

INFORMATION & COMMUNICATIONS TECHNOLOGY
Standard VIII

Part 2



GOVERNMENT OF KERALA
Department of General Education

State Council of Educational Research and Training (SCERT), Kerala
2019

NT-849-1-ICT-8-E-VOL.2

THE NATIONAL ANTHEM

Jana-gana-mana adhinayaka jaya he
Bharatha-bhagya-vidhata,
Punjab-Sindh-Gujarat-Maratha
Dravida-Utkala-Banga
Vindhya-Himachala-Yamuna-Ganga
Uchchala-Jaladhi-taranga
Tava subha name jage,
Tava subha asisa mage,
Gahe tava jaya gatha.
Jana-gana-mangala-dayaka jaya he
Bharatha-bhagya-vidhata,
Jaya he, jaya he, jaya he,
Jaya jaya jaya jaya he!

PLEDGE

India is my country. All Indians are my brothers and sisters.

I love my country, and I am proud of its rich and varied heritage. I shall always strive to be worthy of it.

I shall give my parents, teachers and all elders respect, and treat everyone with courtesy.

To my country and my people, I pledge my devotion. In their well-being and prosperity alone lies my happiness.

Information & Communications Technology VIII

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Printed at : KBPS, Kakkanad, Kochi-30

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FOREWORD

Dear Learners,

The world around us is changing fast. The borderlines that were created by time and distance are fading away. The infinite potentials of Information and Communications Technology have made so many things possible which were considered impossible. This is the era in which our classrooms are being rapidly transformed into smart rooms with multimedia facilities as a result of the new technology. In tune with these changes, the contents of this textbook are also developed to enable you to move towards a world of technology, to promote self-study and to construct new knowledge.

The lessons are designed in such a way that practical work is given prime emphasis. Each and every activity included in this textbook is prepared by assimilating the contexts in lessons from other subjects and it is hoped that it will be helpful for studying them.

I sincerely believe that you will be able to do and practise all learning activities given in this textbook, and make use of the skills thus acquired in the study of other subjects as well.

Dr. J Prasad
Director
SCERT

CONSTITUTION OF INDIA

Part IV A

FUNDAMENTAL DUTIES OF CITIZENS

ARTICLE 51 A

Fundamental Duties- It shall be the duty of every citizen of India:

- (a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;
- (b) to cherish and follow the noble ideals which inspired our national struggle for freedom;
- (c) to uphold and protect the sovereignty, unity and integrity of India;
- (d) to defend the country and render national service when called upon to do so;
- (e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;
- (f) to value and preserve the rich heritage of our composite culture;
- (g) to protect and improve the natural environment including forests, lakes, rivers, wild life and to have compassion for living creatures;
- (h) to develop the scientific temper, humanism and the spirit of inquiry and reform;
- (i) to safeguard public property and to abjure violence;
- (j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievements;
- (k) who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between age of six and fourteen years.

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**Certain icons are used in this
textbook for convenience**



For further reading
(Evaluation not required)



Let's Evaluate



Extended activities



6

Data Analysis Made Easy

Oh ! It went wrong this time too! Collecting data from houses was easier. Let's try once more.

Yes, How can we tabulate the data from a hundred questionnaires and analyse it?



Have you understood the problem faced by Anu and Amina? They are trying to consolidate and analyse the questionnaires collected as part of a project. They have a wide range of data with them, collected after visiting a number of families. What are the activities they have to do now? Look at the given procedure.

Data Analysis Made Easy

It is indeed a difficult task to classify, tabulate and analyse the data collected from more than one hundred questionnaires and to reach conclusions. If we do it with the help of a computer, it will reduce our workload and make the analysis easy. Spreadsheet software packages are developed with a view to performing these kinds of activities. Gnumeric, Calligra Sheets, Microsoft Excel, OpenOffice.org Calc, LibreOffice Calc, etc. are examples of spreadsheet software.

Consolidation of Data

Analysis

Conclusion

While doing academic projects...

There are a lot of academic projects assigned in our textbooks. Academic projects can be done as part of the lessons you have to study or based on a particular social issue. Scientific and well planned data collection, consolidation, analysis and making the right inferences are the features of project-based learning. Findings of the study should be published as a report and be presented and the follow-up activities should be planned systematically. Different software packages help us do these tasks easily and accurately. Here, Anu and Amina are doing an academic project given in Std VIII Basic Science textbook in the unit titled 'Let's Regain our Fields'. You can select relevant academic projects from your Science textbook or from any other textbook.

Activity 6.1 - Let's identify the cell address

Open the LibreOffice Calc in your computer and observe it.

Don't you see a lot of small rectangular boxes in rows and columns? These boxes are called **cells**. Click the mouse on each cell. Do you see that the cell you clicked becomes bright? This is called cell pointer. (Fig. 6.1). You can change the position of the cell pointer using the arrow key in the keyboard also. We can type and add information in the cell where the cell pointer is.

A cell is identified by its cell address. Cell address is the combination of column header and row header. Now, complete the table (Table 6.1) given below.

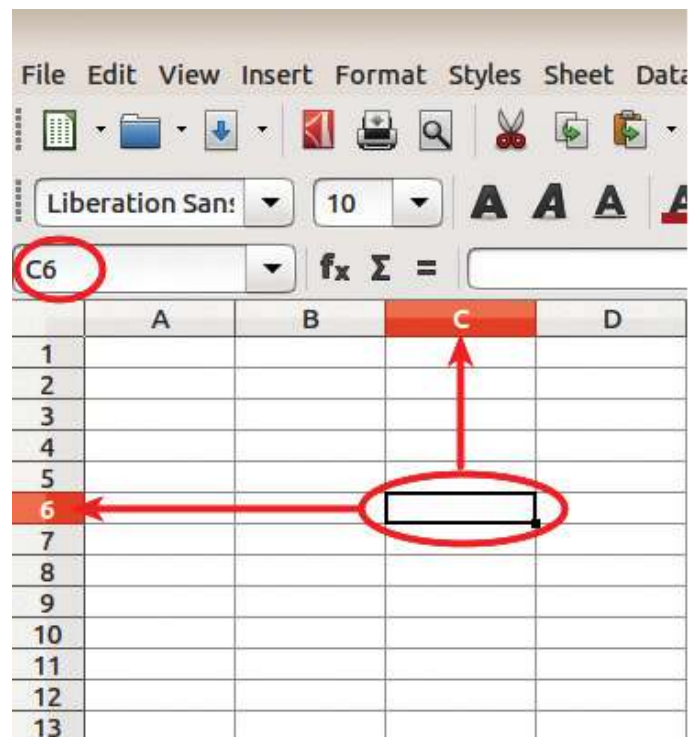


Fig. 6.1 Cell Pointer, Cell Address



Visicalc Software

Spreadsheet Software

VisiCalc is the first spreadsheet program prepared for personal computers. The first edition was released in 1979. VisiCalc is the acronym of 'Visible Calculator'. It was the product of a joint effort by Dan Briklin and Bob Frankenstein. Spreadsheet software packages like Multi Plan and Super Calc had been in use at that time.



Dan Briklin



Bob Frankenstein

Name of column	Name of row	Cell address
C	6	C6
	12	H12
M	34	
AJ		AJ110
		K65

Table 6.1 Cell address formation

What do you see just above the left end of the column header? Isn't it the address of the cell you have selected (Fig.6.1) ? Now, select different cells and identify their cell addresses.

Activity 6.2 - Let's add a new column and row

Amina and Anu have categorised the data collected for their academic project. Now, they are consolidating the data using LibreOffice Calc. The model of the table they have prepared is given below (Fig.6.2).

	A	B	C	D	E	F	G	H	I	J	K
1	Questionnaire Consolidation										
2	Sl No	House No	Total Land (In Acre)	Measure of Land Used (In A	House Name	Quantity of Vegetables Produced (in Kg)					
3						Spinach	Cucumber	Ladies Fing	Beans	Others	Total
4	1	367	1	0.8	Shanibhavan	29	67	43	22	77	
5	2	695	0.6	0.25	Chengala	22	12	8	13	10	
6	3	276	2	1.1	Pathuthara	53	76	12	33	68	
7	4	342	0.85	0.4	Snehitheeram	10	31	0	34	12	
8	5	654	2.2	0.9	Sarang	22	45	35	54	29	
9	6	345	2	1.5	Vallikali House	35	89	30	67	74	
10	7	134	5	2.5	Rahna Manzil	61	123	45	95	86	
11	8	876	5.6	2.9	Manukkara	78	85	98	48	75	
12	9	791	3.5	1.7	Vatakkevedu	37	56	60	25	12	
13	10	765	0.45	0.1	Saketham	1	5	2	0	2	

Fig. 6.2 Model of the table to be prepared

Open the LibreOffice Calc in your computer and prepare a table like this. Give a suitable name for the file and save it in the sub folder *Docs* in your folder.



Data Analysis Made Easy

How can we help Amina and Anu? They want to add house owner’s name to the left of Column E (House Name). What should we do for this? Do the following activities in the given order.

- ◆ Click on any one of the cells in the column ‘House Name’.
- ◆ Select *Insert Columns* and then *Columns Left* from *Sheet* menu (Fig.6.3).

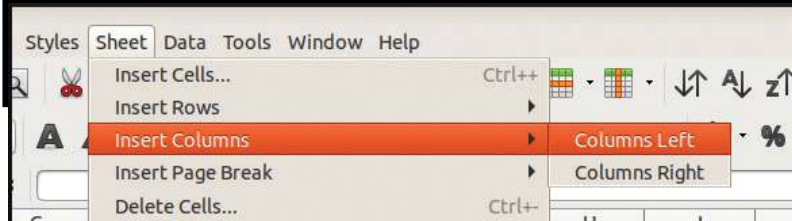


Fig. 6.3 To add new column


Where did you add the new column? Now give the heading ‘Name of the House Owner’ at the top of the new column and add the names of the house owners in the columns below that. Can you guess where the new column will be added, if the cell pointer is in the column ‘Measure of Land Used’? Do it in the computer and make sure that your assumption is correct. Now, write below how to make new rows.

- ◆
- ◆
- ◆

Not the serial number.... It is the name of the row

Everyone of us has his own name. It helps others to identify us. Like that, each row has its own name (Row Header) by which the row can be identified. You have seen numbers (1, 2, 3...) given on the left side of the row. Don’t mistake them as serial numbers. They are the names of the rows. Now, try to find out the names given for columns in the column header. Look at the letters A, B, C, D... given as the column header. Numerals are used to name the rows and English letters are used to name the columns.

Multiple ways to add rows and columns

You can insert a new row in a spreadsheet. Right click on the row header just below where you have to insert the row. You will get a pop up menu (Fig.6.4). You can select suitable options from it. Try to add a column in the same way. You can add a row or column by using  buttons in the tool bar (Fig.6.5). How will you delete an unwanted column or row? It can be done by a right click on the header of the row or the column, we want to delete. Try to delete a column or a row you don’t need in the table. Find out the options available on the tool bar.

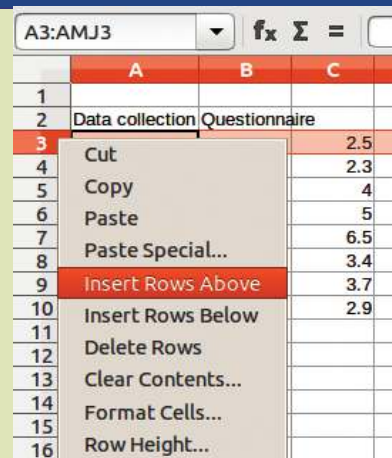


Fig. 6.4 To add new row

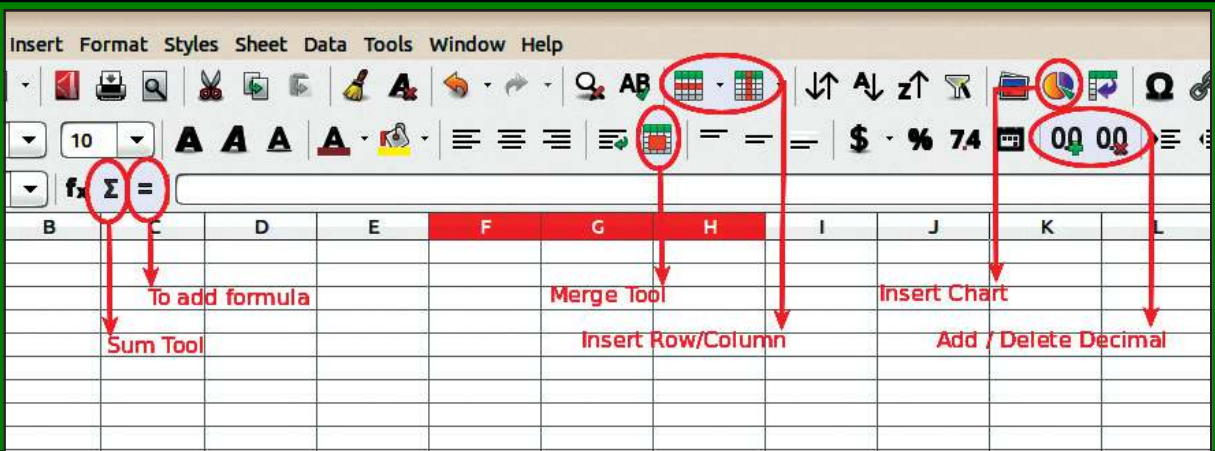
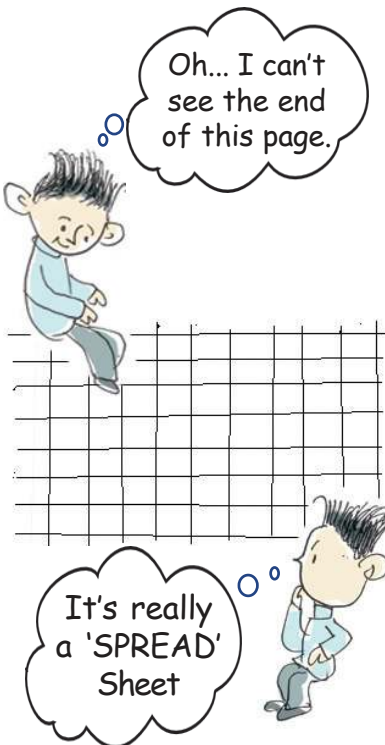


Fig. 6.5 Various tools in LibreOffice Calc

Add serial number

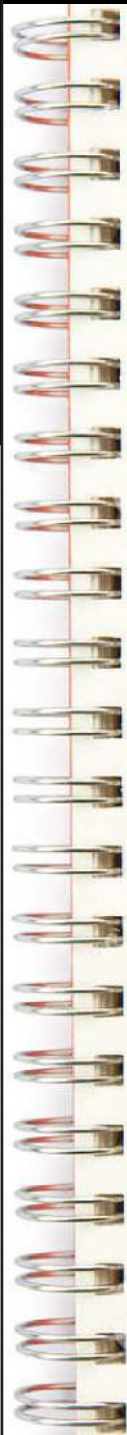
It will be better to add serial numbers in the first column of the table. How can we do this? Add a new column at the beginning of the table. Do you have to type all the serial numbers in the column? Let's follow the process given below and find out.



- ◆ Type '1' in the first cell and press *Enter*
- ◆ Select the cell by clicking on it.
- ◆ Move the mouse pointer towards the right bottom corner of the cell. What change can you observe?
- ◆ Have you noticed that the mouse pointer changed into '+' mark? This is called 'Fill Handle'. Fill handle helps you to copy data or formulae to the adjacent cells (Data Fill).
- ◆ Now drag the pointer downwards. How easy is it to add serial numbers!

Activity 6.3 - Let's find the sum

Fig.6.6 given overleaf is a page in the project diary of Amina. How far has their work progressed? What are the facts that they have to find out as part of the analysis? Read the diary entry carefully.



helped to see and talk to people with different tastes and ideas. People were so lovable!

28 August, Friday

Discussed in detail the classification and consolidation of the data collected. We shared our duties. Tomorrow being a holiday, we have decided to meet at Anu's house. I simply love the palpayasam that Anu's mother makes. If I go there Anu's mother will surely make palpayasam.

29 August, Saturday

Our plan was to draw a big table on a chart. We tried many times, but failed. At last, we sought the help of Thomas sir. He advised us to use a spreadsheet for doing such activities. He introduced us to a software named LibreOffice Calc. We felt relieved when he promised to arrange the facilities for doing this in the computer lab of our school.

5 September, Saturday

We have completed the consolidation of the questionnaire. Analysed and found out the facts to be tabulated

- * Total vegetables produced by a family.
- * Production of vegetables per acre by each family
- * Who are the best vegetable producers?

Fig. 6.6 A page from the project diary

You have read the page from Amina's project diary, haven't you? Now, expand the table with the data she wants to collect.

.....

.....

Fill Handle : To make any series easy....!

'Fill Handle' in the LibreOffice Calc can be used not only to add serial number, but also to add series of months, weeks and days. Open a Calc window and type 'Sunday' in a cell and try using 'Fill Handle' tool. You can see the days from 'Sunday' to 'Saturday' in the cells below. Try month and date just like this. How can we make a number series like 2, 4, 6...? Type '2' in the first cell and use the 'Fill Handle' tool. Type '2' in the first cell and '4' in the second and select both of them and drag downwards using the 'Fill Handle' tool. What changes do you notice? Next, make a number series of the numbers below hundred which is divisible by 4.

How can we find out the answers to the above questions from the table (Fig.6.2) created in LibreOffice Calc? First, let's find out how much vegetables each family produced.

To find the sum,

- ◆ Select the cell in which you have to get the sum total of the quantity of vegetables produced by each family. Isn't the cell empty now?
- ◆ Click on the Σ (*Sum*) tool in the toolbar (Fig.6.5).
- ◆ What do you see in the column (Fig.6.7) you selected for getting 'Sum'?



Really a Spreadsheet...!

Try to reach the last row or column of the spreadsheet. Oh...! How many rows and columns? Press the *Ctrl* Key and *Down Arrow* Key together. Don't you see the last row? See the name of the last row. Then Press the *Ctrl* Key and *Right Arrow* Key together. Your mouse pointer will reach the last column. See the address of that cell. Spreadsheets contain lakhs of rows and thousands of columns. You can reach the first cell by pressing the *Ctrl* key and *Home* Key together.

SUM		fx =SUM(F4:J4)						
	A	F	G	H	I	J	K	L
3	SI No	Spinach	Cucumber	Ladies Finger	Beans	Others	Total	
4	1	29	67	43	22	77	=SUM(F4:J4)	
5	2	22	12	8	13	10		
6	3	53	76	12	33	68		

Fig. 6.7 SUM Function

"=", "SUM", and the address of the first and last cells of which you have to find the sum (parted by ":")? What does it mean? It means 'the cell should have the sum of the data in the cells from F4 to J4'.

- ◆ Now, press the *Enter* Key. You will get the sum of vegetables produced by one family.

How can we find out the sum of the vegetables produced by the other families?

- ◆ Select the cell in which you got the sum.

Data Analysis Made Easy


- ◆ Find the sum of all the other cells using the 'Fill Handle' on this cell.
- ◆ Double click on the "+" button instead of dragging below. What happens now?

When we add serial numbers, number series is added in the nearby cells. But here, the formula for finding the sum is added instead. How can we find out itemwise sum of the vegetables produced? We have to find the sum of the data given in rows instead of that in columns. How can we find the production/acre of each family?

- ◆ We get the production/acre by dividing the total production by the measurement of land used.
- ◆ Let's write using the cell address as we have done to find the sum. Suppose the total production is entered in cell F7 and measurement of land in J7. Try to write the 'Function' including the cell addresses of them.

= /

- ◆ Enter this function in the related cell and press the **Enter** Key. You will get the production/acre.

Now you will see that some of the cells have long numbers. Select such cells and use tools like  (Fig.6.5). Identify the use of each tool and complete Table 6.2.

Activity 6.4 - Let's find out the Best Vegetable Producer

From the table how can we find out the best vegetable producer? The best vegetable producer will be the person who has produced the largest quantity per acre. It is difficult to find out one person from a long list of agriculturists. It will be easy, if we can arrange the list in descending order in accordance with the amount of production. Arrange the table in descending order using the steps given below. Fig.6.8 may help you.

- ◆ Select the entire table.
- ◆ Select **Sort** from the **Data** menu.
- ◆ Select the column which is to be sorted in the **Sort**

Functions in Calc

'Sum' is a function (program) in LibreOffice Calc. You can see a number of functions like this in LibreOffice Calc. You will get familiarised with more functions in the higher classes.



Tool	Use
	To increase the number of digits after the decimal point.
	

Table 6.2 Use of decimal setting tools

Do not Type the Cell Address, just Click!

Instead of typing in a function cell, you can use the following methods:

- ◆ Click on the function tool “=” (Fig.6.5) on the toolbar.
- ◆ Click on the cell in which the total production is given. You can see the address of the cell, can’t you?
- ◆ Enter the symbol of division “/”.
- ◆ Click on the cell in which the measurement of land used is given.
- ◆ Press the Enter Key. Don’t you get the production/acre?

Find the production/acre in all cells using ‘Fill Handle’ tool.

Key 1’. Here, it is production/acre column.

- ◆ Select from the option *Ascending/Descending*.
- ◆ Click *OK*.

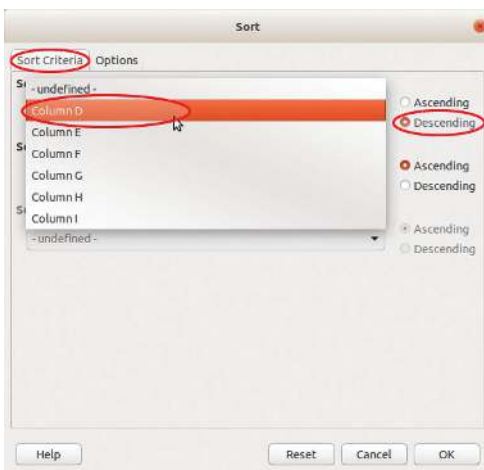


Fig. 6.8 Sorting

Now, you can see the name of the best vegetable producer on the top of the table. Note down the first three best vegetable producers’ names and the amount of vegetables they have produced. Don’t forget to save the changes you have made in the file.

.....

.....

.....

Activity 6.5 - Let’s beautify the table

Fig.6.9 shows the beautified tables prepared by Anu and Amina. See how the title ‘Questionnaire Consolidation’ is given.


What are the features of the title given here?

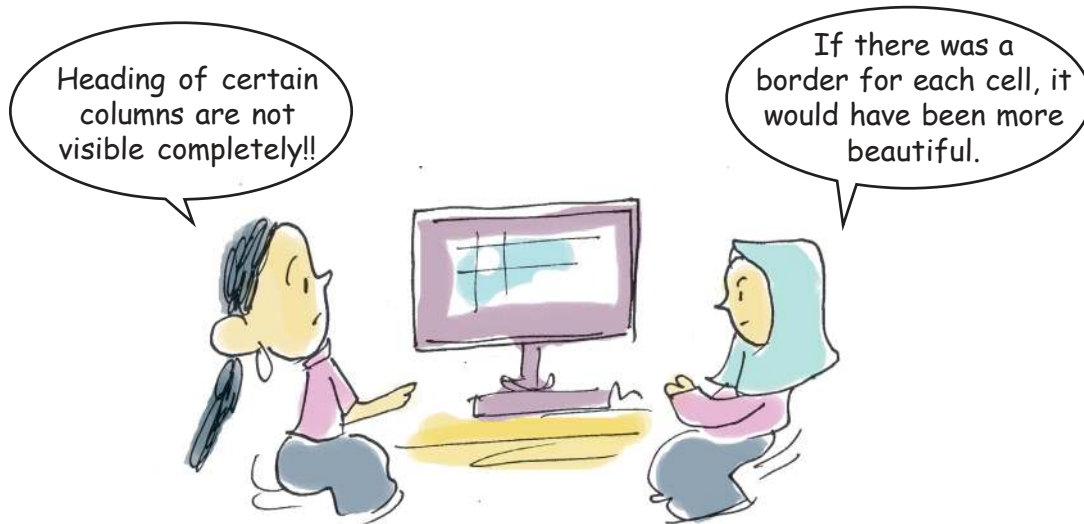
- ◆ It is the heading of the table.
- ◆ It is placed at the centre of the table in big letters.
- ◆ It is coloured.

- ◆
- ◆

Questionnaire Consolidation												
Sl No	House No	Total Land (In Acre)	Measure of Land Used (In Acre)	House Name	Quantity of Vegetables Produced (in Kg)						Production /Acre	
					Spinach	Cucumber	Ladies Finger	Beans	Others	Total		
1	367	1	0.8	Shanibhavan	29	67	43	22	77	238	297.50	
2	695	0.6	0.25	Chengala	22	12	8	13	10	65	260.00	
3	276	2	1.1	Pathuthara	53	76	12	33	68	242	220.00	
4	342	0.85	0.4	Snehtheeram	10	31	0	34	12	87	217.50	
5	654	2.2	0.9	Sarang	22	45	35	54	29	185	205.56	
6	345	2	1.5	Vallikalil House	35	89	30	67	74	295	196.67	
7	134	5	2.5	Rahna Manzil	61	123	45	95	86	410	164.00	
8	876	5.6	2.9	Manukkara	78	85	98	48	75	384	132.41	
9	791	3.5	1.7	Vatakkeveedu	37	56	60	25	12	190	111.76	
10	765	0.45	0.1	Saketham	1	5	2	0	2	10	100.00	
Total		23.2	12.15		348	589	333	391	445	2106	173.33	

Fig. 6.9 Formatted and beautified table

In order to prepare a heading like this, we have to merge the cells in which we have to add the heading. To merge cells, first of all select the cells to be merged. Then click  Merge Tool from the Tool Bar (Fig.6.5). Now, find out the cells to be merged in the table and merge it. You have already learned to resize and colour the letters in LibreOffice Writer, haven't you? Prepare a catchy title for your table too.



Cells should be formatted for solving these problems. Do the following activities to format the cells. Fig.6.10 may help you.

- ◆ Select the cells to be formatted.
- ◆ Select *Cells* in the *Format* Menu.

- ◆ Select *Alignment* from the window that opens.
- ◆ Check *Wrap text automatically* (Fig.6.10).

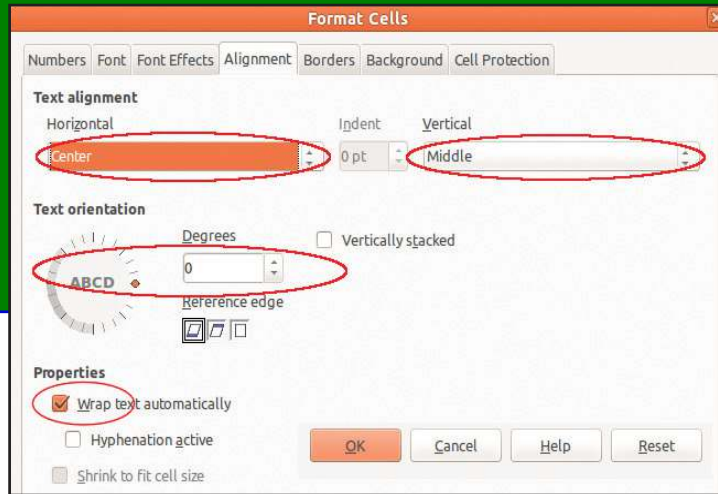


Fig. 6.10 Cell Formatting window

- ◆ Select *Text Orientation* and *Text Alignment* and make necessary changes.
- ◆ Click *OK*.

You might have noticed the border lines given to the cells in Fig.6.9. How can we give border lines to the cells in the table we have prepared? Complete the steps in the process given below and try it in Calc. Fig.6.11 may help you to do this activity.

- ◆ Select the cells to which border is to be given.
- ◆ Select from Format menu.
- ◆ Select from the window opened.
- ◆ Click on *Set Outer Border and All Inner Lines* from *Line Arrangement*.
- ◆ Change Style, Width and Colour of the line, etc. if necessary.
- ◆ Click *OK*.

Now, you have given borders to all the selected cells. Don't forget to save the changes.

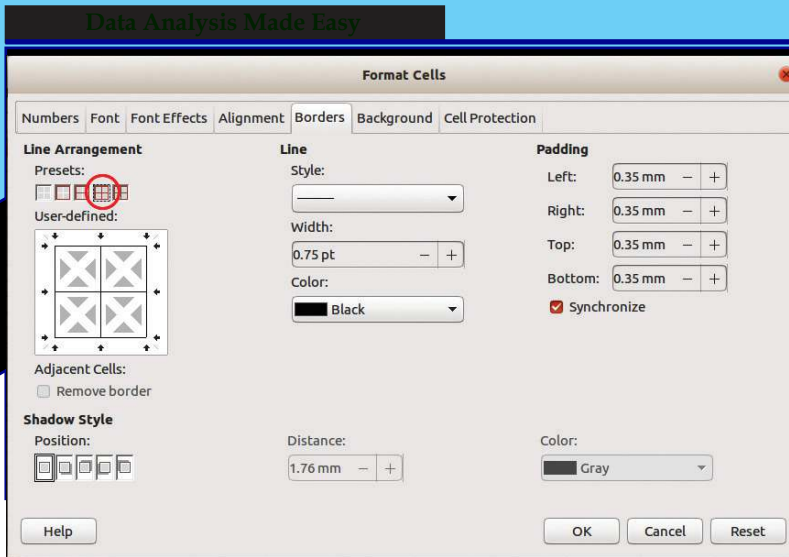
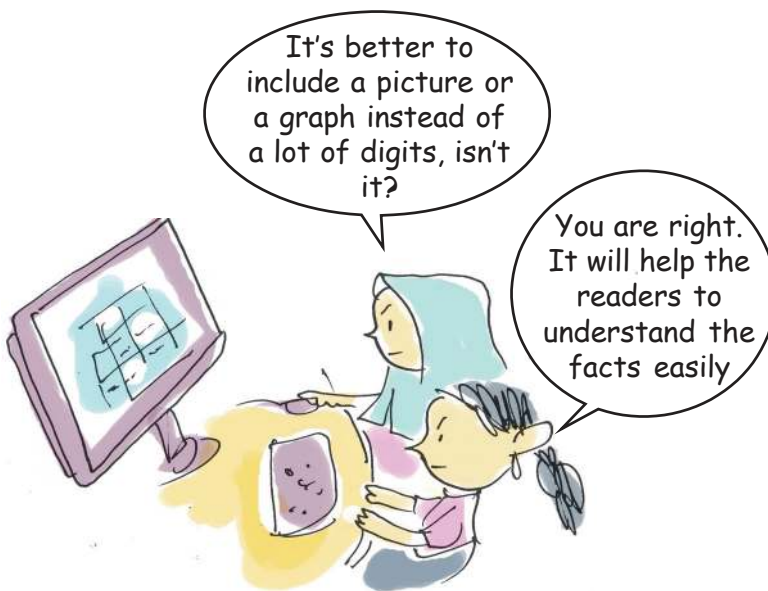


Fig. 6.11 Window to give border to cells

Activity 6.6 - Let's include a chart

The project work of Amina and Anu is in its last stage. They prepare to present their findings before an audience. They have to complete the project report which they are preparing in LibreOffice Writer. Then, they have to prepare a multimedia presentation using a presentation software.



Are the observations of Anu and Amina correct? Isn't it easier to communicate with the help of graphs and pictures than with big tables containing a lot of figures? There are options in LibreOffice Calc to create beautiful graphs representing the given data. You have already

Adjusting the Height of Rows and Width of Columns

We come across situations where we have to adjust the height of rows and the width of columns. Click on the column header in which the width is to be changed. Bring the mouse pointer to the nearby cell. You can see the mouse pointer changing into a double sided arrow mark. Now, you can drag and adjust the size of the column. (Fig.6.12). You can do this using the *Rows/Columns* option in the *Format* Menu.

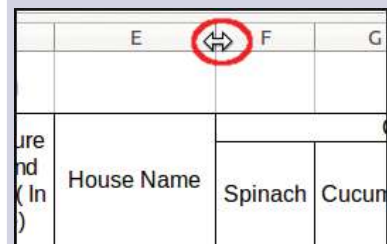



Fig. 6.12 Adjusting the width of the column

calculated the itemwise production of vegetables. How can we change them into a graph? Select the cells containing the data which are to be changed to a graph (Fig.6.13).

How can we select two parts of a spreadsheet together, as shown in Fig.6.13? If you select the second part after selecting the first part, the part selected first will be deselected. Now, press the *Ctrl* Key and select the two parts. You can see that both the parts are selected together.

Quantity of Vegetables Produced (in kg)					
	Spinach	Cucumber	Ladies Finger	Beans	Others
	29	67	43	22	77
	22	12	8	13	10
	53	76	12	33	68
	10	31	0	34	12
	22	45	35	54	29
se	35	89	30	67	74
l	61	123	45	95	86
	78	85	98	48	75
i	37	56	60	25	12
	1	5	2	0	2
	348	589	333	391	445

Fig. 6.13 Two parts are selected together in Spreadsheet

After selecting the cells, click on  tool in the toolbar (Fig.6.5). Do the following activities in the window that opens in the order given.

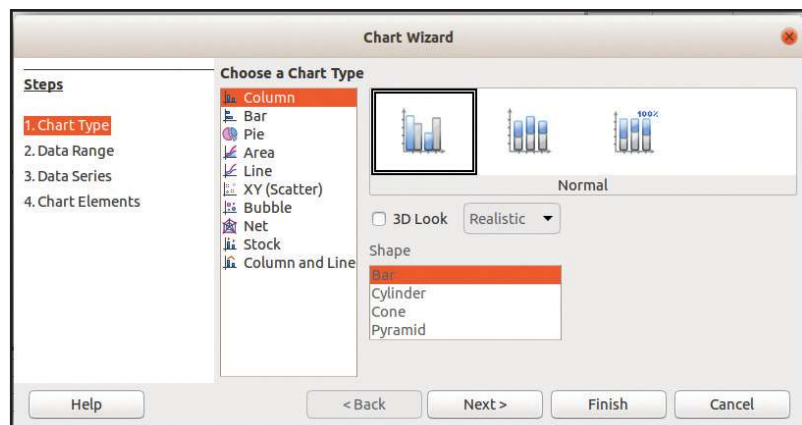


Fig. 6.14 Chart Wizard - Chart Type window

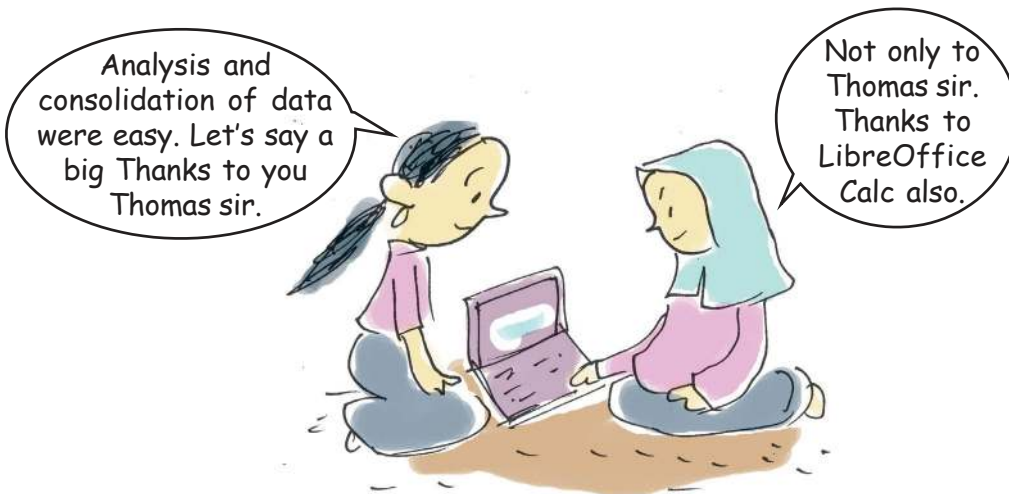
Data Analysis Made Easy

1. Select Chart Type - *Column/Bar/Pie* (Fig.6.14)
2. Click on *Next* button in the windows, *Data Type* and *Data Series*.
3. Provide a heading for the graph and names for X and Y axis in *Chart Elements* (Fig.6.15).



Fig. 6.15 Chart Wizard - Chart Elements window

4. Click on *Finish* button.



Let's Evaluate

1. Complete the table given below :

Name of column	Name of row	Cell address
J	19	
		AA44
B		B13
	123	P123

2. Prepare the calendar of January 2016 using the hints given below:
 - ◆ Use Fill Handle Tool.
 - ◆ January 1, 2016 is Friday.
3. The following table gives the population of five districts in Kerala, according to the Census 2011. Find out the total population using LibreOffice Calc.

Sl. No.	District	Male	Female	Total
1	Kasaragode	626617	675983	
2	Kannur	1184012	1341625	
3	Wayanad	401314	415244	
4	Kozhikode	1473028	1616515	
5	Malappuram	1961014	2124942	
Total				

4. The following picture shows the image Manu got when he clicked on a tool in LibreOffice Calc. Study the picture and write down your observations.

The screenshot shows the LibreOffice Calc interface. The formula bar at the top displays the formula `=SUM(F4:J4)`. Below it is a spreadsheet with columns A through L and rows 3 through 6. The data in the spreadsheet is as follows:

	A	F	G	H	I	J	K	L
3	Sl No	Spinach	Cucumber	Ladies Finger	Beans	Others	Total	
4	1	29	67	43	22	77	=SUM(F4:J4)	
5	2	22	12	8	13	10		
6	3	53	76	12	33	68		

- 1)
 - 2)
 - 3)
 - 4)
5. "Spreadsheet software makes academic projects easier." Substantiate your views.

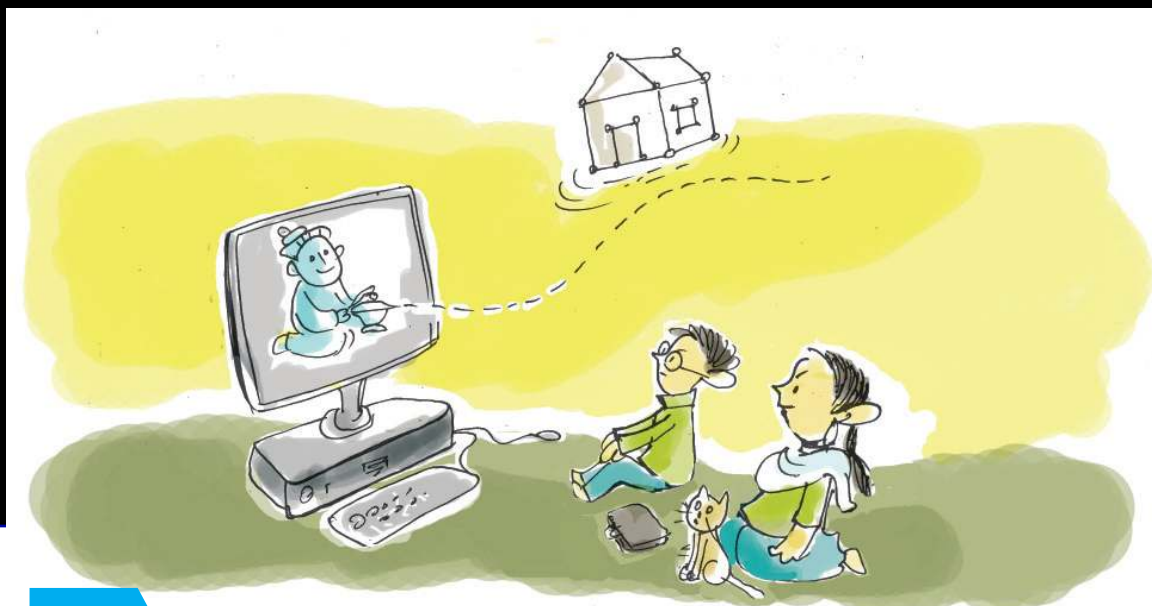


Extended activities

1. Prepare a table in LibreOffice Calc of the height (in metres) and the weight (in kilograms) of the students in your class. Calculate the BMI (Body Mass Index) of all the students. Arrange the table with the student with high BMI appearing first. Beautify the table.
(Hint: BMI = Weight in Kg / (Height in Metre)²)

2. Collect the monthly expenditure on various items of ten families living near your school. Consolidate the data in LibreOffice Calc. Find out the total expenditure of each family and total expenditure on each item. Prepare a pie diagram showing the expenditure on each item. Beautify the table.





7

Laboratories in your Computer

The growth and development of science depends on experiments and observations. The basis of science is the lessons that the primitive man got from his surroundings and experiences. Each finding and realisation is the stepping stone to the next phase in the growth of science. In this digital age, we make use of computer technology to its maximum in every walk of life. Today, we have Virtual Labs which help even highly complicated experiments in the field of scientific research. Many software packages are also available today to make our science lessons interesting. Let's see some of them.

Particles of substances and temperature

Solid
Liquid
Gas

- Is the arrangement of particles in the solid, liquid and gaseous states the same?
- In which of these states do particles remain very close to each other?
-

Laboratories in your Computer

Have you ever thought of the elements with which our universe is made of? What are the different varieties of substances that we see around us? Substances have different shapes, features, colours, smell and tastes. Our universe got its wonderful shape and beauty from these substances.

The air we breathe, the water we drink, the materials we use to construct houses, etc. have different features. All these substances are made up of atoms. You have learned in your science classes about the arrangement of atoms in these substances. It is difficult to see and understand the features of atoms even with the help of a microscope. But, nowadays there are simulation software packages which help us to understand the atomic features of substances. PhET in IT@School GNU/Linux is such a software. Let's do some activities using this software.

Activity 7.1 - Let's change the temperature of a substance

Do you think that a change in the temperature of a substance causes a change in the nature of atoms in it? Let's observe this phenomena through PhET simulation.

PhET Simulation - Certain Hints

- ◆ Open the *States of Matter* from PhET.
- ◆ Click on *States* and run them.
- ◆ Find out the facilities in the main window of States of Matter simulations with the help of Fig.7.1 and do the experiments.
- ◆ Click on number '3' to select a substance.
- ◆ Choose a suitable unit of temperature ($^{\circ}\text{C}$ or 'K') from the place where number '4' is marked (Fig.7.1).

Let's change the temperature of a substance. The simulation will show us how this substance changes when the temperature is changed. For this, click on the button where '1' is marked in Fig.7.1. Then, the temperature can



be increased or decreased by dragging the mouse. When the required temperature is reached, release the mouse.

What did you understand from this simple activity? In which state are the particles closely packed - solid, liquid or gas? What difference does it make in the nature of atoms, as the temperature changes? Observe and make a note of it.

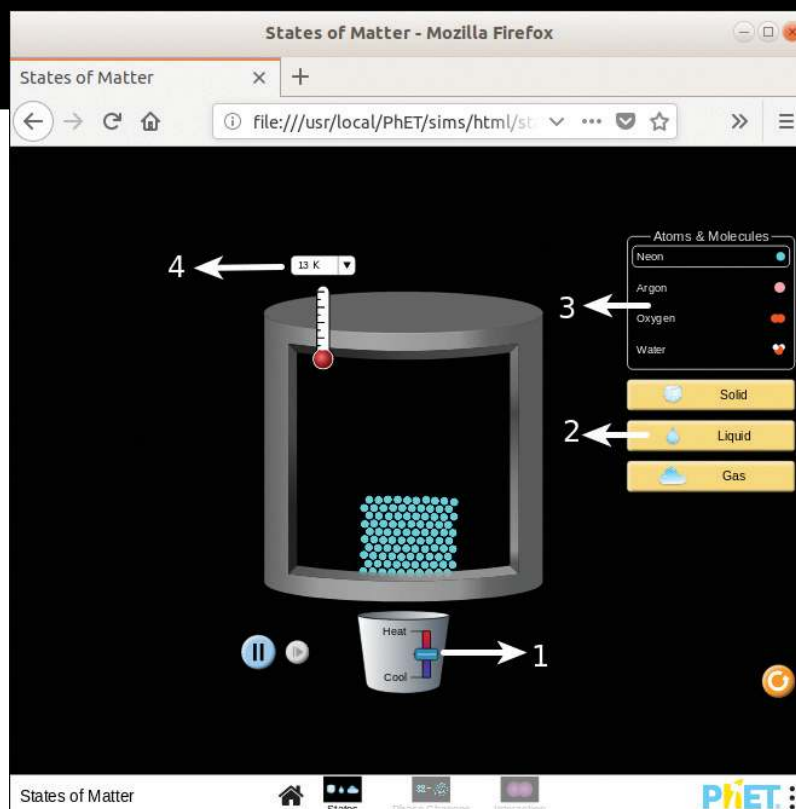


Fig.7.1 PhET - States of Matter window

1. To change the temperature
2. To change the state of substances
3. To select different substances
4. To change the unit of temperature ($^{\circ}\text{C} \rightarrow \text{K}$)

Activity 7.2 - Let's complete the table

Table 7.1 from your Science textbook is given below. Complete the table with the help of PhET software.

Laboratories in your Computer

How does the nature of atoms change when they absorb heat?

- ◆ Energy of particles :
- ◆ Distance between the particles :
- ◆ Attraction between the particles :
- ◆ Movement of particles :

Table 7.1 Fill up using PhET software

PhET (Physics Education Technology)

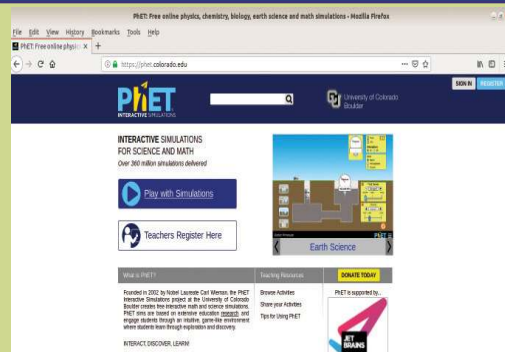


Fig. 7.2 PhET website

PhET is a collection of interactive simulations which help us to teach and learn Science and Mathematics. It is prepared by the 'Open Educative Resources', a project of the University of Colorado Boulder in America. The project was started by the Nobel Prize Winner Carl Wieman in 2002. PhET is the abbreviation of Physics Education Technology. Though it started with simulations for Physics, later it spread to other branches of science too.

PhET simulations are available online. PhET Online Simulation is available in the website 'phet.colorado.edu'.



Simulation software

Experiments which cannot be carried out even in your school science lab can be done using software. Science simulations are imitations of scientific operations in the real world created in computers using software. Using this, we can closely watch and study the complicated and dangerous scientific phenomena, or those which happen in far away places. Most often, these simulations are created just for the purpose of observation study rather than to get a copy of scientific facts. To observe how the same scientific phenomena functions in different situations, it is possible to arrange the values of these elements that control the phenomena in this software. Such simulations are known as interactive simulations. *Stellarium*, *KStars* (study of the sky and the stars) are some examples of simulation software.

Activity 7.3 *Let's complete the table using PhET software*

Table 7.2 from your Science textbook is given below. Complete it with the help of PhET Software.

	When solid changes to liquid	When liquid changes to gas	When gas changes to liquid	When solid changes to gas
Movements of particles				
The distance between particles				
The attraction between particles				
Energy of particles				

Table 7.2 Table in Science Textbook

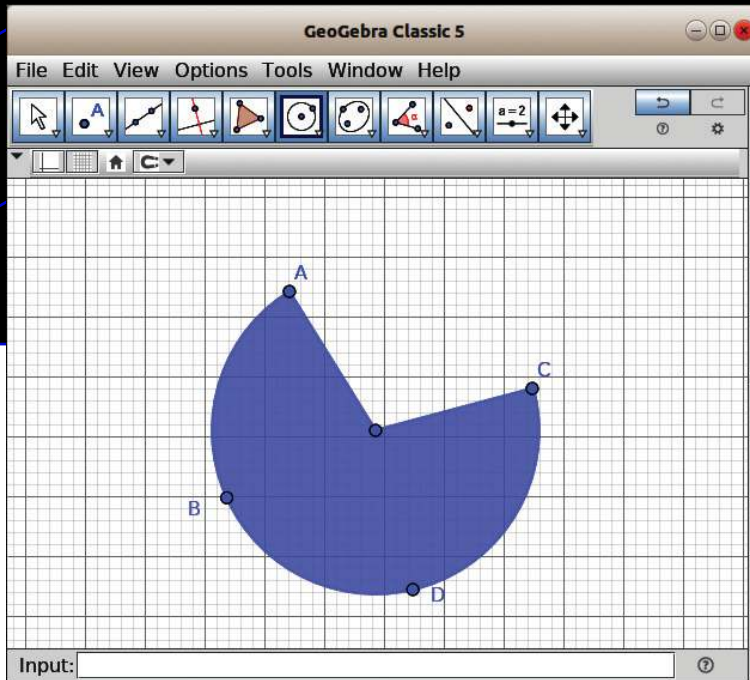
**Let's Evaluate**

1. Display the state of the particles of water molecule at 120°C with the help of PhET software and save a screenshot of it.
2. Display the solid state of Oxygen with the help of PhET and save a screenshot of it.
3. Display the state of water and Argon at 350K and save a screenshot of it. Compare these states.
4. Observe the movements of particles in solid, liquid and gaseous states in PhET and prepare a note.

**Extended Activities**

1. Open PhET Online Simulation Lab (phet.colorado.edu) and find out more activities.
2. Find out and activate other simulations in the PhET software related to the lessons in your Science textbook.

Geometrical constructions



You have drawn many shapes and observed their features as part of learning geometrical constructions, haven't you? How many angles are there between two lines? There will be four angles between two intersecting lines. To examine whether there is any relation between these two angles, you have to make more geometrical constructions in your notebook and calculate their measurements to reach a conclusion. We can do these activities with the help of some software in our computer.

Software packages like GeoGebra, Drawing Geometry, etc. help us to draw geometrical constructions and to see the changes in their measurements. GeoGebra is included in the education package in IT@ School GNU/Linux.

Open the main window of GeoGebra and observe various facilities available in it. (Fig.7.3)

There are many tools in GeoGebra which help to construct geometrical shapes. These tools are arranged in groups. For example, tools for drawing points are included in group '2'.



Marks Hoven

GeoGebra is a software which helps in the study of Mathematics. This software is available in different operating systems. We use GeoGebra which works in GNU/Linux for doing different classroom activities. Marks Hoven, who was a teacher in the University of Salsburg, Austria developed GeoGebra in 2001 and it is still being modified. This is purely a Free Software. Michael Borchers, a school teacher is another person who plays an important role in developing this software.

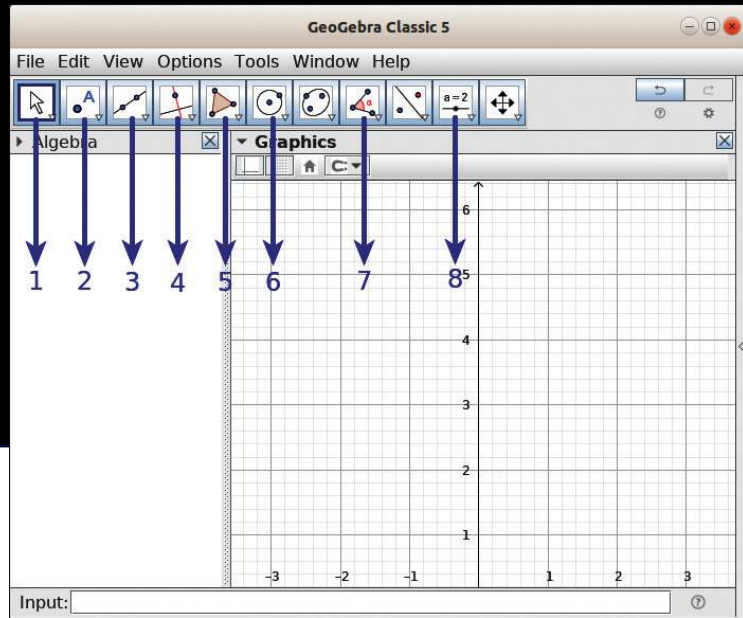


Fig. 7.3 GeoGebra main window

1. Tool to move
2. Tools related to points
3. Tools related to lines
4. Tools to draw verticals and parallels
5. Tools to draw polygons
6. Tools to draw circles
7. Tools related to angles and measurements
8. Tool to add sliders and texts.

Table 7.3 Different tools in GeoGebra

Activity 7.4 - Let's draw and measure angles between lines

Let's see how we can draw and measure an angle between two lines, with the help of GeoGebra software. Select the *Segment* tool from the third group of tools to draw small lines and click on two points of the surface to draw the line AB. Like this draw the line CD. (Fig.7.4)

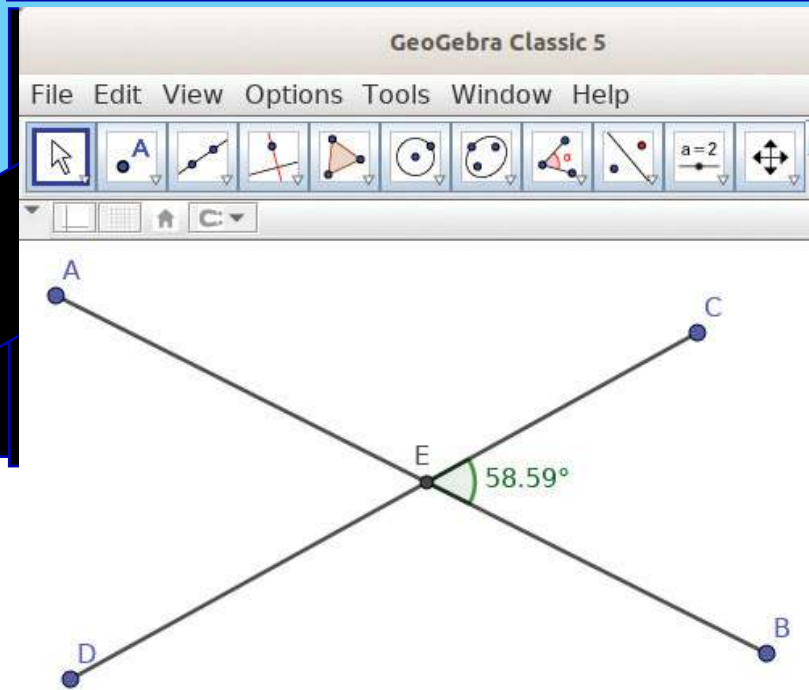


Fig.7.4 Intersection of segments drawn in GeoGebra

We have to draw the joining point to mark the angles between two lines. For this, select *Intersect* tool from the points related tools (in Fig.7.3 Group 2) and click on the two lines.

Select *Angle* tool. Click on and rotate clockwise on the points which decide the angle. Click on and rotate anticlockwise and find out which angle measurement is received.

We can change the position of Vertex in the picture using the *Move* tool. Click on the *End points* of the segments and drag it, and observe how the measurements of angles change.

Activity 7.5 - Let's draw a triangle

How do you draw triangles in your notebook? Usually we draw triangles by joining three lines which are not in the same line, with the help of a ruler and a pencil. In the same way, you can draw triangles using GeoGebra. Besides this, you can also draw triangles and polygons easily, using the *Polygon* tools (Group 5 in Fig.7.3).

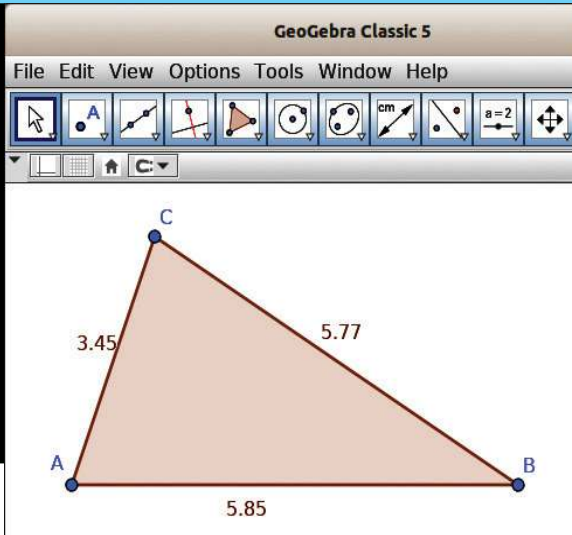


Fig.7.5 Triangle drawn in GeoGebra

Let's change the colour and shape of the picture

Place the mouse inside the picture drawn and click the right button. Select 'Object Properties' from the menu opened. You will get a side window. There are facilities in this window to change the colour and thickness of lines.

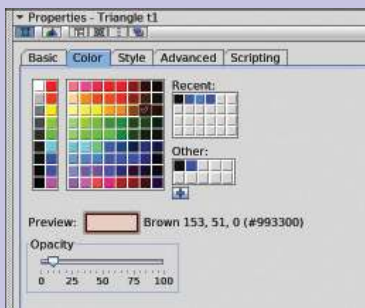


Fig.7.6 Object properties Window

Open GeoGebra window and choose *Polygon* tool. Click on three points corresponding by which are not in the same direction and finish clicking on the point you started with. What are the measurements of the triangle you have drawn? Choose *Distance or Length* tool (Group 7 in Fig.7.3) from the angles and measurements tools and click on each side of the triangle using the same tool. See the measurement you get when you click inside the triangle. Observe what happens when you click inside the triangle using the *Angle* tool and the *Area* Tool and complete Table 7.4.

Activity 7.6 - Let's prepare a heading

How can we give a heading to the picture drawn in GeoGebra? Select the *Text* tool (group 8 in Fig.7.3) and click on the Canvas to give text. Type the text in the edit box of the window opened, and click on the **OK** button. To make the heading attractive you can use the *Object Properties* facility.

You can also use *Regular Polygon* tools to draw triangles and polygons. When you mark any two points in the canvas using this tool, there appears a window demanding the numbers of sides of the polygon. When you give the numbers of the polygon in this window

Tools for measurement

Method of using tools	Result
Click on the lines using 'Distance or Length' tool	Got the length of lines
Click inside the triangle using 'Distance or Length' tool	
Click clockwise in the vertices of the cones using 'Angle' tool	
Click inside the triangle using 'Angle' tool	
Click inside the triangle using 'Area' tool	

Table 7.4 Tools for measurement

and click *OK*, a polygon will appear. Observe the features of the polygon that appeared and save it in your folder.

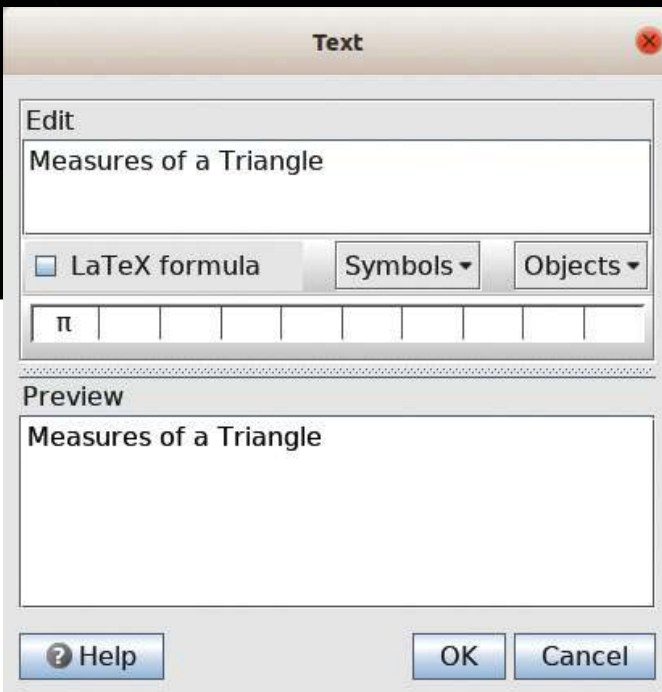


Fig.7.7 Text Edit Window

Activity 7.7 - Let's draw circles

In GeoGebra, there are many tools used to draw circles. (Group 6 in Fig.7.3)

Let's see what they are.

1. A circle with one point as its centre and passing through another point.
2. A circle passing through three points.
3. A circle with fixed centre and radius.

To draw a circle with one point as its centre and passing through another point, select *Circle with Center through Point* tool and click on two different points. Like this, use the other available tools and practise drawing circles.

Let's save

To save your constructions prepared in GeoGebra use *Save* in *File* menu. The file is saved as *ggb* extension.

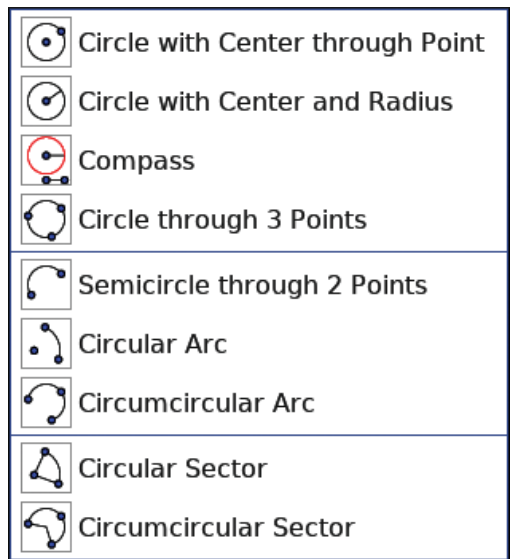


Fig. 7.8 GeoGebra circle : related tools



Let's Evaluate

1. Draw two horizontal lines. Draw a vertical line across them and measure all the angles formed.
2. Draw a Regular Polygon with five sides in GeoGebra and give blue colour to it. Name it as 'PENTAGON'.
3. Mark three points 'A, B, C' and draw a circle passing through these points. Join A, B, C and draw a triangle. Give different colours to the circle and triangle.
4. Mark a point 'P' and draw a circle of radius 3 cm centered at 'P'. Measure the length of radius (Distance or Length tool).



Extended activities

1. Draw a pattern as shown in Fig.7.9 with the help of *Regular Polygon* Tool. (Hints: *Midpoint* tool helps us to find out the midpoint of each side of a polygon).
2. Draw a triangle using *Polygon* tool and find out the circumference and surface area of the triangle.
3. Draw the picture on Page 58 of your Mathematics textbook using GeoGebra (Fig. 7.10)

Hints: Draw a polygon with 8 sides using 'Regular Polygon' tool. Click on each side anticlockwise and draw another polygon with eight sides on each side.

4. Draw Fig. 7.11 using the segment tool. Measure the outer angles, table them and find out their sum. Repeat your observation with different number of sides.

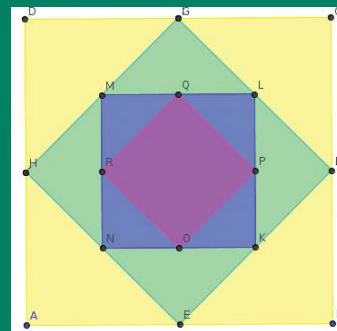


Fig.7.9

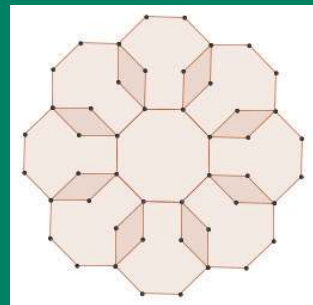


Fig.7.10

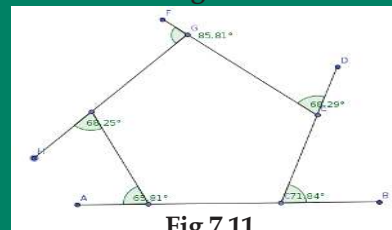
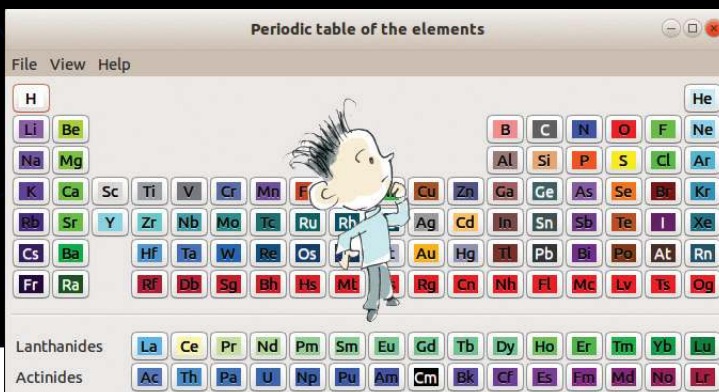


Fig.7.11

Digital Periodic Table



You have already observed the features of particles in different states of substances, with the help of PhET software. All substances on the earth are made of different elements. Elements can be classified based on their features. Periodic Table is a table in which elements are classified in this way. See the periodic table given in your Science Textbook. How many features of elements can you trace out from this table?

- ◆ Atomic Number
- ◆ Symbol
- ◆ (Scientific) Name

What will you do if you want to know more about elements? More information can be gathered from the Internet or from books. There are many software packages which can provide us with the information scattered in many places. Most of them are interactive software which help us to do many experiments and arrange the elements in different ways.

Kalzium available in IT@School GNU/ Linux is an interactive periodic table which provides facilities to study and compare elements. (Fig.7.12)

Let's open the *Kalzium* software and see the facilities available in it. In order to learn more about elements, they are arranged in different ways in periodic tables. Select these tables from the menu marked in red Fig.7.12 and observe. Among these tables, which one is given in your science textbook?

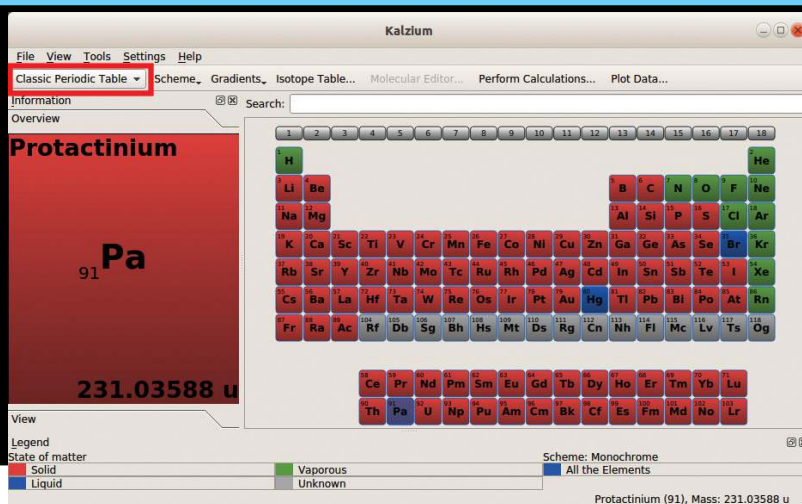
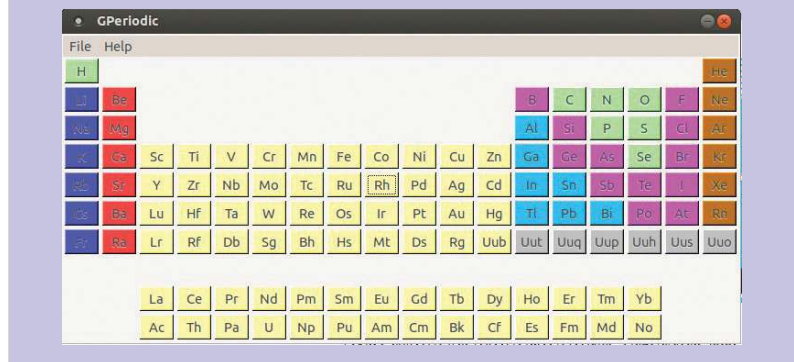


Fig. 7.12 Main window of Kalzium

Periodic Table

Gperiodic, *Periodic Table of Elements* etc. are other software, like *Kalzium* that provide details of periodic tables. These software include a lot of information about each element.



Activity 7.8 - Let's find out the features of elements

Open *Kalzium* software and click on each element. In the window that opens, facilities are available to know the different features of the element you have selected. For example, let's click on Aluminium (Al) in the periodic table. What are the details that appear? Observe the details of Aluminium by clicking the tabs on the left side one by one. See the details of Gold (Au), Iron (Fe), and Zinc (Zn) with the help of *Kalzium* software and prepare a table as shown in Table 7.5.

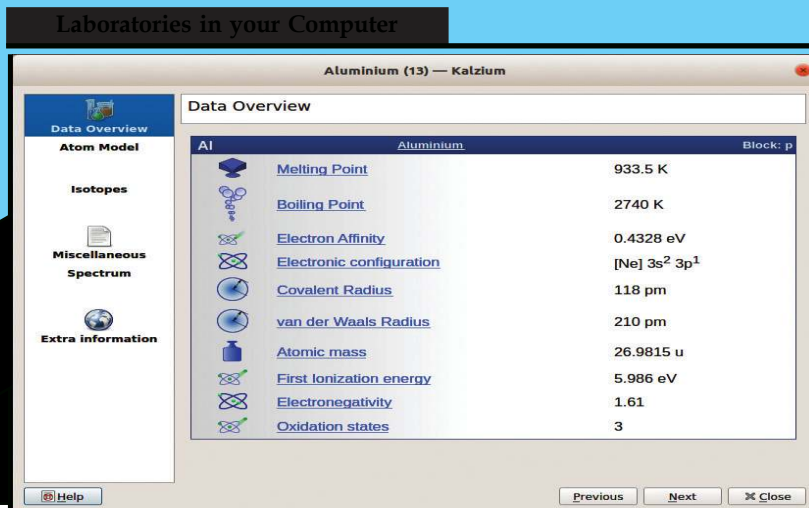


Fig. 7.13 Kalzium - Data Over View Window

Element	Aluminium
Symbol	Al
Melting Point	933.5 K
Boiling Point	2740 K
Atomic Mass	26.9815 u

Table 7.5 Features of the element - Aluminium

Activity 7.9 - How elements got their names

In the earlier times, the elements were named after places, countries, names of scientists and planets.

These details about elements are given in *Kalzium* software. Select an element and click on the Miscellaneous tab on the left side of the window. You can see the name of the person who discovered the element, the year in which it was discovered and why it is named so. The details of Zinc (Zn) are given in Fig.7.14.

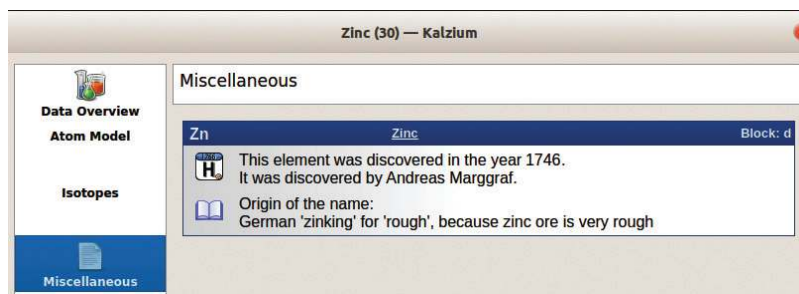


Fig.7.14 Kalzium - Miscellaneous Window



Complete Table 7.6 with the help of *Kalziium* software.

Element	Symbols	Basis of name	Person who discovered	Year of discovery
Americium	Am			
Francium	Fr			
Rubidium	Rb			
Copper	Cu			
Titanium	Ti			
Chlorine	Cl			

Table 7.6 Table to be completed with the help of *Kalziium* Software



Let's Evaluate

1. Display the model of Chlorine atom using *Kalziium* software. Take a screenshot and save it.
2. Symbols are used to represent elements. English letters are used as symbols. Complete Table 7.7 with the help of *Kalziium* software.

Element	Latin name	Symbol
Silver		
Hydrogen		
Tin		
Antimony		

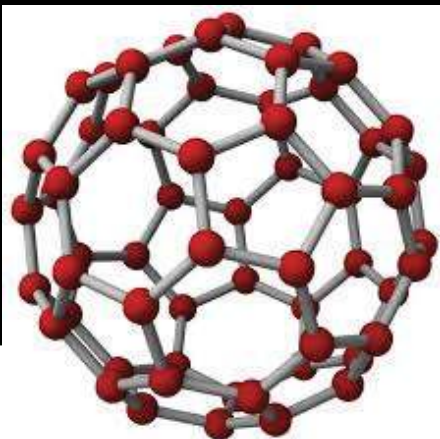
Table 7.7 Elements and Symbols



Extended activities

1. Find out and use the other software packages in IT@School GNU/Linux related to periodic table of elements.
2. Tabulate the elements in their chronological order of discovery with the help of *Kalziium* software.

Models of Molecules



Water (H_2O) is a compound familiar to us. Water is a combination of Hydrogen and Oxygen atoms. Molecules are made of minute atoms. Molecules cannot be seen with our naked eyes. Have you ever thought about them? Fig. 7.15 shows the model of a molecule of Methane (CH_4) which is contained in bio-gas.

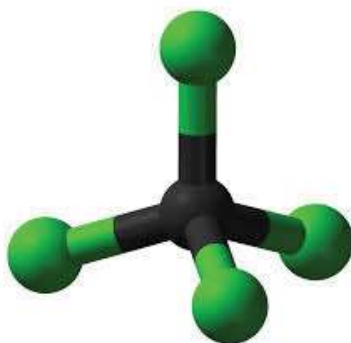


Fig. 7.15 Model of Methane molecule

As part of your classroom activities in Science, you might have made models of molecules using coconut vein (eerkil) and pearls. But with the help of certain software packages, we can make models of molecules easily. The software *ghemical* which is included in IT@School/GNU Linux helps to create models of software molecules and to monitor various methods. Open the *ghemical* window and familiarize the tools.

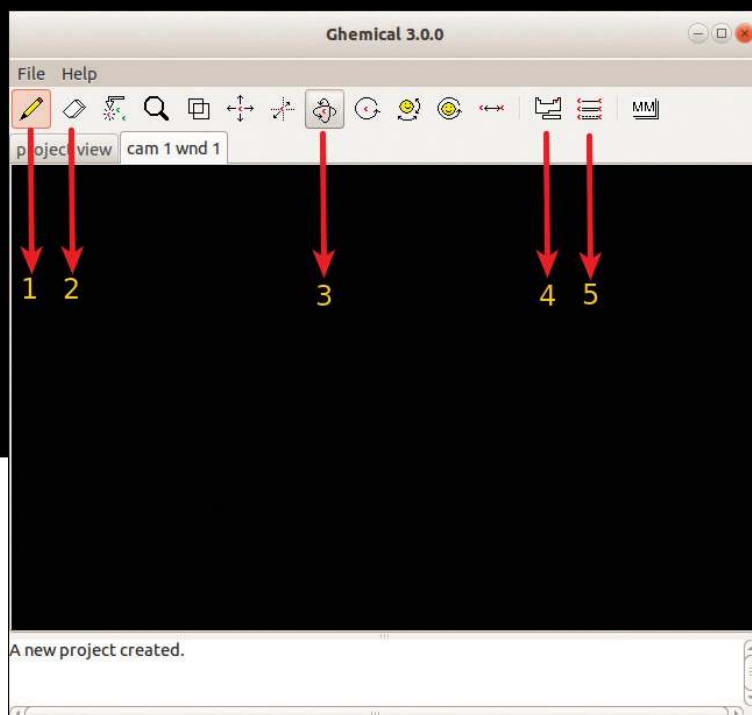


Fig.7.16 ghemical Window






Tool No. (Fig.7.16)	Tool Icon	Use
1	Draw 	To draw
2	Erase 	To erase something
3	Orbit XY 	To turn the models three dimensionally
4	Set the current element 	To include atoms of elements
5	Set the current bondtype 	To select the chemical bond

Table 7.8 Major tools in ghemical and their uses

Activity 7.10 - Let's make a model of water molecule

Let's make a model of the molecule of water using *ghemical* software. You know that a molecule of water contains two Hydrogen atoms and one Oxygen atom. Let's see how we can make a model of a water molecule using *ghemical* software.

- ◆ Open the *ghemical* software.
- ◆ Click on the tool which is used to include atoms and select Hydrogen atom.

Laboratories in your Computer

- ◆ Click on the canvas using *Draw* tool and include two Hydrogen atoms. Include Oxygen atom in the same way.
- ◆ Right click on the canvas in the window that appears, click on *Render, Label Mode and Element* correspondingly and show the name of the element.
- ◆ Click on the *Set the current bondtype* to select Chemical bond to combine atoms.

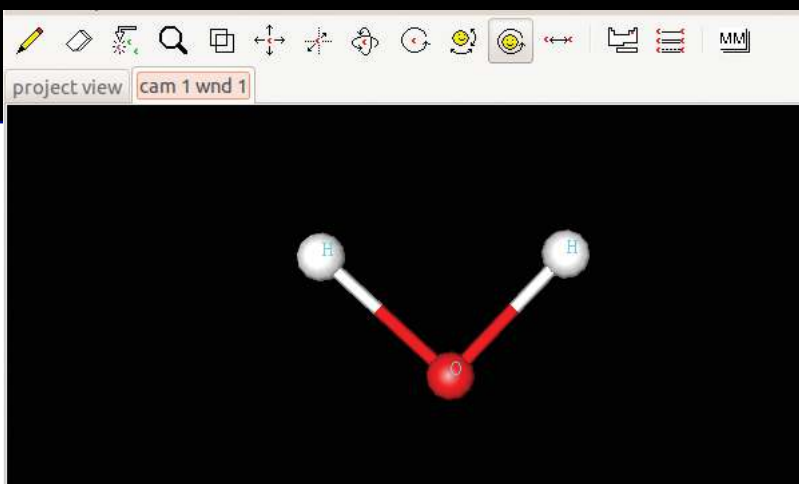


Fig. 7.17 Model of an molecule created using gchemical

- ◆ Drag from one atom to another using *Draw* tool.
- ◆ Right click on the canvas and in the menu that appears click on *Compute, Geometry Optimization* correspondingly to arrange the molecules.
- ◆ Select *Orbit XY* tool to rotate the model of molecule from the toolbar.
- ◆ Rotate the molecule to various directions using the mouse and observe it.



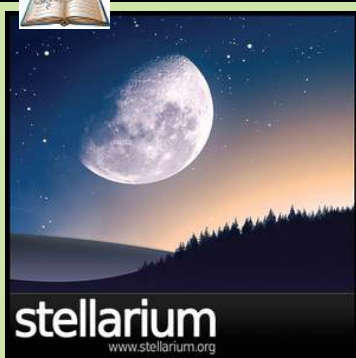
Let's Evaluate

1. Prepare a model of Ammonia (NH_3) molecule and present it.
2. Make a model of Carbon dioxide (CO_2) molecule and save its screenshot.



Extended activities

1. Which are the software packages available in IT@ School GNU/Linux to make and observe the models of molecules? Work using these software.
2. Collect models of different molecules from the Internet.



Stellarium is a simulation software providing different sights of the sky. We can set the sky on any day or any time in our computer with the help of this software. This is a very useful software for sky watchers. We can find out the constellations, shapes, their names and the distance between them. There are details of more than 6,00,000 stars in this software.



8

Presentations Made Attractive



"Do you know me? I'm an overhead projector. In earlier days, images and texts were presented before an audience using me. But after the arrival of computers, I have been relegated to the attic of the school building. But I am not sad. After all, I had been replaced by a better one".

Have you read the monologue of an overhead projector? Overhead projector was an important equipment we had used earlier for presentation. Using this projector, we could present images and texts prepared in transparent sheets. We used to project the images and texts on screens or walls using light rays. Haven't you seen the slot for keeping the sheet and the mirror for reflection in the above picture? It was a major limitation of the overhead projector that motion pictures and certain colours could not be projected. The development of technology eliminated the need for overhead projector. Today, we can effectively present our ideas before others using pictures and motion pictures with the help of the computer.

Presentations Made Attractive

Did you understand what Anu and Amina were discussing? They were discussing how they can effectively present the findings of their project. You already know that they were doing a project based on the lesson **Retrieve Fields** in their Basic Science textbook.

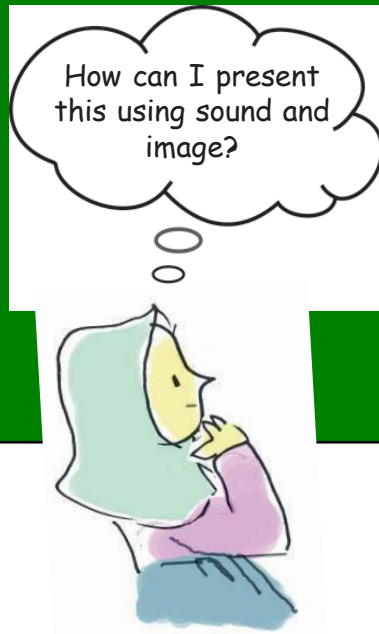
Can we help Anu and Amina? What details are to be presented before the audience?

- ◆ Information related to the project such as methodology, limitations and scope of the study
- ◆ Findings and conclusions
- ◆ Pictures and other data collected as part of the project
- ◆ Audio and video clips of project activities, interviews, discussions etc.
- ◆ Tables, charts, graphs
- ◆ Relevant portions of the project report
- ◆
- ◆

These details are now stored in computer and CD, aren't they? These are to be clearly presented before the audience at the right time. Imagine that we are using an overhead projector for this. How many sheets will be required for preparing these pictures and texts? But now, these can be done easily using computers. Presentation with sound effect and images is possible using the multimedia presentation facility available in computers. There are so many software packages to help in this. These are known as presentation software. The following are some of the popular presentation software. (Table 8.1)



Multimedia presentation is a slide show. What is a slide? It is similar to the transparent sheet used in overhead projector. Presentation slide is a slide prepared on one page containing information to be presented at a time. Instead of slides prepared on sheets by drawing and writing, we use the computer technology for preparing slides. That's all.



Software	Developed by
LibreOffice Impress	The document foundation
Apache Open office Impress	Apache Software foundation
Kaligra Stage	KDE
Key note	Apple Inc.
Microsoft Power Point	Microsoft

Table 8.1 Different presentation software packages and developers.

What are the details to be included in the presentation prepared by Anu and Amina? Prepare a note after discussing the given hints and points.

- ◆ Text, pictures, sounds etc. that are to be included in each slide
- ◆ The background colour of each slide
- ◆ The order and manner in which the slides are to be displayed before the audience
- ◆

Presentation Storyboard

Storyboard is a term we hear in connection with film making, animation etc. Before the shooting of a film so many preparations are needed. First, a story for the film is to be identified. Then, a script will be formulated from the story. Details such as camera position, dialogue of characters, movements, how and where each scene is to be displayed etc. are to be decided well in advance before the shooting begins. The next stage will be preparing notes which include minute details that are not there in the script. These notes are known as storyboard. Storyboard can be prepared by writing or drawing. The details of each and every scene are available in the storyboard. In the same way, before a multimedia presentation is prepared, the details about how and where the text, table, picture, sound, video etc. are to be displayed before the audience should be decided in advance. The outline prepared in this way before making a presentation is called presentation storyboard. A film storyboard contains the details which are to appear in each scene whereas a presentation storyboard contains the details to be included in each slide. It should be a note which contains all the details about the colour, type, form, size of the font, background colour, movement of letters, how and where pictures are to appear etc. It should be a note including also all the changes to be made in a multimedia presentation.

Presentations Made Attractive

Complete your storyboard by observing the model of presentation storyboard given below. You can improve your storyboard while preparing the presentation.

Now, let's try to prepare a presentation on the basis of the completed storyboard. We use the LibreOffice Impress software for this purpose.



LibreOffice

LibreOffice comprises a package which includes software like *Writer* (Word Processor) which is used to prepare letters, notices etc.; *Calc* (Spreadsheet) which is used to analyse information; *Impress* software is used for presentation; *Base* used to handle data; and the *Draw* is used to handle pictures. LibreOffice editions are now available for all important operating systems. This has been developed by The Document Foundation. The main aim of LibreOffice is to create a non-commercial office package supported by ODF (Open Document Format). The name LibreOffice is created by joining the word *libre* which means freedom and the word *office*.

Model Storyboard	
Slide: 1 Subject- Land utilisation and Vegetable cultivation <div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center;"> <i>Collage of various vegetables</i> </div>	Font size : 44 Colour : Pink Background : Sky blue Animation : Fade in Slide transition :
Slide : 2 Objectives of the Study 1. To find out the area of the land available. 2.To find out the area of land used for agriculture. 3. 4.	Font size : (Objectives of the study : 44) Others : 32 Colour : Red Background colour : Light Yellow Animation : Fade in Slide Transition:
Slide : 3 Methodology 1. 2. <div style="border: 1px solid black; border-radius: 15px; padding: 5px; text-align: center;"> <i>Cartoon by a student</i> </div>	Font size (Methodology : 44) Others : 32 Colour : Red Background colour : Light Yellow Animation : Fade Slide Transition :

Activity 8.1 - Typing the Content

To type the content, open LibreOffice Impress window. Then try to do the activities mentioned below.

1. The window opened now is the one meant for choosing different types of templates. Click the *Cancel* button below *select a template* window to enter the main window.
2. Type the required content by clicking the textboxes (Fig.8.1) named *Click to Add Title* and *Click to Add Text*.

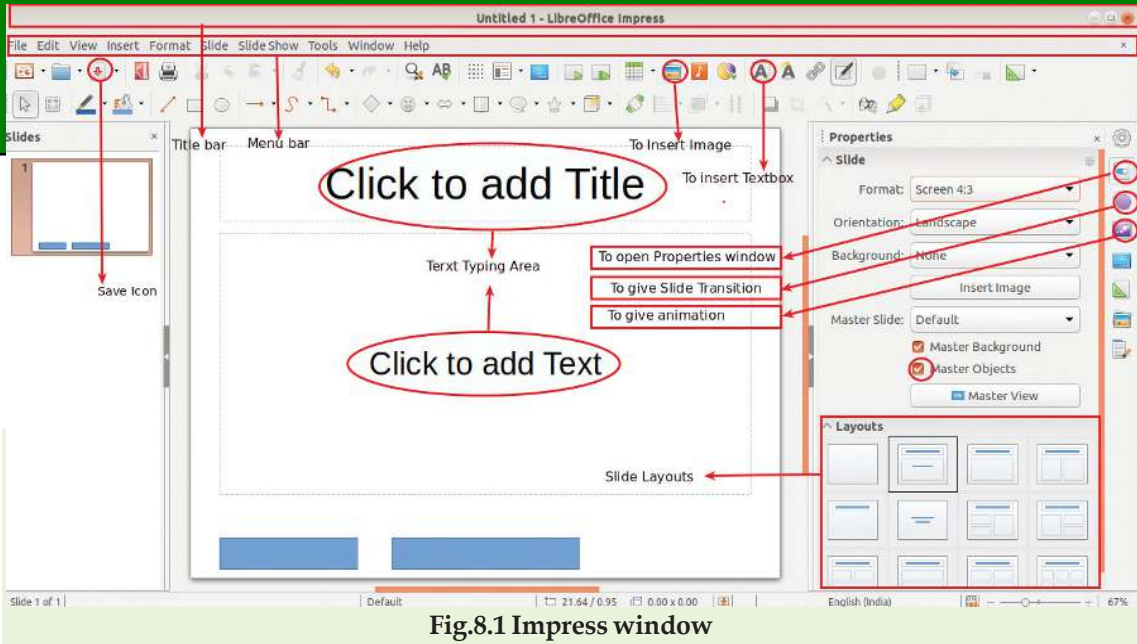


Fig.8.1 Impress window

3. Insert the next slide. As seen in Fig.8.2, by clicking *New Slide* in *Slide* menu, a new slide can be added. Don't forget to select the required layout while inserting the new slide. Textbox can be created by clicking the **A** tool seen at the top of the window.
4. Uncheck *Master Objects* in *Properties* window and then select suitable layout from slide layout region (Fig.8.1).

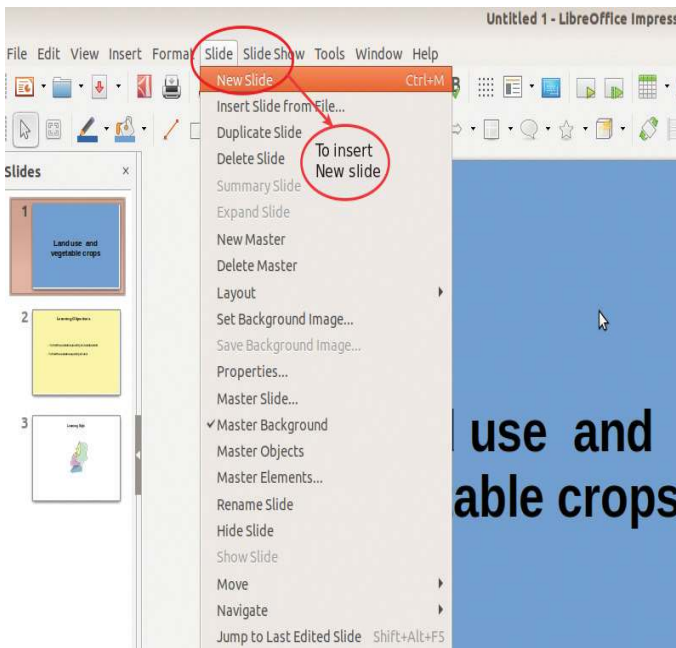
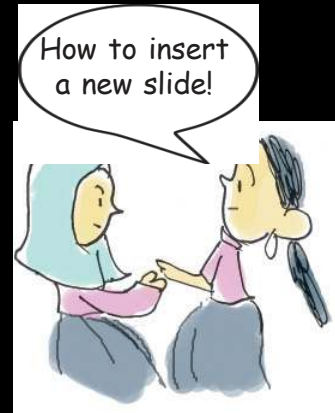


Fig.8.2 Insert new slide

The first stage of making a presentation is typing the prepared content in the storyboard in different slides. Then, save the presentation in the *Docs* sub folder in your folder.

Activity 8.2 - Beautifying the Presentation

Beautifying the presentation is the next stage. This process of beautification of the presentation is known as formatting. You have studied the techniques for beautifying characters and paragraphs in the first unit, **When a Letter Reaches the Computer**. In a presentation, the characters in each box should be selected and beautified in contrast to Word processor.



Giving Background Colour

For giving background colour to a slide, try to follow the steps given below:

- ◆ Click **Properties** in **Slide** Menu.
- ◆ Click **Background** tab in **Page Setup** window (Fig.8.3).
- ◆ Click the **Color** button in the window that appears.
- ◆ Select appropriate colour and click **OK** button.
- ◆ Slides can be given colours using the option of Background colour in the **Properties** window on the Sidebar (Fig.8.4).


Slide Templates

Slide Templates are used to give unity for slides selected while making presentation. Several templates are included in LibreOffice Impress. Several templates are available for free download from the Internet.

Slide layout is the model of pre-designed slides in a presentation software.

Activity 8.3 - Inserting a Picture

We know that it will be very helpful for communication if we present ideas along with pictures. To insert a picture in the presentation, try to do the activities given below.

A picture that we intend to include can be inserted either by clicking on  icon in the presentation window (Fig.8.1) or by clicking **Insert** → **Image**.

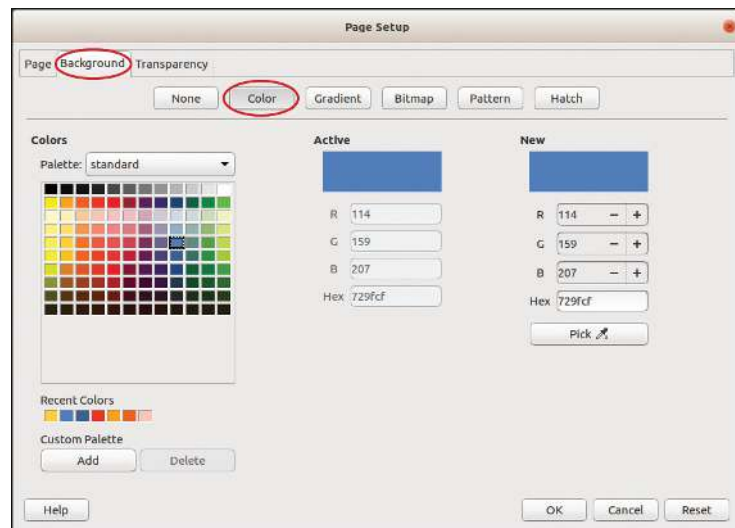


Fig.8.3 Page Setup window

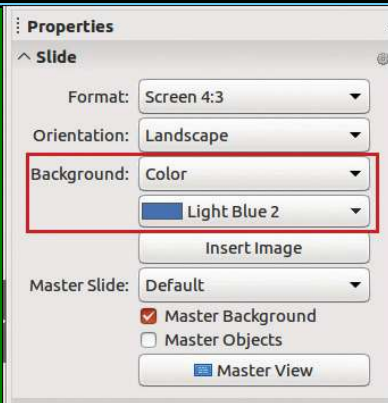


Fig.8.4 Page Setting window

The inserted picture should be arranged in a suitable manner for the presentation. For this, click on the picture. Drag by holding the mouse on the small squares that appear at the vertex of the picture. If the size does not change as intended, drag the mouse by pressing the Shift key.

Activity 8.4 - Viewing the presentation

Now the presentation is prepared and is saved in the folder. Let's present it before an audience. Try to start the slide show by clicking *Start from First Slide* in the *Slide Show* menu (Fig.8.5). Don't the slides appear one after the other? Is the computer monitor enough to make presentations before the audience? Don't you require a projector for this? Connect the computer to a projector with the help of your teacher.

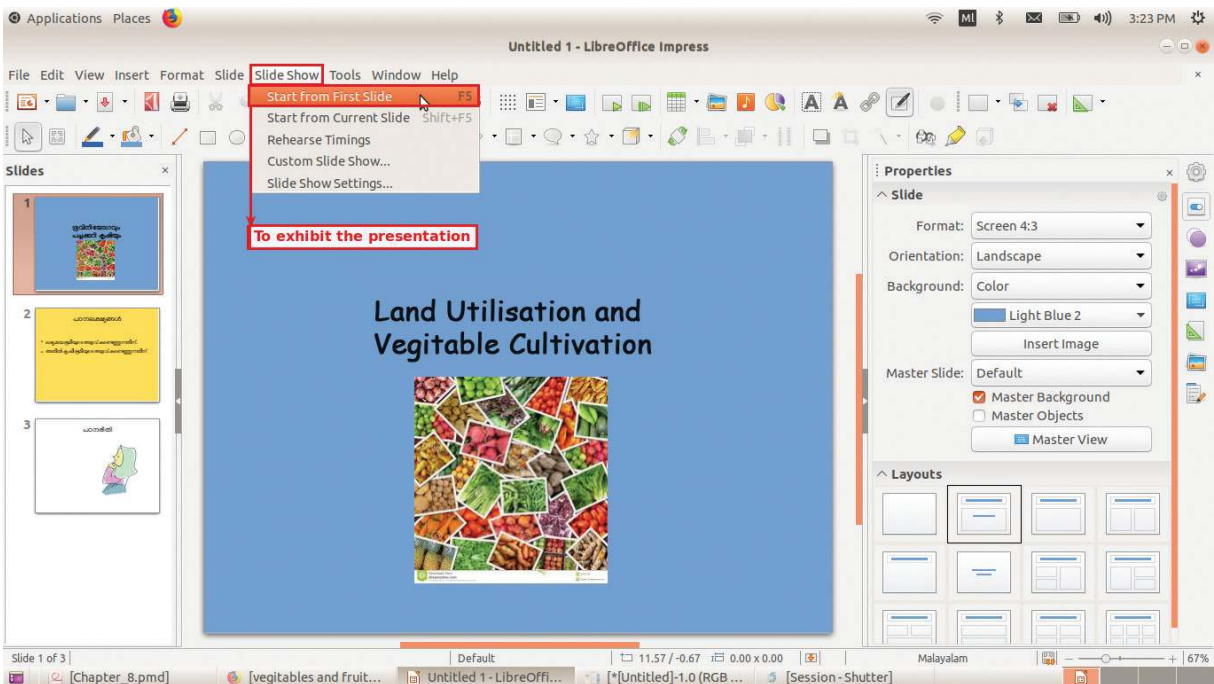


Fig.8.5 Slide Show

Slide show can be activated by pressing the F5 key on the top row of the keyboard.

Did you watch the slide show? How was it? Did you feel that it has to be improved? What is to be done to make the presentation more effective? Note them down.

Presentations Made Attractive

- ◆ The text, images etc. should appear in each slide as desired by the presenter.
- ◆ The slides should appear in an attractive manner.

Is computer monitor sufficient for presentation before an audience?



For this, let's get familiar with more techniques in the presentation software.





Projectors

Projector is the equipment which projects images on a surface or screen with the help of light rays. Normally, projectors reflect images with the help of light that passes through a lens in it. But now projectors are available which directly project pictures with the help of laser.

Multimedia projectors are more in vogue nowadays. The slide projector as well as the overhead projector specified earlier were its predecessors. The slide projector which was in use from 1950 to around 2000 became totally obsolete after the introduction of digital projector. They are known as LCD projector and DLP projector based on the technology used such as LCD (*Liquid Crystal Display*) and DLP (*Digital Light Processing*) respectively. Among these, LED projectors use LED (*Light Emitting Diode*) technology as the source of light. Movie projectors are used in cinema theatres.

Activity 8.5 - Animating characters

The technique of animation can be used to give motion to the characters in a presentation. For this, follow the given instructions.

- ◆ Select the sentence/picture to be animated.
- ◆ Open the *Animation* window by clicking on  icon in the side bar.
- ◆ Give appropriate animation by clicking on  button in the window that appears (Fig.8.6).

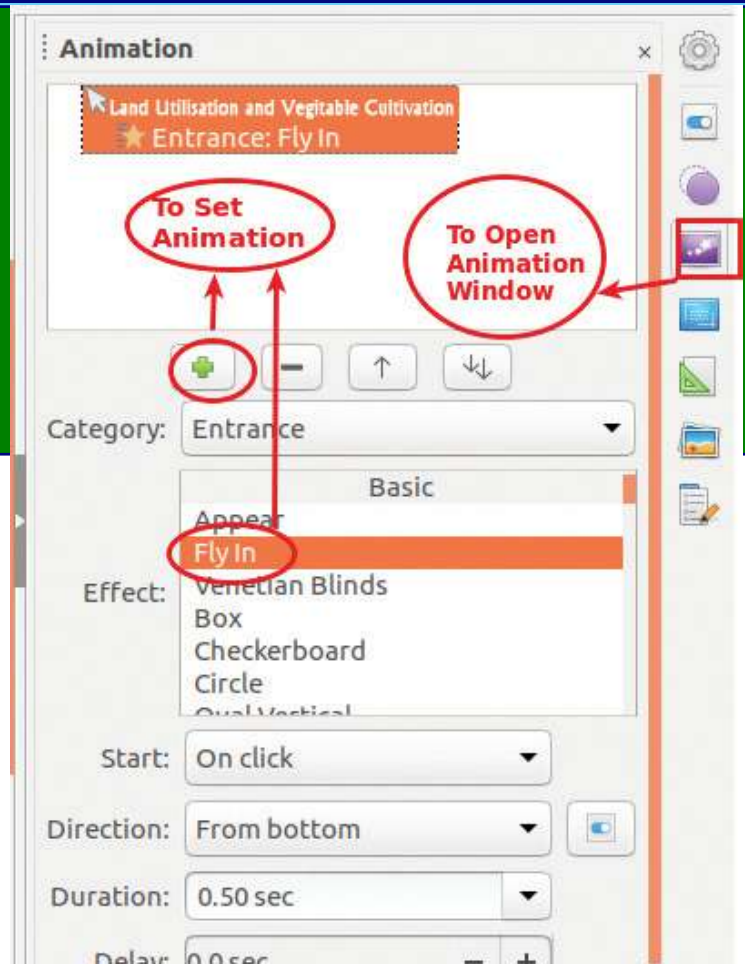


Fig.8.6 Animation Window

Activity 8.6 - Animating slides

The manner in which slides appear during a slide show makes the presentation attractive and catchy. We ourselves can arrange the manner in which slides should appear during the presentation. For this do the activities given below.

- ◆ Click on *Slide Transition* in the *Slide* menu.
- ◆ Select the appropriate slide transition from the window that appears on the sidebar (Fig.8.7).

This window also helps you to determine whether the slide should appear on mouse click or automatically, during the presentation. Hope you will make the necessary changes in the presentation after viewing it using slide show.

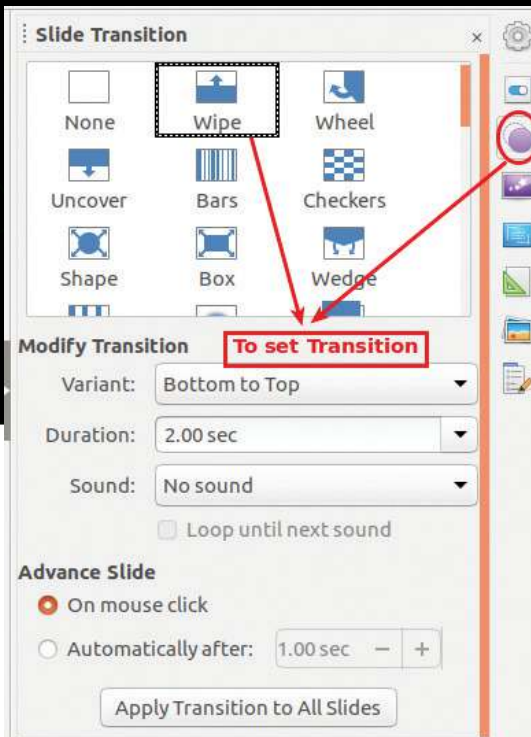


Fig.8.7 Slide Transition window



Let's Evaluate

1. Which of the following characteristics did you find in a presentation software that was different from a word processor?
 - a) Characters can be given colour.
 - b) Page can be given colour.
 - c) Picture can be inserted.
 - d) Animation can be given.
2. Storyboard is prepared while making a multimedia presentation _____
 - a) To decide the content of a slide in advance.
 - b) To save the presentation.
 - c) To create textbox.
 - d) To make the projector working.

3. Animation is given to a presentation _____
 - a) To show the slides in an attractive manner.
 - b) To give motion to characters and images.
 - c) To type the content.
 - d) To give colour to characters.
4. Slide Transition in a presentation is
 - a) To show the inserted picture in a slide as the presenter likes.
 - b) To give a background colour.
 - c) To decide the order of appearance of slides.
 - d) To type the content.



Extended activities

1. Prepare a presentation in connection with the project **Soil and Human Intervention** in your Social Science textbook.
2. Prepare a presentation for an awareness class in connection with the World AIDS Day.
3. Prepare a multimedia presentation to describe the milestones in the history of Cell Biology.
4. "Journey gives not merely the experience of sight but plenty of other things to us." - Prepare a presentation based on the activities given in the lesson 'Vazhiyathra' in the Kerala Malayalam Reader including the pictures of a journey you have made.





9

Hello.. Mic Testing...!!!

“അമ്മ പറഞ്ഞതിനപ്പുറം മറ്റൊന്നു-
മില്ലാതിരുന്നെനാരാപ്പോയ കാലം
മാവേലി നാടുവാണീടും കാലം, പാടി-
പ്പുനുള്ളിപ്പോയ പൊന്നോണക്കാലം...”

You have studied the poem **Puthuvarsham** written by Smt.Vijayalakshmi given in Kerala Malayalam Reader. Your teacher might have recited the poem melodiously in the classroom. Have you been fortunate to listen to any one else reciting it melodiously in different tunes? Did you try to recite the poem in a different manner?

In the era of computers and mobile phones, if we record and save poems and songs in these devices, we can enjoy them over and over again whenever needed.

Activity 9.1 - Listening and enjoying a poem

Let's listen to the poem puthuvarsham.mp3 included in the folder audio_files in the folder School_Resources for 8th Standard in the IT@School GNU Linux.

പുതുവർഷം

മിക്ക പാങ്ങിമ്പുറം മറ്റൊന്നു-
മില്ലാതിരുന്നെനാരാപ്പോയ കാലം,
മാവേലി നാടുവാണീടും കാലം,
പാടിപ്പുനുള്ളിപ്പോയ പൊന്നോണക്കാലം,
മാവേലി നാടുവാണീടും കാലം,
പാടിപ്പുനുള്ളിപ്പോയ പൊന്നോണക്കാലം...

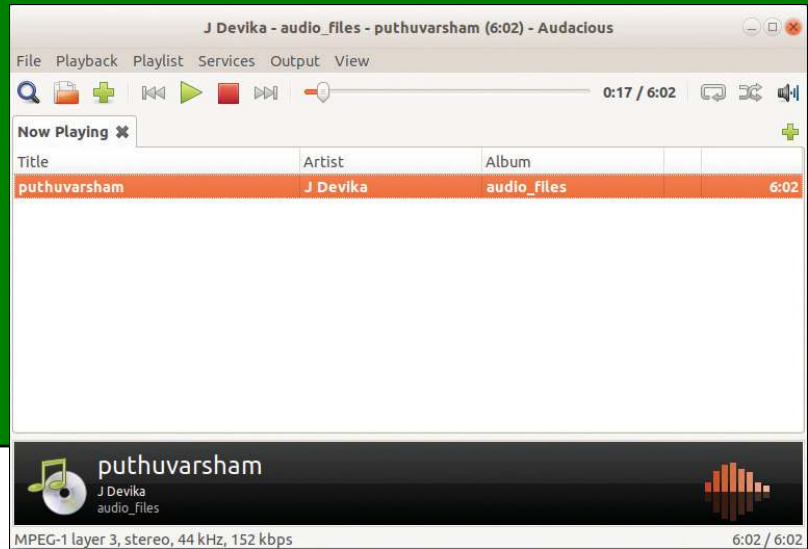
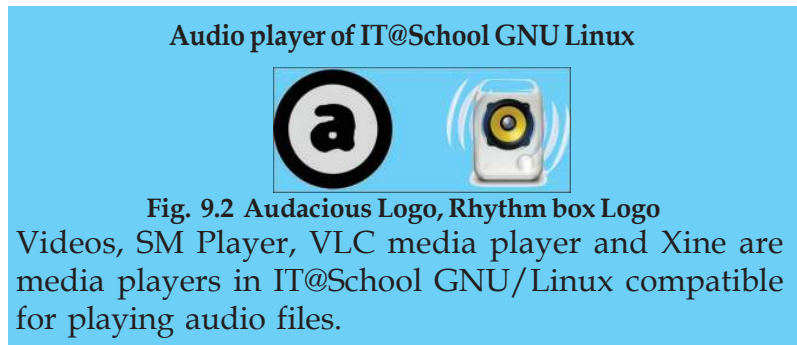


Fig. 9.1 Audacious window



Double click on this audio file. In which software does it open? (Fig. 9.1). In order to listen to this you may have to use either a speaker or a headphone, if you are using a desktop computer.

Find out whether there are any audio players in your computer other than Audacious.

Check for any other audio player software in which you can play these audio files.



Arrangements of mic and sound

If we want to recite and record the poem **Puthuvarsham** and then play it for others, what should we do?

At first, we have to input our voice in the computer. Which is the input device used for this?

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We should connect to a microphone and make necessary arrangements, shouldn't we?

Connect the microphone to the audio input port of the computer. (Fig. 9.3). Click on Audio Applet icon on the top panel of the Desktop Screen and select *Sound Settings* option to open Sound Setting window. Now, drag the sliders in the Input and Output tabs and make suitable settings to these. (Fig. 9.4).

Audio Input Settings



Fig. 9.3 Microphone and its connecting port

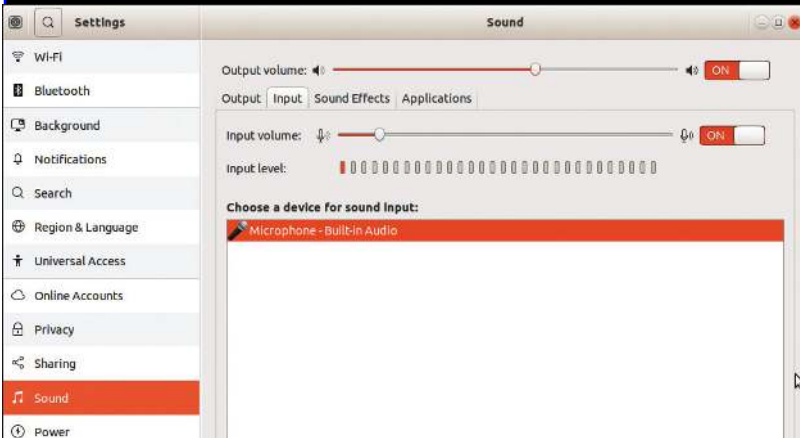


Fig. 9.4 Sound Settings window

If we are using laptops, do we need to connect Microphone for voice recording?

Audio recording

We learned that to play a sound file, we should have Audio Player or Media Player in the Operating System.



Phonograph and Gramophone

Years back, large music disks called Gramophone records were used for playing music. Music was recorded creating small grooves of different depths engraved on a disc. In order to play the music, a stylus was run through the grooves. This was the technology used then. Phonograph is considered the first device used for recording and playing sound. Gradually, Phonograph was developed into Phonograph Cylinder and later refined to the Gramophone.



Fig. 9.5 Gramophone (Phonograph)

Audacity, an open source audio editor



Fig. 9.6
Audacity logo

Dominic Massoni and Roger Dannenberg developed an open source audio editor software in the year 1999 as part of their research project. Even though it was a venture of two persons, now almost a hundred volunteer developers, including twelve main developers are working behind this wonderful audio editing software. Since Audacity is distributed under GNU GPL (GNU General Public License), anyone can use and modify it freely. Audacity versions are available in all the leading operating systems like Microsoft Windows, Mac OS, GNU/Linux and you can freely download its versions.

Visit www.audacityteam.org for more details.

Similarly specific software are needed to record a poem in the computer.



Audacity, Adobe Audition, Gold Wave, ACID Pro are various software that help conduct audio version. Of these, we use *Audacity*, which is a free software. The provisions for audio recording and audio editing are invariably found in all these audio editing software. Sound recording, Sound editing and File exporting can also be done using Audacity.

Poem, in our voice!

Hope the microphone is connected to your computer and the audio settings are done. Now, you are ready to recite the poem.

Follow the given instructions to record the poem using Audacity software.

Activity 9.2 - Let's start recording

- ◆ Open Audacity software.
- ◆ Press **Record** button  for audio version in Transport toolbar (Fig.9.7) and recite the poem (A wave form of the recorded sound can be seen).
- ◆ After reciting the poem fully, press **Stop** button  to stop recording.
- ◆ Now let's save the file using **File** → **Save Project** to the folder Sounds under the folder of your class in the /Home/Student_Works_8. (Create your class folder and Sounds folder, if not created before, while saving). When you save the project file is saved with the extension .aup (Audacity projects).

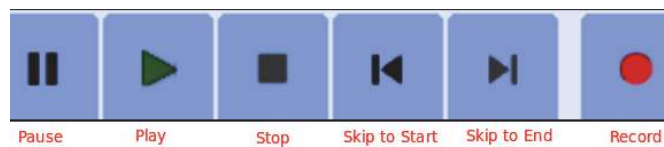






Fig. 9.7 Transport Toolbar in Audacity

We can listen to poems using **Play** button  and can stop it using **Stop** button . To stop temporarily, press **Pause** button  and to resume playing press the

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Pause button once more. You can use the *Skip to Start* button  to reach the beginning of the recorded poem and *Skip to End* button  to reach the end of the recorded poem.

We can also operate *Play*, *Stop* buttons using Spacebar in Keyboard.

Activity 9.3 - Editing the poem

Suppose after pressing the *Record* button, a delay of a few seconds occurred before the actual recitation of the poem.

This non-recorded portion in the beginning and the corrupted area in between the recorded portions can be removed. Don't bother about the non-recorded portion or the corrupted area of the recording or the unwanted noise that has crept in. All these can be edited and corrected using the editing provisions in the Audacity software.

Using Audacity open the audio project file of the poem we have recorded earlier and corrections and changes can be effected them.

- ◆ The unwanted portion at the beginning and or at the end should be removed. For this select the respective portion and press *Delete* button of your keyboard.

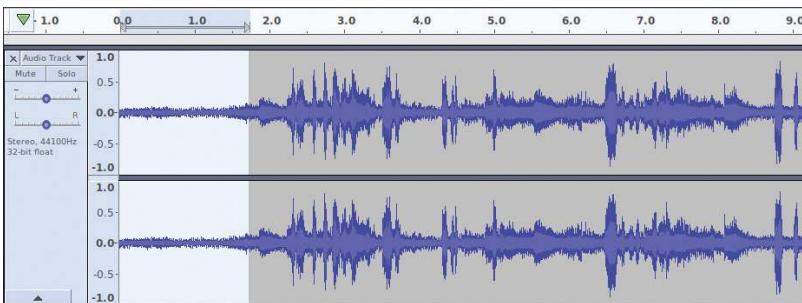


Fig. 9.8 Editing window

- ◆ The corrupted part, non recorded part or the unwanted noise that has crept in etc. found in between the recording can be removed in a similar way.
- ◆ You can use Cut, Copy, Paste activities to rearrange the position of the selected part of the recording. For example, suppose the first four lines of the poem are repeated many times in the later portion. In that case, copy the first four lines and paste it at the desired place in the audio track.

Oh! I coughed in between. Should I recite once again?



- ◆ If we think certain parts of the audio track are not up to the mark, then re-record those parts and copy-paste them to the corresponding positions.

Important point to Note

If we don't select the portion for editing, it becomes applicable to the entire portion of the project window.

A certain part of the recording has low volume. Can we amplify the sound of that part alone?



Audio tracks

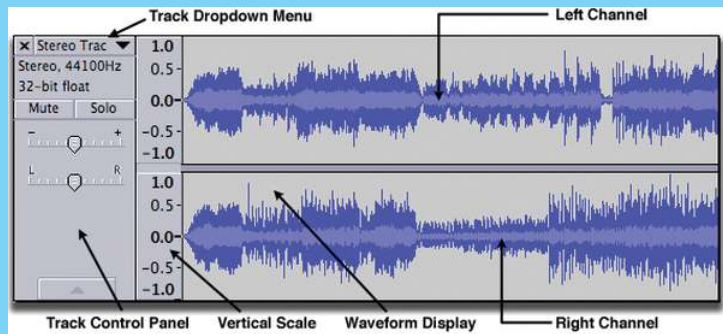


Fig. 9.9 Stereo audio track

When we record a voice using Audacity, Audio Track is the area where the Wave Form, Vertical Scale and Control Panel are shown. You can see the stereo track in Fig.9.9. If you record or import an audio without selecting the track, such audio files will be recorded or imported to a new track. You can add any number of tracks and use them one by one. Normally the upper portion of the stereo track denotes left channel and the lower portion denotes right channel. In a mono audio track, there will be only one Wave Form and Vertical Scale.

More effects

Hope you have removed all the corrupted portions in your recorded audio.

What else is to be done next to make the audio perfect? Do you feel the intensity of the audio is the same everywhere? We can rectify any difference in intensity in the recording.

Activity 9.4 - Giving more effects

- ◆ Select the portion to be amplified.
- ◆ Choose *Amplify* option in *Effect* Menu.
- ◆ Adjust the *New Peak Amplitude* (dB) slider in the *Amplify* window to increase and decrease the volume

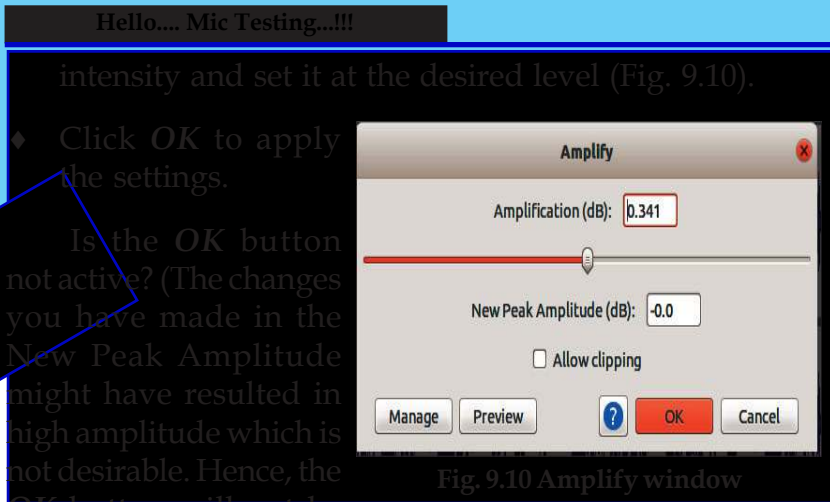


Fig. 9.10 Amplify window

intensity and set it at the desired level (Fig. 9.10).

Click **OK** to apply the settings.

Is the **OK** button not active? (The changes you have made in the **New Peak Amplitude** might have resulted in high amplitude which is not desirable. Hence, the **OK** button will not be

active. In that case, to avoid distortion of sound, a clipping has to be effected). Activate clipping by putting a tick mark on **Allow Clipping**. Now the **OK** button will be active, and click to apply settings.

Likewise we can activate more effects on the audio files using Audacity. Do you wish to include more effects on your audio file?

Try different effects that you wish to include. If any effect becomes uncomfortable or undesirable, you can cancel the action using **Undo** option. Audacity permits any number of **Undo/Redo** options.

Activity 9.5 - Completing the table

After experimenting with different effects in the **Effect Menu**, fill up the table given below.



Don't jar your ears !!!

The unit of sound is decibel. Absolute silence is considered as zero decibel. Murmuring is of 30 decibel and normal talk amounts to 60 decibel. Hearing the sound greater than 80 decibels may damage your hearing.

If you have the habit of watching TV and playing audio system with high volume for long hours, please avoid such undesirable practices for the safety of your ears.

Effect	Usage
Fade in	To increase the intensity of the selected audio part from silence to the original intensity.
Fade out
Change Pitch	To increase or decrease the pitch of the selected portion.
Change Speed
.....

Table 9.1 Effects and their uses

Audio File Formats

Uncompressed audio formats

This is the best file format for saving original audio files. Though such files are bigger in file size, their quality of sound would be high. Eg: .wav, .aiff etc.

Lossless compressed audio formats

In this file format, the files are stored in a compressed manner without losing any information that its main feature is original Compressed Format can be regenerated from this format. Eg: .flac, .alac (Apple)

Lossy compressed audio format

In this file format, since data is saved by omitting certain information. It leads to decrease in the file size. This is its advantage. The drawback is not so good quality of sound. Eg: .mp3, .ogg, .amr

Playing the poem in audio player

The poem saved with .aup extension can be opened for editing in any computer in which Audacity software is installed. But to play it using Audio/Media players or to use it in webpages and presentations, we have to convert the recorded audio from Project Format to Audio File Format.

Let's familiarize how to export Project files as Audio files using the facility 'Export' in Audacity.

Activity 9.6 - Let's Export the Project

Export Audacity Project file to other formats.

- ◆ Open the window in the order **File** → **Export** → **Export as MP3**. Here, you can choose other formats (Fig 9.11).
- ◆ In the window that opens select destination, give the file name and then click Save button.

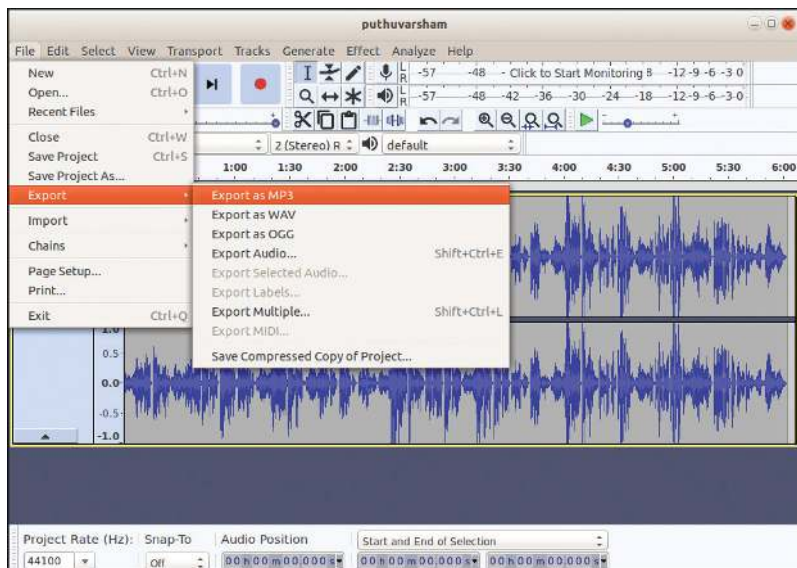


Fig. 9.11 Export Audio window

In the window that appears, if needed, give more details about the file and then click **OK**.

Sing or not?

Now, you are familiar with different audio formats.

All the media players may not be able to handle all the audio formats.

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In such cases, one audio file format has to be converted to another audio file format which we will study the conversion in the higher classes.

Activity 9.7 - Identifying audio files

You can see different audio files in *School Resources* in your computer. Identify the audio formats seen there.

Play all these audio files in different audio/media players and fill up the table given here (Table 9.2).

Extensions	Compatible Players
.wav	
.ogg	
.mp3	
.amr	
.....	
.....	
.....	

Table 9.2 Compatible players for different audio file formats

Combining introduction and background music

Play your exported poem in any one of the audio players. How is it?

Don't you feel that an introduction to your poem and also a background music will make the poem more appealing?

We can also do the audio mixing using Audacity.

For this, an introduction and a suitable background music have to be exported. This can be done in the same way you exported your poem into mp3 format.

For the time being, you may use the introduction and background music in the *Audio_files* folder in *School Resources* for 8th Standard.

Activity 9.8 - Mixing audio files

- ◆ Open the poem in Audacity software.
- ◆ Import two files Narration .mp3 and bgm.mp3 from the folder School_Resources for 8th standard -- Audio Files using the option *File* → *Import* → *Audio*. After importing, these files can be seen in two separate tracks (Fig. 9.12).

Introduction should come first. For this, move the poem track to the right till the introduction track ends.



More opportunities !


Resul Pookutty from Kerala won the Oscar Award for the best audio mixing. The audio mixing done in the film 'Slumdog Millionaire' won him this award. More and more opportunities are a waiting sound engineers in the field of cinema, TV channels, radio stations, advertising, animation studios etc. Dedication, hardwork, patience, keen interest in music are all essential for one to become a successful sound engineer.

Now shall we play the poem?

The poem, introduction and background music are played together. Is it not?



Fig. 9.12 Window consisting of Three tracks after importing

We can do this, by dragging poem to the front by using  (*Time Shift*) from the Tools toolbar (Fig.9.14).

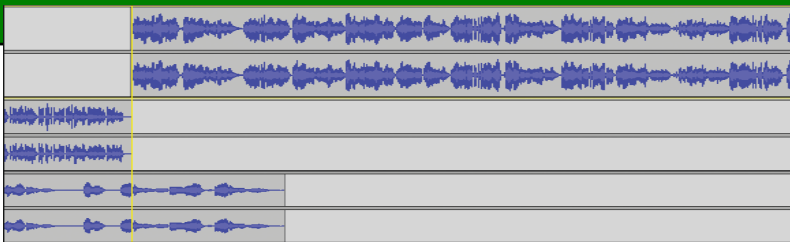



Fig. 9.13 Track window after first track is moved rightwards

When the tool  *Time Shift* is used, it is not merely enough to pause Play, always remember to stop it compulsorily.

Now, play the tracks again. You can hear the introduction first and then the poem. But what about background music? Some alterations are still to be made.

- ◆ We have to split the background music and place it at different positions. For this, first place the cursor to the position where the track has to be cut. Then select *Edit - Clip Boundaries - Split*. Now the track is cut into two pieces.

After splitting, move the track to the desired position using the *Time Shift* Tool.



Fig. 9.14 Tools Toolbar



Selection: This tool is used for selecting the beginning of the audio track and to drag and select a particular portion.



Envelope: Using this tool, we can increase the intensity of the sound track area where you feel the intensity is low.



Draw: To edit the nodes of the wave form.



Zoom: Left click on the wave form to zoom in, and right click on the wave form to zoom out.



Time Shift: To move wave form leftwards and rightwards in *Timeline*.

Hello... Mic Testing...!!!



Multitool: For handling all the five tools.

◆ Now, split and join the poem track and background music track appropriately.

See how the required copies of the background music are created and copy-pasted to the areas wherever necessary (Fig.9.15).

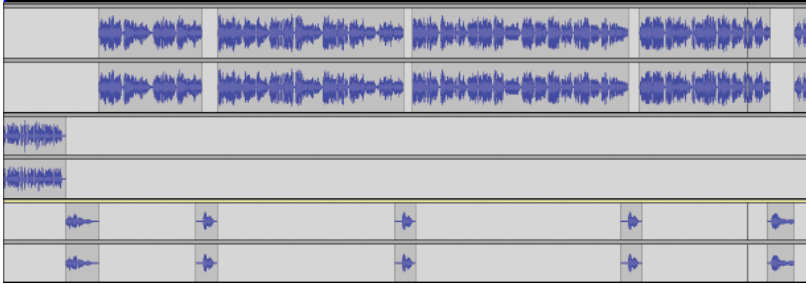


Fig.9.15 Window before exporting

◆ Play the tracks. If you find it pleasing and satisfactory, save and export it.

The poem which is recorded, edited and mixed by yourself, is now ready. Play it to your friends proudly.

Come on everybody. Listen to my recitation.







Let's Evaluate

1. The file 'Puthuvarsham.aup' created in Audacity cannot be played in audio players and media players. Why?
2. Match the effects and their usages given in the table below :

Amplify	Starting with silence and to original intensity in an ascending order.
Change pitch	To increase or decrease the existing level of intensity.
Fade in	To rise or lower the intensity of pitch.

3. Song.wav and Song.mp3 are two different files of the same song. Identify the two correct statements given below with respect to the format Song.wav.

1. Lossy Compressed is a file in the Audio Format.
 2. The file size is small compared to Song.mp3.
 3. It is a file in the Compressed Audio Format.
 4. The file size is large compared to Song.mp3.
4. Match the tools and their usages in the table below:

	Left click to Zoom In and Right Click to Zoom Out.
	To alter the intensity of the sound at a particular point.
	The wave form can be moved forward and backward through timeline.
	To edit a wave form independently.



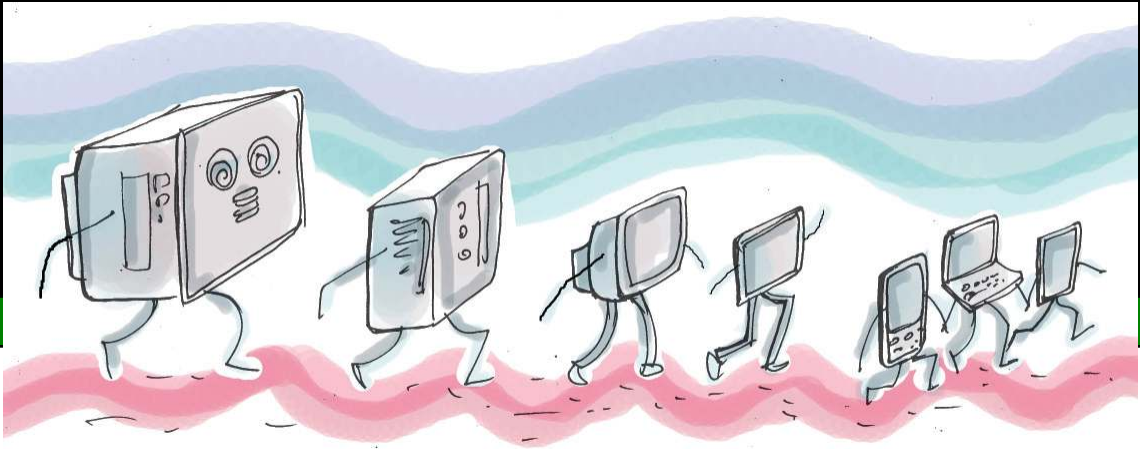
Extended activities

1. Open Audacity software and import any audio file from the folder audio_files under the IT@School GNU Linux School Resources for 8th Standard. Cut any four lines from that audio files and export to mp3 format.
2. Open Audacity Software and import Narration.mp3 and puthuvarsham.mp3 from the folder audio_files under the IT@School GNU Linux/School Resources for 8th Standard. Place the the audio Narration.mp3 before the audio puthuvarsham.mp3 and do the necessary sound mixing. Then export the file in wav format.
3. Narrate and record the story **Ammamma** written by P. Surendran in your Malayalam Reader with expression and feelings. Add an introduction audio text also. After completing the editing and mixing, export it to mp3 format.
4. Recite and record the poem **We are the World** from your English Reader. Include an introduction in the beginning of the audio text. After necessary editing and mixing, export it to wav format.

Hello... Mic Testing...!!!

5. Recite and record the poem 'सुख-दुख' in your Hindi Reader, Unit II. Include an introduction in the beginning of the audio text to the poem. After necessary editing and mixing, export it to ogg format.
6. Write and record a short play of the radio_drama type with your friends collaboratively. Do the editing and mixing . Save and Export as mp3 format.
7. You have studied the travelogue of a journalist describing his experience in the minefield in your Social Science textbook. Assume that you are narrator and record the audio file of the travelogue.





10

My Computer

3D printing : Built a house in 3 hours!

How many days are required to construct a two storeyed building? Most probably not less than six months. But in Shanxi Province in China, a two storeyed house was constructed in just 3 hours. Do you think it is possible? But it is a fact. With the help of 3D printing technology, each part of the house like doors, windows, walls, etc. were printed in heavy 3D printers and later joined using cranes. The raw materials used for the construction of the house were recycled factory wastes!



The above news indicates how man makes use of the giant leaps in technology. Computer technology has grown to great heights. What were the inventions that led man to this growth of technology. Let's examine each stage of growth in computer technology.

The history of computers

Examine Fig.10.1 and discuss in detail the evolution of the computer at each stage. Write short notes on these stages.

My Computer

Eniac - First computer with size of one big hall and low speed processing.



1946

First commercial computer by IBM (IBM 701)



1952

Lisa - First personal computer with Graphical User Interface - created by Apple.



1983

World's first Personal Computer The Kenbak-1



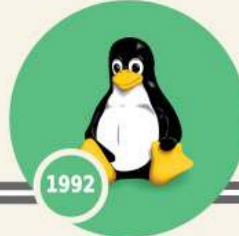
1970

Microsoft Windows Operating System launched



1985

GNU/Linux operating system launched



1992

Smart Phone Era begins Ericson R380



2000

Rasberry Pi - credit card sized computer



2012

Android- Linux based free operating system for smart phones



2008

Macbook_Pro High end Laptop from Apple



2006

Fig.10.1 Timeline of computers

Computer is a machine that can perform many tasks like receiving, storing and processing information. What are the innovative changes in its later development? What are the subsequent changes that occurred in its mode of operation in due course?

Charles Babbage

Charles Babbage was a mechanical engineer who lived in England. During the first quarter of the 19th century, he designed a machine for mathematical calculations. *The Difference Engine*, was a machine to perform mathematical calculations only. It was his first product. Soon after, he designed another machine called Analytical Engine which was operated by instructions and was capable of doing general computations. This was the first computer in the world. Hence the world honoured him by calling him the Father of Computers.

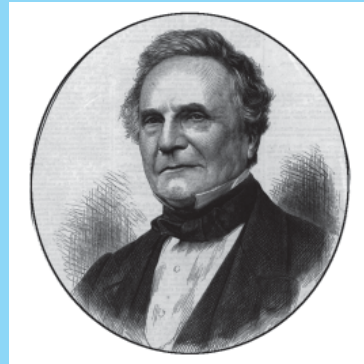


Fig.10.2
Charles Babbage

Collect more details of Charles Babbage by visiting the wikipedia. (en.wikipedia.org/wiki/Charles_Babbage)

Activity 10.1 - Identifying evolution of computers

The table shown below depicts the evolution in the shape of personal computers (Table.10.1). Collect more information and try to fill up the left out columns.




System	Characteristics
	<ul style="list-style-type: none"> ◆ Has the structure suitable to be placed on a table. ◆ System unit is the main component. ◆ Mouse, keyboard etc as input devices. ◆ Monitor as an output device.
	
	

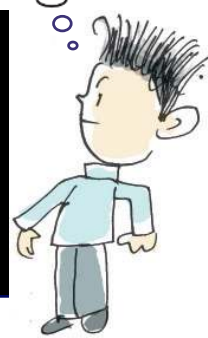
Table 10.1 Characteristics of personal computers

Data - Oh ! How many types?

In the early days, computers handled only text data. But do you know how many types of data are handled by modern computers? We have already learned about it in previous units. Can you recall some of them?

- ◆ Text
- ◆ Sound
- ◆

Computers- so big as a hall !



◆

We have learned how these data are entered into a computer. We know that to input a data, a compatible input device is to be connected to the computer. What about retrieving data? Do you know how data is retrieved? Here also, to retrieve the processed data we should connect appropriate devices. These devices are called output devices.

Activity 10.2 - Use of various input/output devices

Complete Table 10.2 by adding more information to the blank spaces.

Device	Input/Output	Use
Keyboard	Input	For entering text data
Mouse		For selecting what is seen in the screen
Microphone		
Camera		
Scanner		
Bar code reader		

My Computer

Joy stick		
Monitor		
Printer		
Speaker		

Table 10.2 Use of Input/Output devices

Activity 10.3 - Preparing shortnotes on input/output devices

What are the main input and output devices used in computers today? Prepare a short note on each of them. Some of these devices are:

- ◆ Keyboard
- ◆ Mouse
- ◆ Monitor
- ◆
- ◆

Mouse

Right Button
Context Menu
(Shortcut Menu)



Left Button
Select, Drag,
Double click

Scroll Wheel
Move and zoom
pages, etc.

The prototype of the mouse that we use today was developed in the year 1960. Douglas Engelbart, an American Computer Engineer, invented it. The mouse helped the computers very much in making them popular among the common people. First generation of the mouse worked with the help of a freely moving small metal sphere kept at the bottom of the mouse. Later, the mouse that worked with the help of light rays called optical mouse came into existence.

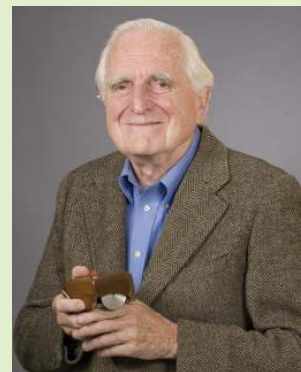


Fig.10.3
Douglas Engelbart

Activity 10.4 - Complete the table

See Table 10.3 and the images. Find out the data that matches with each of the device and complete the table.

Device	data
	
	Image, Movies
	

Table 10.3 Devices and types of data

Input or output?

Touch screen is used as an input device as well as an output device simultaneously. Now, touch screen technology is widely used in smart phones, tablets, ATMs (Automated Teller Machines), Laptops etc. Bent Stumpe, a Danish Electronic Engineer, designed and developed touch screen in the year 1972 and thereby started the era of touch screen. Earlier, touch screens were controlled by touching with a specially designed pen called Stylus. Later, touch screens controlled by our finger touch was developed and it monopolised the technology market. Touch screen substitutes keyboard, mouse and monitor facilities.

For more details, visit en.wikipedia.org/wiki/input/output, en.wikipedia.org/wiki/Touchscreen



Fig.10.4 Touch screens

Computer and their peripherals operate with the help of a pre-installed set of instructions. These instructions are commonly called software.

Let's know more about software

Activity 10.5 - Identifying the file type and required software for different applications.

We know that a computer can do a lot of activities with the help of specific software. The table given below contains files, file types and their respective software. Fill up the left out items and complete the table.

File	File Type	Application Software
Leave application	Text	LibreOffice Writer
Marklist		
Slide presentation		
Drawing picture		
Record voice		

Table 10.4 File type and software for different applications

Software and their functions are listed in the previous table. They are commonly known as Application software.

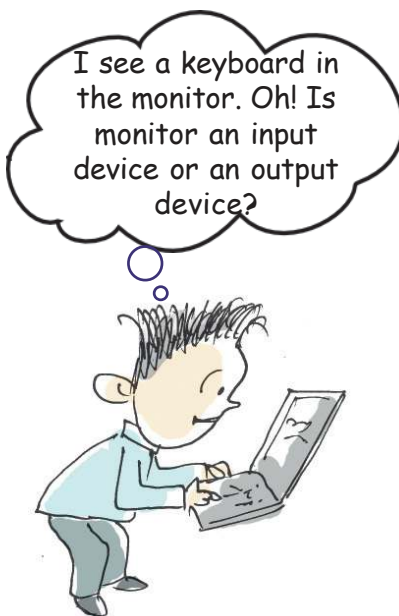
To run these application software, the computer should have some facilities. What are they?

- ◆ arrange the application software and be able to use them conveniently when required.
- ◆ manage all input, output and storage devices.
- ◆ store the files created using the application software in a schematic manner.
- ◆ User must be able to communicate with the computer and he should also be provided with a conducive atmosphere to work on it.

Software giving such provisions are called Operating systems.

Let's learn and copy

Operating systems and Application software are available under two categories: Free Software and Proprietary Software.



Operating system

Operating System is the main software that acts as an interface to accomplish a user's activity on computer. GNU/Linux, Mac-OS, Microsoft Windows, B.S.D, Unix are some of the prominent operating systems.

For more details visit:
[en.wikipedia.org/wiki/
Operating_system](http://en.wikipedia.org/wiki/Operating_system)



Mobile Operating System



Fig.10.5 Computer Operating Systems

Mobiles also have an Operating System

Mobile phones that we use also work with the help of an operating system.

Android, Apple iOS, Symbian, BlackBerry OS are the some of the important mobile operating systems. Moreover, now we have mobile versions of Windows and Ubuntu as mobile operating systems.

Android from Google is a Linux-based free mobile operating system. Linux-based mobile operating system was a turning point in the multipurpose mobile phone scenario and also caused a drop in the price of mobile phones. Today, e-Commerce as well as m-Commerce (online commerce using mobile phone technology) have flourished since the advent of low cost multipurpose mobile phones.

There are many other operating systems functioning using Linux. For more details visit:

1. en.wikipedia.org/wiki/Linux_for_mobile_devices
2. en.wikipedia.org/wiki/Mobile_operating_system

The proprietary software from commercially interested companies are meant for a single user. Users are restricted from copying or manipulating the software. But free software gives us the freedom to use the software for any purpose, to edit the source code and incorporate changes and to copy it.

Finally I also became free!



We know that operating systems provide a conducive platform for the application programs to work on it. Do you know which operating system is used in your school? What are the facilities provided in it? Let's see one by one.

Beautification of the desktop

The computers in our school work with IT@School GNU/Linux operating system.

The desktop of this operating system is seen in Fig.10.7.

Do you wish to change the colour of the desktop background?

Free Operating System

Even though computers were developed earlier, the operating systems were designed later. When personal computers became popular, the computer world started thinking of an operating system which can be easily managed by a user. In 1980, Apple Corporation came with world's first Graphical User Interface Operating system called Mac OS. Later Microsoft launched Windows operating system.



Fig.10.6 Linus Torvalds & Richard Stallman

These operating systems can be used only with the permission of the concerned companies and they also restricted the freedom of the user in many ways. This led to the idea of a free operating system. In 1992, Richard Matthew Stallman of America collaborated with Linus Benedict Torvalds of Finland, developed and launched a free operating system called GNU/Linux. Now, various versions of GNU/Linux are available for us. Department of Education, Kerala State recognised the importance of the free software and declared GNU/Linux as the official operating system. Many Government departments in the state have already switched over to the free software.

The steps given below will help you to change the desktop.

- ◆ Click right button of the mouse on the desktop and select *Change background* (Fig.10.8). Then click *Background*.

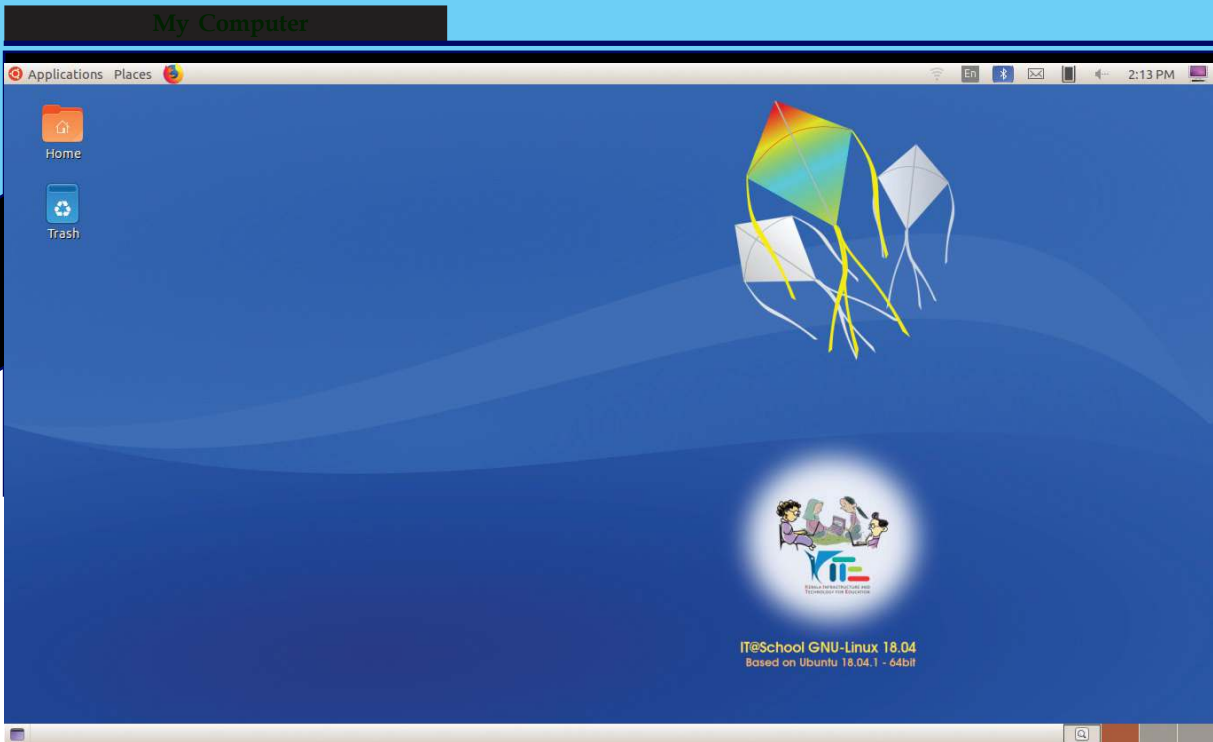


Fig.10.7 IT@School GNU/Linux Desktop

- ◆ Click on the tab *Wallpapers* in the window that opens, then choose the picture you like and click *Select*.
- ◆ By clicking the *Pictures* tab in the window, pictures from the *Pictures* folder in the *Home* can be included (Fig.10.9).

Find out more options for making the desktop more beautiful. We will learn about more advanced options in higher classes.

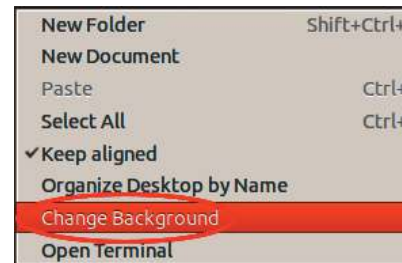


Fig. 10.8 Window for activating Desktop settings

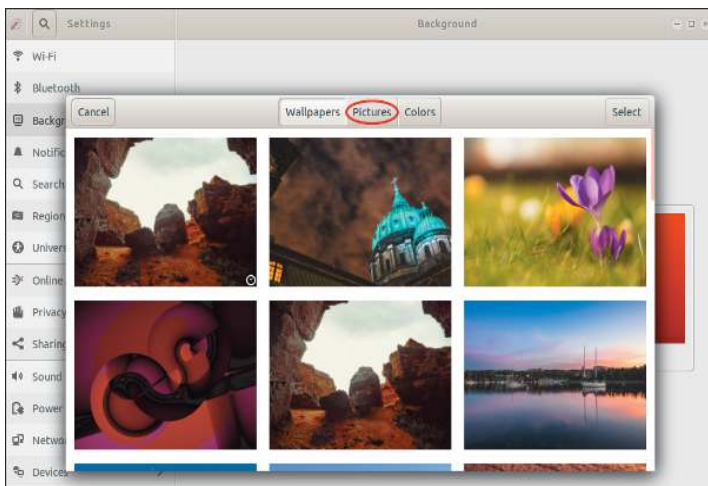


Fig.10.9 Window for changing desktop background





Android watches

Wearable computers are also popular now. Latest Android versions are used in these devices. The operating systems of these devices are designed to run collaboratively with Android versions after the Android 4.3 (Jelly Bean). Therefore the operating system of such devices is known as Android wear.



Android watches, Android spectacles, etc. are now available in the market.

Folders to store files

You are familiar with the desktop of your operating system. Did you notice an important folder in the desktop?

The folder named *Home* is the main folder where the user's files are stored. You have saved all the activities done in the previous chapters in this folder. Do you know where you have saved your activity files in your computer?

Find the path of a file

- ◆ Open your folder and right click on any of the saved files.
- ◆ Select *Properties* in the window that opens, look at what is written against Parent Folder.

You see the text as */home/.....* What does it indicate? It indicates that your file is stored in the folder named *Home* or in the sub folders created inside the *Home* folder of your computer. You will learn more about file path in the higher classes.

Be careful while saving a file

A file is generated as a result of a work done in the computer. Do not save this file carelessly in any name and also in any location. Always create a specific folder meant for it and save the file in that folder. Do not forget to give an appropriate file name while saving. This habit

My Computer

will help you to remember and retrieve the file later when required.

Do you know where the files will be stored if they are saved without assigning proper name or exact location? Normally, according to the type of the file, the computer will store such files in *Home* folder or in folders like *Documents*, *Pictures*, etc. seen inside the *Home* folder.

Rename a folder

How do you change the existing name of a folder?

Place the mouse pointer over the folder and click on the right button of the mouse. Don't you now see the option for renaming the folder from the window that appears? You can change the folder's name now.

System settings

Did you type Malayalam in computer? In the previous unit you have learned how to type Malayalam or any other language in your computer.

If we want to type a new language, don't we have to set the specific keyboard layout? What are the settings to be done?

Let's examine.

Click on the Settings button in the above panel and select *System Settings* (Fig.10.10).



Fig.10.10 Window that leads to system settings

Select *Region and Languages* from the window that appears.

From the window that appears Click + button and select *More*, then select the desired language and click *Add* button (Fig.10.12, 10.13).



Drones



An era of Unmanned Aerial Vehicle (UAV) commonly known as Drones is forthcoming. The things you need will fly to your doorstep and it is not a distant dream. The drone's technology and its usage are far developed beyond our imagination. Days have come where Unmanned Aerial Vehicles are used in war as well as in peace. Drones are used legitimately/lawfully for wedding photo session, Television and film shooting, Aerial surveillance etc.

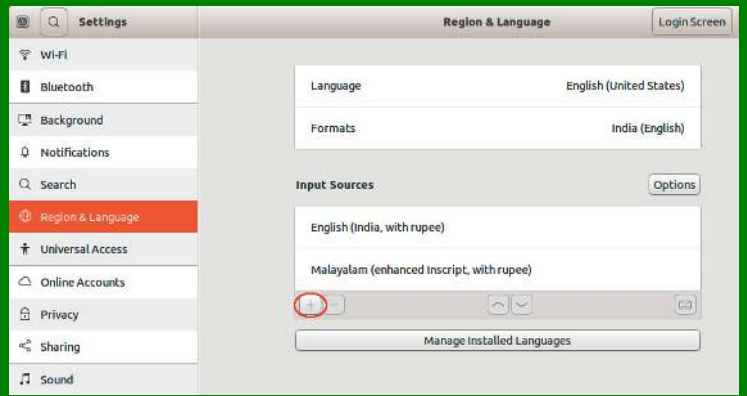


Fig.10.11 System Settings window



Fig.10.12 Text Entry Settings window

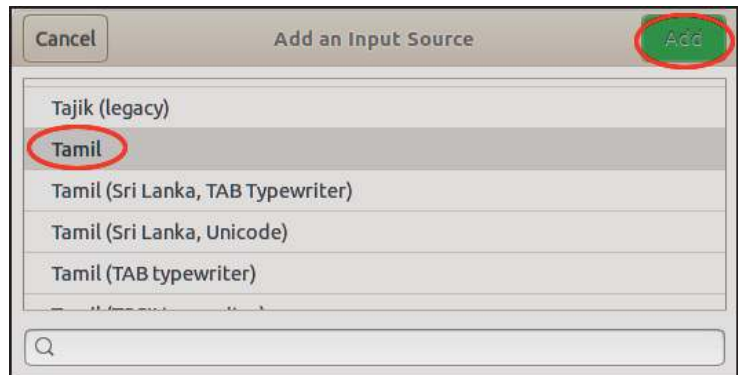


Fig.10.13 Window for selecting language



Let's Evaluate

1. What are the milestones in the evolution of computers from ENIAC to Smart phones?
2. What are the common data handled in computers?

My Computer

3. Prepare a table correlating data like Text, Image, Sound, etc., its compatible input/output devices and the appropriate Application Software.
4. Examine the table and fill in the blanks.

Activity	Software Segment
To turn on a computer	Operating system
To draw a picture in a computer	Application software
To create a folder	
To type a poem	
To consolidate information	
To change desktop background	

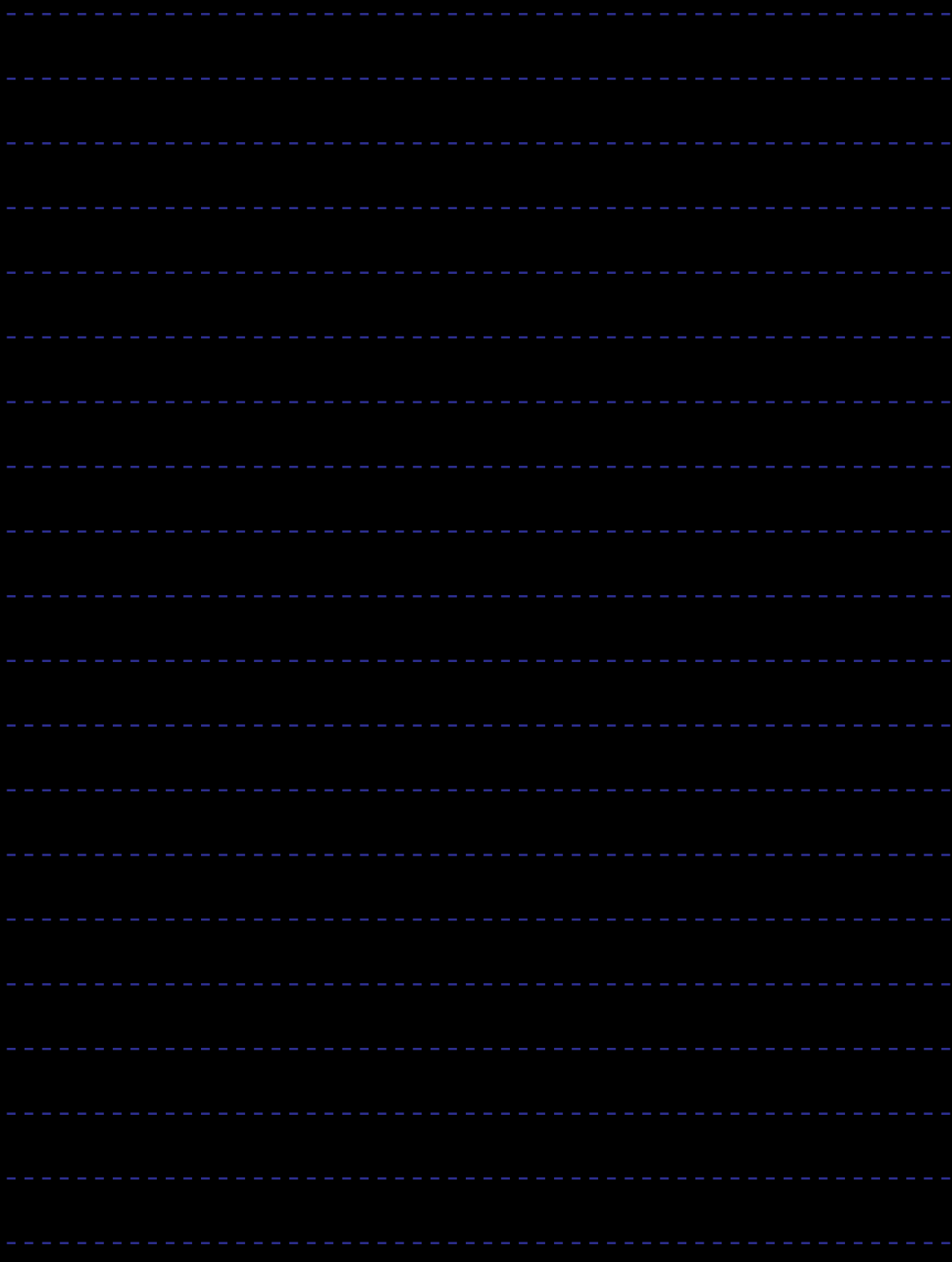


Extended activities

1. Prepare a presentation for a seminar using LibreOffice Impress on the topic 'Computer Evolution from Eniac to Smart Phones'.
2. Collect pictures and information about the main Input and Output devices of a computer. Then, prepare a presentation using LibreOffice Impress on the data collected.
3. Conduct a debate on the topic 'The Decreasing gap between Computer and Mobile phone'.
4. Create a folder named ICT at home and also create three sub folders named Office, Gimp, Program inside ICT folder.
5. Change your desktop background to a background depicting flowers.
6. Open LibreOffice Writer and insert a table which should contain the following information in Malayalam: Various data types, their compatible Input/Output devices and their compatible software packages.



Notes



Let's know about cyber safety

There is absolutely no need to mention the advantages of Internet and Social Networking sites. We have embraced their potential for communication, entertainment and information seeking.

But over the period, it is seen that a lot of teenagers are being harassed and fall prey to the abuse of Social Media. You can easily prevent yourself from being a victim, if you take a few precautionary measures while being online.

▶▶ How Social Networking sites can be dangerous

- Sharing and posting too much of personal information such as phone number, address, location, photos, etc., can be misused.
- Trusting strangers believing their profile to be true can be dangerous, as they may not be the same as stated.
- Snapshots of chats, photos, videos, etc., are saved and will be used for blackmailing and threatening.
- Being cyber bullied by posting negative, derogatory comments, posts, photos, etc. to tarnish one's image.
- Lots of predators and adult criminals are lurking online to trap children.

▶▶ Tips for safe Social Networking

- Always keep your personal information strictly personal.
- Customize your privacy settings so that others can see only the basic information.
- Just know about and manage your friends. Don't trust all the online friends.
- Let your friends know that you are uncomfortable if they post something inappropriate about you.
- Do not publish any information that reveals your identity.
- Always use strong passwords. Don't share them with others.
- Never share your pictures, photographs, email accounts, etc., with anyone.
- Keep your personal messages strictly personal. Once posted they are published for ever.
- If ever threatened or bullied seek the help of parents/teachers.

Helpline Phone Numbers

Crime Stopper: 1090
Cyber Cell (Tvm): 9497975998
Control Room: 100
Child Helpline: 1098 / 1517