Describe the main components of an operating system.

Operating system structure: Two main components: Kernel and Shell Kernel: The inner part of the system responsible for dealing with processes and allocating system resources. Resources include: processor time, memory, disk space, network bandwidth, access to unshareable devices (e.g. sound card, mouse, keyboard)

Processor management - Processes run for a short period of time (a ‘quantum’ or ‘timeslice’) and are then interrupted. The OS kernel regains control and can switch to another process. If the timeslice is small enough, the processes appear to run in parallel with each other.

Memory management - Each process has its own address space, the range of addresses from 0 upwards that it can refer to. Memory management hardware maps (translates) process addresses into corresponding addresses in physical memory.

Operating system can provide a simplified, idealised view of a resource example: file system provides named files they may be located on disks, CDs, remote machines... access is the same regardless of how or where the data is actually stored.

Device drivers: Kernel components that interact with specific hardware devices (e.g. the sound card) Shell: the ‘desktop’ program that lets you interact with the operating system. GUI programs are event driven. Events arrive in an unpredictable sequence from various sources (mouse, keyboard, ...) Programs must be prepared to deal with events in any sequence. Shells can also be character based like the bash shell in Linux