Assignment 2A: Processor Scheduling with C Programming

User Documentation

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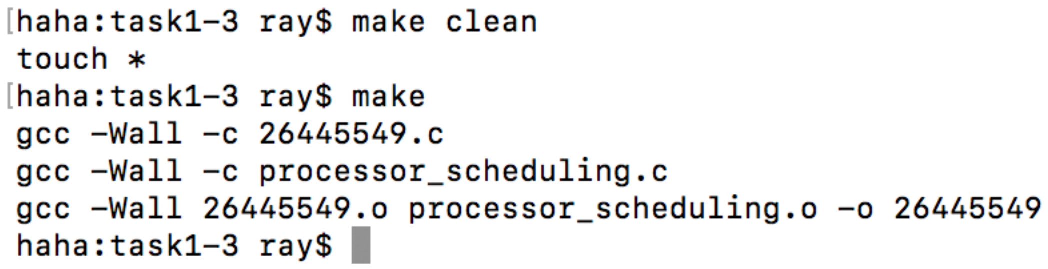
Introduction

Processor scheduling prompts the user for a valid file name and scheduling algorithm option (accepted options are 1->FCFS (First-Come-First-Served), 2->RR (Round Robin), and 3->SRT (Shortest Remaining Time)) and executes the appropriate scheduling algorithm based on the selected option for a given file in current directory specified by the input file name. After printing the result of the execution, the program will ask the user whether the user wants to continue executing other scheduling algorithms for another file or quit the program. If the user chooses to continue executing other scheduling algorithms then the program will repeat the same process (i.e. prompt file name and scheduling algorithm option, execute the selected scheduling algorithm, print the result of the execution, etc). Finally, the program will stop executing when the user has chosen to quit the program.

How to use the processor scheduling program

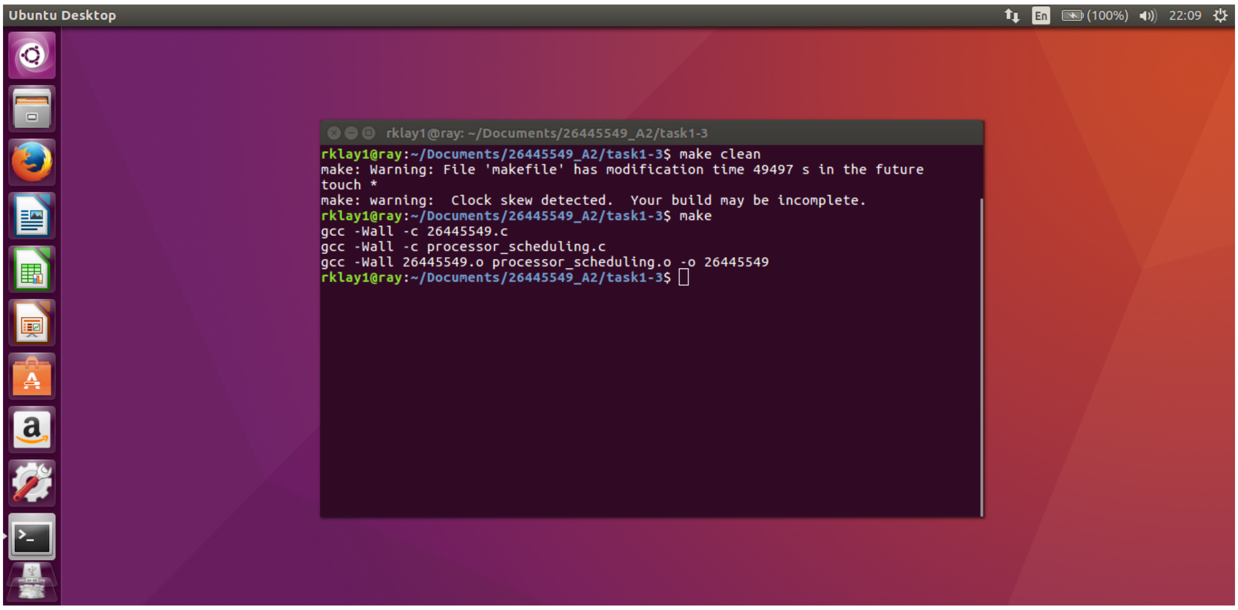
1. **Build the processor scheduling program with "make" command**

macOS Sierra (version 10.12.5)



```
[haha:task1-3 ray$ make clean
 touch *
[haha:task1-3 ray$ make
 gcc -Wall -c 26445549.c
 gcc -Wall -c processor_scheduling.c
 gcc -Wall 26445549.o processor_scheduling.o -o 26445549
 haha:task1-3 ray$ 
```

Ubuntu 16.04 LTS



```
rklay1@ray:~/Documents/26445549_A2/task1-3$ make clean
make: Warning: File 'makefile' has modification time 49497 s in the future
touch *
make: warning:  Clock skew detected.  Your build may be incomplete.
rklay1@ray:~/Documents/26445549_A2/task1-3$ make
gcc -Wall -c 26445549.c
gcc -Wall -c processor_scheduling.c
gcc -Wall 26445549.o processor_scheduling.o -o 26445549
rklay1@ray:~/Documents/26445549_A2/task1-3$
```

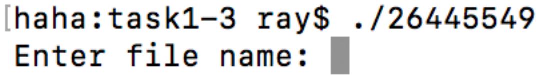
Description

To build the program, the following commands are used:

- make clean
- make

Note: The “make clean” command will execute the “touch *” command which is used to fix the “make: warning: Clock skew detected. Your build may be incomplete.” warning in Ubuntu 16.04 LTS.

2. Run the processor scheduling program



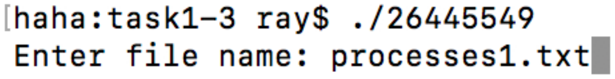
```
[haha:task1-3 ray$ ./26445549
 Enter file name: 
```

Description

To run the program, the following command is used:

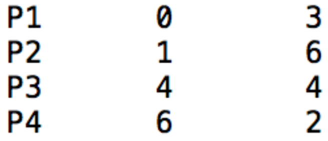
- ./26445549

3. Provide a valid file name that contains a valid process table with ‘\t’ as delimiter for each value in each line



```
[haha:task1-3 ray$ ./26445549
 Enter file name: processes1.txt
```

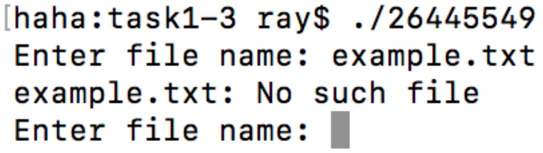
Sample valid process table



```
P1      0       3
P2      1       6
P3      4       4
P4      6       2
```

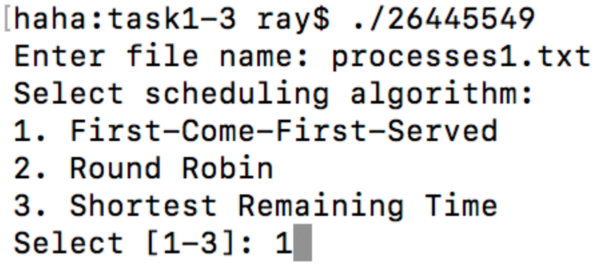
Additional functionalities:

- Print the appropriate error message if the user does not provide a valid file name (i.e. file does not exist with the specified name)



```
[haha:task1-3 ray$ ./26445549
 Enter file name: example.txt
 example.txt: No such file
 Enter file name: 
```

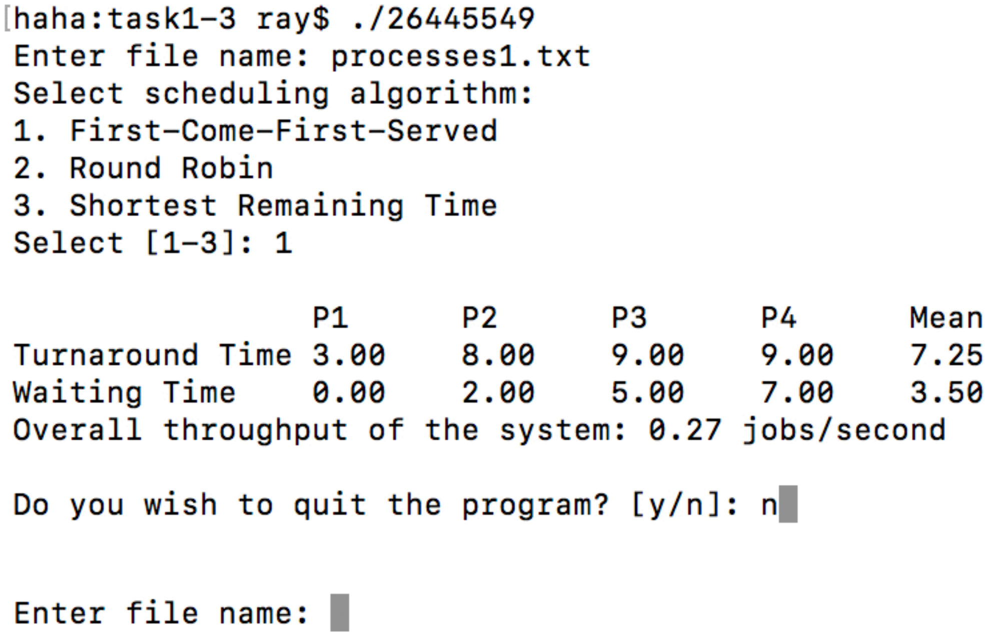
4. **Provide a valid scheduling algorithm option (must be an integer in the range of 1-3)**



```
[haha:task1-3 ray$ ./26445549
 Enter file name: processes1.txt
 Select scheduling algorithm:
 1. First-Come-First-Served
 2. Round Robin
 3. Shortest Remaining Time
 Select [1-3]: 1
```

5. **Specify whether to continue executing other scheduling algorithms or quit the program**

Continue executing other scheduling algorithms



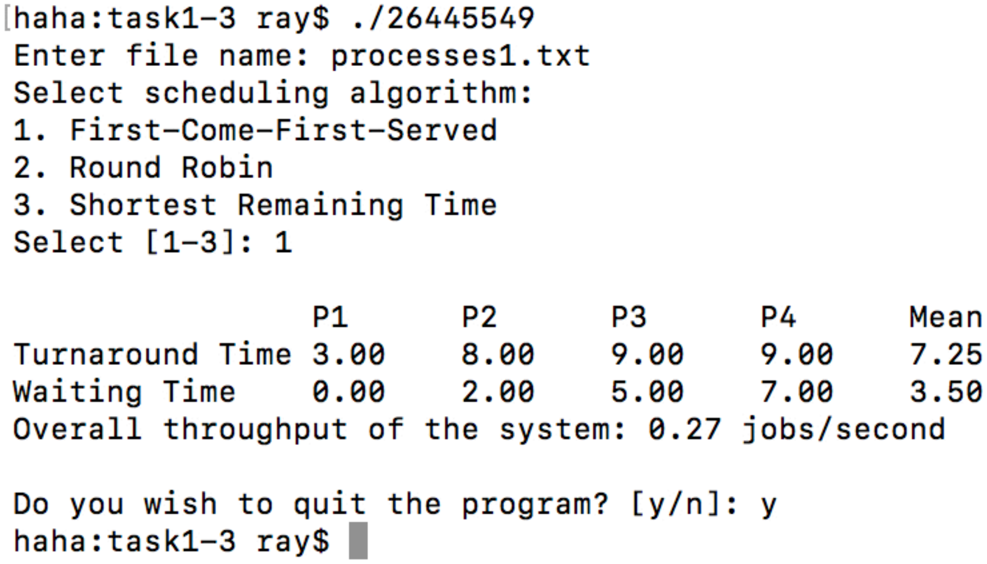
```
[haha:task1-3 ray$ ./26445549
 Enter file name: processes1.txt
 Select scheduling algorithm:
 1. First-Come-First-Served
 2. Round Robin
 3. Shortest Remaining Time
 Select [1-3]: 1

                 P1      P2      P3      P4      Mean
 Turnaround Time 3.00    8.00    9.00    9.00    7.25
 Waiting Time    0.00    2.00    5.00    7.00    3.50
 Overall throughput of the system: 0.27 jobs/second

 Do you wish to quit the program? [y/n]: n


 Enter file name: 
```

Quit the program



```
[haha:task1-3 ray$ ./26445549
Enter file name: processes1.txt
Select scheduling algorithm:
1. First-Come-First-Served
2. Round Robin
3. Shortest Remaining Time
Select [1-3]: 1

                P1      P2      P3      P4      Mean
Turnaround Time 3.00    8.00    9.00    9.00    7.25
Waiting Time    0.00    2.00    5.00    7.00    3.50
Overall throughput of the system: 0.27 jobs/second

Do you wish to quit the program? [y/n]: y
haha:task1-3 ray$ █
```