4 Open Office Tools

UNIT SPECIFICS

In this unit, learners will learn and practice different open-source programs of Apache Open Office (AOO) software. Unit includes AOO's Writer program used for basic word processing tasks, CALC program for manipulating tabular data in form of spreadsheets and Impress program for presentation preparation. Adequate practice of these programs will surely enhance basic software skills of learners.

RATIONALE

It is well known that IT systems are used for information display to advanced data processing and research tasks. But if we look at the uses happening around us, it is being used in abundance in office suite tasks like word processing tasks, calculation tasks, presentation tasks, etc. Therefore, it is necessary to study such software in use for these office suite functions.

OpenOffice is an open-source software suite that can runs on several hardware architectures and various operating systems such as Microsoft Windows, Mac OS X, Linux, and Sun Solaris. OpenOffice includes various tools e.g., Writer (word processor), Calc (spreadsheet), Impress (presentations), drawing application (draw), a formula editor (math), and a database management application (base). All these components are well integrated and commonly referred as OpenOffice tools.

PRE-REQUISITES

– Fundamental knowledge of computer systems.
– Basic knowledge of working with Windows or Unix OS environments.

UNIT OUTCOMES

Learners will be able to:

U4-O1: Install OpenOffice software and define features of its programs i.e., Writer, Calc, and Impress.

U4-O2: Use Writer interface and perform word processing tasks.

U4-O3: Use Calc interface and perform calculative tasks of spreadsheet programs.

U4-O4: Use Impress interface and prepare impactful presentations.

Table 4.1: Mapping of Unit Outcomes with the Course Outcomes

Unit-4 Outcome	EXPECTED MAPPING WITH COURSE OUTCOMES (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)						
	CO-1	CO-2	CO-3	CO-4	CO-5	CO-6	CO-7
U4-O1	2	2	1	1	2	3	1
U4-O2	2	1	1	1	3	3	1
U4-O3	2	1	1	1	1	3	1
U4-O4	2	1	1	1	3	3	1

4.1 INSTALLATION OF OPENOFFICE

The mission of OpenOffice developers is to create an office suite software community that will run on all major platforms. We can leverage the various programs of OpenOffice by installing the software on our computer system. To install OpenOffice, it is recommended to go through the system requirements. Depending on the hardware and operating system of our computer system, we should download and install the package from the OpenOffice project's home page. The following steps describe the process to install Apache OpenOffice (AOO):

1. First of all, we need to download the current version from the OpenOffice website i.e., *https://www.openoffice.org/download/index.html*

2. On the above webpage, we have to choose appropriate options for the operating systems, language, and version of the OpenOffice package to be downloaded. Other than various international languages, Apache OpenOffice is also available in Hindi and Tamil languages. Click on the 'Download full installation' button. A full installation file, sized about 135 MB will be downloaded (see Fig. 4.1).

Fig. 4.1: Download Apache OpenOffice

3. Start the installation with the downloaded file in the previous step. As depicted in Fig. 4.2(a) an installation wizard will appear to guide the installation process. By clicking Next, we will be shown a window to choose the installation location. Click on the Install button. The installation process will begin and show some installing information via intermediate screens.
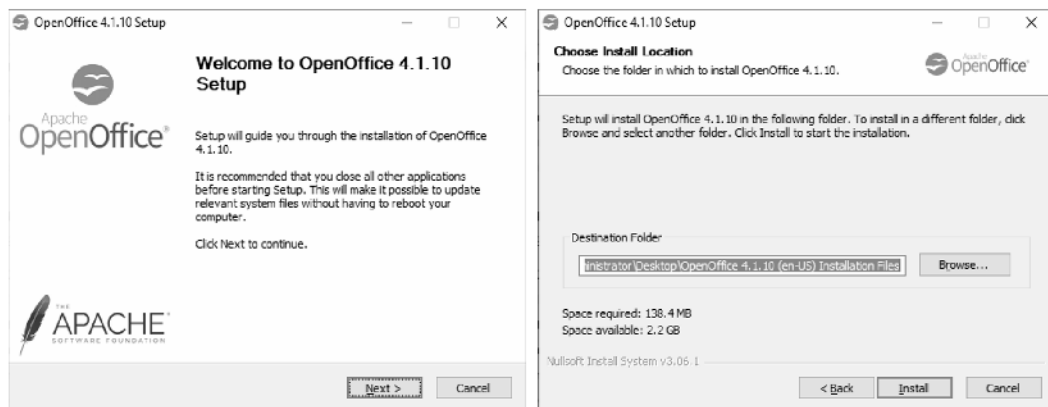

Fig. 4.2: Installation Wizard Screens (a) Welcome Screen (b) Install Location

4. Next, a 'Customer Information' form will be presented to take complete customer Information. After filling the form click on Next and then another window will be presented to choose setup type. Click Next, after setup type selection. (see Fig. 4.3)
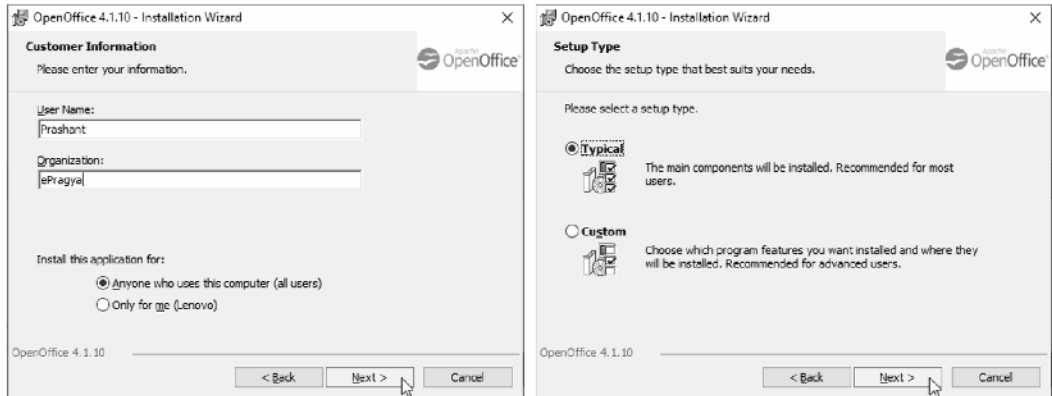
Fig. 4.3: Installation Wizard Screens (a) Customer Information (b) Setup Type Selection

5. The window depicted in Fig. 4.4(a) will be shown. Click on the Install button to begin the installation process. After some time, the OpenOffice installation completed wizard appears then Click on Finish. (See Fig. 4.4(b))
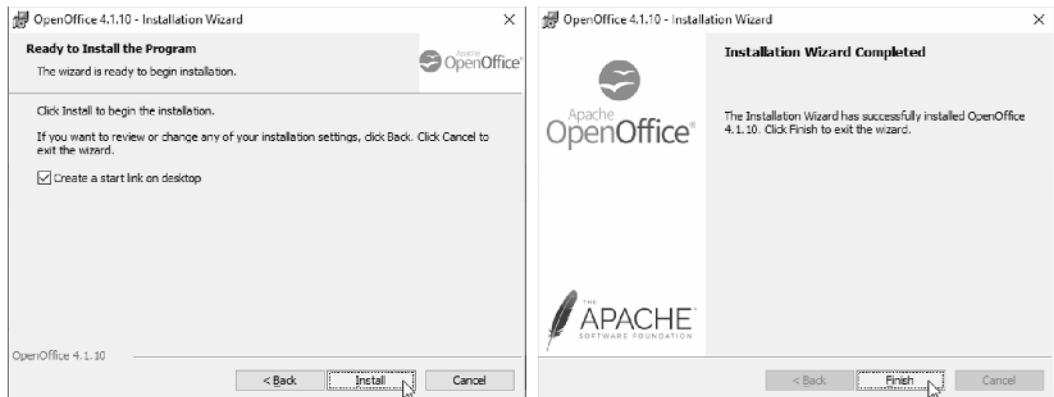

Fig. 4.4: Installation Wizard Screens (a) Begin Installation (b) Finish Installation

6. Now, we will have a start link on desktop. We can open the OpenOffice4 by double-clicking the link. Initial screen with all the OpenOffice programs will be shown as depicted in Fig. 4.5.
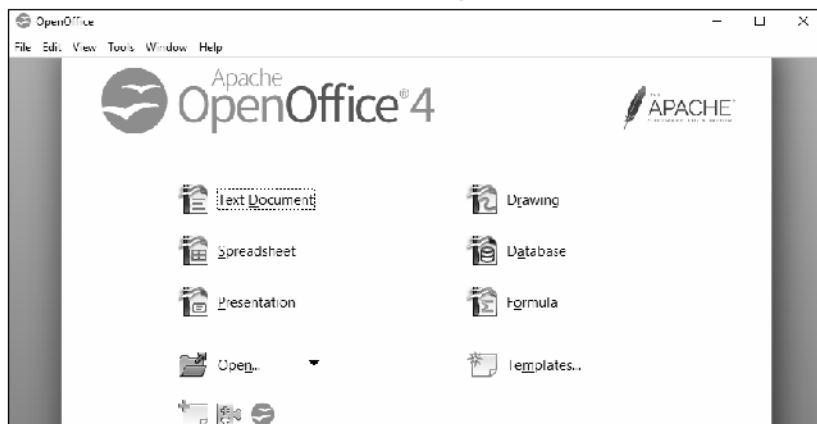

Fig. 4.5: OpenOffice Start Center

The Advantages of OpenOffice

OpenOffice software possesses several benefits over other office suite counterparts. Some of these are:

1. **No licensing fees:** It's free software. Anyone can use and distribute it without any charges.
2. **Open source:** Source code is openly available. Users can distribute, copy and modify the software as per the AOO's Open-source licenses.
3. **Cross-platform:** The software can be installed in several hardware architectures and under multiple operating systems.
4. **Extensive language support:** Its user interface is available in more than 40 languages including Hindi, Tamil, etc. It also supports spelling, hyphenation, and thesaurus dictionaries in over 70 languages.
5. **Consistent interface:** Provides user interfaces with a similar look and feel for better administration.
6. **Integration:** AOO's components are integrated e.g., spelling checker is used consistently across the suite. Drawing tools available in Writer are also usable in Calc, Impress and Draw.
7. **Granularity:** AOO options can be set at the component level or even document level.
8. **File compatibility:** In addition to its native OpenDocument formats, AOO includes PDF and Flash export capabilities, as well as support for opening and saving files in many common formats including Microsoft Office, HTML, XML, etc. It also includes the ability to import and edit some PDF files.
9. **No vendor lock-in:** Supports Open Document format i.e., an XML, it can be opened in any text editor.
10. **Community support:** Worldwide community to fix the software issues and software enhancement.

4.2 OPENOFFICE WRITER

The writer is the word processor component of Apache OpenOffice (AOO). It is a free alternative to Windows MS Word. The writer has all features we expect from a modern, fully equipped word processor. Using writer, we can create documents such as reports, letters, create complete books with contents, diagrams, indexes, agendas, minutes, or carrying out more complex tasks such as mail merges. It provides the usual features of a word processor: enter and edit text, spelling check, thesaurus, hyphenation, autocorrect, find and replace, automatic generation of tables of contents and indexes, mail merge, and others. In addition, the Writer provides these important features:

- Templates and styles
- Page-layout methods, including frames, columns, and tables
- Embedding or linking of graphics, spreadsheets, and other objects
- Built-in drawing tools
- Master documents—to group a collection of documents into a single document
- Change tracking during revisions
- Database integration, including a bibliography database
- Export to PDF, including bookmarks

4.2.1 Parts of Writer Interface

The Writer interface is depicted in Fig. 4.6. Features of the Writer interface are described below.

Title Bar

It is situated at the top of the Writer window and shows the file name of the current document. Fig 4.6 shows the Title Bar on top having Chapter4_Wirtre_Interface.odt as the file name.

Menu Bar

The menu bar is just below the title bar having various menus. When a menu is clicked it dropdowns and displays several commands. We will discuss one by one each such menu.
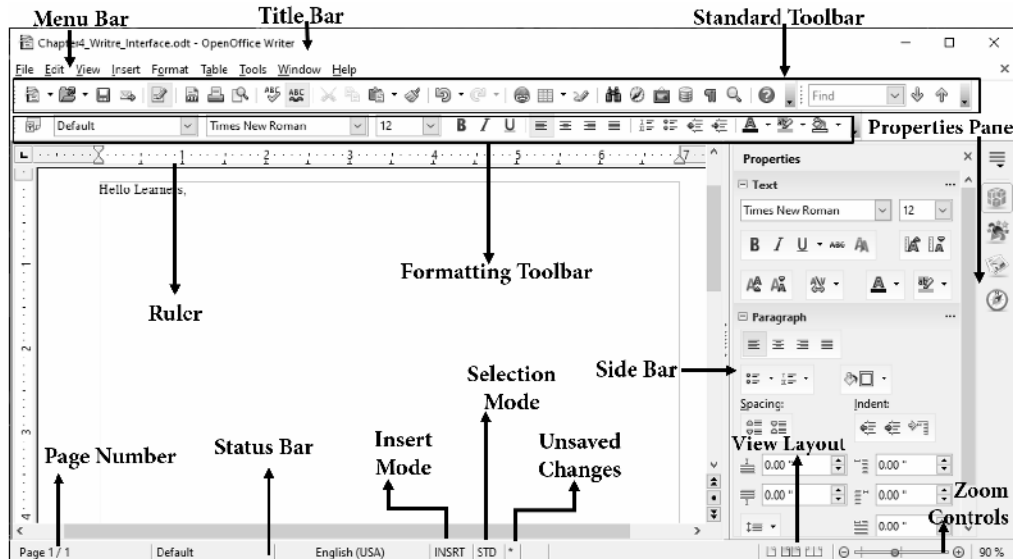

Fig. 4.6: OpenOffice Writer Interface

1. **File Menu** contains commands which apply to the entire document such as Open, Close, Save As, Digital Signature, Print, and Export as PDF. Dropdown menu with various commands is depicted in Fig. 4.7(a).

2. **Edit Menu** contains commands which apply to the entire document such as Undo, Repeat, Auto Text, Find and Replace. It also contains commands to cut, copy and paste the contents of your document. The Dropdown menu with various commands is depicted in Fig. 4.7(b).

3. **View Menu** contains commands which control the display of documents such as print layout, web layout, Fullscreen view, Zoom control, etc. It also can show/hide various toolbars on the main window. The Dropdown menu with various commands is depicted in Fig. 4.8(a).

4. **Insert Menu** contains commands for inserting elements into header, footers, and pictures in the document. It also has commands to insert manual breaks, special characters, sections, hyperlinks, bookmarks, and cross-reference. Frames, objects, Movies, and sound can also be inserted with corresponding commands. The Dropdown menu with various commands is depicted in Fig. 4.8(b).

5. **Format Menu** contains formatting layout commands for our documents using Styles, Formatting, Paragraph, Bullets, and Numbering options. The Dropdown menu with various commands is depicted in Fig. 4.9(a).

6. **Table Menu** contains commands about manipulation of table structure e.g., insert, delete, merge, split, select. In addition, it also contains content formatting commands like AutoFormat, Autofit, sorting, etc. The Dropdown menu with various commands is depicted in Fig. 4.9(b).
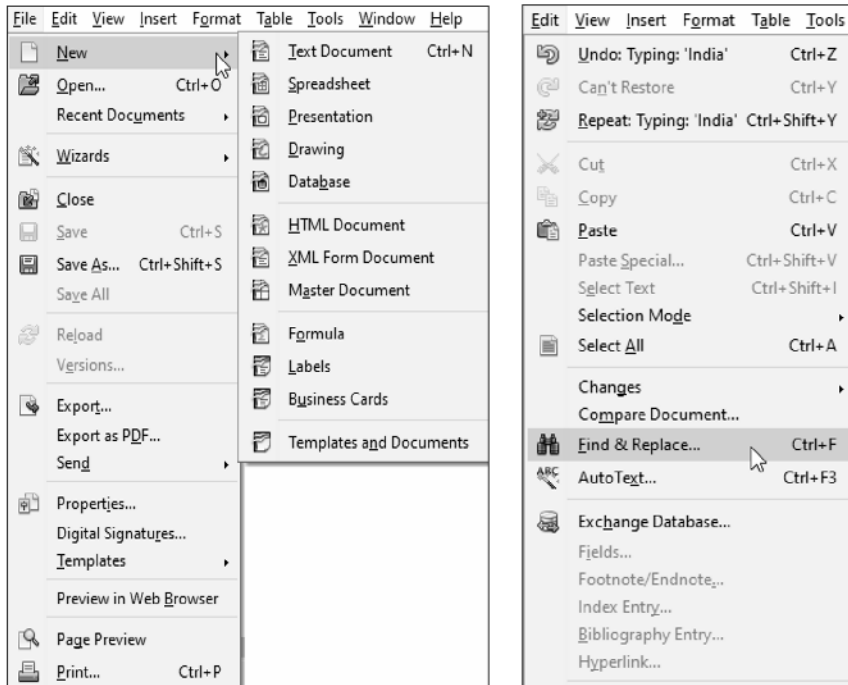
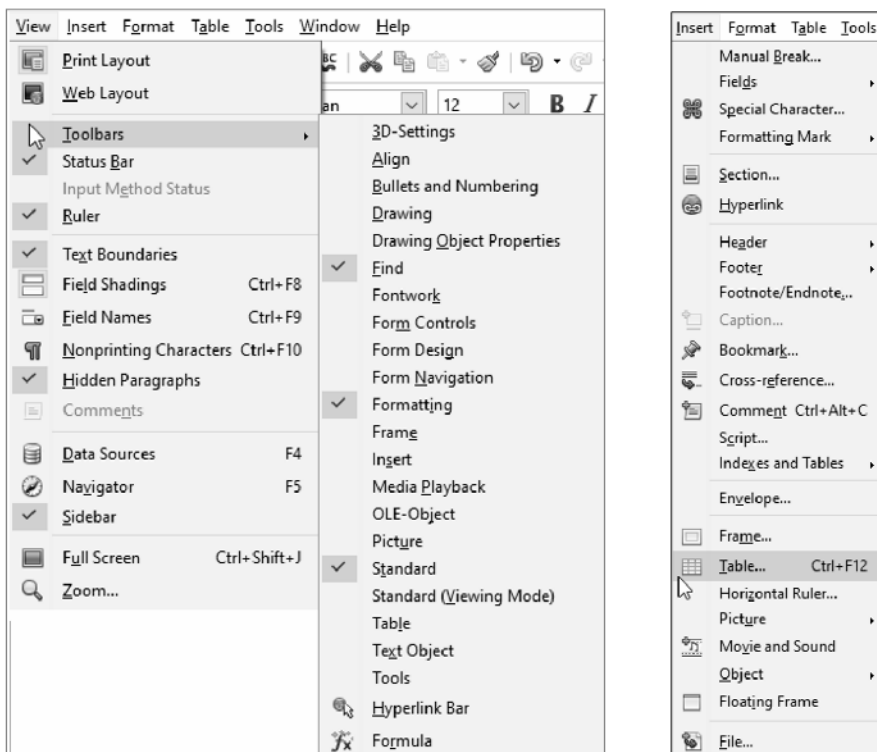**Fig. 4.7:** Writer Interface Menus (a) File Menu (b) Edit Menu

Fig. 4.8: Writer Interface Menus (a) View Menu (b) Insert Menu

7. **Tools Menu** contains various utility functions like Spelling and Grammar, Mail Merge Wizard, AutoCorrect, and Options. The Dropdown menu with various commands is depicted in Fig. 4.9(c).

8. **Window Menu** contains various commands to control the display of various opened writer windows. The new window command opens another window whereas the close command closes the current document. A list of opened documents can also be presented to switch between the documents.

9. **Help Menu** contains link to open the AOO help file. Update options check for any available update for the software. It also gives information about the version and license information of the program.
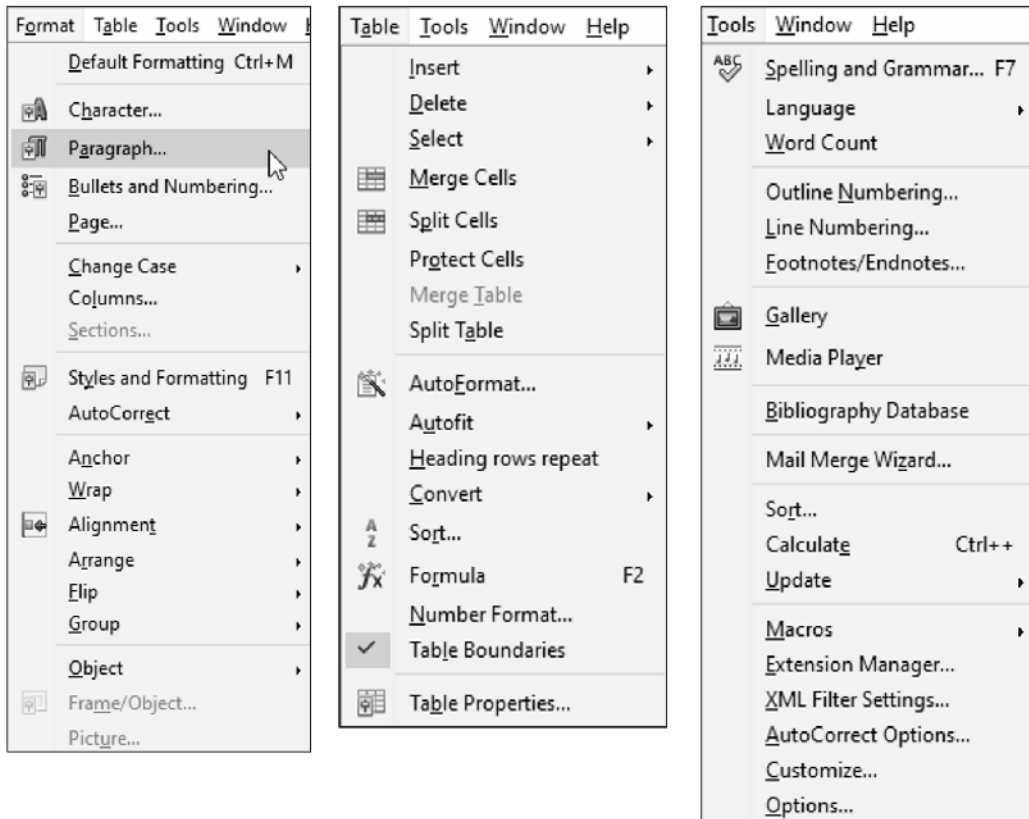

Fig. 4.9: Writer Interface Menus (a) Format Menu (b) Table Menu (c) Tools Menu

Toolbars

As per mobility of toolbars, the writer supports several toolbars i.e., docked, floating, and tear-off toolbar. A **docked toolbar** is fixed by default but it can be moved to different locations. The standard toolbar as depicted in Fig. 4.6 is a docked toolbar. The standard toolbar is also available in Calc, Impress and Draw programs of AOO. **Floating toolbars** are context-sensitive. It appears as per the current cursor position or selection. For example, when the cursor resides in a table then it will show controls about the table whereas, in the case of a bulleted list, it will show controls about bullets and numbering. The second toolbar at the top i.e., the formatting toolbar is an example floating toolbar in AOO. Tear-off toolbars can be opened via a triangle on toolbar icons as shown in Fig. 4.10. We may hide or move various toolbars as listed below:

- To display or hide toolbars, choose View → Toolbars, then click on the name of a toolbar in the list as shown in Fig. 4.8(a).
- To move a docked toolbar, place the mouse pointer over the toolbar handle, hold down the left mouse button, drag the toolbar to the new location, and then release the mouse button.
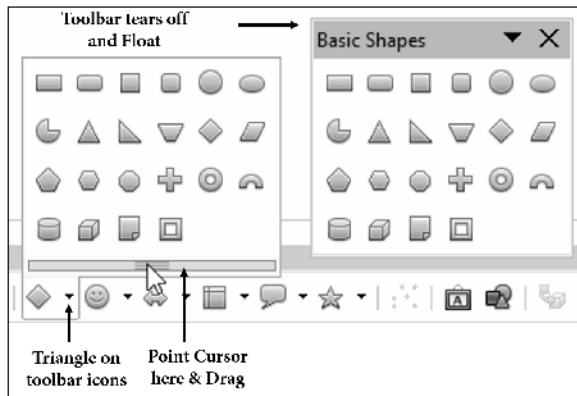- To move a floating toolbar, click on its title bar and drag it to a new location.

Fig. 4.10: An Example of Tear-off Toolbar

Right-click (context) menus

Users can right-click on a paragraph, graphic, or other objects to open a context menu. It is the fastest and easiest way to reach a function of the right-clicked object. If you're not sure where in the menus or toolbars a function is located, you can often find it by right-clicking.

Rulers

Rulers are used to control and see page margins, paragraph indents, and various alignment of writer objects. It can be shown or hidden via ruler check mark in view menu as depicted in Fig. 4.8(a). To enable the vertical ruler, navigate to Tools → Options → OpenOffice.org Writer → View and select Vertical ruler.

Status bar

The Writer status bar is located at the bottom of the workspace. It provides information about the document and convenient ways to quickly change some document features. It is shown at the bottom of Fig. 4.6. It contains page number, page style, language, writer mode, file save status, digital signature, document view layout, page zoom controls, etc.

4.2.2   Starting a Document

There are many ways to open a fresh text document in AOO Writer.

1.   Via Operating system Menu:

- We can open any AOO program by using the operating system menu. To do so, open the application by selecting Start → Programs → Writer or "Impress, Cal &Draw".
- Alternatively, you may just hit the windows key/search button on the bottom right corner of windows10 and simply type "writer"; it will show an icon for the OpenOffice Writer App; On Clicking the icon, we will have a new document opened.
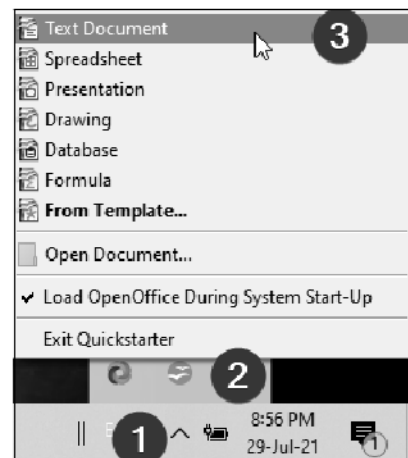

Fig. 4.11: Open New Document via Quick Starter

2. **Via QuickStarter:** We can use this method to open a fresh document. For the purpose we have to enable this feature one time by Tools Menu → Options → OpenOffice → Memory → OpenOffice QuickStarter. We can use QuickStarter icon at bottom right side of taskbar as depicted in Fig. 4.11.

3. **Via Start Center:** Open Start Center by clicking on the OpenOffice icon (either on desktop shortcut icon or by Start → Programs → OpenOffice App). Now we can open a new document with the start center option "Text Document" (see Fig. 4.5) or by Templates.. → New Document.

4. **Via File Menu:** If a document is opened and we want another to open, then the option of the File menu → New → Text Document (Shortcut Key Ctrl + N) can be used. (See Fig. 4.7)

4.2.3 Opening a Document

An already created document can be opened in several ways.

1. **Via QuickStarter:** Open QuickStarter by the method shown in Fig. 4.11 and then click on the open document. It will show an open dialog box to browse for the desired file to be open.

Fig. 4.12: Open Document with Start Center

2. **Via Start Center:** Open Start Center by clicking on the OpenOffice icon (either on the desktop shortcut icon or by Start → Programs → OpenOffice App).

   • Click on the Open… icon, shown in the start center. See Fig. 4.12

   • We can open from a list of recent documents as shown in Fig. 4.12.

   • The document can also be open from the menu option File → Open (shortcut key Ctrl + O)

   • Recent Documents list of the File menu

The above methods are also applicable if one document is opened and we want another to open.
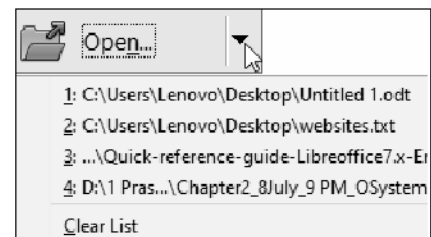
4.2.4 Saving a Document

A newly created document can be saved in many ways.

   • Select File → Save (See Fig. 4.7(a))

   • Select File → Save As

   • Click on the Save Icon (floppy icon) on the standard toolbar.

   • Short cut key Ctrl + S

When we apply any of the above actions, a save as dialog box will open. We have to provide the name of the file, its type, and the location where we want to save the file. We can save a document in various supported formats. (See Fig. 4.13)
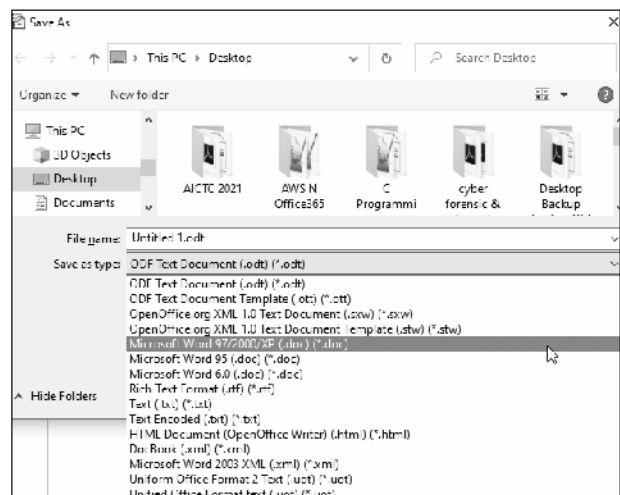

Fig. 4.13: Save as Dialog Box

4.2.5 Closing a Document

A document can be closed in many ways.
- Select File → Close
- Cross Icon at right most of Menu Bar

If our document is not saved after the last modification then it will alert us and display a Dialog

Fig. 4.14: Document Modified Dialog box

Box as shown in Fig. 4.14. Click on save to save the modifications. Select Discard if do not want to save the last modifications and select cancel if you want to work on the document again.
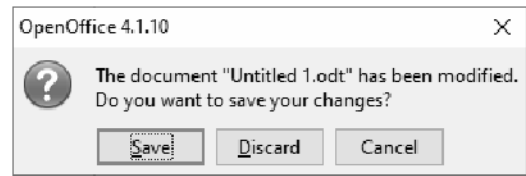
4.2.6 Printing a Document

1. **Quick Printing:** This option can be utilized to quickly send a document to your default printer. Click on the "Print File Directly (Default printer name)" icon on the standard toolbar.

2. **Controlled Printing:** It is a customized printing option. We can set parameters for printing. To execute this command, select File → Print or Keyboard shortcut Ctrl + P will open a print dialog box as shown in Fig.
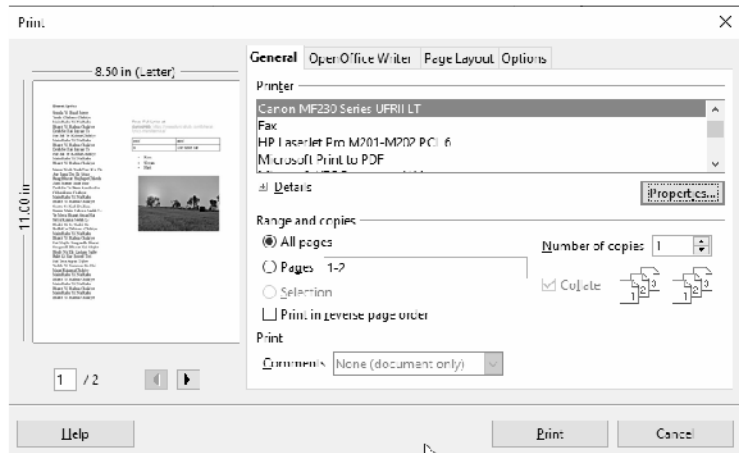

Fig. 4.15: Print Dialog Box

4.15. We have to provide our printing preferences like page range to be print, printer name, number of copies, order of printing, page setup, quality of printing, layout (pages per sheet), etc. Then click on the Print button.

4.2.7 Selection, Cutting, and Pasting in a Document

Selection, Cut, and Paste operation in the AOO Writer application is the same as in other applications of a computer system. We can use mouse, keyboard, menu commands to perform these operations. Text can be copied within the document or between various other documents.

To cut or copy (with text selected) you can use:
- Keyboard shortcuts: Control + X (cut) or Control + C (copy)
- Menu selections: Edit → Cut or Edit → Copy
- Contextual menus: Right-click text selection and choose Cut or Copy
- Icon sources: Cut or Copy

Pasting text places, the cut or copied text in the document. When pasting text, the formatting result depends on the source and how you paste it. To paste and retain original formatting use:
- Keyboard shortcut: Control + V
- Menu selection: Edit → Paste
- Contextual menu: Right-click and choose Paste
- Icon Source: Paste

4.2.8   Character Formatting

We can apply many formats at the character level using the command buttons on the Formatting toolbar. The Formatting toolbar is shown below (Fig. 4.16) as a floating toolbar, customized to show only the icons for character formatting.
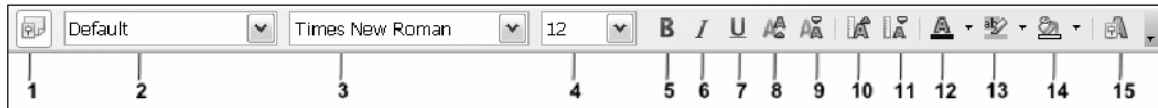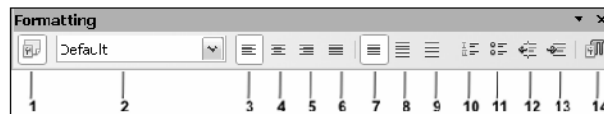
Fig. 4.16: Formatting Toolbar Showing Icons for Character Formatting

1. Styles and Formatting window	2. Apply Style	3. Font Name
4. Font Size	5. Bold	6. Italic
7. Underline	8. Superscript	9. Subscript
10. Increase Font	11. Reduce Font	12. Font Color
13. Highlighting	14 Background Color	15 Character Format dialog

4.2.9   Paragraph Formatting

You can apply many formats to paragraphs using the buttons on the Formatting toolbar. The Formatting toolbar is shown below (Fig. 4.17) as a floating toolbar, customized to show only the buttons for paragraph formatting.

**Fig. 4.17:** Formatting Toolbar Showing Icons for Paragraph Formatting

1. Styles and Formatting window	2. Apply Style	3. Align Left
4. Centered	5. Align Right	6. Justified
7. Line Spacing: 1	8. Line Spacing: 1.5	9. Line Spacing: 2
10. Numbering On/Off	11. Bullets On/Off	12. Decrease Indent
13. Increase Indent	14. Paragraph Format dialog	

4.2.10   Finding and Replacing of Text

The writer program supports the facility to find a specific text and replace it with other text with its "Find & Replace" dialog box. The dialog box can be opened via the standard toolbar's binocular icon or Ctrl + F Keys or Edit Menu → Find & Replace command (see Fig. 4.18).

The Find & Replace dialog can be utilized for various search tasks as described below:

- Find and replace words and phrases
- Use wildcards and regular expressions to fine-tune a search
- Find and replace specific formatting
- Find and replace paragraph styles
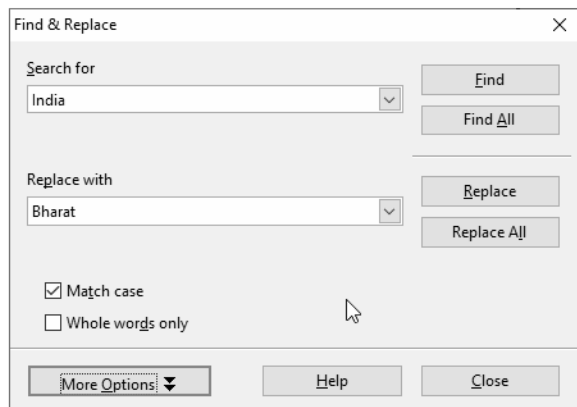
Fig. 4.18: Find & Replace Dialog Box

The Find & Replace process is performed as:
1. Type the text you want to find in the Search for box.
2. Type the new text in the Replace with box.
3. You can select various options such as matching the case, matching whole words only, or doing a search for similar words.
4. When you have set up your search, click Find. To replace text, click Replace instead.

4.2.11 Spelling and Grammar Checking

The Writer provides a spelling and grammar checking facility, accessed via Tools → Spelling (See Fig. 4.9(c)) and Grammar or F7 shortcut Key or by clicking on icons on the standard toolbar as described in the table.

Table 4.2: Spelling and Grammar Checking

ABC AutoSpellcheck	AutoSpellcheck checks each word as it is typed and displays a wavy red line under any misspelled words. Once the word is corrected, the line disappears.
ABC Spelling and Grammar dialog	To perform a separate spelling check on the document (or a text selection), click the Spelling and Grammar button. This checks the document or selection and opens the Spelling dialog box if any misspelled words are found.

- Dictionary language can be changed on the Spelling and Grammar dialog box.
- By default, a Grammar checker is not available but that can be installed as an extension. Navigate to Tools → Language → More Dictionaries Online
- You can add a word to a dictionary. Click Add in the Spelling and Grammar dialog box and pick the dictionary to add it to.
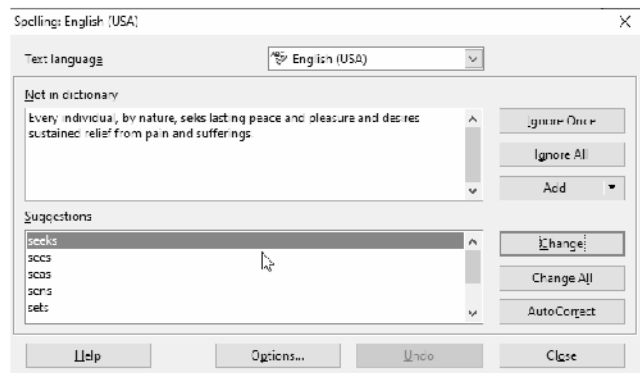
Fig. 4.19: Spelling Checking

4.2.12 AutoCorrect

The writer's AutoCorrect function has a long list of common misspellings and typing errors, which it corrects automatically. For example, "abotu" will be changed to "about". Select Tools → AutoCorrect Options to open the AutoCorrect dialog box (See Fig. 4.9(c)). There you can define what strings of text are corrected and how. To stop the Writer from replacing a specific spelling, go to the Replace tab, highlight the word pair and click Delete. (See Fig. 4.20)
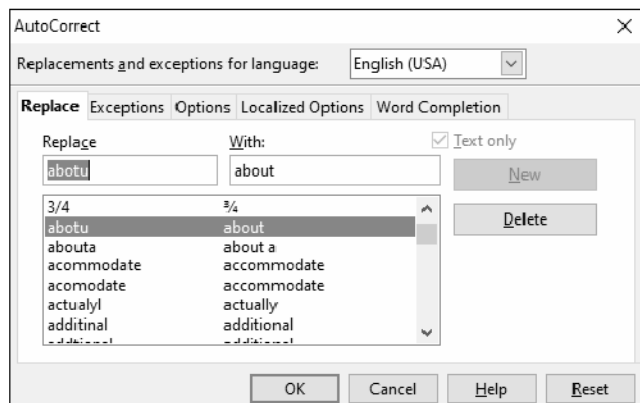
Fig. 4.20: AutoCorrect Options

4.3 OPENOFFICE CALC

Calc is the spreadsheet component of Apache OpenOffice. It contains most of the features found in spreadsheets. Spreadsheets allow us to organize, analyze and store data in tabular form. In spreadsheet we can manipulate this data to produce certain results. Calc is similar to Microsoft Excel and capable of opening and saving various spreadsheet file formats. Other features provided by Calc include:

- Calc consists of several individual sheets, each sheet of cells arranged in rows and columns.
- Functions, which can be used to create formulas to perform complex calculations on data
- Database functions, to arrange, store, and filter data
- Dynamic charts; a wide range of 2D and 3D charts
- Macros, for recording and executing repetitive tasks
- Ability to open, edit, and save Microsoft Excel spreadsheets
- Import and export of spreadsheets in multiple formats, including HTML, CSV, PDF, etc.

4.3.1 Introduction to Spreadsheet, Sheets, and Cells

In Calc, we create files that are called spreadsheets, consists of several separate sheets. Each sheet containing cells arranged in rows and columns. A specific cell is identified by its row number and column letter. Each spreadsheet can have many sheets, and each sheet has a large number of individual cells. In Calc, each sheet can have a maximum of 1,048,576 rows and a maximum of 1024 columns.

4.3.2 Parts of CALC Interface

The CALC interface is depicted in Fig. 4.21. Features of the CALC interface are described below. The menu bar, title bar, formatting toolbar, and standard toolbar have the same functionality as we discussed in the AOO Writer's Interface in section 4.1. A new toolbar i.e., Formula bar is elaborated below.
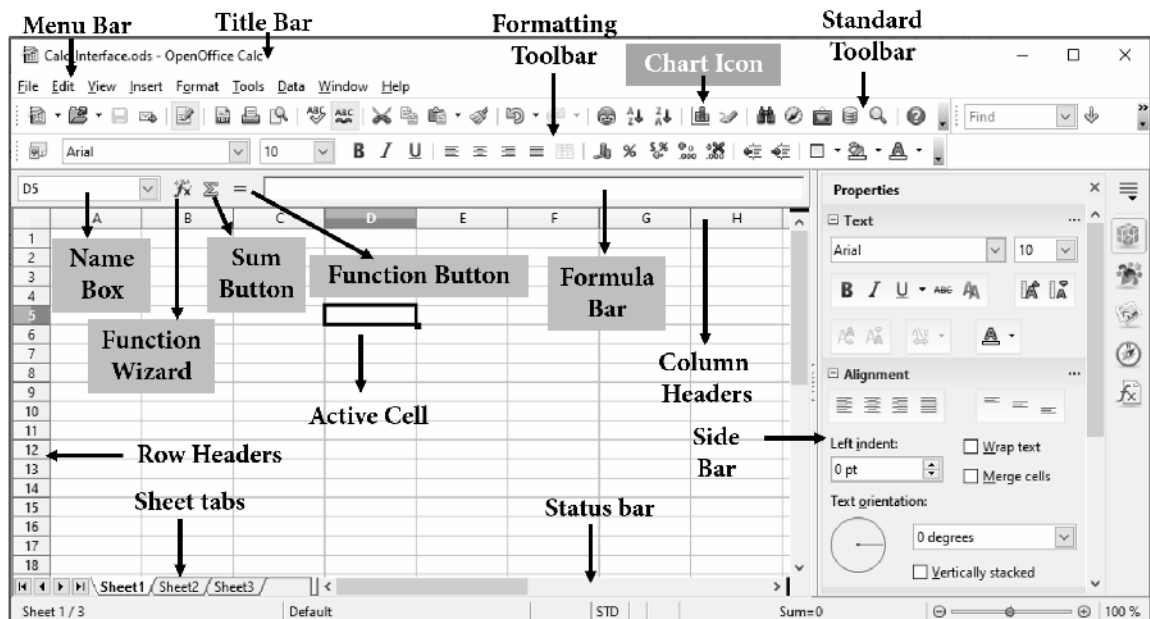

Fig. 4.21: OpenOffice CALC Interface

Formula bar

The formula bar is shown in Fig. 4.21, below the formatting toolbar. It consists of various controls which are annotated with dark background color in Fig. 4.21. The Name box holds the address of the currently selected cell which is D5 in our case. The Function Wizard is used to view or insert available inbuilt functions. It also shows the parameter list and syntax of the functions. Clicking the Sum button inserts a formula into the current cell that totals the numbers in the cells above the current cell. Clicking the Function button inserts an equal (=) sign into the selected cell and the Input line, thereby enabling the cell to accept a formula.

Individual cells

The main section of the screen displays the cells in the form of a grid, with each cell being at the intersection of a column and a row. At the top of the columns and at the left end of the rows are a series of gray boxes containing letters and numbers. These are the column and row headers. The columns start at A and go on to the right, and the rows start at 1 and go down. An active cell is depicted in Fig. 4.21.

Sheet tabs

At the bottom of the grid of cells are the sheet tabs. These tabs enable access to each individual sheet, with the visible (active) sheet having a white tab. Clicking on another sheet tab displays that sheet, and its tab turns white. You can also select multiple sheet tabs at once by holding down the Control key while you click the names. Sheet tabs are shown in the bottom left corner of Fig. 4.21.

4.3.3   Starting, Opening, Saving, and Closing a Document

Starting of CALC document can be Via Operating system Menu, Via QuickStarter, and Via Start Center. The process is already illustrated on pages number 105 & 106. An already created CALC document can be opened Via QuickStarter or Via Start Center as discussed on page 106. Similarly, saving and closing of a document also follow the AOO's standard procedure as we discussed during the Writer component.

4.3.4   Freezing/Unfreezing Rows and Columns

Freezing locks, several rows at the top of a spreadsheet or several columns on the left of a spreadsheet or both. Then when scrolling around within the sheet, any frozen columns and rows remain in view.

Fig. 4.22: Freezing Rows and Columns

Freezing a row and a column

1. Click into the cell that is immediately below the row you want frozen and immediately to the right of the column you want to be frozen.
2. Choose Window → Freeze. A dark line appears, indicating where the freeze is put.

Unfreezing

To unfreeze rows or columns, choose Window → Freeze. The checkmark by Freeze will be removed.
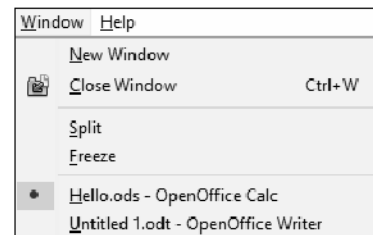
4.3.5 Creating a Chart

Calc supports a variety of charts and graphs to present numeric data efficiently and conveniently. Using Calc, you can customize charts and graphs to a considerable extent. Many of these options enable you to present your information in the best and clearest manner. To understand it practically we recreate a chart which was presented in unit 1 i.e., percentage share of the browser market (See Fig. 1.3). The step-by-step process will help us for easier understanding.

1. Insert data into the CALC which is to be graphically presented.
2. Select the data to be included in Chart/Graph formation.
3. Either press the Chart icon on standard toolbar (See Fig. 4.21) or Click on Insert → Chart option.
4. It will show a Chart Wizard with the default formation of the chart as per the given data. Chart Wizard is depicted in Fig. 4.23. Now with chart wizard, we can customize our chart.
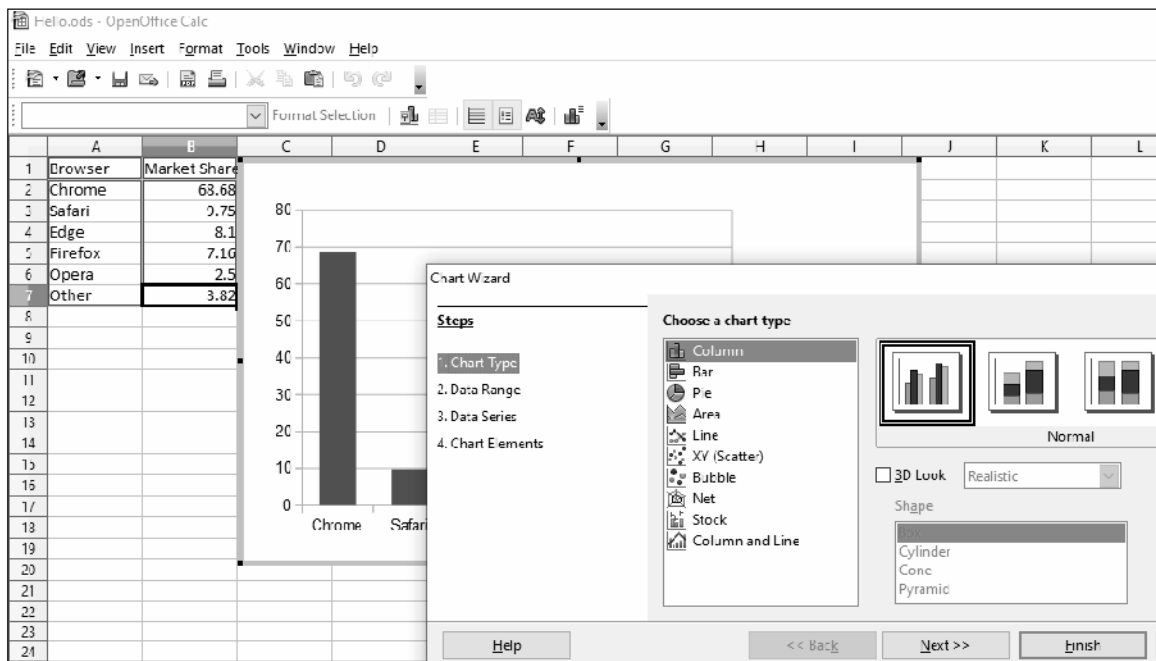
Fig. 4.23: Creating Chart with Chart Wizard

The Chart Wizard has three main parts: a list of steps involved in setting up the chart, a list of chart types, and the options for each chart type. Chart wizard includes four steps to draw a powerful chart.

1. Choosing a chart type: A variety of chart types are provided, we can select any of them by clicking the icon of the chart type. A preview will be shown to us for better selection.
2. Data Range: We can manually reselect the data range (if any error in the previous selection).
3. Data Series: We can fine-tune the data that we want to include in the chart.
4. Chart elements: With the chart elements page, we can give title, subtitle, legends to our chart.

4.3.6 Creating Formulas

In CALC, we can enter formulas in two ways, either directly into the cell itself or at the input line. Either way, we need to start a formula with one of the following symbols: =, + or –. Starting with anything

else causes the formula to be treated as if it were text. Each cell on the worksheet can be used as a data holder or a place for data calculations. Entering data is accomplished simply by typing in the cell and moving to the next cell or pressing Enter. With formulas, the equals sign indicates that the cell will be used for a calculation.

Table 4.3: Common Ways to Enter Formulas in CALC

| Formula	Description
=A1+10	Displays the contents of cell A1 plus 10.
=A1*16%	Displays 16% of the contents of A1.
=A1*A2	Displays the result of the multiplication of A1 and A2.
=ROUND(A1;1)	Displays the contents of cell A1 rounded to one decimal place.
=EFFECTIVE(5%;12)	Calculates the effective interest for 5% annual nominal interest with 12 payments a year.
=B8-SUM(B10:B14)	Calculates B8 minus the sum of the cells B10 to B14.
=SUM(B8;SUM(B10:B14))	Calculates the sum of cells B10 to B14 and adds the value to B8.
=SUM(B1:B65536)	Sums all numbers in column B.
=AVERAGE(BloodSugar)	Displays the average of a named range defined under the name BloodSugar.
=IF(C31>140; "HIGH"; "OK")	Displays the results of a conditional analysis of data from two sources. If the contents of C31 is greater than 140, then HIGH is displayed, otherwise OK is displayed.

4.4   OPENOFFICE IMPRESS

Impress is Apache OpenOffice's slide show (presentations) program. Impress creates presentations in the ODP format, which can be opened by other presentation software or can be exported in different presentation formats. We can create slides that contain different elements, including text, bulleted and numbered lists, tables, charts, clip art, and a wide range of graphic objects. Impress also includes a spelling checker, a thesaurus, prepackaged text styles, and attractive background styles.

4.4.1   Creating new Presentation

Firstly, start the impress in one of the following ways:

- If no component of AOO is open, from the Start Center: click on the Presentation icon.
- From the system menu or the AOO Quickstarter.
- From any open component of AOO: click the triangle to the right of the new icon on the main toolbar and select Presentation from the drop-down menu, or choose File → New → Presentation from the menu bar.
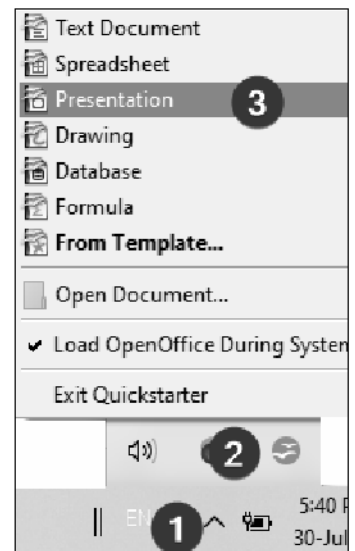

Fig. 4.24: Starting impress from Quickstarter

When you start Impress for the first time, the Presentation Wizard (see Fig. 4.25 & Fig. 4.26) is shown.

1. Under Type, choose one of the options:
   • Empty presentation creates a blank presentation.
   • From template uses a template design already created as the basis for a new presentation. The wizard changes to show a list of available templates. Choose the template you want.
   • Open existing presentation continues work on a previously created presentation. The wizard changes to show a list of existing presentations. Choose the one you want.

2. Click Next. Fig. 4.25(b) shows the Presentation Wizard step 2 as it appears if you selected Empty presentation at step 1. If you selected From template, an example slide is shown in the Preview box.
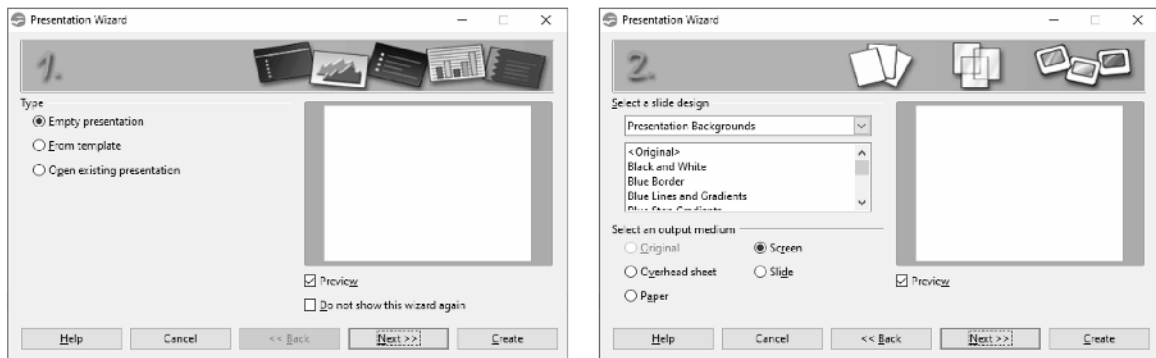
Fig. 4.25: Presentation Wizard (a) Type Selection (b) Design & Output Medium Selection

3. Choose a design under Select a slide design. The slide design section gives you two main choices: Presentation Backgrounds and Presentations. Each one has a list of choices for slide designs. If you want to use one of these other than <Original>, click it to select it.

   The types of Presentation Backgrounds are shown in Fig. 4.25(b). When you click an item, a preview of the slide design appears in the Preview window. <Original> is an empty background. Click an item to see a preview of the slide design in the Preview window.
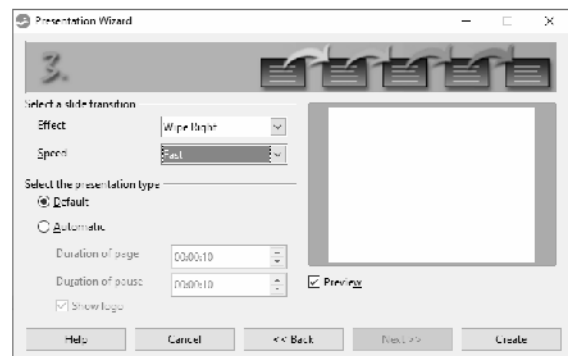
Fig. 4.26: Transition and Presentation Type Selection in Presentation Wizard

4. Select how the presentation will be used under Select an output medium.

5. Click Next. The Presentation Wizard step 3 appears as shown in Fig. 4.26. Select the desired speed for the transition between the different slides in the presentation from the Speed drop-down menu. We have chosen "Fast speed" with "Wipe Right" effect as shown in Fig. 4.26.

6. Click Create. A new presentation is created.

4.4.2 Parts of IMPRESS Interface

The main Impress window (Fig. 4.27) has three parts: the Slides pane, Workspace, and Tasks pane. Additionally, several toolbars can be displayed or hidden during the creation of a presentation.
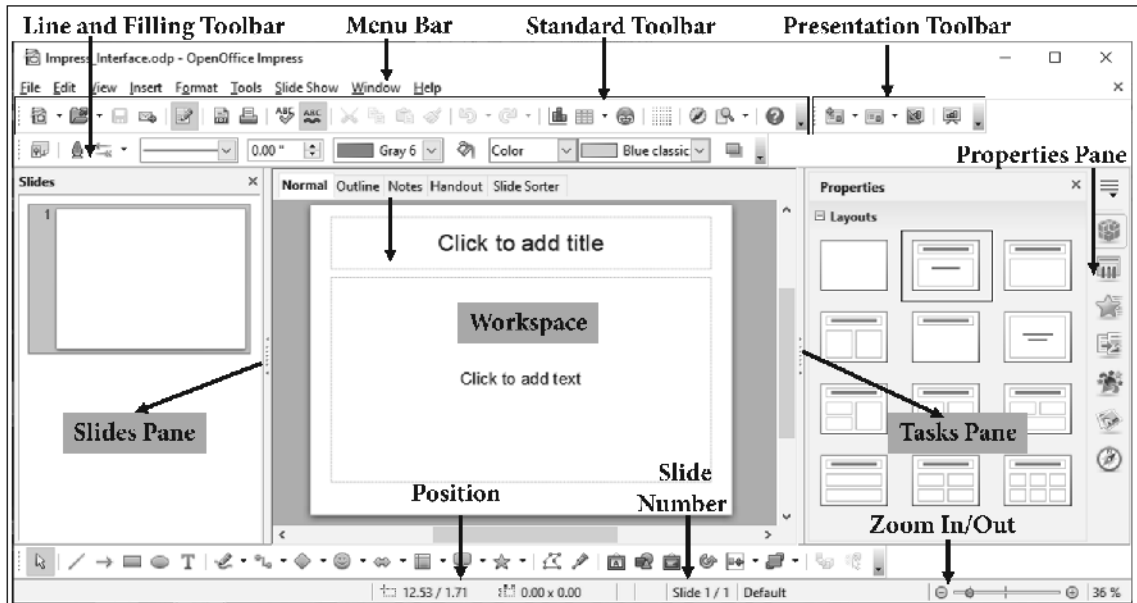
Fig. 4.27: Open Office IMPRESS Interface

Slides Pane

The Slides pane contains thumbnail pictures of the slides in your presentation. Clicking a slide in this pane selects it and places it in the Workspace. When a slide is in the Workspace, you can apply to it any changes desired. Several additional operations can be performed on one or more slides simultaneously in the Slides pane:

- Add new slides to the presentation.
- Mark a slide as hidden, delete a slide from the presentation if it is no longer needed.
- Rename a slide, duplicate a slide or move it to a different position in the presentation.

Tasks Pane

The Tasks pane has several sections. To expand the section you wish to use, click on the right-pointing triangle to the left of the caption as shown in Fig. 4.28. Only one section at a time can be selected.

1. **Master Pages:** Here you define the page style for your presentation.
2. **Layout:** The pre-packaged layouts are shown here. You can choose the one you want, use it as it is, or modify it to your requirements.
3. **Custom Animation:** A variety of animations for selected elements of a slide are listed. Animation can be added to a slide, and it can also be changed or removed later.
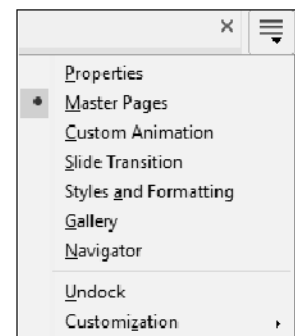
Fig. 4.28: Opening Task Pane Section

4. **Slide Transition:** We can select transition type, its speed (slow, medium, fast), choose between an automatic or manual transition, and choose how long the selected slide will be shown.

Workspace

The Workspace has five tabs: Normal, Outline, Notes, Handout, and Slide Sorter. These five tabs are called View buttons. The Workspace below the View buttons changes depending on the chosen view.

1. **Normal view:** Normal view is the main view for working with individual slides. Use this view to format and design and to add text, graphics, and animation effects.
2. **Outline view:** The outline view contains all the slides of the presentation in their numbered sequence. It shows topic titles, bulleted lists, and numbered lists for each slide in outline format. Only the text contained in the default text boxes in each slide is shown.
3. **Notes view:** Use the Notes view to add notes to a slide.
    a. Click the Notes tab in the Workspace.
    b. Select the slide to which you want to add notes.
    c. In the text box below the slide, click on the words Click to add notes, and begin typing.
4. **Handout view:** The handout view is for setting up the layout of your slide for a printed handout. Click the Handout tab in the workspace, then choose Layouts in the Tasks pane. We can choose to print 1, 2, 3, 4, 6, or 9 slides per page.
5. **Slide Sorter view:** Slide Sorter view contains all of the slide thumbnails. Use this view to work with a group of slides or with only one slide.

Toolbars

Many toolbars can be used during slide creation; they can be displayed or hidden by clicking View → Toolbars and selecting from the menu.

Status bar

The Status bar, located at the bottom of the Impress window, contains information that you may find useful when working on a presentation.

Navigator

The Navigator displays all objects contained in a document. It provides another convenient way to move around a document and find items in it. To display the Navigator, click its icon on the Standard toolbar, choose View → Navigator on the menu bar, or press Ctrl+Shift+F5.

4.4.3 Formatting a Presentation

A new presentation only contains one empty slide. In this section, we will start adding new slides and preparing them for the intended contents.

Inserting slides

This can be done in a variety of ways:

Fig. 4.29: Presentation Toolbar

- Insert → Slide.
- Right-click on the present slide, and select Slide → New Slide from the pop-up menu.
- Click the Slide icon in the Presentation toolbar.

Sometimes, rather than starting from a new slide, you want to duplicate a slide you have already inserted. To do so select the slide you want to duplicate from the Slides pane and then choose Insert → Duplicate Slide.

Selecting a layout

In the Tasks pane, select the Layout drawer to display the available layouts. The Layouts differ in the number of elements a slide will contain, from a blank slide to a slide with six contents boxes and a title. To select or change the layout, place the slide in the work area and select the desired layout from the layout drawer in the Task Pane. Several layouts contain one or more content boxes. (See Fig. 4.30(a)). Each of these boxes can be configured to contain one of the following elements: Text, Media clip, Picture, Chart, or Table. You can choose the type of content by clicking on the icon that is displayed in the middle of the contents box as shown in Fig. 4.30(b). If instead, you intend to use the contents box for text, just click anywhere on the box to get a cursor.
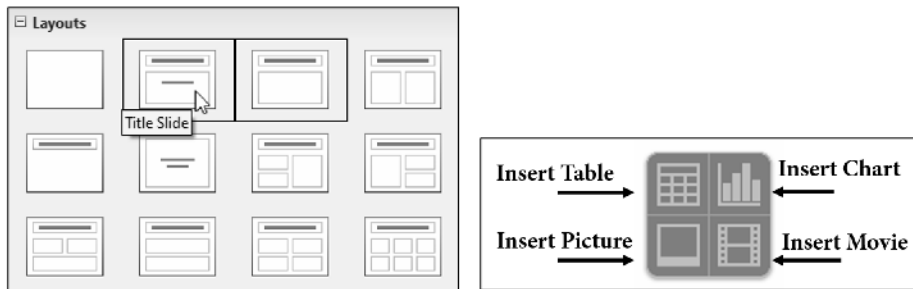
Fig. 4.30: Presentation (a) Slide Layout Options (b) Insert Content Type

Modifying the slide elements

Our slide contains elements as per our chosen layout slide; We may remove unneeded elements and add objects (such as pictures), as well as insert text. To add any pictures or objects to the slide. follow these steps:

1. To add pictures from graphic files to places other than the clipart frame:
   a. Insert → Picture → From File. The Insert Picture dialog box opens.
   b. Browse to the graphic file. To see a preview of the picture, check Preview at the bottom of the Insert picture dialog box. Select a picture and click Open.
   c. Move the picture to its location.
   d. Resize the picture, if necessary.
2. To add text to a slide that contains a text frame, click on Click to add an outline in the text frame and then type your text. The Outline styles are automatically applied to the text as you insert it. You can change the outline level of each paragraph as well as its position within the text by using the arrow buttons on the Text Formatting toolbar
3. To remove any element on the slide that is not required, click the element to select it. The green handles show that it is selected; press the Delete key to remove it.

4.4.4   Applying an Animation Effect

In Normal view, display the desired slide. Select the text or object you want to animate. An object such as a graphic or an entire text box will have green handles around it when selected. In the Tasks pane, choose Custom Animation (see Fig. 4.31). Click Add. The Custom Animation dialog box (Fig. 4.32) appears. Choose an effect from one of the pages of this dialog box, and choose the speed or duration of that effect.

To choose the animation to be applied when the object is placed on the screen, use an effect from the *Entrance page*, for example, Fly In or Dissolve In. Use the *Emphasis page* to apply a basic effect, such as changing the font color, or to add special effects such as blinking text. To choose the effect to be applied when the object is leaving the screen, use the *Exit page*. If you want the object to move along a line or curve, select an animation from the *Motion Paths page.*

Click OK to save the effect and return to the Custom Animation page on the Task pane. Here you can choose how to start the animation, change the speed, and apply some additional properties to the selected effect.

Starting an animation effect

You have three choices for starting an animation effect:
- **On click**—the animation does not start until you click the mouse.
- **With previous**—the animation runs at the same time as the previous animation.
- **After previous**—the animation runs as soon as the previous animation ends.

4.4.5 Running the Slide Show

To run the slide show, do one of the following:
- Click Slide Show → Slide Show on the main menu bar.
- Click the Slide Show button on the Presentation toolbar or the Slide Sorter toolbar.
- Press F5 or F9.

Fig. 4.31: Custom Animation

If the slide transition is Automatically after x seconds, let the slide show run by itself. If the slide transition is On mouse click, do one of the following to move from one slide to the next.

Fig. 4.32: Custom Animation Dialog Box

- Use the arrow keys on the keyboard to go to the next slide or to go back to the previous one.
- Click the mouse button to advance to the next slide.
- Press the Spacebar on the keyboard to advance to the next slide.

When you advance past the last slide, the message Click to exit presentation...appears. Click the mouse or press any key to exit the presentation. To exit the slide show at any time including at the end, press the Esc key.

Interesting Facts

- Worldwide over 1700 companies are using OpenOffice.
- Of all the customers that are using OpenOffice, 29% are small (<50 employees), 34% are medium sized and 37% are large (>1000 employees).
- LibreOffice is a forked variant of OpenOffice, the Document Foundation (TDF) uses source code of OpenOffice.org 3.3b in 2010.
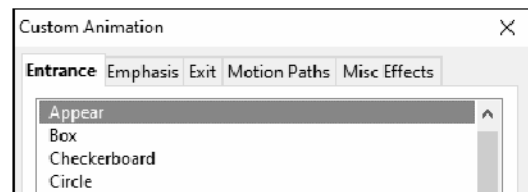
4.4.6 Printing a Presentation

Impress provides many options for printing a presentation: with multiple slides on one page, with a single slide per page, with notes, as an outline, with date and time, with page name, and more. For more control over printing a presentation, choose File → Print to display the Print dialog as shown in Fig. 4.33. The **General tab** is used to select the printer and its related properties. Range and copies are also given in this tab. What we want to print is selected from the dropdown box under Print option. We may choose slides, Handouts, Notes, or Outline.

Fig. 4.33: Open Office Impress Print Dialog

OpenOffice Impress tab is used to include slide-specific contents (slide name, date & time, etc.), color, size for the printing. The left pane is showing preview with two slides, it is configured in the **Page Layout** tab by pages per sheet set to 2. The options tab can be used for the "print to file" command.
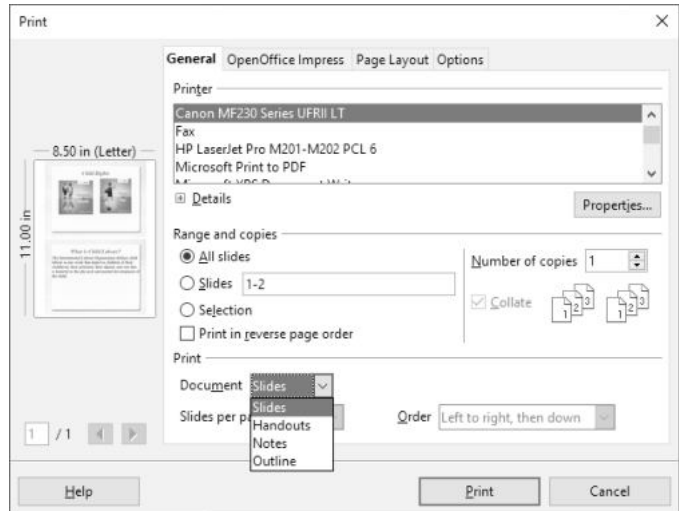
VIDEO RESOURCES

TYPE: Video Resources   **Title:** Apache OpenOffice Writer

TYPE: Video Resources   **Title:** Apache OpenOffice CALC

TYPE: Video Resources   **Title:** Apache OpenOffice Impress

TYPE: Video Resources   **Title:** Multilingual Videos on Computer Literacy & AOO

SUMMARY

1. Apache OpenOffice (AOO) is free open-source software that can be downloaded from the official website www.openoffice.org.
2. The writer is a word processor component of AOO. It has extensive support for all common file formats and by default uses the ODF format.
3. OpenOffice Writer views a large document using the Writer preview interface and tools.
4. Calc is the spreadsheet component of AOO for performing numerical and analytical tasks.

5. In CALC we can combine formulas and functions to create a simple spreadsheet application.
6. Impress is used to create a powerful presentation with predefined slide layouts.
7. We can run a slideshow with F9 or F5. Keyboard arrow keys and mouse used for navigation.
8. Workspace view of Impress is used to format the presentation.
9. Workspace's view buttons provide the facility to view slides in various views.
10. Impress can integrate various media types i.e., audio, video, picture, text, charts, etc.
11. Custom animation and transitions provide dynamic look & feel for an impressive presentation.

EXERCISES

A. Objective Questions

Q1. Keys to Moves the current paragraph up.
   A. Ctrl + PgUp   B. Ctrl+Alt+UpArrow
   C. Alt+PgUP   D. Alt+Home+UpArrow

Q2. Which among the following file extensions are not compatible with OpenOffice writer?
   A. csv   B. sxw
   C. doc   D. txt

Q3. Which of the following is a shortcut key to Redo any operation in the writer ?
   A. Ctrl+R   B. Ctrl+Y
   C. Ctrl+X   D. Ctrl+Z

Q4. Apache Openoffice spreadsheet file has an extension of –
   A. .odt   B. .ods
   C. .odg   D. .odp

Q5. What kind of Program is OpenOffice Impress?
   A. Spreadsheet   B. Word processing
   C. Presentation   D. None of these

Q6. The spreadsheet program of Apache OpenOffice is known as
   A. Draw   B. Writer
   C. Impress   D. Calc

Q7. When we select the 'save as' option in CALC which information will ask in the dialog box?
   A. File Name   B. The location where the file is to be saved
   C. Both (A) & (B)   D. None of these

Q8. The cell in CALC which is currently selected is known as
   A. Master Cell   B. Source Cell
   C. Active Cell   D. Base Cell

Q9. The number of rows in OpenOffice CALC
   A. 1024   B. 32676
   C. 1056728   D. 1048576

Q10. Thumbnail pictures of slides are presented by
   A. Workspace   B. Task pane
   C. Slide pane   D. None of these

Q11. What is a shortcut command for spelling checking in AOO?
   A. F7   B. F9
   C. F6   D. F2

Q12. Which section is available in the Task pane?
A. Master pages
B. Layout
C. Table design
D. All of these

Q13. In AOO Slide can be deleted by
A. Edit → delete slide
B. select the slide and press the delete key
C. Both above
D. None of these

Q14. What is the default formatting command in AOO?
A. Ctrl +B
B. Ctrl + M
C. Ctrl + Q
D. Ctrl + F

Q15. Which menu is used to hide slides in AOO Impress?
A. Format
B. Tools
C. View
D. Slide Show

B. Subjective Questions

Q1. What are the advantages of using OpenOffice software?

Q2. Explain the main parts of the Writer interface.

Q3. Explain the main parts of the CALC interface.

Q4. Explain the main parts of the Impress interface.

Q5. Create a resume in the AOO Writer interface with different logical sections for your personal, academic, and professional details.

Q6. Create a chart as shown in unit one's Fig. 1.3. Data is as under.

Browser	Chrome	Safari	Edge	Firefox	Opera	Other
Market Share %	68.68	9.75	8.1	7.16	2.5	3.82

Q7. Prepare a presentation in AOO Impress to look like below.
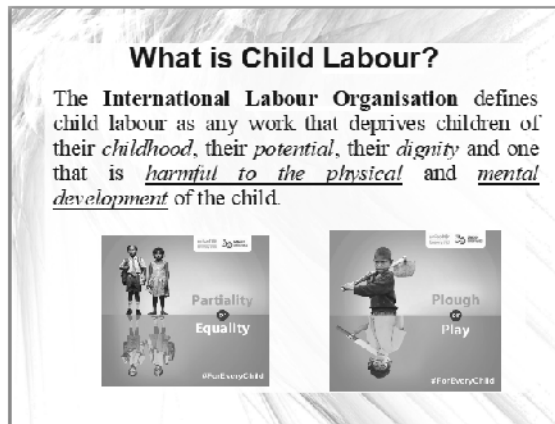
ANSWERS

A. Objective Questions

Q.N.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Option	B	A	B	B	C	D	C	C	D	C	A	D	C	B	D

B. Hints for Subjective Questions

A1. Explain various advantages of using open-source OpenOffice software i.e., No licensing fees, Open source, Cross-platform, Extensive language support, Consistent user interface, Integration, Granularity, File compatibility, No vendor lock-in, and Community support.

A2. Explain Writer interface's title bar, various menus residing in the menu bar, standard and formatting toolbar, status bar, etc. (Refer Fig. 4.6)

A3. Explain the CALC interface's title bar, menu bar, standard toolbar, formula bar, sheet tabs, status bar, etc. (Refer Fig. 4.21).

A4. In addition to the title bar, standard toolbar, formatting bar also explain Impress interface's various panes i.e., slide pane, workspace pane, tasks pane. (Refer Fig. 4.27)

A5. Create a new Writer document and input your details in logical and chronological order. Use different text formatting options of the standard toolbar and formatting toolbar to present content in an effective way. Use of table and picture is also suggested.

A6. Create a new spreadsheet document in CALC. Input and select the given data. Select Insert → Chart option. A chart wizard window will be shown as in Fig. 4.23. Select appropriate options for chart type, legends, etc.

A7. Create a new presentation as discussed in section 4.3. Then select slide layout "Title and 2 content layout" from the tasks pane. Use the Text tool of the drawing toolbar to insert a text placeholder for definition. Use different slide formatting options for title and content formatting. Insert two pictures of your choice as explained in Fig. 4.30.

KNOW MORE

1. Some functionalities which are not natively available in OpenOffice software are provided by means of various Extensions. These can be downloaded from the below URL: *https://extensions.openoffice.org/*

2. Spelling and Grammar can be checked against multiple languages by installing concerning language dictionaries.

Applications

- The AOO Writer made typing of words and other documents in easier way. It can be used to type almost every kind of content e.g., writing works, official documents or letter typing. It is also used to save our written document, which can serve as record keeping database.

- The AOO CALC is generally used for storing numerical data in tabular form and manipulating it with various predefined formulas. It can be utilized in preparing ledger balance, maintaining accounts, receipt or invoice generation etc.

- The AOO Impress software can design creative and engaging presentation by adding the texts, graphics, video and images. The presentations can be used to showcase company's portfolio or sample in front of a client. Nowadays it is widely used for developing e-Learning resources for educational institutions.

PRACTICALS

Experiment 4.1: Open Office Tools

Practical Statement

Explore features of Open Office tools, create documents using these features, do it multiple times.

Practical Significance

The spread of information technology has ensured the computer has its place in every office. Word processing, mathematical work, and presentation work have an important role in the daily computer tasks of an office. In this practical, we will see the Writer, Impress, Calc component of Apache's OpenOffice Software suite.

Relevant Theory

Various components of Apache Open Office (AOO) Tools like Writer, Impress, Calc have been explained in detail in unit 4. In the unit, we have also learned the description of interfaces of these components and how to create documents in them. Specific functions of each component and process to use them are also learned.

Practical Outcomes (PrO)

The learners will be proficient in working AOO tools and:

PrO1: creating a general office proforma in the Writer component of AOO.

PrO2: creating a receipt proforma in the CALC component of AOO.

PrO3: creating a presentation in the Impress component of AOO.

Practical Setup (Work Situation)

In this practical, students should be provided with the different scenarios to work on and let them choose the AOO component of their choice.

Scenario 1: Suppose you are working in the education department and assigned to create a proforma to collect the teacher's profile. Fields for data collection with a sample proforma are provided as in Fig. 4.34.

Scenario 2: Considering yourself as an employee of a service provider company, prepare the receipt proforma given to you. Calculations should be done automatically in the electronic version (softcopy) of the proforma. The sample receipt, given to your customer should be as depicted in Fig. 4.35.

Scenario 3: Assuming yourself a government official, prepare an informative presentation on the Start-up India campaign. The sample template is depicted in Fig. 4.36.

Resources Required

1. A computer system i.e., PC/Laptop.
2. Installed Apache OpenOffice software.

TEACHER'S PROFILE

YEAR: ....

Employee's code	:	U-DISE Code No.	:	
Name of the teacher	:	State/UT	:	
Date of birth	:	District	:	
Designation	:	Block	:	
School's address	:			

Academic/Professional Qualifications:

Academic Qualifications:			
Examination	University/Board	Year	Subjects
Graduation			
Post-Graduation			
Ph.D.			
Professional Qualifications:			
D.Ed./D.El.Ed./Eq.			
B.Ed./Equivalent			
M.Ed.			

Experience:

Experience	Period		Total	
	From	To	Year	Months
Teaching				
Administrative				
Other				

Achievements/Awards (if any):

1. _____

2. _____

Signature of Teacher

Fig. 4.34: A Template Proforma for Teacher's Profile

Precautions

1. Back up and save your working document periodically to protect it from data loss.
2. Analyze page size, page layout, slide layout as per proforma/slide being created.

Shyam Techno Services			**RECEIPT**
[Street Address]			
[City, ST ZIP]			
Phone: 8001234567	**INVOICE #**		**DATE**
	20215		10-08-21
BILL TO	**CUSTOMER ID**		**TERMS**
[Name]	564		Due Upon Receipt
[Company Name]			
[Street Address]			
[City, ST ZIP]			
[Phone]			
[Email Address]			

DESCRIPTION	QTY	UNIT PRICE	AMOUNT
Service Fee	1	200.00	200.00
Labor: 5 hours at 200 ₹ /hr	5	200.00	1,000.00
Parts	1	1,750.00	1,750.00

Thank you for your business!	SUBTOTAL		2,950.00
	GST		18.000%
	TAX		531.00
	TOTAL	**INR**	**3,481.00**

If you have any questions about this invoice, please contact
[Name, Phone, email@address.com]

Fig. 4.35: A Template Proforma for Receipt

Suggested Procedure

(a) Proforma for Teacher's Profile

The sample proforma depicted in Fig. 4.34 should be created in Writer program for quick formatting and provided layout, although it can be created in other components as well.

1. Open a new Writer document (refer to unit 4, section 4.1)

2. Go to the format → page → page tab, choose paper size, margins, etc.

3. Type the top 7 rows and format the rows to look like in the given proforma, using the basic formatting command available in the formatting toolbar.

4. Create a table having 4 columns and 9 rows to accommodate content provided in proforma for academic/ professional qualification. To do go to Insert → Table or press Ctrl+F12.

5. Merge columns of row 1 and row 6 by selecting their cell → right-click → Cells → Merge. Adjust the size of columns by dragging the borders.

6. Apply text formatting commands like center, background color, font size, and type as specified in the given proforma.

7. Create another table for Experience details via the following steps similar to steps 4 to 6.

8. Create a numbered list for collecting experience details. Type underscore three times and then press Enter to insert a line as given in proforma.

(b) Proforma for Receipt

The sample proforma depicted in Fig. 4.35 should be created in CALC program for quick formatting, layout, and calculation needs. There may be different ways to prepare such document. One sequence of steps is mentioned below.

1. Open a new CALC document.

2. Go to the format → page → page tab, choose paper size, margins, etc.

3. As depicted, content has a maximum of 4 columns of data so all text layout can be adjusted in 4 columns.

4. Merge first 3 cells of row 1 and type name of the company i.e., Shyam Techno Services. Merging can be done via the Merge cells command provided on the Formatting toolbar.

5. Insert and merge other content as per the given layout.

6. Apply various text formatting commands e.g., Font type, size, background color, alignment of text to make our document identical to the given proforma (as much as possible). You may use "Format Paintbrush" 🖌 for quicker formatting.

7. To present numbers with decimal fractions: Right-click on cell → Format Cells → Number → Options, set decimal places to 2.

8. Apply formulas for calculating Amount, Subtotal, Tax & Total. (refer to unit 4, Table 4.3)

(c) Presentation on Start-up India campaign

By looking at both the slide we have to develop the slide. First Slide is having one image (right upper corner) and 5 text sections with different formatting, numbering styles. Slide 2 is having six text segments for infographics and one for the heading of the slide. The slide is also having some numbering on the left upper corner of text segments. We may follow the below steps to create our presentation to look like the given template.

1. Open a new Impress presentation with Presentation Wizard (refer to unit 4, section 4.3)

2. Select blank layout from Tasks pane.

3. Insert Text with Text icon from text toolbar or drawing toolbar or by pressing the F2 key.

4. Similarly, insert other text segments and input desired data on them. Apply formatting options like background color, font size, font color, font style, numbering.

5. Find the Start-up India logo on a search engine, insert and place it on right upper corner.

6. Insert a new slide by right click on the Slides pane and then click New Slide.

7. Insert a text segment for heading and apply formatting options as given in the template.
8. Insert another text segment and type the text for the first information. Apply text formatting.
9. Select the text box and fill it with color by Properties pane → Area → Fill drop down to color and choose the desired color.
10. To insert numbering with a circle; create a circle with help of an ellipse icon. Double click to insert the numbering value. Fill it with the desired color as in the previous step.
11. Select text box and circle shape and recreate another text segment with numbering by copying & pasting. Make desired changes as per the second information box of the slide.
12. place the segments by drag and drop or by keyboard navigational keys.
13. Repeat step 11, for the next four text segments and numbering.

Fig. 4.36: A Template- Presentation Slides

Practical Related Questions

1. Which text formatting commands have you used to create the teacher proforma?
2. How do you set the spacing between two lines to "double"?
3. What would you change in the receipt proforma to give a discount? and how?
4. How to change the background and layout of the entire slide?

Suggested Learning Resources

- Enriched online help and documentation files developed by OpenOffice.org.

Suggested Assessment Scheme

The given performance indicators should serve as a guideline for assessment regarding process and product related marks.

Performance Indicators		Weightage	Marks Awarded
Process Related: ………. Marks* (………. %)			
1.	Explanation of practical components i.e., section 1.2 to 1.7	15	
2.	Procedure adoption and step-by-step explanation	15	
3.	Viva voce	25	
Process Related: ………. Marks* (……….%)			
4.	Preparation of Writer document with proper text formatting, coloring and alignment of text boxes, tables.	15	
5.	Preparation of CALC document with proper formatting, alignment of text boxes, and formula creation.	15	
6.	Preparation of Impress document with proper text formatting, alignment of text boxes, images, etc.	15	
Total		100%	

* Marks and percentage weightage for product and process assessment will be decided by the teacher.

Name of the Student:…………………………………………………… Marks Awarded			Signature of Teacher with date
Process Related	Product Related	Total	

REFERENCES AND SUGGESTED READINGS

Enriched online help and documentation files developed by OpenOffice.org:

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