

Digital Skills

Students Learning Outcomes

After completing this unit students will be able to:

- Define the term operating system
 - Demonstrating the startup procedure of any available operating system
- Differentiate between the types of operating system (windows, MAC, Linux, and Android)
- Analyze the functions of operating systems
 - Identifying the desktop icon/tools (desktop, start button, start menu, taskbar, notification area, desktop icon) and explaining their functions.
- List the function of files, folders, shortcuts and a drive (with Example)
 - Demonstrating how to create, name, rename and delete a new file, folder and create a shortcut.
 - Demonstrating how to cut, copy, and paste a file/folder to another folder/location, drag and drop a file/folder to another folder/location.

3.1 Software

Computers are electronic devices that are built out of hardware, physical devices which are used to enter, process, store and receive information. In order to manage and control these devices software is used.

Software is defined as a set of instructions, data and programs that are used to operate computer and perform a specific task.

3.1.1 Types of Software

There are two main types of software:

- **System software:** these refer to the set of useful programs that can be found on every computer. One of the most important system software is Operating system. System Software is a type of program that is designed to control and manage the computer's internal and external resources. If we think of computer as a layered model, the system software is considered as a primary interface between the hardware and user applications.
- **Application Software:** these refer to programs written to carry out a certain task of the user such as writing text (Microsoft Word), making spreadsheets (Microsoft Excel), editing image (Microsoft Paint) and browsing internet (Internet Explorer). Some application software is especially designed to meet the targeted demands of managing systems at school and medical centers.

The core purpose of the system software:

- Simplify the use and the interaction of the hardware and software.
- Provide an aid in controlling the hardware and software of the computer.
- Optimizes the effectiveness and performance of the computer.

Types of Software

There are four basic types of system software:

- Operating system
- Device Driver
- Utility Program
- Language Translator

3.2 Operating System

The operating system is a system software that controls and manages all operations of the computer. Computers do not function without an operating system subsequently. It is the job of an operating system to make sure that the necessary operations of the computer hardware and software are working properly.

Functions of Operating system

Some of the main functions of an operating system are to do the following:

Booting Process:

Completes its own loading into the main storage once the computer starts.

Security Management:

Manages the security of the user accounts.

Application Management:

Enables the user to install and use the application programs on the computer.

Memory Management:

Organizes the use of memory and processing time between user and programs.

File Management:

Enables the user to save, load, delete rename, print and copy files.

Device Management:

Controls the use of peripherals such as disk drivers and printers.

Coordination between Software and User:

Provide an interface between the user and the computer software and hardware.

Some of the most common operating systems are Android, MacOS, MacDOS, Chrome OS, Blackberry, Solaris, Linux and Microsoft Windows (like Windows 10, 8, 7, Vista, XP etc.)

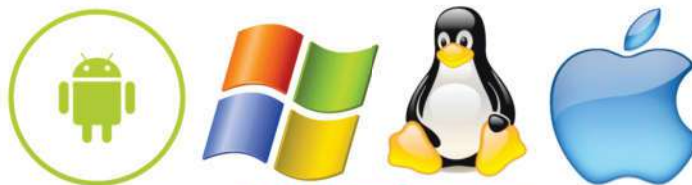


Fig 3.1 Operating systems

Types of Operating Systems

Windows

Windows is a graphical operating system developed by Microsoft. This operating system allows you to use the computer. It is for personal computers, work station and embedded systems.



Mac

Mac OS is the computer operating software used by Apple desktop and laptops. Mac OS was introduced in 1984 to run Macintosh Personal computers.

Linux

Linux is a Unix-like, community-developed and open-source operating system (OS) for computers, servers, mainframes, mobile devices and embedded devices. It is supported on almost every major computer platform, including x86, ARM and SPARC, making it one of the most widely supported operating systems.



Android

Android is a mobile operating system which is categorized as an open-source software. It is developed by google that creates and shares its own version of it and is based upon the Linux Kernel and GNU software. Its target system type is tablet computers and smart phones.

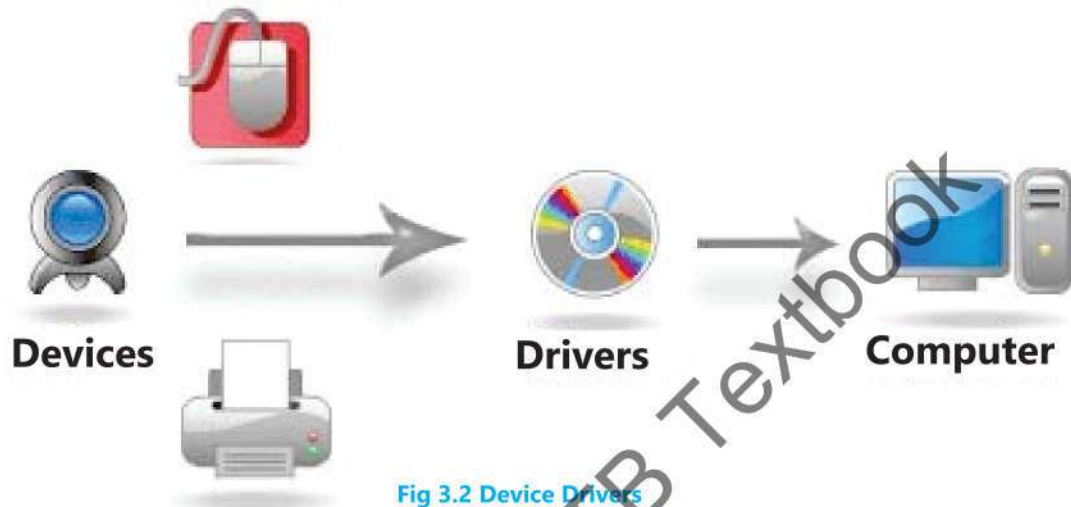
Do you Know?

Differentiation of types of operating system.

Name of OS	Latest stable version	Latest release Date
Android	Android 12L	March 2022
Linux	5.19	July 2022
Mac	IOS 15.6.1	August 2022
Windows	Windows 11	August 2022

3.3 Device Drivers

Device Drivers enable the computer hardware components to communicate with the computer. e.g. printer driver and sound drivers.



3.4 Utility Programs

It is also known as Service program. A utility program is an application that performs management tasks related to the functions of the computer. There are several types of utility software which are as follow:

- Antivirus
- File management tools
- Compression tools
- Disk cleanup tool
- Disk Management tools.
- Backup utility



Fig 3.3 Utility Programs

3.5 Language Translator

These are the software that are used to translate computer program from human readable language to machine understandable code language.

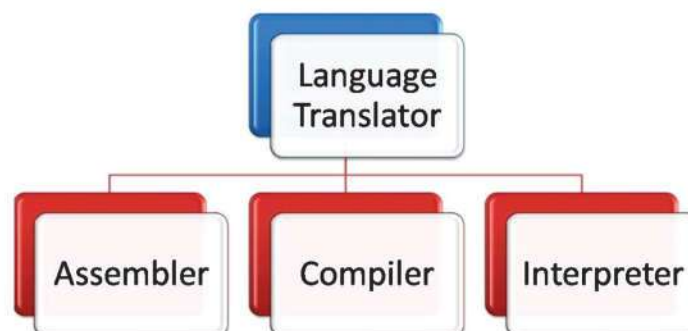


Fig 3.4 Language translators

3.6 Stepping into Windows

3.6.1 Startup procedure of Windows

1. Press power button available on system unit, login screen will appear
2. Click the user name and write password in password field.
3. Press Enter button or click on login button

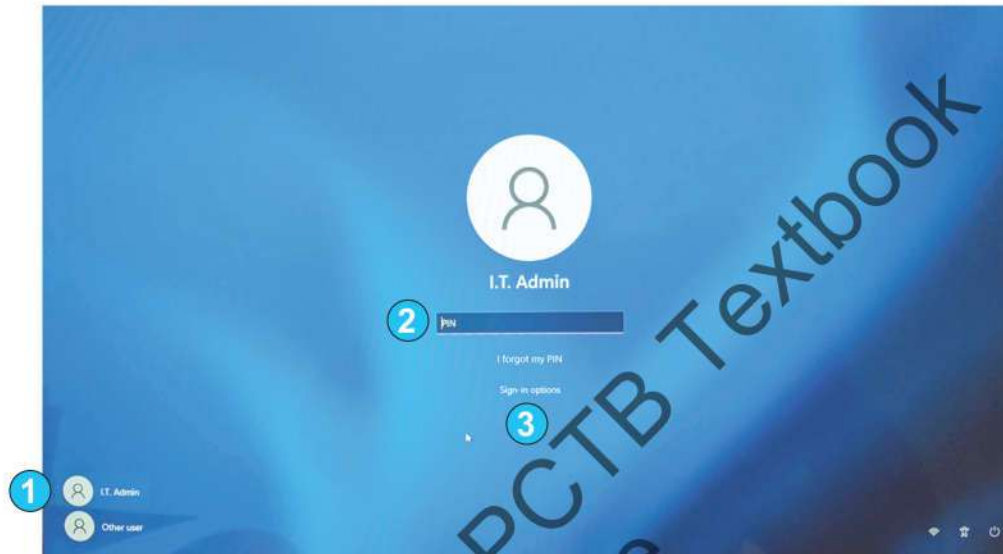


Fig 3.5 Startup Procedure

3.6.2 Exploring Microsoft Windows

After starting the computer, the desktop is the first and the main screen that the user will see. The desktop layout is shown in the illustration below:

The desktop consists of the following parts:

- Icons: These are small pictures that can open a file, folder or program.
- Taskbar: It is a long bar found usually at the bottom of the desktop
- Background: This is a large area of the desktop where all the programs are opened

File Explorer is a file manager application that allows to access files and folders on the computer.

Taskbar Programs provide quick access to the opened programs



We can also change the background picture of our own choice. The background is often called a wallpaper.

We can change the background by following the steps below:

- Right click anywhere on the desktop: this will open a menu.
- Choose "personalize" from the menu. We can find many important things on the screen.
- Click on desktop background, select the image for background.

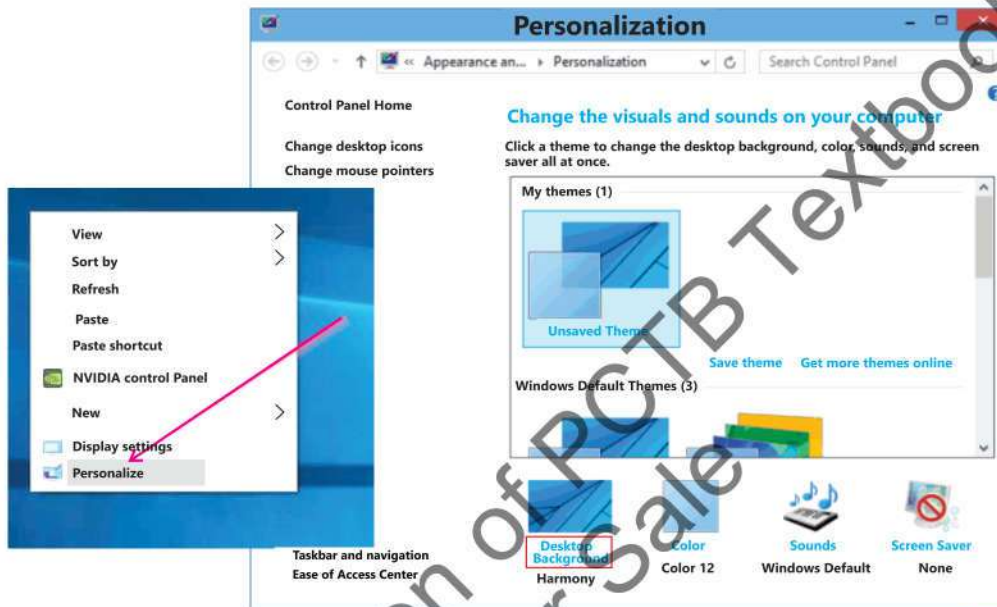


Fig 3.6 Desktop Background

Start button

When we click on the start button, the start screen will open. From the start screen, we can open programs found on our computer.



Fig 3.7 Taskbar programs

Program buttons

The area on the taskbar with several program button has icons of the programs that we often use when we are currently running the program. We can simply open the program by clicking on its icons button on the taskbar.

Notification area

The notification area is found on the right side of the taskbar. It shows the date and time as well as the icons that show information about some programs like battery, WIFI, volume, Calendar and action center.

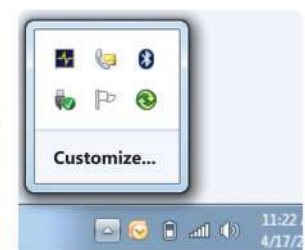


Fig 3.8 Notification Area

Show desktop button

The show desktop button is found on the far-right of the taskbar. If we click the Show Desktop button, all open windows will hide and we can then see the desktop.

3.6.3 Snipping tool

Snipping tools are used to take the screen shots of a specified area on screen. To open this built-in snipping tool on Window 10 and 11, press the Windows + shift + S

For the keyboard shortcut.

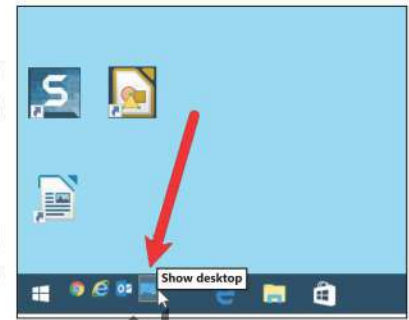


Fig 3.9 Desktop Buttons

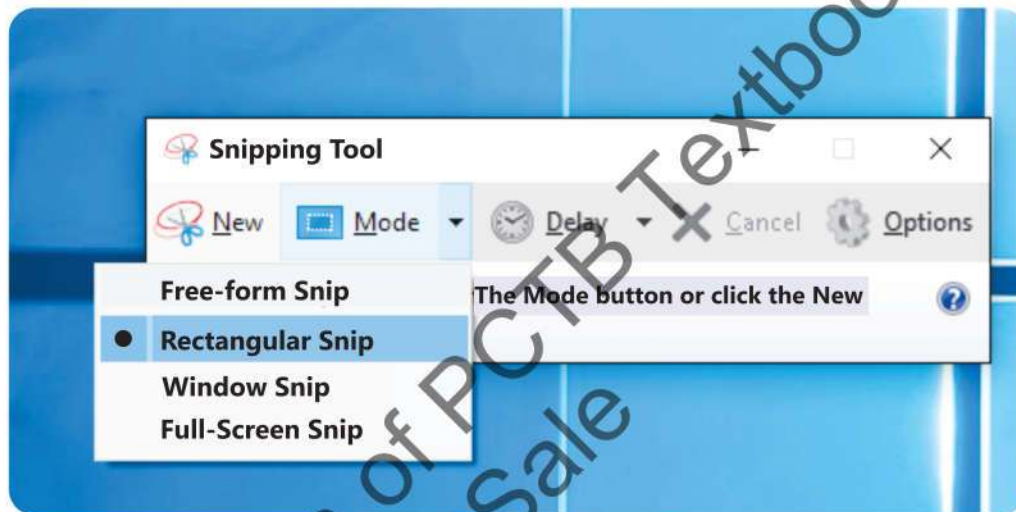


Fig 3.10 Sniping Tool

3.6.4 Microsoft Windows Store

Microsoft Windows Store is a digital distribution platform that has nearly everything for your device. It provides different types of application free of cost or on payment.



Fig 3.11 Microsoft Windows Store

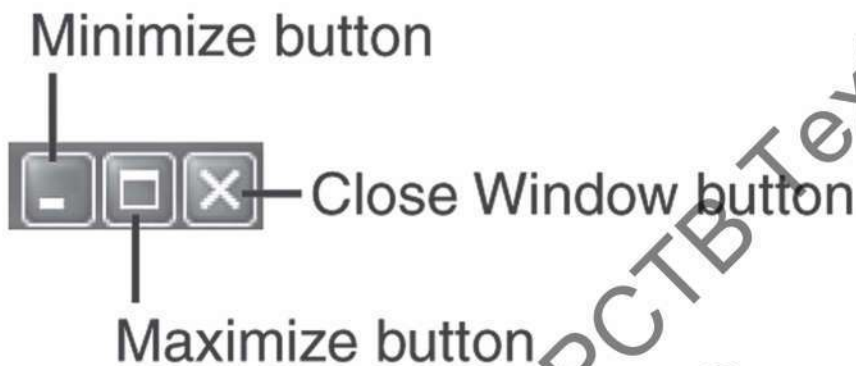
3.6.5 Working with Active Window

Active Window is said to be the currently used program that is opened in front of all the windows on the desktop. The important commands on the top right of the title bar on the window are as follows:

Close: This button allows to close the active window.

Maximize: This allows to enlarge/ fill the entire desktop screen or restore.

Minimize: This button hides the active window from view. Minimizing the window will create a button for it on the taskbar.



Tips:

You can search for a file in the start search by typing * in search box with the file extension to the file if you have forgotten the name of the file.

Fig 3.12 Active windows on Desktop

3.7 Managing Files and Folders

3.7.1 File

The core function of the computer is to sort and organize the information and data. A file can be defined as a common storage unit on the computer. This stored information can be a text, photo, audio, video, document or a presentation.



Fig 3.13 File



Fig 3.14 Folder

3.7.2 Folder

A folder (directory) is a collection of files in order to organize them on a storage device. This is a virtual place for documents, applications and data. A folder can also have other folders in it as its sub folders. These folders can be moved, retrieved and manipulated as one entity.

3.7.3 Shortcut

Shortcut is a link to the file created to easily access it. Shortcuts can be created on the desktop and in other folders. Clicking on the shortcuts takes the user to the original file.



Fig 3.15 Folder shortcut

3.7.4 Creating a new file

We can create a new file anywhere in the computer. This needs to be done in simple steps that are as follow:

Step 1: Navigate to the location or the folder in the computer where you plan to create your file. This can be on the desktop or any file in the folders.

Step 2:

Right click on any empty space in that folder.

Step 3:

Upon Right clicking a menu will open in place. Select "New" from the popped-up menu,

Step 4:

Select the type of file you want to created in that place.

Step 5:

We can name the new create file by simply clicking on the file.

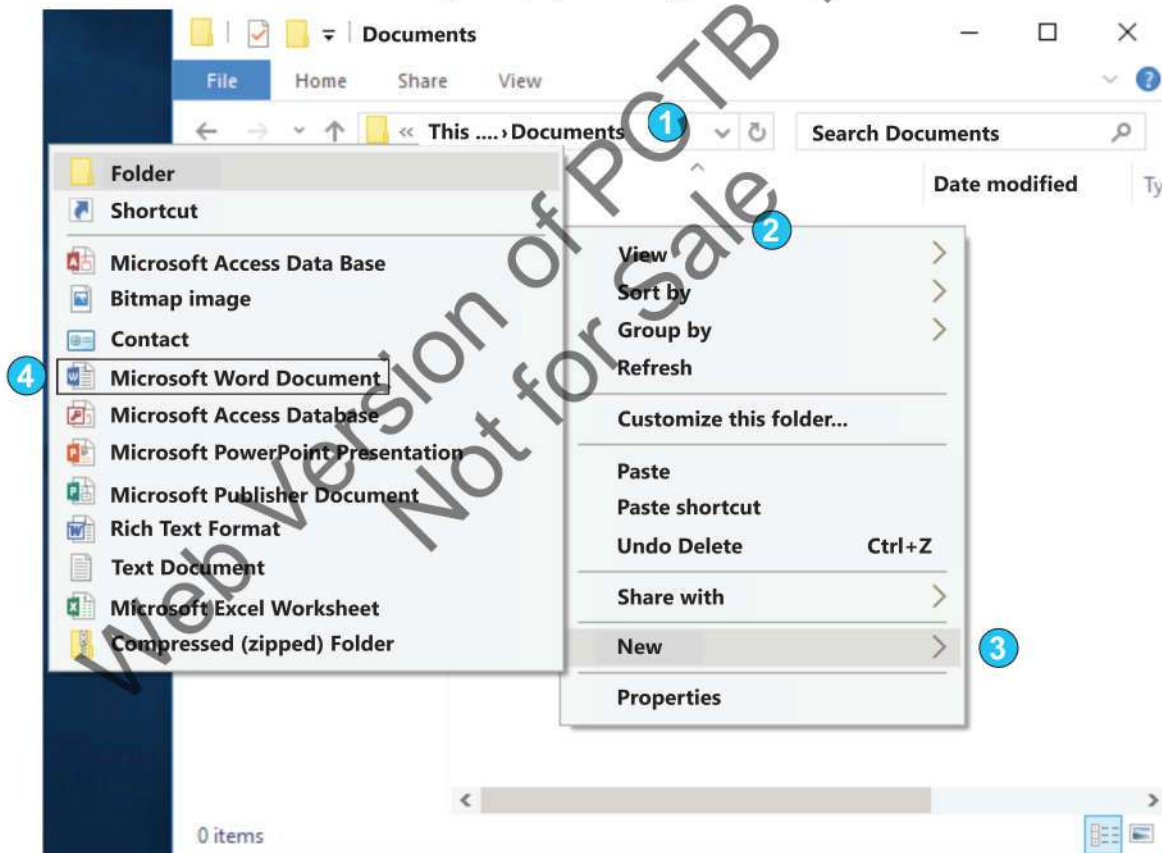


Fig 3.16 Creating New file

Step 6:

Once the file is created, you can double click on the icon to open it.

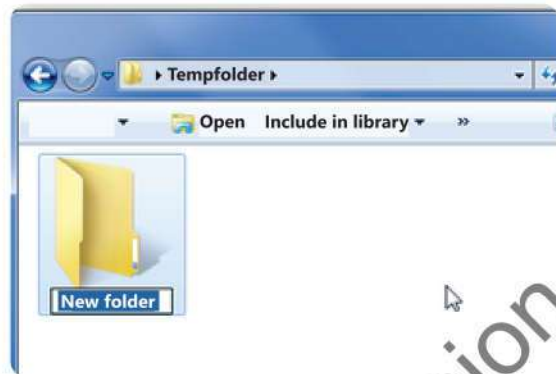
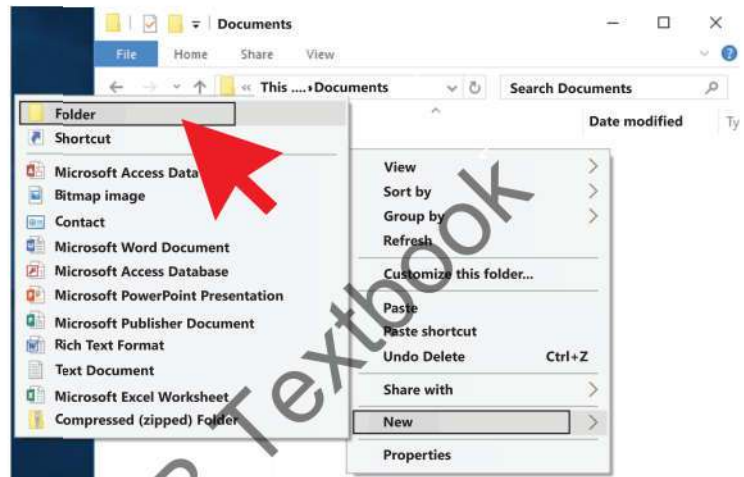


3.7.5 Creating new folder

To create a folder is almost the same as creating a file. The following are the simple steps to create a new folder:

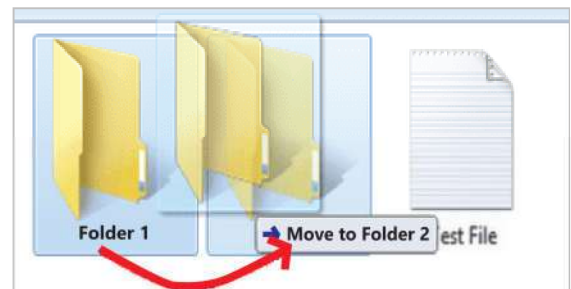
Step 1:

In the location where you want to create a folder, select the option of the folder to create the folder.



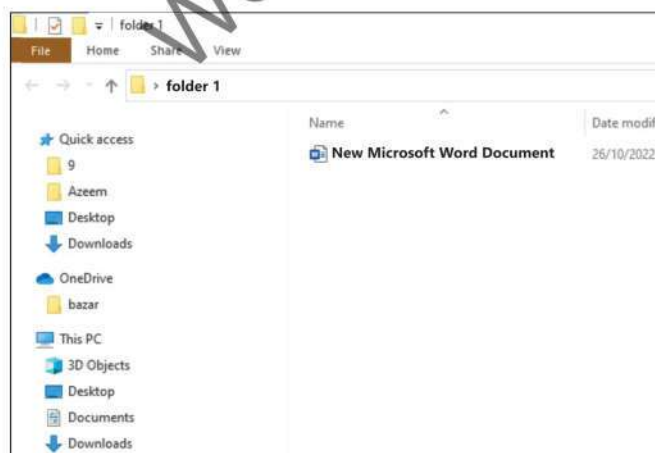
Step 2:

After a new folder appears, click on it to name.



Step 3:

You can drag the file or folder into the folder by clicking the file by holding it with the help of the mouse.



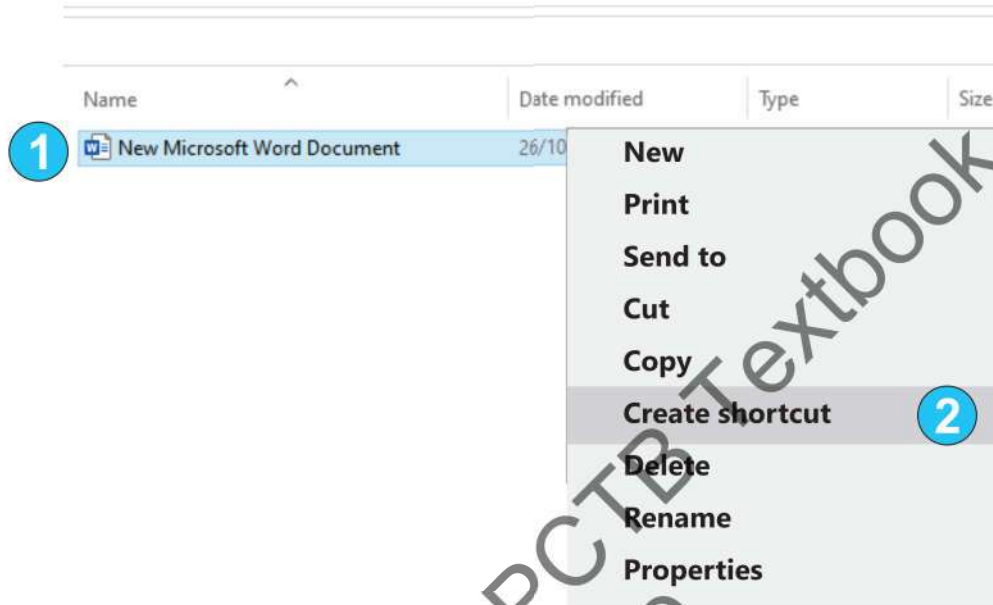
Step 4:

On double clicking the folder, you can view the file that are contained in that folder.

3.7.6 Create a shortcut

The following are the steps to create a shortcut of a file or a folder to the desktop:

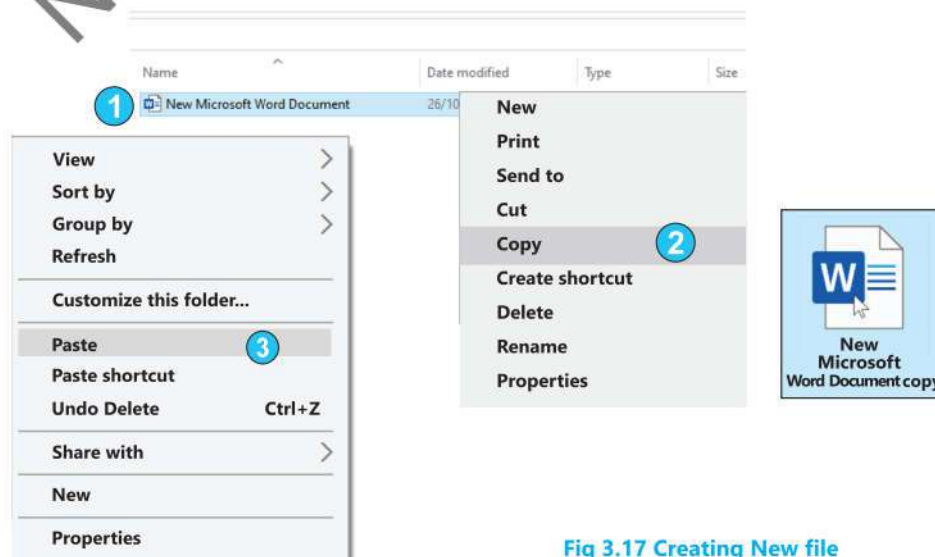
1. Right click on the folder or a file, a menu will pop up in place..
2. Select option "create shortcut" from the menu that extends.



3.7.7 Cut, Copy and Paste a file/ folder/ shortcut

There are three basic steps used to cut, copy and paste a file/ folder/ a shortcut.

1. Select the file/ folder that needs to be cut/ copy.
2. Right Click on the file / folder and select cut/ copy option from the menu that appears.
3. Right click on the location that you desire to paste the file/ folder and select 'paste' from the menu that appears



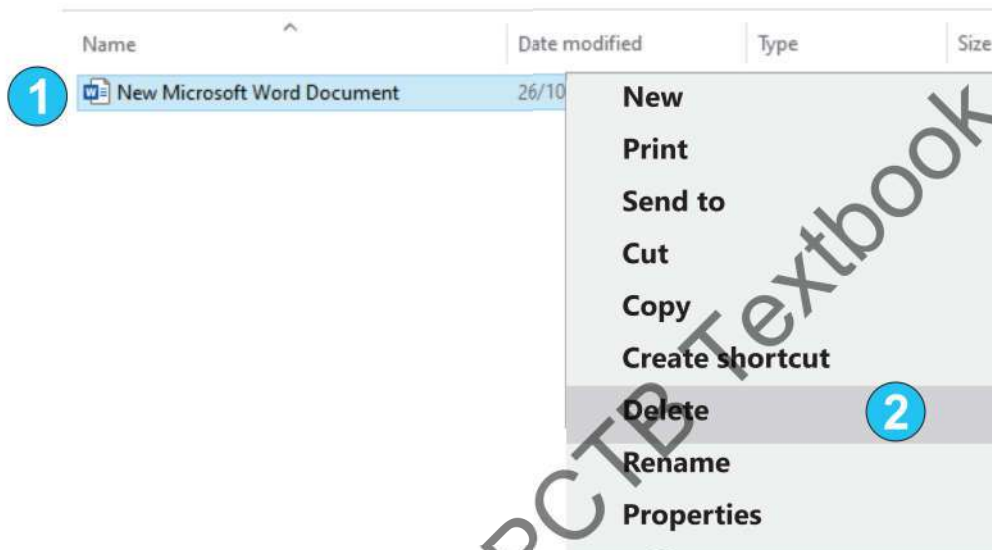
If you do not want a specific file or folder, you can delete it or remove it from your computer.

Fig 3.17 Creating New file

To Delete a file or folder:

1. Select the file and right click on file/folder.
2. In the appearing option, select the delete option.

Deleted file or folder is now in recycle bin.



3.7.9 Restore a deleted file/ folder/ a shortcut

To restore means to bring back something or to return to the former situation. Restoring a file subsequently means to bring back a file to its original place from the recycle bin where it was kept after deleting. The following are the basic steps to restore a file/ folder/a shortcut.

- 1- Double click the recycle bin icon on the desktop to open it.
- 2- Right click on the file that needs to be restored. Once the menu opens, click on the "restore" button option to put the file in its original location.

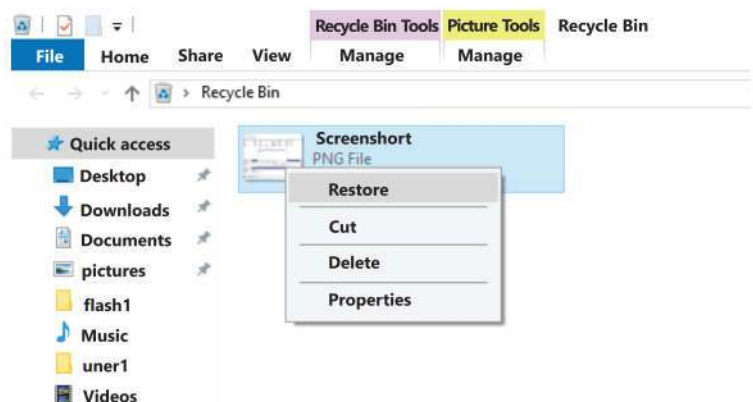
Alternatively, using the keyboard shortcut of Alt + del will delete the file completely and altogether from the computer. This means that once you use this shortcut the file will not be backed up in the recycle bin after you delete it rather it will be deleted directly.

3.8 Application Software

Software that is developed to aid the user to perform a specific task is known as application software. The different kinds of application software are: from your computer.

1. Entertainment Software:

This software is solely designed for the



sake of entertainment. These can include examples of video games, audio, music, animations and cartoons.

2. Productivity Software:

These are used to produce information in form of a text document. Spreadsheets, presentations, digital art and digital painting, etc.

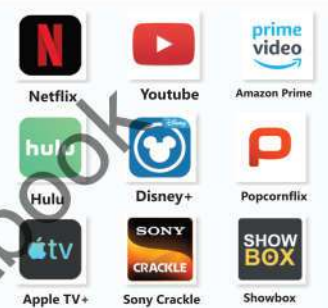


Fig 3.18 Entertainment Software

3. Education and Reference Software:

These are primarily used to enhance and assist the learning skills. We use these software to seek assistance when we are making researches and developing on the educational grounds. Encyclopedia, dictionaries, educational games, Google maps, and tutorials are the perfect examples to such kind of software.



Fig 3.19 Productivity Software

3.9 Working with Paint 3D

Paint 3D is a raster graphics and a 3D creative application that is a refresh of Microsoft Paint. This application has numerous 2D and 3D tools that can work in collaboration to create fun and professional projects. This is an update of Microsoft paint that was initially released in 2017.

Some important features of Paint 3D are given below:



Fig 3.20 Educational Software

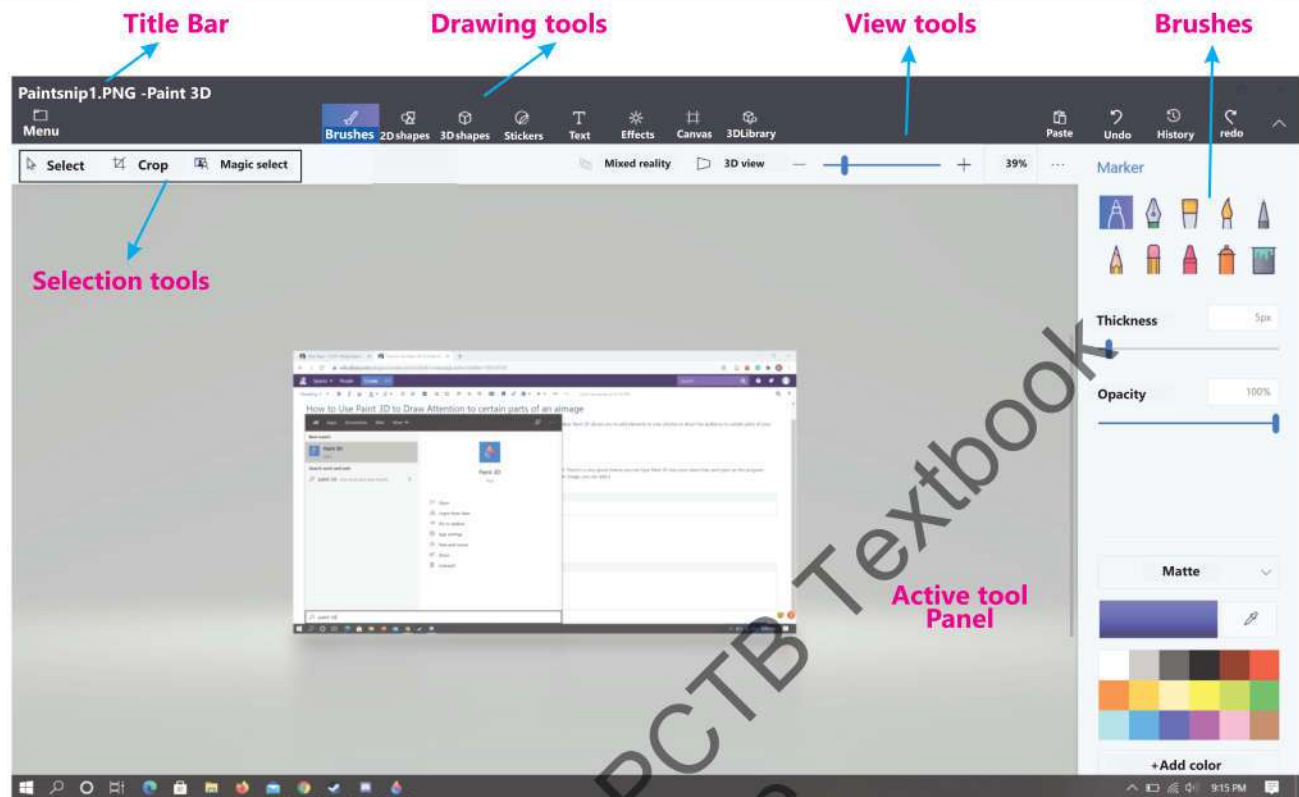


Fig 3.21 3D Paint

22

3.9.1 Brushes

- Hover the mouse over the Brush tool to display the name of the brush.
 - Select the brush by click on the option of your choice and start drawing lines by clicking on the left mouse button and dragging it from the starting point.
 - There are several brush sizes, colors and shapes to select from.
- From the Menu Select, you can save the project by clicking on the save option. Enter the name of the file and click save in the dialog box that appears.

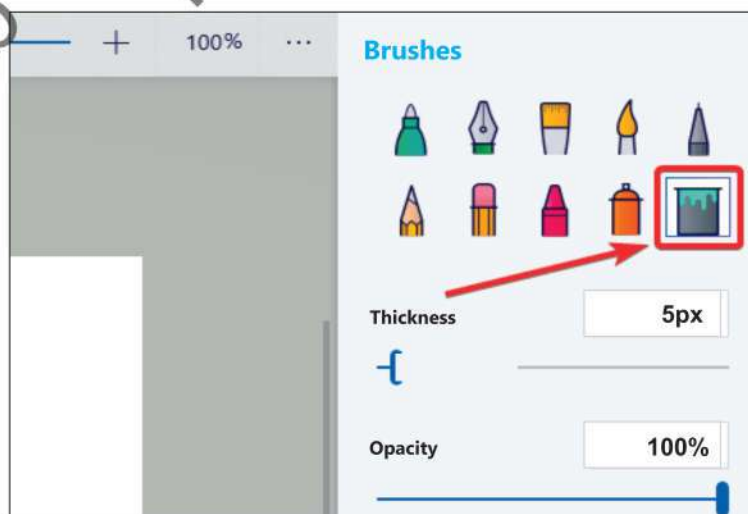


Fig 3.22 Brushes



Fig 3.23 3D shapes

3.9.2 Creating 2D shapes

Following are the steps to create 2D shapes:

1. Select 2D shapes option from Toolbar.
2. After selecting the shape of your choice, drag it out into the drawing area.
3. Modify the shape by using the handles by the side of the shape to alter its size and shape.

3.9.3 Making 3D Image

1. Design a 2D image
2. Select the 3D mode to make the image 3 dimensional.
3. Rotate the object and size by using the handles on the side

3.9.4 Clone Stamp tool

This tool is used to copy the images:

1. Drag the required shape in the drawing area.
2. Select the Stamp tool, the new shape appears.
3. After selecting different options, repeat this process for required number of shapes.

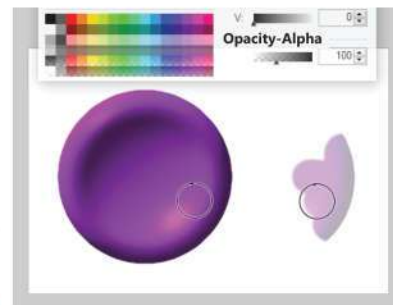


Fig 3.24 Clone stamp tool

3.9.5 Drawing straight lines and drawing Multi point Curves

1. Select the 2D Shapes tool.
2. Select the straight-line tool.
3. Drag the mouse from the starting point to stretch a line of desired length in any direction.

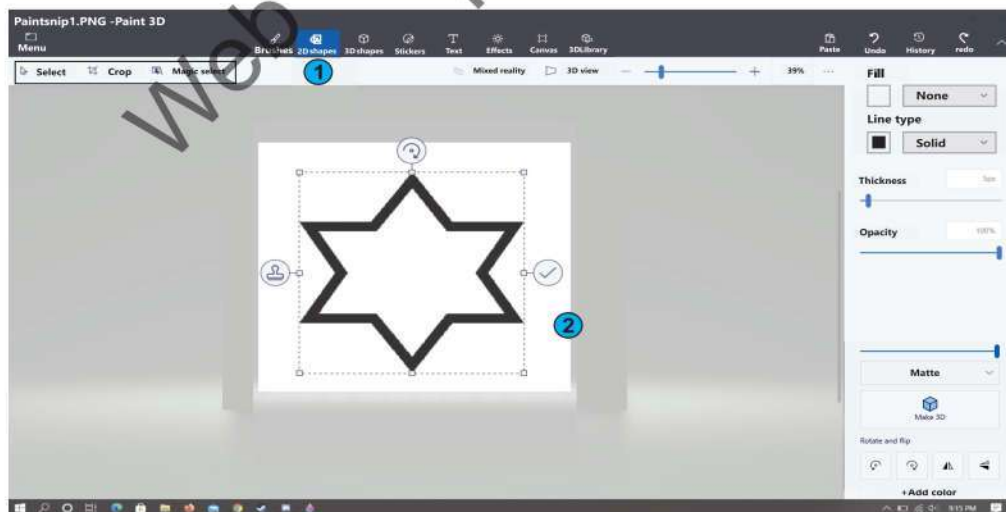


Fig 3.25 Line tool



4. Control the lines in any direction by selecting the corners or the midpoints.

3.10 Working with 3D models

3D (three dimensional) model is a technique in computer graphics that is vastly used to create real world objects in three axes to represent their height, length and width. These models give an illusion of moving in and out of the plane of canvas.

3.10.1 3D shapes

3D shapes in Geometry are defined as shapes with three dimensions such as Length, width and height.

3.10.2 Create 3D objects

Following are the steps to create a 3D shape:

1. Select 3D Shapes tool from Toolbar.
2. Select a cube object.
3. Drag the cube out and rotate it around each axis.
4. You can change the color of the cube and flip it horizontally or vertically.

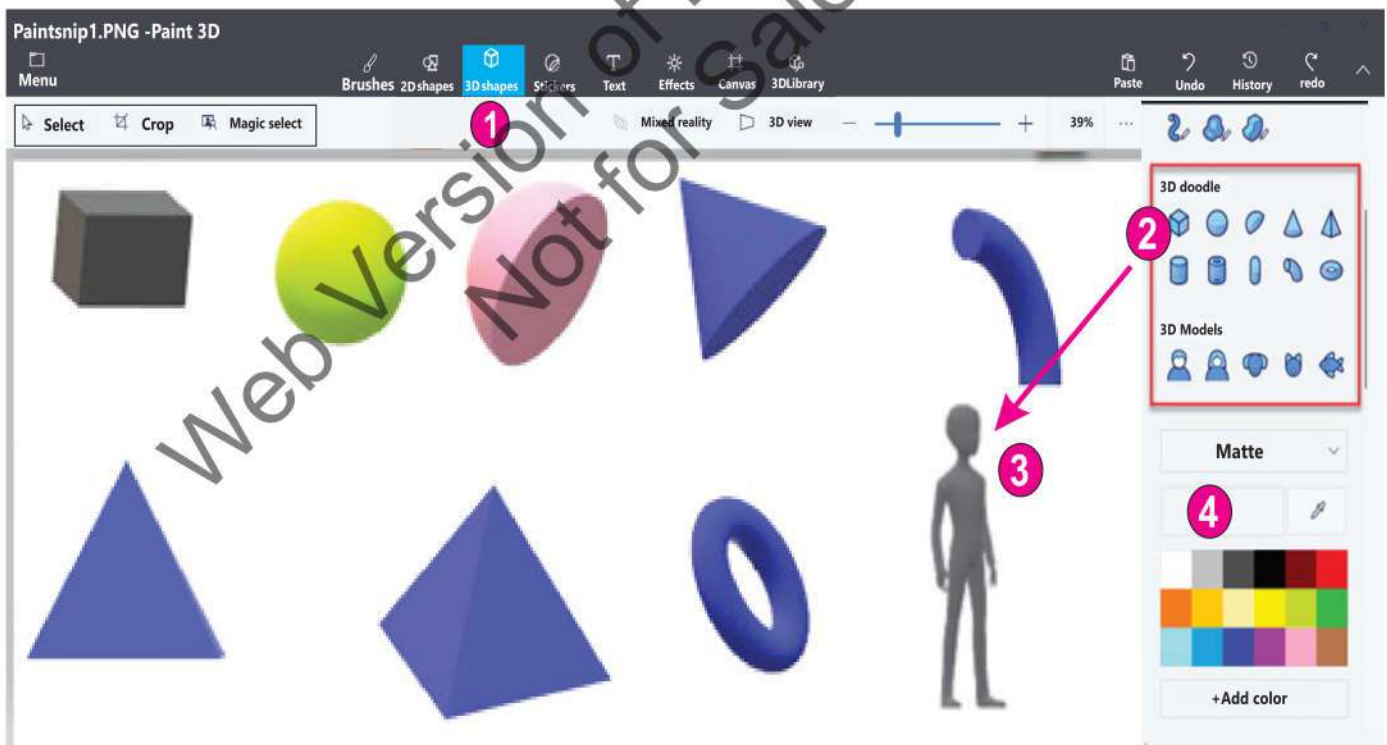


Fig 3.26 3D object

Tips:

You can add more colors of your choice to the color palette by editing colors

3.10.3 Create 3D doodles

Doodle is defined as an aimless or random drawing or scribbling. It is possible to practice doodling on 3D paint application. The following are the steps to create 3D doodles:

1. Select the 3D shapes tool.
2. Select the 3D doodle option.
3. Select the colour.
4. Drag out from the options while clicking on the mouse to create a free hand shape and curve.

You can modify the shape by rotating it around its x axis.

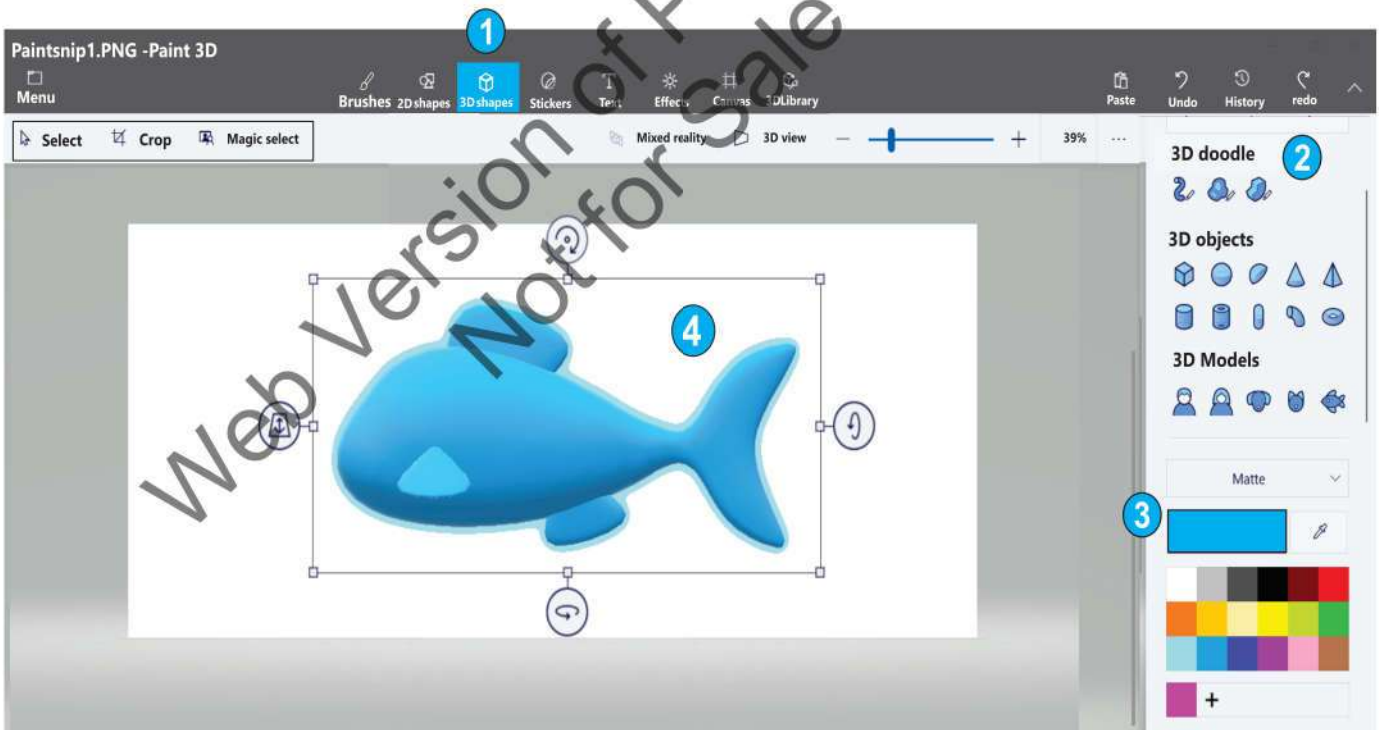


Fig 3.27 3D doodle

3.10.4 Create 3D text

The text tool in 3D Paint provides with several option of writing in 2D, 3D and changing colors, sizes, font, style and alignment.

This can be done by following the below mentioned easy steps:

1. Select the text tool, and then select the style options.
2. Select the font and the style options.
3. Click outside the text box.
4. Edit, rotate and flip the text as required.

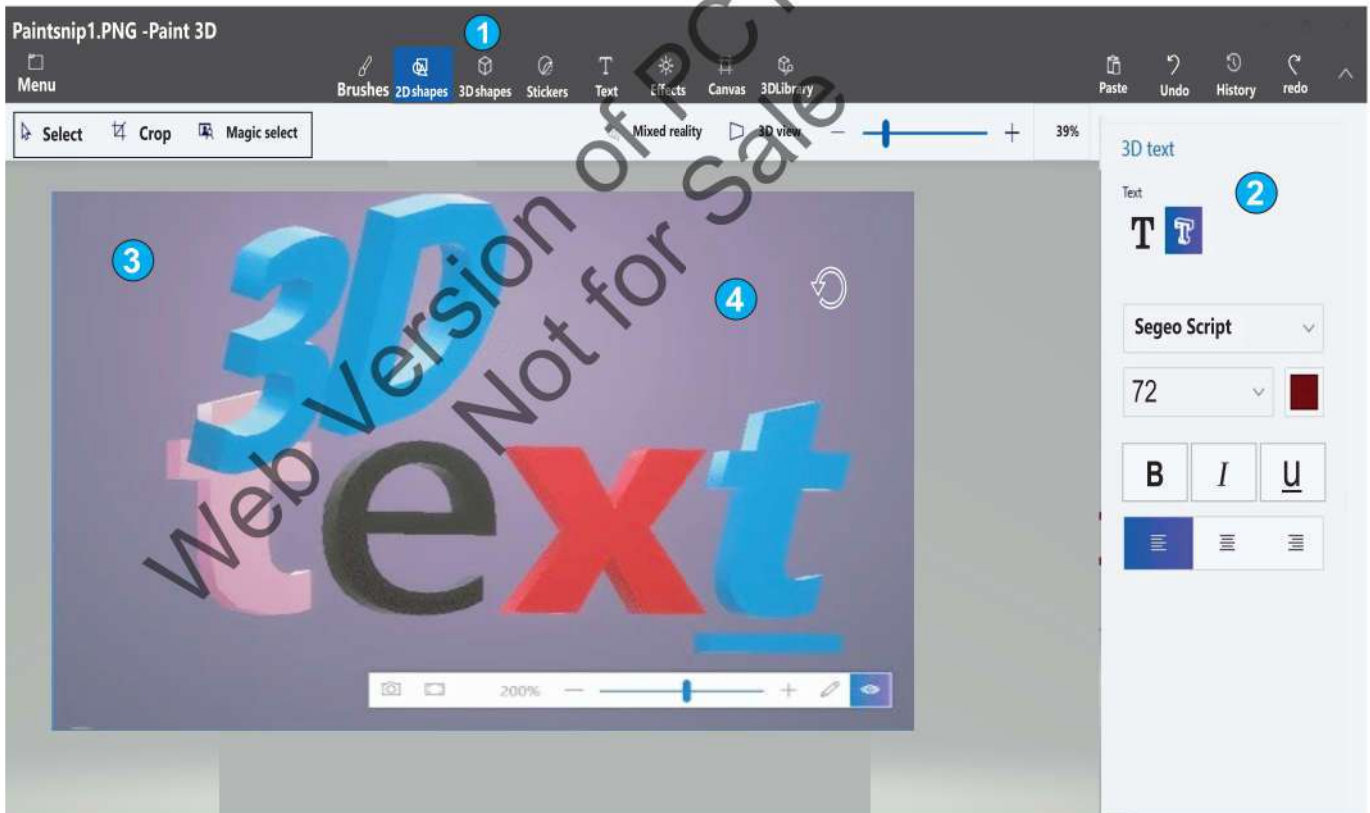


Fig 3.28 3D Text

3.10.6 Use image stickers

Following are the steps to create image stickers:

1. Select 3D shapes tool from Toolbar.
2. Select the 3D mode and Drag out an object.
3. Select stickers tool
4. Add the eye and mouth stickers to complete the animated look.
5. Confirm the stickers by rotating an object.

Tips:

- Edit the color of an object by option Add color.
 - Select brushes tool to paint different parts of an object.
- The history tool has history slider that show the step while creating a Point 3D

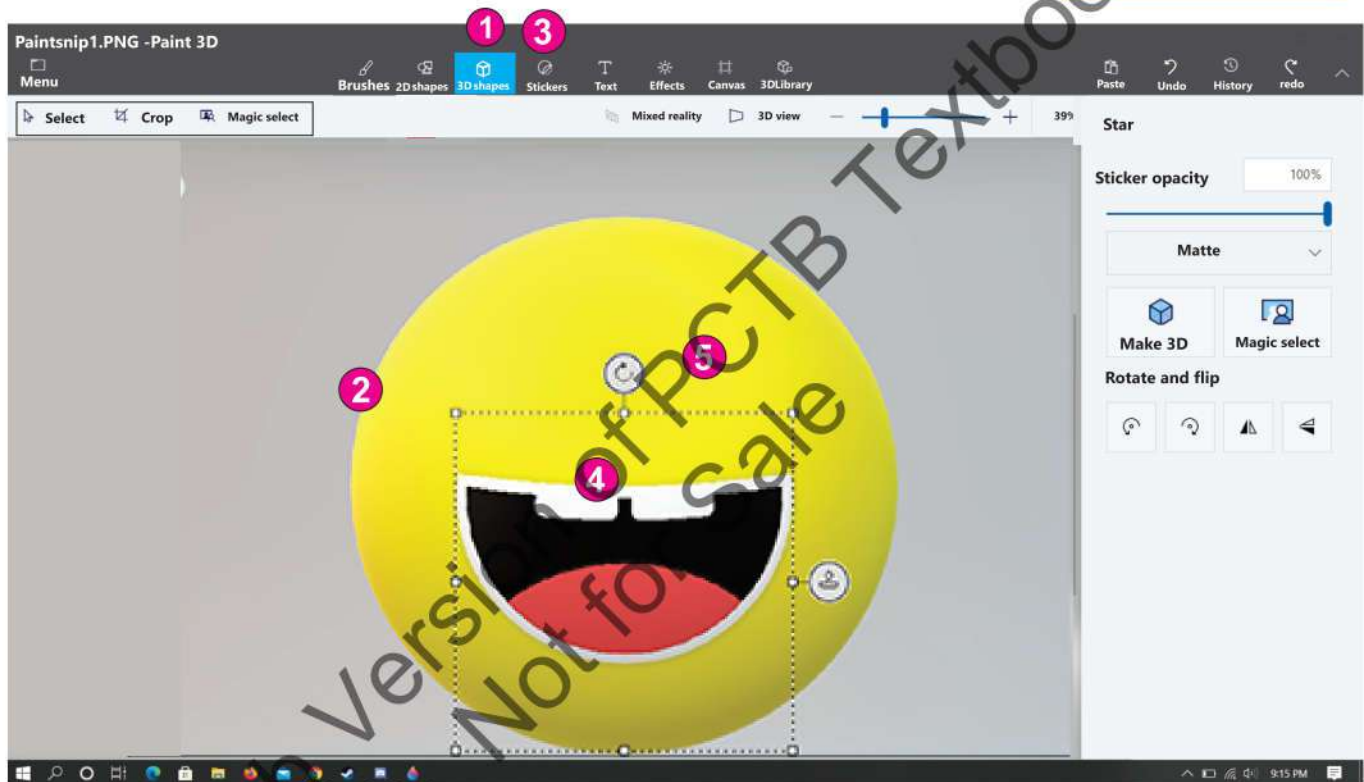


Fig. 3.29 image Striker

3.10.7 The canvas

The canvas is like a 2D sheet of paper and the 3-dimensional objects can be moved in front or behind the plane of canvas. You can do this by selecting the Canvas tool and then selecting different options.

3.11 Navigating the Internet

3.7.1 Web Browser:

The web browser is an application software that opens webpages to allow us to view information from the internet. There are several examples of web browsers, such as Internet Explorer, Google Chrome, Opera, Safari and Mozilla Firefox.

A browser can access information on World Wide Web (WWW) and display it on your computer or mobile device. World Wide Web can be defined as a Global collection of websites that the computer user can access via internet. Moving from one page to another and viewing information on them is known as surfing on the internet.

The illustration below shows the main parts of the Google Chrome window:

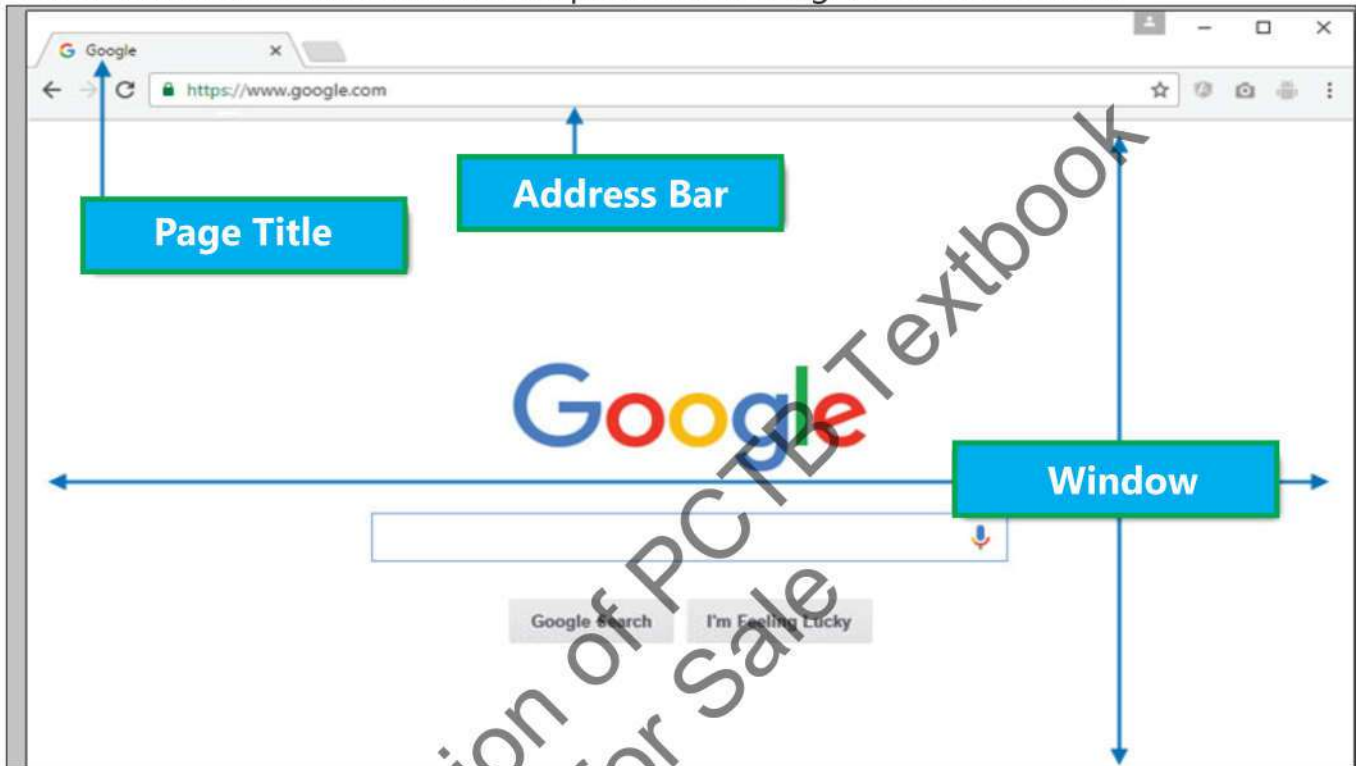


Fig. 3.30 Google page

- We can type the address of the webpage we want to visit in the address bar.
- The menu buttons have all the useful commands. It is from this menu that we can open a new window, print, and manage bookmarks.
- The webpage section displays the content of that webpage.
- When we click on the new tab button, a new tab will open.

The following is the labeled illustration of some important buttons:

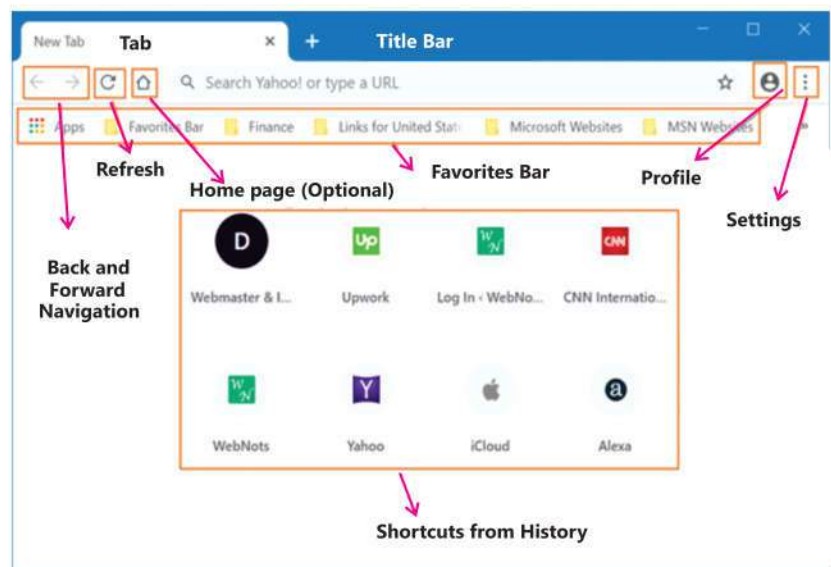


Fig. 3.31 Buttons in Webpage

3.7.2 Search Engine

A search engine is a website that allows us to search for information on the internet. Popular examples of the search engines includes Google, Yahoo, Kidzsearch, Ask and Microsoft Bing.



Fig. 3.32 Search Engine

We can do the following on the search engine:

- Research a topic and gather information about it.
- Find and save pictures and images.
- Search for and download files and programs.

Tips:

Typing can be improved by limiting your hand and finger movement. Don't rush instead practice all typing lessons to ace this skill.



Fig. 3.33 safari

3.8 Using Rapid typing Tutor

This is one of the most used software applications that is used to learn and enhance the typing skills of the user. It aids in developing the keyboarding skills. Keyboarding means typing on the keyboard using the correct fingers. Each finger on your hands should be placed correctly on the specific key on the keyboard. It is very important for the user to know the correct sitting posture when using the keyboard.

3.8.1 Prescribed sitting posture when keyboarding:

- Sit upright and keep your back straight
- Keep your elbow bent at an angle of 90.
- Face towards the monitor with head slightly inclined forward.
- Keep an ideal distance of at least 45-70 cm from the screen.
- Sit in a way that your shoulders, arms and wrist muscles are in least stress. The wrist should touch the table top in front of the keyboard making sure that the body weight is not shifted to the wrists.



3.8.2 Home Row position

It is very important to know the skill of keyboarding when using the computer. As specified earlier that the fingers are required to be on a specific key on the keyboard, we must use both our hands with thumbs resting on the space bar. Fingers from the left hand should be

Tips:

The figure to the right shows the labeling of the fingers on your hand.



placed on ASDF and fingers from the right hand should be placed on JKL; The illustration below shows the correct placement of the fingers on the keyboard when keyboarding:

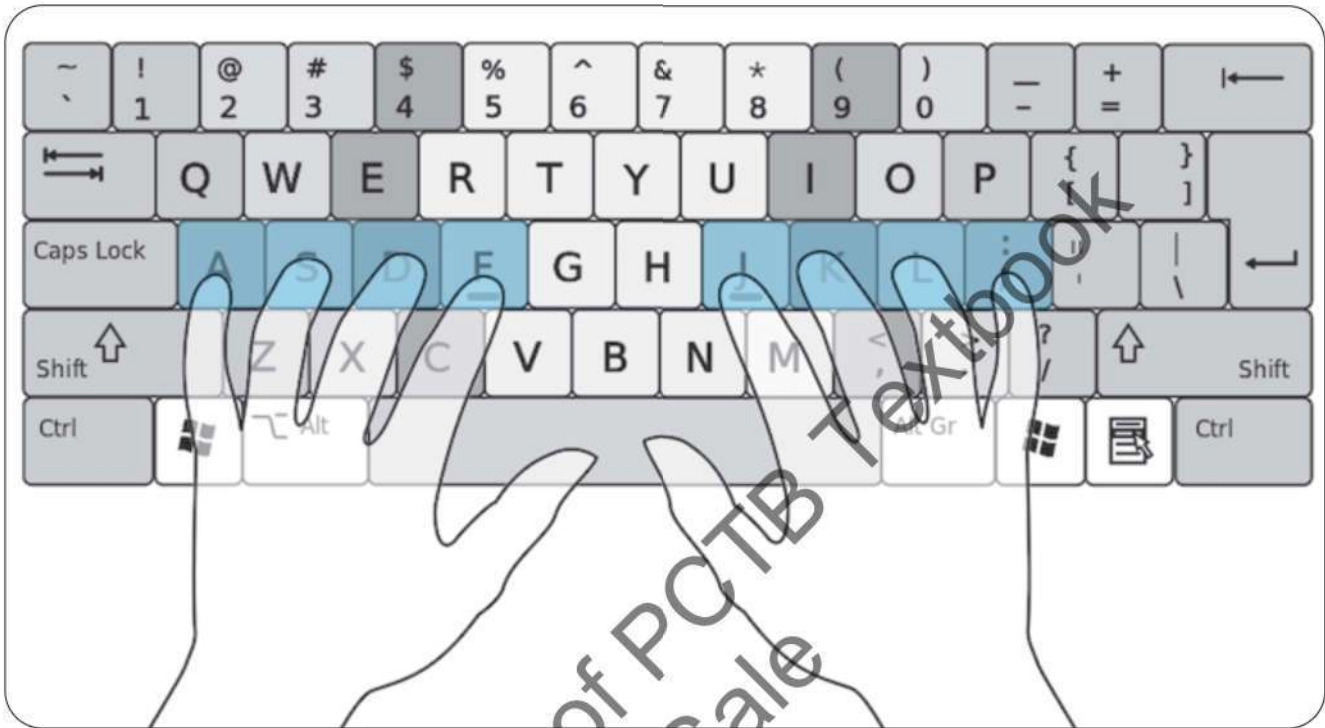


Fig. 3.34 Finger placement on keyboard

The color-coded keyboard will help us understand keyboarding better.

- Use the fingers on the specified keys on the keyboard only.
- When typing always return to the primary placement of ASDF and JKL.
- Maintain a practice of typing at equal intervals.
- The shift key is always pressed with the Pinky finger on both the hands.
- The thumbs from both the hands should always be resting on the space bar.
- Speed is secondary whereas accuracy is more important.

Summary

- Software is defined as a set of instructions, data and programs that are used to operate computer and perform a specific task.
- System Software is a type of program that is designed to control and manage the computer's internal and external resources.
- The operating system is a system software that controls and manages all operations of the computer.
- There are four basic types of system software:
 - Operating system
 - Device Driver
 - Utility Program
 - Language Translator
- A file can be defined as a common storage unit on the computer.
- A folder (directory) is a collection of files in order to organize them on a storage device.
- Shortcut is a link to the file created to easily access it. Shortcuts can be created on the desktop and in other folders.
- Entertainment Software is solely designed for the sake of entertainment.
- Productivity Software are used to produce information in form of a text document.
- Paint 3D is a raster graphics and a 3D creative application that is a refresh of Microsoft Paint.
- The web browser is an application software that opens webpages to allow us to view information from the internet. There are several examples of web browser, such as Internet Explorer, Google Chrome, Opera, Safari and Mozilla Firefox.
- A search engine is a website that allows us to search for information on the internet.
- Typing Tutor is one of the most used software applications that is used to learn and enhance the typing skills of the user.
- Keyboarding means typing on the keyboard using the correct fingers.



Exercise

Tick (✓) the Correct option:

1. The window in use on the desktop is known as a _____.
a. Actual b. Dynamic c. Active d. Live
2. The process of moving from one web page to another is known as:
a. Changing b. Switching c. Transferring d. Browsing

3. Antivirus is an example of:

- a. Application software
- b. Utility program
- c. Device driver
- d. Operating system

4. A software used by the teachers and students for enhancing their learning skills and activities is an example of:

- a. System software
- b. Educational software
- c. Gaming software
- d. Operating system.

5. A software that is developed to do a specific task on the computer is called:

- a. Operating system
- b. Entertainment software
- c. Gaming software
- d. Application software

6. Which of the following tool is Paint 3D and is used to copy:

- a. Crop tool
- b. Snipping tool
- c. Clone stamp tool
- d. Curve tool

7. We can change the size of the marker using the _____ tool.

- a. Marker
- b. Eraser
- c. Canvas
- d. Crayon

8. _____ is the link to the original file.

- a. Icon
- b. Shortcut
- c. Taskbar
- d. Folder

9. _____ is the collection of files.

- a. Folder
- b. Desktop
- c. Icons
- d. Applications

10. _____ is a website that allows us to search for information from internet.

- a. Web browser
- b. Websites
- c. Applications
- d. Search engine

Briefly answer the following questions:

1. What is Search engine? discuss any two.
2. Differentiate between 2D and 3D Shapes?
3. Define software.
4. Differentiate between utility software and device drivers.
5. Enlist Language Translators.
6. Write a note on Snipping tools in windows.
7. Write down the usage of Notification area in windows.
8. Differentiate between file and folder.
9. What is productivity software?
10. Discuss Educational software.

Answer the following questions in detail:

1. Discuss system software.
2. Discuss any two examples of operating systems.
3. Write down the functions of OS.
4. What is application software? list down its types.
5. Write a note on web browsers.

Project Based Questions:

1. Identify the operating systems installed in the computers in your computing labs at school.
2. Practice typing a research report on "my favorite National Hero" in Microsoft Word. This should be approximately 300 words of research. Save your work on the computer and get a print out to display on the pin boards around the school after marked by the teacher.
3. Following are the steps for searching information on Google search engine:
 - Open the web browser.
 - Enter the website address, like www.google.com
 - Enter the specific words for the information you want to find, for example "dessert Safari" and press enter.
 - View the search results.
 - Click on the web link in the results which most relevant.
 - View and navigate through the information that you are looking for.
4. Create a Solar system in 3D Paint. Draw all planets by using the feature of 3D shapes. Distinguish the planets with different colors and show creativity by labeling them by the text tool. Draw planet orbits around the planet were required.
5. Create a table in Microsoft word, listing examples of different types of software. The examples can be written under the heading of the software, for example entertainment software, educational software and productivity software. Research online and list the examples of each in the table that you inserted.
6. Plug and Play (PnP) is the technology that allows the Operating System to automatically detect the peripherals devices, without using any Device Driver. Identify some Plug n Play devices.

Activity Based Questions

1. Divide the students into pairs. Ask them to create a folder on the desktop and rename it. Instruct them to delete the folder and empty the recycle bin. Observe the students and guide them where help is needed.
2. Divide the students into pairs. Explain to students that each pair is going to use an image processing software to draw a given prompt (for example, draw a house). Instruct students to open the software. Demonstrate how to use each of the "paint tools" and how to edit/erase. Demonstrate to the students how to use the spray paint, creating different shapes and colors. Students may use 3 different colors, 3 different shapes, and text. Ask if there are questions. Students will practice using the basic tools for 5 minutes. Give students 30 minutes or whatever time they need to draw and paint their house. Take a round to observe and guide the students as required. This activity is to mainly enhance a student's fine motor skills while allowing him/her to express inner creativity.