

JOB ROLE – INSTALLATION TECHNICIAN COMPUTING AND PERIPHERALS

Sector – Electronics
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PSS Central Institute of Vocational Education
Shyamla Hills, Bhopal – 462 013 , Madhya Pradesh, India

www.psscive.ac.in

CHAPTER 3: INPUT AND OUTPUT DEVICES

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Session Objectives

The students will be able to:

- Describe Input Devices
- Explain Output Devices
- Describe Hard copy output devices

Introduction

Input and output devices are required to communicate with the computer. These devices are connected to the CPU through various ports or with the help of wireless technologies. Input devices feed data and instructions into the computer, and output devices present information from a computer system. Output generated by the output devices may be hardcopy or softcopy output.

Input Devices

An input device is used to feed data into a computer. It is also defined as a device that provides communication between the user and the computer.

Text Input Devices

Keyboard: This is the most common input device. It is designed just like a conventional typewriter. It allows the user to input alphabets, numbers, and other characters. It provides keys for additional functions.



Numeric keypad: It is a small keyboard having only numbers. It is used to enter only numeric data such as those in ATMs. The computer keyboards also have a numeric keypad.



Input Devices



PIN Pad: This is a device with a numeric keypad used to enter a personal identification number (PIN) of debit card or credit card while doing the transaction.

Pointing Devices: These devices are used to move an onscreen pointer or cursor (usually an arrow). They are commonly used with graphical user interfaces (GUIs).



Mouse: It is a small handheld device used to indicate the position of a cursor or its movement on a computer's screen by rolling it over a mouse pad or flat surface. A mouse has one or more buttons and possibly a scroll wheel.

Input Devices



Light pen: It is a pointing device shaped like a pen. The tip of the light pen contains a light-sensitive element which when placed against the screen detects the light from the screen, enabling the computer to identify the location of the pen on the screen.



Touch screen: It is an input device that allows the user to operate by simply touching on the display screen. Some computers, tablets, smartphones, etc., have touch-sensitive display screens.



Graphic tablet: This consists of an electronic writing area and a special pen that works with it. It allows artists to enter natural hand movements to create graphical images with motions and actions similar to traditional drawing tools.

Input Devices



Touchpad: This is a pointing device found on the laptop computers in place of a mouse to control the pointer. It allows the user to move the finger across the touchpad just as a mouse pointer does and this movement in the form of data is sent to the computer.



Joystick: This is an input device used for playing video games, controlling training simulators and robots. Joysticks and other game controllers can also be used as pointing devices.

Audio Visual Input Devices



Scanner: Scanning is a process of taking a close-up photograph. Scanner is an input device which functions like a photocopying machine. It has a glass plate to place the paper which is to be scanned.

Input Devices



Microphone: This is used to input human voice into the computer. It is attached to a computer for the input of sound. It accepts sound which is analogue in nature as input and converts it to digital format.



Digital camera: This can take pictures and videos and convert them into digital format.



Webcam: It is a compact and less expensive version of a digital camera. It is used in computers for video chatting. It does not have an internal memory.

Closed circuit TV (CCTV): CCTV captures the images and videos fed as input to the computers. CCTVs are commonly used to maintain road safety and the security on premises.

Input card Readers



Smart card or chip reader: This is a plastic card that stores and transacts data. It has a tiny 'chip' of computer memory embedded inside. Data can be stored in the chip's memory and read back using a 'chip' reader.



Magnetic strip reader: The credit cards have a magnetic strip. This strip stores the user's data in the form of magnetised dots (for example, the credit card number, card expiry date, and customer name).

Input-reading Text or Codes



Barcode or Quick Response (QR) code reader: It is a set of vertical lines of different thickness and spacing that represent a number. These lines are read by a barcode reader or scanner. Barcode readers are devices that are used to input data from such set of barcodes.



Optical Mark Reader (OMR): It is an input device that recognises marks made by a pencil or pen in a multiple-choice type form.



Magnetic Ink Character Reader (MICR): It reads the data written by the magnetic ink. The cheque number is printed at the bottom of each bank cheque by special magnetic ink using a special font.



Optical Character Recognition (OCR): This is a software technology that converts images of text into an actual text file.

Input Sensors

A sensor is a device that senses the real world data (for instance, temperature) and converts it into digital data to be processed by the computer.

Remote control: This is a very commonly used input device. It sends data signals each time a button is pressed using infrared light or radio signals.

Biometric sensor: It is a device that identifies unique human physical features with high accuracy. It is an essential component of a biometric system which uses physical features like fingerprints, retina, iris patterns,



Output Devices

These can be categorised into three types based on the output produced by the computer in the following form:

1. soft copy
2. hard copy
3. sound output

Soft copy output device: The output on the screen is called a soft copy. The soft copy output can be provided on the following devices.

Visual Display Unit (VDU)

This is an output device that visually conveys text, graphics, and video information. Information shown on a display device is called softcopy because the information exists electronically and is displayed for a temporary period of time.

Output Devices

Display devices include Cathode Ray Tube (CRT) monitors, Liquid Crystal Display (LCD) monitors, Thin Film Transistor (TFT) monitors, Light Emitting Diode (LED) monitors, and gas plasma monitors.



LCD projector: This is a type of video projector used for displaying videos, images, or computer data on a large screen or any other flat surface.



Hard copy output devices

Hard copies are tangible computer outputs. Printer and plotter are used to get a hard copy output.

Printer: This is used to produce a hard copy output. There are different kinds of printing technology. Two factors that determine the quality of a printer are its resolution and speed.

Impact printers: These use the typewriting or printing mechanism where a head or needle strikes against an ink ribbon to make a mark on the paper. The ink ribbon used in this printer is not very expensive. It is used in banks and shops for printing receipts, etc. Dot matrix printers fall under this category.

Hard copy output devices



Dot matrix printers: Use small electromagnetically activated pins in the print head and an inked ribbon to produce images by impact.



Line Printer: The line printer also uses the similar technology but it is a fast printer which prints one row at a time. This means it can print upto 3,000 lines per minute.

Non-impact printers: These do not touch the paper while printing. And since they don't strike the printer head, they are not noisy. They use different technologies to print characters on paper. Inkjet, laser, and thermal printers fall under this category.

Hard copy output devices



Inkjet printers: These form the image on the page by spraying tiny droplets of ink from the print head. The four colour ink (cyan, yellow, magenta, and black) is used to produce colour printouts.



Laser printers: These produce a good quality output. It utilises a laser beam to produce an image (through a mirror) on a drum.



Thermal printers: These produce a printed image by selectively heating heat sensitive thermal paper when it passes over the thermal print head.



Three dimensional (3D) printers: *This is a new generation output device used to print 3D objects. It can produce different kinds of objects in different materials and this can be done using the same printer.*

Plotter

It is an output device used to produce hard copies of graphs and designs on the paper. Plotters are used to print the drawings by using a special pen. Coloured pens are used to produce colour line drawings.



Drum plotter: It is also known as a roller plotter. It consists of a drum or roller on which a paper is placed and the drum rotates back and forth to produce the graph on the paper.



Flatbed plotter: It is also known as a table plotter. It plots on paper that is spread and fixed over a rectangular flatbed table. The flatbed plotter uses two drawing arms, each of which holds a set of coloured ink pens or pencils.

Sound output device

The device which gives a sound output is called a speaker. Speaker devices are designed for personal and public use.

The audio output is the ability of the computer to produce sound. Speakers are the output devices that produce sound. They are connected to the computer through audio ports.



Summary

In this session, you have learnt about the different types of input and output devices of computers.

Project Coordinator : Dr. Dipak D. Shudhalwar

Assistance

Mr. Jayant Mishra



Joint Director

**PSS Central Institute of Vocational Education
Shyamla Hills, Bhopal – 462013 , Madhya Pradesh, India**

E-mail: jdpsscive@gmail.com

Tel. +91 755 2660691, 2704100, 2660391, 2660564

Fax +91 755 2660481

Website: www.psscive.ac.in