German University in Cairo
Faculty of Media Engineering and Technology
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CSEN 602 Operating Systems, Spring 2021
Milestone 1
Due Date: 4/6/2021 at 11:59pm

Project Objective

The best way for you to understand the concepts of an Operating System is to build an operating system and then to experiment with it to see how the OS manages resources and processes. In this project, you are asked to build a simulation of an operating system.

Milestone 1

In this milestone, you are asked to implement a basic interpreter. You have a text file that represents a program. When you read that text file and start executing it, it becomes a process. You are asked to write 5 programs, and execute them. Your programs should include normal instructions as well as system calls.

System Calls

A system call is the process's way of interacting with the Operating System. In order for a process to be able to use any of the available hardware, it makes a request, system call, to the operating system.

Types of system calls required:

1. Read the data of any file from the disk.
2. Write text output to a file in the disk.
3. Print data on the screen.
4. Take text input from the user.
5. Reading data from memory.
6. Writing data to memory.

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Processes

Our simulated OS can create different processes and execute them, one at a time.

We have 4 main processes:

Process 1:
It should take input from the user: a filename. Then print the content of this file on the screen.

Process 2:
It should take two inputs from the user: a filename, and some data. Then write the data to the file.

Process 3:
It should take 2 numbers as input from the user, and perform the addition of these numbers. The output of the addition should be displayed on the screen.

Program Syntax

For your programs you should use the following syntax:

- print: to print the output on the screen. Example: print x
- assign: to initialize a new variable and assign a value to it. Example: assign x y, where x is the variable and y is the value assigned. The value could be an integer number, or a string
- add: to perform the summation of 2 numbers. Example: add x y.
- writeFile: to write data to a file. Example: writeFile x y, where x is the filename and y is the data.
- readFile: to read data from a file. Example: readFile x, where x is the filename

Output

For this Milestone, your Simulated OS should be able to read the provided programs and run them.

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Work Distribution

- Code parser/interpreter, the print and input instructions.
- The assign instruction with all its sub cases.
- The add, read file and write file instructions.

Project Deliverable and Submission

You will work in teams of strictly 3. You should register your team through the following link: `https://forms.gle/A11T5hGFpz9e122T8` by maximum Tuesday, 11th of May. The programming language that you will use is **JAVA**. The project should be submitted as ONE zip folder containing the java files you created. Please make sure to name your folder as follows, Team_number (ex. Team_00). Late submissions will not be accepted. Submission will be through the following link: `https://forms.gle/SJnXfygxoPiwgzqp6`.