**Project Assignment 1**

***Shell Experiences and Programming***

**CS4352 Operating Systems**

Fall 2018

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Due Date: 10/13, 11:59 pm, soft copy via Blackboard.

Late submissions are accepted till 10/16, 11:59 pm, with 10% penalty each day.

No submissions accepted after 10/16, 11:59 pm

In this programming assignment, you are asked to experience shell programming on Linux platform. This assignment assists you for better understanding of Unix/Linux shell, enhancing programming skills, and experiencing with programming on a Unix-like environment.

**Part 1.** CPU utilization = 1- pn.

Requirements:

1. Prompt users to enter the number of processes (n) (in the range from 0 to 10)

You should check if the input is valid or not. If not, ask users to re-enter.

1. Prompt users to enter the expected CPU utilization (in the range from 0 to 1)

You should check if the input is valid or not. If not, ask users to re-enter.

1. Print out this **maximum** I/O fraction time (integer) to achieve this goal.

**Part 2.** Process scheduling.

Requirements:

1. Prompt users to enter the number of jobs (no checking, assume that users input a valid integer from 0 to 10).
2. Prompt users to enter the run time for each job (in seconds)
3. Print out the order of jobs that minimize the waiting time.
4. Also, print out the minimum the waiting time.

We assume all process are ready to be running at the beginning and there are no constraints in the order of running these processes.

**Expected Submission:**

You should submit a single zipped file through the Blackboard containing the following:

* Source codes (shell scripts) for each part. You need to name your scripts as yourfirstname\_assignment1\_part1.sh and yourfirstname\_assignment1\_part2.sh.
* Provide 3 examples for each of your programs: Capture (screenshots are fine) the example inputs and outputs of your programs.

**Grading Criteria:**

|  |  |  |
| --- | --- | --- |
| Part 1 | Percentage % | Criteria |
| 6% | 3% | The shell script can be run |
| 3% | Correctness of result |
| Part 2 | Percentage % | Criteria |
| 7% | 3% | The shell script can be run |
| 4% | Correctness of result |

This project 1 is **13**% of your final score.

**Reference Materials:**

* Linux Shell scripting:

<http://www.freeos.com/guides/lsst/>