SJF (NON –PREMPTION):

CODE :

import java.util.Scanner;

class SJFNProcess {

int pid, burstTime, arrivalTime, waitingTime, turnaroundTime;

public SJFNProcess(int pid, int burstTime, int arrivalTime) {

this.pid = pid;

this.burstTime = burstTime;

this.arrivalTime = arrivalTime;

}

}

public class SJFNonPreemptive {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter number of processes: ");

int n = sc.nextInt();

SJFNProcess[] processes = new SJFNProcess[n];

for (int i = 0; i < n; i++) {

System.out.print("Enter arrival time and burst time for process " + (i + 1) + ": ");

int at = sc.nextInt();

int bt = sc.nextInt();

processes[i] = new SJFNProcess(i + 1, bt, at);

}

// Sort processes by arrival time and burst time

for (int i = 0; i < n - 1; i++) {

for (int j = 0; j < n - i - 1; j++) {

if (processes[j].burstTime > processes[j + 1].burstTime) {

SJFNProcess temp = processes[j];

processes[j] = processes[j + 1];

processes[j + 1] = temp;

}

}

}

int totalTime = 0, totalWT = 0, totalTAT = 0;

for (SJFNProcess p : processes) {

p.waitingTime = totalTime - p.arrivalTime;

totalTime += p.burstTime;

p.turnaroundTime = p.waitingTime + p.burstTime;

totalWT += p.waitingTime;

totalTAT += p.turnaroundTime;

}

// Print Gantt Chart

System.out.println("Gantt Chart: ");

for (SJFNProcess p : processes) {

System.out.print("P" + p.pid + " ");

}

System.out.println("\n");

// Print process details

System.out.println("Process\tArrival\tBurst\tWaiting\tTurnaround");

for (SJFNProcess p : processes) {

System.out.println("P" + p.pid + "\t" + p.arrivalTime + "\t" + p.burstTime + "\t" + p.waitingTime + "\t" + p.turnaroundTime);

}

System.out.println("Average Waiting Time: " + (totalWT / (float) n));

System.out.println("Average Turnaround Time: " + (totalTAT / (float) n));

sc.close();

}

}

OUTPUT :

Enter number of processes: 5

Enter arrival time and burst time for process 1: 2 6

Enter arrival time and burst time for process 2: 5 2

Enter arrival time and burst time for process 3: 1 8

Enter arrival time and burst time for process 4: 0 3

Enter arrival time and burst time for process 5: 4 4

Gantt Chart:

P2 P4 P5 P1 P3

Process Arrival Burst Waiting Turnaround

P2 5 2 -5 -3

P4 0 3 2 5

P5 4 4 1 5

P1 2 6 7 13

P3 1 8 14 22

Average Waiting Time: 3.8

Average Turnaround Time: 8.4