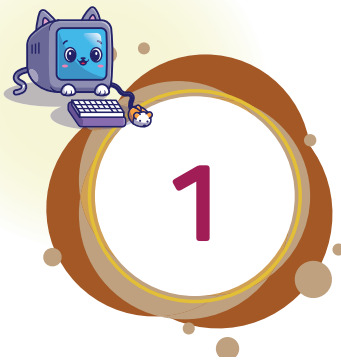


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1

GENERATIONS OF COMPUTERS



Learning Outcomes

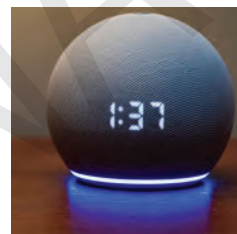
At the end of this chapter, students will be able to:

- ◆ Know the characteristic features of different generations of computers.
- ◆ Learn about the Primary and Secondary memory of a computer.



Warm-up

Circle the pictures of the things that were used by your ancestors.



Teacher's Note:

Apprise students that with every passing generation, progress takes place that makes our life better.



Hey Friends! Let's learn about different generations of computers.

In today's world, for almost every activity whether personal or business-related; in some or other way, we rely on the computer system. It's amazing how easily computers operate, in terms of speed, accuracy and readiness. As a result of their high-speed processors and data storage devices, modern computers are more potent than earlier models which were only meant to be used for calculations. Since ancient times, simple manual machines like the Abacus helped people in doing calculations.

In 1833, Charles Babbage who is referred to as the 'Father of Computers' invented the machine called **Analytical Engine**. It was the first-ever working model of a mechanical computer, whose structure is considered the basic framework of modern-day computers today.



GENERATIONS OF COMPUTERS

The technology employed changes with each generation. The modern-day computer is the result of changes that took place over a period of time. There are five generations of computers.

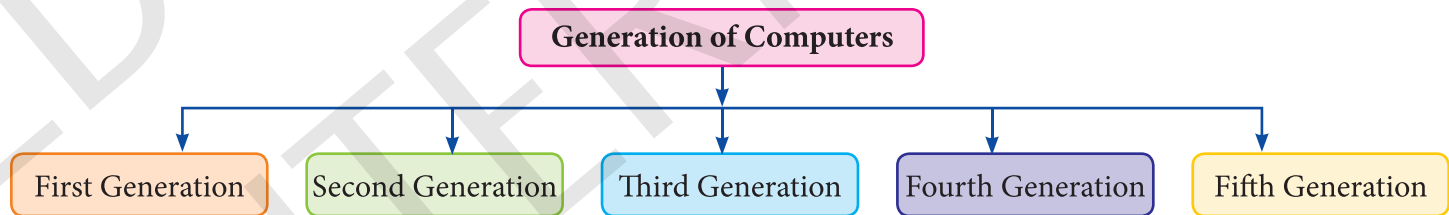


Figure 1.1: Timeline

First Generation of Computers (1940 - 1956)

The features of the first generation computers were:

- ❖ These computers were huge in size.

- ❖ The calculations were carried out using circuitry made of vacuum tubes.
- ❖ They used a lot of electricity and produced a lot of heat.
- ❖ They used punched cards for the communication of data.

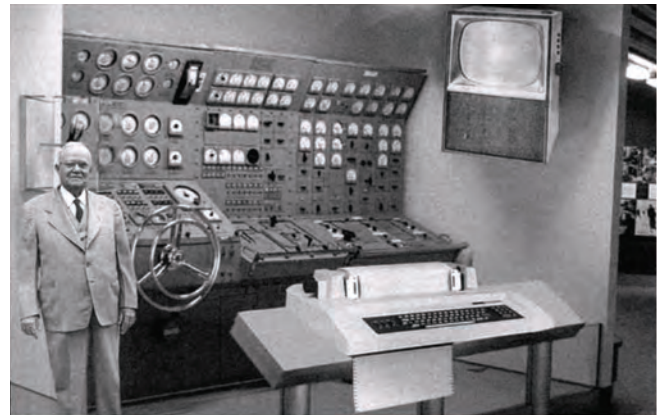


Figure 1.2: First Generation Computers


Examples: Mark I, ENIAC and UNIVAC.

Second Generation of Computers (1956 - 1963)

In this generation, assembly language and high-level programming languages like FORTRAN and COBOL were used. The computers used batch processing and a multiprogramming operating system. Storage media such as tape, disk and printers were in use for the output. The features of the second generation computers were:

- ❖ They were a bit large but smaller, cheaper and faster than the first generation computers.
- ❖ In order to perform the calculations, they used transistors instead of vacuum tubes.
- ❖ Magnetic tapes were used to store data.
- ❖ In this generation, the use of the keyboard as an input device was also introduced.

Examples: IBM 1620, IBM 7094 and UNIVAC 1108.

 **Do You Know?**

Similar to modern-day electric bulbs, vacuum tubes existed. They used to fuse regularly and produced a lot of heat. The UNIVAC had 5200 vacuum tubes.



Figure 1.3: Transistor



Figure 1.4: Second Generation of Computer

Third Generation of Computers (1964 - 1971)

Integrated circuits were developed in the third generation, which resulted in smaller-sized computers with better performance and more storage.

The main features of the third-generation computers were:

- ❖ They used integrated circuits, which reduced the size and increased the speed of the computers.
- ❖ They were more affordable and efficient than second-generation computers.
- ❖ Monitors and keyboards were used for communication.

Examples: Honeywell 6000 series, IBM system 360 and UNIVAC 9000 series.

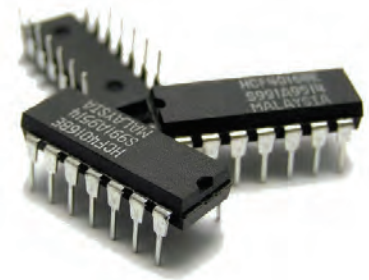


Figure 1.5: Integrated circuit chips



Figure 1.6: Third Generation of Computer

Fourth Generation of Computers (1972 - 1981)



Let Me Answer

Who comes in the fourth generation in your family?

The invention of Very Large Scale Integration (VLSI) came into existence

in which thousands of transistors were on a single chip called a microprocessor.

The main features of the fourth-generation computers were:

- ❖ The size of the computers was reduced to what we call a **Personal Computer**.
- ❖ The speed of the computers were increased and the cost was reduced.
- ❖ GUI operating system was introduced.

Examples: DEC 10, CRAY 2 and Apple II.



Figure 1.7: VLSIC



Figure 1.8: Fourth Generation of Computer

Fifth Generation of Computers (1982 - Present)

In the fifth generation, VLSI technology became ULSI (Ultra Large Scale Integration) technology. The devices are equipped with AI-based technologies like face detectors, fingerprint detectors and much more.

REMEMBER IT!



The first Microprocessor was created by Intel.

The main features of the fifth-generation computers are:

- ❖ The size, cost, speed are improved with high performance.
- ❖ Development of new versions of GUI Operating systems.
- ❖ The computers can recognise a human face, fingerprints and voice.

Examples: Notebooks from IBM and Robots.

The two key factors that have accelerated the development of different generations are processing speed and storage capacity. It is important for us to know about computer memory and its types.



COMPUTER MEMORY AND ITS TYPES

Computer memory refers to the storage area of a computer where all the data and instructions are stored.

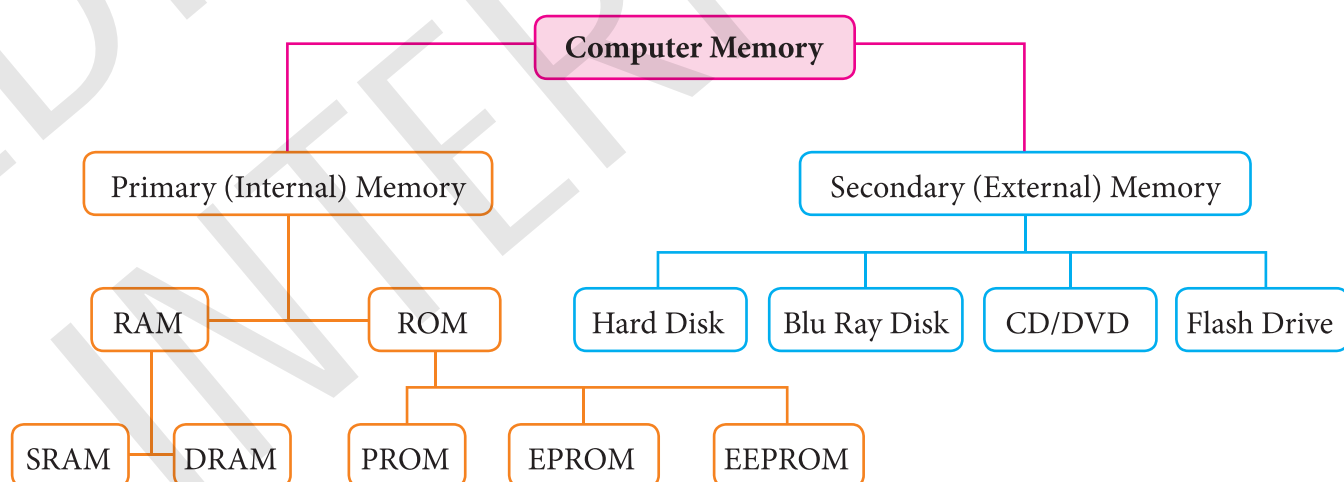


Figure 1.9: Computer Memory

PRIMARY MEMORY

Primary Memory is a section of computer memory that the CPU can access directly, also called Main memory or Internal memory. It has constrained capacity. We can broadly classify Primary Memory into two parts:

1. Read Only Memory or ROM
2. Random Access Memory or RAM

Read Only Memory or ROM

As the name suggests, we can only read from this memory and cannot write on it. It is the built-in memory of a computer. Moreover, it does not lose data after the power supply is cut off i.e. it is non-volatile. Furthermore, its main function is to store the program and instructions permanently.



Figure 1.10: ROM

ROM is of three types:

- ❖ **PROM:** The user can only change the programmable Read Only Memory once.
- ❖ **EPROM:** It is Erasable Programmable Read Only Memory which can be erased as well as reprogrammed.
- ❖ **EEPROM:** The Electrically Erasable Programmable Read Only Memory can be modified by erasing the content and reprogrammed.

Random Access Memory or RAM

Random Access Memory is a type of computer memory that can be read and modified in any order. It is usually used to store working data and

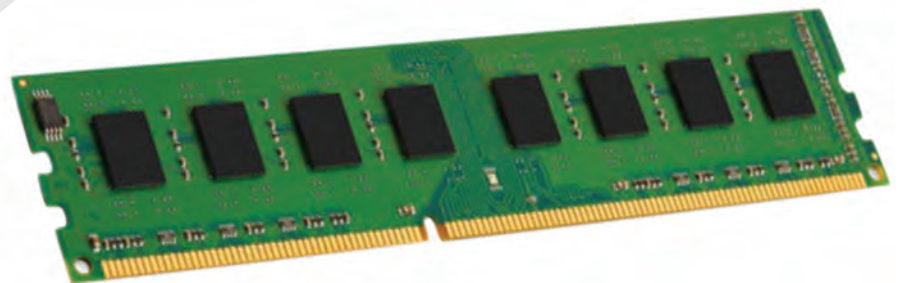


Figure 1.11: RAM

machine code. The storage of data and instructions are temporary. It is volatile memory, i.e. When the power is cut off, it loses its content.

We can broadly classify RAM into two types on the basis of behaviour:

- ❖ **SRAM:** As long as the computer is powered on, the data is kept in static RAM (SRAM).
- ❖ **DRAM:** This memory is temporary and constantly refreshes its content.



SECONDARY MEMORY

Secondary Memory stores a large amount of information permanently, i.e., it doesn't lose its memory when the power is off. It is also called External Memory. Some of the secondary storage devices are Hard Disk, CD-ROM, Digital Versatile Disc, Blu ray Disc and Pen Drive.

Hard Disk:

Hard disks are storage devices designed to hold a lot of information. It is the main and the largest secondary data storage device in a computer. Hard disk stores the operating system, software and other files. It is created using the collection of discs known as platters. The platters are placed one below the other. They are coated with magnetic material.



Figure 1.12: Hard Disk

CD-ROM (Compact Disc-Read Only Memory)

It is an optical storage device that has the capacity to hold a wide range of data in the form of text, photos, video and audio. The storage capacity of a CD is up to 700 MB of data. Its shape is circular and is made up of polycarbonate plastic.



Figure 1.13: CD-ROM

DVD (Digital Versatile Disc)

A Digital Versatile Disc, usually known as a DVD, resembles a CD in appearance but has a larger storage capacity, holding up to 4.7 GB of data.



Figure 1.14: DVD

Blu-Ray Disc

A Blu-ray disc looks just like a CD or a DVD but it can store data or information up to 25 GB data. It is developed for recording, rewriting and playing high-definition video. The name Blu-ray is derived from the technology that is used to read the disc 'Blu' from the blue-violet laser and 'ray' from an optical ray.



Figure 1.15: Blu-Ray Disc

Pen Drive

A pen drive is a small device, which is used to transfer and store data. It is also called a USB drive or Flash drive. It comes in various storage capacities, such as 1 GB, 2 GB, 4 GB, 8 GB, 16 GB, 32 GB, 64 GB, up to 1 TB.



Figure 1.16: Pen Drive



Let me Answer

For what purpose have you used a pen drive?



Kids' IQ

List the names of the brands which make pen drives.



Let's Recall

- There are five generations of computers.
- First generation computers used punched cards for the communication of data.
- In the second generation, the use of the keyboard as an input device was also introduced.
- In the fourth generation, GUI operating system was introduced.
- Primary Memory is also referred to as Main Memory.
- Secondary Memory is also referred to as External Memory.



A. Fill in the blanks.

1. In ancient times, simple manual machines like helped people in doing calculations.
2. is referred to as the Father of Computers.
3. was the first-ever working model of a mechanical computer.
4. There are generations of computers.
5. circuits were developed in the third generation.

B. Write 'T' for True statements and 'F' for False statements.

1. Computers of the first generation were small in size.
2. Magnetic tapes were used in the second-generation computers to store data.
3. IBM system 360 is an example of a third-generation computer.
4. In the fifth generation of computers, VLSI came into existence.
5. ULSI stands for Uniform Large Scale Integration.

C. Answer in one word.

1. A type of computer memory that can be read and modified in any order.
2. A secondary storage device which resembles a CD in appearance but has a larger storage capacity.
3. A storage device that is also referred to as a USB drive or Flash drive.
4. The memory which is temporary and constantly refreshes its content.
5. A storage device made up of Polycarbonate plastics.

D. Write the following in expanded form.

1. ROM -
2. RAM-

- 3. CD-ROM-
- 4. DVD-
- 5. VLSI-

E. Answer the following questions.

1. How many generations of computers are there?

.....
.....

2. Write the features of the second generation of computers.

.....
.....

3. State the difference between the third generation and fourth generation of computers.

.....
.....

4. What do you mean by Primary Memory?

.....
.....

5. Explain any three types of secondary storage devices.

.....
.....



A. Some features have been listed on the next page. Segregate them in the appropriate columns.

- ❖ GUI operating system was introduced.
- ❖ Punched Cards for the communication of data.
- ❖ Usage of Integrated Circuits.
- ❖ Magnetic tapes were used to store data.
- ❖ The use of the keyboard as an input device was introduced.

First Generation	Second Generation	Third Generation	Fourth Generation	Fifth Generation

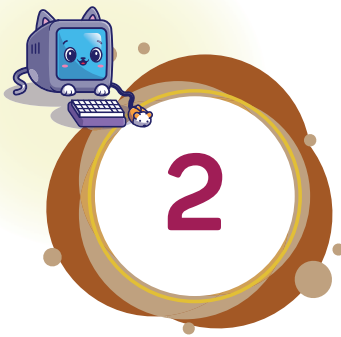
B. Samaksh attended the marriage ceremony of his cousin. He wants to save all the pictures but the file is larger than 16GB. Advise him as to what should he do.



Team Work

Let us discuss the topic - Generation of Computers.

<p>Which generation of computer do you use? How?</p> <p>1.</p> <p>2.</p> <p>3.</p> <p>4.</p> <p>5.</p>	<p>Which types of secondary storage do you use? List the name of the devices.</p> <p>1.</p> <p>2.</p> <p>3.</p> <p>4.</p> <p>5.</p>
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LEARNING MORE ABOUT WINDOWS 10



Learning Outcomes

At the end of this chapter, students will be able to:

- ◆ Know various features of Windows 10.
- ◆ Enhance their knowledge of various components of Windows.
- ◆ Change Windows appearance.



Number the following Windows from the older versions to the advanced editions.



Windows 7



Windows 10



Windows XP



Windows 2003



Windows VISTA



Windows NT



Teacher's Note:

Assist students in arranging the editions of the windows in chronological order. Apprise students that continuous research and increased technology usage has led to the advanced editions of Windows by Microsoft.



Hi Friends! In the previous class, we already learnt about some of the features of Windows 10. Let's learn more!

As we know, a computer is a machine that cannot think on its own and requires commands from us. The most important program of a computer is its Operating System. Windows is such an operating system that acts as a medium through which we can interact with the hardware, using the software.

The first GUI edition of windows with a new user interface was introduced in 1995 and was called Windows 95.

Windows 10 is the latest version of Windows available in the market.



FEATURES OF WINDOWS 10

Following are the features of Windows 10.

- ❖ It is interesting and easy to use.
- ❖ It is the most secured version of windows.
- ❖ The use of graphics makes it quite interactive.
- ❖ The enhanced tool, Cortana, allows in searching the information on the system or the web directly.
- ❖ The new start menu helps to give us easy access to apps and services.
- ❖ The new Task View button on the taskbar provides the ability to open multiple desktops at the same time. You can create an unlimited number of desktops.

 **Do You Know?**
Bill Gates is the founder of Microsoft.

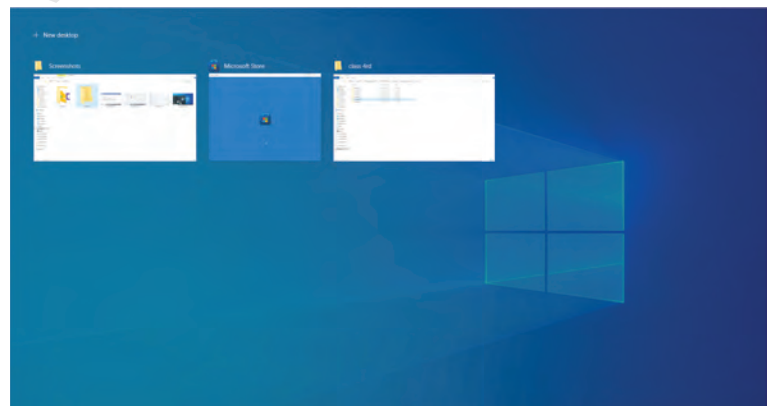


Figure 2.1: Window 10

- ❖ The window snapping feature allows working with multiple applications on the screen.
- ❖ Microsoft Edge is the default browser of Windows 10. It helps you to write and highlight directly on the web pages.
- ❖ With Windows Hello, you can instantly access your Windows 10 devices using a PIN, facial recognition software, or a fingerprint in a more private and secure way.
- ❖ The window store provides a lot of free or paid applications.



COMPONENTS OF WINDOWS 10

Components of Windows 10

Desktop

The first screen that appears when we start the computer is called the Desktop. It has various icons of files and folders. By default, the taskbar is located at the bottom of the desktop screen.



Figure 2.2: Desktop

Icons

Icons are tiny images on the desktop that represent files, folders, and apps. Some of the common desktop icons include: This PC, Application icons, shortcut icons and recycle bin.



LET US LEARN ABOUT THESE ICONS IN DETAIL

1. This PC Icon:

It shows all the files and folders stored on our computer system. It helps us in ordering the data stored on the local drives efficiently.



Figure 2.3:
This PC icon

2. Application Icons:

To display a specific application on a computer, windows employ application icons. It provides easy access to the related application.



Figure 2.4: Application Icons

3. Shortcut Icons:

A shortcut icon provides direct access to a certain application. It has a small arrow on its lower left.



Figure 2.5: Shortcut Icon

4. Recycle Bin Icon:

All the deleted files/folders are moved into the Recycle bin. We can easily restore the file or a folder from recycle bin or can be deleted permanently.



Figure 2.6: Recycle bin

Start Button

It is at the bottom left of the screen. By clicking on it, we get two panels side by side. The panel on the left displays apps in a listed form in alphabetical order. Live tiles which show the new updates are on the right panel.

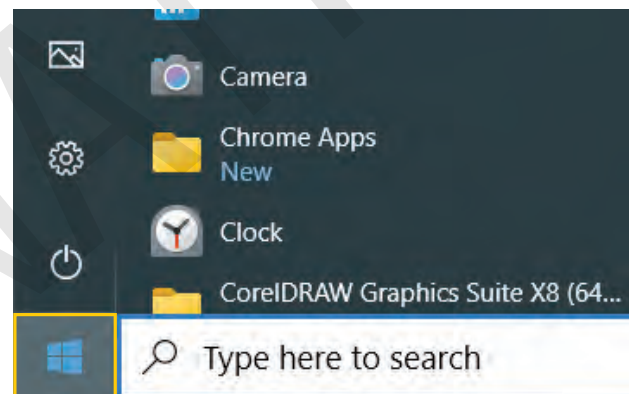


Figure 2.7: Recycle bin

Taskbar

The long horizontal bar found at the desktop's bottom is the taskbar.



Figure 2.8: Windows Taskbar

It shows the Start button on the extreme left side. Just next to the Start button is the search box, Cortana. It helps to browse both your computer and the web. To the right of the Cortana, is the Task view button which allows accessing multiple desktops simultaneously. The area which lies in the mid of the taskbar contains the apps which are opened and are used frequently. In the taskbar, we have a notification area on the right side, which shows the clock, date, and some more icons. On the extreme right, the Peek button is present which makes the desktop visible by minimizing all the open windows.



CUSTOMISING WINDOW APPEARANCE

With the wide range of settings in Windows 10, we can change the appearance to make the desktop and apps look better.

Changing the wallpaper

Follow the following steps to change the wallpaper.

Steps:

1. Right-click on the blank area of the desktop.
2. From the pop-up menu, select the Personalize option.
3. The settings window will be displayed.
4. Under the Personalisation panel, click on the background option.
5. Select the background available or click on the browse button to select the picture of your choice.
6. The selected picture will be set as the desktop background.

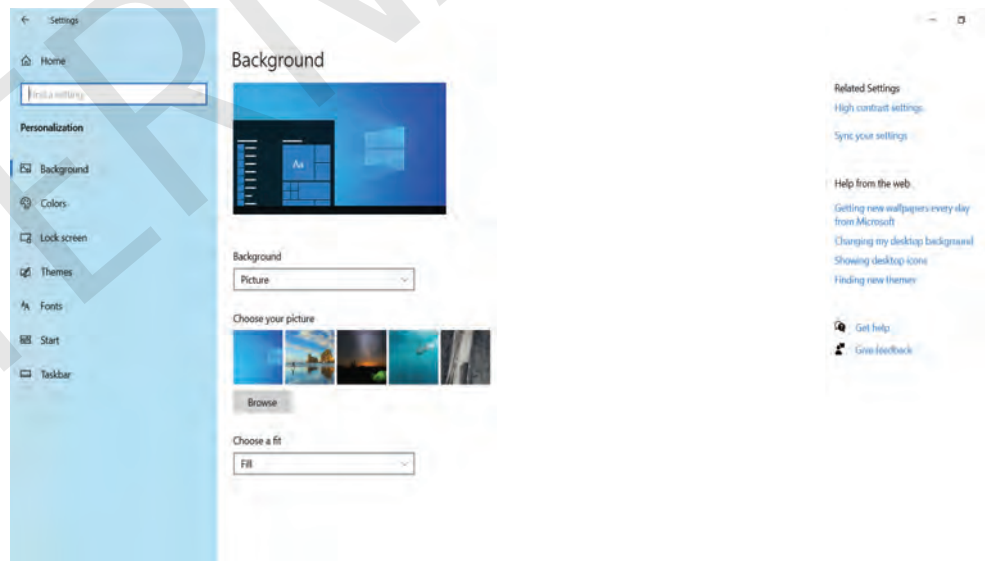


Figure 2.9: Background

Setting the Screen Saver

A screensaver is a computer program that displays the black screen or fills it with moving patterns when the computer has been idle for a designated time.

Follow the following steps to change the screen saver.

REMEMBER IT!



Press window Key + L together to lock your computer.

Steps:

1. Right-click on the blank area of the desktop.
2. From the pop-up menu, select the Personalize option.
3. The settings window will be displayed.
4. Select the Lock screen option from the left panel.
5. Click on the screen saver option, and a dialogue box will appear.
6. Select the desired Screen saver and click on the apply option.
7. The chosen screen saver will be applied.

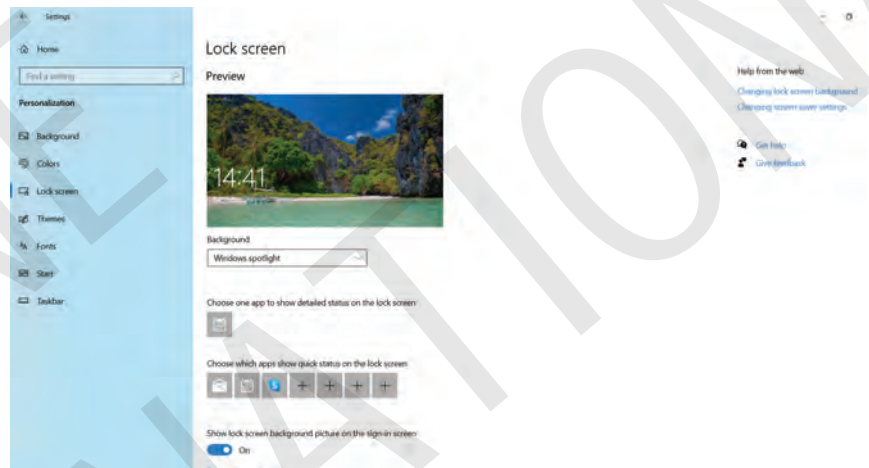


Figure 2.10: Lock Screen

Live Tiles

In the right panel of the Start Menu, the most popular Universal apps in the form of resizable live tiles are displayed. All the latest information such as news, weather report and much more are shown here.

Follow the following steps to resize a live tile.

Steps:

1. Click on the Start menu.
2. Right-click on the tile whose size you want to change.

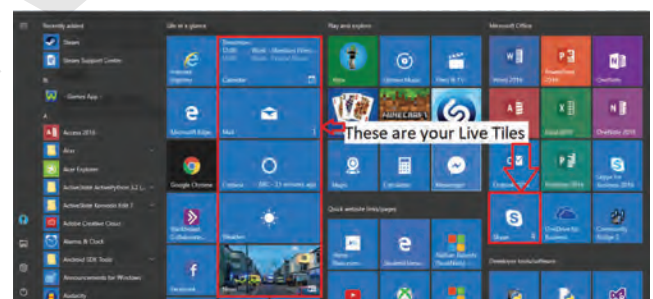


Figure 2.11: Live Tiles

3. Select the option **Resize**, and choose the size of your choice from the sub-menu.

Turning a Live Tile On/Off

Follow the following steps to turn on Live tiles.

Steps:

1. Click on the Start menu.
2. Right-click on the tile you want to turn on.
3. Click on **more**, and click **Turn live tile on**.

Similarly, you can turn off the Live tile by selecting **Turn Live tile off**.



Figure 2.12: Turning a Live Tile On/Off

Displaying Windows Together

Multiple application windows can be displayed side by side in Windows 10.

Follow the following steps to display windows together.

Steps:

1. Open Excel window, Word window and Paint 3D.
2. Now, Right-click on the blank area of the taskbar.
3. Select the 'Show Windows Side by Side' option from the pop-up menu.
4. All three windows will be displayed side by side.

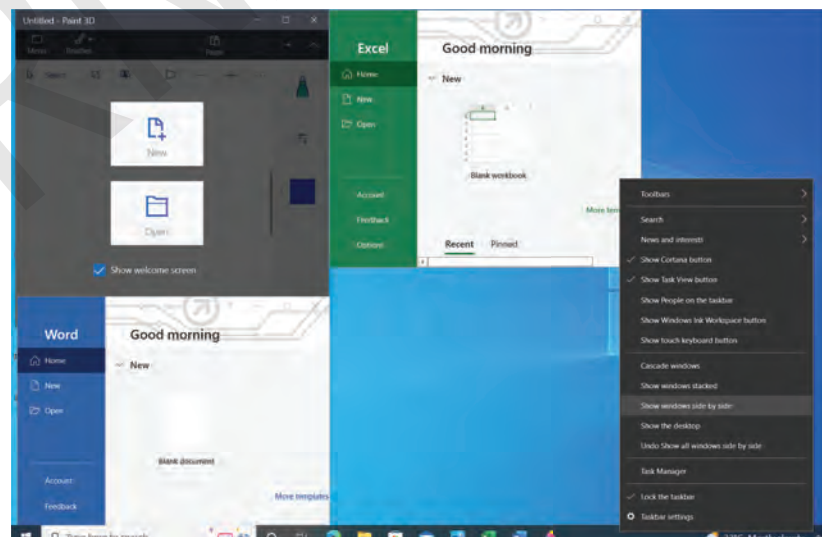


Figure 2.13: Displaying Multiple Windows Together



FILE EXPLORER WINDOW

Files and Folders stored in our system are displayed in the File Explorer Window. It allows to view and manage files and folders. Further, we can create, open, move or delete a folder in this window.

Opening File Explorer

Follow the following steps to open the File Explorer window.

Steps:

1. Click on the Start button.
2. Click on the File Explorer option.
3. The File Explorer Window will open.
4. Alternatively, click the Windows button (Windows button) + E.

Components of File Explorer Window

1. **Search Box:** In this box, we can search files or folders in the system.
2. **Navigation Pane:** It is on the left and is used to explore disks and drives.
3. **Content Area:** It contains icons representing the drives in the system.
4. **Address Bar:** Here, the path of the currently open file or the folder is displayed.

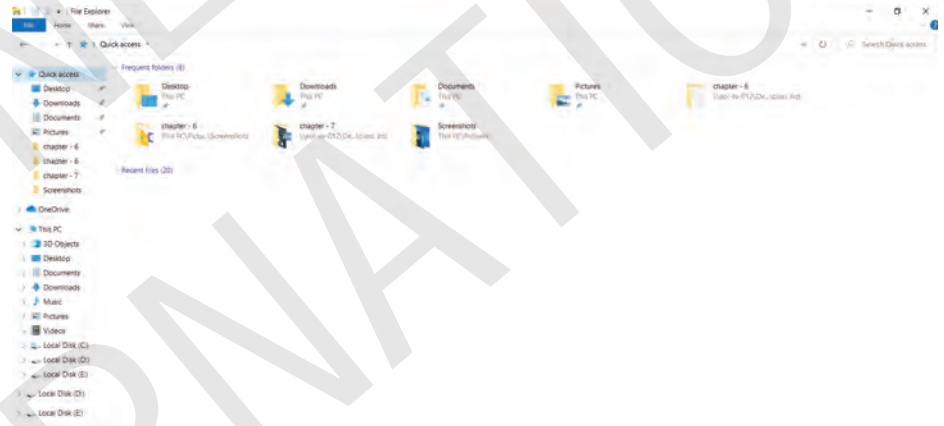


Figure 2.14: File Explorer



UNIVERSAL APPS OF WINDOWS 10

Universal App is an application that works on all devices from phones to high-powered desktops. Moreover, these apps can work on different types of devices such as iPhones and Smartwatches.

Some of the most useful apps are:

- ❖ **Weather App** - This app lets you know all about the Weather such as real-time rain alerts, minimum/maximum temperature and much more.
- ❖ **E-mail App** - This app aids you to manage all your mail accounts in one place. Also, it gives the notification of all the incoming mails.
- ❖ **News App** - This application displays the latest news to keep the user up-to-date.

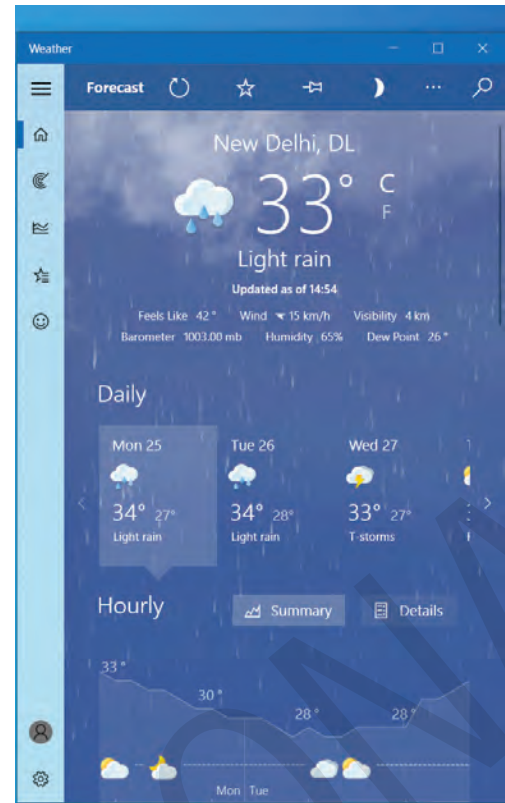


Figure 2.15: Weather App

Kids' IQ

Pragya is a content writer . She has to keep herself updated with the news every hour. Suggest the kind of app she should use for the same.

Let's Recall

- The most important program of a computer is its Operating System.
- The first screen that appears when we start the computer is called the Desktop.
- All the deleted files/folders are moved into the Recycle bin.
- The long horizontal bar found at the desktop's bottom is the taskbar.
- Files and Folders stored in our system are displayed in the File Explorer Window.
- Universal App is an application that works on all devices from phones to high-powered desktops.



A. Fill in the blanks.

1. The most important program of a computer is its
2. The first GUI edition of Windows with a new user was introduced in
3. is the latest version of windows available in the market.
4. The Window store provides a lot of free or paid
5. The first screen that appears when we start the computer is called the

B. Answer in one word.

1. Tiny images on the desktop that represent files, folders and apps.
.....
2. Location of the taskbar.
.....
3. An icon that provides direct access to a certain application.
.....
4. The tiles which display the most popular Universal apps.
.....
5. The window which displays files and folders stored in our system.
.....

C. Write 'T' for True statements and 'F' for False statements.

1. A computer is a machine that thinks on its own.
2. The first GUI edition of Windows was called Windows 95.
3. Bill Gates is the founder of Microsoft.

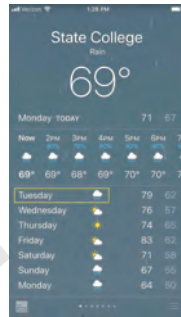
4. In Windows 10, we can create an unlimited number of desktops.



5. All deleted files/folders are moved into This PC.



D. Identify the following icons/apps and write their names.



E. Answer the following questions.

1. Write any five features of Windows 10.

.....
.....

2. Briefly write about any two components of Windows 10.

.....
.....

3. Write the steps to change the wallpaper.

.....
.....

4. What do you mean by a screen saver?

.....
.....

5. What is the purpose of the File Explorer Window?

.....
.....



Critical Thinking

A. Anushka wants to write the information from two different files. Suggest the option she can use to open two files side by side.

.....
.....

B. Unscramble the letters to form words.

1. SLUIVNEAR PAP -
2. VILE EILT -
3. DTESKPO -
4. SKBTAAR -
5. SNIOC-



Team Work

A. Work in pairs. Find out an interesting quote on hard work by some famous personality and set it as your wallpaper.

B. Discuss with your friends.

1. Which type of wallpaper do you like the most?
a. Nature b. Famous personalities c. 3D objects.
2. How did you write the quote?