Computer Awareness

Part 1   Intro/Generation/ Classification of Computers

Part 2   Computer Architecture / Computer Memory

Lets move on to
Next Part

CA FUNSTA
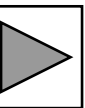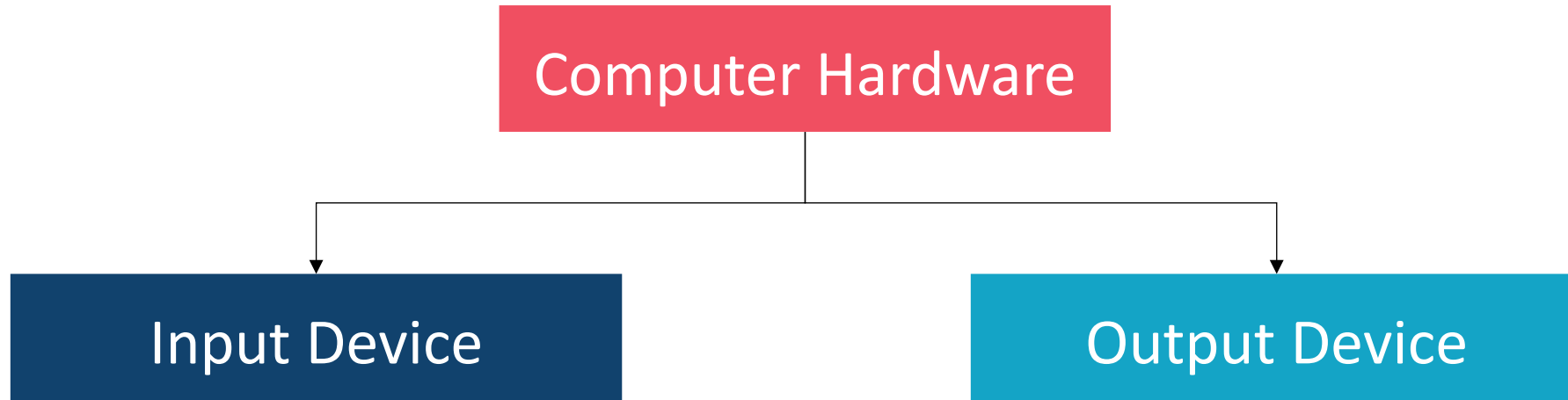UNBOX THE NEW WAY OF LEARNING

```
                    Computer Hardware
                   /                \
          Input Device          Output Device
```
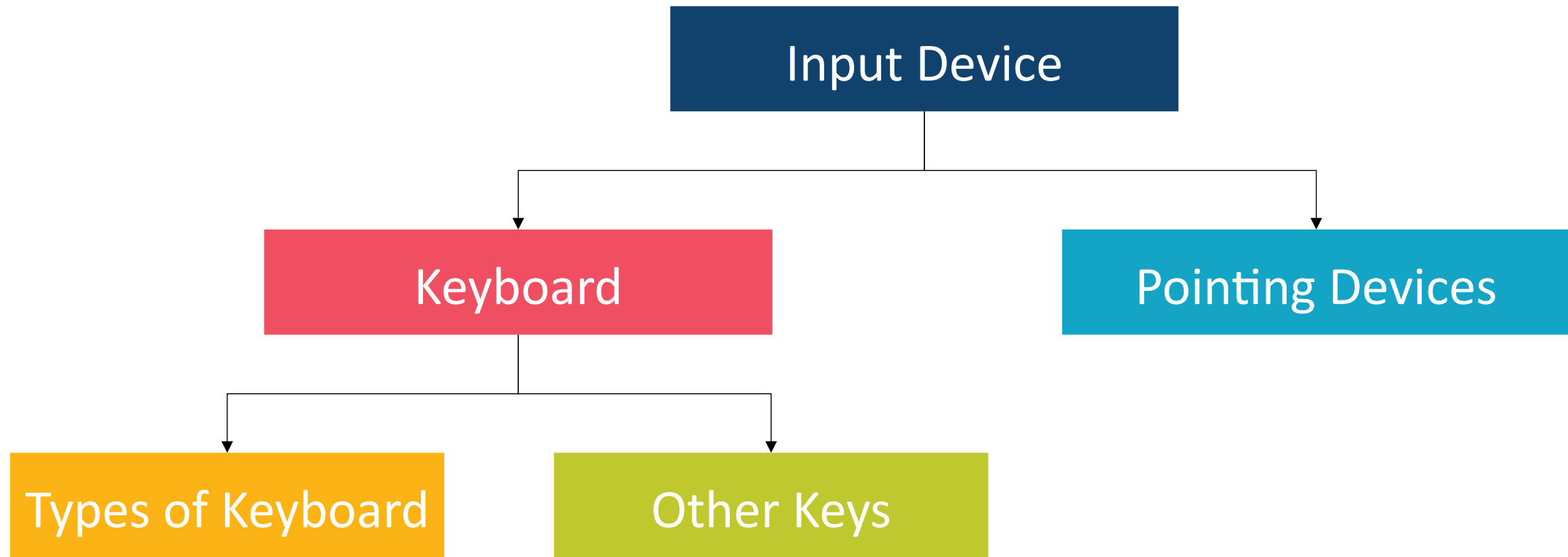
COMPUTER HARDWARE

- Hardware is typically directed by the software to execute any command or instruction.

- **Computer hardware** includes the physical parts of a computer, such as the case central processing unit (CPU), monitor, mouse, keyboard, computer data storage, graphics card, sound card, speakers and motherboard.

Back to
Computer Hardware
Flow Chart

CA FUNSTA
UNBOX THE NEW WAY OF LEARNING

```
                        Input Device
                             |
            +----------------+----------------+
            |                                 |
        Keyboard                       Pointing Devices
            |
     +------+------+
     |             |
Types of        Other Keys
Keyboard
```
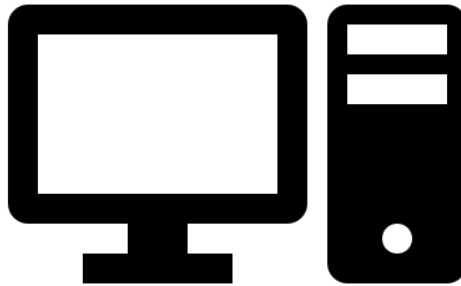
Back to
Computer Hardware
Flowchart

Pointing Devices

Mouse	Barcode Reader	Biometric Sensor
Track Ball	Optical Mark Reader (OMR)	Scanner
Joy Stick	Optical Character Recognition (OCR)	Microphone (Mic)
Light Pen	Magnetic Ink Char. Recognition (MICR)	Web camera (Webcam)
Touch Screen	Smart Card Reader	PC Card

Back to
Input Device Flow Chart

INPUT DEVICES

- In computing, an **Input Device** is a piece of equipment used to provide data and control signals to an information processing system such as a computer

- They accept instructions from the user and concert the accepted instructions into the machine language.
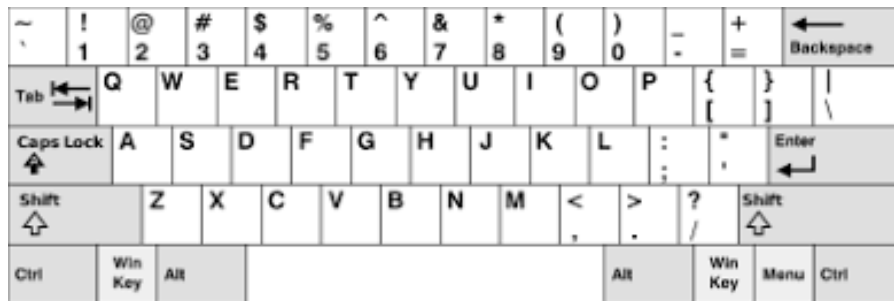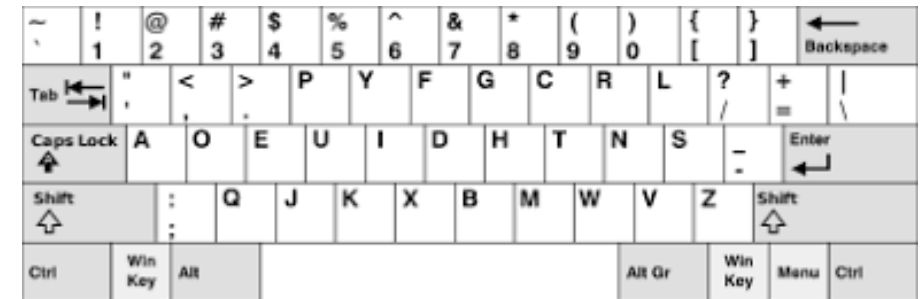
Back to
Computer Hardware

Back to
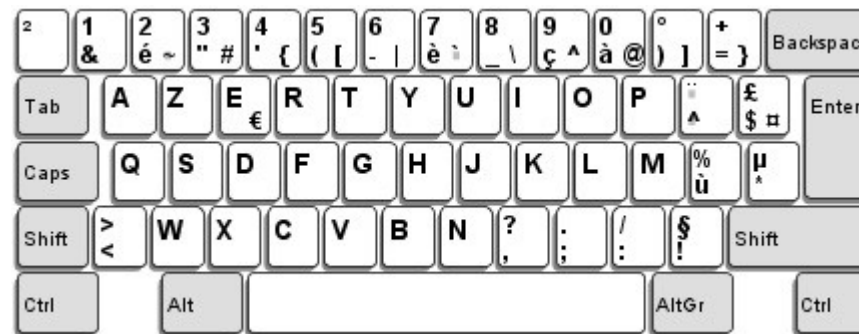Input Device Flow Chart

Keyboard

- It is one of the most common input devices.
- The user can type text and command using this device.

- Keyboard controller stores the code of pressed key in keyboard buffer.
- There are different types of keyboard such as **QWERTY, DVORAK,** and **AZERTY**.

QWERTY

DVORAK

AZERTY

Back to
Computer Hardware

Back to
Input Device Flow Chart

Types of Keys on Keyboard

Alpha Numeric Keys

- Include the alphabet keys (A, B, C,... , Z) and number keys (0,1, 2,3,...., 9)..

Types of Keys on Keyboard

Numeric Keys

- There are located at the right hand side of the keyboard.
- They consist of digits and mathematical operators

Types of Keys on Keyboard

Function Keys

- They are the programmable keys, i.e the programs can assign some specific actions.
- They are numbered from **F1** to **F2.**

Types of Keys on Keyboard

Cursor Control Keys

- **Keys** include four directional (**left, right, up, down**) arrow keys that are arranged in a inverted T formation between the alphanumeric and numeric keypad.
- Above the arrow keys there are four more keys to control the cursor.
- These are as follows
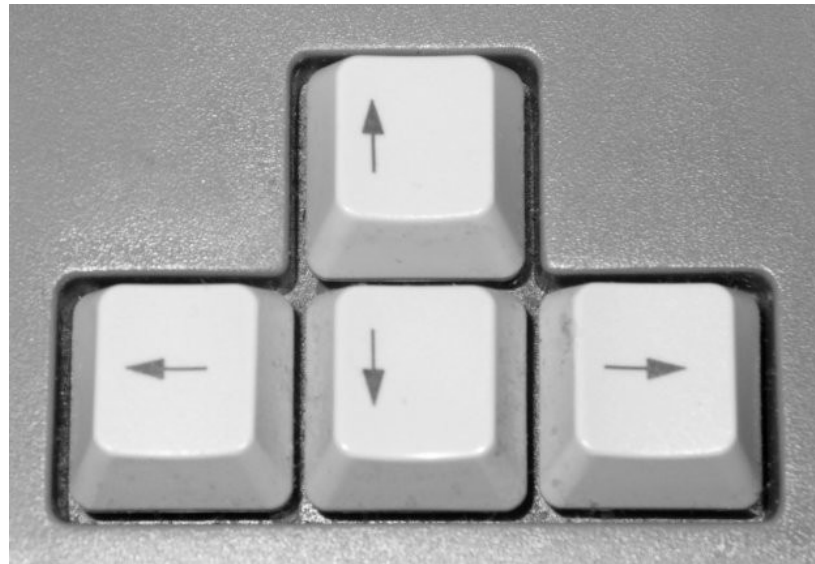
Types of Keys on Keyboard

Home

- It is used to return the cursor to the beginning of the line or the beginning of the document

End

- It moves the cursor to the end of line.

Page Up

- When it is pressed, the page view will be moved up one page and cursor goes to the back page.

Page Down

- When it is pressed, the page view will be moved down one page and cursor goes to the next page

Back to
Input Device
Flow Chart

Other Keys

Ctrl

- **It performs a special operation with the combination of other keys**

Enter ⏎

- It is used to finish an entry and begin the new entry in a document
- Enter key is an alternative to press **ok** button.
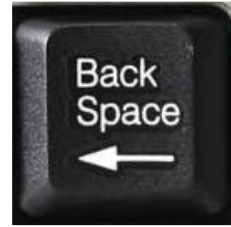
Shift

- Some keys on the keyboard like numeric keys have a symbol printed on their upper portion.
- Shift key is used to print these symbols. This key is also called combination key.

▶

Other Keys

- It allows a user to cancel or abort operations which are executing at present
- It opens start menu with the combination of Ctrl key.

- It is used to erase anything typed.
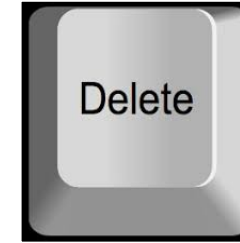
- It is used to erase information from the computer's memory and characters on the screen.

Other Keys

- It is used to enable and disable the numeric keypad.

- It is used to open the start menu

- It is used to move the cursor over to the right to a pre-set.
- In world document, tab is used to indent a paragraph.

Other Keys

Spacebar

- It provides a space between two words.
- It is the longest key on the keyboard

Caps Lock

- It is used to type the alphabet in capital letters.
- When this key is enable, the alphabet would be in capital letters.
- When it is disabled, the alphabet would be in small letters

Back to Input Device Flow Chart

Pointing Devices

- A pointing devices is used to communicate with the computer by pointing to the locations on the monitor.

- Movements of the pointing devices are echoed on the screen by movements of the pointer.

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Pointing Devices
Flow Chart

Back to
Input Device
Flow Chart

Pointing Devices

Mouse

- It is a small handheld device having two buttons on its upper side and also has a small wheel between these buttons.

- The mouse may be used go position the cursor on screen move an object by dragging or select an object by clicking.

- Mouse was invented by Douglas Engelbart at stand ford research Centre in 1963. There are three types of mouse as follows wireless mouse, mechanical mouse, optical mouse.

- Thera are four actions of mouse as follows, Left click It selects an item on the screen, Double click It is used to open a document or program, Right click It displays a list of commands on the screen.

- Right clicking is used to access the properties of selected object, Drag and drop It is used to move an item on the screen.

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Pointing Devices
Flow Chart

Back to
Input Device
Flow Chart

Pointing Devices

Track Ball

- It is another pointing device which is an alternative to a mouse.

- A trackball is a pointing device consisting of a ball held by a socket containing sensors to detect a rotation of the ball about two axes—like an upside-down mouse with an exposed protruding ball Users roll the ball to position the on-screen pointer, using their thumb, fingers, or commonly the palm of the hand while using the fingertips to press the mouse buttons.

- Large trackballs are common on CAD workstations for easy precision.

Back to
Pointing Devices
Flow Chart

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Input Device
Flow Chart

Pointing Devices

Joy Stick

- It is a device that moves in all directions and controls the movement of the cursor.

- Joysticks are used in flight simulators, CAD / CAM system, etc.

- Joy stick allows movements in all directions (360°).

Back to
Pointing Devices
Flow Chart

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Input Device
Flow Chart

Pointing Devices

Light Pen

- A light pen is a computer input device in the form of a light-sensitive wand used in conjunction with a computer's cathode-ray tube (CRT) display.

- It is very useful in identifying a specific location on the screen.

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Pointing Devices
Flow Chart

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Input Device
Flow Chart

Pointing Devices

Touch Screen

- It is an input device that accepts input when the user places a fingertip on the computer screen.

- Touch screen is generally used in applications like ATM, HOSPITAL, airline reservation, supermarkets etc.

Back to
Pointing Devices
Flow Chart

Back to
Input Device
Flow Chart

Pointing Devices

Barcode Reader

- It is an optical scanner that can read printed barcodes, decode the data contained in the barcode and send the data to a computer.

- Like a flatbed scanner, it consists of a light source, a lens and a light sensor translating for optical impulses into electrical signals.

- A perfectexample of a barcode reader, use in super market where barcode scanner reads the price of a product

Back to
Pointing Devices
Flow Chart

Back to
Input Device
Flow Chart

Pointing Devices

Optical Mark Reader (OMR)

- Optical mark recognition is the process of capturing human-marked data from document forms such as surveys and tests.

- They are used to read questionnaires, multiple choice examination paper in the form of lines or shaded areas.

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Pointing Devices
Flow Chart

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Input Device
Flow Chart

Pointing Devices

Optical Character Recognition (OCR)

- Optical character recognition or optical character reader is the electronic or mechanical conversion of images of typed, handwritten or printed text into machine-encoded text, whether from a scanned document, a photo of a document, a scene-photo or from subtitle text superimposed on an image.

Back to
Pointing Devices
Flow Chart

Back to
Input Device
Flow Chart

Pointing Devices

Magnetic Ink Character Recognition (MICR)

- The characters are printed using a special ink, which contains iron particles that can be magnetised.

- Magnetic ink character recognition code, known in short as MICR code, is a character recognition technology used mainly by the banking industry to streamline the processing and clearance of cheques and other documents

Back to
Pointing Devices
Flow Chart

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Flow Chart

POINTING DEVICES

SMART CARD READER

- Smart card readers are used with smart cards which are a type of plastic technology card with a built-in chip used for.

- electronic processes including personal identification, access control, authentication, and financial transactions

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Pointing Devices
Flow Chart

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POINTING DEVICES

BIOMETRIC SENSOR

- It is a transducer that changes abiometric treat of a person into an electrical signal.Biometric treats mainly include biometric fingerprint reader, iris, face, voice, etc.

- Generally, the sensor reads or measures light, temperature, speed, electrical capacity and other types of energies.

Back to
Pointing Devices
Flow Chart

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Flow Chart

POINTING DEVICES

SCANNER

- It is a device that optically scans images, printed text, handwriting or an object and converts it to a digital image.

- The most common types of scanners are as follows, Handled scanners, Flatbed scanners, Drum scanners.

Back to
Pointing Devices
Flow Chart

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Flow Chart

POINTING DEVICES

MICROPHONE (MIC)

- We can send input to the computer through a special manual input device called microphone or mic.

- A mic converts the received sound into computer's format, which is called digitised sound or digital audio.

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Pointing Devices
Flow Chart

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Flow Chart

POINTING DEVICES

WEBCAMERA (WEBCAM)

- It is a digital video device commonly built into a computer. Its main function is to transmit pictures over the Internet.

- It is popularly used with instant messaging services and for recording images.

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Pointing Devices
Flow Chart

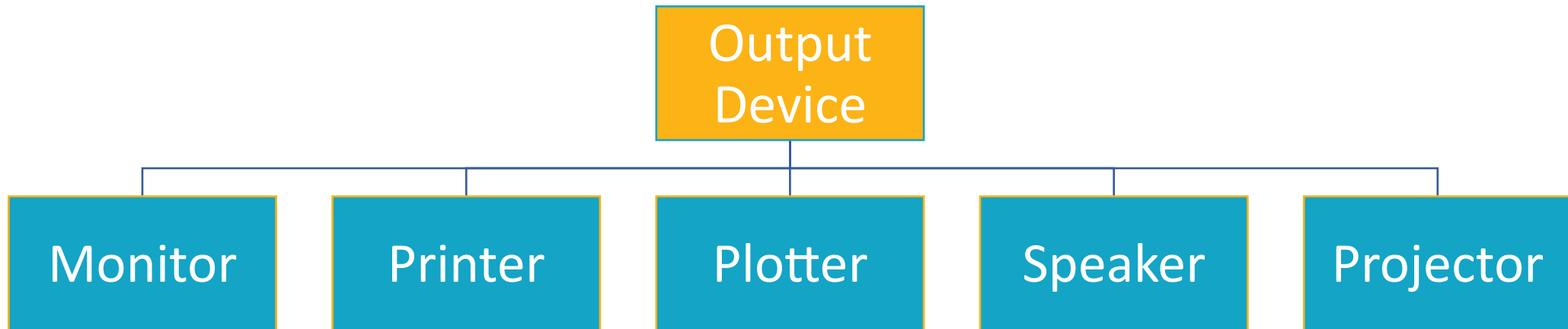Back to
Input Device
Flow Chart

POINTING DEVICES

PC CARD

- A PC card is a credit card size memory or I/O device that fits into a personal computer, usually a notebook or laptop computer.

- Probably the most common use of a PC card is the telecommunications modem for notebooks computers.
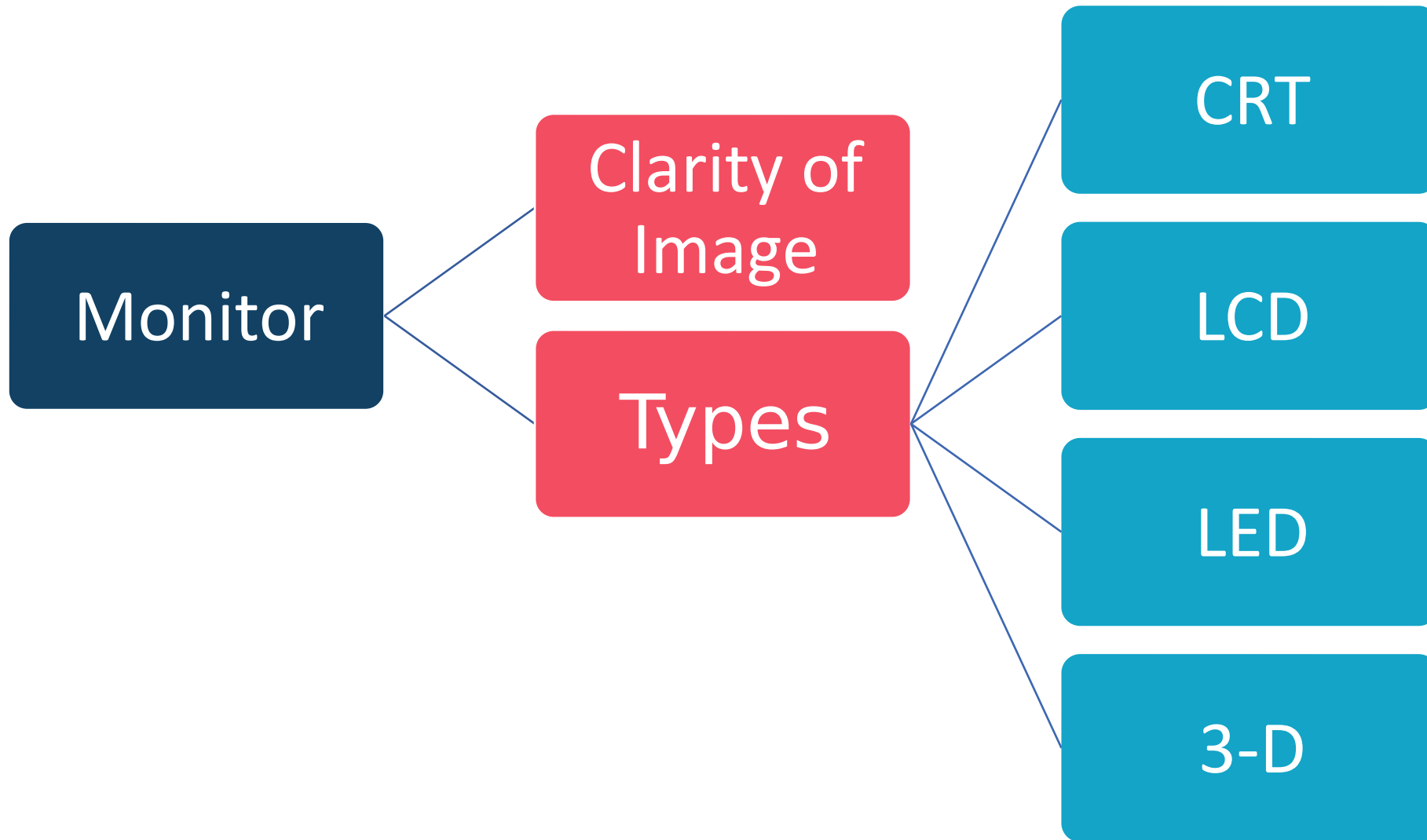

Back to
Pointing Devices
Flow Chart

Back to
Input Device
Flow Chart

```
Output
Device
   ├── Monitor
   ├── Printer
   ├── Plotter
   ├── Speaker
   └── Projector
```

Back to
Computer
Hardware

Monitor

Clarity of Image

Types

CRT

LCD

LED

3-D

Back to Output Flowchart

Output Device

- An output device is any piece of computer hardware equipment which converts information into human-readable form.

- It can be text, graphics, tactile, audio, and video.

- Some of the output devices are Visual Display Units (VDU)

 Monitor

 Printer

 Plotter

 Projector

Monitor

- A computer monitor is an electronic device that shows pictures for computers.

- Monitors often look similar to televisions.

- The main difference between a monitor and a television is that a monitor does not have a television tuner to change channels.

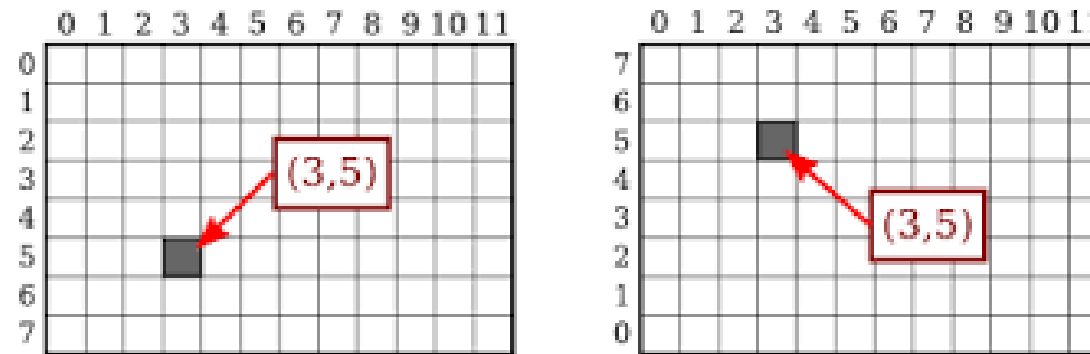- Monitors often have higher display **resolution** than televisions.

Monochrome

Color display

Clarity of an Image

Resolution of screen:

- In **computers, resolution** is the number of pixels (individual points of color) contained on a **display** monitor, expressed in terms of the number of pixels on the horizontal axis and the number on the vertical axis.


12-by-8 pixel grids, shown with row and column numbers.
On the left, rows are numbered from top to bottom,
on the right, they are numberd bottom to top.

Clarity of an Image
Dot pitch

- **Dot pitch** (sometimes called line **pitch**, stripe **pitch**, or phosphor **pitch**) is a specification for a **computer** display, **computer** printer, image scanner, or other **pixel**-based device that describes the distance, for example, between **dots** (sub-pixels) on a display screen.
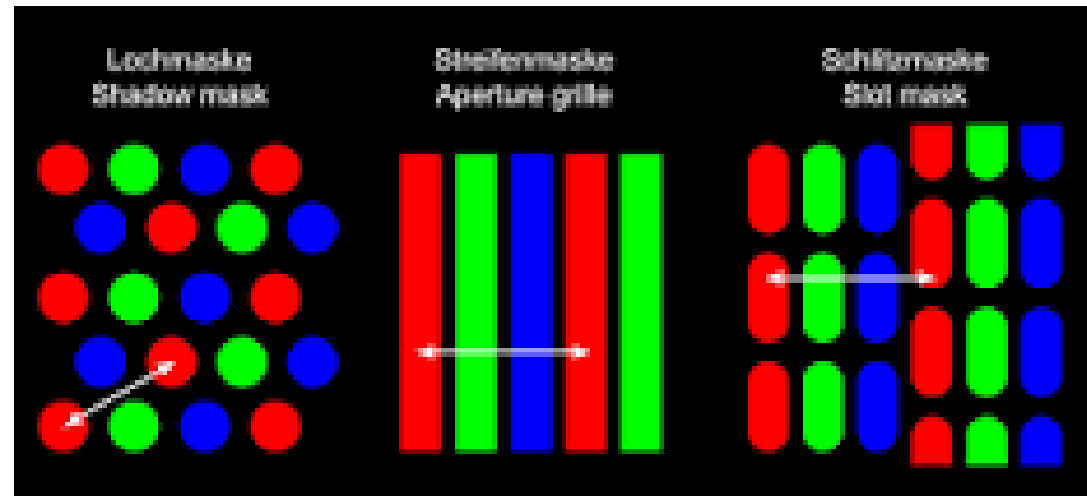
Clarity of an Image
Refresh rate

- Refresh rate is a CRT monitor measurement in Hz that indicates how many times per second a monitor screen image is renewed.

- For example, a monitor with a refresh rate to **75 Hz** means the screen is going to redraw **75 times per second**.
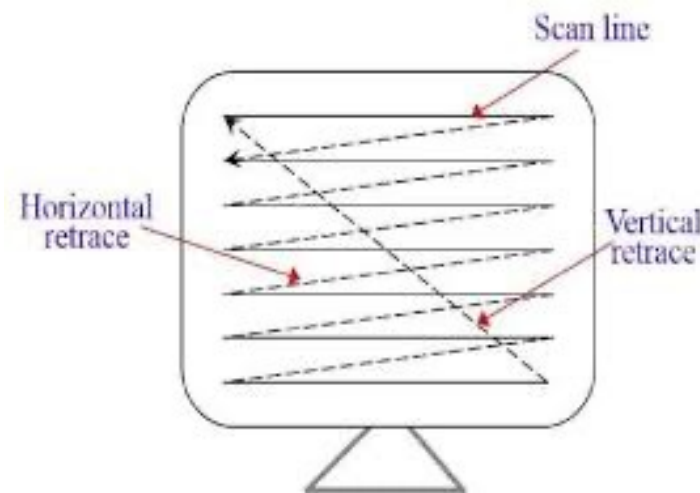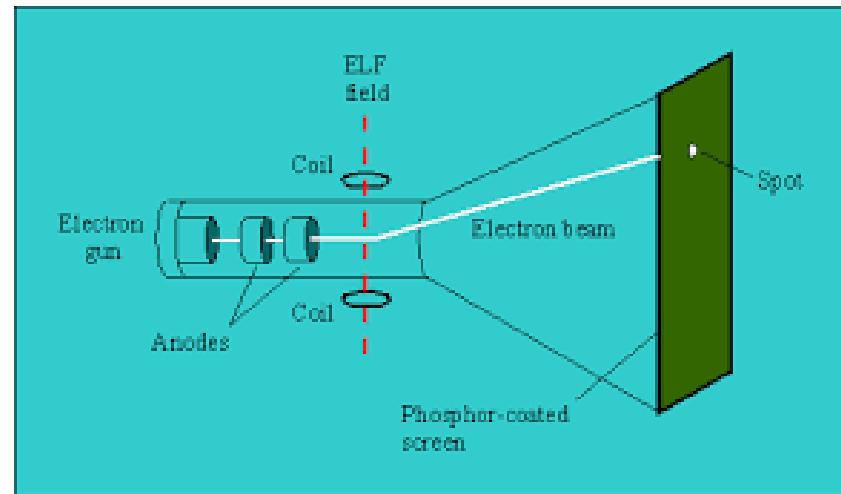

Back to Monitor Flowchart

Types of Monitor
CRT(Cathode Ray Tube)

- The **cathode-ray tube** (CRT) is a vacuum **tube** that contains one or more electron guns and a phosphorescent screen and is used to display images.

- It modulates, accelerates, and deflects electron beam(s) onto the screen to create the images.
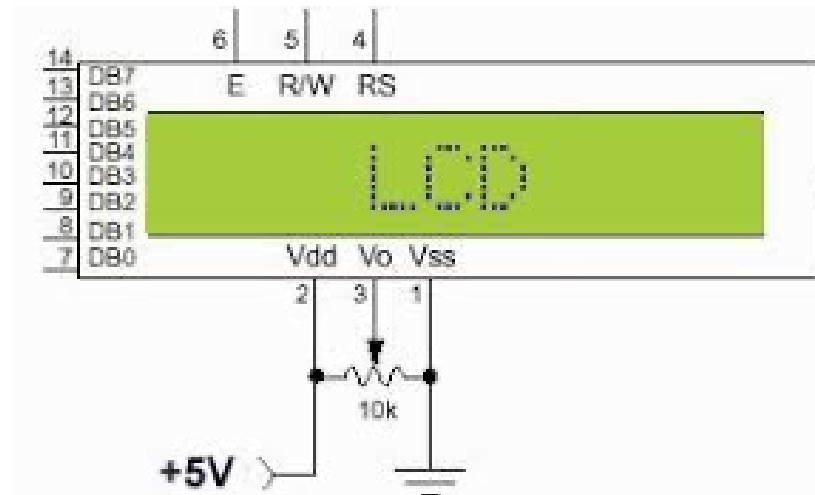

Back to Monitor Flow Chart

Types of Monitor

LCD(Liquid Crystal Display)

- The way they operate is significantly different as well.

- Instead of firing electrons at a glass screen, an LCD has backlight that provides light to individual pixels arranged in a rectangular grid.

- Each pixel has a red, green, and blue RGB sub-pixel that can be turned on or off.

Back to
Monitor
Flow Chart

Types of Monitor

LED(Liquid/Light Emitted Diode)

- Short for light-emitting diode **monitor**, an **LED monitor** or **LED** display is a flat screen, flat-panel **computer monitor** or television.

- It has a very short depth and is light in terms of weight.

- The actual difference between this and a typical LCD **monitor** is the backlighting.

Back to
Monitor
Flow Chart

Types of Monitor
3-D monitor

- Newer **monitors** are able to display a different image for each eye, often with the help of special glasses, giving the perception of depth.

- An autostereoscopic screen can generate **3D** images without headgear.

Back to
Monitor
Flow Chart

Printers

- A **printer** is an output device that prints paper documents.

- This includes text documents, images, or a combination of both.

The speed of the printer is divided into 3 types

 Characters per second(CPS)

 Lines per minutes (LPM)

 Pages per minute(PPM)

Note: Resolution of a Printer quality is measured in Dots Per Inch (DPI)

Printers

Impact Printers

Non -Impact Printers

DOT Matrix

Daisy wheel

Line Printer

Drum printer

Inkjet Printer

Thermal Printer

Laser Printer

Electromagnetic printer

Electrostatic printer

Back to
Output Device

Printers

Impact Printers

- An **impact printer** strikes paper and ribbon together to form a character Like typewriter.

- This can print a character or entire line at a time

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Printer
Flowchart

Impact Printers

DOT Matrix

- A print head that runs back and forth on the page and prints by impact, striking an ink-soaked cloth ribbon against the paper

- They can be Bidirectional.
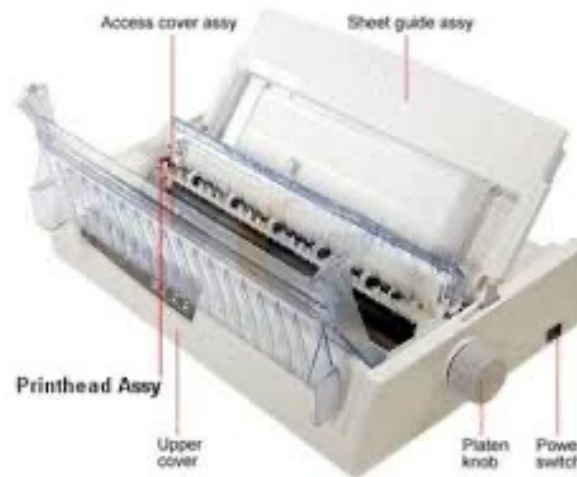
Back to Printer Flowchart

Impact Printers

Daisy wheel

Daisy Wheel Printer

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Printer
Flowchart

Impact Printers

Line Printer

Back to Printer Flowchart

Impact Printers

Drum printer

Fig. 5.17 Printing Mechanism of a Drum Printer
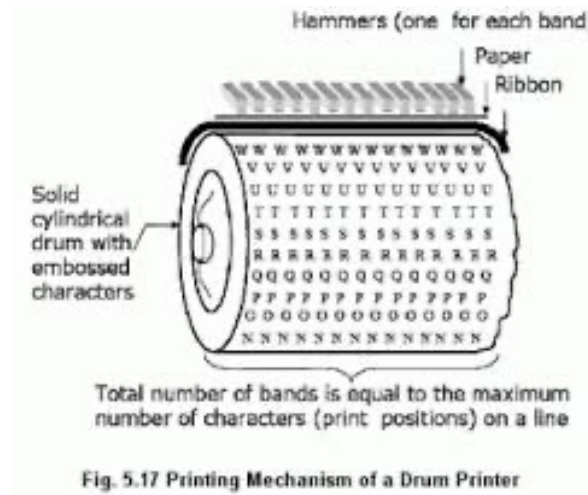
Back to Printer Flowchart

Non- Impact Printers

Inkjet Printer

- An **inkjet printer** is a **computer** peripheral that produces hard copy by spraying **ink** onto paper.

- A typical **inkjet printer** can produce copy with a resolution of at least 300 dots per inch (dpi).

Back to
Printer
Flowchart

Non- Impact Printers

Thermal Printer

- It uses heated pins to print on the heat sensitive paper.

Back to Printer Flowchart

Non- Impact Printers

Laser Printer

- When a document is sent to the **printer**, a **laser** beam "draws" the document on a selenium-coated drum using electrical charges.

- Most **laser printers print** only in monochrome.

- It can print 5-24 pages with 400-1200 dpi.

Back to Printer Flowchart

Non- Impact Printers

Electromagnetic Printer

- They are the **fastest printers** with the speed of **20000 LPM**. i.e 250 pages per minute.

Back to
Printer
Flowchart

Non- Impact Printers

Electrostatic printer

- A **printer** that uses an electric charge to deposit toner on paper. ink cartridge - a cartridge that contains ink and can be replaced.

- Laser **printer** - **electrostatic printer** that focuses a laser beam to form images that are transferred to paper electrostatically.

Back to Printer Flowchart

Plotter

- A **plotter** is a computer hardware device much like a printer that is used for printing vector graphics.

- Instead of toner, **plotters** use a pen, pencil, marker, or another writing tool to draw multiple, continuous lines onto paper rather than a series of dots like a traditional printer.

- They are of two types

Flat bed plotter

Drum Plotter

Plotter

Back to
Output device
Flowchart

Speaker

- **Speakers** are popular output devices used with **computer** systems. They receive audio input from the **computer's** sound card and produce audio output in the form of sound waves.

Headphones

- **Headphones** are a pair of small speakers used for listening to sound from a **computer**, music player or other such electronic device

Back to
Output device
Flowchart

◀

Projector

- A **projector** is an output device that can take images generated by a **computer** or Blu-ray player and reproduce them by **projection** onto a screen, wall, or another surface.
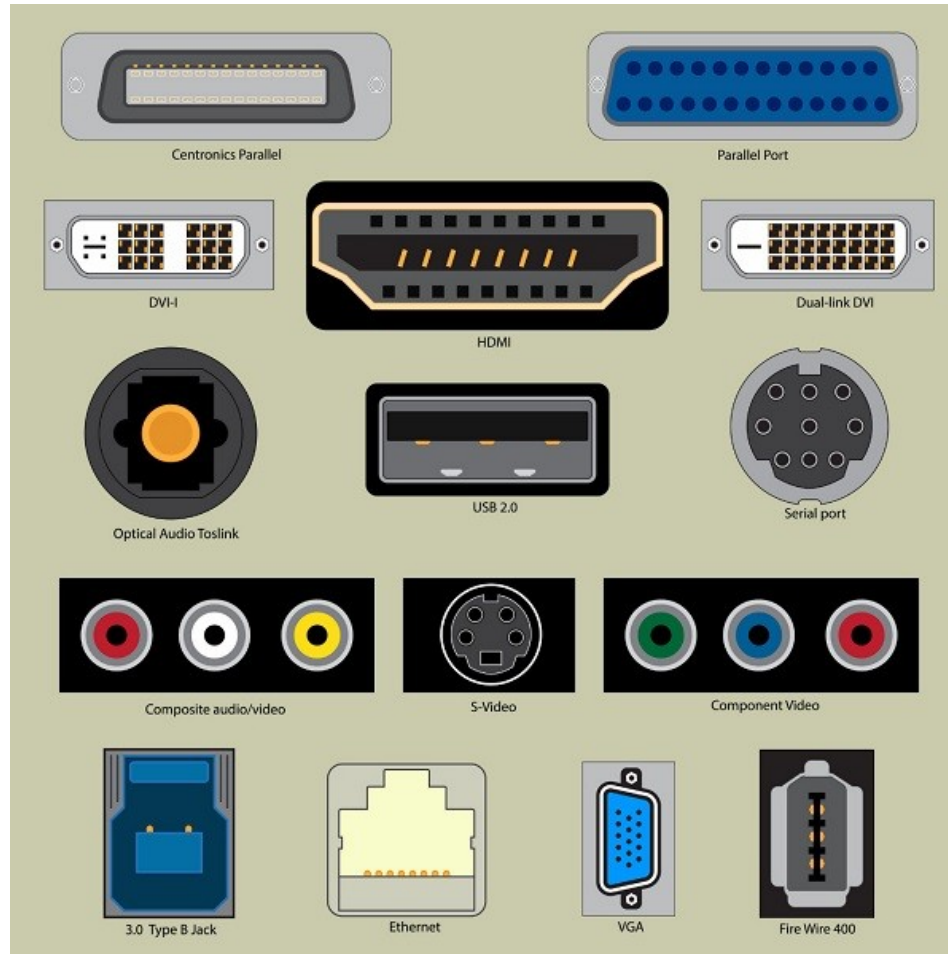
LCD Projector

DLP Projector

Back to
Output device
Flowchart

I/O PORTS

- (Input/Output **port**) An I/**O port** is a socket on a computer that a cable is plugged into. The **port** connects the CPU to a peripheral device via a hardware interface or to the network via a network interface.

I/O PORTS

I/O PORTS

- Parallel Ports
- Serial Ports
- USB Port
- Firewire

Back to
Computer Hardware

I/O PORTS
Parallel Ports

- A parallel ports lets an external parallel device to communicate with the computer by transmitting more bits(such as 8 or 25) of data a time.

- For example – printer,scanner.

Back to
I/O Ports
Flowchart

I/O PORTS
Serial Ports

- Serial ports allows one bit of information at a time and hence it's a slow transmission process.

- For e.g.: Mouse, Keyboard doesn't needs a faster transmission.

- It is often referred as communication ports.

Back to
I/O Ports
Flowchart

I/O PORTS
USB Port

- It is the most common external port available with the computers.

- It is a plug and play feature.

- A single USB port can support connection of up to 127 devices

Back to
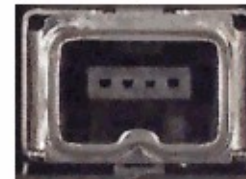I/O Ports
Flowchart

I/O PORTS
Firewire

- It has high speed transmission capacity for multimedia usage like video camera.

- It is a expensive port.

- It can transfer up to 400 mb/sec.

IEEE 1394(AKA Firewire, I-Link)
6-pin   4-pin

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I/O Ports
Flowchart