Information and Communication Technology

Workbook

Grade 6

Educational Publications Department

The National Anthem of Sri Lanka

Sri Lanka Matha

Apa Sri Lanka Namo Namo Namo Namo Matha

Sundara siri barinee, surendi athi sobamana Lanka

Dhanya dhanaya neka mal palaturu piri jaya bhoomiya ramya

Apa hata sepa siri setha sadana jeewanaye matha

Piliganu mena apa bhakthi pooja Namo Namo Matha

Apa Sri Lanka Namo Namo Namo Namo Matha

Oba we apa vidya

Obamaya apa sathya

Oba we apa shakthi

Apa hada thula bhakthi

Oba apa aloke

Apage anuprane

Oba apa jeevana we

Apa mukthiya oba we

Nava jeevana demine, nithina apa pubudukaran matha

Gnana veerya vadawamina regena yanu mana jaya bhoomi kara

Eka mavakage daru kela bevina

Yamu yamu vee nopama

Prema vada sema bheda durerada

Namo, Namo Matha

Apa Sri Lanka Namo Namo Namo Namo Matha

අපි වෙමු එක මවකගෙ දරුවෝ
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එක පාටැති එක රුධිරය වේ
අප කය තුළ දුවනා

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කිසි කල නොම දිරනා

ආනන්ද සමරකෝන්

ஒரு தாய் மக்கள் நாமாவோம்
ஒன்றே நாம் வாழும் இல்லம்
நன்றே உடலில் ஓடும்
ஒன்றே நம் குருதி நிறம்

அதனால் சகோதரர் நாமாவோம்
ஒன்றாய் வாழும் வளரும் நாம்
நன்றாய் இவ் இல்லினிலே
நலமே வாழ்தல் வேண்டுமன்றோ

யாவரும் அன்பு கருணையுடன்
ஒற்றுமை சிறக்க வாழ்ந்திடுதல்
பொன்னும் மணியும் முத்துமல்ல - அதுவே
யான்று மழியாச் செல்வமன்றோ.

ஆனந்த சமரக்கோன்
கவிதையின் பெயர்ப்பு.

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Being innovative, changing with right knowledge
Be a light to the country as well as to the world.

<u>Message from the Hon. Minister of Education</u>

The past two decades have been significant in the world history due to changes that took place in technology. The present students face a lot of new challenges along with the rapid development of Information Technology, communication and other related fields. The manner of career opportunities are liable to change specifically in the near future. In such an environment, with a new technological and intellectual society, thousands of innovative career opportunities would be created. To win those challenges, it is the responsibility of the Sri Lankan Government and myself, as the Minister of Education, to empower you all.

This book is a product of free education. Your aim must be to use this book properly and acquire the necessary knowledge out of it. The government in turn is able to provide free textbooks to you, as a result of the commitment and labour of your parents and elders.

Since we have understood that the education is crucial in deciding the future of a country, the government has taken steps to change curriculum to suit the rapid changes of the technological world. Hence, you have to dedicate yourselves to become productive citizens. I believe that the knowledge this book provides will suffice your aim.

It is your duty to give a proper value to the money spent by the government on your education. Also you should understand that education determines your future. Make sure that you reach the optimum social stratum through education.

I congratulate you to enjoy the benefits of free education and bloom as an honoured citizen who takes the name of Sri Lanka to the world.

Akila Viraj Kariyawasam
Minister of Education

Foreword

The educational objectives of the contemporary world are becoming more complex along with the economic, social, cultural and technological development. The learning and teaching process too is changing in relation to human experiences, technological differences, research and new indices. Therefore, it is required to produce the textbook by including subject related information according to the objectives in the syllabus in order to maintain the teaching process by organizing learning experiences that suit to the learner needs. The textbook is not merely a learning tool for the learner. It is a blessing that contributes to obtain a higher education along with a development of conduct and attitudes, to develop values and to obtain learning experiences.

The government in its realization of the concept of free education has offered you all the textbooks from grades 1-11. I would like to remind you that you should make the maximum use of these textbooks and protect them well. I sincerely hope that this textbook would assist you to obtain the expertise to become a virtuous citizen with a complete personality who would be a valuable asset to the country.

I would like to bestow my sincere thanks on the members of the editorial and writer boards as well as on the staff of the Educational Publications Department who have strived to offer this textbook to you.

W. M. Jayantha Wickramanayaka,
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2019.04.10

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Content

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1 Importance of Computers

Activity 1.1

1. complete the following diagram which shows basic functions of computer.

```
( A ) → ( B ) → ( C )
```
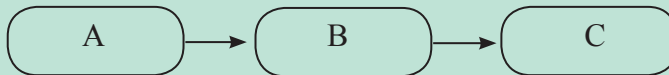
A - ....

B - ....

C - ....

2. Select the correct answer and write the relevant English alphabetical letter in the space given.

    i. What is known as input in a computer ?

    ....

    ii. What is known as output in a computer ?

    ....

    iii. What is known as storage in a computer ?

    ....

    A). Any method which is used to send out data processed by the computer system

    B). Any method which is used to feed data into a computer system

    C). A method which can be used to store data

Input

Entering data into the computer is known as input and the devices which are used for that purpose are known as input device as or input methods

Process

The procedure of executing data in a computer according to the instructions is known as process

Output

Output is sending out processed data and devices used for this purpose are known as output devices or output methods

Activity 1.2

1. Write three examples for input devices

   - ....
   - ....
   - ....

2. Write three examples for output devices.

   - ....
   - ....
   - ....

3. Identify storage devices in the picture.

A   B   C

D   E
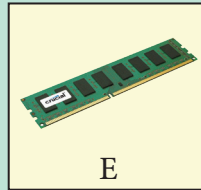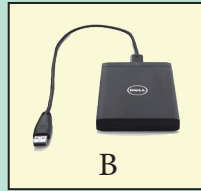
A - ....   B - ....

C - ....   D - ....

E - ....

4. Name the devices shown below.
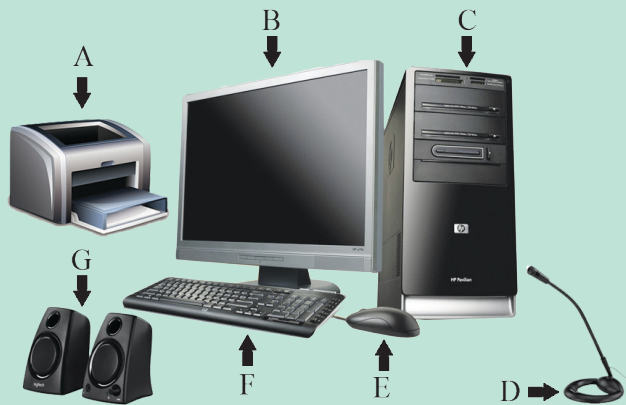
A .... B ....

C .... D ....

E .... F ....

G ....

5. Categorise the devices correctly and write in the following grid.

Input	Output	Other

6. Prepare a list of devices which can be seen in a school computer laboratory in addition to the above devices.

- ....
- ....
- ....
- ....
- ....

7. Enter the list of the items you've prepared.

Input	Output	Other

8. Write five examples for embedded computer devices that are used in day to day life

   - ....
   - ....
   - ....
   - ....
   - ....

9. Mention three advantages of using embedded computer devices

   - ....
   - ....
   - ....

1. Describe a computer software.

    • ....

    • ....

    • ....

2. Which of the following is a software?

    a. Monitor
    b. Operating system
    c. Mouse
    d. Printer

3. Write five examples for a computer software.

    • ....

    • ....

    • ....

    • ....

    • ....

4. What is a computer hardware?

    ....

    ....

5. Which of the following is an example for computer hardware?

    a. Monitor
    b. Operating system
    c. Web browser
    d. Data

6. Write five examples for computer hardware.

    •   ....

    •   ....

    •   ....

    •   ....

    •   ....

7. Write three examples for occasions where the computer is used in day to day activities.

    •   ....

    •   ....

    •   ....

8. Explain two ways in which the computer can be used for agriculture ?

    01. ....
    ....
    ....
    ....
    ....
    ....

    02. ....
    ....
    ....
    ....
    ....
    ....

Activity 1.4

These activities should be organized with the assistance of the teacher.

1. Divide the students into three groups. Prepare three cards as given below. Randomly distribute one to each group.

List the input devices and output devices that are related to the type of computer you have on the card. Then compare the results of each group and verify the accuracy with the teacher.

2. Prepare a poster on the topic of the "computer in day to day life".

2 Let's use the Computer Laboratory Safely

Activity 2.1

01. Identify the following devices and see whether they are located in your computer laboratory (put a tick in front of the devices that are in your computer laboratory)

....	....	....
....	....	....
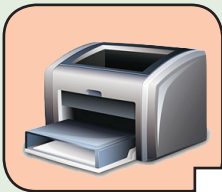
In addition to the above, mention other devices that should be installed in a school computer laboratory

- ....
- ....
- ....
- ....

02. Say if it is correct or wrong to do this following actions in a computer laboratory by marking (✔) or (✗).

1) Keeping the equipment in proper order after use ( )
2) Try to put your pen in to all the ports ( )
3) Playing by rotating chairs ( )
4) Inquiring about fire extinguishing equipment from the teacher ( )
5) Entering the lab after keeping water bottles and removing shoes outside ( )
6) Connecting external storage drives to the computer without any virus scan ( )
7) Supply electricity to the multimedia projector without the knowledge of teacher ( )
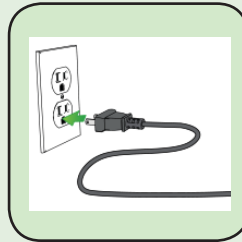8) Dusting the keyboard ( )

03. Set up a notice board to display safety measures you can follow in a computer laboratory. (Draw a sketch of that board in your exercise book.)

Activity 2.2

01. Number the following pictures as **1 2 3 4** to show the sequential order of turning on a computer correctly. Write each action in words.

☐	☐	☐	☐

....

....
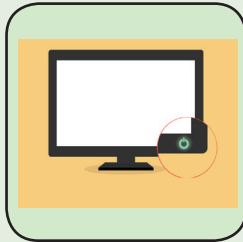
Now operate the computer in front of you correctly. (For that, follow the instructions given in the textbook and your teacher)

02. Write the correct sequential order of shutting down a computer.

Switching off the UPS	A........................
Turn off the monitor	B........................
Leaving from running programmes	C........................
Select the command of shut down	D........................
Turn off the wall switch	E........................

03. Discuss in your group about the damages caused to the computer by not shutting down the computer properly. List out some of the damages you identified.

....

....

....

Activity 2.3

01. Briefly explain what is meant by computer ethics.

....

....

....

02. Write three examples for computer ethics.

....

....

....

03. Write a list of computer ethics to put on your school Information Technology Wallpaper. (Write the list in your exercise book)

Activity 2.4

01. Observe the following image carefully.
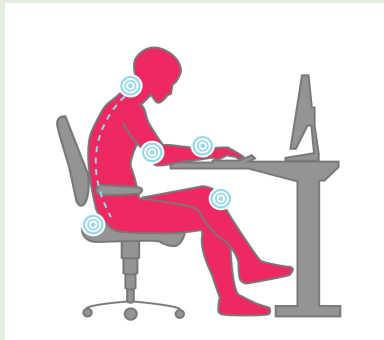
   i.   What's wrong with the boy's posture in this picture?

....

....

....

ii. Several problems that could be caused by not working in the computer with a correct posture are given below. What measures should be taken to prevent them?

- Pain in the eye

  ....

  ....

- Pain along the hand from the shoulder

  ....

  ....

- Frequent pain in backbone

  ....

  ....

- Wrist pain

  ....

  ....

- Difficulties in the feet

  ....

  ....

01. Write five examples for electronic waste in your school/home.

1. ....
2. ....
3. ....
4. ....
5. ....

02. Write the method of managing the above waste according to the 3R system.

....

....

....

....

....

....

....

....

....

Activity 2.6

01. Have a discussion about an instance where you reused electric or electronic waste without disposing them at home. Briefly write it in your book.

02. Write an instance where you reused an electronic waste in your school.

....
....
....
....
....
....

03. Name some of the materials that you sent for recycling?

at school	**at home**
....	....
....	....
....	....
....	....
....	....
....	....
....	....

04. Write down names of several institutions that collect electronic waste for recycling.

1. ....
2. ....
3. ....
4. ....
5. ....

Activity 2.7

01. Explain briefly why a computer should be protected by setting a password.

   ....
   ....
   ....
   ....
   ....
   ....
   ....

02. Write three facts to be considered when setting a password?

   • ....
   • ....
   • ....

03. Mention two features of a strong password.

   • ....
   • ....

04. Write five examples for strong password

   • ....
   • ....
   • ....
   • ....
   • ....

05. Say whether the following passwords are strong or not. Put (✔)
    if it is strong and put (✘) if it is weak.

school123   ⬭
Nam2005ab#   ⬭
claSS@21   ⬭
amara abc   ⬭

3 Operating system and File management

Activity 3.1

01. The following image is a model of a computer screen.
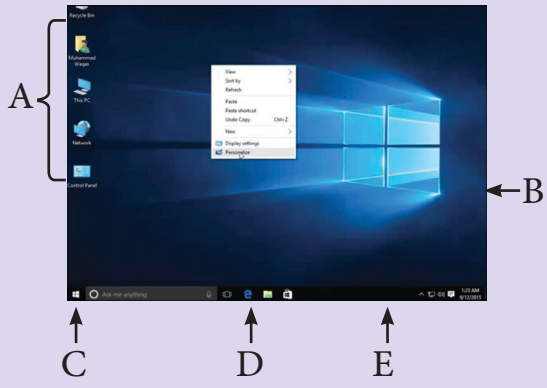
A - icons
B - desktop
C - start menu
D - quick launch bar
E - task bar

A desktop home screen with Microsoft Windows 10 operating system

A - icons
B - desktop
C - start menu
D - quick launch bar
E - task bar

A desktop home screen with Ubuntu operating system

(With the help of your teacher, open an operating system and identify the components of a computer screen.)

2. The column A contains trademarks of some operating systems. Match those trademarks with the correct name in the column B.

A	B
	Windows
	Linux
	Apple
	Android
	Ubuntu

Activity 3.2

1. What is a file?

....
....
....

2. Select a computer in your computer laboratory and write the names (with the file extension) of ten files which are stored in it.
    i. ex : Grade6A docx ....
   ii. ....
  iii. ....
   iv. ....
    v. ....
   vi. ....
  vii. ....
 viii. ....
   ix. ....
    x. ....

3. Fill the following grid with information of above files you have listed out in question 2.

file name	file extension	file type	type of software	name of the software
ex: Grade6A	docx	text file	word processing software	MS Word

Activity 3.3
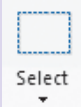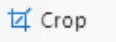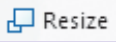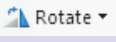
1. Let's draw a picture using the computer.
   Given below is how the MS Paint software is used in a computer with windows 10 operating system. According to operating system used, these steps could vary slightly

2. Tools used to draw a picture according to the software

   a. Click the START ⊞ button
   b. Select All Programmes
   c. Click on Accessories
   d. Select Paint and double click it then a working screen similar to the following will be opened
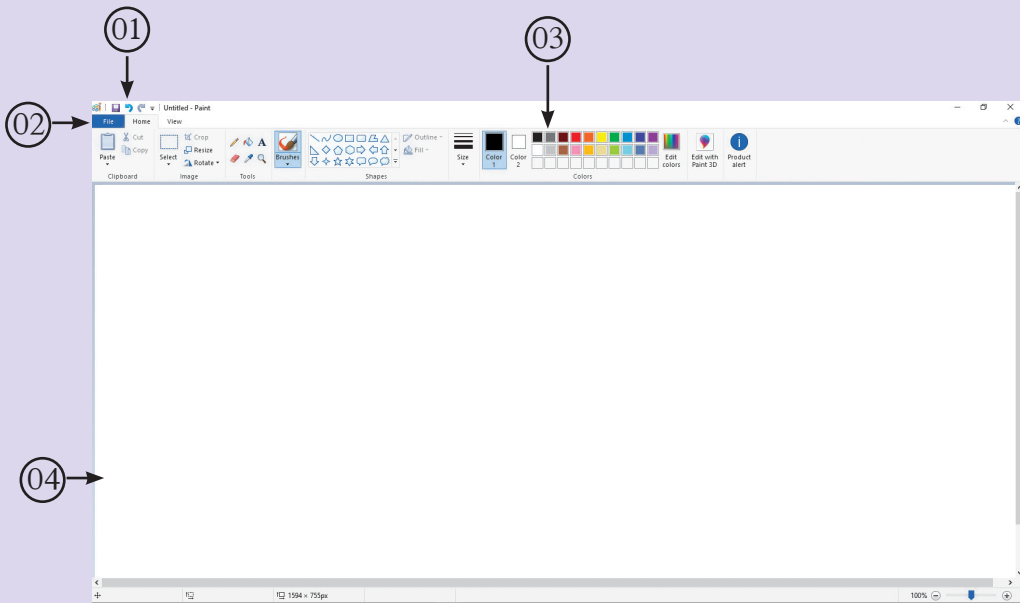
01. paint buttons
02. quick access toolbar
03. ribbon
04. drawing area

icons	details
Select	Can start a text or a picture that is drawn
Crop	Can select and cut the required portion of a picture or a text
Resize	Can enlarge or reduce the picture that is drawn or text
Rotate	Can rotate the picture to a necessary direction
pencil	Can draw a picture like drawing by a pencil
paint basket	Can fill a closed drawing with colours conveniently.
A text tool	Can insert necessary text
eraser tool	Can erase writings and drawings
brush tool	Can draw with Brushes of various Sizes

4. Use of different shapes

icon	details
line tool	can be used to draw straight lines
curve tool	can be used to draw flexible lines

Closed images that are available in addition to the above are brown as ready-made shapes

◯ oval   ▭ rectangle   ▢ rounded rectangle   △ triangle   ◺ right triangle

⬠ diamond   ⬠ pentagon   ⬡ hexagon   ⇨ arrows   ☆ star

💬 callouts   ♡ heart   ⚡ lightning bolt

Activity 3.4

1. Open a graphic software with the help of your teacher and draw a picture. Type your name and the school in the picture.
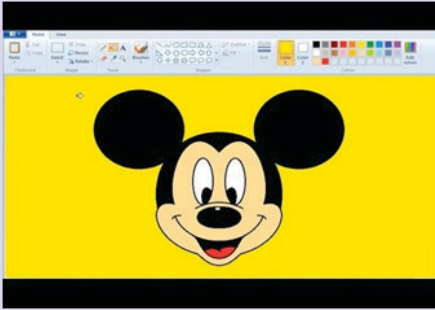
MS Paint
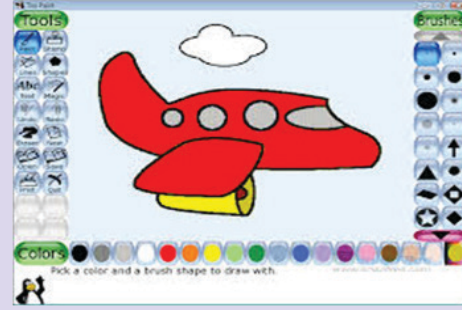
Tux Paint

2. Propose three suitable names for your file.

i. ....

ii. ....

iii. ....

Activity 3.5

Opening a file

Select the file location and the file and double click it.

File location
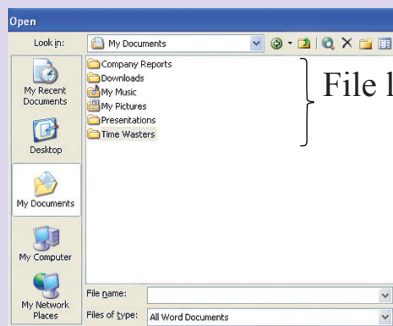
Getting a file

To copy and paste files and folders, select the file to be copied

Copying and pasting files and folders

1. Select a file to be copied.
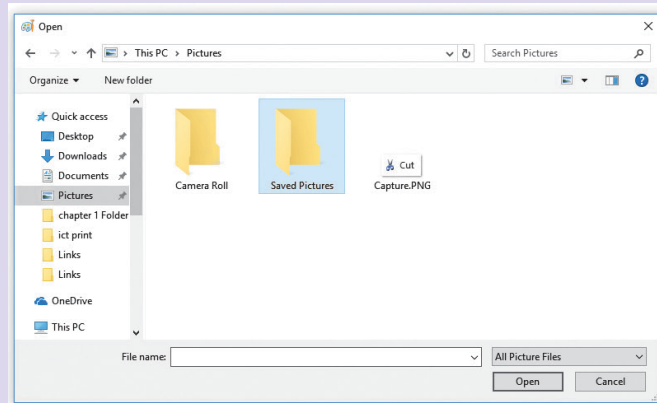
2. Give the command 'copy' to be copied. Click the right mouse button for that. At the same time the short cut of Ctrl+C can be used on the keyboard.
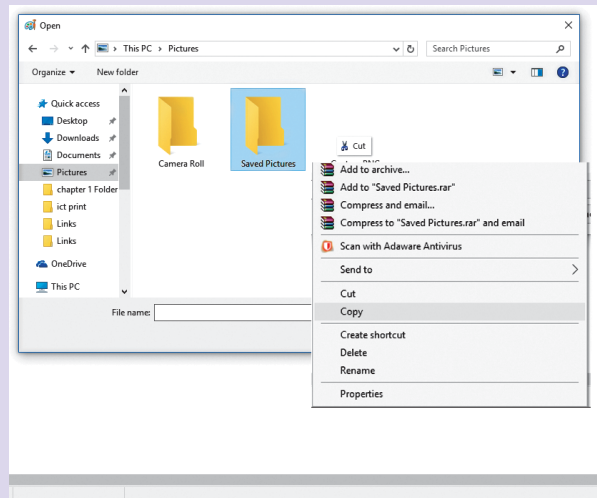
3. Select a location to be copied and give 'Paste' command. At the same time the short cut of Ctrl+V can be used on the keyboard.
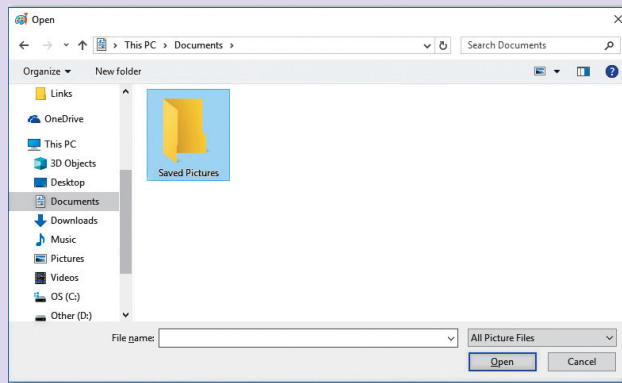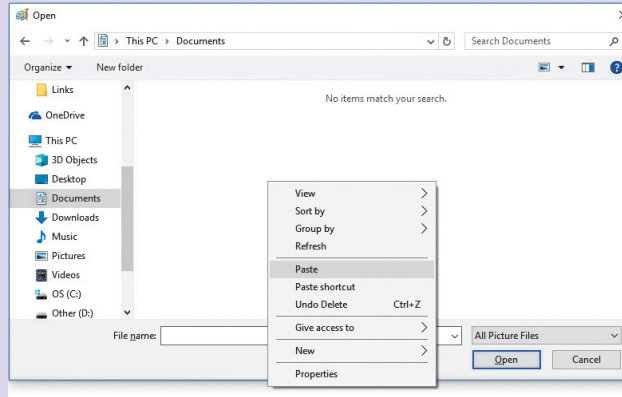
3. Cut and Paste files and folders.
1. Select the file/folder to be cut and pasted.
2. Use the 'cut' command or ✂ icon to cut.
   (At the same time the short cut of Ctrl+X can be used on the keyboard.)
3. Follow the procedure of pasting shown earlier.

4. Close a file
The file may be closed by clicking the ❎ button shown on the top right of your file. At the same time, you can use the Ctrl+W keys alternatively.

5. **Maximize a window :**
   The file may be maximized by clicking the button ▢ shown on the top right of your file.

6. **Minimize a window :**
   The file may be minimized by clicking the button ▬ shown on the top right of your file.

7. Write the steps to be followed to save a file, close a file, etc in this table.

Activity	Giving command	Short cut keys	Other method
Opening a file	File → open	Ctrl + O	right click open tool bar open
Closing a file			
Copying a file			
Pasting a file			
Cutting a file			

Activity 4.1

01. Describe application software

....
....

02. Find out the type of software that is appropriate for each task given below. Word processing software, search engine, web browser, spreadsheet software, graphic software

- Prepare documents   - ....
- Finding information on the internet - ....
- Drawing picture   - ....
- Preparation of budget reports   - ....
- Preparation of invitation cards - ....

03. Prepare a list of ten tasks you can perform using the computer. (In addition to the example in the above question 2)

- ....
- ....
- ....
- ....
- ....
- ....
- ....
- ....
- ....
- ....

04. List five instances where special purpose software is used.

- ....
- ....
- ....
- ....
- ....

Activity 4.2

01. The following screenshots show how the mouse appears on a computer screen on different occasions. Describe when each mouse pointer appears on screen

....

....

....

02. Name the parts of the picture given below.

A - ....
B - ....
C - ....
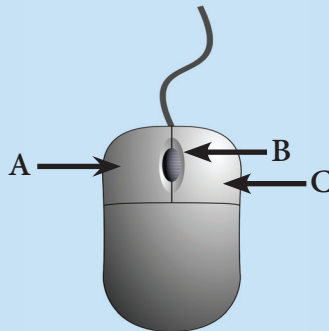
01. Types of keys that can be seen on a keyboard are illustrated here. Write three examples for each type of keys.
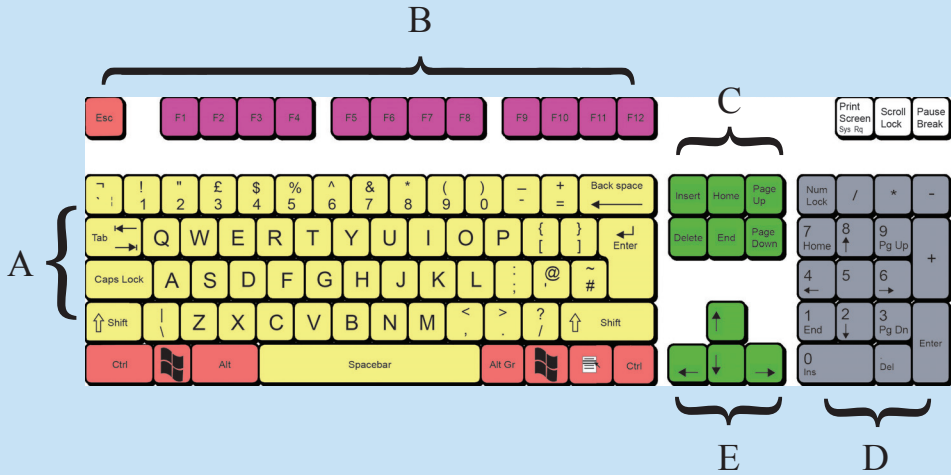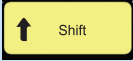
A - (i) ....

(ii) ....

(iii) ....

B - (i) ....

(ii) ....

(iii) ....

C - (i) ....

(ii) ....

(iii) ....

D - (i) ....

(ii) ....

(iii) ....

E - (i) ....
(ii) ....
(iii) ....

02. Write down the tasks performed by the following keys.

1. `Delete` - ....

2. `↑ Shift` - ....

3. `Tab` - ....

4. - ....

5. `End` - ....

Activity 4.4

01. Mention three difficulties and complexities which can arise when the mouse is not properly used.

• ....

• ....

• ....

02. Mention three difficulties and complexities which can arise when the keyboard is not properly used.

• ....

• ....

• ....

03. Write five examples for graphic software.

- ....
- ....
- ....
- ....
- ....

04. Write five examples for word processing software.

- ....
- ....
- ....
- ....
- ....

Activity 4.5

01. Get the teacher's assistance since the steps for the following activity may differ according to your version of operating system installed in your computer. Let's draw a picture of a clear blue sky with the sun using MS Paint software.
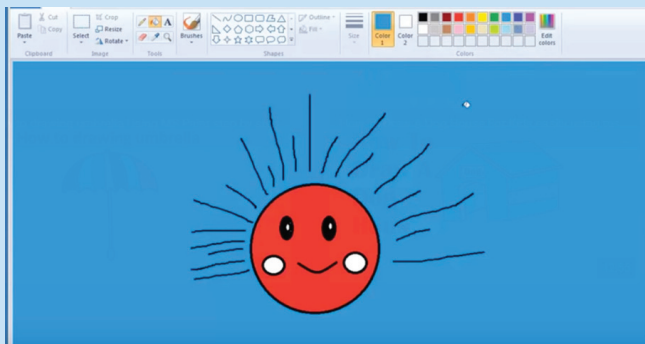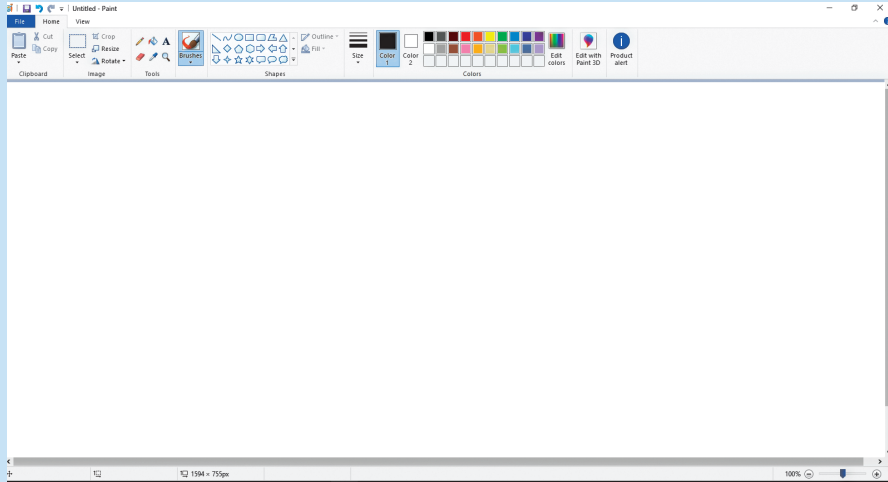
Use the blank drawing area to draw.

Step 1

Take the mouse pointer to shapes and click the left mouse button on the circle shape. (selecting the circle shape is shown below)

Step 2

Take the mouse pointer to the drawing area and drag the mouse by clicking the left mouse button. Then a circle shape will be drawn in the drawing area.
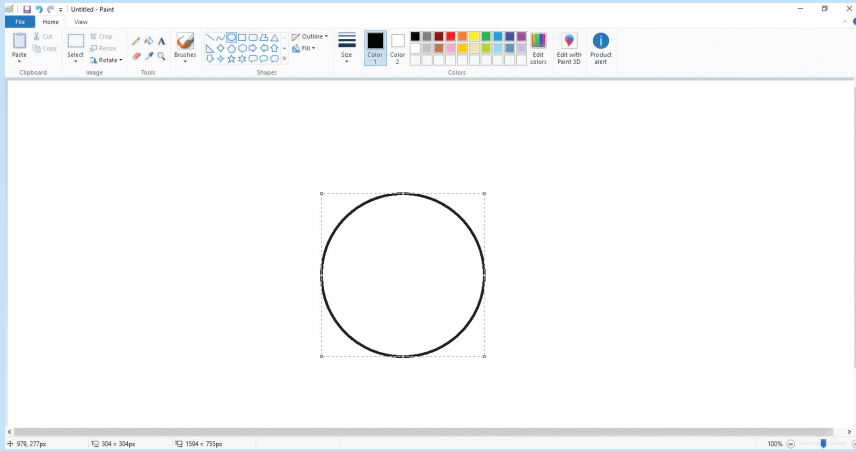
To select the pencil, click the left mouse button on the pencil symbol. When you take the mouse pointer to the drawing area, the arrow head will change to a pencil.

Now, to draw small lines around the circle, click the left mouse button and drag in necessary directions. In case of errors, click the left mouse button on the eraser icon, and erase casually as you use a real eraser.
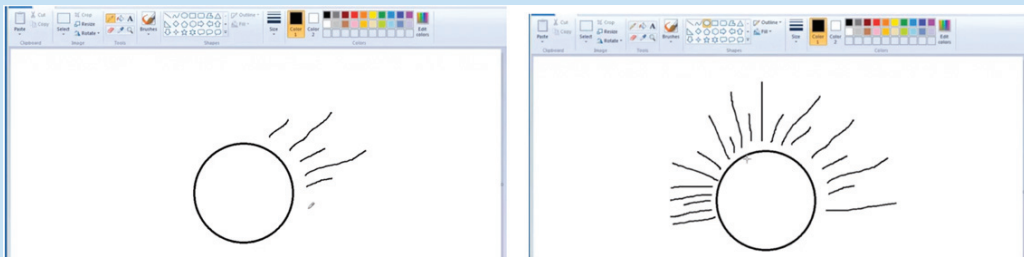
Step 4

Again draw two small circles for eyes and cheeks inside the circle using the mouse pointer by selecting the circle shape.
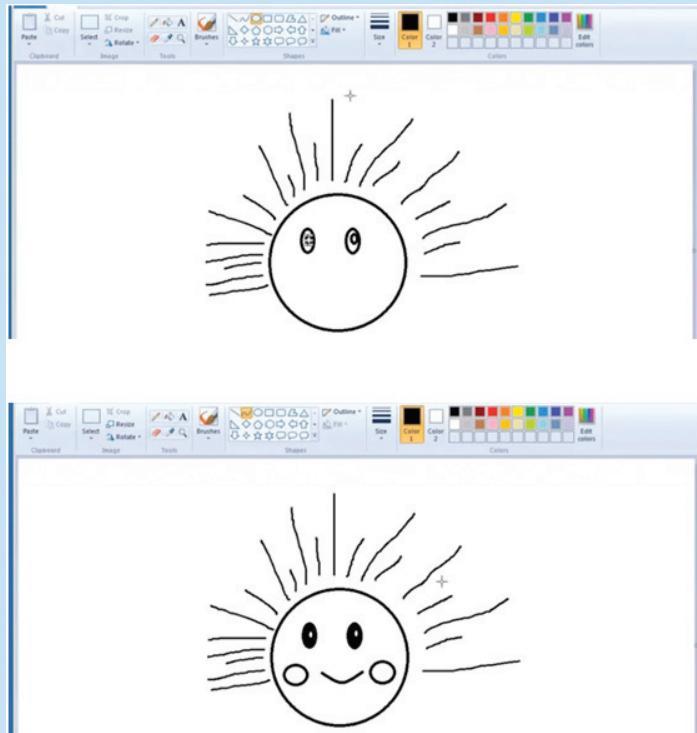
Again draw a suitable shape for the mouth by selecting the pencil icon.

Step 5

Select black colour in the paint basket to colour the eyes.
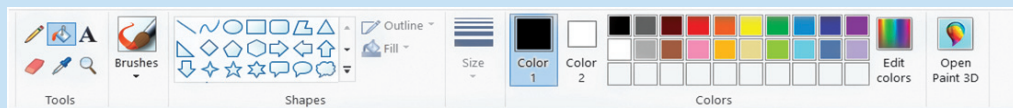
Then, take the mouse pointer on the eyes and click the left mouse button. Click left mouse button on red colour, take the mouse pointer on the face and click the left button.

Click the left mouse button on the white background by selecting the blue colour to draw the blue sky.
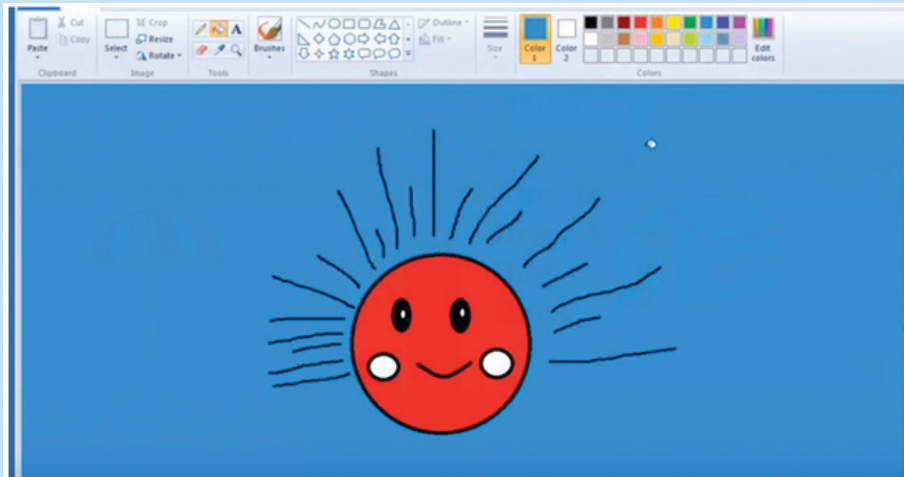
Follow the Following steps to store your picture in the computer.

Step 1

Go to the file menu and select Save.
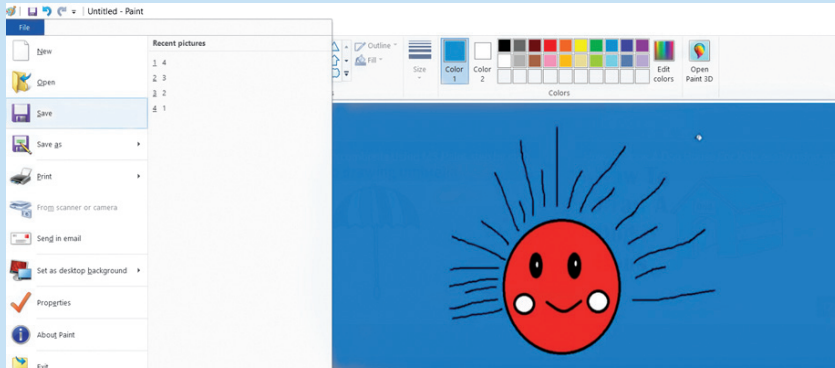
Select a suitable location for storage.
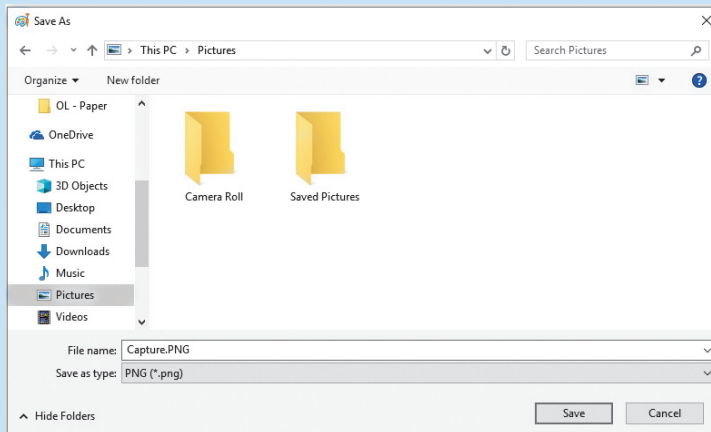
Choose an appropriate name and click 'save'.
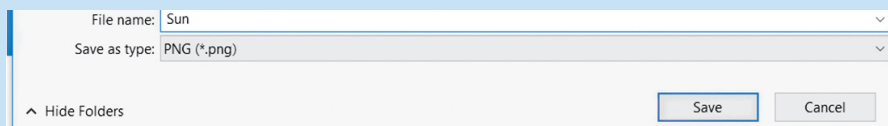
Let's use the Tux Paint software

We can create different coloured shapes and designs as shown above by using the Tux Paint software too.

A screen as shown below will appear when we use Tux Paint software. Beautiful creations like we did earlier can be made by using tools, brushes and colours in this software too.

Activity 4.6

01. Let's use the MS Word application
   a. Click ⊞
   b. Select All Programmes
   c. Click on MS Office
   d. Select MS Word

   Now you will see a screen as shown below.
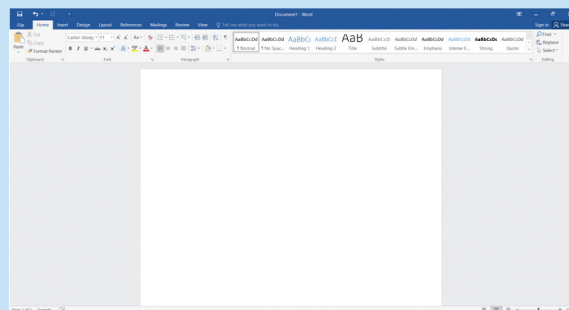
Identify the characters shown on the screen by pressing various keys on the keyboard. To type capital or simple letters, use CAPS LOCK key or type with **shift** key. Get your teacher's assistance for that.

Now let's type numbers (1 2 3 4 5 6 7 8 9 10) using that software.

Press number 1 key on the keyboard to type number 1.
Number 1
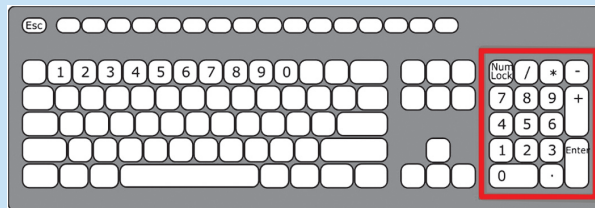
Use the space bar key to keep a distance between 1 and 2.

1 **(space bar)** 2
Now, 1 and 2 are typed as 1 2 Then type the remaining numbers.
Now you will see 1 2 3 4 5 6 7 8 9 10
Press the Enter key to go to the next line.
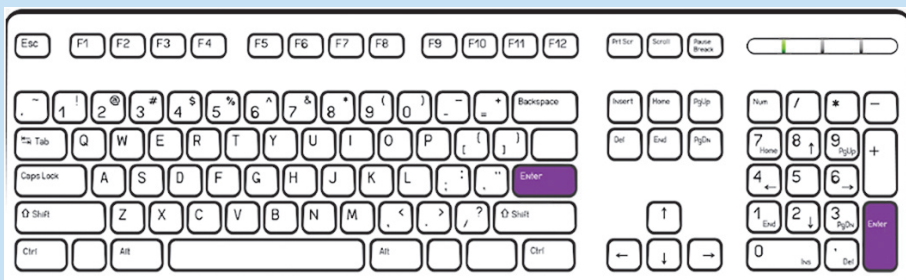
Use letters on the keyboard to type characters.

Letter keys

To type capital letters user the Caps Lock key

Caps Lock

Let's type the word 'computer'.

When you type after pressing the Caps Lock key you will get COMPUTER and if you press the same key again, you can type as 'computer'.

To type only one letter in capital, press the shift key with that letter key

Now on your screen, you will see as follows;
1 2 3 4 5 6 7 8 9 10
Computer

Now let's store the document you prepared in the computer. For that, follow the steps given below

Step 1

Go to the file menu and select save.
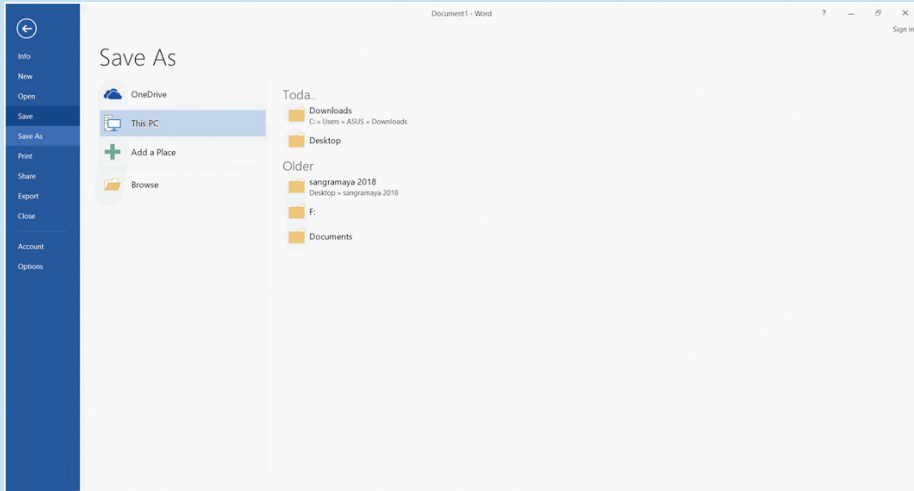
Step 3

Let's select a suitable location to store.
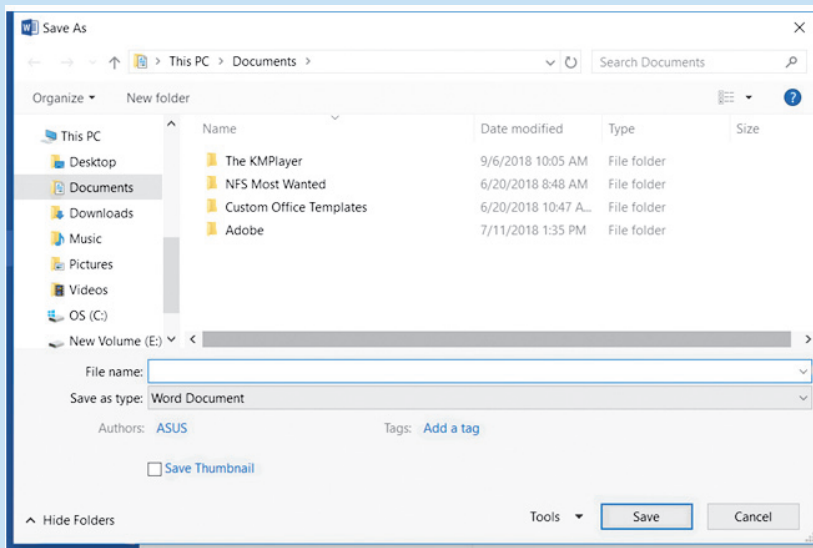
Let's save by giving a suitable name.
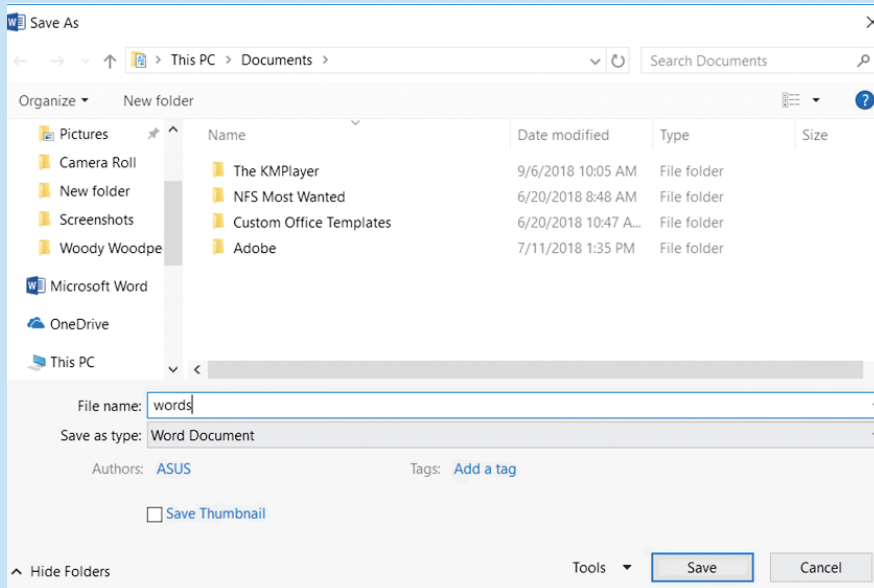
02. Let's use the LibreOffice Writer software.

1. Click
2. Select All Programmes.
3. Select LibreOffice Writer.

You will get the screen as shown below

We can type our documents using LibreOffice Writer software same as word processing software that we studied earlier. At the same time, type characters and numbers shown in the activity by using previous knowledge you got and store it in the computer.
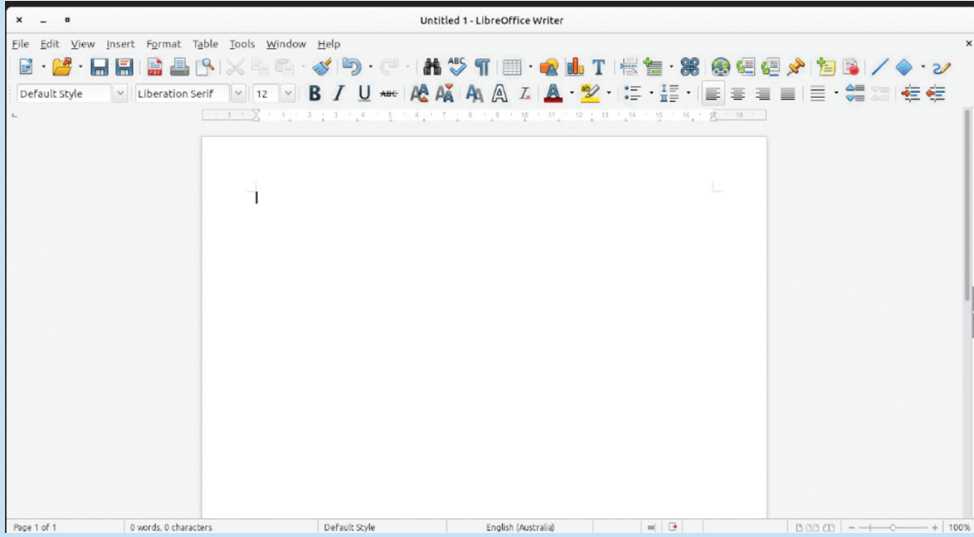
Activity 4.7

01. Explain what is meant by an audio – tape?

....

....

02. Write five examples for audio editing software

- ....

- ....

- ....

- ....

- ....

03. Explain what is meant by a video - tape

....

....

04. Write five example for video – editing software

- ....
- ....
- ....
- ....
- ....

Activity 4. 8

01. Write five ethics that should be followed when recording and editing audio and video tapes

- ....
- ....
- ....
- ....
- ....

02. Take the assistance of the teacher for this activity.

        Twinkle, twinkle, little star,
        How I wonder what you are.
        Up above the world so high,
        Like a diamond in the sky.

Propose a suitable software to record the singing of the above poem

....

Write the step clearly from beginning that software recording and saving it

....
....

If you have facilities in your school, sing that verse, record it and practice

03. With the assistance of the teacher, divide the class in to two groups. Prepare a short drama of three minutes to explain the advantages of using application software

If you can have facilities in school, record the two short dramas prepared by the two groups, give a suitable name and store in the computer

5 Algorithm and Flowcharts

Activity 5.1

01. What are the three main components of a 'problem'?

    A - ....

    B - ....

    C - ....

Explain them briefly.

    A - ....
        ....

    B - ....
        ....

    C - ....
        ....

02. Write the input, process and output to find the perimeter of a rectangle.

Input   - ....

Process - ....

Output   - ....

03. Given below are the steps related to making a cup of tea by a grade 6 student. select the steps related to input, process and output.

Write the relevant English alphabetical letter against input, process and output

A. Take water, tea leaves, sugar and milk powder
B. Boil water
C. Add tea leaves to boil water
D. Mix milk powder and sugar
E. Add plain tea to the above mixture
F. Prepare the cup of tea mixing all

Input   -   ....

Process   -   ....

Output   -   ....

Activity 5.2

01. What is algorithm? Explain it briefly.

....

....

....

....

02. Write suitable algorithm to find the perimeter of rectangle which is mentioned in question 2 of activity 5.1.

....

....

....

....

....

....

....

....

....

....

03. Write suitable algorithm for preparing tea which is mentioned in question 3 of activity 5.1

....

....

....

....

....

....

....

....

....

Activity 5.3

01. What is a flowchart? Explain it briefly.

....

....

....

....

....

....

....
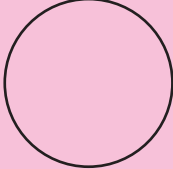
02. Fill the gaps in the table.

	Name	Symbol	Usage
01	Start/ end	◯	Showing Start and End of flowchart
02	Input/output	▱	....
03	....	▭	To show the steps of the procedure
04	....		To show making decision
05	Flow lines		To show the flow of instructions

Activity 5.4

01. Draw flowcharts for question 02 and 03 of activity 5.2

Part 02

Part 03
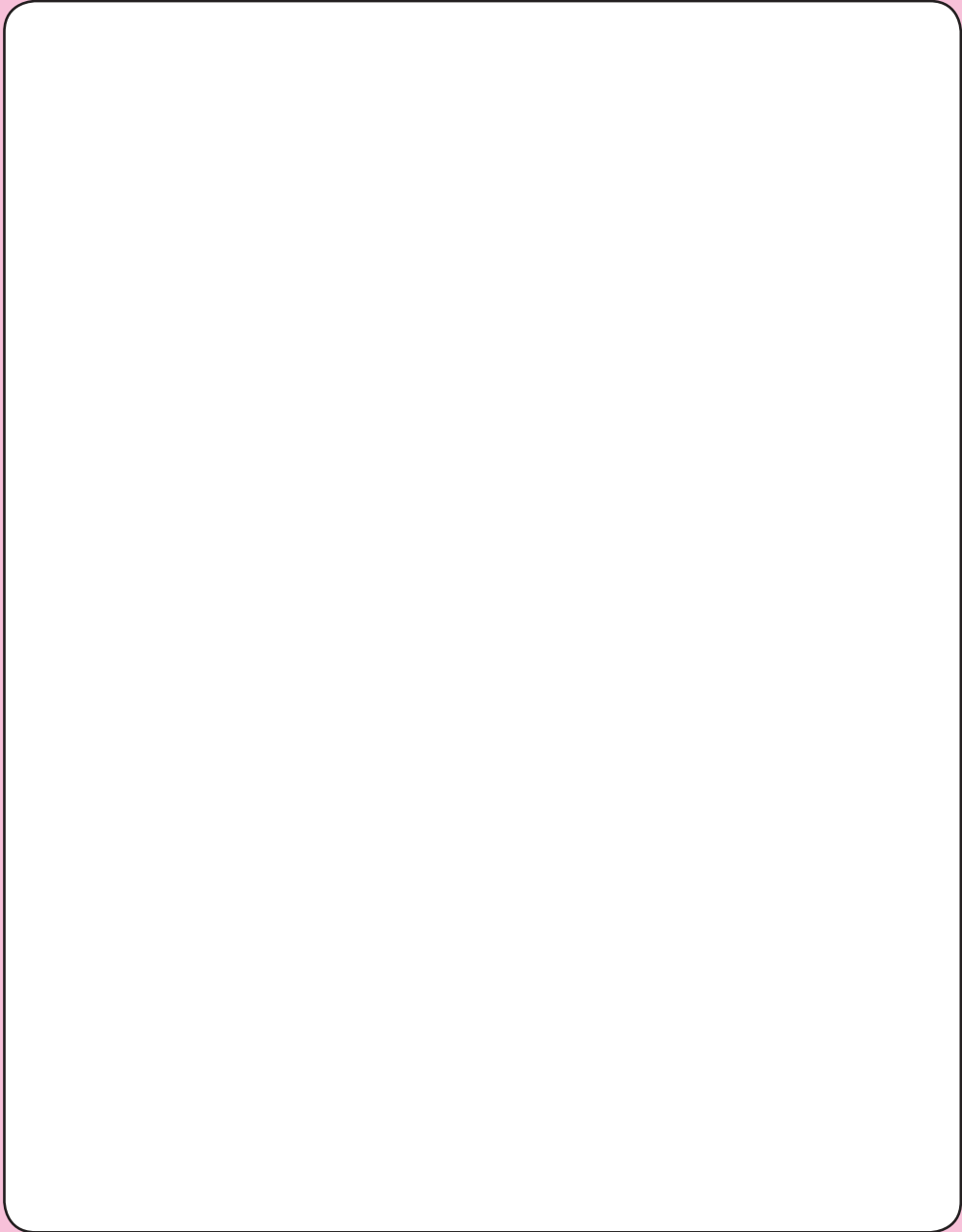
6 Using the Internet for collecting Information and Communication

Activity 6.1

01. Explain what is meant by Internet.

....

....

....

....

02. Explain what do you mean by web browser and search engine.

a. Web browser...

....

b. Search engine...

....

03. Write five popular web browsers.

- ....
- ....
- ....
- ....
- ....

04. If you have internet facility in the school computer lab, open Google Search engine and type 'education websites' and look for search result. Write first five results in the blank.

- ....
- ....
- ....
- ....
- ....

05. Imagine that you need to look up information about mammals living in your surroundings for activities in the science subject. Prepare a list of keywords you use for that.

....
....
....
....
....
....
....
....
....
....
....
....
....
....

01. Prepare a list of services available on internet. (Get the assistance of your teacher.)

....

....

....

....

....

....

02. Divide the students into three groups with the assistance of your teacher. Select three services from the above list and distribute them among three groups. Have a group discussion on the advantages of services, threats and ways of safeguarding. Finally present them briefly.

Include findings in the following grid after the presentation. (consider the correction of the teacher as well)

Service	Instances of threats	Ways of safeguarding
i)	....	....
ii)	....	....
iii)	....	....