CPU Scheduling

- **Purpose**: To execute all processes in a **fair** and **efficient** manner in a multiprocess environment.
- CPU scheduling is categorized into **long-term**, **mid-term**, and **short-term** scheduling, depending on the stage of process execution.

(Focusing only on Round Robin here, as it frequently appears across various courses like databases and distributed systems.)

Round Robin (RR) Scheduling

- **Key Characteristics**:
    - There are no priority rankings among processes.
    - Each process is allocated a **fixed time quantum** to run on the CPU.
    - If the process does not complete within its time quantum, it is preempted and placed back in the ready queue.
- **Advantages**:
    - Ensures fairness since all processes are treated equally.
    - Reduces the risk of starvation.
- **Disadvantages**:
    - The efficiency of RR depends on the size of the time quantum:
        - **Too small**: Increases overhead due to frequent context switching.
        - **Too large**: Behaves similarly to First-Come-First-Served (FCFS) scheduling, potentially leading to poor response times.