2.2 Input devices.

An input device is any device that is used to supply information to a computer (as data or for the selection of commands/menus/icons etc).

Keyboard: This is used to input/enter data into a computer. With a keyboard, you can enter commands, select menu options and enter data/values into applications (software).

Mouse: The mouse is used to point and click on items/icons/menu's on the screen. When you move the mouse, a pointer on the screen also moves. If you press the mouse button while the pointer is on certain icons or buttons, you can activate commands or program options.

Light pen: A special pen that lets you *draw* directly onto the screen, or click on buttons and menus.

Touch screen: Similar to an ordinary TV screen. Has a thin, transparent layer of plastic covering that is touch-sensitive. When you touch a part of the screen, it has the same effect as if you clicked on that area with a mouse.

Joystick: A hand-held stick that can be moved around in any direction. Used mainly for playing games (i.e, flight simulators etc).

Touchpad: Often used on laptops. With a touchpad, you can move the mouse cursor on the screen by touching the pad and moving your finger around. The two buttons, on the touch pad, simulate the use of the left and right buttons on a mouse.

Trackerball: Instead of using a mouse, you can also use a trackerball. The trackerball generally provides the same functionality as a mouse, however, you do not have to move the unit up/down/left/right etc to move the mouse pointer. Instead, you can use your thumb on the roller-ball to move the cursor on the screen.

Graphics Pad: This is a square piece of material that you can use to draw pictures (as a mouse is not always practical for drawing complicated lines and shapes).

Scanner: Used to scan images/documents into a computer. Can be flatbed or hand-held. Also used for **Optical Character Recognition (OCR)** and to scan microfilm/transparencies and negatives.

2.3 Output devices (VDU/Monitors).

With modern software, the screen display can be the most important interface with the user. Nearly all commands are issued using a keyboard and/or mouse (including a trackerball/touchpad etc).

Displaying data on-screen requires a graphics card (such as an **AGP** supported card described earlier) and a **Visual Display Unit (VDU)**.

AGP Card

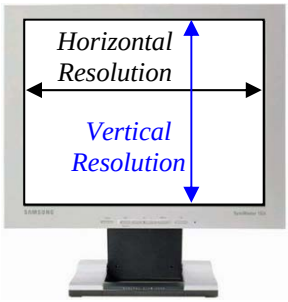
VDU (also known as a **Monitor**): The screen/monitor/visual display unit is the part of the computer that displays the current process or application (i.e., what's going on and what you are doing).

There are several types of VDU such as the ***CRT*** (***Cathode Ray Tube***) and ***Flat Screen/LCD*** style. ***CRT's*** are cheaper but take up more desktop space whereas ***Flat Screen/LCD*** styles take up less room, often display a much sharper screen but are generally much more expensive.

CRT

Flat Screen

Monitors often vary in size from 14" to 21" (30 – 60 cm). A larger screen can display images at a higher **resolution**. The screen image is made up of **pixels** (a 'dot' or 'point' on the screen display). The **screen resolution** is defined by the maximum number of pixels displayed horizontally and vertically. Most monitors can support a number of screen resolutions such as 640 x 480, 800 x 600, 1024 x 768, 1280 x 1024 etc where the size *n* x *n* denotes the number of pixels in width x height respectively.



The higher the screen resolution, the more graphical information you will be able to fit on the screen (and objects will look smaller and sharper). Very high resolutions (1024 x 768 and above) are often used for CAD (Computer Aided Design) tasks to ensure an accurate representation of drawing objects.

A monitor should also have a sufficient **refresh rate** at the selected resolutions. The refresh rate is the frequency with which an image is redrawn. If the refresh rate is set too low, the image will appear to flicker and may cause eye strain and headaches.

2.4 Output Devices (Printers).

Printers are used to transfer information from the computer onto paper. For example, if you typed a letter in a word processor, you could print out a paper copy to send. There are many different types of printers (presented below).

Laser: These are large, expensive printers that work like a photocopier. They usually have very high quality printouts and can print very fast.

Inkjet and Bubble-Jet: These are smaller, cheaper printers that use a little cartridge to spray a jet of ink onto the paper. They are fairly quiet and of good quality, but are not as fast or produce such high quality output as a laser printer. These printers are sometimes known as **line printers** because they print each page one line at a time.

Dot matrix/impact: An older type of printer that uses a ribbon and a print head, like a typewriter. They are very loud and extremely slow. However, they are very much cheaper.

Plotter: This is a special type of printer that draws pictures based on commands from a computer. They are used by engineers and designers who need to draw complicated diagrams (in conjunction with CAD – Computer Aided Design – software).

2.5 Storage.

A PC processes the data in streams of **bits** (the smallest component of computer data). Each **bit** can be in one of two states: **1** or **0** (**on** and **off**). These states are known as **binary digits**.

Bits are combined in sets of **eight** to form a **byte**. Bytes are used to represent data such as characters – for example, 01000001 is the character **'A'** in binary code. Binary codes are also used for instructions.

Further units used to measure data are called **kilobytes, megabytes** and **gigabytes**.

A **kilobyte** (**KB**) is **1024 bytes**. The size of files stored on your computer is often measured in kilobytes.

A **megabyte** (**MB**) is **1,048,576 bytes** (1024 kilobytes). MB's are often used to measure the storage capacity of a disk or the amount of main memory in a computer system. As an example, 1MB is approximately 5000 pages of double-spaced text.

A **gigabyte** (**GB**) is **1,024 megabyte's**. Devices such as hard drives are often measured in gigabytes.