

CPU SCHEDULING ALGORITHMS Part 2C) ROUND ROBIN:

AIM: To simulate the CPU scheduling algorithm round-robin.

DESCRIPTION:

To aim is to calculate the average waiting time. There will be a time slice, each process should be executed within that time-slice and if not it will go to the waiting state so first check whether the burst time is less than the time-slice. If it is less than it then assign the waiting time to the sum of the total times. If it is greater than the burst-time then subtract the time slot from the actual burst time and increment it by time-slot and the loop continues until all the processes are completed.

ALGORITHM:

Step 1: Start the process

Step 2: Accept the number of processes in the ready Queue and time quantum (or) time slice

Step 3: For each process in the ready Q, assign the process id and accept the CPU burst time

Step 4: Calculate the no. of time slices for each process where

No. of time slice for process (n) = burst time process (n)/time slice

Step 5: If the burst time is less than the time slice then the no. of time slices =1.

Step 6: Consider the ready queue is a circular Q, calculate

a) Waiting time for process (n) = waiting time of process(n-1)+ burst time of process(n-1) + the time difference in getting the CPU from process(n-1)

b) Turnaround time for process(n) = waiting time of process(n) + burst time of process(n)+ the time difference in getting CPU from process(n).

Step 7: Calculate

c) Average waiting time = Total waiting Time / Number of process

d) Average Turnaround time = Total Turnaround Time / Number of process Step

8: Stop the process

```
Microsoft Visual Studio Debug Console
Enter the no of processes -- 4
Enter Burst Time for process 1 -- 25
Enter Burst Time for process 2 -- 45
Enter Burst Time for process 3 -- 82
Enter Burst Time for process 4 -- 34
Enter the size of time slice -- 40
The Average Turnaround time is -- 123.500000
The Average Waiting time is -- 77.000000
  PROCESS  BURST TIME  WAITING TIME  TURNAROUND TIME
    1       25         0           25
    2       45        99          144
    3       82       104          186
    4       34       105          139
```

D) PRIORITY:

AIM: To write a c program to simulate the CPU scheduling Priority Algorithm.

DESCRIPTION:

To calculate the average waiting time in the priority algorithm, sort the burst times according to their priorities and then calculate the average waiting time of the processes. The waiting time of each process is obtained by summing up the burst times of all the previous processes.

ALGORITHM:

Step 1: Start the process

Step 2: Accept the number of processes in the ready Queue

Step 3: For each process in the ready Q, assign the process id and accept the CPU burst time

Step 4: Sort the ready queue according to the priority number.

Step 5: Set the waiting of the first process as 0 and its burst time as its turnaround time

Step 6: Arrange the processes based on process priority

Step 7: For each process in the Ready Q calculate

a) Waiting time(n)= waiting time (n-1) + Burst time (n-1)

b) Turnaround time (n)= waiting time(n)+Burst time(n)

Step 8: Calculate

c) Average waiting time = Total waiting Time / Number of process

d) Average Turnaround time = Total Turnaround Time / Number of process Print the results in an order.

Step 9: Stop

```
Microsoft Visual Studio Debug Console
Enter the number of processes --- 5
Enter the Burst Time & Priority of Process 0 --- 10
3
Enter the Burst Time & Priority of Process 1 --- 1
1
Enter the Burst Time & Priority of Process 2 --- 2
4
Enter the Burst Time & Priority of Process 3 --- 1
5
Enter the Burst Time & Priority of Process 4 --- 5
2
PROCESS      PRIORITY      BURST TIME      WAITING TIME      TURNAROUND TIME
1             1             1              0                1
4             2             5              1                6
0             3            10              6               16
2             4             2             16               18
3             5             1             18               19
Average Waiting Time is --- 8.200000
Average Turnaround Time is-- - 12.000000
```