

Assignment 3

Please complete the report and upload the corresponding code. The file required for submission of this assignment include:

1. Submit `report.pdf` through Blackboard
2. Finish and push the code to GitLab

The GitLab link of assignment3: https://mirrors.sustech.edu.cn/git/operating-systems/asterinas_labs/assignment3_{Your student ID}

How to push code to GitLab, please refer to `Lab/作业提交配置手册.pdf` (Note: section 5 in the PDF file is no longer used in the semester)

1. CPU Scheduling [65pts]

Consider the following single-threaded processes, and their arrival times, estimated CPU costs and their priorities (a process with a higher priority number has priority over a process with lower priority number):

Process	Estimated CPU Cost	Arrives	Priority
A	6	1	1
B	1	2	2
C	3	5	3
D	2	4	4

Please note:

- Ignore context switching overhead.
- If a process arrives at time x , they are ready to run at the beginning of time x .
- Highest response ratio next (HRRN) is a non-preemptive scheduling algorithm. In HRRN, the next job is not that with the shortest estimated run time, but that with the highest response ratio defined as: $1 + \text{waiting time} / \text{estimated CPU time}$.
- Newly arrived processes are scheduled last for RR. When the RR quanta expires, the currently running thread is added at the end of to the ready list before any newly arriving threads.
- The quanta for RR is 1 unit of time.
- Average turn-around time is the average time a process takes to complete after it arrives.
- SJF is non_preemptive.
- Priority scheduler is preemptive.

Given the above information please fill in the following table.

Time	HRRN	FIFO/FCFS	RR	SJF	Priority
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
Avg. Turn-around Time					

2. Priority + RR Scheduling [Programming] [35pts]

For the description of this question, please refer to [README.md](#) in the code repository.