

OS LAB EXAM

Round Robin Scheduling

Code:

```
1  #include <stdio.h>
2
3  void roundRobin(int n, int bt[], int qt) {
4      int wt[n], tat[n], rem_bt[n];
5      for (int i = 0; i < n; i++) rem_bt[i] = bt[i];
6
7      int t = 0, done;
8      while (1) {
9          done = 1;
10         for (int i = 0; i < n; i++) {
11             if (rem_bt[i] > 0) {
12                 done = 0;
13                 if (rem_bt[i] > qt) {
14                     t += qt;
15                     rem_bt[i] -= qt;
16                 } else {
17                     t += rem_bt[i];
18                     wt[i] = t - bt[i];
19                     rem_bt[i] = 0;
20                 }
21             }
22         }
23         if (done) break;
24     }
25
26     int total_wt = 0, total_tat = 0;
27     printf("PID Burst Time Waiting Time Turnaround Time\n");
28     for (int i = 0; i < n; i++) {
29         tat[i] = bt[i] + wt[i];
30         total_wt += wt[i];
31         total_tat += tat[i];
32         printf("%d\t%d\t%d\t%d\t%d\n", i+1, bt[i], wt[i], tat[i]);
33     }
34     printf("\nAverage waiting time: %.2f\n", (float)total_wt/n);
35     printf("Average turnaround time: %.2f\n", (float)total_tat/n);
36 }
37
38 int main() {
39     int n, qt;
40     printf("Enter the number of processes: ");
41     scanf("%d", &n);
42     int bt[n];
43     printf("Enter the quantum time: ");
44     scanf("%d", &qt);
45
46     for (int i = 0; i < n; i++) {
47         printf("Enter burst time for process %d: ", i+1);
48         scanf("%d", &bt[i]);
49     }
50
51     roundRobin(n, bt, qt);
52     return 0;
53 }
54
```

Output:

```
PS C:\Users\Admin\Desktop> gcc rr.c
PS C:\Users\Admin\Desktop> .\a.exe
Enter the number of processes: 5
Enter the quantum time: 4
Enter burst time for process 1: 4
Enter burst time for process 2: 6
Enter burst time for process 3: 9
Enter burst time for process 4: 12
Enter burst time for process 5: 16
PID Burst Time Waiting Time Turnaround Time
1      4           0           4
2      6          16          22
3      9          26          35
4     12          27          39
5     16          31          47

Average waiting time: 20.00
Average turnaround time: 29.40
```