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OS Emulator

**Overview:**

The project is on the design and implementation of an OS simulator. The simulator will run on a virtual CPU.

**Experience:**

Staying organized with such an in depth project was a very hard task. I am used to working on projects that are much larger than this but the math and logic involved in this project made it very difficult to keep track of everything.

The hardest part about this project was getting everything organized and on paper. The architecture design was incredible tough to picture before writing any code.

I started off with graphing everything in DIA. After that and understanding exactly what and how this project will work I began coding.

**Class Details:**

**Driver:**

This is where everything is instantiated. It is the main part of the project that help bring everything together. It keeps track of the status of each class and knows when to trigger its next job.

**Loader:**

This is where I am loading the JOB from the datasheet and creating the job in the process. It pulls the data from the datasheet and places it on the harddisk which adding the processes to the PCB.

**PCB:**

This is basically the holder for all the Processes. The PCB holds an array of processes with getters and setters for appropriate data.

**Long Term Scheduler:**

This populates the ready queue.

**Short Term Scheduler:**

This pulls the processes from the Ready Queue and prepares the data. Once it's ready it calls the dispatcher to do work. The short term scheduler keeps pulling from queue until it is empty.

**Dispatcher:**

This loads from the PCB and hands it off to the CPU. Once it is done it waits to be calls by short term scheduler.

RESULTS:

1 CPU && 256 RAM

2 CPU && 512 RAM



4 CPU && 512 RAM

4 CPU && 1024 RAM



6 CPU && 1024 RAM

8 CPU && 1024 RAM



10 CPU && 2048 RAM



**Final Results:**

As expected the wait times decreased whenever a CPU or RAM was added. I noticed a lot more increase by adding RAM which does make sense considering that that RAM is being multiplied by the number of CPU's.

I would also like to say that I am very happy that I had the chance to do this project. It got me thinking in ways I have never had to think before. I have a lot of experience programming(especially in Java) and I haven't been pushed this hard in a long time. It's always fun to learn new things. I honestly did not expect this project to be so difficult but it was one of the hardest projects I have done. I learned so much from so many different angles. Thank you again for letting me do this project.