Operating Systems

Tutorial 1

Dr. Eng. Catherine M. Elias
Eng. Yasmin El-behiry
Eng. Sarah Khaled
Eng. Farah Shams
Eng. Youssef Saeed

GUC
German University in Cairo

Course TAs

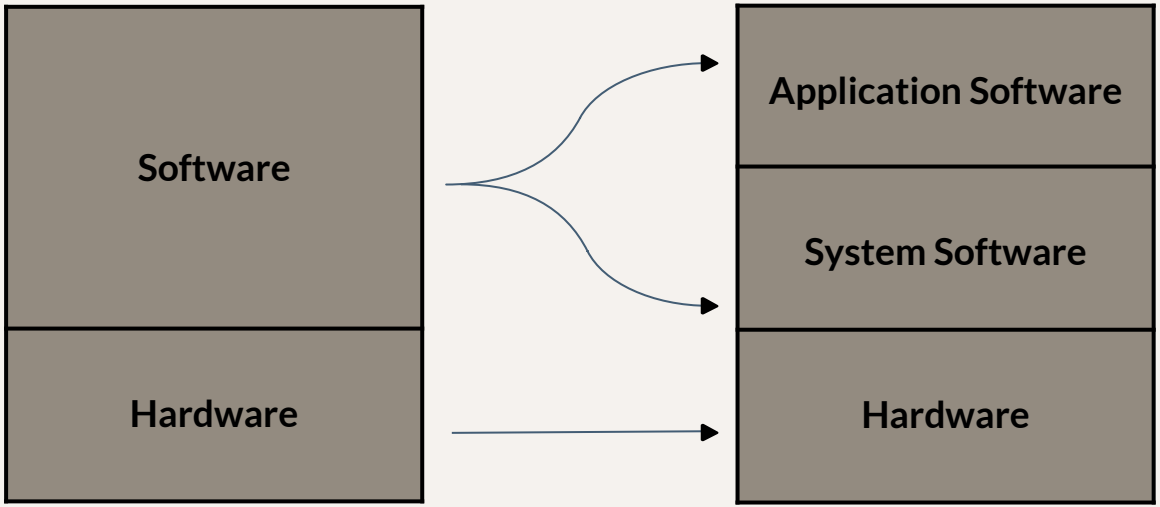
1. Sarah Khaled
    a. Email: Sarah.khaled@guc.edu.eg
    b. Office: C3.205
    c. Office Hours: by email

2. Yasmin El-behiry
    a. Email: yasmin.el-behiry@guc.edu.eg
    b. Office: C7.201
    c. Office Hours: by email

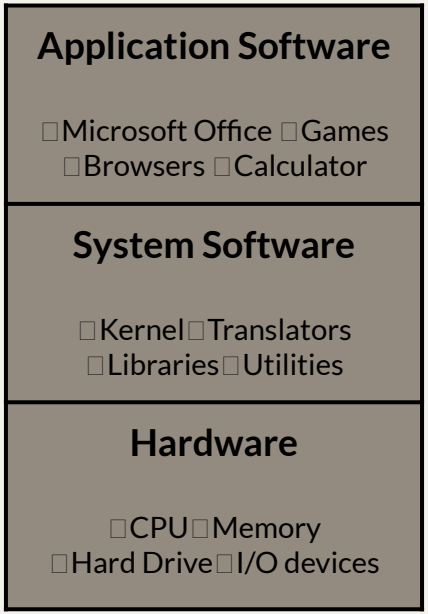
3. Farah Shams
    a. Email: farah.shams@guc.edu.eg
    b. Office: C7.220
    c. Office Hours: by email

4. Youssef Taha
    a. Email: yousef.saeed-taha@guc.edu.eg
    b. Office: C7.220
    c. Office Hours: by email

Computer System Layers



Computer System Layers



Operating Systems (OS)

a piece of software which does...

01

Abstraction

The process of **hiding the details and complexity** of a system and presenting a **simplified view** to the users and applications

02

Arbitration

Managing access to shared hardware resources so that **multiple applications** can run on the same hardware at the same time **without interfering with each other**

Operating Systems (OS)

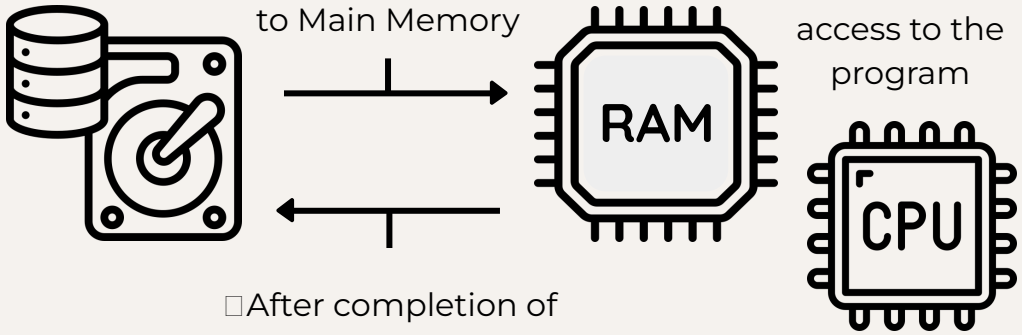
1. Act as an **intermediary** between **the user** on one side and **the hardware** resources on the other side.

2. **Assign requested resources** to running processes in a way that **guarantees the completion** of all processes.

3. **Manage existing resources** (e.g: I/O devices, critical resources) to make sure that only **valid operations are carried out** by running processes.

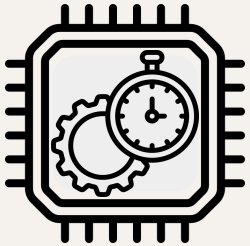
OS Functionalities

▸01 Execution Of Programs

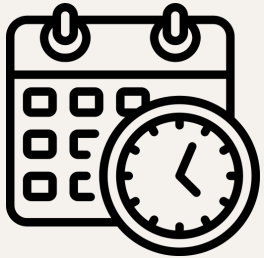


OS Functionalities

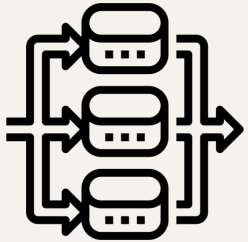
▸02 CPU Scheduling



Executing processes such that the CPU utilization is maximized and process response time is minimized.



The process scheduler chooses a process to be executed, and also decides for how long the chosen process is to be executed.

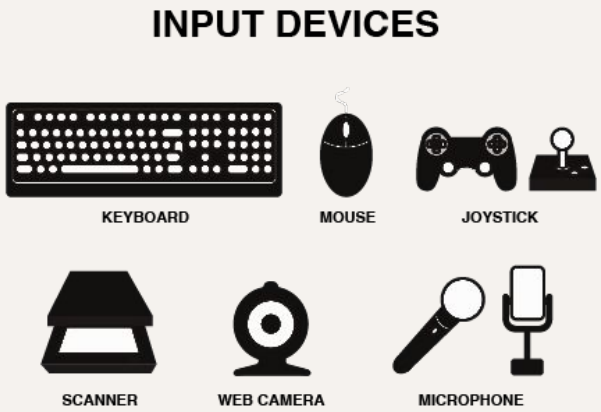


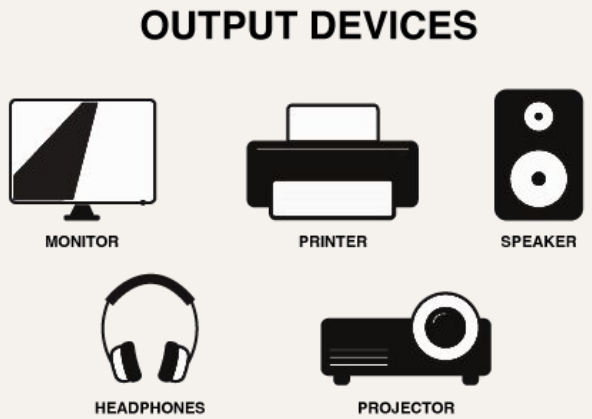
Illusion of Parallelism

OS Functionalities

▸03 Input/Output Management

Abstracting the entire process of communication complexity by just providing **system call interfaces** to the processes for communication with the input-output devices.





All Done!