

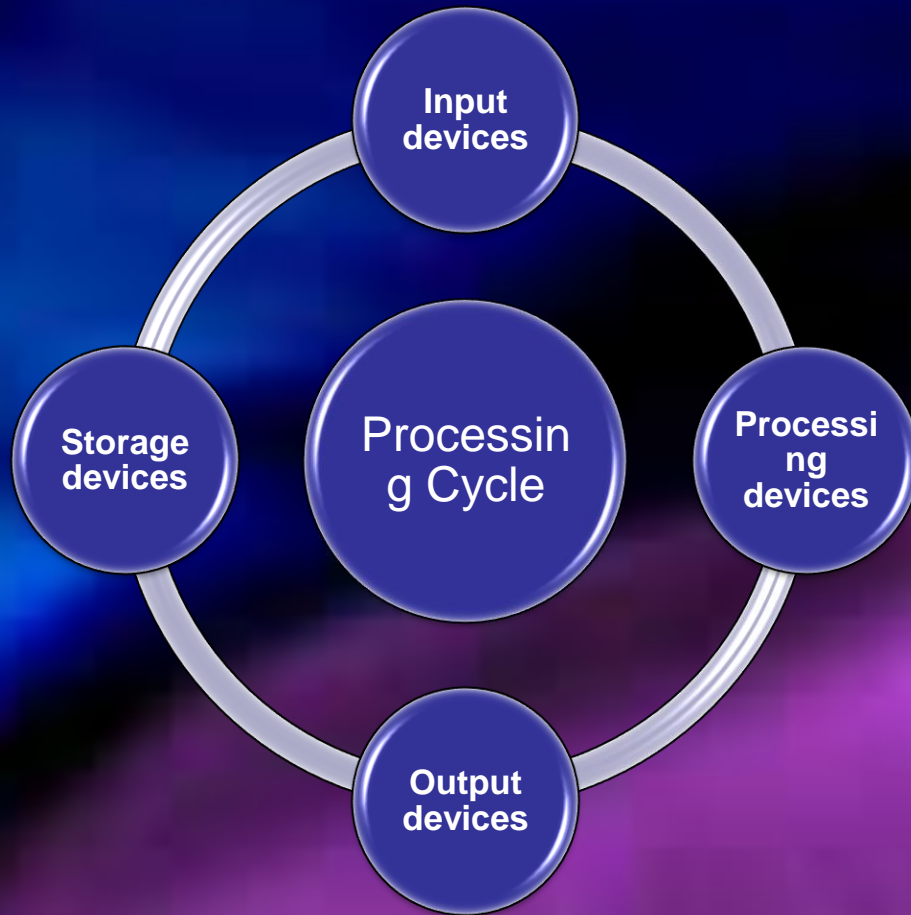


Output devices



The personal computer system uses the following hardware device types -

- Input devices
- Processing devices
- Output devices
- Storage devices



to complete the processing cycle

Monitors What are they?

- A monitor is an interface between the computer and the user, the video adapter converts the computers instructions to a form that tells the monitor what to display
 - Your monitor **displays everything that is currently happening in your PC** – look at your taskbar – what programs are you running



- what other programs is the system running?



Monitor/Visual Display Unit – an output device – gives soft copy (something which is showing temporarily on screen)

- **Other names?**

VDU, screen, display,
could be:
flat screen, plasma, LED, touch screen

- **What is its purpose?**

shows **position** of mouse

shows **position** of cursor

shows raw **data** as it is input

shows **information** which is the result of processing the raw data



Different screen types

Flat screen LCD monitor



Flat screen LED monitor
highest quality output



CRT monitor
lowest quality output



Performance measures ...

- The performance parameters of a monitor are:
 - Size
 - Viewable area, usually **measured diagonally** versus physical size (How much can you actually see?)
 - Do you want to watch lots of DVD movies? Maybe consider a wide screen instead of standard size
 - Response time
 - The time taken to react to input or refresh. It is **measured in milliseconds (ms)**. Lower numbers mean faster transitions.
 - Resolution
 - Clarity of text and images
CAD users, graphic artists and video game players run their computers at 1600×1200 pixels resolution (**measured in pixels per inch** – a pixel is a single point in a graphic image) or higher if they have the necessary equipment.
1280×1024 pixels is more standard.
 - Note: Dpi (dots per inch) is a measure of printing resolution; the number of dots of ink a printer or toner produces in one-inch

Graphics/Video Cards ... what are they?

- VGA video card: Video display controller that generates a feed of output images to a display (eg a computer monitor)
- A Graphics card: converts the data into visual display output eg makes the shape, adds light and colour, makes it 3D etc etc for your monitor to understand
- A Video/Graphics card: connects to the motherboard and generates output images to display. Video cards include a processing unit, memory, a cooling mechanism and connections to a display device. This is a Radeon 9800 Pro



- For fast-paced games, the computer has to go through this process about sixty times per second. Without a graphics card to perform the necessary calculations, the workload would be too much for the computer to handle.
- The graphics card accomplishes this task using four main components:
 - A motherboard connection for data and power
 - A processor to decide what to do with each pixel on the screen
 - Memory to hold information about each pixel and to temporarily store completed pictures
 - A monitor connection so you can see the final result

– As at 14/11/2016

the Radeon 9800 Pro
was the top recommended
video card



PRINTER - an output device

- **What is it?**

A peripheral device – an extra device that is added to a PC

- **What is its purpose?**

CPU sends copy of data to print from RAM to printer memory

Produces **hard copy** (something permanent you can take away with you from the computer)

Types of printers

- Laser

(toner in cartridge fuses with laser beam, colour toner relatively expensive but black cheap, can be an expensive purchase, but very high quality, quiet and fast)

this example ([HP LaserJet Pro CM1415fnw](#)) has a control panel to navigate functions directly at the printer



- Ink jet printer
(sprays ink in shape of letter or image, colour or black, cheap to purchase, good quality printing, home use common)

this is a Hewlett Packard example



- Dot Matrix
(uses impact from pins or printing head onto a black ribbon, continuous paper used, can use carbon paper, low/high speed, cheap/expensive, used for bulk printing, noisy)

this is an Okidata example



End of presentation

Next steps

Go back to the workbook

You will see that there are Study Notes on the Output Devices