

COMPUTERS AND GNU / LINUX FOR CHILDREN

(Using K12LTSP 4.0 Fedora Core 1 Linux for schools)



BOOK 1

COMPUTERS AND GNU-LINUX FOR CHILDREN

An Introduction to Computers using Free Software

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1. PARTS OF A COMPUTER



Introduction

- Computer is an electronic machine for performing calculations automatically
- It can store a lot of information like photos, songs, movies and so on.

Personal Computer

- Computer used in homes or offices is called as a **Personal Computer (PC)**.
- Personal computers can be placed on a small table.
- They are also called as **Desktop Computers**.
- Personal Computers are designed to be used by one person at a time.

Uses of computer

- Play games
- Draw pictures
- Play songs
- See movies
- Typing letters, documents etc.
- Education and so on.

Parts of a Computer

1. Speakers
2. Monitor
3. Keyboard
4. System unit (CPU)
5. Mouse
6. Printer.

EXERCISES

I. Answer the following in one or two sentences.

1. What is a computer ?
2. What is a Personal Computer ?
3. Expand PC.
4. What is the other name of a PC.
5. What are the uses of computer ?

II. Identify following parts of a computer.



2. MONITOR



Colour Monitor



Black and White
Monitor

- Monitor looks like a TV set.
- It is used for displaying information and user interface .

Uses of Monitor

- To see movies , drawings , what we type on the keyboard etc.
- To show the **user interface** to operate the Computer and so on.

User Interface

- This is a program that controls a display for the user on a computer monitor
- User interface allows the user to interact with the system
- There are two types of user interfaces namely
 - Command Line user Interface (CLI) and
 - Graphical User Interface (GUI).

Command Line Interface

- In this type of user interface we type commands to interact with the system.
- A keyboard is enough for this interface.

Graphical User Interface

- This type of interface is based on graphics like icons ,buttons, pictures and menus
- A mouse and a keyboard are required to use this interface.

Monitor Types

- Black and White
- Colour

EXERCISE

I. Answer the following in one or two sentences.

1. What is a monitor ?
2. Name the different types of monitors ?
3. What are the uses of a monitor ?

3. KEYBOARD



- Keyboard is similar to a typewriter keyboard.
- There are 101 keys or 104 keys on a keyboard.
- We can use it to
 - type a letter
 - to give commands to the computer
 - to give inputs to the computer
 - to play games and so on.

Types of keys on the Keyboard

Alphabet keys

The keys A ,B,C to Z are alphabet keys.

Numeric keys

The keys 1, 2... 9,0 are called numeric keys.

Caps Lock Key

•This key is used for typing Capital Letters.

•**Shift Key** is also used for this purpose.

Enter key

- This is used to give a command or to start a program.
- This key is also used to go to a new line when typing.
- The word Enter and an arrow is present on the Enter key.

Space Bar key:

- This key is used to insert spaces between words while typing.

Special Keys:

- Alt, Ctrl, Esc, Back space, Arrows, Delete, Home, End, Page Up, Page Down, Tab etc.

Function keys

- There are 12 function keys namely F1 to F12

EXERCISE

I. Answer the following in one or two sentences.

1. How many keys are there in a computer keyboard ?
2. What are the uses of a keyboard ?
3. What are alphabet keys ?
4. What are numeric keys ?
5. What is a Caps Lock key ?
6. What is a shift key ?
7. What is an Enter key ?
8. How many Function keys are there and what are they ?
9. See the keyboard and name the biggest key in size in the keyboard ?

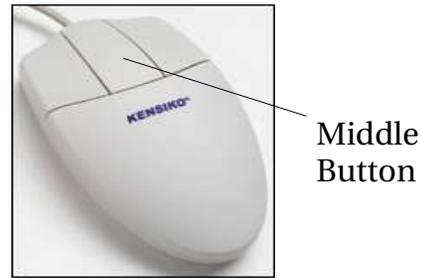
II. Identify the following keys on your keyboard

1. Enter
2. Spacebar
3. Alt
4. Ctrl
5. Backspace
6. Tab
7. Caps Lock
8. Shift
9. Esc
10. Up arrow
11. F4
12. F2

4. MOUSE



2 Button Mouse

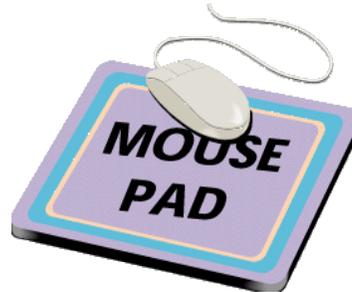


3 Button Mouse

- Mouse is used for operating a Graphical User Interface(GUI)
- Using mouse objects like Menus, icons, pictures, buttons on the monitor can be selected to give command to the computer.

Types of mouse

- There are two types of mouse
 - Two button mouse which has Left and Right Buttons
 - Three button mouse which has Left, Middle and Right Buttons



Mousepad

- Mouse is placed on a smooth pad namely mousepad.
- On the bottom of the mouse is a ball that rolls on the surface of the pad.
- Mousepad should be kept clean by removing the dust using a dry cloth.



Mouse Pointers

Mouse Pointers or Cursors

- When you move the mouse, the arrow or pointer on the screen moves.
- The pointer changes shapes as shown above .
- The shape of the Pointer depends on
 - where the mouse pointer is on the screen
 - which program is being used.

EXERCISE

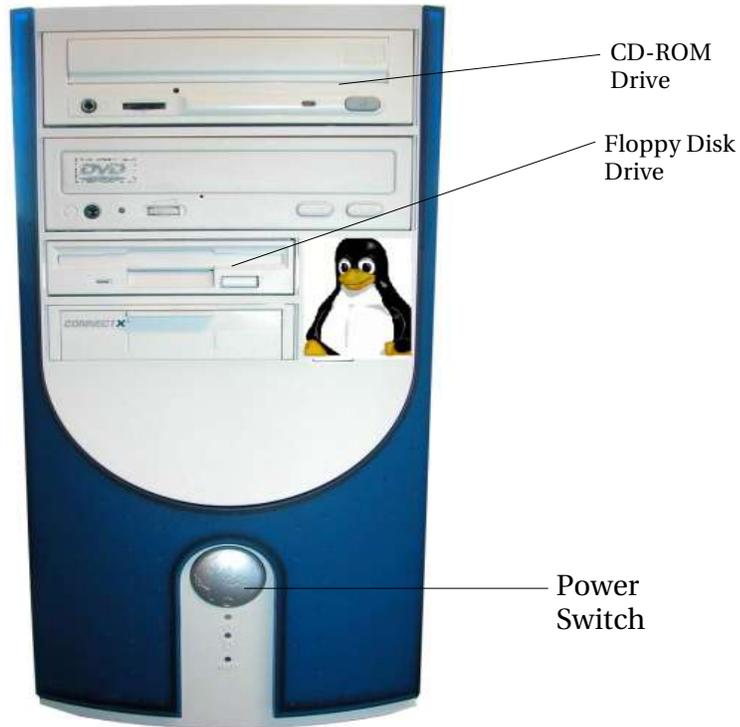
I. Answer the following in one or two sentences.

1. What is the use of a mouse?
2. How many types of mouse are there ?
3. How many buttons are there in a mouse ?
4. Where is the mouse placed ?
5. Name some mouse pointers ?

III. Identify the different mouse buttons.



5. SYSTEM UNIT



CPU

System unit (CPU)

- It is the main part of the computer.
- It is similar to our brain.
- It is also called as Central Processing Unit (CPU).
- CPU controls all the parts of the computer.
- It is connected to all the other parts of the computer like
 - keyboard,
 - monitor,
 - mouse etc.

Parts visible at the Front side of the CPU

- Power Switch
- Floppy Disk Drive
- CD-ROM Drive

Power Switch

- We can start the computer by pressing the Power Switch button.
- We should not Switch off the computer using Power Switch.
- We have to give the Shut Down Command which will Switch Off the Computer automatically

EXERCISE

I. Answer the following in one or two sentences.

1. What is a System Unit ?
2. Expand CPU ?
3. Name some of the parts that are connected to the CPU ?
4. What controls the different parts of the computer ?
5. What are the parts that are visible in front side of the CPU ?
6. How do we start a computer ?
7. How do we stop a computer ?

II. Identify the different parts in the picture

1. Floppy Disk Drive.
2. Power switch.
3. CD-ROM Drive.



6. STORAGE DEVICES

- Storage devices store the information we require for future use.
- For example we can store any letter we type for future use.

Common storage devices :

- Floppy Disk
- CD-ROM
- Hard Disk.

Floppy Disk:

- Floppy disk can be put in the Floppy disk drive found in front of the CPU.
- After storing the information, we can remove it and keep at a safer place or take it with us .

Floppy Disk



Capacity: 14 lakh alphabets.
Or 1.4 MB (Mega Bytes)

CD-ROM

- CD-ROM means Compact Disk Read Only Memory
- CD-ROM can be put in the CD-ROM drive found in front of the CPU.
- Nowadays all the software are loaded to the computer from a CD-ROM .
- We have to handle the CD-ROM carefully.
- We can also hear songs, see movies from CD-ROM on the computer.

CD-ROM



Capacity: 64 Crore alphabets.
Or 640 MB (Mega Bytes)

Hard Disk

- Hard disk is inside the CPU.
- It is permanently fixed inside the CPU.
- It can store huge amount of data and many softwares.

Hard Disk



Capacity: 4000 Crore alphabets.
Or 40 GB (Giga Bytes)

EXERCISE

I. Answer the following in one or two sentences.

1. What is the use of a storage device ?
2. Name three common storage devices ?
3. What is the storage capacity of a Floppy disk ?
4. Expand CD-ROM .
5. What is the storage capacity of a CD-ROM ?
6. Where is the Hard Disk kept ?
7. What is the storage capacity of a Hard Disk ?

II. Identify the different storage devices below.



7. PRINTER

Printer is used to print letters, photos etc.

Types of printers

- Black and White
- Colour .



Colour Printer

8. HARDWARE AND SOFTWARE

Hardware

Hardware is all the parts of the computer which we can see and feel .

Eg: Monitor,CPU,Keyboard,mouse etc.

Software

Software is a set of commands which the computer understands.

Software gives the intelligence to the computer.

Software is created by people called **Programmers**.

Comparison of Software and Movie on a video cassette

Software is similar to a movie inside a video cassette. We cannot see the movie which is inside the cassette. But we can put it in a VCR and watch it on the TV.

Similarly the software has to be loaded into the Hard Disk of the computer. After that we can operate it using mouse or keyboard. Software mostly comes on a CD-ROM.

Is TV useful without a TV station , or without a video cassette ?

In the same way without the software, Computer is useless.

Computer Equation

Computer = Hardware + Software.

Types of software

Mainly there are two types of software.

They are

- Commercial software and
- Free Software

Commercial software

- These software are created by big Companies.
- Costs a lot of money and there are lot of restrictions

Some Famous Software companies

- IBM,Microsoft,Novell,Oracle etc.

Famous commercial softwares

UNIX, MS Windows,Oracle, Apple Macintosh, MS Office etc.

How to Use Commercial Software

- We have to buy the software which usually comes on CD-ROMS from the Software sellers.
- Along with the CD-ROMS they give one license .
- For every computer we have , we need to buy a separate license for the software.
- We cannot share the commercial softwares with our friends,neighbours etc.
- Copying a commercial software is illegal and the offense is called as Software Piracy.

EXERCISE

I. Answer the following in one or two sentences.

1. What is Hardware ?
2. Give some examples of Hardware parts of a computer.
3. What is Software ?
4. In which part of the computer do we load the softwares ?
5. Write the equation of a Computer .
6. What gives the intelligence to the computer ?
7. What are the people who create software called ?
8. How many types of softwares are there ?
9. Who creates commercial softwares ?
- 10.Name some famous software companies.
- 11.Name some famous commercial softwares.
- 12.Can we share Commercial software with our friends ?
- 13.What is the offense of sharing or copying Commercial software called ?
- 14.What is software piracy ?
- 15.Name the storage device on which software is usually sold.
- 16.We need a license for using commercial software . True of False.

10. FREE SOFTWARE



Richard M Stallman
Father of Free Software
Movement

Free Software Movement

- Father of Free software movement is Richard M Stallman from USA.
- He started Free Software Foundation (FSF) in the year 1984.
- His goal was to make and spread the use of Free Software.
- We can give or share Free Software with our friends , neighbours and so on.

GNU

- He first started a free software project called as GNU.
- Gnu is pronounced as Gnoo.
- The expansion of GNU is “GNU is Not Unix”.

People behind Free Software

- Thousands of students ,engineers, and other experts from all over the world.
- They help in creating , improving Free software.
- Free software is a community based activity .
- Free software does not belong to any company or person, but to all of us.

GNU LOGO:

- The symbol of GNU is an animal found in South Africa called as Gnu .



GNU Logo

EXERCISE

I. Answer the following in one or two sentences.

1. Who is the Father of Free Software Movement ?
2. Expand FSF.
3. When was the Free Software Foundation started ?
4. Expand GNU.
5. Who create Free Softwares ?
6. What is the goal of FSF ?
7. What is the logo of GNU ?

11. GNU / LINUX

Linux Kernel

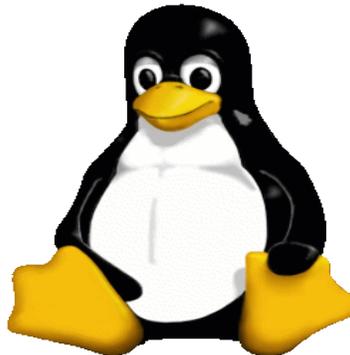
- In the year 1991 Linus Torvalds created a type of Free software namely **Linux Kernel**.
- He was a student from the country called as **Finland in Europe**.
- **Kernel** is an important part of the software called **Operating systems (OS)**.
- Operating system is the software which controls the different parts of the computer
- Operating system makes it easy for us to use the computer.



Linus Torvalds
Creator of Linux

Linux Logo

- The symbol of Linux is a cute looking penguin.
- It is also known as tux.



Tux
Logo of Linux

GNU/Linux A Free Operating System

- GNU and Linux together are called as **GNU/Linux OS**.
- There are lot of famous GNU/Linux Operating Systems which are generally called as GNU/Linux Distributions.

EXERCISE

I. Answer the following in one or two sentences.

1. Who is the father of Linux ?
2. In which year Linux was created ?
3. Which country does Linus Torvalds belong ?
4. What is the logo of Linux ?
5. Name the Cartoon character looking like TUX .
6. What is an Operating System software ?
7. What is the important part of Operating System software ?
8. What makes it easy to use a computer ?
9. What is GNU and Linux together are called as ?
10. What is the other name for GNU-Linux Operating Systems ?

12. GNU/LINUX DISTRIBUTIONS

- The GNU/Linux softwares distributed by different companies or a group of people are called as GNU/Linux distributions.

Famous GNU/Linux Distributions and their logos



RedHat



SuSe



Mandrake



Debian



Slackware



Knoppix



Lycoris



LindowsOS



K12LTSP

EXERCISE

II. Identify the different GNU-Linux Distributions below.



13. MOUSE OPERATIONS

- Important buttons of mouse are Left and Right buttons.
- We have to hold the mouse so that forefinger rests on Left button and middle finger rests on right button.
- Most of the time we use only the left button.

Different Mouse Operations

Left Click

- Press the left button once and release the button.
- This is called simply as a **click or Single Click**.
- This operation is usually done to press on a button or menu.

Double click

- Press the left button twice one after another fast.
- This should happen normally within half a second.
- This operation is done to start a program on the desktop by double clicking on its icon .

Drag

- Press the left button.
- Without releasing the button move the mouse in any direction you want.
- This is used to select a group of items or to move a selected object to a new place.

Right click

- Press the right button and release it.
- A menu called as Pop Up menu will appear
- We can select different options from this menu by using the Left Button.

Guidelines on using the mouse

- Mouse operations require some time to master.
- Children may require more practice as their hands and fingers are delicate.
- Children should not use the mouse more than half an hour initially.
- It is advisable to use a mini mouse meant for children if it is available.
- Using of mouse for longer duration may result in
 - pain or cramps in the fingers or hand.
- Generally it takes at least a week to master the mouse operations.
- Some people may need more time to learn mouse operations.

EXERCISE

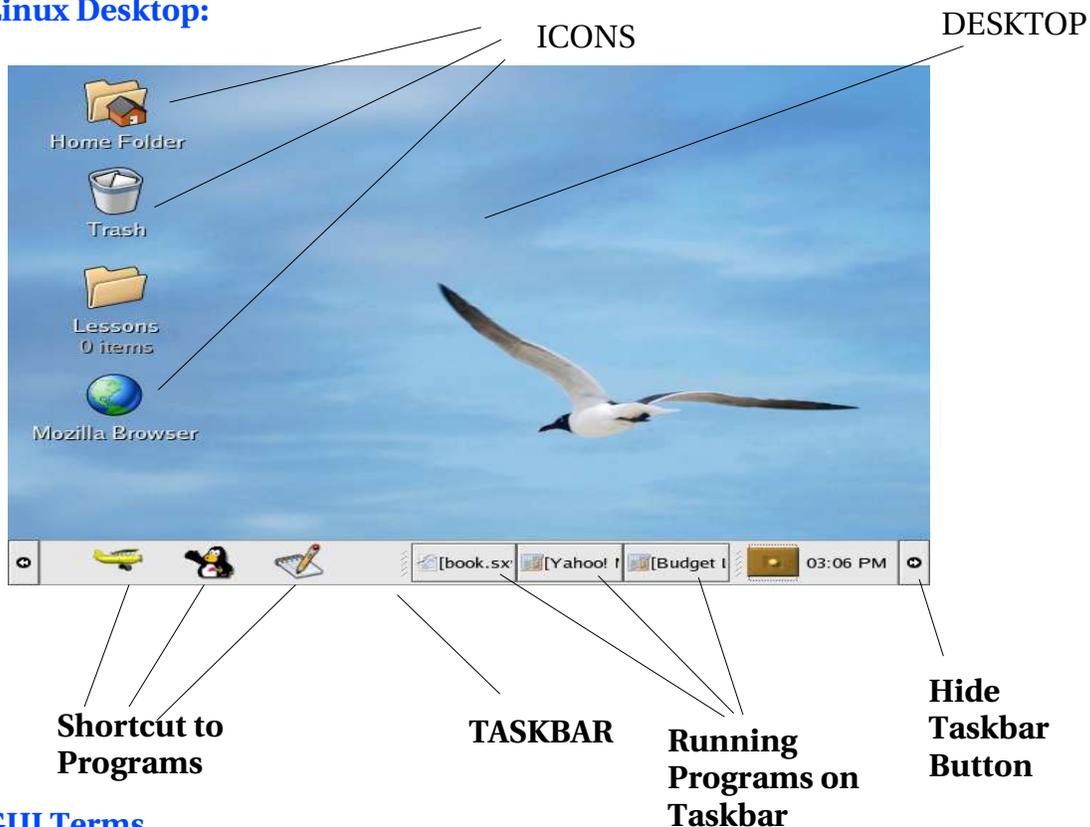
I. Answer the following in one or two sentences.

1. How do we hold a mouse ?
2. Which is the important button in a mouse ?
3. Name the different mouse buttons ?
4. Name different mouse operations ?
5. What is click or single click ?
6. What is double click ?
7. What is the use of single click ?
8. What is a drag operation ?
9. What is right click ?
10. How much time is required to learn mouse operations ?

14. GRAPHICAL USER INTERFACE

- Graphical user interface (GUI) is an easy way to use computers.
- Within a few attempts anybody can learn to use computers.
- We need a mouse and a keyboard for using a GUI.
- In a GUI, there are Icons, Windows, Buttons, Menus etc.
- The first thing that we see in a GUI is a desktop.
- Desktop is the first picture on the Monitor.

Linux Desktop:



GUI Terms

Desktop

- This is a rectangular area on the monitor.
- In the above figure the blue area is the Desktop.

Icon

- These are small images or pictures which is related to a software, or object.
- **Home folder** is an icon for our Home directory.
- **Trash** is an icon where our deleted files will be put.
- **Mozilla browser** is an icon for a software called Mozilla browser to see the Internet.

Program Shortcuts

- These are icons when clicked , will start the program related to that icon.
- We can put important programs icons here, so that it is easy to start that program.

Taskbar

- In this area, the programs we started can be made active or inactive.
- Computers can run many programs at the same time.
- Taskbar is useful to activate and switch between the many programs that are running.

Hide Taskbar Button

- This button is used to hide or show the taskbar.
- It is useful to increase the space on the Desktop when there is a bigger photo or picture to view.

EXERCISE

I. Answer the following in one or two sentences.

11. Expand GUI ?

12. What is a GUI ?

13. What is required to operate a GUI ?

14. Name the different objects in a GUI .

15. What is a Desktop ?

16. What is an icon ?

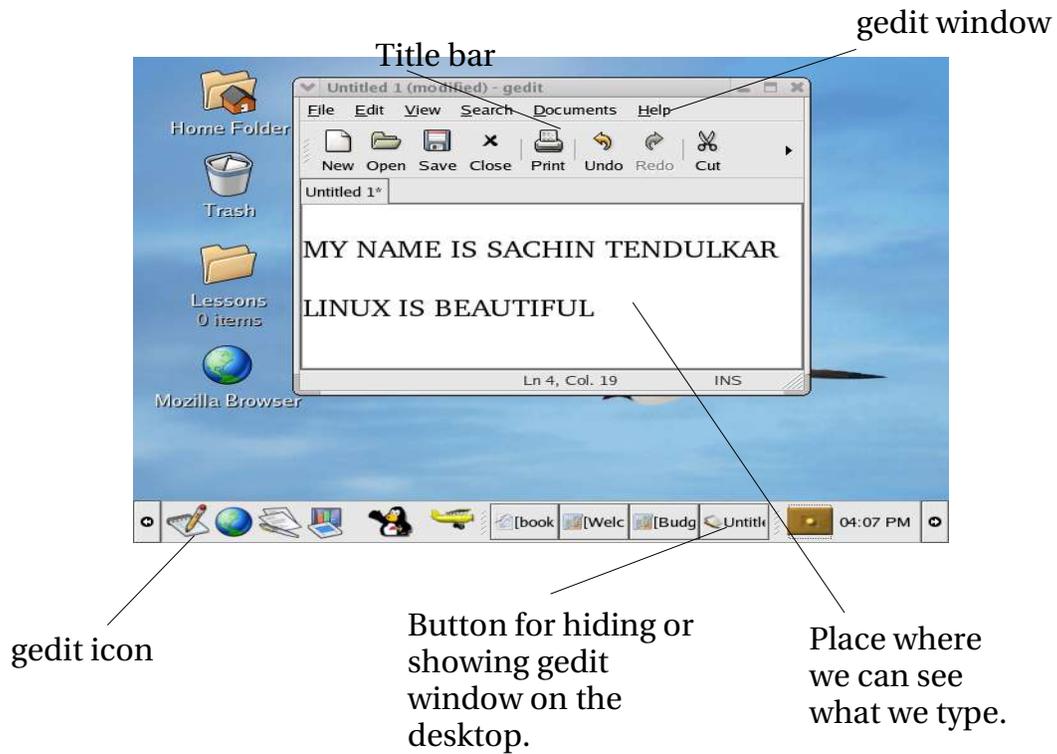
17. What is a program shortcut ?

18. What is a taskbar ?

19. What is the use of a taskbar ?

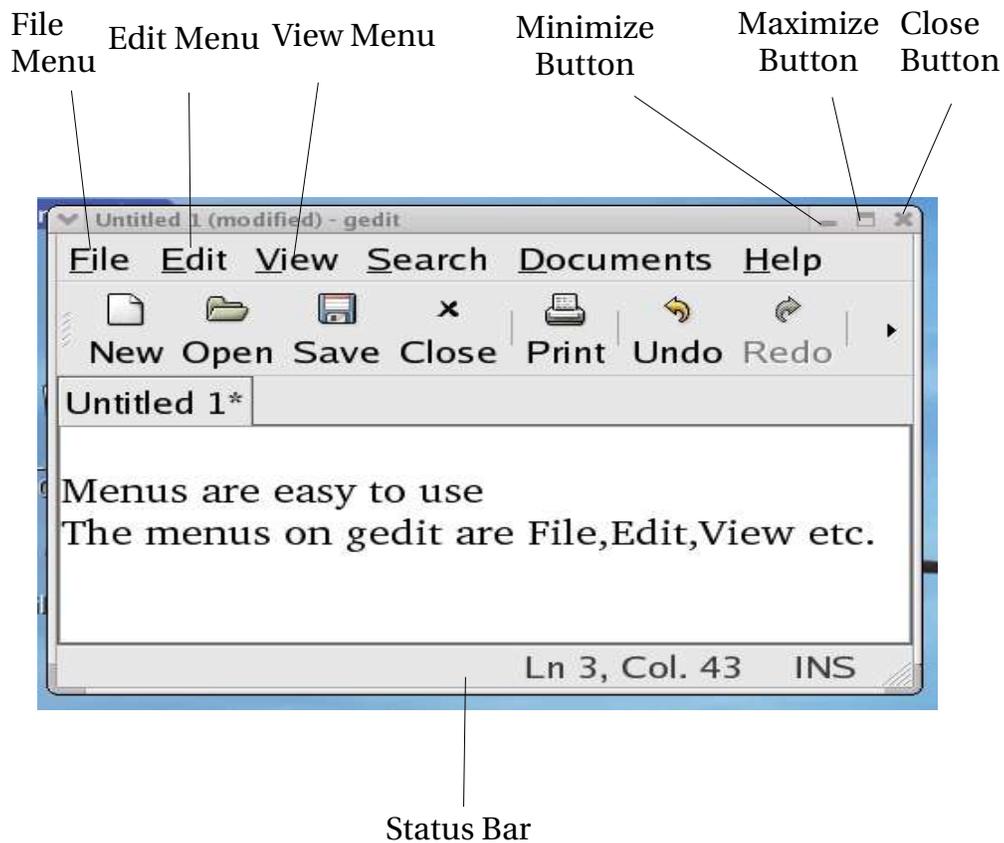
20. What is a hide taskbar button ?

14. WINDOW TO COMPUTER WORLD



- In a GUI, all programs run in a Rectangular area called as a Window.
- You can see a Window of a typing program called **gedit** on the above picture.

16. MENUS



Menus

- Menus are a list of options.
- Each Menu has a name .
- When we click on the menu name, the menu details will be shown .
- In the above diagram there are menus namely File,Edit,View,Search etc.

EXERCISE

I. Answer the following in one or two sentences.

1. What is a window ?
2. What is the use of minimize button ?
3. What is a titlebar ?
4. What is a menu ?
5. Name the icons of **gedit** program ?
6. Name the menus of **gedit** program?

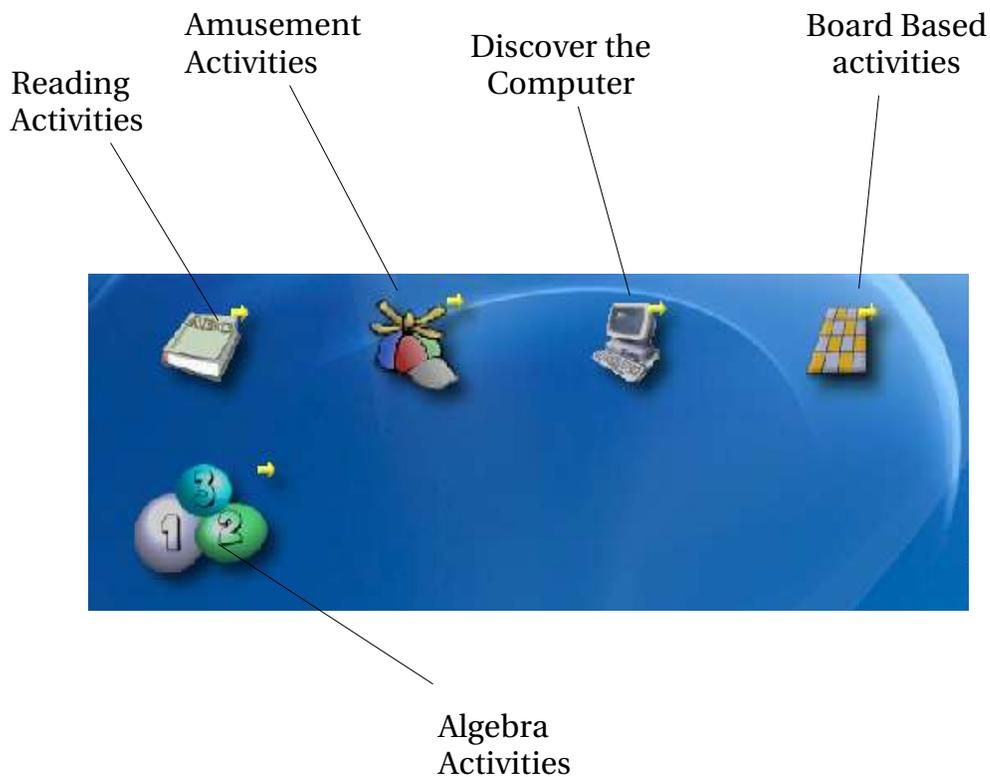
16. GCOMPRIS EDUCATIONAL GAMES

- GCompris is a collection of educational games for children from age group 3 and above.
- There are around 30 games in different categories.

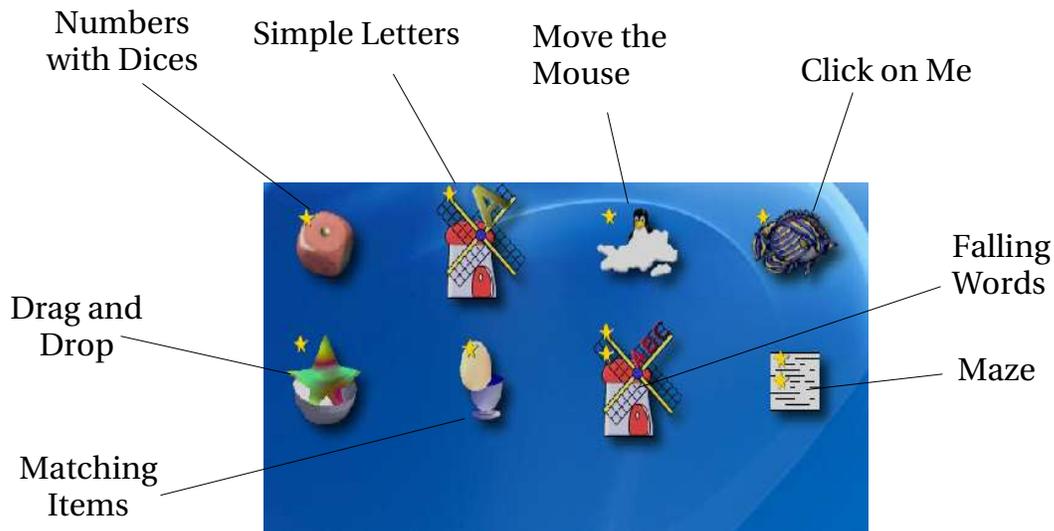


Gcompris Icon

- Click on the Gcompris Icon on the Taskbar which looks like an aeroplane.
- You will get the following Screen with multiple icons.
- For mouse practice click on the Discover the Computer icon.



17. DISCOVER THE COMPUTER



The first Category is Discover the computer.

Move the Mouse: Move the mouse to uncover bears pictures. This is similar to a cleaning brush to clean dust on a picture.

Click on Me: Click on fishes to kill them. For every fish you kill, you get a point. This game is for Clicking practice.

Numbers with Dices :Enter Numbers by counting the dots on a falling dice. This game is for practicing entering numbers using keyboard

Simple Letters: Enter alphabets using keyboard which should be matched to the falling alphabets. For every correct entry there is one point.

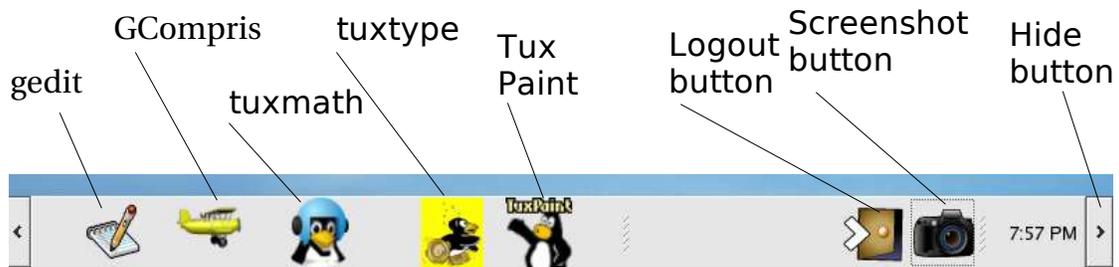
Falling Words: Type the the words Falling from above.

Drag and Drop: Drag a shape from a list onto the outline of the shape on screen. This game is for Dragging practice.

Match Items with Words: Drag the items to their names.

18. SOME GAMES OF GCOMPRIS

Taskbar for children

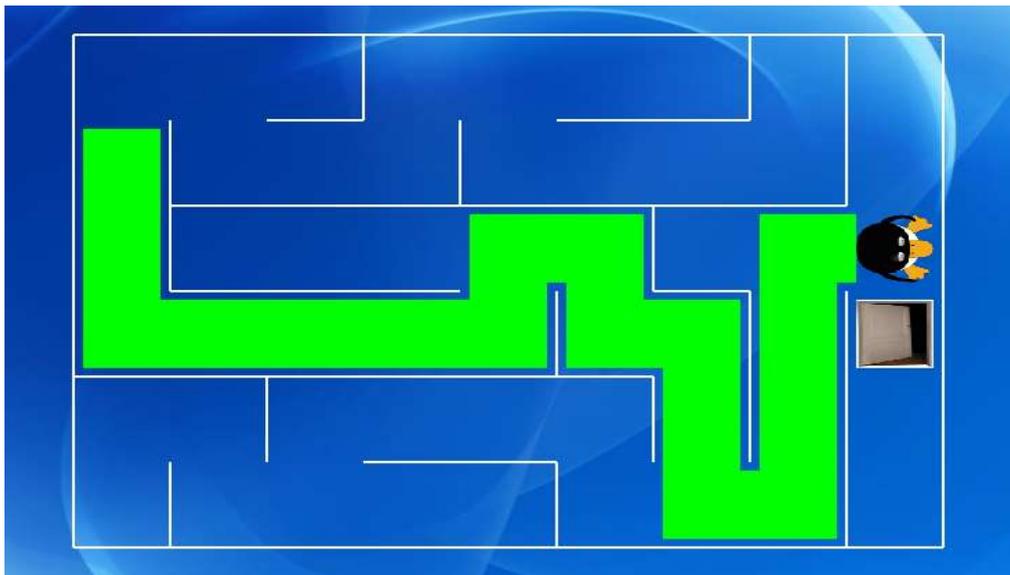


- Taskbar hides after pressing Hide button



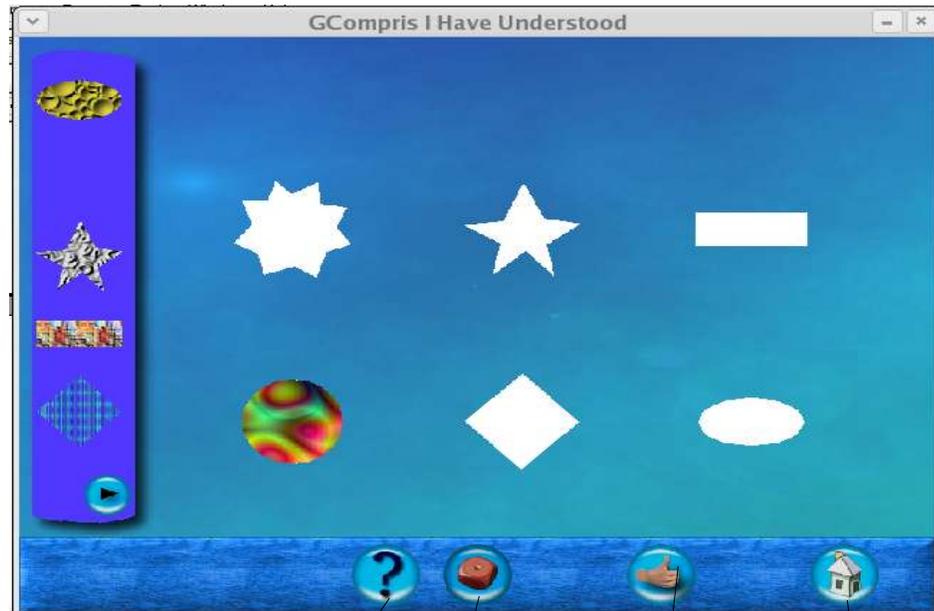
- To show taskbar press Hide button again

Maze



- Use arrow keys left, right, up and down for the penguin to reach home
- After finishing one game, a new game starts with more difficulty

19. DRAG AND DROP



Help

Change
shapes or
level

Check
the
Answer

Home
or
Go Back

- Drag the pictures to their shapes
- After finishing all pictures click on Hand icon to check

20. AMUSEMENT ACTIVITIES

Identify Colours

Set time in watch

Identify Left or right hand

Painting program

Operate a submarine

World map Jig-Saw puzzle

Operate a canal lock

Painting program

Eraser

Select Face,nose,eyes and other parts

Select Colours

22. TUXPAINT PROGRAM

- Tuxpaint is easy to use drawing program for children
- To start tuxpaint cick on the tuxpaint icon on the taskbar
- Children can learn it by themselves.
- Click on the various icons in the tuxpaint program and start learning.



Painting using
tuxpaint

23. ALGEBRA ACTIVITIES

Addition, Subtraction
Multiplication tables

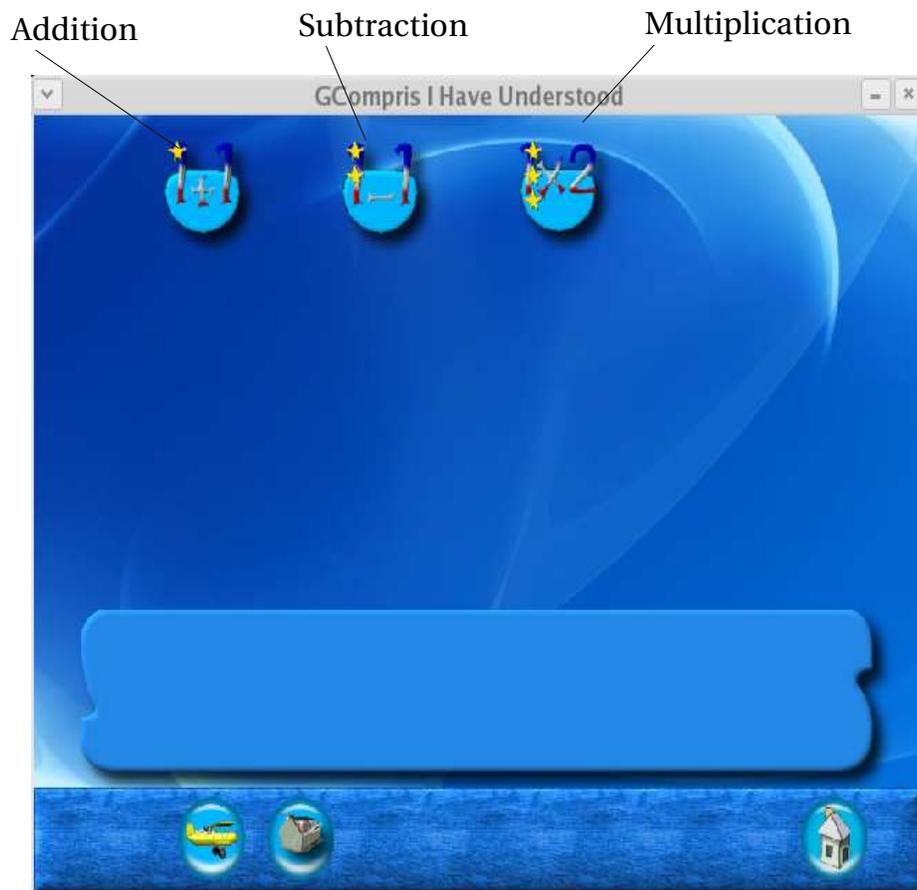
Scale
balance



Scale balance

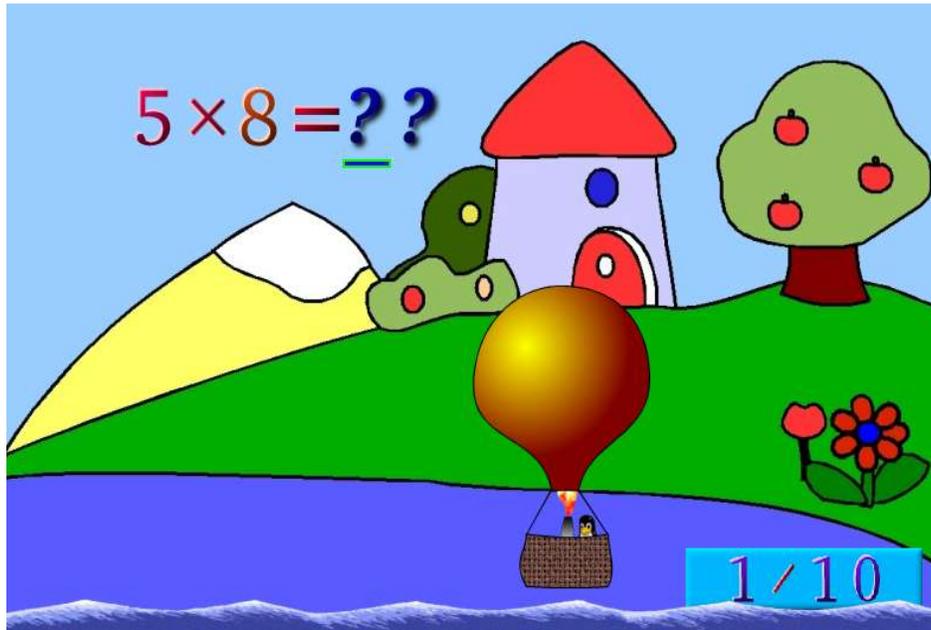


24. MULTIPLICATION TABLE



- These games improve the mathematics ability of children
- The level of the game starts from number 1 .
- Different levels or numbers can be selected by clicking on the dice icon.
- Start the practice on Addition, subtraction or multiplication by clicking on the icons as above.
- You can see the Multiplication practice picture in the next page.
- Addition and Subtraction also look similar to mutiplication picture.

25. MULTIPLICATION PRACTICE



- Type the answer and press Enter key
- The answer should be entered before the penguin touches the water
- If the penguin touches the water the game will start again
- To select a different number of multiplication table click on the dice symbol.
