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CECS 326 Sec 02

Professor Xu

Project 4 “CPU Scheduler” Report

For this project I decided to do it in Python, although due to starter files not being provided for this language the design for how to do it was completely open, because of this I decided to have 4 total .py files, one for our scheduler which is our driver code, and then the remaining three are our algorithms for process scheduling of FCFS, Priority, and Round-Robin. Each of these processing scheduling algorithms have their own text file that they each read from, FCFS using “schedule.txt”, Priority uses “prio-schedule.txt”, and Round-Robin uses “rr-schedule.txt”. This is important to state here because this code does not take in terminal inputs so these text files must already exist in the same folder that the code is in to be able to run.

Unlike previous projects in which I relied on libraries or this one I decided not and to avoid them altogether. This also gave me the opportunity to practice writing my own queue-like behavior using lists, especially in the Round-Robin part where I manually used pop(0) and append() to simulate the CPU queue. Due to not using libraries for this project this also meant having to use lists and for loops in order to implement this code and the logic behind it.

In the scheduler.py file I made the class of Task which stores the task name, the priority associated with that task, and the CPU burst for that task. I also added a remaining_time which was extremely helpful for implementing the Round-Robin algorithm. In this scheduler.py we also have the two functions outside this class of read_task() which reads the tasks from the text files, and run() which simulates running a task on the CPU for this function it has two different parts

one in which it is needed for FCFS and Priority and the other part for Round-Robin. We would then import these functions to each algorithm file by doing “from scheduler import read_tasks, run”.

Overall, this project has taught me how to implement these algorithms without using outside libraries, using an object-oriented design to manage our task data. Alongside, it was nice to make a code that is reusable and able to be imported and used across different files.

YouTube Link: https://youtu.be/5F1Cd-eesFo?si=6X6_0HhJOdpGDwd9