




13. Types of computers

1. Introduction



There are many different types of computer available today. They range from giant super computers right down to small hand-held personal organisers.

	Microcomputer 	Minicomputer 	Mainframe Computer 
1. Introduction	Referred to PC	Mini for short	Mainframe for short
2. Size	Small-sized computer	Medium-sized computer	Large-sized computer
3. Cost	Cheap	Expensive	Very Expensive
4. Use	Easy to use	Difficult to use	Difficult to use
5. User	Single-user (1)	Multi-user (10 - 60)	Multi-user (More than 100)
6. Used For	Personal use	Medium-sized business or organizations, banks and etc	Big business and government departments
7. Power	Low computing power	High computing power	Very High computing power
8. Room	Normal or air-conditioned room	Air-conditioned room	Special air-conditioned room
9. Example	PC Clones	IBM 36, HP 9000	CRAY-2, VAX 9000
10. Applications	Word Processing, Spreadsheet, E-mail, Games (Home entertainment), Graphic (designing clothes/shoes) and ...	Control ATM at the banks, Inventory control for supermarket, Hospital registration and ...	Airline reservation, weather forecasting, Space vehicle control, big universities, to detect oil and gas field in the sea (BSP) and ...

2. Supercomputers

Supercomputers are the fastest and most expensive computers in the World. They can cost over a hundred million pounds to build and very few organisations can afford to purchase one.

They are mainly used by large universities who do a lot of research projects such as scientific research, weather modelling etc and by large organisations such as pharmaceutical companies for drug research or by the military for weapons research.

Whilst supercomputers are working, they generate so much heat that they need to be housed in specifically designed rooms with environmental controls and air conditioning systems. It is vital that the atmosphere is kept free of dust particles and special filters are used to keep the air clean.

There may be many miles of cables which connect the computer to various peripherals. In order to hide the cables, false floors and ceilings are often needed.

Supercomputers usually need their own back up electricity generator to ensure that they can continue to work even when there is a power failure.

3. Mainframe Computers

Mainframes are large, powerful computers that can carry out many different tasks for many different people at the same time. They are slower than a supercomputer but they are far less expensive. They may cost around 4 million pounds to purchase. Mainframes can execute billions of instructions per second and can process large amounts of data simultaneously.

They are usually connected to a large number of peripherals e.g. printers, terminals, disk drives etc.

They are used by large companies such as:

Utility companies e.g. gas and electricity suppliers to calculate customer bills.

Banks - for managing thousands of customers accounts each day

Insurance companies - for keeping track of policies and claims

Airlines - for dealing with bookings, tickets, cancellations etc

Police - for storing and processing all of the data collected each day about crimes

Mainframe computers need to be operated by specialist, trained staff.

They are usually kept in an air-conditioned rooms away from the office or factory floor.



4. Personal Computers

In the early days (1980s) these types of machine were called micro-computers, for example, schools often had a BBC micro-computer. But now we tend to call them 'desktop personal computers' or just 'PC'.

The desktop PC has a central processing unit housed in a metal or plastic case (often called a tower unit). A keyboard and mouse are usually used to input data and a monitor to output the data.

Until recently, most PCs all looked the same, a very boring beige or grey box. Now manufacturers are coming up with some really interesting designs such as the 'alien' design on the right.

Modern PCs are quite powerful. They can carry out millions of calculations per second. They are useful for lots of different types of tasks:

- Running office applications such as word processors, spreadsheets and databases
- For CAD design such as designing kitchens
- Editing videos
- Creating and playing music
- Accessing the Internet for research, work and entertainment



5. Laptops

Laptops were traditionally expensive when compared to a similar specification for a desktop PC. However, with the growing demand for laptops and cheaper production methods, they are now a similar price. The trend towards the use of laptops has been brought about due to many different reasons:

Changes in working/living patterns

Many workers are no longer 'chained' to their desk. Many people need to be able to move about during their working day. This could be going to different offices or buildings for a meeting or driving to another town for a meeting or conference. It could be that people want to be able to carry on working whilst travelling to and from work on the train.

Schools are beginning to provide all staff and students with their own laptops to ensure that they always have access to a computer no matter where they are in the school. Think about how many schools there are in the country and how many students there are in each school - that is an awful lot of laptops needed!

Growth of wireless networking

Over the last few years wireless networking has grown rapidly. This has enabled people to move around, use their laptops and still be connected to the home or office network to access files and data.



Improvements in battery life

When the early laptops were developed, the batteries didn't last very long and you couldn't rely on being able to use your laptop for any length of time.

Batteries now last for long periods of time, making it viable to work for quite a few hours before the battery needs recharging



Size and weight

Early laptops were fairly large, bulky and heavy to carry around. This didn't make them suitable for people who needed to carry them for any length of time.

Laptop design has significantly improved along with smaller, lighter batteries.

Modern laptops are now fairly compact and reasonably light to carry. They can be stored inside a briefcase, doing away with the need for bulky carrying bags.



6. Personal Digital Assistant (PDA)

A PDA was originally developed as an electronic organiser. They aimed to replace diaries, 'to do' lists and address books. However, rapid development has resulted in palm tops and PDAs becoming almost cut down computers in their own right.

PDAs are now available with cut down versions of the main Office software, e.g. Microsoft Word, Excel and Access. The reason they are so successful is that they usually have the ability to synchronize with a desktop PC. So, any work you have been doing on your PDA can be uploaded to your PC and the files updated.

Many PDAs can now also access the Internet and can be used to research web pages, send emails or even play games. Some even double up as phones.

Palmtops are very similar to PDAs in their use. The main difference is that Palmtops have a built in keyboard.



7. Embedded Computers

An embedded computer is a single chip that contains all of the elements that are essential for any computer i.e. RAM, ROM , CPU, Input , Output , Clock. Another term often used for an embedded computer is a '**micro controller**'. This is because the main purpose of an embedded computer is to control something. All of the following contain an embedded computer:

- Telephones
- TVs
- Cameras
- Washing machines
- Microwave cookers
- Dishwashers
- Cars