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Couse: CSE323

Operating Systems Project

Project Title: CPU-Scheduling-algorithms using C++

Situation:

In operating systems, CPU scheduling algorithms are a core concept used to manage multiple processes competing for CPU time. understanding how different scheduling algorithms behave under varying workloads is difficult when relying only on textbook examples.

Challenges faced:

- Understanding performance differences among scheduling algorithms.
- Accurately calculating waiting time and turnaround time.

- Translating theoretical algorithms into working code.
- Visualizing how processes move through the ready queue.

Task:

My task was to design and implement a CPU Scheduling Simulator that demonstrates how different scheduling algorithms work,

- Simulate multiple CPU scheduling algorithms.
- Accept user-defined process parameters (arrival time, burst time, priority).
- Compute key scheduling metrics.
- Allow comparison between algorithms.
- Follow modular design principles taught in OS.

Action:

I designed a modular simulator using C++ that supports multiple CPU scheduling algorithms such as FCFS, SJF, Priority Scheduling, and Round Robin. I implemented process structures, queue management, and scheduling logic. File handling was added to store process data, and GitHub was used for version control and documentation.

Result:

The simulator successfully executes multiple scheduling algorithms and displays waiting time, turnaround time, and average metrics. This project improved my understanding of OS scheduling, data structures, and real-world OS behavior. The project is now a reusable academic learning tool and portfolio-ready.