TSN2101 Operating System Assignment
Trimester 1, Year 2020/2021

Lecture Section : TC02
Tutorial Section : TT04

Topic 1:
Simulation of CPU Scheduling Algorithms

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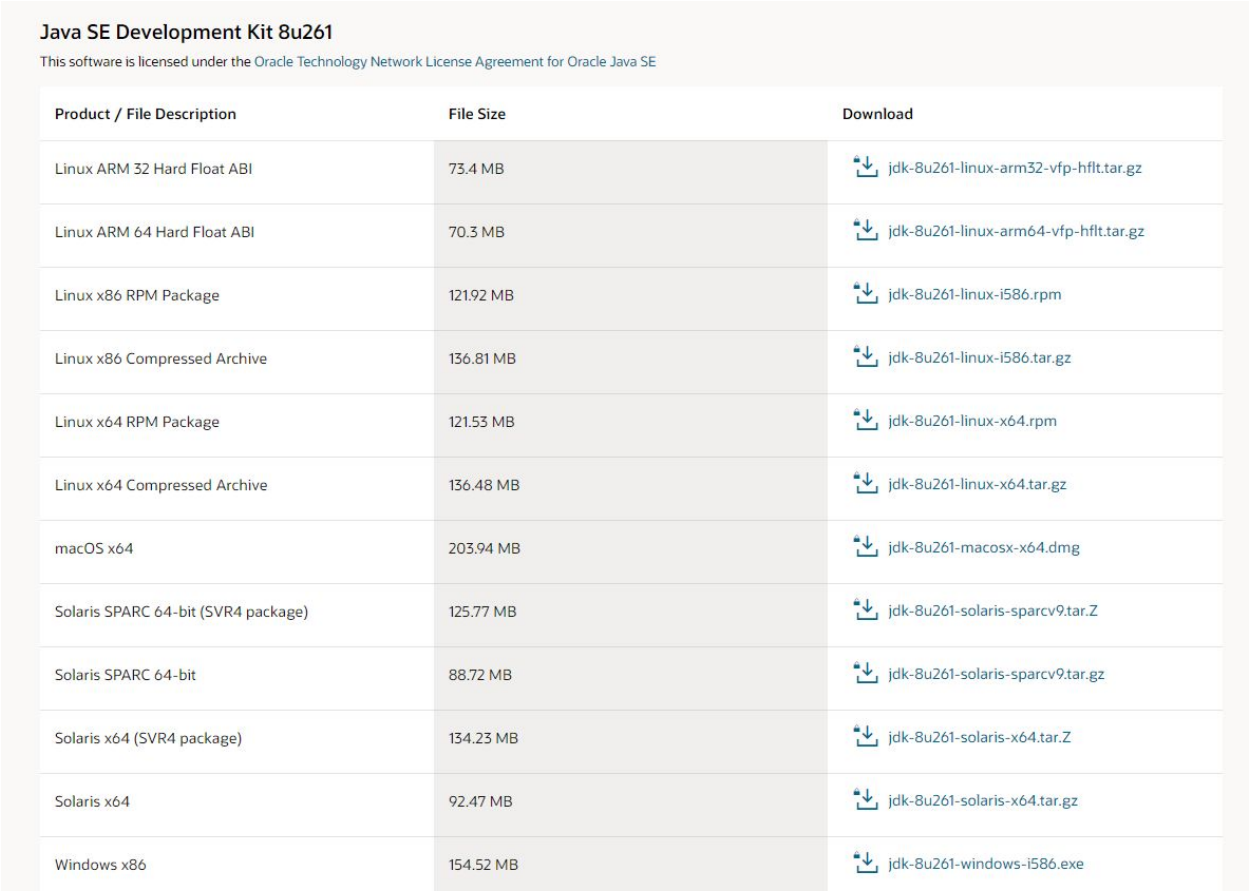
1.0 User Guide

1. Install Java SE Development Kit (Recommended version is Java SE 8) from https://www.oracle.com/java/technologies/javase/javase-jdk8-downloads.html if not installed yet.



Java SE Development Kit 8u261

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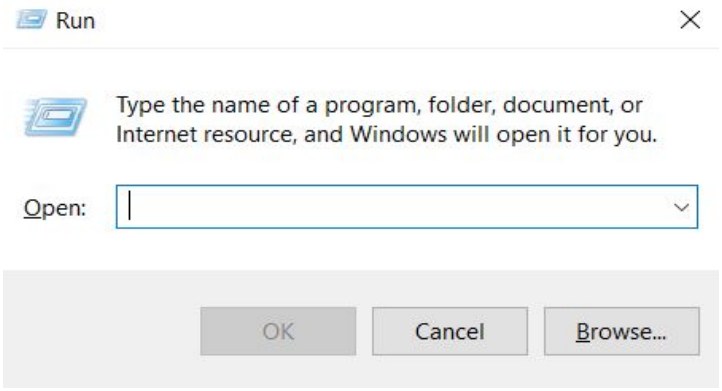
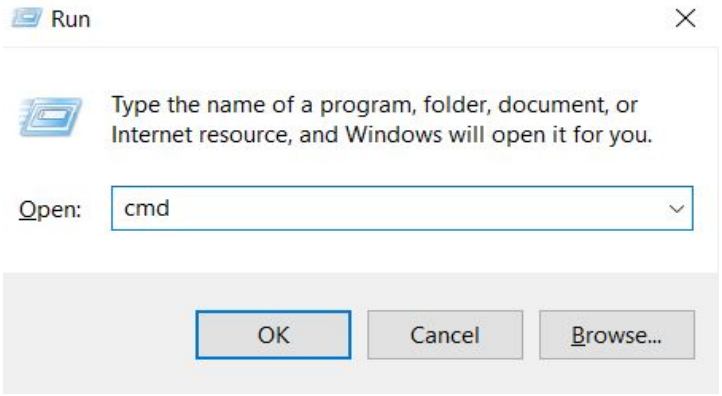
Product / File Description	File Size	Download
Linux ARM 32 Hard Float ABI	73.4 MB	jdk-8u261-linux-arm32-vfp-hflt.tar.gz
Linux ARM 64 Hard Float ABI	70.3 MB	jdk-8u261-linux-arm64-vfp-hflt.tar.gz
Linux x86 RPM Package	121.92 MB	jdk-8u261-linux-i586.rpm
Linux x86 Compressed Archive	136.81 MB	jdk-8u261-linux-i586.tar.gz
Linux x64 RPM Package	121.53 MB	jdk-8u261-linux-x64.rpm
Linux x64 Compressed Archive	136.48 MB	jdk-8u261-linux-x64.tar.gz
macOS x64	203.94 MB	jdk-8u261-macosx-x64.dmg
Solaris SPARC 64-bit (SVR4 package)	125.77 MB	jdk-8u261-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	88.72 MB	jdk-8u261-solaris-sparcv9.tar.gz
Solaris x64 (SVR4 package)	134.23 MB	jdk-8u261-solaris-x64.tar.Z
Solaris x64	92.47 MB	jdk-8u261-solaris-x64.tar.gz
Windows x86	154.52 MB	jdk-8u261-windows-i586.exe

2. Set path C:\Program Files\Java\jdk1.8.0\bin if haven't set path before in the environment variable settings.

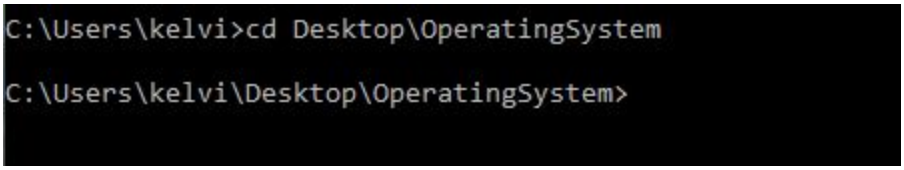
3. press the shortcut key "Windows+R"



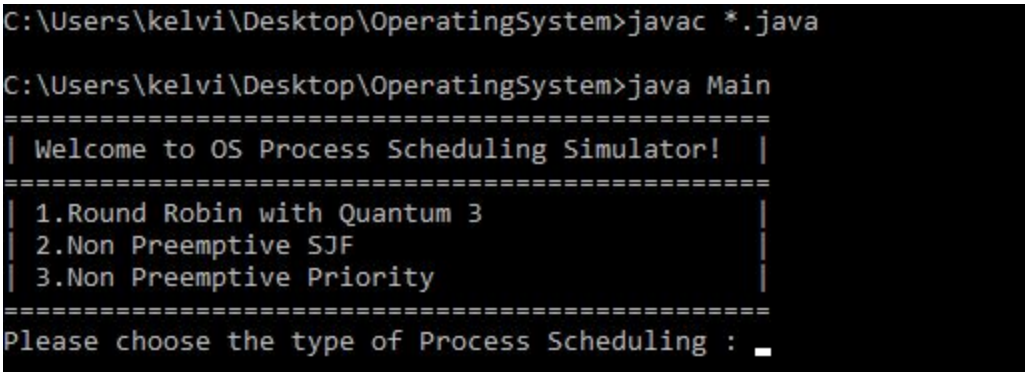
4. Enter "cmd" and click OK.



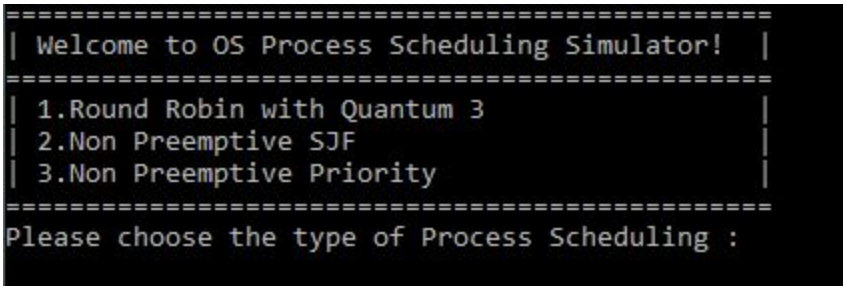
5. The command prompt window will show up. Now, go to the file directory where all your files are located, by entering the command "cd *your_file_directory*". In this case, the file directory is on the desktop , in the folder OperatingSystem. Therefore, the command is "Desktop\OperatingSystem"



6. After switching to the correct file directory, compile all the java files using the command "javac *.java". Then, run the main class file "Main.class" by entering the command "java Main".



7. The simulator will show up and you may start in the command prompt.



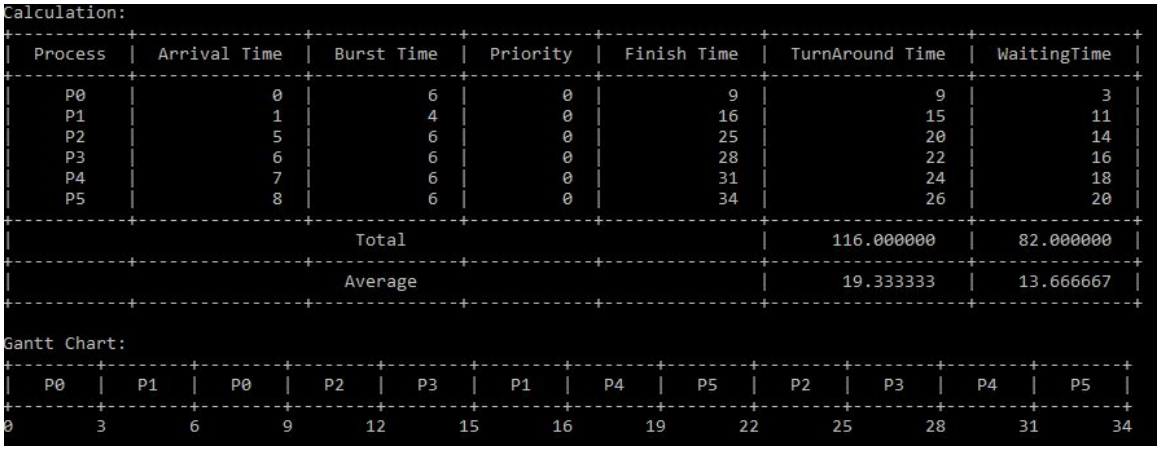
2.0 Result

We used Table 1 as our sample data to test our program. You may use other dataset as well.

Process	Burst Time	Arrival Time	Priority
P0	6	0	3
P1	4	1	3
P2	6	5	1
P3	6	6	1
P4	6	7	5
P5	6	8	6

Table 1

2.1 Round Robin with Quantum 3



Calculation:

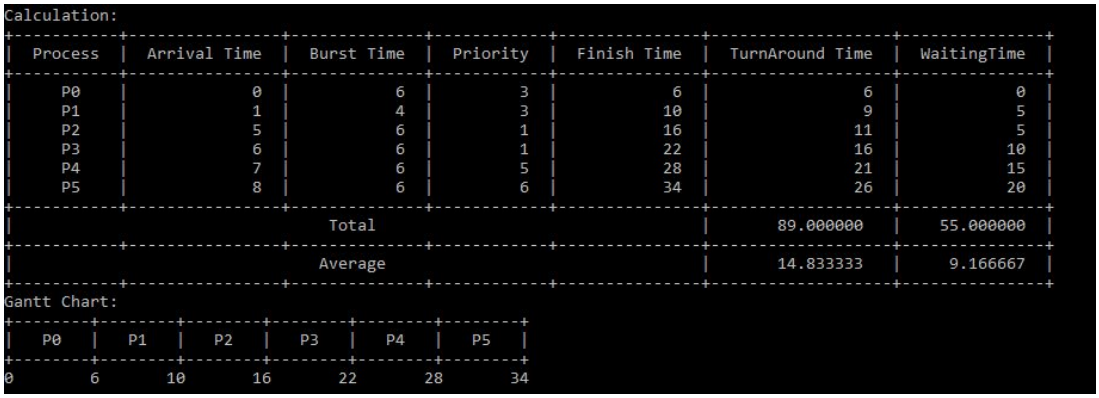
Process	Arrival Time	Burst Time	Priority	Finish Time	TurnAround Time	WaitingTime
P0	0	6	0	9	9	3
P1	1	4	0	16	15	11
P2	5	6	0	25	20	14
P3	6	6	0	28	22	16
P4	7	6	0	31	24	18
P5	8	6	0	34	26	20
Total					116.000000	82.000000
Average					19.333333	13.666667

Gantt Chart:

P0	P1	P0	P2	P3	P1	P4	P5	P2	P3	P4	P5

0 3 6 9 12 15 16 19 22 25 28 31 34

2.2 Non Preemptive SJF



Calculation:

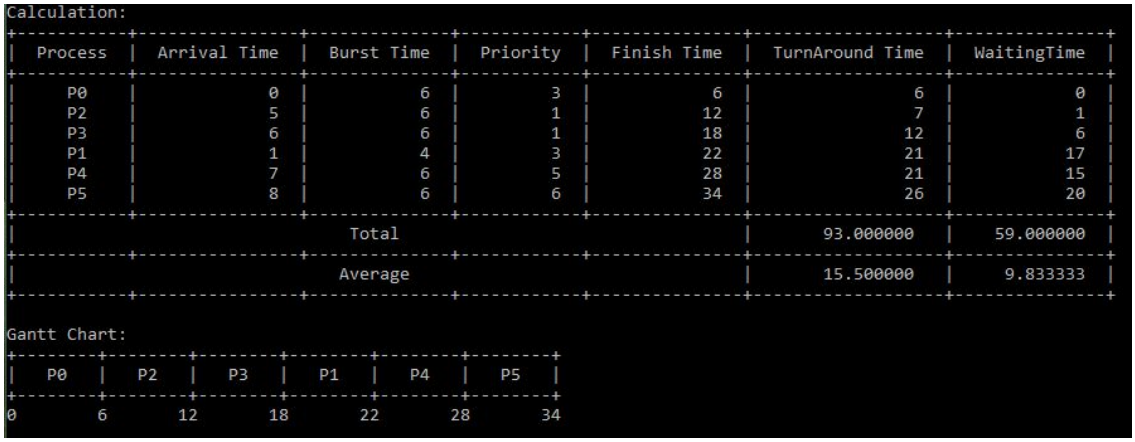
Process	Arrival Time	Burst Time	Priority	Finish Time	TurnAround Time	WaitingTime
P0	0	6	3	6	6	0
P1	1	4	3	10	9	5
P2	5	6	1	16	11	5
P3	6	6	1	22	16	10
P4	7	6	5	28	21	15
P5	8	6	6	34	26	20
Total					89.000000	55.000000
Average					14.833333	9.166667

Gantt Chart:

P0	P1	P2	P3	P4	P5

0 6 10 16 22 28 34

2.3 Non Preemptive Priority



Calculation:

Process	Arrival Time	Burst Time	Priority	Finish Time	TurnAround Time	WaitingTime
P0	0	6	3	6	6	0
P2	5	6	1	12	7	1
P3	6	6	1	18	12	6
P1	1	4	3	22	21	17
P4	7	6	5	28	21	15
P5	8	6	6	34	26	20
Total					93.000000	59.000000
Average					15.500000	9.833333

Gantt Chart:

P0	P2	P3	P1	P4	P5

0 6 12 18 22 28 34