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ROLL NO:- 46

CLASS/BATCH:- TE-B-2

Practical No:- 04

Write a program to simulate CPU Scheduling Algorithms: FCFS, SJF (Preemptive), Priority (Non-Preemptive) and Round Robin (Preemptive).

Priority (Non-Preemptive)

```
import java.util.Scanner;

class Process {
    int pid;        // Process ID
    int bt;         // Burst Time
    int wt;         // Waiting Time
    int tat;        // Turnaround Time

    Process(int pid, int bt) {
        this.pid = pid;
        this.bt = bt;
    }
}

public class SJF_NonPreemptive {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        // Input number of processes
        System.out.print("Enter number of processes: ");
        int n = sc.nextInt();

        Process[] proc = new Process[n];

        // Input burst times
        for (int i = 0; i < n; i++) {
            System.out.print("Enter Burst Time for Process " + (i + 1) + ":");

            int bt = sc.nextInt();
            proc[i] = new Process(i + 1, bt);
        }

        // Sort processes by burst time (SJF)
        for (int i = 0; i < n - 1; i++) {
            for (int j = i + 1; j < n; j++) {
                if (proc[i].bt > proc[j].bt) {
                    Process temp = proc[i];
                    proc[i] = proc[j];
                    proc[j] = temp;
                }
            }
        }

        // Calculate waiting time
        proc[0].wt = 0;
        for (int i = 1; i < n; i++) {
            proc[i].wt = proc[i - 1].wt + proc[i - 1].bt;
        }

        // Calculate turnaround time
        for (int i = 0; i < n; i++) {
            proc[i].tat = proc[i].wt + proc[i].bt;
        }

        // Display results
    }
}
```

```

        System.out.println("\nProcess\tBurst Time\tWaiting Time\tTurnaround
Time");
        int totalWT = 0, totalTAT = 0;
        for (int i = 0; i < n; i++) {
            System.out.println("P" + proc[i].pid + "\t\t" + proc[i].bt +
"\t\t" +
                                proc[i].wt + "\t\t" + proc[i].tat);
            totalWT += proc[i].wt;
            totalTAT += proc[i].tat;
        }

        System.out.println("\nAverage Waiting Time = " + (float) totalWT /
n);
        System.out.println("Average Turnaround Time = " + (float) totalTAT /
n);

        sc.close();
    }
}

```

OUTPUT :

```

gescoe@gescoe-OptiPlex-3010:~/Desktop/TE_B[46]/LP-1$ javac
SJF_NonPreemptive.java
gescoe@gescoe-OptiPlex-3010:~/Desktop/TE_B[46]/LP-1$
java SJF_NonPreemptive
Enter number of processes: 3
Enter Burst Time for Process 1: 5
Enter Burst Time for Process 2: 3
Enter Burst Time for Process 3: 8

```

Process	Burst Time	Waiting Time	Turnaround Time
P2	3	0	3
P1	5	3	8
P3	8	8	16

```

Average Waiting Time = 3.6666667
Average Turnaround Time = 9.0

```