Chris Wise
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CMSC 312 Project 2 Submission

Github link: https://github.com/cmsc-vcu/cmsc_312_operating_system_project

Grade the latest commit if possible. I am hoping to finish debugging my existing code tonight.

Simulator Structure:
- main.py: user interphase where user generates the processes to simulate
-cpu_core.py: contains all of the queues and has a scheduler and supporting functions
-process.py: process objects with helper functions
-process_control_block: process object attribute created for each newly created process
-operation.py: operation object

Description of implemented functionality:

I implemented multithreading using pythons threading module.
   -   I used a semaphore with initial value 4 to simulate a 4 threaded CPU
I added memory to the templates
   -   When the scheduler loads from the new queue into the ready queue it checks for available memory
   -   If none is available, the thread waits for a notify signal from an exiting process
I implemented fork spawning a child that is added to the new queue
I implemented I/O simulation functionality

I redid my round robin scheduler and fixed critical section resolving scheme by using threading lock

Instructions:

Compile all of the python classes and the templates folder into one executable. Run that executable. You will be prompted with further instructions by the console.

Challenges:

I had a really hard time with phase 1 because I didn't understand how to make the critical resolving scheme without multiple threads. Learning and implementing multithreading was my biggest accomplishment since.

I really don't want to retake this class because I can't afford to. I've already taken out loans for this semester and am increasingly worried about the cost to finish my degree (6 classes remain if I pass all 4 this semester)

I experienced quite a bit of financial difficulty this semester balancing work and school. I had to increase my work hours because I almost got evicted from my apartment after falling behind in rent.

This was right before the deadline for Phase 1. As a result, I wasn't able to get Phase 1 to work properly in time and didn't want to submit it or tell you until I had impressive working code. Only last week was I able to afford taking time off work to focus on school again. I'm sure you get an abundance of excuses and extension requests and I understand if I haven't met qualifications to pass.

I am going to keep working on the project for phase 3's deadline until I feel confident that my project is worth an A. That way, if I have to retake the class, at least my project will be done and I will have already learned and mastered the course material.