# Operating system

Operating system consists of:

* Files (binaries, libraries, configs, system scripts, filesystems)
* Processes
* Kernel

# Kernel

Kernel manages hardware (CPU, RAM). It is a bridge between applications / processes and hardware.

Kernel tasks regarding processes:

* Start, stop and schedules processes
* Decides which process get resources (CPU, RAM) and when
* Keeps each process isolated in memory

Kernel tasks regarding file system management:

* Reads and writes files
* Map files to blocks on a physical disk

Kernel tasks regarding devices:

* Talks to hardware like keyboard, mouse, drive
* Routes data between devices and apps
* For example typing on a keyboard generates signals that kernel routes to terminal

Kernel tasks regarding security and isolation:

* Enforces user permissions
* Provides namespaces and cgroups

For example when we run a Python script then Kernel:

* Loads Python from disk
* Allocates memory
* Schedules it to run on the CPU
* Tracks when it finishes