Operating Systems

Definition

An operating System (OS) provides a platform on which the applications software can run. It controls the hardware, and provides communication with the outside world. There are four main types of OS; Single User (or multi-tasking), Batch processing, Multi-user and networking OS.

Types of Operating System

Single User OS

Only one person can use it as a time, although there may be many user accounts present on it. It will allow users to protect their files with things like passwords, and ensure that users are able to carry out actions with the hardware, and use the software that they want. I will also allow the user to do several things at once, which is why it is sometimes called a multi-tasking OS

Batch processing

To improve the efficiency of a computer the slowest part (the human) was taken out. In batch processing all the data is collected automatically, and then once it has all be collected it is processed to give the input. They were developed in the 1950's, when there were few computers, but lots of people wanting to use them.

Multi-user OS

If a database of information needs to be stored centrally and accessed by many people, then one way to do this is to use a multi-user OS. Many users can use it at the same time; each terminal is given a little bit of time on the computer before it moves onto the next one, usually about a $1/100^{th}$ of a second, so the operators of the terminals don't even notice. E.g. in a supermarket.

Networking and Distributed Systems

Another way to share information is to network a number of computers, so that they can all share the same resources. When you switch on the computer, and identify yourself, the software and data files are downloaded onto your particular machine. E.g. in a school or office.

Definition of a Real time OS

A real time OS if defined as an OS that produces an output immediately, so that the output can influence the next input

Functions of an Operating System

Interrupt handling

Detects many different types of interrupts, and handles then accordingly.

Resource Allocation

Allocates CPU time, memory, and other resources, and schedules them to make best use of available resources. Also manages the memory.

User communication with computer

It allows the user to communicate with the computer, so converts commands.

Provision of a virtual Machine

Hides complexities of the hardware from the user.