EXPERIMENT 5 FCFS ARRIVAL TIME

#FCFS WITH ARRIVAL TIME

import java.util.\*;

class Process {

int id;

int arrivalTime;

int burstTime;

int waitingTime;

int turnaroundTime;

public Process(int id, int arrivalTime, int burstTime) {

this.id = id;

this.arrivalTime = arrivalTime;

this.burstTime = burstTime;

this.waitingTime = 0;

this.turnaroundTime = 0;

}

}

public class FCFSWithArrivalTime {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int n = scanner.nextInt();

List<Process> processes = new ArrayList<>();

// Input process details

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

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

int arrivalTime = scanner.nextInt();

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

int burstTime = scanner.nextInt();

processes.add(new Process(i + 1, arrivalTime, burstTime));

}

// Sort processes based on arrival time

processes.sort(Comparator.comparingInt(p -> p.arrivalTime));

// Calculate waiting time and turnaround time

int currentTime = 0;

for (Process process : processes) {

// Wait for the process to arrive

if (currentTime < process.arrivalTime) {

currentTime = process.arrivalTime;

}

// Waiting time is the difference between the current time and arrival time

process.waitingTime = currentTime - process.arrivalTime;

// Turnaround time is waiting time + burst time

process.turnaroundTime = process.waitingTime + process.burstTime;

// Increment current time by burst time for next process

currentTime += process.burstTime;

}

// Output results

System.out.println("\nProcess ID | Arrival Time | Burst Time | Waiting Time | Turnaround Time");

int totalWaitingTime = 0;

int totalTurnaroundTime = 0;

for (Process process : processes) {

System.out.printf(" %d | %d | %d | %d | %d\n",

process.id, process.arrivalTime, process.burstTime, process.waitingTime, process.turnaroundTime);

totalWaitingTime += process.waitingTime;

totalTurnaroundTime += process.turnaroundTime;

}

double averageWaitingTime = (double) totalWaitingTime / n;

double averageTurnaroundTime = (double) totalTurnaroundTime / n;

System.out.printf("\nAverage Waiting Time: %.2f", averageWaitingTime);

System.out.printf("\nAverage Turnaround Time: %.2f\n", averageTurnaroundTime);

scanner.close();

}

}