CHAPTER 9

Introduction to Spreadsheet

Learning Objectives

Students will be able

- To know the features of OpenOffice Calc.
- Use of different operators.
- Generation of Series.
- Edit Formula in Worksheet.
- Manipulation of Rows/Columns in Worksheet.
- Understand various text format in options.
- Use of Number format in Worksheet.

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9.1 Introduction to spreadsheet

Spreadsheet is a very useful office automation tool to organise, analyse and store data in a tabular form. Spreadsheet was developed as computerized equivalent to paper-based accounting worksheets.

Spreadsheet users can adjust any of the stored values and can observe the effects on the calculated values. This is called "**What if**" analysis. Modern spreadsheet can have multiple interacting sheets and can display data either as text or numerals or in a graphical form.

9.1.1 Evolution of Spreadsheet

Daniel Bricklin and **Bob Frankston** developed the first spreadsheet called "VisiCalc" in 1979 for Apple II. In 1982, Lotus Corporation introduced "Lotus 1-2-3"; Lotus 1-2-3 was the first to introduce cell names and macros. In 1987, Microsoft Corporation introduced Excel. Excel implemented a Graphical User Interface (GUI) and the ability to point and click using a mouse. There are lots of other spreadsheet applications; Microsoft Excel continues to be the most popular spreadsheet software.

Daniel Singer "Dan" Bricklin
The Father of Spreadsheet

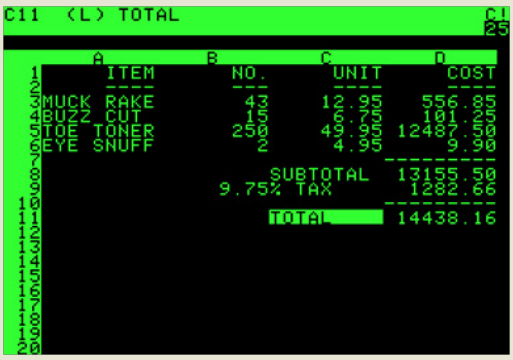
Daniel Singer "Dan" Bricklin (born 16 July 1951), often referred to as "The Father of the Spreadsheet", is the American Co-Creator, with Bob Frankston, of VisiCalc spreadsheet. He also founded Software Garden, Inc., in which he is currently the President of Trellix Corporation, which is currently owned by Web.com. He currently also serves as the Chief Technology Officer of Alpha Software.

OpenOffice Calc is a popular open source spreadsheet application maintained by Apache Foundation. Star Office calc is the parent application of OpenOffice Calc which was developed by a German Company namely, Star Division in 1985.

9.2 Working with OpenOffice Calc

Calc is the spreadsheet component of OpenOffice. You can enter any kind of data in a spreadsheet and then manipulate this data to produce certain results. Alternatively, you can enter data and then use Calc in a 'What If...' manner by changing some of the data and observing the results without having to retype the entire spreadsheet.

First Spreadsheet



VisiCalc ("Visible Calculator") was the first spreadsheet for personal computers, originally released for the Apple II by VisiCorp. It is considered that VisiCalc turned the microcomputer from a hobby for computer enthusiasts into a serious business tool, prompting IBM to introduce the IBM PC, two years later. It was sold over 700,000 copies in six years, and as many as 1 million copies over its history.

9.2.1 Features of OpenOffice Calc:

- **Connecting with Excel** - Ability to open, edit, and save Microsoft Excel spreadsheets.
- **AutoSum** - helps you to add the contents of a cluster of adjacent cells.
- **List AutoFill** - automatically extends cell formatting when a new item is added to the end of a list.
- **AutoFill** - allows you to quickly fill cells with repetitive or sequential data such as chronological dates or numbers, and repeated text. AutoFill can also be used to copy functions. You can also alter text and numbers with this feature.
- **Charts** - helps you in presenting a graphical representation of your data in the form of Pie, Bar, Line charts and more.
- **Functions** - which can be used to create formula to perform complex calculations on data
- **Database functions** - to arrange, store, and filter data

9.3 Creating a new worksheet

A new worksheet can be created through various methods. From Windows, select

Start → All Programs → OpenOffice → OpenOffice Calc (or)

From **Star Center (Welcome Screen):**

Double-click on ***"OpenOffice"*** icon the desktop

Now, a welcome screen appears as shown in Figure 9.1.

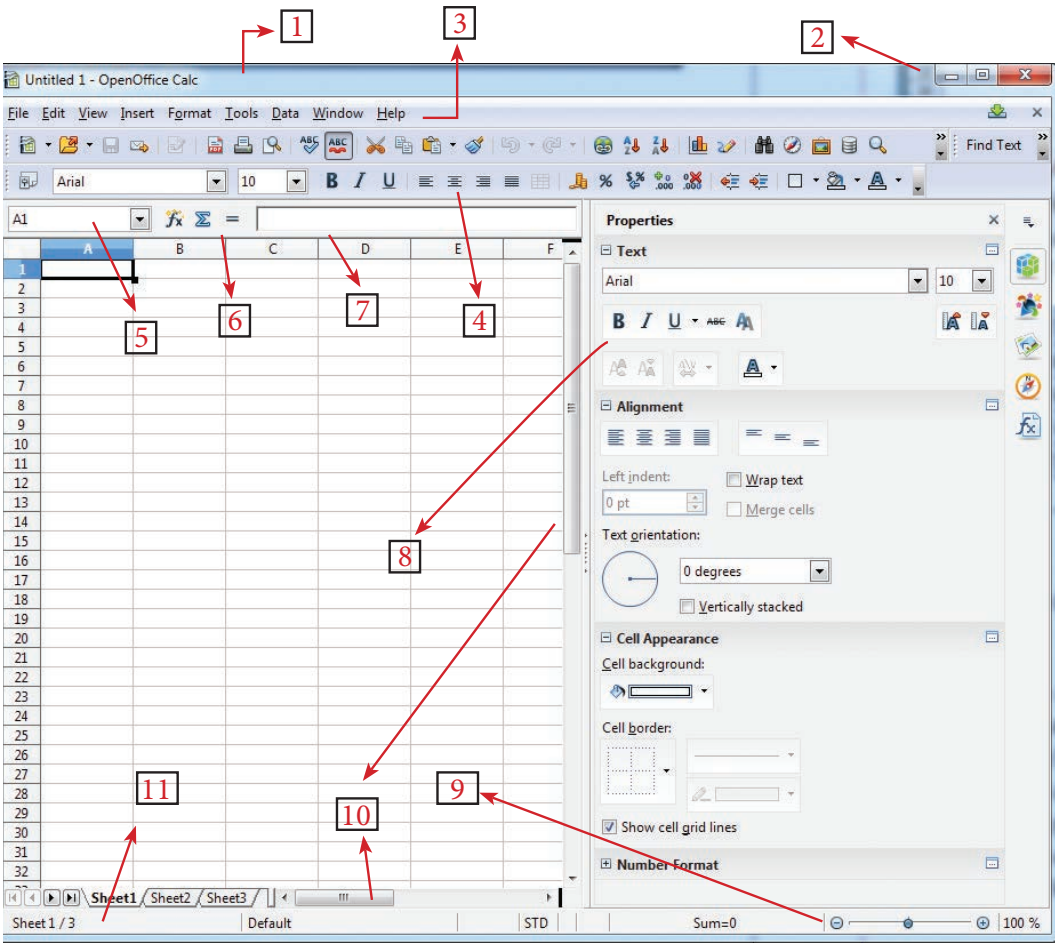
This open screen is called as ***"Star Center"***. Calc is one of the component of OpenOffice. So, it may be invoked from the ***"Star Center"*** by simply clicking on the ***"Spreadsheet" icon***.

(or)

A new spreadsheet can also be created by selecting **File → New → Spreadsheet** from any OpenOffice Application. After using any one of the above said methods, OpenOffice Calc window appears as shown in Figure 9.2. The outline of the window is very similar to other application windows of OpenOffice. The main area of the Calc window is called as "**Work area**" or "**Worksheet**".

A worksheet is a grid of cells with a programmable calculator attached to each cell. When you open a new spreadsheet, there are three worksheets available by default(Sheet1, Sheet2, Sheet3). You can include more sheets and organize them.

Figure 9.1 Opening Screen (Star Center) of OpenOffice



1. Title Bar	2. Control Buttons	3. Menu Bar	4. Tools Bar
5. Name Box / Address Box	6. Quick Function Wizard	7. Formula Bar / Input Line	8. Formatting Properties
9. Zoom	10. Scroll bars	11. Status Bar	

Figure 9.2 OpenOffice Calc Window

9.3.1 Parts of the OpenOffice Calc Window

Appearance of the Calc window is very similar to that of the Writer window. The workspace of Writer is a big blank area. But, in Calc, the grid of cells is the workspace.

9.3.1.1 Title Bar

At the top of the window is the "Title Bar". It is used to show the name of the file and its application. In OpenOffice Calc, the default name for the first unsaved worksheet is "Untitled1".

9.3.1.2 Control Buttons:

In the right corner of title bar, (1) minimize, (2) maximize / restore and (3) close control buttons are available.

9.3.1.3 Menu Bar

Below the title bar is the menu bar. Most of the menus are very similar to what you have learnt in OpenOffice Writer.

File - menu contains the commands of all file management tasks like, Create a new file, Open an existing file, Close the current file, Save a file, Save a file in another name, print file, Export file etc.

Edit - menu contains the editing commands like, cut, copy, paste, Undo, Redo, Fill etc., Most of the menu items are similar to Writer Edit menu. But, for Calc, some special editing options are available under this menu.

View - menu contains the commands which are used to modify the environment of Calc.

Insert – menu contains commands for inserting various Calc elements such as cells, columns, rows, functions, charts etc.,

Format – menu contains the commands of various text and cell formatting features.

Tools – menu contains various tools and functions such as spell check, protect document, insert pictures, macros, etc.,

Data – menu contains the commands to manipulate data in a worksheet such as sort, filter, subtotal, validity etc.,

Window – menu shows display options such as New Window, Close Window, Split and Freeze.

Help – menu lists in-built help features available with OpenOffice.

9.3.1.4 Tools Bar

Under the menu bar, there are three toolbars available by default. They are:

(1) Standard Toolbar
(2) Formatting Toolbar
(3) Formula bar

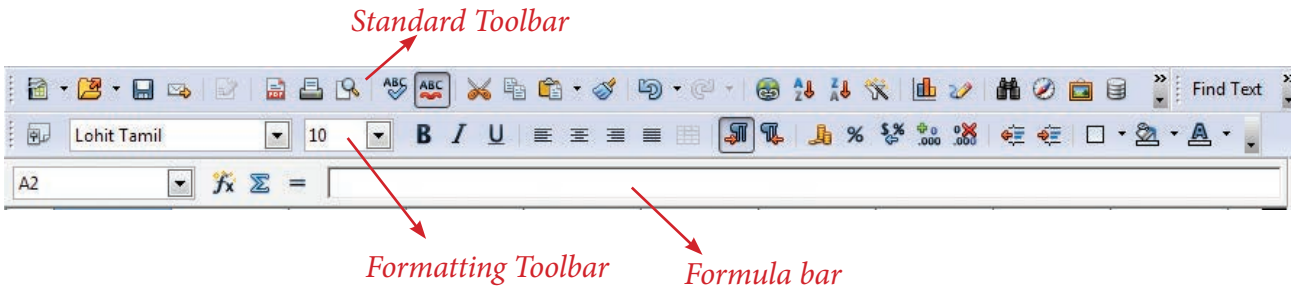


Figure 9.3 OpenOffice Calc Tool bar

Standard Toolbar – contains frequently used menu such as File, Edit, Data etc., commands as icons such as New Open Save, Send, Print, Print Preview, Cut, Copy, Paste, Sorting, Inserting chart etc.,

Formatting Toolbar – contains frequently used text and cell formatting commands as such as changing font style, font size, font colour, alignments, cell formatting etc.,

Formula bar – This is a very important element in a spreadsheet. It contains Name box, Function Wizard, Sum button, Function button and Input line (Refer Figure 9.4).

Name box : It display the current cell address

Function Wizard : It is used to insert function

Sum button : It is used to quickly insert sum function.

Input Line : This is used to show the contents of the current cell. It always shows actually what is typed in a cell. It can also be used to edit the contents.

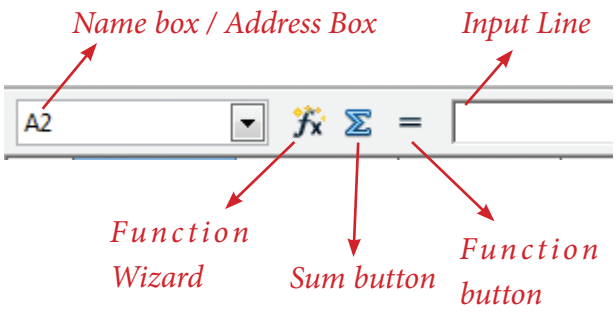


Figure 9.4 Calc Formula bar

9.3.1.5 Scroll bar

Spreadsheet window also has two sets of scroll bars (1) Vertical Scrollbar and (2) Horizontal Scrollbar (Refer Figure 9.5)

Vertical Scroll bar : It is used to move the screen up and down.

Horizontal Scroll bar : It is used move the screen left and right.

Scroll buttons : used to move the screen to the relative distance.

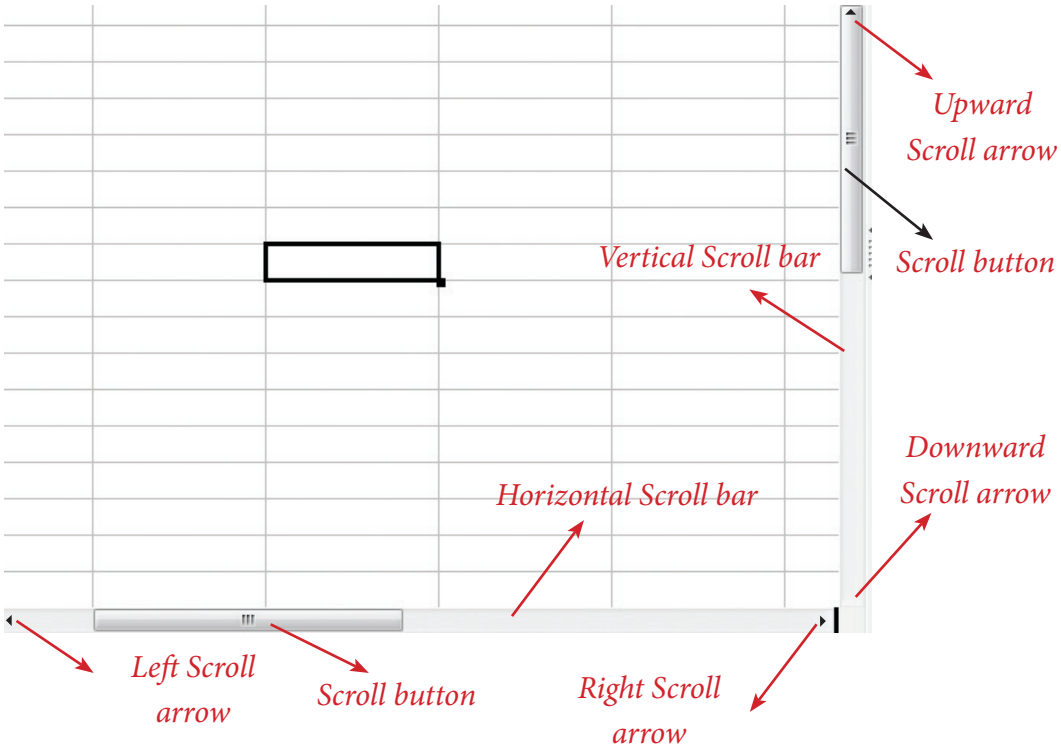


Figure 9.5 Calc Scrolling bar

9.3.1.6 Row, Column, Cell and Cell Pointer

Below the **formula bar** contains the worksheet of work area which consist of grid cells The worksheet has number of rows and columns, where each column is labelled as A, B, C, D ….. AA, AB, AC ….. and the rows are numbered from 1, 2, 3 …. (Figure 9.6).

OpenOffice Calc version 4.1.5 contains **1024** columns ands **10,48,576** rows. Column heading starts from **A** and end with **AMJ.** In the case of Microsoft Excel 2016, there are **16,384** columns (**A** to **XFD**) and **10,48,576** rows. (OpenOffice Calc Version 4.1.5).

Cell

Intersection of each row and column is a box which is called as a "Cell". Each cell has a unique address. Cell address is the combination of column heading and row number. For example, the intersection of column B and row 4 makes a cell B4. (Figure 9.7). Every cell is thus identified by its unique cell address.

Cell pointer is a rectangular box which can be moved around the worksheet. The cell in which the cell pointer is currently located is known as **"Active cell".** When you type any content, it will appear in the active cell. The address of the active cell is displayed in the Name box / Address box. Active cell's column name and row number will be highlighted. Using this visual clue, one can easily identify an active cell. Moreover, the contents of an active cell will be displayed in the formula bar.

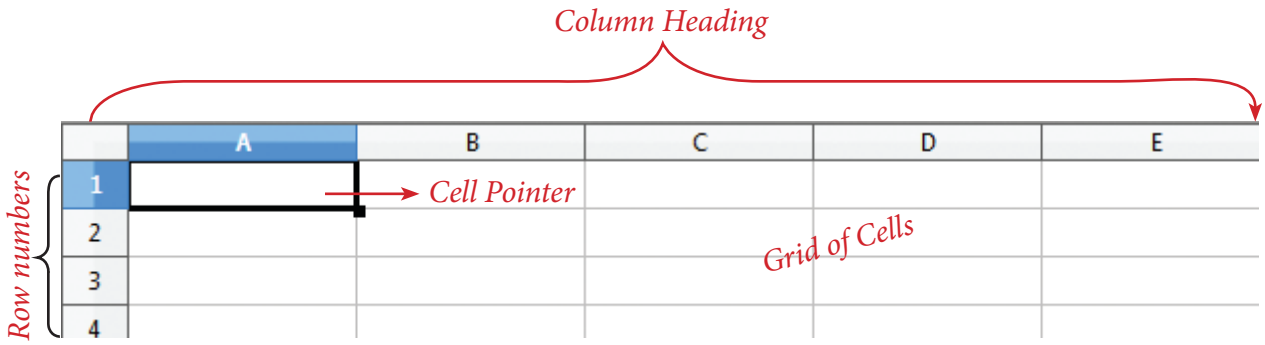


Figure 9.6 Calc Rows, Columns, Cells

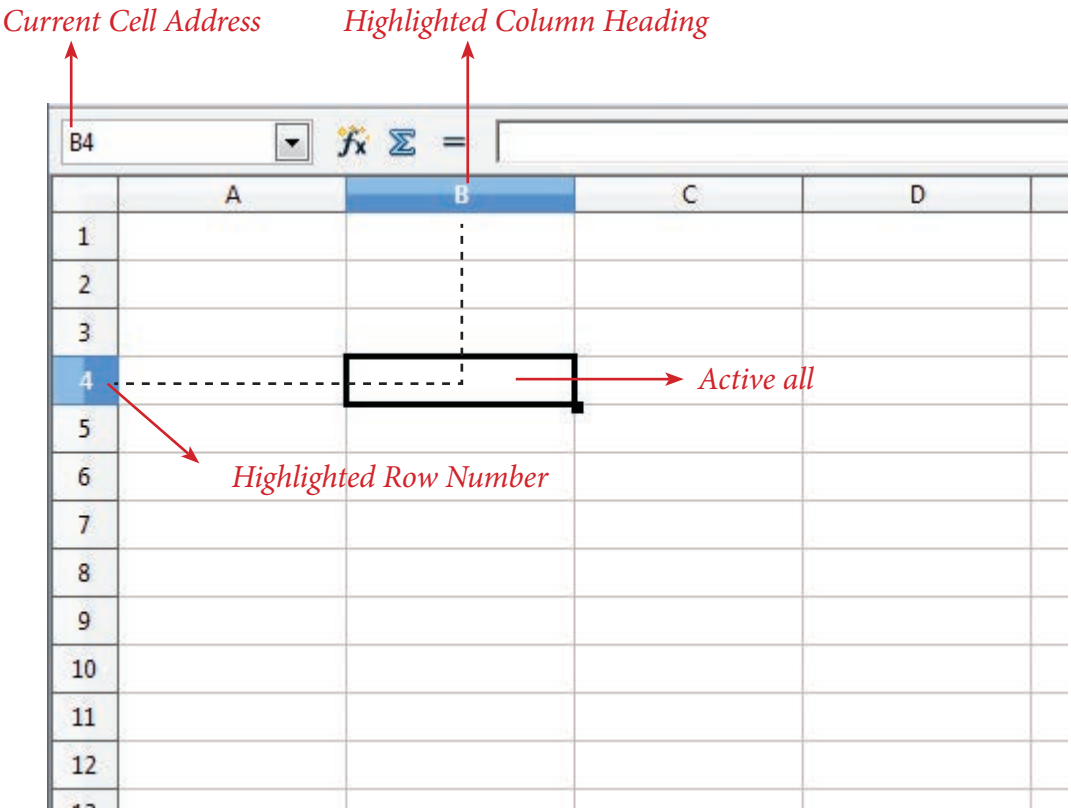


Figure 9.7 Cells, Rows and Columns

9.3.1.7 Worksheet tabs

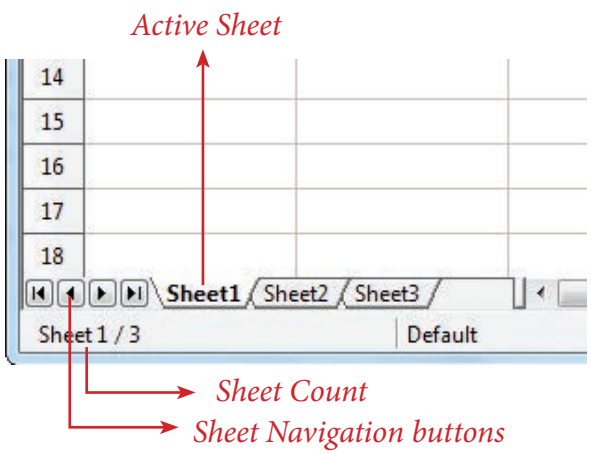


Figure 9.8 Calc Sheet Tab

At the bottom of the grid of cells are the sheet tabs. By default there are 3 sheets "Sheet1", "Sheet2" and "Sheet3", (Figure 9.8). When you open a new worksheet, sheet1 is the default active sheet. Active sheet tab will appear in white colour. If you click on another sheet, it will become active and its colour will turn white. Multiple sheets can also be selected by clicking the sheet and press the **Ctrl** button **(Ctrl + Click)**. Selected sheets will turn to white colour.

On the left of the sheet tab, four navigation buttons are used to move between worksheets (Figure 9.9).

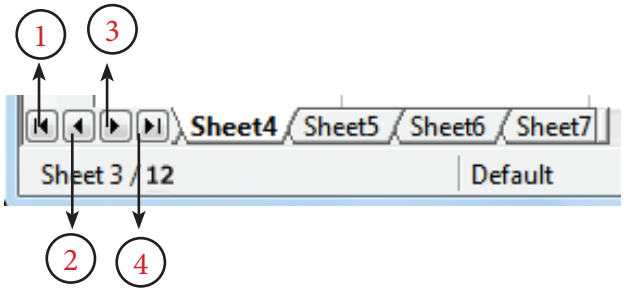


Figure 9.9 Calc Sheet tab and Navigation buttons

(1) Move to the First sheet
(2) Move to the previous sheet
(3) Move to Next sheet
(4) Move to the Last sheet

Left corner of status bar shows the total count of sheets and the present active sheet number. For example, if the status bar shows sheet 3/12; 3 refers to the serial number of the current sheet and 12 refers to the total number of sheets available.

Each sheet name can be renamed. To rename a sheet, just double-click on the sheet, which will show a small box as shown in Figure 9.10.

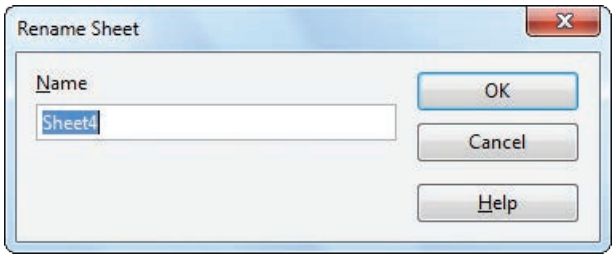


Figure. 9.10 Rename Sheet dialog box

It shows the current name; delete or overwrite the existing name and type a new name; click OK button. New name will be displayed on the sheet.

9.3.1.8 Status bar

Below the sheet tabs and horizontal scrolling bar is the "Status Bar". It shows the current status of the worksheet (Refer Figure 9.11).

Sheets count: Displays current serial number of the sheet / total number of sheets available.

Page Style: Displays the page style of the current sheet. To make changes, just double-click on "Default" and it will show you the "Page Style" dialog box, which is used to change the margin, orientation, paper size, inserting header, footer, border style etc.,

Selection Mode: Displays the selection mode of the current sheet. There are three modes available to select the cells of a worksheet. They are, Standard (STD), Extend (EXT) and Add (ADD).

Unsaved Changes: An asterisk (*) symbol indicates that the changes are made in the worksheet but not yet saved. If you have saved your changes, it will disappear.

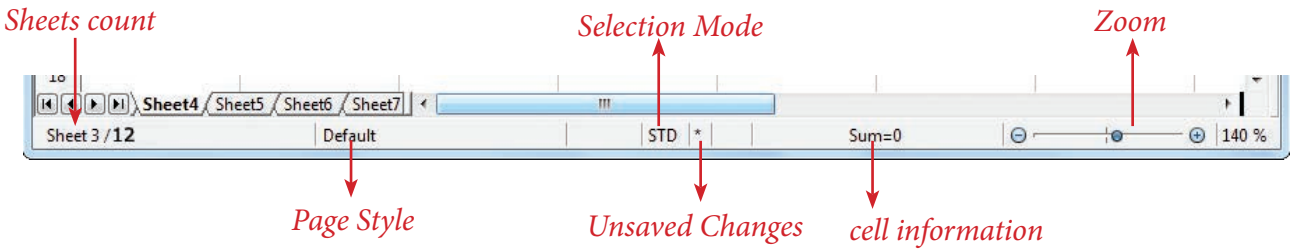


Figure 9.11 Calc Status bar

9.4 Working with Data

When you open a new worksheet, the cell pointer is located in cell A1. So, the cell A1 is known as **"Home Cell".** Cell pointer can be moved anywhere in the worksheet using the direction keys.

"Tab key" is used to move the cell pointer towards the right side or in the forward direction. **"Shift+Tab"** is used to move backward i.e. from right to left in a row. **"Enter" key** is also used to move the cell pointer. Enter moves the cell pointer to a cell below the current cell i.e. downwards. Four "**direction keys**" are used to move the cell pointer anywhere in the worksheet.

9.4.1 Entering Data:

Any data can be typed direc tly in any cell of the worksheet. But, the cell in which you type data should be an active cell. So, move the cell pointer to a particular cell to make it active cell; or click any cell to make it active cell. Then, start typing any data. When you type data, spreadsheet recognises the type of data entered in cells.

Data types:

Data are of different types. Data are made up of **alphabets, numbers, Date** and **time** is also another data type even though it has numbers and symbols. In general, data types are classified as:

Alphabetic data type – consists of alphabets only, **Numeric data type** – consists only of numbers (whole number or fractional numbers), **Alphanumeric data types** – consists of a combination of alphabets and numerals, **Date data type** – consists only of date, **Time data type** – consists only time.

9.4.1.1 Entering Numbers:

Any numeric data can be entered in a worksheet. Entered numbers are aligned to the right side within the cell by default. Negative numbers may be entered with a minus sign or within brackets (Refer Figure 9.12). If you enter any number within the bracket, it will be changed as negative number i.e., number prefixed with minus. If any number starts with 0 (zero), Calc will drop the leading zero.

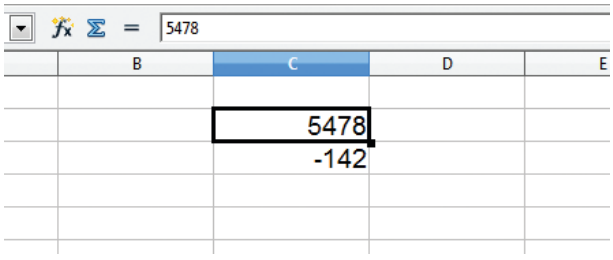


Figure 9.12 Entering data

9.4.1.2 Entering Text:

Unlike numbers, any character can be entered as data in Calc. Entered text will be

aligned to the left side within the cell by default. When you enter any numeric value, if it is aligned left, it is understood that the entered content is not a number. If there is any number that starts with a single quote, Calc converts that number to text (Refer Figure 9.13).

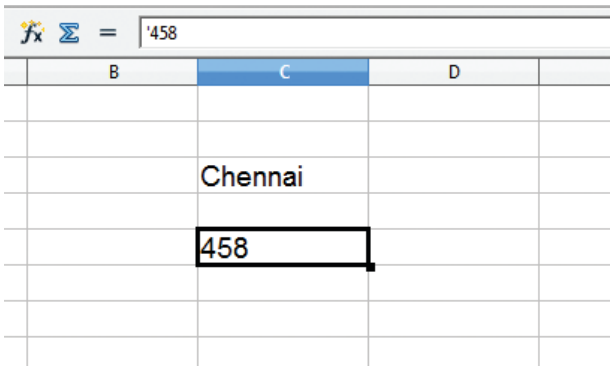


Figure 9.13 Entering Text

9.4.1.3 Entering Date and Time:

Before entering date, ensure the format of your system date. Calc accepts date as per the system date format. If your system has American date format i.e. month-date-year; you should enter dates in Calc spreadsheet as mm/dd/yy. If your system follows the Indian date format, date should be entered as dd/mm/yy form in Calc.

For example: if your system has American Date format, 18th December 2017 should be entered as 12/18/17. As soon as the date is typed in the correct form, the entered date will be aligned on the right side within the cell, and if you place the cell pointer in that cell, the formula bar shows your date as "12/18/2017" (Figure 9.14). This is a visual clue to know whether the date is accepted or not.

A Date format can be changed to any other valid form using "Cell Formatting" dialog box and it will be discussed later.

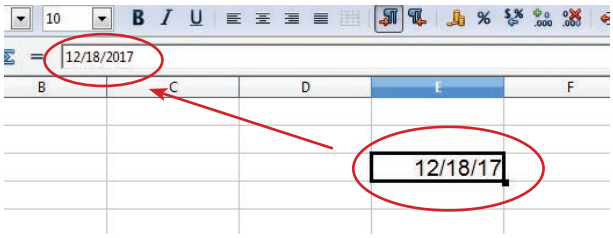


Figure 9.14 Entering Date

Like dates, for entering time, Calc follows the general format HH:MM:SS, where HH, MM and SS represent hours, minutes and seconds respectively.

Different Date Formats

Order styles	Countries
DD/MM/YYYY	Asia (Central, SE, West), Australia, New Zealand, parts of Europe, Latin America, North Africa, India, Indonesia, Bangladesh and Russia
YYYY/MM/DD	Bhutan, Canada, China, Koreas, Taiwan, Hungary, Iran, Japan, Lithuania, Mongolia.
MM/DD/YYYY	United States, Federated States of Micronesia, Marshall Islands
DD/MM/YYYY and MM/DD/YYYY	Malaysia, Nigeria, Philippines, Saudi Arabia, Somalia
DD/MM/YYYY and YYYY/MM/DD	Afghanistan, Albania, Austria, Czech Republic, Germany, Kenya, Macau, Maldives, Montenegro, Namibia, Nepal, Singapore, South Africa, Sri Lanka, Sweden.

9.5 Creating Formulae

After entering the data in worksheet, you can perform calculations on the data in the worksheet. In order to create formulae, you first need to know

the syntax that describes the format for specifying a formula.

In Calc, you can enter formulas in two methods, either directly into the cell or at the input line. Formula in Calc may start with equal (=) or plus(+) or minus(–) sign followed by a combination of values, operators and cell references. But, as a general practice, all formulas should start with an equal sign. If any formula starts with a + or –, the values will be considered as positive or negative respectively.

9.5.1 Operators

Operators are symbols for doing some mathematical, statistical and logical calculations. Combination of values, operators and cell references is called as "**Expression**". Calc supports a variety of operators which are categorized as:

(1) Arithmetic Opertors
(2) Relational Operators
(3) Reference Operators
(4) Text Operator

9.5.1.1 Arithmetic Operators

Arithmetic operators are symbols for performing simple arithmetic operations such as addition, subtraction, multiplication, division etc., These operators return a numerical result.

	A	B	C	D	E	F
1	Operator	Name	Value in Column C	Value in Column D	Formula in Column E	Result in Column F Operator
2	+	Addition	98	25	= B2 + C2	123
3	-	Subtraction	125	25	= B3 – C3	100
4	*	Multiplication	25	5	= B4 * C4	125
5	/	Division	90	10	= B5 / C5	9
6	^	Exponent	25	2	= B6 ^ C6	625
7	%	Percent	600		= B7 * 35%	210
8	Percentage (%) operator shows percentage of the content.					

Table 9.1 List of Arithmetic Operators

Formula bar shows the formula what the user has entered. But, the cell shows the resultant value (Figure 9.15).

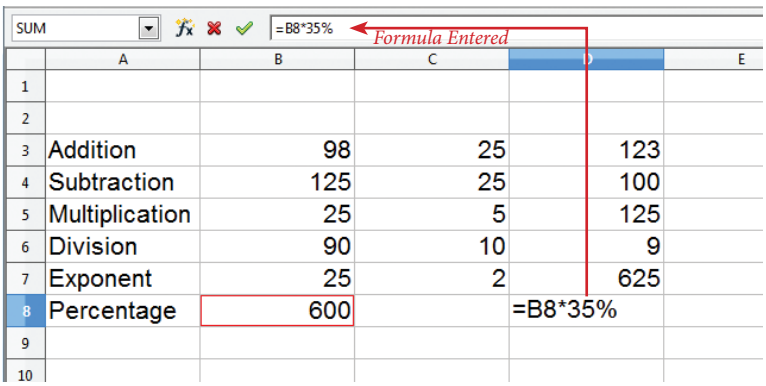


Figure 9.15 Percentage Operator

9.5.1.2 Relational Operators

Relational operators are symbols used for comparing two values such as greater than, less than, equal to etc. The relational operators are also called as ***"Comparative operators"***. These operators return either a True or a False.

	A	B	C	D	E	F
1	Operator	Name	Value in Column C	Value in Column D	Formula in Column E	Result in Column F
2	>	Greater than	98	100	=B2>C2	FALSE
3	>=	Greater than or equal to	85	72	=B3>=C3	TRUE
4	<	Less than	54	24	=B4<C4	FALSE
5	<=	Less than or equal to	55	55	=B5<=C5	TRUE
6	=	Equal to	12	12	=B6=C6	TRUE
7	<>	Not equal to	54	45	=B7<>C7	TRUE

Table 9.2 List of Relational Operators of cells.

9.5.1.3 Reference Operator

Reference operators are used to refer cell ranges. **A continuous group of cells is called as "Range".** There are three types of reference operators that are used to refer cells in Calc: they are (1) Range Reference Operator, (2) Range Concatenation (3) Intersection Operator.

Range Reference Operator

Colon (:) is the range reference operator. It is used to group a range of cells. An expression using a range operator has the following syntax:

reference left : reference right

where reference left is the starting cell address of a linear group of cells or upper left corner address of a rectangular group

Reference right is the last cell address of a linear group or lower right corner address of a rectangular group of cell.

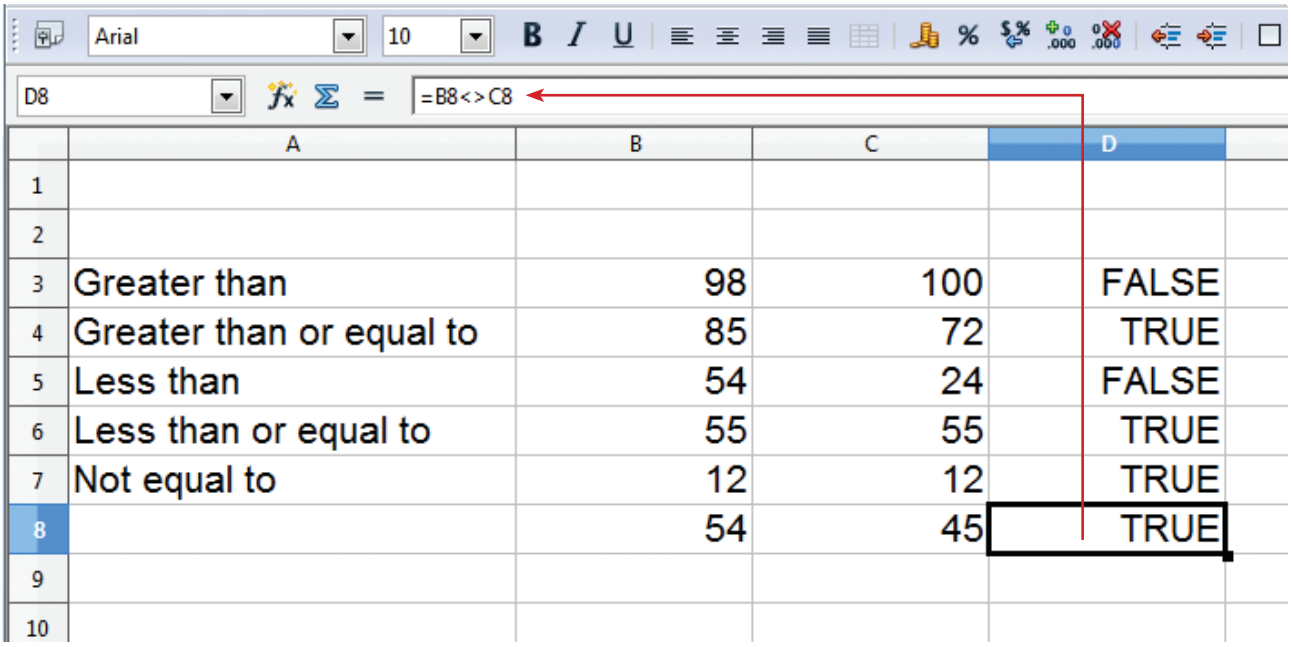


Figure 9.16 Entering Relational Operator

Example:

(i) Linear group of cells A1, A2,A3,A4,A5 is referred as A1:A5

(ii) Rectangular group of cells A2, A3, A4, ….. B2, B3, B4,….D5, D6 is referred as A2:D6 (Refer Figure 7.17)

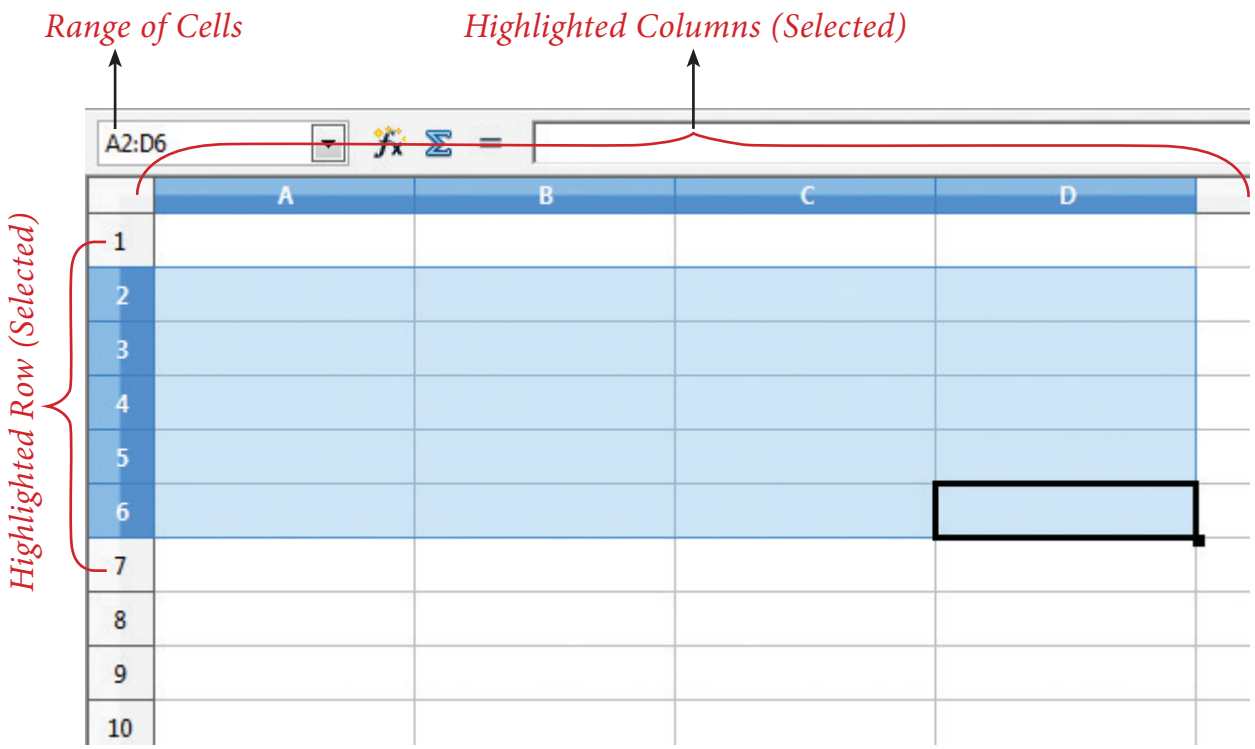


Figure 9.17 Range of selected cells

Name box shows the reference A2:D6 corresponding to the cells included in the drag operation with the mouse to highlight the range.

Reference concatenation operator:

Concatenation means joining together. Tilde (~) symbol is used as a concatenation operator in calc. An expression using a concatenation operator has the following syntax:

reference left ~ reference right

Example:

If you want to find the sum of the values from A1 to A6 and C3 to F3. The formula is **=SUM(A1:A6 ~ C3:F3)**

Note

SUM is a function to find the sum of a group of values. (Refer Figure 9.18)

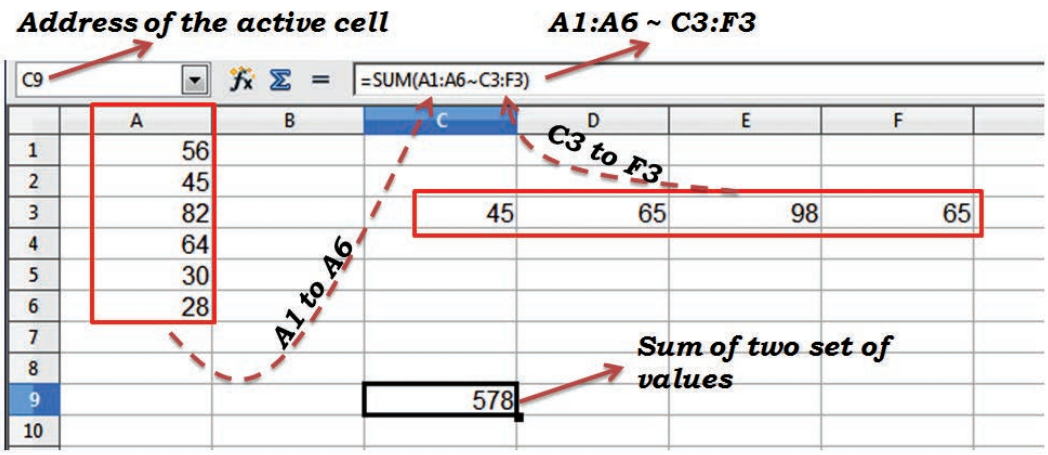


Figure 9.18 Reference concatenation operator

Intersection Operator:

Intersection operator is used to join two set of groups. It is very similar to Range concatenation operator. The intersection operator is represented by an exclamation

reference left ! reference right

Example: (A2:D3 ! B2:E4)

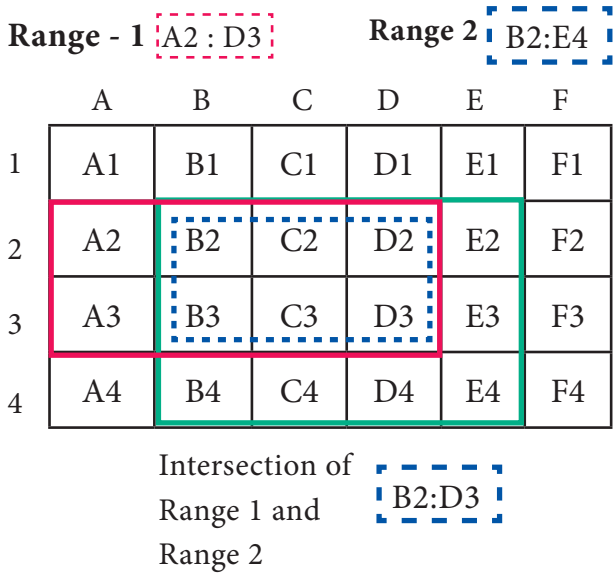


Figure 9.19 Intersection operator

The result of (A2:D3 ! B2:E4) is referred by the range B2:D3, because these cells are both inside A2:D3 and B2:E4 (Refer Figure 9.19 and 9.20).

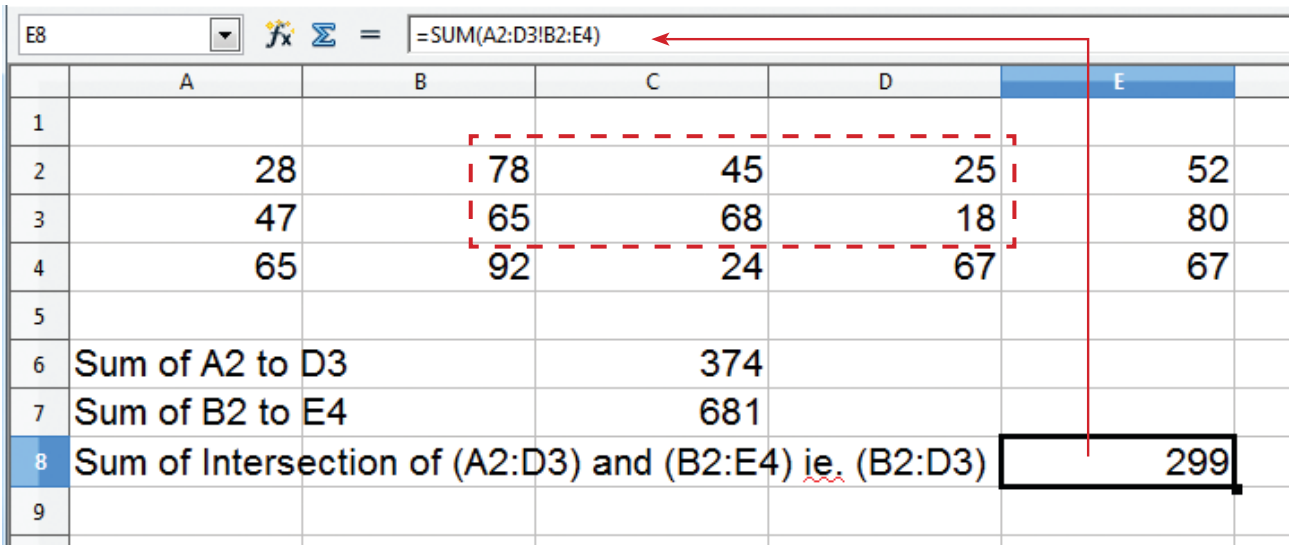


Figure 9.20 Worksheet with Intersection operator

9.5.1.4 Text Operator:

In Calc, "**&**" is a text operator which is used to combine two or more text. Joining two different texts is also known as "Text Concatenation" **(Refer Figure 9.21)**. An expression using the text operator has the following syntax:

text reference1 & *text reference2*

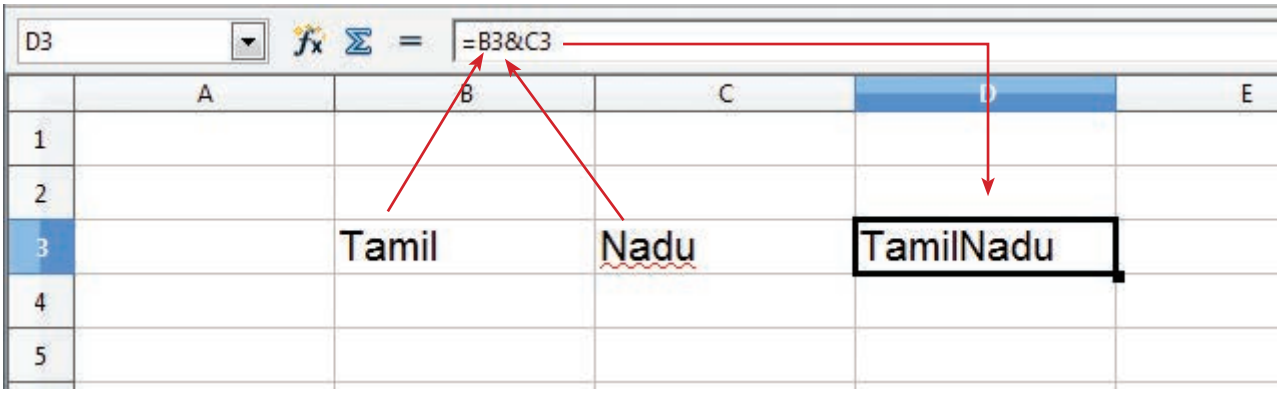


Figure 9.21 Text operator

When arithmetic operators are used in a formula, Calc displays the results using the rule of precedence followed in Mathematics. The order is:

I. Exponentiation (^)

II. Negation (-)

III. Multiplication and Division (*, /)

IV. Addition and Subtraction (+, -)

Here is an example to illustrate how to create a formula:

Illustration 1:

Create a Marks worksheet with the following data:

Reg. No	Name	Tam	Eng	CS	Com	Acc
12001	Jayashree J	147	136	105	163	162
12002	Kowsalya T	156	148	149	147	179
12003	Muskan S	149	165	123	168	179
12004	Ashia Stephy R	168	144	146	192	167
12005	Vennila T P	199	198	150	200	200
12006	Deepika M	187	141	98	130	178
12007	Tharani J	165	102	100	192	192
12008	Thulasi A	143	169	88	176	173
12009	Ayisha B	120	138	109	182	167
12010	Jenifer A	145	135	95	180	185

After completing the data entry, your worksheet will look as shown in Figure 9.22.

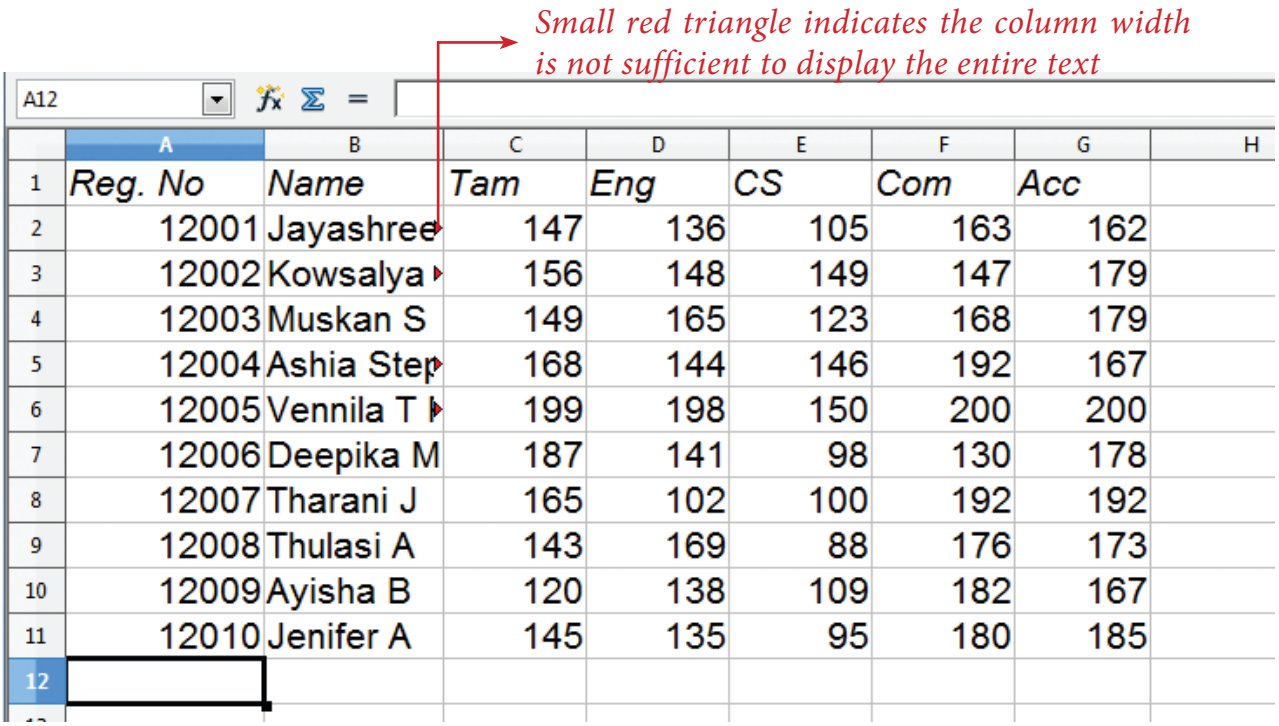


Figure 9.22 Worksheet Illustration

9.5.2 Construction of formula

To construct a formula, follow the steps below:

- Cell pointer should be in the cell in which you want to display the result.
- Formula should begin with an = sign.
- While constructing a formula, ***BODMAS rule*** should be kept in mind.
- General Syntax of constructing a formula is: = ***cell reference1 <operator> cell reference2 <operator> .....***

- Cell references are of two types (i) Relative cell reference (ii) Absolute Cell reference.
- In Calc, while constructing formulae, cell addresses are "Relative cell reference" by default.
- Examples of Relative Cell addressing:

Adding values of A1, B1, C1, D1	=A1+B1+C1+D1
Subtract E4 from H3	= H3 – E4
Multiply A5 and B5	= A5 * B5
Average of G1, G2, G3, G4	=(G1+G2+G3+G4)/4

- In the above table, all cell references are “Relative cell addressing:”.
- While using a formula, if you use the $ symbol in front of a column name and row number, it will become an “**Absolute Cell addressing**”.
- Examples of Absolute cell addressing:

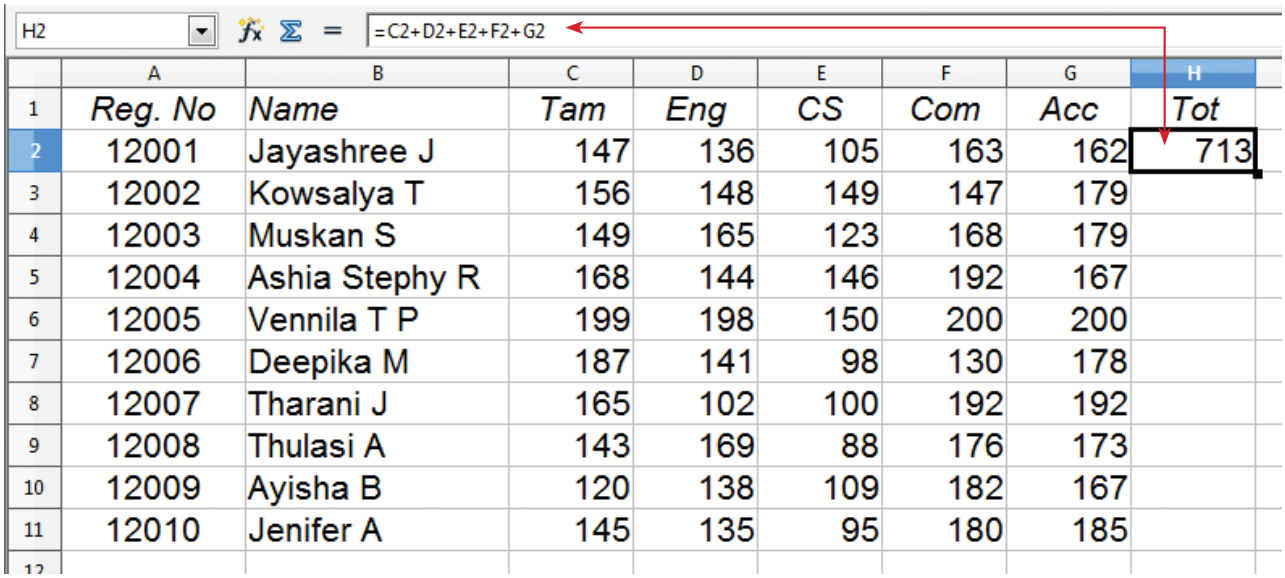
Adding values of A1, B1, C1, D1	=$A$1+$B$1+$C$1+$D$1
Subtract E4 from H3	= $H$3 – $E$4
Multiply A5 and B5	= $A$5 * B5
Average of G1, G2, G3, G4	=($G$1+G2+$G$3+G4)/4

- In an expression, all cells need not necessarily be relative or absolute. You can mix both type of references.
- The following section explains the use of relative cell addressing. About “Absolute cell addressing”, you will be learn later in this chapter.

Finding Total to the above Illustration:

- Move the cell pointer to H2 (Total column)
- Type the following formula; after entering the formula, press “Enter” key
  = C2+D2+E2+F2+G2 (Refer Figure 9.25)
- Now, you will get the sum of all the values of C2, D2, E2, F2 and G2
- The above-mentioned formula clearly states that, how worksheets are working with cells.
- While referring to the cell addresses in a formula, the worksheet reads the value inside the cell that you refer. This is a good practice of constructing a formula. Because, if you change any value, the worksheet recalculates it with a new value.

After entering a formula the result is display as in **Figure 9.23**



	A	B	C	D	E	F	G	H
1	*Reg. No*	*Name*	*Tam*	*Eng*	*CS*	*Com*	*Acc*	*Tot*
2	12001	Jayashree J	147	136	105	163	162	713
3	12002	Kowsalya T	156	148	149	147	179	
4	12003	Muskan S	149	165	123	168	179	
5	12004	Ashia Stephy R	168	144	146	192	167	
6	12005	Vennila T P	199	198	150	200	200	
7	12006	Deepika M	187	141	98	130	178	
8	12007	Tharani J	165	102	100	192	192	
9	12008	Thulasi A	143	169	88	176	173	
10	12009	Ayisha B	120	138	109	182	167	
11	12010	Jenifer A	145	135	95	180	185	

Figure 9.23 Constructing formula in Worksheet

9.6 Save, Close and Open the Worksheet:

9.6.1 Saving Worksheet

The process of saving a worksheet is very similar to saving a document. Steps to save a worksheet are as follows:

Step 1: **File** **Save** (or) **Ctrl + S** (or) Click **"Save"** icon on the standard tool bar.

Step 2: If the worksheet has not been saved previously, the **Save As** dialog box will appear.

Step 3: Type the name in "**File Name**" list box. OpenOffice Calc Spreadsheets are stored with extension **.ods** by default.

Step 4: Click **"Save"** button.

After clicking the save button, the given file name is displayed in the title bar as shown in **Figure 9.24.**

File Extension:

A file extension or file name extension helps to identify the type of file. Following table gives the file extension of commonly used files.

Familiar File Type	Extension
Text Files	.txt
Microsoft Word Documents	.doc / .docx
OpenOffice Documents	.odt
Microsoft Excel	.xls / .xlsx
OpenOffice Calc	.ods
Microsoft PowerPoint	.ppt / .pptx
OpenOffice Impress	.odp
Executable Files / Applications	.exe
Web Pages	.htm / .html
Portable Document Format	.pdf
Photos	.jpg / .jpeg (Joint Photographic Experts Group)
Animated Images	.gif (Graphic Interchange Format)
Audio	.mp3
Audio / Video	.mp4

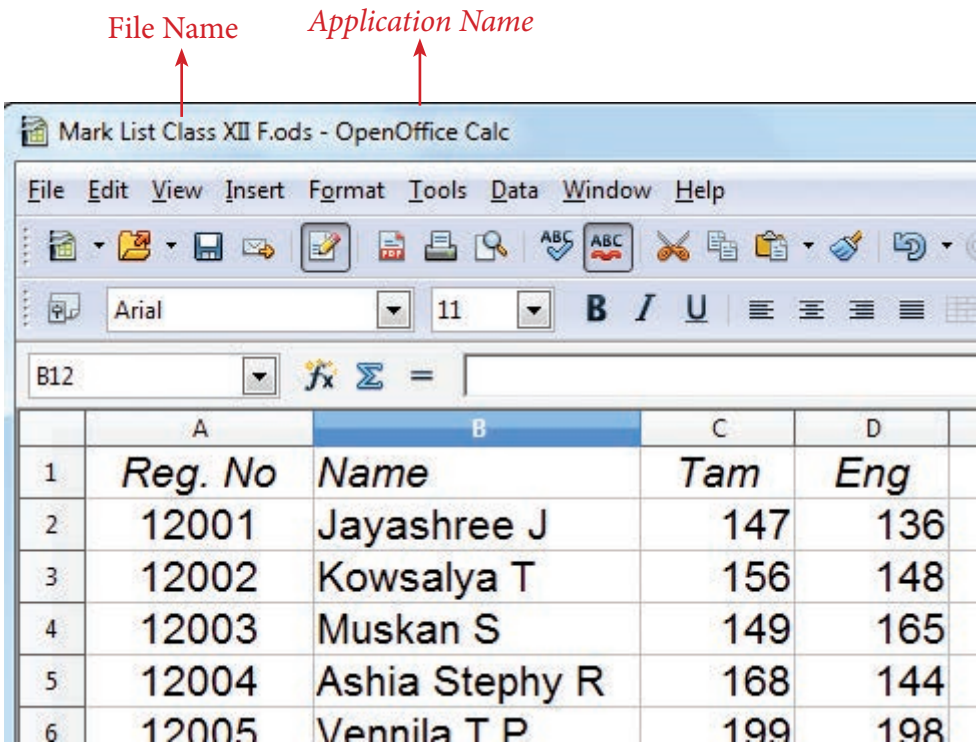


Figure 9.24 Saved Spreadsheet

Note: The saved file is stored in the *"**Documents**"* folder by default.

What is save?

Technically saving is a process of transferring or shifting contents from primary memory (RAM) to Secondary storage medium such as Hard disk, Pen drive, memory chip etc.

9.6.2 Auto Save:

OpenOffice saves a file at regular intervals. This is called as ***"Auto Save"*** feature. The default time interval is 15 minutes. It can be reduced even to one minute. If any unexpected shutdown occurs, this feature will recover your file.

9.6.3 Closing a Worksheet

After saving the worksheet; it remains open. So, you can continue to working with it. When the work is finished, you should save using **File → Save** (or) Click **"Save"** icon (or) **Ctrl + S** and then to close the worksheet using **File → Close** command (or) Press **Ctrl + W**.

9.6.4 Opening an existing worksheet

9.6.4.1 Using Open dialog box

To reopen an existing worksheet, the **File → Open** command (or) "Open" icon (or) **Ctrl + O** can be used. An Open dialog box appears as shown in **Figure 9.25** that is similar to **"Save As"** dialog box.

The name of the file to be opened can be chosen from the list or folder in which worksheet has been saved.

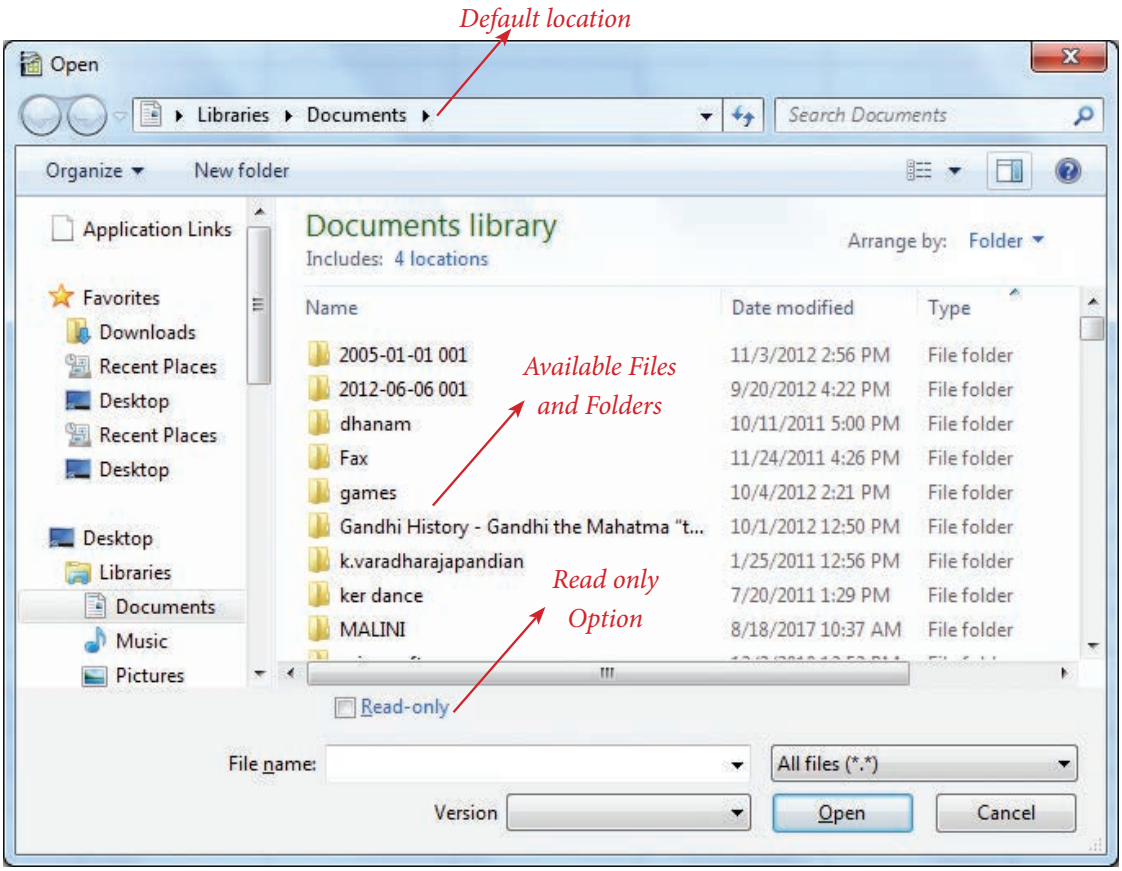


Figure 9.25 Open Dialog box

9.6.4.2 Using Recent documents

OpenOffice keeps a list of recently opened files. **File → Recent Documents** option can be used to open an existing worksheet from the list as shown in **Figure 9.26.**

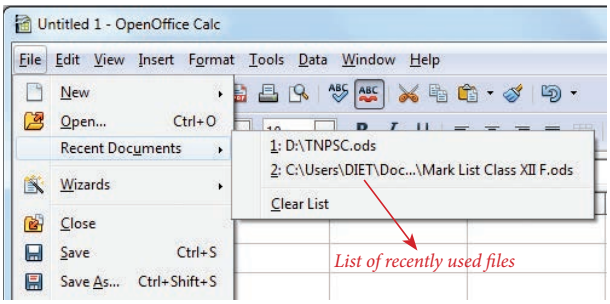


Figure 9.26 List of Recent Documents

9.7 Copy, Cut and Paste

9.7.1 Copy and Paste Data (Coping Data)

- Select the cell or cells you want to copy
- Select **Edit → Copy** or **Click "Copy"** icon from the standard toolbar or Press **Ctrl + C.**
- Move the cell pointer to the cell in which you want to paste.
- Select **Edit → Paste** or **Click "Paste"** icon or Press **Ctrl + V**

9.7.2 Cut and Paste Data (Moving Data)

- Select the cell or cells you want to cut
- Select **Edit → Cut** or **Click "Cut"** icon from the standard toolbar or Press **Ctrl + X**
- Move the cell pointer to the cell in which you want to paste.
- Select **Edit → Paste** or **Click "Paste"** icon or Press **Ctrl + V.**

9.7.3 Copy and Paste Formula

- The process of Copy and Paste data is used for copying formula.
- When you copy a formula from one cell to another cell, the address of the pasted formula will change according to its row. This is called **"Relative Cell Reference"** (Refer **Figure 9.27**).

Example:

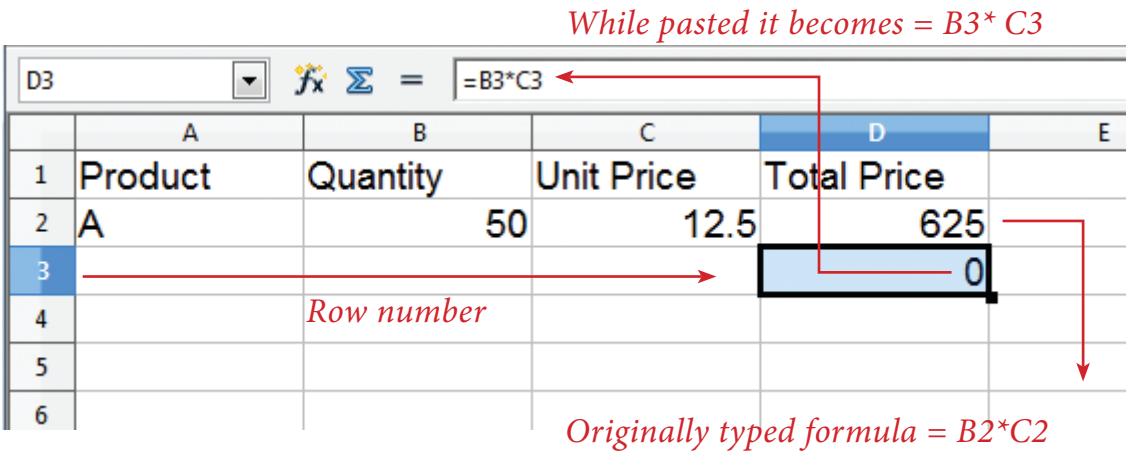


Figure 9.27 Copy and Paste formula to multiple cells

9.7.4 Copy a formula from one cell and paste it in multiple cells:

(For illustration 1 - Refer Figure 9.23)

Step 1: Copy the formula from H2 using **Ctrl + C** or **Edit → Copy** (or) **click "Copy"** icon.

H3:H11 =C11+D11+E11+F11+G11

	A	B	C	D	E	F	G	H
1	*Reg. No*	*Name*	*Tam*	*Eng*	*CS*	*Com*	*Acc*	*Tot*
2	12001	Jayashree J	147	136	105	163	162	713
3	12002	Kowsalya T	156	148	149	147	179	779
4	12003	Muskan S	149	165	123	168	179	784
5	12004	Ashia Stephy R	168	144	146	192	167	817
6	12005	Vennila T P	199	198	150	200	200	947
7	12006	Deepika M	187	141	98	130	178	734
8	12007	Tharani J	165	102	100	192	192	751
9	12008	Thulasi A	143	169	88	176	173	749
10	12009	Ayisha B	120	138	109	182	167	716
11	12010	Jenifer A	145	135	95	180	185	740
12								

Figure 9.28 Copy and Paste forumla to Multiple cells

Step 2: Select all cells (i.e. H3 to H11) in which you want to paste the addition formula.

Step 3: Paste the copied formula using **Ctrl + V** or **Edit → Paste** (or) Click **"Paste"** icon.

WorkShop Practice:

1. Open the worksheet which was created in Illustration 1.
2. Add one more column heading "Average" in I1
3. Create a formula to find the average of all marks in I2.
4. Apply the formula to the remaining cells.
5. Save the changes and close the file

9.8 Auto Fill Feature:

You have learnt how to copy and paste a formula from one cell to other cells in the previous section. The process of Copy and Paste can be replaced by a click and drag and it is called as "**Auto Fill**". This is an alternate way to copy and paste.

Auto Fill feature fills the contents from one cell to all the dragged cells. The content may be a data or formula. If you fill a relative formula, all the addresses of filled formulae will be changed.

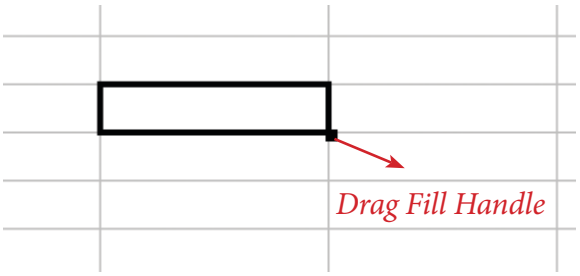


Figure 9.29 Drag fill handle

Cell pointer's "**Drag fill handle**" is used to auto fill. Just click and drag this handle to fill the contents. It can be dragged towards right or down. Same can be achieved by **Edit →Fill → Down** (or) **Edit → Fill → Right.**

9.8.1 Auto Fill Series:

Auto Fill is also used to generate a series of values. For example, if you want to generate 1,2,3……. up to some value; it can be done by a simple clicking and drag process.

Generating whole number series: (Refer **Figure 9.30**).

Step 1: In cell A1, type as 1 (one) and press enter

Step 2: Click A1 to place the cell pointer

Step 3: Click "Drag Fill Handle" of cell pointer; now the mouse pointer becomes a small + sign

Step 4: Drag over the cells; while dragging, the generated values will be displayed.

Step 5: Release the mouse pointer. Selected cells will be filled with series of values.

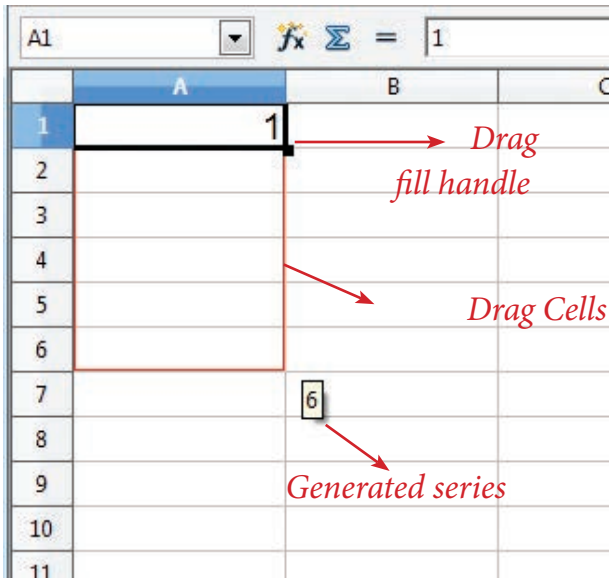


Figure 9.30 AutoFill series

9.8.2 Generating series using command

Edit → Fill → Series Command is used to generate different set of series. Before using this feature, a set of cells should be selected. Using Fill Series feature, you can fill series of values at any direction. (Remember that, auto fill only fills either right or down). Refer **Figure 9.31.**

Direction : Down / Right / Up / Left (Selected cell direction will be default)

Series type :

Linear : To generate a sequence of series (Example 2,4,6,8,10…….)

Growth : To generate multiplication series (Example 2,4,8,16,32,64……)

Date : To generate date series (when you select date as series type; time unit section gets enabled)

AutoFill : To generate a continuous series of values (1,2,3,…….). When you select "AutoFill", Time unit section, End value and Increment text boxes become disabled.

Time Unit: (Enabled only when you select the series type as "Date")

Day	:	To generate date series day-wise
Weekday	:	To generate date series weekday-wise
Month	:	To generate date series month-wise
Year	:	To generate date series year-wise

Start Value:

- Initial value of the series should be typed

End Value:

- End value of the series should be typed
- If you fail to specify the end value, series will be generated upto the selected cells.

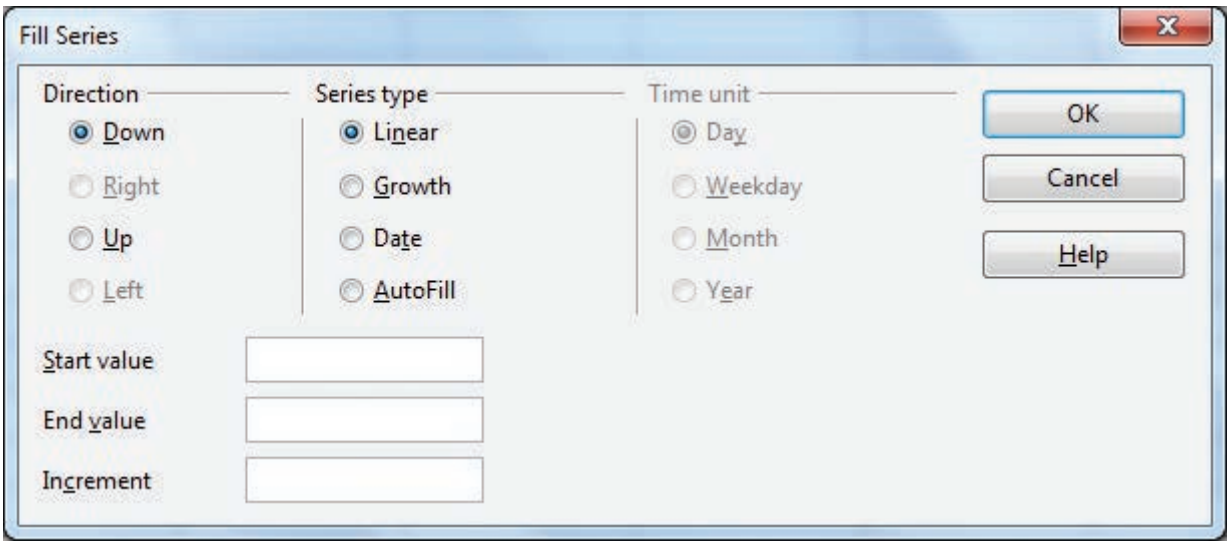


Figure 9.31 Fill series dialog box

- If your selection is less than the specified end value, series will be generated only upto the selected cells.

Increment:

- It is a difference value between the first and second value of your series. So, the next value (Third value) of the series will be generated based on this value.
- If you want to generate a decreasing order series, negative value should be specified as an increment value.

Self Practice:

(i) Generate Even number series from 2 to 20

(ii) Generate a series of 5, 10, 15, 20 ……. upto selected cells.

(iii) Generate a series of 2,4,8,16,…… 2048

(iv) Generate a series of 33, 30, 27 …… upto 3

(v) Assume, today is Friday and generate next 25 Fridays (Date series).

9.8.3 Date Arithmetic:

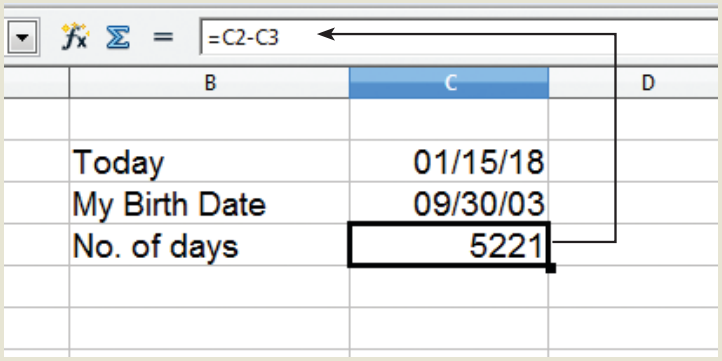
Manual date calculations can be tricky because you have to keep track of the number of days in a month. In spreadsheets, date calculations become very simple. Here you can add a number to a date and arrive at a new date, find the difference between two dates and use a wide variety of function and formats to get what you want.

For example, enter a date 02/26/2018 in a cell, say A2. Suppose you want to calculate the date 80 days after this date. To do so, enter the formula, = **A2 + 80**, in another cell, say A4.

The date 05/17/18 appears in the cell.

To Find out how many days you were born? your birth?

- Type today's date in first cell.
- Type your birth date in second cell.
- Type the following formula in third cell = first_cell_reference – second_cell_ reference



Editing and Formatting Worksheet

9.9 Inserting Columns, Rows and Cells

In Calc, columns, rows and cells can be inserted individually or in groups.

9.9.1 Inserting a Column:

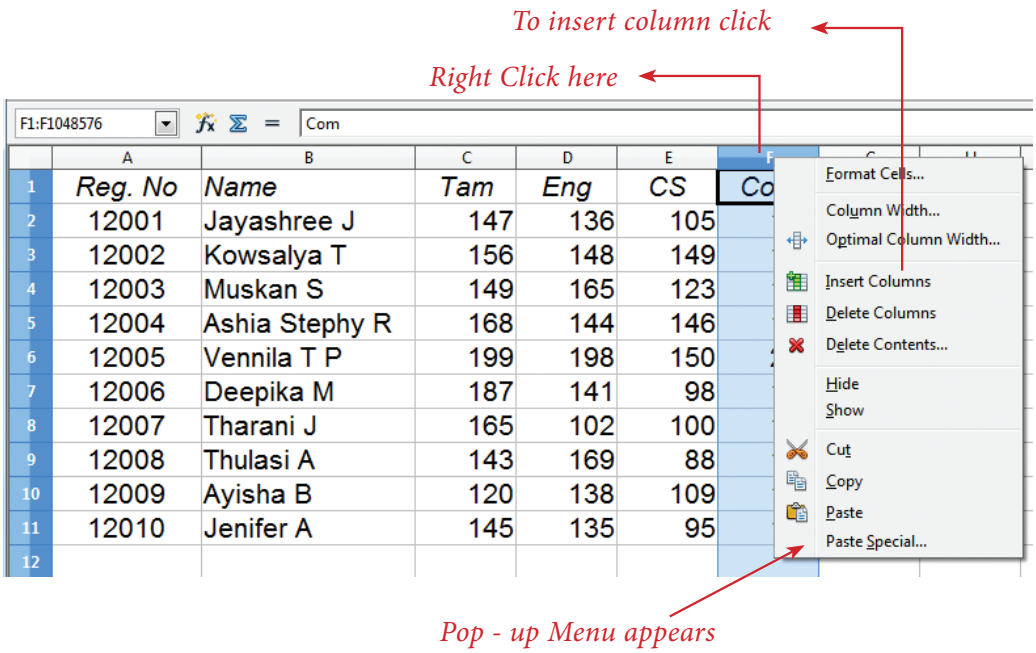
When you insert a new column, it is inserted to the left of the current column. The location of the cell pointer present, is the Current column. In Calc, you can insert a new column anywhere in the worksheet.

Step 1: Select the column where a new column to be inserted.

Step 2: Right-click on the selected column name. A pop-up menu appears.

Step 3: click the **"Insert Columns"** option from the menu.

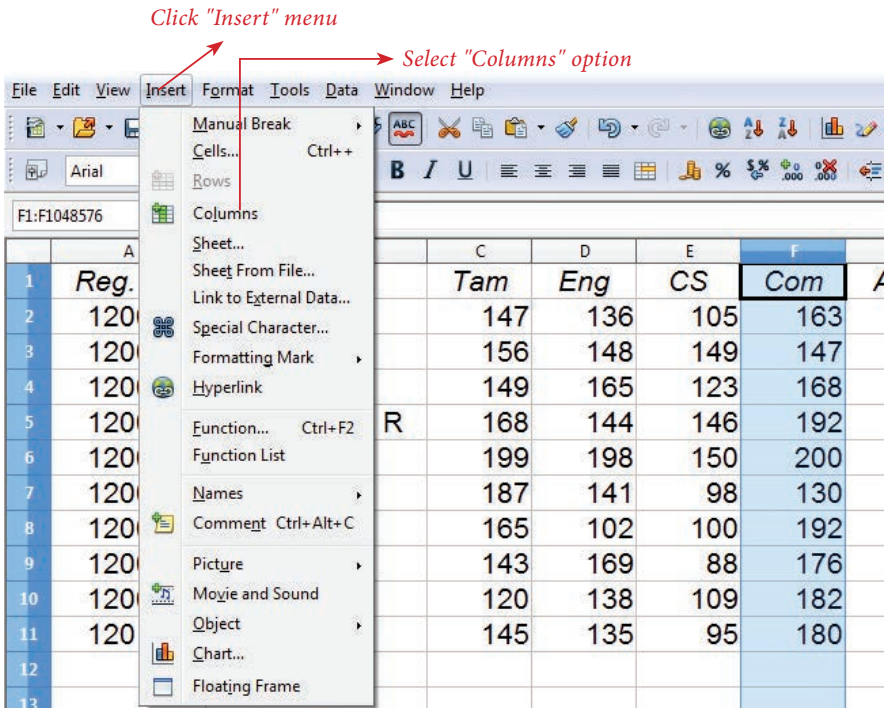
Now, a new column will be inserted to the left of the current column.



	A	B	C	D	E	F
1	Reg. No	Name	Tam	Eng	CS	Co
2	12001	Jayashree J	147	136	105	
3	12002	Kowsalya T	156	148	149	
4	12003	Muskan S	149	165	123	
5	12004	Ashia Stephy R	168	144	146	
6	12005	Vennila T P	199	198	150	
7	12006	Deepika M	187	141	98	
8	12007	Tharani J	165	102	100	
9	12008	Thulasi A	143	169	88	
10	12009	Ayisha B	120	138	109	
11	12010	Jenifer A	145	135	95	
12						

Figure 9.32 Insert Column pop-up menu

A new column can also be inserted using **Insert → Columns** command. (Refer **Figure 9.32**).



	A	C	D	E	F
1	Reg.	Tam	Eng	CS	Com
2	120	147	136	105	163
3	120	156	148	149	147
4	120	149	165	123	168
5	120	168	144	146	192
6	120	199	198	150	200
7	120	187	141	98	130
8	120	165	102	100	192
9	120	143	169	88	176
10	120	120	138	109	182
11	120	145	135	95	180
12					

Figure 9.33 Insert Column menu bar

Workshop

1. Open the worksheet which was created in Illustration 1.
2. Insert a new column between column E and F
3. Give the heading as “Eco” and Enter the Economics marks for all the students
4. Insert one more column between the columns, Name and Tamil marks.
5. Give the heading as “Date of Birth” and Enter the date of birth for all the students.
6. Save the changes and close the file.

9.9.2 Inserting Rows

When you insert a new row, it is inserted above the current row. The location of the cell pointer present is the current row. In Calc, you can insert a new row anywhere in the worksheet.

Step 1: Select the row where a new row to be inserted.

Step 2: **Right-click** on the row number, a pop-up menu appears

Step 3: click **“Insert Rows”** option from the menu.

Now, a new row will be inserted to above the current row.

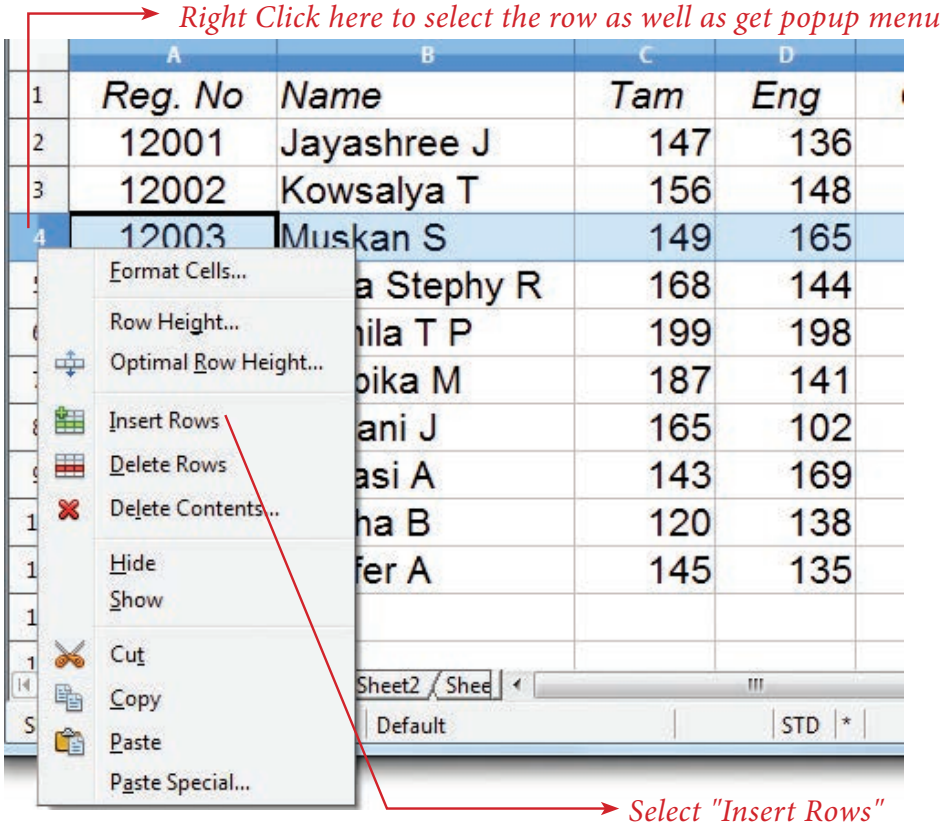


Figure 9.34 Insert Rows popup menu

Insert → Rows command is used to insert a new row. Refer **Figure 9.35.**

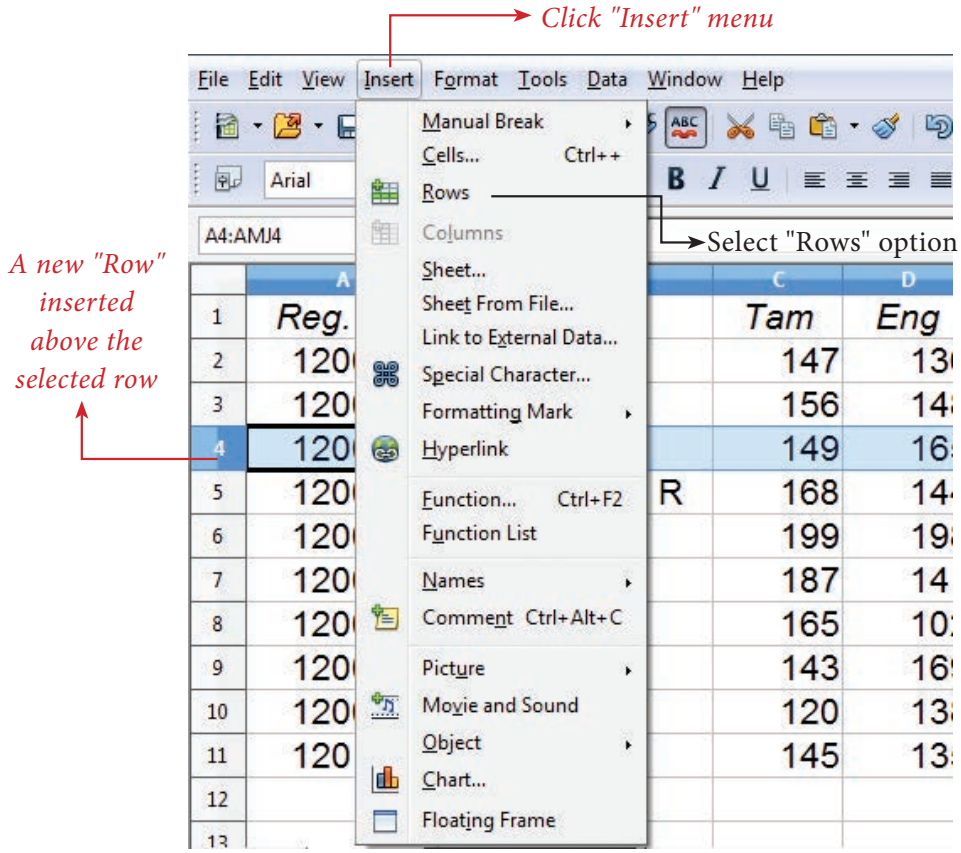


Figure 9.35 Insert Rows menu bar

Workshop

1. Open the worksheet which was created in Illustration 1.
2. Insert 8 rows one by one, then insert the following student details
3. Save the changes and close the file.

Reg. No	Name	Date of Birth	Tam	Eng	CS	Eco	Com	Acc
12101	Sarika S	26/05/2001	145	135	145	125	180	196
12102	Jewees Celcya J	11/04/2001	102	165	134	95	180	134
12103	Yuvarani T	27/06/1999	172	130	107	155	162	130
12104	Meharunisha I	30/05/2001	132	146	112	185	192	176
12105	Priya W	07/03/2000	130	172	100	92	162	155
12106	Vijaya Vasavi K	03/06/2001	198	175	149	148	158	135
12107	Deepika B	14/03/2001	120	182	103	144	107	186
12108	Viji V	19/04/2001	137	173	128	148	125	177

9.9.3 Inserting Cells

- To insert a new cell between two existing cells, just right-click on any existing cell
- From the pop-up menu, select **"Insert"** option *Figure 7.36 Insert cells*
- The **"Insert Cells"** dialog box appear with four options

  i) **Shift cells down** ii) **Shift cells right** iii) **Entire row** iv) **Entire Column**
- Any one of the **four** options can be selected.
- Selecting **"Shift cells down",** inserts a new cell in the present location and the existing cells are shifted downwards.
- Selecting **"Shift cells right",** inserts a new cell in the present location and the existing cells are shifted towards right.
- Selecting the **"Entire Row"** or **"Entire Column"** option, inserts a new row or a new column respectively.

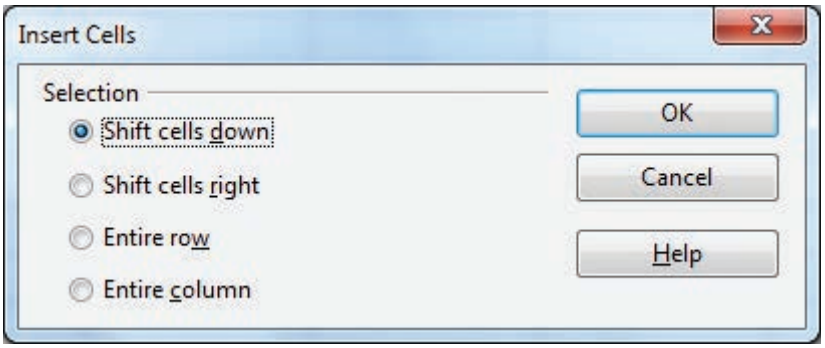


Figure 9.36 Insert cells

9.9.4 Inserting multiple columns or rows

Multiple columns or rows can be inserted at once rather than inserting one at a time.

- Select multiple rows or columns for insertion.
- Follow steps as in 9.9.1 and 9.9.2

9.9.5 Inserting Columns, Rows and Cells using "Insert Cells" Toolbar

- **Insert Cells** floating toolbar is also used to insert cells, rows and columns
- Click **View → Toolbars → Insert Cell**
- A floating toolbar appears on the screen with four icons. Using these icons, you can insert cells, rows and columns. Refer **Figure 9.37.**

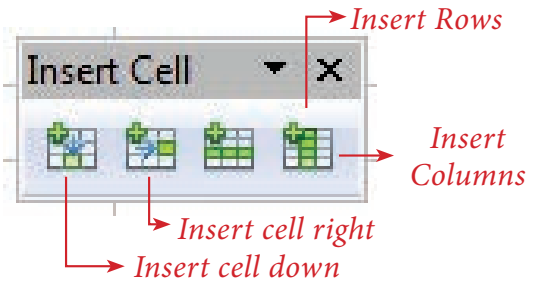


Figure 9.37 Insert cell tool bar

9.10 Deleting columns and rows

A single or multiple columns or rows can be deleted.

Inserting a new Column or row is really possible in a Spreadsheet?

All spreadsheets have some specific number of rows and columns, then is it possible to insert an additional row or column?

Technically this is NOT POSSIBLE.

Additional column, row or even cell cannot be inserted in any spreadsheet. When you insert a column or row, the contents within the column or row will be shifted to the next column or row. But visually it is felt that a new column or row has been inserted.

9.10.1 Delete single column or row

A single column or row can be deleted by using the mouse:

- Select the column or row to be deleted.
- Choose **Edit →Delete Cells** from the menu bar.

(or)

- **Right-click** on the column or row header.
- Choose **Delete Columns** or **Delete Rows** from the pop-up menu.

9.10.2 Delete multiple columns or rows

Multiple columns or rows can be deleted at a time. Refer **Figure 9.38.**

- Select the required columns or rows to be deleted.
- **Right-click** on the selected columns or row.
- Choose **Delete Columns** or **Delete Rows** from the pop-up menu or **Edit → Delete Cells.**

Workshop:

1. Open the spreadsheet which was created in Illustration 1.
2. Delete the details of any 3 students. Save the changes and close the file.

Deleting Column or Row is not Possible

Same as inserting column or row, Deleting a column or row is also not possible. No one can delete any column or row in a spreadsheet. When you delete a column or row, all the contents will be removed from the column or row. Actually, this is also another kind of deleting contents from a column or row.

9.11 Formatting Worksheet

Formatting Data in a cell gives additional effect to the text. Additional effect includes changing the font style, font size, automatic wrapping, bold, underline, italic etc. The data in Calc can be formatted in several ways, using formatting icons.

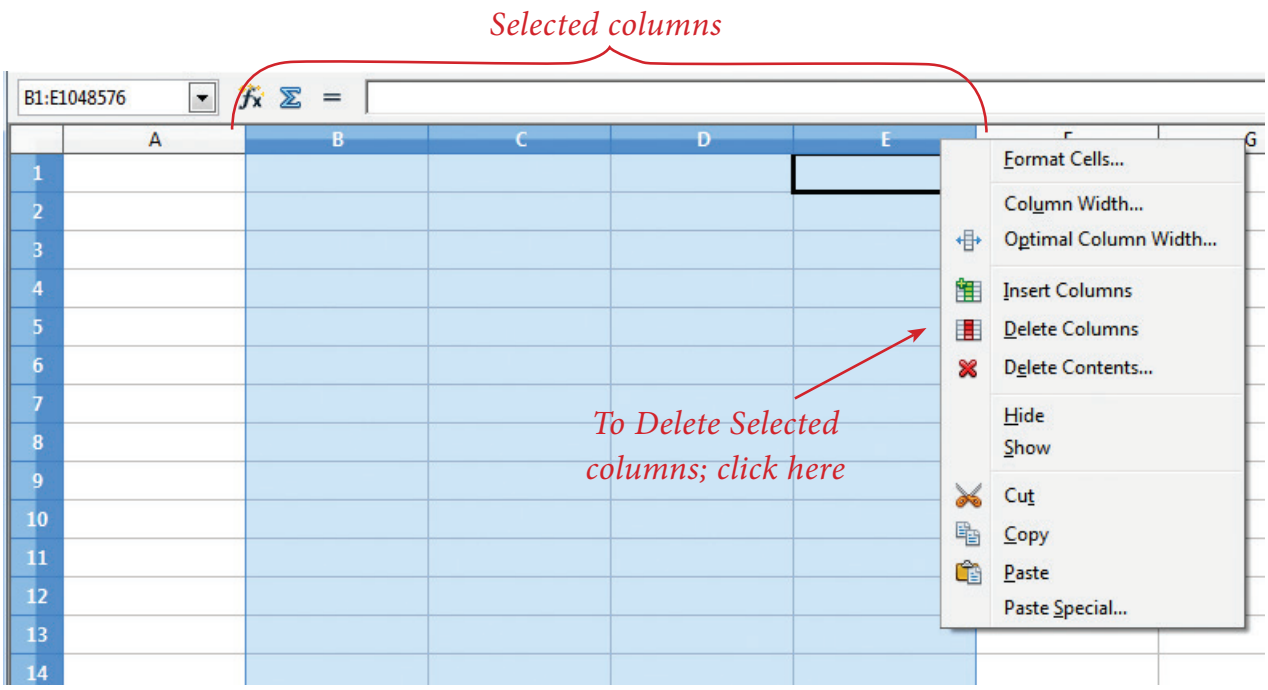


Figure 9.38 Delete multiple columns

9.11.1 Text Formatting

Making the cell contents as bold, italics, underline, changing font style, size, colour etc., comes under text formatting. All text formatting options are available as icons in **Formatting toolbar** learnt in OpenOffice Writer.

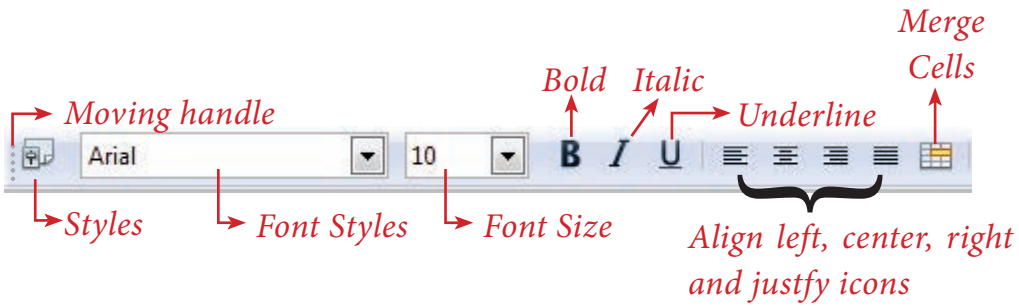


Figure 9.39 (a) Text Formatting Toolbar

Formatting Option	Keyboard Shortcut	Description
Font style		Used to change Font style
Font size		Used to change Font size
Bold	Ctrl + B	Used to make the data as Bold
Italic	Ctrl + I	Used to italicize data
Underline	Ctrl + U	Used to underline the data
Left Align	Ctrl + L	Left Align data within a cell
Right Align	Ctrl + R	Right Align data within a cell
Center Align	Ctrl + E	Center Align data within a cell
Justify	Ctrl + J	Align the data evenly both on left and right side of a cell
Merge cell		Makes selected cells as a single cell

9.11.2 Number formatting

Number formatting options are used to visually change the format of a numeric content. These formatting changes appear for visual as, it does not change the original value. For example, to display a number in currency form use Number format: Currency.

Number format: Currency will be used as shown **Figure 9.39(b)**.

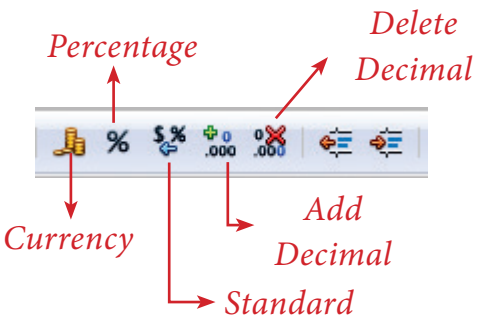


Figure 9.39 (b) Formatting toolbar

Number Format	Keyboard Shortcuts
Currency Symbol	*Ctrl+Shift+4*
Percent	*Ctrl+Shift+5*
Standard	*Ctrl+Shift+6*
Add Decimal Place	
Delete Decimal Place	

Workshop

1. Open the worksheet which was created in Illustration 1.
2. Align all headings as center and make them bold.
3. Align all Register numbers and marks in center
4. Apply different font styles to the entire worksheet.
5. Save the changes and close the file

Workshop 1

1. Create a worksheet with following data

Emp. No	Name of Emp.	Basic	DA	HRA	CCA	MA	GPF	IT	HF
1001	Manivannan M	25500	25 % of Basic	%15 of Basic and DA	600	300	12 % of Basic	%10 of Gross	250
1002	Kannan K	20200			600	300			250
1003	Gowrishankar N V	24300			600	300			250
1004	Lenin K	23400			600	300			250
1005	Suryanarayanan T	24100			600	300			250
1006	Ramesh K	18500			600	300			250
1007	Govindasami A	13200			600	300			250
1008	Kannan S	20250			600	300			250
1009	Penchil Rao K	28300			600	300			250
1010	Logeswaran M	30200			600	300			250
1011	Arumugam E	12000			600	300			250
1012	Vasu G N	25000			600	300			250

Based on the above data,

(1) Calculate the Gross Salary, Total Deductions and Net Salary

(2) Insert “IT Cess” column and calculate 3% of cess to all employees

(3) Delete the records of "Govindasami" and "Arumugam".

(4) Insert four new rows and enter the following employee details.

(5) Calculate the Total amount of GPF, IT and Cess

Emp. No	Name of Emp.	Basic	DA	HRA	CCA	MA	GPF	IT	HF
2001	Murali G	24750							
2002	Munirathnam A	23550							
2003	Ramakrishnan V G	25500							
2004	Srinivasan R	27500							

Workshop: 2

1. Create a new worksheet in OpenOffice Calc.

2. Enter the following stock and sales details of "Chennai whole sale Marketing Pvt. Ltd." during the month of Jan-2018.

Code	Product Name	Weight (gm)	Opening stock	Cost price	Sales in units	Rate of Discount	Amount of Discount	Selling price	Amount of Sale	Closing Stock
100	Marie Gold	120	345	15	147	5%				
101	Milk Bikis	85	106	10	63	5%				
102	Dark Fantasy	75	147	25	43	3%				
103	Nutri Choice	250	98	50	12	10%				
104	Lays potato chips	52	172	15	152	4%				
105	Oreo	120	112	25	85	6%				

3. Calculate the following using formula

(i) Amount of Discount, Selling price and Amount of sales for each product

(ii) Total amount of discount and Sales of the month

(iii) Closing stock of each product

Workshop: 3

1. Create a worksheet in OpenOffice Calc.

2. Enter the following details of loan sanctioned during the month of January 2018 of "Tamil Finance Corporation".

AC No Emp. No	Name	Amount of Loan	Loan Sanction date	Duration of Loan	Rate of Interest	Interest (Rs)	Total Amount	Due date
2001	Senthil	250000	02/01/2018	120 days	9.5%			
2002	Kumar	175000	15/01/2018	150 days	9.5%			
2003	Ibrahim	550000	16/01/2018	140 days	10.5%			
2004	Valli	375000	21/01/2018	210 days	10%			
2005	Charles	450000	28/01/2018	130 days	10.5%			

3. Create the formula to calculate

(i) Interest, Total amount and due date.

(ii) Gross total of loan amount, interest and total amount.

4. Insert 5 new rows between Kumar and Ibrahim and include the following details

AC No	Name	Amount of Loan	Loan Sanction date	Duration of Loan	Rate of Interest	Interest (Rs)	Total Amount	Due date
3001	Pari	250000	03/02/2018	125 days	9.5%	5%		
3002	Arul	375000	07/02/2018	155 days	9.5%	5%		
3003	Raman	350000	10/02/2018	130 days	10.5%	3%		
3004	Givind	450000	10/02/2018	100 days	10%	10%		
3005	Zeenath	800000	26/02/2018	90 days	10%	4%		

Points to Remember:

- Spreadsheet is a very useful office automation tool for organization, analysis and storage of data in a tabular form.
- Daniel Bricklin and Bob Frankston developed the first spreadsheet software called "VisiCalc" in 1979 for Apple II.
- OpenOffice Calc is a popular open source spreadsheet application software presently maintained by Apache Foundation.
- A worksheet is a grid of cells with a programmable calculator attached to each cell.
- OpenOffice Calc version 4.1.5 contains a total of 1024 columns and 10,48,576 rows.
- Intersection of each row and column forms a rectangular box which is called as "Cell".
- Cell pointer is a rectangle element which can be moved around the worksheet.
- The cell in which the cell pointer is currently located is known as "Active cell".
- All formula should start with an equal sign.
- There are four types of operators supported by Calc.

Activity

Student Activity

1. Based on the concept of calculation using formula, make the students to create various worksheet data.

Teacher Activity

1. To show the demo of working with spread sheets using simple example in class room.

Evaluation

QXHSFF

Part - I

Choose the correct answer

1. Which is the first electronic spreadsheet?
   (A)Excel (B) Lotus 1-2-3 (C) Visicalc (D) OpenOffice Calc

2. Which of the following applications is the parent to OpenOffice Calc?
   (A)Visicalc (B) LibreCalc (C) Lotus 123 (D) StarOffice Calc

3. Grid of cells with a programmable calculator:
   (A)Spreadsheet (B) Database
   (C) Word processor (D) Linux

4. A column heading in Calc is a
   (A)Number (B) Symbol (C) Date (D) Alphabet

5. Which key is used to move the cell pointer in the forward direction within the worksheet?
   (A)Enter (B) Tab (C) Shift + Tab (D) Delete

6. A formula in calc may begin with
   (A) = (B) + (C) - (D) All the above

7. What will be the result of the following formula (Assume A1=5, B2=2)? + A1^B2
   (A) 7 (B) 25 (C) 10 (D) 52

8. What will be the result of the following expression (Assume H1=12, H2=12)? = H1<>H2
   (A) True (B) False (C) 24 (D) 1212

9. Which of the following symbol is used to make a cell address as absolute reference?
   (A) + (B) % (C) & (D) $

10. Which of the following key combination is used to increase the width of the current column?
    (A)Alt + Right arrow (B) Ctrl + Right arrow
    (B)Alt + Left arrow (D) Ctrl + Left arrow

Part – II

Answer to the following questions (2 Marks)

11. What are the types of toolbars available in OpenOffice calc?

12. What is a cell pointer?

13. Write about the text operator in OpenOffice Calc.

14. Write the general syntax of constructing a formula in Calc.

15. What are the keyboard shortcuts to cut, copy and paste?

16. Can you edit the contents of a cell? If yes, explain any one of the method of editing the cell content.

17. What are the options available in "Insert Cells" dialog box?

18. Match the following

A	B
(a) Cut, Copy and Paste	(1) Absolute Cell
(b) Cell pointer	(2) Status bar
(c) Selection Mode	(3) Standard Toolbar
(d) $A$5	(4) Active cell

19. Define the following (i) Text Operator (ii) Rows and Columns of spreadsheet

20. Differentiate between Copy -Paste and Cut-Paste

Part – III

Answer to the following questions (3 Marks)

21. Write a short note on OpenOffice Calc.

22. Write about inserting columns and rows in Calc.

23. Differentiate Deleting data using Backspace and Delete Keys

24. Write any three formatting options.

25. In cell A1=34 A2=65 A3=89 write the formula to find the average.

Part – IV

Answer to the following questions (5 Marks)

1. Explain about changing the column width in Calc.

2. Write the steps to generate the following series. 5, 10, 20 ….. 2560

3. Read the following table

	A	B	C	D	E
1	Year	Chennai	Madurai	Tiruchi	Coimbatore
2	2012	1500	1250	1000	500
3	2013	1600	1000	950	350
4	2014	1900	1320	750	300
5	2015	1850	1415	820	200
6	2016	1950	1240	920	250

Above table shows the sales figures for "Air Cooler" sold in four major cities of Tamilnadu from the year 2012 to 2016. Based on this data, write the formula to calculate the following.

(1) Total sales in the year 2015.

(2) Total sales in Coimbatore from 2012 to 2016.

(3) Total sales in Madurai and Tiruchi during 2015 and 2016.

(4) Average sales in Chennai from 2012 to 2016

(5) In 2016, how many "Air Coolers" are sold in Chennai compared to Coimbatore?

GLOSSARY

Spreadsheet	Sheet of paper that shows accounting or other data in rows and columns
What-if analysis	It is a process of changing the values in a cell to see how these changes will affect output.
VisiCalc	The first electronic spreadsheet application
GUI	Graphical User Interface
Excel	Familiar spreadsheet application developed by Microsoft Corporation.
Cell	Intersection of rows and columns.
Cell Pointer	A rectangular box, highlighting the cell in a spreadsheet.
Active cell	A cell in which the cell pointer is presently located.
Formula	A formula is an expression that tells the computer what mathematical operation to perform on a specific value.
Operator	A symbol that usually represents an action or process
Range	Group / Collection of cells
BODMAS Rule	Order of mathematical calculation: **B**rackets - **O**rders (powers or square roots) - **D**ivision – **M**ultiplication – **A**ddition - **S**ubtraction.
Drag fill handle	A small black box at the bottom right corner of the cell pointer.
Function	Predefined formula / a group of instructions to return a single result or a set of results.
Chart	Graphical representation of data.
Database	A large quantity of indexed digital information.
Flat file database	Single table, non relative database