Functions of an OS – Part A

The Operating System (OS) is the central part of the system program stored in a computer. The OS controls the overall operation of the computer such as running user applications, managing devices, protecting programs from interfering with each other and protecting files from other users reading or writing files . Traditional commercial examples of operating systems are Windows and Mac Os X developed by Microsoft and Apple.

Other non-profit organisations have come up with operating systems which are free and readily available for use known as ‘open source’. Examples of open source software are Unix, Linux and Android.

The role of the OS as the controller is to provide a link between the user and the computer. Examples of user interfaces are Graphical User Interfaces (GUIs) that have menus and icons, command line interfaces where the user types in codes, natural language where the user speaks to the interface and menu based which gives the user a selection of options.

One of the functions of the OS is memory management which is done by keeping track of storage devices and controlling which application has access to which area of memory.

Each location in memory can be read, modified, and written to by the OS. When the memory location is full the OS sends a confirmation message.

Similarly, the OS provides file management services by sorting out where data is stored on the disk drives and memory. The OS allows users to organise files in folders as well as to copy and delete files.

The other function of the OS in personal computers is to coordinate the Basic Input and Output Systems (the BIOS). Keyboard, mouse, monitor and printers are controlled through device drivers.

A device driver is a software program which allows hardware devices to be used by the OS.

The OS coordinates the working of different programs by allocating the CPU time between different programs based on time and priority of the software application. Each task running is given a slice of time, or a turn on the CPU. Each task has to wait its turn unless it is given a higher priority by the OS in which case it gets more or longer time slices.

The OS prevents unauthorised access. It ensures security of the system through usernames and passwords. The OS protects files from other users reading or writing files.