

DIGITAL LITERACY

UNIT-I

Basic Applications of Computer

Computers play a role in every field of life. They are used in homes, business, educational institutions, research organizations, medical field, government offices, entertainment, etc.

Home

Computers are used at homes for several purposes like online bill payment, watching movies or shows at home, home tutoring, social media access, playing games, internet access, etc. They provide communication through electronic mail. They help to avail work from home facility for corporate employees. Computers help the student community to avail online educational support.

Medical Field

Computers are used in hospitals to maintain a database of patients' history, diagnosis, X-rays, live monitoring of patients, etc. Surgeons nowadays use robotic surgical devices to perform delicate operations, and conduct surgeries remotely. Virtual reality technologies are also used for training purposes. It also helps to monitor the fetus inside the mother's womb.

Entertainment

Computers help to watch movies online, play games online; act as a virtual entertainer in playing games, listening to music, etc. MIDI instruments greatly help people in the entertainment industry in recording music with artificial instruments. Videos can be fed from computers to full screen televisions. Photo editors are available with fabulous features.

Industry

Computers are used to perform several tasks in industries like managing inventory, designing purpose, creating virtual sample products, interior designing, video conferencing, etc. Online marketing has seen a great revolution in its ability to sell various products to inaccessible corners like interior or rural areas. Stock markets have seen phenomenal participation from different levels of people through the use of computers.

Education

Computers are used in education sector through online classes, online examinations, referring e-books, online tutoring, etc. They help in increased use of audio-visual aids in the education field.

Government

In government sectors, computers are used in data processing, maintaining a database of citizens and supporting a paperless environment. The country's defense organizations have greatly benefitted from computers in their use for missile development, satellites, rocket launches, etc.

Banking

In the banking sector, computers are used to store details of customers and conduct transactions, such as withdrawal and deposit of money through ATMs. Banks have reduced manual errors and expenses to a great extent through extensive use of computers.

Business

Nowadays, computers are totally integrated into business. The main objective of business is transaction processing, which involves transactions with suppliers, employees or customers. Computers can make these transactions easy and accurate. People can analyze investments, sales, expenses, markets and other aspects of business using computers.

Training

Many organizations use computer-based training to train their employees, to save money and improve performance. Video conferencing through computers allows saving of time and travelling costs by being able to connect people in various locations.

Arts

Computers are extensively used in dance, photography, arts and culture. The fluid movement of dance can be shown live via animation. Photos can be digitized using computers.

Science and Engineering

Computers with high performance are used to stimulate dynamic process in Science and Engineering. Supercomputers have numerous applications in area of Research and Development (R&D). Topographic images can be created through computers. Scientists use computers to plot and analyze data to have a better understanding of earthquakes.

Definition of Input Device

An input device is essentially a piece of instrument or hardware that allows users to provide data, information, or control instructions to a computer used for interaction and control. Data is entered into a computer in a raw format, which is converted into computer understandable language by input devices and processed by a central processing unit (CPU) to produce output. In simple terms, an input device is a kind of peripheral device that helps communicate with processing units of the computer.

Note: Input devices and Input Units are the same things. They are two similar terms used in different ways by different people. They are also known as peripheral or auxiliary devices.

What are the Input Devices?

Feeding instructions or data into a computer machine is done using hardware devices. During the process, the data is referred to as the input to a computer machine while the device or hardware device used to input the data is referred to as the input device or input unit. The input devices can be divided into different categories, such as pointing devices, keyboard devices, speech or voice input devices, draw devices, recognition devices, etc. The most common input devices of a computer system are listed below:

Functions of Input Devices

Because input devices perform essential functions for computers, they are considered as parts of computer systems. They are electro-mechanical devices that help users input raw data into a computer. However, computers do not understand data in raw formats. Therefore, input devices convert raw data into the appropriate format or language that can be easily understood by a computer. The translated or converted data is stored in primary memory and sent to the CPU for further processing. In other words, the computer accepts raw input from users and translates the received input into machine language

with the help of input devices. This is the primary function of the input device on the computer.

Examples of Input Devices Several types of input devices are available to enter raw data into a computer. Each device has its own function, benefits, and drawbacks. The following are examples of commonly used input devices:

Keyboard

The keyboard is one of the primary input devices, which helps in entering data and commands in a computer. The layout of the keyboard is almost identical to a traditional typewriter with additional keys that help in performing specific tasks. A normal keyboard usually has a variety of keys, such as alphabetic character keys, function keys, number keys, arrow keys, and control keys. The keyboard can be connected to a computer using USB (for a wired keyboard) or Bluetooth (for a wireless keyboard).

There is no specific rule for defining the number of keys; however, most keyboards come in two sizes - 84 keys or 101/102 keys. Nowadays many major brands are also making keyboards with 104 keys or 108 keys for Windows Laptops come with inbuilt, more compact keyboards, which help make the laptop smaller and lighter. Besides, most modern devices (such as smartphones, tablets, and convertible touch screen laptops) come with on-screen virtual keyboards that help to input the data into a computer.

Most English language keyboards have a QWERTY layout. Before the keyboard, punch cards and paper tape were used to enter data and commands into computers.

Mouse

A mouse is the most common and very popular pointing device that helps interact with a computer through a process called 'point and click'. This is mainly used to move a cursor on the computer's screen and click on the corresponding object using its buttons (usually left, right, and middle key roller buttons).

The left button helps select items while the right button helps display menus. The scroll wheel mainly helps to move the scrollbar up and down while surfing the web or reading documents. Some advanced mouse may also have additional buttons to perform specific tasks. Like the keyboard, the mouse can be both wired and wireless. Previously, the mouse used an integrated ball and roller, known as a mechanical mouse, to track the cursor move. The modern mouse uses optical technology (laser) to control or track the movements of the cursor; such a mouse is called an optical mouse.

Joystick

Joysticks are widely used to play games on a computer. They help control the characters and vehicles of the game. It can be a standalone device or can be included with multiple buttons and triggers to add options to perform more in-game features. It can also be used as a pointing device like a mouse. Essentially, a joystick is a handle that has a spherical ball at both ends (upper and lower). It can be moved in all four directions, and its angle or moving direction is sent to the computer as data.



Touchpad

The touchpad, also known as a trackpad, is an input device that is primarily integrated with a laptop. It is a pointing device like a surface that can detect the movements of our fingers and move the pointer

accordingly. It is nothing but a common alternative to a mouse and also helps to make computer devices compact, small, and lightweight. Touchpads were introduced mainly for laptops in the year 1990. Almost all modern laptops come with a touchpad that helps to perform mouse functions.



Light Pen

A light pen is another pointing device that has the same structure as a pen. It is a light-sensitive device consisting of a photocell and an optical system placed in a small tube. It is mainly used to select on-screen items, draw pictures, and write independently in document files using a computer screen. When the tip of the light pen is moved on the computer screen and the button on the pen is pressed, the photocell sensing element detects the screen location and sends the corresponding signal to the CPU. This helps the CPU detect pointer movements and clicks.



Track Ball

The trackball is a pointing device that is used to perform similar tasks as a mouse. However, its mechanical structure is slightly different from that of the mouse. Unlike a mouse, the trackball does not need to be moved around the surface. Instead, the user is required to rotate a ball by turning the fingers, which moves the pointer accordingly. The ball is inserted halfway into an instrument and may contain various shapes, such as a ball, square, or button. Because the trackball does not need to be moved around the surface, it can be perfect for lowlying areas. A trackball also has buttons to perform certain functions like a mouse. Trackballs may be stand-alone devices or may be attached to a keyboard, notebook, or laptop computer instead of a mouse.



Scanner

A scanner is an essential input device that allows us to convert a hard copy document into a digital file (.jpeg, .png, .pdf, etc.). It basically uses optical technology that reads characters or pictures from a paper and transfers them to a computer's drive for further manipulation. Like other images, the scanned image can also be saved, edited, emailed, and printed whenever we want. Scanners can be of different

types, depending on the different functionality. Some common types of scanners include a photo scanner, flatbed scanner, drum scanner, sheet-fed scanner, handheld scanner, etc.



Graphic Tablet

A graphic tablet, also known as a digitizer, is primarily used to digitally transform hand-drawn artwork (.png, .jpeg, etc.). It is an input device with a flat surface and comes with a stylus. Users can use a stylus to draw graphics on a surface like we draw something on paper using a pen or pencil. The digitizer reads the signals and converts graphics to binary input. The same drawing is displayed on a computer screen in real-time and can be saved, edited, emailed, or printed. Besides, digitizers can also be used to signatures or texts as handwritten texts or computertyped texts.



Stylus

A stylus is an input device used to draw or write on the surface of digitizers and touch-screens. It was mainly introduced for digitizers and PDAs; however, nowadays people are using a stylus with smartphones and tablets instead of fingers. This is because it can result in better accuracy, and prevent oil and scratches on the surface of the device from the user's fingers.



Touchscreen

Touchscreens are widely used due to the use of portable devices, such as smartphones, notebooks, tablets, laptops, etc. Touch screens allow users to input anything from moving or copying any object. Users can perform tasks using only their fingers or stylus. A touch screen is nothing but a touch-sensitive surface or monitor screen that reads the signals of movement of the user's fingers and performs certain tasks accordingly. This can be seen nowadays in most devices, such as smartphones, cameras, GPS screens, smartwatches, laptops, etc.



Microphone

A microphone, also known as a mic, is a type of voice input device that allows users to input voice into a computer system. Mics typically read sounds from the surroundings and convert analog sound waves into electrical signals. These signals are further converted into digital form and stored in the computer. Mics are used for many purposes, such as adding sound to a presentation, chatting while online gaming, video conferencing, voice calling, recording, voice recognition, and more. They can be of different types, depending on the quality and specific functionality. Some common types of microphones include a



dynamic mic, ribbon mic, condenser mic, etc.

Digital Camera

A digital camera is an input device that is used to capture images and video in digital form. This allows users to store the captured media files in a memory card and transfer them to the computer. Digital cameras use an image sensor chip to capture images rather than the film used by traditional cameras of the old days. Digital cameras are widely used nowadays. Many advanced digital cameras also come with

a screen that displays captured media as well as allows for many other options, such as preview, zoom,



delete, send, and more.

Webcam

Webcam can capture images and videos and convert them into a digital form. A webcam is slightly different from a digital camera. Unlike digital cameras, webcams cannot operate independently. They should be connected to a computer. Also, webcams have no inbuilt memory; they use the computer's storage to save captured data. Webcams are most commonly used for video chatting and live-streaming videos.



Magnetic Ink Card Reader (MICR)

MICR is a device that typically reads characters or texts that are printed on paper using ink that contains particles of magnetic material. This device is mainly used in banks to read the cheque number and bank code and to send a signal to the computer to process a valid cheque. This reading process is known as

magnetic ink character recognition. The MICR input device is very helpful for processing a large number of cheques in a short duration and that too with almost 100% accuracy.



Optical Character Reader (OCR)

OCR is an input device used to read the handwritten or printed text and convert them to digital text. This device reads text optically, character by character, and converts the text into digital form to be stored in a computer. It is mostly used in libraries and offices to copy texts from books and save them digitally. OCR scans the documents like a scanner and then converts them into two colored bitmap versions (usually black and white). The light scanned areas are considered as background, while dark areas are considered as characters.



Bar Code Reader

A bar code reader, also known as a barcode scanner, is an input device used to read bar codes. Barcodes are data written as dark and light lines. Barcodes are usually printed on various items for labeling details.



It is also known as a POS (point of sale) scanner. The bar code reader scans the bar code image using light, which is then reflected and translated into an analog signal. The signals are then decoded and transformed into alphanumeric values to be stored in a computer connected to a barcode reader. This ultimately helps in identifying product details and prices from the database

QR Code Reader

The QR code reader, also known as the QR code scanner, is an input device used to read QR codes. QR codes are computer-generated patterns that store or hold a modest amount of data. They do not require a database to store information separately. QR code readers are almost identical in functionalities to bar code readers.



Optical Mark Reader (OMR)

The OMR is a type of input device that optically scans the paper and identifies the mark created using a pencil and pen. It is mainly used to verify answers from answer sheets, which include answers to multiple-choice questions

Biometric Devices



Biometric devices are used to input a person's scanned data based on biological characteristics, such as facial structures, fingerprints, eye corneas, etc. Most modern smartphones come with the feature of

Face Unlock and Fingerprint Unlock, making them a biometric device. However, they can also be



standalone devices.

Motion Capturing Devices

These are the devices used to detect human movements and send them as input to the computer. Such devices are mostly used in advanced gaming setups, which allow players to play a game by moving their body parts accordingly. This technique is also beneficial in animation and robotics.



Note: There are many more input devices used on computers for performing specific purposes. Some other input devices are Interactive whiteboard, Paddle, Steering wheel, Light gun, VR, Remote, Gesture recognition devices, etc. Summary This article covers 20 examples of input devices used for computers, including their names, pictures, and functions of each. The primary function of an input device is to

convert raw data given by users to machine language because computers only understand machine language and not raw input. The input device is known as the electro-mechanical component of a computer system.

Output device: Click on the below link.

[Output Devices of Computer: Definition & Examples - TutorialsMate](#)

Hardware and software

Differences between Hardware and Software

Hardware	Software
Hardware is further divided into four main categories: <ul style="list-style-type: none">• Input Devices• Output Devices• Secondary Storage Devices• Internal Components	Software is further divided into two main categories: <ul style="list-style-type: none">• Application Software• System Software
Developed using electronic and other materials	Developed writing using instructions using a programming language
When damaged, it can be replaced with a new component	When damaged it can be installed once more using a backup copy
Hardware is physical in nature and hence one can touch and see hardware	The software cannot be physically touched but still can be used and seen
Hardware cannot be infected by Viruses	The software can be infected by Viruses
Hardware will physically wear out over time	Software does not wear out but it can be affected by bugs and glitches
An example of Hardware is hard drives, monitors, CPU, scanners, printers etc.	An example of software is Windows 10, Adobe Photoshop, Google Chrome etc.