



Academic Year	2024
Semester	<input type="checkbox"/> Fall <input checked="" type="checkbox"/> Winter <input type="checkbox"/> Summer
Course Code - Name	CSCI 3310 – System Programming
Instructor	Dr. Razi Iqbal
Assessment	Lab 4
Deadline	Submit during the lab

Lab 4

The main purpose of this lab is to test your Scheduling Algorithms.

Instructions:

- You are required to submit C file (.c).
- Students having exactly similar code will get a straight 0.
- You are required to complete these questions using any Linux Distro.
- The soft deadline for submission of this lab is during the lab session and the hard deadline is 2 days after your lab session. If for some reason, you are not able to complete this lab in the lab session, please inform the TAs.

Question

You are required to program Priority Scheduling in C.

The program is expected to take 5 processes with the following attributes:

- Process ID (`int`)
- Burst Time (`int`)
- Priority (`int`)

In order to use Process as a collection of attributes, you can use `struct` in C language. Please use [this link](#) for more information on how to use structs in C.

Once you have created a Process struct, create 5 processes in the main method. You are free to hardcode these values using an array of Processes, e.g., `{{1, 10, 3}, {2, 1, 1}, {3, 2, 4}, {4, 1, 5}, {5, 5, 2}}` where `{1, 10, 3}` is the first process and `{2, 1, 1}` is second and so on. 1 in the first process is the Process ID, 10 is the Burst Time and 3 is the Priority as illustrated above as the attributes of the Process.

After populating the Processes, show the Process ID, Burst Time and Priority of all the processes as shown below in the expected output screenshot.

Since, you are programming Priority Scheduling, you are required to sort processes in the ascending order of their priority. You are free to use any method to sort the processes in the array, however, C has a good [qsort function](#) that can help in doing that.

Once sorted, calculate the wait time and turnaround time for all the processes and display on the console as shown in the expected output screenshot.

Do not forget to calculate the average wait time for priority scheduling. Please refer to the expected output screenshot for more details.

Below is the expected output of the program:

```
raziqbal@raziqbal-VirtualBox:~/Documents/CSCI3310/Lab_4$ ./lab_4.o
Before sorting...
Process ID      Burst Time      Priority
1                10              3
2                 1              1
3                 2              4
4                 1              5
5                 5              2

After sorting...
Process      Burst Time      Priority      Wait Time      Turn Around Time
2             1              1              0              1
5             5              2              1              6
1            10              3              6             16
3             2              4             16             18
4             1              5             18             19
Average Wait Time: 8.20
```