OS PROJECT REPORT

MILESTONE 0

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We have decided to implement a university and payroll batch system. It is under the batch operating system type. Batch Operating Systems work periodically, doing the same task over and over again over a specified time frame.

We will be using the Java as the preferred programming language for our simulation.

Introduction:

A batch operating system is an operating systems in which same type of processes are batched together for execution. It's a relatively faster system than traditional system. Every specific period of time, some predefined processes are executed together only and once they are started, they cannot be changed or interrupted.

They tend to be useful in bulk database operations specifically due to the repetitive work that has to be frequently done. They're used mainly in business and product automation productions.

Methodology:

It will be responsible for calculating the yearly salary of employees (doctors and teaching assistants) as well as calculate the years of experience of the employee. It will also calculate the annual increase in the students' tuition fees (10%) and the GPA category the students belong to.

We will need a file management module to edit to and write in the spreadsheets of the respective tasks, we will not need memory management nor threading as only one process runs at a time. We will not need an Input/Output module as the changes take place inside the respective files and no output is needed to be displayed to the user.

2ⁿᵈ milestone - Initial implementation:

Created multiple classes:

- PCB.java (Process Control Block class): it has the attributes of every process which includes but not limited to - process_id, user_id, time the process needs to be executed as well as the period which is how often this process should take place.
- Process.java class: an abstract class that defines the main attribute every Process should have, which is the PCB. As well as an abstract method called "void run()" which is responsible for running the process.
- Multiple instances of different processes like PayRoll, TuitionFeesIncrease, etc. Where each class implements the run() method differently according to the class functionality.
- Scheduler.java class, which is responsible for literally "scheduling" the processes. It has an array list attribute which holds all the processes that are on this operating system and a ready queue that holds the processes that are actually due for running (by checking on their respective period attribute against the current day of the year).

Current Functionality:

Our basic operating system so far is very simple. We initialize an instance of the class Scheduler.java, it will run forever. Each day it will check on all the array list of processes, once a process that is due for working is found, it is immediately put into the readyQueue using the method called ***void Read(Process p)***, then it will be run using the method ***void Running()*** which removes the first element in the readyQueue and calls its respective run method, taking the required time to finish.

The Scheduler.java class "Schedules" the processes to run based on the FIFO (first come first served) principle.

The results on the console so far are:

- The day we are currently on.
- Which process is being run and its output, which is basically just a simple print statement.
- "Done!" which is printed after the process has been executed.