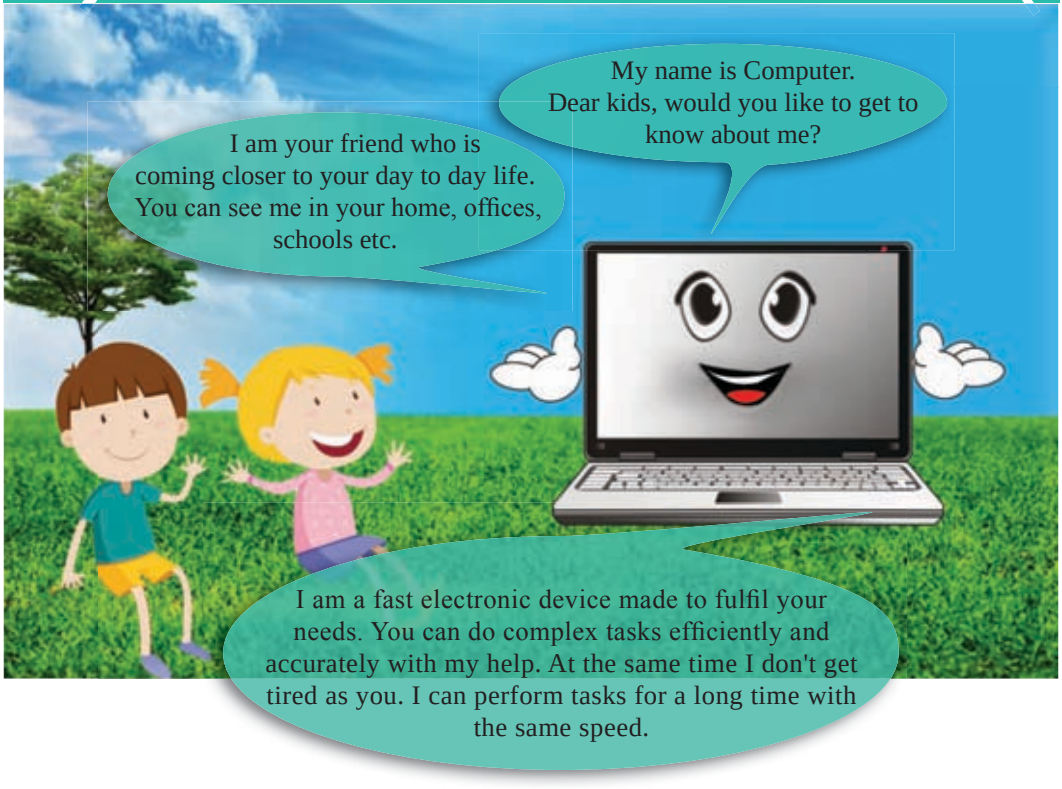
1 Importance of Computers

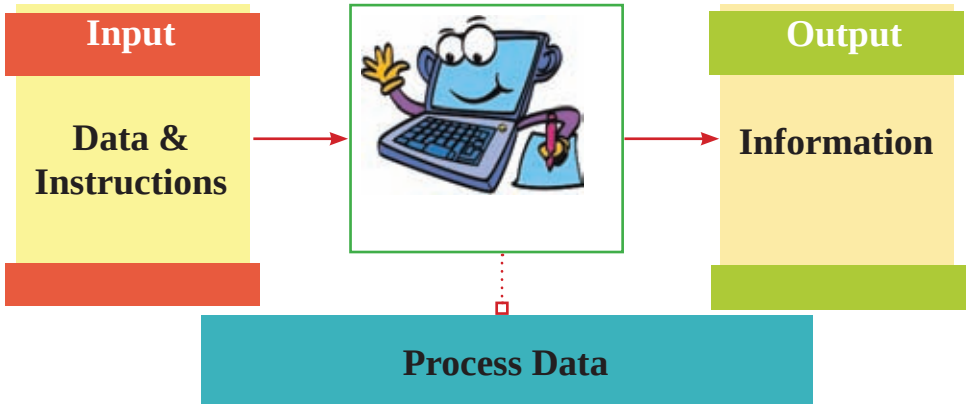
1.1 Let's get to know the Computer

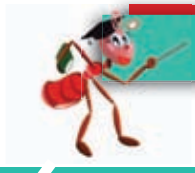


1.1.1 Functions of a Computer

The basic functions of a computer are entering data, processing them and producing processed data (information).

Figure 1.1 - Basic Functions of a Computer

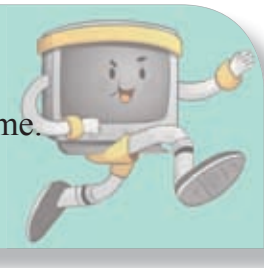




Activity 1 - See 1.1 in the Workbook.

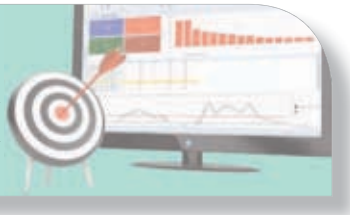
1.1.2 Significant Features of a Computer

Speed and Efficiency



- It can finish any given task within a very short time. (It can perform billions of tasks in a second.)

Accuracy



- It can provide correct information when correct instructions and data are given.

Reliability

- You can rely on the process and the output.

Consistency

- It produces consistent output when the same input is given.

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Storage Capacity

It can store a large amount of data. It can obtain them at any given time for any process.

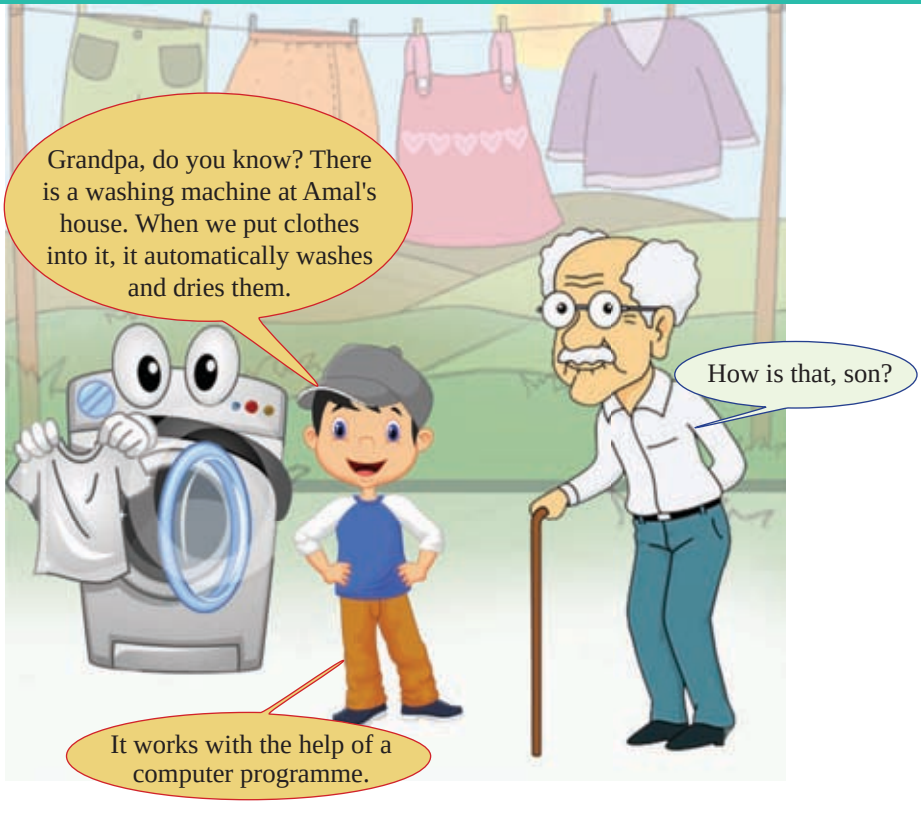
Cost

Though the initial cost is high, the maintenance cost is not so.

Intelligence

It can act according to the given instructions. But it cannot take decisions on its own like a human being.

1.1.3 Devices with Embedded Computers



Equipment like washing machines, mobile phones, modern motor vehicles and modern televisions are operated by computer programmes. Computer programmes included in such equipment are known as Embedded Computer Systems.

Smart Phones | Washing Machines | Modern Cars | Smart Televisions

Figure 1.2 - Some Devices with Embedded Computers

1.2 Let's identify the Components of a Computer

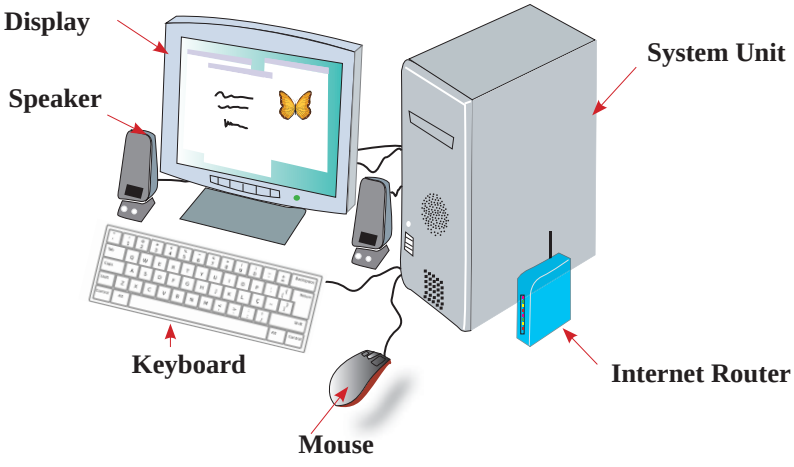


Figure 1.3 - Components of a Computer

A computer is a unit which consists of many parts. We can categorise those parts into components according to the nature of the functions they do.

- Input Devices
- Output Devices
- Central Processing Unit
- Main Memory
- Storage Devices
- Communication Devices

• Input Devices

The devices which are used to enter data and instructions to computers are called input devices.

Mouse

Keyboard

Microphone

Web Camera

Barcode Reader

Scanner

Figure 1.4 - Some Input Devices

• Output Devices

The devices which are used to retrieve the data and information are called output devices.

Computer Monitor

Printer

Speaker

Multimedia Projector

Figure 1.5 - Some Output Devices

• Central Processing Unit (CPU)

Controlling the computer and processing data according to the given instructions are done by the Central Processing Unit.

The Central Processing Unit is located inside the system unit. It cannot be seen from outside.

System Unit Mother Board Central Processing Unit

Figure 1.6 - Location of the Central Processing Unit

• Main Memory

The device which is used to store data, information and instructions temporarily is identified as the main memory or the primary memory. It is also called the Random Access Memory (RAM).

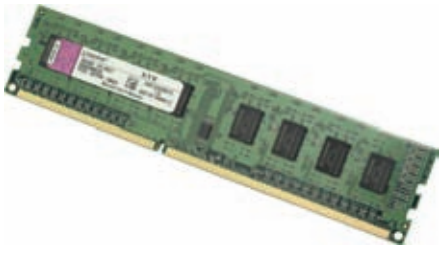


Figure 1.7 - Random Access Memory -RAM

• Storage Devices

The devices which are used to store data, information and instructions are called storage devices.

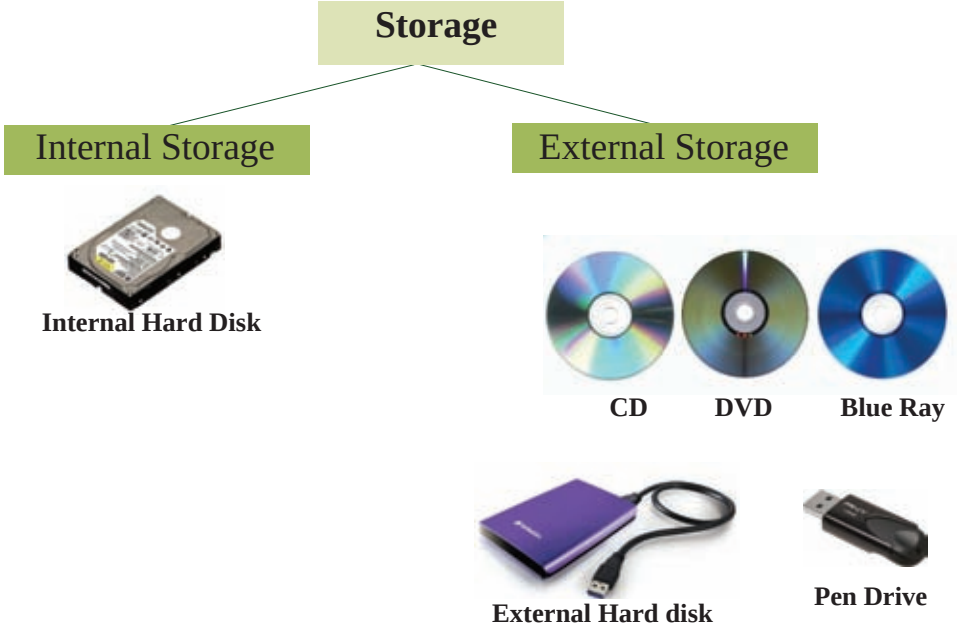


Figure 1.8 - Some Storage Devices

• Communication Devices

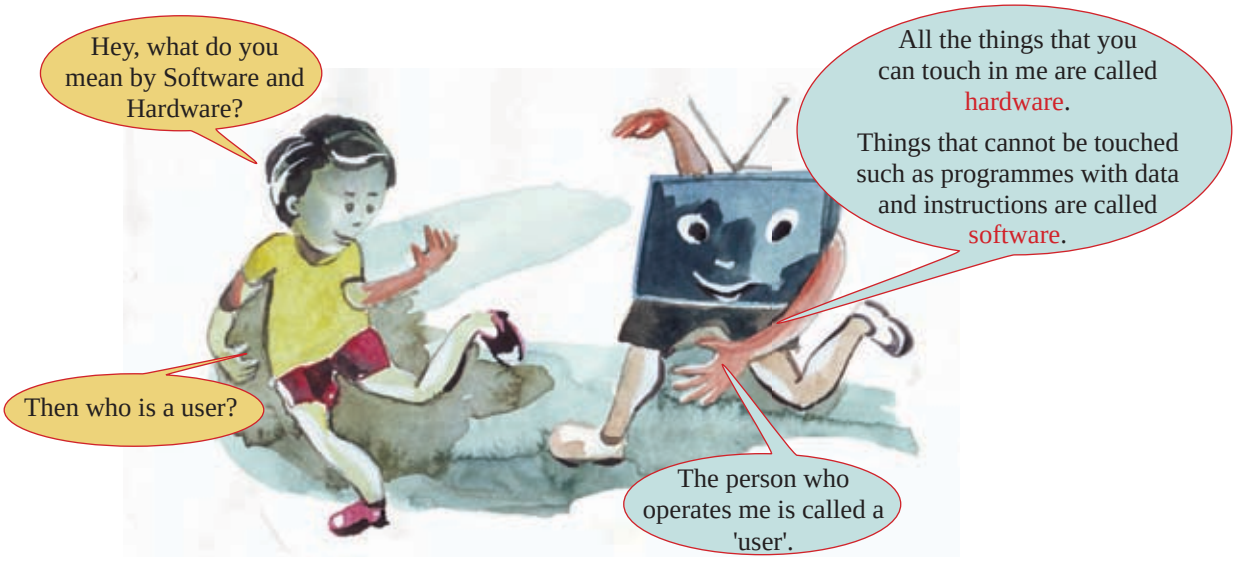
The devices which are used to exchange the processed data and information are called communication devices.

Figure 1.9 - Wired/Wireless Communication Devices

1.3 Importance of Software

A software is a set of programmes designed to execute certain tasks by using a computer.

Activity 2 - See 1.2 in the Workbook.



A user can do different tasks by using software.There are various types of software to fulfil the needs of the user.

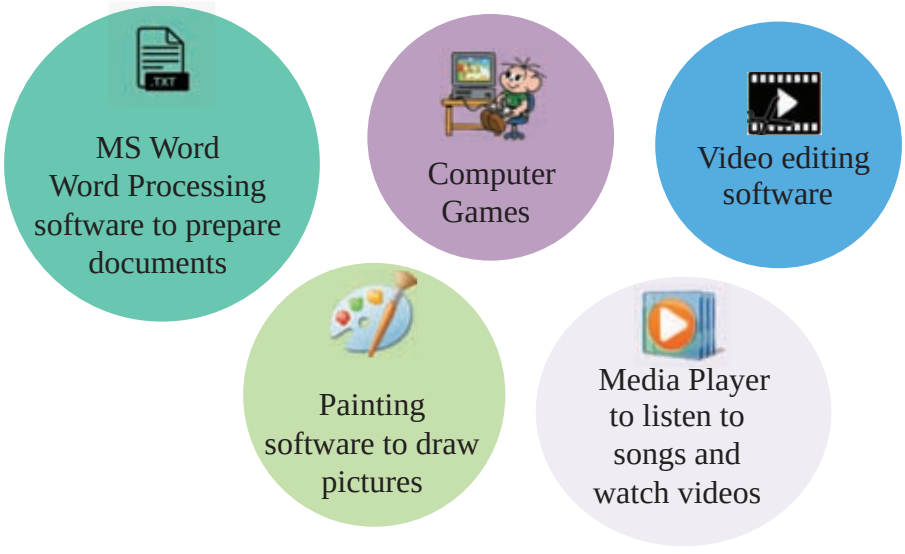


Figure 1.10 - Some Examples for Software

You can study more about software in the forthcoming chapters.

1.4 Application of Computers in Various Sectors

Activities in all sectors have become easy by the use of computers. Several examples for such sectors are given below.

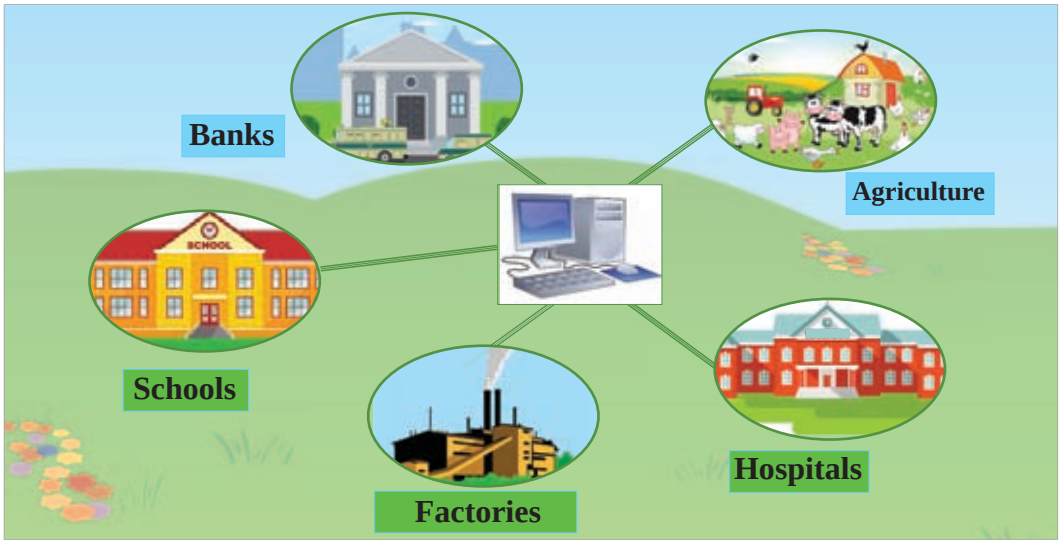
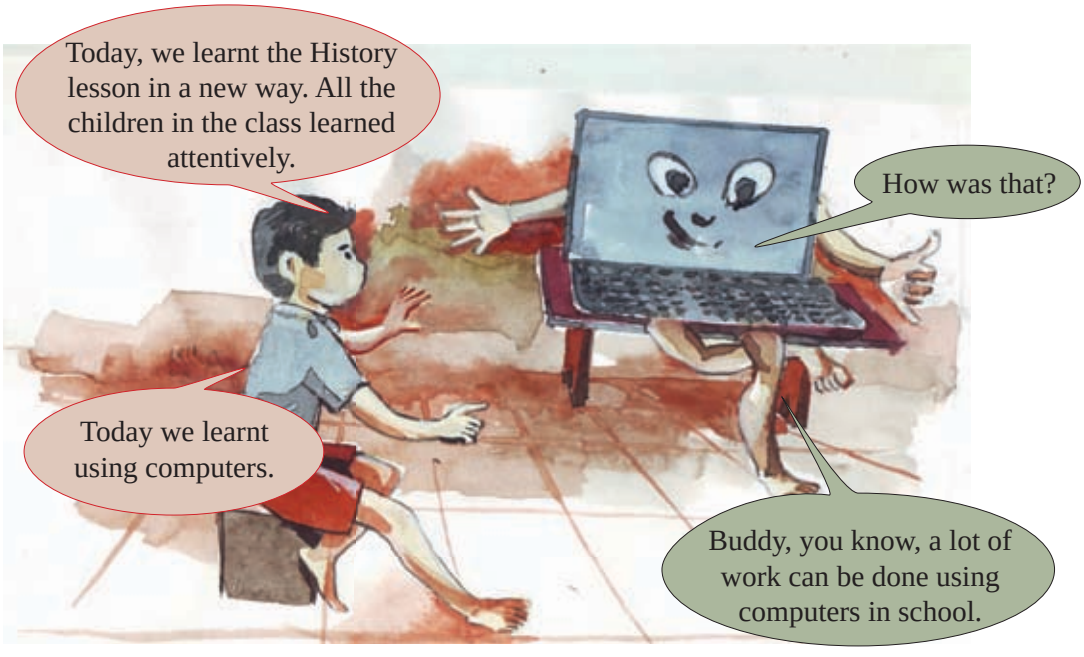


Figure 1.11 - Various Sectors that use Computers

1.4.1 Schools



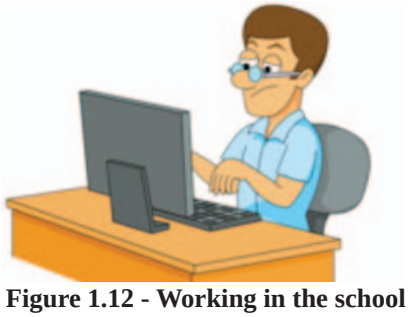


Figure 1.12 - Working in the school office using computers

Computers simplify work and bring effectiveness to office work in the school system.

Computers are used instead of blackboard and books in the learning process.

Figure 1.13 - Computer enabled Learning Situation

Figure 1.14 - Getting knowledge from the internet

Obtain additional knowledge related to subjects by accessing the internet.

1.4.2 Banking

Computer has become an essential tool in the banking activities.

Figure 1.15 - An ATM machine

Use of Automated Teller Machine (ATM) to deposit and withdraw money.

Using electronic cards to settle bills when purchasing goods.

Figure 1.16 - Paying bills by electronic cards

Figure 1.17 - Internet Banking

Internet banking and mobile banking are latest trends in the banking system.

1.4.3 Hospitals

There are many examples of using computer systems in hospitals.

Figure 1.18 - Thermometer

Digital thermometer is an embedded computer device which can be used at home.

Use of computer and embedded computer devices in Intensive Care Unit (ICU).

Figure 1.19 - Use of computers and computer embedded devices in ICU

Use of computers and computer embedded devices in an operation theatre.

Figure 1.20 - Use of computers and computer embedded devices in an operation theatre

1.4.4 Factories

Figure 1.21 - Use of Robotic Technology

- Human labour is replaced by computer devices. As a result, production can be increased.
- The use of robotic technology is a latest improvement in industrial work. Activities in industrial sector have become easier by that.

1.4.5 Agriculture

Embedded computer devices are used in various activities such as harvesting, weeding and water supplying. Thus, the productivity can be increased by minimising expenditure.

Figure 1.22 - Supplying Water and Fertilizer using Modern Technology in Agriculture

Activity 3 - See 1.3 in the Workbook.

Summary

- The main tasks of the computer are input, processing and output.
- Input devices, memory, CPU, output device, communication devices are identified as the main parts of a computer.
- Software is essential to do different tasks of the user.
- Computer is used for various activities of day to day life.
- Smart phones, modern televisions and washing machines can be identified as equipment with embedded computer systems.

2 Use the Computer Laboratory Safely

2.1 Let's Identify the Computer Laboratory

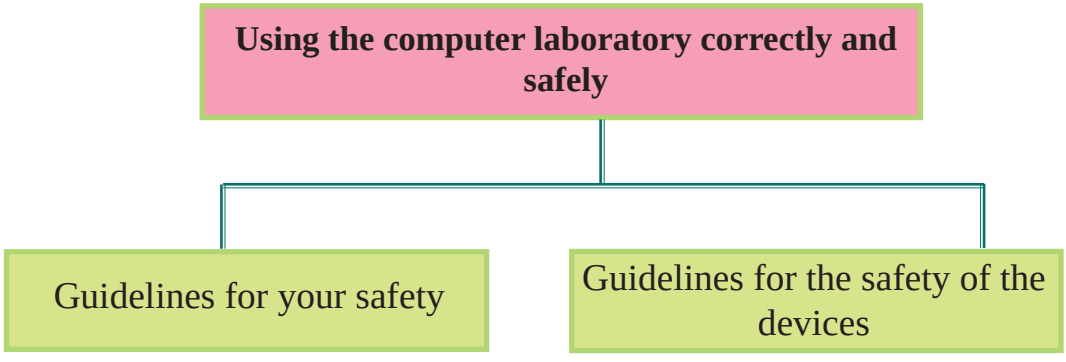
I welcome all of you to the computer lab. This computer lab is a valuable resource in our school. Since you all are new to this place, you need to know about this computer lab and how to use it well.

Computers and other accessories have been installed in the computer laboratory. Printers, scanners, multi-media projectors are some of them.

Computers and other accessories in a lab are expensive and valuable. A large amount of money have to be spent to repair a device, if it is damaged or to replace a new one. Therefore, it is your responsibility to use them properly and keep them safe.

Figer 2.1 - A Computer laboratory

2.1.1 Let's use the Computer Laboratory Correctly



For your safety

Be careful when you touch devices such as wires and sockets that are connected to electricity.

Should be aware of the exit doors of the laboratory.

Should be aware of fire extinguishers if any.

Avoid running and playing inside the computer laboratory.

For the safety of the devices

Do not supply power to devices without correct instructions.

The laboratory and all the equipment should be kept clean and dust-free.

All the equipment must be switched off properly after use.

The used equipment should be placed in the proper place.

Footwear should be removed and placed outside the laboratory.

Avoid taking food, water or other liquid into the laboratory because they may damage the equipment.

Virus scanning should be done when connecting external storage devices such as flash drives to the computer.

Activity 1 - See 2.1 in the Workbook.

2.2.1 Let's operate the Computer

We must practise to operate the computer correctly from our childhood. For that follow the guidelines given below.

1. First, supply electricity to the computer by turning on the switch connected to the computer.

2. If the computer is connected to an uninterrupted power supply (UPS), turn it on.

3. Next, the system unit should be switched on.

4. Finally, the monitor should be turned on.

Anyhow, the above steps may differ in modern computers (like laptop computers) which come with a single power button.

Please follow your teacher's instructions at all times since the above steps might be different in your laboratory.

How to shut down the computer?

The functioning computers should be shut down in a proper way. Otherwise, the life span of the computer may be shortened.

First, we should close any programmes that we have opened.

Then, select the command "Shutdown" and click on it.

Switch off the power on/off button of the monitor when it's screen becomes dark.

Then, switch off the UPS and the wall switch respectively.

2.2.2 Let's learn Computer Ethics

''මහත් සෙත් වඩවන	''Mahath seth wadawana
සිරිත් මල්දම් බලමින	Sirith maldam balamina
සිරිත් හොඳ දැනගෙන	Sirith honda denagena
මහත් යසසිරි ලබනු දෙලොවින''	Mahath yasasiri labanu delowina''
- සිරිත් මල්දම	- Sirith Maldama

Meaning : Read Sirith maldama. It brings you peace. Learn and practise good values from it and it will bring you good fortune in this life and lives to come.

Dear children, you always get advices to be a good child at home and at school. These advices are called ethics, values, or good customs.

Good practices help to lead a good life. Similarly, there is a set of ethics that should be followed to use the computer properly.
They are identified as 'computer ethics'.

Activity 2 - See 2.2 in the Workbook.

This code of ethics can be considered as a set of guidelines that help you to use the computer properly.

When we use the computer laboratory...

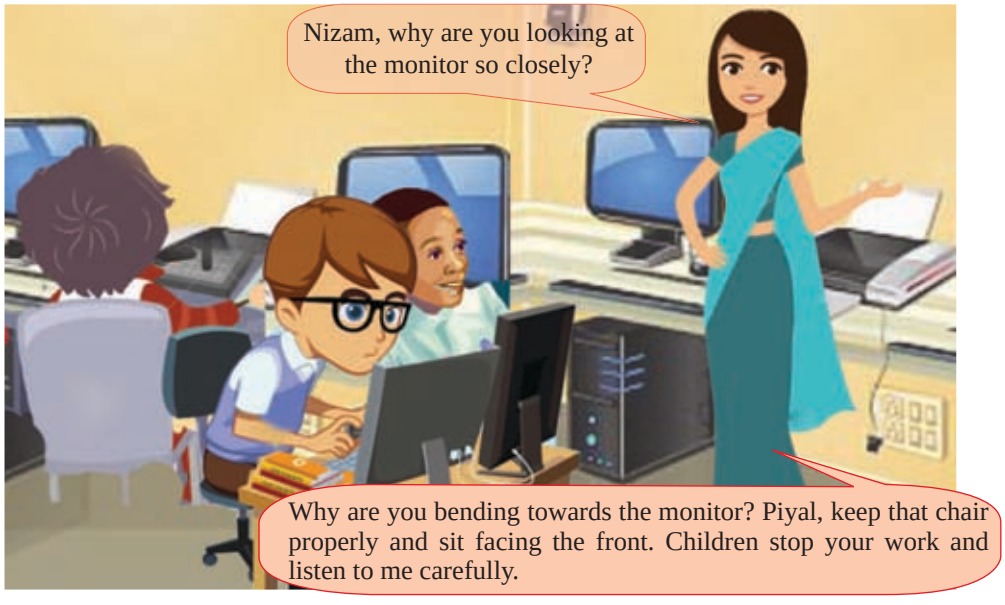
- we must use computers without disturbing others.
- we must avoid hacking computer activities of others.
- we must refrain from accessing computer files and articles of others without permission.
- Software which should be used by paying money should not be fakely used or copied.
- we must not repair any computer devices without proper instructions.
- we should not uninstall/ change/ delete any programmes without the permission of the teacher.
- we must not access the internet without the supervision of teachers.

In additon, there can be some other rules and regulations related to your laboratory.

The above regulations are for grade 6 students like you. You will learn more on computer ethics in the forthcoming grades.

Activity 3 - See 2.3 in the Workbook.

2.2.3 Let's use Correct Postures when using Computers



It is common for various health problems to occur when using computers constantly. Most of the illnesses occur due to the lack of maintaining a correct posture. So we need to practise maintaining a correct posture from our childhood.

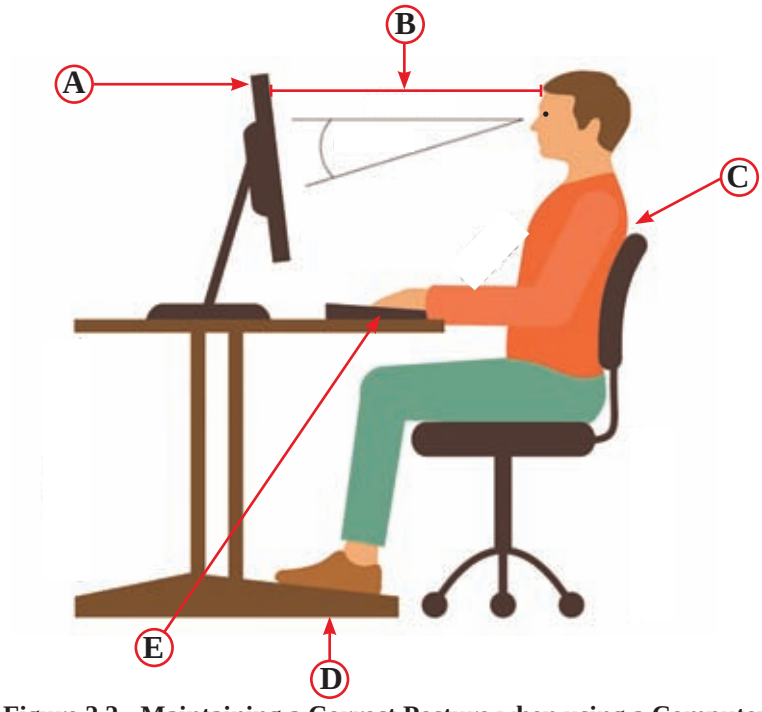


Figure 2.2 - Maintaining a Correct Posture when using a Computer

Correct postures to be followed	When correct postures are not maintained
A. Always keep the computer screen at the level of your eyes or little below.	Pain in the eye, problems in eyesight and tearful eyes can occur.
B. The distance between your eyes and the computer screen should be between 18 and 28 inches.	
C. Sit straight by leaning on to the back of the chair.	Pain in backbone.
D. Keep your legs vertically and place your feet on the ground.	Strain in feet.
E. Keep the keyboard and the mouse at the level of your elbow.	Pain in fingers and elbows.

In addition, adjust the brightness and the contrast of the computer screen to suit your eye. Often give a rest to your eye if you are working on your computer for a long period of time.

Although an incorrect posture can cause health issues, the computer is not a device that can be discarded. Therefore, we must use the computer properly to avoid such problems.

Activity 4 - See 2.4 in Workbook.

2.2.4 Let's dispose Electronic Waste Safely

All computer hardware is considered as electronic waste when they become out of use or when the user discards them.

When these harmful substances enter the human body. They can cause various diseases. They can cause various day-to-day inconveniences and gradually lead tod evelop various long-term non-curable diseases such as cancers and kidney diseases.

When we dispose these tools improperly to the environment it can cause great damage to the environment as well as to human beings, since they have been manufactured from various harmful metals such as Copper, Aluminum and Lead as well as from plastic.

- **Lead** Damage the brain, kidneys and disorders in blood circulation
- **Barium** Brain swelling, muscle weakness, damage to heart
- **Mercury** Damage to kidneys and nervous system
- **Beryllium** Lung Cancer

Figure 2.3 - Illnesses that can be caused due to electronic waste

Since, these hazards can cause damages for generations, they must be disposed properly. For that, the 3R system can be used.

Figure 2.4 - 3R Method

1. Reduce

It is not necessary to upgrade to new equipment periodically if we maintain existing equipment properly as to use them for a long time.

This reduces the amount of waste that is released to the environment.

Activity 5 - See 2.5 in the Workbook.

2. Reuse

When purchasing new equipment, consider donating or selling the old equipment if they are in working condition, without discarding them.

Figure 2.5 - Uses of Discarded Computers

If it is not in working condition, then it can be utilized for other purposes.

For instance, as shown in the picture, an empty monitor can be used as a flower pot and a casing of the system unit can be used as a garbage bin.

The amount of waste that is released to the environment is therefore minimal.

3. Recycle

Equipment which are not repairable or reusable, should be recycled without discarding them. It should be handed over to a electronic waste recycling company.

Recycling is a process of transforming the waste to a new product. Waste is separated into small parts and new material is produced through machinery.

Activity 6 - See 2.6 in the Workbook.

2.2.5 Let's use Passwords to protect Computers

Computers should be safeguarded physically as well as logically.

You must have read in fairy tales that a door is opened with a secret word. Also, there is a key to open main door of your house. Can you open the door without a key?

To protect the information stored in the computer from outsiders, a secret word can be set in the computer. That is known as a password.

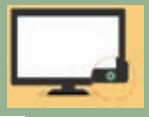
Then you must enter the password before entering the computer. If the password is incorrect, the computer does not allow you to enter.

Follow the guidelines given below when setting a password

- The password must be a collection of letters (A-Z), numbers (0 - 9), and symbols (@, #, $). It should have a minimum of 8 characters including at least one of the above types.
- The password must not include some simple information like your name, birthday, etc. which can be easily guessed.
- You can give a password hint.
  In case you forget the password, you can give a word or a statement as a hint that will help you to recall it again.
- By giving an e-mail address, the password can be restored.

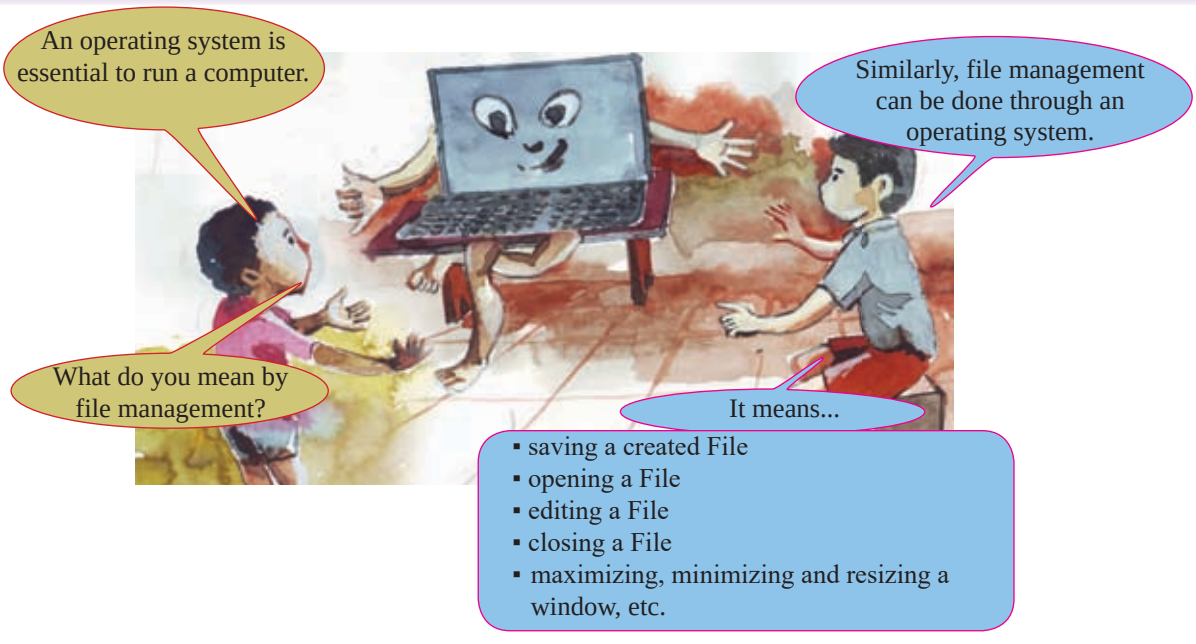
Activity 7 - See 2.7 in the Workbook.

Summary

Turn on the computer	Turn off the computer
Electric Supply ↓ UPS ↓ System Unit ↓ Monitor	Opened programmes ↓ Operating System ↓ Monitor  ↓ UPS ↓ Electric supply

- It's our responsibility to avoid damaging any equipment in the laboratory.
- Passwords can be used to protect the computers.
- Electronic waste should be disposed properly without harming the environment.
- When using the computer, maintain a correct posture to prevent from physical difficulties that occur on a daily basis and from long term health issues.

3 Operating System and File Management



3.1 Operating System

You have learnt in the first chapter that an operating system is a software. That means, it is a computer programme. It establishes a relationship between the user and the hardware. It also helps to manage other software in the computer.

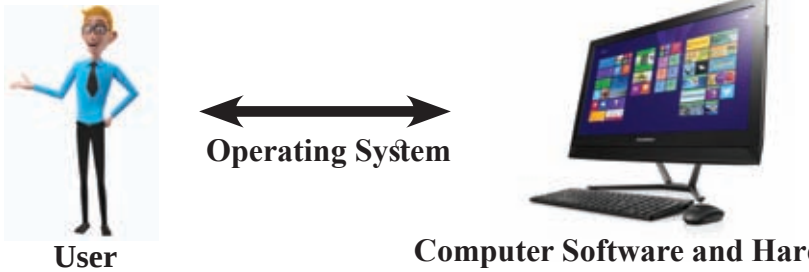


Figure 3.1 - Functions of an Operating System

According to my brother, computer is like a cricket team. Then, the captain is the operating system. Other players are like software and hardware.

The captain leads the players by giving instructions according to the needs of the match. Just like that, software and hardware are managed by the operating system according to the given set of instructions.

Sometimes, captains are changed. Likewise, the operating system also can be changed.
Windows, Linux, Ubuntu are some other types of operating systems. It is like changing a captain.

Captain	Operating System
Players	Software, Hardware
Different Captains	Various types of operating system Eg: Windows, Linux, Ubuntu

Figure 3.2 - Explaining of Operating System through an Example

Examples for Operating System

Windows O/S

Linux O/S

redhat O/S

Mac OS

Figure 3.3 - Examples for Operating System

3.2 User Interface

A user interface is given to a user by the operating system to do his tasks. This interface is displayed on the screen when the computer is turned on.

Activity 1 - See 3.1 in the Workbook.

3.2.1 Let's learn about File

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Activity 2 - See 3.2 in the Workbook.

Given below are several files which are stored in a computer.

- List of term test marks in a particular class
- A video of the school play presented at the all island drama competition
- The agenda of the sportsmeet
- The National Anthem
- Images of the sportsmeet

These different types of files are shown with unique symbols. A few examples are given below to give you a basic understanding and you will get a broader knowledge about them in higher grades.

A file with text

A file with voice

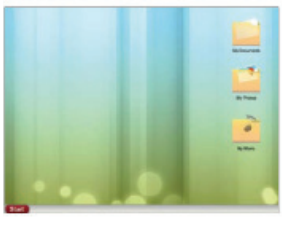
A file with images

A file with video

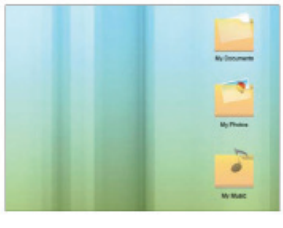
Figure 3.4 - Exampels for File Symbols

User Interface

When you open a file or a programme, it is displayed on the user interface.



You can use the icons which are shown on the user interface to open a file, a folder or a programme.



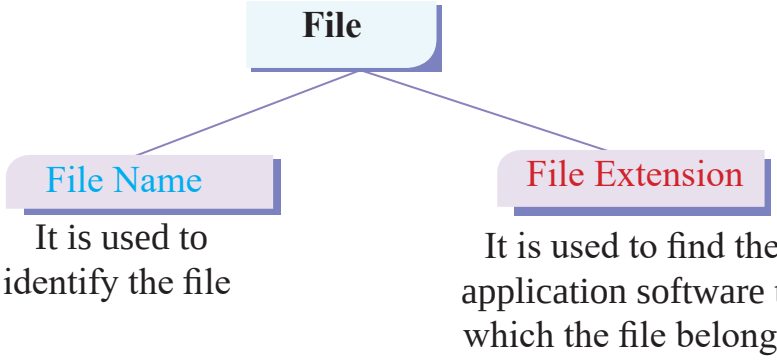
An icon represents a file, a folder or a programme.

File

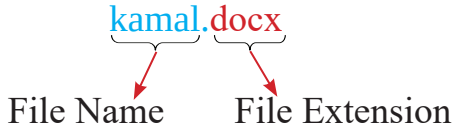
Folder

Activity 3 - See 3.3 in the Workbook.

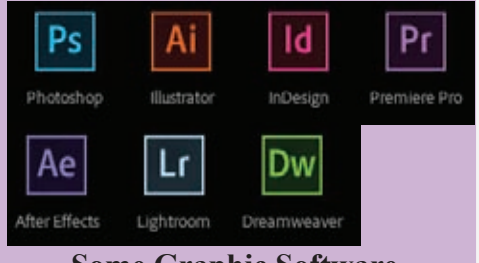
A file contains two parts.



This file is created by a word processing software and it is named as "Kamal".



Let's see how certain tasks are done using a graphic software to learn more about files. A graphic software is used to draw images, charts, shapes, diagrams, figures and building plans.



Some Graphic Software

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3.2.2 Let's Identify the Working Window

The working window is displayed once you open a software.

Let's imagine that you drew an art on a working window. (For that, tools in the menu provided in the opened software should be used).

The working window can be maximized, minimized, resized and closed.

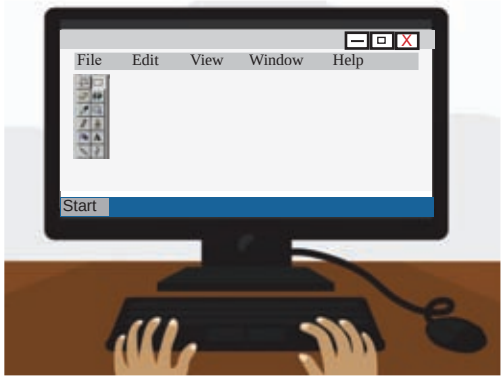


Figure 3.5 - Working Window

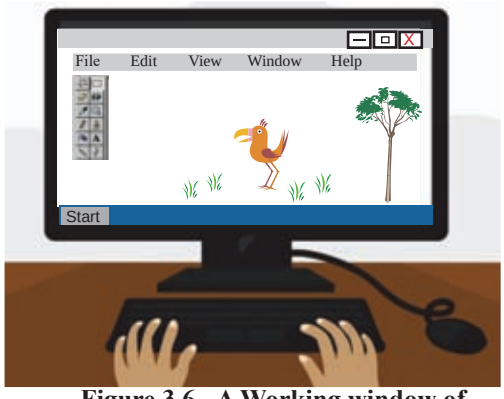


Figure 3.6 - A Working window of an Art

Minimizing the Working Window

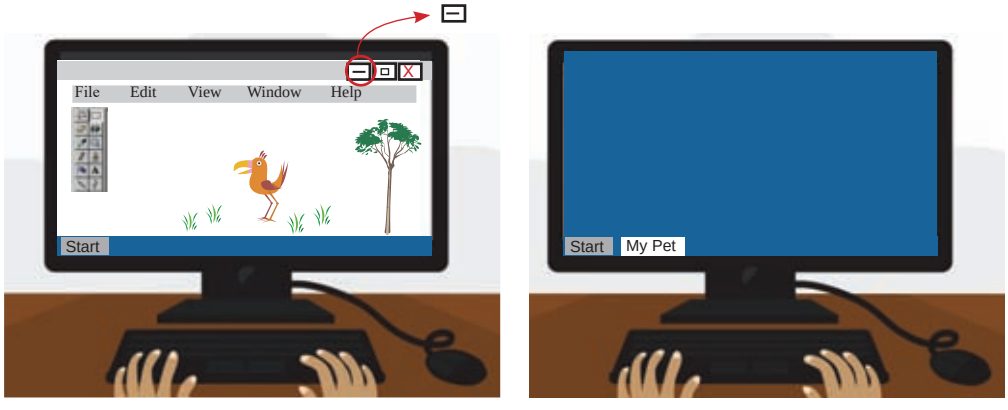


Figure 3.7 - Hiding a Window

Here the window is hidden. The window you opened disappears and is kept on the task bar. It is shown by words or an icon.

Eg: My Pet or

By clicking on the button shown by the word or the icon, you can restore the working window.

Maximizing the Window

The working window can be enlarged by clicking on the maximize button so that the screen fits into the entire screen.

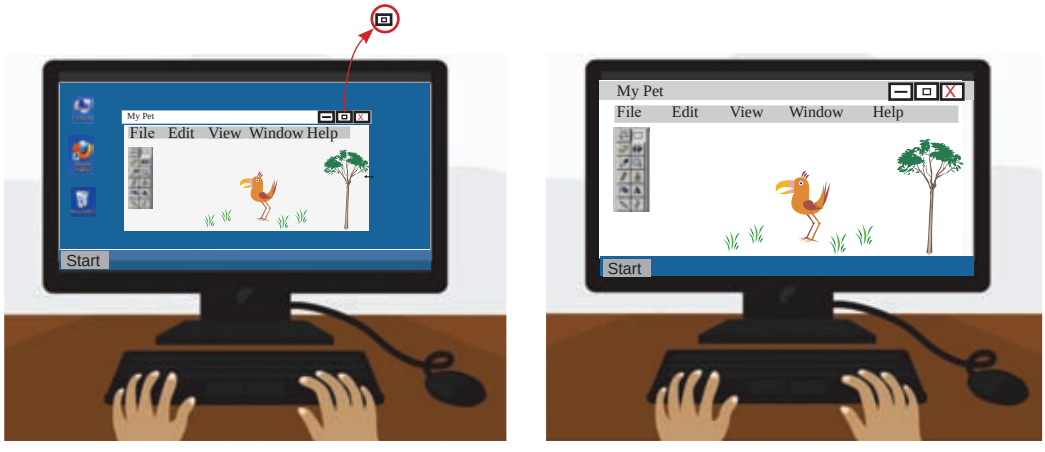


Figure 3.8 - Maximizing a window

It will shrink when you re-click the button again.

Resizing the Window

There is also the opportunity to change the size of the working window that appears on the screen. When the mouse pointer is brought to the edge of the window, arrow shapes are shown. By dragging these arrow shapes you can change the size of the window.

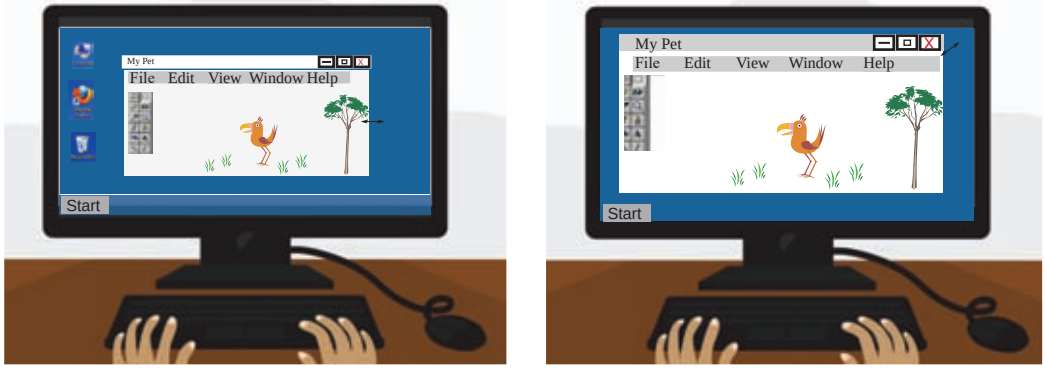
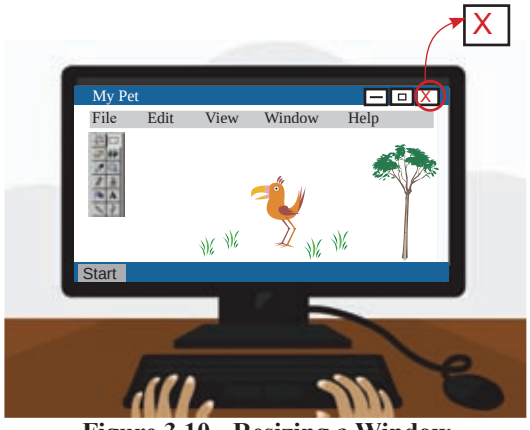


Figure 3.9 - Resizing a Window

Closing the Window X

Click the X button on the top right hand corner to close a window.



When you click the X button, you will see a query window asking whether to save the document or not.

Figure 3.10 - Resizing a Window

If you want to save the document, to use it later, Select 'Yes' command or if you do not want to save it, click the "No" command.

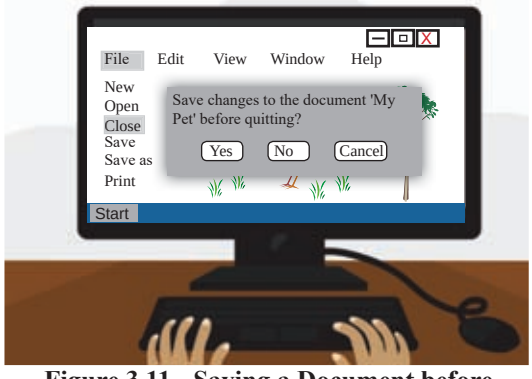
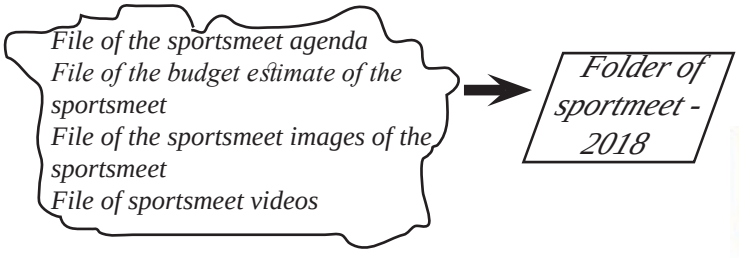


Figure 3.11 - Saving a Document before closing a Window

3.2.3 Let's learn about File Folder

Folders are used to keep files in order.



Folder

File and Folder

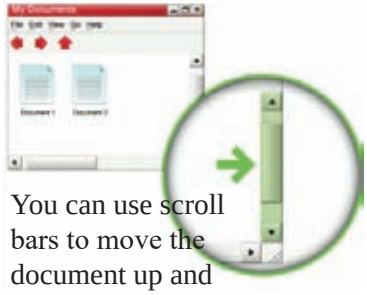
Following facts about folders and the working window will be useful to you.

Symbols like ; < > ... can be used to name a file or a folder.

Folder and Working Window

A folder contains files like documents, images, etc.

When you double click on a file or a folder, its content is displayed on a working window.



You can use scroll bars to move the document up and down as well as from left to right.

Menu Bar

The menu bar contains commands to carry out tasks in a folder, a document or a programme.

Title Bar

The name of the file, document or the programme will be shown on the title bar.

Tool Bar

The tool bar contains several commands that are derived from the menu bar.

Multiple working windows can be opened simultaneously.

The active window is visible in front of the other windows and its title bar is highlighted.

To switch between windows, click on the relevant window or the button on the task bar.

The opened windows are displayed as buttons on the task bar. The button related to the active window is displayed in another colour.

Create a File

Consider the simple art drawn above. When you close the window, if you give a command to save it, it creates a file and saves the document.

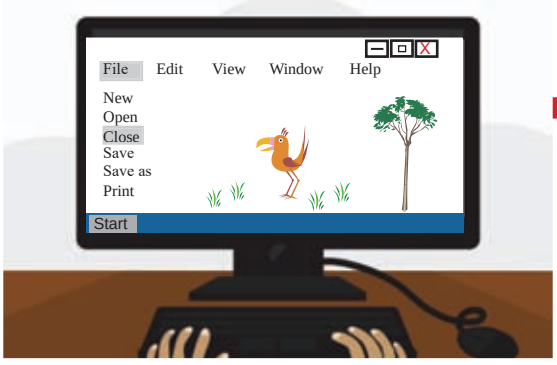


Figure 3.12 - Creating a File

Activity 4 - See 3.4 in the Workbook.

Saving a File

Figure 3.13 - Saving a File

Created files should be saved for reuse. These can be stored in a folder for convenience and order. Here you can use the 'Save' or 'Save as' command to save the file.

When saving the file for the first time, despite the selected command, the "Save as" command window will be opened.

Here, the operating system suggests a name for the file. The user can change it and give a suitable name. Also, determining the location of the file to be stored can be done in the same manner.

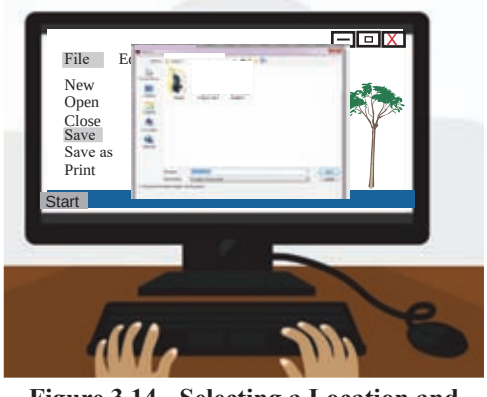


Figure 3.14 - Selecting a Location and giving a Name to save a File

When giving a name to a file, give a name that hints the content of the file. It makes it easier to find the file easily.

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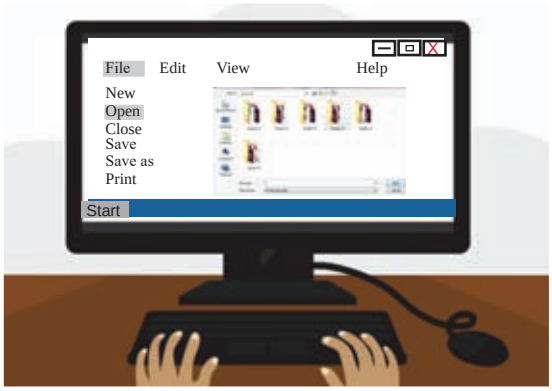
It is not allowed to save two files with the same file name which are created by the same software in the same folder. The operation system gives an identity to the file by doing that.

It's also difficult for you to identify several friends who have the same name. Similaly, the same problem affects the operating system. Therefore, it does not allow multiple files to be saved under the same file name in the same folder.

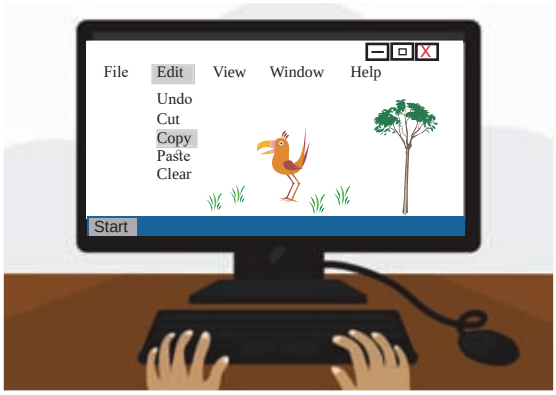
Open a File



To open a saved file, find the file location and the name. Then, click on it.

Figure 3.15 - Opening a File

Edit a File



You will be able to edit the saved file after opening it.

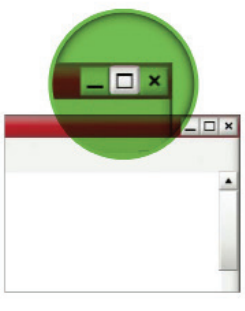
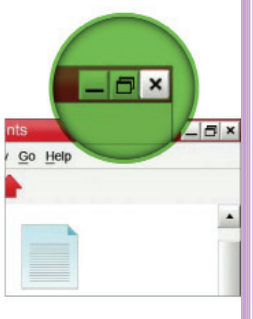
Here, it should be saved once you edit it. For that, 'Save' command can be used. If you want to save the file in a different location, then use the 'Save as' command.

Figure 3.16 - Editing a File

Activity 5 - See 3.5 in the Workbook.

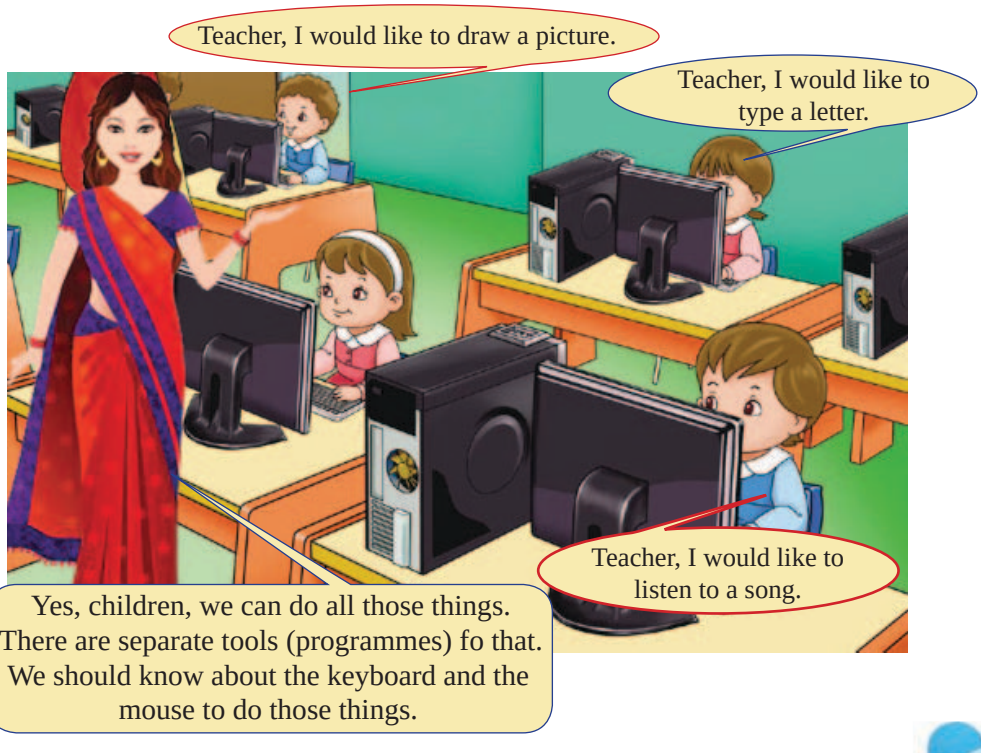
Summary

- The operating system is a bridge that connects the user and the computer.
- File manipulation is a major function of the operating system.
- Creating a file, editing and closing a file can be done through an operating system. In addition, it is possible to maximize, minimize and resize a window.
- A file is a collection of data and information whereas a folder is a collection of files.
- A file name contains a name and an extension whereas a folder contains only a name.

To minimize the screen click the minimize button on the top right hand corner of the screen.	To restore the window, click the relevant button on the task bar.	Click the maximize button to enlarge the screen and to fit the window to the entire screen.	To close the window, click the close button.
			

4 Using Mouse and Keyboard to use Application Software

4.1 Application Software



4.1 Examples for Tasks that can be done by a Computer

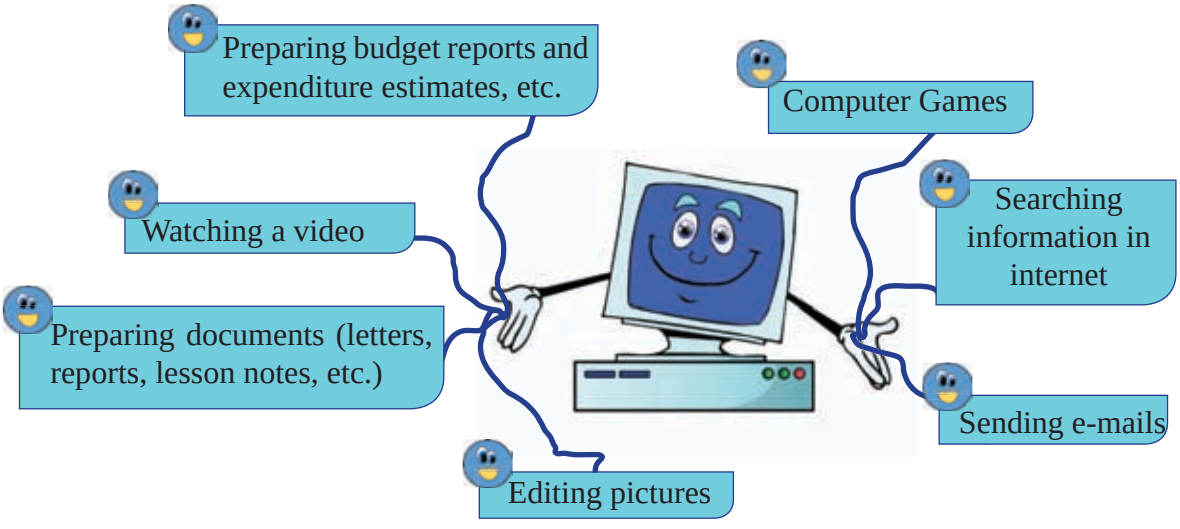


Figure 4.1 - Several Tasks that can be done through a Computer

Various programmes which execute such requirements of the user are called application software.

4.1.1 Types of Application Software

Application software is mainly divided into two parts. They are;

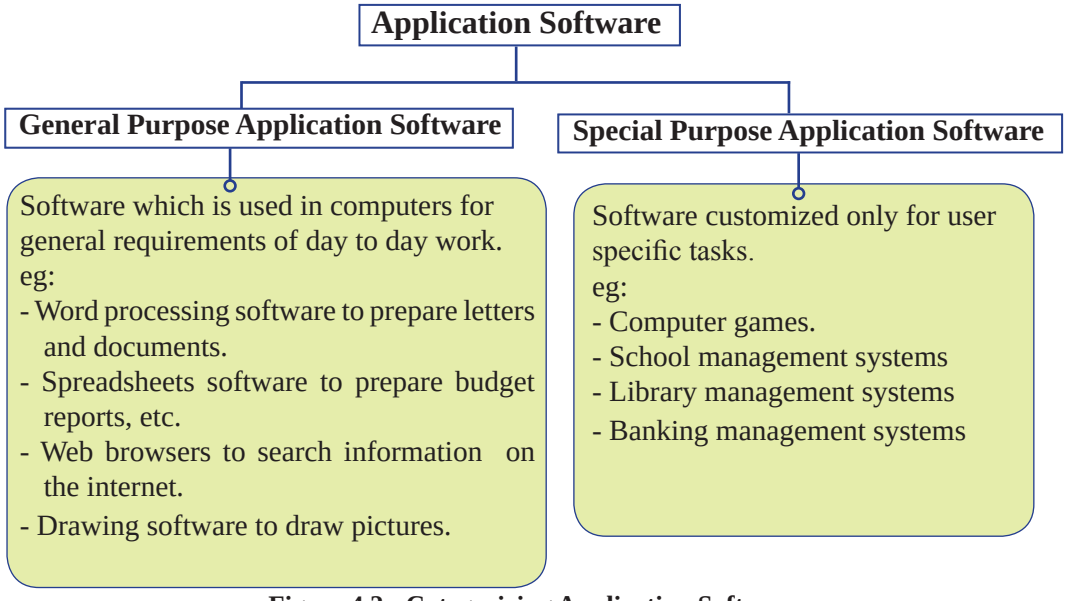


Figure 4.2 - Categorizing Application Software

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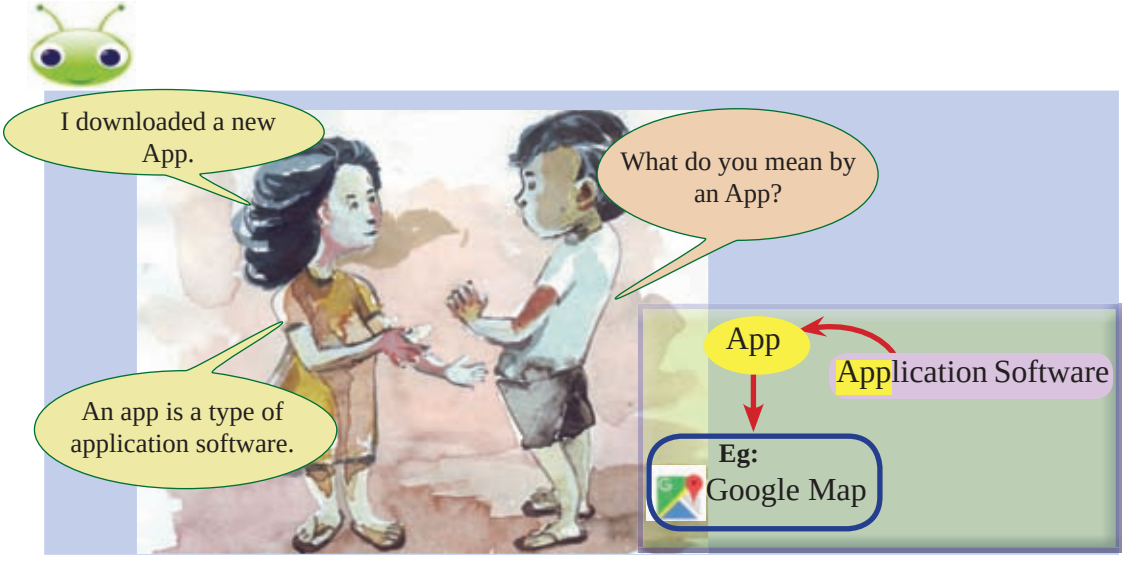


4.2 Basic Tools needed to use Application Software

When using application software, basically the keyboard and the mouse are used. Therefore, first of all, you need to get a clear understanding of the mouse and the keyboard to accomplish various tasks using application software. You should properly train yourself to use them.

4.2.1 Using the Mouse

Controlling the pointer on the screen can be done by moving the mouse. Also, opening a file, folder, menu and selecting commands can be done by clicking the buttons on the mouse.

The arrow mark shown on the screen is identified as the mouse pointer or the cursor.

Activity 1 - See 4.1 in the Workbook.

Main Parts of a Mouse

Normally, the mouse has a left and a right button and a small wheel in the middle.

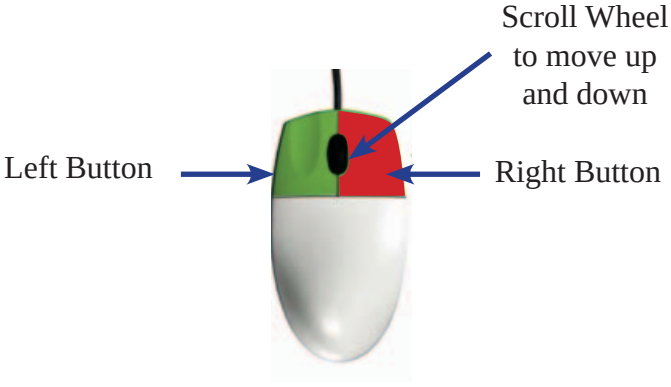


Figure 4.3 - Main Parts of a Mouse

Activity 2 - See 4.2 in the Workbook.

Let's identify several types of mouse that are in use.

Mouse

Wireless Mouse

Touch Pad

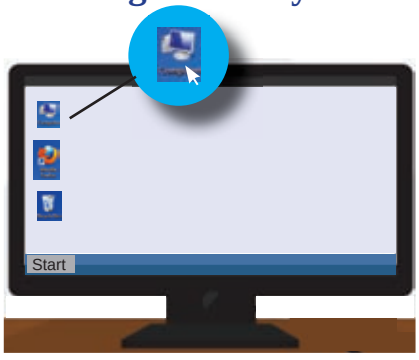
Figure 4.4 - Examples for Mouse Types

Functions of the Mouse

Many tasks can be performed on the computer screen with a mouse. They can be divided into following three categories.

Eg:
- Selecting necessary items
- Opening necessary items
- Moving necessary items

Selecting necessary items



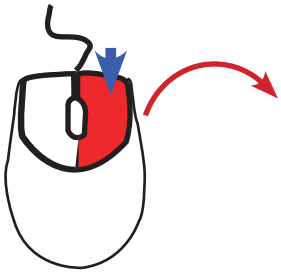
To do this, bring the cursor on to the item and click the left button once. Then the item is highlighted.

Opening necessary items

Method I

By double-clicking the left button, you can open the application or file that represents a corresponding icon.

Method II



Once you click the right button on the icon, select the 'open' command from the sub menu.

Moving necessary items

Click the left button, then drag and drop it.

In addition, a mouse scroll is used to move the working window up and down. Here, a wheel in the mouse is rotated to move the page up and down.

Let's use the Mouse Properly

Figure 4.5 - Using the mouse properly

When we use the mouse, we need to learn to hold it properly. Holding the mouse inproperly can cause pain and difficulty in our hands.

Figure 4.6 - Using the mouse inproperly

4.2.2 Keyboard

There are various keyboards such as wired keyboards, wireless keyboards and touch keyboards.

Figure 4.7 - Keyboard

Figure 4.8 - Wireless Keyboard

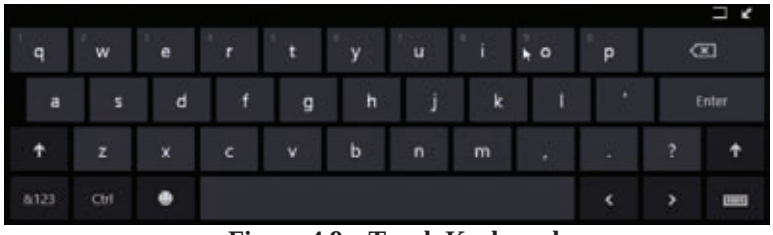


Figure 4.9 - Touch Keyboard

Types of Keys in the Keyboard and Their Functions

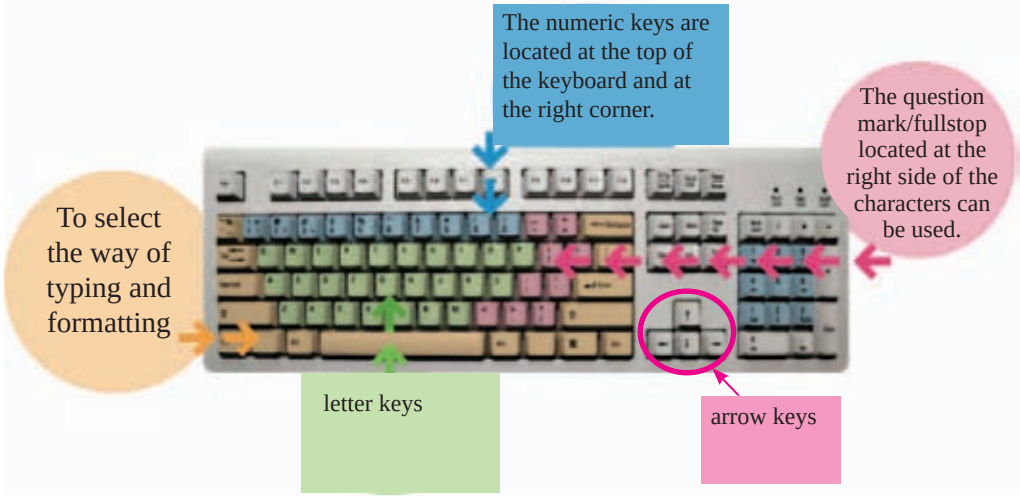


Figure 4.10 - Parts of the Keyboard

There is a vertical line that appears and disappears when you are about to start typing on a document or a box. It is the cursor.

Letter keys are used to type letters. Letter-keys are not located in the order of the English alphabet. The manner in which the letter keys are located on the keyboard is known as 'QWERTY' layout.

The cursor shows the location where the typing starts.

Use the Caps Lock key

After pressing the Caps lock key once, you can type in capital letters. When you need to type normally, press the Caps lock key again.

- **Pressing Caps Lock** key once
  A, C, D
- **When you press Caps Lock again** a, c, d

Use the Shift key

There are two Shift keys on the right and left hand on a keyboard. When letter keys are pressed while pressing on the shift key, letters are typed in capital letters. Similarly, while pressing the Shift key, if you press other keys, the symbol at the top of the key is typed.

⇧ + A ⟶ A

⇧ + ?/ ⟶ ?

Activity 3 - See 4.3 in Workbook.

Space bar - It is used to insert space between words. By pressing this key once, you can get one space and by pressing it twice, you can get two spaces. Likewise, you can press it several times to get the needed space.

Eg:- Pressing once. **Thank You**

Pressing twice. **Thank You**

Tab key - It is used to insert a large space between words. If you press it once, one space is kept and by pressing it twice, two spaces can be kept.

Eg:- Pressing once. **Thank You**

Pressing twice. **Thank You**

Enter key - This key is used to take the cursor one line below.

Eg:- Pressing once **Thank**

You

Arrow keys - These keys are used to move the cursor up and down and from right or left.

Backspace key - By pressing this once, one letter, space or a number on the left side is deleted.

Let's use the Keyboard Correctly

When we fail to use the keyboard correctly, it will cause inconvenience and pain in fingers as well as in the wrists.

The way you should keep your fingers on the keyboard is shown below.

Figure 4.11 - The method of keeping hands on the keyboard correctly

4.3 Let's learn how to use the Application Software

It is intended to provide an understanding about some of the application software and we look forward to discuss audio and video software in the forthcoming chapters.

Graphic Software

At first, art was drawn manually by man.

Later, software was produced to draw pictures using the computer.

Figure 4.12 - A hand drawn painting

Figure 4.13 - An art drwan using a computer

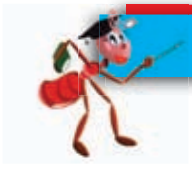
Activity 4 - See 4.4 in the Workbook.

Different software is used to create graphics and to draw arts. This software is known as graphic software.

Adobe Illustrator

Microsoft Paint

Figure 4.14 - Examples for Grapic Software



Activity 5 - See 4.5 in the Workbook.

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Word Processing Software

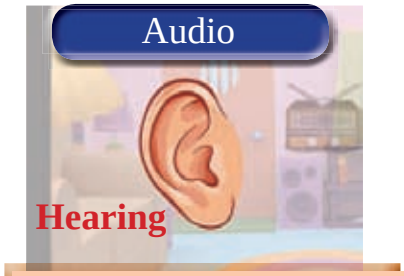
The software we use to create and store documents that are needed in everyday life is called word processing software.

Figure 4.15 - Examples for Word Processing Software

Activity 6 - See 4.6 in the Workbook.

Audio and Video Editing Software

Software has been developed to edit audio and video recordings. Many tasks can be done using this software.



- Audio
  Has voice
  Eg: Radio Programmes

- Video
  Has voice and images
  That means, audio-visual
  Eg: Television programmes

Among several software which is designed to create and edit audio-video material, software created to edit audio recordings is known as audio editing software and software created to edit video recordings is known as video editing software.

Audacity

Adobe Audition

Figure 4.16 - Examples for Audio Editing Software

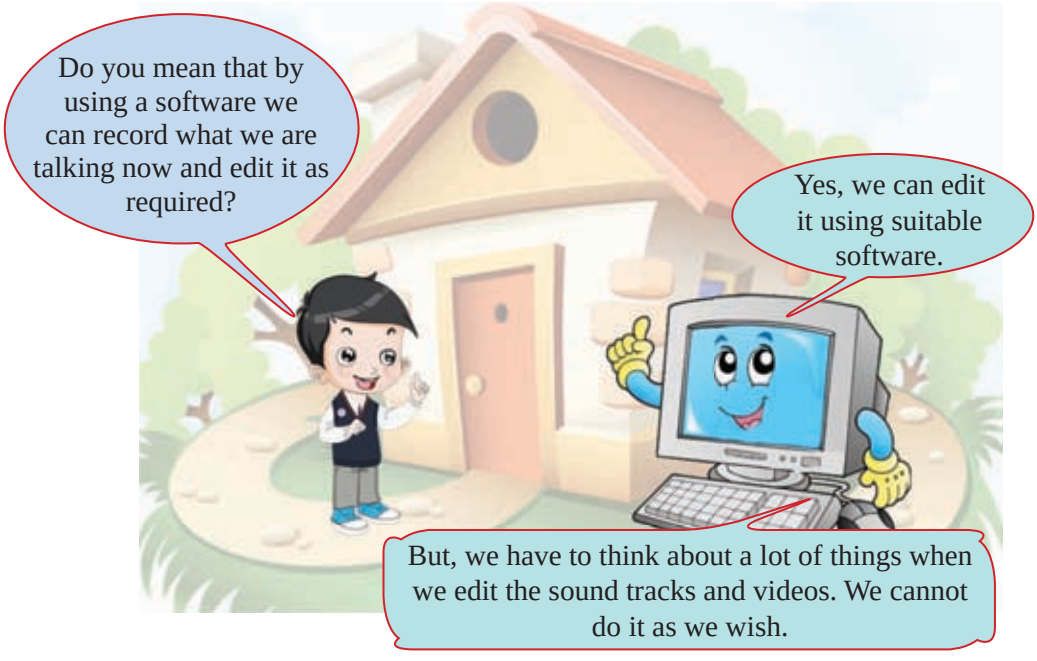
Openshot

Adobe Premiere Pro

Figure 4.17 - Examples for Video Editing Software

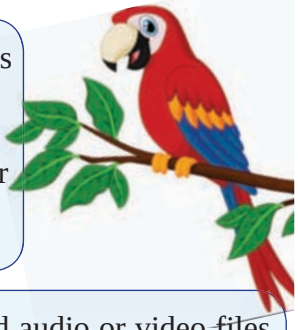
Activity 7 - See 4.7 in the Workbook.

Creating Audio-Video Files



It is very important to comply with the ethics in editing audio and video recordings.

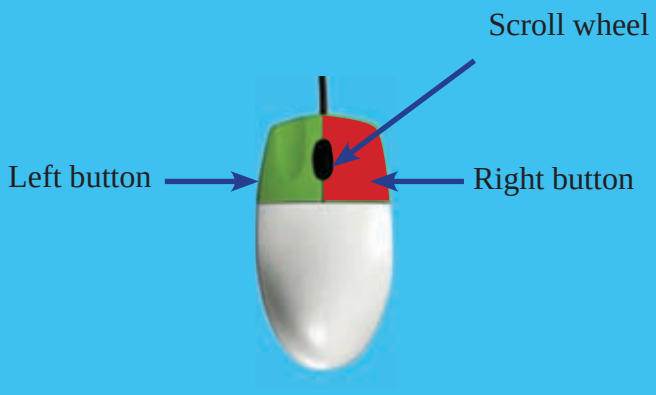
- When we record voices and images of others, their permission must be obtained. (In case of small children, the permisson of their parents or school must be obtained.)
- When editing recordings of voices and images of others, they should not be done in a manner as to make them uncomfortable.
- Editing should not be done in a manner as to give a false idea or a message.
- You should not use the knowledge of editing software for fraudulent purposes.
- If edited audio or video files are made available, it must be done by protecting the identity of you or relevant people.

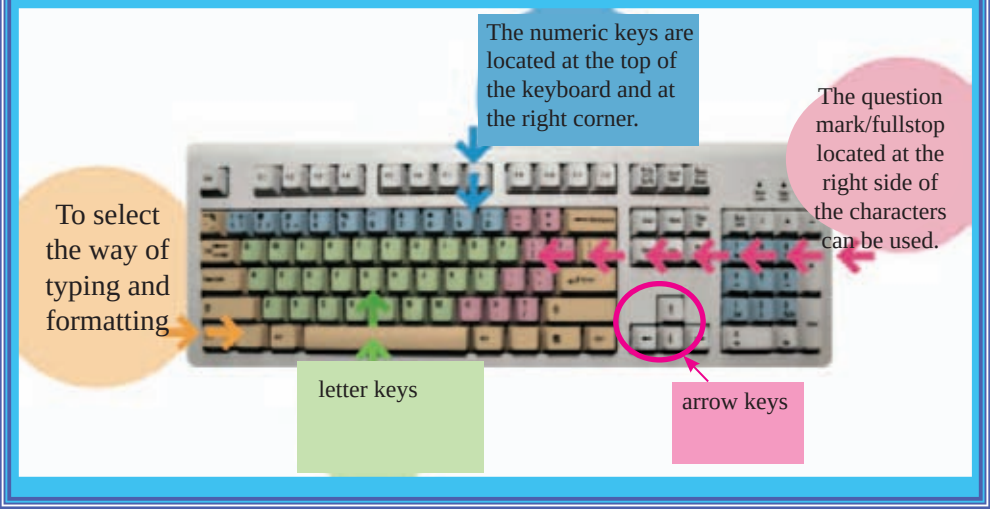


Activity 8 - See 4.8 in the Workbook.

Summary

- Software which is designed to fulfil user requirements is called application software.
  Eg: graphics software, word processing software, audio-video software
- Knowledge of the keyboard and the mouse is important to use application software.
- Right button, left button and scroll wheel are the main parts of a mouse.





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5 Algorithm and Flow Charts

5.1 Process of Solving Practical Problems

Imagine that a group of relatives have arrived when you were alone in the house. You need to serve them some tea. Here, you should prepare a cup of tea by following different steps.

On another occasion, you will have to make a fruit salad for a dessert or make a birthday cake. On all these occasions, you need to solve problems. Compare it with calculating the area of a rectangle during your mathematics lesson.

When we have a certain aim, we do certain activities to achieve it. In our day to day life, we often solve problems.

5.1.1 Problem Solving

The problem needs to be analyzed well before solving it. Then you can get a good understanding of how to solve the problem. The process of problem solving has an input, an outcome and a process.

Input	-	Things to be included to solve the problem.
Process	-	Guidelines to be followed to solve the problem.
Output	-	The result you get after solving the problem.

Thus, you will understand that processing content according to a recipe is known as solving problems.

Example: 1
The input, process and output of preparing a fruit salad is as follows.

Input - a variety of fruits
Process - washing fruits, cutting fruit, mixing
Output - Fruit salad

Example: 2
The input, process and output of finding the area of a rectangle are as follows.

Input - the length and the width of the rectangle
Process - length x width
Output - area of the rectangle

Activity 01 - See 5.1 in the Workbook.

5.2 Algorithm

If you are able to prepare a cup of tea, tie the shoe lace correctly, or put on the school uniform correctly, then you know how to use an algorithm.

Figure 5.1 - Some instances in daily life where we use algorithms

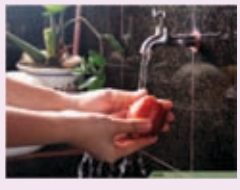
5.2.1 What is an algorithm?

Algorithm

A method that includes all the steps of solving a problem in order is known as an algorithm.

Example 1

Steps to create a fruits salad are as follows.

Step 01		Finding various kinds of fruits
Step 02		Washing all the fruits well
Step 03		Cutting fruits into small pieces
Step 04		Putting the pieces of fruit into a bowl
Step 05		Add sugar and mix
Step 06		Serve the fruit salad in bowls

It's important to write the steps sequentially in an algorithm. Think about what will happen if the sixth step is done as the second step. All the fruits mixed with sugar should be washed again.

Therefore, it is important to write the steps of an algorithm sequentially.

5.2.2 Writing Algorithm

When writing an algorithm in a standard way, every algorithm must have a start and an end. Therefore, it is compulsory to include an initial step and a final step in writing an algorithm in addition to the normal steps.

Example 1

The algorithm for making a chocolate cake

Step 01	Start
Step 02	Clean and wash the baking tray and other bowls
Step 03	Dissolve chocolate
Step 04	Mix wheat flour and baking powder
Step 05	Beat butter until it gets creamy. While beating, add sugar little by little
Step 06	Add the eggs one by one to the sugar and butter mixture and beat it. Then add the flour mixture little by little.
Step 07	Add the dissolved chocolate
Step 08	Add milk
Step 09	Put the mixture into the baking tray and bake it
Step 10	Let it cool after baking
Step 11	Decorate as you wish and serve it
Step 12	End

Example 2

Algorithm to find the area of a rectangle.

Steps 01	Start
Steps 02	Get the length of the rectangle
Steps 03	Get the width of the rectangle
Steps 04	Area = length x width
Steps 05	Get the area of the rectangle
Steps 06	End

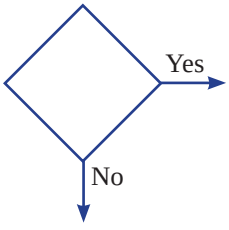
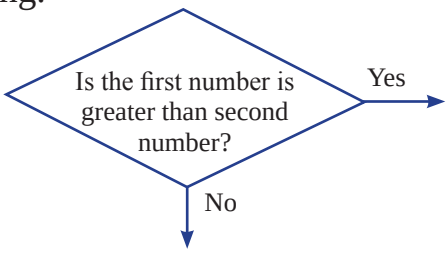
Activity 02 - See 5.2 in the Workbook.

5.3 Flow Chart

A flow chart is a graphical representation of the algorithmic steps.

Here, standard symbols are used to show each action.

Symbol	Usage
	Used to indicate the start and the end. Eg:
	Used to indicate the input and the output. Eg:

	Used to show an action/a process Eg: Adding eggs one by one to the mixture of sugar and butter and beating it. Area = length x width
	Used to indicate an instance of decision making. 
	It is used to indicate the direction of data flow.

Activity 03 - See 5.3 in the Workbook.

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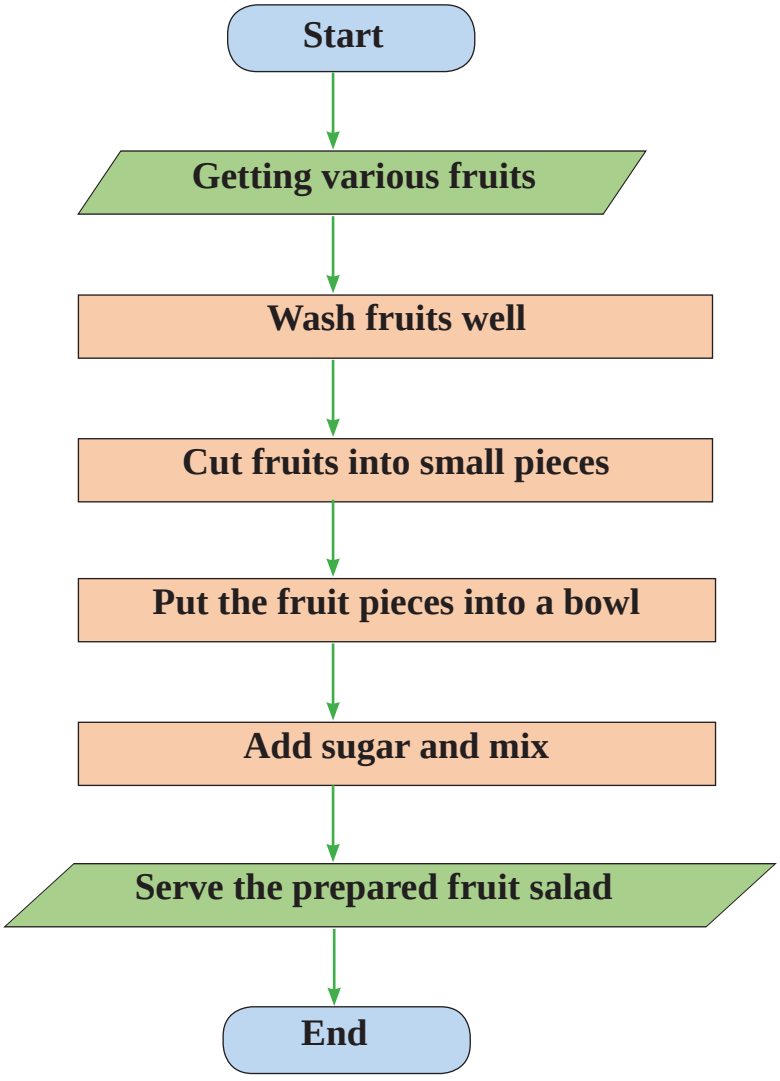
Example 01

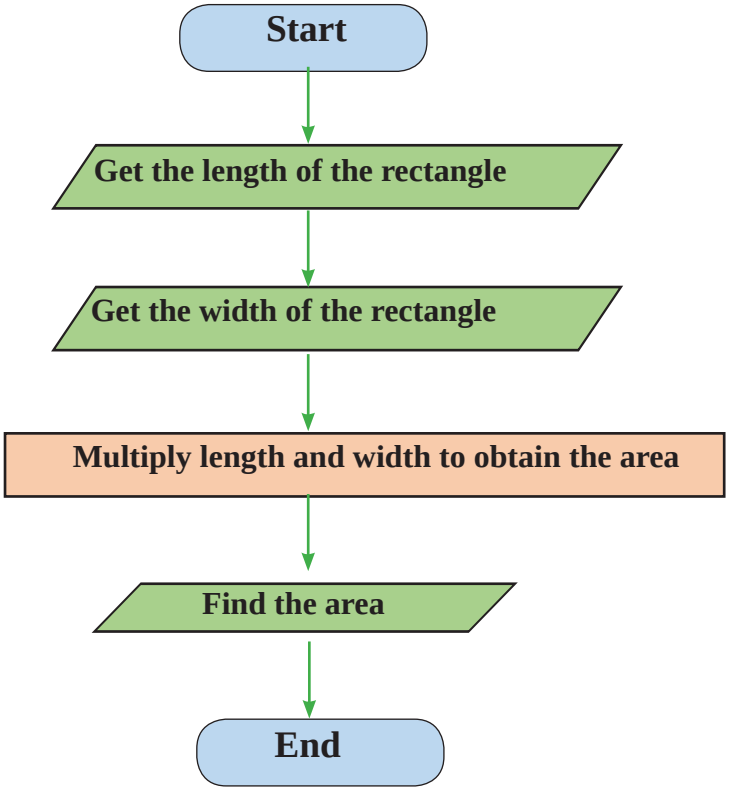
Drawing the flow chart for making a fruit salad using the above symbols is given below.

Here the symbols related to start, end input out and process are used.



Example 02

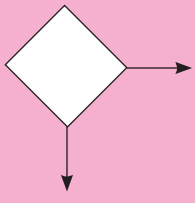
The flow chart for finding the area of a rectangle is given below.



Activity 04 - See 5.4 in the Workbook.

Summary

- Before the problem is resolved, it needs to be analyzed well.
- There is an input, output and a process when solving a problem.
- Things we feed to solve the problem are identified as the 'input', the steps to be followed when solving a problem are identified as the 'process', and the result we get after solving the problem is named as the 'output'.
- A method set out in order including all the steps needed to solve any problem is identified as an algorithm.
- A standard algorithm must have a start and an end.
- A flow chart is a graphical representation of the algorithmic steps. Specific symbols are used to indicate each action.

- shape is used to indicate the start and the end.
- shape is used to indicate the input and the output.
- shape is used to indicate the process.
-  shape is used to indicate the decision taken.

6 Using the Internet for collecting Information and Communication

6.1 Let's learn about the Internet

The internet is made up of a large number of computers and computer networks around the world.

Two or more interconnected computers → **Computer Network**

A large number of interconnected computer networks → **Internet**

There are a wide range of services available on the internet reading such as reading newspapers, bill payments, online shopping, exchange of letters and watching television.

6.2 Accessing Internet

Figure 6.1 - Model of a Web Page

6.2.1 Web Browser

You open a website or a web page in a web browser. The software used to open websites and webpages on the internet is the web browser.

Eg:

Google Chrome Internet Explorer Mozilla Firefox

6.2.2 Use of Web Browsers

To use a web browser, the computer should be connected to the internet.

Normally a web browser can be opened via a shortcut on the desktop.

The address bar can be seen on the top of the web browser's interface.

If you want to open a website, you need to enter an address in the address bar.

Bring the cursor on to the address bar and click on it. Then enter the address directly. Then press the enter key.

Eg: Accessing the website of the Ministry of Education

Figure 6.2 - Website of the Ministry of Education

If you have typed the address previously, it will be displayed. Hence, bring the cursor and click on it.

Figure 6.3 - Address Bar

There is a toolbar in the web browser. These toolbars can be used to change websites and update web pages.

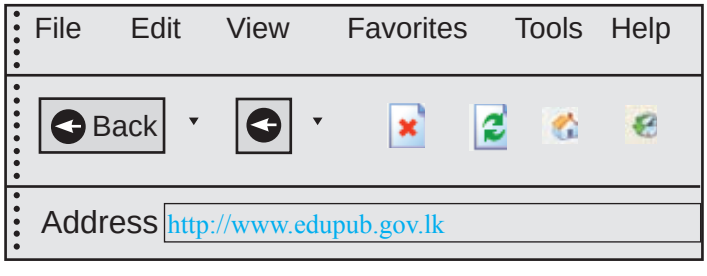


Figure 6.4 - Web Address of the Educational Publications Department

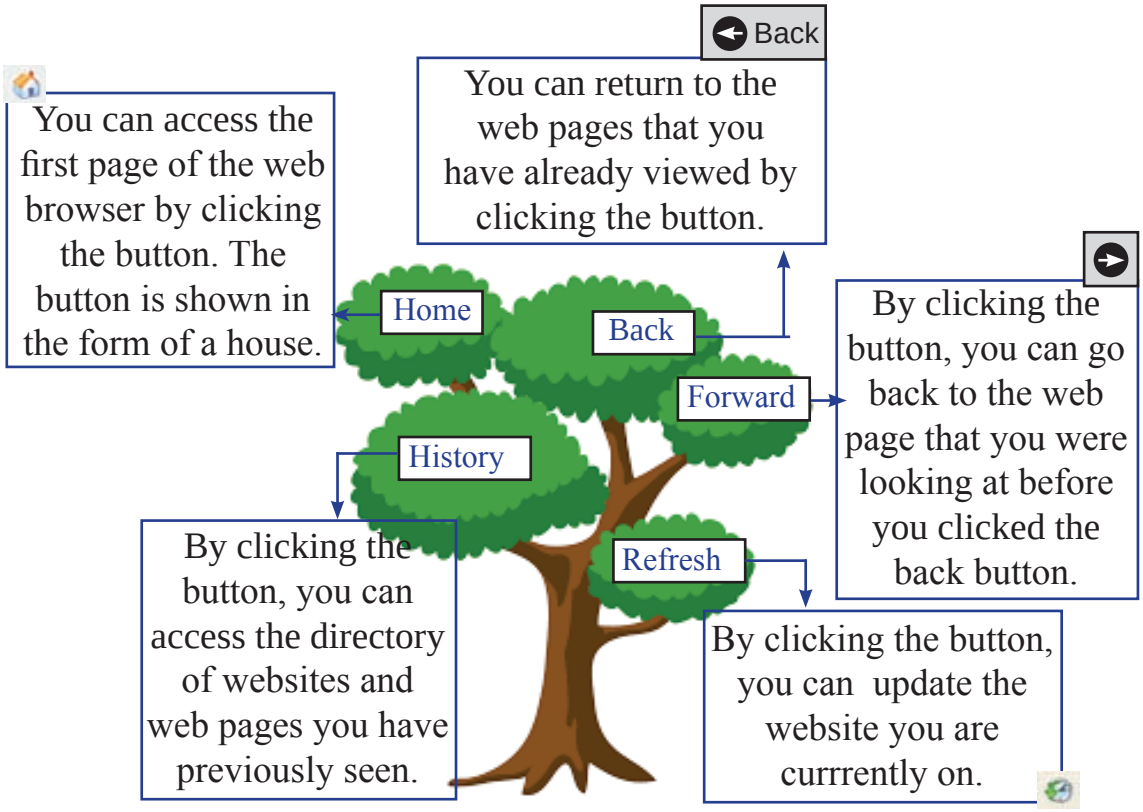
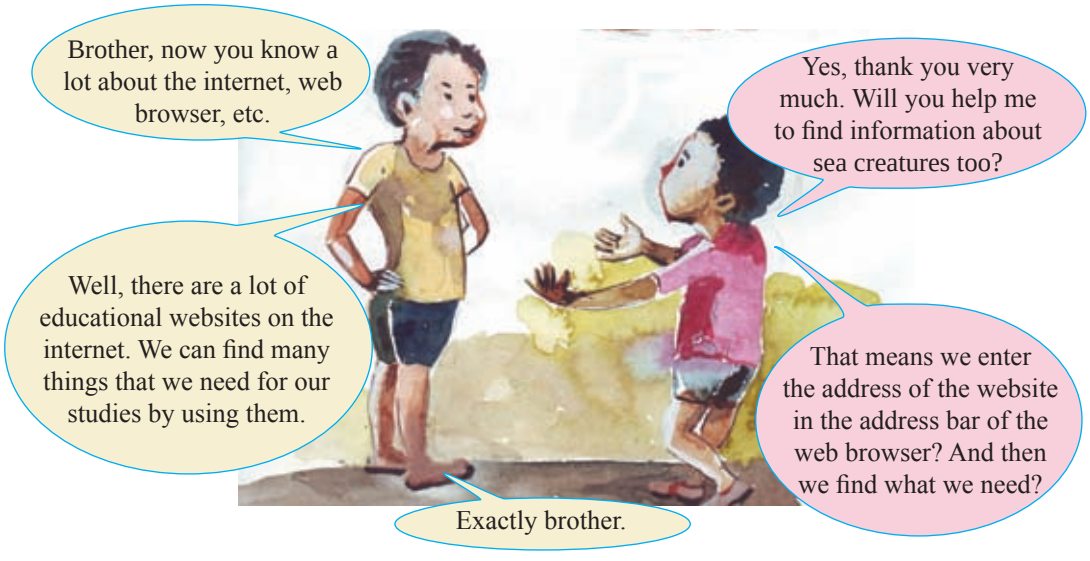


Figure 6.5 - Some Buttons in a Web Browser

6.3 Obtaining Information from Educational Websites



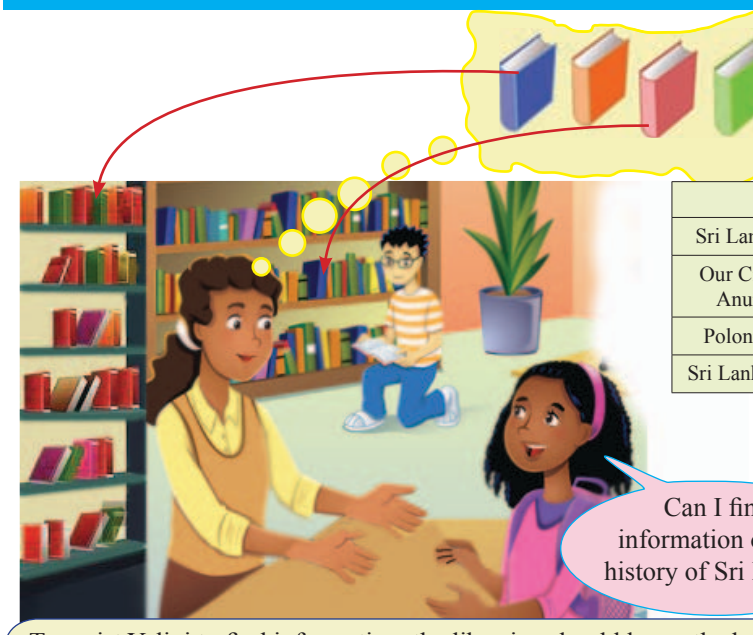
There are a lot of educational websites on the internet and we can get many information regarding our studies. In order to enter a website the address of the web site should be entered in the address bar of the web browser.

Example : www.bbc.com/bitesize

6.4 Let's learn about Search Engines

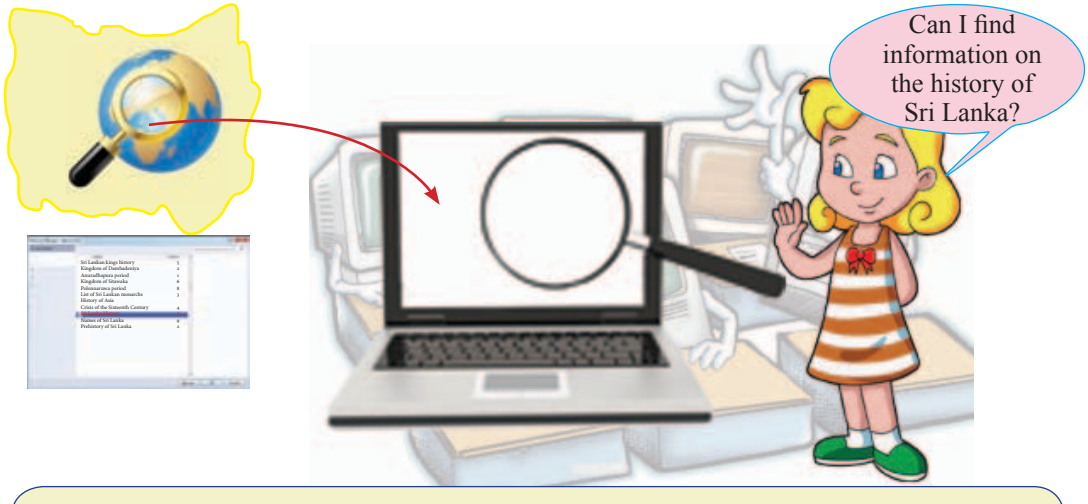
A search engines is a software that can be used to find information on the internet. This gives you a list of websites related to the facts that we are searching for.

Use of Search Engines



Book	Rack
Sri Lankan History	1
Our Civilization 1 Anuradhapura	3
Polonnaruwa Era	2
Sri Lankan History 2	6

To assist Yalini to find information, the librarian should know the books about the history of Sri Lanka and know the location of books.
In the end, a list of names of the books and the place where the books are placed will be provided.



To help Anne to find the information, the search engine should know about websites or web pages that contain information on the history of Sri Lanka and they should also know the location of websites or webpages.
In the end, a list of names and addresses of websites will be available to help you find relevant websites or web addresses.

There are a large number of websites and web pages on the internet. Search engines can search anything such as recipes, news, history, science, education, etc. on those sites.

Search engines are needed to find what is most productive on the internet.

A search engine efficiently scans thousands of websites and web pages and process them.

- Examples for search engines;

  Google - www.google.com
  Yahoo - www.yahoo.com
  Bing - www.bing.com

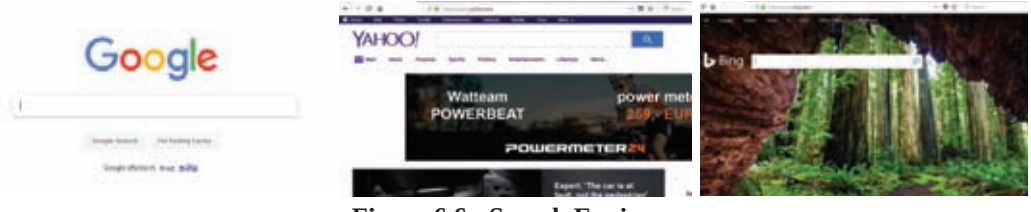


Figure 6.6 - Search Engines

Opening and Using Search Engines

To use search engines, you need to open the web browser that is installed in a computer.

The address of the search engine must be entered in the address bar.

You can enter the search engine by clicking the Search key on the address bar or by pressing Enter key on the keyboard.

There is a search box or a search field in a search engine.

Enter the key words relevant to the information and click the search button.

Your search results are shown as a list of websites and links. It will show a list of the most popular or the most suitable websites or links on the top. From that, you need to select the relevant site and click on the link to view it.

The keywords are the simplest and straightforward terms of what you are looking for.

For example,

Think that you need to search about the history of Sri Lanka. You can use

'History Sri Lanka' as a key word.

Tips for making Search Results more effective

The following short tips can be used to make your search more effective:

- Use keywords. Do not use complete sentences/questions.
  Eg: 'I need the history of Sri Lanka'.

  You should type 'Sri Lankan History' or 'History Sri Lanka' instead of 'I need the History of Sri Lanka'.

- If you cannot find what you require, try using a different word or a different expression.

Figure 6.7 - Search Information using a Search Engine

Activity 1 - See 6.1 in Workbook

In some searches, it will show hundreds of web pages irrelevant to your search. Be careful when selecting your search terms to avoid that. Your search engine will give an accurate result when your word is more appropriate.

1. Use inverted commas (" ") for a clause with several words.

2. Removing unnecessary words

   Do not use words that are not relevant to your search. Do not use words like " how, and, in, to, as". Use the names of people, places or things you want to find.

3. When you want to use more than one main word. Connect the words with '+' . For example, when you need to see the beautiful places in Kandy,

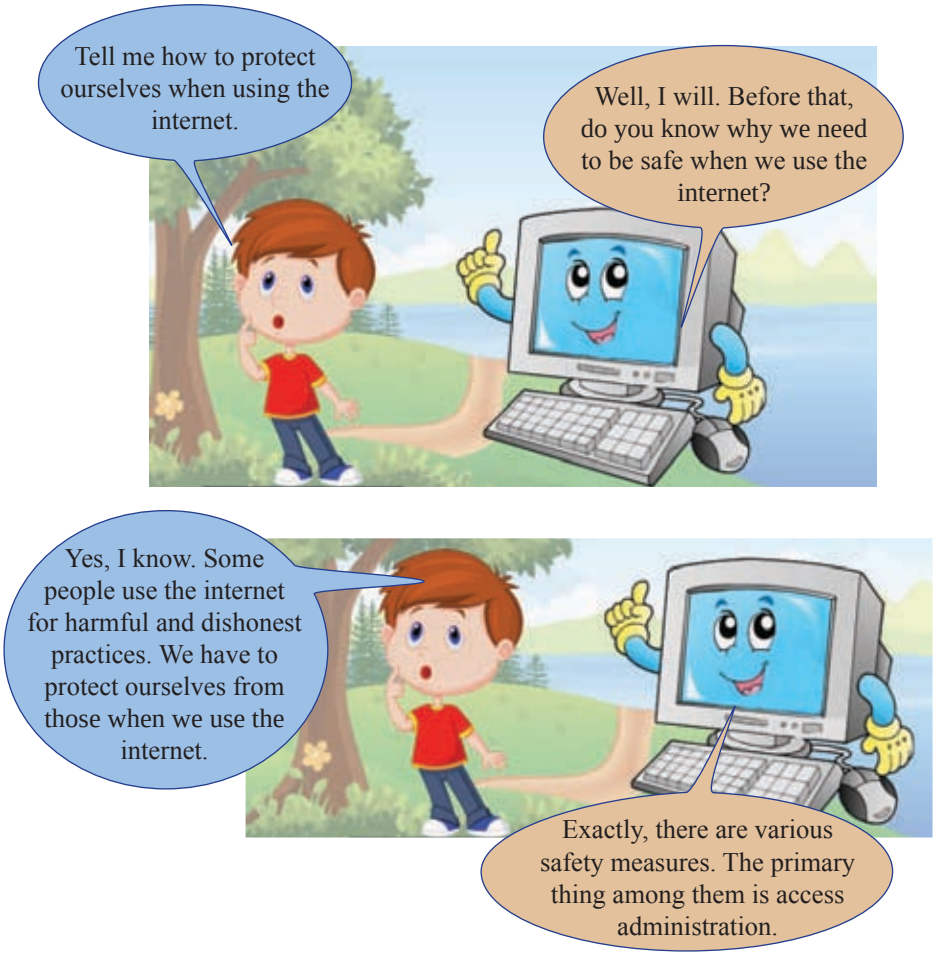
   It is better to use

4) To remove unnecessary facts

   Use '-' in front of the unwanted word. For example, when you are searching for information about Wimbledon, it would show information on tennis too. So to remove details about tennis, use;

5. When looking for an image about something, select the 'image' command of the search engine to search what you need.

6.5 Let's use the Internet Safely



The access administration is following different measures to access the internet safely and with a control. When we are using the internet, we interconnect with various computer networks and various websites around the world. Thus, it can influence our computer in many ways.

6.5.1 Provide Usernames and Passwords when Accessing Websites

In some cases, it is necessary to register usernames and passwords when accessing certain websites to obtain specific information.

Your username should not be your name. You can safeguard you identity by giving another word as the username. It should be memorable and shouldn't be easy for someone else to guess.

For a better password, use a password with letters and numbers. It's identified as a strong password.

Eg: Not a suitable password - password
saman 123

Suitable password - be220mmb*
Sama89agu@

- It's safer to use different passwords for different websites.
- It is important to log out when you leave a website after using the username and password to log on.
- Do not give your password to anyone else.

6.5.2 Use E-mail Safely

Individuals can send e-mail messages in order to access personal information, such as bank account details. We can also receive e-mails containing advertisements that are sent to thousands of people for commercial purposes.

Here are some steps you can follow to safeguard e-mails.

- Be careful when opening e-mails sent by unknown people.
- Avoid replying those e-mails and prevent from accessing links in them.
- Avoid providing information to any institution who request them through e-mails without inquring about them.

6.5.3 Doing Safe Online Transactions

One of the important uses of the internet is that we can do online transactions and purchase goods.

But, you should be very careful. In order to purchase goods, you must use most reliable websites and you must do payments through safe methods.

It's important to follow the directions and instructions of those who have good knowledge about using the internet. At present, there is an increase in the fraudulent acts on the internet.

Be sure to get the help and guidance of your teachers, parents, or adults whenever you access the internet. It will make your browsing time more productive, satisfying and safe.

Activity 2 - See 6.2 in the Workbook.

Summary

- The internet is a collection of a large number of computer networks.
- There are a number of internet services that can be used to exchange information and web is one of the services.
- Documents, pictures, videos and sounds can be exchanged through web and they are stored as webpages.
  A website is created using web pages. A web address is used to identify a website.

- The software used to look up web pages is the web browser.
- Search engines are used to find information.
- The service used to send messages via the internet is e-mail.
- You can use the internet to make transactions and use secure web addresses only.
- Differences between a web browser and a search engine:

Web Browser	Search Engine
It is a software used to access websites through the internet and view the web pages.	It is a programme used to find information needed from a vast collection of information on the internet. This requires a web browser.
The web address is used to access the website.	The words or phrases are used to find information.
Related website is opened.	Provides a list of relevant websites. You must select the suitable website to find the relevant information.