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Lab 5

Ques: Implement the round robin algorithm for process scheduling.

Round Robin is a CPU scheduling algorithm where each process is assigned a fixed time slot in a cyclic way.

Source Code

```
#include<stdio.h>
int main()
{
    int i, limit, total = 0, x, counter = 0, time_quantum;
    int wait_time = 0, turnaround_time = 0, arrival_time[10], burst_time[10], temp[10];
    float average_wait_time, average_turnaround_time;
    printf("Enter Total Number of Processes:");
    scanf("%d", &limit);
    x = limit;
    for(i = 0; i < limit; i++) {
        printf("Enter Details of Process[%d]", i + 1);
        printf("Arrival Time:");
        scanf("%d", &arrival_time[i]);
        printf("Burst Time:");
        scanf("%d", &burst_time[i]);
        temp[i] = burst_time[i];
    }
    printf("Enter Time Quantum:");
    scanf("%d", &time_quantum);
    printf("Process ID   Burst Time   Turnaround Time   Waiting Time");
    for(total = 0, i = 0; x != 0;) {
        if(temp[i] <= time_quantum && temp[i] > 0){
            total = total + temp[i];
            temp[i] = 0;
            counter = 1;
        }
        else if(temp[i] > 0){
            temp[i] = temp[i] - time_quantum;
            total = total + time_quantum;
        }
        if(temp[i] == 0 && counter == 1){
            x--;
            printf("\nProcess[%d]\t%d\t\t%d\t\t%d\t\t%d", i + 1, burst_time[i], total - arrival_time[i], total - arrival_time[i], total - arrival_time[i] - burst_time[i]);
            wait_time = wait_time + total - arrival_time[i] - burst_time[i];
            turnaround_time = turnaround_time + total - arrival_time[i];
            counter = 0;
        }
        if(i == limit - 1){
            i = 0;
        }
        else if(arrival_time[i + 1] <= total){
            i++;
        }
        else{
            i = 0;
        }
    }
    average_wait_time = wait_time * 1.0 / limit;
    average_turnaround_time = turnaround_time * 1.0 / limit;
    printf("\nAverage Waiting Time:\t%f", average_wait_time);
    printf("\nAvg Turnaround Time:\t%f\n", average_turnaround_time);
    return 0;
}
```

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Output

```
Enter Total Number of Processes:3
Enter Details of Process[1]Arrival Time:5
Burst Time:10
Enter Details of Process[2]Arrival Time:7
Burst Time:20
Enter Details of Process[3]Arrival Time:3
Burst Time:10
Enter Time Quantum:3
Process ID  Burst Time  Turnaround Time  Waiting Time
Process[1]    10         11             1
Process[3]    10         29             19
Process[2]    20         33             13
Average Waiting Time:  11.000000
Avg Turnaround Time:  24.333334
```