

CPU SCHEDULING ALGORITHMS

FIRST COME FIRST SERVED

PROGRAM:

```
#include<stdio.h>
struct ps
{
int pno;
int btime;
};
int main()
{
int n,p,i,wait;
float avg,avg1,avg2;
struct ps f[20];
printf("\n Enter the no. of process:");
scanf("%d",&n);
for(i=0;i<n;i++)
{
printf("\n Enter the process no:");
scanf("%d",&f[i].pno);
printf("\n Enter the burst time:");
scanf("%d",&f[i].btime);
}
printf("\n The process details are:");
printf("\n\n Process\n bursttime\t waiting time\t turnaround time");
avg1=avg2=wait=0;
for(i=0;i<n;i++)
{
printf("%d\t%d\t%d\t",f[i].pno,f[i].btime);
printf("%d\t\t%d\n",wait,wait+f[i].btime);
avg2=avg2+wait+f[i].btime;
avg1=avg1+wait;
wait=wait+f[i].btime;
}
avg1=avg1/n;
avg2=avg2/n;
printf("\n Average waiting time is%f\n",avg1);
printf("\n Average turnaround time is%f\n",avg2);
}
```

OUTPUT:

```
Enter the no. of process:3
Enter the process no:1
Enter the burst time:2
Enter the process no:2
Enter the burst time:3
Enter the process no:3
```

Enter the burst time:5

The process details are:

| Process | bursttime | waiting time | turnaround time |
|---------|-----------|--------------|-----------------|
| 1 | 2 | 0 | 2 |
| 2 | 3 | 2 | 5 |
| 3 | 5 | 5 | 7 |

Average waiting time is 2.333333

Average turnaround time is 4.666667

SHORTEST JOB FIRST

PROGRAM:

```
#include<stdio.h>
struct sjf
{
int pno,btime;
};
main()
{
int n,i,j,wait,ptemp,btemp,a,pno,btime;
float avg1,avg2,wt,ta;
struct sjf s[10];
printf("\n\n sjf algorithm \n\n");
printf("*****");
printf("\n enter the no of process");
scanf("%d",&n);
btemp=ptemp=wait=avg1=avg2=a=0;
for(i=0;i<n;i++)
{
printf("\n enter the process no:");
scanf("%d",&s[i].pno);
printf("\n enter the burst time");
scanf("%d",&s[i].btime);
}
for(i=0;i<n;i++)
{
for(j=i+1;j<n;j++)
{
if(s[i].btime>s[j].btime)
{
btemp=s[i].btime;
ptemp=s[i].pno;
s[i].btime=s[j].btime;
s[j].btime=btemp;
s[i].pno=s[j].pno;
s[j].pno=ptemp;
}
}
}
```

```

}
}
printf("\n\n the process details");
printf("\n proces number \t burst time \t waiting time \t turnaround time");
for(i=0;i<n;i++)
{
printf("\n\t%d\t\t%d",s[i].pno,s[i].btime);
printf("\t%d\t\t%d",wait,wait+s[i].btime);
avg1=avg1+wait;
avg2=avg2+wait+s[i].btime;
wait=wait+s[i].btime;
}
printf("\n\n gantt chart\n\n");
printf("\n_____");
printf("%d\t\t",a);
for(i=0;i<n;i++)
{
a=a+s[i].btime;
printf("%d\t\t",a);
}
printf("\n_____");
wt=avg1/n;
ta=avg2/n;
printf("\n average waiting time is:%f",wt);
printf("\n\n average turnaround time is:%f",ta);
}

```

OUTPUT:

Enter number of process:3

Enter Burst Time:

p1:2

p2:3

p3:3

| Process | Burst Time | Waiting Time | Turnaround Time |
|---------|------------|--------------|-----------------|
| p1 | 2 | 0 | 2 |
| p2 | 3 | 2 | 5 |
| p3 | 3 | 5 | 8 |

Average Waiting Time=2.333333

Average Turnaround Time=5.000000

ROUND ROBIN ALGORITHM

PROGRAM:

```
#include<stdio.h>
main()
{
int bt[10],wt[10],tat[10],t[10],n,tq,i;
int count=0,swt=0,stat=0,temp,sq=0;
float awt,atat;
printf("\n Enter the no.of process");
scanf("%d",&n);
printf("\n Enter the burst time");
for(i=0;i<n;i++)
{
scanf("%d",&bt[i]);
t[i]=bt[i];
}
printf("\n Enter the time quantum");
scanf("%d",&tq);
while(1)
{
for(i=0;i<n;i++)
{
temp=tq;
if(t[i]==0)
{
count++;
continue;
}
if(t[i]>tq)
t[i]=t[i]-tq;
else
if(t[i]>=0)
{
temp=t[i];
t[i]=0;
}
sq=sq+temp;
tat[i]=sq;
}
if(n<=count)
break;
}
for(i=0;i<n;i++)
{
wt[i]=tat[i]-bt[i];
swt=swt+wt[i];
stat=stat+tat[i];
}
```

```

}
awt=(float)swt/n;
atat=(float)stat/n;
printf("\n The process details");
printf("\n\n process number\t burst time\t waiting time\t turnaround time");
for(i=0;i<n;i++)
{
printf("\n%d\t\t%d\t\t%d\t\t%d",i+1,bt[i],wt[i],tat[i]);
}
printf("\n Average waiting time is%f",awt);
printf("\n average turnaround time is%f",atat);
}

```

OUTPUT:

```

Enter the no.of process3
Enter the burst time: 4
6
8
Enter the time quantum:3
The process details
process number  burst time    waiting time  turnaround time
1                4                6             10
2                6                7             13
3                8                10            18
Average waiting time is : 7.6667
Average turnaround time is: 13.6667

```

PRIORITY SCHEDULING

PROGRAM:

```

#include<stdio.h>
int main()
{
int i,j,n,time,sum_wait=0,sum_turnaround=0;
int smallest,at[10],bt[10],priority[10],remain;
printf("enter the number of process:");
scanf("%d",&n);
remain=n;
for(i=0;i<n;i++)
{
printf("enter arrivaltime,burst time and priority for process p%d:",i+1);
scanf("%d",&at[i]);
scanf("%d",&bt[i]);
scanf("%d",&priority[i]);
}
priority[9]=11;
printf("\n\n process\t|turnaround time|waiting time\n");
for(time=0;remain!=0;time++)

```

```

{
smallest=9;
for(i=0;i<n;i++)
{
if(at[i]<=time&&priority[i]<priority[smallest]&&bt[i]>0)
{
smallest=i;
}
}
time+=bt[smallest];
remain--;
printf("p[%d]\t|\t%d\t|\t%d\n",smallest+1,time-at[smallest],time-at[smallest]-at[smallest]);
sum_wait+=time-at[smallest]-bt[smallest];
sum_turnaround+=time-at[smallest];
bt[smallest]=0;
}
printf("\n avg waiting time=%f\n",sum_wait*1.0/n);
printf("\n avg turnaround time=5f\n",sum_turnaround*1.0/n);
return 0;
}

```

OUTPUT:

```

enter the number of process:4
enter arrivaltime,burst time and priority for process p1:0 5 1
enter arrivaltime,burst time and priority for process p2:0 4 3
enter arrivaltime,burst time and priority for process p3:0 1 2
enter arrivaltime,burst time and priority for process p4:0 6 4
process   | turnaround time | waiting time
p[1]      |          5      |      5
p[3]      |          7      |      7
p[2]      |         12      |     12
p[4]      |         19      |     19
avg waiting time=6.750000
avg turnaround time=5f

```