Mawlana Bhashani Science and Technology University

Lab-Report

Report No:10

Report Name:Implementation of Round Robin Scheduling algorithm

Course code:ICT-3110

Course title:Operating System Lab

Date of Performance:16-09-2020

Date of Submission:19-09-2020

Submitted by

Name:Sabikun Nahar Piya

ID:IT-18020

3rd year 1st semester

Session: 2017-2018

Dept. of ICT

MBSTU.

Submitted To

Nazrul Islam

Assistant Professor

Dept. of ICT

MBSTU.

Experiment No:10

Experiment Name:Implementation of Rund Robin scheduling program

Theory:

Round Robin is a CPU scheduling algorithm where each process is assigned a fixed time slot in a cyclic way. It is the oldest, simplest scheduling algorithm, which is mostly used for multitasking.In Round-robin scheduling, each ready task runs turn by turn only in a cyclic queue for a limited time slice. This algorithm also offers starvation free execution of processes.

Implementation:

step 1: Declare the array size.

step 2: Get the number of elements to be inserted.

step 3: Get the value.

step 4: Set the time sharing system with preemption.

step 5: Define quantum is defined from 10 to 100ms.

step 6: Declare the queue as a circular.

step 7: Make the CPU scheduler goes around the ready queue allocating CPU to eachprocess for the time interval specified.

step 8: Make the CPU scheduler picks the first process and sets time to interrupt afterquantum expired dispatches the process.

step 9: If the process has burst less than the time quantum than the process releasesthe CPU

Working process:

Code for Rund Robin scheduling algorithm:

```
#include<stdio.h>
int main()
{
  int count,j,n,time,remain,flag=0,time_quantum;
  int wait_time=0,turnaround_time=0,at[10],bt[10],rt[10];
  printf("Enter Total Process:\t ");
  scanf("%d",&n);
  remain=n;
  for(count=0;count<n;count++)
  {
    printf("Enter Arrival Time and Burst Time for Process Process
Number %d :",count+1);
    scanf("%d",&at[count]);
    scanf("%d",&bt[count]);
    rt[count]=bt[count];
  }
  printf("Enter Time Quantum:\t");
  scanf("%d",&time_quantum);
  printf("\n\nProcess\t|Turnaround Time|Waiting Time\n\n");
  for(time=0,count=0;remain!=0;)
  {
```

```
    if(rt[count]<=time_quantum && rt[count]>0)
    {
      time+=rt[count];
      rt[count]=0;
      flag=1;
    }
    else if(rt[count]>0)
    {
      rt[count]-=time_quantum;
      time+=time_quantum;
    }
    if(rt[count]==0 && flag==1)
    {
      remain--;
      printf("P[%d]\t|\t%d\t|\t%d\n",count+1,time-at[count],time-
at[count]-bt[count]);
      wait_time+=time-at[count]-bt[count];
      turnaround_time+=time-at[count];
      flag=0;
    }
    if(count==n-1)
      count=0;
```

```
  else if(at[count+1]<=time)
    count++;
  else
    count=0;
 }
 printf("\nAverage Waiting Time= %f\n",wait_time*1.0/n);
 printf("Avg Turnaround Time = %f",turnaround_time*1.0/n);
 return 0;
}
```

Output:

```
Enter Total Process:     4
Enter Arrival Time and Burst Time for Process Process Number 1 :0
9
Enter Arrival Time and Burst Time for Process Process Number 2 :2
3
Enter Arrival Time and Burst Time for Process Process Number 3 :1
4
Enter Arrival Time and Burst Time for Process Process Number 4 :3
5
Enter Time Quantum:      5


Process |Turnaround Time|Waiting Time

P[2]    |       6       |       3
P[3]    |       11      |       7
P[4]    |       14      |       9
P[1]    |       21      |       12

Average Waiting Time= 7.750000
Avg Turnaround Time = 13.000000
Process returned 0 (0x0)   execution time : 50.190 s
Press any key to continue.
```

Discussion:

It is simple, easy to implement, and starvation-free as all processes get fair share of CPU.One of the most commonly used technique in CPU scheduling as a core.It is preemptive as processes are assigned CPU only for a fixed slice of time at most.The disadvantage of it is more overhead of context switching.