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There are different types of computer of varying size and power including:

- **Mainframe**: large, very powerful, **multi-user** and **multitasking**
  - **multi-user**: can be used by many people at the same time.
  - **multitasking**: can run many programs and process different sets of data at the same time

- **Supercomputer**: the most powerful type of mainframe

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- **Minicomputer**: smaller than a mainframe, powerful, multiuser, multitasking
- **Personal computer (PC)**: single user
  - **Desktop computer**: suitable size for sitting on an office desk
    - **Workstation**: most powerful type of desktop, used for graphic design ...
  - **Portable**: can be carried around, can operate with batteries

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- **Personal computer (PC)**: single user
  - **Portable**:
    - **Laptop**: large portable, can be rested user's lap
    - **Notebook**: size of a sheet of notebook paper
    - **Handheld**: can be held in one hand
      - **PDA** (personal digital assistant): has functions such as task lists, diary, address book. PDAs can be screen-based or keyboard-based.
      - **Pen-based**: main input device is an electronic pen

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- The term **PC** usually refers to an IBM compatible personal computer. An Apple Mac personal computer is not referred to as a PC.
- **Server computer**: is a computer on a network that provides services such as storing files and sharing a printer.
- They usually have a **UPS** (uninterruptible power supply) attached to them. This is a battery that automatically provides an electricity supply to allow the server to shut itself down properly if the main supply fails.

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- The **processor** is the most important part of the computer. It processes the data and controls the computer.

- Powerful computers used as servers often have more than one processor.

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- There are two types of memory:
  - **RAM** (random access memory): it holds the program instructions and the data that is being used by the processor.
  - **ROM** (read only memory): it holds the program instructions and settings required to set up the computer.

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- Memory + processor = **CPU** (central processing unit)
- Sometimes the processor itself is called the CPU.
- **Peripherals**: other parts that are connected to the CPU such as input devices, output devices, storage devices and communications devices.

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- **Input devices** → Keyboards, scanners, barcode readers, digital cameras, microphones and video cameras such as webcams (small digital video cameras used on the web)

- **Output devices** → **monitors** (VDU display screens), printers, plotters, speakers and headphones

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- **Storage devices** are pieces of equipment used for reading from and writing to a storage medium → magnetic tape, floppy disks, hard disks, CD-ROMs, CD-R disks, CD-RW disks and DVDs

- **Modem**: a modulator/demodulator is a **communication device** used for converting digital signals to analog signals and vice versa to allow a computer to be connected to an ordinary telephone system.

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- A set of connectors used for carrying signals between the different parts of a computer is known as a **bus**.
- Data is transferred constantly between the processor and memory along the **system bus**.
- Each part of memory has its own memory address and the processor determines where processed data is stored by sending an address signal along an **address bus** and data along a **data bus**.

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- This is synchronized by an electronic **clock** in the CPU that determines the operating speed of the processor.

- Transferring data between the processor and RAM can slow up the computer; therefore, some very expensive, extremely fast memory is usually used as a **cache** to hold the most frequently used data

- This can speed up the system and provide a way of recovering data if the system **crashes**.
  - **crashes**: Fails suddenly and completely, usually referring to a hard disk failure
- There is a variety of optical storage devices that use laser light to read or write to a disk, including:
  - **CD-ROM**s (compact disk read only memory), **CD-R** (recordable compact disk), **CD-RW** (rewritable compact disk), **DVD** (digital versatile disk)

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- A **barcode reader** is a special kind of **scanner** for reading **barcodes**.
  - **barcodes** A set of printed bars of varying thickness that are used to identify a product e.g. used to price items in supermarkets.

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- When comparing computers, the **power** of the computer is important. It is determined by the **speed** and **capacity** (size) of each part of the computer.
- Speed is measured in hertz (Hz) - i.e. cycles per second → Now speed is measured in megahertz (MHz)- **gigahertz** (GHz).
- Capacity is measured in bytes (B) where
  - 1 **byte** = 8 **bits** (binary digits) = 1 character.

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- When specifying a computer, the following are normally quoted:
  - 1.Processor speed
  - 2.Memory capacity
  - 3.Hard disk capacity
  - 4.Optical storage devices speed e.g. CD-ROM, DVD
  - 5.Display monitor size (measured in inches diagonally across the screen surface)
  - 6. Resolution
  - 7.The graphics card memory size
  - 8.Modem speed

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- Two different number systems are used in computer specifications:
  - 1) The **decimal system**, which consists of ten digits from 0 to 9, is used for measuring speed.
  - 2) The **binary system**, which only has two digits (0 and 1), is used for measuring capacity.

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- Communication is provided between **applications programs** and computer **hardware** by a set of programs called the **operating systems** e.g. Microsoft Windows, MacOS, Linux.

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- **Writing**
  - The instruction for opening an application in your computer.
  - The instruction for opening a computer in the correct sequence.