Domestic Data Entry Operator

(Job Role)

Qualification Pack: Ref. Id. SSC/Q2212

Sector: Information Technology and Information Technology enabled Services (IT–ITeS)

Textbook for Class X

विद्यया ऽमृतमश्नुते

एन सी ई आर टी
NCERT

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
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Foreword

The National Curriculum Framework (NCF)–2005 recommends bringing out work and education into the domain of the curricular, infusing it in all areas of learning while giving it an identity of its own at relevant stages. It explains that work transforms knowledge into experience and generates important personal and social values, such as self-reliance, creativity and cooperation. Through work, one learns to find one's place in the society. It is an educational activity with an inherent potential for inclusion. Therefore, an experience of involvement in productive work in an educational set up will make one appreciate the worth of social life and what is valued and appreciated in the society. Work involves interaction with material or other people (mostly both), thus, creating a deeper comprehension and increased practical knowledge of natural substances and social relationships.

Through work and education, school knowledge can be easily linked to learners' life outside the school. This also makes a departure from the legacy of bookish learning and bridges the gap between the school, home, community and workplace. The NCF–2005 also emphasises Vocational Education and Training (VET) for all those children, who wish to acquire additional skills and/or seek livelihood through vocational education after either discontinuing or completing their school education. VET is expected to provide a 'preferred and dignified' choice rather than a terminal or 'last resort' option.

As a follow-up of this, the NCERT has attempted to infuse work across subject areas and also contributed towards the development of the National Skill Qualification Framework (NSQF) for the country, which was notified on 27 December 2013. It is a quality assurance framework that organises all qualifications, according to the levels of knowledge, skills and attitude. These levels, graded from one to ten, are defined in terms of learning outcomes, which the learner must possess regardless of whether they are obtained through formal, non-formal or informal learning. The NSQF sets common principles

and guidelines for a nationally recognised qualification system, covering schools, vocational education and training institutions, technical education institutions, colleges and universities.

It is under this backdrop that Pandit Sunderlal Sharma Central Institute of Vocational Education (PSSCIVE), Bhopal, a constituent of the NCERT has developed learning outcome based modular curricula for vocational subjects from Classes IX to XII. This has been developed under the Centrally Sponsored Scheme of Vocationalisation of Secondary and Higher Secondary Education of the Ministry of Education, erstwhile Ministry of Human Resource Development. qaza

This textbook has been developed as per the learning outcome based curriculum, keeping in view the National Occupation Standards (NOSs) for the job role and to promote experiential learning related to the vocation. This will enable the students to acquire necessary skills, knowledge and attitude.

I acknowledge the contributions of the book development team, reviewers, and all institutions and organisations for supporting towards the development of this textbook.

The NCERT welcomes suggestions from students, teachers and parents, which would help us to further improve the quality of the material in subsequent editions.

Dinesh Prasad Saklani
Director
National Council of Educational
Research and Training

New Delhi
September 2022

About the Textbook

The IT–ITeS sector is growing at a fast pace and is a very important industry in India and abroad. In the growing business opportunities in various domains around the globe, there is a huge transfer of information from one place to another. Large amount of data is churned thus creating a need for proper management of the data that are collected. The companies also have to concentrate on their core activities and resort to outsourcing the data entry process. The rapid growth in the IT industry along with the entry of many small and large outsourcing companies in this area, has led to a huge demand for trained personnel for various job roles, such as Data Entry Operator.

Domestic Data Entry Operators in the IT-ITeS Industry are also known as Data Entry Operators. These individuals are responsible for providing daily work reports and work on hourly basis. They are also responsible for electronic entry of data from the client site on to the office site or vice-versa. Individual tasks vary depending on the size and structure of the organisation. This job requires the individual to have thorough knowledge of various technology trends and processes as well as have updated knowledge about database management systems and IT initiatives. The individual should know fast and accurate typing or data encoding. This job involves working on a computer, and appropriate software to enter accurate data regarding different issues like retrieving data from a computer or to a computer.

The textbook for the job role of "Domestic Data Entry Operator" has been developed to impart knowledge and skills through hands-on learning experience, which forms a part of the experiential learning. Experiential learning focusses on the learning process for the individual. Therefore, the learning activities are student-centered rather than teacher-centered.

The textbook has been developed with the contribution of the expertise from the subject and industry experts and academicians for making it a useful and inspiring teaching-learning resource material

for the vocational students. Open source software LibreOffice version 6.4 under Ubuntu Linux is used to demonstrate the process in this textbook. The presentation of the screenshots may look different in other versions of LibreOffice under Windows platform, but the functionality, features and commands will remain the same in any version under any platform. Adequate care has been taken to align the content of the textbook with the National Occupational Standards (NOSs) for the job role so that the students acquire necessary knowledge and skills as per the performance criteria mentioned in the respective NOSs of the Qualification Pack (QP). The textbook has been reviewed by experts so as to make sure that the content is not only aligned with the NOSs, but is also of high quality. The NOSs for the job role of Domestic Data Entry Operator covered through this textbook are as follows:

1. SSC/N3022 – Undertaking data entry services
2. SSC/N9001 – Managing work to meet requirements
3. SSC/N9003 – Maintaining a healthy, safe and secure working environment

Unit 1 of the textbook covers the advanced features of word processing using LibreOffice Writer. It covers applying styles to the document, where you will learn to format a document using styles.

Unit 2 of the textbook covers the advanced features of spreadsheet using LibreOffice Calc. It includes – analysing data to extract useful information for making effective decisions.

Unit 3 of the textbook covers the Database Management System (DBMS) using LibreOffice Base. It covers the general concepts of DBMS, different database model with the focus on relational database. Unit 4 of the textbook deals with the concept of working environment in IT industry. It focuses on safe working practices at workplace. It explains about health related problem caused by the wrong practices and its solution. It also gives the knowledge about required resources in workplace for smooth working.

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The Council acknowledges the contribution of Prakash Khanale, *Head*, Department of Computer Science, DSM College Parbhani, for carefully evaluating and giving suggestions for the improvement of this textbook.

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The Council is grateful to Saroj Yadav, *Professor* and *Dean* (A), NCERT, and Ranjana Arora, *Professor* and *Head*, Department of Curriculum Studies, for their sincere efforts in coordinating the review workshops for the finalisation of this book. The Council acknowledges the copy editing and valuable contribution of Shilpa Mohan, *Assistant Editor* (Contractual) in shaping this book. The efforts of *DTP Operator* Pawan Kumar Barriar, Haridarshan Lodi and Rajshree Saini, *DTP Operators* (Contractual), Publication Division, NCERT, for flawless layout design are also acknowledged.

Contents

Do You Know ?

According to the 86th Constitutional Amendment Act, 2002, free and compulsory education for all children in 6-14 year age group is now a Fundamental Right under Article 21-A of the Constitution.

EDUCATION IS NEITHER A PRIVILEGE NOR FAVOUR BUT A BASIC HUMAN RIGHT TO WHICH ALL GIRLS AND WOMEN ARE ENTITLED

Give Girls Their Chance !

Digital Documentation (Advanced) using LibreOffice Writer

Introduction

In Class IX, you have learned the basic concepts of word processing using LibreOffice Writer, where the basic functions, such as creating, editing and formatting the document are covered. However, in today's professional set up, you need to know more features to create a document that can be presented in a professional style. LibreOffice Writer offers a variety of features and commands that enable you to create an attractive and presentable document with a consistent format. Further, such documents are easy to read, comprehend and edit by one and all.

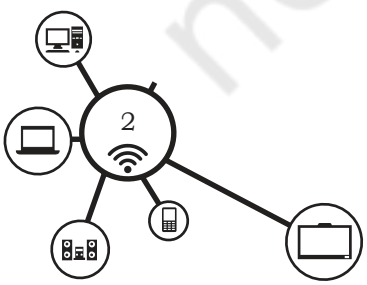
In this Unit, you will learn to format a document using styles, use style formats, create new styles, update styles, and apply styles and to use the template of another document to format the current document.

A document with pictures is always easier to understand than a text document. Pictures have a visual appeal, as our brain responds quickly to colours in comparison to any other form of information. In digital document, a picture can be a drawing, chart, photo,

logo, graph or single video frame. LibreOffice Writer provides various tools to work with images. In this Unit you will learn to create a document with pictures, insert and modify images in the document to make it more attractive.

Later, it discusses some advanced features of LibreOffice Writer that are used to create professional documents. You will be able to use the feature 'Table of Contents', which is based on different types of heading styles and create professional documents using templates. 'Track changes', an important feature, used to keep a track of editing being done by each user is also covered in this Unit.

The screenshots of LibreOffice version 6.4 under Ubuntu Linux are used here to demonstrate the various processes. The presentation of the screenshots may look different in other versions of LibreOffice or under Windows platform. But the functionality, features and commands are the same in any version under any platform.



CHAPTER 1

Introduction to Styles

In Class IX, you had learned to create, format and edit documents in LibreOffice Writer. In today's world, a document created and presented in professional style is appreciated by all. There are two ways of creating an attractive digital document in Writer: manually formatting a document or by applying styles.

You learned manual formatting in class IX, where you selected a part of a document, such as page, paragraph or words and then applied formatting effects using the formatting toolbar. To format different portion(s) in the document, having same style, steps were repeated for all part(s) of the document. So, to change any aspect(s) of formatting, the entire process was repeated for the document. Manual formatting is popular, as it is easy to use and requires less knowledge. Creating a big report with consistent format becomes difficult when manual formatting is used. To avoid inconsistency in formatting and reduce time and effort in formatting a document, we use Styles in Writer. In this chapter, you will learn how to style a document by using– style formats, creating new styles, updating styles, applying styles and using template to format the current document.

Introduction to Styles

A ***style*** is a collection of all formatting information, which you want to save and then apply on the document. For example, following details of **Font** can be stored as a style with the name ***'Title style'***.

Size – 12
Name – Bookman Old Style
Weight –Bold
Alignment – Left

Now you can use and consistently apply ***Title style*** to all titles of the document. To change the style of **Title** in a document, you just need to update the ***Title style*** and apply it to the document. Similarly, to change the format of the complete document, just change the style applied to it. Using Style allows you to shift your focus from appearance of the document to the content of document. This chapter will help you learn how to create and apply styles in Libreoffice Writer.

Style Categories

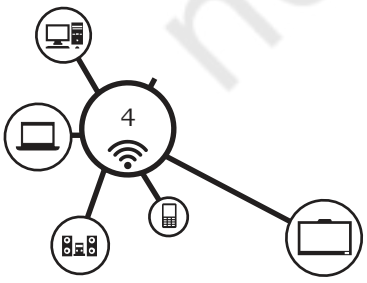
Writer provides six ***Style*** categories, which are as follows:

(a) **Page** – all documents in Writer are based on pages, hence for formatting them, Page Style is used. It defines basic page layout like page size, its margin, placement of header and footer, footnote, borders and background. A document can have one or many page styles. If a page style is not specified, Writer uses its built-in ***Default*** page style.

(b) **Paragraph** – after deciding on a page format, next is the document content, which is organised in paragraphs. A paragraph begins and ends by pressing Enter key. Paragraph formatting includes tab stops, text alignment, line spacing and borders. Usually, it also includes Character styling attributes.

(c) **Character** – this styling is used to work on block of letters, i.e. word(s) in the paragraph instead of the whole paragraph. By using character styles, you can change the appearance of a part of a paragraph without affecting the other part. Character styles allow changing the text colour, text size, highlighting text and emphasising it.

(d) **Frame** – using frames, a document can be organised in sections, so that each section of the page can have a different appearance. Frames are like containers, which can hold text, graphics and lists. Therefore, applying Frame Styles allows to format a frame by specifying its size, position, border and how the text is placed around the picture.



(e) **List** – to style lists in a document, the Writer provides a separate category. It can be used to style lists by putting numbering or bullets of a different kind or specify numeric format.

(f) **Table** – using tables, a large amount of information can be organised and presented effectively. Table Style category allows to format a table by adding borders, using different text or border colour(s), aligning text inside the table, having different patterns or text colour.

Now we know which Style category should be applied to style/format a section of the document, let's learn how to apply it.

Styles and Formatting

Writer provides many options and tools to style or format a document. All formatting options, learned in Class IX, which can be applied using Formatting toolbar, can also be applied using Style menu.

There are many predefined Styles in Writer, which can be accessed by using the following methods:

(i) Using **Style** option from **Menu Bar**

(ii) Using **Style Drop Down** list box, as shown in Fig. 1.1, from the Toolbar. The current paragraph style is displayed in the textbox. If the Toolbar is not visible then, click on **View>Toolbars**, and enable **Formatting/"Formatting (Styles)"**.

(iii) Using **Sidebar Menu**. On the Sidebar, clicking on Styles icon, displays the **Style** sub-menu as shown in Fig. 1.2.

(iv) Using keyboard shortcut — F11 function key.

If you choose to style your document using this option, you will find various available options on top as shown in Fig. 1.3

In Fig. 1.3, first six icons allow to select the category of style, such as Paragraph style,

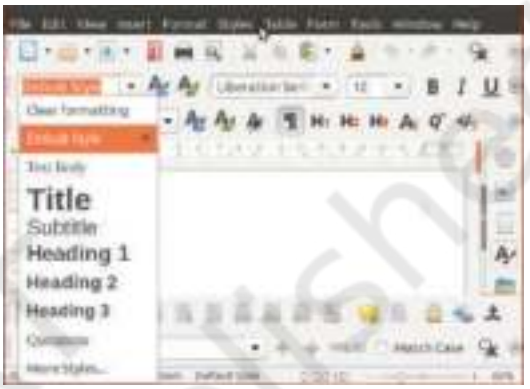


Fig. 1.1: Style drop down list in Toolbar

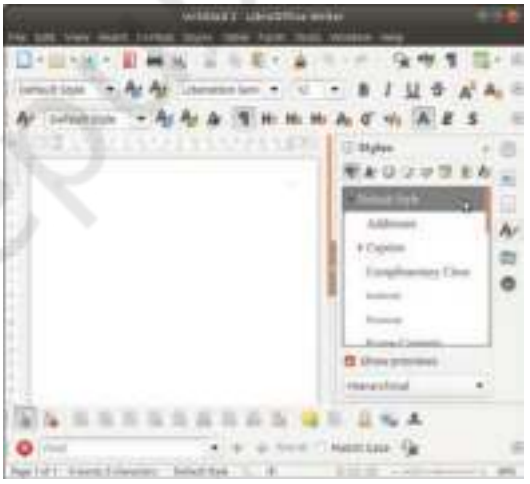


Fig. 1.2: Style sub menu from sidebar

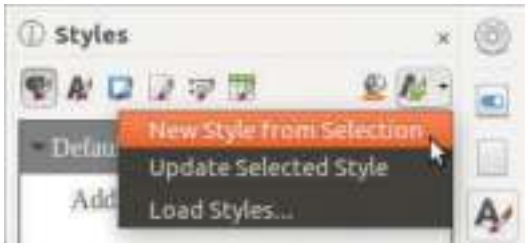


Fig. 1.3: Buttons at the top of sidebar sub menu

Fig. 1.4: Paragraph Styles without Show previews

Fig. 1.5: Paragraph Styles with Show previews

Character style, Frame style, Page style, List style and Table style to work on. Click on any one of these buttons to display a list of existing styles in that category. From the bottom of the window selecting **Show Preview** option displays its style along with the name in the list.

Fig. 1.4 shows the list when preview is **not selected** and Fig. 1.5 shows when the preview is **selected**.

At the bottom of this menu, there is a **Drop Down list**, to select the **filter** for the style list to be displayed above. By default this filter is set to **Hierarchical** as shown at the bottom of Fig. 1.5.

Assignment 1

Select each of the Styles – Character style, Frame style, Page style, List style and Table style and list the styles under each category.

Let us use these styles in a document. For applying any styles, such as *Paragraph, Character, Frame, Page, List, Table* follow the given steps.

Step 1. Select the text to be formatted. The selected text may be a collection of characters, words, lines, paragraph, page, frame or table.

Step 2. To format the selected text, choose appropriate style by clicking the button from the top of the Styles bar.

Step 3. A list of styles for that category appears. Double click on the desired style to apply to the selected text.

Practical Activity 1.1

Apply an existing **Heading style**, from Paragraph Styles.

Step 1. Create a new document named '*noise.odt*' with the text as shown in Fig. 1.6.

Step 2. Add a title, 'Noise Pollution' on top.

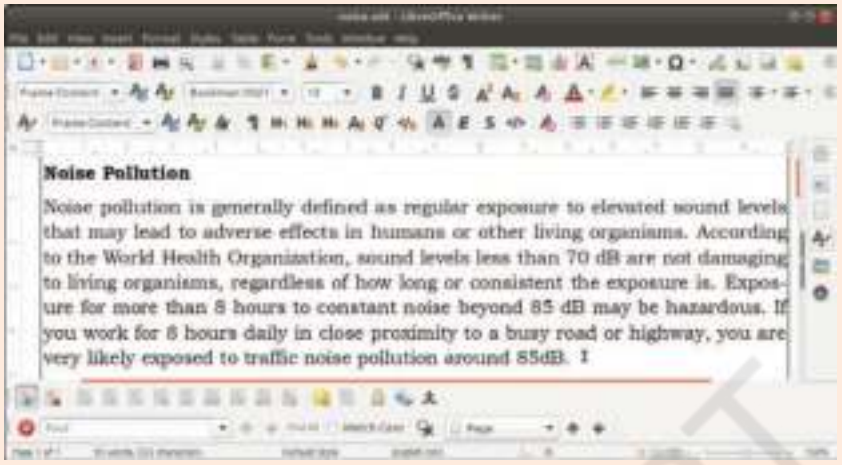


Fig. 1.6: noise.odt

Step 3. Select the Tile – *Noise Pollution*

Step 4. Open **Styles** Menu using Sidebar and go to *Headings option.*

Step 5. Double click on *Heading 4* to apply. Observe that the Fig. 1.7 shows the Heading 4 style is applied to the heading 'Noise Pollution'.

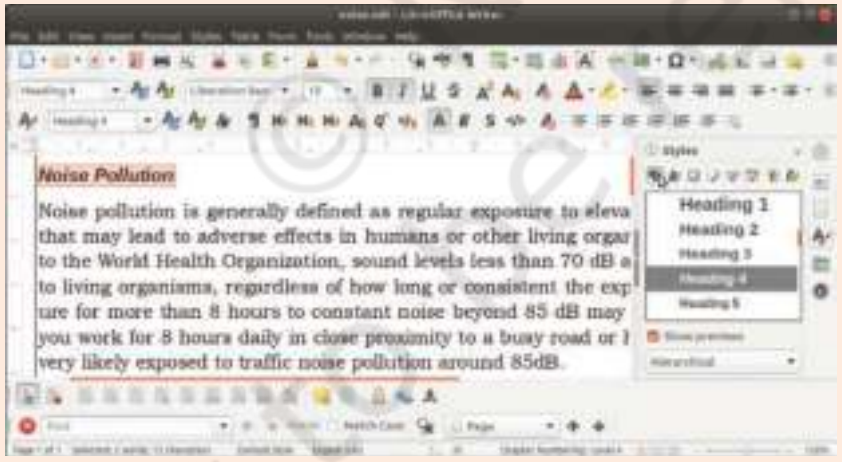


Fig. 1.7: Applying Heading 4 options of Paragraph Styles

Using predefined Heading Style, allow you to use them as a Book Mark for browsing the document.

Practical Activity 1.2

Apply an **existing page style** on 'noise.odt'

Step 1. Open file 'noise.odt' created in Activity 1.2.

Step 2. Insert a blank page in the beginning by selecting **Insert>Page Break** from main menu bar, as shown in Fig. 1.8.

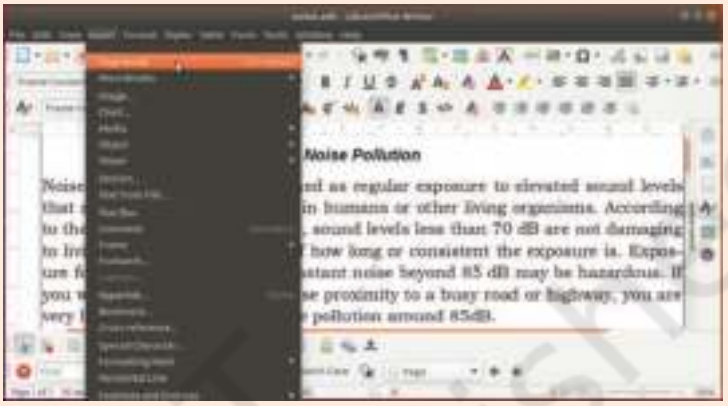


Fig. 1.8: Inserting page break

Step 3. Observe that in Fig. 1.9, inserting a page break will shift the matter to the second page. Now, place the cursor at the beginning of page 2, where the matter appears as shown in Fig. 1.9.

Step 4. Open **Style** Menu from side bar and select the **Page Styles** option as shown in Fig. 1.9.

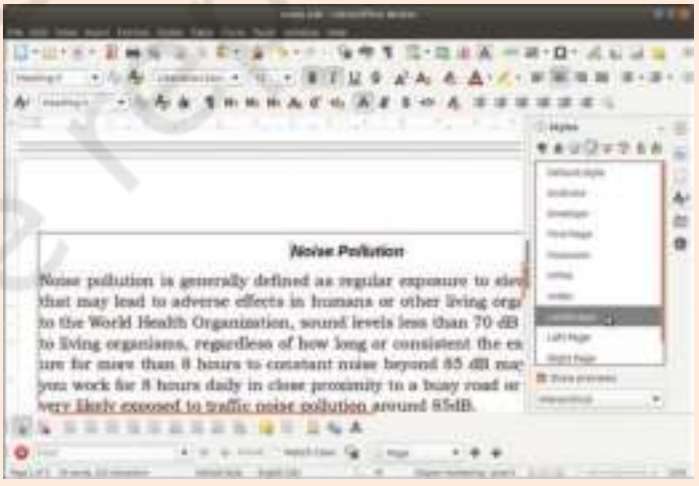


Fig. 1.9: Selecting Landscape from Page Styles option of sidebar menu

Step 5. Double click on **Landscape** to change page orientation to Landscape. After applying **Page Styles**, you can observe that the document pages orientation is changed to Landscape from Portrait.

Note: Applying page style on a page may affect the entire document.

Assignment 2

(i) Try applying Landscape option on one page of a large file.

(ii) Explore, in which situation **Conditional Styles** filter, given in Paragraph category of styling, can be used?

Fill Format

To apply a style on words present at different locations in the document, you will have to go to each word separately and apply it on each word. Writer provides a convenient way of doing it through **Fill Format option**. It is the second icon from right on the Style menu, as shown in Fig 1.3. This method is useful when a same style is to be applied at many places scattered in the document. Fill Format can be used to style scattered – pages, frames, tables, lists, paragraphs or characters. Follow the steps given below to use it.

Step 1. Open the document to be styled.

Step 2. Open the ***Styles*** window and select the desired style category and then desired style from drop down list.

Step 3. Select **Fill Format** button.

Step 4. To apply the selected style, take the mouse pointer to desired location and click. Do take care to apply style on appropriate type of content.

Step 5. Repeat step 4 until all the changes have been made for that style in the entire document.

Step 6. To quit **Fill Format** option, click the **Fill Format** button again or press the ***Esc*** key.

Practical Activity 1.3

Use Fill Format to change appearance of paragraphs at different places in the document using paragraph formatting. A file '*documentation.odt*' with at least 5 pages of text is used for the activity.

Step 1. Open a file '*documentation.odt*' having 5 pages of text. Observe the indented sentences in second page in Fig. 1.10.

Fig. 1.10: Pages of file documentation

Step 2. Go to **Style** Menu from sidebar and click on **Paragraph** category, and select **List Paragraph** from the drop down list as shown in Fig. 1.11.

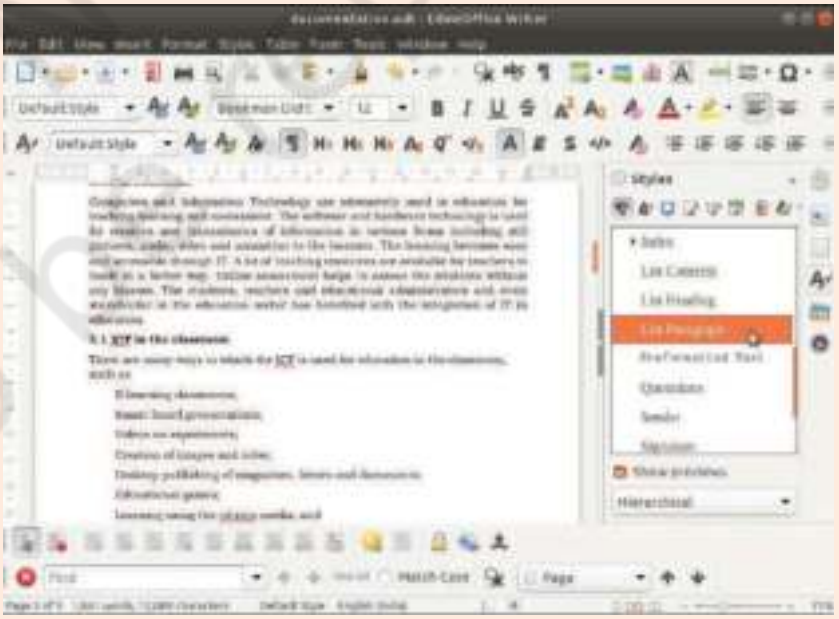


Fig. 1.11: Selecting List paragraph option in Paragraph Styles category

Step 3. Click at the beginning of the sentence to be styled using List Paragraph.

Step 4. Now click on **Fill** button, keep on doing same to apply the style for all sentences using desired format. Observe in Fig. 1.12 that how the indented list items look after applying the **Fill Format** button.

Step 5. Press '***Esc***' key to disable **Fill** button.

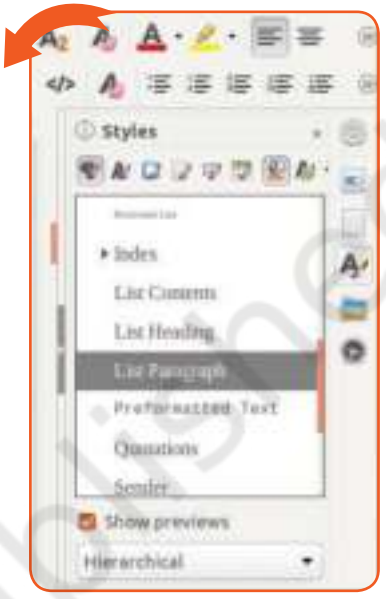


Fig. 1.12: Using Fill Format button

Creating and Updating a New Style

Till now you have used only predefined styles to format a document. If existing styles specified by Writer do not match your requirement, then it is also possible to create a *Custom Style*. There are many ways to create a custom style, two of them – From Selection and by using drag and drop are explained here.

(a) From Selection – last button in **Style** menu, is **Styles action** button is used to create a new style or modify an existing style. It can also be used to load a style defined in document or template, in the list. Let us learn how to create a new style; which is the first function in the drop down list of action button.

Fig. 1.13: Selecting New Style from Selection to create a New Style

Step 1. Select the portion of document, such as page, paragraph, character, to change its appearance. Format it as per the requirement.

Step 2. From the buttons at the top of the **Style** menu, choose the category (paragraph, character, page, etc.) for which a new style is to be created.

Step 3. Select **Style action** button. A list of options as shown in Fig. 1.13 is displayed. Click on **New Style** from Selection.

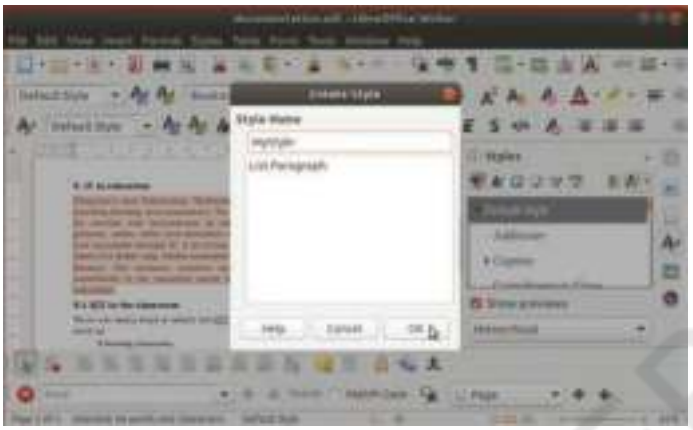


Fig. 1.14: Creating a new style MyStyle

Step 4. In **Create Style** dialog window, type the name of new style, say, '*MyStyle*' as shown in Fig. 1.14. The names of existing styles are displayed in the window.

Step 5. Click **OK** to save the name of new style.

Observe that the name of the newly created style '*MyStyle*' appears in the list of styles.

Practical Activity 1.4

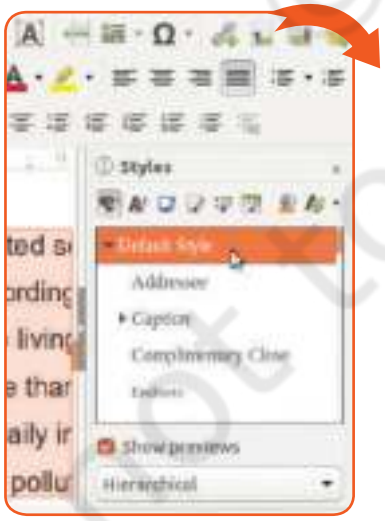
To create a **custom paragraph style** 'myStyle', using file '*noise.odt*' created in Practical Activity 1.2.

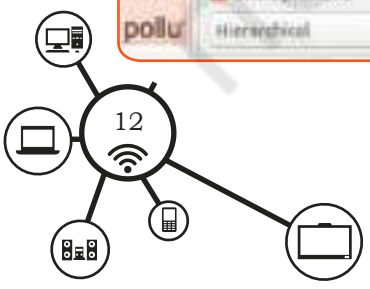
Step 1. Open file '*noise.odt*' created in Practical Activity 1.2.

Step 2. Format the content of the paragraph with Font face – Arial, Font size 12, line spacing 1.5.

Step 3. Select paragraph button from **Style** Menu of sidebar as shown in Fig. 1.15.

Fig. 1.15: Selecting Paragraph Style





Step 4. Select **Style** Action button.

Step 5. Click on New Style From Selection. A Create Style dialog box will appear as shown in Fig. 1.16.

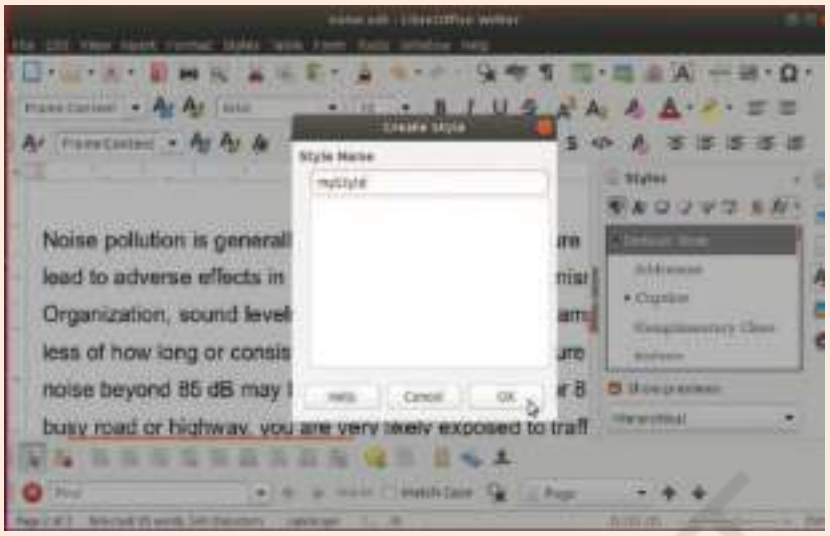


Fig. 1.16: Create New style using Selection

Step 6. Type '*myStyle*' as style name in the box and click **OK**. The Style Name (*myStyle*) will appear in the drop down list under Paragraph category.

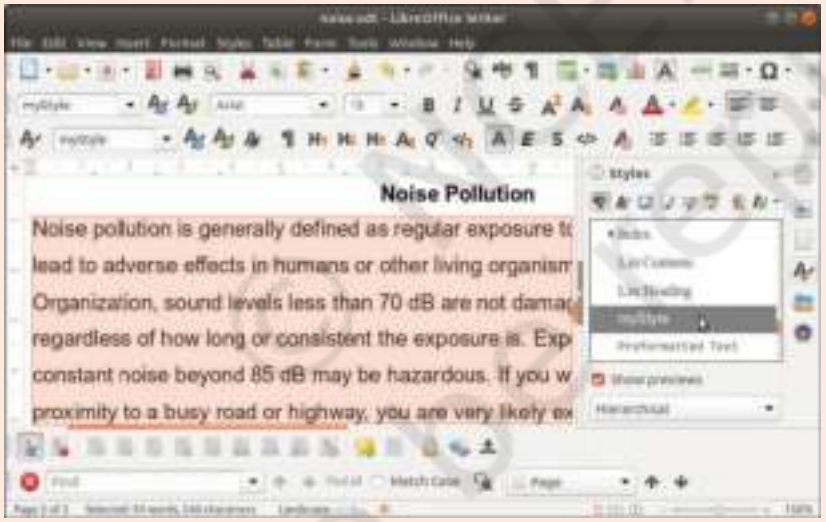


Fig. 1.17: New created myStyle becomes part of Style list under Paragraph category

Updating a Style

Instead of creating a new style for a small changes in predefined style, an existing Style can be modified on desired aspect. **Updating Current Style** (Fig. 1.18), the second option in list can be used for doing so.

Fig. 1.18: Selecting Update Selected Style option

Follow the given below steps to modify an existing **user defined** style of page, frame or paragraph style.

Step 1. Select the page/paragraph to be modified.

Step 2. Format the selected portion as per the requirement.

Step 3. Go to **Style** menu, and click on the button to update.

Step 4. Using **Style Action** button, click on **Updated Selected Style**.

Note – Ensure that the aspect modified remains same throughout the selection. For example, in paragraph, if you are changing font face or size then, throughout the paragraph it should remain same.

Using Drag and Drop

Another way of creating a new style is using ***Drag and Drop*** method. It is very easy, as the desired formatted portion of text is just dragged and dropped at correct place in the **Style** menu.

Use the following steps to create a new Style using **Drag and Drop** method.

Step 1. Select the text from the document and change its formatting as desired.

Step 2. From the buttons at the top of the **Style** menu, choose the desired category of style to create.

Step 3. Click on the desired style under which, new style is to be created.

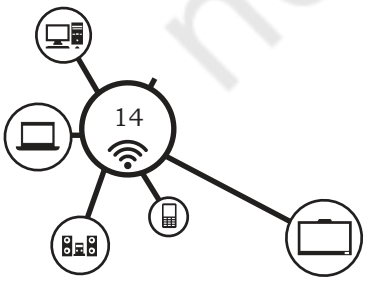
Step 4. From the document drag the selected portion of text to the **Style** Menu.

Note – While dragging the text, check the cursor shape, as it changes to indicate whether the desired operation is possible or not.

Step 5. **Create Style** dialog window appears (see Fig. 1.16), type the name of new style. Names of existing styles are displayed in the window.

Step 6. Click **OK** button to save the name of new style.

The **Create Style** window displays the list of custom styles. To update an existing style, choose the style name from the list. So same method can be used to create or update a Style. Drag and Drop cannot be used to create a Page Style.



Practical Actiivty 1.5

Create a new style '*myStyle1*' using drag and drop, by changing line spacing to 1 and font size to 13 in *myStyle*.

Step 1. Open file '*noise.odt*' created in Practical Activity 1.2.

Step 2. Format the content of the paragraph with Font size 13 and line spacing 1.

Step 3. Select paragraph button from **Style** menu of sidebar as shown in Fig. 1.19.

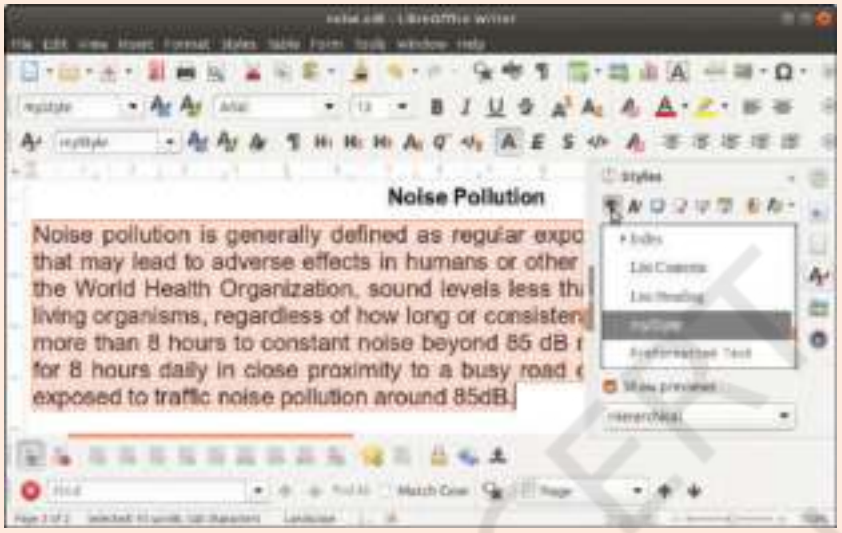


Fig. 1.19: Paragraph Styles in Style menu of sidebar

Step 4. Now drag the selected text to **Style** menu, as shown in Fig. 1.20.

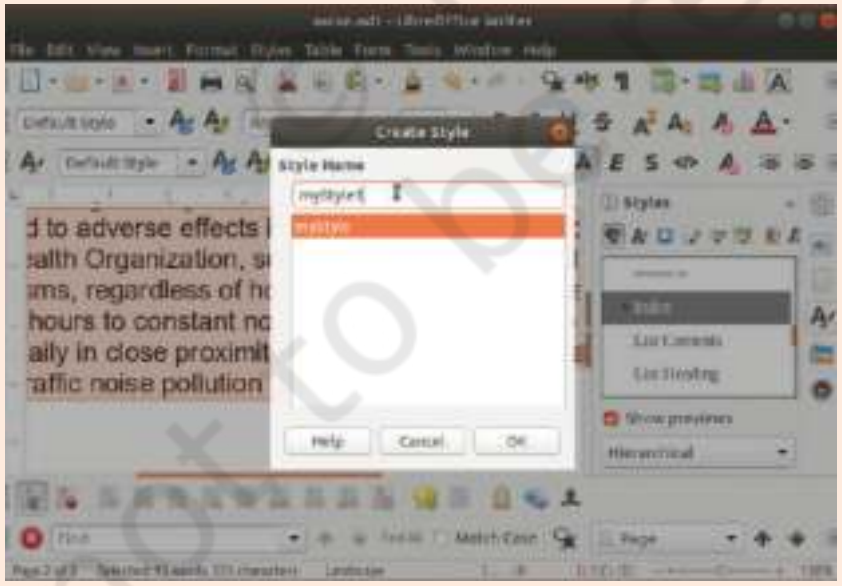


Fig. 1.20: Creating a new style using drag and drop

Step 5. Press **OK**. The style name (myStyle1) will appear in the drop down list under **Paragraph** category as shown in Fig. 1.21.

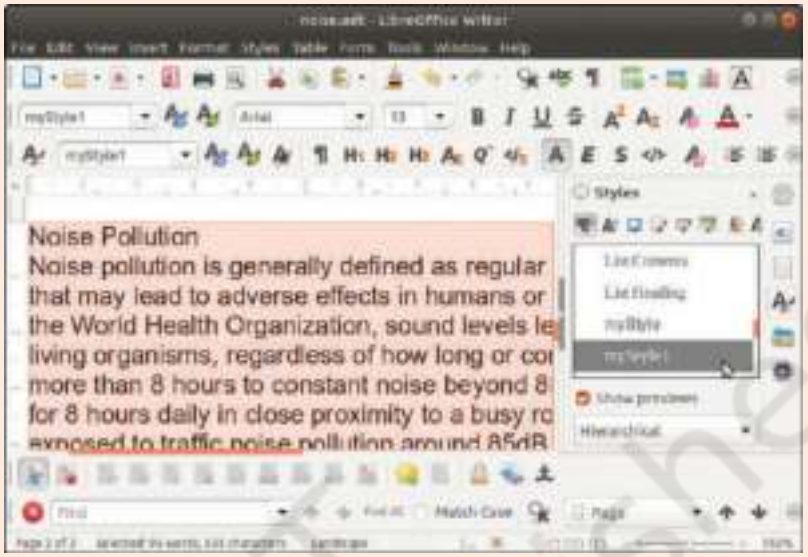


Fig. 1.21: New style myStyle1 created using drag and drop appears in the style list

Apart from creating a new style or modifying an existing style, a new document can be styled/formatted using pre-defined templates or another document which suits our requirement. This helps in copying all styles of the template/document in one go to our Style menu and makes formatting our task easy.

Load Styles (from a template or document)

The last option, in **Style Action** button of **Style** Menu is **Load Styles**. It is used to copy styles from an existing template or document. Once copied, in the list of styles, you can create a new document having same appearance as old one with no extra efforts.

Follow the given steps to copy style from template or document

Step 1. In the **Styles** Menu, click on the **Load Styles** as shown in Fig. 1.22.

Step 2. It will open the **Load Styles** dialog box as shown in Fig. 1.23. In the **Load Styles** dialog box, choose the category of your document.

Step 3. Find and select the desired template to copy styles from. Note that there are no templates stored in My Templates category.

Fig. 1.22: Selecting Load Styles option from Style Action button

Step 4. From the same dialog window, also, select the options for the types of styles to be copied, such as *Text* for Paragraph and Character styles, *Frame, Pages or Numbering (List styles)*. By selecting ***Overwrite*** option, the styles being copied will replace any existing styles with the same name.

Step 5. Click **OK** to copy the styles.

Step 6. In case styles are to be copied from a file, then instead of Template option, click on the **From File** button. A **File Selection** dialog box is displayed. Select the desired document from your computer.

Fig. 1.23: Selecting the My Templates from Categories of Load Styles dialog window

Applying styles

Whenever a new document is created, the Writer applies default style(s) to it, and the same is displayed in the status bar as shown in Fig. 1.24.

You may like to retain the default style or change it.

Self Exploration

Learn other ways of accessing Style options as listed in section 1.4.

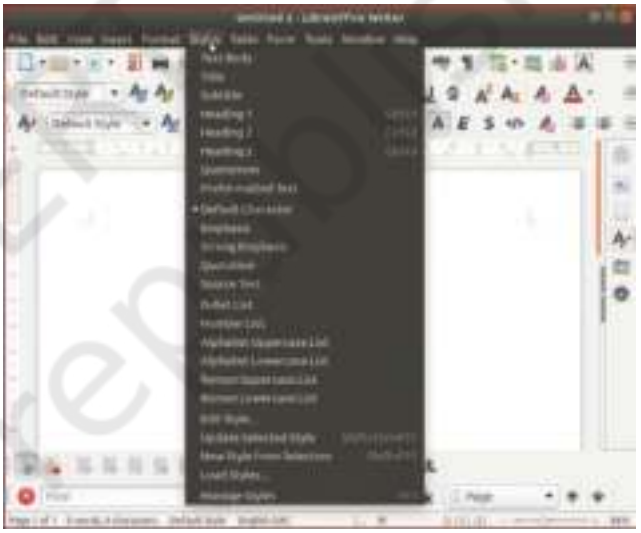


Fig. 1.24: The current Default Style is displayed on the status bar

SUMMARY

- A *Style* is collection of all formatting information, which you want to save and then apply on the document.
- Writer provides six ***Style*** categories – Page, Paragraph, Character, Frame, List and Table.
- Predefined Heading style(s) act as bookmarks in a document. These bookmarks allow faster browsing in a document.
- These Style(s) tools can be accessed from Menu bar, Drop Down List and Side bar.
- *Fill Format* is used to style scattered – Pages, Frames, Tables, Lists, Paragraphs or Characters in a document.

- *Writer* allows creating custom style and saving them for future use.
- These new styles can be created using Selection method or Drag and Drop method.
- Drag and Drop method cannot be used to create a Page style.
- A user defined style once created, can be updated at any point of time. Steps used for updating a style are same as creation of style.
- A document can be styled using another document or a template.

Practical Exercises

1. Mr R K Sharma is planning to change his job. He approaches a company (www.naukri.in) for helping him in finding new job. Mr Sharma is asked to submit his CV/Resume in the company. He has downloaded a sample CV from "template.com". Help him in creating his CV in the same format. Also save the format as "CV1" on the computer, for future reference.
2. Raghav receives a non-styled text document as shown in Fig. 1.25, from his teacher to convert it into desired appearance as shown in Fig. 1.26. He has to save it as "reportStyle" for future reference. Write the process that he should follow.

Fig. 1.25: Practical Exercise 2 Original Document

Fig. 1.26: Appearance of Styled Document

3. Kendriya Vidyala No. 3, is planning to publish a monthly digital newsletter for their school. Ravish Pandey of class 12, heads the group responsible to design it on computer. Size of news letter finalised is 5 inch (length) by 8 inch (height). It was also decided that:
   - The newsletter will have two pages with 4 leaves.
   - The first leaf will provide brief information about school.
   - The second leaf will have a table, displaying the school's last year's Board exam results.
   - On the third leaf School achievements (at least 4) for the current session will be given.
   - The last leaf will have articles or poems (at least 2) written by students.

You being part of the team are required to perform the following using Style Menu from Sidebar:

(a) Suggest appropriate style category (page, frame, and table) to be used to design the newsletter.

(b) Create digital copy of it.

(c) Apply Left Page and Right Page format on appropriate leaves.

(d) Also set the same margins on all leaves, having same border on all.

(e) Add page number on each leaf. The page number should appear in Footer as "Page – number". Right align these numbers on each leaf.

(f) For heading(s) and sub heading(s) use Heading 2 and Heading 4, in the newsletter.
(g) On the first leaf, while displaying information about school, use character styling of your choice to make it attractive.
(h) Use table to style Board Results, using grid rows and columns.
(i) Each row of the table should have a number – in Roman, prefixed to content.
(j) Organise school achievements in frames, where individual frame is to be styled using Frames of Paragraph category.
(k) Using selection method, save the style in respective category, so that the same can be used to publish future newsletters to maintain consistency.

Check Your Progress

A. Multiple choice questions

1. Which of the following features in LibreOffice Writer is/are used to create the given document?
   (a) Page borders
   (b) Envelope
   (c) Picture from File
   (d) Indexes and Tables

2. Styles menu (from sidebar) in Writer provide options to work on
   (a) Paragraph Styles
   (b) Frame Styles
   (c) Page Styles
   (d) All of the above
3. What is style template in LibreOffice Writer?
   (a) Pre-determined form and mode of document file
   (b) One kind of model style
   (c) One type of document
   (d) Cluster of documents in Writer
4. Which of the following gives the status of your document like page numbers, number of pages?
   (a) Status bar (b) Standard toolbar
   (c) Formatting (d) Title bar
5. Which of the following can be used to access a style menu?
   (a) F11 function key (b) Sidebar Menu
   (c) Formatting toolbar (d) All of these

B. Fill in the blanks

1. A _____ is a collection of different formats
2. Styles are especially handy in _____.

3. Proper use of styles improves _____ in a document
4. The first five buttons at the top of the Styles window select the category of _____.
5. Using predefined _____ creates Bookmark in the document.
6. On opening a new file _____ Style is used for formatting the document.
7. In page layout documents, you can arrange _____ like text boxes and graphics.
8. Character styles are often integrated in _____ Style.
9. _____ allows to apply style at different places in the document.
10. Predefined Style _____ be updated by Drag and Drop method.

C. Short answer questions

1. What do you understand by styles in LibreOffice writer document?
2. Write advantages of using Style over manual formatting, for designing a document.
3. What are the different categories of style in LibreOffice writer document?
4. Write down the steps to update a style.
5. What do you understand by custom styles in LibreOffice writer?
6. In a document Introduction paragraph is to be designed extensively by setting its font (face, size, weight, colour), space above it and giving number to heading. Given below are the steps used to do so.
   (i) Select the Introduction (paragraph)
   (ii) Open Font list from Toolbar
   (iii) Select the font
   (iv) Open Font size from Toolbar
   (v) Select the desired font size
   (vi) Select Font weight (Bold) from the toolbar
   (vii) Open Font color from Toolbar
   (viii) Select desired color
   (ix) Using Format menu option, select **Spacing** > **Paragraph** > **Indent and Spacing**
   (x) Edit space above paragraph
   (xi) Add number by Selecting Numbered list from Toolbar.
7. Give two examples, where instead of Style, using manual formatting will be beneficial.
8. Give one situation, in which you will prefer to use Fill Format for styling your document.
9. Write steps to load style(s) from a template.

CHAPTER 2

Working with Images

It is easy to read and comprehend a good interactive document. A word processing application has rich features, which allows to create an interactive document. A document containing pictures is always easier to understand than a pure text document. Pictures have visual appeal, as our brain responds quickly to colors in comparison to any other form of information. A picture can be a drawing, chart, photo, logo, graph, or single video frame. In digital document a picture can be a graphic or image representation, which is a digital image. Till now, we have created a text document with different features, such as formatting and using styles. In this chapter you will learn to create a document with pictures. You will learn to insert and modify images in the document to make it more attractive. LibreOffice Writer provides various tools to work with images. A picture is a digital image, which is representation of image in finite set of digital values 0 or 1, known as pixels. These are stored in various types of graphics files with the file extension, such as GIF, JPG, JPEG, PNG, BMP, etc.

Inserting an Image in a Document

LibreOffice Writer allows to work on images, shapes, charts and diagrams by providing various tools. The image file stored on the computer, can be inserted into a document using different ways, such as using Insert Image dialog, using Drag and Drop option, using Cut, Copy and Paste option and lastly by Linking.

Inserting Image Using Insert Image Option

A general procedure to insert an image using Insert Image dialog box, is as follows.

Step 1. Open the document to insert an image in LibreOffice Writer.

Step 2. Place the cursor where you want to insert an image.

Step 3. Select and click on **Insert > Image** from menu bar

Step 4. An **Insert Image** dialog box will open which will allow to choose the picture file to be inserted.

Step 5. Select the file and click on Open button to insert an image in document.

Practical Acitivity 2.1

Insert an image using ***Insert Image dialog box*** in the file "*noise.odt*" created in previous chapter.

Step 1. Ensure that you have an image file on your computer hard disk. Otherwise download a relevant image from Internet.

Step 2. Open "*noise.odt*" file created in Practical Activity 1.2 of Chapter 1.

Step 3. Place the cursor to the next line of the text to insert the image file, and then click on **Insert** menu from the menu bar as shown in Fig. 2.1.

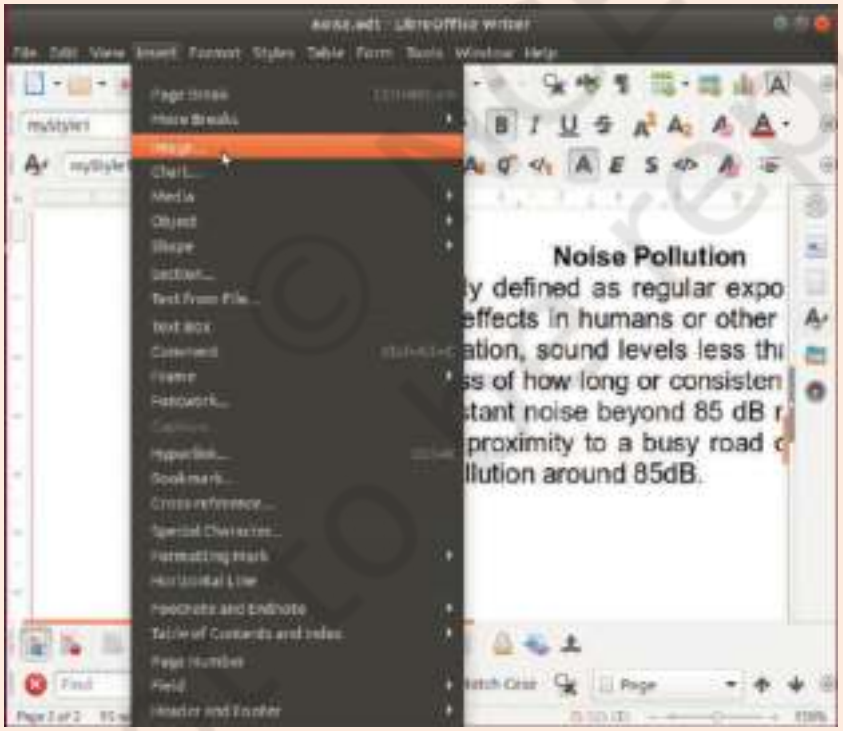


Fig. 2.1: Selecting Insert menu for inserting Image

Step 4. Click on ***Image*** option, opens ***Insert Image*** browsing window to select an image. Select desired image as shown in Fig. 2.2.

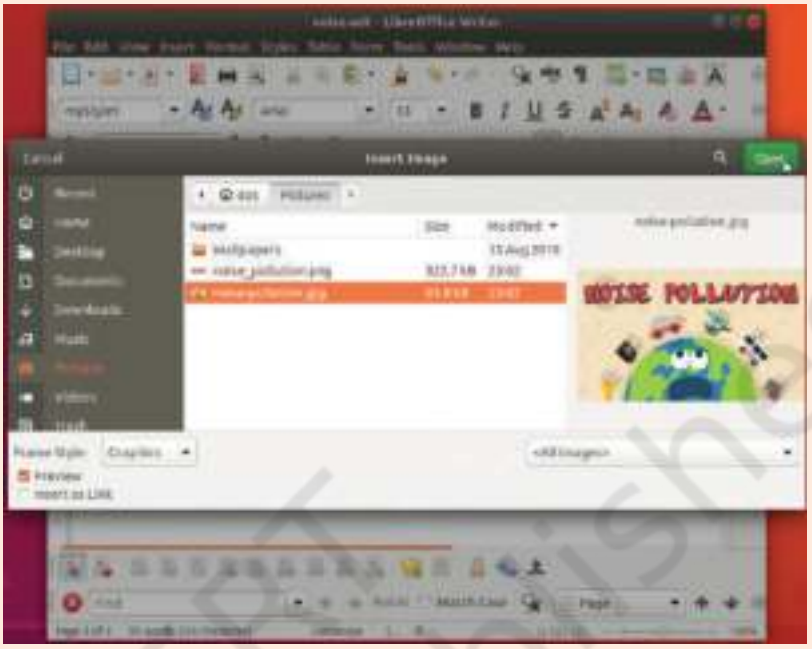


Fig. 2.2: Insert image browsing window

Step 5. Click Open button. The image appears at desired place as shown in Fig. 2.3.

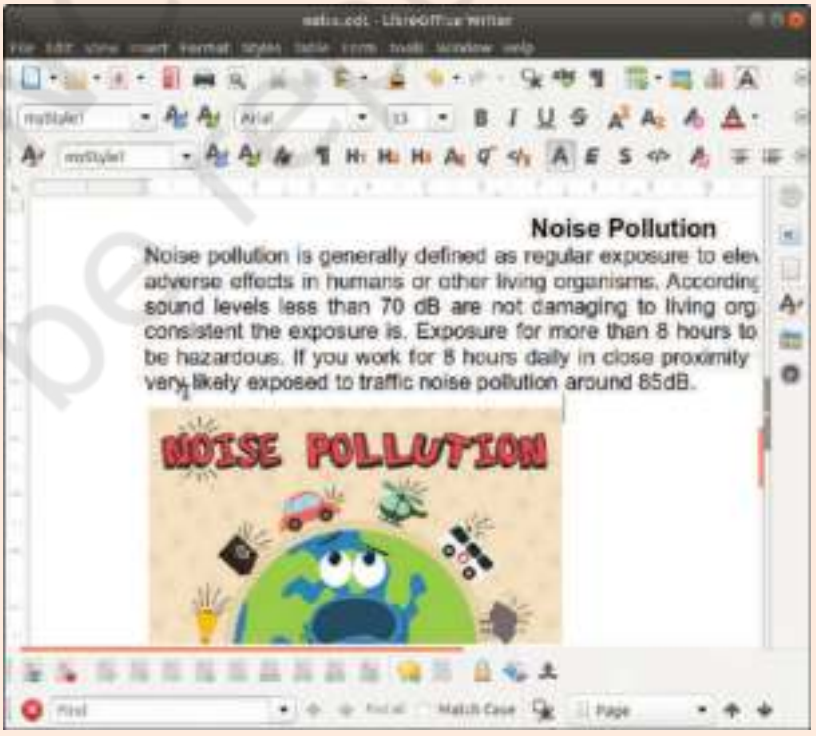


Fig. 2.3: Image inserted in noise.odt document

Inserting Image using Drag and Drop option

Another option to insert images in the document is by using Drag and Drop option. The standard procedure is just drag the image from its source and drop it at desired position in the document. A general procedure to insert an image using ***drag and drop option***, is as follows.

Step 1. Open the document to insert an image in LibreOffice Writer.

Step 2. Open a file browser window (**Win+E**) and select the image file to be inserted.

Step 3. Drag the image into the document

Step 4. Drop it, where you want it to appear in the document.

Inserting image using Copy and Paste method

As stated above, another way to insert an image in the document is by using copy and paste method. In this method instead of dragging the image, copy the image and then paste into the desired location of the document.

Inserting an image using any of the above described method saves a copy of image file in the document wherever image is inserted, that means, the image gets embedded in the document.

Practical Activity 2.2

Insert an image from one document (source) to another document (target) using Clipboard. Source file is "*typewriter.odt*" having different images of typewriter, and target file is "*documentation.odt*" created in the previous chapter.

Step 1. Open source file "*typewriter.odt*" and target file "*documentation.odt*".

Step 2. In the source document, select the image to be copied, as shown in Fig. 2.4.

Fig. 2.4: Selected image in typewriter.odt

Step 3. Move the mouse pointer over the selected image and copy the image by using keyboard shortcut (*Ctrl+C*) or right-click and select **Copy** option from the context menu to copy the image to the clipboard.

Step 4. Switch to the target file, "*documentation.odt*".

Step 5. Place the cursor on the location where you want to insert the image as shown in Fig. 2.5.

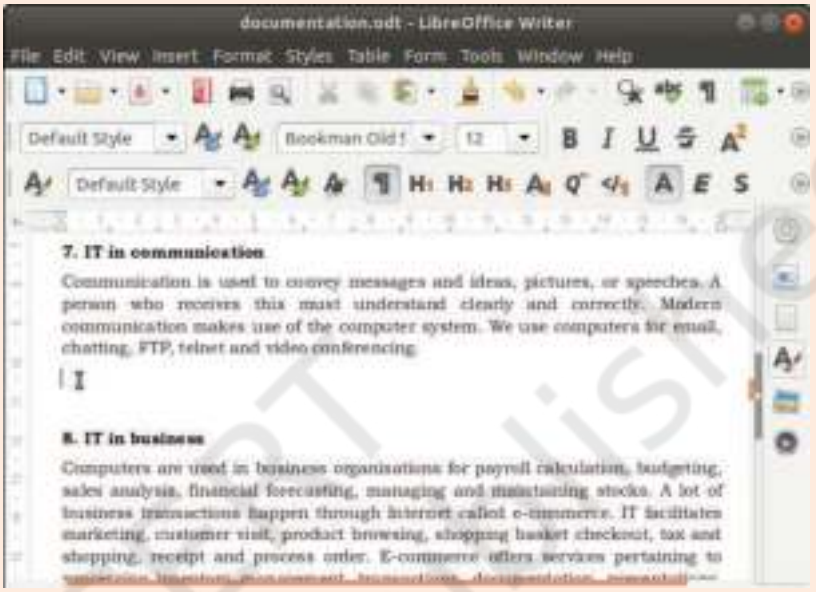


Fig. 2.5: Placing cursor to insert image in documentation.odt

Step 6. Paste the image by using the keyboard shortcut (*Ctrl+V*) or right-click and select **Paste** option from the context menu to paste the image as shown in Fig. 2.6.

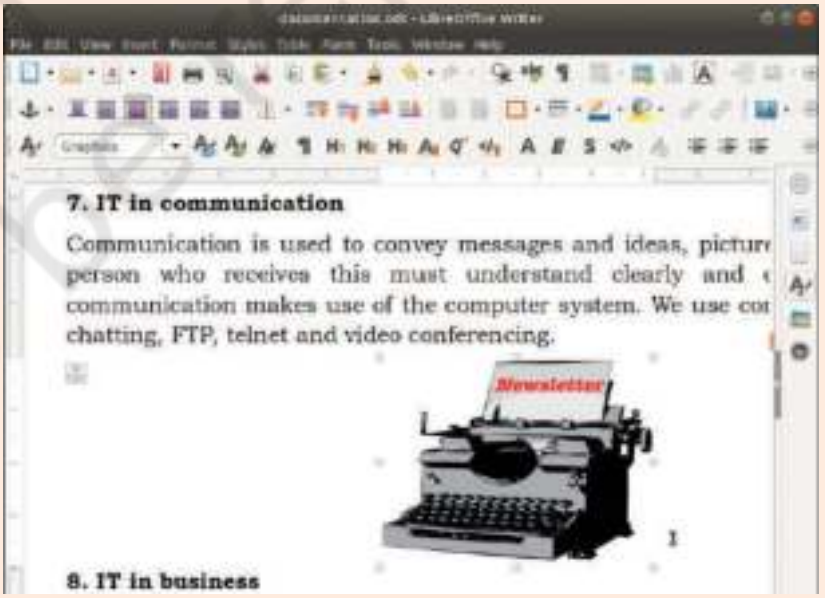


Fig. 2.6: documentation.odt after inserting image from typewriter.odt

Inserting an image by linking

If multiple copies of the same image are required to be inserted in the document, it is beneficial to save the link of image instead of inserting the image. Inserting a link, stores its reference instead of the image itself, thereby reduces the size of the document, because actual image is saved only once as a separate file along with the document.

Whenever a document containing the link is opened, the image file gets merged, at the place(s) where reference was stored, and displayed on screen to the user. A general procedure to link the image file is as follows.

In **Insert Image** dialog box, check the Link option as shown in Fig. 2.7

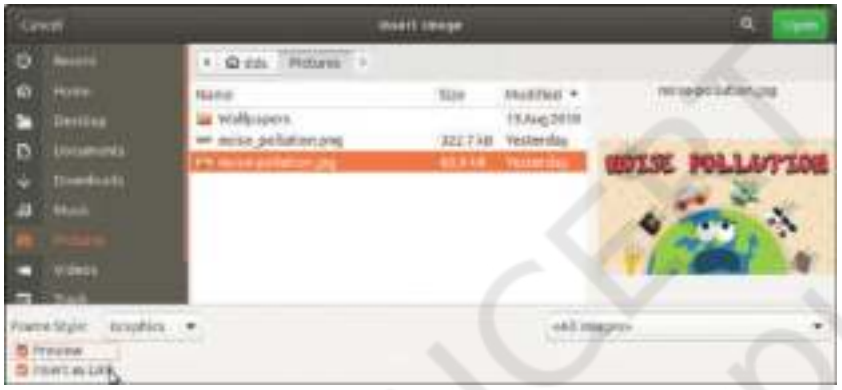


Fig. 2.7: Link check box in Insert image dialog window

Keyboard shortcut to link an image – drag and drop the image while holding the **Ctrl+Shift** keys.

Assignment 1

Explore how to insert an image from Writer's Gallery or from any other device?

Modifying an Image

Sometimes we may have to modify the image inserted in the document to suit its requirement. The Image toolbar is used to resize, crop, delete and rotate the image.

Using the Image toolbar

The image toolbar automatically appears when an image is inserted or selected in the document. If you want to keep it always on screen, click on **View** > **Toolbars** > **Image** from the menu bar. The Image toolbar will be

displayed as shown in Fig. 2.8. Table 2.1 describes various tools that are made available through this image toolbar.

Fig. 2.8: Image Toolbar

Table 2.1: Description of Image Toolbar

Tool	Effect on image
Image Filter	There are 11 types of filters available for improving an image. Details given in Table 2.2
Image Mode	Image can be changed to black and white, gray-scale or a watermark
Crop	Cuts off non-desirable part of the image
Flip Horizontally	Flips the image Horizontally by 180°
Flip Vertically	Flips the image Vertically by 180°
Rotate 90° left	Rotates the image by 90° left
Rotate 90° right	Rotates the image by 90° right
Rotate	Image can be rotated by any angle using this tool
Transparency	Makes an image transparent by using the value provided in percentage
Colour	Using Drop Down list (as shown in Fig. 2.9), Red, Blue or Green colour can be modified or adjustment for brightness, contrast and gamma can be made

Fig. 2.9: Color dropdown list

To apply any of the tools from **image toolbar**, select the image on which tool is to be applied and then click on the tool. Clicking on the colour button will display the colour drop down list as shown in Fig. 2.9. It consists of six components in the drop down list. One can increase or decrease the percentage of these components. The first components represent the three primary colours Red, Green and Blue, respectively. The fourth component represent the Brightness, fifth component represent the Contrast and last sixth component represent the Gamma.

Clicking on **Image Filter** opens up a window with 11 filters, as shown in Fig. 2.10. Table 2.2 gives the brief description of various tools available in the Image Filter window.

Fig. 2.10: Image Filter window

Table 2.2: Description of Image Filter

Tool	Effect on Image
Invert	Inverts the colour values of coloured image. In case image is gray-scale then its brightness is inverted.
Smooth	Softens the contrast of image. Another dialogue box appears to adjust parameter
Sharpen	Increases the contrast of image
Remove Noise	Removes single pixels from the image
Solarisation	Used in Photographs to reverse the tone. Dark appears light and light appears dark. Another dialogue box appears to adjust parameter.
Aging	Simulates the effect of time on picture. On clicking it, another dialogue box appears to adjust parameter.
Posterise	Makes a picture appear like painting by reducing colours in the image. Another dialogue box appears to adjust parameter, when this icon is clicked.
Charcoal Sketch	Changes image as charcoal sketch
Relief	Adjusts light source to create shadow using dialogue box to adjust parameter
Mosaic	Joins group of pixels into a single area of one colour. Another dialogue box appears to adjust parameter.

Practical Acitivity 2.3

Insert an image in a document and rotate the image.

Step 1. Open a new document in LibreOffice Writer.

Step 2. Go to Insert menu and Select Image >> From File

Step 3. Insert an image from library as shown in Fig. 2.11.


Fig. 2.11: Image inserted in a new document

Step 4. Select image and then click on rotate tool. Observe that four dots known as handles, appeared on four corners of the image.

Step 5. Move the mouse on any corner and observe that the 'rotate' symbol is activated.

Step 6. Click on rotate symbol on the top right corner of the image and drag it to downward direction, as shown in Fig. 2.12.

Fig. 2.12: Rotating image

Fig. 2.13: Image after rotation

Step 7. The image rotated is shown in the Fig. 2.13.

Practical Acitivity 2.4

Crop an image in a new file.

Step 1. Open a new document in LibreOffice Writer.

Step 2. Insert an image in the document as shown in Fig. 2.14 using **Insert** >> **Image** >> From File option as demonstrated above.

Fig. 2.14: Document after inserting image

Fig. 2.15: Changed handles for cropping the image

Step 3. Select the image by clicking on the image. Observe that the selected image is surrounded by eight small squares as shown in Fig. 2.14.

Step 4. Click on crop tool from Image toolbar. Now observe that the eight small squares surrounding the image will be changed into the blue coloured handles as shown in Fig. 2.15. These are the handles used to crop the image.

Step 5. Click any of these edges of the image and drag the cursor towards the center of image as shown in Fig. 2.16. Observe that the image is being cropped up to the dotted lines. It is possible to crop the image by clicking on dragging any of the edge as per the requirement.

Fig. 2.16: Cropping the image

Fig. 2.17: Image after cropping from upper right edge

Step 6. Click anywhere on the page or press Esc key to leave the crop tool and observe the cropped image as shown in Fig. 2.17.

Resizing an Image

Sometimes you may want to resize the image to fit an image at the desired place in a document. Resizing is the process of reducing or enlarging the size of the image. This can be done in various ways. Quick and easy way to resize an image is by dragging the image's sizing handles. Use the following steps to resize image:

Step 1. Click on the image inserted in the previous activity. Observe that there are eight sizing handles surrounding the image as shown in Fig. 2.14.

Step 2. Position the pointer over one of the sizing handles. The pointer changes shape indicating the direction of resizing.

Step 3. Click and drag to resize the image as shown in Fig. 2.18.

Step 4. Release the mouse button when satisfied with the new size and observe the size of the image is reduced.

Fig. 2.18: Resizing the image

By dragging the corner handles, one can resize both the width and the height of the image simultaneously, while the other four handles only resize one dimension at a time.

Note that while resizing the image its size gets changed, but while cropping the image cuts it.

Deleting an Image

It is possible to delete the image from the document just like we delete the text. To delete the image, just select the image by clicking on the image and press the Delete key.

Drawing Objects

If you need to draw a flowchart or a callout box in your document, LibreOffice Writer provides the feature of drawing tools for such work. The set of drawing tools available in Writer are easy to use, and helps in creating good quality designs, diagrams and drawings. Once you create the drawings, you can directly place it in the document. These diagrams can also be copied or imported in other packages.

Using Drawing Tools

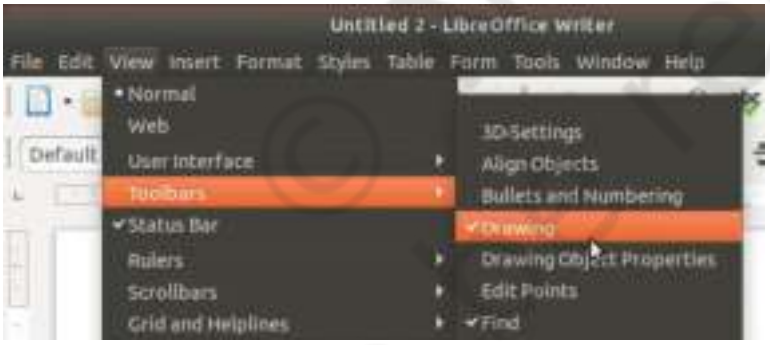


Fig. 2.19: Enabling Drawing tools

To display **Drawing Toolbar** in the Writer window, click on **View > Toolbars > Drawing** as shown in Fig. 2.19. This will display the **Drawing Toolbar** in the Writer window as shown in Fig. 2.20. The toolbar contains various basic drawing objects of different types to create any design of your choice.

There are many default drawing objects used to create designs in document. To use them –

Step 1. Place the cursor in the document where you want the drawing to be placed (anchored). You can change the anchor later, if required.

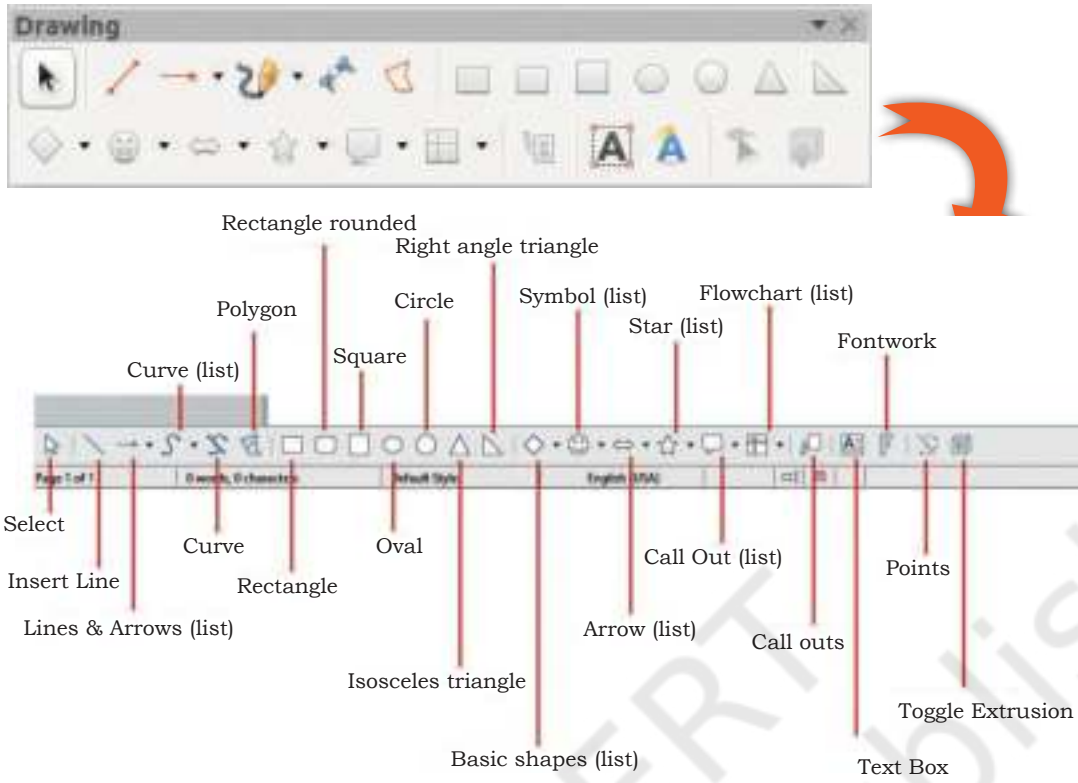


Fig. 2.20: Drawing Toolbar

Step 2. Select the tool from the *Drawing toolbar* as shown in Fig. 2.20. The mouse pointer changes to a drawing-functions pointer.

Note – One more toolbar appears on the screen, the **Drawing Object Properties**. It is shown in Fig. 2.23 and explained later.

Step 3. Move the pointer to the place in the document where you want the image to appear and then click-and-drag to create the drawing object.

Step 4. Release the mouse button to finish drawing. The selected drawing function remains active, so that you can draw another object of the same type.

Step 5. To cancel the selected drawing function, press the **Esc** key or click the **Select** icon (the arrow) on the **Drawing toolbar**.

Practical Activity 2.5

Draw a family tree with 3 family members, Mr R K Sharma (Grandfather), Mr B Sharma (Father), Mrs Sunita Sharma (Mother).

Step 1. Open a new document in LibreOffice Writer. Enable the Drawing toolbar and ensure that it is displayed on the bottom of the document window as shown in Fig. 2.21.

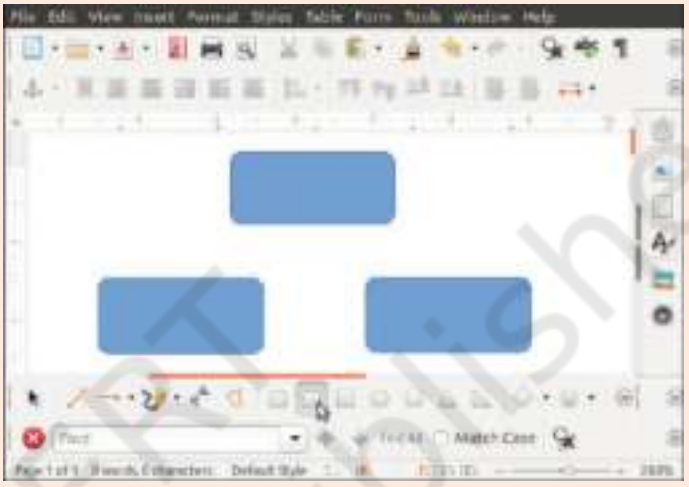


Fig. 2.21: Rectangles created using drawing tool for family tree

Step 2. Select **Rectangle Round** tool from the toolbar. Place the cursor on the location where you want to draw the family tree, and drag it to create a rectangle. In the same manner, create other two rectangles as shown in Fig. 2.21.

Step 3. Enter the text in all three rectangular boxes as shown in Fig. 2.22. To enter text, select the rectangle and then type the text.

Step 4. Select the type of line (simple line and line with arrow) from Line tool to draw lines showing hierarchical relation as shown in Fig. 2.22.

Step 5. Save the diagram in file "*family.odt*".

It is also possible to change the properties of the object on which you are working. Writer provides tools in **Drawing Object Properties toolbar** for changing properties, i.e. customising an object. Using these tools the object can be moved, resized, rotated, edited and conFig.d on various aspects.

Properties of the object can be modified or edited, either at the time of its creation, i.e. before you start drawing them or after its creation. When properties are

modified before creation, it is known as **setting default value(s)**. To work on properties, you can use tools from the toolbar and change the desired aspect of the object. Properties can also be modified by right clicking on the object.

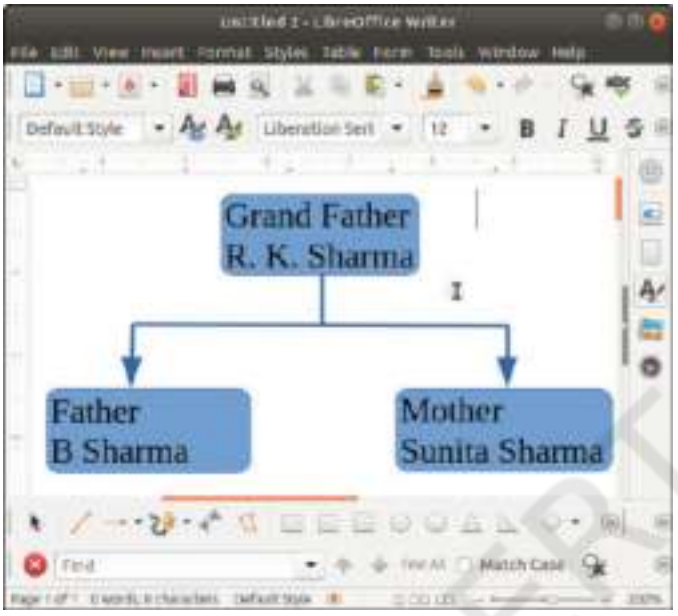


Fig. 2.22: Drawing of family tree using rectangles

Setting or Changing Properties of Drawing Object

On selecting the drawing object, in the document, **Drawing Object Properties Toolbar** is displayed as shown in Fig. 2.23. It is a floating toolbar, and can be placed anywhere on the screen.

Fig. 2.23: Drawing Object Properties Toolbar

To set the properties before drawing the object, follow the given steps.

Step 1. From the **Drawing Toolbar**, select the object you want to draw.

Step 2. From **Drawing Object Properties Toolbar**, click on the icon of property to be modified.

Step 3. Change the value of parameter.

Step 4. Repeat steps 2 and 3 to change all desired properties.

Step 5. Draw the desired figure by following the steps given in the previous section.

Changes done in properties of an object, before creating it, are available only for current session.

Follow the steps for changing properties of the object after drawing it.

Step 1. Select the object whose properties are to be modified.

Step 2. Follow steps 2 to 5 of the previous process of setting Properties before drawing an object.

Practical Activity 2.6

In the file "*family.odt*" created in Activity 2.5, add two more members, a son Master Rohit Sharma and a daughter Baby Deepika Sharma. Make a copy of the file. Then change the properties of Rectangle as (Fill color – lime yellow, border line – Orange having 0.08" width) and Line (color – black, Style – ultrafine dashed) used in Family Tree.

Step 1. Open file "*family.odt*" in LibreOffice Writer.

Step 2. Add two rounded rectangle and add text in them to reflect two more members in the diagram.

Step 3. Save a copy as "family1.odt". Keep on working in "*family.odt*"

Step 4. Select a rectangle using selection tool.

Step 5. Click on **Fill Color** tool in *Drawing Object Properties toolbar*, and change the color selected rectangle as shown in Fig. 2.24.

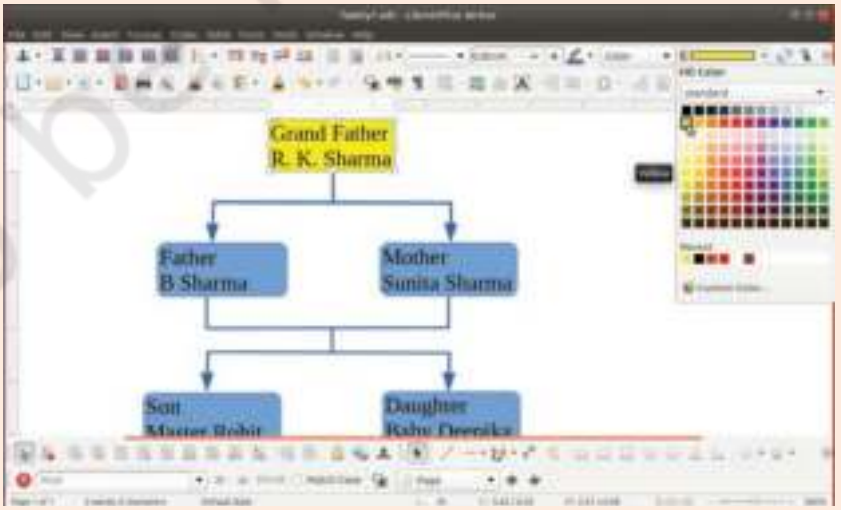


Fig. 2.24: Using Fill Color tool for rectangle

Step 6. In the same way change color of all the rectangles.

Step 7. Select a line in the drawing. Click on **Line Color** tool and select Black color to change the line color from blue to black. In the same way, change the color of all the lines to black as shown in Fig. 2.25.

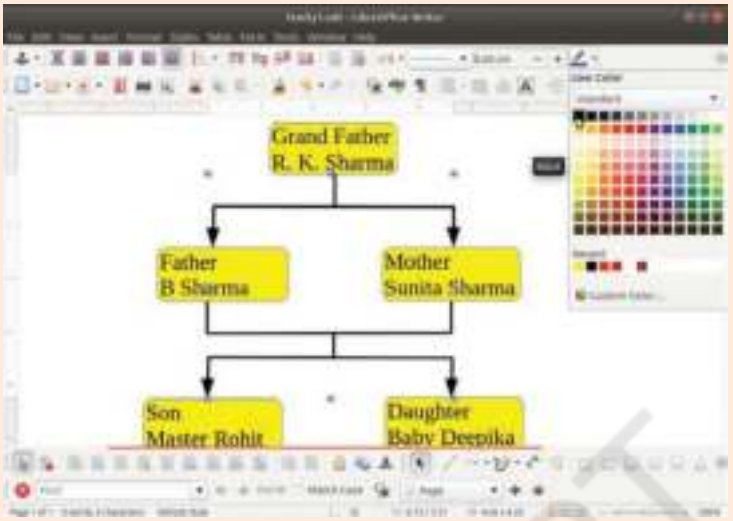


Fig. 2.25: Using Line Color tool for changing the line color

Step 8. You can also change the border color of rectangle using Line color tool and width of the border by specifying the value in line width option.

Step 9. Alternately you can change the line color and width by right clicking on the object and then selecting the "Line" option from the context menu as shown in Fig. 2.26.

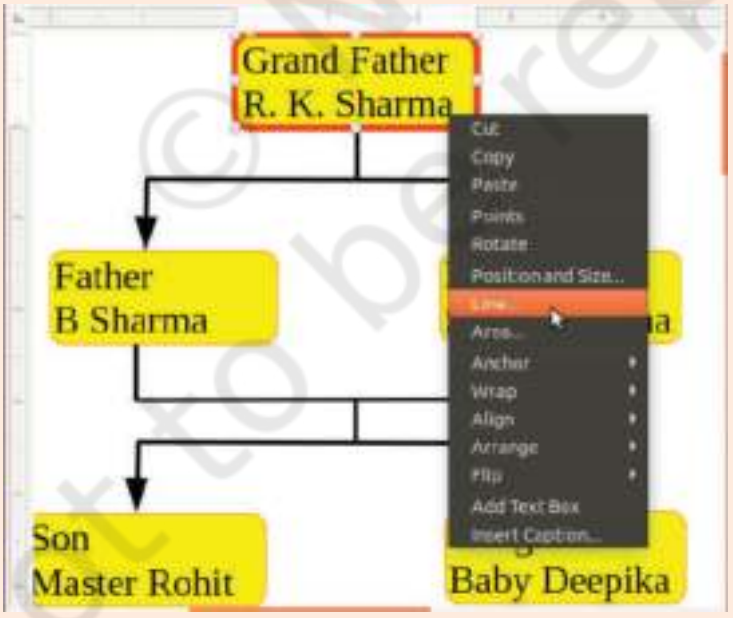


Fig. 2.26: Right clicking on object to select Line option from context menu

Step 10. To change the line color and width of all the rectangles, select all the rectangles by holding shift key and clicking on each rectangle. This will open the Line dialog window as shown in Fig. 2.27. Change the line color to "Orange" and specify the line width as "0.08" as shown in Fig. 2.27 and click on the OK button.

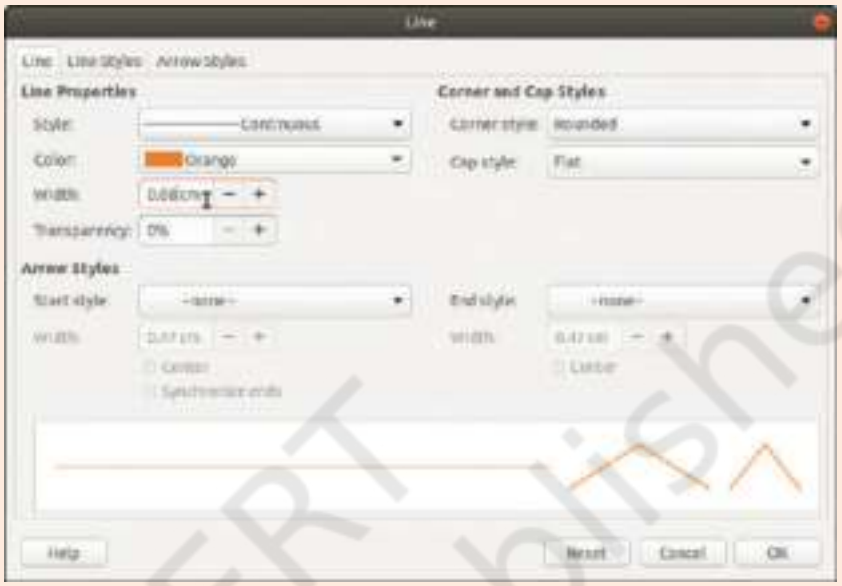


Fig. 2.27: Specifying line color and line width for selected objects in the Line dialog window

Observe in Fig. 2.28, the line color and width changed as specified

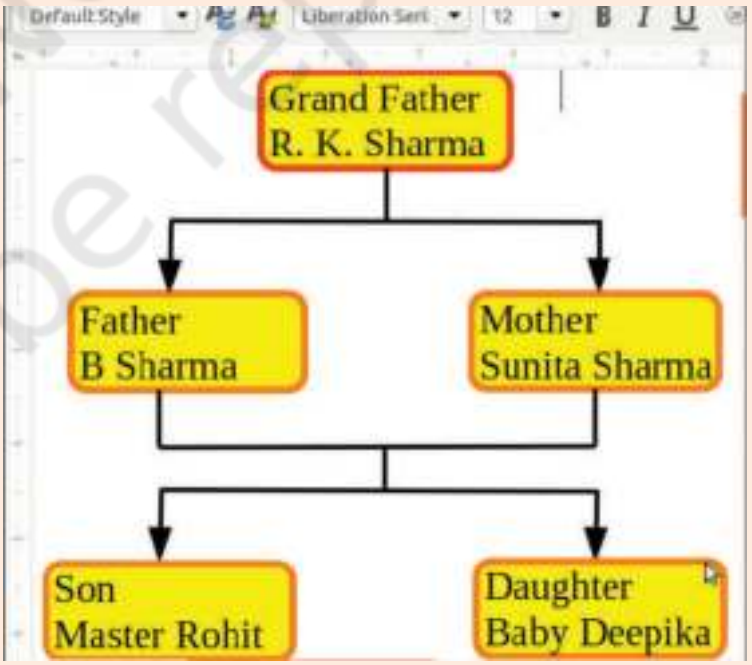


Fig. 2.28: Family Tree with desired object properties

Resizing and Grouping objects

Sometimes you may want to change the size of drawing to accommodate it at a particular place in the document. This can be done either by changing its size only or by changing its shape and size both. Follow the given steps to resize a drawing.

Step 1. Select the object to be resized. All eight handles on the corners and edges will be visible.

Step 2. Click on any of the handles and drag it to its new place. The object will be scaled up or down, depending on your action. Also whether object's shape will be retained or not, will depend on the handle you choose for resizing.

Step 3. For resizing and maintaining original shape of drawing, use corner handles.

Step 4. Using edge handles will resize drawing non-proportionally.

Assignment 2

Use **SHIFT key**, while resizing the object, in both the cases and observe the difference in action.

While drawing an object comprising more than one overlapping shape, on screen they stay together looking like a single entity. But actually they are different shapes placed together as different entities. So, when you choose to edit them you have to work on each individual shape. To treat these shapes as one Fig., they may be grouped together.

Grouping drawing objects

LibreOffice Writer allows grouping these different shapes, to behave as a single entity without affecting their size and position. Once grouped, all shapes belonging to that group become its member and a change applied on one member works on all. Follow the given below steps to group the drawing objects.

To group drawing objects:

Step 1. Select the object by clicking over it.

Step 2. Hold the ***Shift key*** and keep on selecting all other objects by clicking on it to be included in the group.

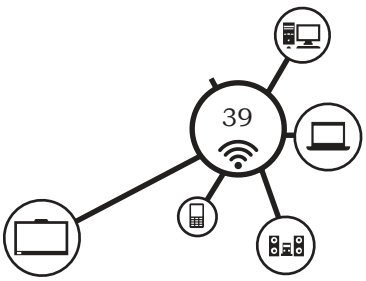


Fig. 2.29: Grouping tools in Drawing Object Properties toolbar

Step 3. Select a group tool from *Drawing Object Properties Toolbar* (Fig. 2.23). Alternatively, selecting from main menu **Format > Group > Group** will also do same work.

Step 4. This process will group the selected drawing objects.

There are four options under Group option. These are *Group, Ungroup, Enter Group, Exit Group.* The icons as shown in Fig. 2.29 for these options also present in the *Drawing Object Properties Toolbar*.

Practical Activity 2.7

Group all items of Family tree created in Activity 2.5 and 2.6, in the file "family1.odt". Using the group, change the properties of Rectangle (Fill color – lime yellow, border line – orange with 0.08" width) and Line (color – black, Style – ultrafine dashed) used in Family Tree.

Step 1. Open the document "*family.odt*" created earlier in Writer.

Step 2. Select all the lines. For this click on the first line, hold the Shift key and keep on selecting other lines to group them.

Step 3. Click on **Group** tool in Drawing Object Properties toolbar. Observe that all the lines are grouped together as shown in Fig. 2.30. Now change the color of all lines grouped together to black.

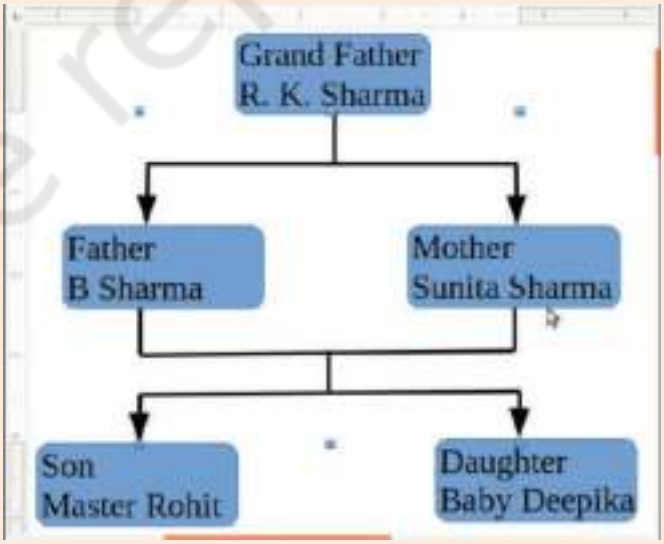


Fig. 2.30: All the lines are grouped together and changed the color to black

Step 4. Similarly select all the rectangles, group them and change its fill color to lime yellow, border line to orange color and border width to 0.08, as done in previous activity. Observe that the color of all the rectangles changed to orange colour as shown in Fig. 2.28.

Positioning Image in the Text

Once the task of creating, formatting, resizing and grouping the drawing object is complete, it has to be positioned in the document with text and other image or drawings. Positioning of an image is controlled by four settings.

(i) Arrangement
(ii) Anchoring
(iii) Alignment
(iv) Text Wrapping

These settings can be accessed using three ways – by using Format menu, by using context menu after right clicking on the object, by using Drawing Object Properties Toolbar for changing the properties of the drawings. Let us learn how to use **Drawing Object Properties Toolbar** to position a drawing in the page.

Arrangement

In Overlapping objects **arrangement** determines the position of the current drawing with respect to other drawings or text. The **Drawing Object Properties toolbar** consists of the arrangement tools as shown in Fig. 2.31. These are the six tools in the order of appearance from left to right, namely *Bring to Front, Forward One, Back One, Send to Back, To Foreground*, To Background, which are briefly explained in Table 2.3.

Fig. 2.31: Image arrangement tools in Drawing Object Properties

Table 2.3: Description of Image arrangement tools

Tool	Effect
Bring to Front	Place image on top of all objects / images
Forward One	Bring image one level up, when there are overlapping images
Back One	Sends image one level down in overlapping images
Send to Back	Place image at the bottom of all objects/ images

To Foreground	Moves the drawing object in front of the text
To Background	Moves the drawing object behind the text

Note – First four settings can be applied on an image or drawing, but last two are available for drawings only.

Fig. 2.32: Anchored tool with its options

Anchoring

It acts as a reference point for image or drawing. Anchoring allows an image to retain its position to a page, paragraph, character or frame. Anchor tool is shown in Fig. 2.32. Clicking on the downward arrow you can observe that an image can be anchored to Page, Paragraph, Character or Frame. So whenever a page, paragraph, character or frame is aligned, the anchored image moves along with it.

Fig. 2.33: Alignment tools in Drawing Object Property toolbar

Alignment

It allows the vertical or horizontal placement of the image with respect to its anchor. **Alignment** tools are located under **Drawing Properties Toolbar**, as shown in Fig. 2.33. An image can be aligned in six different styles – 3 horizontal and 3 vertical.

Fig. 2.34: Text wrapping tools in Drawing Object Properties toolbar

Text Wrapping

It allows the placement of image in relation to text. Text Wrapping tools are available under *Drawing Object Properties Toolbar.* There are six choices, namely Wrap off, Page Wrap, Optimal Page Wrap, Wrap left, Wrap right, Wrap through, in the order of their appearance from left to right as shown in Fig. 2.34. Table 2.4 briefly describes these tools.

Table 2.4: Description of Text Wrapping tools

Tool	Wrapping Effect
Wrap off	Text is placed above and below the image
Page Wrap	Text flows around the image. Moving an image will rearrange the text on the page
Optimal Page wrap	In Page Wrap, if the space between image and margin is less than 2 cm then text will not be placed on that side
Wrap left	Text is placed on left side of the image
Wrap right	Text is placed on the right side of the image
Wrap through	Superimposes the image on the text

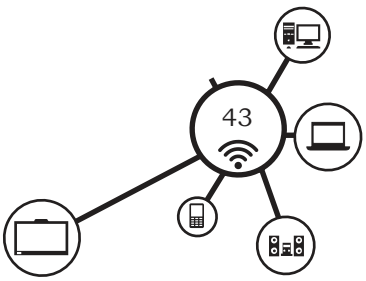
Summary

- In a digital document, a graphic or image is called digital image.
- A digital image is represented in pixels.
- Predefined image can be inserted using Drag-Drop method, Copy-Paste method or using Insert Image dialog box.
- Inserting an image embeds a copy of the image in the document.
- An image can be linked to a document using Insert Image dialog box.
- Linking an image saves only the link of the image instead of embedding the image. This saves space in case multiple copies of the same image are required.
- Image Toolbar can be used to modify an image. Tools for filtering, resizing, cropping, deleting and rotating an image are available in this toolbar.
- Drawing Tools are used to create pictures (objects), such as Flowchart, Call out box, designs, etc.
- Properties of Object can be customised by resizing, rotating, moving or editing.
- Drawing object properties can be modified either at the time of creation (when you start drawing) or after its creation.
- Properties when modified before creation, is known as setting Default values.
- An object drawn using different shapes, can be grouped to behave as single object.
- Writer provide various tools to arrange text and image or drawing on a page.

Practical Exercises

Q.1 In Practical Exercise of chapter 1 (Question 3), you created a school newsletter. Leaf-wise content of the newsletter were:
(a) School Information
(b) Result for Class X & XII in table
(c) School Achievement
(d) Students' article(s)/poem(s)

Notes



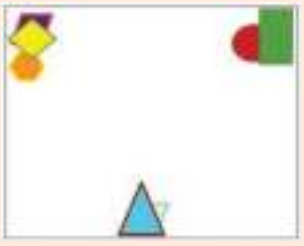
For improving the visual appeal of the newsletter, add some images in it. Following are the details given for adding images.

Leaf 1: Add a relevant photo of school in bottom right corner, as shown in picture. Photo should have good contrast and brightness. Add black border to photo.

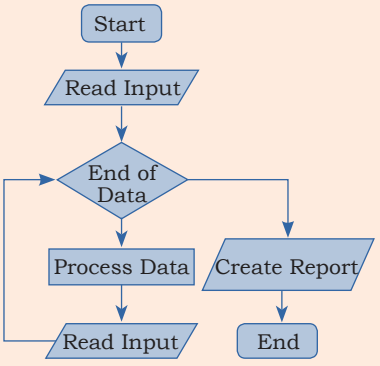
Leaf 2: Add photograph of toppers of Class X and Class XII. Make adjustment to display photograph of student in appropriate table and in front of their name. As this page might be printed in black, convert them to grayscale with proper contrast.

Leaf 3: Add few relevant pictures in the given style on this leaf. Apply at least two types of image filter on the pictures.

Q.2 Master Udit is helping his drawing teacher to create digital drawings. His teacher asks him to write down the steps to create the following two drawings. In the first drawing, objects are grouped and second drawing was created by resizing objects of first drawing. How would you help her to do so using drawing tools of Writer?



Q.3 Miss Roshni has downloaded a flowchart to be included in her report. She asks for your help, in creating an editable copy of the flowchart. Write steps to draw it using Drawing tools of Writer.



Check Your Progress

A. Multiple choice questions

1. The text or image which appears faintly in the background of a page is called _____.
   (a) Water mark (b) Trade mark
   (c) Copyright (d) Embossing
2. JPG or JPEG in image format stands for _____.
   (a) Joint Photographic Experts Group
   (b) Joint Picture Experts Group
   (c) Joint Photographic Experts Graph
   (d) Joint Photographic Experts General
3. In Drawing Object Properties toolbar, Grouping options provided are _____.
   (a) Exit Group (b) Ungroup
   (c) Enter Group (d) All of these
4. Which of the following is not the correct file extension for an image file?
   (a) GIF (b) JPEG
   (c) Odt (d) PNG
5. Image toolbar does not provide a tool for _____.
   (a) filtering (b) cropping
   (c) copying (d) flipping

B. Fill in the blanks

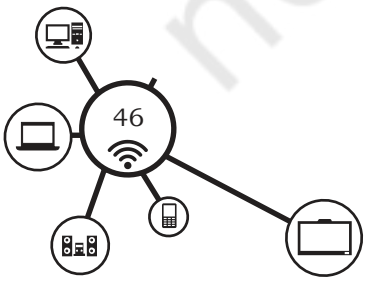
1. _____ tool cuts off non-desirable part of the image.
2. To change both brightness and contrast of the image _____ tool can be used.
3. To simulate the effect of time on picture _____ tool is used.
4. _____ place image at the bottom of all objects.
5. An image can be deleted by _____ it and pressing DELETE key.
6. In drawing tools, basic shapes list provide _____ shapes.
7. Anchor act as _____ point for a drawing.
8. There are _____ options for aligning an image horizontally.
9. The _____ handles of image are used for rotating it.
10. Changing properties of an object _____ creation, retain them throughout the session

C. Short answer type questions

1. What is a digital image? How can you create one?
2. Write steps to insert an image from the gallery using Drag and Drop method.

NOTES

3. How is resizing of image different from cropping it?
4. What are the tools available in drawing toolbar? Describe any five tools.
5. How is linking of an image different from embedding? Give a situation in which you would prefer to link an image.
6. Write steps to change properties for drawing objects.
7. What are the benefits and drawbacks of grouping drawing objects?
8. Describe any two tools from Drawing Object Properties toolbar.
9. Write steps to insert an image in a basic drawing shape.
10. Write factors controlling positioning of an image in a document.



Chapter 3 Advanced Features of Writer

As we all know that LibreOffice Writer is a word processor that provides a variety of features. You have already learned some of the features, such as formatting, editing, inserting tables and images, styling the text and inserting graphics in the document. In this chapter, you will be learning some advanced features of LibreOffice Writer that will be used to create professional documents. To give the listing of the contents of the document, we can use the **Table of Contents** feature, which is based on different types of heading styles. LibreOffice Writer also provides templates to create professional documents. When multiple users are working on a single document, the **Track Changes** feature can be used to keep a track of the editing being done by each user.

Table of Contents

In Class IX, you had learned to insert tables in a document, where the data was represented in a row and column format. In this chapter, we will discuss **Table of Contents (ToC)**. You must have seen table of contents in the beginning of your books. It contains a list of topics and subtopics that have been covered in the book along with page numbers.

Table of Contents, allows to insert an automated table of contents in a document. The entries or contents of this table are automatically taken from the headings and sub headings of the document. Also, these contents are hyperlinked in the table. So by clicking on any topic in the table of contents, we can navigate directly to the selected topic. But before creating table of contents, you need to first understand the concept of hierarchy of headings.

Hierarchy of Headings

LibreOffice Writer supports up to 10 levels of headings H1 to H10. These headings are applied to the headings of the document. The following process will demonstrate how to apply these headings to the headings in the document.

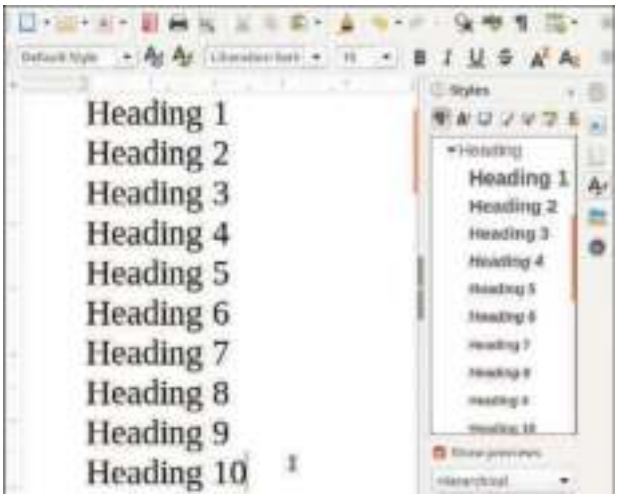


Fig. 3.1: Hierarchy of 10 Headings

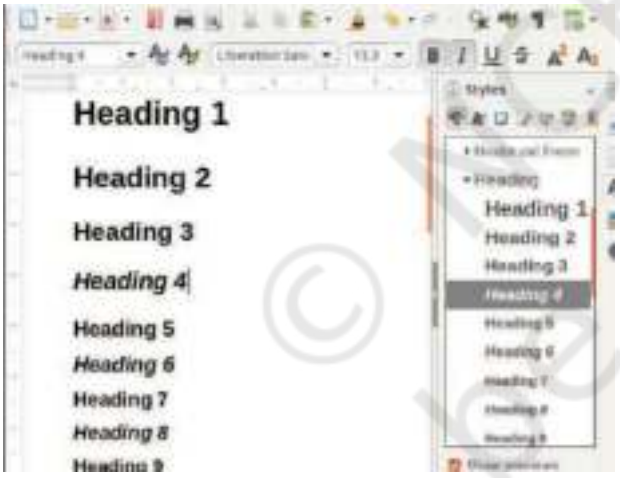


Fig. 3.2: Document after applying 10 Headings

Step 1. Create a new document in LibreOffice Writer and enter the text Heading 1 to Heading 10 as shown in Fig. 3.1.

Step 2. Click on the Styles button from the right side bar. Click on the Paragraph Styles and then Headings. The Styles dialog window will display the list of headings from Heading 1 to Heading 10 as shown in Fig. 3.1.

Step 3. Place the cursor on Heading 1 as typed in the document. Then click on the Heading 1 from the Styles dialog window.

Step 4. Repeat Step 2 for the words Heading 2 to Heading 10.

Step 4. Observe that Heading 1 to Heading 10 is applied to the words Heading 1 to Heading 10 of the document and these headings have changed as per the applied style as shown in Fig. 3.2. Observe the change in Figs. 3.1 and 3.2.

Once the desired heading styles are applied in the document, the same hierarchy will be reflected in the table of contents also.

Creating a Table of Contents (ToC)

Before you start creating the table of contents or ToC in a document, you must ensure that proper heading styles, such as Heading 1, Heading 2, Heading 3 and so on are inserted in the document. The correct ToC will be

generated only if proper paragraph styling for headings is applied to the document. Once a styled document is created, follow the steps given below to insert the ToC in the given document:

Step 1. Open the earlier created file *"documentation.odt"*.

Step 2. Assign proper heading styles to the various headings in the document from the Styles dialog box. For example, assign the heading **styles** as shown in Fig. 3.3 in the *"documentation.odt"* file.

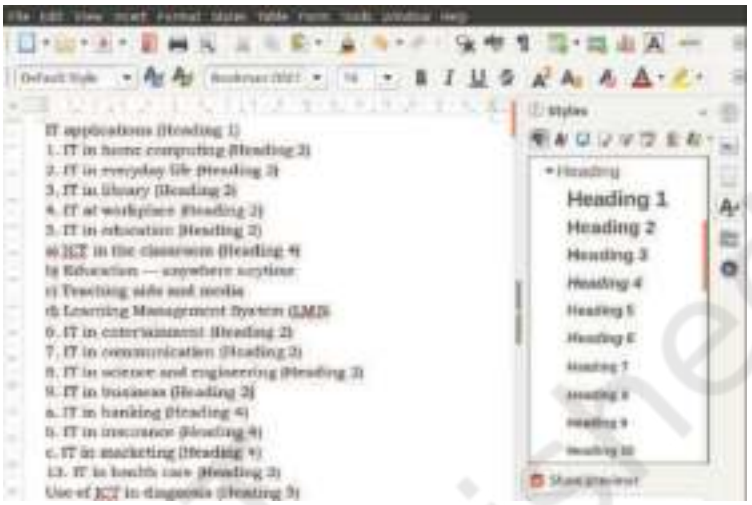


Fig. 3.3: Planning for assigning headings styles

Step 3. Place the cursor at the position where the table of contents is to be inserted. Usually, it is in the beginning of the document.

Step 4. From main menu, select **Insert > Table of Contents and Index > Table of Contents, Index or Bibliography**. The **Table of Contents, Index and Bibliography** dialog box will be displayed as shown in Fig. 3.4.

Fig. 3.4: Table of Contents, Index or Bibliography dialog box

Step 5. By default, the **Type** tab will be selected with a preview of ToC on the right side of the dialog box. On the left of the dialog box, is the **Types** and **Title** section. In the **Title** text box, the default name of the ToC, i.e. Table of Contents is displayed. You can change this name, just by typing in the text box. Type the desired title of the ToC say *"Contents"* in the **Title** text box. The title will be changed in the **Preview** section as shown in Fig. 3.4.

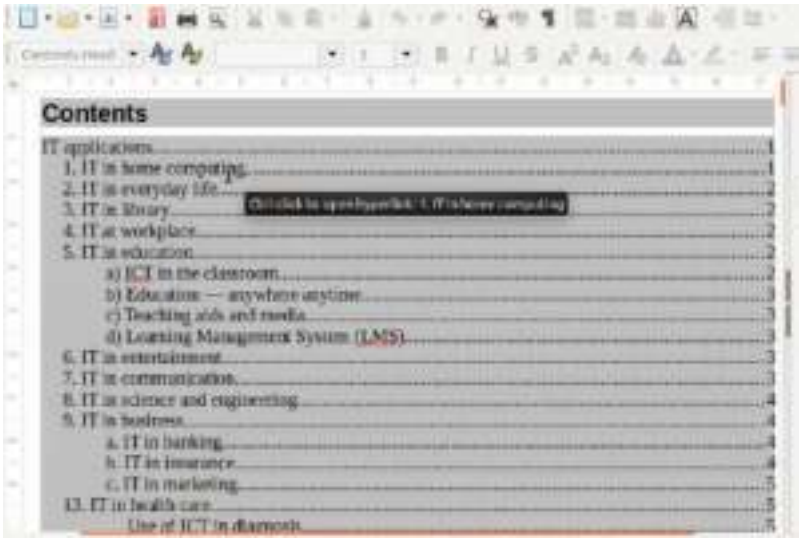


Fig. 3.5: Table of Contents inserted in a document

By default, the checkbox for **Protected against Manual Changes** option is selected. This protects the ToC from any accidental change. If this box is unchecked, then the contents of ToC can be changed directly on the document page, just like any other text on the document.

In the **Create Index or Table of Contents List** box, the Entire Document option is selected in the **For** list box. So the ToC will be automatically created from the headings and sub-headings of entire document.

The Outline check box is selected, so the complete outline of the ToC is shown in the preview. Click and deselect it if you do not want to see it.

Step 5. Click **OK** button. The Table of Contents will be inserted in the document as shown in Fig. 3.5.

Note that all the headings will appear with page numbers in the ToC. The entries in the ToC are hyperlinked. Moving a mouse pointer over any of the entries will show a tool tip stating to press *Ctrl+click* to open *hyperlink* followed by the heading title. Pressing *Ctrl+click* the cursor will directly move on to the selected section heading.

Practical Activity 3.1

Rimjhim has created a report on Environmental Pollution in LibreOffice Writer. She has applied proper heading styles to all section headings of the document. Now, to add table of contents to the document with the heading as Rimjhim's Table of Contents, follow the steps given below.

Step 1. Open the document in LibreOffice Writer.

Step 2. Select **Insert > Table of Contents and Index > Table of Contents, Index or Bibliography**. The Table of Contents, Index and Bibliography dialog box will be displayed.

Step 3. In the Type the Titles text box, type Rimjhim's Table of Contents.

Step 4. Click **OK**. The Table of Contents will be inserted in Rimjhim's document.

Customisation of ToC

Once the ToC is inserted, we can customise it according to our requirements. To do so, right click anywhere on the ToC and select **Edit Index** option from the popup menu as shown in Fig. 3.6.

The **Table of Contents, Index or Bibliography** dialog box will be displayed as shown in Fig. 3.7. As seen in the previous section, the dialog box has five tabs – **Type, Entries, Styles, Columns and Background**. The options in these tabs can be used to edit the table in various ways. The changes made will be reflected in the **Preview** section of the dialog box.

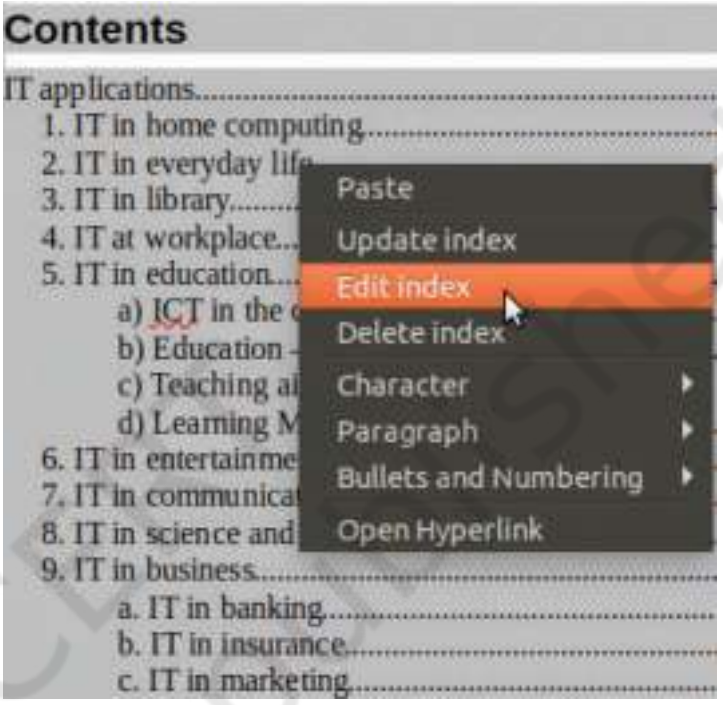


Fig. 3.6: Selecting Edit Index option from the pop up menu

Fig. 3.7: Selecting Entries Tab in Table of Contents, Index or Bibliography dialog window

Type Tab: is active by default after opening the **Table of Contents, Entries or Bibliography** dialog box to insert the ToC.

Entries Tab: contains options to set styles for various entries in the ToC.

Styles Tab: contains options to apply the desired styles to the text of each level in the table of contents. To apply a custom paragraph style to any level, follow the steps given below.

Step 1. Click and select the level from the **Levels** list box.

Step 2. Click and select the desired paragraph style from the **Paragraph Styles** list box.

Step 3. Click the OK button to apply the selected paragraph style to the selected outline level. The assigned style appears in square brackets in the *Levels* list and will also be visible in the **Preview** pane.

Fig. 3.8: Background Tab in Table of Contents, Index or Bibliography dialog window

Step 4. Click **OK** button to apply the selected styles.

To remove the applied paragraph styling, select the desired level in the **Levels** list box, and then click the **Default** button.

Columns Tab: contains options to set the number of columns that we want to have in our ToC.

Background Tab: contains options to change the background of the ToC as shown in Fig. 3.8. The current background color will be displayed in the **Active Color** window.

To change the background color follow the following steps.

Step 1. Click the **Color** button on the top of the dialog box.

Step 2. Select the desired color from the **Colors** palette. The selected color will appear in the **New color** window.

Step 3. To add the selected color to the custom palette, click **Add** Button below the color palette. Now, the added color can be re-used whenever required.

Step 4. Click **OK** to apply the desired color to the ToC (Fig. 3.9).

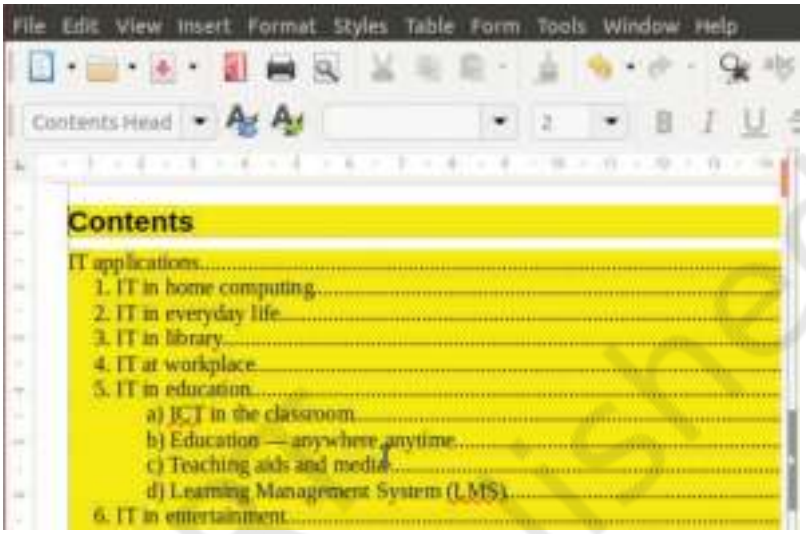


Fig. 3.9: ToC with changed background color

To remove the background colour from the ToC, click **None** button present on the top of the dialog box.

LibreOffice Writer also allows to add a graphic as a background of the ToC. For this, select the **Bitmap** button in the Background tab of the dialog box. Select the desired graphic option and click **OK** button (Fig. 3.10).

Fig. 3.10: Adding graphic as a background of the ToC

Maintaining a Table of Contents

As we know now that a table of contents is a snapshot of the entire document at any given point in time. If any changes are made to the document section headings or page numbering, it should be reflected in the Table of Contents as well. Maintaining a Table of Contents consists of updating and deleting the ToC.

Updating the ToC

Writer does not update the ToC automatically. The following activity shows how to update a ToC manually.

Practical Activity 3.2

Some more sections are added in the document, accordingly the ToC needs to be changed. To update a ToC manually, follow the steps given below.

Step 1. Right-click anywhere in the ToC.

Step 2. From the pop-up menu as shown in Fig. 3.11, select **Update Index** option. Writer updates the ToC so as to reflect any changes made in the document. The reflected changes in ToC is shown in Fig. 3.12.

Fig. 3.11: Selecting options for updating and editing a ToC

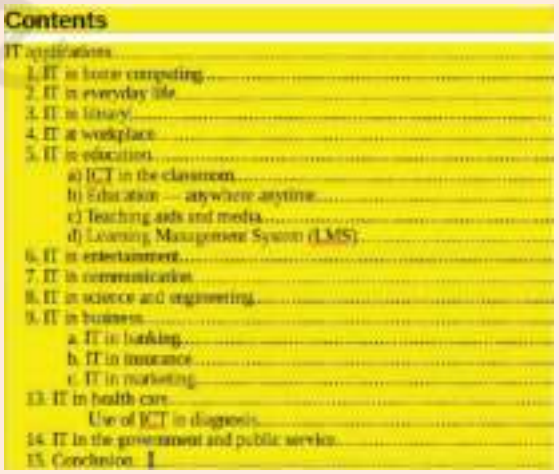


Fig. 3.12: Updated ToC

Deleting ToC

To delete the ToC, right click on the table and select Delete Index option from the pop-up menu. The ToC will be deleted.

Practical Activity 3.3

Rimjhim has edited her document after the ToC was inserted. Now she wants to update the ToC and also wants a pink coloured background. Write the steps that Rimjhim should follow.

Step 1. To update the ToC, right-click anywhere in the ToC. From the pop-up menu, select **Update Index** option as shown in Fig. 3.11.

Step 2. To apply a coloured background, right click anywhere on the ToC and select **Edit Index** option from the pop-up menu.

Step 3. From the **Table of Contents, Index or Bibliography** dialog box, select the **Background tab**. The current background color will be displayed in the **Active Color** window.

Step 4. Click the **Color** button on the top of the dialog box.

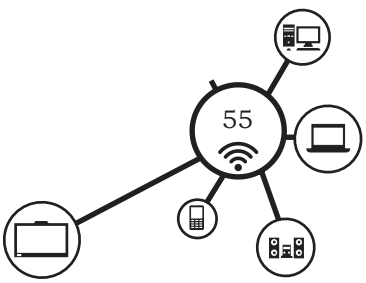
Step 5. Select the desired color from the **Colors** palette. The selected color will appear in the **New** color window.

Step 6. Click **OK** to apply the desired color to the ToC.

Using Templates

A template is a preset layout that helps to create professional and/or formal documents easily. In the previous chapters, we have learned styling of different document objects using templates. In this section, we will learn to create document templates. Sometimes there is a need to copy specific content including graphics, such as logo of a company, image of a product or text, such as tag lines of a product or a company, legal notices or even headers and footers in multiple documents.

Instead of adding and then formatting the objects in all documents, we can use templates. For example, templates can be used to create a resume, chapter or project report. A template can contain all the features or objects that a regular document can contain – text, graphics, styles and can even use any language. In a template we can create and save defined headings, text formats, styles, page numbers, headers and footers.



When new documents are created from these templates, they have the same content segregation, formatting features and appearance as that of the applied templates.

At the same time, Writer also allows us to edit the styles and contents of the document to which the template is applied. All documents in Writer are based upon templates. If no specific template is specified, then Writer uses the default template as blank document template for the file being created.

Checking the template of the document

To see what template is associated with a document, select Properties option from the File menu. The Properties dialog box will be displayed as shown in Fig. 3.13. Since the document was created from the default template, no template is listed in Fig. 3.13.

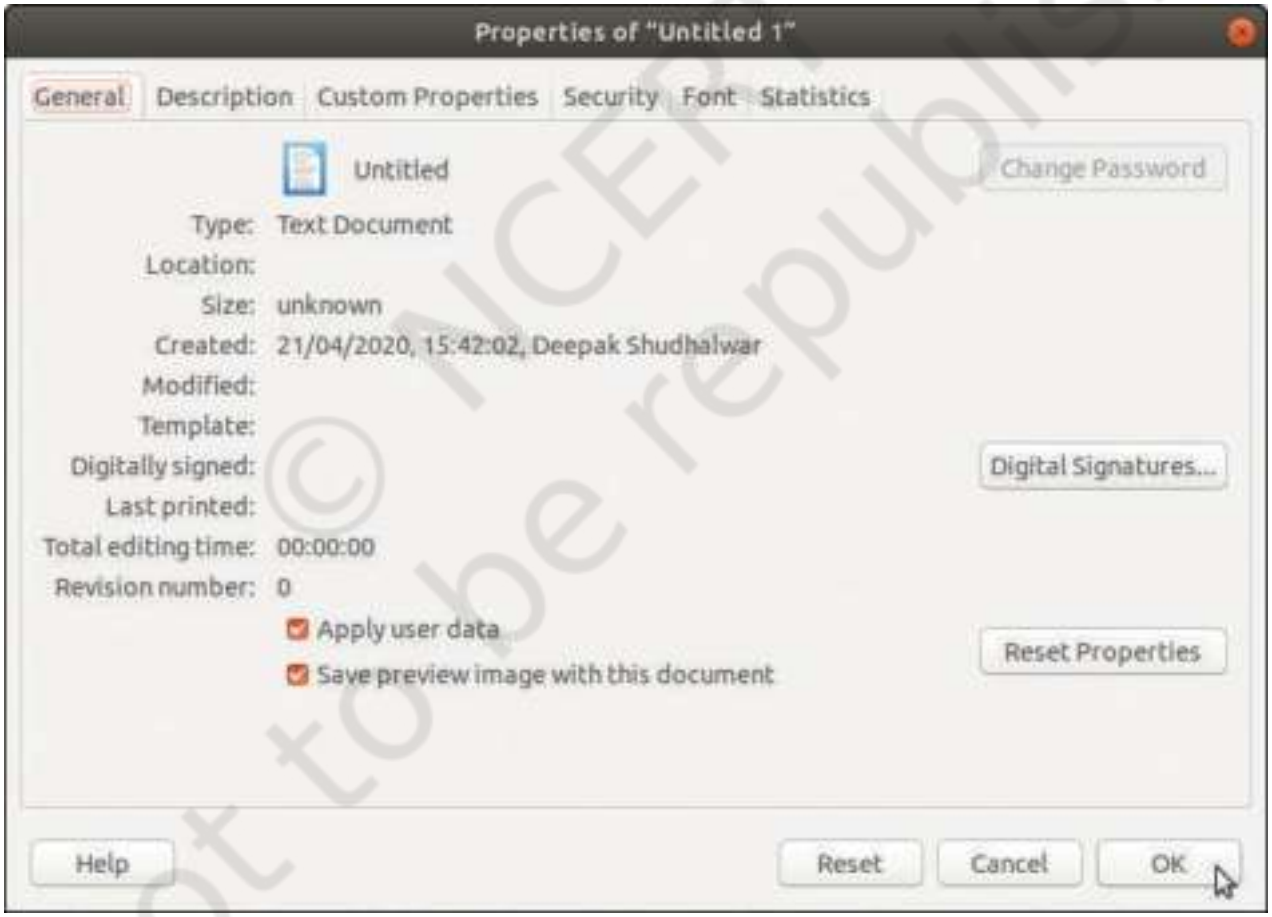


Fig. 3.13: Document properties with no template

When the document is created with template, this window will display the name of the template. For example, if you want to create a document with template. Follow the steps given below.

Step 1. Create a new document from **File > New > Templates ...**

Step 2. A template selection window will be displayed as shown in Fig. 3.14. Select a template, for example, select the first template 'Modern business letter'.

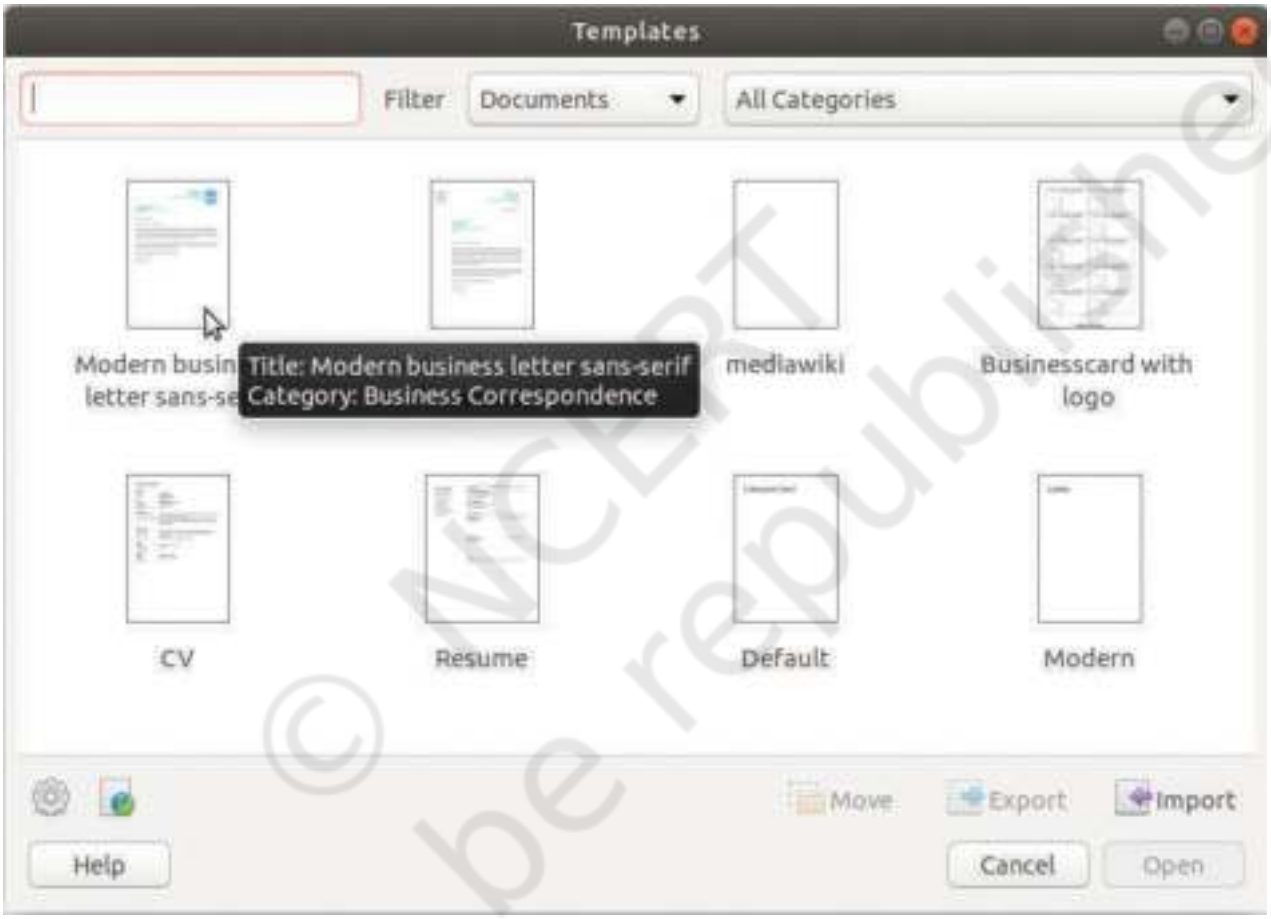


Fig. 3.14: Selecting a template

Step 3. Click on **Open** button, a document with the selected template will open as shown in Fig. 3.15.

Step 4. Now check the template of the created document from **File > Properties**. Observe that the template name *'Modern business letter sans-serif'* is displayed under Template in the Property dialog box as shown in Fig. 3.16.

Fig. 3.15: Document created by selecting template

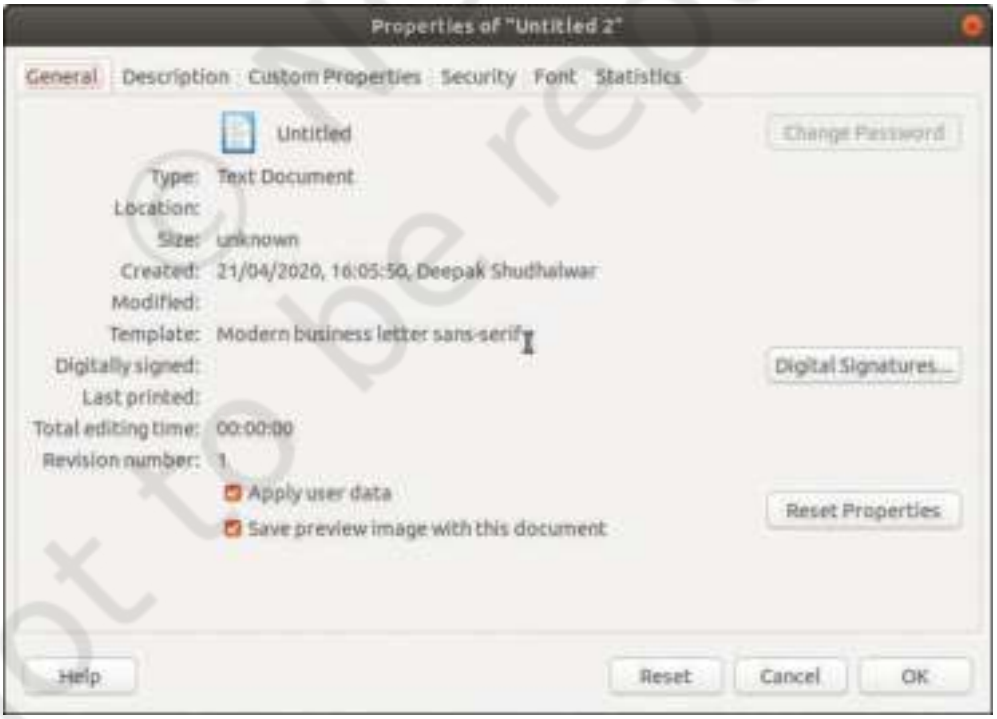


Fig. 3.16: Document Properties with template name Modern business letter sans-serif

Creating a Template

You have learnt how to create a document with predefined template. It is also possible to create your own template and save the current styles and appearance of a document for future use. Follow the steps given below to create and save a template in Writer.

Step 1. Open the document in LibreOffice Writer whose template is to be created.

Step 2. From main menu bar, select **File > Templates > Save**. The **Save As Template** dialog box appears as shown in Fig. 3.17.

Step 3. Type the name of the new template (T1) in **Template Name** text box.

Step 4. Select the category of the template being created. A category is just like a folder that helps to organise the templates. Some of the categories that can be seen in the dialog box are My Templates, Business Correspondence, Online Business Documents and Presentations.

Step 5. Click and select **Set as default template** checkbox to make the current template as the default template.

Step 6. Click **Save** button to save the template. A template in Writer is saved with an extension .ott. Now this template file can be used by any document in LibreOffice Writer.

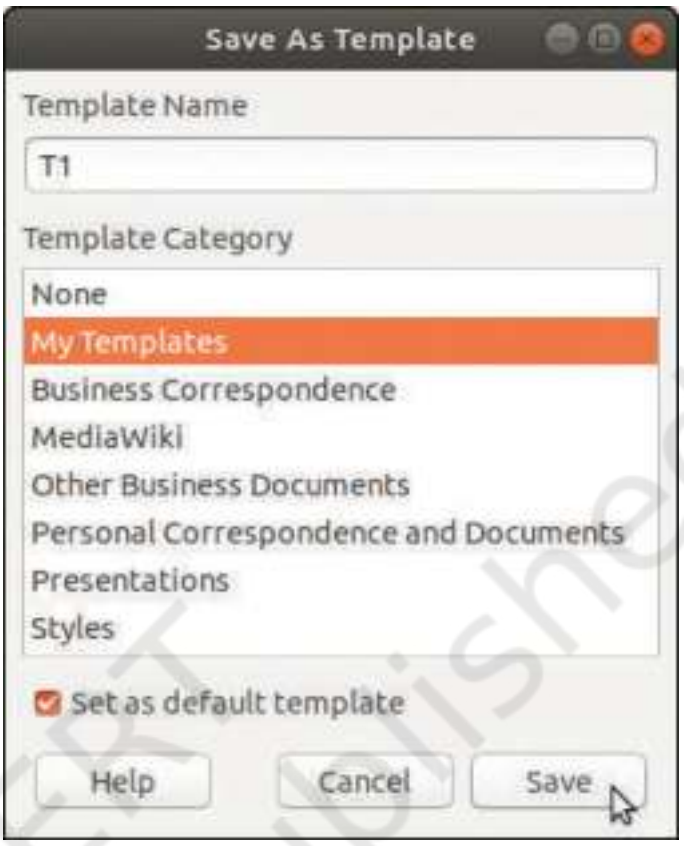


Fig. 3.17: Save As Template dialog box

Using In-built/Saved Templates

LibreOffice allows to use the in-built templates, online templates as well as the templates created and saved by us. Follow the following steps to use a predefined template to style a document.

Step 1. Open the new document in LibreOffice Writer.

Step 2. From main menu bar, select **File > Templates > Manage Templates**. You can also use the keyboard shortcut key **Ctrl+Shift+N** to open the Templates dialog box. The **Templates** dialog box will be displayed as shown in Fig. 3.18 showing a list of all available templates. Observe that it also shows the Template T1 created in the previous section.

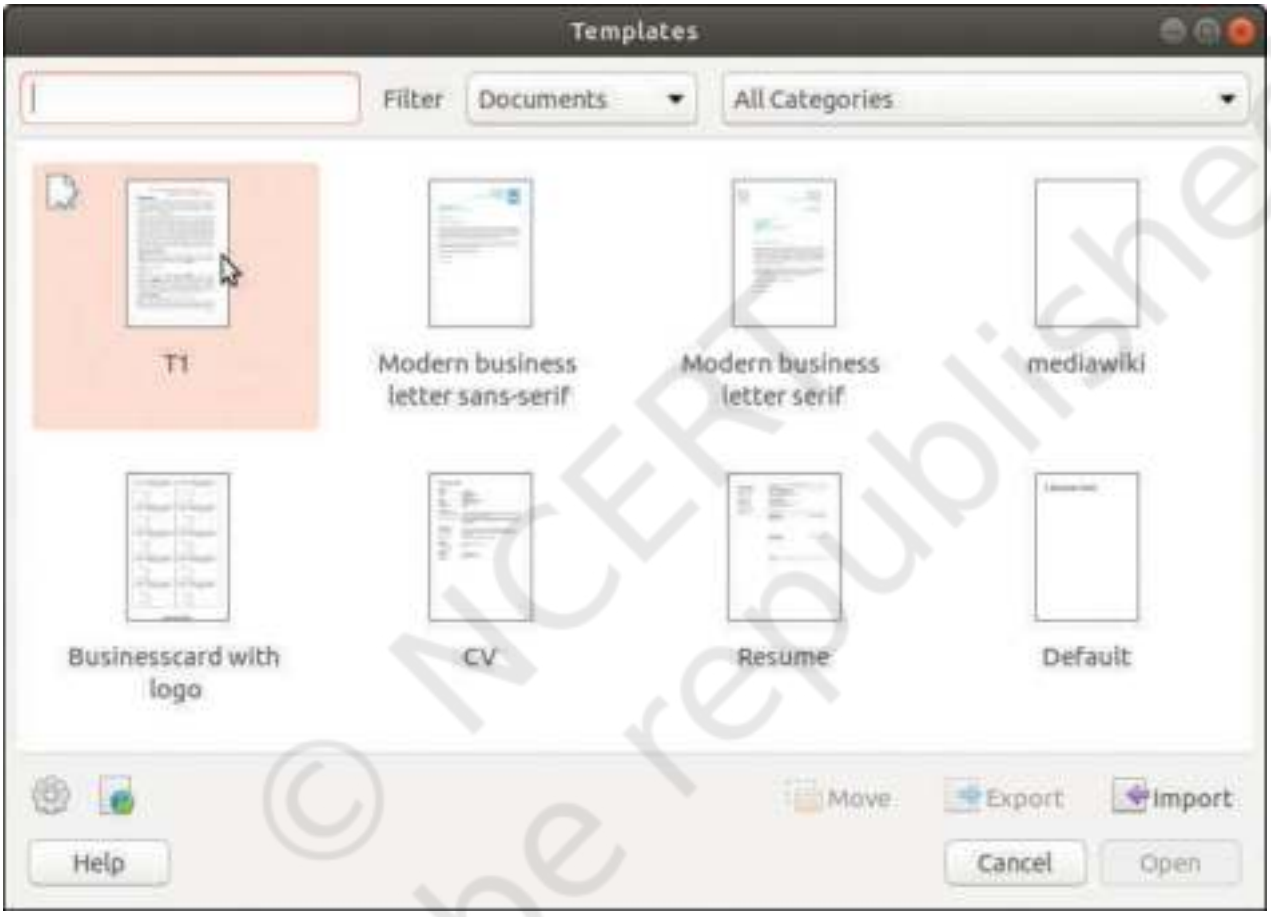


Fig. 3.18: Templates dialog box

Step 3. Select the desired template, (say T1) and click **Open** button. The new document (with name as Untitled) will be opened with the same content, appearance and formatting effects as the saved template.

Step 4. Make the desired changes and save the file.

Practical Activity 3.4

Niaz works in a garment factory. He has to give the report of each garment being designed and stitched in his factory. His manager wants the same type of report for each garment. Instead of typing every time, he has been suggested to use the template feature of Writer. He wants to create his own default template and then use it to create multiple reports with same format and style. Give the solution to complete this task.

Procedure

Follow the following steps to create and save a template in Writer.

Step 1. Create or open the document whose template is to be created.

Step 2. From main menu bar, select **File > Templates > Save**. The **Save As Template** dialog box appears as shown in Fig. 3.17.

Step 3. Type the name of the new template *(Niaz_template)* in the **Template Name** text box.

Step 4. Select the category of the template *(Business Correspondence)*

Step 5. Click and select **Set as default template** check box.

Step 6. Click **Save** button to save the template with an extension .ott.

Now follow the steps given below to use the template.

Step 1. Select File > Templates > Manage Templates.

Step 2. Select the desired template, (Niaz_template) from the Templates dialog box.

Step 3. Click on Open button. The new document with name as Untitled, will be opened with the same content, appearance and formatting effects as the saved template.

Step 4. Make the desired changes and save the file.

Using Online Templates

LibreOffice provides a wide range of online templates, which can be downloaded from Internet. Once these templates are installed on the computer, they will appear in Templates window. To view and select online templates provided by Writer, follow the steps given below.

Step 1. From main menu bar of LibreOffice Writer, select **File > Templates > Manage Templates**.

Step 2. Templates dialog box will be displayed as shown in Fig. 3.18. Observe the small circular icon *Browse Online Templates* in the lower left corner above the Help button.

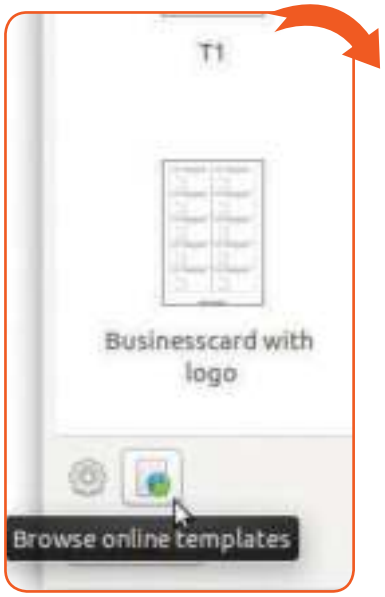


Fig. 3.19: Browse Online Templates option in Templates dialog box

Step 3. Click on Browse Online Templates button on the bottom left of the Templates window (Fig 3.19). The official templates page of OpenOffice Writer (https://extensions.libreoffice.org/templates) will open in the browser as shown in Fig. 3.20.

Fig. 3.20: The official templates page of libreoffice.org

Step 1. If you click on any of the templates, you will see the detailed information about that template.

Step 2. Download the desired template, say Calendar Creator and save it on your computer.

Step 3. Open LibreOffice Writer.

Step 4. Click **File > Templates > Open Template...**

Step 5. From the Open dialog box, browse for the template Company Letter, that is to be opened, and click on **Open** button.

Step 6. The template file *Company Letter.ott* will open.

Step 7. Make the desired changes in the content or appearance.

Step 8. Save the file as text file *Company Letter.odt*

Libreoffice.org also provides extensions on https://extensions.libreoffice.org/extensions. These are independent programs that can be added or removed from the main existing application. Some templates are available in the form of extensions which can be downloaded and installed on the computer.

Importing a Template

Once a template is downloaded and saved in any file or folder, it is possible to import it so that it is visible in the list of templates in the **Templates** dialog box. Use the following steps to import the template.

Step 1. Open the **Templates** dialog box.

Step 2. Click **Import Templates** button located in the bottom right corner of the dialog box. The **Select Category** dialog box will open as shown in Fig. 3.21.

Step 3. To add the new template into any existing category, click and choose that category from the list box. Otherwise click and select **Create a New Category** check box.

Step 4. Type the name of new category in the text box.

Step 5. Click **OK** button. The **Open** dialog box will appear.

Step 6. Browse for the folder where the downloaded template file *Company Letter* was saved.

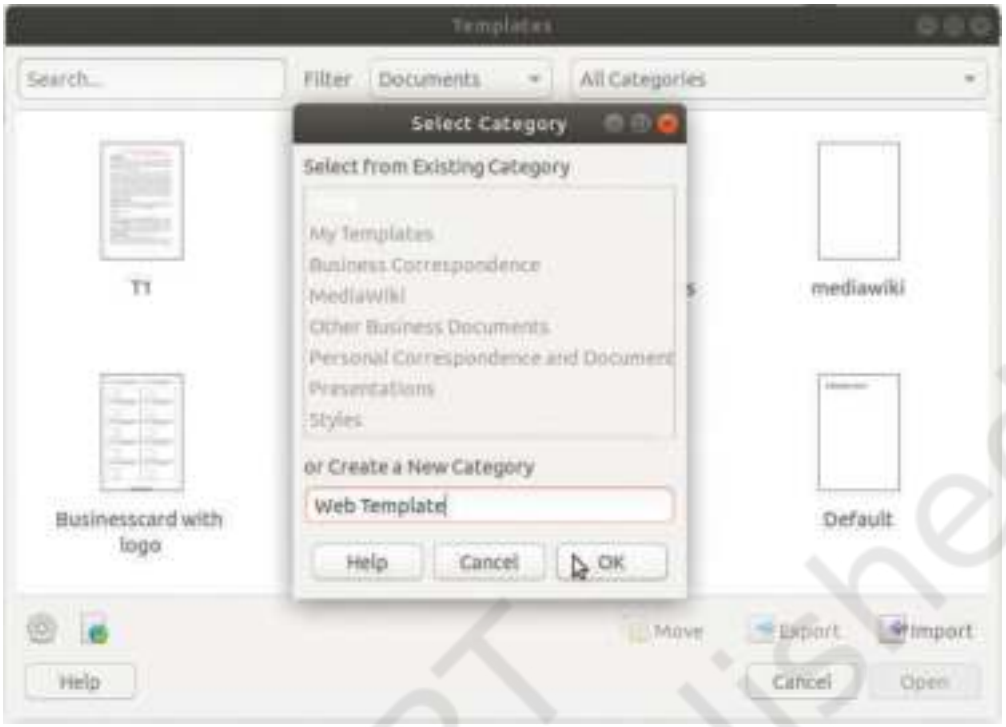


Fig. 3.21: Select category dialog box

Step 7. Select the file and click **Open** button. The selected file will be added to the list of templates as shown in Fig. 3.22.

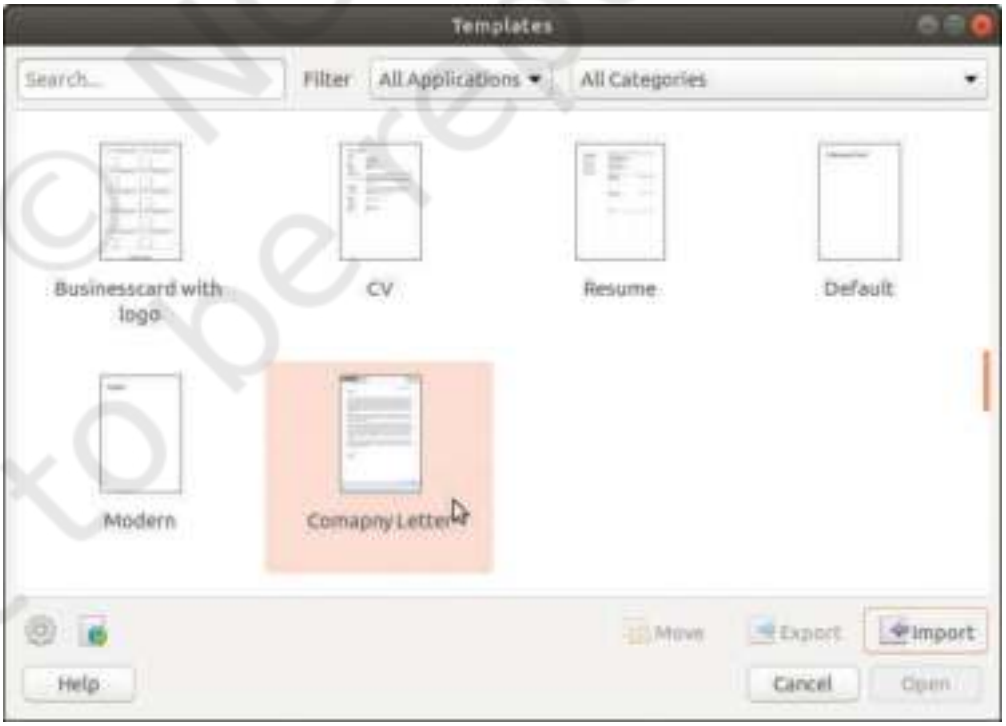


Fig. 3.22: Templates dialog box showing the imported template

Practical Activity 3.5

Niaz's colleague, Balwinder has to create Employee IDs for all the employees of her company, but there is no pre-defined template for the same. She searched some templates on the Internet that suit her requirement. Although, she has learned to create and use a template but does not know how to download and use an online template from the Internet. How will she resolve this issue?

Follow the steps given below to solve this problem.

Step 1. Open the new document in LibreOffice Writer.

Step 2. Open the Templates dialog box by using the keyboard shortcut **Ctrl+Shift+N**.

Step 3. Click on the **Online Templates button**.

Step 4. From the templates page in the browser click and select the desired template, *Employee ID Badge*, as shown in Fig. 3.23. The description of the template will be displayed.

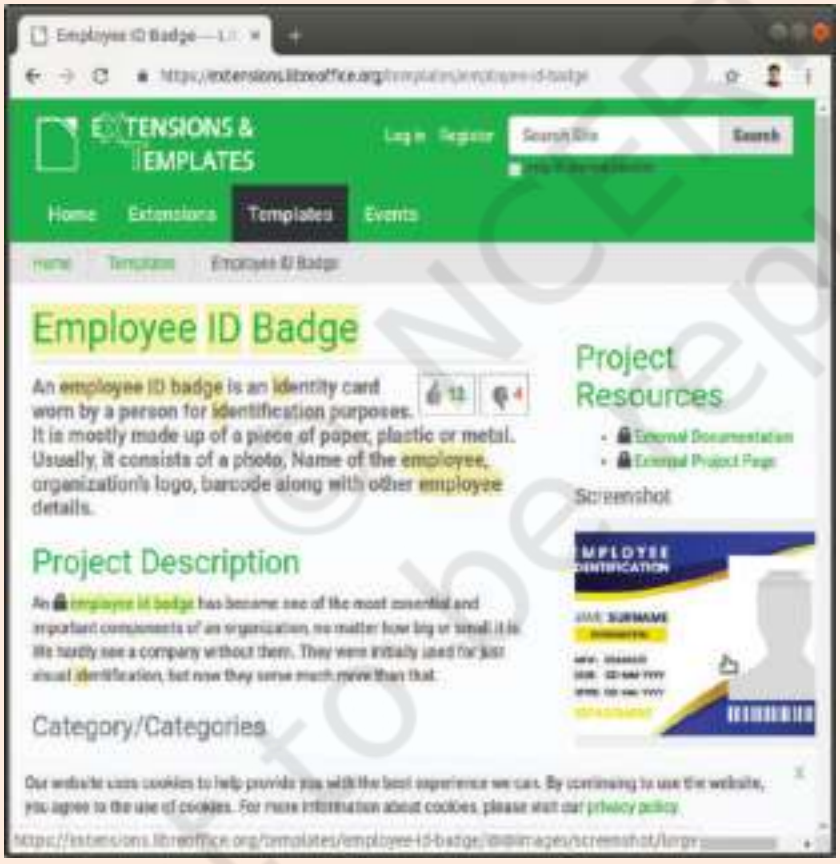


Fig. 3.23: Online template Employee ID Badge

Step 5. Download the template *Employee ID Badge* and close the browser. By default the template gets downloaded and saved in Download folder.

Step 6. Open **Templates** dialog box again and click on **Import** button, as shown in Fig. 3.24.

Fig. 3.24: Clicking on Import Template

Step 7. Then select the category in the **Select Category** dialog box and click on **OK** button as shown in Fig. 3.25.

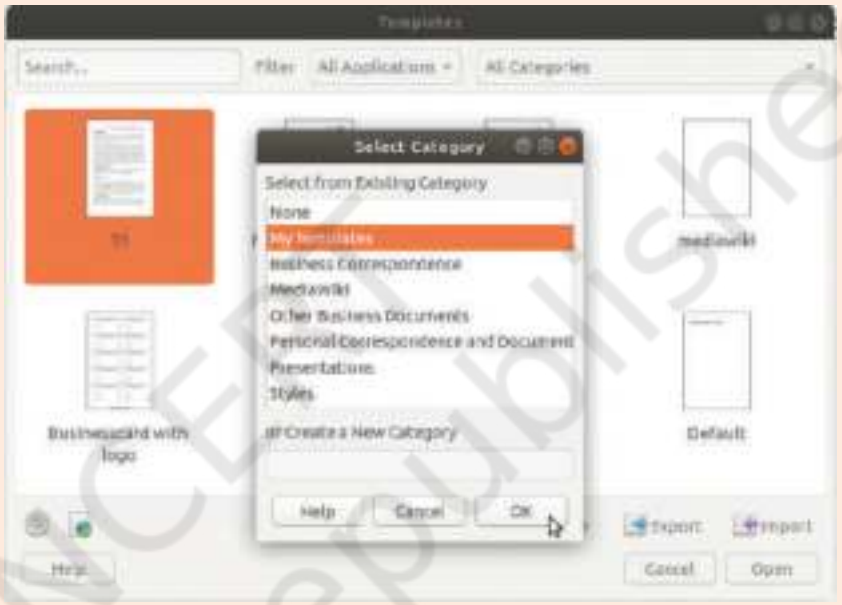


Fig. 3.25: Selecting Category while importing Template.jpg

Step 8. Browse the Download folder to select the template *Employee ID Badge*, as shown in Fig. 3.26.

Fig. 3.26: Select the template Employee ID Badge to import

Step 9. Click on **Open** button to add the Employee ID Badge template. The template imported appears in the list of templates as shown in Fig. 3.27.

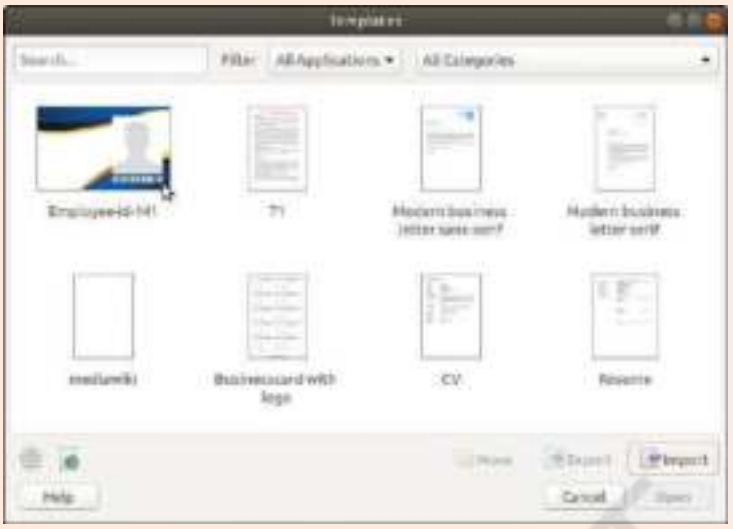


Fig. 3.27: Updated list of templates in Template dialog window

Step 10. Double click on **Employee ID Badge** template. A new file in a new window with the selected template will be opened as shown in Fig. 3.28.

Fig. 3.28: New document created with selected template

Step 11. Make the desired changes and save it as a document file.

Editing a Template

Once a template is created, desired changes can be made in it by following the steps given below.

Step 1. Click **File > Templates > Manage Templates**. The **Templates** dialog box will be displayed.

Step 2. Right click on the template file (say *T1*) that has to be edited.

Step 3. Select the **Edit** option from the popup menu. The template file will be opened. Make the desired changes and save the file. Now if we apply this template for any document, the edited file will be used.

Setting Up a Custom Default Template

Any template can be set as a default template. Writer gives a blank document as a default template. At the same time, any template file can be set as a default template by following the steps given below.

Step 1. Open the **Templates** dialog box by pressing **Ctrl+Shift+N**.

Step 2. Right click on the template that you wish to set as the default template.

Step 3. From the popup menu, select option **Set as Default** as shown in Fig. 3.29.

Fig. 3.29: Setting up a default template

The default icon will appear on the top left of the template file. The next time you create a new document by selecting **File > New > Text Document**, the new document will use the last edited template.

Moving a Template

When you place a mouse pointer on any of the templates in the Templates dialog box, a tool tip appears displaying the name of

the template and its respective category. You can move a template from one category to another by following the steps given below.

Step 1. Open the **Templates** dialog box.

Step 2. Click and select the template to be moved.

Step 3. Click **Move** button.

Step 4. Select the new category where the template has to be moved.

Step 5. Click **OK** button.

Exporting a Template

Export template feature allows to store the template file in the desired folder on your computer. It is different from moving a template from one category folder to another. When a template is exported, it is saved as a template file at any desired location. Exporting the template is a useful feature for sharing the templates with multiple users. Follow the steps given below to export a template:

Fig. 3.30: Selecting Export Template button

Step 1. In the **Templates** dialog box, select the template to be exported.

Step 2. Click on **Export** button located in the bottom right of the dialog box as shown in Fig. 3.30.

Step 3. Then the **Select Path** dialog box appears as shown in Fig. 3.31 to select the folder where you want to export the template.

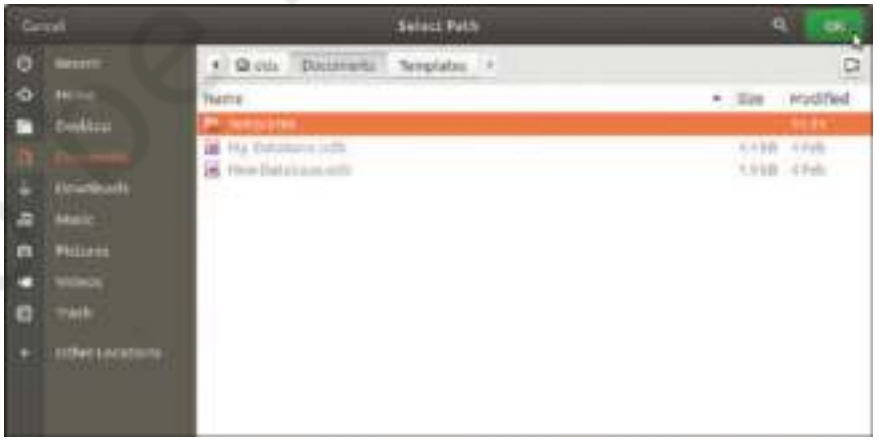


Fig. 3.31: Select Path dialog box

Fig. 3.32: Confirmation after exporting a template

Step 5. Select the folder and press on **OK** button. The selected template will be exported in that folder and a confirmation dialog box, as shown in Fig. 3.32 will be displayed.

Applying Templates to a Blank Document

You can apply the template from the available template list to any blank document. Follow the steps given below to apply the template.

Step 1. Open a new document in LibreOffice Writer by selecting **File > New > Text Document**.

Step 2. Select **File > New > Templates** to display the **Templates** dialog box.

Step 3. Select the desired template. The template will be opened in a new window.

Step 4. Copy the entire content of the template by using keyboard shortcut key **Ctrl+A** for selection and **Ctrl+C** to copy.

Step 6. Open the blank document and paste the copied content of the template by using keyboard shortcut key **Ctrl+V**.

Step 7. Add or delete the content as desired and save it as a text file.

Once a template is created, it can be applied to an existing document by selecting **Insert >Text From File** option. Browse and select the template file that has been saved on the computer. The selected template will be inserted in the document.

Practical Activity 3.6

Niaz wants to store the template created by him and another one that was imported by Balwinder in a folder named Company_Templates on the desktop.
Follow the steps given below to complete this task.

Step 1. Create a new document in LibreOffice Writer and press **Ctrl+Shift+N** to open the Templates dialog box.

Step 2. Select the template *(Niaz_template)* to be exported.

Step 3. Click **Export** button in the bottom right of the dialog box. The **Save As** dialog box appears.

Step 4. Browse for the folder named *Company_Templates* stored on the desktop.

Step 5. Click **Select Folder** button to export the selected template.

Step 6. Repeat the steps 1 to 5 to import the template Employee ID Badge in the *Company_Templates* folder.

Track Changes Feature

Track Changes is a powerful tool that makes the process of commenting, editing and reviewing of a document easy between multiple users. A document created by one user need to be reviewed and edited by self or other users. If any modifications are made in the document directly, the original document might get lost. Instead, the **Track Changes** feature of Writer offers an alternative method to keep a record of all the changes made in the original document. All the changes that are recorded can be either accepted or rejected by the original author. Furthermore, the Track Changes feature also gives us the option to add comments while reviewing a document.

The Track Changes toolbar contains various tools that help to track the changes made by different users. To view the **Track Changes** toolbar, from main menu bar, select **View > Toolbars > Track Changes**. The Track Changes toolbar will appear in the bottom left corner of the Writer window as shown in Fig. 3.33.

Fig. 3.33: Track Changes Toolbar

The various buttons present on the Track Changes toolbar shown in the Fig. 3.33 are briefly explained below.

(a) **View Track Changes** – Clicking on this button displays all the changes made in the document by different users.

(b) **Record Track Changes** – Clicking on this button, turns on the Track Changes feature. After this, any sort of editing done will be marked. Any character added to the document will be displayed in a different color and any deletion done will be seen in strike-through style.

(c) **Previous Track Changes/Next Track Changes** – Click on these buttons to navigate between the changes made.

(d) **Accept/Accept All Track Changes** – Once the editing is done, the original author may accept the change made to the document by clicking **Accept All Track Changes** button will accept all the changes made to the document.

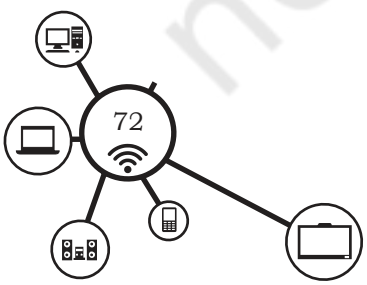
(e) **Reject/Reject All Track Changes** – The original author of the document may reject a single change or all changes made to the document by clicking **Reject Track Changes** or **Reject All Track Changes** button, respectively.

(f) **Manage Track Changes** – By clicking on this button the **Manage Changes** dialog box is displayed, which contains a detailed list of all changes made to the document along with the author's name and date and time of modification.

(g) **Insert Comment** – This button is used to add a comment in a document.

Preparing a Document for Review

Track Changes feature is used when a document is shared with one or more users for review or editing purposes. So, before the document is shared, one should make sure that the changes made should be recorded. This will ensure that after the review is done, the original author of the document has the option to accept or reject the changes made. Hence, before the document is



sent for review, the original author should prepare the document for review and start recording the changes being made. For that, select **Edit > Track Changes >Record** option. Alternatively, select the **Record** button from the Track Changes toolbar. To make sure that no user is able to disable the track changes option, we can protect the document with password. Follow the following steps for the same.

Step 1. Create a new document in LibreOffice Writer. From the main menu, select **Edit > Track Changes > Protect** option. The **Enter Password** dialog box will appear as shown in Fig. 3.34. Alternately, you can click on Protect Track Changes button located on the **Track Changes Toolbar** to protect the document.

Step 2. Enter the same password in Password and confirm text box and click on **OK** button. After protecting the document with password, if any user tries to disable the Track Changes feature, Writer will prompt to enter the password.

Fig. 3.34: Enter Password dialog box allowing to enter password after clicking on Protect Track Changes button

Recording Changes

Once the Track Changes features is **ON**, the reviewers can begin recording the changes in the document. For that, click **Edit > Track Changes > Record** option. Alternatively select Record button from the toolbar. The shortcut key to start recording the changes is ***Ctrl+Shift+C***.

Once the **Record** option is selected, the **Track Changes**

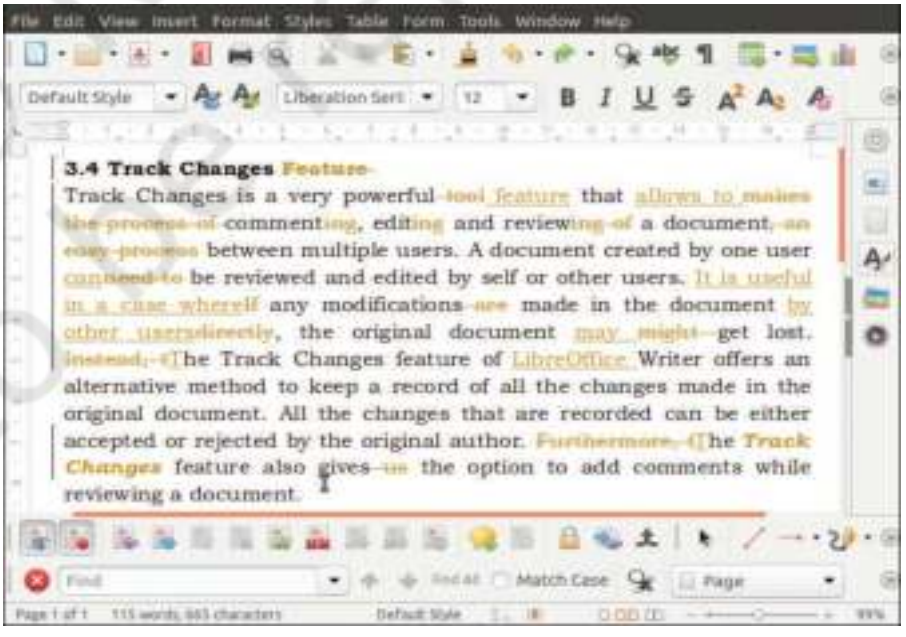


Fig. 3.35: Recording the changes

Fig. 3.36: Tool tip showing the details of changes made

feature is ON. Now, any character being deleted will be shown as strike through text and any character added will be shown in different colour as shown in Fig. 3.35. Also when you place the mouse pointer over any of the changes, a tool tip is displayed giving details of the author, change made, date and time of change done as shown in Fig. 3.36.

To stop recording, deselect the record option by selecting **Edit > Track Changes > Record** or click the Record button on the toolbar.

Accepting and Rejecting Changes

Once the changes are made by all the reviewers, the original author may accept or reject them. Open the document and follow the steps given below.

Step 1. To accept or reject a change, click on the change made and then select **Accept Track Change / Reject Track Change** button.

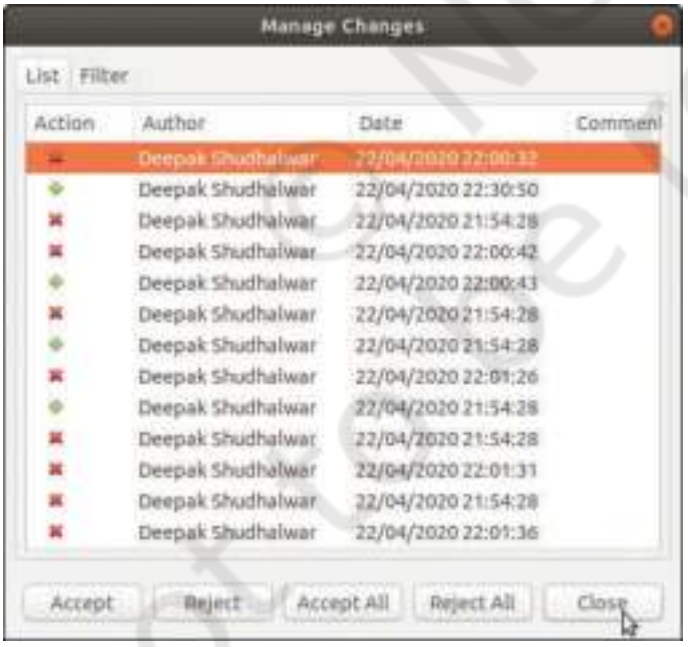


Fig. 3.37: Manage Changes dialog box

Step 2. To navigate between the changes made to the document click **Previous Track Changes and Next Track Changes** buttons.

Step 3. To accept or reject all the changes made, select **Accept All Tracked Changes / Reject All Tracked Changes** button respectively.

Step 4. If **Manage Track Changes** button is clicked, a **Manage Changes** dialog box appears as shown in Fig. 3.37. It contains the details of all the changes made in the document. The dialog box contains buttons to accept and reject changes as well.

Adding Comments

To add comments while reviewing, we can use the **Track Changes** toolbar as well. Click at the place in the document where the comment is to be placed. Thereafter, follow the steps given below to add comments in a document.

Step 1. Click **Insert Comment** button on the Track Changes toolbar. A comment box will be inserted on the right side of the window. It will have the name of the author or reviewer and date and time of the comment being made, as shown in Fig. 3.38.

Step 2. Type the comment.

Step 3. Once done click anywhere on the document to activate it.

If more than one or two of users add comments then the comments by different users will be shown in different coloured comment boxes in Fig. 3.38.

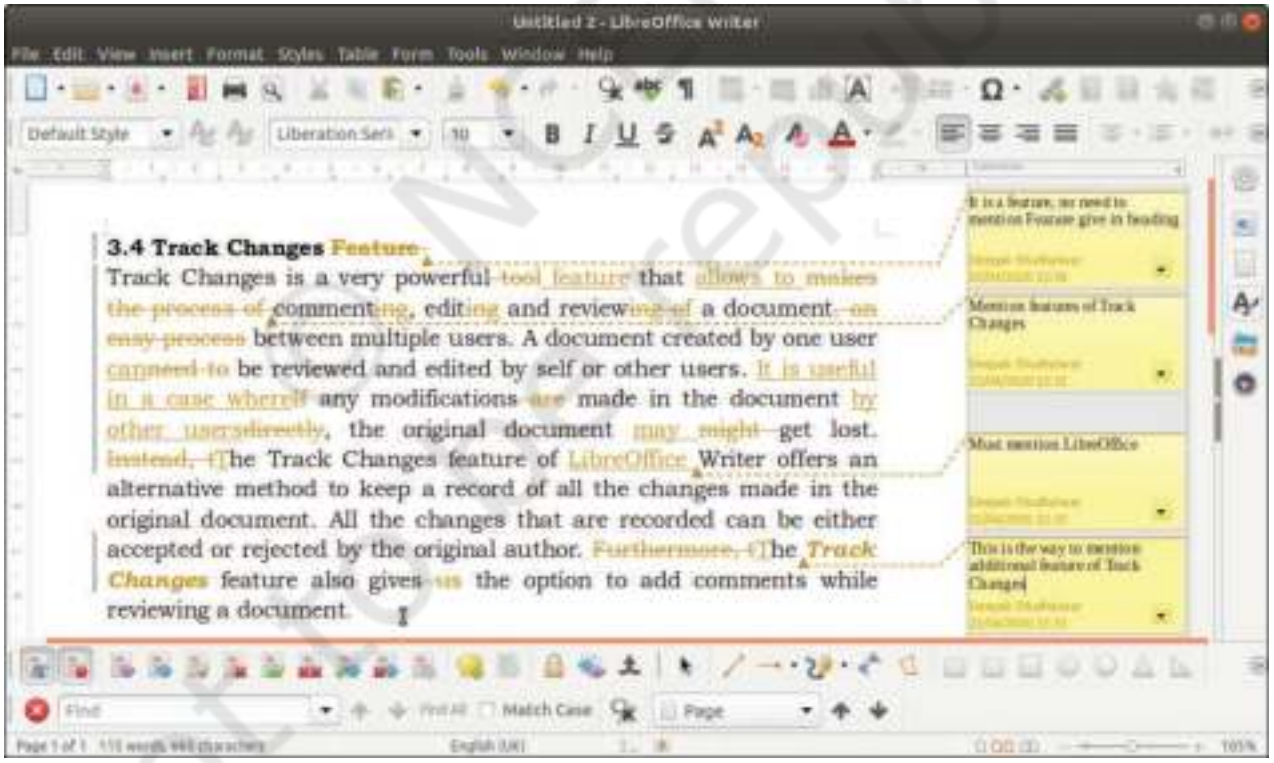


Fig. 3.38: Inserting Comments using the option under Track Changes toolbar

Deleting Comments

To delete any comment, click on the down arrow on the bottom right of the comment box. A popup menu will be displayed as shown in Fig. 3.39. It gives the option to delete only the current comment, all comments by a particular author and to delete all comments. Select the desired option.

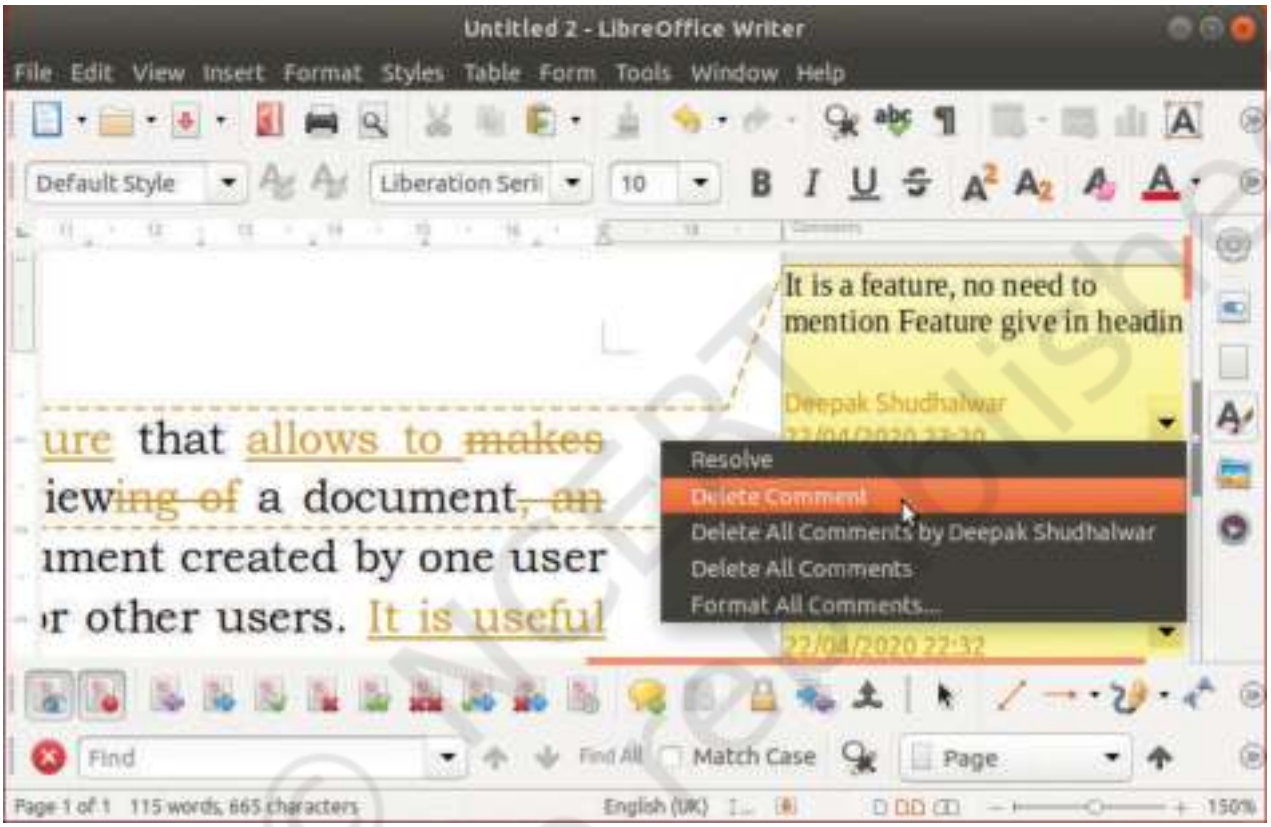


Fig. 3.39: Deleting Comments from pop-up menu

Comparing Documents

Once the reviewers have made the changes and given their comments, Writer allows to compare the original document with the reviewed document and then choose the option(s) that suits the best. Follow the steps given below to compare the documents.

Step 1. Open the edited document.

Step 2. Select **Edit > Track Changes > Compare Documents** option. Alternatively, click Compare **Non-Tracked Changed Document** from the toolbar.

Step 3. The **Compare To** dialog box will appear. Browse and select the original file to be compared as shown in Fig. 3.40.

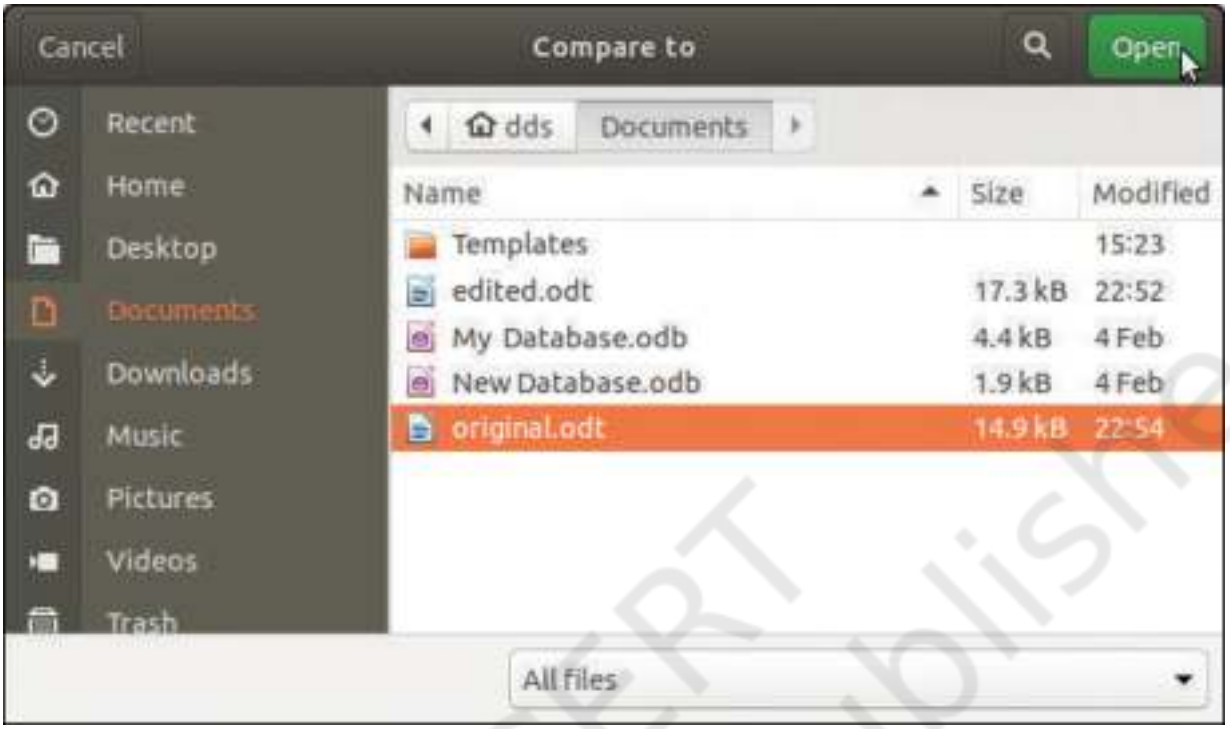


Fig. 3.40: Selecting original file

Step 4. The **Manage Changes** dialog box is displayed as shown in Fig. 3.37. Accept or reject the desired changes.

Step 5. Close the dialog box when done.

Step 6. Save the edited file.

Practical Activity 3.7

Pradeep has created a document on 'Humans and Nature'. He wants his friends to review the document and give their comments wherever required. The following process will demonstrate how his friends add comments in the document.

Step 1. Open the document created by Pradeep to review.

Step 2. Click on **Insert Comment** button on the toolbar.

Step 3. Type the comment in the comment box.

Step 4. Once done click anywhere on the document to activate it.

Step 5. Repeat the steps given above to add more comments in the document.

Practical Activity 3.8

After incorporating the reviews, Pradeep mailed the document to his editor with the Track Changes ON. He made certain changes in the document. Pradeep wants to compare his original document with the reviewed document. The following process will demonstrate how Pradeep will compare the edited document with the original document.

Step 1. Open the edited document.

Step 2. Select **Edit > Track Changes > Compare Documents** option.

Step 3. The **Compare To** dialog box will appear. Browse and select the original file to be compared as shown in Fig. 3.40.

Step 4. The **Manage Changes** dialog box is displayed as shown in Fig. 3.37.

Step 5. Accept or reject the desired changes.

Step 6. Close the dialog box when done.

Step 7. Save the edited file.

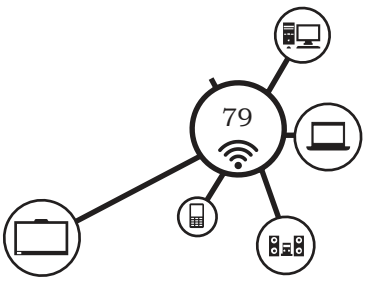
SUMMARY

- A Table of Contents (ToC) contains a list of topics and subtopics that have been covered in the book along with page numbers.
- A ToC in Writer allows to insert an automated table of contents in a document.
- The contents in the ToC are hyperlinked in the table.
- LibreOffice Writer supports up to 10 levels of headings H1 to H10.
- To insert a ToC, select **Insert** > **Table of Contents** and **Index** > **Table of Contents**, **Index or Bibliography**.
- To add a graphic as a background of the ToC, select the Bitmap button in the Background tab of the Table of Contents, Index or Bibliography dialog box.
- Once inserted, a ToC can be edited or deleted from the document.
- A template is a preset layout that helps to create professional and/or formal documents easily.
- In a template we can create and save defined headings, text formats, styles, page numbers, headers and footers.

- The new documents created from these templates have the same content segregation, formatting features and appearance as that of the applied templates.
- To create a new document with a template, select **File** > **New** > **Templates** ...
- To create and save your own template, select **File** > **Templates** > **Save**.
- LibreOffice provides a wide range of online templates which can be downloaded from then Internet.
- Once these templates are installed on your computer, they will appear in Templates window from where they can be viewed and selected.
- Any template can be set as a default template.
- Export template option allows to store the template file in the desired folder on your computer.
- Exporting a template is a very useful feature to share the templates with multiple users.
- Track Changes feature of Writer makes the process of commenting, editing and reviewing of a document easy between multiple users.
- The Track Changes feature of Writer helps to record all the changes made in the original document. All the changes that are recorded can be either accepted or rejected by the original author.
- The Track Changes feature also gives us the option to add comments while reviewing a document.
- The Track Changes toolbar contains various tools that help to track the changes made by different users.
- To view the Track Changes toolbar, from main menu bar, select **View** > **Toolbars** > **Track Changes**.

Practical Exercises

1. Rajnikant has created a detailed report on Education in India using the LibreOffice Writer tool. He has styled the document well by inserting proper paragraph and section headings. His colleague Murugan advised him to insert a Table of Contents that will give a complete glimpse of his report. Help Rajnikant to insert a ToC with a green background.



2. After the ToC was inserted, Rajnikant made some changes in the report but the changes were not reflected in the ToC. Will he have to again insert a new ToC? Suggest him a better way to update the ToC.
3. Rukhsat has just downloaded a template from libreoffice.org. Now she wants to import it in My templates category of the Templates folder. How can she complete her task?
4. Rimit loves to create cards on his computer. This time he decided to make his own Christmas cards and send them to his friends. He wants to do the task using the templates feature of Writer. He has already saved and imported the desired template(card.ott). Help him to create cards for at least five of his friends.
5. Teena is a member of the editorial team of her school. She wants to set the newspaper template as her default template. Write the steps to help Teena complete the task.
6. Venkat has created a document on India's Trade Review. He wants two of his friends, Rinky and Sujoy to review his document and if required, add comments to it. But none of them know how to use the Track Changes feature of Writer. Help them to complete the task.
7. Venkat has received the reviewed file with modifications and comments. What steps will he follow now to accept or reject the changes done by his friends.
8. Write steps to compare the original document created by Venkat and the edited document sent by Rinky and Sujoy.

Check Your Progress

A. Multiple choice questions

1. Which of the following is NOT true about Table of Contents, Index or Bibliography dialog box?
   (a) It has four tabs
   (b) On the Type tab, by default, the checkbox for Protected against Manual Changes option will be selected.
   (c) The Styles tab contains options to change the background colour.
   (d) None of the above
2. Which of the following tabs is by default active when the Table of Contents, Entries or Bibliography dialog box is opened?
   (a) Entries (b) Background
   (c) Styles (d) Type

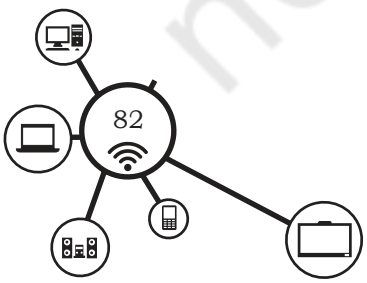
3. Which of the following tabs contains options to set styles for various entries in the ToC?
   (a) Entries (b) Background
   (c) Styles (d) Type
4. Which of the following can be added in the background of Table of Contents in LibreOffice Writer?
   (a) Color (b) Graphic
   (c) Both a and b (d) Neither a nor b
5. Which of the following is NOT true about templates?
   (a) The styles and formatting features can be reused.
   (b) LibreOffice provides online templates
   (c) We cannot create our own templates.
   (d) None of the above.
6. Which of the following is the shortcut key to open the Templates dialog box?
   (a) Ctrl+Alt+N (b) Shift+Ctrl+N
   (c) Ctrl+Alt+T (d) Shift+Alt+T
7. Which of the following buttons, in the Templates dialog box, will be clicked to save a template displayed in the list of templates?
   (a) Export (b) Import
   (c) Move (d) None of the above
8. Which of the following is the shortcut key to select he entire document?
   (a) Ctrl+S (b) Ctrl+A
   (c) Ctrl+D (d) Ctrl+B
9. Which of the following is the correct sequence of options to open the Templates dialog box?
   (a) File > Manage Templates > Templates
   (b) File > Templates > Manage Templates
   (c) Insert > Templates >Manage Templates
   (d) Insert > Manage Templates > Templates
10. Which of the following is true about Track Changes feature of Writer?
    (a) You cannot record a change made in the document.
    (b) A comment of a particular author only can be deleted
    (c) Any change made to the document is permanent.
    (d) None of the above
11. Which of the following menus contains the Track Changes option?
    (a) File (b) Edit
    (c) View (d) Insert
12. Which of the following is the shortcut key to start recording the changes being made in the document?
    (a) Ctrl+Shift+C. (b) Alt+Shift+C
    (c) Ctrl+Alt+C (d) Shift+C+F2

B. Fill in the blanks

1. To navigate to the topic from the ToC, press _____ key while clicking the mouse button on that topic.
2. To remove the applied paragraph styling in the ToC, select the outline level in the Levels list box, and then click the _____ button.
3. If the checkbox for_____ option is selected, the ToC is protected from any accidental change.
4. To update the ToC manually, right click and select _____ option from the pop up menu.
5. The _____ tab contains options to set the number of columns that we want to have in our ToC.
6. A _____ is a preset layout that helps us to create professional and formal documents easily.
7. The default template in Writer is _____.
8. To find the template that is being used in the current document, select _____ option from the File menu.
9. The _____ button is clicked in Templates dialog box to view online templates.
10. The _____ feature of Writer offers us an alternative method to keep a record of all the changes made in the original document.
11. The shortcut key to start recording the changes is _____.
12. After the Track Changes feature is ON, the added characters are shown as _____ text.

C. State whether the given statements are True or False

1. The topics in Table of Contents are hyperlinked.
2. The Table of Contents in LibreOffice Writer can be updated automatically.
3. TABLE of Contents can be inserted even if the section headings are not styled.
4. Once a ToC is created, it cannot be edited.
5. We cannot add a graphic as a background of ToC.
6. A single template can be used for multiple documents.
7. A template cannot contain graphics.
8. All documents in Writer are based upon templates.
9. The online templates cannot be added to the list of templates in the templates dialog box.
10. A template once created can be edited again and again.
11. The changes recorded have to be accepted by the original author.
12. We can delete the comments added in a document by the user.



D. Answer the following questions

1. What is the need of table of contents?
2. What will happen if the 'Protected Against Manual Changes' option is not selected in the Type tab of Table of Contents, Index or Bibliography dialog box?
3. Name the five tabs present in the Table of Contents, Index or Bibliography dialog box.
4. What do you mean by customization of ToC?
5. How headings and sub-headings of a document differentiated in ToC?
6. Define a template.
7. Give any one advantage of using a template for your document.
8. What is the difference between importing and exporting a template?
9. Name any two categories of templates.
10. When is exporting of templates useful? Give any one reason.
11. What is the difference between Accept Track Change and Accept All Tracked Changes buttons?
12. How do we prepare a document for review?
13. Identify and label the *Record button, Insert Comments button, Accept All Tracked Changes, Reject Track Change* buttons in the following figures of Track Changes toolbar (shown in Fig 3.41).
14. Identify and label *"Browse Online Templates button, Export button, Import button"* in the following Templates dialog box.

Fig. 3.41: Track Changes Toolbar

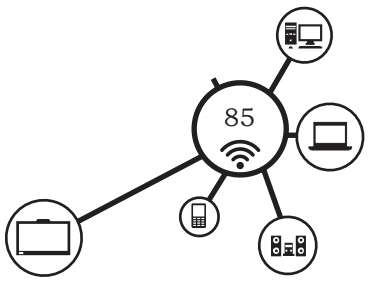
Electronic Spreadsheet (Advanced) using LibreOffice Calc

Introduction

In the modern digital world, one of the most important thing is counting and calculations. Every profession, household, institution and even our smart devices have to deal with numbers. In computers we can do the calculations on number of records spread over the long sheet using the spreadsheet software that helps to work with numbers efficiently. It resembles an accountant's ledger book wherein everything is recorded under suitable headings. We have already learned in Class 9, that how the spreadsheet software performs calculations and present data in tabular format. It becomes easy to visualise a huge grid of numbers when represented using charts in electronic spreadsheet. Moving further, in this unit you will learn advanced features of electronic spreadsheet using LibreOffice Calc to perform analysis, automate repeated tasks, link, share and review data. It includes – analysing data to extract useful information for making effective decisions. Macros, is the another powerful feature of spreadsheet covered in this unit. Macros are a set of stored functions used to automate processes repeatedly. They are tools which can be used

to perform most of the redundant tasks with relative ease. In the second chapter of this unit, you will learn to create multiple sheets and link the data in multiple sheets. It can be done in two ways, one is creating reference to other sheets by using keyboard and mouse, and other is by linking external data. LibreOffice Calc also provides the sharing feature that allows to share the spreadsheet for editing purpose. This saves to keep track of multiple copies of the same spreadsheet corrected by different users. Sharing allows the users to work on the same spreadsheet in collaboration.

NOTES



CHAPTER 4

Analyse Data using Scenarios and Goal Seek

Introduction

Analysing data is the process to extract useful information for making effective decisions. The spreadsheet is one of the best software used for data analysis. It is used to retrieve, correlate, explore and visualise data to identify patterns, trends and relationships. The spreadsheet component in LibreOffice known as Calc includes several tools used to manipulate the data in the spreadsheet. You can analyse the data and interpret the results from it. In this chapter, you will learn to analyse data using LibreOffice Calc.

Consolidating Data

Consolidate is a function used to combine information from multiple sheets of the spreadsheet into one place to summarize the information. It is used to view and compare variety of data in a single spreadsheet for identifying trends and relationships.

You need to check the following before consolidating data.

- Open each sheet in the spreadsheet and check that the data types must match which you want to consolidate.
- Match the labels from all the sheets which are used for consolidating.
- Enter the first column as the primary column on the basis of which the data is to be consolidated.

Steps to consolidate the data are as follows:

Step 1. Open the spreadsheet which has the data to be consolidated.

Step 2. Create a new sheet where the data has to be consolidated.

Step 3. Choose **Data > Consolidate** option that will open Consolidate dialog as shown in Fig. 4.1.

Step 4. Observe that the default function *"Sum"* is seen in the Function drop-down. You will be able to see the list of functions as shown in the Fig. 4.2 by clicking on the Function drop-down.

Step 5. Choose the required function from the drop-down list.

Step 6. The sources data range list contains existing named ranges to quickly select from that. But if the source range is undefined, then click and select the range from the sheet which is to be consolidated.

Step 7. Click on **Add** to add this range under the *'Consolidation ranges'* of the Consolidation dialog.

Step 8. Repeat steps 6 and 7 to add more sheets to be consolidated.

Step 9. Remember to check the target range specified under Use **'Copy results to'**. If it is not mentioned, then click on the cell of sheet where the final data has to be produced.

Step 10. Click on *Options* that will list two checkbox under **Consolidate by** *"Row labels"* and *"Column labels"* and *"Link to source data"* under **Options**, as shown in Fig. 4.3. From this you can select the additional feature as per requirement. The option consolidate by rows and columns are checked to consolidate data as per row labels and column label. *Link to source data* is checked to make the modification automatically in the consolidated (target) sheet while making any changes in the source data.

Step 11. Finally click on **OK** button.

Let us illustrate this through following activity.

Fig. 4.1: Consolidate dialog box

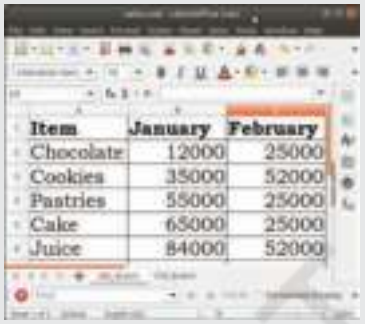
Fig. 4.2: Functions under consolidate

Fig. 4.3: Consolidate options

Practical Activity 4.1

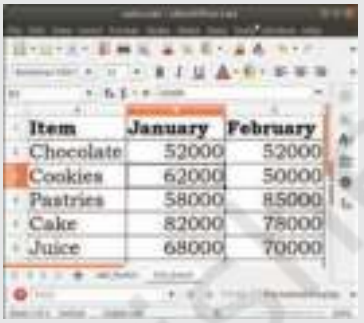
Let us take an example that we have two branches of our shop namely ABC and XYZ. We have the Sales records for the month of January and February of both the branches in two different sheets named ABC_Branch and XYZ_Branch. Now we have to consolidate these two sheets to get the sum of both the sheets monthly to get the insight about the sale as per product and branch.

Now let us create the following sheets in a spreadsheet sales.



Item	January	February
Chocolate	12000	25000
Cookies	35000	52000
Pastries	55000	25000
Cake	65000	25000
Juice	84000	52000

Fig. 4.4: Data for ABC_Branch



Item	January	February
Chocolate	52000	52000
Cookies	62000	50000
Pastries	58000	85000
Cake	82000	78000
Juice	68000	70000

Fig. 4.5: Data for XYZ_Branch

Now let us use the two sheets 'ABC_Branch' and 'XYZ_Branch' of a spreadsheet sales.ods which will be consolidated using the following steps:

Step 1. Add a new sheet and rename it as *Consolidate*

Step 2. Click on **Data > Consolidate** or use the keyboard shortcut key ***ALT+D,*** the *Consolidate* dialog window will open as shown in Fig. 4.6.

Fig. 4.6: Consolidate dialog window

Step 3. In the Function box, choose *Sum* function from the drop down as we want to add the data from all the sheets.

Step 4. Click in the Source data ranges box and then click on the worksheet ABC_Branch and select the area to be consolidated and then click on the Add button will add the copy reference in the consolidation ranges (Fig. 4.7).

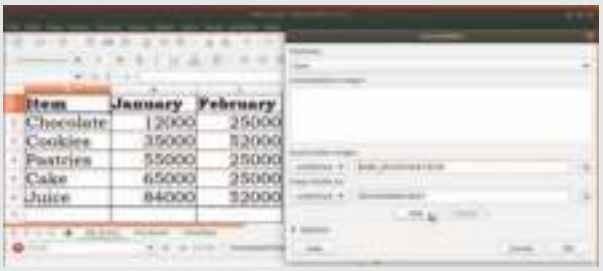


Fig. 4.7: Selecting the source data range from the sheet

Step 5. Click on the sheet XYZ_Branch and select the area to be consolidated and then click on ADD will add the next consolidation range (Fig. 4.8).

Step 6. Click on the '+' sign next to Options in the Consolidate dialog window to change the settings.

'*Consolidate by*' has two options Row labels and Column labels. Check row label or column label or both if you want to consolidate it by matching the label.

If Link to source data is checked, then it will keep on updating the data of the Consolidate sheet automatically if there is any change made in the selected ranges.

Fig. 4.8: Options for setting more properties

Step 7. Click on '**Copy results to**' and then click on any of the cell in the Consolidate sheet where you want to copy the final result after consolidation.

Step 8. Click on **OK** button. Fig. 4.9 will display the Consolidate sheet with data after consolidation.

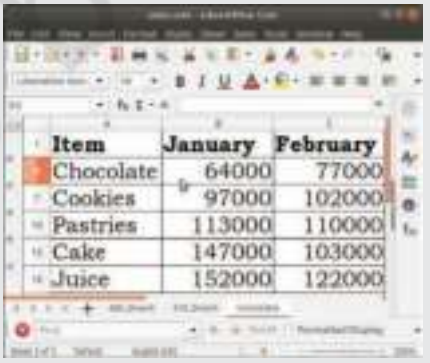
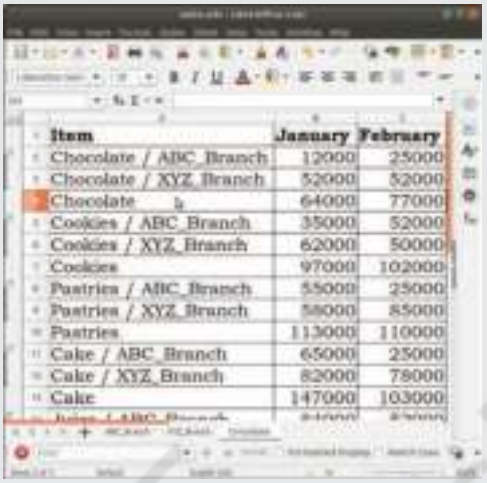


Fig. 4.9: Consolidated sheet

The consolidated sheet will have all the consolidated data along with the original data. You can view the original data of both the sheets and by clicking on the '+' sign in front of the consolidated row. Fig. 4.10 shows the original data and consolidated data.



Item	January	February
Chocolate / ABC_Branch	12000	25000
Chocolate / XYZ_Branch	52000	52000
Chocolate	64000	77000
Cookies / ABC_Branch	35000	52000
Cookies / XYZ_Branch	62000	50000
Cookies	97000	102000
Pastries / ABC_Branch	55000	25000
Pastries / XYZ_Branch	58000	85000
Pastries	113000	110000
Cake / ABC_Branch	65000	25000
Cake / XYZ_Branch	82000	78000
Cake	147000	103000

Fig. 4.10: Consolidated sheet details by clicking on the + sign in front of rows

Practical Activity 4.2

Create two sheets Marks_Term1 and Marks_Term2 to store the marks in Term1 and Term2 for a set of students taking the following columns:

1. Name
2. Marks in English
3. Marks in Hindi
4. Marks in Maths
5. Marks in Science
6. Marks in Social Science
7. Total marks (using function Sum)
8. Percentage (using function Average)

Now, use the consolidate function to merge these two sheets.

Groups and Subtotals

Group and Outline in Calc is used to create an outline of the selected data and can group rows and columns together so that one can collapse (-) to hide it or expand (+) it using a single click on it.

Select the data to be grouped, click on **Data>Group and Outline**. Then choose Rows to group the data on the basis of rows or columns to group it on the basis of columns.

The **Subtotal** tool in Calc creates the group automatically and applies common functions like sum, average on the grouped data. One can use any type of summary function for each column as per the requirement of data analysis.

It can group subtotals by using category and sorts them in ascending or descending order so that one need not to use filters.

Follow the following steps to apply *Subtotal* tool.

Step 1. The sheet where this is to be applied must have labels to the column

Step 2. Click on **Data** menu and choose **Subtotals** (**Data>Subtotals**) as shown in Fig. 4.11.

Step 3. Choose the column in the **Group by** list in the subtotal dialog which is to be used for grouping the data in the sheet as shown in Fig. 4.12.

Step 4. Select the column by clicking the checkbox under **Calculate subtotals for** to create subtotals for.

Step 5. Select the desired function by clicking the function under **Use function.**

Step 6. You can use the 2nd Group and 3rd Group tabs to group the data in further levels.

Step 7. Click on **OK** button.

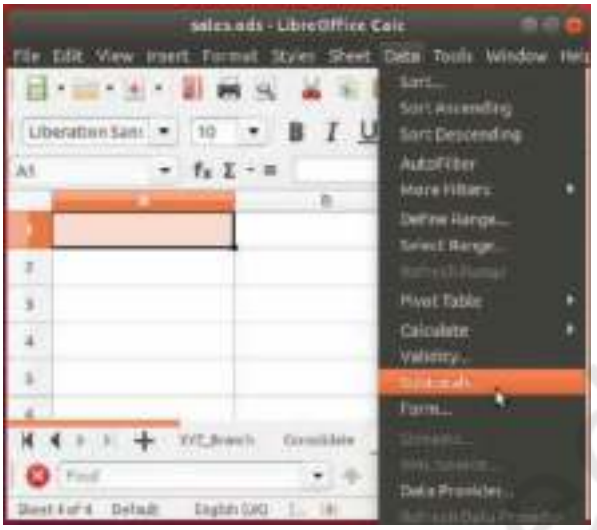


Fig. 4.11: Choosing subtotal option from Data menu

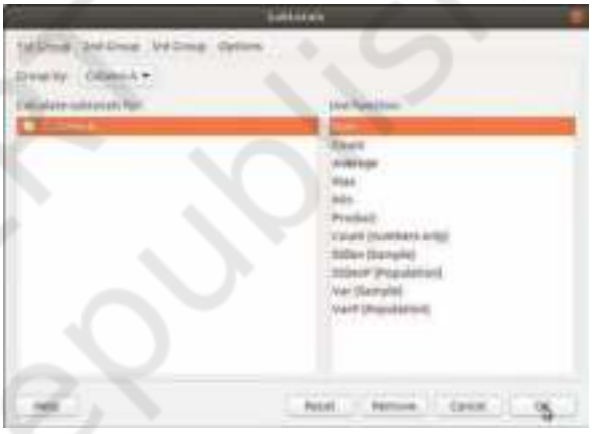


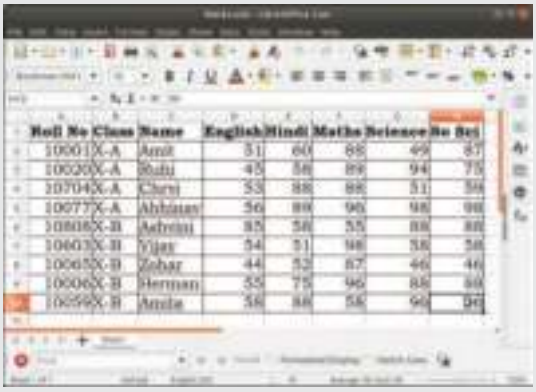
Fig .4.12: Choose the column in the Group by list

Practical Activity 4.3

Let us take an example to store marks in various subjects by students of Class X as shown in the table given in Fig. 4.13. To take out the average of the subjects scored in each class, use the subtotal tool which automatically group the data on a particular column and perform the selected function on any of the column.

To solve this, perform the following steps:

Step 1. Create a sheet as shown in the Fig. 4.13 to take the marks for students in a term for a class.



Roll No	Class	Name	English	Hindi	Maths	Science	Sst
10001X	A	Amit	51	60	68	49	67
10020X	A	Ridu	45	58	89	94	75
10704X	A	Chris	53	88	88	51	58
10077X	A	Abhinav	56	89	96	98	98
10086X	B	Ashvini	85	58	55	88	88
10603X	B	Vijay	54	51	98	58	58
10065X	B	Zohar	44	52	87	46	46
10006X	B	Herman	55	75	96	88	88
10599X	B	Anita	58	88	58	96	96

Fig. 4.13: Spreadsheet with student marks in two class

Step 2. Now, to calculate the average marks scored by the students of each class in each subject, i.e. class-wise and subject analysis.

Step 3. To do so, click on **Data > Subtotal**, the subtotal dialog as shown in Fig. 4.14 will open.

Fig. 4.14: Subtotal dialog window

Step 4. Choose the column i.e. Class under Group by in the 1st Group on which we need to group the whole data. Also, select the subjects i.e. English, Hindi, Maths, Science and Social Science under Calculate subtotals for. For each subject click on the Average under Use function individually otherwise Sum function will be used by default.

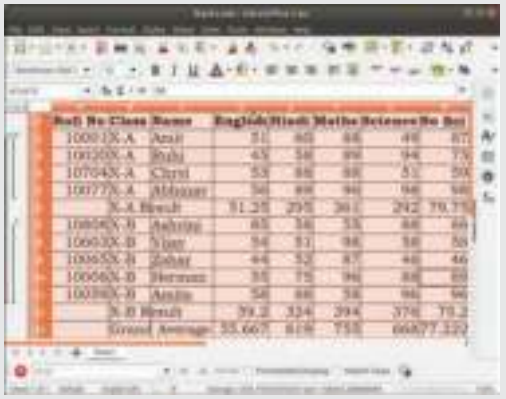


Fig. 4.15: Marks list after Subtotal

Step 5. Click **OK** and the sheet will look like as shown in the Fig. 4.15.

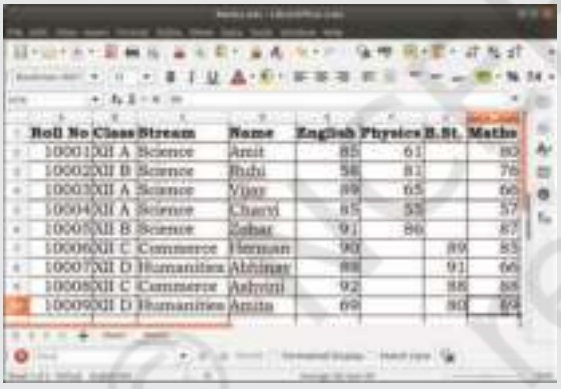
Observe that outline to the left of the row numbers which is inserted after performing the subtotal tool. This outline shows the hierarchical structure which can be used to show or hide different levels by clicking on the group indicators '+' sign to expand and '–' sign to collapse the data.

You can hide the low-level details and just look at the final totals and grand totals.

If you want to remove the outline feature from the sheet at any point of time then it is possible by just clicking on **Data > Group** and **Outline > Remove Outline**.

Practical Activity 4.4

Create a sheet as shown in Fig. 4.16 and then calculate the average of marks subject wise on the basis of class and stream. Also, try out another function Count to calculate the number of students in each subject.



Roll No	Class	Stream	Name	English	Physics	B.St.	Maths
100010	XII	A	Science	Amit	85	61	80
100020	XII	B	Science	Rishi	56	81	76
100030	XII	A	Science	Vijay	89	65	66
100040	XII	A	Science	Charvi	65	55	57
100050	XII	B	Science	Zohar	91	86	87
100060	XII	C	Commerce	Herman	90	89	85
100070	XII	D	Humanities	Abhinav	88	91	66
100080	XII	C	Commerce	Ashvini	92	88	88
100090	XII	D	Humanities	Amita	69	90	69

Fig. 4.16: Marksheet

What-if Scenarios

What-if scenario is a set of values that can be used within the calculations in the spreadsheet. A name is given to the scenario and several scenarios can be created on the same sheet.

It is used to explore and compare various alternatives depending on changing conditions. It can be used in the beginning of any project to optimise the output. This tool is used to predict the output while changing the inputs which reflects the output and thus one can choose the best plan of action based on it.

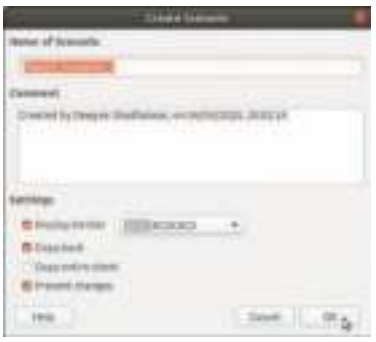


Fig. 4.17: Create Scenario dialog window

For example, a person who is taking car loan has to decide on certain factors as given below:

- The number of years for which the car loan is taken.
- The total amount of car loan

The above two factors, i.e. Principal amount and Number of years can display the EMI to be paid monthly.

Follow the following steps to create scenario.

Step 1. Select the cells which contains values in the sheet that needs to be changed. To select multiple cells, hold *Ctrl* key and click on the cell to be selected.

Step 2. Choose **Tools>Scenarios** will open scenario dialog window as shown in Fig. 4.17.

Step 3. Enter a name for the new scenario and leave the other fields unchanged.

Step 4. Click on OK button.

Step 5. This will create a new scenario which is activated automatically.

Practical Activity 4.5

Let us take an example to get the insight of the EMI, Total Amount paid and Total Interest paid on the Loan Amount (Principal) taken for a fixed Rate of Interest for a number of time period. So, now we want to see what will be the EMI and how much is the total interest paid for different loan amount and time period. To do so, let us use the Scenario tool by using the following steps:

Step 1. Create the following sheet (Fig. 4.18) and remember to put the formula to calculate EMI in B3 as

= ABS(PMT(B2/1200,E1*12,B1))

Total Amount in B4

= B3*E1*12

Total Interest in B8

= B4-B1

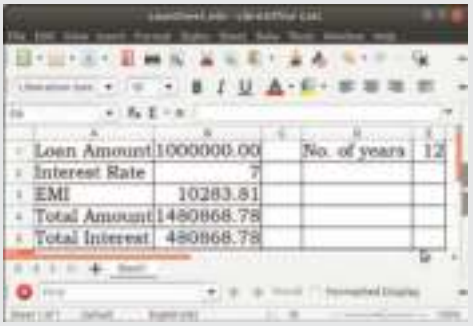


Fig. 4.18: Loan sheet

Step 2. Select the cells B1 and E1 using ***Ctrl + Click*** on these cells as these two are the variables in this situation

Step 3. Choose ***Tools > Scenario*** will display the *Create Scenario* dialog window as shown in Fig. 4.19.

Fig. 4.19: Create Scenario dialog window

Step 4. Write the name of the Scenario and click on **OK** button will add this in the scenario list.

Step 5. Let us create two more scenarios as LAmt_2 and LAmt_3 with Loan Amount as 2500000, No. of years as 12 and Loan Amount as 2500000, No. of years as 10 respectively. We can define different scenarios to do so on the same sheet, each with some different values in the defined cells. Click on **Tools > Scenario**, write the name of the scenario and click on OK. The Loan sheet will look like as shown in the Fig. 4.20

Fig. 4.20: Loan sheet with scenarios

Step 6. Click on the navigator icon in the toolbar and then click on scenarios. Click on the scenario name will display all the details as per that scenario.

Practical Activity 4.6

Calculate the income tax by entering the salary using different scenarios for two variables income tax slab and tax rate. The sheet should look as shown in Fig. 4.21.
The different scenarios to be taken as given below:

Income Slab	**Tax rate**
7.5 to 10 lakhs	15%
10 to 12.5 lakhs	20%

12.5 to 15 lakhs	25%
>15 lakhs	30%

Fig. 4.21: Income tax sheet

What-if Analysis Tool

What-if tool uses **Data** > **Multiple Operations** and is a planning tool for what-if questions. In this, the output is not shown in the same cells, whereas it uses a drop-down list to display the output depending upon the input. The Multiple Operations tool creates a formula array to display the list of results applying the formula on a list of alternative values used in the formula.

This tool uses two arrays of cells, one array contains the input values and the second array uses the formula and display the result.

It is useful to check in the beginning to understand from the output for the efficiency. What-if analysis tool is very helpful when we want to know how much profit we earn for a particular product for a series of selling units.

Following steps are used for what-if analysis tool:

Let us calculate with one formula and one variable:

Step 1. Enter the data in the cells and then enter a formula to calculate a result from values in other cells.

Step 2. Create an array of input values on the basis of which the output is to be generated using the formula.

Step 3. Select the cell range of input array and output array.

Step 4. Click on ***Data>Multiple Operations*** will display the multiple operations dialog window as shown in Fig. 4.22.

Fig. 4.22: Multiple operation dialog window

Step 5. Enter the cell address in the Formulas box from the sheet which contains the formula

Step 6. Now, enter the cell address of the cell which is a variable and is used in the formula in Column input cell box.

Step 7. Click on ***OK*** will generate all the possible outputs based on the formula.

Practical Activity 4.7

Let us take an example to calculate the profit on annual series of sale depending on the Selling Price, Cost Price and Fixed Cost expenses.

Step 1. Create the sheet as given below in Fig. 4.23

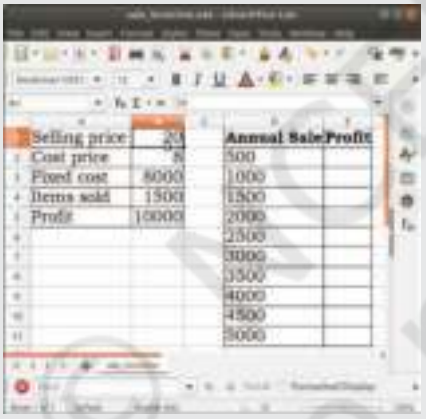


Fig. 4.23: Sale_incentive sheet

Step 2. In Cell B5 enter the formula = B4 * (B1 – B2) – B3

Step 3. Select the cell range from D2:E11

Step 4. Click on **Data > Multiple Operations** will display the Multiple operations dialog window as shown in Fig. 4.24.

Fig. 4.24: Performing Multiple Operations

Step 5. We have formula in cell B5, as we want to use the same cell address to be copied therefore, we have used absolute cell referencing and written it as B5.

Step 6. In this example, we have another variable as number of items sold which is in the cell B4

Step 7. Click on OK will generate a sheet as shown in Fig. 4.25.

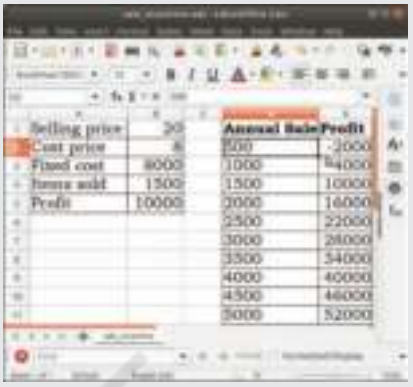


Fig. 4.25: Result for multiple operations

Practical Activity 4.8

Create the following sheet (Fig. 4.26) to calculate the profit and then decide how many books are to be published based on the profit.

Fig. 4.26: Practical exercise

Goal Seek

It general we fill in the values in the cells and then create formula on these values to get the required result. To predict the output, we keep on changing all the input values to obtain the desired output. **Goal seek**

helps in finding out the input for the specific output. For example, if you want to know the number of units produced to get the desired output then use *Goal seek* analysis tool. Follow the following steps to use Goal seek tool.

Step 1. Enter the values in the worksheet.

Step 2. Write the formula in the cell where the calculation has to be used.

Step 3. Place the cursor in the formula cell, choose **Tools > Goal Seek.**

Step 4. The Goal seek dialog window will appear as shown in Fig. 4.27, the Formula cell box will have the correct formula.

Step 5. Place the cursor on the Variable cell box and click on the cell that contains the value to be changed.

Step 6. Enter the desired result in the Target value box.

Step 7. Click on **OK** button.

Fig. 4.27: Goal seek dialog window

Practical Activity 4.9

Let us take a very simple example to perform the backward calculation to find out an input depending upon the specific output. A student has received marks in 4 subjects and has to appear for the 5th subject and plans an aggregate as 70. So, he can use goal seek tool to check how many marks he has to score in the 5th subject to get the required percentage. Follow the following steps to perform this task.

Step 1. Create the marksheet as shown below in the Fig. 4.28. Enter the average function in cell B7 as = Average(B2:B6)

B7 | =AVERAGE(B2:B6)

	A	B	C
1	**Subject**	**Marks**	
2	English	54	
3	Hindi	56	
4	Maths	78	
5	Science	80	
6	So Science		
7	**Average**	67	

Fig. 4.28: Marksheet

Step 2. Click on **Tools > Goal Seek** will display the Goal seek dialog window as shown in Fig. 4.29.

Fig. 4.29: Goal seek dialog window

Step 4. Write the cell address of the formula, i.e. B7 in the Formula cell box.

Step 5. Write the cell address of the cell which is to be generated by the system in the Variable cell box. In this example, it is cell B6 which we want to be filled as per the average marks needed.

Step 6. Enter the result in the Target value box. As per our question, we have to get minimum 70 aggregate so we will write 70 in the target value.

Step 7. Clicking on **OK** will display an error as LibreOffice Calc will not accept the Variable cell to be empty. So, this error dialog window will prompt to add 0 value in the variable cell as shown in Fig. 4.30.

Fig. 4.30: Goal Seek failed alert

Step 8. Click on Yes and then repeat the step 2 will display the dialog window and prompts whether to change the cell with the calculated value as shown in Fig. 4.31.

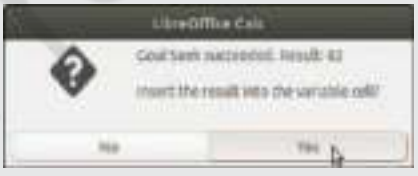
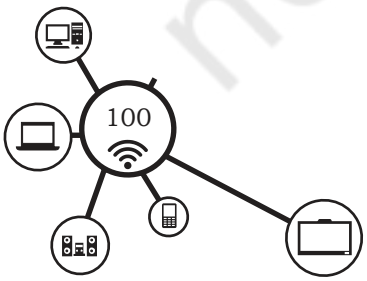


Fig. 4.31: Goal Seek succeeded

Step 9. Click on Yes will change the value with the calculated one in the sheet as shown in the Fig. 4.32.

	A	B
1	**Subject**	**Marks**
2	English	54
3	Hindi	56
4	Maths	78
5	Science	80
6	So Science	82
7	**Average**	**70**

Fig. 4.32: Marksheet after applying Goal seek



Practical Activity 4.10

Create the following spreadsheet (Fig. 4.33) to find out the quantity to be sold for the item Talc so as to get the total amount of 50000.

Item	Unit Price	Quantity sold	Amount
Soap	75	150	11250
Shampoo	120	200	24000
Talc	250	0	0
Total Amount			**35250**

Fig. 4.33: Practical Exercise

Check Your Progress

A. Multiple choice questions

1. Which of the following feature is not used for data analysis in spreadsheet?
   (b) Consolidating data
   (c) Goal Seek
   (d) Subtotal
   (e) Page layout
2. Which of the following office tool is known for data analysis?
   (a) Writer
   (b) Calc
   (c) Impress
   (d) Draw
3. Which of the following operations cannot be performed using LibreOffice Calc?
   (a) Store and manipulate data
   (b) Create graphical representation of data
   (c) Analysis of data
   (d) Mail merge
4. What is the extension of spreadsheet file in Calc?
   (a) .odb
   (b) .odt
   (c) .odg
   (d) .ods
5. The default function while using Consolidate is _____.
   (a) Average
   (b) Sum
   (c) Max
   (d) Count
6. Group by is used in _____ tool to apply summary functions on columns.
   (a) Consolidate function
   (b) Group and Outline
   (c) What-if scenario
   (d) Subtotal tool

7. Which tool is used to predict the output while changing the input?
   (a) Consolidate function
   (b) What-if scenario
   (c) Goal seek
   (d) Fine and Replace
5. Which of the following is an example for absolute cell referencing?
   (a) C5
   (b) C5
   (c) $C
   (d) #C
5. _____ analysis tool works in reverse order, finding input based on the output.
   (a) Consolidate function
   (b) Goal seek
   (c) What-if analysis
   (d) Scenario

B. State whether the following statements are True or False

1. Consolidate function is used to combine information from two or more sheets into one.
2. Consolidate function cannot be used to view and compare data.
3. Link to source data is checked updates the target sheet if any changes made in the source data.
4. Using subtotal in Calc needs to use filter data for sorting.
5. Subtotal tool can use only one type of summary function for all columns.
6. Only one scenario can be created for one sheet.
7. What-if analysis tool uses one array of cells.
8. Goal seek analysis tool is used while calculating the output depending on the input.
9. The output of What-if tool is displayed in the same cell

C. Fill in the blanks

1. Consolidate function is used to combine information from multiple sheets to _____ the information.
2. Data can be viewed and compared in a single sheet for identifying trends and relationships using _____ function.
3. _____ under Data menu can be used to combine information from multiple sheets into one sheet to compare data.
4. The _____ tool in Calc creates the group automatically and applies functions on the grouped data.

5. _____ scenario is used to explore and compare various alternatives depending on changing conditions.
6. _____ is a planning tool for what-if questions.
7. What-if analysis tool uses _____ array of cells, one array contains input values and the second uses the _____.
8. _____ helps in finding out the input for the specific output.

D. Answer the following questions

1. Define the terms
   (a) Consolidate function
   (b) What-if analysis
   (c) Goal seek
2. Give one point of difference between
   (a) Subtotal and What-if
   (b) What-if scenario and What-if tool
3. Give any two advantages of data analysis tools.
4. Name any two tools for data analysis.
5. What are the criteria for consolidating sheets?
6. Which tool is used to create an outline for the selected data?

Lab Exercise

1. Mr Gurdeep has to take a loan of Rs. 10 lakhs to buy a house. After assessing his situation, he has realized that he can pay the loan in 15 years by paying out an EMI of 20,000.
   (a) Use Goal seek to find out the interest rate at which he can borrow the loan.
   (b) Use What If Scenario to depict payment of loan in 25 years by paying out an EMI of 10,000.
   (c) Use Scenario manager to find the best case.
2. Power Motors has 3 branches all over Bhopal. Each branch maintains monthly sales of different models of electric scooter and at the end of month mails it to the State Head. Prepare a consolidated sheet that shows total and average sales made for each model of the electric scooter with respect to the spreadsheet sent by the branches to the head office. You are required to identify the column headings for the various branches, enter data in three different spreadsheets indicating different branches and consolidate data to find total sales and average sales for each model.

Chapter 5 Using Macros in Spreadsheet

Introduction

Many times, we have to perform repeated tasks such as typing school name, address, contact numbers with a specific formatting or apply the same formula at a particular cell for different sheets in a workbook. How easy would it be if we could get this done at the click of a button? This will ensure that we maintain the standardization in terms of font style without any typing mistake. Can you think of any other advantage? In this chapter, you will learn how to use a macro to automate repeated tasks that are always performed in the same way over and over again.

Recording a Macro

A macro is a single instruction that executes a set of instructions. These set of instructions can be a sequence of commands or keystrokes that can be used for any number of times later. A sequence of actions such as keystrokes and clicks can be recorded and then run as per the requirement.

Fig. 5.1: Enabling a Macro

It is important to know that by default the macro recording feature is turned off when LibreOffice is installed on your computer. Hence, to record a Macro ensure that the macro recording is enabled. Macro recording can be enabled using the **Tools** option on the main menu bar by selecting **Tools > Options > LibreOffice > Advanced.** Observe the ***Optional Features***. There are two options which are not check marked. Put the checkmark on the option *"Enable macro recording"* as shown in Fig. 5.1.

Observe in Fig. 5.2, that the ***Record Macro*** option found under **Tools>Macros** is visible now.

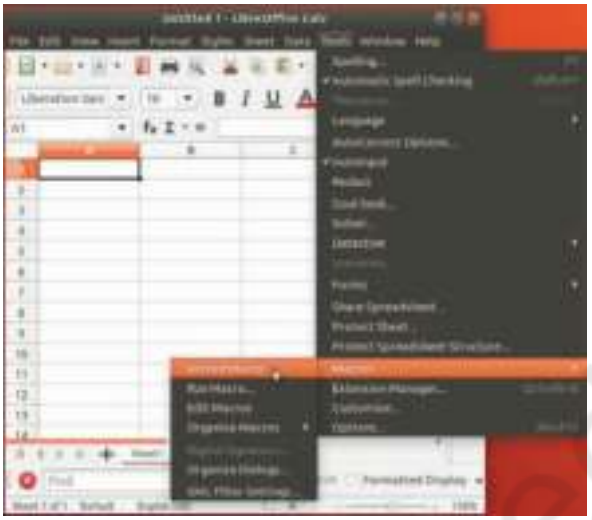


Fig. 5.2: Record Macro option after enabling macro

The Macro records all the keyboard and mouse actions but the following actions are not recorded.

- Opening of windows
- Actions carried out in another window than where the recording was started.
- Window switching
- Actions that are not related to the spreadsheet contents. For example, changes made in the Options dialog, macro organizer, customizing.
- Selections are recorded only if they are done by using the keyboard (cursor traveling), but not when the mouse is used.
- The macro recorder works only in Calc and Writer.

Follow the steps given below to record a macro.

Step 1. Click on **Tools > Macros** and then click on the *Record Macro* option.

Step 2. Now start taking actions that will be recorded.

Step 3. Once you click on *Record Macro* option, recording of actions starts and a small alert will be displayed as shown in Fig. 5.3. Clicking on *"Stop Recording"* button will stop the recording of actions.

Fig. 5.3: Stop Recording button

Step 4. This will open the Basic Macros dialog window to save and run the created macro, as shown in Fig. 5.4.

Fig. 5.4: Basic Macros dialog window

Step 5. To save the macro, first select the object where you want the macro to be saved in the **Save Macro** to list box.

Step 6. The name of the macro by default is ***Main*** and is saved in the **Standard Library** in Module1. You can change the name of the macro.

Step 7. Click on **Save** button.

A Library is a collection of modules which in turn is a collection of macros.

Practical Activity 5.1

Record a macro to apply the following style to the Heading "Data Analysis" in the cell A1.
The font style should be "Times New Roman"
The font size should be "14"
The font colour should be "Blue"
Cells from A1 to G1 should be merged and centred

Procedure

Step 1. Create the spreadsheet. Write the heading *"Data Analysis"* in cell A1.

Step 2. Choose **Tools > Macros > Record Macro**. Perform the actions mentioned above in Practical Activity 5.1 in the spreadsheet.

Step 3. Click **Stop Recording** to stop the Macro Recorder.

Step 4. The Basic Macro dialog appears as shown in Fig. 5.4, in which you can save and run the macro.

Step 5. A **Standard** library is present by default when a spreadsheet is created and saved.

Step 6. To save the macro, first select the object where you want to save the macro in the **Save macro in** list box. Fig. 5.5 shows that the **Main** macro is saved by default in the **Standard Library** in **Module1**. You can change the name of the macro. Here, we have named the macro as ***FormatHeading***.

Fig. 5.5: Naming a Macro

***Note** : If all the macros will be given the same name then they will overwrite the previous Macro created by that name.*

Rules for naming a Macro, Module or a Library:
While naming a Macro, Module or a Library the name should :

- Begin with a letter
- Not contain spaces
- Not contain special characters except for _ (underscore)

Running a Macro

Let us now run the macro for another sheet which requires its heading in cell A1 to be given the same format as recorded in the *Formatheading* macro. To run a macro we need to perform the following steps.

Step 1. Type the heading in cell A1

Step 2. Use **Tools > Macros > Run Macro** to open the Macro Selector dialog box as shown in Fig. 5.6.

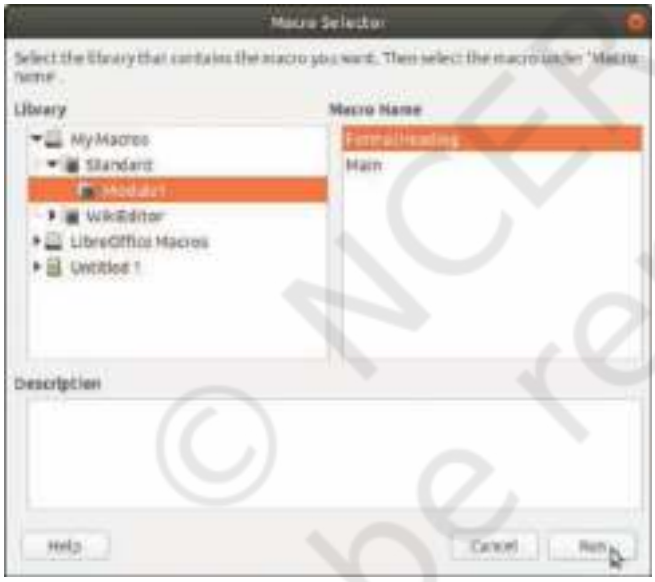


Fig. 5.6: Selecting and runnig a Macro

Fig. 5.6 shows three names in the library. Out of which

- *LibreOffice Macros library* is provided by LibreOffice and contains modules with pre recorded macros and should not be changed.
- *My Macros* contain macros that we write or add to LibreOffice.
- *Untitled1* is the name of the worksheet we are working on. Since at this time we have not saved

the worksheet with another name it is showing *Untitled1*. You will see further that Untitled1 will be replaced with the name of the spreadsheet.

Step 3. Select the library and module in the Library list.

Step 4. Select the macro in the Macro name list.

Step 5. Click **Run** to run the macro.

Practical Activity 5.2

Run a previously created Macro *Formatheading*.

Step 1. Type the heading in cell A1.

Step 2. Open the Macro selector dialog box by clicking **Tools -> Macros-> Run Macro**

Step 3. Click on **MyMacros > Standard > Module1**. Then select *Formatheading* from the **Macro Name box** and click **Run** as shown in Fig. 5.6.

You will observe that the Heading in Cell A1 is formatted.

The action recorded by a macro is recorded as instructions in a programming language called BASIC. It is also possible to view and thus edit the code of a macro. But remember, it is advised to edit a macro only if you have knowledge of the language in which the macro is written which is BASIC in case of CALC. You can view the code generated for the macros by going to Tools > Macros > Edit Macros.

Choose the macro name from the *Object Catalog* and the associated code will be visible as shown in Fig. 5.7.

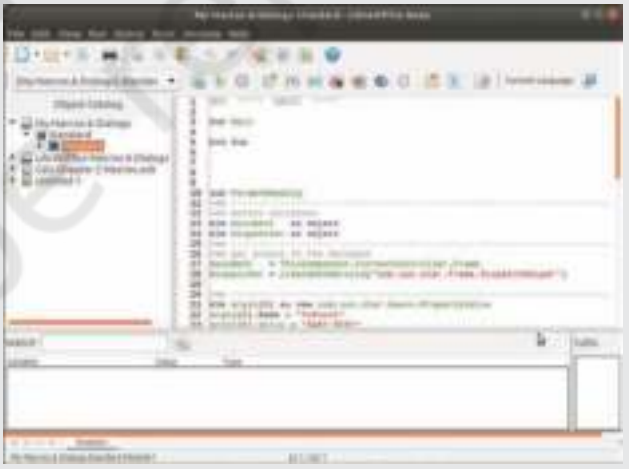


Fig. 5.7: Code generated for macro in IDE

Warning **–** Do not make any changes to the code unless you are aware of the language.

Note – The code of a macro begins with Sub followed by the name of the macro and ends with End Sub .

Creating and Organising a Simple Macro

Till now we have learned to record, store and run the macro. The recorded macro is internally stored as instructions written in a programming language that are executed when the macro is executed or run.

We selected a library or module to store our recorded macro, similarly while creating a macro, either create a new library/module or edit an existing module stored in a library. Use the following steps to organize the macro.

Step 1. Click on **Tools > Macros > Organize Macros > LibreOffice Basic** to open the LibreOffice Basic Macro dialog window as shown in Fig. 5.8.

Step 2. Click **Organizer** to open the Basic Macro Organizer dialog as shown in Fig. 5.9.

Fig. 5.8: Basic Macro dialog window

Fig. 5.9: LibreOffice Basic Macro Organiser

Create a library to store a macro

To create a new library containing modules, click on **Library > New**.

Use the following steps to create a module to store a macro.

Choose the **Modules** Tab and select a **Module**. Click on **New** to create a new Module.

Practical Activity 5.3

Create a simple Macro using BASIC programming instructions that will display Hello in a dialog box stored in the Standard module as shown in Fig. 5.10 when executed.

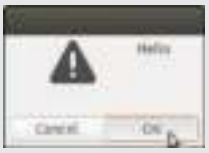


Fig. 5.10: A Dialog Displaying Hello using macro

Step 1. Open the LibreOffice Basic Macro dialog box using **Tools > Macros > Organize Macros > LibreOffice Basic.**

Step 2. From the **Basic Macros dialog box** select **Organizer**

Step 3. From **Modules** tab, select **My Macros** folder and click on **New** button as shown in Fig. 5.11.

Fig. 5.11: Creating a Module with name Hello

Step 4. Give a name to the New Module say '*Hello*' and click **Ok.** You will see ***Hello*** under Standard Library in ***My Macros*** Library.

Fig. 5.12: Module Hello in Basic Macro Organizer Dialog

Step 5. Select Hello and click **Edit** (Fig. 5.12) to open the Integrated Development Environment (IDE). It is a text editor that allows you to create and edit macros. Type Print "Hello" between Sub Main and End Sub as shown in Fig. 5.13.

Fig. 5.13: Code of Hello Macro

The created module can be executed as explained in the previous section. Besides, the module can be executed from the IDE by either clicking the Run button or pressing F5.

Macro as a Function

Consider a situation wherein you need to perform calculations that are repetitive in nature. Assume that the same formula needs to be applied to different data in different sheets and there is no predefined function for it. In such a situation will it not be convenient if we could create a macro that performs the calculations? It will save us the effort of remembering and typing the formulas. It is possible to do so if we use Macro as a function. Instead of writing instructions in between Sub and End Sub, we can write instructions in between Function and End Function. A function is capable of accepting arguments or values. It can perform operations on the arguments, perform calculations and return the result.

Practical Activity 5.4

Calculate the number of tiles required for flooring of a room using macro as a function. The length and width of the room and the length and width of a tile is entered in the sheet as shown in Fig. 5.14.

	A	B	C	D	E
1	Length of the room (in feet)	Width of a room (in feet)	Length of a tile (in feet)	Width of a tile (in feet)	Number of tiles required for the room
2	10	10	2	2	
3	18	24	4	4	
4	12	14	3	2	
5	30	40	5	5	

Fig. 5.14: Sheet storing length and width of floor and tile

Step 1. Enter data in a sheet and save it with the name as *Calculatetiles.ods*

Step 2. Select **Tools > Macros > Organize Macros > LibreOffice Basic** to open the LibreOffice Basic Macros dialog.

Step 3. Choose *Calculatetiles.ods*. Click on New and type a name. We have named it as Calctiles as shown in Fig. 5.15 and press **OK**.

Fig. 5.15: Creating a New Module to define function

Step 4. Write a function to calculate the number of tiles. A function starts with Function followed by the name of the function and then the statements to calculate area of the floor, tiles and number of tiles and store the final result in the name of the function as shown in Fig. 5.16. Press the **Save** button on the toolbar or press **Ctrl+S**.

Fig. 5.16: IDE showing function definition to calculate number of tiles

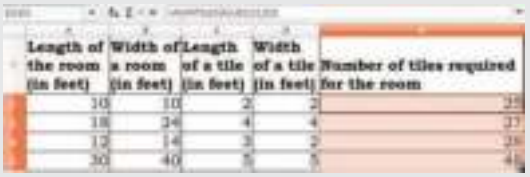
Note: The text in grey is preceded by ' (single quote) indicating it is a comment. A comment is written to write descriptive text to support the code.

Step 5. Use the function in the sheet as shown in Fig. 5.17.

	Length of the room (in feet)	Width of a room (in feet)	Length of a tile (in feet)	Width of a tile (in feet)	Number of tiles required for the room
2	10	10	2	2	=NUMTILES(A2;B2;C2;D2)
3	16	24	4	4	
4	12	14	3	2	
5	30	40	5	5	

Fig. 5.17: Sheet using Macro as a function

Step 6. Use fill handle to drag the function for other cells. The final sheet is shown in Fig. 5.18.



	Length of the room (in feet)	Width of a room (in feet)	Length of a tile (in feet)	Width of a tile (in feet)	Number of tiles required for the room
2	10	10	2	2	25
3	18	24	4	4	27
4	12	14	3	2	28
5	30	40	5	5	48

Fig. 5.18: Displaying Number of tiles using Macro as a function

Check Your Progress

A. Multiple choice questions

1. Macro Recordings can be enabled from the _____ option in the menu bar.
   (a) Sheet
   (b) Data
   (c) Tools
   (d) Window.
2. Which of the following is an invalid Macro Name?
   (a) 1formatword
   (b) format word
   (c) format*word
   (d) Format_word.
3. Which of the following Libraries contains modules with prerecorded macros and should not be changed?
   (a) My Macros
   (b) LibreOfficeMacros
   (c) Untitled1
   (d) Test.
4. Identify which of the following is a programming Language?
   (a) Calc
   (b) BASIC
   (c) Writer
   (d) Macro.
5. The Module can be executed from the IDE by pressing _____.
   (a) F3
   (b) F4
   (c) F5
   (d) F6
5. Which of the following is the default name of the Macro _____.
   (a) Default
   (b) Main
   (c) Macro1
   (d) Main_Macro

B. Fill in the blanks

1. _____ library is automatically loaded when the document is opened.
2. IDE stands for _____.
3. Macro as a function is capable of accepting _____ and returning a _____.
4. Macro _____ allows us to add, delete a module.
5. The code of macro begins with _____ followed by the name of the macro and ends with _____.
6. By default a macro is saved in the _____ .

C. State whether the following statements are True or False

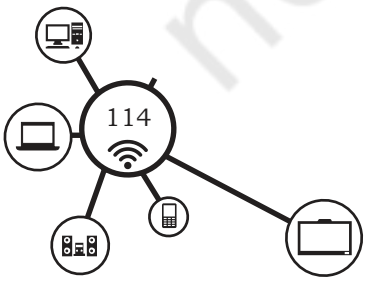
1. Macro is a group of instructions executing a single instruction.
2. Once created, Macro can be used any number of times.
3. By default, the Macro recording feature is turned on.
4. It is not possible to stop recording of a Macro.
5. Every Macro should be given a unique name.
6. A macro once created can be edited later.

D. Answer the following questions

1. What is a Macro? List any two real life situations where they can be used.
2. List the actions that are not recorded by a macro.
3. How is LibreOffice Macros Library different from my Macros?
4. Differentiate between predefined function in Calc and Macros as a function
5. List the rules that should be kept in mind while naming a macro.
6. Give any one advantage of macros.

Lab Exercises

1. Record a Macro that performs Bold, Underline on the Heading in Cell A1. Give macro the name BoldunderlineA1 and save it in a New Module named Basic Formatting which is created in a New Library named DocumenHeadingA1.
2. Record a Macro that creates a bar chart for data stored in cells A2 – A9 and K2 to K9.
3. Run the macro recorded in (i) and display a barchart for the following data showing Minimum and Maximum temperature from 2010-2017.



Year	Annual -Min	Annual -Max	Jan-Feb-Min	Jan-Feb-Max	Mar-May-Min	Mar-May-Max	Jun-Sep-Min	Jun-Sep-Max	Oct-Dec-Min	Oct-Dec-Max
2010	20.15	30.13	14.51	25.96	22.09	33.47	23.57	31.43	17.42	27.78
2011	19.58	29.82	13.84	25.33	20.68	32.07	23.56	31.55	17.16	28.23
2012	19.54	29.81	13.68	25.03	20.78	32.33	23.68	31.77	16.8	27.88
2013	19.83	29.81	14.38	25.58	21.14	32.58	23.61	31.33	16.82	27.83
2014	19.77	29.72	14.26	24.9	20.66	31.82	23.8	32	17.2	27.81
2015	19.96	29.9	14.53	25.74	20.91	31.68	23.62	31.87	17.75	28.27
2016	21.28	31.63	16.17	28.33	23.15	34.57	24.61	32.28	18.37	30.03
2017	21.17	31.42	15.72	27.95	22.68	34.13	24.58	32.41	18.73	29.69

Source: https://data.gov.in/resources/seasonal-and-annual-minmax-temp-series-india-1901-2017

Collect information about the population of the South Asian countries form the Internet and store it in a Calc sheet. Run the Macro created in (i) to display a chart for the data stored.

Create Macro as a function to calculate Amount to be paid after a 5% discount. A sample sheet for the same is given below.

Sn	Item name	Price per unit	No. of units	Total amount after 5% discount
1	Toothpaste	35	150	
2	Tooth brush	15	120	
3	Mouthwash	120	80	
4	Sanitizer	50	150	

Fig. 5.19: Lab Exercise 5

4. Anuja has to create a Marks list for every term. The format is as follows :

Mark List																	
Roll No.	Student Name	English			Hindi			Maths			Science			Social Science		
		50	100	150	50	100	150	50	100	150	50	100	150	50	100	150

Fig. 5.20: Sample Sheet for Marks Entry

(a) Record two macros to create the format given in Fig. 5.20.

(b) To enter names of students in the list so that she doesn't need to retype or copy the names

Run the above created macros for a new sheet.

5. Use Macro as a function to calculate Mileage of a vehicle. Mileage (in km/L) is calculated as Distance Travelled (in km)/ Fuel filled (in Litre). Create a sheet with three columns Distance Travelled (in Km), Fuel filled (in L) and Mileage (in km/L).

Chapter 6 Linking Spreadsheet Data

Introduction

We have learned in Class IX to organise the data in a spreadsheet. Let us take a situation where the marks scored by each student of three terms in three terminal examinations are stored in three different sheets Term1, Term2, Term3. Now to generate final result in single result sheet by finding the average marks of each subject, what would be the ideal solution?

Retyping or copying the marks can be one solution but it will be time consuming and also there are chances of committing typing errors.

Instead, the ideal solution will be to find a way to refer the marks stored in the sheets Term1, Term2 and Term3. In this manner, there are nearly no chances of errors and if the marks of a subject are changed, they will be reflected and thus ensuring correctness while performing calculations, such as calculating average.

In this chapter, we will learn how to create multiple sheets, and also to link the data in multiple sheets. It can be done in two ways, one is creating reference to other sheets/documents by using keyboard and mouse, and other is by linking external data.

Term 1
Class X

Roll No	Name	English	Hindi	Maths	Science	So. Sci.	Total	Percentage
1	Arush Oberoi	65	84	33	30	69	281	56.2
2	Anshul Agrawal	31	41	87	57	35	251	50.2
3	Faizan Sethi	77	46	72	35	65	297	59.4
4	Himanshu Arora	76	79	33	73	76	337	67.4
5	Seema Malik	41	93	32	87	29	302	60.4
6	Dhruv Bharti	90	84	93	43	54	363	72.6
7	Gagandeep Singh	30	90	39	44	59	262	52.4
8	Sanya Rao	93	74	42	84	48	341	68.2
9	Shrey Kalra	62	8	74	93	86	323	64.6
10	Harman Bhogal	37	27	28	61	48	191	38.2

Fig. 6.1: Marks scored by students in Term1

Setting up Multiple Sheets

Let us consider a worksheet storing marks of the first term in a sheet named Term1 as shown in Fig. 6.1.

To add a new sheet in the spreadsheet, click on the Add Sheet by clicking on the (+) sign located in the left bottom of the spreadsheet.

Alternatively, you can right click anywhere on the sheet tab and select Insert sheet option from the drop-down list displayed as shown in Fig. 6.2. It gives us a choice to put the new sheet, assign the name of the sheets, delete a sheet and so on.

Note: Insert Sheet dialog box can be invoked from the menu option **Sheet > Insert Sheet**

Fig. 6.2: Inserting a new sheet using context menu displayed after right click option

Practical Activity 6.1

Add a new sheet to store data for Term2 in the spreadsheet by using the Insert Sheet Dialog box.

Step 1. Open the **Insert Sheet** Dialog and add a sheet after the current sheet by selecting **After Current Sheet** option. The current sheet is our active sheet which in this case is Term1 as shown in Fig. 6.1.

Step 2. Name the Sheet as Term2 as shown in Fig. 6.3.

Fig. 6.3: Insert sheet dialog

Step 3. Enter the marks obtained by the students in second term in Term2 sheet as shown in Fig. 6.4.

Step 4. Insert a new sheet and name it as "Result".

Term II Class X								
Roll No	Name	English	Hindi	Maths	Science	So. Sci.	Total	Percentage
1	Ayush Oberoi	60	75	45	45	67	292	58.4
2	Anshul Agrawal	40	45	88	54	56	283	56.6
3	Faizan Salfi	72	44	65	45	65	291	58.2
4	Himanshu Arora	71	67	45	65	56	304	60.8
5	Heena Malik	56	76	56	67	45	300	60
6	Dhruv Bharti	76	71	89	56	55	347	69.4
7	Gagandeep Singh	33	83	48	45	56	264	52.8
8	Ramya Rao	91	77	47	78	53	346	69.2
9	Shrey Kabra	60	40	77	87	84	348	69.6
10	Harman Bhugal	34	45	45	71	53	248	49.6

Fig. 6.4: Marks scored by students in Term2

Note: You can use the macro created by you in the previous chapter to create the format of the result sheet and populate the name of the student column to save time.

Creating Reference to Other Sheets by Using Keyboard and Mouse

We have been using cell references for applying functions and formulas in class IX. In this section we will learn how to reference cells in other sheets using mouse and keyboard.

To calculate the final result, it is required to store the final marks for each subject in the sheet named *"Result"* inserted in Activity 6.1 by applying the formula (Marks obtained in Term1 + Marks obtained in Term2)/2. As we know that marks obtained in Term1 and Term2 are stored in different sheets named Term1 and Term2 respectively.

To calculate the final marks for English in in the cell C4 of Result sheet, as shown in Fig. 6.5, follow the following steps.

Step 1. First copy the Roll No and Name of the Student from Term1 sheet to Result sheet, copy all headings of and give the name as Final Result.

Step 2. Click on the = icon next to the input line (or type = in cell C4), type Sum() and click between the brackets.

Step 3. Now click on the Term1 sheet and click the English Marks for the first student and add (,) comma for the next value

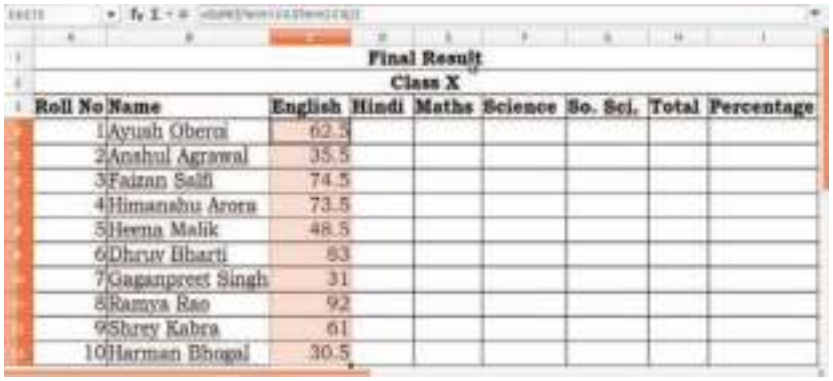
Step 4. Next click on the Term 2 sheet and click the English Marks for the first student.

Step 5. To calculate average type /2 after the sum(+) as shown in Fig. 6.5 to calculate average.

Step 6. Press *Enter key*, the average is displayed in cell C4 of *Result* sheet. Then use fill handle to fill the cells up to the last student's data.

Step 7. The result sheet gives the average marks scored by each student in English as shown in Fig. 6.5.

Step 8. You can copy the same formula for other subjects.



Final Result								
Class X								
Roll No	Name	English	Hindi	Maths	Science	So. Sci.	Total	Percentage
1	Ayush Oberoi	62.5						
2	Anshul Agrawal	35.5						
3	Faizan Salfi	74.5						
4	Himanshu Arora	73.5						
5	Heena Malik	48.5						
6	Dhruv Bharti	93						
7	Gaganpreet Singh	31						
8	Ramya Rao	92						
9	Shrey Kabra	61						
10	Harman Bhopal	30.5						

Fig. 6.5: Result sheet after referencing the data from Term1 and Term2 sheets

Any changes made to marks in Term1 and Term2 sheet will be reflected in the result sheet as well. That is how the sheets are linked together.

We had selected cell reference by clicking on the cells. An alternative could be to type the reference. First, we need to understand how referencing is performed across sheets in the same spreadsheet document.

Hence, to refer to a cell in another sheet precede the cell reference with a '$' sign. It is then followed by the name of the sheet in **' '** (single quotes) followed by a **.** (dot) and then the cell address. For example, to refer a cell C4 of sheet named Term1 we will type:

$'Term 1'.C4

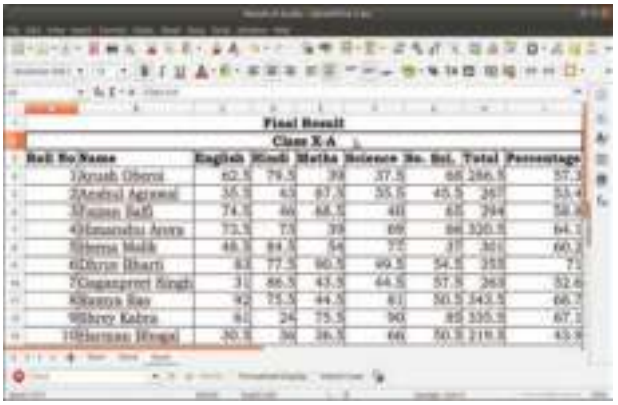
Note: Single quotes (**' '**) are used as there is a space between Term and 1 in the sheet name.

Let's Practice– Calculate Final marks for all the subjects by referencing with Keyboard for one of the columns and mouse for other columns.

Creating Reference to Other Documents by Using Keyboard and Mouse

In the previous section we had0 created references to other sheets in a spreadsheet. Sometimes we may intend to reference sheets stored in another spreadsheet file.

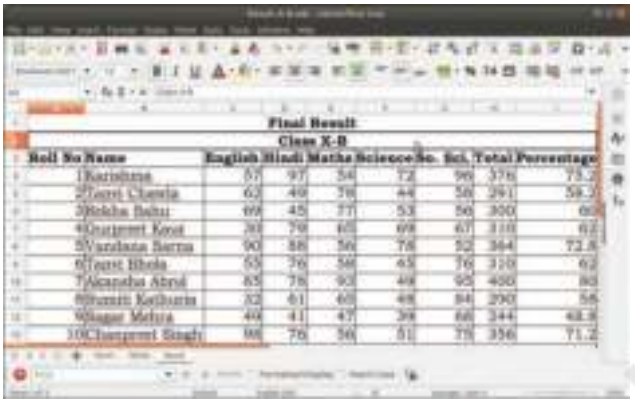
Let us consider a situation where it is required to create a Summary report consisting of the average of result sheets for each section of a class. To do so, we need to insert sheets that are stored in different files. Fig. 6.6 shows the final result of class X-A and Fig. 6.7 shows Final Result of class X-B.



Final Result
Class X-A

Roll No	Name	English	Hindi	Maths	Science	So. Sci.	Total	Percentage
1	Arush Dhoni	62.5	79.5	39	37.5	68	286.5	57.3
2	Arshvi Agrawal	55.5	63	67.5	55.5	45.5	267	53.4
3	Yasin Safi	74.5	66	68.5	48	65	294	58.8
4	Anandita Arora	73.5	73	39	69	86	330.5	84.1
5	Hema Malik	48.5	84.5	54	72	37	301	60.2
6	Divya Bharti	83	77.5	80.5	49.5	54.5	355	71
7	Gaganpreet Singh	31	86.5	43.5	44.5	57.5	263	52.6
8	Kavya Rao	92	75.5	44.5	81	50.5	343.5	68.7
9	Shrey Kabra	61	24	75.5	90	85	335.5	67.1
10	Harman Bhagat	30.5	30	36.5	66	50.5	219.5	43.9

Fig. 6.6: Result of class X-A stored in Result-X-A spreadsheet



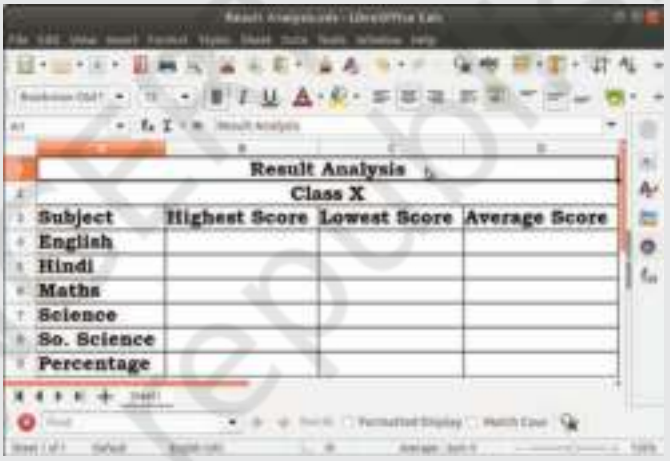
Final Result
Class X-B

Roll No	Name	English	Hindi	Maths	Science	So. Sci.	Total	Percentage
1	Karishma	57	97	54	72	96	376	75.2
2	Tanvi Chawla	62	49	76	44	50	291	58.2
3	Rekha Babu	69	45	77	53	56	300	60
4	Gurpreet Kaur	70	79	65	69	67	310	62
5	Varshana Sarna	90	88	56	78	52	364	72.8
6	Tanvi Bhola	55	76	58	45	76	310	62
7	Akansha Abrol	85	78	93	49	95	400	80
8	Pranit Kathuria	32	61	60	48	84	290	58
9	Sagar Mehra	44	41	47	39	68	344	68.8
10	Charanpreet Singh	98	76	56	51	75	356	71.2

Fig. 6.7: Result of class X-B stored in Result-X-B spreadsheet

Practical Activity 6.2

Create Summary of result in a spreadsheet document named *Result Analysis* of class X-A and X-B as shown in Fig. 6.8.



Result Analysis
Class X

Subject	Highest Score	Lowest Score	Average Score
English			
Hindi			
Maths			
Science			
So. Science			
Percentage			

Fig. 6.8: Result Analysis spreadsheet

Since the marks of both the classes are stored in separate spreadsheet file and Result Analysis itself is a separate spreadsheet, therefore we need to create reference to other spreadsheets.

Step 1. Open the spreadsheets namely *Result-X-A, Result-X-B* and *Result Analysis*.

Step 2. Click on cell B4 of *Result Analysis* spreadsheet and type =MAX(), as shown in Fig. 6.9.

Step 3. Click between the brackets of MAX() and then click on the cell range containing marks of English in *Result sheet* of *Result-X-A* spreadsheet.

Step 4. Type (,) comma and click on the cell containing marks of English in the *Result* sheet of *Result-X-B* spreadsheet.

Step 5. Press Enter, Maximum of the marks will be displayed in cell B4 as shown in Fig. 6.9.

Fig. 6.9: Displaying the highest score in English using Max function

We had selected cell reference by clicking on the cells in the separate spreadsheet and an alternative could be to type the reference. First, we need to understand how referencing is performed across different spreadsheet files.

To refer to a cell in a different spreadsheet we write in single quotes the path of the file followed by #$ then the name of the sheet followed by a **.** (dot) and then the cell address.

For example: 'file:///C:/Users/ADMIN/Documents/X-A.ods'#$Result.C4

Note : The path of a file has three forward slash ///. A filename can have space within its name hence single quotes (' ') are used.

It is also possible to insert a sheet from another file. The **From file** option of **Insert Sheet Dialog box** allows us to insert sheet from another file as well (refer Fig. 6.10).

Insert a sheet from an existing file into the current document.

Practical Activity 6.3

Step 1. To insert the sheet *"Result"* from *Result-X-A* spreadsheet in the *Result Analysis* spreadsheet, open the *Result Analysis* spreadsheet.

Step 2. Select **Sheet > Insert Sheet > From File** as shown in Fig. 6.10.

Step 3. Click on ***Browse*** button, which will open a file selection dialog box.

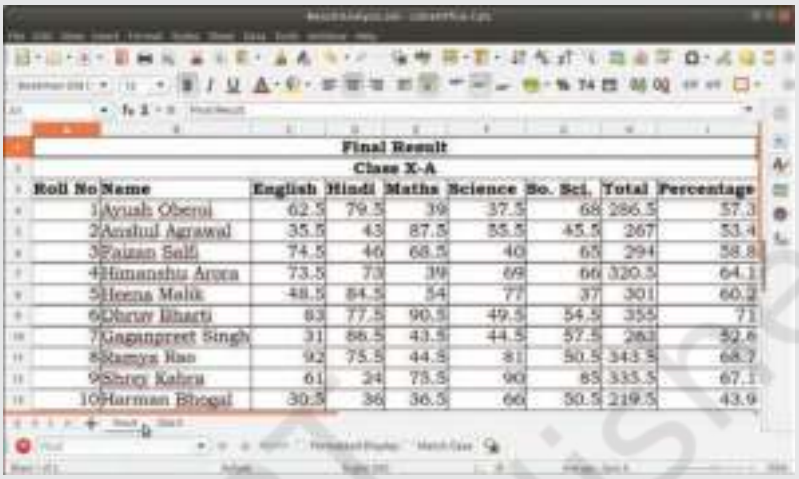
Step 4. Select the file from which you want to import the sheets. After selecting the file, the sheets contained in it are displayed in the list box, as shown in Fig. 6.10. The file path is displayed below this box. Select the sheet to be inserted from the list box.

Fig. 6.10: Inserting Result sheet of Result-X-A spreadsheet into Result Analysis spreadsheet

Step 5. Click on the required *"Result"* sheet from the file *"Result-X-A.ods"* as shown in Fig. 6.10.

Step 6. Check the Link checkbox to ensure that the changes made in the selected sheet "*Result"* are reflected.

Step 7. Press **OK**. You will find the ***Result*** sheet added to the sheet tab as shown in Fig. 6.11.



Final Result								
Class X-A								
Roll No	Name	English	Hindi	Maths	Science	So. Sci.	Total	Percentage
1	Ayush Oberoi	62.5	79.5	39	37.5	68	286.5	57.3
2	Anshul Agrawal	35.5	43	87.5	55.5	45.5	267	53.4
3	Faizan Saifi	74.5	46	68.5	40	65	294	58.8
4	Himanshu Arora	73.5	73	39	69	66	320.5	64.1
5	Heena Malik	48.5	84.5	54	77	37	301	60.2
6	Dhruv Bharti	83	77.5	90.5	49.5	54.5	355	71
7	Gagnpreet Singh	31	86.5	43.5	44.5	57.5	263	52.6
8	Samya Rao	92	75.5	44.5	81	50.5	343.5	68.7
9	Shrey Kalra	61	24	75.5	90	85	335.5	67.1
10	Harman Bhogal	30.5	36	36.5	66	50.5	219.5	43.9

Fig. 6.11: Result sheet added to the sheet Tab of ResultAnalysis

You could have also copied and pasted data but linking a sheet allows us to always have access to *"live"* data from another spreadsheet. A *"live"* data means that the data is always the same as in the original file.

The links can be updated by selecting **Tools > Options > LibreOffice Calc > General > Updating**, as shown in Fig. 6.12, whenever the file is opened to ensure that you have access to the updated data always.

Fig. 6.12: Selecting online update option

Hyperlinks to the Sheet

Sometimes it is required to jump to a document stored at a different location from within a document. It can be done by creating a hyperlink. It is possible to jump from a sheet in the same spreadsheet, different spreadsheet or a website by creating a hyperlink.

Relative and Absolute Hyperlinks

A hyperlink can be either *absolute* or *relative*. An absolute hyperlink stores the complete location where the file is stored. So, if the file is removed from the location, absolute hyperlink will not work. For example: C:\Users\ADMIN\Downloads\try.ods is an absolute link as it defines the complete path of the file.

A *relative* hyperlink stores the location with respect to the current location. *For example: Admin\Downloads\try.ods* is a relative hyperlink as it is dependent on the current location and thus the folder admin is searched where the active spreadsheet is being stored. If the complete folder containing the active spreadsheet is moved the relative link will still be accessible as it is bound to the source folder where the active spreadsheet is stored.

Creating Hyperlinks

It is possible to hyperlink a sheet of other spreadsheet document in a spreadsheet. Suppose, you have to hyperlink a *Result* sheet of "Result-X-A" spreadsheet document in the *"Result-X-B"* spreadsheet document, then follow the following steps:

Step 1. Open the Result-X-B spreadsheet document.

Step 2. From the main menu, select and click on **Insert > Hyperlink.** An Hyperlink dialog box will open as shown in Fig. 6.13.

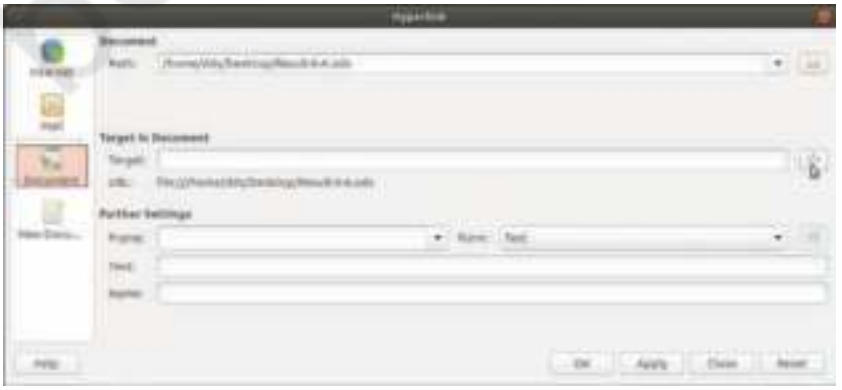


Fig. 6.13: Hyperlink dialog box

Step 3. To insert the spreadsheet document, click on the **Document** on the left pan of dialog box, then to select the spreadsheet document, click on the button located after the Path. Select the required document. In our case we select the spreadsheet document *"Result-X-A".*

Step 4. Then click on the **Target** button to choose the sheet which is to be hyperlinked. *Target in Document* helps to specifically choose a target in the document such as sheet, tables, frames, images, headings and so on. Here in our case we will select the sheet *Result* as shown in Fig. 6.13.

Step 5. Click on **Apply** and **Close** button to exit the Target Document window.

Step 6. Enter the text in the Text box to assign the hyperlink to that text. In our case we have entered the text as "Result-X-A" as shown in Fig. 6.14. So the hyperlink will be assigned to the text "Result-X-A".

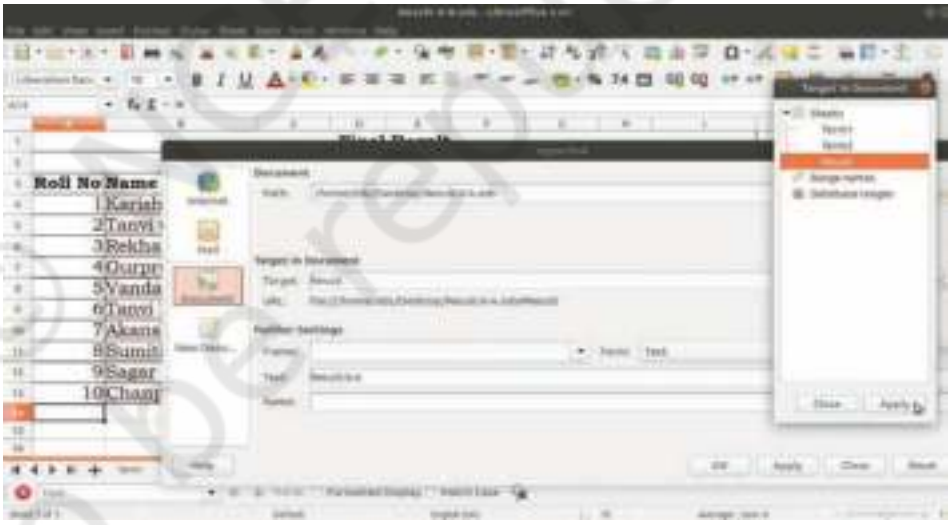
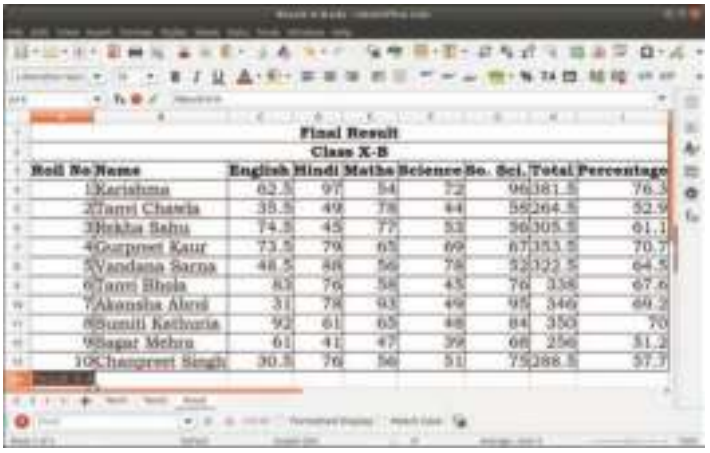


Fig. 6.14: Specifying Target and Text for inserting a Hyperlink

Step 7. Click on **Apply** and **Close** button to confirm the changes and exit the Hyperlink dialog box.

Step 8. Observe that the hyperlink is assigned to the word "Result-X-A" as shown in Fig. 6.15.

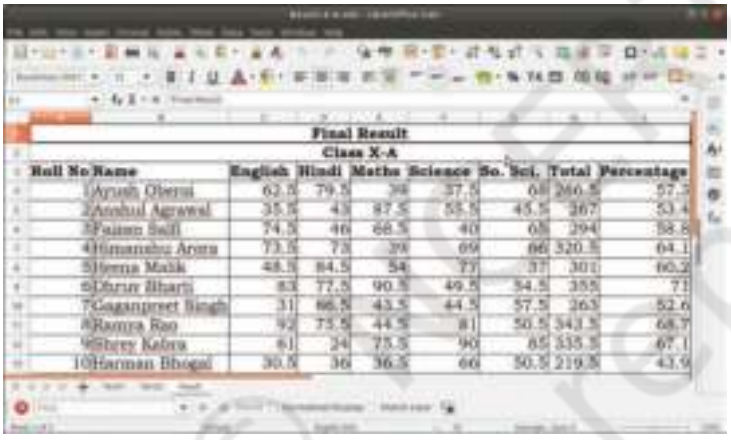


Final Result
Class X-B

Roll No	Name	English	Hindi	Maths	Science	So. Sci.	Total	Percentage
1	Karishma	62.5	97	54	72	96	381.5	76.3
2	Tanvi Chawla	35.5	49	78	44	58	264.5	52.9
3	Rekha Sahu	74.5	45	77	53	56	305.5	61.1
4	Gurpreet Kaur	73.5	79	65	69	67	353.5	70.7
5	Vandana Sarna	48.5	46	56	78	52	322.5	64.5
6	Tanvi Bhola	83	76	58	45	76	338	67.6
7	Akansha Abrol	31	78	93	49	95	346	69.2
8	Sumiti Kathuria	92	61	65	48	84	350	70
9	Sagar Mehra	61	41	47	39	68	256	51.2
10	Changreet Singh	30.5	76	56	51	75	288.5	57.7

Fig. 6.15: Hyperlink inserted in the spreadsheet

Step 9. To open the hyperlinked sheet, press the ***Ctrl*** key and click on the hyperlinked word "Result-X-A", the sheet will be opened in the new window as shown in Fig. 6.16.



Final Result
Class X-A

Roll No	Name	English	Hindi	Maths	Science	So. Sci.	Total	Percentage
1	Ayush Oberoi	62.5	79.5	39	37.5	68	286.5	57.3
2	Anshul Agrawal	35.5	43	87.5	55.5	45.5	267	53.4
3	Param Sidl	74.5	46	66.5	40	68	294	58.8
4	Himanshu Arora	73.5	73	39	69	66	320.5	64.1
5	Seena Malik	48.5	84.5	54	77	37	301	60.2
6	Dhruv Bharti	83	72.5	90.5	49.5	54.5	355	71
7	Gagandeep Singh	31	66.5	43.5	44.5	57.5	263	52.6
8	Ramya Rao	92	73.5	44.5	81	50.5	343.5	68.7
9	Shrey Kalra	61	24	75.5	90	65	335.5	67.1
10	Harman Bhogal	30.5	36	36.5	66	50.5	219.5	43.9

Fig. 6.16: Hyperlinked sheet open in new window

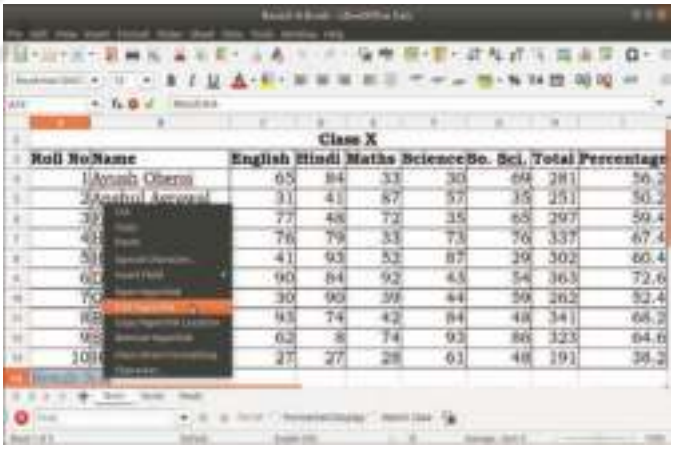
Let's Practice

Create a Hyper link to Result Analysis spreadsheet.

Editing a Hyperlink

To edit an existing link, place the cursor anywhere in the link and right click the hyperlink. A context menu will be displayed as shown in Fig. 6.17.

Click on **Edit Hyperlink...**, the Hyperlink dialog box will be displayed, where you can make changes to the hyperlink.



Class X

Roll No	Name	English	Hindi	Maths	Science	So. Sci.	Total	Percentage
1	Ayush Oberoi	65	84	33	30	69	281	56.2
2	Anshul Agrawal	31	41	87	57	35	251	50.2
3		77	46	72	35	68	297	59.4
4		76	79	33	73	76	337	67.4
5		41	93	53	87	39	302	60.4
6		90	84	92	43	54	363	72.6
7		30	90	39	44	59	262	52.4
8		93	74	42	84	48	341	68.2
9		62	8	74	93	86	323	64.6
10		27	27	28	61	48	191	38.2

Fig. 6.17: Selecting Edit Hyperlink from context menu on right clicking the Hyperlink

On clicking the **Remove Hyperlink** option, the link will be removed from the text and thus it will not point to any other location.

Linking to External Data

Internet is a rich source of information, which is stored in the form of web pages. The web pages are written in HTML documents. Data on a web page can be stored in the form of tables.

The versatility of a spreadsheet allows us to insert tables from HTML documents into Calc. To insert the tables from a HTML document, we can use the External Data Dialog box. The steps for the same are given below.

Step 1. Open the spreadsheet where external data is to be inserted.

Step 2. Select the cell to store the first cell of the table in the external data.

Step 3. Select **Sheet > Link to External Data**.

Step 4. **The External Data dialog box** is displayed as shown in Fig. 6.18. Type the URL of the source document or select it from the drop-down list if it is listed and press enter.

Step 5. A dialog box is displayed to select the language for import as shown in Fig. 6.18. Selecting Automatic shows data in the same language as in the webpage.

Fig. 6.18: Slecting language to import for the webpage

Let us Practice

Create a Hyper link to Result Analysis spreadsheet.

From the Available Tables/Ranges list, choose the desired table. If you choose *HTML_all* option, then the entire HTML document is selected. Here in our example suppose we select HTML_10 table to insert as shown in Fig. 6.19.

Fig. 6.19: Inserting a table from a webpage

The table is inserted in the spreadsheet as shown in Fig. 6.20.

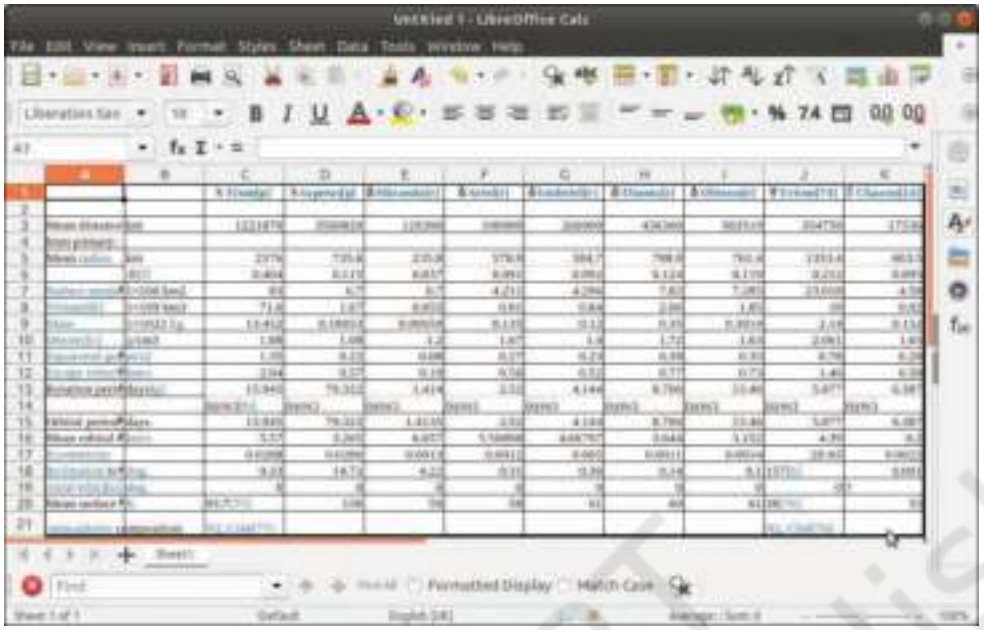


Fig. 6.20: HTML_10 table inserted from the webpage https://en.wikipedia.org/wiki/List_of_gravitationally_rounded_objects_of_the_Solar_System#Planets

Linking to Registered Data Sources

LibreOffice Calc allows us to link spreadsheet documents with databases and other data sources. The data source needs to be registered with LibreOffice. Registration is a means to inform LibreOffice about the type of data source and the location of the file. We will restrict our discussion to LibreOffice Base. The extension of LibreOffice Base is .odb. You will learn about LibreOffice Base in detail in Unit 3. You can access a variety of databases and other data sources and link them to Calc documents. To register a data source that is in *.odb format, follow the steps given below.

Step 1. Select **Tools > Options > LibreOffice Base > Databases**. The **Options - LibreOffice Base-Databases** dialog box appears.

Step 2. Click the New button to open the **Create Database Link** dialog box as shown in Fig. 6.21.

Fig. 6.21: Registering databases

Step 3. Enter the location of the database file, or click **Browse** to open a file browser and select the database file.

Step 4. Type a name to use as the registered name for the database and click **OK**. The database is added to the list of registered databases.

Note – The **OK** button is enabled only when both fields are filled in.

Check Your Progress

A. Multiple choice questions

1. Insert Sheet dialog can be invoked from _____.
   (a) sheet
   (b) insert
   (c) tools
   (d) Windows
2. _____ refers to cell G5 of sheet named My Sheet.
   (a) $My Sheet.'G5'
   (b) $My Sheet_'G5'
   (c) $ 'MySheet'.G5
   (d) $ 'MySheet'_G5
3. The path of a file has _____ forward slashes.
   (a) four
   (b) three
   (c) two
   (d) one
4. Which of the following feature is used to jump to a different spreadsheet from the current spreadsheet in LibreOffice Calc?
   (a) Macro
   (b) Hyperlink
   (c) connect
   (d) Copy

B. Fill in the blanks

1. A relative hyperlink stores the location with respect to the _____ location.
2. While inserting tables from a webpage _____ selects the entire HTML document.
3. The extension of LibreOffice base is _____.
4. _____ are used to enclose sheet names as there might be a space within sheet names.
5. The From file option of _____ Dialog box allows to insert sheet from another file.

C. State whether the following statements are True or False

1. A sheet can only be added before the current sheet.
2. If 'sales' sheet has a reference to 'cost' sheet then any changes made to 'cost' sheet will be reflected in the sales sheet as well.
3. It is not possible to link a sheet as a reference in another sheet.
4. We can insert data from a table created on a web page into a spreadsheet.
5. A hyperlink once created on a sheet cannot be deleted.

D. Answer the following questions

1. Name the two ways to link the sheets in a LibreOffice Calc.
2. Differentiate between Relative and Absolute Hyperlink.
3. Write steps to extract a table from a web page in a spreadsheet.
4. Write steps to register a data source that is in *.odb format.
5. State advantages of extracting data from a web page into spreadsheet.

Lab Exercises

1. Create three sheets named Jan, Feb and March. In each sheet store the attendance of employees for a month. Apply count function to count the number of days the employees were present by counting P.
2. Add another sheet named 'Consolidated Attendance' that stores total attendance of three months and calculates the percentage.
3. Create a spreadsheet containing the list of Prime ministers of India with their tenure from the website https://knowindia.gov.in/general-information/prime-ministers-of-india.php. Perform steps to extract the table from the website into a Calc Sheet and display the count of Prime Ministers of India till date.

Chapter 7 Share and Review a Spreadsheet

Introduction

In LibreOffice Calc, one spreadsheet can be used by more than one user at a time by sharing it. A shared spreadsheet is a same sheet that can be accessed by more than one user and can allow them to make changes simultaneously on it. It saves the trouble of keeping track of multiple copies of the same spreadsheet. Sharing allows working in collaboration so that everyone can contribute, make changes and view it.

Sharing Spreadsheet

Fig 7.1: Share Document dialog window

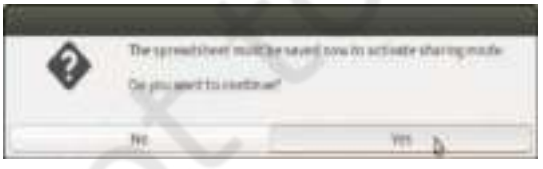


Fig. 7.2: Confirmation dialog window for sharing a spreadsheet

Sharing a spreadsheet is just like a teamwork to work in collaboration with other users. The following are the steps to share the spreadsheet.

Step 1. Open a new spreadsheet and save it with some name.

Step 2. Select and click on **Tools > Share Spreadsheet** from main menu bar. This will open the Share Document dialog window as shown in Fig. 7.1 which can be used to enable or disable sharing option.

Step 3. Click on the checkbox *"Share this spreadsheet with other users"* to share the spreadsheet and click on ***OK*** button. This will open the confirmation dialog window as shown in Fig. 7.2 to save the spreadsheet to activate the shared mode.

Step 4. Click on **Yes** to continue.

Step 5. Once the spreadsheet is saved, the name of the spreadsheet in the title bar will display (shared) along with the name of the spreadsheet.

Practical Activity 7.1

Create a spreadsheet and save it with the name Test_1.ods

Step 1. Create the spreadsheet with the data and save it with Test.ods, as shown in Fig. 7.3.

Fig. 7.3: Contents of spreadsheet Test.ods

Step 2. Select and click on **Tools > Share Spreadsheet** from main menu bar. This will open the Share Document dialog window as shown in Fig. 7.1. Put the check-mark on the check box, *"Share this spreadsheet with other users"*, as shown in the Fig. 7.1.

Step 3. Click on the checkbox and then on **OK** button. It will display the Confirmation dialog window to activate the sharing mode as shown in Fig. 7.2. Click Yes to continue.

Step 4. Observe that shared is added with the name of the document in the title bar as shown in Fig. 7.4.

Fig. 7.4: Title bar showing the spreadsheet changed to shared

Opening and Saving a Shared Spreadsheet

Fig. 7.5: Message box while opening shared spreadsheet

Opening a Spreadsheet

To open a shared spreadsheet, follow the following steps.

Step 1. While opening a spreadsheet which is a shared spreadsheet, a message will appear as shown in Fig. 7.5 that the spreadsheet is in shared mode and some of the features are not available to use in this spreadsheet.

Fig. 7.6: Edit menu of shared spreadsheet

Step 2. Click on **OK** button to open the spreadsheet in shared mode.

Step 3. If you don't want this warning option to be displayed again, then check the mark in the checkbox *'Do not show warning again'.*

Step 4. Once the spreadsheet is saved in shared mode, some of the features will become unavailable for used.

Step 5. Observe the Edit menu on the main menu bar as shown in Fig. 7.6, that shows Undo, Redo, Repeat, Paste, Links to External files, ImageMap, Object are not available for use.

Saving a Shared Spreadsheet

Follow the steps given below to save a shared spreadsheet:

Step 1. After making the changes in the shared spreadsheet, you need to save it before closing the spreadsheet.

Step 2. If two or more users are working at the same time and the changes do not conflict, then the message will appear stating that the spreadsheet has been updated with changes saved by other users.

Step 3. If there is any conflict for the changes, then resolve conflict dialog window will appear.

Step 4. No other user can save the shared spreadsheet when you are resolving the conflicts.

Step 5. If another user is trying to save the shared document and resolve conflicts, then you will be notified with a message that the file is locked. Now, you cannot save it.

Recording Changes

This feature of LibreOffice Calc provides different ways to record the changes made by one or other users in the spreadsheet. While recording the changes, the spreadsheet will turn off its shared feature. Follow the following steps for recording changes:

Step 1. To enable the Record changes, first disable the shared mode of spreadsheet.

Step 2. To disable the shared mode, open the spreadsheet "Test.ods".

Step 3. Select and click on **Tools > Share Spreadsheet** from main menu bar. This will open the Share Document dialog window. Remove the check-mark on the check box, *"Share this spreadsheet with other users"*, and click on **OK** button. It will display the Confirmation dialog window to disable the sharing mode. It will give warning to disable the shared mode of a spreadsheet as shown in Fig. 7.7. Click Yes to continue.

Fig. 7.7: Confirmation dialog window to disable sharing mode of spreadsheet

Step 4. Observe that (shared) word from the name of the spreadsheet has disappeared from the title bar of the spreadsheet.

Step 5. The feature of ***Track Changes > Record*** under ***Edit*** menu is turned ON as shown in Fig. 7.8, which was disabled and not working in the shared spreadsheet.

Fig. 7.8: Recording Track changes under Edit menu enabled

Step 6. Now to record track changes, click on **Edit** > **Track Changes** > **Record** as shown in Fig. 7.8.

Step 7. Now change name Sia to Sita in cell B5 as shown in Fig. 7.9. Observe that the border colour of the cell in which data has been changed turns to red. Also, the changed cell will display the description if the cursor moves to the changed cell.

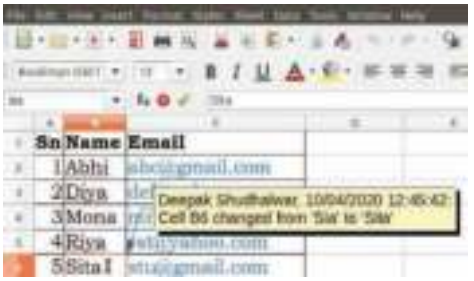


Fig. 7.9: Displaying the information of changes recorded under track changes

Step 8. Thus, by looking at the spreadsheet, other users can easily know the changes made in the cell and the changes made by whom.

Practical Activity 7.2

Assume that you are captain of your school cricket team. Prepare the budget in the spreadsheet for the current academic year. Turn ON the feature ***Track Changes*** > ***Record*** and ask other team members to make necessary changes in the spreadsheet.

Add, Edit and Format the Comments

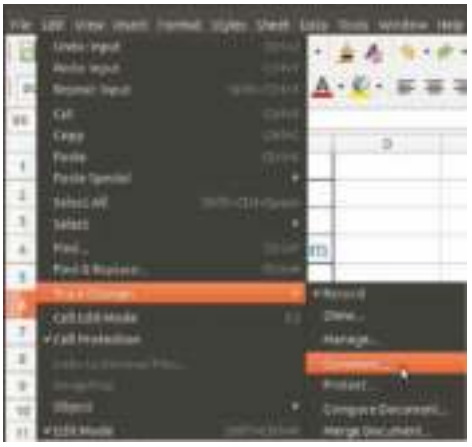


Fig. 7.10: Selecting Comment under Track Changes

In Calc, the comments are automatically added. Also, the author or reviewer can add their own comments as well. Follow the following steps to add your comments:

Step 1. Select from main menu bar and click on **Edit > Track Changes > Comment** as shown in Fig. 7.10, to add your own comments.

Step 2. This will open the Add comment window. Enter your comments. Fig. 7.11 shows the comments entered.

Step 3. Now to view the entered comment, click on the cell B6 as shown in Fig. 7.12. It shows the complete description of the comments entered.

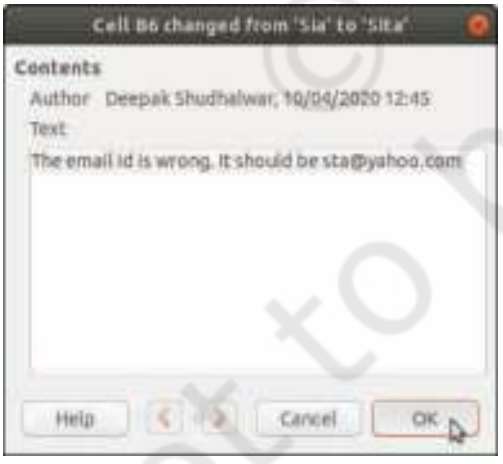


Fig. 7.11: Entering text in Comment dialog window

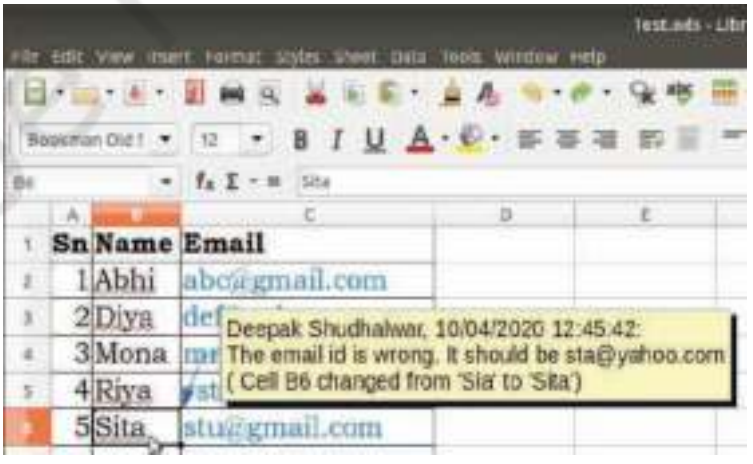


Fig. 7.12: Comment displayed with full description

Step 4. You can also insert comments to a cell. Click on the cell where you want to insert comments. Then select from main menu **Insert > Comment** as shown in Fig. 7.13.

Step 5. This type of comments is known as notes or suggestions in the spreadsheet. The box will appear to write the comment as shown in Fig. 7.14. The comment box shows the comments entered as *"Contains only alphabets"*. Once this text is typed in the text box, you can observe a coloured dot in the upper-hand corner of the cell where the comment is added using insert comment.

Step 6. Once the comment is added, you can display, edit or delete it. To perform these operations, right click on the cell where you have inserted the comments as shown in Fig. 7.15. Observe the options under popup menu.

Step 7. Select the *"Edit Comment"* option to edit the comments. It will take you again to the comment textbox to make any changes.

Step 8. Select *"Delete Comment"* option to delete the comment.

Step 9. Select the *"Show Comment"* to view the comment. By selecting this option, the comments will be displayed. Again when you right click on the cell, you will observe that *"Hide Comment"* option will be activated in place of *"Show Comment"*. This is because when you are displaying the comments it is already in show mode, which has to be hide.

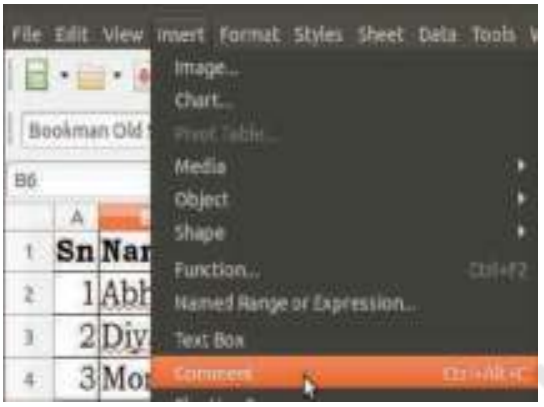


Fig. 7.13: Insert Comment

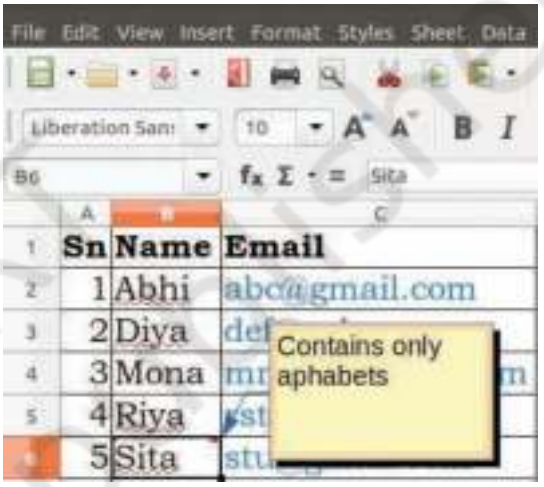


Fig. 7.14: Comments inserted in comment box

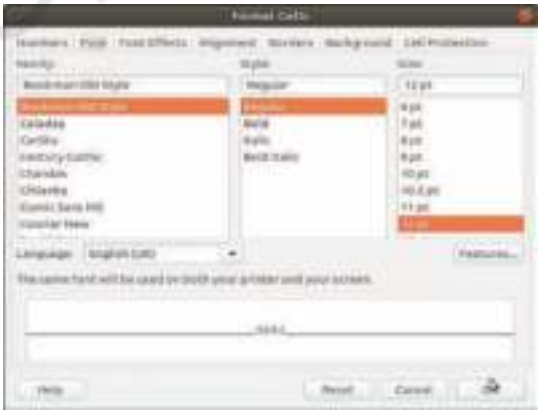


Fig. 7.15: Right click menu options after inserting comments

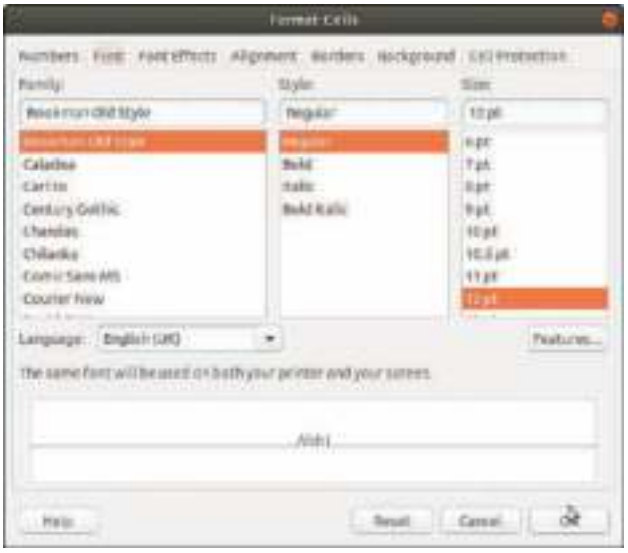


Fig. 7.16: Format Cells dialogue box

Formatting Comment

You can format the comment box, just like formatting the cell contents. It means changing the background colour, border style, and transparency of a comment. Follow the following steps to format the comment.

Step 1. Right click on the cell where the comment is added.

Step 2. Select the option *"Format cell"*, which will display the **Format Cells** dialogue box as shown in Fig. 7.16.

Step 3. You can apply the various formatting features from its tab such as Font, font Effects, Alignment, Borders, Background and Cell Protection. Change the font, text colour, fill colour, line colour for the comment box as desired and click on OK button to apply the changes. Observe the desired formatting features applied to the comment box.

Let's Practice — Save the spreadsheet with some other name. Turn off the shared feature. Now, make some changes in the spreadsheet. Also, add comments into the changed cells. Try editing comments and format it with different colours.

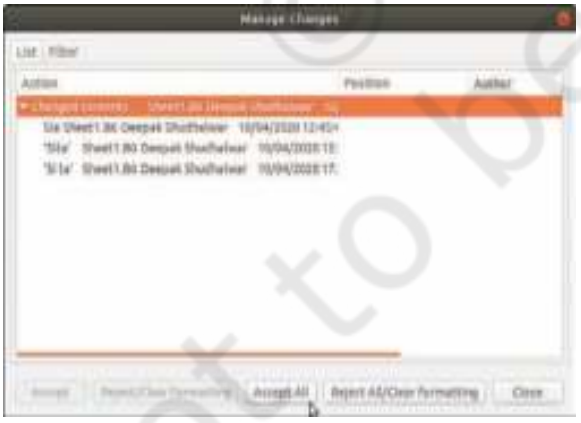


Fig. 7.17: Show Changes Dialog window

Reviewing Changes – View, Accept or Reject Changes

Once the spreadsheet is edited by all the members of the team. It is the final stage before submitting the spreadsheet. In this stage, we will go through the changes to accept or reject to prepare the final spreadsheet after looking at all the changes made by the team members. Follow the following steps to review changes.

Step 1. Select and click on **Edit > Track Changes > Show.** It will open the *Show Changes* dialog window as shown in Fig. 7.17.

Step 2. This is used to plan what all changes are to be displayed while reviewing the spreadsheet.

Step 3. Click on **Edit** > **Track Changes** > **Manage** to accept or reject the changes. It will display the Manage Changes dialog window as shown in Fig. 7.18.

Step 3. In this dialog window, click on the line and click on ***Accept*** or ***Accept All*** or ***Reject All button*** to review the changes.

Fig. 7.18: Manage Changes dialog window to accept or reject changes

Step 4. Click on ***Close*** button once the review is done.

Let's Practice — As the changes done by other team members in the Practical Exercise 7.4 has been recorded by the feature in Calc, now you just review those changes and accept or reject the necessary changes done by other team members.

Merging and Comparing

If the same spreadsheet is reviewed by different team members and you have two different versions of the same spreadsheet file. Follow the following steps to merge document.

Practical Activity 7.3

Merge two files

To work on our earlier created spreadsheet Test.ods, save the file Test.ods with another name say Test1.ods and make some changes in the spreadsheet Test1.ods. Now, we have two files that are to be merged.

Step 1. Open the spreadsheet file *Test.ods*. Note the contents of spreadsheet Test.ods in Fig. 7.19. Also note the contents of spreadsheet Test1.ods before merging in Fig. 7.20.

Fig. 7.19: Contents of Test.ods before merging

Fig. 7.20: Contents of Test1.ods before merging

Step 2. Click on **Edit > Track Changes > Merge Document** as shown in Fig. 7.21.

Fig. 7.21: Selecting Merge Document option

Step 3. Select the spreadsheet file Test1.ods from the **Merge OWith** dialog window to open the spreadsheet *Test1.ods* to merge with Test.ods and Click on **Open** button as shown in Fig. 7.22.

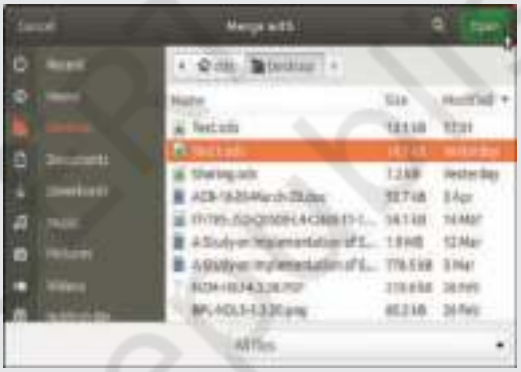


Fig. 7.22: Open the Test1.ods from Merge With dialog window

Step 4. This will open ***Manage Changes*** dialog window as shown in Fig. 7.23.

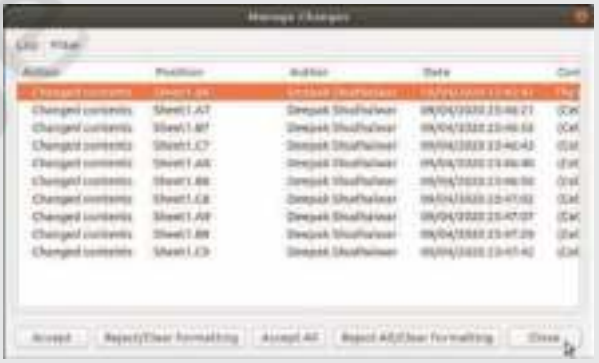


Fig. 7.23: Manage Changes dialog window

Step 5. Click on Accept All as shown in Fig. 7.23. to accept all the changes which is done in the *Test1.ods* spreadsheet to the *Test.ods*.

Step 6. Now open the first spreadsheet Test.ods after merging and observe its contents as shown in Fig. 7.24. Observe that Fig. 7.24 shows the contents of Test.ods and Test1.ods merged.

Fig. 7.24: Contents of Test.ods after merging

Comparing Documents

Instead of merging two spreadsheets, one can compare the two spreadsheets by comparing the documents. Follow the following steps to compare the documents. Let us compare the two earlier created spreadsheets Test.ods and Test1.ods

Step 1. Open the spreadsheet file Test.ods. Click on **Edit** > **Track Changes** > **Compare Document** as shown in Fig. 7.25.

Step 2. This will open the ***Compare to*** dialog window, which will allow to open the spreadsheet to be compared. Select the spreadsheet file *Test1.ods* and click on **Open** button as shown in Fig. 7.26.

Step 3. This will open the **Manage Changes** dialog window to accept/reject the changes. Click on Accept as shown in Fig. 7.27.

Step 4. Finally click on **Close** button to close the Manage Changes dialog window as shown in Fig. 7.28.

Fig. 7.25: Selecting Compare Document option

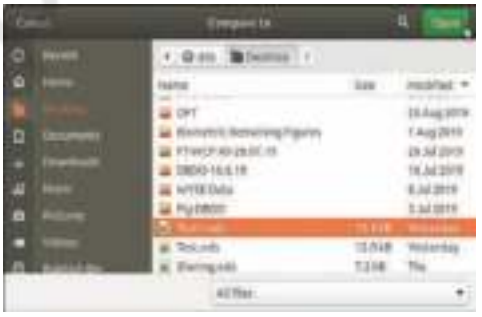


Fig. 7.26: Open Test1.ods from Compare to dialog window

Fig. 7.27: Accepting Manage Changes

Fig. 7.28: Closing Manage Changes dialog window

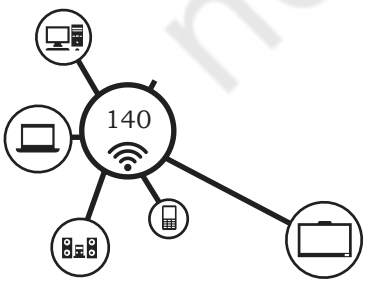
Check Your Progress

A. Multiple choice questions

1. Sharing allows to edit the spredshheet by
   (a) single user
   (b) different users simultaneously
   (c) one by one users
   (d) one after other users
2. Sharing spredsheet feature allows to save the changes in
   (a) multiple sheets
   (b) user's sheet
   (c) in a same sheet
   (d) in different sheet
3. The Recording Changes feature of LibreOffice Calc provides different ways to record the changes made by _____ in the spreadsheet.
   (a) one user
   (b) other user
   (c) the user
   (d) one or other users
4. In Calc, the comments are added
   (a) automatically
   (b) by author
   (c) by reviewer
   (d) all of above
5. The changes by team members in the spreadsheet can be accepted or rejected by
   (a) the team members
   (b) any of the user
   (c) owner
   (d) other users

B. State whether the following statements are True or False

1. Spreadsheet cannot be shared to work with more than one user?
2. Some of the features becomes unavailable when the spreadsheet is in shared mode.
3. You can record changes in the spreadsheet when the spreadsheet is opened in shared mode.
4. File menu is used to Record changes for the spreadsheet.
5. You can add a note or suggestion in the spreadsheet using Insert Comment.
6. Formatting comment can be used to change the font colour of the comment.



C. Fill in the blanks

1. The title bar of the document shows _____ along with the filename for the shared mode of the spreadsheet.
2. The shared mode spreadsheet allows _____ users to access and edit the spreadsheet at the same time.
3. Recording changes automatically _____ the shared mode of a spreadsheet.
4. Click on Edit menu, Track Changes and then select _____ to record the changes in the spreadsheet.
5. The border color of the changed cell will be _____.
6. _____ is used to add notes or suggestions to a cell in a spreadsheet.
7. The comment box can be formatted just like formatting the _____ (cell contents).

D. Answer the following questions

1. Define the terms
   (a) Sharing Spreadsheet
   (b) Record changes
2. Write the commands to perform
   (a) Sharing Spreadsheet
   (b) Record changes
3. Which menu is used to perform the functions
   (a) Track Changes
   (b) Saving Spreadsheet
4. What do you understand by reviewing the changes in the spreadsheet?
5. Differentiate between Merging and Comparing Spreadsheet.

Lab Exercise

Anushka and Niyaz have been made the class representative. Anushka has been asked to collect the class assignments for the various subjects. Create a spreadsheet to store the roll number, name of the students and subject names. Perform the following operations so that Niyaz can access the file:

1. Enable Track changes
2. Add comment to show the date on which the assignment has been submitted.
3. Share the document with the class teacher.

Database Management System using LibreOffice Base

Introduction

Management of data is of prime importance for any organisation. The ease of entering data, its efficient storage, accurate and fast retrieval is the primary objective of any database management system. In this unit you will learn about various methodologies of data management using LibreOffice Base, which is an open source application.

The first chapter starts with the general concepts of database management system, different database model with the focus on relational database. It explains the concept of primary key and foreign key and the various database objects of RDBMS.

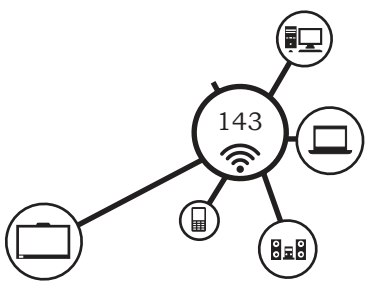
In the second chapter you will learn about LibreOffice Base application interface, how to start and use it, how to create database and tables, enter and edit the data in the table. Different data types used by LibreOffice Base have also been discussed.

After creating a table, you can edit or delete the table and set up relations between the tables to control data redundancy and inconsistency for proper maintenance of a database. In the third chapter, you will learn how

the changes are reflected in the related tables after setting up relations.

In the fourth chapter, you will learn to retrieve the data from the database as per your requirement by providing the desired specifications, which is called as Query. Depending upon given specifications, the specific records are searched form the database and then displayed in the desired manner.

In the last chapter, you will learn to create Forms and Reports using LibreOffice Base. Form is the user friendly data entry screen that allows to enter the data in the table easily by any user. The Report feature helps to present the retrieved data in a user friendly, understandable and formatted manner.



CHAPTER 8

Introduction to Database Management System

Introduction

Databases and database systems are essential parts of our life. We have been interacting with databases since a time. Recall the process of looking for a word in a dictionary or finding the telephone number of a friend from the telephone directory. With the advancement in ever changing technology, computerized databases are being used to store, manipulate, and manage the database. Today, we use databases in almost all spheres of life. When we go to book railway tickets, to search for a book in a library, to get the salary details, to get the balance amount after withdrawal of money from the ATM and so on, this list can run into several pages. Data being stored in databases can be of varied types like text, images, audio and video. This data is then stored and/or processed so as to get meaningful information.

Data and Information

The raw facts constitutes **data**. The facts may be related to any person, place, activity or things. It may be stored in the form of text, graphics, audio or video. This data must be processed by any computing machine in a proper way to generate the useful and meaningful information. The examples of data are marks scored by the students, weights, prices, costs, numbers of items sold, employee names, product names, addresses, tax codes, registration, marks etc.

Information is the processed or organized form of data. If data is not correct or accurate, the information obtained by processing such data may not be correct. For example, marks obtained by students and their roll numbers is the data, while the report card/sheet is the

information. Other forms of information are pay-slips, schedules, worksheet, bar charts, invoices, account returns etc. Similarly the temperature recorded is data which can be processed to find out the maximum or minimum temperature of day and night. Also this data is generally organised in tabular form as shown in the Table 8.1.

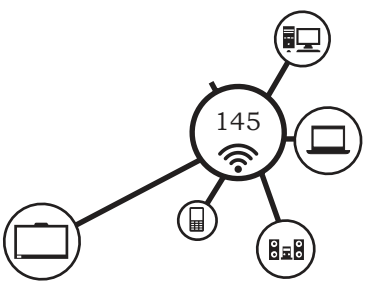
Table 8.1: Data Stored in Tabular Form

Day	Day Temperature	Night Temperature
Sunday	35	15
Monday	37	17
Tuesday	36	16
Wednesday	34	15
Thursday	35	17
Friday	35	16
Saturday	33	14

Databases and DBMS

A database is a collection of logically related data items stored in an organised manner. The information being stored in a database can be added, modified, deleted or displayed according to the requirements of the user. The software that is used to create, update and retrieve data is known as database management system (DBMS). It facilitates planning and maintenance of the database for the user. Some of the common examples of DBMS are MS Access, Open Office or LibreOffice Base, Oracle, Ingress, MySQL. In this book, we will use LibreOffice Base version 6.4 to learn various aspects of DBMS.

We all know that it is easy to remember names of our friends, but it is difficult to retain their phone numbers in our memory. If details like names and phone numbers are stored in a diary or mobile phone in an orderly manner, then it becomes easy to retrieve the phone number of a required person. Thus, the phone book can be considered a simple database and to manage this database electronically, we will require a database management system or a DBMS.



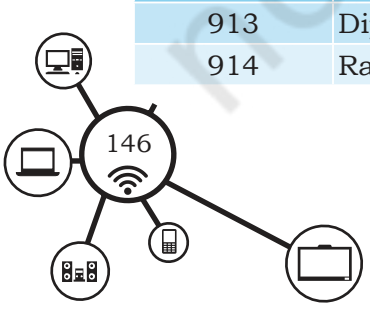
Let us discuss some of the advantages of DBMS:

- Organised Storage – The data in the database is stored in an organised manner, so that retrieval of the required data is fast and accurate.
- Data Analysis – A database helps in analysis of data based on certain criteria. It is easy to find out maximum or minimum value, average or mean using a database.
- Data Sharing – If the same data set is required for different applications then the database can be shared with other applications. Hence using a database means making once and using it repeatedly for multiple applications.
- Minimal Data Redundancy – In the event of requiring the same data field in several tables the data field might get repeated in number of tables. This is called as data redundancy. This can be reduced by using DBMS tools.
- Data Consistency – By minimising data redundancy, chances of inconsistent data being stored is reduced. For example, it should not happen that the name of the student is changed in one table and not in another. Such inconsistency is reduced by using a DBMS.

Let us consider a situation where, for example, Murugan looks after the data management of ABC School. There are two tables in his database– Admission table and Library table. 'Ram Lal Kumar' wants to change his name to 'Ram Kumar' has recently shifted his house. So, he hands over the application for the same to Murugan. In the absence of a DBMS, Murugan has to change the name of the student separately in the admission table and also in the library table. But as we can set a relation between the two tables using a DBMS, any change in one table is automatically reflected in all the related tables. There is no need to add another record with the changed name. The same record will be updated. Hence, this reduces the chances of data redundancy and inconsistency.

Admission Table

Roll Number	Student Name	Class	Date of Birth	Date of Admission
913	Dipak Kumar	10	06/04/2004	25/06/2018
914	Ram Lal Kumar	10	01/03/2004	24/06/2018



Library Table

Student Name	Name of the Book	Date of Borrow	Date of Return
Dipak Kumar	IT	10/12/2018	25/12/2018
Ram Lal Kumar	Science	11/11/2018	24/11/2018
Sham Lal	Mathematics	12/11/2018	30/12/2018

- Increases Efficiency – Since database tables are properly organised, saving, reading and searching data can be carried out efficiently.
- Increases Accuracy – Since data redundancy and inconsistency can be minimised in a database, the data is retrieved accurately from the database.
- Increases Validity – Properties of different data fields can be assigned when a database is planned. So whether or not valid data is being entered can be checked at the data entry stage. This increases the validity of the database. For instance, we may set up a restriction while creating the table that the amount of fees being entered should be more than 1000.
- Security – Unauthorised access can be controlled by assigning passwords to the users. The data might be translated in such a manner that unauthorised users are not able to read it. This is known as encryption. Both these measures increase the security of the database.

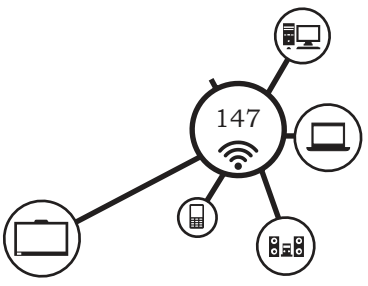
Data Models

A database can be designed in different ways depending on the data being stored. This structure of database is known as **data model** that describes the manner in which data will be stored and retrieved.

A data model consists of components for describing the data, relationships among them and the constraints that hold data. There are different data models such as hierarchical data model, network data model and relational data model.

Hierarchical Data Model

In this model the data is organized into a tree like structure. The data is stored in the form of records. A record is a collection of fields and its data values.



All these records are linked to each other at various levels, thereby forming a hierarchy. For example, in Fig. 8.1 the data of a company is stored using a hierarchical data model.

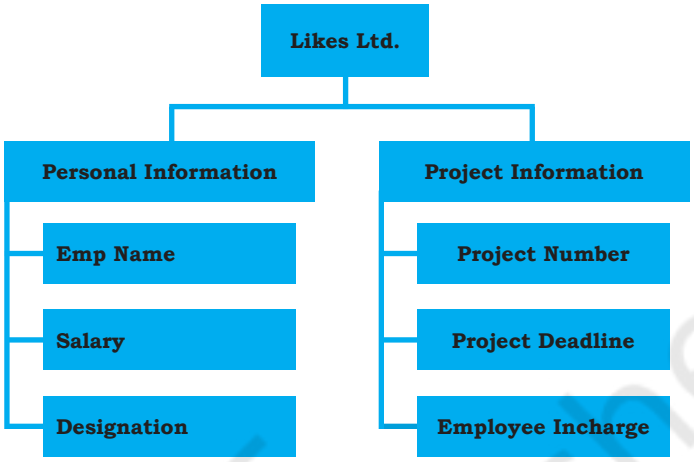


Fig. 8.1: Hierarchical Data Model

Network Data Model

In this model, multiple records are linked to same master file. It is also considered as an inverted tree where master is present in the bottom of the tree and the branches contain information linked to the master. In Fig. 8.2, the data of the company is represented using the network data model.

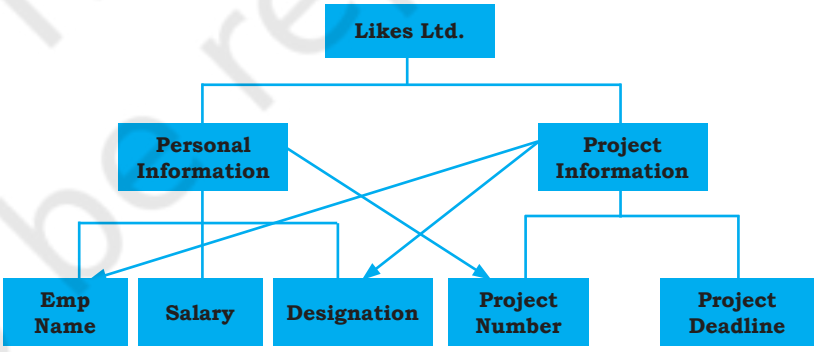


Fig. 8.2: Network model

Relational Data Model

This data model is based on the principle of setting relationships between two or more tables of the same database. It is the most commonly used database model. Let us study about this model in detail.

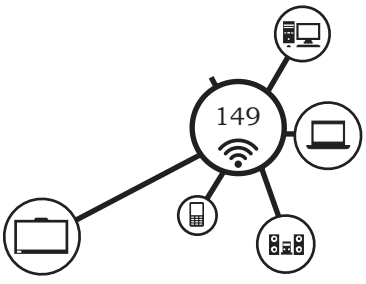
Relational Database Model

The Relational Database Model was proposed in 1970 by E. F. Codd. Relational database model is the most common type of database model. The data elements are stored in different tables made up of rows and columns. The data in different tables are related through the use of common fields. So relations are set between tables based on common fields. That is why this model is termed as relational database model.

Relational Database Terminology

Let us get familiar with some of the common terms used in RDBMS.

- **Entity –** It is a real world object about which information is to be stored in a database. For example, if we want to store information about an entity Student in a school, then we need to have his admission number, roll number, name, father's name, date of birth, etc. These details associated with the entity are called **attributes**. Each entity is a collection of these attributes associated with it. So roll number, name, admission number, etc., are attributes associated with the entity student. These attributes are represented in the form of columns.
- **Table –** A table is a collection of logically related records. It is organised as a set of columns, and can have any number of rows. For example, the Employee table can have columns, namely name, designation, department and have records or rows having data of 100 employees.
- **Field or Columns or attributes –** A field is the smallest entity in the database. A collection of fields make a record, a collection of records make a table and a collection of tables make a database. Fields are individual record characteristics and are presented as columns within a table. Data values are stored in a database as fields. A field holds the data values of one type of data for several persons. For example, in the Employee table the field "Emp Name" will hold the names of employees of an organisation.
- **Data Values –** Data values are the raw data represented in numeric, character or



alphanumeric form. Examples of data values are 'Abhinav Bindra', '26' 'shooting', "Chandigarh", "10-12-2018", etc.

- **Record or Row –** The data values for all the fields related to a person or object is called a record. It is presented as rows within a table. A record holds the data values of all the fields for a single person or object in a table. For example, in the Employee table with the field names as Name, Designation, Department, the data values of all the fields for an employee may be ('Abhinav', 'Manager', 'Finance') and this forms one record.
- **Primary Key –** A primary key or simply a key is a field that uniquely identifies a row in a table. The key identifier can be the value of a single column or of multiple columns. The primary key is a unique identifier for the table. The column or combinations of columns that form the primary key have unique values. At any time, no two rows in the table can neither have same values for the primary key nor can data value for such field be left blank. For example, in a student table, each student has a unique roll no., which forms the primary key. If, in a table we use more than one fields to identify a record, it is known as a composite key. For example, we may form a composite key consisting of fields roll no. and name.
- **Relational Database –** A relational database is a collection of related tables. For example, in Fig. 8.3, the database contains two related tables.

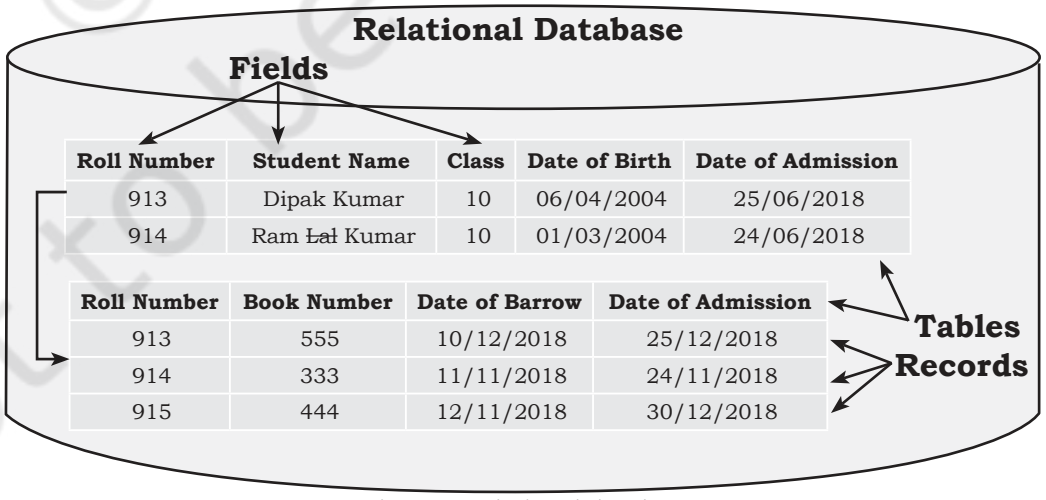


Fig. 8.3: Relational database

- **Foreign Key –** If a field or a combination of fields of one table can be used to uniquely identify records of another table, then that particular field is known as the foreign key. This foreign key helps to build a relation between two tables. Consider the example given below.

Student Registration Table

Enrolment Number	Student Name	Class	Date of Birth	Date of Admission
XX1234567890	Dipak Kumar	10	06/04/2004	25/06/2018
XX1234567891	Ram Kumar	10	01/03/2004	24/06/2018

Primary key: Enrollment Number

Student Marks Table

Roll Number	Maths	Science	Vocational	Enrolment Number
44983	87	75	80	XX1234567890
44990	74	45	75	XX1234567891

Primary key – Roll Number, **Foreign key –** Enrollment Number

In Student Registration Table, 'Enrolment_Number' is the primary key and in the Student Marks Table, 'Roll_Number' is the primary key, whereas 'Enrollment_Number' is the foreign key. This foreign key can be used to set a relation between two tables.

- **Candidate Key –** All the field values that are eligible to be the primary key are the candidate keys for that table. Such fields can neither be left blank nor can have duplicate values. So in the table Student Marks, Enrollment Number and Roll Number both are candidate keys.
- **Alternate Key –** Out of the candidate keys, one or two are made as primary keys. The others are the alternate keys. Hence, if Roll Number is made as the primary key, Admission Number is the Alternate key.

Objects of an RDBMS

An object in a database is a structure or a feature that is used to store, represent or retrieve data. In fact a database is a collection of these objects that work on multiple sets of data related to each other. Various objects in a database are as discussed below:

- **Table** – As mentioned before, a table is the basic unit of any DBMS. The data is first stored in tables

in row and column format. A column represents a field or an attribute while a row represents a record.

- **Forms –** A form is a feature of a database using which we can enter data in a table in an easy and user friendly manner. A form consists of text boxes, labels, radio buttons, list boxes, check boxes etc. that give a user friendly interface for entering data. The data entered through the forms is stored in tables.
- **Queries –** A query is used to retrieve the desired information from the database. In simple terms, it is a question asked from the database. For example, if we want to view the names of only those students who have scored more than 50 marks, then we post a query. The data set matching the given criterion is retrieved from the table and displayed on the screen.
- **Reports –** The output of a query may be displayed in the form of reports. The usual result of the query is in the form of rows and columns. But if we want the report to be formal and in proper layout, then we can use the Reports feature of RDBMS.

Let's Practice

Consider the following table and answer the questions that follow.

Item No.	Name	Price	Quantity	Discount (in%)
A001	Pen	20	12	0
A003	Pencil	15	5	1
A010	Notebook	50	25	5

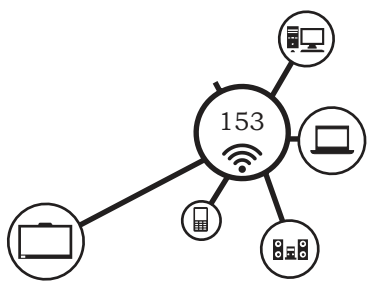
From the above table, identify the primary key. Justify your choice.

How many fields and how many records does the table have?

SUMMARY

- The raw facts constitutes data.
- Information is the processed or organised form of data.
- A database is a collection of logically related data items stored in an organised manner.

- The software that is used to create, update and retrieve data is known as database management system (DBMS).
- Some of the common examples of DBMS are MS Access, Open Office or LibreOffice Base, Oracle, Ingress, MySQL.
- Data Model is the structure of database and it describes the manner in which data will be stored and retrieved.
- There are different data models, such as hierarchical data model, network data model and relational data model.
- In Hierarchical Data Model, the data is organised into a tree like structure. The data is stored in the form of linked records.
- In Network Data model, multiple records are linked to same master file.
- The Relational data model is based on the principle of setting relationships between two or more tables of the same database.
- Entity is a real world object about which information is to be stored in a database.
- The details associated with the entity are called attributes.
- A table is a collection of logically related records. It is organised as a set of columns, and can have any number of rows.
- A field is the smallest entity in the database. These are individual record characteristics and are presented as columns within a table.
- Data values are the raw data represented in numeric, character or alphanumeric form.
- The data values for all the fields related to a person or object is called a record. It is presented as rows within a table.
- A primary key is a field that uniquely identifies a row in a table.
- This foreign key helps to build a relation between two or more tables in a database.
- All the field values that are eligible to be the primary key are the candidate keys for that table.



- Out of the candidate keys, one or two are made as primary keys. The others are the alternate keys.
- An object in a database is a structure or a feature that is used to store, represent or retrieve data. The various objects in a database are tables, forms, reports and queries.
- A form is a feature of a database using which we can enter data in a table in an easy and user friendly manner.
- A query is used to retrieve the desired information from the database.
- The output of a query may be displayed in the form of reports.

Check Your Progress

A. Multiple choice questions

1. Which of the following can be considered as an example of a database?
   (a) Dictionary
   (b) Telephone directory
   (c) Marks Register
   (d) Newspaper
2. Which of the following is NOT a DBMS?
   (a) MS Access
   (b) Open Office Base
   (c) MS Excel
   (d) MySQL
3. DBMS stands for _____.
   (a) Data and Books Management System
   (b) Database Management System
   (c) Duplicate Books Management System
   (d) Data Management Multi System
4. Which of the following data models sets a relation between the two or more tables?
   (a) Relational Data Model
   (b) Network Data Model
   (c) Hierarchical Data Model
   (d) Connection Data Model
5. The details associated with an entity are called _____.
   (a) Table
   (b) Attributes
   (c) Records
   (d) Primary key

6. A _____ is represented as rows in a table.
   (a) field
   (b) attribute
   (c) record
   (d) candidate key
7. In which of the following forms can a data value be represented?
   (a) Numeric
   (b) Character
   (c) Alphanumeric
   (d) All of the above
8. Which of the following uniquely identifies a row in a table?
   (a) Primary key
   (b) Alternate key
   (c) Foreign key
   (d) Candidate key
9. A _____is a feature of a database using which we can enter data in a table in an easy and user friendly manner.
   (a) query
   (b) report
   (c) form
   (d) field
10. A _____ is a question asked from a database.
   (a) query
   (b) report
   (c) form
   (d) field

B. State whether the following statements are True or False

1. A database cannot be organised.
2. Data is the collection of raw facts.
3. A table can be created without a primary key.
4. Two tables can be related in a network data model.
5. MS Access is an example of a database.

C. Fill in the blanks

1. The raw facts constitutes _____.
2. An _____ is a real world object about which information is to be stored in a database
3. The output of a query may be displayed in the form of _____.
4. The data values for all the fields related to a person or object is called a _____.
5. All the field values that are eligible to be the primary key are the _____ keys for that table

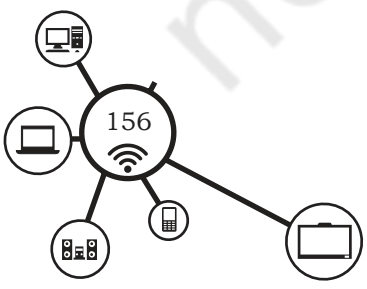
D. Answer the following questions

1. Define the terms
   (a) Database
   (b) Data redundancy
   (c) Report
2. Give one point of difference between
   (a) Data and Information,
   (b) Form and Query,
   (c) Network and hierarchical data model
3. Give any four advantages of a DBMS.
4. Consider the table given below and answer the questions that follow

Table: Library

Book_Id	Book Name	Author Name	Price	Publisher
F001	Pride and Prejudice	Jane Austen	550	ABC
S004	Amazing Astronomy	E. Shane	1050	ABC
C005	**IT and Mankind**	**MHA Diwaan**	**2500**	**HYM**

   (a) Name the fields in the given table.
   (b) Which field should be made the primary key?
   (c) Is there any alternate key in the table?
   (d) How is primary key different from foreign key? Explain with example.



CHAPTER 9

Starting with LibreOffice Base

Introduction

In the previous chapter we have learned about databases and database management system (DBMS). LibreOffice Base is a free and open source DBMS. It can be downloaded from www.libreoffice.org and is available for both Linux and Windows operating systems. Data has to be stored in an organised manner using a DBMS. Also, the data being stored can be a text, number, date or in any other form. So, we need to understand different types of data that can be stored in a table. The data types of the fields have to be specified while creating tables in a database. Thereafter valid data is entered and stored in a table.

Data Types

The nature of data to be entered for various fields are of different types. For example, names are stored in the form of text, age in numbers, fees in decimal numbers, date of birth in date format and so on. A data type refers to the type of data that will be stored in that particular field. The memory size of a field varies according to its data type.

Some commonly used data types are described below. Text Data Type – The text data is a combination of letters, numbers or special characters. No arithmetic calculations can be performed on text data. Examples of text data type is PAN Card Number, Name, Marks, etc.

The table below lists various data types that can store textual data.

Table 9.1: Text Data Types

Name	Data type	Description
Memo	LONGVARCHAR	Stores up to the maximum length indicated by user. It is used to store some descriptive data having more than 255 characters. Memo data type allows to store text data up to 64,000 characters.
Text (fix)	CHAR	Stores exactly the length specified by user. Character data type is used to enter fixed number of characters. It can be used for license number, passport number as they have fixed number of characters.
Text	VARCHAR	Stores upto the specified length. The number of bytes allocated depends on the number of characters entered by the user. For example, the address is defined as varchar (50), and if the address entered by the user is of 20 characters then only 20 bytes will be occupied in the database.

- **Numeric Data Type –** Numeric data types consists of numbers. The numbers can be integer or real numbers on which any type of arithmetic calculations can be performed. For example, 10, -34.8, 90.6789 , -86 are of numeric data type. Table 9.2 lists different numeric data types along with the number of bits/bytes it uses and its range.

Table 9.2: Numeric data types

Name	Data type	Signed	Range
Tiny Integer	TYNYINT	No	0-255
Small Integer	SMALLINT	Yes	-32768 to 32768
Integer	INTEGER	Yes	-2.14×109 to 2.14×109
BigInt	BIGINT	Yes	-2.3×1018 to 2.3×1018
Number	NUMERIC	Yes	Unlimited
Decimal	DECIMAL	Yes	Unlimited
Float	FLOAT	Yes	
Real	REAL	Yes	5×10(-324) to 1.79×10(308)
Double	DOUBLE	Yes	

- **Currency Data Type –** The currency data type indicates the monetary values and can be stored using currencies of various countries. For example $100, £ 500 or Rs. 25.50.
- **Date Data Type –** This data type is used to indicate dates and time. For example 12/25/2019, 08:45 AM. The data and time can be stored in various formats. Table 9.3 list various forms of date data type.

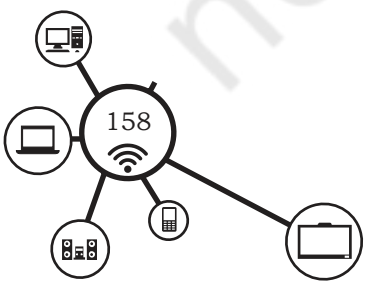


Table 9.3: Various forms of Date data type

Name	Description
Date	Stores the year, month and day as it is stored in the system.
Time	Stores the time of the day as hour, minute and second.
Timestamp	Stores date and time information at once.

- **Boolean –** In boolean data type there can be only two values- True or False. This also can be given in multiple formats like Yes/No, True/False, On/Off.
- **Binary –** The Binary data type used to store digitized images and sounds that comes as long string of zeros and ones. It is possible to store photos of the products or employees, or sound snippets or voice messages in Base database.

Starting with LibreOffice Base

Annual Sports Day is being held in Ruhi's school in which various sports competitions will be conducted. Ruhi has been asked to create a database consisting of various sports activities and its players. She decides to create a database named, 'Sports Day' consisting of a table 'Events' that contains the following fields:

Event_Id	-	to store Event identification no like E001, E002, etc.
Event Name	-	to store name of the event
Date	-	to store date on which the event will be conducted
Winner 1 Name	-	name of the winner
Winner 1 Points	-	points earned y the winner

Let's Practice

What should be the data type of the fields of the table Events that has to be created by Ruhi?
Which field should be made the primary key?

Once the table with its fields has been decided, Ruhi decides to start creating the database using LibreOffice Base. Follow the following steps to create the database.

Step 1. Start the LibreOffice Base as per the standard process of starting the application in Windows or Linux. In Windows, click **Start > LibreOffice** or double click on the **LibreOffice** icon on the desktop or Select **Base Database** option from the bottom left panel.

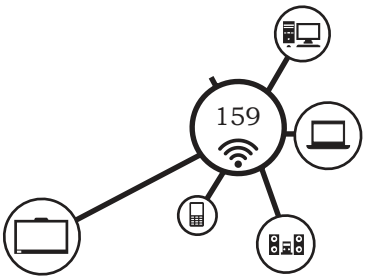


Fig. 9.1(a): Clicking on the Base icon on the left panel to open Base

Fig. 9.1(b): Clicking on Show Applications to search for installed packages

Fig. 9.1(c): Clicking on the searched Base icon to open Base

In Ubuntu Linux, click on the Base icon located on the left panel as shown in Fig. 9.1(a) or click on the ***Show Applications*** as shown in Fig. 9.1(b) to search for its icon. Type Base in the search box. The LibreOffice Base application icon will be displayed as shown in Fig. 9.1(c). Click on the Base icon to open the Base application.

Step 2. A **Database Wizard** opens as shown in Fig. 9.2. It allows you to create a new database or open an existing database.

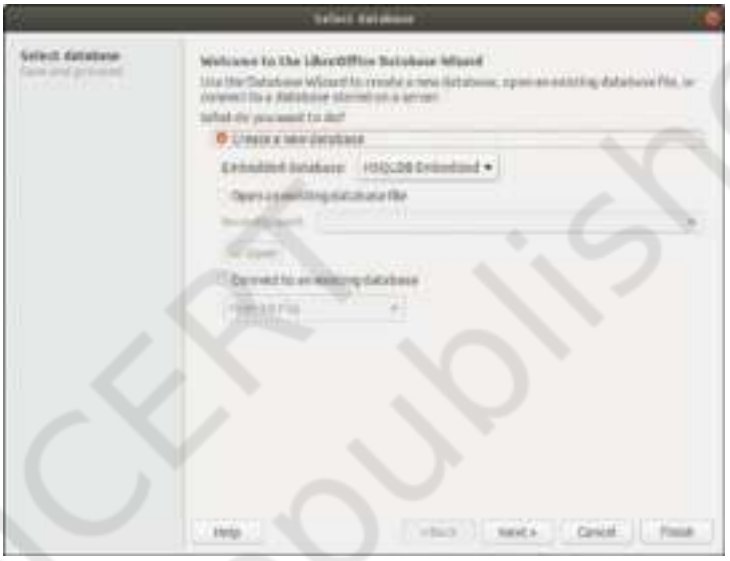


Fig. 9.2: LibreOffice Database Wizard

Tip: To open LibreOffice Base, you may search the application Base on your computer and click on the LibreOffice Base icon.

Step 3. Since we want to create a new database, so click **Create a new database** radio button. If any database that has already been created is to be opened, then select **Open an Existing Database** option to select the database to be opened. Thereafter click **Next** button.

Step 4. The Next step gives the option to register our database with LibreOffice.org. If we register the database, then our database is made public and hence can be accessed by other people. As of now, we would not like to register, so we click and select the radio button with option, **'No, do not register the database'**.

Fig. 9.3: Decide How to Proceed After Saving the Database

Step 5. This step also asks whether you want to **open the database for editing** or want to create a table using the wizard. The option Open the database for editing is already selected.

Step 6. Click **Finish** button to complete the database creation process. The **Save As** dialog box appears.

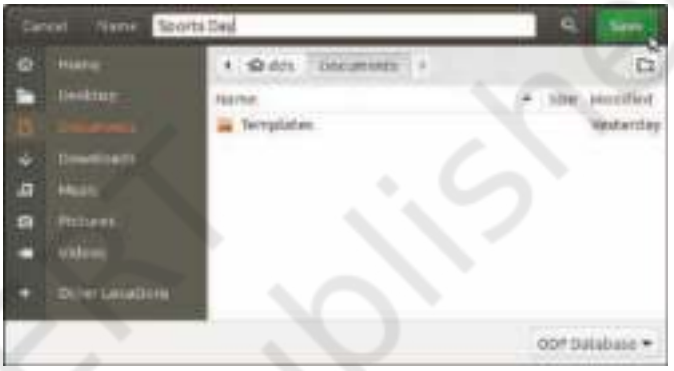


Fig. 9.4: Save As dialog box

Step 7. Browse for the drive and folder where you want to store your database.

Step 8. Type the name (Sports Day) in the **File name** text box.

Step 9. Click **Save** button. The database in Base is saved with an extension **.odb**. Also note that if no name is given to the database, then it is saved with a default name as NewDatabse.odb.

User Interface of Libre Office Base

Once a database is created, the screen as shown in Fig. 9.5 appears. This is the User Interface of Open Office Base.

The various components of the Base User Interface are discussed below:

Fig. 9.5: User Interface of LibreOffice Base

- **Title Bar –** The title bar displays the name of a database and an application in which it is made. The windows buttons to maximize, minimize or close the window are located on the right corner of the title bar.
- **Menu Bar –** The menu bar appears below the title bar. It consists of seven menu items – **File, Edit, View, Insert, Tools, Window and Help**. All these menu items contain commands that help to perform various operations on the database.
- **Standard Toolbar –** It is located below the menu bar. It is used to access frequently used tools.
- **Status Bar –** It is located at the bottom of the interface window. It displays information about the type of view of the object in the database. Database Pane – The database pane is located on the left side of the window. LibreOffice Base is the collection of related data objects known as Tables, Forms, Queries, Reports and application modules. Depending on the object that is selected, the respective Task Pane and Object Area displaying the created object appears.

Fig. 9.6: Opening database from menu option

Opening a Database

To open an already created database, click **File > Open**. The Open dialogue box appears as shown in Fig. 9.6. Browse for the folder where the database to be opened is stored. Select the desired database and click on Open button.

Tip: Use the keyboard shortcut key ***Ctrl+O*** to open an already existing database.

Creating a Table

Once the database is created, we can start working with objects of the database. First and foremost is the creation of the table and then entering data in the table. A table in LibreOffice Base can be created using a wizard or using the Design view.

Creating a Table using a Wizard

A table can be created at the time of creating a database or after creating database. To create a table

at the time of creating a database in database wizard, select the radio button with option **"Create tables using the table wizard"**, then click on the **Finish** button.

Since our database is already open, so we will select and click If the database is opened we can select **Use Wizard to create a table** option from the Tasks Pane. The **Table Wizard** dialog box will open as shown in Fig. 9.7. Follow the instructions in the wizard to create the table with desired fields.

The Table Wizard of Base consists of ready-made tables. Click the Sample tables list box and select select any one table, say Customer from the drop down list.

After selecting the Customer table, various fields appears under ***Available Fields***. The required fields from ***Available fields*** box can be shifted one by one to ***Selected fields*** box using > button as shown in Fig. 9.8. You can select all the fields from ***Available fields*** to ***Selected fields*** in one stroke by clicking on >> button.

Click on **Next** button. It will move you to step 2. Set types and formats as shown in Fig. 9.9.

Then click on **Next** button. It will move you to step 3. Set primary key. Let us set the CustomerID field to primary key as shown in Fig. 9.10.

Click on **Next** button, that will take you to the complete the process of creating table using wizard and display the screen as shown in Fig. 9.11. This screen will give you three choices. By default the "Insert data immediately" option selected.

Fig. 9.7: Table Wizard

Fig. 9.8: Fields shifted from Available fields to Selected fields

Fig. 9.9: Setting types and formats

Fig. 9.10: Setting primary key

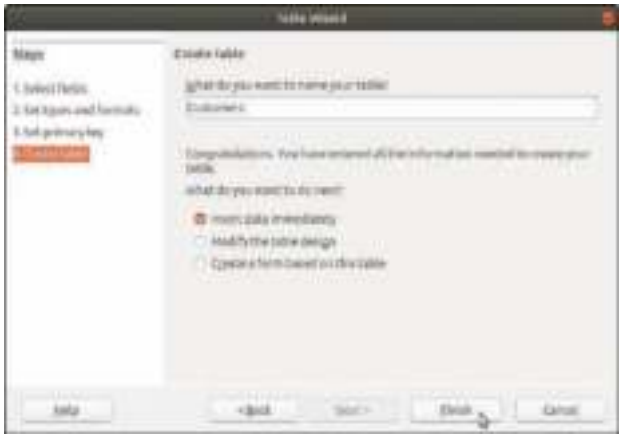


Fig. 9.11: Creating table using wizard

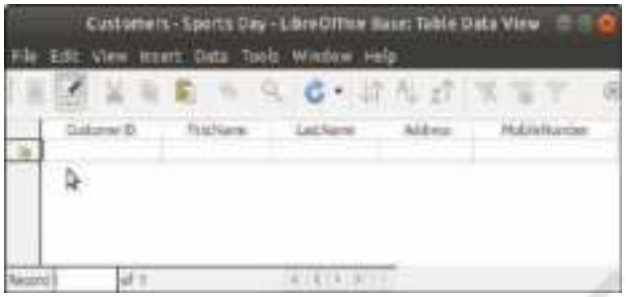


Fig. 9.12: Datasheet view of Customer table

Fig .9.13: Creating Table in Design view

Click on the **Finish** button to complete the process of creating the table and using wizard. The next screen will allow to enter the data as per the selected fields. The data sheet view interface as as shown in Fig. 9.12 will open that allow to enter the data in the Customer table.

Creating Table in Design View

Creating the table using wizard restricts us to use the same fields in the per-designed tables. It may not solve the purpose in real scenario, as we may require to create a table with the different fields for our purpose. Creating tables using Design View gives us more flexibility to do our work.

To create table using Design View, in main Database window, click on the option **Create Table in Design View** in the Tasks Pane and Table Design Window will be opened as shown in Fig. 9.13.

The screen is broadly divided into two sections or horizontal panes.

The upper half consists of a grid structure with three columns Field Name, Field Type and Description.

- **Field Name –** It is the name of the field assigned at the time of creation of table.
- **Field Type –** It allows to assign a data type to the field.
- **Description –** It allows to describe the purpose of the field. It is not the part of database table, but it is meant for the user to understand the purpose of the field. We may or may not enter field description.

The Field Properties pane is located at the bottom half of the window. It displays the field properties assigned by the database designer. These properties can also be

changed as per the requirement and are used to control and validate the data that is to be entered.

Let us help Ruhi to create a table named Events using in the option Create Table in Design view in the Sports Day database. Follow the follow the following steps to do so.

Step 1. Type the first field name (EventId) in the **Field Name** column. Press **Tab** key. The cursor moves to the second column i.e. **Field Type**.

Step 2. The **Field Type** column contains a list box. As you click on the down arrow, it appears and we can select the desired data type from the list box. Select the datatype (Varchar).

Step 3. Observe that certain properties appear in the Field Properties Pane as the data type is selected. Some of the properties are Entry required, Length, Default value, Format example. Set the desired properties for the entered field.

Step 4. Press **Tab** key to move to the next column. Add any description if you want in the third column.

Step 5. Once the properties for the field are set, press **Tab** key to move to next row.

Step 6. Enter the next field by repeating steps 1,2 and 3. Repeat the process for adding all fields in the table. Fig. 9.15 shows the Design View with all the fields.

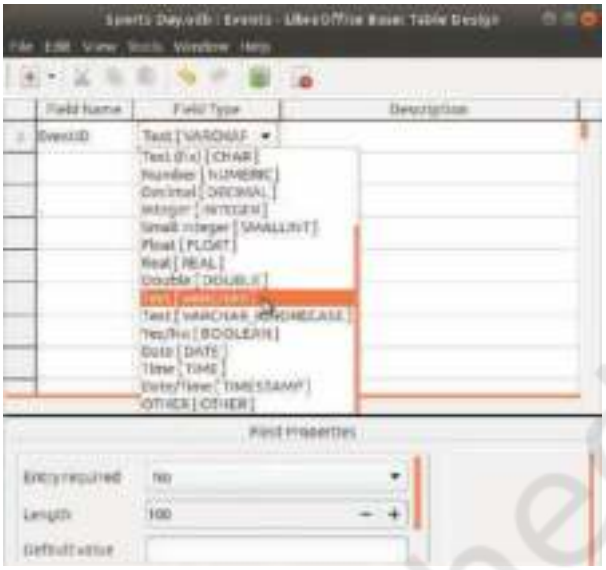


Fig. 9.14: Selecting data type for field

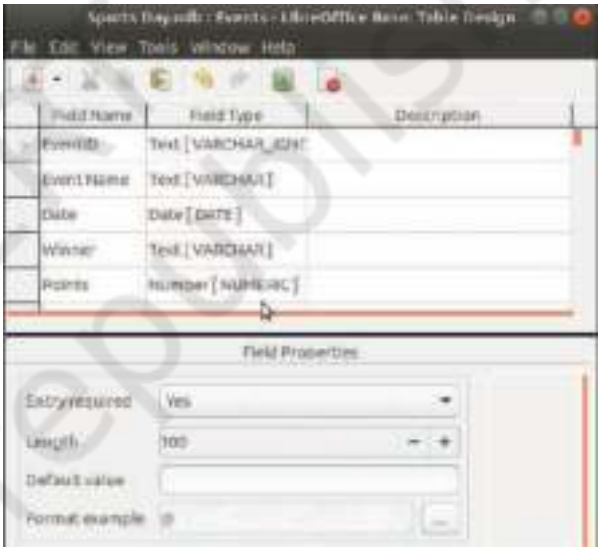


Fig. 9.15: Fields entered using Creating Table in Design View

Setting the Primary Key

As you have learned that every table must have a primary key that uniquely identifies a record in the table. To make a particular field as the primary key, place the mouse pointer before the field name, say Event Id in our above example and right click. A pop up menu appears.

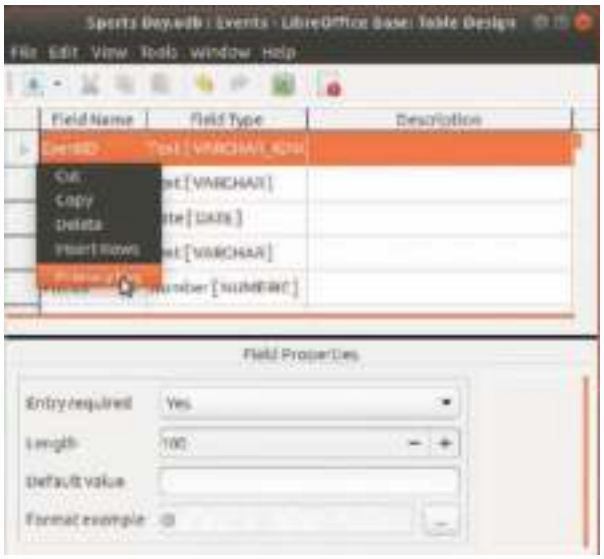


Fig. 9.16: Assigning primary key

Select the Primary Key option from pop up menu as shown in Fig. 9.16. A key icon appears before the field name indicating that it is a primary key.

Saving a Table

After creating the table you need to save it on the disk. To save the table click on the save button or follow menu option **File > Save As**. A Save As dialog box is displayed as shown in Fig. 9.17. Enter the name of table and click on **OK** button.

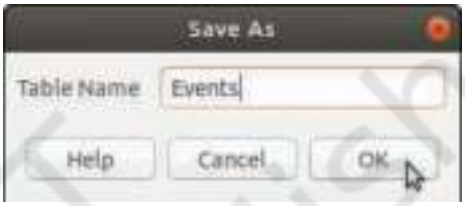


Fig. 9.17: Saving a table

Tip: Press **Ctrl + S** to save the table or click Save icon from the toolbar. If the table is being saved after making some changes, simply select File-> Save option.

Once the table design is complete, click on **Close** button on the toolbar to return to the Database screen. The name of the table will appear in the Tables Object Area as shown in the Fig. 9.18.

Fig. 9.18: Event table added to the database

More to know

To set a **composite key**, i.e. a primary key consisting of two fields, keep the ***Ctrl*** key pressed and then click on multiple fields to select them. Thereafter right click on selected fields and choose **Primary Key** option from the pop up menu.

Entering Data in a Table

To enter data in the table, double click on the created table Events icon in the Tables Object Area on the database screen. Alternatively, we can open the table by right clicking on the desired table and then selecting

the **Open** option from the drop down menu. The datasheet view of the table will appear as shown in Fig. 9.19. It displays the field names in the top row. These fields are displayed in the same order as they were added while creating the table.

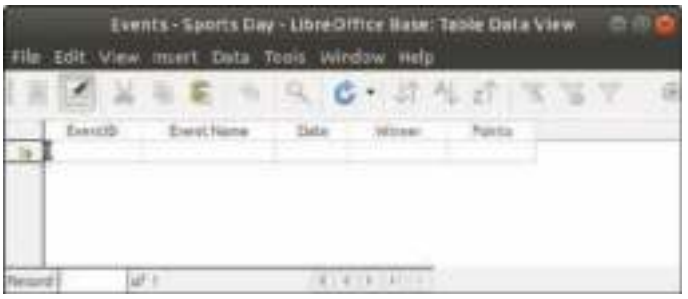


Fig. 9.19: Datasheet view of Events table

If the number of fields are more and cannot fit in the single row, you can use the horizontal scroll bar to view all the fields. The cursor will be blinking in the second row. Start typing the data value for each field. Use **Tab** to move to next field. Once all the data values are entered for a single record, the cursor moves to the next record. This process is called as data entry. Enter 4-5 records in the Events table as shown in Fig. 9.20.

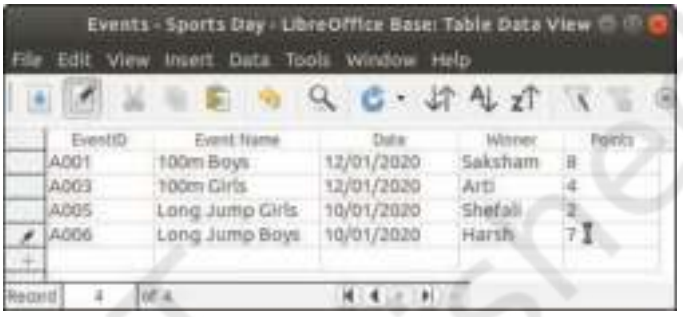


Fig. 9.20: Data entry in Event table

Navigating through the Table

The black pointing arrow (▶)just before the field name is the record pointer. To navigate through various records of the table, we use the navigation box present at the bottom of the datasheet window as shown in Fig. 9.21. It indicates a current record of the table at any given time.

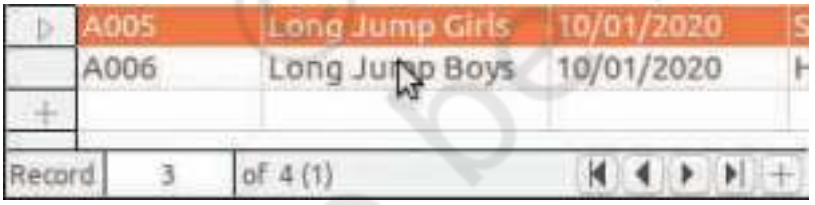


Fig. 9.21: Navigation box

The various components of Navigation Box are as follows:

- **Record Selector Box –** T his is the text box where the currently active record number is displayed. We may enter the record number that we want to see in this text box.
- **Navigation Buttons –** These are used to scroll vertically in the table.

Press ⏮ to move to the first record

Press ▶ and ◀ to move to the next and previous records respectively.

Press ⏭ to move to the last record

Fig. 9.20 shows the datasheet view after entering four records in the table. Note that the record pointer is on fourth record, the Navigation Bar shows the "Record 4 of 4".

Editing Data

To edit or modify the previously entered data simply place the cursor on the field value that has to be edited to edit and enter the new value.

The Edit icon (✎) appears before the record that is being edited. This icon is displayed till the table is saved after making the required changes. Press **Esc** key to cancel the corrections made and restore the original contents.

Deleting Records from Table

To delete any record from the table, open the table and select the record to be deleted. The record can be deleted by pressing the **Del** key from the keyboard or selecting the **Delete Record** option from the **Edit** menu. Alternatively a record can also be deleted by right clicking on the record and clicking on the **Delete Rows** option from the pop up menu.

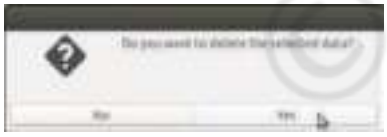


Fig. 9.22: Delete record alert

Attempting to delete the record will display the Confirmation box as shown in Fig. 9.22. Clicking on **Yes** button will finally delete the record, while clicking on the **No** button will not delete the record.

Sorting Data in the Table

Data in a table can be arranged in ascending or descending order. This process of arranging the records in particular order on any filed is called as **sorting**.

Follow the following steps to sort the table.

Step 1. Open the *Event* table in datasheet view and select the field on which you want to sort. Fig. 9.23 shows that the field "*Points*" is selected to sort the records in ascending order.

Fig. 9.23: Sorting the Event table on Points field

Step 2. From the tool bar click ***Sort Ascending*** icon if the table has to be sorted in ascending order of selected field. Alternatively select ***Sort Descending*** icon if the table has to be sorted in descending order of selected field.

Step 3. The table will be sorted in the ascending order of points as shown in Fig. 9.24.

Fig. 9.24: Event table after sorting on Points field

Sometimes we may need to sort the table based on more than one fields. In such case, click ***Sort*** icon on the toolbar. The Sort Order dialog will be displayed as shown in the Fig. 9.25.

Fig. 9.25: Sort Order dialog box

Select the appropriate field name and field value according to which the records are to be sorted. Choose the order of sorting ascending or descending as required from the Order drop down box. Multiple fields may be selected in this dialog box. Click **OK** button once done.

Closing LibreOffice Base

To close the application window of LibreOffice Base, click on the **File > Close** or click on the cross (x) button of the LibreOffice Base window.

Let's Practice

There are 5 houses in Ruhi's school – Ganga, Yamuna, Satluj, Beas and Narmada. Once student can participate from each house in a particular event. Create a table Participants with following fields.

1. Event_Id
2. Event Name
3. Ganga
4. Yamuna
5. Satluj
6. Beas
7. Narmada

Also add minimum five records in the table.

Summary

- Base is a free and open source database component of LibreOffice suit.
- It can be downloaded from www.libreoffice.org
- A data type refers to the type of data that will be stored in that particular field.

- Various in Base can be categorized into Text , Numeric, Currency and Date.
- LibreOffice Base is the collection of related data objects known as Tables, Forms, Queries, Reports and application modules.
- Depending on the object that is selected, the respective Task Pane and Object Area displaying the created object appears on the User Interface Window.
- A table in LibreOffice Base can be created using a wizard or using the Design view.

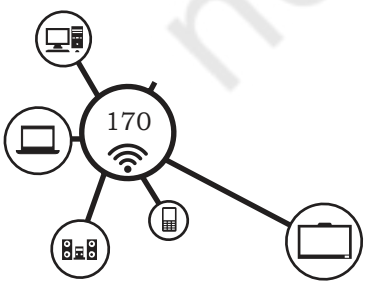
Practical Exercise

Ananthu wants to create a directory containing data – Serial No, Name, Mobile Number, Email id, Date of birth of his friends. Create a table using LibreOffice Base. Make Serial No as primary key. Enter minimum 5 records in the table. Sort the table in alphabetical order of name.

Check Your Progress

A. Multiple choice questions

1. Which of the following is NOT a type of text data type?
   (a) Memo
   (b) Varchar
   (c) Float
   (d) Char
2. A currency data type can only store monetary data that is in dollars.
   (a) True
   (b) False
   (c) Neither a nor b
   (d) Both a and b
3. Which of the following data can a date data type store?
   (a) Date
   (b) Time
   (c) Both date and time
   (d) Neither date nor time
4. Which of the following is true about LibreOffice Base?
   (a) It is a spreadsheet software
   (b) It is free and open source software
   (c) It can store only character data
   (d) It is a licensed software.



5. Which of the following methods can be used to create a table in Base?
   (a) Using a table wizard
   (b) Design View
   (c) Both a and b
   (d) Neither a nor b
6. The related objects of a database can be seen in _____ pane of the Base Database window.
   (a) Database
   (b) Task
   (c) Title Bar
   (d) Menu Bar
7. Which is the shortcut key to open an existing database?
   (a) Ctrl+ D
   (b) Ctrl+O
   (c) Ctrl+E
   (d) Ctrl+F
8. The Design view of Table Creation window in LibreOffice Base is divided into _____ sections or panes.
   (a) 2
   (b) 3
   (c) 4
   (d) 5
9. While entering records in a table, we can move to the next field by pressing the _____ key.
   (a) Tab
   (b) Ctrl
   (c) Enter
   (d) Shift
10. Which of the following is true about primary key of a table?
    (a) Every table must have a primary key
    (b) The data values in primary key field cannot be duplicated.
    (c) A primary key field cannot be left blank
    (d) All of the above

B. State whether the following statements are True or False

1. The text data can contain special characters.
2. Memo data type can be used to store descriptive data.
3. A Boolean data type can have two or more than two values.
4. We cannot store audio data in LibreOffice Base.
5. The properties of a field change according to the data type selected.
6. Field description may or may not be entered while designing a table.
7.  is pressed to move to the last record.
8.  appears when the record is being edited.

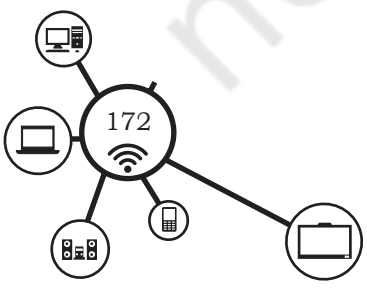
9. A table once created in a database cannot be edited.
10. Sort dialog box can only help to sort data in ascending order.

C. Fill in the blanks

1. A data type refers to the type of data that will be stored in that particular field.
2. The _____ data is a combination of letters, numbers or special characters.
3. _____ data type can be used to store Aadhar number.
4. The _____ data type used to store digitized images.
5. The shortcut key to save a table is _____.
6. _____ on the Base Interface Window displays information about the type of view of the object in the database.
7. A _____ icon appears before the field name indicating that it is a primary key.
8. The data can be entered in a table only in _____ view.
9. The black pointing arrow just before the field name in a table is called _____.
10. The process of arranging the records in particular order on any filed is called _____.

D. Answer the given questions

1. Differentiate between:
   (a) Memo and Varchar data type
   (b) Number and Decimal data type
   (c) Design View and Datasheet view of a table
2. Name the menu items present on the Base User Interface,
3. Label the components – Title Bar, Database Pane, Tasks Pane, Status Bar of the LibreOffice Base User Interface.
4. How can we define a primary key in a table?
5. Write steps to sort the table in descending order of primary key.
6. What is the use of navigation box with respect to tables in a database?



Chapter 10 Working with Multiple Tables

Introduction

We have learned to create tables in a database. Once the tables are added in a database, you may require to edit or delete the table. Also relations are set up between the tables to control data redundancy and inconsistency. This helps in proper maintenance of a database by checking that neither the records are duplicated nor there is variable data value for a particular field in two or more tables. If you set up relations between tables, then adding or updating a record in one table reflect the changes in all the related tables.

Editing and Deleting Tables

In the previous chapter, we have created a Customer table using a wizard in Sports Day database. It is possible to copy, rename, edit and delete the table of database by right clicking on the table name and using the appropriate option from the pop up menu.

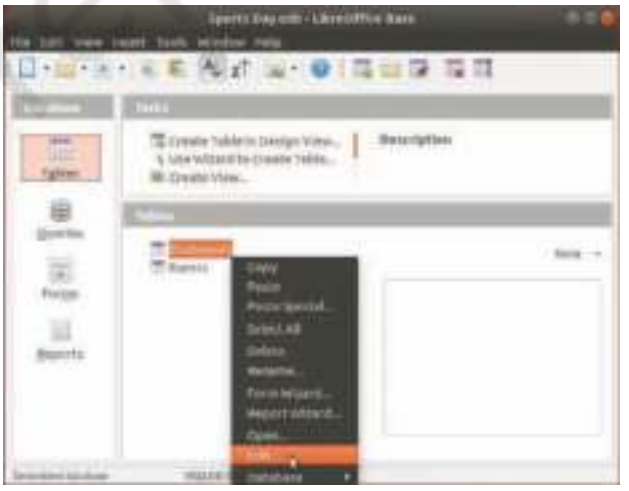


Fig. 10.1: Selecting Edit option from pop up menu

Editing a table involves the task such as adding a new field or removing any field in a table or to alter any of the field properties. To edit a table, open the **Database User Interface** window. Selecting the **Table** object in **Database Pane**, the list of tables will be displayed in the **Table Area**. Right click on the table name and select **Edit** option from the pop menu. In our example we have selected the Customer table as shown in Fig. 10.1.

The design view window of the table will be displayed as shown in Fig. 10.2. Do the required modifications

Fig. 10.2: Table in design view window

Fig. 10.3: Selecting Delete option from pop up menu

Fig. 10.4: Confirm Deletion Alert

and save the table. Also note that the changes so made will not affect the previous records entered in the table.

Similarly to delete a table, right click on the table to be deleted, say Customer table and select the **Delete** option from the pop up menu as shown in Fig. 10.3.

A confirmation box to confirm for deletion of the table will be displayed as shown in Fig. 10.4. Click on **Yes** button to finally delete the table.

To rename a table, right click on the table name in the Table Area and select **Rename..** option from the pop up menu. A cursor will appear. Type the new name and press the **Enter** key.

Relationships between Tables

While working with multiple tables, you need to check the redundancy and inconsistency of data. The record for a particular entity should neither be repeated nor different data values should appear for a single entity in the database.

This is done by setting relationship between the tables of a database. The most important prerequisite for setting a relationship is that there must be a common field(s) between the two tables to create a relationship.

Let us consider an example of a database containing following two tables–Student_Details and Student_Result

Table 10.1: Student_Details

Admission No	Name	Father's Name	Class	DOB
1001	Mampi	D K Bose	10	12/3/2004
1005	Harnoor	Tej Singh	9	2/5/2005
1110	Sanjeeva	B Reddy	10	13/11/2004
1002	Neeru	Rajesh Jain	7	14/11/2006
1134	Urjit	Mahesh Patel	10	7/7/2003

Table 10.2: Student_Result

Roll No	Admission No	Class	Aggregate_Marks
1	1001	10	78
2	1110	10	93
3	1134	10	46

In Table 10.1 (*Student_Details*), Admission No is the primary key. In table 2 (*Student_ Result*), *Roll No* is the primary key and *Admission No* is the foreign key. So each record in Table 10.2 has a value of Admission No that corresponds to a record in Table 10.1 with same value of Admission No. It is important to note that the data types of the common field in both the tables must be same. If they are not same then LibreOffice Base will display an error message and will not allow to set the relationship between the two tables.

Once the relationship between the two tables has been set, the integrity of data will be managed by the DBMS. That means once a student's record has been entered in the *Student_Details* table, only then that particular *Admission No* can be entered in the *Student_ Result* table. The record pertaining to *Admission No* in *Student_Details* table is considered as the **master record** while the corresponding record in the related table (*Student_Result*) is the **transaction record**. Therefore *Student_Details* is called the **master table** and *Student_ Result* is called the **transaction table**.

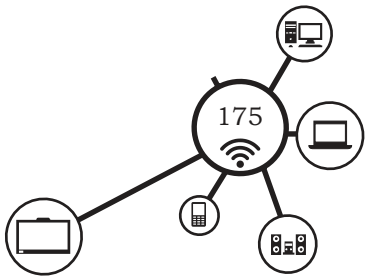
Types of Relationships

The type of relationship between any two tables in a database is based on the number of records that are present in the transaction table corresponding to the master table. Primarily three types of relationships can be set up between two tables in a relational database These are:

(i) One-to-One
(ii) One-to-many
(iii) Many-to-Many

One-to-One relationship

In this type of relationship, one specific record of a master table has one and only one corresponding record in the transaction table. For example, the record for *Admission_No* in the master table (*Student_Detail*) will have only one corresponding record of same value of *Admission No* in the transaction table of *Student_ Result*. This is because no two students will be given same admission number. Similarly one person can have



only one ticket to get entry into a stadium to view the match. So relationship between Student and Admission number and a person and his ticket number will be one-to-one relationship (Fig. 10.5).

Table 1: Student_Details

Admission No	Name	Father's Name	Class	DOB
1001	Mampi	D K Bose	10	12/3/2004
1005	Harnoor	Tej Singh	9	2/5/2005
1110	Sanjeeva	B Reddy	10	13/11/2004
1002	Neeru	Rajesh Jain	7	14/11/2006
1134	Urjit	Mahesh Patel	10	7/7/2003

Table 2: Student_Result

Roll No	Admission No	Class	Aggregate_Marks
1	1001	10	78
2	1110	10	93
3	1134	10	46

Only One corresponding record

Fig. 10.5: One–to-one relationship

One-to-Many relationship

This is one of the most common types of relationship between the tables in a database. As the name says, in this type of relationship, one specific record of the master table has more than one corresponding records in the related transaction table. For example, one teacher can teach multiple students or multiple classes, or one person can sell multiple products. So we can say that there is a one to may relationship between a teacher and class or teacher and student or seller and products (Fig. 10.6).

Table : Teacher Details

Teacher_Id	Name	Subject
T002	Venkateshwari	English
T123	Shikha	Chemistry
T009	Alam	Geography
T056	Vaishali	Maths
T908	Sandhya	English
T667	Puneet	Computers
T342	Onkar	Hindi
T765	Gajender	Maths

Table : Class allocation

Multiple corresponding records

Class	Section	Subject	Teacher_Id
10	A	English	T002
10	A	Hindi	T342
10	B	English	T002
10	A	Maths	T765
9	C	Maths	T765
8	A	Maths	T765

Fig 10.6: One–to–Many relationship

Many-to-Many relationship

In this type of relationship, there will be multiple records in the master table that correspond to multiple records in the transaction table as well. Generally this type of relationship is set when certain records have to be saved more than once in both the related tables. For example, a teacher in a school may hold multiple responsibilities such as class teacher, an activity in-charge or examination in-charge. For each responsibility the teacher might be attached with multiple students. So this type of relationship will be many to many relationship. Similarly a shopkeeper may sell multiple products to multiple customers. So many-to-many relationship exists between a product and a customer. Fig. 10.8 shows the corresponding records in master table and transaction table are in same color.

Table: Department_Incharges

Department	Teacher_Id
Examination	T002
Discipline	T765
Co-Curricular	T056
Time Table	T002
Website Update	T765

Table: Activity_Duty

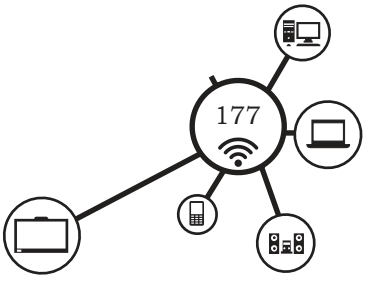
Activity	Department	Teacher_Id
UT1	Examination	T002
Term1	Examination	T002
HomeWork Upload	Website Update	T765
Timetable Upload	Website Update	T765
Inter-house Dance	Co-Curricular	T056
Inter-class Debate	Co-Curricular	T056
Discipline duties	Discipline	T765

Fig. 10.8: Many–to-many relationship

Advantages of Relating Tables in a Database

There are various advantages of relating tables in a database. Few of them are as given below.

- A relationship can help prevent data redundancy.
- It helps prevent missing data by keeping deleted data from getting out of synch. This is



called **referential integrity**. We will study in detail about referential integrity later in the chapter.

- Creating relationships between tables restricts the user from entering invalid data in the referenced fields.
- Any updation in the master table is automatically reflected in the transaction tables.

Let's Practice

Name the type of relationship for the following:

- Citizen and his Driving License
- Customer and Product
- Student and Course
- Team and Match
- Player and Country
- Employee and Project

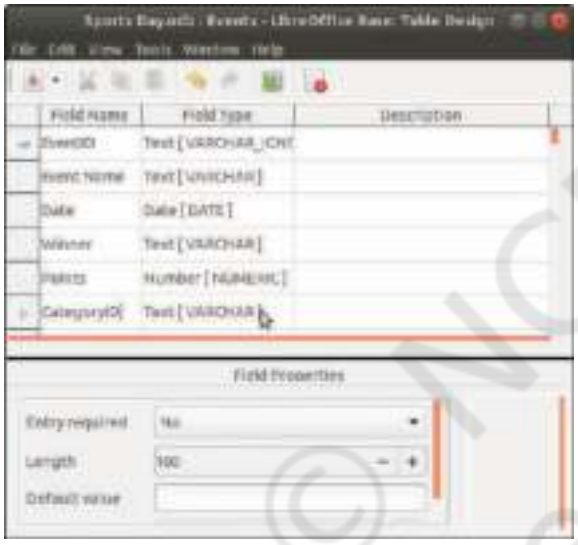


Fig. 10.9: Adding field CategoryID in Event table

Creating Relationships between Tables

Let us get back to Sports Day database created in the previous chapter. Let us add another field, CategoryID to the table *Events* using Edit option as shown in Fig. 10.9.

Enter 10 records in the Events table of various categories as shown in Fig. 10.10.

Create another table with the name EventCategory with the fields – CategoryID, CategoryName, TeacherIncharge and enter the records as shown in Fig. 10.11.

Hence, there are two tables in the database – Events and EventCategory with a common field as CategoryID.

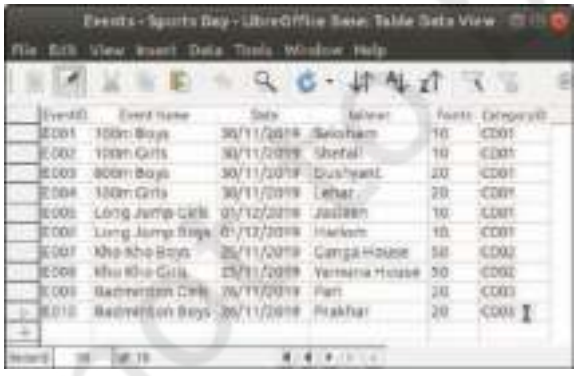


Fig. 10.10: Records entered in Event table with added field CategoryID

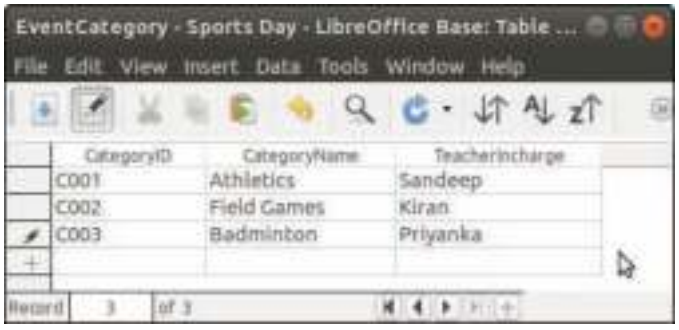


Fig. 10.11: Records entered in EventCategory table

In Event table, EventID is the primary key and CategoryID is the foreign key. In EventCategory table, CategoryID is the primary key. To set up relationship between these tables follow the following steps.

Step 1. From main menu of LibreOffice Base, click on Tools > Relationships…

Step 2. The Relationship Design screen will appear as shown in Fig. 10.12. In the middle of the screen there is Add Tables dialog box. Both the tables are listed in the dialog box.

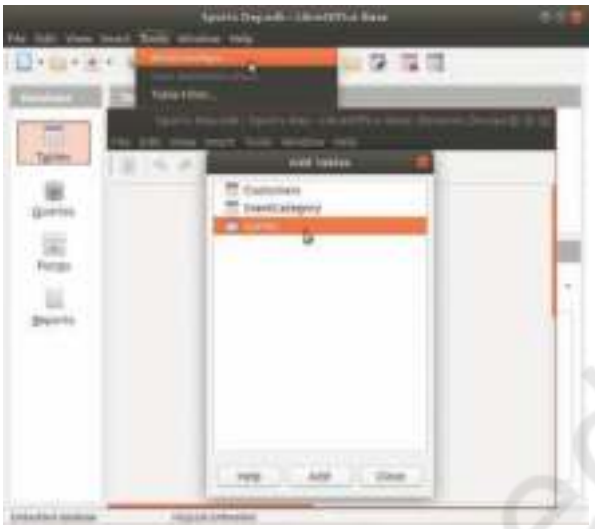


Fig. 10.12: Add Tables dialog box in Relationship Design Screen

Step 3. In the Add Tables dialog box, click Events table and then click Add button. Similarly add EventCategory table to the Relationship Area.

Step 4. Click Close button to close the Add Tables dialog box. Observe that the tables Events and EventCategory table added to the Relationship Area along with all its field list as shown in Fig. 10.13.

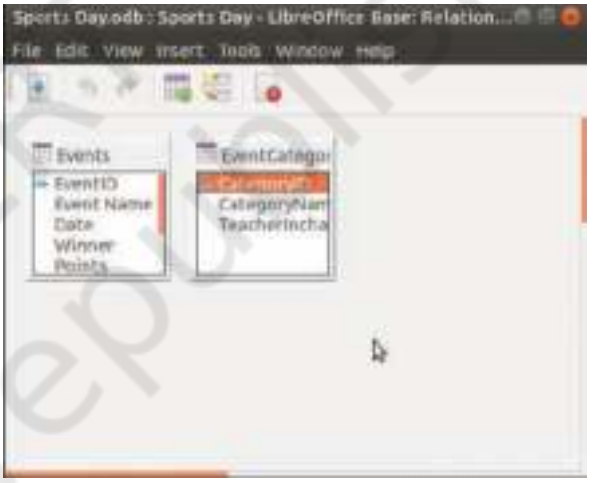


Fig. 10.13: Events and EventCategory Tables added in Relationship Design window

Step 5. As discussed before, CategoryID is the common field in the two tables. Hence it will be used to set a relationship between the two tables. To create a relation between the two tables, we just have to drag the common field CategoryID from the Events table and drop it in EventCategory table. A line connecting both the tables with the common field (CategoryID) appears on the screen as shown in Fig. 10.14.

Fig. 10.14: Relationship between two tables

The line is labeled as '1' on the primary key side and as 'n' on the foreign key side. Hence the CatgeoryID from EventCategory table as primary key will have unique values and is called referenced field. On the other hand,

Fig 10.15: CategoryID of Events table is referenced field and CategoryID of EventCategory table is referencing field

in the Events table, the values of CategoryID might be repeated. Here it is known as referencing field. Fig. 10.15 shows that the CategoryID of the Events table is referenced field and CategoryID of the EventCategory table is referencing field. This type of relationship where one value of a table is associated with multiple values in another table is a One-to-many relationship.

In this relationship EventsCategory is the master table. So the master record with a particular CategoryID has to be added in EventsCategory table first. Only then the corresponding record can be added in the Events table. Also, only one record with a specific CategoryID will exist in the master table but multiple values of CategoryID might exist in the transaction table, thereby forming a one-to-many relationship.

Referential Integrity

According to the principle of referential integrity, no unmatched foreign key values should exist in the database. That means if a record, say Admission No as 1001 is not present or deleted in the master table (Student_Details) of Student database, then there should be no record with Admission no as 1001 in the transaction table (Student_Result) as well. Similarly, in Ruhi's Sports Day database, if a particular category of sports, say C003 is deleted from the master table EventCategory, then there should be no record with Category as C003 in the transaction table. Likewise, if any student leaves the school and his record is deleted from Student_Details table, then there is no question of his appearing for exams and having a result. Hence corresponding record in the transaction table (Student_Result) should either have NULL value or should be deleted.

In Ruhi's Sports Day database as well, the CategoryID that exists in EventCategory table can only be entered in Events table. As mentioned before, once the relationship between the two tables has been set, the integrity of data will be managed by the DBMS. LibreOffice Base

will allow only that corresponding record to be entered in the transaction table which already exists in the master table.

LibreOffice Base gives us following four options to choose from to maintain referential integrity in such cases.

- **No action –** This is the default option. This option states that a user should not be allowed to update or delete any record in the master table if any related record exists in the transaction table.
- **Update cascade –** This option allows the user to delete or update the referenced field but along with it all the related records in any of the transaction tables will also be deleted or updated.
- **Set NULL –** This option assigns NULL value to all the related fields if the master record is deleted or updated.
- **Set default –** This option assigns any fixed default value to all the related fields if the master record is deleted or updated.

To set the relationship properties double click on the relation line joining the two tables, Events and EventCategory. A Relations dialog box will open as shown in Fig. 10.16.

By default the radio button with No action option will be selected. Choose any of the desired option and click OK to set the referential integrity between the two tables.

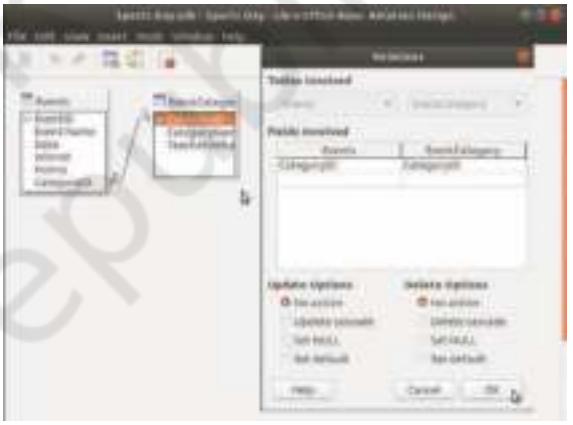


Fig. 10.16: Relations dialog box

Let's Practice

Form a table in Sports Day database in which one-to-one relationship can be established. Write steps to create such a relation in LibreOffice Base.

Summary

- Relations are set up between the tables to control data redundancy and inconsistency.
- The most important prerequisite for setting a relationship between the two tables is that there must be a common field(s) between the two tables.

- Three types of relationships can be set up between two tables in a relational database. These are One-to-One, One-to-Many and Many-to-Many.
- In One-to-One type of relationship, one specific record of a master table has one and only one corresponding record in the transaction table.
- In One-to-Many type of relationship, one specific record of the master table has more than one corresponding records in the related transaction table.
- In Many-to-Many type of relationship, there are multiple records in the master table that correspond to multiple records in the transaction table.
- According to the principle of referential integrity, no unmatched foreign key values should exist in the database.

Practical Exercises

Prakasan lives in Happy Home Society. He wants to create a database so as to store and manage the maintenance dues received from flat owners of the society. Create the following tables for his database.

Table: Residents Details

Flat no
Owner Name
Contact No
Flat Category

Table: Maintenance Dues

Receipt_Id
Flat No
Date
Amount

Relate the two tables and thereafter enter minimum five records in both the tables. Which type of relationship did you create? In which table did you enter the data first?

Uzair manages a boys hostel in an engineering college. He wants to manage the records of the people staying in his hostel by creating a database with the following tables and also set a relationship between the tables.

Table: Student_Details
Student_Id
Name
DOB
Course
Father's Name
Contact No_student

Contact No_ guardian
Room No
Table: Room Details
Room No
Floor (data value can be first, second or third)
Category (data value can be AC / Non- AC)
Student Id
DOO (Date of occupancy)
Monthly Rent

Check Your Progress

A. Multiple choice questions

1. Which of the following actions can be performed once the tables are created in a database?
   (a) Add a field in a table
   (b) Rename a table
   (c) Delete a table
   (d) All of the above
2. Which of the following is checked by a DBMS?
   (a) Redundancy
   (b) Inconsistency
   (c) Both (a) and (b)
   (d) Neither (a) nor (b)
3. Which of the following is required to set a relationship between the two tables?
   (a) Both the tables must be in different databases
   (b) Both the tables must have a common field
   (c) Both the tables must have the same name
   (d) Both tables must be stored in documents folder only.
4. If a record is added in a master table, which of the following is NOT true for transaction table
   (a) The record in the master table is called the master record
   (b) The corresponding record in transaction table can only be entered once.
   (c) The record in the transaction table is called the transaction record.
   (d) It is possible to add a record in the master table
5. Which type of relationship exists between a student and the subjects studied by him/her?
   (a) One-to-one
   (b) One-to-many
   (c) Many-to-many
   (d) All of the above

6. Consider the following tables. Which type of relationship can be established between the two tables?
   (a) One-to-one
   (b) One-to-many
   (c) Many-to-many
   (d) None of the above

Table 1: Item

Item_Code
Item_Name
Price
Qty
Category_Code

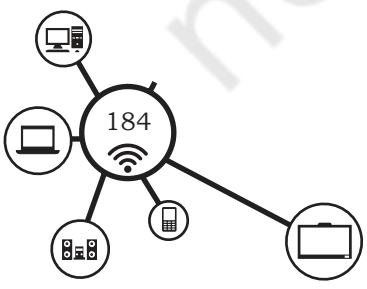
Table 2: Item_Category

Category_Code
Cat_Name
Item_Code
Cat_Disc

7. Which of the following menus contains the Relationship option?
   (a) Edit
   (b) File
   (c) Tools
   (d) View
8. The list of tables to be added is displayed in the _____ dialog box in the Relationship Screen.
   (a) Add Tables
   (b) Add Databases
   (c) Both (a) and (b)
   (a) Neither (a) nor (b)
9. In the relationship design screen, the relationship between the two tables is done using _____ operation.
   (a) Click
   (b) Double Click
   (c) Drag and Drop
   (d) Right click
10. Which of the following is NOT an option that can be used to maintain referential integrity in a database?
    (a) No Action
    (b) Set NULL
    (c) Set Default
    (d) Set Value

B. State whether the following statements are True or False

1. Redundancy is preferred in a database.
2. In a table, a record for a particular entity should not be repeated.
3. A single field should always have only one data value.
4. If a table is edited, the records already entered in it are deleted.
5. The record in master table should be entered before the corresponding record is entered in the transaction table.



6. In one-to-many relationship, one specific record of the master table has more than one corresponding records in the related transaction table.
7. The Relationship option is present in the Widows menu.
8. In a database, the referential integrity is maintained by the user.
9. A relationship is always set between the tables based on a common field.
10. If the master record is deleted, the transaction records will always be deleted.

C. Fill in the blanks

1. A table to be edited is displayed in _____ view.
2. The most important prerequisite for setting a relationship between the two tables is that there must be a _____between them.
3. In _____relationship, one specific record of a master table has one and only one corresponding record in the transaction table.
4. _____is one of the most common types of relationship between the tables in a database.
5. A record being entered in a _____ table must always exist in a _____ table.
6. The principle of _____helps prevent missing data by keeping deleted data from getting out of synch.
7. Creating _____ between tables restricts the user from entering invalid data in the referenced fields.
8. Data integrity is maintained by _____.
9. A relationship between customers and products is an example of _____ relationship.
10. The _____ window is used to set relationships between the tables.

D. Answer the following questions

1. Give any two advantages of relating a table in a database.
2. How is redundancy or inconsistency controlled in a database? Explain with an example.
3. Define referential integrity. Who maintains referential integrity in a database?
4. Differentiate between one to one relationship and one to many relationship. Give suitable examples to explain your answer.
5. Explain many to many relationship with an example.

CHAPTER 11

Queries in Base

Introduction

A database is used to store data in an organized manner so as to retrieve it easily and accurately from database. To search for the desired record and to retrieve the desired data, we have to give its specifications to DBMS. Such specifications are given to the database in the form of queries. For example, we may have to specify the fields that we want to display or any particular data value based on which the records are to be filtered from the table(s). Therefore, we can say that a query is a sort of question asked from a database. Depending upon specifications given in the query, the specific records are searched from the table(s) in the database and then displayed in the desired manner. Such information may be difficult to find by just looking at a single table or multiple tables. In fact as the number of records increase, finding the desired information becomes more and more difficult. By using queries, we are able to retrieve data without going individually through each record in the table(s) and also display them in desired format.

Queries

A query is one of the most important feature of any DBMS. Using a query, we can retrieve and display data from one or more tables in a database. This is done by giving specific search criteria to the DBMS so that we are able to view the exact information that we want.

LibreOffice Base allows us to create a query and even save it as an object in a database. This helps us to run the query multiple times as and when required.

Using a query, we can specify the fields that we want to display and also the criterion based on which the records to be filtered. The information may be retrieved from a single table or from multiple tables. Also the result of the query is displayed in tabular form with field names in columns and the records in rows.

For example, in a Student database, if we want to display the names and marks of the students in a particular class from the Result table, who have scored less than 320 aggregate marks, then we need to give the following information to the database:
Name of the table – Result
Fields to be specified – Name, Marks
Criterion – Aggregate marks should be less than 320

In this chapter you will learn to create a query, save it and then run it as and when required.

Creating a Query

A query can be created in three ways. In this chapter you will learn the first two methods to create a query.

(i) Using a Wizard
(ii) In Design View
(iii) In SQL view

Creating a Query Using a Wizard

Let us recall the *Sports Day* database created in the previous chapters with two tables – Events and EventCategory.

Let us create a query that will display the Event Name and Winner for each event with *CategoryID* as *C001*. The desired data has to be retrieved from the Events table. To create a *query using a wizard*, follow the following steps.

Step 1. Open the *Sports Day* database. In the **Database Design** window, click on **Queries** button present in the **Database Pane** on the left as shown in Fig. 11.3.

Step 2. In the **Tasks Area**, click on **Use Wizard to Create Query...** option. The **Query**

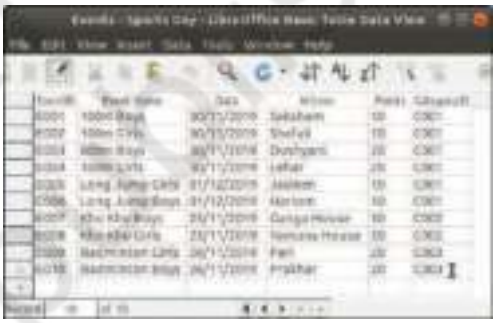


Fig. 11.1: Records in Events table

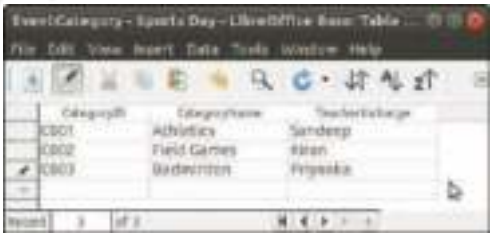


Fig. 11.2: Records in Event Category table

Fig. 11.3: Queries icon in Database Pane

Fig. 11.4: First step of Query wizard

Fig. 11.5: Fields of selected Events table displayed in the Available Fields list box

Fig. 11.6: Fields moved from Available fields to Fields in the Query list box

Fig. 11.7: Select sorting order

Wizard will start as shown in Fig. 11.4. It contains the **Steps Pane** on the left and the **Query Details Area** on the right.

Step 3. The first step of the wizard is to select fields from the respective tables. For our query, to display *Event Name* and *Winner* and the criterion to filter the records based on *CategoryID*. All these fields are present in *Events* table. Therefore select *Events* table from the **Tables** list box. The corresponding fields are displayed in the **Available Fields** list box as shown in Fig. 11.5.

Step 4. Select Event Name field from the list box and click the right arrow (>) button. The field name will appear in the **Fields in the Query** list box. Repeat the process for *Winner* and *CategoryID* fields as shown in Fig. 11.5. Observe that these three fields are moved to **Fields in the Query** list box.

Note that once the fields are added they can be moved up and down in order by clicking ∧ and ∨ buttons present on the extreme right of the wizard. Clicking on » button moves all fields to **Fields in the Query** area and « button moves all the fields back to **Available fields** area.

Step 5. Clicking on the **Next** button will display the screen to select the sorting order as shown in Fig. 11.7. It will set the sorting order. The result of the query can be displayed in ascending or descending order of any particular field of the table. Since we do not want to set in a particular order, so we click on **Next** button.

Step 6. The next step is to set the search conditions or the criteria on the basis

of which records will be filtered from the table. This is the step where actually the query is set up or the criterion is given to the database. As per our query, the criterion is to display the records of events with *CategoryID* as *C001*. By default, the radio button with option **Match all of the following** is selected.

Step 7. Select *Events.CategoryID* field from **Fields** drop down list, is equal to from **Condition** drop down list and type the value as C001 as shown in Fig. 11.8, and click on Click **Next** button.

Fig. 11.8: Selecting the Search condition and specifying value

Three search conditions can be given at the most in the wizard. Click and select the radio button with option **'Match any of the following'** if any one of the given condition are to be matched for filtering the records.

Step 8. Steps 4, 5 and 6 given in the **Steps Pane** deal with tasks like summarizing and performing numerical calculations. Such steps are not required if there is no numeric field involved in the query. So you can skip these steps and move directly to "*Step 7. Aliases*" of the wizard.

Step 9. The next step to give alias name i.e. the column header name will be displayed when we run the query. By default the field names will be displayed as column headers. Many times field names are not user friendly, so an alias name which is more readable, is chosen to be displayed in the query output. For example, the name of the field in the *Events* table is *Winner*. To display the name of winner as the column header, type '*Winner Name*' and click on **Next** button as shown in Fig. 11.9.

Fig. 11.9: Assigning Alias Names

Step 10. The last step of the Query wizard displays the entire overview of the query as shown in Fig. 11.10. All the steps performed till now are shown in a summarised manner.

Fig. 11.10: Overview of Query

It includes the following:

- **Name of the Query –** By default, the name of the query is Query_Events by default. If desired, type the new name in the text box.
- **The action to be performed after the wizard finishes –** By default Display Query option will be selected. Click and select the Modify Query radio button if the query has to be edited in the Design view.

Fig. 11.11: Records retrieved from Query with CategoryID C001

- **Complete detail of the query –** This section contains a summary about the query that has been created.

Step 11. Click on **Finish** button. The records with *CategoryID* as C001 will be displayed on the screen as shown in Fig. 11.11. Observe the column headings. Are all of them same as the field names in the *Events* table?

Once the query is created, it can be edited in Design view. We will study about Design View in the coming section.

Creating a Query in Design View

Another way to create a query is using the **Design** view. This is a more flexible method to create a query from either single or a multiple tables of a database. Let us create a query to display records of Athletics category. For this query, records have to be filtered from both *Events* and *EventCategory* tables. Open *Sports Day* database and follow the following steps to create a query in Design View:

Fig. 11.12: Create Query in Design View

Step 1. Click **Queries** icon on the **Objects Pane** in the **Database Window**.

Step 2. Click **Create Query in Design View...** icon in the **Tasks Pane**. The **Query Design Window** appears. In the middle of the window the **Add Table or Query** dialog box is displayed as shown in Fig. 11.12.

Step 3. Click on the Event table to be used in the query and then click on **Add** button. Alternatively double click on

the *Events* table. The table will be added to the Tables Pane present at the top of the **Query Design window**.

Step 4. Similarly add *EventCategory* table to **Tables Pane** of the **Query Design window**.

Step 5. Click **Close** button in the **Add Table or Query** dialog box to close it. The tables *Events* and *EventCategory* added will be displayed in the Table pane as shown in Fig. 11.13.

Fig. 11.13: Table added in the Tables Pane

Step 6. Next step is to select the fields. For our query we want to display *Event Name* and *Winner* from the *Events* table and *Category Name* from the *EventCategory* table. So in the list box of *Events* table, double click on *EventName* and *Winner* field. Similarly add the field *CategoryName* form *EventCategory* table. The field name along with the table name is displayed in the **Design grid** present in the lower half of the **Query Design window** as shown in Fig. 11.14.

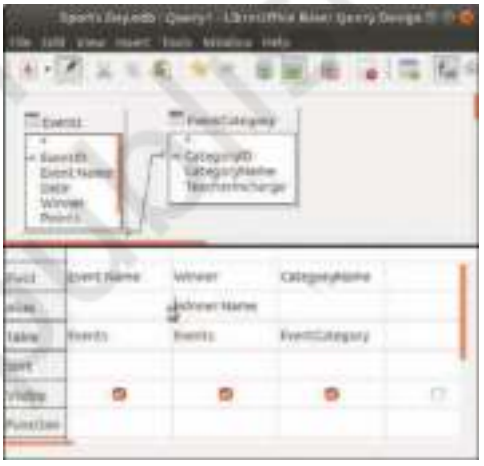


Fig. 11.14: Adding fields to query

Observe that the **Visible Check Box** is by default selected. This means that all these three fields will be visible when you run the query. If you do not want the data values for the particular field to be displayed, click to deselect the respective check box.

Step 7. In the grid, there is a row titled **Alias**. As mentioned before, it can be used to display meaningful names in the output. For example, instead of Winner, we would just like to display Winner Name. For this, type Winner Name in the **Alias** text box under Winner column as shown in Fig. 11.14.

Step 8. By default, the data that is displayed as a result of the query is not sorted. To sort the records in either ascending or descending order of a particular field, the **Sort** row is given in the grid. For example, to display the records in alphabetical order of *Event Name*, select *Ascending* from the drop down list box visible in the **Sort** row under Event Name column.

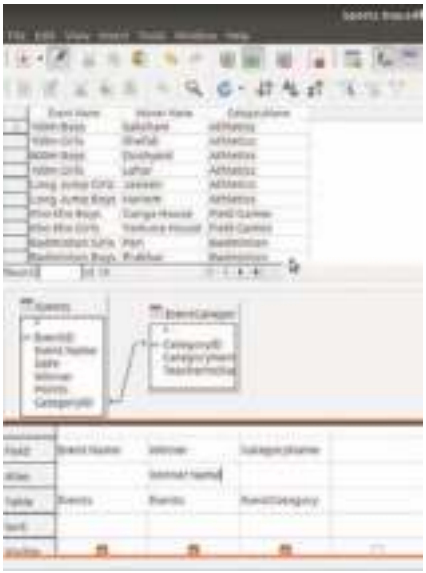


Fig. 11.15: Query Result in Tables Pane

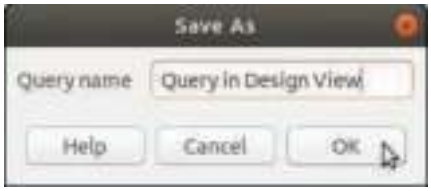


Fig. 11.16: Saving the query

Fig. 11.17: Selecting Edit option to edit query

Step 9. Once the query is designed, click **Run Query** ( ) button on the toolbar or press **F5** key. The query result will be displayed in the **Tables Pane** area as shown in Fig. 11.15.

Step 10. Click on **Save** button to save the query. The **Save As** dialog box will be displayed as shown in Fig. 11.16.

Step 11. By default, the Query Name as *Query1* will be displayed. Type a different name if required. Click on **OK** button to save the query.

The name of the query will be seen in the **Objects area** in the **Database window**. To run the query again and see the result s of the query, double click on the query name. The results of the query will be displayed in a separate window.

To close the Query window, click on on close button on the top right corner of the window.

Editing a Query

To edit any query, click on the **Query** icon of the query that has to be edited. The list of queries that have been created will be displayed in the **Objects Area**. Right click on the Query Name in the **Objects Area** of the **Database window**, as shown in Fig. 11.17.

Select **Edit** option from the drop down menu. The **Query Design window** will be displayed. Let us apply a criteria to display records of only Athletics category. For this type *Athletics* in the **Criterion row** under the *Category Name* column. Now, the query design is complete if we run the query, the record of only *Athletics* category will be displayed as shown in Fig. 11.18.

We can use the Criterion row to apply multiple conditions as well. Also note that we can apply all relational operators like <, >, <=, >=, != and = for all conditions that can be given in **Criterion** row. For example, if you want to see only those records where points scored are more than 10, then add Points field to the grid and then set the Criterion for it as >10 as

shown in Fig. 11.18. Now save and run the query. Observe the output as shown in Fig. 11.18.

Fig. 11.18: Query result in Design view after applying criteria to display records of Athletics category

Working with Numerical Data

Till now, we have been displaying data from tables in the query. But that is not all, we can even use certain mathematical functions to find the count, sum, minimum, maximum or average of data values. Let us design a query to display the average points for each category of events. In the **Database Window**, click **Create Query in Design View...** button to open the Query **Design Window**. Add Events and *EventsCategory* tables. Thereafter follow the following steps to display the average points for each category.

Step 1. Add Category Name field from *EventCategory* table and Points field from *Events* table.

Step 2. Under the *Category* Name field, in the **Function** row, click the down arrow. A drop down list will be displayed as shown in Fig. 11.19.

Step 3. Select **Group** option from the drop down list. This option forms the groups for each of the data values in the column of *Category Name*.

Step 4. Similarly, under the Points column, select the **Average** function from the drop down list.

Step 5. Press **F5** to run the query. The query result depicting average points in all the categories will be displayed as shown in the Fig. 11.20.

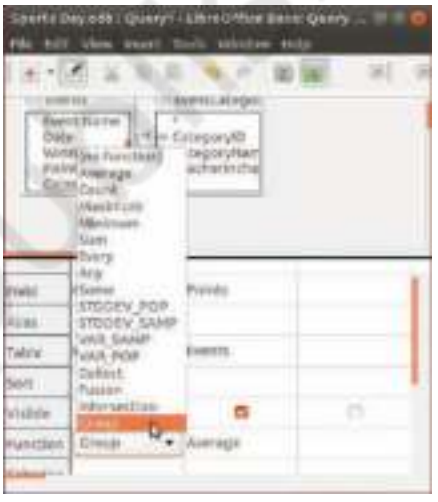


Fig. 11.19: Function drop down list

Fig. 11.20: Query result in Design view after applying Group function to Category Name and Average function to Points

Step 6. Further, we can also put conditions on groups using the **Criterion** row. Say, for example to display the average of only *Athletics* category, type *Athletics* in the **Criterion** row under the *Category Name* column. Now, if we run the query the average of only *Athletics* category will be displayed in the query result.

SUMMARY

- A query is used to retrieve and display data from one or more tables in a database.
- A specific search criteria is given to the DBMS to view the desired information.
- The result of the query is displayed in tabular form with field names in columns and the records in rows.
- A query can be created in three ways.
  - Using a Wizard
  - In Design View
  - In SQL view

Practical Exercises

Prakasan lives in Happy Home Society. He has created the following tables in his database so as to store and manage the maintenance dues received from flat owners of the society.

Table: Residents Details

Flat no
Owner Name
Contact No
Flat Category

Table: Maintenance Dues

Receipt_Id
Flat No
Date
Amount

Create a query to display the following information

Flat No	Owner	Receipt Number	Date	Amount

(Please note the change in column headings)

Uzair manages a boys hostel in an engineering college. To manage the records of the people saying in his hostel, he created a database with the following related tables.

Table: Student_Details

Student_Id
Name
DOB
Course
Father's Name
Contact No_student
Contact No_ guardian
Room No

Table: Room Details
Room No
Floor (data value can be first, second or third)
Category (data value can be AC / Non- AC)
Student Id
DOO (Date of occupancy)
Monthly Rent

Create a query to display the following tabular format

Room No	Student Name	Category	Monthly Rent

Create a query that displays total monthly rent collected for each category.

Project Work

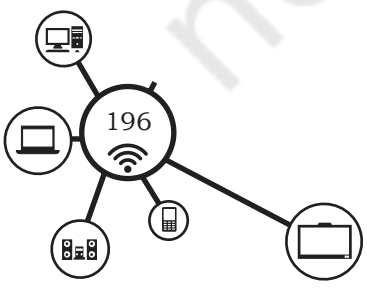
Use the internet to study the process of working of hostels. See, what all tables/fields/queries should be further added to the existing database so that it is able to fully automate the working of the boys hostel explained in the above exercise. Thereafter make changes in the database created by you in LibreOffice Base.

Check Your Progress

A. Multiple choice questions

1. Which of the following is refer to asking questions from the database?
   (a) Report
   (b) Table
   (c) Query
   (d) Database
2. Which of the following are the ways to design a query?
   (a) Wizard
   (b) Design View
   (c) SQL
   (d) All of the above
3. Which is a flexible way to create a query?
   (a) Wizard
   (b) Design View
   (c) Both (a) and (b)
   (d) Neither (a) nor (b)

4. Into how many parts is the query design window divided?
   (a) One
   (b) Two
   (c) Three
   (d) Four
5. Which of the following is NOT true about queries?
   (a) It can be created using multiple tables
   (b) Multiple queries can be created in a database
   (c) A query can run multiple times
   (d) A query once created cannot be edited
6. Which of the following is the shortcut key to run the query?
   (a) F3
   (b) F4
   (c) F5
   (d) F6
7. Which of the following functions can be performed on numerical data while designing a query?
   (a) Sum
   (b) Minimum
   (c) Maximum
   (d) All of the above
8. In a Query Design wizard, which of the following buttons is clicked to move a field from 'Available fields' list box to 'Fields in the query' list box?
   (a) >
   (b) < 9
   (c) ∨
   (d) ∧
9. Which of the following relational operators can be applied to set the criterion while designing a query in LibreOffice Base?
   (a) >
   (b) =
   (c) !=
   (d) Add Form
10. Which of the following dialog box is present when the Query Design window is opened for the first time to design a query?
    (a) Add Table
    (b) Add Query
    (c) Add Table or Query
    (d) None of the above
11. Which of the following step is not performed if there is no numerical data to be worked upon in a query?
    (a) Selection of fields
    (b) Giving Aliases
    (c) Summarizing
    (d) Selection of tables



B. State whether the following statements are True or False

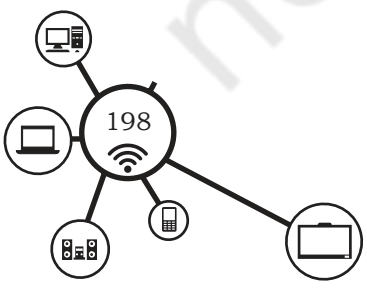
1. You can run a query only once
2. A query cannot be created from multiple tables
3. The shortcut key to run a query is F5.
4. LibreOffice Base provides us with two ways to create a query.
5. A query with numerical data cannot be saved.
6. By default the query result is not sorted.
7. A query can be used to display the average value of a numerical field.
8. While designing a query, the criterion can be set on only one field.
9. Alias is an alternative name for a field in a query.
10. In query Design window, the visible check box is selected by default.
11. A query once created using a wizard can only be edited in the Design view.

C. Fill in the blanks

1. A _____ is a sort of question asked from a database.
2. The result of the query is displayed in _____ form with field names in columns
3. A query can be created in _____ways.
4. The Query Design window is divided into _____ sections.
5. The shortcut key to run the query is _____.
6. The conditions to filter the records are set in the _____ row.
7. When a table is selected in a Query wizard, the corresponding fields are displayed in the_____list box.
8. The result of the query can be displayed in _____ or _____ order of any particular field of the table.
9. At the most _____ search conditions can be given in the query wizard.
10. The last step of the Query wizard displays the entire _____ of the query.
11. The _____ view is a more flexible method to create a query.
12. To edit any query, right click on the _____ icon of the query that has to be edited.
13. In the _____ row of the Query Design grid, we can type the column heading that will be displayed instead of field name when we run the query.

D. Answer the given questions

1. Define a query? What is the need of creating a query in a database?
2. Rearrange the steps given below so as to create a query using a wizard.
3. Give Alias
4. Select the fields
5. Set the criterion
6. Set the sorting order
7. Give table name
8. What all information is seen in the overview (last step) of the Query wizard?
9. What is the use of Alias row in the Design grid of the Query Design window?
10. Name any four mathematical functions that can be applied to numerical data in a query.
11. Name the three ways of creating a query in LibreOffice Base?



Chapter 12 Forms and Reports

Introduction

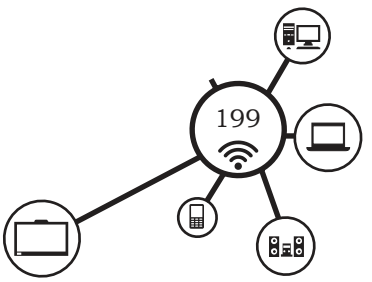
We know that tables in a database are used to store data in an organized manner. For this we have to enter data into the tables. As seen in previous chapters, data-sheet view is used to enter data into the tables. The row and column format of the data-sheet view is not a user friendly interface. So it is required to develop a user friendly data entry screen for data entry operator or a user, who is not very well versed with computers. Moreover, while doing data entry, the user may accidentally or intentionally alter the data in the table. Therefore LibreOffice Base provides the **Form** feature for data entry purposes.

Also, when the user wants to retrieve and view the data from one or more tables in a database using queries, it is again displayed in data-sheet view. The **Report** feature of OpenOffice Base helps to present the retrieved data in a user friendly, understandable and formatted manner.

Both reports and forms are considered as objects of the database and are present in the **Database Pane** of the **LibreOffice Base User Interface**. In this chapter we will learn to create Forms and Reports using LibreOffice Base.

Forms

A form is an object of the database that has a user friendly interface where data can be entered and seen in an attractive and easy-to-read format. For any database, it is the front end for data entry and data modification. It displays the data in a layout design by us and not just in a simple row and column format.



Primarily, a form contains **field controls** arranged in a presentable and user friendly manner. Each field control consists of a label and the field value text box. A label is a piece of text that specifies the data that should be entered in the field value text box. A field value text box is linked to the respective field in the table. We may add all or selected fields from the table on the form. In addition to field controls, it may contain some additional text like titles, headings and names, graphics like logos, list boxes and radio buttons.

There are two ways to create a form:

- Using a wizard
- Using the Design View

Creating a Form Using a Wizard

This is the simplest way to create a form. To explain how to create a form using a wizard, we will get back to the Sports Day database created in the previous chapters. To create a form using wizard, follow the following steps.

Step 1. Open the Sports Day database created in LibreOffice, and click the **Form** icon on the **Database Pane** as shown in Fig. 12.1.

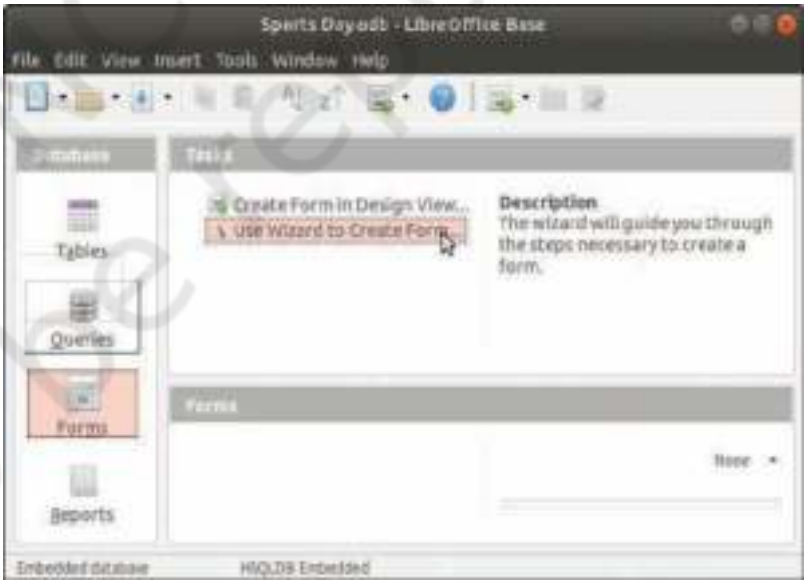


Fig. 12.1: Selecting Forms from Database Pane

Click the option **Use Wizard to Create Form...** on the **Tasks Pane**. The **Form wizard** will open along with a blank database form in design view in the background as shown in Fig. 12.2.

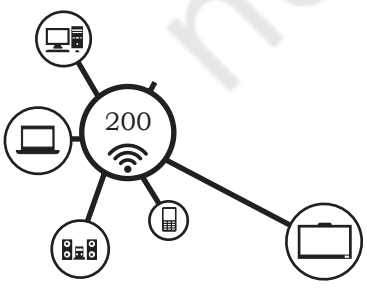


Fig. 12.2: Form Wizard and Database Form in Design View

Step 2. The step 1 of the wizard is to select the tables or queries for which the form has to be created. As we are creating a form for *Events* table, select Events table from "*Tables and queries*" list box as shown in Fig. 12.2.

Step 3. After selecting the *Events* table, all the fields of the *Events* table will be listed in the **Available Fields** list box as shown in Fig. 12.3.

Fig. 12.3: Fields of Events table listed in the Available Fields

Step 4. As we require all the fields to appear in the Form, shift all the fields of Event table from **Available Fields** list box to **Fields in the Form** list box using >> button. Observe that in Fig. 12.4, all the fields are shifted to **Fields in the Form** list box. Click on **Next** button to move forward.

Fig. 12.4: All fields of Events table in Available Fields are shifted to Fields in the Form

Step 5. The second step consists of setting up a subform, i.e. a form within a form. You need to check the checkbox "Add Subform" in Fig. 12.5 to add the subform. Since we do not want to set up any subform, click **Next** button to proceed further.

Fig. 12.5: Step 2 Set up a subform

Step 6. The wizard skips the next two steps that relate to the subform and moves on to step 5. This step arrange controls i.e. to set up the design of the form. Observe in Fig. 12.6 that, by default, all controls will be left aligned. Click **Right Align** radio button to align the controls from the right side of the form. As mentioned before, a field control consists of two parts – label and the field value text box. So in this step we arrange the label and field value text boxes as we want them to be visible on the screen.

Fig. 12.6: Selecting the Layout of the form

Four layouts are given in this step of the wizard to choose from:

- Columnar display with Labels on the left of the field value

- Columnar display with Labels on top of the field value
- Display as datasheet
- Block display with labels on top

Let us select *Columnar Display with labels on the left* arrangement. Also note that as we choose the Layout type, the fields are arranged in the Form Design view also.

Step 7. Click **Next** button.

Step 8. The step 6 of the wizard asks whether the form will be used for displaying data, entering data or both. As we go with the default settings, so we click **Next** button as shown in Fig. 12.7.

Fig. 12.7: Step 6 of form wizard

Step 9. The next step is to apply styles to the form being created. We can select the desired background colour and border type of the field value text boxes. Observe in Fig. 12.8, by default the border of the field text value is displayed in *3D look*. We can select the options *No Border* or *Flat* if required.

Fig. 12.8: Applying styles to the form

Step 10. Click **Next** button.

Step 11. The next step is to set the name of the form. By default the name of the form is same as the name of the table. Click in the textbox and type a different name if desired, say *EventsForm*,

as shown in Fig. 12.9. In the same step, by default, the radio button with the option **Work with the form** is selected. If you wish to modify the form after the wizard finishes, click **Modify the form** option.

Fig. 12.9: Assigning name to form

Step 12. Click **Finish** button. The form with the first record will be displayed on the screen in a separate window. Also, observe that in Fig. 12.10, the name of the form, *EventsForm* will appear in the **Object Area** of LibreOffice User Interface window.

Fig. 12.10: Form created for Events table

As shown in Fig. 12.10, on the left of the Form Design window is the **Forms Control toolbar** and at the bottom is the **Records toolbar**.

Forms Control Toolbar

This toolbar contains various controls that can be added to the form. We will learn about some of the controls later in the chapter.

Records Toolbar

The Records toolbar contains the navigation control buttons in the extreme left. With the help of these

buttons, we can traverse and view the records in the file. As we move from one record to another, the record number in the record text boxes changes. Fig. 12.11 shows the navigation control buttons, there are commands to add a new record, save a record, delete a record and so on.

Fig. 12.11: Records toolbar

Modifying a Form

It is possible to modify the form in any manner once it is created. The modification can be to change the background color, font size and color of the text or even positioning of various controls in the form.

Changing the background color

Follow the following steps to change the background color of the form.

Step 1. Open **OpenOffice Base User Interface** for *Sports Day* database and click on **Forms** icon in the **Database Pane**. The name of the saved form (*EventsForm*) will be displayed in the **Objects Area**.

Step 2. Right click on the form name and select **Edit**... option. A separate **Form Design View** will open.

Step 3. To change the background color of the form, right click on the form and select **Page Style**... option from the pop up menu as shown in Fig. 12.12.

Fig. 12.12: Selecting the Page Style option from the Edit pop down

Step 4. The Page Style dialog box will appear, where you select **Area** tab and choose the desired color from the palette, as shown in Fig. 12.13.

Fig. 12.13: Selecting Colors Palette in Page Style dialog box

Step 5. Click on **OK** button. The selected color will be applied on the form as shown in Fig. 12.14.

Fig. 12.14: Forms with changed background color

Editing the labels

To edit the labels, either by changing the text or by changing the formatting effects, follow the following steps.

Step 1. Place the mouse pointer over the label, say *EventID* to change it.

Step 2. Press the keyboard shortcut key ***Ctrl+Click*** to select the label. The position boxes will appear around the label.

Step 3. Right click on the selected label and select **Control Properties...** option from the pop up menu as shown in Fig. 12.15.

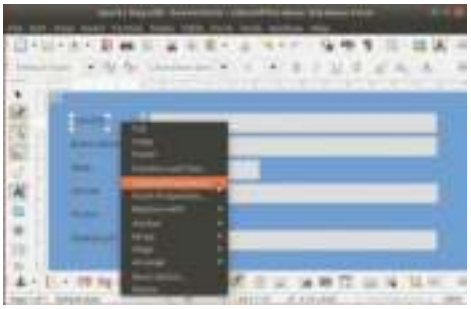


Fig. 12.15: Selecting Control Properties by right clicking on the label

Step 4. The Properties: Label Field dialog box will appear as shown in Fig. 12.16. It contains various properties of the selected label. In the text box after **Label** property, type *Event ID*. The label caption on the form changes accordingly.

Fig. 12.16: Changing the label caption from the Properties Label Field

Similarly we can change other properties of the selected label like width, height, alignment, font style and font size.

Step 5. After making the desired changes close the **Properties** dialog box by clicking the cross (x) button on the top right of the dialog box. The changes made will be applied on the selected text.

Moving a control

It is possible to move the to another location in the form. Click on the control that has to be moved. Both the label and the text box for field value will be selected and position handlers will be placed around the control. If only one of these have to be re-positioned then press **Ctrl** key while clicking on that control. Now, click and drag the control to move to the desired location (Fig. 12.17).

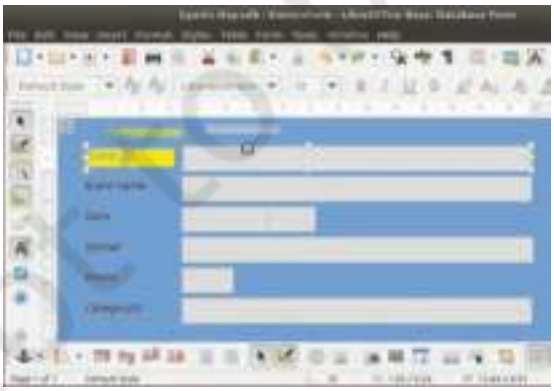


Fig. 12.17: Moving a control

Changing the size of the textbox control

To change the size of the textbox control, press **Ctrl** button while clicking on the textbox. It will be selected with position handlers around it. Place the mouse pointer on any of these handlers. It will change to a double sided arrow. Click and drag them to the desired size.

Adding a Tool tip

A tool-tip is a small piece of text that is displayed when the mouse pointer is placed on a particular control. Say for example, if the mouse pointer is placed over *EventID text-box*, a message '*Enter Event Identification Number*' can be displayed. This will make entering data for the user easy. Such type of text that appears when the mouse pointer is placed on a particular control is called the tool-tip **text** or **help text**. Let us add a tool-tip for *EventID* control by following the steps given below.

Step 1. Press **Ctrl** button and click on *EventID* text box.

Step 2. Right click and select **Control Properties**... option. The **Properties: Text Box** dialog box will be displayed as shown in Fig. 12.18.

Fig. 12.18: Adding a tooltip in Properties Text Box

Step 3. In the dialog box, scroll down till **Help Text** property appears.

Step 4. Type '*Enter Event Identification number*' in the text box.

Step 5. Close the dialog box by clicking on cross (X) button. Now, if the mouse pointer is placed over *EventID* text box, the tool tip will be displayed as shown in the Fig. 12.19.

Fig. 12.19: Displaying tool tip

Forms Controls Toolbar

The forms control toolbar contains various tools to add or edit controls on the form. Let us learn to use few of these tools.

Adding a calendar for the date field

While filling up a form on a computer, mostly a calendar is displayed. This is because it is easy to choose a date rather than typing it. To add the calendar to the date field in the form, follow the steps given below:

Step 1. Place the mouse pointer over the Date text box and press ***Ctrl+Click*** to select it.

Step 2. Right click and select **Control Properties....** option.

Step 3. In the **Properties: Date Field** dialog box, scroll down for **Date Format** property. By default, *Standard* (*short*) format will be displayed.

Step 4. Click to open the list box and select *Standard* (*long*) format.

Step 5. Scroll down further till you find the **DropDown** property. By default its value will be No. Select Yes. The control properties set is shown in Fig. 12.20.

Fig. 12.20: Control Properties set for Date field

Step 6. Close the dialog box. The selected date control text box on the form changes to a list box with an arrow being displayed in the extreme right as shown in Fig. 12.21.

Fig. 12.21: Date Control field with Calender

Adding text to the form

While designing a form, we may need to enter titles, headings or subheadings. It is called as Labels. It is

Fig. 12.22: Selecting Label icon on Form Controls tool box

Fig. 12.23: Properties Label Field dialog box for the created label

Fig. 12.24: Setting font type, style and size in Character dialog box

possible to create Labels in the form while designing. Follow the following steps to insert the title text in the form.

Step 1. Click the **Label** ( ) tool on the Form Controls tool box as shown in Fig. 12.22.

Step 2. On the form, click and drag the mouse to create a label field box. It will also have position handlers.

Step 3. Double click on box to open the **Properties: Label Field** dialog box.

Step 4. Type the title as "*Data Entry Form*" in the **Label** property, as shown in Fig. 12.23.

Step 5. Set the **Font** property by clicking the **Font** button in front of the **Font** property. The **Character** dialog box will be displayed as shown in Fig. 12.24, where you can set the font type, style and size. Choose the desired font style and size and click on **OK** button.

Step 6. Close the **Properties: Label Field** dialog box. The title with the selected formatting effects will be displayed on the form.

After applying and editing various controls, the final form for entering data in the Events table looks as shown in Fig. 12.25.

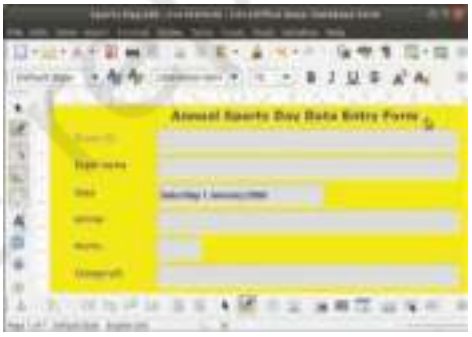


Fig. 12.25: Modified Data Entry Form for Events table

Adding a new record using a form

After you have finished designing the form, you can display or insert records using this form. For this purpose, you have to shift from **Design View** to **Form View** by clicking on **Design Mode** button on the **Forms Controls** toolbar. The **Form View** window appears with the first record displayed in the respective text boxes as shown in the Fig. 12.26.

Fig. 12.26: Displaying form in Design view by clicking on Design Mode button on Form Controls

To add a new record into the table using this form, click on **New Record** button on the **Records** toolbar as shown in Fig. 12.27.

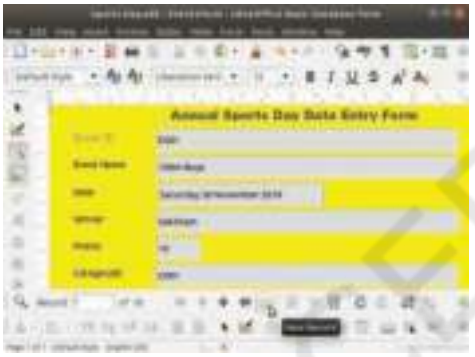


Fig. 12.27: Adding a new record by clicking on New Record

A blank form with the cursor blinking in the first text box i.e. *EventID* will be displayed.

Fig. 12.28: New blank record showing the next record number

Observe that the record pointer shows the record 11, as there were already 10 records in the table. Once the record is entered, click on **Save Record** button on the **Records** toolbar to save the record in the table.

To delete any record, navigate to the record by either typing the record number in the **Record** text box or by

using the navigation buttons. Thereafter click **Delete** button on the **Records** toolbar. The next record will be displayed in the form.

To toggle between Design view and Form view press Design Mode button on the Forms Controls toolbar.

When we create a form in Design View, all the controls are placed on the form using various tools given in the Forms Control toolbar.

Reports

A report is another useful feature of a database management system. We have seen that the records that have been extracted using a query are displayed in a simple row and column format. Instead, using a report we can present the retrieved data in an attractive and customized manner. We can create a report based on a table or a query or both. Preferably, if a report has to be generated from multiple tables, a query should be created first and then that query can be used to generate the report.

Let us create a report using the table *Events* from the *Sports Day* database. Follow the following steps to create a report.

Step 1. In the **LibreOffice Base User Interface**, click on the **Reports** icon in the **Database Pane**.

Step 2. From the **Tasks Pane**, click **Use Wizard to Create Report**... option.

Step 3. The **Report wizard** along with two other windows will be displayed. One of the window is **Report Builder** window and the other is **Add Field** dialog box. We will confine our study to the wizard (Fig. 12.29).

Fig. 12.29: Report Wizard, Report Builder and Add Fields dialog box

Step 4. The first step of wizard is to select the table and the corresponding fields that we want to

display in our report. From the Tables or Queries list box, select the table *Events*.

Step 5. All the fields of the Events table will be listed in the **Available Fields** list box. Click >> button to shift all the fields to **Fields in report** list box. Fig. 12.30 shows the **Fields in report** list box after shifting.

Fig. 12.30: Selecting table Events and fields after shifting to Fields in report list box

Step 6. Click on the **Next** button. The next step is to label the fields. By default, the column headers will be displayed as labels or column headers for the field values. As fields names are generally shortened, to change to more self-explanatory names, type the new names in the respective text boxes.

Fig. 12.31: Step 2 of wizard Labelling the fields

Step 7. Click on the **Next** button. The next step is to group the data based on any of the fields in the report. Since we do not want to group as of now, click on the **Next** button.

Step 8. The fourth step is to set the Sort options. If the data to be displayed in the report has to be sorted in either ascending or descending order of a particular field, specify the field and sorting order in this step. Say, for example, select the field *EventID*. The radio button for *Ascending* is already selected. Select Descending radio button to display the records in descending order as shown in Fig. 12.32.

Fig. 12.32: Setting the Sorting options

Step 9. Click on the **Next** button to move on to the next step in which the layout of the report will be selected.

Step 10. A layout is the manner in which the labels, field values and titles will be displayed in the report. Out of various Layout options given, choose the desired layout, say *Tabular* and also the layout of headers and footers (*Default*). You may also choose the orientation option **Landscape** or **Portrait** in this step.

Fig. 12.33: Choosing the Layout

Keep the default orientation option *Landscape* selected by default as shown in Fig. 12.33.

Step 11. Click on the **Next** button to move to last step. Here we name the report and to specify the manner in which we want to proceed after the wizard finishes. Type the name of the report as *EventsReport*, as shown in Fig. 12.34. By default the type of report is **Dynamic**. That means as the field values in the base table or query change, the report will also change automatically. If you don't want automatic updation of the report, choose the **Static** option. In this step, specify whether you would like to modify the report or create the report once the wizard finishes. Select the default option to create the report with current setting.

Fig. 12.34: Step 6 Create report of the wizard

Step 12. Click on **Finish** button to display the report as shown in Fig. 12.35.

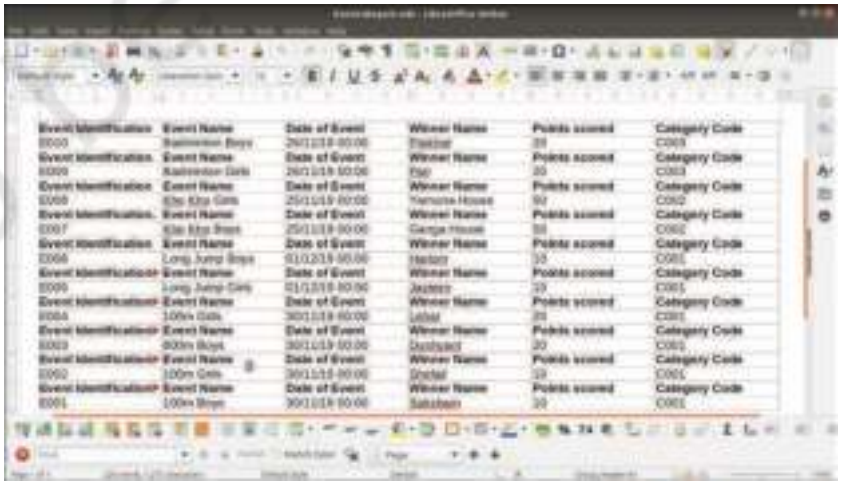


Fig. 12.35: Report generated from Events table

Inserting other controls in the report

As you can observe the report generated in Fig. 12.35, the report is very simple and boring. We can make it more presentable by inserting some more controls like titles, author name, date of generation of report etc.

Right click on the Report name (*EventsReport*) on the **LibreOffice User Interface** and then select the **Edit**... option. The **Report Builder** window will open as shown in Fig. 12.36. In this window, various controls can be inserted using the **Report Controls toolbar**.

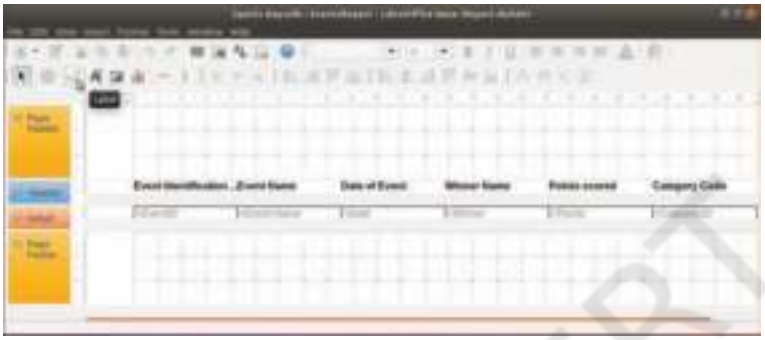


Fig. 12.36: Report Builder window

Inserting Titles and Headings

To insert the title of the report, follow the following steps.

Step 1. Click on the **Label** tool available on the **Report Controls** toolbar.

Step 2. Bring the mouse pointer on the report. Click and drag to insert the label textbox.

Step 3. Double click on it to open the **Properties** dialog box. Type the title text that you want to display in the **Label** property textbox, say ***"Annual Sports Day Report"*** and also set the font style and size using the Font property as shown in Fig. 12.37.

Fig. 12.37: Assigning label name and setting font in Properties dialog box

Step 4. Close the Properties dialog box. Double click on the EventsReport in the Reports of Database Pane. The report will be displayed with with the formatted effects as shown in Fig. 12.38.

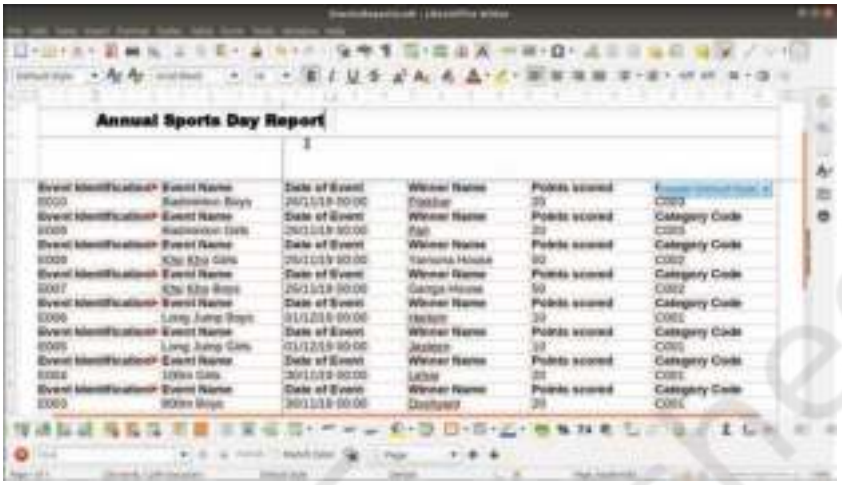


Fig. 12.38: Report with formatted effects

Inserting Date and Time

To insert the date on which the report is generated, follow the following steps.

Step 1. Click in the **Page Header** area to make it active.

Step 2. Click **Insert > Date and Time...** option as shown in Fig. 12.39.

Fig. 12.39: Inserting Date and Time in Header

Step 3. The **Date and Time** dialog box will be displayed as shown in Fig. 12.40. Select the desired format for date and time format and click on **OK** button.

Fig. 12.40: Date and Time dialog boxu

The date will be inserted on the top left corner of the **Page Header** area. You may click and

drag it to reposition it in any place in the **Page Header** area. The final report looks as shown in Fig. 12.41.

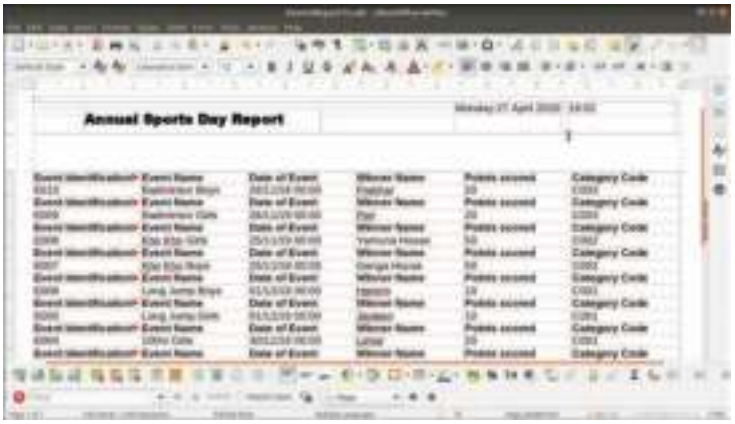


Fig. 12.41: Report with Title and Date

To create a report that groups the retrieved data according to a particular field, specify the field name according to which the retrieved data has to be grouped in step 3 of the wizard. For example, if we want to display the details of events category wise, shift *CategoryID* field to **Groupings** list box as shown in Fig. 12.42.

Fig. 12.42: Moving CategoryID for Grouping records

The category wise report will be generated as shown shown in Fig. 12.43.

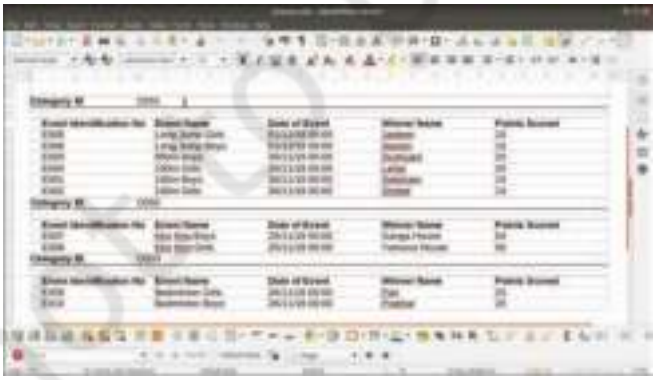


Fig. 12.43: Report generated Category wise

SUMMARY

- A form is an object of the database that has a user friendly interface where data can be entered and seen in an attractive and easy-to-read format.
- A form contains **field controls** arranged in a presentable and user friendly manner.
- Each field control consists of a label and the field value text box.
- There are two ways to create a form – Using a wizard, Using the Design View
- The forms control toolbar contains various tools to add or edit controls on the form.
- A report is used to present the retrieved data in an attractive and customized manner.
- We can create a report based on a table or a query or both.

Practical Exercises

1. Prakasan lives in Happy Home Society. He has created the following tables in his database so as to store and manage the maintenance dues received from flat owners of the society.

Table: Residents Details

Receipt_Id
Flat No
Date
Amount

Table : Maintenance Dues

Flat no
Owner Name
Contact No
Flat Category

In the previous chapter, Prakasan had created a query to display the following information

Flat No	Owner	Receipt Number	Date	Amount

(Please note the change in column headings)

Create a form for data entry of Resident Details and Maintenance Dues table. Also create a report based on the query created above.

2. Uzair manages a boys hostel in an engineering college. To manage the records of the people saying in his hostel, he created a database with the following related tables.

Table : Student_Details

Student_Id
Name
DOB
Course
Father's Name
Contact No_student
Contact No_ guardian
Room No

Table: Room Details

Room No
Floor (data value can be first, second or third)
Category (data value can be AC / Non- AC)
Student Id
DOO (Date of occupancy)
Monthly Rent

Create a query to display the following tabular format

Room No	Student Name	Category	Monthly Rent

Create a query that displays total monthly rent collected for each category.
Create a form for data entry of both the tables.
Generate a report the displays information retrieved from both the queries in a presentable manner.

Check Your Progress

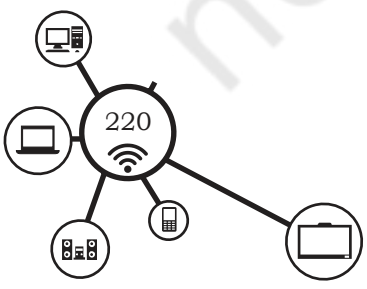
A. Multiple choice questions

1. Which of the following toolbars contains the Label tool?
   (a) Standard Toolbar
   (b) Forms Controls Toolbar
   (c) Records toolbar
   (d) Formatting toolbar
2. The Record toolbar has the buttons to move to the
   (a) first record
   (b) second record
   (c) last record
   (d) all records
3. Which of the following is NOT true about forms?
   (a) It is the front end for data entry
   (b) It can contain only text fields
   (c) Graphics can be inserted on the form
   (d) It can contain only fixed number of records

4. Which of the following keys is pressed to select only textbox on the form?
   (a) Alt
   (b) Shift
   (c) Ctrl
   (d) Tab
5. Which of the following properties in the Properties: Label Field text box is used to insert a tool-tip on the form?
   (a) Tool Text
   (b) Help Text
   (c) Tool Tip
   (d) Help Tip
6. Which of the following objects of LibreOffice Base is used to display data retrieved from one or more tables in a presentable manner?
   (a) Query
   (b) Form
   (c) Report
   (d) Panel
7. Which of the following values of Date Format property is selected to view a calendar on the form?
   (a) Standard (short)
   (b) Standard (long)
   (c) Default
   (d) Standard (Medium)
8. Which of the following commands on the Forms Control toolbar is used to toggle between Design View and Form view?
   (a) Design Mode
   (b) Toggle Mode
   (c) View Mode
   (d) Print mode
9. Using which of the following objects in a database, can a report be generated?
   (a) Tables
   (b) Queries
   (c) Both a and b
   (d) Neither a nor b
10. Which of the following components open along with the Report Wizard?
    (a) Report Builder
    (b) Add Fields dialog box
    (c) Both (a) and (b)
    (d) Neither (a) nor (b)

B. State whether the following statements are True or False

1. Report is an object of a database but form is not.
2. We can choose the layout of the form.



3. We have to add all fields of the table on the form.
4. There are two ways n which a form can be created.
5. A report is generated in a separate window.
6. Once a control is added on to the form, it cannot be re-positioned.
7. The Record toolbar has the button to add a new record.
8. We can create a report only using a table.
9. By default, the records in a report are sorted in descending order.
10. We can group data based on a particular field in a report.
11. A report can have data only in row and column format.
12. We can insert both date and time of generation of report.
13. A report once created cannot be edited.

C. Fill in the blanks

1. A form can be used for _____ and _____.
2. Each field control consists of a _____and _____
3. A _____ is a piece of text that specifies the data that should be entered in the field value text box.
4. By default the border of the field text value is displayed in _____.
5. A _____ is a small piece of text that is displayed when the mouse pointer is placed on a particular control on the form.
6. The default orientation option for a report is _____.
7. A _____ is the manner in which the labels, field values, titles etc. will be displayed in the report.
8. The option to insert date and time in the report is present in _____ menu.
9. A Report Wizard contains _____ steps.
10. A _____ type of report changes automatically as the field values in the base table or query change.

D. Answer the following questions

1. Give one difference between a form and a report.
2. What is a field control with respect to forms?
3. Which tool on the Forms Record toolbar is used to insert text on the form?
4. Name the two ways to create a form in LibreOffice Base.
5. What is the difference between a static and a dynamic report?
6. Write the function of Forms Controls toolbar and Records toolbar.

Maintain Healthy, Safe and Secure Working Environment

Introduction

The work culture in IT industry is different from routine office work, where working hours are also not fixed. Continuously working in front of the computer creates health problems especially in your eyes. Adopting the safe work practice in the work place, the productivity can be increased.

This Unit deals with the concept of working environment in IT industry. It focuses on safe working practices at work place. It explains about health related problem caused by the wrong practices and it's solution. It also gives the knowledge about resources required in workplace for smooth working. Further it explains how to deal with computer component and problem related to electrical hazards. It also explains workplace safety guidelines, workplace hazard and it's control. The medical emergency situations and its solution is illustrated.

Chapter 13 Health, Safety and Security at Workplace

Introduction

One evening we were travelling on the busy road of Mumbai city. We were looking at the big and tall buildings. My friend was telling me that all these buildings hold different IT companies. Suddenly we find that there was a lot of smoke coming out of one building. People working in that building were running away from the building and shouting about the fire. Soon we find that the fire alarm was ringing and fire brigade vehicles along with water tanks were approaching the building. People were telling that there are lot of casualties and the overall damage to the building was worth of several lakhs. This event remind us the importance of health and safety at the workplace.

Fig.13.1: Illustration of fire catches in the office building

Introduction to Health, Safety snd Security at Workplace

Every workplace accident, illness or dispute is a cost to organization, as well as a cost to injured individuals and their families. It is our responsibility to create a safe workplace. This will improve the work environment and the productivity. Employees have to take responsibility for their own health and safety rather than relying solely on the *"safety officer"* or management.

Health

Health of an employee is the state of the physical, mental and social well being. Every organisation must

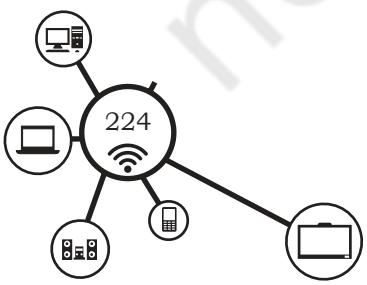
provide healthy and safety working environment for their employees at the workplace. Health of an employee must be in a good condition so that the employees of the organisation will not suffer from any diseases. Cleanliness at the workplace is mandatory. The work places must be cleaned in the morning before the people start working. If it is neat and clean then the people will feel happy to work in that environment. A proper air conditioning is mandatory to provide clean and cool air at workplace. A properly filtered water facility must be available for the employees of the company. A fresh food cafeteria must provide the good quality food for the employees. This will help to maintain the health of the employee. The organisation should maintain a clean washroom facility in good condition to be used by the employees.

Safety

The work environment of the organisation must be safe. It must be free from hazards and risk. A hazard is the something that can cause harm to the people. A risk is a probability of causing harm to the people. A proper safety guidelines must be prepared by the company and it should be strictly followed. At regular intervals of time, the safety procedures must be practised by employees.

Security

Every employee working in an organisation must feel that they are secured in the company campus. Security is a kind of freedom from any potential harm. Security ensures the safety of the people working in the organisation. Every organisation must have separate security department. This department should be responsible for various security such as personal safety, computer system safety, electrical safety, transport safety and other equipment safety. The proper security procedures will reduce liabilities, insurance and compensation for organisation. This will increase the business revenue and will reduce the operational charges of the company.



Policies and Procedures for Health, Safety and Security

The Department of Information Technology (DoIT) has prepared the policy to provide employees with a healthy and safe work environment.

Definition

A health, safety and security policy is a written statement by an employer stating the company's commitment for the protection of the health, safety and security of employees and to the public. It is an endorsed commitment by management to its employees regarding their health, safety and security.

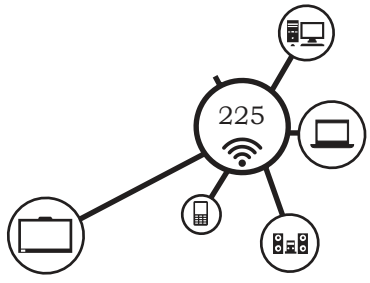
A health, safety and security program/policy contains the health, safety and security elements of an organisation and objectives which make it possible for the company to achieve its goal in the protection of its workers at the workplace.

The government has a specific section mentioned in their company laws, which states the minimum requirements to be followed for health, safety and security programme. Each employer or company should follow these requirements. Apart from that the company should also have their own health, safety and security committee to determine the hazards present at the workplace. Once these hazards are identified then their control measures should be specified in the health, safety and security programme.

Reasons for Health, Safety and Security Programs or Policies in Workplace

There are several reasons that can be specified for safety policy as given below.

- It clearly indicates the company's commitment for their employee's health and safety;
- It shows the performance of the business and the safety performance are compatible with each other;
- It clearly state that the company is not only doing the business for profits but it is taking care of all its stake holders.



- The accountability of every one working for the company is outlined for the workplace health, safety and security;
- Company can comply national policy on Occupational Health and Safety (OH&S) of Government of India;
- Injuries and illness of the employees is prevented through such policy

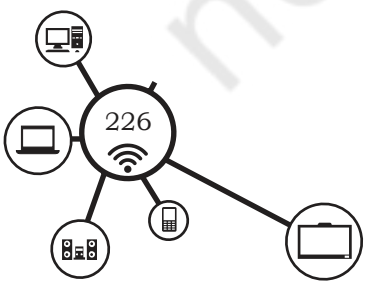
A typical policy of an IT company may contain the following OH&S clauses.

- Provide adequate resources to ensure continual improvement in its OH&S performance.
- Comply with relevant OH&S legal and other requirements applicable to the organisation and drive for 'beyond compliance' leadership.
- Set appropriate OH&S objectives & targets and conduct periodic performance reviews against these targets.
- Adopt measures and processes that focus on the prevention of occupation related accidents, injuries, illnesses, and near-misses and strive to continuously improve such processes.
- Ensure OH&S awareness and build competency associated at all levels to handle individual OH&S responsibilities.

Workplace Safety Hazards

The most common definition of hazard is *'a danger or risk'* that is associated with something. Something can even be considered a hazard if it would be a trigger for causing another hazard to become present, which could hurt someone or something in the area. Workplace hazards poses potential harm to people at work, and that can cause damage to the work environment and everything else in it. Hazards could cause adverse health effects and losses of property and equipment for organisations.

There is a common way to classify hazards, and not all these are present in all workplaces. In some industries like manufacturing and pharmaceuticals, there are biological and chemical risks that pose risks to the workers. Physical hazards are present as well in



many industries where there is exposure to electricity, radiation, extreme pressures, noises and magnetic fields. On the other hand, ergonomic hazards are present in facilities where there are repetitive movements and where workstations are set up haphazardly.

But it can be generalized that in all these classifications, there are always safety hazards that come up along with the highlighted workplace hazards.

Physical Hazards

It is the risks arising from the physical work environment – floors, facilities, walls, and ceilings. Physical hazards could also mean working with machinery and electricity-operated machines. Work processes or specific assignments could also qualify as areas where physical hazards are present. There is a vast list of physical hazards across all industries, but when we look at one specific sector, these hazards are also specific to the work setting.

Falling Off Heights, Slipping and Tripping

The reasons for falling are attributed to faulty scaffolding and ladders, as a result of contact with electricity, and slipping or crashing into anything that throws the worker off balance (Fig. 13.2). On the other hand, trips and slips occur right on lower levels, particularly the floor, on ramps and any uneven surface in the workplace. Various injuries result from simply tripping over things at work, while many more accidents occur when employees slip on the floor, from motorized vehicles or from scaffolding or ladders.

Fig.13.2: Falling off height, slipping and tripping

To avoid falls and slips, all things must be arranged properly. Any spilt liquid, food or other items such as paints must be immediately cleaned to avoid any accidents. Make sure there is proper lighting and all damaged equipment, stairways and light fixtures are repaired immediately.

Electrical Hazards

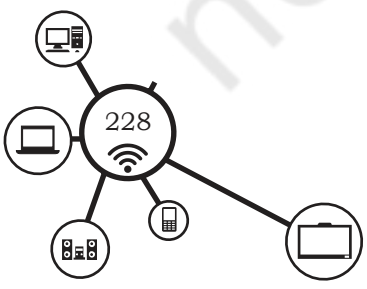
There are many reasons why workers get electrocuted or suffer from electric shock at work. For the most part, it's due to coming in direct contact with live wires, or having indirect contact through a conductor. While not all electrical accidents lead to death, there are many life-threatening, severe and often permanent injuries that could result from it. At work, the common causes of electrical accidents are exposed, worn-out wiring, overloading of electrical outlets, ungrounded or faulty equipment, and unsafe use of electrical equipment. Employees must be provided basic knowledge of using electrical equipment and common problems. Employees must also be provided instructions about electrical safety, such as keeping water and food items away from electrical equipment. Electrical technician and engineers should carry out routine inspections of all wiring to make sure there are no damaged or broken wires.

Fire Hazards

Each establishment must comply with housekeeping standards to ensure fire safety. Everyone not follows such requirements, and this leads to accidents resulting to fire. Such incidents not only damage the vital workplace equipment, stock and other items, and the building; it could also lead to injuries among its employees. To avoid fire, it is important to observe safety precautions at workplace. The whole organisation must also have first response and emergency mitigation systems in place. Employees should be aware of all emergency exits, including fire escape routes, of the office building and also the locations of fire extinguishers and alarms.

Health Hazards

Health refers to the physical well-being of the workers, and this includes the condition of their skin, eyes, ears and all other body parts. But it also includes the health situation of what we cannot see upfront – their respiratory and cardiovascular system, and the nervous system. Hazards are present in most workplaces that could



impact any part of the human body. For example, a noisy machine or factory environment could damage the sense of hearing of the workers. In the same manner, exposure to bright lights and toxic fumes and vapour could damage the eyes and nose. There are also more serious and long-term health issues arising from hazardous workplaces, such as damage to the lungs because of the exposure to harmful chemicals (Fig. 13.3).

Safety Hazards | Biological Hazards | Physical Hazards | Ergonomic Hazards | Chemical Hazards

Fig.13.3: Health hazards

Potential Sources of Hazards in an Organisation

Bright light sources behind the display screen can create contrast problems, making it difficult to clearly see your work. Apply the following possible solutions to avoid this.

- Use blinds or drapes on windows to eliminate bright light. Blinds and furniture placement should be adjusted to allow light into the room, but not directly into your field of view.
- Use indirect or shielded lighting where possible and avoid intense or uneven lighting in your field of vision. Ensure that lamps have glare shields or shades to direct light away from your line of sight.
- Reorient the workstation so bright lights from open windows are at right angles with the computer screen.
- High contrast between light and dark areas of the computer screen, horizontal work surface, and surrounding areas can cause eye fatigue and headaches. So, use well-distributed diffuse light.

Hazards using Computers

Hazards while using computers include poor sitting postures or excessive duration of sitting in one position. These hazards may result in pain and strain. Making the same movemen`t repetitively can also cause muscle fatigue. In addition, glare from the computer screen can be harmful to the eyes. Stretching at regular intervals or doing some simple yoga in your seat can mitigate such hazards.

Handling Office Equipment

Improper handling of office equipment can result in injuries. For example, sharp-edged equipment if not handled properly, can cause cuts. Staff members should be trained to handle equipment properly. A relevant manual should be made available by the administration on handling equipment.

Handling Objects

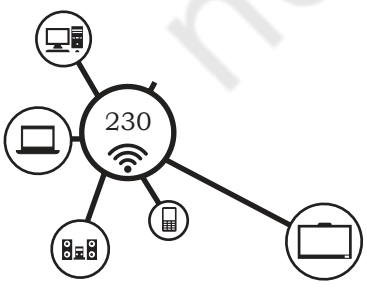
Lifting or moving heavy items without proper procedure or techniques can be a source of potential hazard. Always follow approved procedure and proper posture for lifting or moving objects.

Stress at Work

In organisations, you may encounter various stress-causing hazards. Long working hours can be stressful and so can aggressive conflicts or arguments with colleagues. Always look for ways for conflict resolution with colleagues. Have some relaxing hobbies for stress against long working hours.

Working Environment

Potential hazards may include poor ventilation, chairs and tables of inappropriate height, hard furniture, poor lighting, staff unaware of emergency procedures, or poor housekeeping. Hazards may also include physical or emotional intimidation, such as bullying or ganging up against someone. The staff should be made aware of organisation's policies to fight against all the given hazards related to a working environment.



Hazard Control

Hazards that have been identified and assessed as priorities require to implement adequate control measures. Control measures should follow the hierarchy with a strong emphasis on eliminating hazards at the source, whenever possible.

- Take all feasible measures to eliminate the hazard, for example, by substituting or modifying the process.
- If elimination is impractical or remains incomplete, take all feasible measures to isolate the hazard, for example, instituting engineering controls such as insulating noise.
- If it is totally impossible to eliminate or isolate the hazard, its likelihood to cause injury should be minimised. Ensure that effective control measures are being applied, such as installing proper exhaust ventilation and providing personal protective clothing and equipment that is properly used and maintained, and monitoring exposure among at-risk workers

Safety Guidelines Checklist

1. Store all cleaning chemicals in tightly closed containers in separate cupboards.
2. Throw garbage daily.
3. Make sure all areas have proper lighting.
4. Do not wear loose clothing or jewellery when working with machines.
5. Never distract the attention of people who are working near a fire or with some machinery, tools or equipment.
6. Where required, wear protective items, such as goggles, safety glasses, masks, gloves, and hair nets.
7. Shut down all machines before leaving for the workplace.
8. Do not play with electrical controls or switches.

9. Do not operate machines or equipment until you have been properly trained and allowed to do so by your supervisor.
10. Repair torn wires or broken plugs before using any electrical equipment.
11. Do not use equipment if it smokes, sparks or looks unsafe.
12. Cover all food with a lid, plastic wrap or aluminium foil.
13. Do not smoke in 'No Smoking' areas.
14. Report any unsafe condition or acts to your supervisor.

Check Your Progress

A. Multiple choice questions

1. Workplace safety is essential in organisation _____.
   (a) to avoide the accident and injury
   (b) to increase the productivity
   (b) to improve the work environment
   (d) All of the above
2. Which of the following is not mandatory to keep the good health of an employee?
   (a) Cleanliness
   (b) Food court
   (c) Clean and fresh air
   (d) Clean washroom
3. The security department is not responsible for _____.
   (a) personal safety
   (b) computer system and equipment safety
   (c) electrical safety
   (d) personal belongings
4. The proper security procedures will increase _____.
   (a) liabilities
   (b) insurance
   (c) business revenue
   (d) operational charges of the company
5. Which kind of hazards can occur in IT industry?
   (a) Biological
   (b) Chemical
   (c) Physical
   (d) Ergonomic

6. Which of the following can cause hazards while using computers?
   (a) Poor sitting postures or excessive duration of sitting in one position
   (b) Lifting heavy object
   (c) Mishandling of tools and equipment
   (d) Improper handling of office equipment
7. Which of the following statements is likely to result in an injury to the operator?
   (a) Selecting the right tool for the job
   (b) Wearing safety goggles or glasses
   (c) Using a tool with loose handles
   (d) Keeping cutting tools sharp
8. What are the potential cause of hazards at workplace?
   (a) Poor ventilation
   (b) Poor lighting
   (c) Poor housekeeping
   (d) All of the above

B. Fill in the blanks

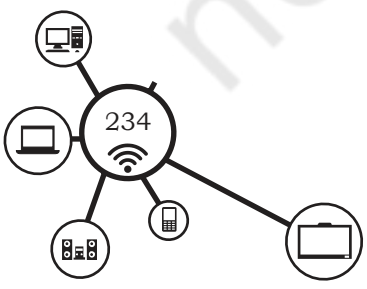
1. Health of an employee is the state of the physical, _____ and _____ well being.
2. The work places must be cleaned in the _____ before the people start working.
3. A proper _____ provide clean and cool air at the workplace.
4. A fresh food cafeteria helps to maintain the _____ of the employee.
5. The work environment of the organisation must be _____ and free from _____ and _____.
6. The proper security procedures will increase the _____ and will reduce the _____ of the company.
7. Injuries and illness of the employees is prevented through national policy on _____.
8. Physical hazards occurs due to _____.
9. Electrical hazards mostly caused due to coming in direct contact with _____, or indirect contact through a _____.
10. Hazards while using computers occurs due to _____ or excessive duration of sitting in _____.

C. State whether the following statements are True or False

1. The employer and employees are responsible for workplace safety.
2. Any injury at work should be reported to the supervisor immediately.
3. No matter how big or small the injury; the injured person should receive medical attention.
4. While working with machines and equipment, employees must follow the safety guidelines set by the company.
5. Bright light sources behind the display screen can create contrast problems.
6. Exposure to bright lights and toxic fumes and vapour could damage the mouth and ears.
7. The use of personal protective clothing and equipment can control the hazards at workplace.
8. Do not throw rubbish daily.
9. Proper handling of office equipment can result in injuries.
10. Stress at workplace can cause hazard in today's organisation.

D. Short answer questions

1. Briefly explain the concept of health, safety and security at workplace.
2. State the most important reasons for health, safety and security programs in workplace
3. List out the various workplace safety hazards.
4. List out the potential sources of hazards in an organisation.
5. List some of the IT workplace hazards.
6. What are the examples of potential hazards?
7. Describe information technology workplace hazards.
8. What are the workplace safety rules?
9. List out different safety guidelines?
10. Describe type of emergency with example.



Chapter 14 Workplace Quality Measures

Introduction

In any organisation it is necessary to maintain a good air quality to improve the working capabilities of employees. A pollution free air is an essential requirement for any organisation. Also most of the IT companies makes use of centralised air conditioning system to keep the temperature of working place at pleasant level. Water pollution is another problem faced by many organisations. Most of the human activities makes water polluted. The polluted water may cause the disease. So an organisation must ensure to prevent air pollution or water pollution.

Fig. 14.1: Air pollution and water pollution

Air and Water Quality Monitoring Process

Air and water pollution can be analysed by using several methods. There are three common forms of analysis – physical, chemical and biological. For such analysis samples can be collected in the surrounding region of the organisation.

The water and air samples can be analysed by performing some physical, chemical and bilogical tests.

The temperature and content of the sample can be easily measured. For example, the various gases or percentage of various gases, such as oxygen, nitrogen, carbon dioxide present in the air can be measured. The PH value of the water can be measured through chemical analysis. The effect of air and water on these

plants and animals is studied. The microbial indicators are used to monitor the health of the ecosystem.

Guidelines for Clean Air and Clean Water

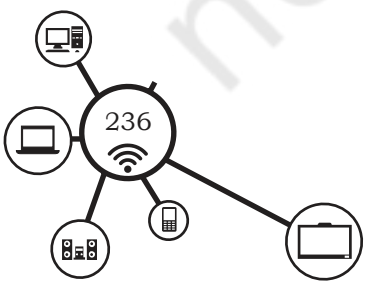
A proper guidelines may be followed by organisation to keep the surrounding air and water clean. Some of the points of such guidelines can be.

1. Air pollution is mostly caused by production of the dust, mixture of solid particles and gases in the surrounding air. So avoid dust production, generation of solid particles and gases in the air.
2. Extensive use of automobile vehicles in the campus can lead to the air pollution. So organisation must use limited number of vehicles to avoid air pollution. Practice a no vehicle day in every week.
3. Ozone produced in the air can pollute the air. Many times it is called as a smog. The generation of ozone gas must be kept at low level by the organisation.
4. Most of the human activities pollute the surrounding water. The sewage or the waste water can also cause the water pollution. Take care that their waste is not mixed with the surrounding water.
5. Extensive use of fertilizers and pesticide must be avoided as it can make the ground water polluted.

Importance of Cleanliness at Workplace

It is always safe to keep your workplace clean to avoid hazardous. The poor handling and storage practices result in damages. A clean work station makes your job easier and more pleasant. Common areas should be cleaned up by all personnel, when necessary.

- All areas must be kept neat and clean. Each employee is responsible for the cleanliness of their work area and all tools and equipment used.
- Spills and breakage are to be cleaned up immediately.
- Spaces around machines and equipment should be kept clear and clean at all times to permit free movement.



- Floors should be kept clean and clear to prevent slipping and collision.
- Lighting fixtures are to be checked regularly to permit clear vision. Faulty lights should be reported to administration, so that building maintenance/ facilities can be contacted to rectify the situation.

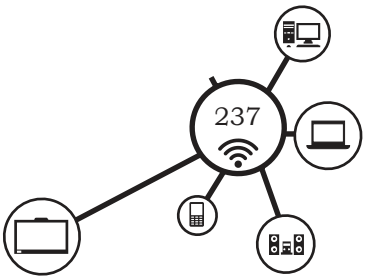
Office Ergonomics

Ergonomics is the science concerned with designing and arranging things so that people can use them easily and safely. Applying ergonomics can reduce the potential for accidents, injury to improve performance and productivity. In an office setting, the repetition of a seemingly innocuous task over a period of time can cause an injury. The resulting injuries can be physically painful and rehabilitation can be difficult and time consuming. The following office ergonomics emphasize the identification of early warning signs.

Early Warning Signs	Potential Cause	Try This
Sore lower back	No lumbar support	Use back rest of chair, put small pillow or lumbar support on backrest of chair
Burning in the upper back	No upper back support from chair	Put document holder or prop up so you can see without leaning forward
Stiff neck	Working with head turned to side tilting head forward holding telephone between the ear and shoulder	Move or raise monitor to centre of desk check if headset is available
Sore shoulders	Reaching forward for long periods or reaching forward frequently	Move closer to the keyboard, Bring mouse down to level of keyboard or 1" higher
Arching wrists	Working with wrists extended too much repetition	Add a wrist rest to the front of keyboard and mouse pad rest thumbs on front edge of keyboard so wrists can't drop.
Dry eyes	Forget to blink	Rest eyes periodically and do simple eye exercises
Eye strain and sore eyes	Glares from overhead lights or windows eye glasses not correct need vision check	Re-orient your desk and computer so light is not directly behind or in front of you.

Computer Health and Safety Tips

With the increase use of computer, several health and safety issues related to vision, musculoskeletal issues,



body aches and pains may occur. Many of these issues are preventable and if incurred are temporary. They can be resolved by adopting simple corrective action.

Musculoskeletal Problems

Fig. 14.2: Ideal Neck and Monitor position

This problem include different areas of your body, such as neck, back, chests, arms shoulders and feet. It occurs because of your wrong posture, uncomfortable chair for sitting that is not ergonomically correct while working on the computer.

To avoid this problem,

- Position your computer such that the end of the monitor should be at your eye level.
- Keep the neck neutral with monitor directly ahead to prevent to turn your neck.
- Keep your monitor at least arm length distance, or 20 to 30 inch away from you.
- Maximise contact of your back against the backrest of the chair.
- Adjust height of armrests so that your elbows are at a 100–110 degrees open angle.
- Place keyboard at a slight negative tilt if you are sitting upright.
- While typing, keep your hands slightly lower than elbows, with fingers pointing downwards at the floor.
- Minimise any twisting of your wrists from side to side or up and down.
- Use a keyboard palm rest as needed only when you are not typing. Do not rest your wrists when typing. It leads to wrist strain.
- Always take small breaks while working on the computer to stretch your muscles, keep your blood flowing, and to rest your eyes.

Occupational Overuse Syndrome

Occupational overuse syndrome, also known as repetition strain injury (RSI), is a collective term for a range of conditions, characterised by discomfort or persistent pain in muscles, tendons and other soft tissues, with or without physical manifestations. It is

usually caused or aggravated by work, and is associated with repetitive movement, sustained or constrained postures and/or forceful movements. Psycho-social factors, including stress in the working environment, may be important in the development of occupational overuse syndrome.

Fig. 14.3: Symptoms of carpal tunnel syndrome

Repetitive use of muscle may feel pain in your neck, shoulder, wrist or fingers. One of the most common conditions related to repetitive use of muscles when using the computer is carpal tunnel syndrome. It causes pain, numbness, and tingling in the hand and arm as shown in Fig. 14.3.

Ensure that you use appropriate posture when typing. For example, your fingers should be above the *'home position' (asdf and jkl; keys)* on the keyboard, when your elbows are by your sides. Users should avoid gripping the mouse too tightly. The keyboard and mouse should be kept at the same level. In addition, use of ergonomic keyboard and mouse help to reduce the risk of wrist related conditions.

Strain in Legs and Feet

Sitting to work for long time may cause strain in legs. Position your desk chair to sit comfortably with your feet flat on the floor and your lower legs vertical. Use a footrest for more support. Make sure that there's enough space to change position and stretch your legs out every now and then, too.

Eye Strain

Computer's bright light, glare and flickering images can cause eye strain and visual fatigue. When you constantly focus on screen, you forget about blinking your eyes that can cause of drying eyes. Computer Vision Syndrome is caused by poor lighting and glare on the computer screen. Both of these factors place strain on the users eyes, causes blurry vision, burning and/or watering eyes, headaches and in some instances shoulder and neck pain. It is important to look after your eye health. Specifically wear anti-glare glasses to work on computer.

To reduce the risks of visual problems:

- Adjust the brightness of computer screen to save your eyes from strain.
- Reposition the screen to avoid glare from lights or windows.
- Keep a proper vision distance from computer screen and blink your eyes in an interval.
- Wear anti-glare glasses while working in computer.
- Keep the screen clean and use a desk lamp to make it easier to see.
- Ensure the screen colours are easy to look at, and that the characters are sharp and legible.
- Give your eyes periodic breaks from the screen and perform frequent blinking. Look away from the screen into the distance for a few moments to relax your eyes; focus on something 30 metres away for 30 seconds every 30 minutes.
- Keep your monitor between 18 to 24 inches away from your face. Lastly, position monitors to avoid glare from sunlight and keep them clean.

Headaches

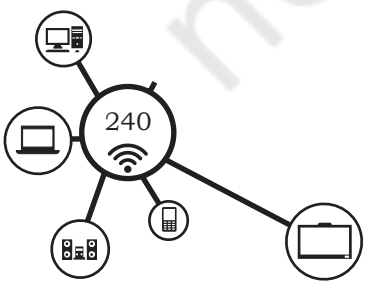
Headache may occur due to muscle tension or pain in the neck. Strain on the eyes or vision problem can also cause headaches. Attend regular eye exams to work toward correcting any vision problems. Try your best to keep your neck straight in front of the computer and take breaks.

Obesity

Spending long hours on computers may lead lacks of physical activity and exercise. In children prolonged use of computers or electronics in general, is a major contributing factor to obesity. You should take a break and try to squeeze in some exercise until you go back to work.

Stress Disorders

Technology impacts our behaviors and emotions. Prolonged use of computers may be accompanied by poor health and increased pressure on you in your workplace, which may lead to stress. The longer the



stress untreated, the greater the chances of contracting more serious health problems. Stress can lead to decreased attention span, lack of concentration, dizziness and becoming easily burned out. To tackle this problem, promote your own health and prevent future health conditions or by seeking treatment options for any stress that you may encounter. Try things from yoga, to natural remedies, to medications as prescribed by a medical provider to combat your stress.

Injuries from Laptop Use

The growing use of laptops cause more pain and strain. Laptops are designed for short periods of use. In present day individuals choose to use laptops over desktops more frequently, due to convenience. In laptop the screen and keyboard are very close together and there is really no right way to use a laptop because if you position the screen at the right height for your back and neck, it will cause you to have to lift your arms and shoulders too high to use it and vice versa. It will probably cause a problem. To overcome this problem, you may use desktop that is set up ergonomically-correct, while working for long hours.

Sleeping Problems

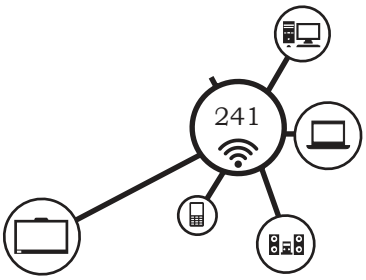
Artificial lighting from computer screens can trick your brain and suppress its release of melatonin substance that assists your sleeping patterns. To tackle this, refrain from using a computer right before going to bed.

Health and Safety Requirements for Computer Workplace

The minimum health and safety requirements for computers including Desktop computers, Laptops, Tablets, Smart phones, Television screens and Video monitors are as follows:

Display Screen (Monitor)

Use the modern LED monitors of legible size and with adequate spacing between the characters and lines. The image on the screen should be stable, with no flickering or other forms of instability. The screen must be free of



reflective glare and reflections liable to cause discomfort to the user.

Keyboard

The keyboard should tilt and separate from the screen to find a comfortable working position and avoid fatigue in the arms or hands. The space in front of the keyboard must be sufficient to provide support for the hands and arms of the user. The keyboard should have a matt surface to avoid reflective glare. The symbols on the keys must be adequately contrasted and legible from the design working position.

Work Surface

The work desk should be sufficiently large, low-reflectance surface and allow a flexible arrangement of the screen, keyboard, documents and related equipment. The document holder shall be stable and adjustable so as to minimise the need for uncomfortable head and eye movements.

Work Chair

The work chair must be stable and allow the user to move easily and find a comfortable position. It should be adjustable in height. The user's feet must be placed flat on the floor or a footrest should be used.

Space Requirements

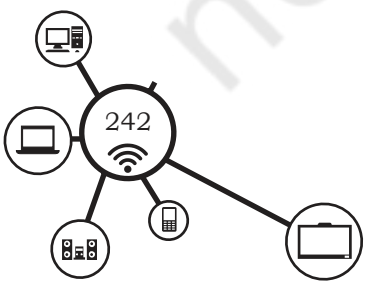
The workstation should be designed to provide sufficient space for the user to change position and vary movements. The user should have enough desk space for the equipment they use.

Lighting

There must be satisfactory lighting conditions with appropriate contrast between the screen and background environment. Possible disturbing glare and reflections on the screen or other equipment should be prevented.

Reflections and Glare

Workstations should be designed so that sources of light, such as windows and other openings, transparent



or translucid walls, and brightly coloured fixtures or walls cause no direct glare and no distracting reflections on the screen. Windows shall be fitted with a suitable system of adjustable covering to attenuate the daylight that falls on the workstation.

Noise and Heat

Noise emitted by equipment should not distract the attention. Noise cancelling earphones may provide a solution if some noise is unavoidable. The equipment may not produce excess heat which could cause discomfort to users.

Cautions while Working on the Computer

It is important to work safely on computer. The static electricity generated just by walking on the carpet can damage your computer component. So use a surge protector when you plug your system in.

A battery backup system is the best way to protect against a power outage, as it provides the system with constant voltage.

Remove rings, watches and necklaces while working on the computer. These ornaments are often made of conductive metals which can damage Computer components by striking them static electricity.

Fig. 14.4: Unplug power source from computer

Unplug all power sources and cables from computer. If you are working with plugged in computer then it might damage your hardware. Modern processors will overheat within 7 sec if heat sink is not attached.

Watch Out for Cords and Wires

Loose cords and wires can cause hazard and even electrical hazards as shown in Fig. 14.5.

If a cord or wire will cross a pathway safety it should be mark it with hazard tape as shown in Fig. 14.6.

Fig. 14.5: Loose cord that can be hazardous

Fig. 14.6: Hazard tape

Fig. 14.7: Avoid water while working with electricity

Avoid water at all times when working with electricity. Never touch or try repairing any electrical equipment or circuits with wet hands. It increases the electrical conductivity of the body for the flow of electric currents.

Check Your Progress

A. Multiple choice questions

1. To provide healthy and safety working environment, every organisation must have _____.
   (a) Cleanliness
   (b) Filtered water
   (c) Clean wash-room
   (d) All of the above
2. Air pollution is mostly caused by production of the _____ in the surrounding air.
   (a) dust
   (b) mixture of solid particles
   (c) gases
   (d) All of above
3. Repetitive use of muscle may feel pain in your _____.
   (a) neck
   (b) shoulder
   (c) wrist or fingers
   (d) All of the above
4. The security department organisation is not responsible for _____.
   (a) other safety
   (b) computer system safety
   (c) electrical safety
   (d) transport safety
5. For an organisation, the proper security procedures will reduce _____.
   (a) liabilities
   (b) insurance
   (c) business revenue
   (d) operational charges of the company
6. Do not wear _____ when working with machines.
   (a) jewellery
   (b) safety glasses
   (c) masks
   (d) gloves
7. Sore lower back is caused due to _____.
   (a) reaching forward frequently
   (b) no lumbar support
   (c) no upper back support from chair
   (d) reaching forward for long periods

8. What should you do with the problem of dry eyes?
   (a) Forget to blink
   (b) Rest eyes periodically and do simple eye exercises
   (c) Do exercise
   (d) Blink the eyes
9. If light is coming directly behind or in front of you then you may suffer from _____.
   (a) eye strain
   (b) sore eyes
   (c) dry eyes
   (d) eye strain and sore eyes

B. Fill in the blanks

1. Air and water pollution can be analysed by using – physical, _____ and _____ analysis.
2. The PH value of the water can be measured through _____ analysis.
3. The _____ indicators are used to monitor the health of the ecosystem.
4. Ergonomics is the science concerned with _____ and arranging things.
5. Working with wrists extended too much repetition can cause _____.
6. The repetition of a seemingly _____ task over a period of time can cause an injury.
7. If a cord or wire will cross a pathway safety it should be mark it with _____.
8. Loose cords and wires can cause _____.
9. Glare and _____ on the screen should be prevented.
10. The keyboard should have a matt surface to avoid _____ glare.

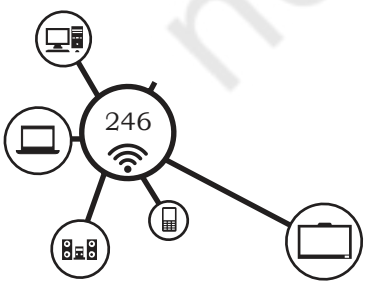
C. State whether the following statements are True or False

1. The work environment of the organisation must be free from hazards and risk.
2. Practice a no vehicle day in every week to avoid air pollution.
3. Applying ergonomics can improve performance and productivity.
4. Wear rings, watches and necklaces while working on the computer.
5. Never touch or try repairing any electrical equipment or circuits with wet hands.
6. Unplug all power sources and cables from computer while working on computer.

7. Occupational overuse syndrome, also known as repetition strain injury.
8. The work chair must be stable and allow the user to move easily.
9. Artificial lighting from computer screens can cause sleeping problems.
10. The keyboard and mouse should not be kept at the same level.

D. Short answer type questions

1. What causes the water pollution?
2. What is occupational overuse syndrome?
3. What are musculoskeletal problems?
4. What cautions to be taken while working on the computer?
5. Why there is no right way to use a laptop?
6. What causes eye strain and how to avoid it?
7. What type of display screen is suitable to work on computer?
8. What type of keyboard is suitable to work on computer?



Chapter 15 Prevent Accidents and Emergencies

Introduction

In an organisation, any small accident or unforeseen situation may turn into emergencies if not given due attention. The emergencies can be natural, such as floods, hurricanes, earthquakes or man-made emergencies may include fire, toxic gas releases, chemical spills, illness, explosions, and civil disturbances. Such situations may disrupt or shut down your operations, or may cause physical or environmental damage. While no one expects such emergencies and disasters that can strike anyone, anytime, anywhere. The best way to protect yourself and your organisation is to develop a well thought-out emergency action plan to guide the employees in the event of an emergency. This chapter explains the general workplace hazards, its prevention, care and how to keep workplace safe.

Accidents and Emergencies

An accident is an unplanned, uncontrolled, or unforeseen event resulting in injury or harm to people and damages to goods. For example, a person falling down and getting injured or a glassware item that broke upon being knocked over. Emergency is a serious or crisis situation that needs immediate attention and action. For example, a customer having a heart attack or sudden outbreak of fire in your organisation needs immediate attention.

Each organisation has procedures and practices to handle and report accidents and to take care of emergencies. Although most of these procedures and practices common across the industry, some

procedures might be modified to fit a particular type of business within the industry. For example, procedure to handle accidents caused by slipping or falling will be similar across the industry. You need to be aware of the general procedures and practices as well as specific to your organisation.

The following are some of the guidelines for identifying and reporting an accident or emergency:

Notice and Correctly Identify Accidents and Emergencies

You need to be aware of what constitutes an emergency and what constitutes an accident in an organisation. The organisation's policies and guidelines will be the best guide in this matter. You should be able to identify such incidents in your organization, and be aware of the procedures to tackle each form of accident and emergency.

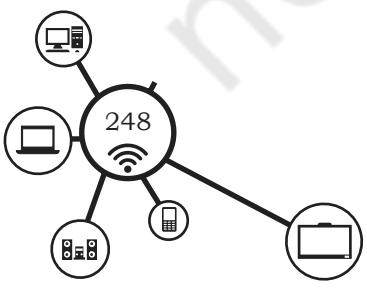
Get help Promptly and in the Most Suitable Way

Follow the procedure for handling a particular type of accident and emergency. Promptly act as per the guidelines. Ensure that you provide the required help and support as laid down in the policies. Do not act outside the guidelines and policies laid down for your role even if your actions are motivated by the best intention.

Remember that only properly trained and certified professionals may be authorized to take decisions beyond the organisation's policies and guidelines, if the situation requires.

Follow Company Policies and Procedures for Preventing Further Injury While Waiting for Help to Arrive

If someone is injured, do not act as per your impulse or gut feeling. Go as per the procedures laid down by your organisation's policy for tackling injuries. You need to stay calm and follow the prescribed procedures.



Act within the Limits of your Responsibility and Authority when Accidents and Emergencies Arise

Provide help and support within authorised limit. Provide medical help to the injured only if you are certified to provide the necessary aid. Otherwise, wait for the professionals to arrive and give necessary help.

Promptly Follow Instructions given by Senior Staff and the Emergency Services

Provide necessary services as described by the organisation's policy for your role. Also, follow the instructions of senior staff who are trained to handle particular situations. Work under their supervision when handling accidents and emergencies.

Types of Accidents

The following are some of commonly occurring accidents in organisations:

Trip and Fall

Customers or employees can trip on carelessly left loose material and fall down, such as tripping on loose wires, goods left on aisles, elevated threshold. This type of accident may result in simple bruises to serious fractures.

Slip and Fall

slips are mainly due to wet floors, spilling of liquids or throwing of other slip-causing material on floors. Slip and fall is generally caused by negligence. It can also be due to broken or uneven walking surface, such as broken or loose floor tile. People should be properly cautioned against tripping and slipping. For example, a *"wet floor"* sign will warn people to walk carefully on freshly mopped floors. Similarly, *"watch your steps"* signs can prevent accidents on a staircase with a sharp bent or warn against a loose floor tile.

Fig. 15.1: Types of accidents

Injuries caused due to Escalators or Elevators (or lifts)

Although such injuries are uncommon, they mainly happen to children, ladies, and elderly. Injuries can be caused by falling on escalators and getting hurt. People may be injured in elevators by falling down due to sudden, jerking movement of elevators or by tripping on elevators' threshold. They may also get stuck in elevators resulting in panic and trauma. Escalators and elevators should be checked regularly for proper and safe functioning by the right person or department. If you notice any sign of malfunctioning of escalators or elevators, immediately inform the right people. If organization's procedures are not being followed properly for checking and maintaining these, escalate to appropriate authorities in the organization.

Accidents due to Falling of Goods

Goods can fall on people from shelves or wall hangings and injure them. This typically happens if pieces of goods have been piled improperly or kept in an inappropriate manner. Always check that pieces of goods are placed properly and securely.

Accidents due to Moving Objects

Moving objects, such as trolleys, can also injure people in the organisation. In addition, improperly kept props and lighting fixtures can result in accidents. For example, nails coming out dangerously from props can cause cuts. Loosely plugged in lighting fixtures can result in electric shocks.

Handling Accidents

Try to avoid accidents in your organization by finding out all potential hazards and eliminating them. In case of an injury to a colleague due to an accident, do the following.

Attend to the Injured Person Immediately

Depending on the level and seriousness of the injury, see that the injured person receives first aid or medical help at the earliest.

Inform your Supervisor

Give details about the probable cause of accident and a description of the injury.

Assist your Supervisor

Investigate and find out the actual cause of the accident. Help your supervisor to take appropriate actions to prevent occurrences of similar accidents in future.

Types of Emergencies

It is important to have policies and procedures to tackle the given categories of emergencies. You should be aware of at least the basic procedures to handle emergencies. Here are some general emergency handling procedures that you can follow:

First Aid

Should be quickly accesseble to the employees. It should contain all the important items for first aid required to deal with common problems such as cuts, burns, headaches and muscle cramps.

Electrical Safety

Employees must be provided instructions about electrical safety such as keeping water and food items away from electrical equipment. Electrical staff and engineers should carry out routine inspections of all wiring to make sure there are no damaged or broken wires.

Keep a list of numbers to call during emergency, such as those of police, fire brigade, security, ambulance etc.

Regularly check that all emergency handling equipment such as the fire extinguisher and fire alarm system are in working condition.

Ensure that emergency exits are not obstructed and keys to such exists are easily accessible. Never place any objects near the emergency doors or windows

Evacuation

It is critical for employee to know who is the coordinator or authority to make decisions during emergencies.

The coordinator should be responsible to handle evacuation process.

General Evacuation Procedures

Each organization has its own evacuation procedures as listed in its policies. You should be aware of these procedures and follow them properly during an emergency evacuation. In addition to organization's policies, here are some general evacuation steps useful in such situations,

- Leave the premises immediately and start moving towards the nearest emergency exit.
- Guide your customers to the emergency exits.
- If possible, assist the person with disability to move towards the emergency exit.
- You may carry your hand-held belongings, as you move towards the emergency exit. Do not come back to pick up your belongings unless the area is declared safe.
- Do not use the escalators or elevators (lifts) to avoid overcrowding and getting trapped, in case there is a power failure. Use the stairs instead.
- Go to the emergency assembly area. Check if any of your colleagues are missing and immediately inform the person concerned.

Fire Hazards in the Workplace

The first step to fire safety is assessing the existence of fire hazards in workplace. In most facilities, there are three main types of hazards to evaluate – electrical hazards, combustible materials, and flammable materials.

Electrical issues, such as damaged extension cords, blocked electrical panels and heaters, and overloaded circuits often lead to fires. Fires are also commonly caused by electrical events such as arc flash. Maintenance of power cords and other electrical equipment should be conducted on a regular basis.

Workplace fires are also commonly caused by improper storage of flammable material or combustible dust. Both are dangerous and should be properly

handled and stored. Dust explosions can be another cause of fire hazard.

Fire Prevention

- All employees must know where the fire extinguishers are located, and how to properly use them.
- Fire extinguishers and First Aid Stations should be clearly marked with signs.
- Never block access to Exits, fire extinguishers, electric switches and panels.
- Do not block or stack material against doors, which would prevent them from operating properly in event of a fire.
- Do not use flammable material near electrical panels, switches, lift trucks or any electrical equipment.
- Make sure all equipment is properly grounded where needed.
- Fire extinguishers must be inspected regularly.
- Report to your supervisor of any defect in electrical, fire prevention or material handling equipment.
- No flammable material are to be placed around an exit door way.

Identification of Material and Ignition Sources

Materials are classified by risk, and are sorted according to these fire classifications:

Class A Material: materials such as wood, cloth, and paper, which won't ignite on their own but will continue to burn once exposed to a heat source.

Class B Material: all liquid, grease, and gas materials that burn when exposed to ignition sources.

Class C Material: electrical materials and equipment. These materials cause fires very quickly and present a serious risk of arc flash.

Class D Material: any materials that are volatile and able to quickly ignite, such as magnesium, potassium, and sodium.

Examples of ignition sources include:

Open flames such as gas ovens, lighters in smoking areas, and welding torches.

Sparks from wood or metal saws and other types of equipment.

Heat sources such as combustion engines, space heaters, ovens, and machines that produce heat during operation.

Chemical ignition from chemicals that combust under normal working temperatures.

Select the suitable type of fire extinguisher					
	Water CO2	**Dry chemical powder**	**Carbon dioxide**	**Mechanical foam**	**ABC dry powder**
Class A	Suitable	Not suitable	Not suitable	Suitable	Suitable
Class B	Not suitable	Suitable	Suitable	Suitable	Suitable
Class C	Not suitable	Suitable	Suitable	Not suitable	Suitable
Class D	Not suitable	Suitable	Not suitable	Not suitable	Suitable

Fig. 15.2: Fire extinguisher with its parts labeled

Fire Extinguisher

A fire extinguisher is a protection device used to extinguish fires. It is a cylindrical pressure vessel containing an agent which can be discharged to extinguish a fire. The Fig. 15.2 shows the different parts of fire extinguisher.

The following activity will demonstrate the operation of fire extinguisher.

Practical Exercises

Demonstrate the operation of a fire extinguisher.

Procedure

Step 1: Identify the safety pin of the fire extinguisher, present in its handle.

Step 2: Break the seal and pull the safety pin from the handle.

Step 3: Use the fire extinguisher by squeezing the lever.

Step 4: Sweep it from side to side.

Fig. 15.3: Steps to open the seal and safety pin

First Aid for Electrical Emergencies

Electrical accidents cause countless injuries. Injury could be minimised and many lives can be saved if proper rescue techniques and treatment are used. Electrical accidents may occur at any time or place. Timely response and treatment of victims is a major concern. When an electrical accident occurs, due to the effect of muscle cramping, a victim is often incapable of moving or releasing the electrical conductor. There should always be an emergency response plan for scheduled electrical maintenance or work.

Fig. 15.4: An unconscious state because of an electrical shock

Electrical Rescue Techniques

Approaching the accident

- Never rush into an accident situation.
- Call 108 as soon as possible.
- Approach the accident place cautiously.

Examining the scene

- Visually examine victims to determine if they are in contact with energised conductors.
- Metal surfaces, objects near the victim itself may be energised.
- Do not touch the victim or conductive surfaces while they are energised.
- Switch off the electrical circuits if possible.

Hazards and solutions

- Be alert for hazards, such as heated surfaces and fire.
- In case you cannot switch off the power source, take extreme care.
- Ensure that your hands and feet are dry.
- Wear protective equipment, such as gloves and shoes. Stand on a clean dry surface.
- Use non-conductive material to remove a victim from the conductor.

Fig. 15.5: Beware of high voltage

High voltage rescue

- Special training is required for rescues if high voltage is present.
- Protective equipment, such as gloves and shoes must be worn.

First Aid

- A victim may require Cardio-Pulmonary Resuscitation (CPR). Steps to perform in CPR are shown in the Fig. 15.6 and 15.7.

Fig. 15.6: Gloves and shoes for safety

Fig. 15.7: Open the mouth for airway

Fig. 15.8: Rescue breathing

- If the victim is breathing and has a heartbeat, give first aid for injuries and treat for shock.
- Ensure the victim gets medical care as soon as possible.
- Physician attending the victim must have detailed information to properly diagnose and care for the victim.

Practical Exercises

Identify and name the steps mentioned in the following figures.

Check Your Progress

A. Multiple choice questions

1. What are the steps necessary for operating a fire extinguisher?
   (a) Identify the safety pin of the fire extinguisher which is generally present in its handle
   (b) Break the seal and pull the safety pin from the handle
   (c) Use the fire extinguisher by squeezing the lever
   (d) All of the above
2. Which of the following is an examples of ignition sources of open flames?
   (a) Gas ovens
   (b) Lighters in smoking areas
   (c) Welding torches
   (d) All of the above
3. In fire classification, all liquid, grease, and gas material comes under _____.
   (a) Class A material
   (b) Class B material
   (c) Class C material
   (d) Class A material
4. In fire classification, material magnesium, potassium, and sodium comes under _____.
   (a) Class A material
   (b) Class B material
   (c) Class C material
   (d) Class D material
5. In fire classification, material wood, cloth, and paper comes under _____.
   (a) Class A material
   (b) Class B material
   (c) Class C material
   (d) Class D material
6. In fire classification, electrical material and equipment comes under _____.
   (a) Class A material
   (b) Class B material
   (c) Class C material
   (d) Class D material
7. When do we use a fire extinguisher?
   (a) In case of flood
   (b) In case of electric shock
   (c) In case of fire
   (d) In case of burn injury
8. What is the primary fire emergency telephone number is?
   (a) 011
   (b) 101
   (c) 108
   (d) 111

9. Which of the following contains everything you need to know about evacuating your facility safely?
   (a) Evacuation Diagram
   (b) Emergency Action Plan
   (c) Employee Directory
   (d) Both (a) and (b)
10. The best course of action to take during a medical emergency is to _____.
   (a) Begin first aid immediately
   (b) Activate the emergency plan for reporting injuries
   (c) Notify the person's family about the situation
   (d) Both (a) and (b)

B. Fill in the blanks

1. Emergency is a serious or crisis situation that needs_____attention and _____.
2. A _____ sign will warn people to walk carefully on freshly mopped floors.
3. _____ signs can prevent accidents on a staircase with a sharp bent or warn against a loose floor tile.
4. The _____ should be responsible to handle evacuation process.
5. Workplace fires are commonly caused by improper storage of _____ material or _____ dust.
6. There should always be an _____ plan for scheduled electrical maintenance or work.
7. If the victim is breathing and has a heartbeat, give _____ for injuries and treat for shock.
8. A fire extinguisher is a _____ containing an agent which can be discharged to extinguish a fire.

C. State whether the following statements are True or False

1. The organisation's policies and guidelines is the best guide to handle emergency.
2. If someone is injured, act as per your impulse or gut feeling.
3. Keep water and food items away from electrical equipment.
4. Always switch off the electrical circuits.
5. Always wear protective equipment, such as gloves and shoes.
6. A fire extinguisher is a protection device used to extinguish fires.
7. Flammable materials can be placed around an door exit.
8. You can determine possible evacuation routes from floor plan diagrams posted in your facility.

D. Short answer questions

1. What is a workplace emergency?
2. How do you protect yourself, your employees, and your business?
3. What is an emergency action plan?
4. What should your emergency action plan include?
5. How do you develop an evacuation policy and procedures?
6. How do you establish evacuation routes and exits?
7. What are the various types of fire extinguisher and their extinguishing material?
8. What are the steps for operating a fire extinguisher in case of a fire emergency.
9. Compare the different type of fire extinguisher.
10. List the different class of fire.
11. List out electrical rescue techniques.
12. What is the first aid for electrical emergencies?

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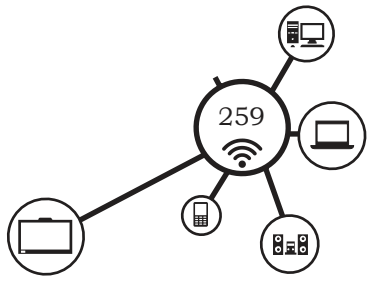

Answer Key

Unit 1. Digital Documentation (Advance) using LibreOffice Writer

Chapter 1. Introduction to Styles-Paragraph, Page, Character and List

A. Multiple choice questions

1. (b) 2. (d) 3. (b) 4. (a) 5. (d)

B. Fill in the blanks

1. style
2. LibreOffice
3. consistency
4. styles
5. Heading Style
6. Default
7. objects
8. Paragraph
9. Fill format
10. cannot

Chapter 2. Working with Images

A. Multiple choice questions

1. (a) 2. (a) 3. (d) 4. (c) 5. (c)

B. Fill in the blanks

1. Crop
2. gamma correction
3. ageing
4. Send Back
5. selecting
6. 25
7. reference
8. three
9. corner
10. before its

Chapter 3. Advanced Features of Writer

A. Multiple choice questions

1. (a) 2. (d) 3. (c)
4. (c) 5. (c) 6. (b)
7. (b) 8. (b) 9. (b)
10. (d) 11. (b) 12. (a)

B. Fill in the blanks

1. Ctrl
2. Default
3. Protected Against Manual Changes
4. Update Index
5. Columns
6. Template
7. Blank Document template
8. Properties
9. Browse Online Templates
10. Track Changes
11. Ctrl+Shift+C
12. coloured

C. State whether the following statements are True or False

1. True 2. False 3. False 4. False 5. False 6. True
7. False 8. True 9. False 10. True 11. False

Unit 2. Electronic Spreadsheet (Advance) using LibreOffice Calc

Chapter 4. Analyse Data using Scenarios and Goal Seek

A. Multiple choice questions

1. (d) 2. (b) 3. (d) 4. (d) 5. (b)
6. (d) 7. (b) 8. (b) 9. (b)

B. State whether the following statements are True or False

1. True 2. False 3. True 4. False 5. False
6. False 7. False 8. False 9. False

C. Fill in the blanks

1. summarize
2. consolidate
3. Subtotal
4. Subtotal
5. What-if
6. What-if tool
7. two, formula and display output 8. Goal seek

Chapter 5. Use Macros in Spreadsheet

A. Multiple choice questions

1. (c) 2. (d) 3. (b) 4. (b) 5. (c) 6. (b)

B. Fill in the blanks

1. Standard
2. Integrated Development Environment
3. arguments/values, result/value

4. Organizer
5. Sub, End Sub
6. Standard Library

C. State whether the following statements are True or False

1. False 2. True 3. False
4. False 5. True 6. True

Chapter 6. Link Spreadsheet data

A. Multiple choice questions

1. (a) 2. (c) 3. (b) 4. (b)

B. Fill in the blanks

1. current
2. HTML_all
3. .odb.
4. Single quotes (‘ ’)
5. Insert Sheet

C. State whether the following statements are True or False

1. False 2. True 3. False 4. True 5. False

Chapter 7. Share and Review a Spreadsheet

A. Multiple choice questions

1. (b) 2. (a) 3. (d) 4. (d) 5. (c)

B. State whether the following statements are True or False

1. False 2. True 3. False
4. False 5. False 6. True

C. Fill in the blanks

1. shared
2. many
3. turn off
4. record
5. red
6. Comment
7. cell contents

Unit 3. Database Management System using LibreOffice Base

Chapter 8. Introduction to Database Management System

A. Multiple choice questions

1. (d) 2. (c) 3. (b) 4. (a) 5. (b)
6. (d) 7. (d) 8. (a) 9. (c) 10. (a)

B. State whether the following statements are True or False

1. False 2. True 3. False 4. False 5. False

C. Fill in the blanks

1. Data
2. Entity
3. Report
4. Record
5. Candidate

Chapter 9. Starting with LibreOffice Base

A. Multiple choice questions

1. (c) 2. (b) 3. (c) 4. (b) 5. (c)
6. (a) 7. (b) 8. (a) 9. (a) 10. (d)

B. State whether the following statements are True or False

1. True 2. True 3. False 4. False 5. True
6. True 7. False 8. True 9. False 10. False

C. Fill in the blanks

1. Data type
2. Text
3. Text
4. Binary
5. Ctrl+S
6. Tasks Pane
7. Key
8. Datasheet
9. Record pointer
10. Sorting

Chapter 10. Working With Multiple Tables

A. Multiple choice questions

1. (d) 2. (c) 3. (b) 4. (b) 5. (b)
6. (b) 7. (c) 8. (a) 9. (c) 10. (d)

B. State whether the following statements are True or False

1. False 2. True 3. False 4. False 5. True
6. True 7. False 8. False 9. True 10. False

C. Fill in the blanks

1. Design
2. common field
3. one-to-one
4. one-to-many
5. transaction, master

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6. referential integrity
7. relationship
8. DBMS
9. Many-to-many
10. 10.

Chapter 11. Queries in Base

A. Multiple choice questions

1. (c) 2. (d) 3. (b)
4. (b) 5. (d) 6. (c)
7. (d) 8. (a) 9. (d)
10. (c) 11. (c)

B. State whether the following statements are True or False

1. False 2. False 3. True
4. False 5. False 6. True
7. True 8. False 9. True
10. True 11. True

C. Fill in the blanks

1. Query
2. Report
3. Three
4. two
5. F5
6. Criterion
7. Available fields
8. ascending, descending
9. three
10. Overview
11. Design
12. Query
13. Alias

Chapter 12. Forms and Reports

A. Multiple choice questions

1. (b) 2. (d) 3. (b) 4. (c) 5. (b)
6. (c) 7. (b) 8. (a) 9. (c) 10. (c)

B. State whether the following statements are True or False

1. False 2. True 3. False
4. True 5. True 6. False
7. True 8. False 9. False
10. True 11. False 12. True 13. False

C. Fill in the blanks

1. Enter, view data
2. label, field value
3. label
4. 3D
5. tool tip
6. landscape
7. Layout
8. Insert
9. Six
10. dynamic

Unit 4. Maintain Healthy, Safe and Secure Working Environment

Chapter 13. Health, Safety and Security at Work Place

A. Multiple choice questions

1. (d) 2. (b) 3. (d) 4. (c)
5. (d) 6. (a) 7. (c) 8. (d)

B. Fill in the blanks

1. mental, social
2. morning
3. air conditioning
4. health
5. safe, hazards, risk
6. business revenue, operational charges
7. Occupational Health and Safety
8. physical work environment
9. live wires, conductor
10. poor sitting postures, one position

C. State True or False

1. True 2. True 3. True 4. True 5. True
6. False 7. True 8. True 9. False 10. True

Chapter 14. Workplace Quality Measures

A. Multiple choice questions

1. (b) 2. (d) 3. (b) 4. (c) 5. (b)
6. (c) 7. (b) 8. (a) 9. (c) 10. (c)

B. Fill in the blanks

1. chemical, biological
2. chemical
3. microbial

4. designing
5. arching wrists
6. innocuous
7. hazard tape
8. electrical hazards
9. reflections
10. reflective

C. State whether the following statements are True or False

1. True 2. True 3. True 4. False 5. True
6. False 7. True 8. True 9.True 10. False

Chapter 15. Prevent Accidents and Emergencies

A. Multiple choice questions

1. (d) 2. (d) 3. (b) 4. (d) 5. (a)
6. (c) 7. (c) 8. (b) 9. (d) 10. (d)

B. Fill in the blanks

1. immediate, action
2. wet floor
3. watch your steps
4. coordinator
5. flammable, combustible
6. emergency response
7. first aid
8. cylindrical pressure vessel

C. State True or False

1. True 2. False 3. True 4. False
5. False 6. True 7. False 8. True