A logo of a company

AI-generated content may be incorrect. A drawing of a person sitting on a chair

AI-generated content may be incorrect.

Faculty of Engineering Cairo University

Credit Hours System

**OS Scheduler**

**#Report**

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# Scheduling Project Deliverables

## 1. Code Files

The following code files are included in this deliverable:

- scheduler.c

- scheduler.h

- process.c

- process\_generator.c

## 2. Test Cases

```bash  
gcc -o process.out process.c  
gcc -o scheduler.out scheduler.c -lm  
gcc -o generator.out process\_generator.c

## 3. Report

### 3.1 Data Structures Used

• Queue for Round‐Robin (RR) to hold ready processes in FIFO order.

• MinHeap for Shortest Remaining Time Next (SRTN) and Highest Priority First (HPF), keyed by remaining time and priority respectively.

### 3.2 Algorithm Explanation & Results

• RR: Each process runs up to a fixed quantum (2s). If it doesn’t finish, it’s preempted and enqueued back.

• SRTN: Always runs the process with the smallest remaining time, preempting whenever a shorter one arrives.

• HPF: Runs to completion the ready process with the highest priority (lowest numerical value).

### 3.3 Assumptions

- Time unit = 1 s; arrival and running times are integers.

- Context‐switch overhead ≈ 0, ignoring signal handling delay.

### 3.4 Workload Distribution

|  |  |
| --- | --- |
| Name | Workload |
| Abdelrahman Essam Mohamed | RR, PCB, printing, Circular (not circular) queue  Scheduler.h |
| Akmal Mohamed Emad | SRTN, minheap struct & functions, message queue |
| Youssef Nasser Sayed | HPF, calculator, some minheap functions |
| Mohamed Amr Safwat | Process generator, reading input |

### 3.5 Time-Taken Table

|  |  |
| --- | --- |
| Task | Time Taken |
| Designing queue & heap structures | 1 h |
| Implementing RR scheduler | A LOT h |
| Process generator | 5-6 h |
| Implementing HPF | 4 h |
| Calculator | 1 h |
| Implementing SRTN | 6 h |
| Developing test cases & runs | 1 h |
| Writing & formatting the report | 10 min |