SVKM'S NMIMS Deemed-to-be-University
Mukesh Patel School of Technology Management & Engineering
Department of Computer Engineering

Course Code		Program	B.Tech
Semester	IV	Year	III
Name of the Faculty	Prof. Mohini Reddy	Class	
Course Title	Operating Systems	Academic year	2022-2023

PART A
(PART A : TO BE REFFERED BY STUDENTS)

Experiment No. 03

A.1—Aim:
Study various Process Scheduling Algorithm and implementation of First Come First Serve algorithm for scheduling using 5 Process count.

A.2--- Prerequisite:
Concepts of Process & Process Scheduling

A.3--- Outcome:
After successful completion of this experiment students will be able to:
1. Understand the basics of Process & Process Scheduling.
2. Implement FCFS Process Scheduling Algorithm

A.4--- Theory:

First Come First Serve

First-Come-First-Serve algorithm is the simplest scheduling algorithm. Processes are dispatched according to their arrival time on the ready queue. Being a non-pre-emptive discipline, once a process has a CPU, it runs to completion. The FCFS scheduling is fair in the formal sense or human sense of fairness but it is unfair in the sense that long jobs make short jobs wait and unimportant jobs make important jobs wait.

FCFS is more predictable than most of other schemes since it offers time. FCFS scheme is not useful in scheduling interactive users because it cannot guarantee good response time. The code for FCFS scheduling is simple to write and understand. One of the major drawback of this scheme is that the average time is often quite long. The First-Come-First-Served algorithm is rarely used as a master scheme in modern operating systems but it is often embedded within other schemes.

A.5--- Procedure:
Task:
1. Study various Process Scheduling Algorithm
2. Implement FCFS Scheduling algorithm with 5 processes.
3. Save and close the file and name it as **EXP3_ your Roll no.**

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PART B

(PART B: TO BE COMPLETED BY STUDENTS)

Roll No: B090	Name: Vedant Sahai
Class: B	Batch: B2
Date of Experiment:02-08-22	Date of Submission:
Grade:	

B.1 Work done by student

```
package src.com.company;

import java.util.Scanner;

public class os_expt3 {
   static String name[];
   static int arrivaltime[];
   static int bursttime[];
   static int completiontime[];
   static int turnaroundtime[];
   static int waitingtime[];
   static int responsetime[];
   static int n;
   static float avgTAT;
   static float avgWT;
   os_expt3()
   {
      Scanner sc= new Scanner(System.in);
      System.out.print("Enter the number of Processes: ");
      n = sc.nextInt();
      name = new String[n];
      arrivaltime = new int[n];
```

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```
    bursttime = new int[n];
    completiontime = new int[n];
    turnaroundtime = new int[n];
    waitingtime = new int[n];
    responsetime = new int[n];
}
void input(){
    Scanner sc = new Scanner(System.in);
    for(int i = 0; i < n; i++) {
        System.out.println();
        System.out.println("Enter Process " + (i + 1) + " details");
        System.out.print("Name: ");
        name[i] = sc.next();
        System.out.print("Arrival time: ");
        arrivaltime[i] = sc.nextInt();
        System.out.print("Burst time: ");
        bursttime[i] = sc.nextInt();
    }
}
void calculate(){
    int ct = 0;
    int sumTAT = 0;
    int sumWT = 0;
    for(int i = 0;i < n;i++) {
        if (ct >= arrivaltime[i]) {
            ct = ct + bursttime[i];
        } else {
            ct = arrivaltime[i] + bursttime[i];
        }
        completiontime[i] = ct;
        turnaroundtime[i] = completiontime[i] - arrivaltime[i];
        waitingtime[i] = turnaroundtime[i] - bursttime[i];
        responsetime[i] = waitingtime[i];
        sumTAT+=turnaroundtime[i];
        sumWT+= waitingtime[i];
```

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```
        }
        avgTAT =(float)sumTAT/n;
        avgWT = (float)sumWT/n;
    }
    void display()
    {
        System.out.println("\nProcessid Arrival time(AT) burst time(BT) completion
time(CT) turnaround time(TAT) Waiting time(WT) Respose time(RT)");
        for(int i = 0 ;i < n;i++)
        {
            System.out.println("\t"+name[i] +"\t\t\t"+
arrivaltime[i]+"\t\t\t\t"+bursttime[i]+"\t\t\t\t"+completiontime[i]+"\t\t\t\t\t"+turnaro
undtime[i]+"\t\t\t\t\t\t"+waitingtime[i]+"\t\t\t\t\t"+responsetime[i]);
        }
        System.out.println();
        System.out.println("Average Turn Around Time: "+avgTAT);
        System.out.println("Average Waiting Time: "+avgWT);
    }
    public static void main(String args[])
    {
        os_expt3 ob = new os_expt3();
        ob.input();
        ob.calculate();
        ob.display();
    }
}
```

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```
Enter the number of Processes: 5

Enter Process 1 details
Name: P0
Arrival time: 0
Burst time: 2

Enter Process 2 details
Name: P1
Arrival time: 1
Burst time: 6

Enter Process 3 details
Name: P2
Arrival time: 2
Burst time: 4

Enter Process 4 details
Name: P3
Arrival time: 3
Burst time: 9

Enter Process 5 details
Name: P4
Arrival time: 6
Burst time: 12
```

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```
Processid Arrival time(AT) burst time(BT) completion time(CT) turnaround time(TAT) Waiting time(WT) Respose time(RT)
    P0         0              2              2                2                     0                  0
    P1         1              6              8                7                     1                  1
    P2         2              4              12               10                    6                  6
    P3         3              9              21               18                    9                  9
    P4         6              12             33               27                    15                 15

Average Turn Around Time: 12.8
Average Waiting Time: 6.2
```

B.2 Conclusion:

Studied various Process Scheduling Algorithm and implemented First Come First Serve algorithm.

B.3 Questions of Curiosity:

Q1. What is Process Scheduling?

The process scheduling is the activity of the process manager that handles the removal of the running process from the CPU and the selection of another process on the basis of a particular strategy.

Process scheduling is an essential part of a Multiprogramming operating systems. Such operating systems allow more than one process to be loaded into the executable memory at a time and the loaded process shares the CPU using time multiplexing.

Q2. What is the Average Waiting time and Turnaround time for the implemented example?

```
Average Turn Around Time: 12.8
Average Waiting Time: 6.2
```