

Information & Communication Technology

Standard VIII



Government of Kerala
Department of General Education

Prepared by IT@School Project
For State Council for Education Research and Training (SCERT), Kerala
2010

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
Bharata-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 respect to my parents, teachers and all elders and treat everyone with courtesy.

I pledge my devotion to my country and my people.

In their well-being and prosperity alone lies my happiness.

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Dear learners,

Information and Communication Technology (ICT) has, within a very short span of time, turned out to be one of the basic building blocks of modern society. Many countries now consider understanding ICT and mastering its basic skills and concepts as part of their core education policy.

While there have been many new technologies being introduced from time to time, with ever increasing rapidity, nothing has made as far reaching an impact as Information Technology. Today, students require strong technology skills to succeed in every sphere of their endeavour. Moreover, Information Technology is endowed with a platform for student inquiry, analysis and construction of new information.

Children, you have been interacting with the computer from the primary classes. The goal we have set here is not restricted merely to Information Technology alone but it's also meant to expand the boundaries of your creativity through the use of advanced computing and telecommunications technology. The process of classroom learning can become significantly richer as students gain access to new and different types of information.

Numerous software available today facilitate graphic displays and controlled experiments in ways never before possible through which students can communicate their results and conclusions to their teacher, students in the next classroom or even to the students around the world in a variety of media. Each chapter in this book packs a lot of information to captivate and more importantly to motivate you and ultimately take you towards greater learning!

This book is a journey through the processes like drawing, composition of a news magazine and various games. Getting familiar with computer software like spread sheet to tabulate the collected details, make attractive multi-media presentation and IT based information in connection with the core subjects like Mathematics, Social Science, Basic Science and Geography that will engage the students more fruitfully in their learning process is also included in this journey.

Networked computers with internet connectivity can increase learner motivation as it combines the media richness and interactivity with real people and to participate in real world events. As you are surrounded by all the other applications of the technology, you will get an opportunity to handle the computer effortlessly. The activities designed in each chapter are based on various subjects that will enhance your knowledge. Make a voyage through this ocean to enrich your information.

Hope this textbook will steer the students' path towards higher education and will prepare them for a productive career path. May you freely soar high up in the boundless world of technology and use the new technology to your best advantage!

With warm wishes,

Prof. M.A Khader
Director
SCERT
Thiruvananthapuram

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CONSTITUTION OF INDIA
Part. IV A
FUNDAMENTAL DUTIES OF CITIZENS

ARTICLE 51A

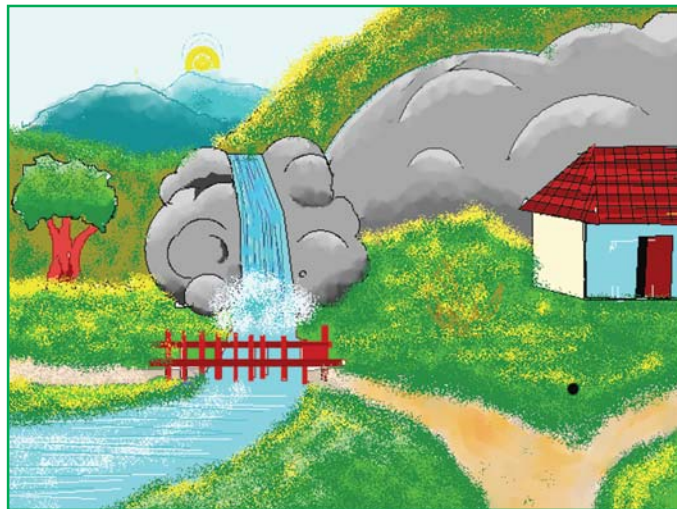
Fundamental Duties - It shall be the duty of every citizen of India :

- (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 and 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 achievement.
- (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.

1. Sketches and Colours



*“Crowded by thickets in bloom
Soaked in emerald green
Lay the captivating countryside
In its pristine beauty and elegance”*



How do you find the illustration of the landscape that *Changampuzha*, the celebrated Malayalam poet, described in his famous poem *Ramanan*? (Picture 1.1) It was created on a computer. Do you like it?

Pic. 1.1 A picture made using GIMP

Poetic narratives appear as images in our mind, don't they? Wouldn't you also like to create such images using a computer?

You are already familiar with software assisted drawing. Try to recollect the features that you used in such software. Let's now familiarise

ourselves with a similar software with more features.

Where to draw?

Now let's prepare a space to draw a picture. For this, go to the 'File' menu of the GIMP software, and click 'New'. Click 'OK' in the new window that pops up. A window for drawing a picture opens (Picture 1.5). The white rectangle in the middle is the area for you to draw.

Jithin Dev K.S, PS High School., Palliippuram



Pic. 1.2

Harikrishnan V., Govt. Raja's HSS, Kottakkal.

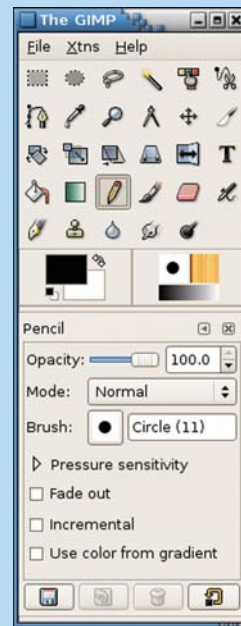


Pic. 1.3

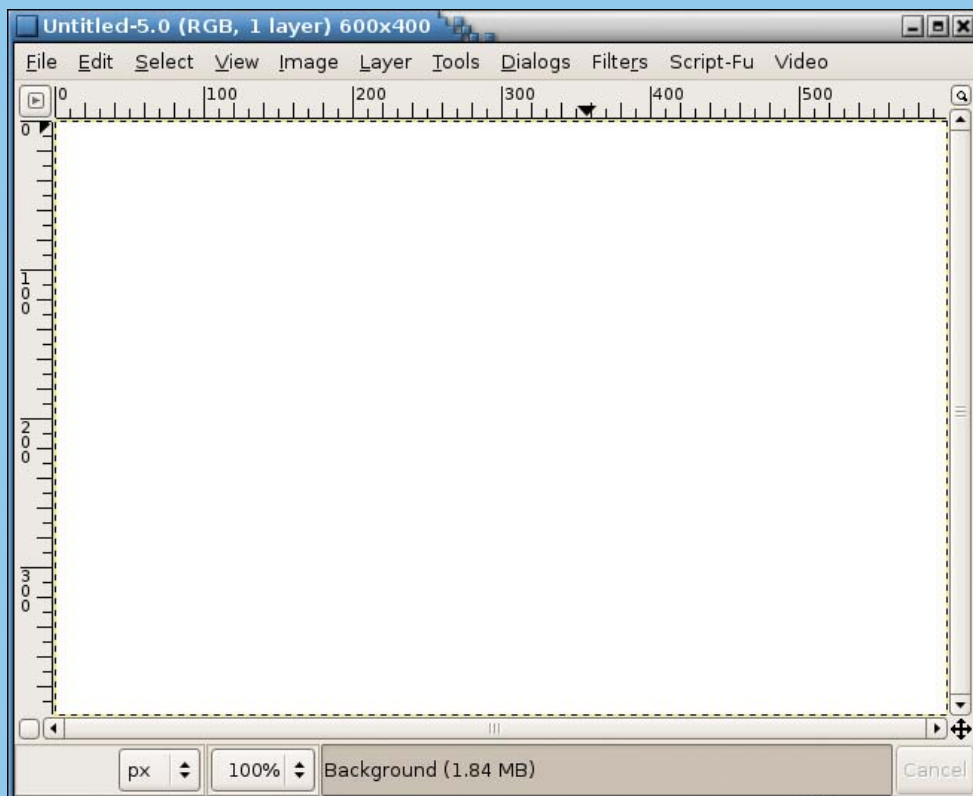
The paintings that won the first and second places in the paintings competition using GIMP as part of the State School IT Festival 2009.

GIMP

GIMP is the acronym for GNU Image Manipulation Programme. It is a free software used for drawing, image editing, preparation of logos, and animation. It is 'GIMP Version 2.2' that is used in this chapter. In order to open the software, go to 'Applications' menu, select 'Graphics', and click on the tab 'GIMP Image Editor'. The main window in GIMP appears with tools in it (Picture 1.4).



Pic. 1.4 GIMP - The main window



Pic. 1.5 GIMP - The drawing Window

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See the main window of GIMP software. Several tools that help us in drawing and painting are given there. The name of each tool can be displayed by bringing the mouse pointer over the tool. Try using the numbered tools in Picture 1.6, one by one. Then fill up the following table with the name and use of each tool.



Pic. 1.6

Now that you are familiar with the tools used in digital drawing, let's start drawing a picture.

Select 'brush' tool, choose a colour, and use it to draw a picture. Draw whatever comes to your mind. Use 'fill' or 'bucket' tool to colour it. See how the picture comes up. If you are not satisfied, try different colours. Tools in this software are like pencil and pen. Use them again and again.

Knowing to use a pen

Tool	Name of the Tool	Use the Tool
1.	Pencil Tool	Use to draw like a pencil
2.		
3.		
4.		
5.		
6.		
7.		


alone does not make one a writer. Pen is just a tool. One needs to have creativity and imagination to become a writer. Similarly, if you want to become an artist, you should be able to use the tools in GIMP to express your creativity. Keep experimenting with tools. That's how you will become capable of expressing your creativity using the tools. Capable of creating pictures in your own style.

You have created a picture and saved it as a file. Now let's consider a few activities.

Activities

1. Do the following using GIMP for a digital magazine for your class.
 - (a) Make a painting of a sea shore in the evening
 - (b) Prepare the cover page for the magazine
 - (c) Prepare illustrations and page lay out for the poems in the magazine
2. Redo the illustration used for the poem *Kannikkoithu* in your Malayalam textbook using GIMP.

Saving Pictures



While saving a picture, in addition to the file name, we have to specify an 'extension' as well. The 'extension' signifies the file format. GIMP can handle various formats. However, its own format is 'xcf'.

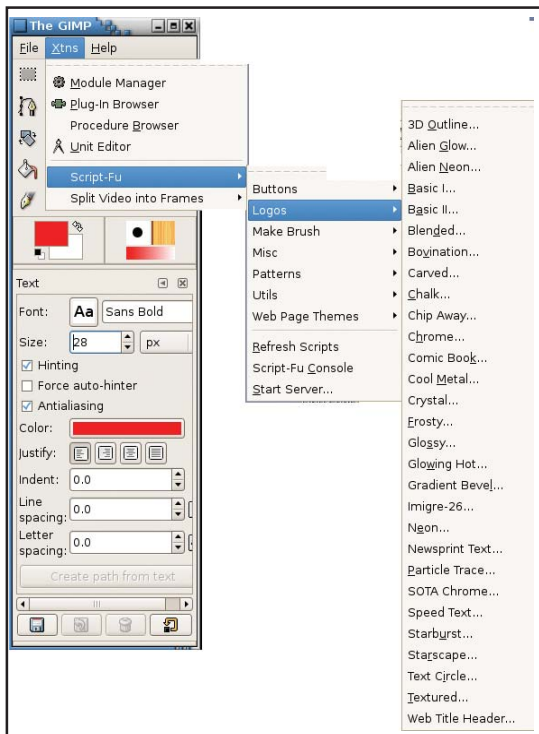
Pic. 1.7 'Save Image' Box

In order to save a picture in GIMP, select 'Save' from the 'File' menu. In the window that opens, type file name in the 'Name' box, select 'xcf' by clicking on the 'Select File Type' tab, and click 'Save'.

Clone Tool

'Clone' tool is used for copying a picture exactly from one part of the drawing space to another. (Clone tool is marked '8' in Picture 1.6).

- ◆ Select the brush of appropriate size from the brush window.
- ◆ Bring the mouse pointer to the picture to be copied. Click on the picture while keeping the 'Control' key pressed.
- ◆ Take the mouse pointer to the place where you want to copy the picture. Move the mouse while keeping the left mouse button pressed. By dragging the mouse pointer adequately, the picture can be copied fully or in part as required.



Pic. 1.8



Pic. 1.9 The window for making logos

3. Visualise the sunrise in the Western Ghats and draw it in GIMP.

Creating a logo in GIMP

By now, you must have understood how to make drawings and paintings using GIMP. We can use this software to create beautiful titles and logos as well. Let's see how these can be done.

Open GIMP software, click 'File' menu, select 'Xtns', then select 'ScriptFu', and click on 'Logos' (See Picture 1.8). You can now see a list of title types in various styles.

Now select one of the title types. For instance, suppose you have selected 'ScriptFu:3D Outline'. Type your name in the tab marked 'Text' in the window that opens. You can make title types in Malayalam also using GIMP.

Remember the way we saved the pictures in GIMP? Similarly we can save

the titles and logos in 'xcf' format. There are other formats such as 'png' and 'jpeg' in which these can be saved. In order to do this, click 'Save' after selecting the appropriate format by clicking the tab 'File Type' in the 'Save Image' dialogue box. The size for the same file is much lower in 'png' and 'jpeg' formats compared to 'xcf'.

Activities

- Prepare a title for the science wall magazine of your class using GIMP.
- Prepare a poster on the importance of water conservation using logos in GIMP.
- Prepare a poster advertising the energy conservation campaign of the Energy/Environment Conservation Club in your school using logos.



2. Understanding Time Zones



You know how to use computers for different purposes. You have also used them to learn other subjects. Let's see how we can enhance our understanding of some of the topics in Social Science using computers.

Read the following matter and discuss the reasons behind them :

- Inaugural match of the last football world cup was held in Munich on 9th June 2006, at six o'clock in the evening. We saw the live telecast of the same match at 9.30 in the night the same day.
- The killer waves of the Indian ocean tsunami of 26th December 2004

Sunclock

Sunclock is a software application that delineates the countries experiencing day or night at a given time on a world map using light and shade. Numerous facts including time differences across countries, distances between regions, and longitudes and latitudes of various places are available on Sunclock. Sunclock offers geographical information including positions of the sun and the moon at a given time on a given day.

originated off the Sumatra Island at 9 AM, Indonesian time. These waves travelled through the sea for two hours and hit the Kerala coast at 9.30 AM, Indian standard time, killing hundreds of people.

Don't you think it is worth understanding this time difference in more detail? 'Sunclock' is a free software that would help you in this.

Remember the activities relating

to 'time zones' suggested in your Social Science text. Now be prepared to engage in those activities, using 'Sunclock'. Directions given in *Help 2.1* will help you in opening the 'Sunclock'.

Help 2.1

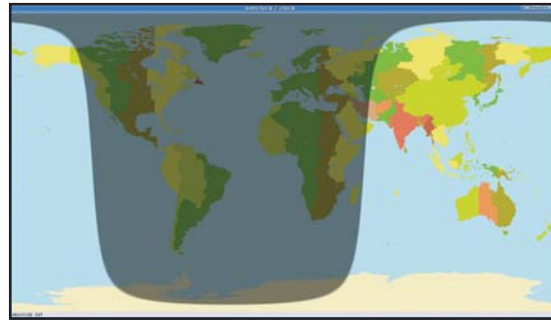
Use the following sequence to open the Sunclock: **Applications** → **Education** → **Sunclock**

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In order to access 'Suncllock Tool Bar', click anywhere inside the 'Suncllock' window (Picture 2.2). Bring the mouse pointer over the buttons on the 'Suncllock Tool Bar' and see the function of each tool.

Days and Nights

Take a close look at the map in the 'Suncllock' window. Some countries are



Pic. 2.1 Suncllock Window



Pic. 2.2 Suncllock Toolbar

covered by a shade while others are clearly visible, as if in sunlight. 'Suncllock' uses this representation to show countries that have night and day at a given point of time. The countries that are visible are the ones in day, those

Help 2.2

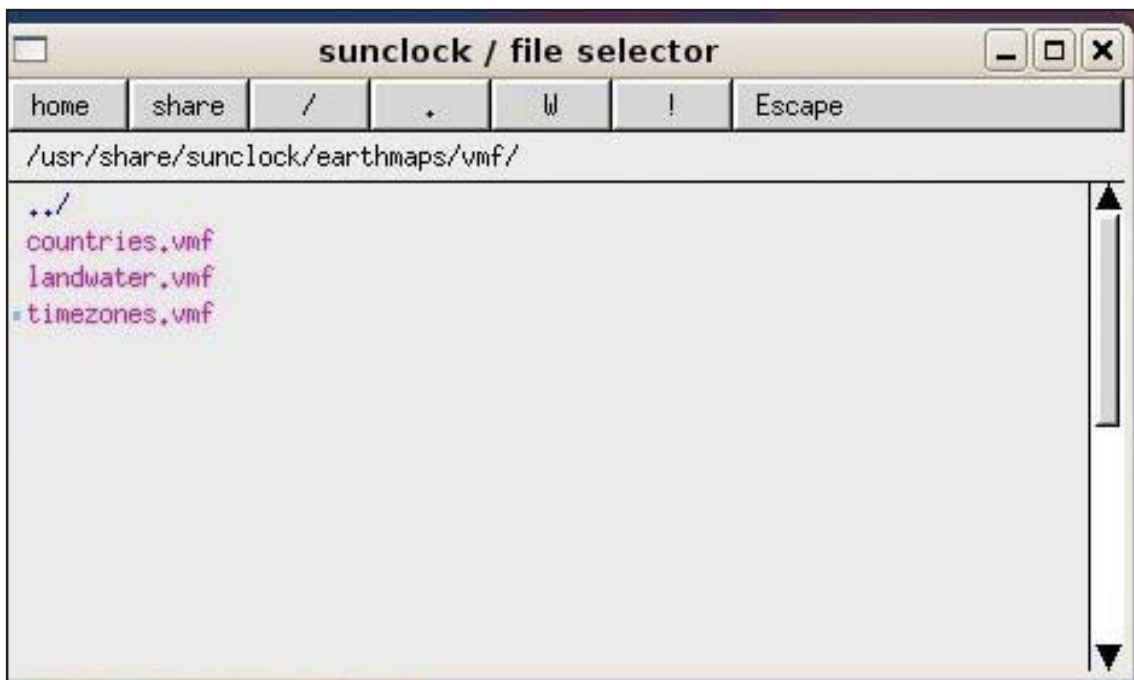
Use the following sequence to see the world map showing countries:
F button → **vmf** → **Countries.vmf**

Help 2.3

Use the following sequence to see the world map delineating land and sea :
F button → **vmf** → **landwater.vmf**

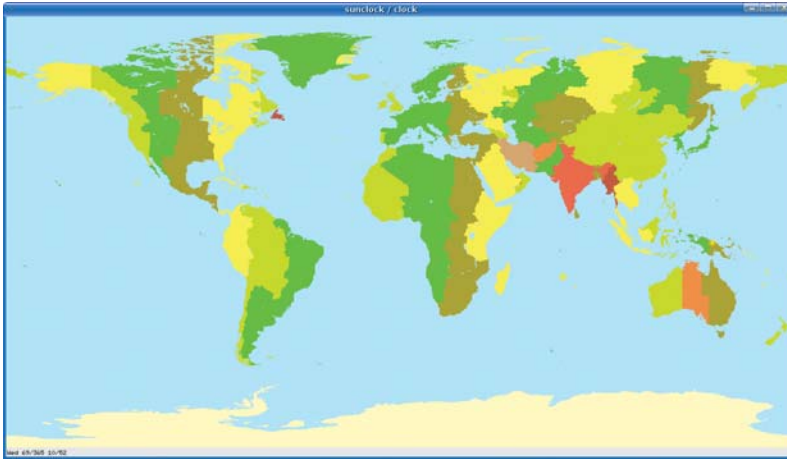
under the shade are passing through the night.

Use the steps in *Help 2.2* to open *countries.vmf* and see the world map showing the various countries delineated by boundary lines.



Pic. 2.3 The window for selecting various maps from

Understanding Time Zones



Pic. 2.4 World Map

Take a closer look at the world map. Do you dream of a world in which people's love and respect towards one another transcend all manmade boundaries? A world in which there are no boundaries at all?

Can you prepare a list of countries that experience night while India is in broad day light? Try clicking the 'N' button in the 'Suncllock Tool Bar' continuously (Picture 2.4). What happens if you keep pressing the 'N' button even after the night fades away completely? Can you find out?

Use the directions in *Help 2.3* to visualise the world map that shows the land and the sea separately. Can you assess the proportion of area covered by the land and the sea?

Time Zones

As a first step towards studying time zones, click the 'W' button on the 'Suncllock Tool Bar'. Time zone map appears in the 'Suncllock' window (Picture 2.5).

- Find out the time

difference for each shift by 15 degrees towards west from the zero degree longitude, i.e., from the prime meridian.

- What is the difference between Indian Standard Time (IST) and Greenwich Meantime (GMT)? Can you explain this

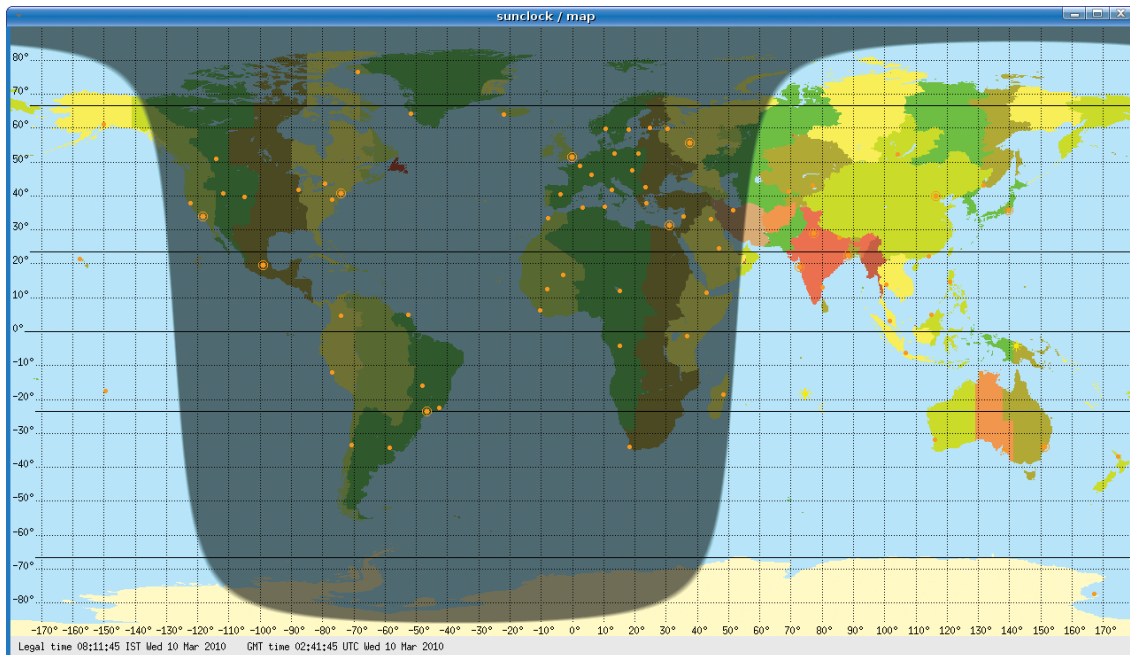
difference using the longitudinal time difference of one hour for every 15 degrees?

Help 2.4

- Open Suncllock zoom window by clicking on 'Z' button (Picture 2.6)
- Note the vertical and horizontal scale bars on the screen. By dragging the mouse pointer on the scale bars, we can select an area that we want to see in detail. Select African continent using this method.
- Click the '+' button to zoom in onto the selected area.

Towards West			Towards East		
Longitude	Day	Time	Longitude	Day	Time
15°	Monday	7 am	15°	Monday	9 am
30°	Monday	6 am	30°	Monday	10 am
45°			45°		
60°			60°		
75°			75°		
90°			90°		
105°			105°		
120°			120°		
135°			135°		
150°			150°		
165°	Sunday	9 pm	165°	Monday	7 pm
180°			180°		

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Pic. 2.5 Time Zone Map

Help 2.5

- ◆ Show the time zone map by clicking on 'W' button
- ◆ Double click on 'T' button to see lines of latitude
- ◆ Double click 'P' button to see lines of latitude with 10 degree gaps
- ◆ Double click 'Y' button to locate the longitudinal positions of the sun and the moon
- ◆ Click on 'U' tab to see the location of cities on the time zone map. See the information displayed below the window when you bring the mouse pointer on a city's location.

- Can you compute the time at the longitudes given below, at 8 AM, GMT?
- How many hours would be the time difference between 180 degrees East and 180 degrees West?

As shown in *Help 2.4*, it is possible to select a place and zoom in to watch more clearly.

Can you zoom in onto the African continent and see how many time zones has the continent been divided into? (use suggestions in *Help 2.4*).

Discuss the issues if India was divided into more time zones?

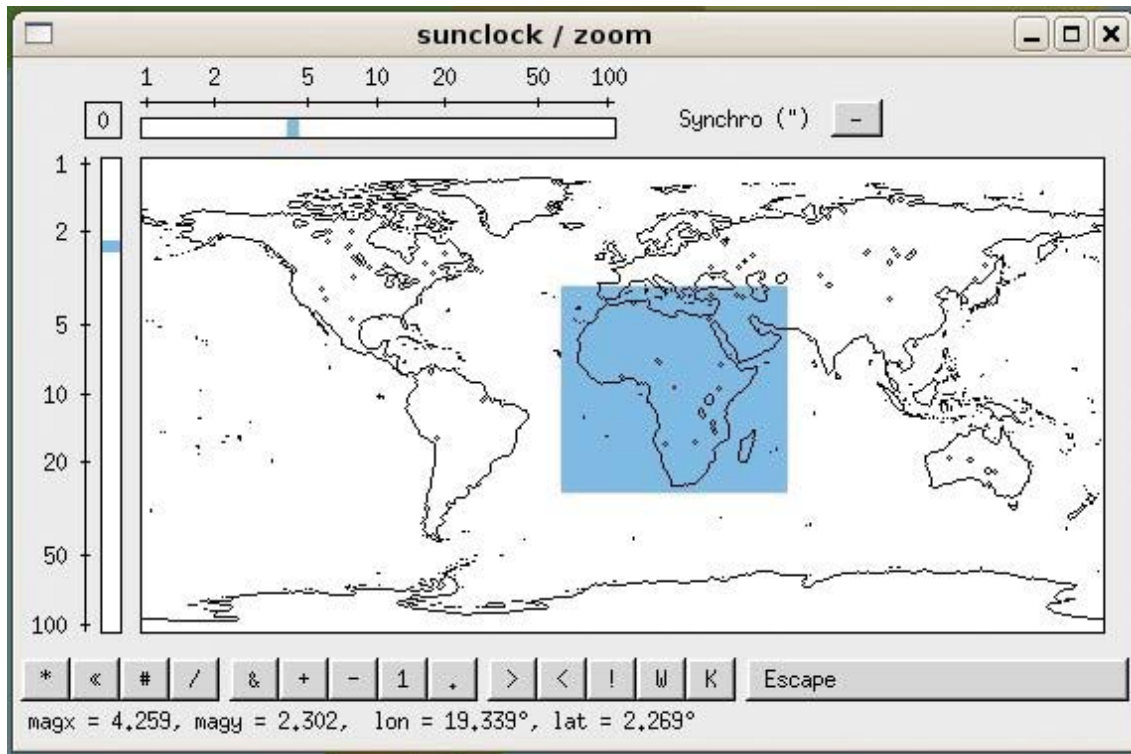
Latitude

Lines of latitude, also called 'parallels', can be seen on the time zone map as directed in *Help 2.5*.

Locate the following lines of latitude.

- Tropic of Cancer
- Equator
- Tropic of Capricorn
- Arctic circle
- Antarctic circle

Prepare a list of countries through which the Equator passes.



Pic. 2.6 Zoom-in-window

Help 2.6

- ◆ Click the **G** button to set the required time.
- ◆ Open the window by clicking 'O' button. Activate animation by clicking on tab.

Help 2.7

- ◆ Click **G** button to set the time difference as required.
- ◆ Use **A** button to set the time forward
- ◆ Use **B** button to set the time backward

Using Animation

'Sunclock' atlas captures the changes commensurate with every second of earth's rotation. In place of every second, we can adjust the speed of change in the atlas for every minute, day, week, or month. 'G' tab helps you to do this. Animation can be activated as shown in *Help 2.6*.

Shadow Clock

All of us know that the night does not set in at the same time all throughout the year. There are seasonal differences. By arranging the dates on the 'Sunclock', it is possible to see the

change in timing in the setting in of the night. Please use *Help 2.7*.

Does the night commence at the same time in Kerala and Delhi, on a given day?

Set the time difference at one minute and see the time lapse between sun rise across the various parts of India. Set the Time Zone Map to March 23, September 21, and December 22 and activate animation. See the difference in timing of sunrise and sunset in different parts of our country.

We have seen the position of the

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sun using animation. Based on this, observe the change in the position of the shadow in the Shadow Clock. Seek the support of your teachers if required.

More Activities

- By observing the Sunclock Time Zone Map, find out the time at which people in India actually saw the live telecast of the inaugural ceremony of Sydney Olympics held at 8 o'clock in the morning, Australian time.
- Identify the time zones in Russia using Sunclock.
- 'When the solar time is 4.10 evening in Kolkata, the same would be 3.08 in Mumbai'. Use sun rise timings to see whether this statement is true.
- Spot countries in African and European continents which lie in the same time zone.

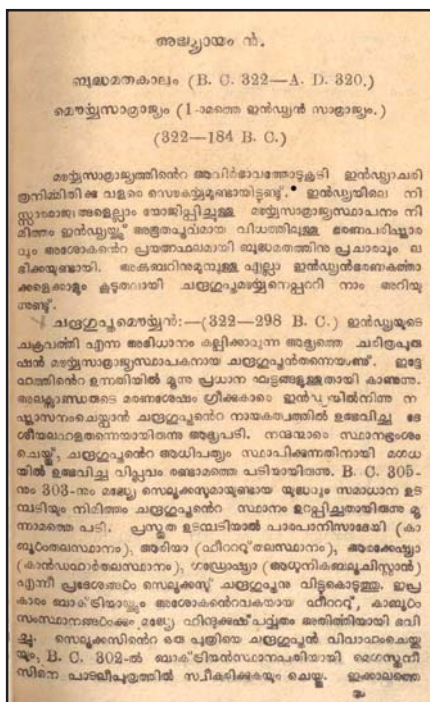


3. A News Magazine for Us



When you flip through the text books, colourful magazines and

daily newspaper, have you ever wondered how they are brought out? The news stories and features that reach you are printed with the help of machines. Two such printed pages in Malayalam are given here. One is from an old Indian history text book while the other is a recent newspaper report on Chandryan.



Pic 3.1



Pic 3.2

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Compare the pictures 3.1 and 3.2. Analyse the peculiarities of the print in both.

Pic. 3.1	Pic. 3.2
<p>Old age printing.....</p> <p>.....</p> <p>.....</p> <p>.....</p>	<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

The matter in the first picture was composed through manual type setting, a method used in the past, the newspaper shown in Pic.3.2 was printed using modern technology. Printing technology has undergone a sea change with the advent of computers.

You know how to prepare a document using computer? What are the different types of software that help you prepare a document? Prepare a list of such software.

- G Edit
- Open office writer
-
-

How to open these software applications?

-
-
-
-
-
-

G Edit

Applications → Accessories

.....

.....

.....

.....

Open office Writer

Applications → Office

.....

.....

.....

.....

Most of the magazines are colourful and eye-catching. How are they made so attractive? How is a paragraph in your textbook created? What are the features of a paragraph in your textbook? What all have been done to make paragraphs more attractive? Write down those points.

- Equal space between the lines
- Same font size
- The lay out made attractive by adding pictures

A News Magazine for Us

-
-
-
-
-
-
-
-

Printing – an amazing development in information technology

Imagine a world with no written words. Speech was the only medium of communication for our ancestors to convey their ideas and share their knowledge. Later, with the information being stored in palm leaves, one could preserve and transfer knowledge to the future generation without losing its accuracy. With the invention of printing press one could exchange information to a large section of the society. With computers replacing manual type setting, quality of printing took a giant leap forward.

Let's make a news magazine

You are already familiar with developing handwritten magazines in your school. Now, let us make a news magazine using computer. This news magazine can also be printed later. Let's prepare it by using your own stories, poems, essays and pictures. The work

begins with the collection of poems, stories and pictures of your friends. If necessary, get the help of your teacher to get suitable pictures from the internet. The first step is to discuss the contents to be included in the magazine. A message from the headmaster can be typed first. Type this message in your computer.

Message

Wow! Turning pages of this magazine is like seeing a rainbow - I am amazed at the variety of your creativity and also the hard work you have put in compiling this magazine. I see many sparks of innovative ideas, which have the potential to lead the thoughts of the society in the future. I wish and hope that you will now work towards making these a reality.
Best wishes.

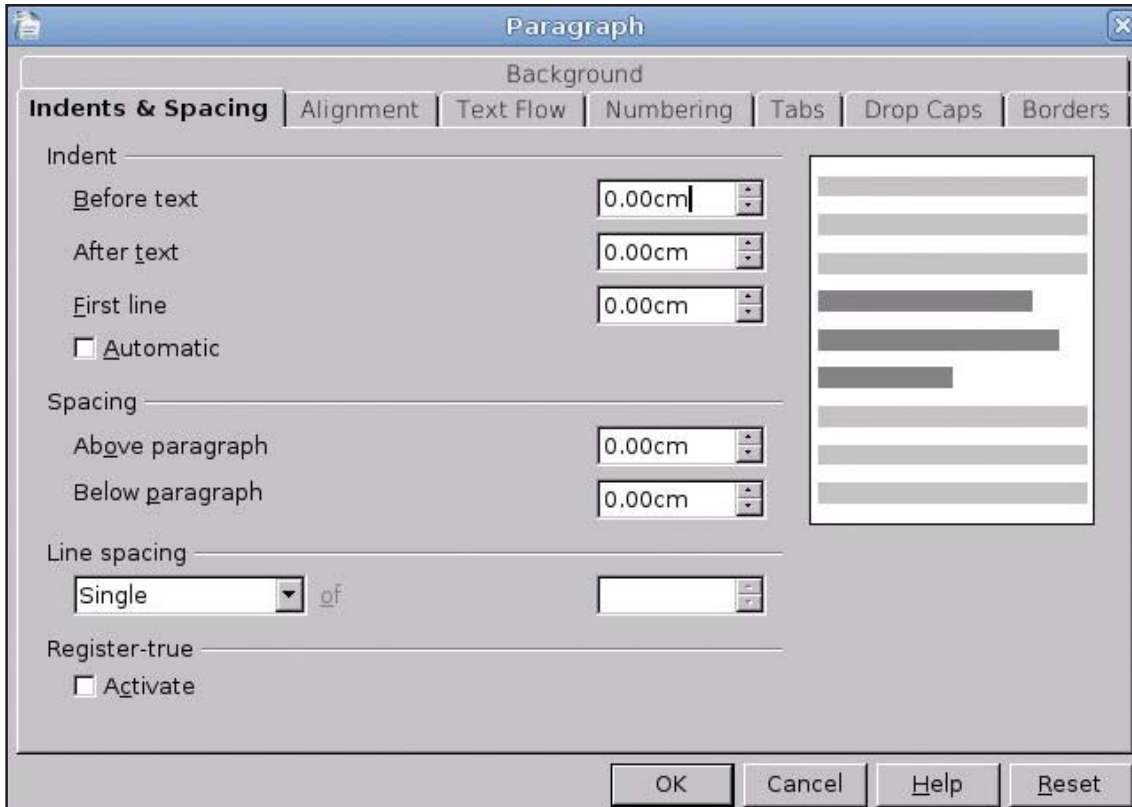
After typing the message structure it into a beautiful paragraph to enhance its appeal.

-
-
-
-

Select the typed paragraph and click on the Paragraph Tab in the Format Menu. What are the Tabs you view in the window that opens? Try to make changes using the facilities in the Tabs. Make list of the use of the Tabs that you get in the window.

How to make a paragraph look beautiful

To make the paragraph look beautiful one has to set space between the lines, between paragraphs, borders and background colour. To modify a paragraph select that particular paragraph and click on the Paragraph Tab in Format Menu. A window opens with ready-to-serve tools.



Pic. 3.3

1. **Background:** To change the background of the paragraph
 2. **Indent spacing:** Spacing between lines and paragraphs
 3.
 4.
 5.
- a. **Before Text:** Space from margin
 - b. **After Text:**
 - c. **Above Paragraph:**
 - d. **Below Paragraph:**
 - e. **First Line:**

You have just been introduced to the Tab that helps to modify a paragraph. Try to modify the headmaster’s message.

Type the stories and poems in Malayalam

You have already learned how to type Malayalam letters in computer. Get ready to type the stories and poems contributed by your friends. Find out the Malayalam letters that you get when you press the English alphabets in the key board. Start typing with the help of the key board (Pic 3.4)



Pic. 3.4

Editor’s Letter

Ajayan has been elected as the Editor of your school magazine. The editor’s words should appear in the second page introducing the Magazine. For this, a new page has to be added. What are the methods available for doing it?

The pictures 3.5 and 3.6 explain the method of adding new pages to your news magazine. Type the editorial following the methods you have learned and make the paragraph more attractive.

New pages can be easily added in the Open Office Writer file. The cursor automatically moves to the next page after the completion of the existing page. If not, bring the cursor at the end of the completed page and proceed with the Manual Break in the Insert Menu to add more pages.

From the Editor’s Desk

We have pleasure in presenting the creative works of the young, budding talents

.....

.....

.....

.....

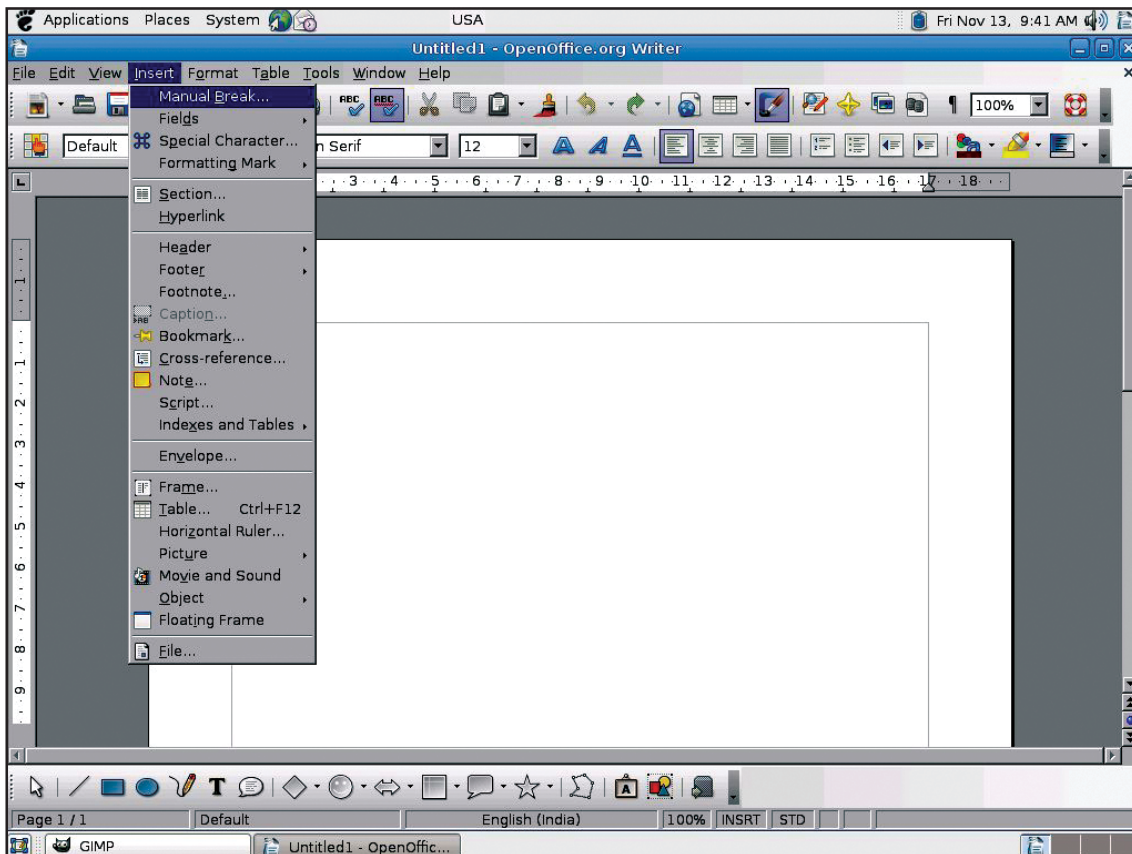
.....

.....

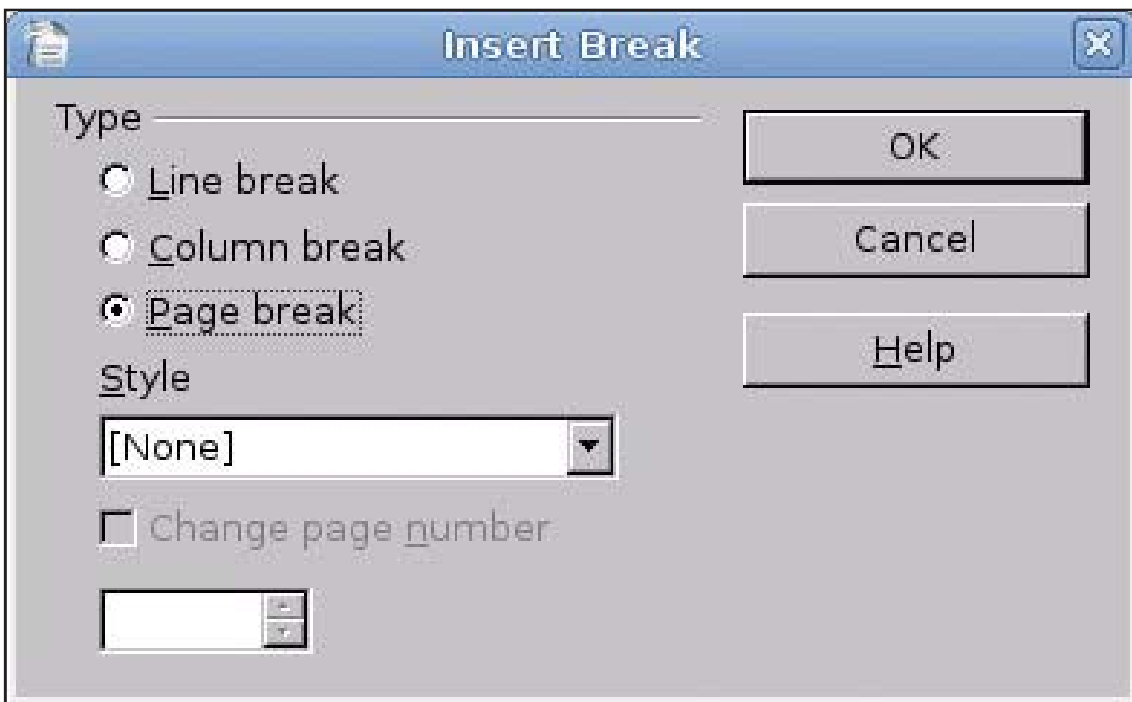
.....

.....

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Pic. 3.5



Pic. 3.6

Observe the paragraph given below. Find out the Tabs used to make the following paragraph attractive.

THE MICE THAT SET THE ELEPHANTS FREE

There was once a ruined village. The mice were the old settler there. They occupied the chinks in the floors of the houses and temples with their children and grand children. They found happiness in a variety of festivities. In to this scene came an elephant king, whose retinue numbered thousands. He, with his herd, had started for the lake in search of water. As they marched through the mouse community, the elephants crushed the faces, eyes, heads and necks of many.

- Prepare a list of the Tabs used.
- | | |
|--------------|---------|
| 1. Drop Caps | 3. |
| 2. | 4. |

Sreekutty's English Story

Sreekutty has contributed an English story to your magazine. Include it in the next page. Type the story and follow the methods of paragraph setting.

THE LION AND THE BULLS

Once three gient bulls lived in a jungle. They were great friends. A lion desired to kill them and eat them. But every time he went after the bulls, they jointly attacked the lion and drove him away. The lion therefore knew that he had to destroy the friendship and unity of the bulls. So he called a fox and asked him to make them quarrel among themselves. He promised that he would reward the fox handsomely. The cunning fox went to work. He told each bull false stories about the others. Within a short time the bulls began to quarrel among themselves. They started going about and grazing separately. Te lion easity killed and ate them all one by one.

While typing the story you would have noticed red lines under a few words. Why? Discuss the matter with your peer group and teacher.

A Dictionary inside the Computer

A dictionary is included in the IT@school/gnu/linux of your computer. This computer dictionary compares each typed word with the similar words in the dictionary and a red underline appears if there is an error. The red line also appears under the words that are not in the computer dictionary. (Eg: The names of persons and places of our local area). These words can be included in the dictionary, if needed.

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The incorrect words in the story of Sreekutty can be corrected. To do so, bring the mouse on the red underlined word and right click. What do you see now? A box appears with a few words similar to the underlined word. Select the correct word from it and clear the errors.

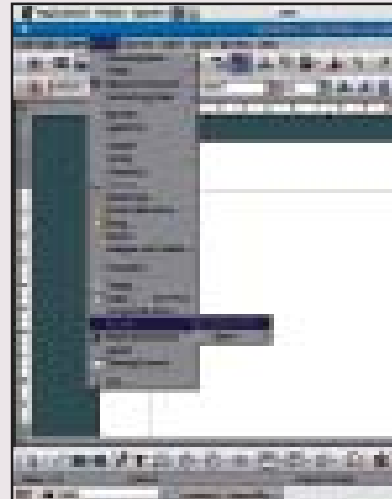
Notes of Saleena

Each unit in your English text has the details of the writers and poets. Saleena has collected more details of these writers as well as profiles of other prominent authors from the internet with the guidance of her teacher. Include this information

Pictures along with articles

Pictures can be included along with the article using the Open Office Writer.

Insert → Menu → Picture from File is the pattern for navigation.

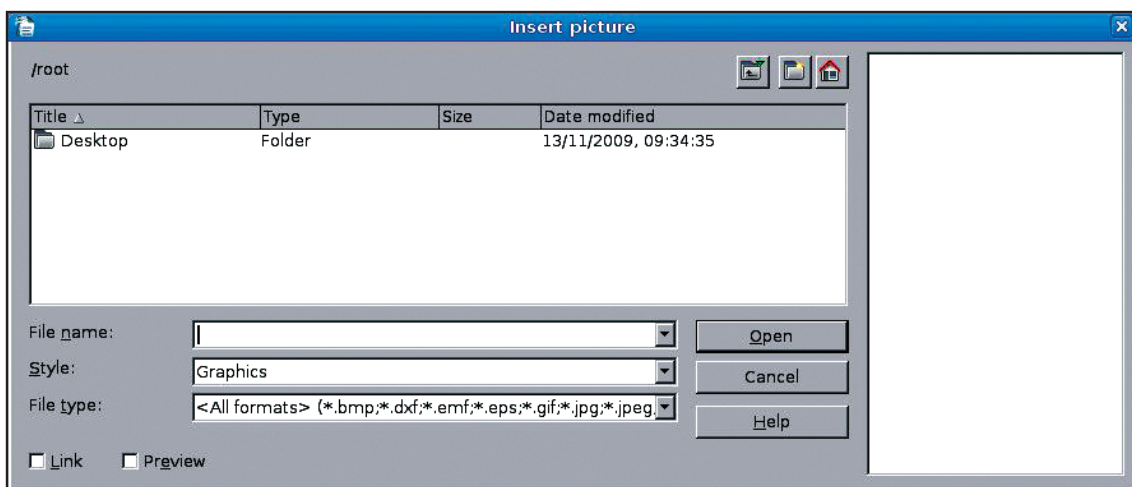


Pic.3.7

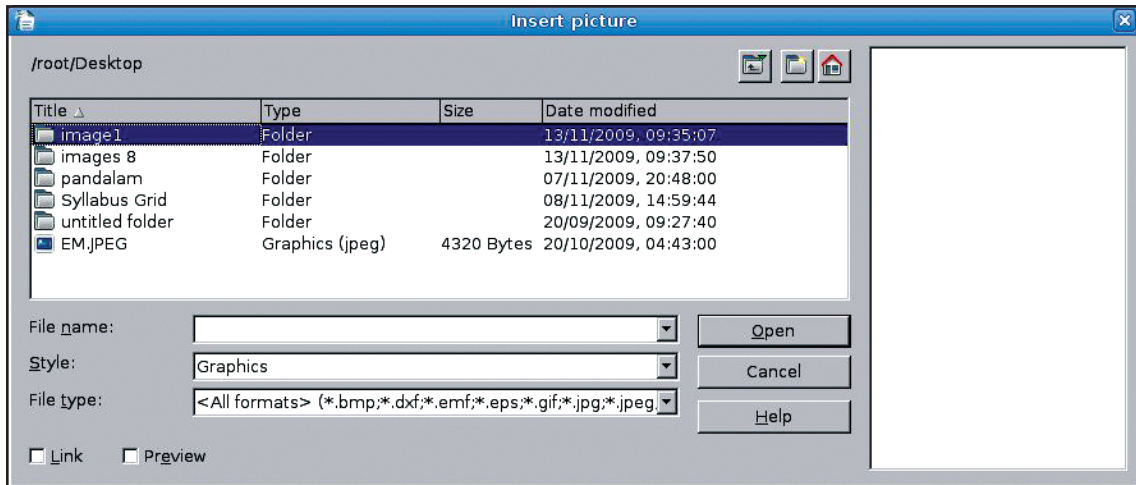
in your magazine. Let's find out the method to include pictures now.

When you click the Insert Picture from File, a browser window opens. Select a picture from the window. The Pic 3.8

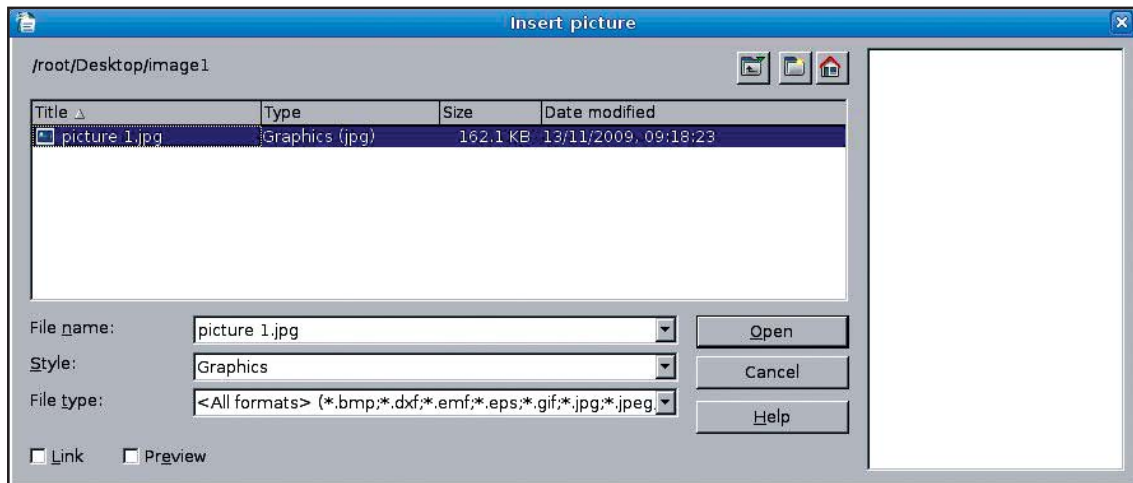
shows the way to select Picture 1 from the desktop folder Image 1. After selecting the picture click Open and the picture appears in the page where your article has been typed.



Pic. 3.8




Pic 3.9




Pic 3.10

Follow the pattern demonstrated here to add the profiles of the writers that Saleena has compiled from the internet.

	<p>WILLIAM SHAKESPEARE (1564-1616)</p> <p>The greatest poet and playwright in English Literature was born at Stratford-upon-Avon in Warwickshire, England</p>
---	--

Pic 3.11

<p>N. KUMARAN ASAN (1873-1924)</p> <p>N.Kumaran Asan also known as Mahakavi Kumaran Asan, the prefix Mahakavi awarded by Madras University in the year 1922 means "Great Poet".</p>	
--	---

Pic 3.12

Tables can be included in the articles

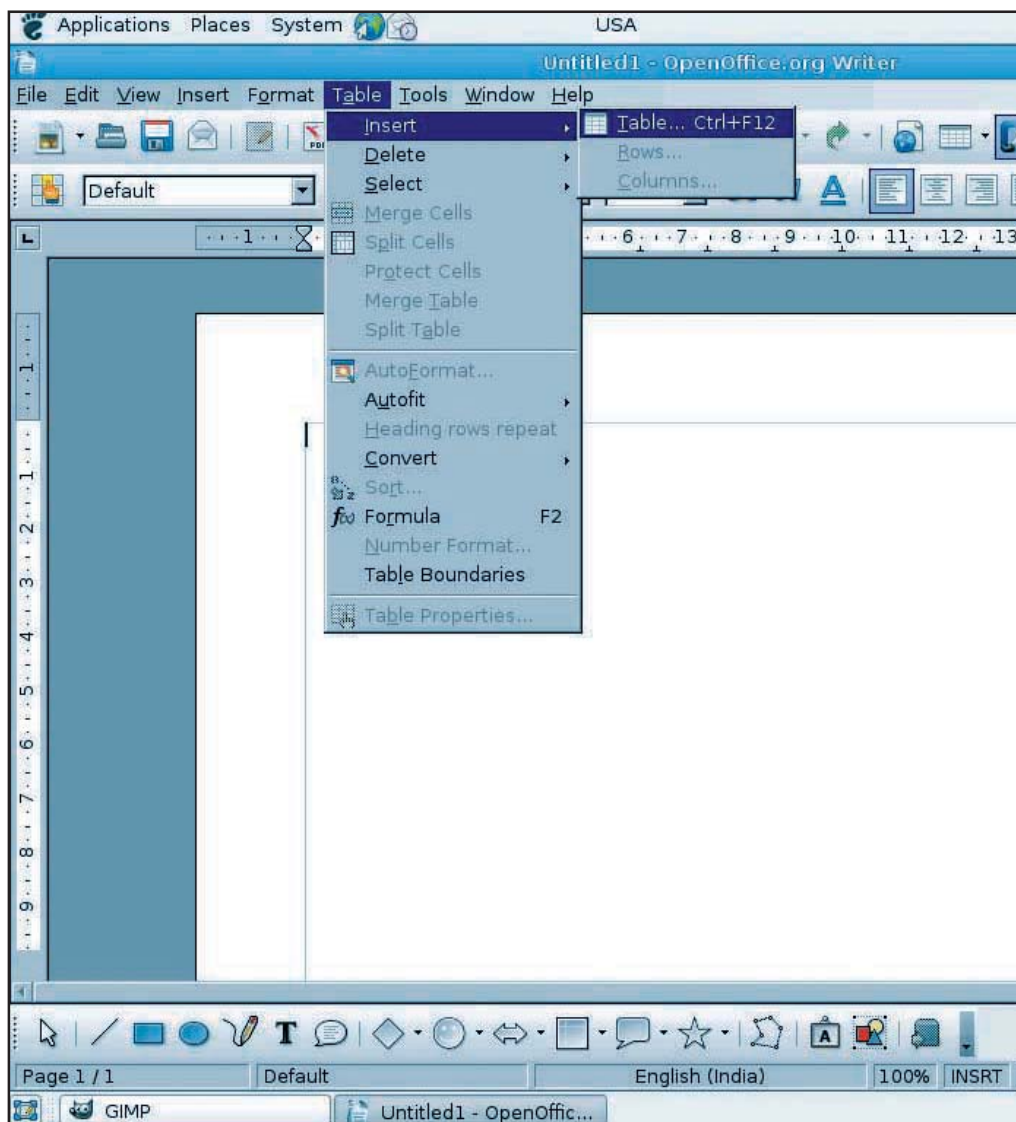
In the article written by Ratheesh on Water Conservation, a table has to be included. Now let's see how to add this table to the article.

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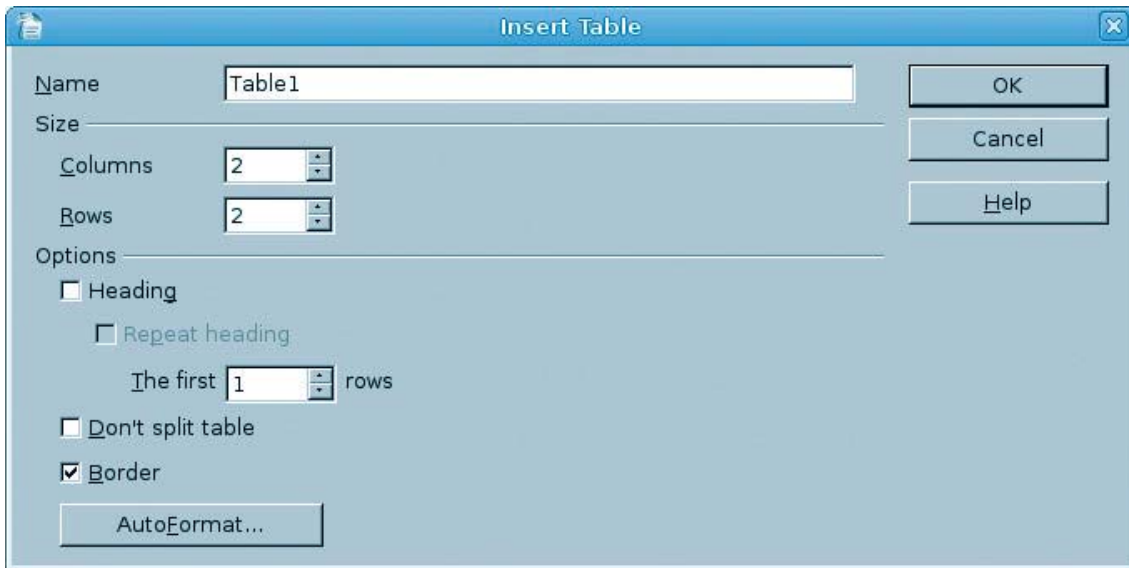
Sources	Those who use well water	Those who use rain water	Those who use tap water
Drinking	10	5	15
Cooking	15	7	18
Washing	40	0	10
Bathing	42	0	8
Other pupose	30	0	20

Bring cursor to the place where the Table has to be included. Click the Insert Table in Table Menu and a new

window opens. Click OK button after adding the required number of columns and rows. Now insert details.



Pic. 3.13



Pic. 3.14

How to make Tables attractive

There are various techniques to make the table attractive. The background colours, columns or rows, dimension of the columns, font size etc can be changed. The columns and rows can

be altered using the mouse pointer. There are tools in the Table Menu to bring about more changes. Find out the various tools in the Table Menu. Identify their applications and note them in the table below. Remember to select appropriate cells before using the tools.

Tools		Uses	
Table	Insert	Rows	
		Column	
	Delete	Table	
		Rows	
		Column	
	Select	Table	
		Rows	
		Column	
		Cells	
	Merge Cells		
	Split Cells		

Prepare a table for the magazine with the details of students in each class. A model is given below and you can use it with necessary changes.

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..... School						
Statement of Students						
Class	Previous Year - No. of Students			Current Year - No. of Students		
	Boy	Girl	Total	Boy	Girl	Total
I						
II						
III						
IV						
V						
VI						
VII						
VIII						
IX						
X						
Total						

Numbering the magazine pages

Each page in your text book is numbered. How is this possible? And how can your magazine be numbered? For numbering a page, at first one has to add a Header or Footer to the page. For this click the Header/Footer in the Insert Menu. Drag the mouse pointer to the

area where the number has to be placed and click Insert Field → Page Number. Notice the change occurred in the selected position. All pages can thus be numbered.

Make the news magazine more attractive by including all the contributions of your friends.



4. Knowledge at your finger tips



1. Computer Network

You must have kept the pictures, letters, and documents that you have prepared by saving them in your folders in the computers at your school. Whenever you want, you can open them, use them, and modify them if needed.

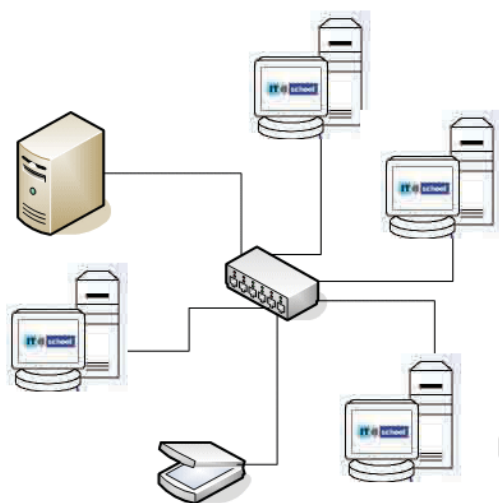
It would be convenient if your friends can see your documents and pictures on their computers, and help

you in editing or improving them. Similarly, it would be handy if you could also help your friends by working on their documents and pictures on your computer. Being able to share information across computers would be a major advantage while working on common assignments.

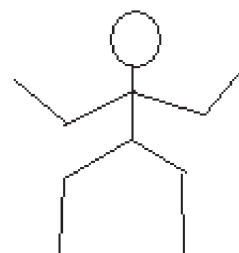
Activity 1.1

Let's draw a picture together

You already know how to draw pictures in 'XPaint' window. Let the friends using the first computer in the computer lab draw the following picture in the window and save it in your group's folder on their desktop.

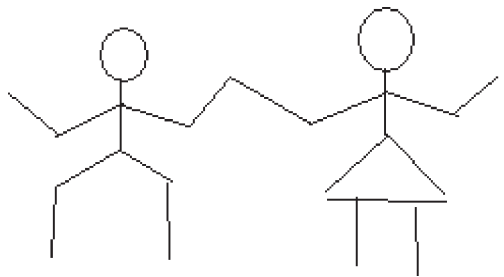


Pic. 4.1



Pic. 4.2

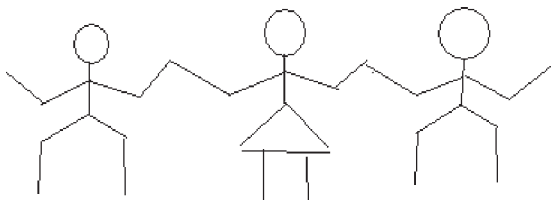
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Pic. 4.3

Can the friends using the second computer open this picture on their computer and make changes in it?

Open the picture that the friends in the first group drew with the help of your teacher, on your computer. Now



Pic. 4.4

you may add one more figure in the picture as shown in Picture 4.3. Please do save the file in the group's folder.

The third group can further add a figure. Now what you have is shown in Picture 4.4. Save it. Let other groups also open the picture and modify according to their imagination.

How is that we are able to open a picture saved in one computer and work on it on another computer?

-
-

Can you use the same method to share the work of the digital magazine and work on it collectively from different computers?

Activity 1.2

What are the advantages of linking computers together?

-
-
-

Activity 1.3

All of you have saved the pictures that you have made using 'GIMP' software in your folders in the computer. Share the pictures among your friends through computers. Open the pictures made by your friend in your computer, modify it, and save the modified copy in your folder.

2. A Journey through Greenland



Pic 4.5

Remember the letter from a student in Greenland given in the first chapter of the Social Science text? That was where we read about time zones and climate zones. You must have wished to see that beautiful place while reading that letter. Can you imagine the

Types of Computer Network

- ◆ For computers to share information, they have to be networked.
- ◆ There are two types of computer networks.
- ◆ When the computers in a room or a building are networked, it is called a Local Area Network (LAN). The computer network in your school lab is an example of LAN.
- ◆ Wide Area Network (WAN) are networks that connect computers over a very large area. The computer networks used by banks to connect their branches and ATMs and the all India tickets reservation system of the Indian Railways are examples of WAN.

Opening Web Browsers

Click on the menu/tab in the following order :

Applications → Internet → Mozilla Firefox /Isewessel

In order to open websites on the Internet, open any of the we browsers such as Mozilla Firefox, Icewessel or Opera. Type down the address of the web site you are looking for in the address bar (Eg. www.greenland.com) and press 'Enter'. We should know the names of the web sites to visit them on Internet.

Internet

Internet is a global computer network. We can access Internet by connecting our computer to it.

probable differences between thegeographies of Kerala and Greenland?

Polar bears, penguins, snow-topped mountains...if only we could visit that place!

But Greenland is so far away. Let's

try to enjoy its landscape a bit by seeing pictures and films about it on our computer. This cannot be as good as actually experiencing it, still let's try.

It is possible that some of the computers in your school lab have pictures and films of Greenland. Some CDs may be available as well. In that case we can make use of them. But what do we do if nobody in the school has got anything on Greenland with them?

Pictures and video documentaries on Greenland must be available in numerous computers in several places in the world. Can we access them? Can we connect to those computers in other parts of the world and access information? May be we should try.

Activity 2.1

Let's open a web site on Greenland in a computer connected to

Saving a picture

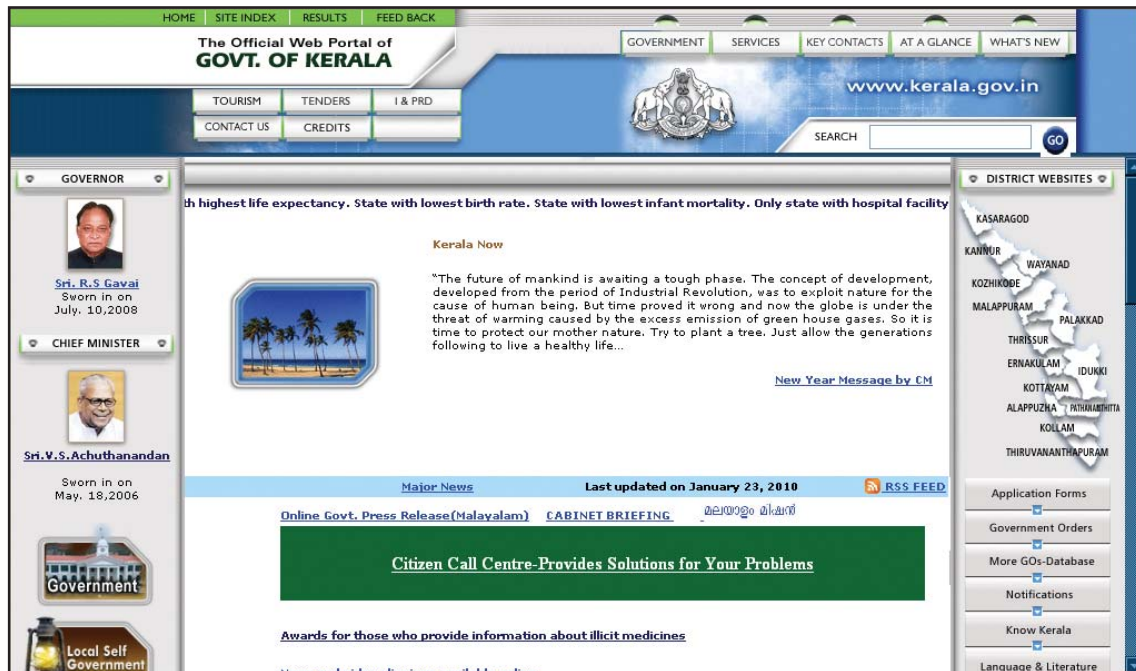
Bring the mouse pointer above the picture to be saved, and click the right button. A menu appears. Select 'Save image as' option from the menu and save the file on your desktop.

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Internet in the school lab. We have to use a 'web browser' for this.

What are the scenes that you see on the computer screen? Mountains covered in snow, polar bears roaming

around, penguins moving in a row... very similar to what that friend from Greenland had written in his letter. Look for more details in the window.



Pic. 4.6 The homepage of the official website of the Government of Kerala

Note down what you have seen:

- 1
- 2
- 3

Can that student in Greenland understand about our country and its geography using computers?

You have seen pictures and got

several information about polar regions. Can you save one of these pictures in your computer? Try saving any picture.

Activity 2.2

Remember the letter from a student in Indonesia in your Social Science text? Can you collect information on Indonesia from the Internet?

A few official Websites

Government of Kerala	- www.kerala.gov.in
Director of Public Instruction	- www.education.kerala.gov.in
IT @ School Project	- www.itschool.gov.in
University of Kerala	- www.keralauniversity.ac.in
Department of Tourism, Kerala	- www.keralatourism.org
Local Self-Government Department	- www.lsg.kerala.gov.in

Activity 2.3

Visit the web site of the Government of Kerala and note down the important information available.

.....

.....

Searching on Internet

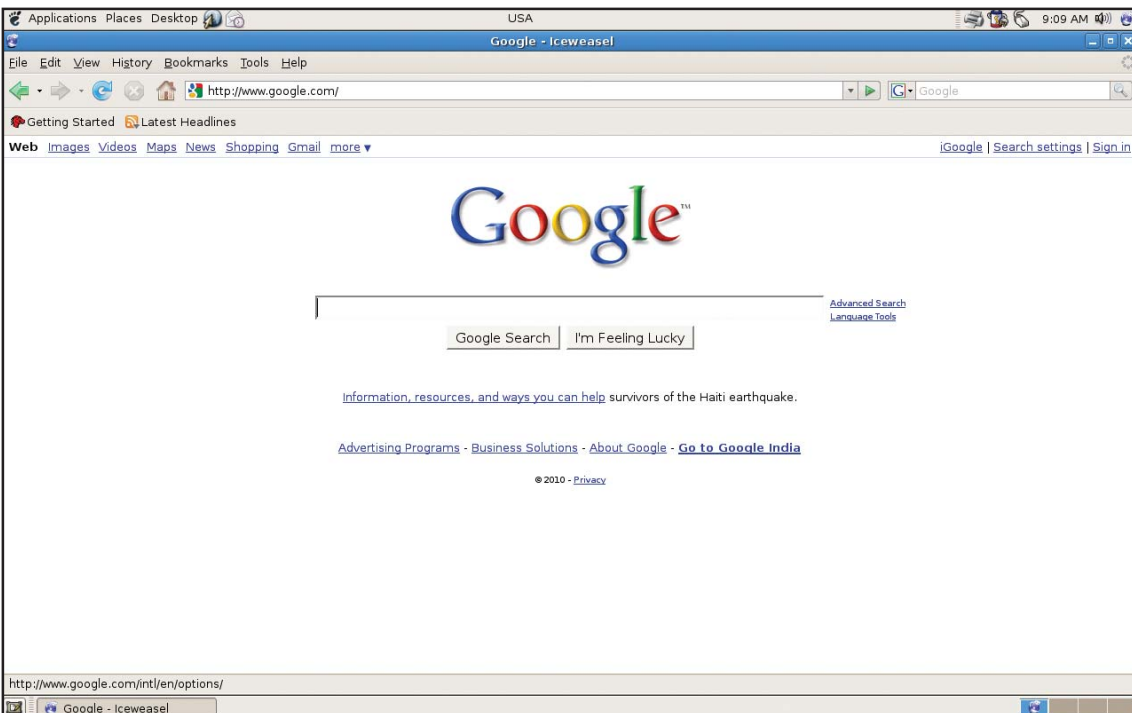
We rely on 'search engines' to search and find information on the Internet. In order to search using the search engine 'Google', type in the key

Saving an Information

You can copy the information to be saved and paste it in a writer window or text editor and save the file.

Search Engines

Search engines help you to find information even if you do not know the exact address of the web sites. Some of the important search engines are www.google.com, www.yahoo.com, www.msn.com, www.altavista.com, www.excite.com, www.bing.com. All these are available on Internet.



Pic. 4.7 - Google homepage

Activity 2.4

words of the information that we need in the search box in Google's home page. We can search for information in almost all the important Indian languages. Remember to provide space between words if you are using multiple keywords.

Remember what you have studied on our digestive system in the 13th chapter of the Science textbook. As part of your studies, can you search for pictures on human digestive system from the Internet? Lot of information on the human digestive system is available

History of Internet

- ◆ An experimental computer network called ARPANET was established on 2nd September 1969.
- ◆ It was a scientist named Paul Baran who played the key role in the development of ARPANET.
- ◆ When Winton Surf took over as the chief of ARPANET, the Project took a different path. He is known as the father of Internet
- ◆ India got connected to Internet on 15th August 1995.

Searching for Pictures

You can search exclusively for pictures by selecting the 'images' tab typically provided on the top portion of the web site's home page.

Activity 2.5

You have been asked to prepare profiles of Sree Narayana Guru, Ayyankali, and Chattampi Swamikal by your Malayalam teacher. Can you use Internet to access information on these great persons and prepare their profiles in Malayalam?

Wikipedia (<http://wikipedia.org>) is an independent and free encyclopedia on Internet. Its Malayalam version (<http://ml.wikipedia.org>) has lot of articles on various subjects.

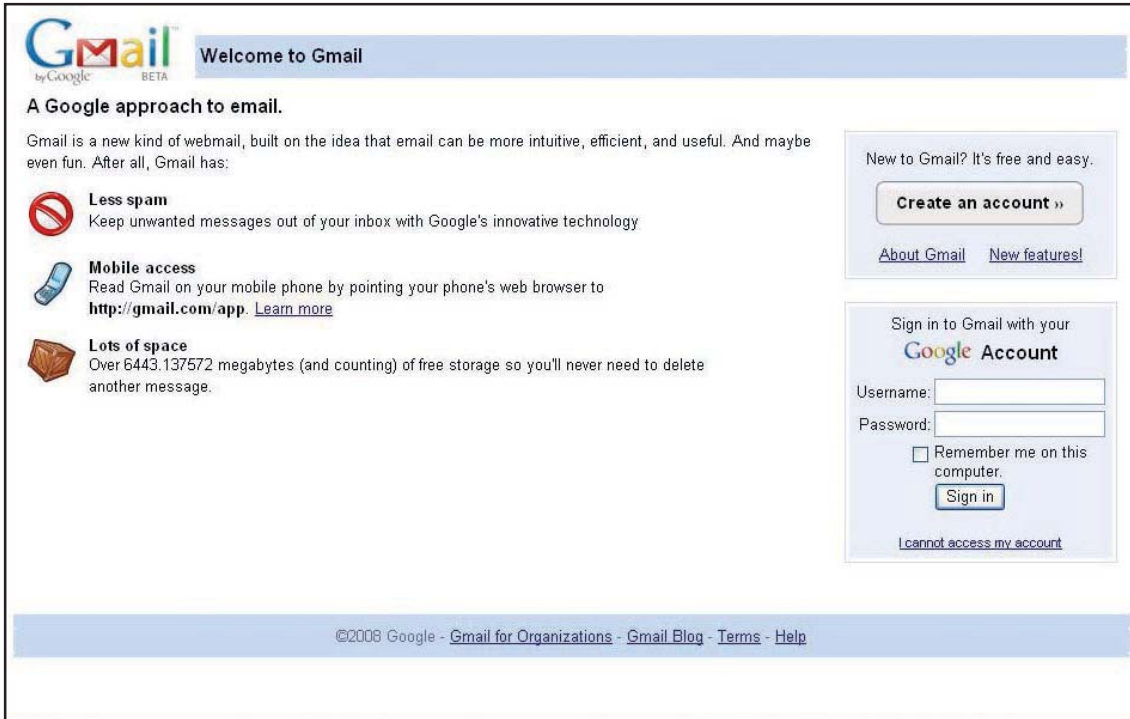
3. Email

You have read the letter from a student in Greece in your Social Science textbook. Can you write and send a

on Internet. Do we need to know the names of all the concerned web sites to access information?

Let's try searching for information on the human digestive system on the Internet.

Pic. 4.8. Article on Sree Narayana Guru in Malayalam Wikipedia



Pic. 4.9 Gmail homepage

reply?

There is a facility in Internet to send messages in the form of text, pictures, voice, and motion-pictures to anybody sitting in any corner of the world. This facility is called email or electronic mail. There are several web sites that offer email facility and addresses free of cost.

- Examples: www.gmail.com
www.yahoo.com
www.rediffmail.com

We need an address to receive and

send letters. Similarly we need email address for receiving and sending emails.

Activity 3.1 An Email address for you

Go to any web site providing free email service. Register an email address by providing your name and other information required.

Activity 3.2

Collect the email addresses of your friends and send the emails. Please do read their replies as well.

<i>Mode of commuication</i>	<i>Advantages</i>	<i>Limitations</i>
<i>Letters</i>		
<i>Telephone</i>		
<i>Mobile phone</i>		
<i>Email</i>		

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Password Security

Password is your secret key to Internet. Keep it confidential.

Conduct a discussion on various modes of communication and write down their features in the following table.

Internet danger zones!

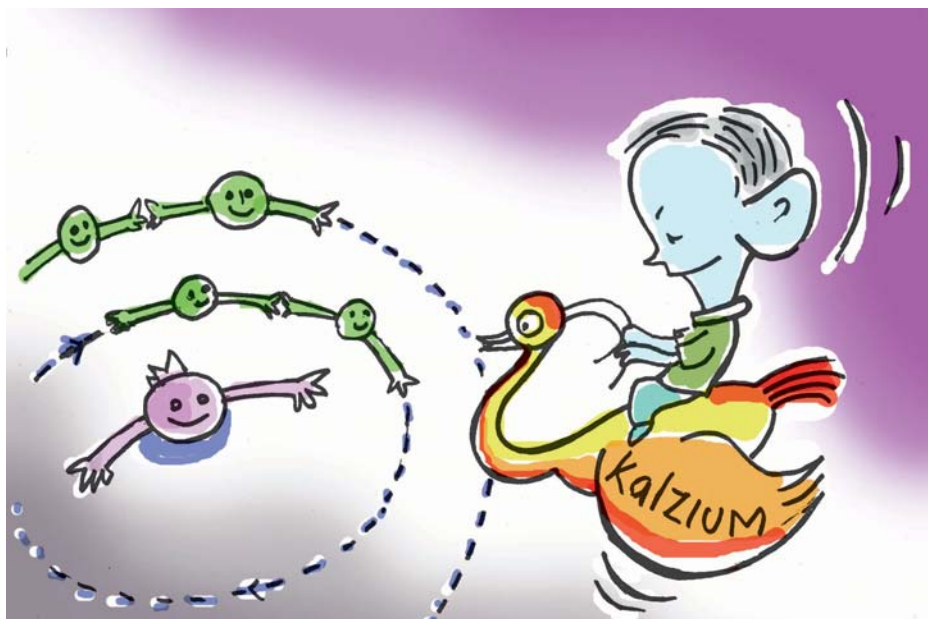
We saw how effectively we can use Internet to access information and communicate. Doesn't it look like an altogether different world of information and communication? But we should be aware of its flip side also.

Indiscriminate use of the Internet may land us up in trouble. There are lots of misleading information available on Internet. You may find information and pictures that may allure you to unacceptable tasks and routes. Therefore, use Internet in the presence of your teachers or parents, and according to their directions.

Using Internet for spreading wrong or obscene information on others is a punishable offence. In addition to that, using Internet for any attempt to destroy or damage the computers or software is also a punishable offence under the Cyber Act passed by the Indian parliament.



5. Chemistry made interesting



Sure you will instantly recognise these two men in the photographs. A billion hearts beat in ecstasy when they stood on the victory stand flaunting those cute little things called Olympic medals. They created history winning individual medals in the topmost sporting event in the world. The events in which they won the medals, years,

alloys that you notice in day to day lives?

We have studied about numerous 'elements' in our chemistry texts. Which elements among them are the ones that you are the most familiar with? How many elements have you seen or touched?



Pic. 5.1

and the types of medal that they got must be etched in your memories.

Have you ever thought of the materials which were used to make those medals? What are the metals and



Pic. 5.2

- Aluminium
- Silver
-
-

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There are elements that we see mostly in the science laboratory. Can you remember some of them?

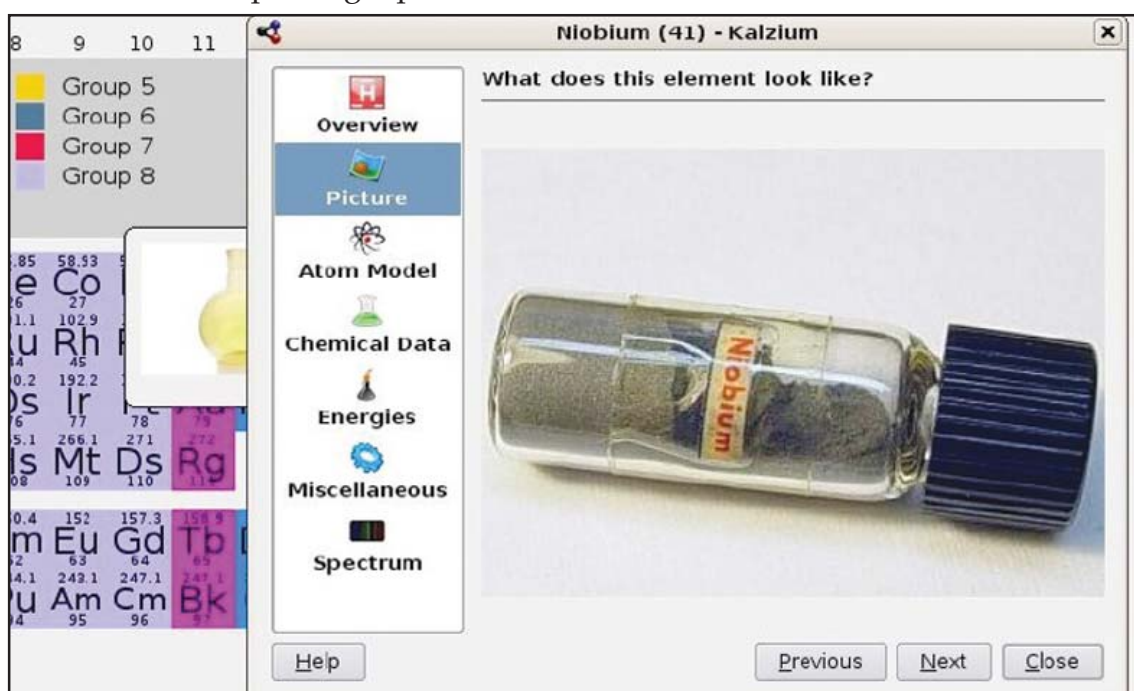
- Magnesium
- Mercury
-
-

We are not familiar with several important elements. We understand them from photographs and

information available on them. What are the usual methods through which we access information on elements?

There are several software applications that help us understand elements. Let's try to use one such software called Kalzium, which is available on GNU Linux platform.

Every element has its own specific properties. Often it is possible to understand some of these just by



Pic. 5.3

observing them. See the element shown in the picture.

Activity 5.1

In 'Kalzium', click on the symbols of elements, observe them and prepare notes on their properties.

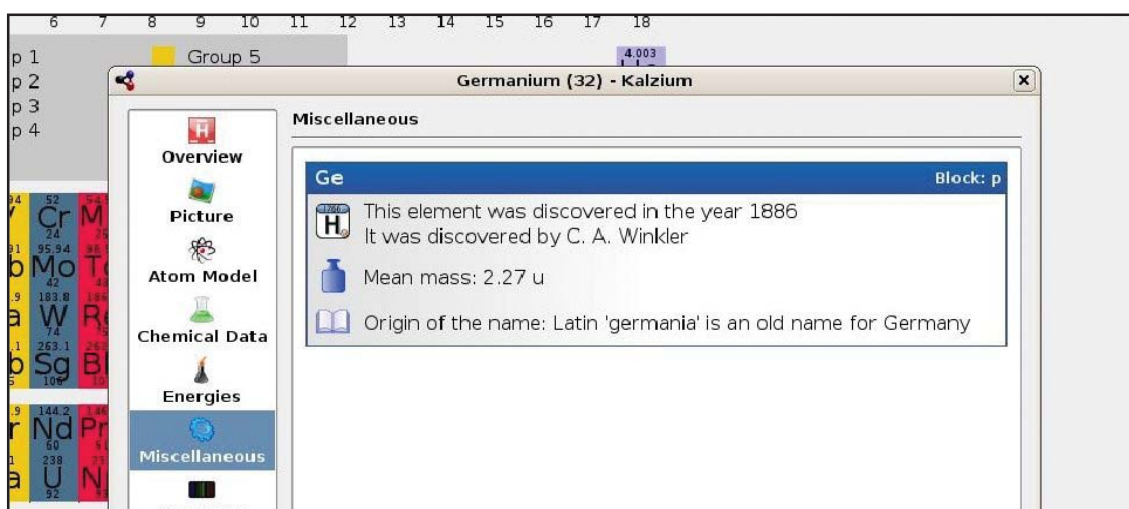
The Model of Observation Table

Element observed	Atomic Number	Physical State	Colour

Open 'Kalzium' software application by clicking 'Applications' → 'Education' → 'Kalzium'. Click on the symbols of elements and see their pictures.

We have understood that different elements have different properties. We also realise that this wonderful universe has been formed by elements. Water, plants, snow, mountains, and the celestial objects are all formed by various compounds of elements.

Elements are behind the nature and diversity of this universe. How many of such elements have already been discovered? Who discovered them? When? We can learn all these and more using 'Kalzium' software application.



Pic. 5.4

- ◆ We can access information by clicking on 'Miscellaneous' after selecting the symbol of an element in the 'Kalzium' software.
- ◆ Click on 'Time line' on the side bar. We can set the year by moving the button below the 'year' tab.
- ◆ Click on 'State of matter' on the side bar. We can change the temperature by moving the button below the temperature tab.

Activity 5.2

Find the following using 'Kalzium' software application.

- Which were the elements that our forefathers knew in pre-medieval times?
- Which was the first element to be discovered? When was it?
- Who discovered Silicon? When?
- How did mercury get the symbol 'Hg'?
- Which were the elements discovered in the eighteenth century?
- Find out the change in the physical

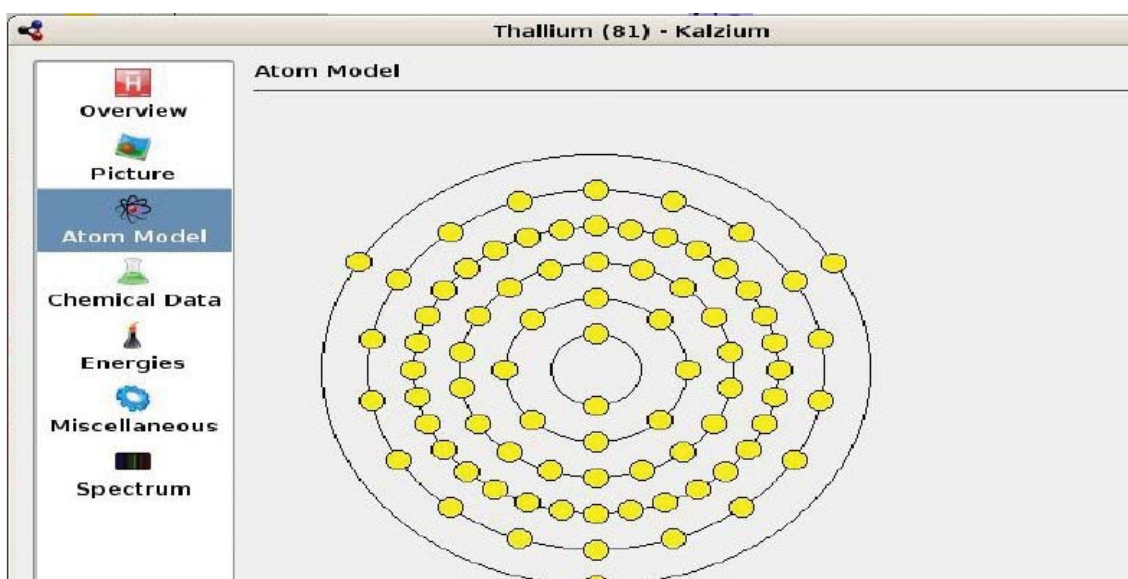
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state of elements at different temperatures.

You know the symbols used for representing elements and their relationship with the names of elements. Based on the information available in 'Kalzium' software, prepare a note discussing the way elements got their names and symbols, with examples.

Atom Model

You know the elementary particles that form an atom. They are protons, neutrons, and electrons. The difference in the number of such particles and the way they are configured in atoms determine the properties and peculiarities of elements.



Pic. 5.5

Picture 5.5 shows the electronic configuration of an atom. Let's examine the electronic configuration of a few other elements as well.

Activity 5.3

Fill in the following table by finding out the properties of a few elements with relatively large atomic numbers using 'Kalzium'.

Open 'Kalzium' software application. Click on an element. Access information by clicking on 'Atom model', 'Chemical data' etc.

Activity 5.4

Find out the elements with more than five isotopes from the 'Isotope Table' in 'Chemical Data'. Compare the number of electrons, protons, and neutrons of isotopes.

Element	Atomic Number.	Mass	No. of Elementary Particles			Electronic Configuration						
			p	n	e	K	L	M	N	O		

Atom Model		Atomic Radius: 180 pm						
Chemical Data		Mass: 40.078 u						
Energies		Isotope-Table						
Miscellaneous		Mass	Neutrons	Percentage	Half-life period	Energy and Mode of Decay	Spin and Parity	Magnetic Moment
Spectrum		39.963 u	20	96.92%			0+	0 μ_n
		41.959 u	22	0.64%			0+	0 μ_n
		42.959 u	23	0.13%			7/2-	+1.31725 μ_n
		43.955 u	24	2.13%			0	0 μ_n
		44.9562 u	26	0.003%	163.8 days	0.257 MeV β^-	7/2-	
		47.952 u	28	0.18%			0+	0 μ_n

Pic. 5.6

Prepare a presentation on the information you have collected on an element from software applications such as 'Kalzium' and 'GPeriodic'. Make a presentation to the class.

Molecular Model



Pic. 5.7 -Sugar



Pic. 5.8 - Punnamada lake

Sugar, water etc., are substances of daily use. Can you imagine how the molecules of these substances would look like? Have you ever been able to see them?

We know that molecules are formed by atoms. But the structures of

such molecules are too small to see. Therefore we make models of molecular structures to enhance our understanding. How will you make such models? Write it down in your note book.

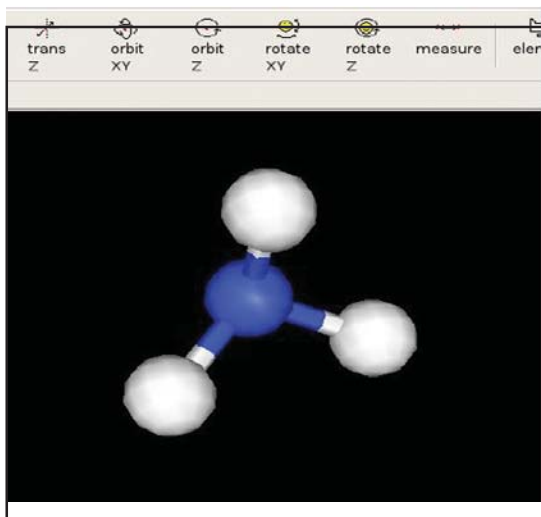
The way I made a molecular structure

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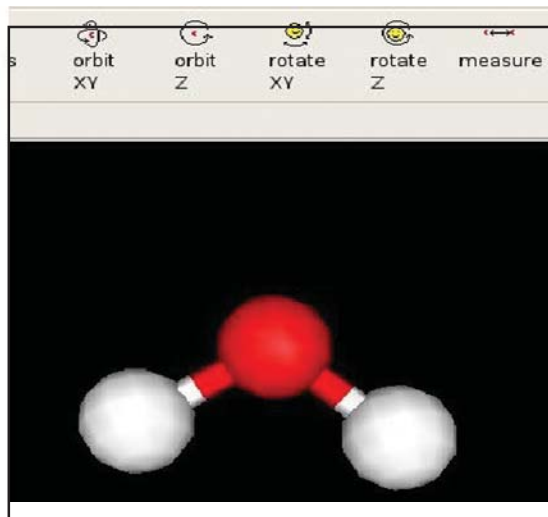
Pictures 5.9 and 5.10 show molecular structures developed using software. Observe these molecular

structures.

Let's also try to make models of molecular structures.

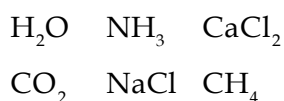


Pic. 5.9 - Ammonia molecule



Pic. 5.10 - Water molecule

Activity 5.5



Aren't you familiar with the molecules shown above? Now try developing models of their structures.

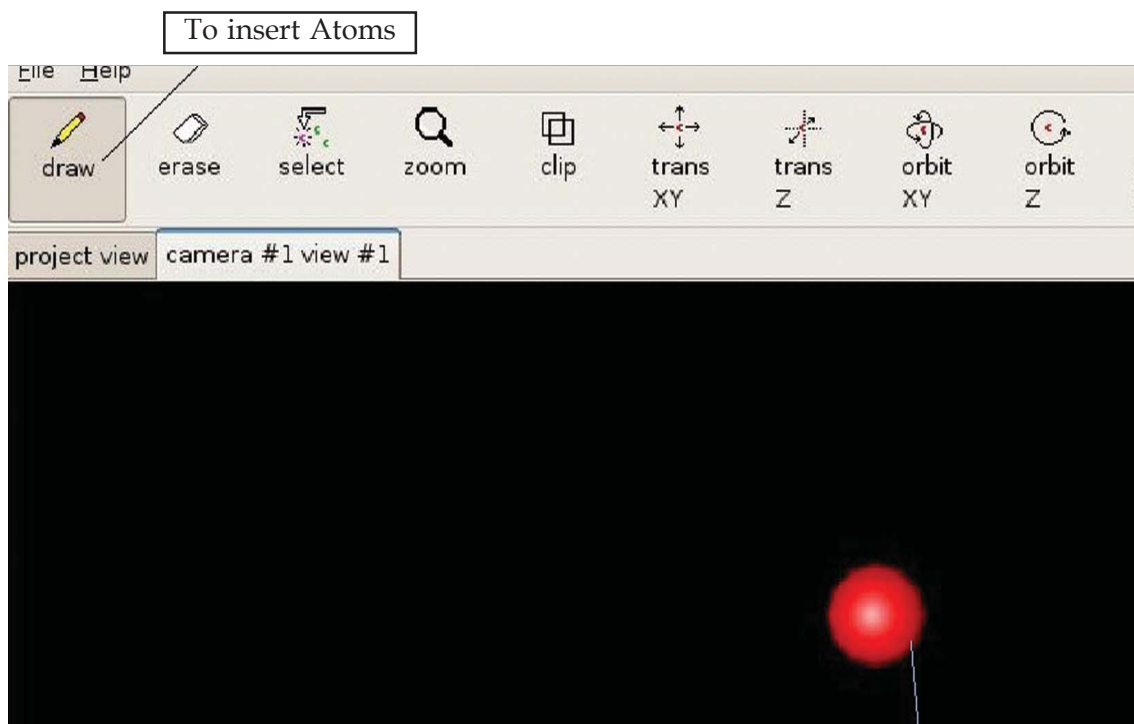
How do we develop models of molecular structures?

Open the appropriate software application.

- Select atoms of required elements (See Picture 5.11)

To find elements

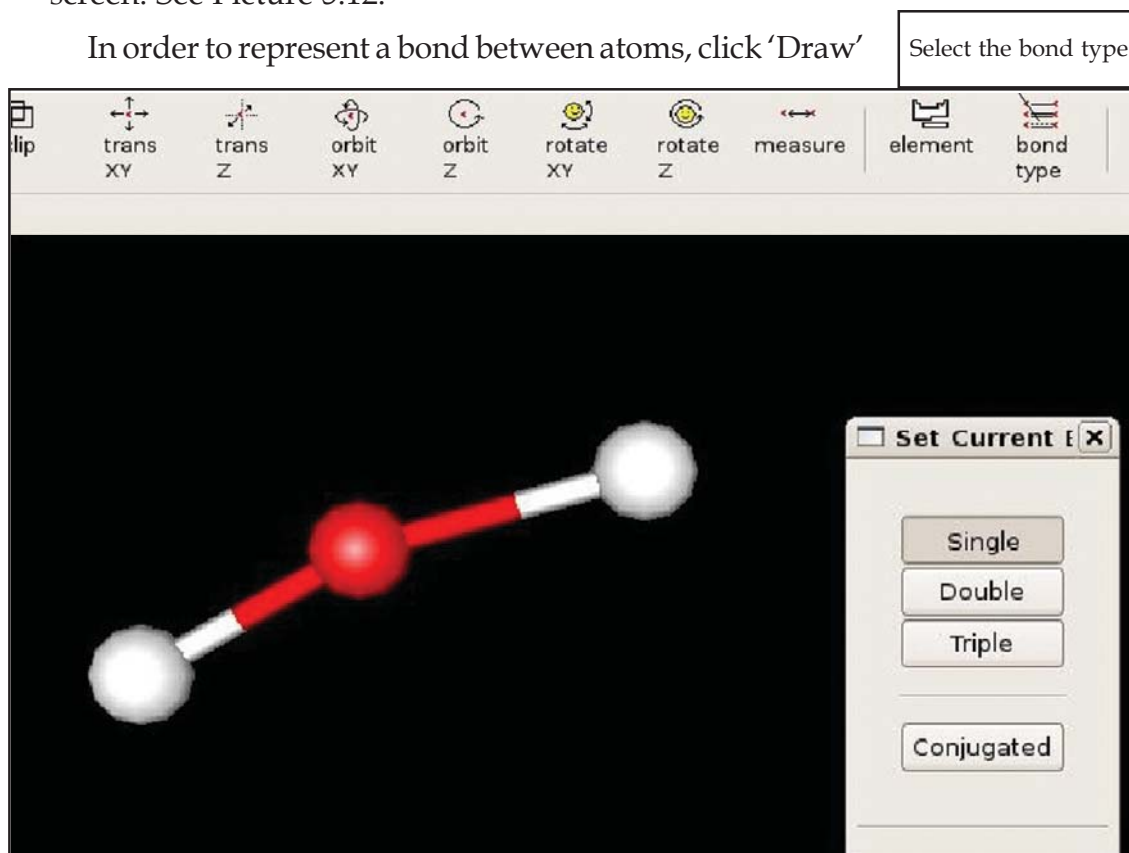
Pic. 5.11



Pic. 5.12 - Oxygen Atom

- In order to bring the atom to the screen, click 'Draw' button first and then click at a desired spot on the 'camera view' screen. See Picture 5.12.

In order to represent a bond between atoms, click 'Draw'



Pic. 5.13

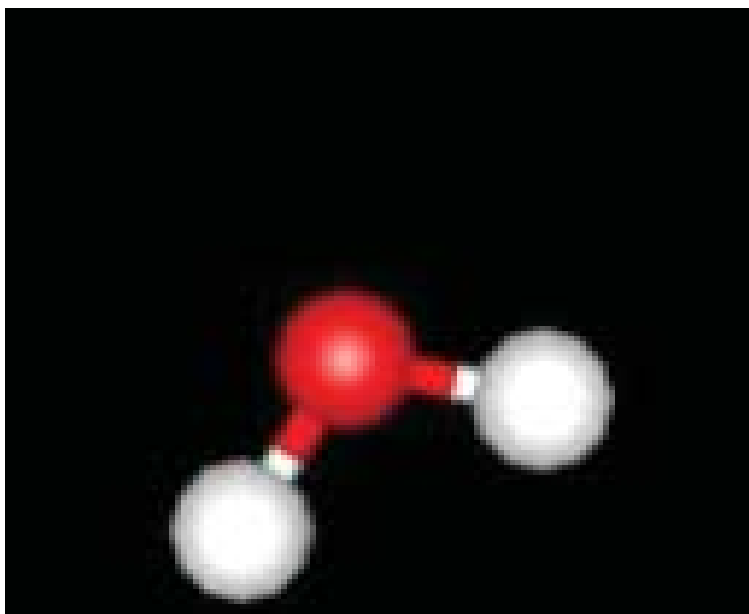
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Several software applications are available for making models of molecular structures. 'Gchemical' included in IT@School GNU Linux is one such software. Open the software and select an element by clicking on 'Elements'. Bring the required number of atoms to the 'camera view' screen by first clicking 'Draw' button and then on any spot on the screen. Select 'Bond Type' button. Place the mouse pointer on an atom and drag to the other to connect. In order to optimise the molecular structure, place the mouse pointer on the molecule, click the right button, select 'Computer' → 'Geometry Optimization' → 'OK'. In order to save the molecular structure, place the mouse pointer on the molecule, click the right button, select 'File' → 'Save As', select the folder to which you want the structure to be saved, give a file name, and press 'OK'.

button, and place the mouse pointer on one of the atoms and drag to the other.

For optimising the molecular

structure, place the mouse pointer on the molecule, click the right button, select 'Computer' → 'Geometry Optimization' → 'OK'.

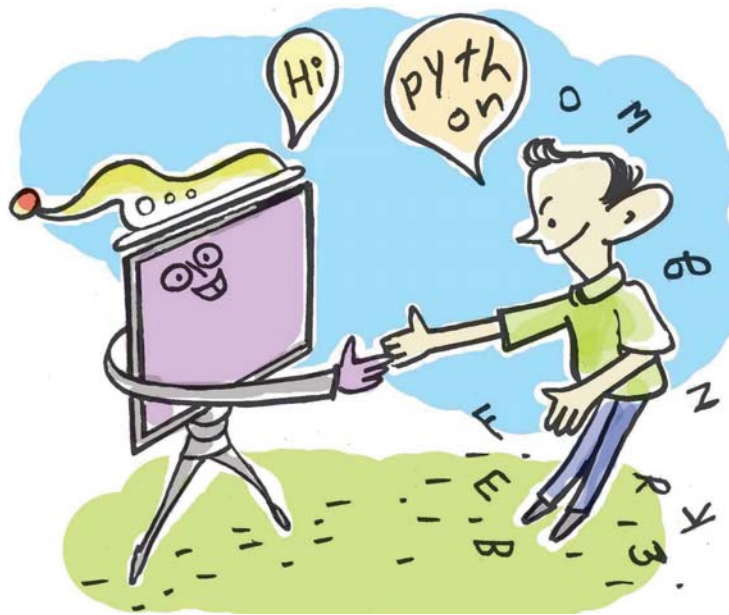


Pic. 5.14

- Try using the tools for viewing a molecule from different angles. Use also the tool for shifting the position of the molecule.
- Save this molecular structure in your folder and keep it.
- Make more models of molecular structures, demonstrate them in your group and discuss.



6. Games that Matter



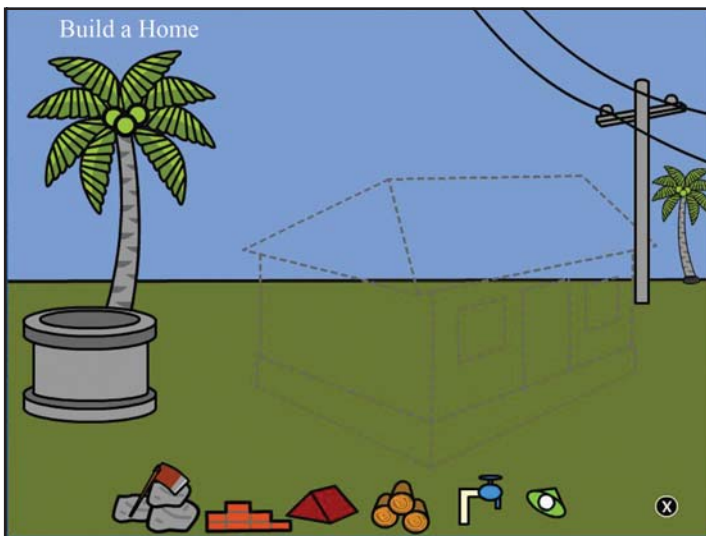
You must be familiar with computer games, and must have played several of them. Which are the games in IT@School Linux that you have played?

Shall we start a new game? You already know how to find games in GNU/Linux. Find the game titled 'Kaliyalla Karyam' and start playing 'Design a dream home'. The sketch of a house (Picture 6.1) appear on the screen.

Not only that, there are also building materials available! You just have to build your dream home now!

Everyone goes through a different experience while trying to build their dream home. What is your experience? Try writing it down.

1. The house got demolished.
2.
3.
4.
5.



Pic .6.1

Remember the activity called 'Hybridization' in the Resource CD? You had done that while learning hybridization in the chapter 'Agriculture: a way of life' in the Science textbook. What

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were the various steps of hybridization? 4.

1. 5.

2.

3.

4.

5.

6.

Remember the activities relating to coconut production that you did for the topic 'Averages' in mathematics text? Let's try doing that through a game. For this, start playing 'Average' in the game 'Kaliyalla Karyam'.

1.

2.

3.

4.

5.

Let's start playing 'Hybridization' in the game 'Kaliyalla Karyam'. The software tells you how to play when you bring the mouse pointer on the 'Help' button. Please remember to note down your observations.

1.

2.

3.

Similarly you can also play 'Difference of Squares', and 'Calculating Speed'. Have all of you been able to complete the games successfully? What all did you discover playing these games?

1. In the game 'Design a dream home', we are able to complete the house only if we build the basement, walls, and roof in that order.

2. In the game 'Average'

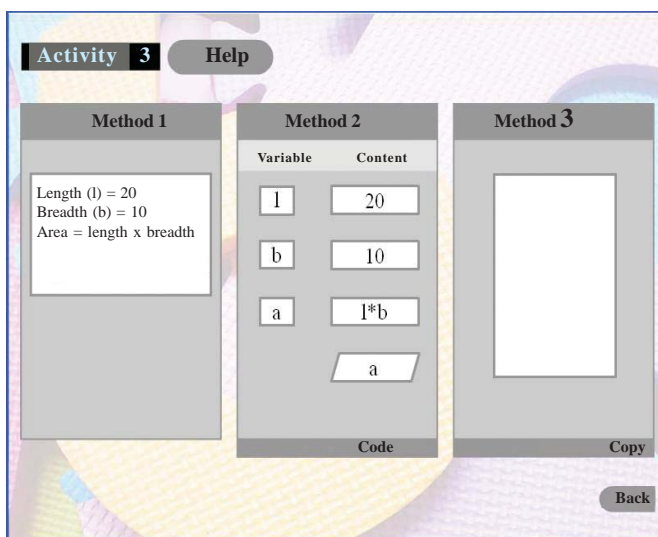
.....

3.

4.

5.

There are different ways to calculate the carpet area of a classroom. Try doing it through the game 'Computer Computation' (Picture 6.2). Use



Pic. 6.2

the 'Help' button in Activity 3.

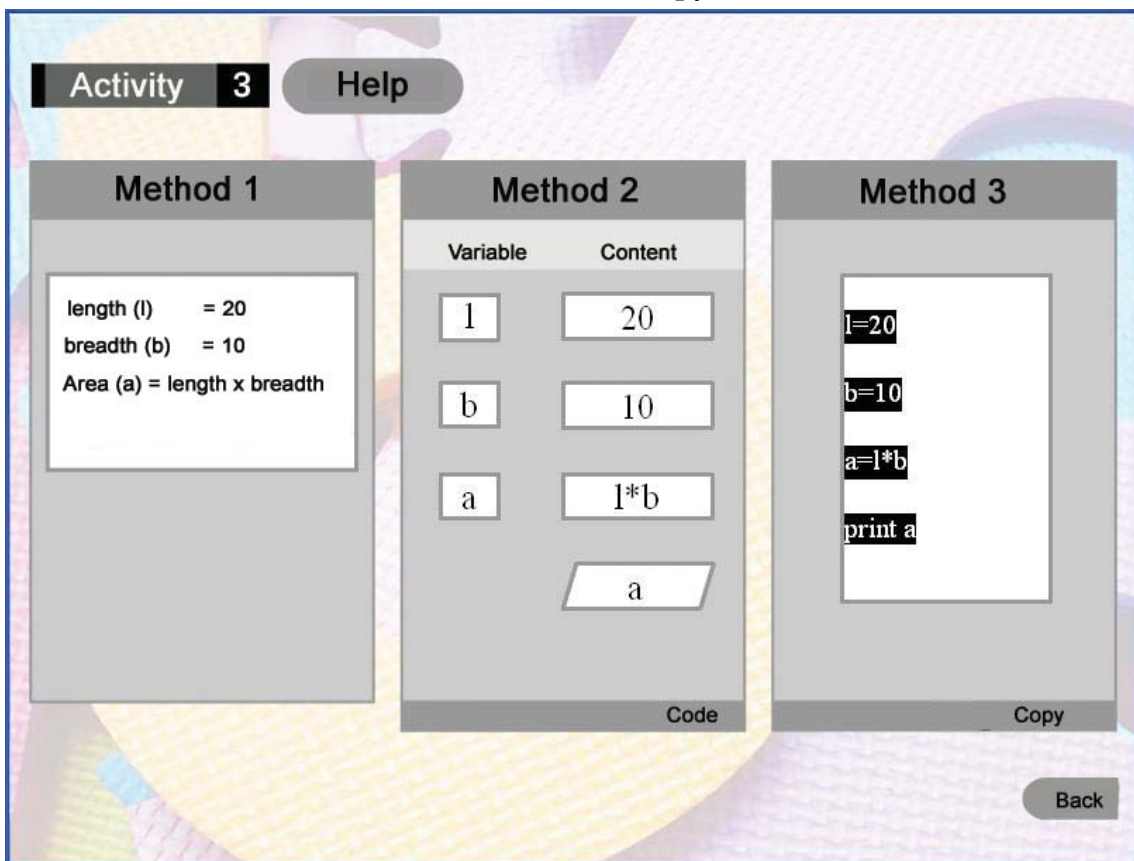
Note that there are two different methods shown for calculating the carpet area of a classroom. Press 'Code' button and you will see a third method. What are the differences across these methods?

1.
2.
3.

'Code' is a computer programme. It is with the help of programmes that computers understand the ways of doing calculations.

Now let's try this programme. Click 'Copy' to copy the programme. You may note that the third method has been selected. Copy it to a text editor, save and run. Please remember to add a tag '.py' to the file name while saving. Example: If the file name you have given is 'area', then the file has to be saved as 'area.py'.

Now let's see how to run the 'area.py' file.



Pic. 6.3

Open the terminal by selecting menus/tabs in the following sequence: 'Applications' → 'Accessories' → 'Terminal'. As shown in Picture 6.4, type 'Python' followed by file name in double quotation marks. In this case,

type the following.

Python "area.py"

Press 'Enter' and you get the carpet area of the classroom.

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If you have to measure the carpet area of another classroom of size, say, 25'X20', what are the changes that you will have to make in the programme "area.py"?

1. Change $l = 20$ to $l = 25$
2.

If you wish to display 'AREA =' before the carpet area, you will have to



Pic. 6.4

add 'AREA =' to the command. Then the command will be

print "AREA=", a instead of print a

Now let's run the programme for finding the perimeter of the same classroom using Activity 3.

In the window that opens (Pic. 6.5), input the variables for length and breadth in the boxes below the title 'Variables'. Type the values in the corresponding boxes on the right side. Similarly type the variable representing

perimeter in the third box and the formula to calculate perimeter in the box on the right side. Input the variable for which the value has to be found in the last box, which has the shape of a parallelogram. Now press 'Code' button. Copy and run.

But if we write programmes like this, for every class room with a different length and breadth, don't we have to prepare a new programme each time?

The language of Computer

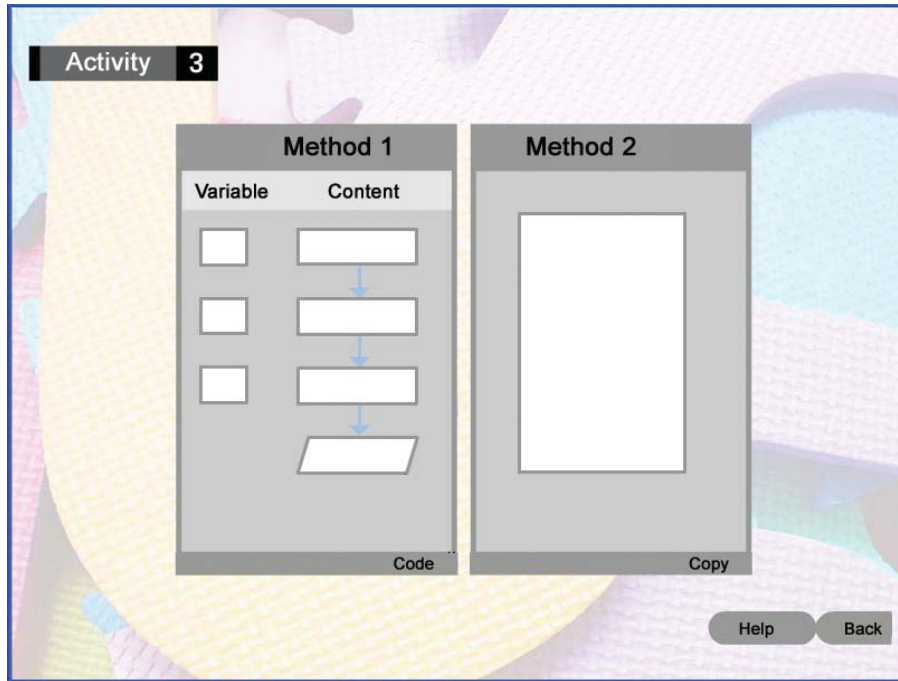
We speak Malayalam language. You know that there are several other languages such as Kannada, Tamil, and Hindi spoken in various parts of India.

Similarly, there are some languages that computers understand. 'Python', 'C', 'C++' are examples. If you can handle these languages, you will be able to make computers perform the tasks that you want them to.

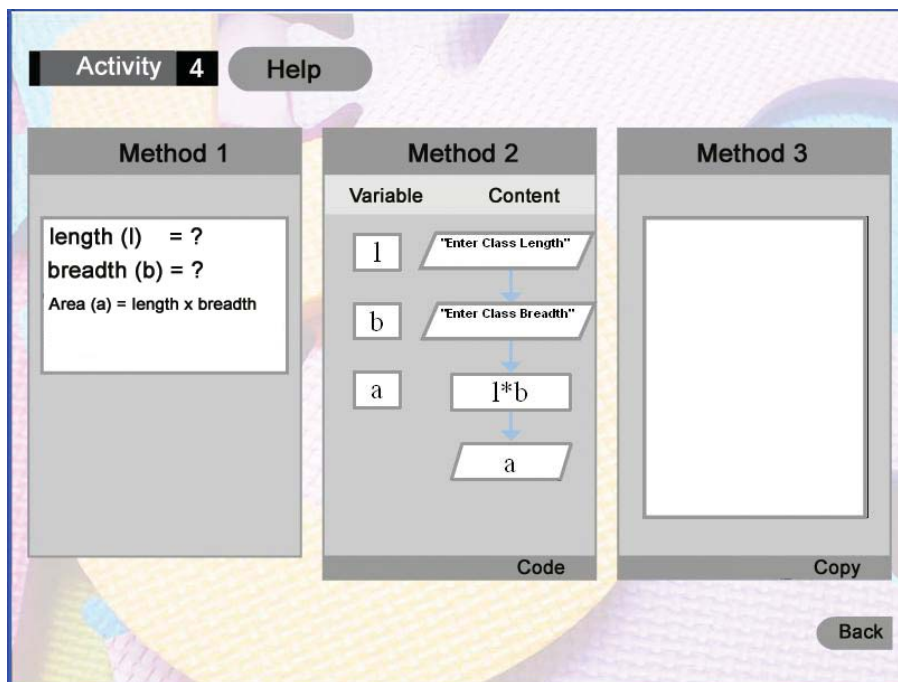
'Open Office Writer', 'Open Office Calc', 'Impress', 'Blender' etc., belong to the category of 'application software'. These application software are developed using different computer languages such as those mentioned above. The application software 'Blender' has been developed using 'Python' language.

The computer language 'Python'

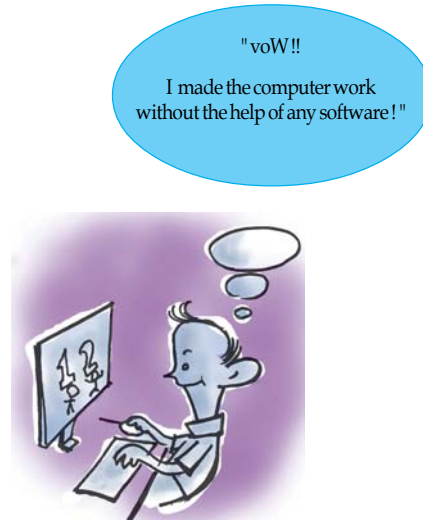
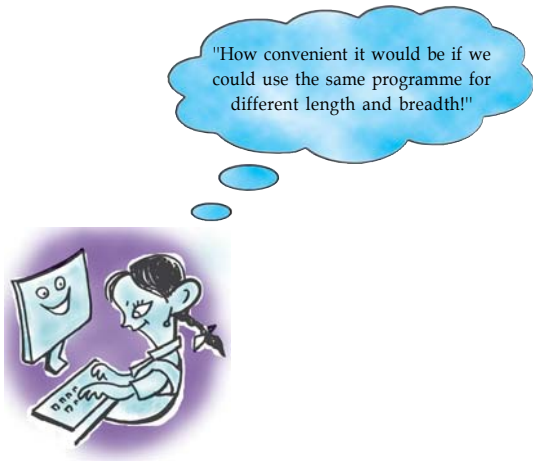
'Python' is an easy-to-learn computer language. This language uses only fewer symbols than languages such as 'C' and 'Java'. It was Guido van Rossum who designed 'Python'. As 'Python' is a software with open source licence, everybody can use this for free.



Pic. 6.5



Pic. 6.6



Activity 4

Press 'Help' button and see the example. Run the programme in the terminal. Several activities similar to the given example can be performed using this game.

Write down the differences that you have observed between Activities 3 and 4 in your note book.

1. Difference in activity

.....

.....

.....

.....

.....

2. Difference in code

.....

.....

.....

.....

Try solving the following problems using Activity 3 and 4.

1. Finding the average of two numbers
2. Calculating the speed of a vehicle using the distance travelled and the time taken to travel.

What all other programmes can be worked out using Activities 3 and 4? Now try these by typing in the text editor and running it without the help of the game.

Programming languages like 'Python' are used for developing all the software applications that we use such as 'Writer' and 'Calc'.



7. Geometrical Constructions



You are familiar with software applications for drawing and painting using computers. Recollect the tools used in the software. Is it possible to draw geometric shapes using those tools? No, because geometric shapes require a different set of tools. The standard set includes ruler, setsquare, and protractor.

There are software applications that provide the tools for drawing geometric shapes. What are the advantages of doing geometric drawing on computer? Suppose you have drawn a rectangle and now want to change the lengths of sides or size of angles. If the rectangle is drawn on paper, the only way is to draw a new rectangle.

This is not necessary when you draw on a computer. Try and experience the difference.

GeoGebra

GeoGebra is an educational software application used for drawing

geometric figures and for observing their properties.

In order to open GeoGebra, click **Applications**→**Education**→**Geogebra**

GeoGebra

GeoGebra is a mathematical educational software application originally developed by Markus Hohenwarter of the University of Salzburg in 2001. Warter, now at the University of Florida, is still working on improving the application. GeoGebra is a free software. Anybody interested in it is free to learn, improve, and distribute it.



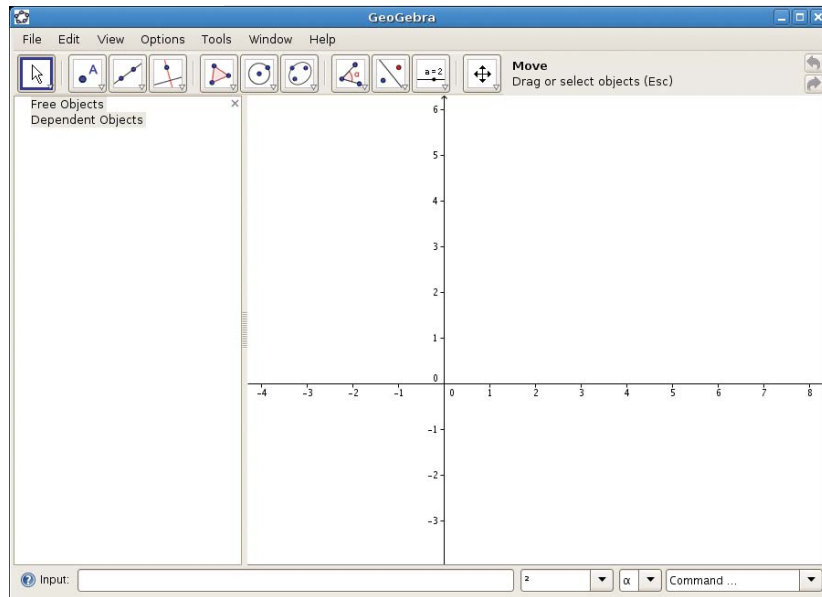
Markus Hohenwarter

Information & Communication Technology

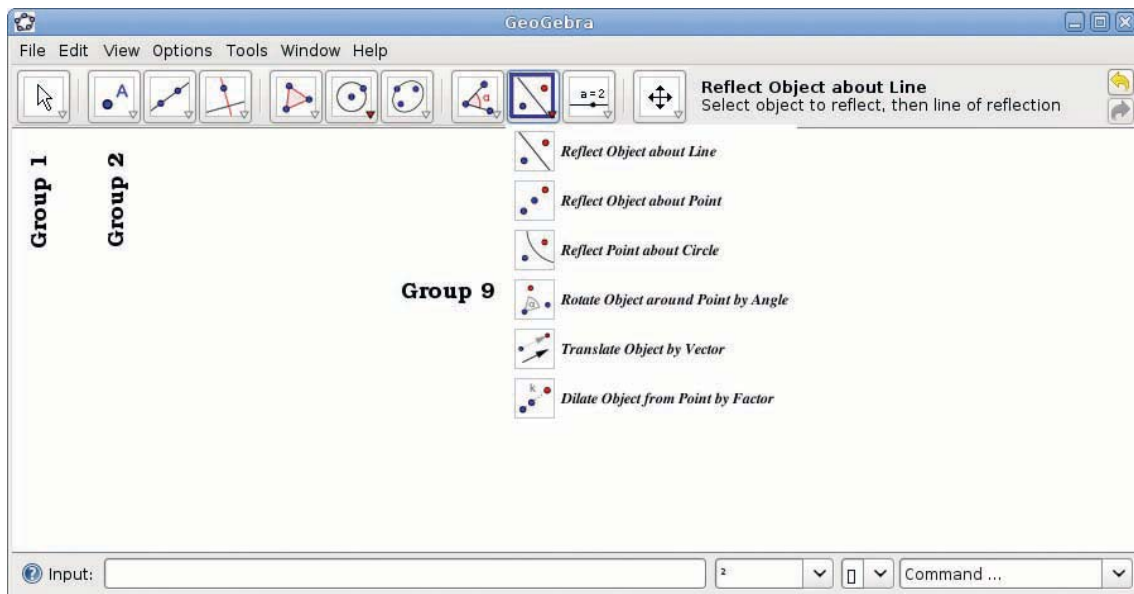
In the opening window, there are planar axes and a panel on the left side. These are not required for drawing. These can be deactivated by clicking **View** → **Axes** **View** → **Algebra view** in the menu.

Tools for Geometric constructions

The tools in GeoGebra have been classified into Groups. We will familiarise the tools in each Group as we move forward.



Pic. 7.1 - GeoGebra Window



Pic. 7.2 - Geogebra Window - Tools

Constructions

What is the fundamental construct in geometry?

A Point.

A point can be marked anywhere on a plane. Examine the second tool in the tool box. Use it to mark a point on

the plane.

Let's now draw a line. First we have to decide the location of the line on the plane. We also have to decide on the direction of the line. In order to decide these, we need to fix two points. Let's mark two points first. Examine Group III in the tool box. Start drawing

Geometrical Constructions

lines, joining the points, using the tool.

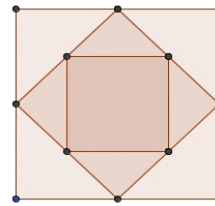
When you keep drawing lines, you would realise that many of them are intersecting. How do we mark the points of intersection? There is a tool for this in Group II. Select the tool and bring it over the intersecting lines.

When two lines intersect, they form angles. Let's now learn to measure these angles.

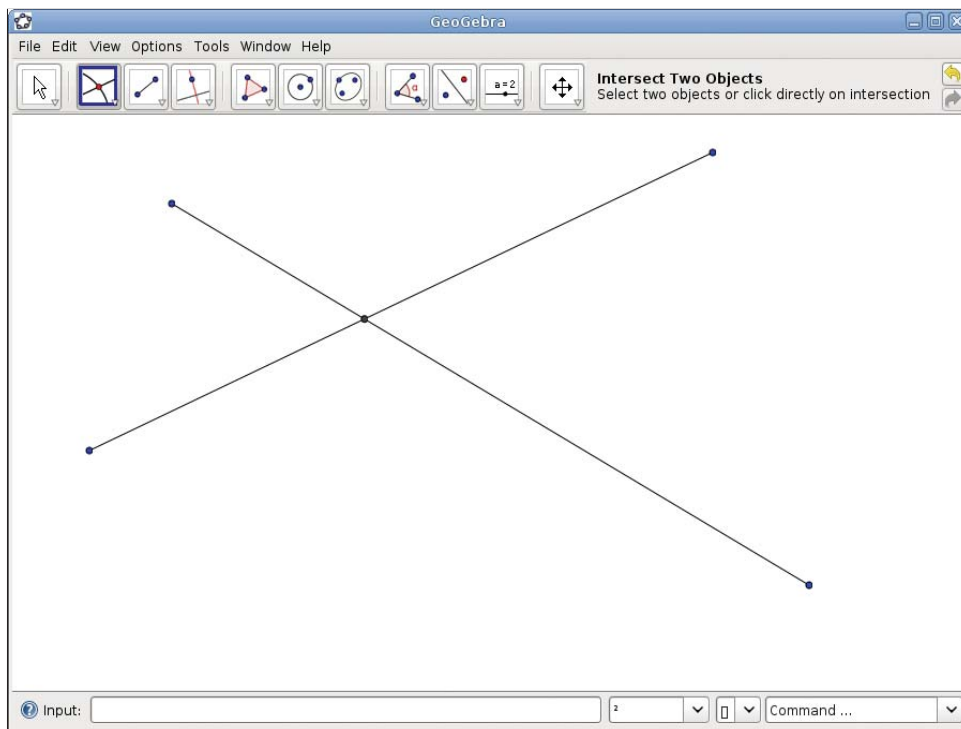
How many angles do two intersecting lines form? How do we specify the angle that we want to measure?

Other mathematical software applications

You have familiarised the software application called Dr.Geo last year. It is used for analysing geometrical problems. There are also other software applications such as 'K Interactive Geometry' and 'CaRMetal'.



Squares within squares



Pic. 7.3 - GeoGebra - Lines

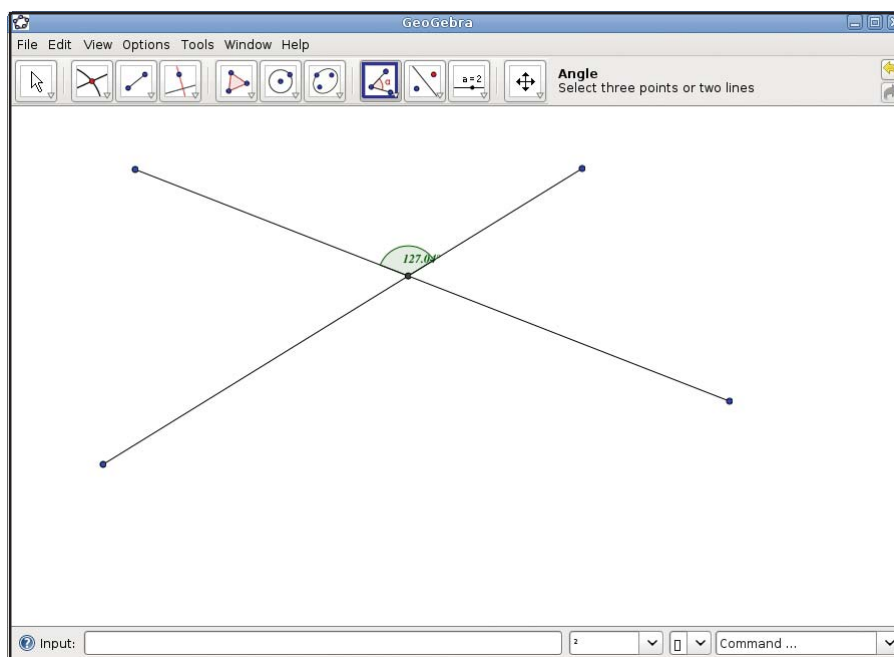
See Picture 7.4. An angle is determined by three points. Select the tool for measuring angles, select three points which determine the angle that we want to measure. The measurement of the angle gets marked in the picture itself.

Suppose we select three points in

the opposite direction to the above, which angle will be marked for measurement?

Mark all the four angles in the picture. Look for the angles that are in opposite directions to each other. What is special about the size of these opposite angles?

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Pic. 7.4 - GeoGebra - Measures of Angle

Draw several intersecting lines and see whether the above observations are true for all of them. Greeks were the first to make these observations centuries back. They recorded them on clay tablets. Now you have got note books, so note down your observations in a note book.

Instead of drawing different sets of lines, can't we just change the locations and directions of the points? In fact, this is the advantage of computer assisted geometric constructions. We use the tool 'Move' from Group I for this.

Parallel Lines

Suppose you want to draw two parallel lines. Once you draw the first line, you can draw any number of lines parallel to it. But, you intend to draw just one parallel line. You have to decide on where do you want to draw it. Once you decide, just mark a point and draw a line parallel to the first one through that point.

Now let's try using the tool in Group III of the tool box to draw parallel

lines.

Construction I

Two lines, parallel to each other. Another line intersecting these two. Mark the angles in similar positions on both the parallel lines. Measure them. Do you find anything special about their sizes? Will these properties remain even if the lines have been changed in position and direction?

Properties of Lines

What are the properties of lines? Mathematically it has just one property - length. However, when we draw lines on a paper, we usually consider several other properties. For example, we may draw a thick line (which is not a line mathematically), may give it some colour, we may also name it (This we do in geometry as well), and write the name at some appropriate place. We can do all these and more in the 'context menu' of lines.

Check the properties of the line that you have drawn. Change the colour of the line and see.

Geometrical Constructions

In order to measure the length of a line, there is a tool (for measuring distance or length) in Group VIII. Try measuring the length of a line using this tool.

Names of Objects

GeoGebra assigns names to all objects that we create using the software. We would need these names subsequently for further work. Let's examine the names of the points that we marked and the lines that we drew.

The name assigned to the line that we drew here is 'a'. Draw more lines, mark more points and check their names. Do you see any pattern in the way names are assigned? Could there be a naming convention used in this?

Mid Point of a Line

We may quite often need to locate the mid point of a line. The method to locate the mid point is available in Tool Group II.

Remember the way we drew parallel lines. It is also possible to draw a line perpendicular to another line.

Construction 2

Draw line AB at 8 cm length and draw a line perpendicular to it from its mid point. In order to draw a line of 8 cm, it is the tool 'Segment with given length' that is to be used.

Constructing a Triangle

Triangles are formed when three lines intersect. Draw a triangle using three lines. Now let's try to name it. Go to the context menu of the vertices of the triangle and check mark 'Show Label'. How do we change the name once given?

Construction 3

You know what Thales'

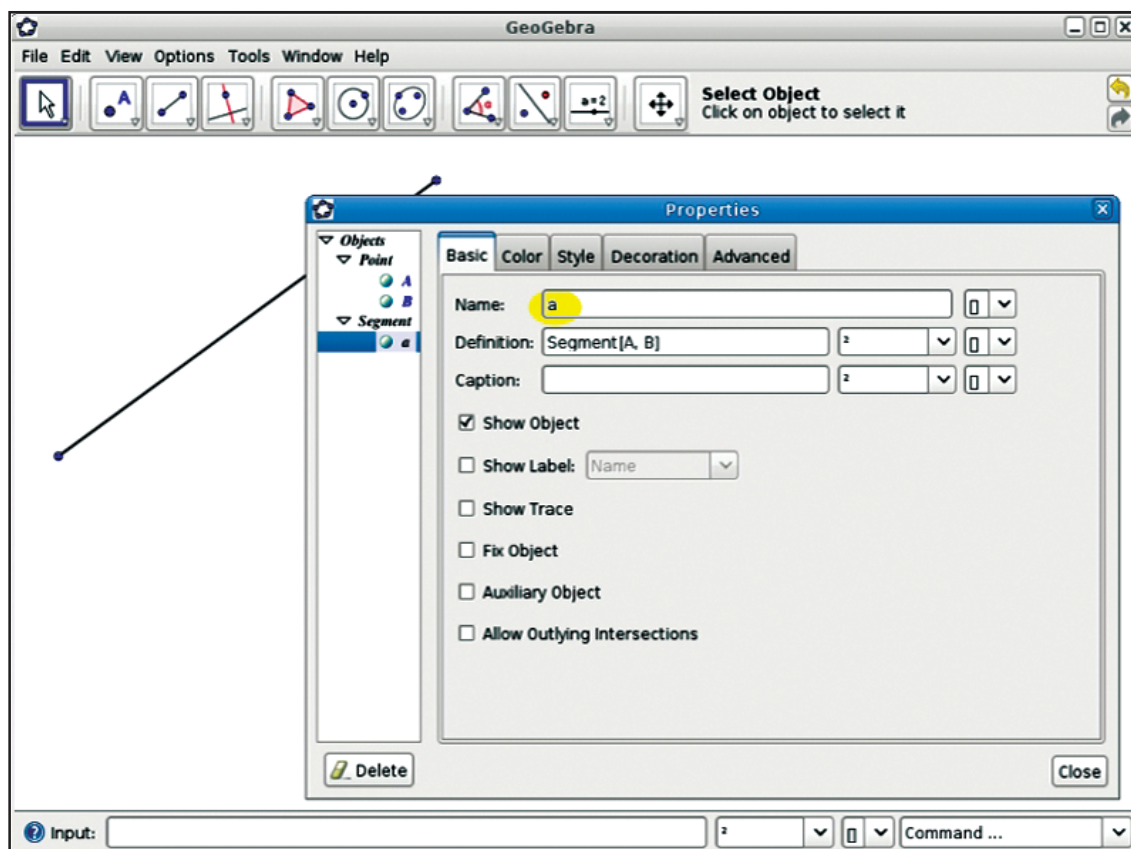
experiment was. Draw a picture depicting it. Try moving the Thales point. See what happens. Write down your observation in a note book.

Geometric Constructions



Euclid

Geometry is a very old branch of mathematics. The first lessons of geometry evolved along the great river of Nile in Egypt. It has its roots in the dispute settling mechanisms used by small farmers cultivating on the Nile delta. Disputes were common as the floods would wash away the boundary lines of their fields. These disputes on land rights were the first problems that geometry addressed. You may know that the word geometry means measurement of the earth. It was Greek philosophers who consolidated and presented the discoveries of Egyptians. Euclid of Alexandria consolidated numerous discoveries of that time in his classic 'Elements' (300 BCE). In 'Elements', Euclid considered those objects that could be made of lines and circles alone. (Can you guess why?). We are living in an age of software applications such as GeoGebra which can be used to draw anything that we can think of. Still, the constructions explained in 'Elements' will continue to have its historical relevance.



Pic. 7.5 - GeoGebra - Object name

Construction 4

Draw an isosceles triangle (How to draw it?). Remember the observation in your mathematics text that the altitude drawn from the vertex angle of an isosceles triangle bisects the angle as well as the base. (Or in other words, the altitude drawn from the vertex angle of an isosceles triangle is a median as well as an angle bisector).

Check whether this is true for all triangles.

Polygons

A polygon is a closed plane figure bounded by three or more line segments. Triangles and squares are examples. In Group V of the tool box, there is a tool to draw polygons. Try drawing a triangle. When you draw, please remember to complete the figure by reaching back to the point from

where you started drawing. Mark the measurements of the sides and the interior angles.

All polygons have a bounded area. How do we measure that area? Don't you remember the tool that we used to measure the length of sides? See what is the next tool in Group VIII. Try measuring the area of the triangle using this tool.

You can change the size of the triangle using the 'move' tool. Select the tool and click on one of the vertices and drag. See the changes in the lengths of sides, angles, and area.

Construction 5

Construct a parallelogram. This requires two pairs of parallel lines. Which are the opposite angles of the parallelogram? Is there anything special about the sizes of these angles? Change

Geometrical Constructions

the angle sizes and observe the changes.

Construction 6-Circle

Mark a circle on the plane. All the points equidistant from this point would form a circle. The distance between the first point and the other points is called the radius.

If you provide the centre and the radius of the circle that you intend to draw, we can draw the circle using GeoGebra. The tool 'Circle with radius and centre' in Group VI can be used for this.

Construct a circle with centre at 'O'. Mark any point as 'A' on the circle. Draw a diameter. Remember, diameter is any chord that passes through the centre of the circle. Mark the point at which the diameter touches the circle at the other end as 'B'. Mark a third point 'P' anywhere on the circle. What will be the

A sequence of area measurement

Draw a square. Mark the midpoints of all sides.

Now draw another square with these midpoints as its corners. You can use the 'polygon tool' for this. Mark the area of both the squares and compare. What is your observation? Repeat the same steps further on the second square. Does the pattern of change in area remain the same? In which other rectangle type can you observe the same property?

size of the angle $\angle APB$? Will the size of the angle change according to the position of point 'P' on the circle? Write down your observation in the form of a statement.

Construction 7

A Circle Containing a Triangle

Construct a triangle and measure its angles. Draw a circle that passes through the three vertices of the triangle. The tool used is from Group VI, 'Circle with three points'. Try to locate the centre of this circle.

Importing Pictures to GeoGebra

GeoGebra can be used for learning subjects other than mathematics as well. In such cases we may need pictures other than geometric constructions. Suppose we intend to use the software for Geography. We may need maps.

Keep a map of India saved in your computer's home folder. We can import this map to GeoGebra using the tool 'Insert picture'. First decide the location where you want to have the map. Click there and select by browsing in the dialogue box that appears.

Inserting Titles and Captions

'Insert text' in Group X can be used to include titles, captions, and explanations for the pictures drawn in GeoGebra. Select the tool and click at the spot where you want to have the title or caption.

A window opens. Titles and sentences can be typed in there.

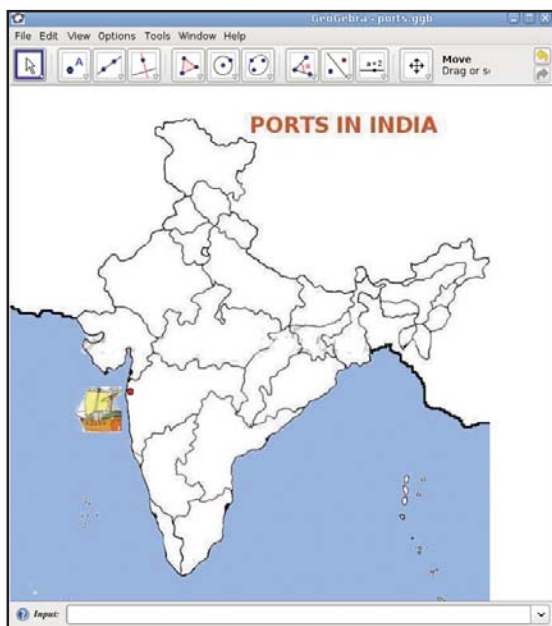
Check Boxes

Suppose we have to mark Mumbai port on India's map.

You may use a symbol to represent the port. A typical symbol is a ship. It is possible to mark this in such a way that it appears only when that particular spot on the map is clicked.

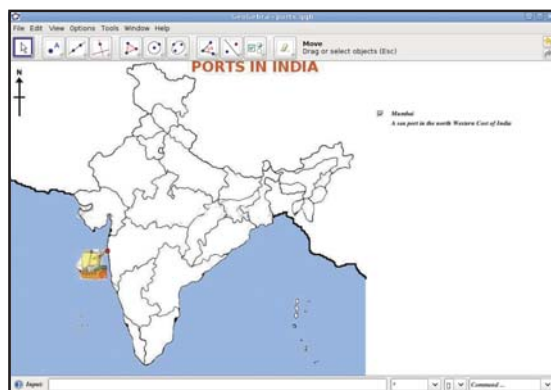
We can use 'check box' for this. One of the tools in Group X helps in

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Pic. 7.6 - GeoGebra - Checkbox.1

setting up the check box. Use this, find the name of the check box and note it down in your note book. Then type in the text that has to appear when the check box is clicked on.



Pic. 7.7 -GeoGebra - Checkbox.2

Open the 'properties' window. Select 'Advanced' tab and enlist 'Conditions to show object'. What is the condition in our case? The condition is what we decide as a prerequisite for exhibiting the label/sentence. Here it should be 'While clicking the check box above'. Select that and provide the name that you had noted down in your note book.

Seek your teacher's support to arrange it in such a way that the ship and 'Mumbai' appear only when clicked on that spot.

Construction 8

Insert the picture of a plant cell in GeoGebra and mark the nucleus and mitochondria.

Sliders

If the figures that we draw move according to our instructions, won't that be interesting? 'Sliders' are used for this. These are available in Group IX.

Select the tool and suggest the location for inserting the 'slider'. The window that opens is shown in Picture 7.8. It shows that point 'a' can be moved from -5 to 5. This is the default setting. We can change it as we want it to be. For instance, replace -5 by 0 and 5 by 10. Click 'Apply'. Slider appears on the plane.

We can now draw a circle, the radius of which keeps changing according to the values that we assign in the slider.

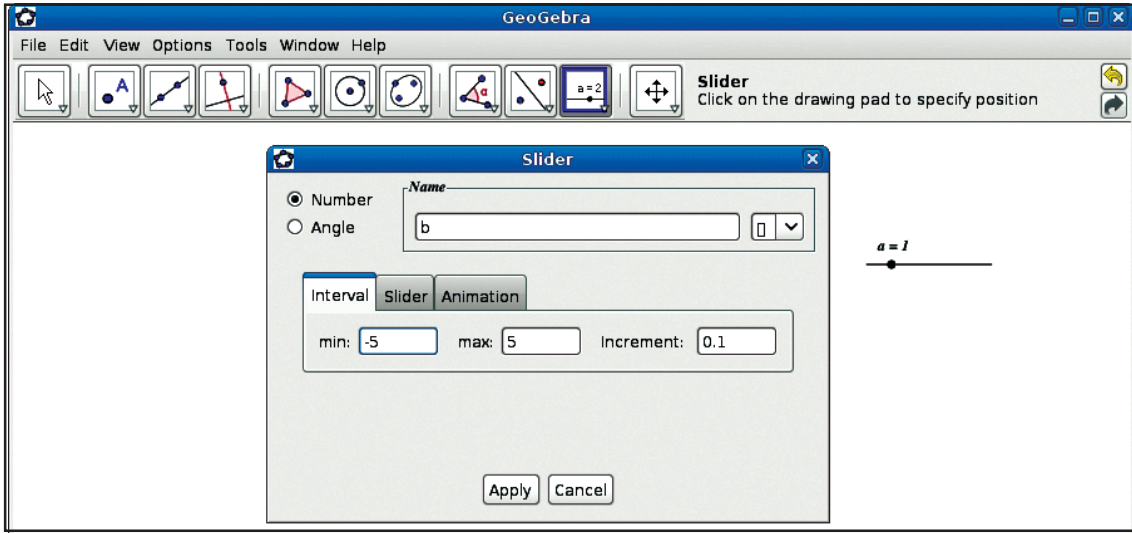
For this we should use the tool 'Circle with centre and radius' from Group VI.

Select the tool and click at the place where you want the centre of the circle to be. A window opens where you can provide the radius (Picture 7.9).

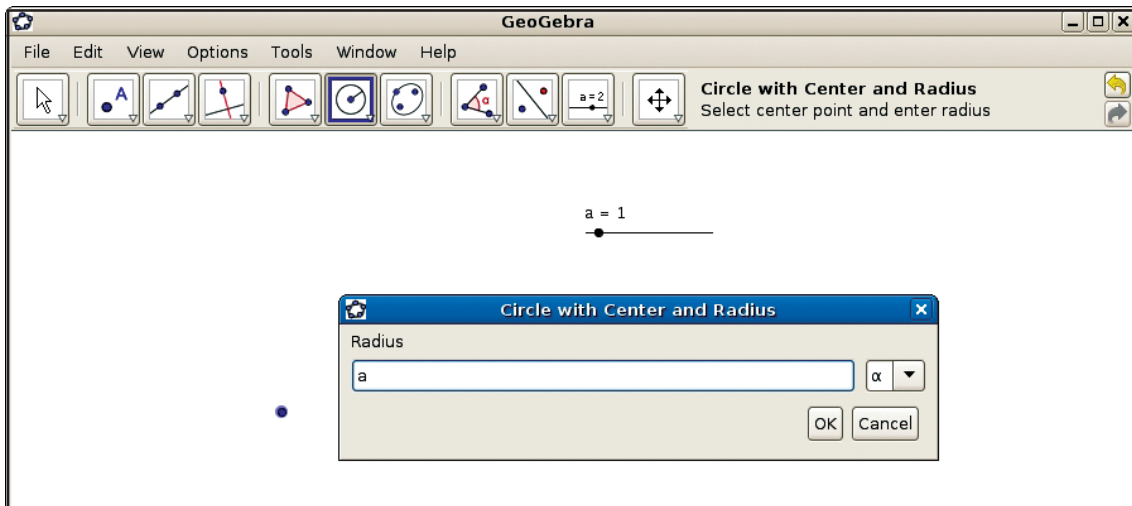
Now that the circle is drawn, check whether its radius varies with the value of 'a' in the slider. Change the value and see. Use the 'move' tool from Group I for this.

Changing Angle Size Using Slider

Slider can also be used to modify the size of angles. For this, in the slider,



Pic. 7.8 - GeoGebra - Slider 1



Pic. 7.9 - GeoGebra - Slider 2

select 'angle' instead of 'number'. (Picture 7.8). The size of the angle ' α ' on the slider can be anything between 0 to 360 degrees.

Now let's see how we can manipulate the interior angles of a triangle. Activate the slider. Use the tool 'angle with given size'. In the window that opens, input the new angle measure in the ' α ' tab on the left side. We can also decide whether we want to measure the angle in clockwise or anti clockwise direction.

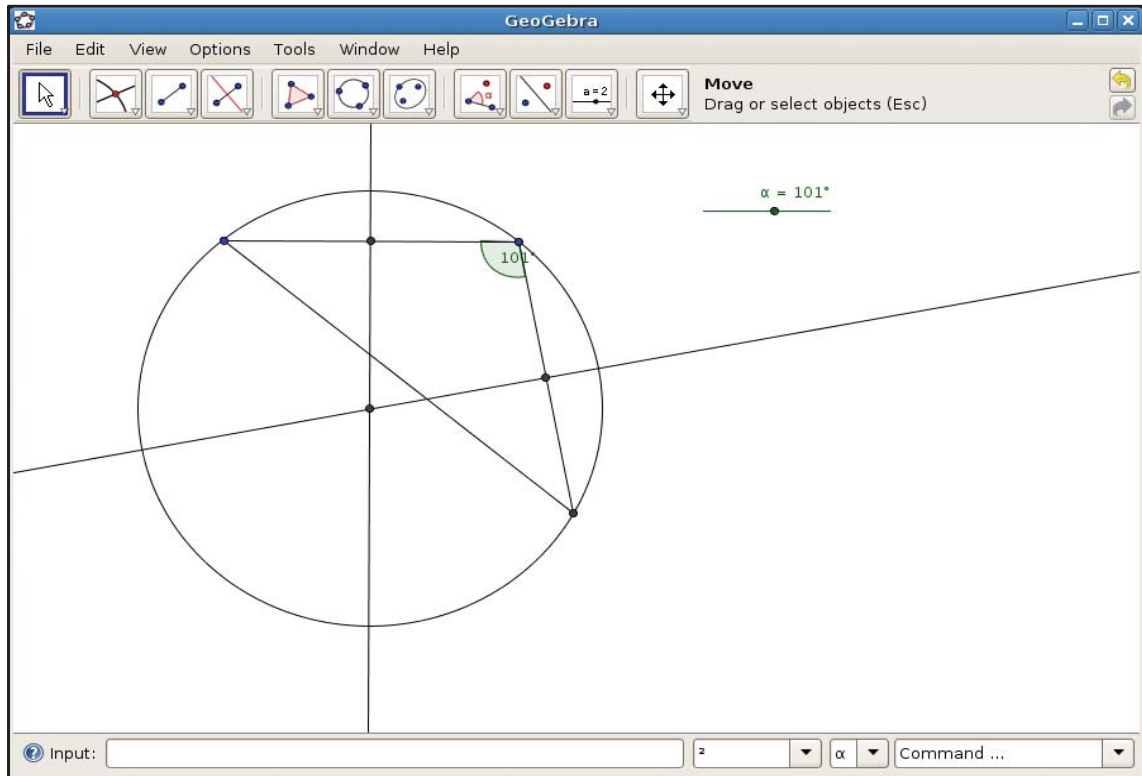
Now you can see the value of ' α ' marked as the proposed angle measure

(the size you want to change to). Sides of the angles will have to be drawn by joining the new point that appears and the vertex. Now remove the slider and see. You can see that the angle size has been changed. Draw the third side and complete the triangle. See that the triangle has been changed.

Construction 9

Draw a circle that passes through the vertices of the above triangle. Mark the centre of the circle. What happens to the centre of the circle when you remove the slider?

Do you find the two lines passing



Pic. 7.10 - GeoGebra - Slider 3

through the centre making the figure a bit too crowded? You may hide these lines. For this, go to 'properties' and uncheck the 'show object' option.

Extra Activities

1. We know that the interior angles of a triangle add up to 180 degrees. What will be the sum of the angles of a rectangle? What about that of a pentagon? Do you think there is any relationship between the number of sides and the sum of angles? Look for the tool to draw polygons with equal sides in the tool groups. Then you can try out more polygons.
2. Construct a square. Mark the midpoints of all the four sides. Draw a circle through three points among these. Note down your observation. Is it possible to similarly draw a circle if it was any rectangle in place of the square? What all types of rectangles will

allow drawing such a circle?

3. Draw a rectangle. If the two pairs of opposite angles are equal, what will you call it? Can you explain your observations to another person by keeping two opposite angles constant while changing the other pair of opposite angles.
4. Draw a rhombus. Draw both its diagonals. What would be the measures of the angles formed by the intersection of these diagonals? Write down your observation as a statement in your note book.

Animated Pictures

Let's try out a slider. Values can be from 2 to 5. Let the slope be 1. Now try out the value of slider in the tool for constructing 'regular polygons'. If you select 'animation' in the 'properties' window, what would be the output that you get?



9. Beyond Calculations



Haven't you heard the folk tale in which a man safely crossed the river with a fowl, fox, and a sack of grains, carrying two of them at a time on a small boat?

We can try it out in the game 'Shore to shore' which works on GNU/

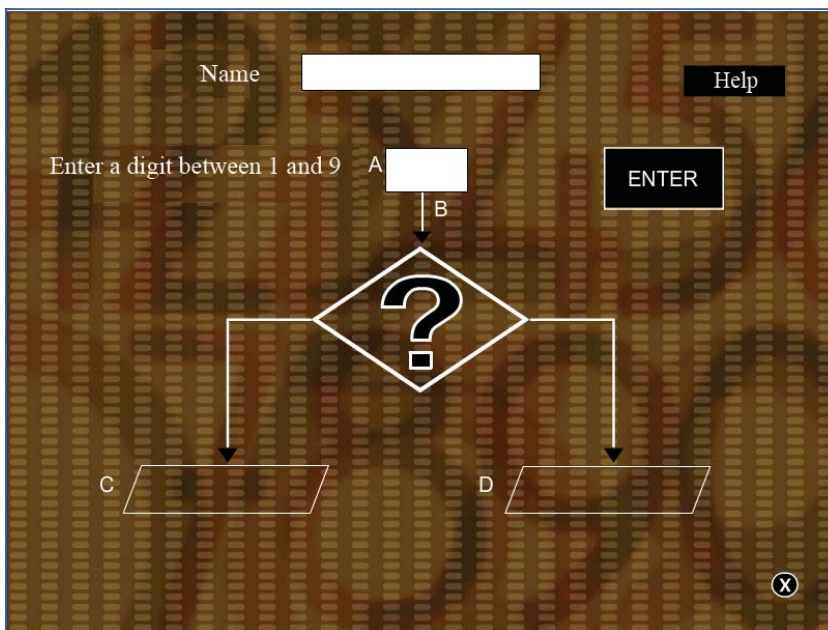
Linux. How do you start the game? Is it easy to win? If not, what are the reasons?

.....

In order to successfully complete

this game, we have to carry beasts and things from one shore to the other, subject to certain conditions. What should we carry first? Next? In which order to carry?

.....



Pic. 9.1

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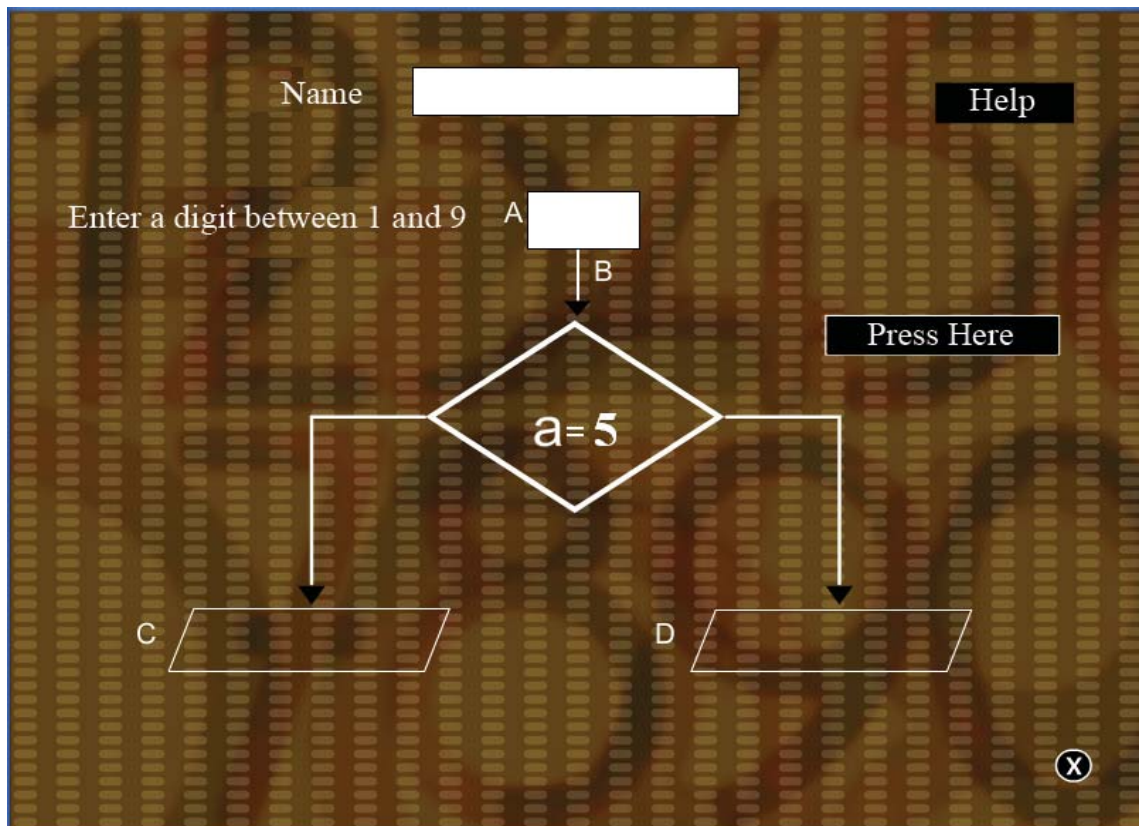
How do we give instructions with such conditions to a computer? Is it possible through 'Python' language? Let's see.

Open the simple computer game called 'Magic number' by clicking in the following sequence: 'Application' 'Education' 'Kaliyalla Karyam'. Click on 'Beyond calculations'. This is the game to get your lucky number (Picture 9.1).

Type in your name in the box

provided for it. Click in the box marked 'A' and type in a single digit number (magic number). Click 'Enter'. See the change in the boxes C and D. When does 'Congratulations' appear in box 'D' indicating success?

Suppose you succeeded on typing '5', what would be the statement among the following, lying hidden in box 'B'?



Pic. 9.2

- If the number typed in 'A' is '5', then let 'Congratulations' appear in box 'D' ($A=5$).
- If the number typed in 'A' is greater than '5', then let 'Congratulations' appear in box 'D' ($A>5$).
- If the number typed in 'A' is smaller than '5', then let 'Congratulations' appear in box 'D' ($A<5$).

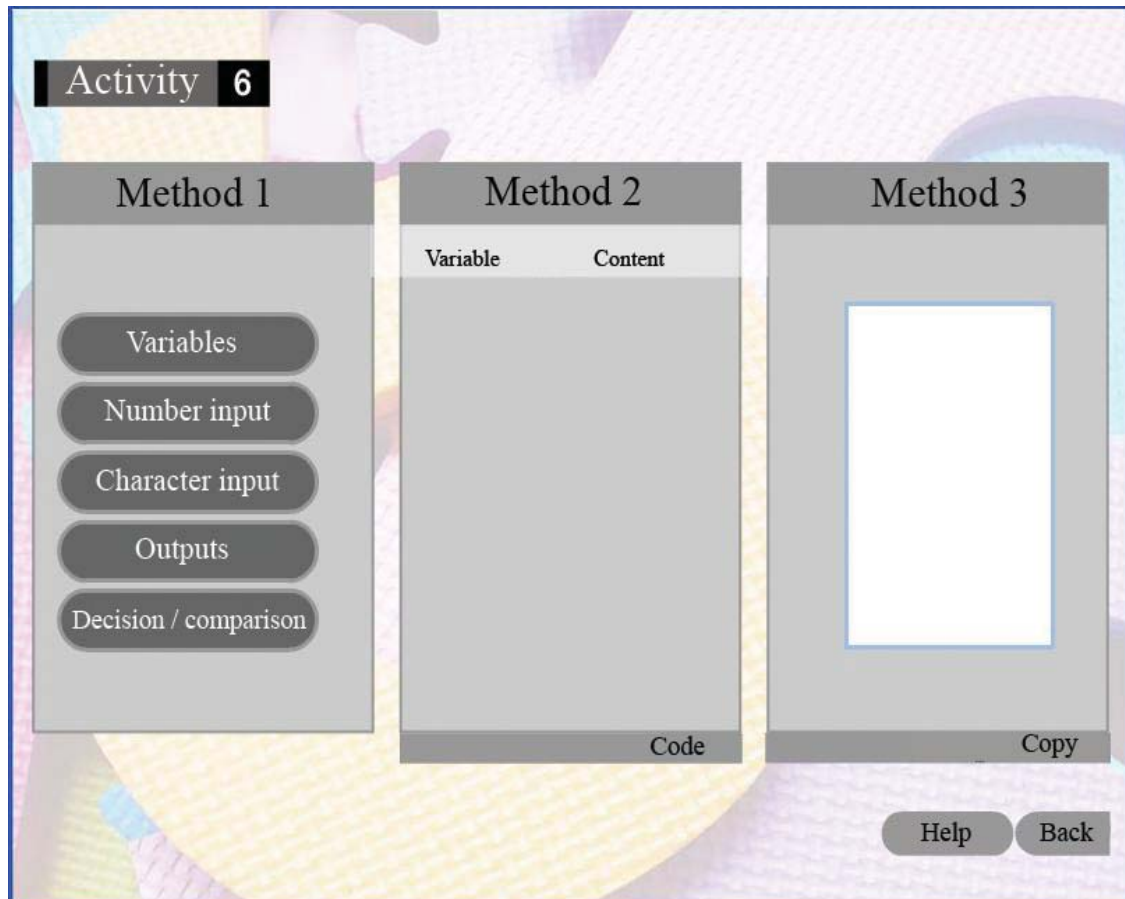
For the right answer, click on the question mark in box 'B' (Picture 9.2).

Note that it is when $A=5$ that 'Congratulations' appear in box 'D'.

You can also develop games like this. Try Activity 6 (Picture 9.3).

Write down the first few steps as statements as we have seen earlier.

- Instruct to type in name
- Instruct to type in a single digit
- If the digit is '5'
 - Show 'Congratulations' as output
 - Show 'Try again' as output



Pic. 9.3

In order to execute a programme as per the above statements, we need the following.

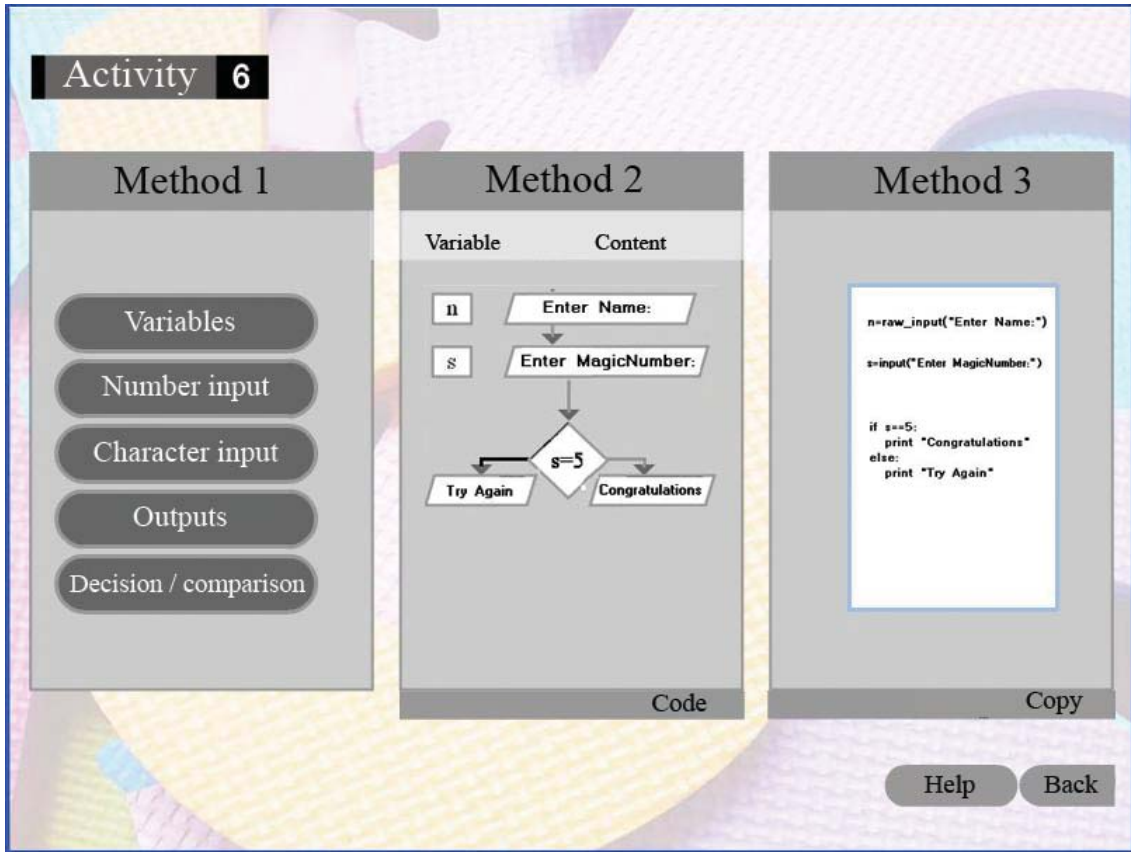
- 'Character input' for typing in name

- 'Number input' for typing in a digit
- A 'decision'

Go to the tool list on the left hand side, click on the buttons 'Character

Number Input and Character Input

If a programme has to accept numbers as inputs, the tool 'number inputs' will have to be selected from the tool list. For the programme to accept characters as inputs, the tool 'character inputs' has to be selected from the tool list.



Pic. 9.4

inputs', 'Number inputs', 'Decision/comparison' in that order. Type in variable and content as shown in Picture 9.4, and click 'Code' button.

You can see computer language (Python) appearing on screen as shown in the Picture. Paste it in 'text editor', save, and run.

Find out the changes that take place in the working of the game when the following changes are made in the content of each box.

Click the 'code' button in the game and see the computer language corresponding to the above changes. Save it and activate.

<p>If $s < 5$ Instead of $s=5$</p> <p>.....</p> <p>If n, congratulations instead of congratulations</p> <p>.....</p> <p>.....</p>	<p>If the typed number is 5, confirm your success in D.</p> <p>.....</p> <p>.....</p>
--	---

Table. 9.1

Beyond Calculations

Try writing down the functions of the statements and symbols in the computer language (Python).

Make adequate changes in the game using the buttons 'variables', 'input', 'output', 'comparison' and do the following activity.

<p>input</p> <p>raw_input</p> <p>=</p> <p>==</p> <p><</p> <p>></p> <p>print</p> <p>if</p>	
---	--

Table. 9.2

Accept the distance travelled and time taken for travel by two vehicles and find the faster vehicle.

Will you try finding more activities like this from your textbooks?

.....

.....

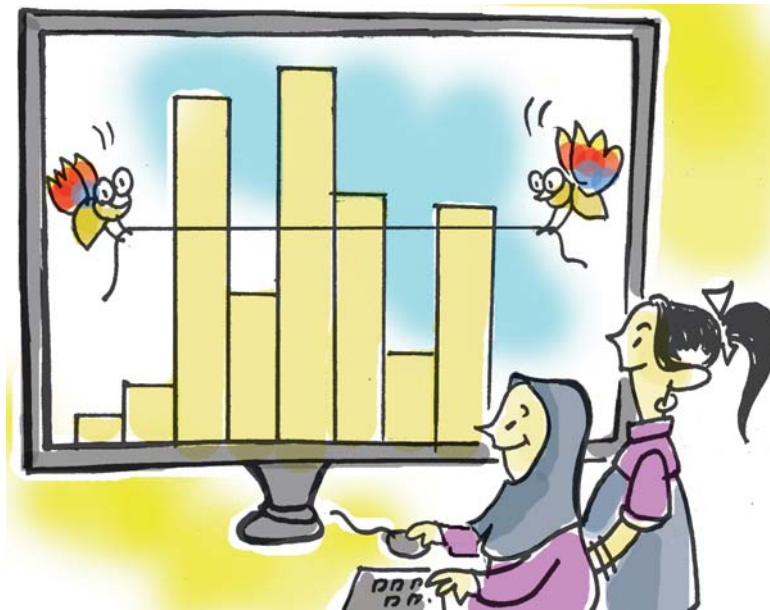
.....

Recollect the computer games that we played, and the various computer applications that we used (Sunlock,

Marble, Calc etc.). Think about how these applications must have been working. For the 'Sunlock' to show the time differences across countries, statements like the ones used above must have been used. It is codes (programme) like this that help Calc provide the sum of the digits in two cells in a third cell. It short, it is the working of several programmes like the one we made in Python that work behind software applications such as 'Sun Clock', 'Marble', and 'Calc'.



8. Tabulate and Analyse



How many books do you have in your school library? There must be books on several subjects by several authors. How do you figure out the titles and authors available? The library register might provide you with the required information.

And what if you are to assess the physi-

cal fitness of students? It can be done based on various tests. Likewise, we can collect information on different topics from different sources. How do we put such information to the best use? We have to analyse them and draw inferences.

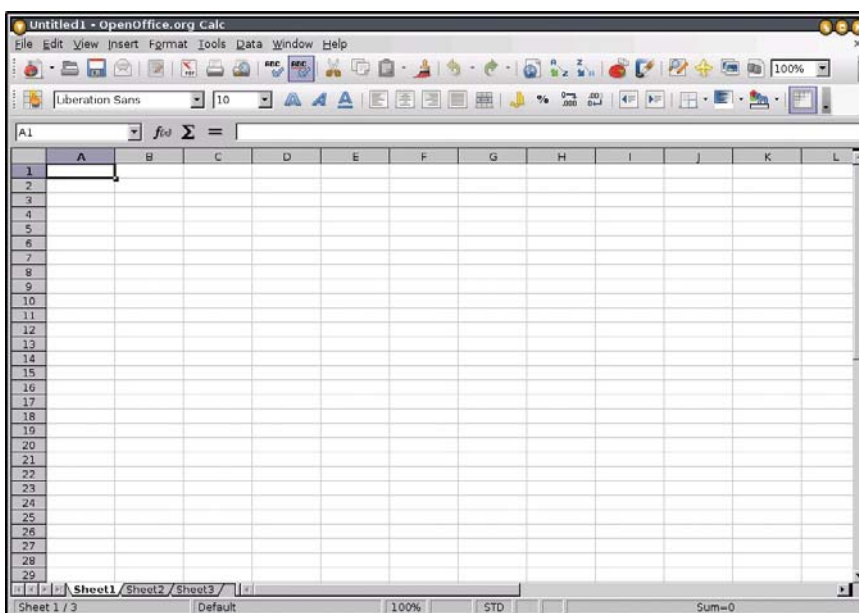
Suppose you want to conduct a cam-

campaign to check the height and weight of each student in connection with the increasing obesity in teenagers, what are the details to be collected?

.....

.....

Based on the information collected classify and analyse them



Pic. 8.1 Spreadsheet window

Information & Communication Technology

first to arrive at a conclusion. It will consume more time and effort if you are to classify such information of all the students in your school.

But with the advent of computers such exhaustive and time consuming tasks could be executed very easily and swiftly.

You are now familiar with the application software called Spreadsheet. The OpenOffice.org Calc is a Spreadsheet software that enables you to carry out such activities. Write down the steps to open the Open Office .org Calc.

Applications →

What are the special features of the spread sheet window?

1. A sheet of paper with rows and columns.
2.

3.
4. The small rectangular boxes cross are called cells.
5.

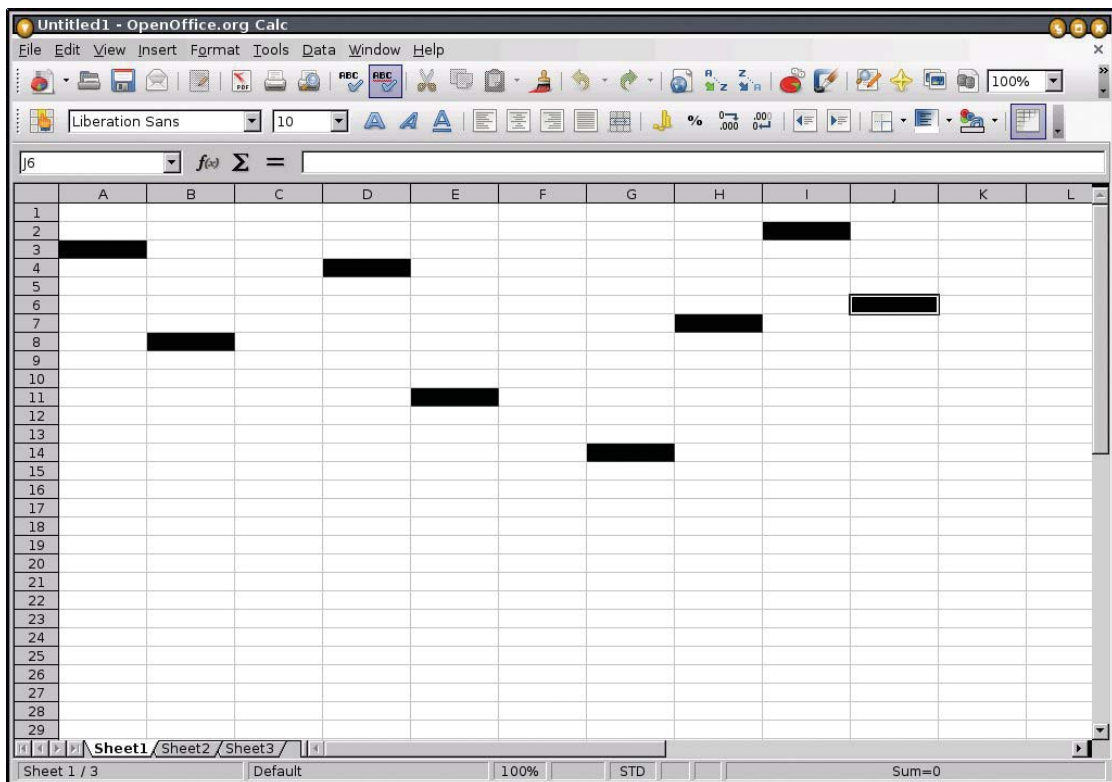
Each row and column has a name by which it can be identified. Locate the place where it is indicated.

The columns are named on top by the English alphabet A,B,C.....etc, and each row is numbered on the left by 1,2,3,.....,etc.

Click the mouse pointer on any cell. Look at the left top above the column header for indication.

You have now identified the cell address. Write down the name of the shadowed cells as shown in the picture 8.2

- | | | |
|---------|---------|---------|
| 1....., | 2....., | 3....., |
| 4....., | 5....., | 6....., |
| 7....., | 8..... | |



Pic. 8.2

Activity

Imagine that you are preparing a family budget for the families in your village. Let's go through the particulars that are essential to prepare the budget. You should be aware of the existing expenditure. Collect details of the previous month's expenditure from each family.

Select 10 houses and collect the details of expenses on the following items :

1. Food
2. Clothes
3. Conveyance
4. Education
5. Miscellaneous

From these find out the answers to the questions given below:

1. Which family has spent the most?
2. For what purpose did they spend the highest expenditure?

3. What is the average expenditure of a family?

4. Which family has spent more on clothes?

Now, let us enter the details collected in the spread sheet and sum up the expenses of families to prepare a model budget.

You have collected only the number of houses and the expenses. Suppose you want to enter the name of the house owner along with other details, just insert another column in between house number and food.

You have included the name of the house owner in the spread sheet. Now insert column on the left for the serial number.

Type 'Monthly Expenses' on the top of the table by inserting a row.

	A	B	C	D	E	F	G	H	I	J	K
1	House No	Food	Cloth	Travelling	Education	Other expense					
2	1	2400	1000	750	600	750					
3	2	2000	200	500	400	400					
4	3	3000	500	1000	700	1100					
5	4	2100	200	500	300	600					
6	5	2600	600	600	650	900					
7	6	1900	200	600	800	200					
8	7	2500	250	1100	1500	1000					
9	8	2000	150	700	800	950					
10	9	1950	200	800	650	500					
11	10	2800	900	780	1000	1200					
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											

Pic. 8.3 Table

Information & Communication Technology

S No.	House No	Name of house owner	Food	Cloth	Travelling	Education	Other expense
1	1	Pathumma	2400	1000	750	600	750
2	2	Basheer	2000	200	500	400	400
3	3	Unda pakru	3000	500	1000	700	1100
4	4	Ammu	2100	200	500	300	600
5	5	Kalam	2600	600	600	650	900
6	6	Azad	1900	200	600	800	200
7	7	Chakki	2500	250	1100	1500	1000
8	8	Raman	2000	150	700	800	950
9	9	Clinton	1950	200	800	650	500
10	10	Anjali	2800	900	780	1000	1200

Pic 8.5 shows the columns with the House owner and serial no.

Now, how will you include the serial numbers in the selected column? Do you know any easy method to include the serial numbers in the column? Seek the help of your teacher if required. In order to make 'Monthly Expenses' that you have typed in the first row, select

the cells there and merge them into one. Merge cells with the help of directions given in the box.

How to delete any of the rows or columns from the table? Seek the assistance of your teacher.

To insert a column / row

1. Put cursor where the row / column is to be inserted
2. Click on Insert - Column/row

- Manual Break
- Cells... Ctrl++
- Rows
- Columns
- Sheet...
- Sheet From File...
- Link to External Data...
- Special Character...
- Formatting Mark
- Hyperlink
- Function... Ctrl+F2
- Function List
- Names
- Note
- Picture
- Movie and Sound Object
- Chart...
- Floating Frame

Pic. 8.4

Tabulate and Analyse

fig 6 - OpenOffice.org Calc

S.No.	House No.	Name of house owner	Food	Cloth	Travelling	Education	Other expense
1	1	Pathumma	2400	1000	750	600	750
2	2	Basheer	2000	200	500	400	400
3	3	Unda pakru	3000	500	1000	700	1100
4	4	Ammu	2100	200	500	300	600
5	5	Kalam	2600	600	600	650	900
6	6	Azad	1900	200	600	800	200
7	7	Chakki	2500	250	1100	1500	1000
8	8	Raman	2000	150	700	800	950
9	9	Clinton	1950	200	800	650	500
10	10	Anjali	2800	900	780	1000	1200

Pic 8.6 with typed title

fig 7 - OpenOffice.org Calc

MONTHLY EXPENSES							
S.No.	House No.	Name of house owner	Food	Cloth	Travelling	Education	Other expense
1	1	Pathumma	2400	1000	750	600	750
2	2	Basheer	2000	200	500	400	400
3	3	Unda pakru	3000	500	1000	700	1100
4	4	Ammu	2100	200	500	300	600
5	5	Kalam	2600	600	600	650	900
6	6	Azad	1900	200	600	800	200
7	7	Chakki	2500	250	1100	1500	1000
8	8	Raman	2000	150	700	800	950
9	9	Clinton	1950	200	800	650	500
10	10	Anjali	2800	900	780	1000	1200

Pic. 8.7 Merged title of the table

To find the sum total

Method 1 -Auto Sum

1. Select the cell to insert the total
2. Click the icon in the formula bar
3. Press the enter key.
4. To obtain the sum
 - a) Select the first cell (the cell that display total sum)
 - b) Bring the cursor on the right corner of the cell.
 - c) When the cursor assumes the form of + sign, press the mouse button and drag to the bottom
 - d) Sums will be obtained in the required cells below.

Method 2

- a) Select a cell to insert the total
- b) Type = sign in that cell.
- c) Click on the first cell to find out the sum. You can view the address of the cell on the right part of the sign '='
- d) Type + sign.
- e) Click on the next cell. Make sure that you have included the addresses of all the cells and press the enter key

There are many methods to find out the total expenses. Use any one of the methods to get the total expenses of each family.

Find out the average expenditure of each family. The formula is known to you It's the sum divided by the number of entries.

How will you find out the family that has spent more? It is easy to find out the details of ten families by verifying the table at a glance. Suppose you have included all the houses for this project, how would you find out an answer to

How to delete row

1. Select the row to be deleted
2. Edit → Delete cells

Same procedure is applicable for deleting the columns

the above question? Verifying the long, detailed list is a difficult task. To make it easier the software spread sheet has a method called Sorting

Pictorial representation enhances understanding of the subject. The graph

Merging cells

1. Select the cells for merging.
2. Click in the following order:
Format → Merge Cells → Merge and Center Cells/Merge Cells.
For the merging of cells in the centre, use the option Merge and Centre.

To find out Average

- ◆ Select the cell to insert the average
- ◆ Type '='
- ◆ Select the cell where the total marks is inserted.
- ◆ Type the sign '/' of division
- ◆ Type the numbers of details.
- ◆ Press the Enter key.

Tabulate and Analyse

MONTHLY EXPENSES								
S No.	House No	Name of house owner	Food	Cloth	Travelling	Education	Other expense	Total
1	1	Pathumma	2400	1000	750	600	750	5500
2	2	Basheer	2000	200	500	400	400	3500
3	3	Unda pakru	3000	500	1000	700	1100	6300
4	4	Ammu	2100	200	500	300	600	3700
5	5	Kalam	2600	600	600	650	900	5350
6	6	Azad	1900	200	600	800	200	3700
7	7	Chakki	2500	250	1100	1500	1000	6350
8	8	Raman	2000	150	700	800	950	4600
9	9	Clinton	1950	200	800	650	500	4100
10	10	Anjali	2800	900	780	1000	1200	6680

Pic. 8.8 Table showing sums

MONTHLY EXPENSES								
S No.	House No	Name of house owner	Food	Cloth	Travelling	Education	Other expense	Total
1	1	Pathumma	2400	1000	750	600	750	5500
2	2	Basheer	2000	200	500	400	400	3500
3	3	Unda pakru	3000	500	1000	700	1100	6300
4	4	Ammu	2100	200	500	300	600	3700
5	5	Kalam	2600	600	600	650	900	5350
6	6	Azad	1900	200	600	800	200	3700
7	7	Chakki	2500	250	1100	1500	1000	6350
8	8	Raman	2000	150	700	800	950	4600
9	9	Clinton	1950	200	800	650	500	4100
10	10	Anjali	2800	900	780	1000	1200	6680

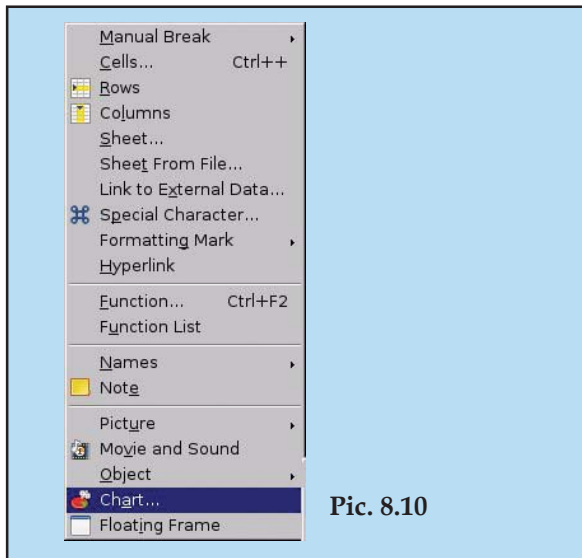
Pic. 8.9

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or diagram based on any information reaches the minds clearly and vividly.
Let us prepare a graph for the project on 'family budget'

To draw a graph

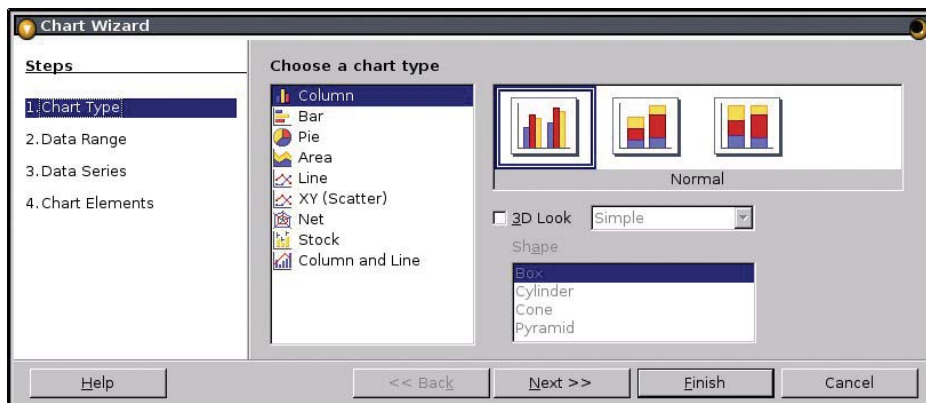
1. Select the facts to be included. (Pic. 8.9)



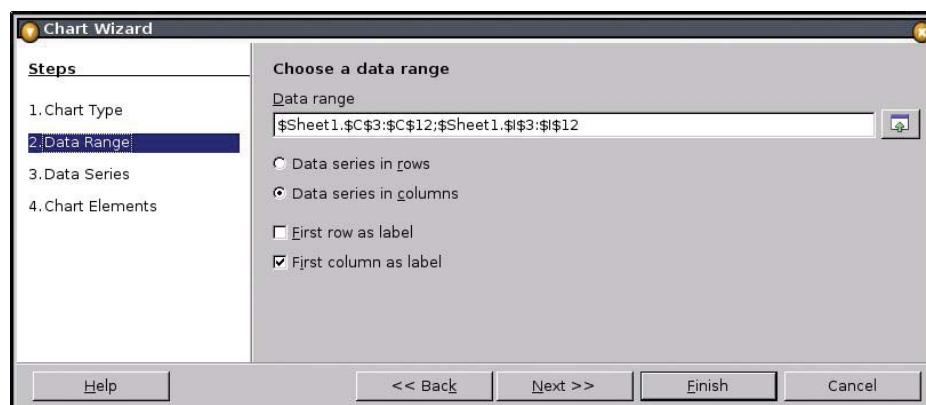
Method of Sorting

1. Select the table as a whole.
2. Data - Sort
3. Select the column to be sorted in the Sort by
4. Select from the option as cending/descending
5. Click OK

2. Click on Insert → Chart



3. Select Chart type



4. Examine the range of the data included. You are free to make necessary changes.
5. Insert, if necessary, the title x-axis or y-axis on the tab Chart Elements.
6. Specify the place to insert the chart.
7. Click the Finish key.

More Activities

1. A table given below shows the total number of MLAs in the Kerala Legislative Assembly for the last few years. Find out the total number of MLAs using the Open Office.org Calc.

Year	Male	Female	Total
1977-80	139	1	
1980-82	135	5	
1982-87	136	4	
1987-91	132	8	
1991-96	132	8	
1996-2001	127	13	
2001-2006			
2006-2011			

2. The literacy rates of Kerala and India during various years are given below. Prepare a graph showing the literacy growth of Kerala by using OpenOffice.org Calc

Year	Kerala %	India %
1961	55.08	28.03
1971	69.75	34.45
1981	78.85	43.57
1991	81.81	52.21
2001	90.92	64.84

3. Given below are the scores awarded by various judges for the participants of digital painting competition in the sub district level IT Fest 2009-10. Using OpenOffice.org Calc calculate the total score of each participant and find out the winner. Also draw a graph showing the level of participants.

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Participants	Judge 1	Judge 2	Judge 3	Total
A	60	42	51	
B	59	51	48	
C	72	68	69	
D	52	48	49	
E	69	59	71	

4. The table below gives you details about the temperature of important cities telecast by Doordarshan News bulletin. Find the average temperature of three cities.

Cities	Maximum Degree Celsius	Minimum Degree Celsius	Average
Thiruvananthapuram	32	22	
Kochi	33	26	
Kozhikode	25	17	



10. Map Reading



Can you think of learning geography without globe and maps? Why do we use them? Can you note down the types of information that we get from globe and maps?

Of late, software applications used for reading maps have become very popular. 'Marble' is a simple software in this category. It is basically a desk top globe.



Pic. 10.1 Globe

Watching the Globe

Open the 'Marble' window in the 'Education' menu and see the globe.

Complete the activities suggested in Activity Corner below.

Activity Corner

- ◆ Click the tabs in 'View' menu and see the changes in the globe.
- ◆ Click the tabs 'Navigation', 'Legend', 'Map view' given on the left side panel of the 'Marble' window and observe the changes.
- ◆ Click on 'home', 'arrow', 'zoom' tabs and see the changes in the globe.

Watching Kuttanad

Zoom in onto the area representing the Vembanad lake in Kuttanad and observe it.

Can you prepare a list of the places around Vembanad lake?

Longitude and Latitude

Zoom in to your place on the 'Marble' globe and see the places. Bring the mouse arrow above those places and see their longitudes and latitudes.

Can you locate the meridian opposite to the prime meridian and write down its longitude?

Measuring Distance

What is the distance between Thiruvananthapuram and Delhi? We can find this out from 'Marble' globe.

Zoom in to Thiruvananthapuram. Click the right button of the mouse. From the menu that opens, select the tab 'Add measurement point' by clicking the left button of the mouse. Similarly, zoom in onto Delhi, and select the tab 'Add measurement point'. See the distance that the software shows. Please note that what is shown is the aerial distance between the two places. Rail

or road distances will be more than that.

By tracing the sea route from Portugal to Kozhikode by means of mouse clicks, can you estimate the nautical miles that Vasco Da Gama travelled in 1498 to reach Kappad?

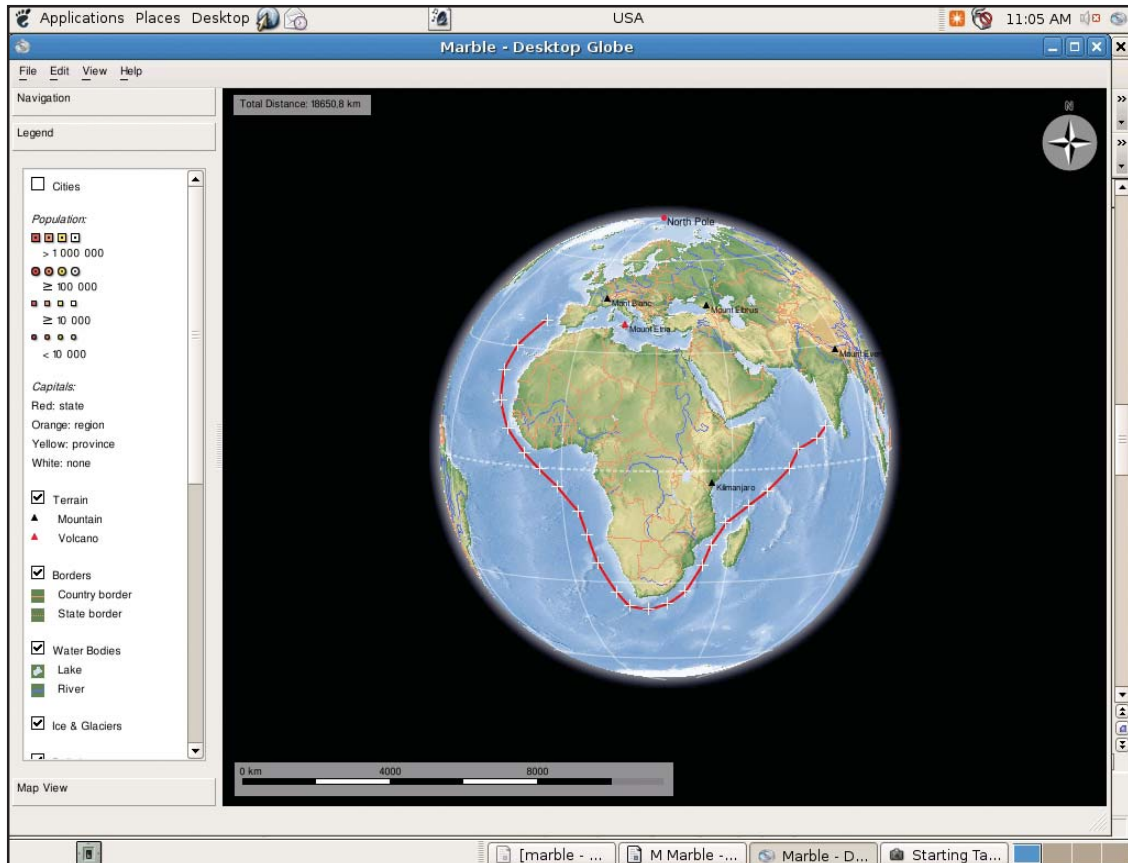
Content of Maps

Prepare a note on the types of information that globes and maps provide.

Let's now run the 'Marble' window in 'Legend mode' for accessing information. See the list of legends shown in the box on the left side. Select the following legends from the list by clicking on the check boxes.

- Cities
- Water bodies
- Ice and glaciers
- Relief
- Coordinates
- Grid
- Scale bar

Observe the changes on the globe now. 'Uncheck' the check boxes and see



Pic. 10.2 Legend Tool bar

the difference. (Picture 10.2).

Different Types of Maps

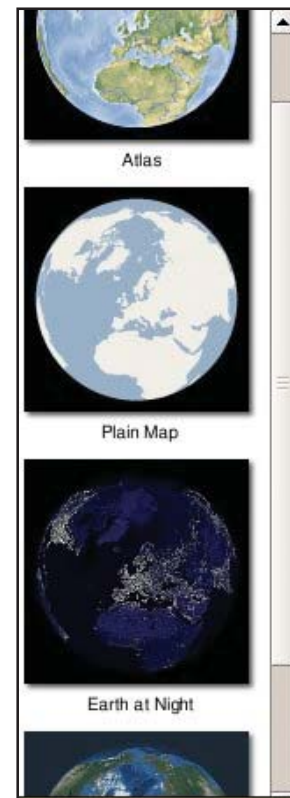
Geographers use various types of maps for different purposes. Observe different maps using the 'View' tab in 'Marble'. (Picture 10.3).

Xrmap for Map Reading

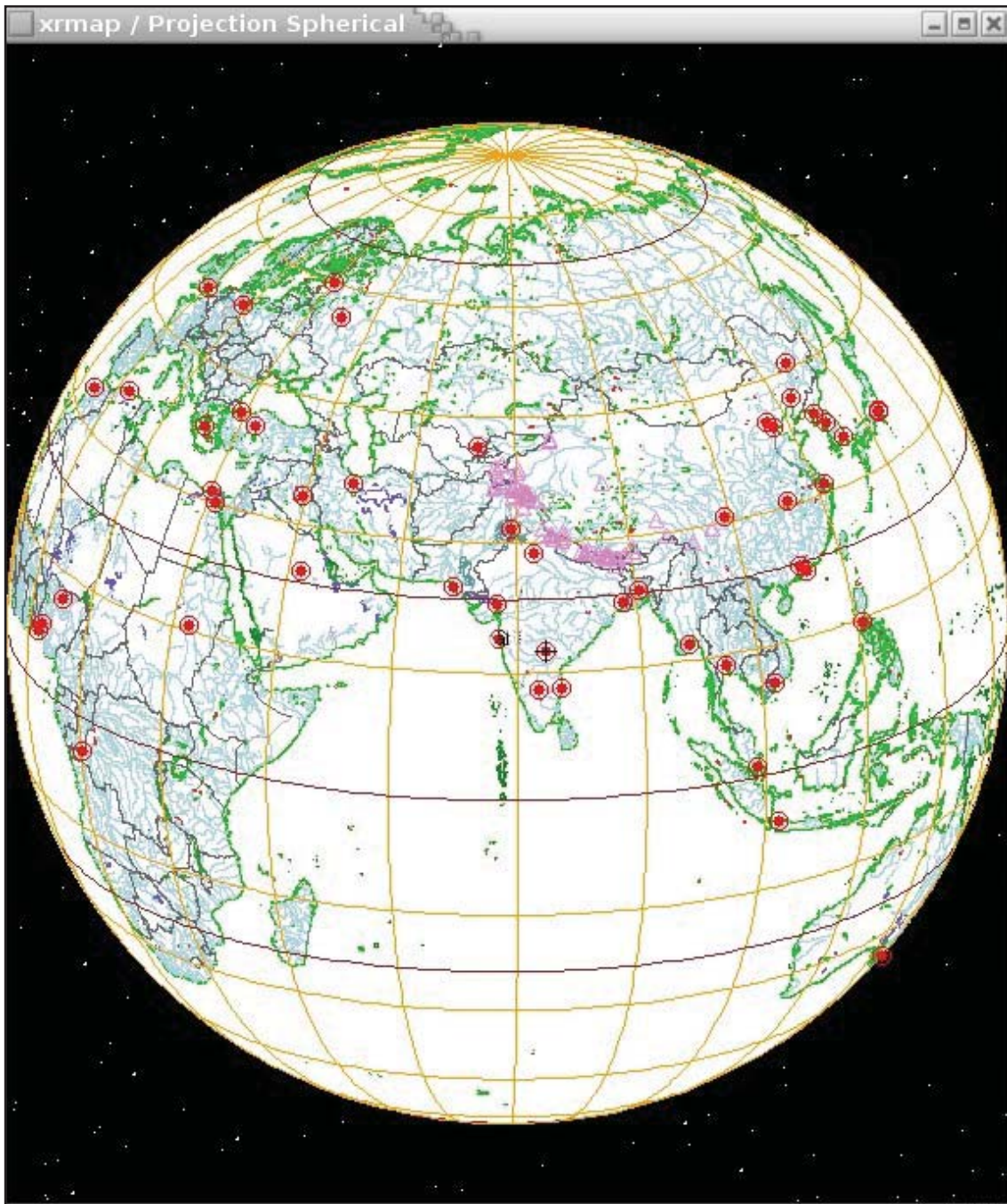
Maps are essentially repositories of geographic information. They may also contain information on various matters such as roads, buildings, administrative boundaries etc. Digital maps are capable of containing much more information than the ordinary maps used in class rooms. Open 'xrmap' provided in the 'Education' menu and observe the types of information stored in digital maps (Picture 10.4).

Scales of Maps

We know that maps are prepared in different scales. Open 'xrmap' and see a map in a small scale. Press '+' key to see map of a larger scale. Observe the difference between the two. Which one provides more details?



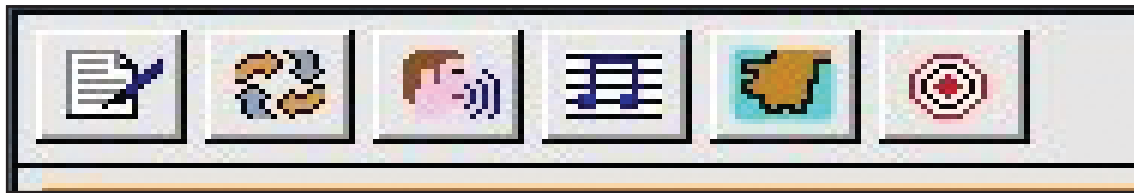
Pic. 10.3 'Marble' maps



Pic. 10.4 Xrmap window

Click on the red marks on the map and see the features available in the tool bar. Find out the use of these features by pressing 'Z' key (Picture 10.6).

Mark your school on *online* maps such as ISRO, Bhuvan, and WikiMapia.



Pic. 10.4 Xrmap toolbar

Keyboard shortcuts (actions)

Q	Quit program
"	show the list of keyboard shortcuts
?	show zoom / position
:	open the topography window
&	save & view the map as encapsulated PostScript
*	export and edit the map parameters in a .rc file
@	pop up the file explorer
H	open the xrmap man page in an xterm
M	enter into the general Menu
F	enter into the File menu
D	enter into command mode menu
S	enter into the Search menu
O	enter into the Option menu
C	enter into the Color menu
N	enter into the map editioN mode
!	activate selection and generate map/expert mode
<<<>>>	

Pic. 10.6 Xr Keyboard Shortcuts

11. Effective Presentation



All of you love watching movies, don't you? But have you ever thought that the movie you watch on the screen is the outcome of several days of hard work and that it is the product of combined effort of many people? The development of Information and Communication Technology has revolutionised the way films are produced. Don't you want to present a story effectively in front of an audience? How will you stir the emotions of the audience?

For effective presentation a lot can be done by utilising the techniques of ICT. The ICT can make your learning process more effective and motivating. The ICT can be used to cover many such areas of your learning activity.

What all ICT techniques do you know to make your presentation more effective and attractive?

- ◆ Pictures
- ◆ Sound
- ◆
- ◆

- ◆
- ◆

You have already understood that the presentation software helps you to present your ideas using sound and images.

Impress in Open Office.org is a presentation software that works in IT@school Gnu/Linux.

Note down the preparations to be made to make an effective presentation using the materials that you have collected as part of your learning activity.

- ◆ Decide on the key points to be presented before the audience.
- ◆ Decide where the visuals and sound will have to appear.
- ◆
- ◆
- ◆
- ◆

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Suppose you want to create a presentation on a topic 'Importance of Water Conservation' based on the 16th chapter of Basic Science textbook in connection with the awareness campaign. An incomplete story board is given below. Complete it to create an effective story board.

Suggestions should appear here on your action plan to preserve water.

The completed story board can be used to create a presentation on the topic. Let us see how presentation can be prepared on the topic with the aid of

A storyboard is a visual layout of the images and text you want to appear on each slide.

OpenOffice.org Impress.

Record the details to be included in the slides and complete the story board in your ICT note book. A discussion in the group will help you to improve the matter. You can even make necessary changes in the story board while you prepare the presentation.

From the 'Tasks' on the right side of the

Slide 1	Water, the elixir of life	An image of a fresh water source Font Size Font Colour
Slide 2	Total amount of water on earth, Pure water - a table	Font Size Font Colour
Slide 3	Availability of water in our area - a study	The information you collected during the project can be given here as a hyperlink
Slide 4	Environmental factors that lead to water contamination.	The video and pictures showing water contamination
Slide 5	The images on proper uses of water	Collect photographs of water recycling with the help of your teacher or photograph it from your area (if available). Use them here.
Slide 6	Water Conservation - Important Points	Suggestions for educating public on preservation of water should appear here

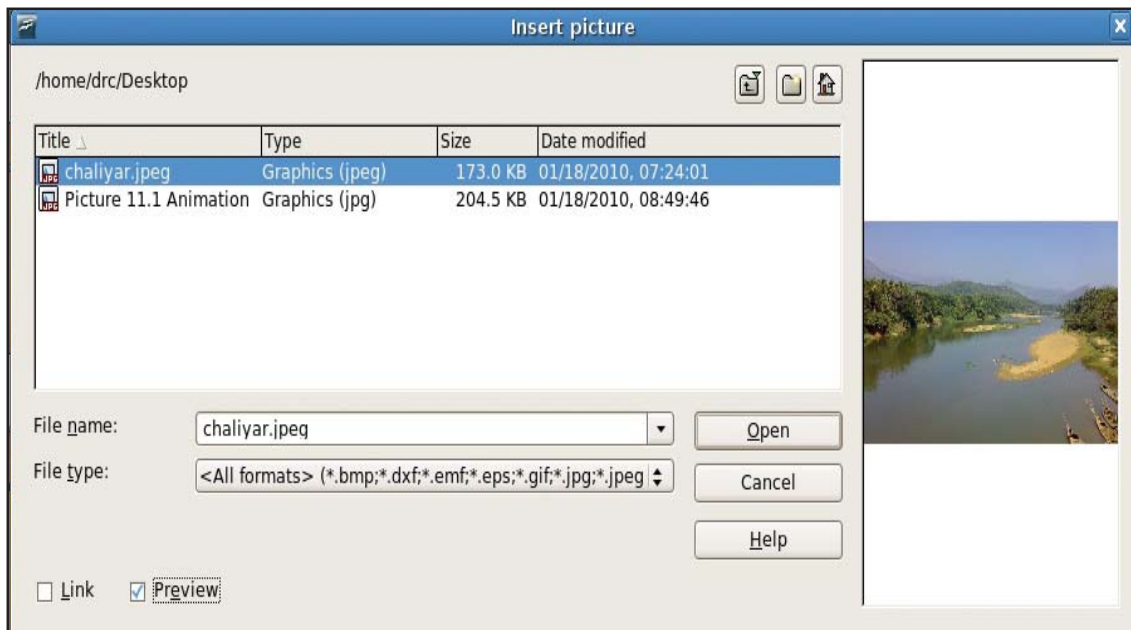
slide, choose a suitable layout for the presentation. Type the required details on the selected slides.

You have now typed the matter in each slide as stated on the storyboard. Let

us see how to make the slides attractive, using the information given below. You can seek your teacher's help, if needed.

To include pictures

Select the slide to add the picture. To add a picture Click the mouse in the following order. Insert → Picture From File.



Pic. 11.1

How to include a movie file or a sound file

Select the slides to be added. Click the Movie and Sound in the Insert Menu to add animation and sound files. (Pic. 11.2)

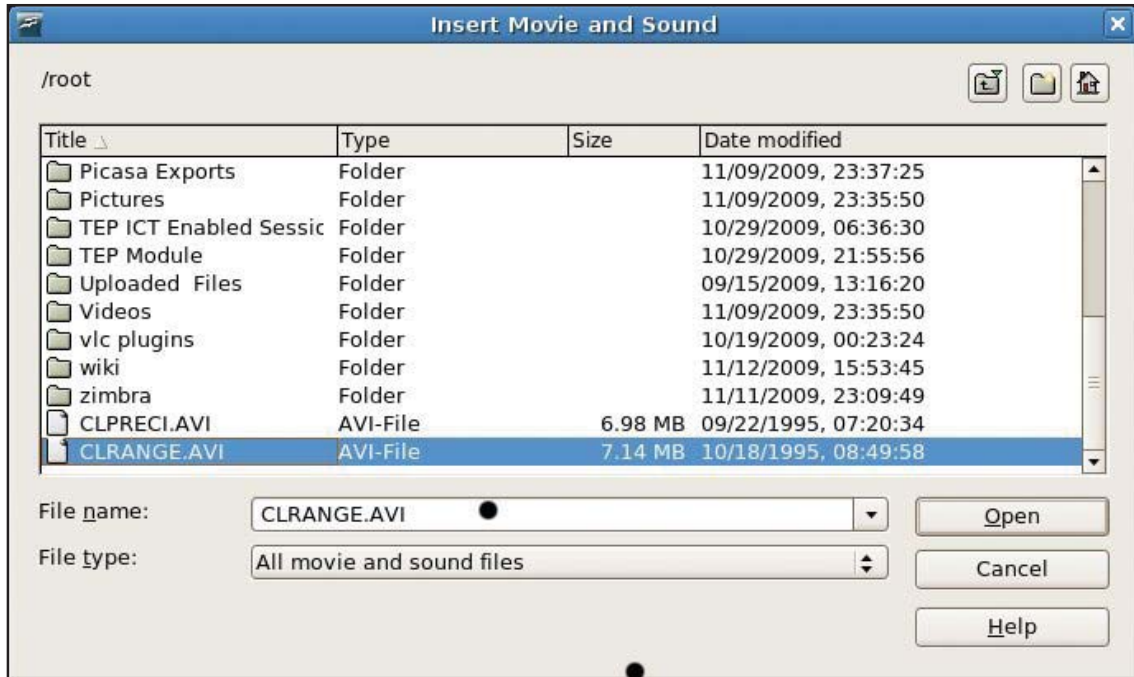
How to give Hyperlink

Select the words in the slide to be hyperlinked. Click on Hyperlink and a window opens. Click on Document on the left side of the window (Pic. 11.3) Click on Folder icon on the right side of the window and browse the file to be connected to the slide. Type the words selected from the slide in the space of Text and click the Apply button.

How to animate the slides

Select the words or pictures to be animated. Click in the following order: Slide Show Custom Animation (Pic. 11.4) Now suitable animation can be added to the slide by clicking the Add button in the Tasks pane appearing on the right side of the slide.

We have learned how to make the slides attractive by adding animation and sound to it. The presentation of slides also deserves equal importance. One has to decide on the order of its appearance. It should never be shown in quick succession as that can distract the viewers. For an effective presentation, the slides have to be in logical or-



Pic. 11.2

der and will have to be properly connected to each other. Many different slide transitions are available in Open Office Impress. Slide Transitions are one of the many finishing touches to a presentation. Wait until you have the slides edited and arranged in the preferred order before setting. You might

have noticed the order and emergence of each scene in a movie. Do it likewise. Click Slide Show and then Slide Transition respectively.

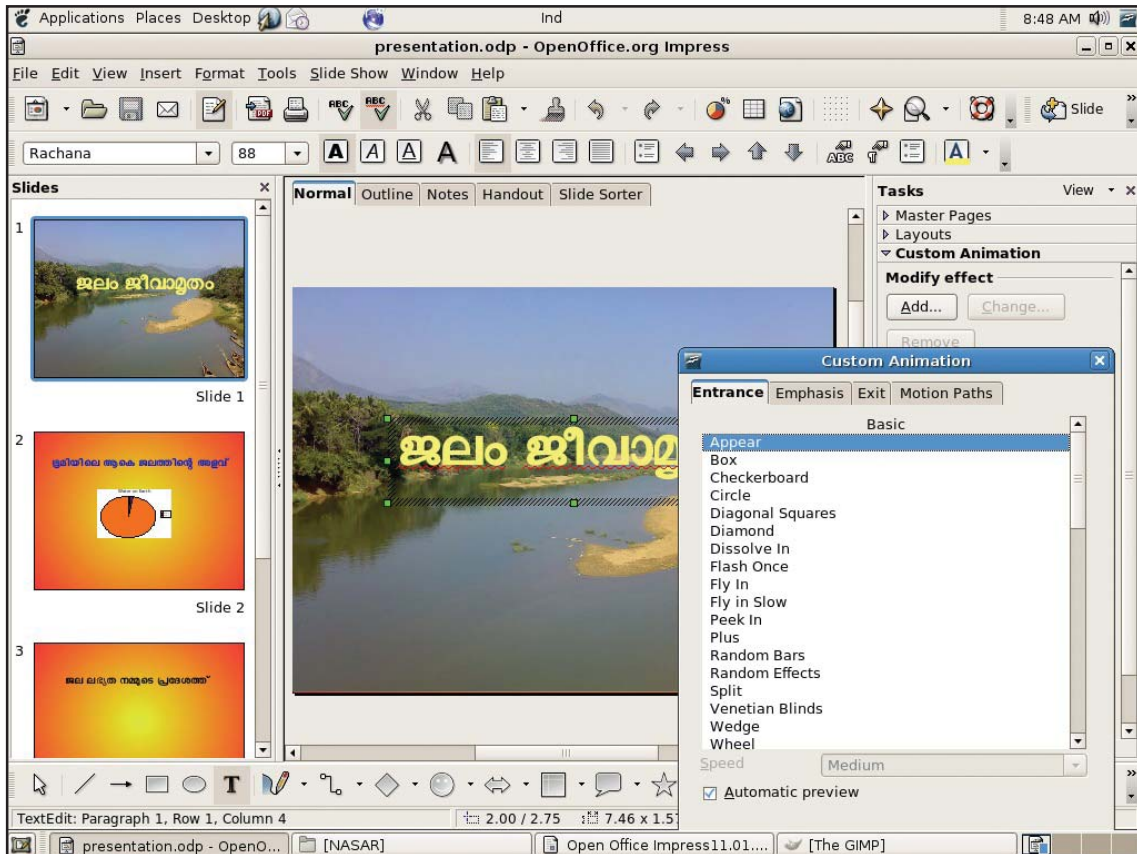
Find alternate method if any and record.

- 1
- 2



Pic. 11.3

- 3
- 4
- 5
- 6
- 7
- 8



Pic. 11.4

Don't forget to save the presentation in your folder. Try to do the activities given below using Impress and present it during the Free Software Day.

Activities

1. Prepare a presentation on Kerala's mineral wealth.
2. Prepare a presentation on the 'Structure of Cell' that appears in the Unit titled 'The Casket of Life' in Basic Science.
3. Prepare a chart in a Spread Sheet on the production of crops in India and the total cultivable land during the last few decades. Prepare a presen

tation on "The Agricultural Scenario – After Independence" and insert the spread sheet as hyperlink.

4. Prepare a presentation on William Shakespeare highlighting the story Macbeth in your English Course Book
5. Prepare a visual presentation of the poem "The Enchanted Shirt" in English Course Book.
6. Prepare a presentation with ample pictures highlighting the traditional agricultural rituals of Kerala in connection with the lesson titled "Arisree' in your Malayalam Course Book.



12. Far out in the Sky



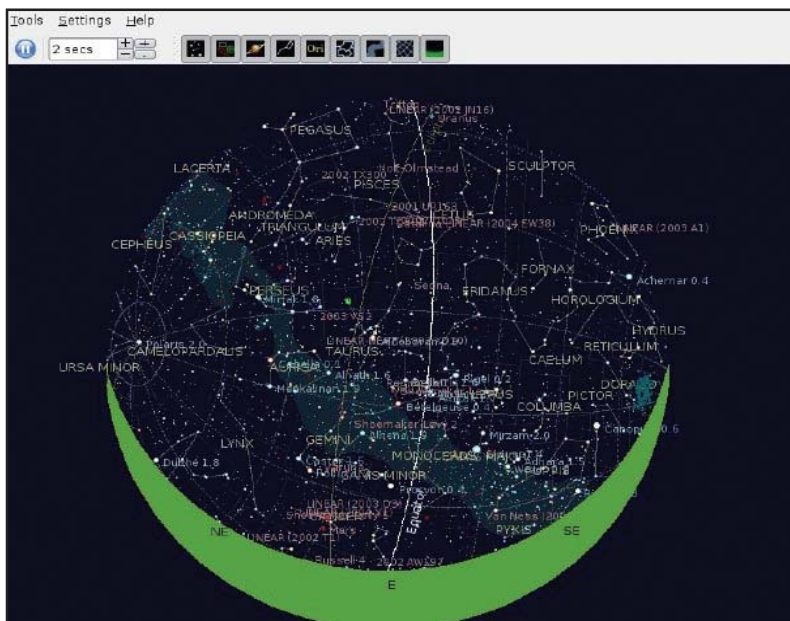
*Boundless and enigmatic as they are
The incredible ways of the Planet Earth
Little could a man sitting in a remote corner
Grasp its fathomless depth and form*

We watch the sky during the day and night. When do you think the sky looks the most wonderful? You must have observed several changes

happening in the sky. Watching the sky with hundreds of stars, planets, moon, and the sun must be something dear to your heart.

When was it that you have watched the sky seriously in the recent past? Were you looking for something specific? Did you find any problem in watching the sky?

Try writing



Pic. 12.1

Far out in the Sky

down your experience in sky watching.

-
-
-

'Kstars', 'Stallarium' etc., are software applications that help us watch and understand the sky better.

Have you observed the changes that the moon undergoes, starting as a crescent the next day after the new moon and progressing towards the full

Open Kstars software application and set our place using 'Settings' ! 'Geography'. If our name is absent in the list, click 'clear fields'. Set 'city', 'state', 'country', 'longitude', 'latitude', and 'UT Offset' (the time difference between Greenwich mean time and our local time). Click 'Add to list' to include place name. For example, in order to include the place name Alappuzha, provide the following: Alappuzha, Kerala, India, 76 23, 09 30, 5.50.

Observe Moon



Pic. 12.2



'Pic. 12.3

moon? We can observe these changes in the shape of the moon using Kstar software.

Activity 12.1

Refer the calender and figure out the dates of new moon and full moon this month. Use Kstars to observe the changes in the shape of the moon through the cycle.

Have you seen solar eclipse?

Set the 'place' in Kstars software application. Set the 'date' as 15th January 2010. Set the appropriate time in the 'Adjust time step' option in the Tool bar. Click the 'Start clock' button.

Sky Watching in Different Months

Picture 12.5 shows the sky on a day in February. Observe the sky on

Open Kstars software application and set 'Time', 'Date', and 'City'. Click 'Pointing' ! 'Find object'. Press 'Enter'. You can see the moon closer by clicking 'Zoom in' button. Click 'Time → Set time' to set date and time.



Pic. 12.4

different days in other months.

What all celestial objects have you seen while watching the sky?

- Stars
- Planets
-
-

Let's See Star Constellations

If you watch the sky every month regularly, you will notice constellations of stars in different parts of the sky. Our ancestors have joined them by imaginary lines and have attributed certain shapes to them. These shapes are mostly of animals or people. These constellations are known by these shapes.



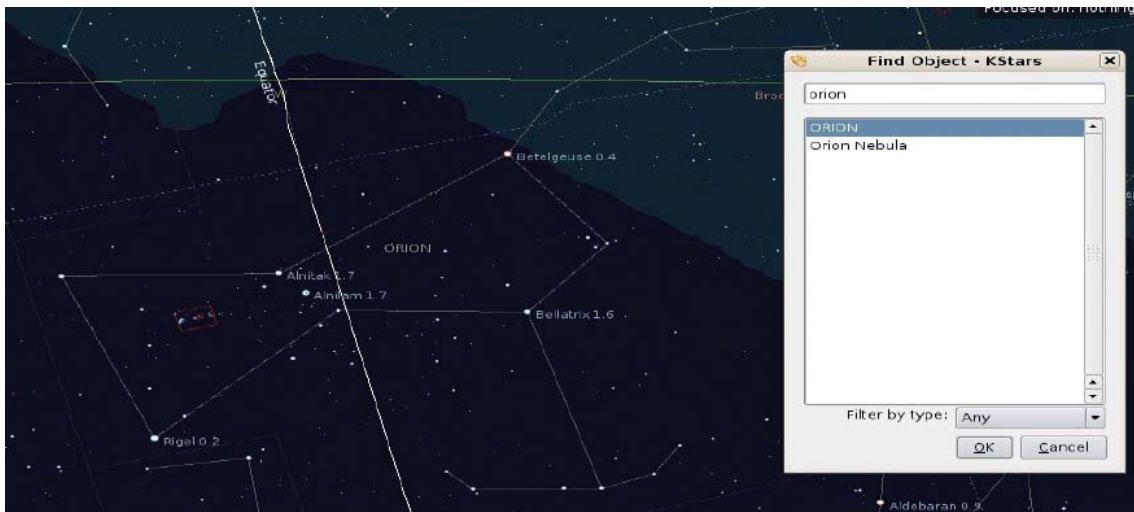
Pic. 12.5

We can use Kstars to locate these constellations. Let's take the constellation which has the shape of a hunter (Orion).

Type 'Orion' in the 'Pointing → Find Object' window. Press 'Enter'. (Picture 12.6)

Try to observe the following while watching the stars:

- How many stars are there in the 'Orion' constellation?
- Which is the brightest star among the Orions?
- What is the relationship between Orion constellation and directions as we understand them on Earth?



Pic. 12.6

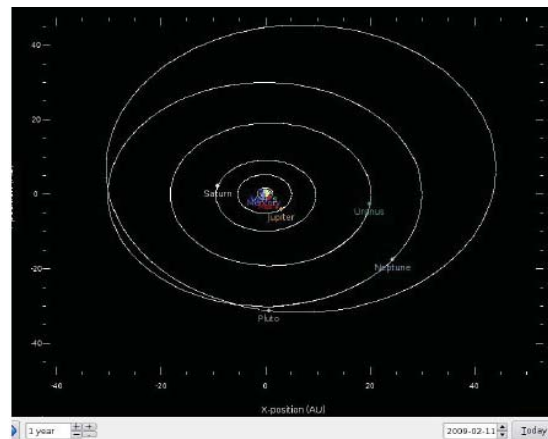
- Repeat the observations on different days and months

Gemini, Aries, Cancer, and Leo are constellations of different shapes. Observe each constellation, count the stars, look for the brightest star and see the shape of the constellation and relate it to its name.

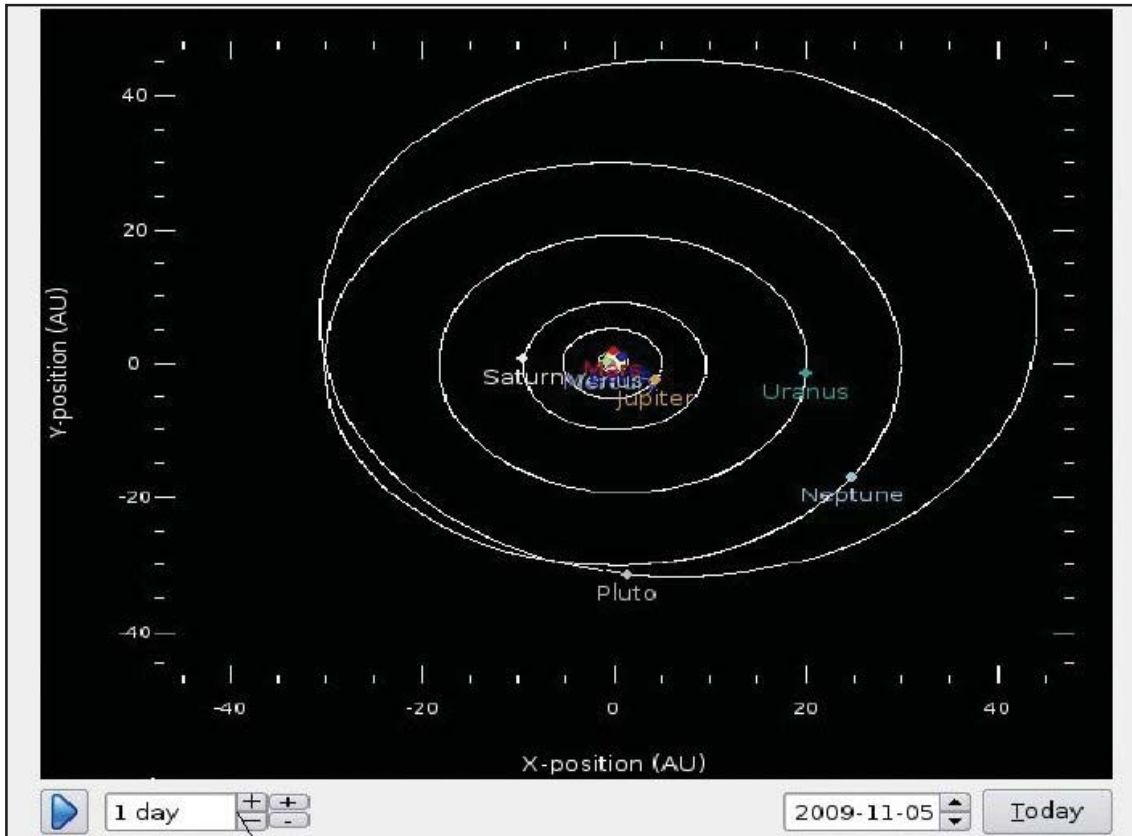
You know the composition of the solar system. You also know the time that the earth takes to revolve around the sun once. But do you know the time that Saturn takes to revolve around the sun once? What about other planets?



Pic. 12.7



Pic. 12.8



സമയം ക്രമീകരിക്കാം

Pic. 12.9

Activity 12.2

Open the Kstars software. If you select 'Tools' and click 'Solar system', the window shown in Picture 12.9 opens. First set the time in the tab provided for that. Now click on the button on the left side and start

observing the planets. Note down your observations. Set a different time and repeat the activity.

Set the time on the computer and click the 'Today' button and see what happens.

