

Operating Systems Project Guidelines

Course: Operating Systems

Instructor: Dr. Abdullah Al zaqebah

Year: First semester 2025/2026

Total Marks: 20 (across 3 phases)

1. Project Overview

In this project, you will design and implement a simulation of CPU scheduling algorithms. The project aims to deepen your understanding of process scheduling, CPU utilization, and performance metrics such as turnaround time, waiting time, and response time. You may use any programming language of your choice (e.g., C, C++, C#, Java, Python).

2. Learning Objectives

- Understand the purpose and operation of CPU scheduling algorithms (**CLO2**).
- Implement and compare different scheduling strategies (**CLO6**).
- Analyze algorithm efficiency using performance metrics (**CLO7**).
- Gain hands-on experience in OS-related programming (**CLO7**).

3. Project Phases

Phase 1: Problem Definition and Design (Week 6-7) — 5 Marks

Deliverables:

- A short project proposal (1–2 pages) including:
- The list of algorithms to implement (at least three, e.g., FCFS, SJF, RR, Priority).
- How you will represent process data.
- Input and output formats.
- Tools/language you will use.

Note: CPU scheduling algorithms will be covered during Weeks 6–7, so your design should reflect your understanding from class.

Phase 2: Implementation (Week 9) — 5 Marks

Deliverables:

1. **Progress Report (2–3 pages)** including:
 - Summary of implementation progress (what has been completed so far).
 - Screenshots or snippets of code showing partial implementation.
 - Description of challenges faced during coding.
 - Plan for completing the remaining work before the final submission.

2. Partial Code Submission:

- At least one algorithm (e.g., FCFS or SJF) partially or fully implemented.
- Demonstration of input/output structure (even if not fully functional).

Note: You will have Week 8 to start implementation and debugging before submission in Week 9.

Phase 3: Testing, Analysis, and Report with Oral discussion (Week 12) — 10 Marks

Deliverables:

- Final report (at least 5 pages) including:
- Introduction and objectives
- Description of implemented algorithms
- Test cases, Gantt charts, and screenshots
- Comparative analysis of algorithms (average waiting and turnaround time)
- Conclusion and observations

Optional Enhancement: use GUI for your implementation (bonus marks).

4. Submission Guidelines

- This is a team's work project (2-3 students for each team).
- Submit a PDF report and source code files via the E-Learning system.
- Late submissions: –10% per day.
- Any detected plagiarism will result in a zero grade.

5. Suggested Algorithms

- First Come First Serve (FCFS)
- Shortest Job First (SJF) – Preemptive or Non-preemptive
- Round Robin (RR)
- Priority Scheduling – Preemptive or Non-preemptive

6. Project Timeline

Phase	Description	Week	Marks
Phase 1	Design & Proposal	Week 6–7	5
Phase 2	Implementation work and progress report	Week 9-10	5
Phase 3	Final Report, source code, and Demonstration	Week 12-13	10
Total			20

Note: Week 6–7: CPU scheduling topics covered in lectures. Week 8: Students begin implementation and seek guidance. Week 13–14: Reserve for project presentations and discussion.