**Roll No. TIA28**

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**Code >>**

#include <stdio.h>

struct Process {

int id;

int arrival\_time;

int burst\_time;

int remaining\_time;

int waiting\_time;

int turnaround\_time;

};

void roundRobin(struct Process processes[], int n, int quantum) {

int currentTime = 0;

int completed = 0;

while (completed < n) {

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

if (processes[i].arrival\_time <= currentTime && processes[i].remaining\_time > 0) {

if (processes[i].remaining\_time <= quantum) {

currentTime += processes[i].remaining\_time;

processes[i].remaining\_time = 0;

completed++;

} else {

currentTime += quantum;

processes[i].remaining\_time -= quantum;

}

processes[i].turnaround\_time = currentTime - processes[i].arrival\_time;

processes[i].waiting\_time = processes[i].turnaround\_time - processes[i].burst\_time;

if (processes[i].waiting\_time < 0) {

processes[i].waiting\_time = 0;

}

}

}

}

}

void calculateAvgTimes(struct Process processes[], int n) {

float total\_waiting\_time = 0;

float total\_turnaround\_time = 0;

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

total\_waiting\_time += processes[i].waiting\_time;

total\_turnaround\_time += processes[i].turnaround\_time;

}

float avg\_waiting\_time = total\_waiting\_time / n;

float avg\_turnaround\_time = total\_turnaround\_time / n;

printf("Average Waiting Time: %.2f\n", avg\_waiting\_time);

printf("Average Turnaround Time: %.2f\n", avg\_turnaround\_time);

}

int main() {

int n, quantum;

printf("Enter the number of processes: ");

scanf("%d", &n);

printf("Enter the time quantum: ");

scanf("%d", &quantum);

struct Process processes[n];

// Input arrival time and burst time for each process

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

processes[i].id = i + 1;

printf("Enter arrival time for process %d: ", i + 1);

scanf("%d", &processes[i].arrival\_time);

printf("Enter burst time for process %d: ", i + 1);

scanf("%d", &processes[i].burst\_time);

processes[i].remaining\_time = processes[i].burst\_time;

}

roundRobin(processes, n, quantum);

printf("Process\tArrival Time\tBurst Time\tWaiting Time\tTurnaround Time\n");

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

printf("%d\t%d\t\t%d\t\t%d\t\t%d\n", processes[i].id, processes[i].arrival\_time, processes[i].burst\_time, processes[i].waiting\_time, processes[i].turnaround\_time);

}

calculateAvgTimes(processes, n);

return 0;

}

**Output >>**

Enter the number of processes: 3

Enter the time quantum: 2

Enter arrival time for process 1: 0

Enter burst time for process 1: 4

Enter arrival time for process 2: 0

Enter burst time for process 2: 3

Enter arrival time for process 3: 0

Enter burst time for process 3: 5

Process Arrival Time Burst Time Waiting Time Turnaround Time

1 0 4 4 8

2 0 3 6 9

3 0 5 7 12

Average Waiting Time: 5.67

Average Turnaround Time: 9.67

PS P:\VsCode>