Lab # 11

CPU Scheduling Algorithms

In this lab we will look at the following CPU Scheduling Techniques

i. **FCFS CPU Scheduling Algorithm**
ii. **Round Robin CPU Scheduling Algorithm**
iii. **Priority CPU Scheduling Algorithm**

FCFS CPU Scheduling Algorithm

Example # 01

```
#include<stdio.h>
main()
{
int bt[20], wt[20], tat[20], i, n;
float wtavg, tatavg;
printf("\nEnter the number of processes -- ");
scanf("%d", &n);
for(i=0;i<n;i++)
{
printf("\nEnter Burst Time for Process %d -- ", i);
scanf("%d", &bt[i]);
}
wt[0] = wtavg = 0;
tat[0] = tatavg = bt[0];
for(i=1;i<n;i++)
{
wt[i] = wt[i-1] +bt[i-1];
tat[i] = tat[i-1] +bt[i];
wtavg = wtavg + wt[i];
tatavg = tatavg + tat[i];
}
printf("\t PROCESS \tBURST TIME \t WAITING TIME\t TURNAROUND TIME\n");
for(i=0;i<n;i++)
printf("\n\t P%d \t\t %d \t\t %d \t\t %d", i, bt[i], wt[i], tat[i]);
printf("\nAverage Waiting Time -- %f", wtavg/n);
printf("\nAverage Turnaround Time -- %f", tatavg/n);
}
```

Round Robin CPU Scheduling Algorithm

Example # 02

```
#include<stdio.h>
main()
{
int i,j,n,bu[10],wa[10],tat[10],t,ct[10],max;
float awt=0,att=0,temp=0;
printf("Enter the no of processes -- ");
scanf("%d",&n); for(i=0;i<n;i++)
{
printf("\nEnter Burst Time for process %d -- ", i+1);
scanf("%d",&bu[i]); ct[i]=bu[i];
}
printf("\nEnter the size of time slice -- ");
scanf("%d",&t);
max=bu[0];
for(i=1;i<n;i++)
if(max<bu[i])
max=bu[i];
for(j=0;j<(max/t)+1;j++)
for(i=0;i<n;i++)
if(bu[i]!=0)
  if(bu[i]<=t)
    {
        tat[i]=temp+bu[i];
        temp=temp+bu[i];
        bu[i]=0;
    }
 else
{
bu[i]=bu[i]-t;
temp=temp+t;
}
for(i=0;i<n;i++)
{
wa[i]=tat[i]-ct[i];
att+=tat[i];
awt+=wa[i];
}
printf("\nThe Average Turnaround time is -- %f",att/n);
printf("\nThe Average Waiting time is -- %f ",awt/n);
printf("\n\tPROCESS\t BURST TIME \t WAITING TIME\tTURNAROUND TIME\n");
for(i=0;i<n;i++)
printf("\t%d \t %d \t\t %d \t\t %d \n",i+1,ct[i],wa[i],tat[i]);
}
```

Priority CPU Scheduling Algorithm:

Example # 03

```
#include<stdio.h>
main()
{
int p[20],bt[20],pri[20], wt[20],tat[20],i, k, n, temp;
float wtavg, tatavg;
printf("Enter the number of processes --- ");
scanf("%d",&n);
for(i=0;i<n;i++)
{
p[i] = i;
printf("Enter the Burst Time & Priority of Process %d --- ",i);
scanf("%d %d",&bt[i], &pri[i]);
}
for(i=0;i<n;i++)
     for(k=i+1;k<n;k++)
        if(pri[i] > pri[k])
           {
               temp=p[i];
               p[i]=p[k];
               p[k]=temp;

               temp=bt[i];
               bt[i]=bt[k];
               bt[k]=temp;

               temp=pri[i];
               pri[i]=pri[k];
               pri[k]=temp;
          }
     wtavg = wt[0] = 0;
     tatavg = tat[0] = bt[0];
for(i=1;i<n;i++) {
wt[i] = wt[i-1] + bt[i-1];
tat[i] = tat[i-1] + bt[i];
wtavg = wtavg + wt[i];
tatavg = tatavg + tat[i];
}
printf("\nprocess\t\tpriority\tburst time\twaiting time\tturnaround time");
for(i=0;i<n;i++)
printf("\n%d \t\t %d \t\t%d\t\t%d\t\t%d",p[i],pri[i],bt[i],wt[i] ,tat[i]);
printf("\nAverage Waiting Time is --- %f",wtavg/n);
printf("\nAverage Turnaround Time is --- %f",tatavg/n);
}
```