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Operating Systems

**CS4348**

## Project #1: Exploring Multiple Processes and IPC

1. Project Purpose: The purpose of this project was to learn how an operating system works by communicating and cooperating multiple processes via CPU and Memory. CPU consists of registers and can implement instructions and Memory can read and write. The CPU and Memory are simulated by separate processes that communicate and Memory contains one program that the CPU executes and then the simulations end.
2. How the project was implemented: The project was programmed using Java. CPU executes programs using the fetch-decode-execute cycle and Memory stores program operations and data while a program is being executed. A class for CPU was created and Scanner memoryIn = new Scanner(memory.getInputStream()) gets input streams and PrintWriter memoryOut = new PrintWriter(memory.getOutputStream()) gets output stream to communicate between the processes. Process memory = runtime.exec("java Memory "+programInput) creates the new process. Furthermore, several methods were implemented to read from and write to memory. In Memory, the path is initialized using String path = args[0]. The read function returns memory address and write function loads data into memory address.
3. Your personal experience in doing the project: In my personal experience the project was fairly hard. I could easily code the instructions that are being executed and this to me was the easiest part. It took me a lot to research to figure out how to create the process initially. After figuring that part out, I took help from the internet to use try catch to make the code easier as my if else faced lots of errors. Overall this project was a good experience, but it took me over 2 weeks to debug.