CS 4348

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CS 4348 Project 1 Summary

Purpose

The purpose of this project was to understand and implement multiple processes with communication between them. This is a concept we have covered in class, but the project aimed to further our knowledge and familiarity with the concept. This program had two main parts: the CPU and the memory. For each of these parts, a separate process was needed. Since I used java, the exec command was used to create these processes.

Implementation

I implemented this project using java and the exec command. First, I created a main class named Project 1, a memory class, and a CPU class. I used the main class to create the processes and begin execution. The memory process is very simple as its main purpose is to read inputs from a file and store them. These inputs were stored in an array of size 2000 with the first 1000 for user memory and the second 1000 for system memory. The only other responsibilities of this class are processing read and write operations requested by the CPU. The CPU process would read the values from the array and execute them based on a set of instructions provided in the project description. I used a set of if statements to implement this part. I also had to include a count for every time the CPU would execute an instruction so the timer could be correctly implemented.

Personal Experience

I began thinking about how to solve this project the day it was assigned to the class. To start with, I looked at the sample code written in java to gain some understanding of how processes can communicate. That was a very helpful first step because I was able to use input and output streams to communicate between processes. I then continued coding the project to successfully execute the sample problems found on the document. At first, instead of using an array to store the instruction, I just printed them to the stream using a print statement in the memory process. I quickly realized that this would not work for the lengthy files that required the CPU class to get information from different addresses. I then utilized an array to store the instructions and information. Once I implemented the array, I did not have much difficulty with the rest of the project. The only other aspects of the project that took some time to solve were the stack and the interrupts. This project required a lot of research and problem-solving skills to understand different concepts. It was a very fun experience that required more effort than any other coding project that I have done. While the length of the project was not overwhelming, the different concepts and issues that arose throughout the implementation of the project required time to solve.