



AMRITA
VISHWA VIDYAPEETHAM
UNIVERSITY

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COURSE CODE : 19CSE103

COURSE NAME: OPERATING SYSTEMS

TEAM MEMBERS :

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SRTF WITH PRIORITY

Code :

```
#include <stdio.h>
int main()
{
    int a[10],b[10],x[10],pr[10],p[10];
    int i,j,smallest,count=0,time,n,pos,temp;
    double avg=0,tt=0,end;

    printf("\nEnter Total Number of Process:\t");
    scanf("%d",&n);

    printf("\nEnter Details of %d Processes\n", n);
    for(i=0;i<n;i++)
    {
        printf("\nEnter Arrival Time:\t");
        scanf("%d",&a[i]);
        printf("Enter Burst Time:\t");
        scanf("%d",&b[i]);
        printf("Enter Priority:\t\t");
        scanf("%d",&pr[i]);
        p[i]=i+1;
    }

    b[9]=9999;

    for(i=0;i<n;i++)
    {
        pos=i;
        for(j=i+1;j<n;j++)
        {
            if(pr[j]<pr[pos])
                pos=j;
        }

        temp=pr[i];
        pr[i]=pr[pos];
        pr[pos]=temp;

        temp=b[i];
        b[i]=b[pos];
        b[pos]=temp;

        temp=a[i];
        a[i]=a[pos];
        a[pos]=temp;

        temp=p[i];
        p[i]=p[pos];
        p[pos]=temp;
    }

    printf("\nProcess\t\t\t Burst Time\t\t\t \tArrival Time\t\t\tPriority ");
    for(i=0;i<n;i++)
    {
```

```

        printf("\nP[%d]\t\t\t %d\t\t\t %d\t\t\t\t\t%d",p[i],b[i],a[i],pr[i]);
    }
    for(time=0;count!=n;time++)
    {
        smallest=9;
        for(i=0;i<n;i++)
        {
            if(a[i]<=time && b[i]<b[smallest] && b[i]>0 )
                smallest=i;
        }
        b[smallest]--;
        if(b[smallest]==0)
        {
            count++;
            end=time+1;
            avg=avg+end-a[smallest]-x[smallest];
            tt= tt+end-a[smallest];
        }
    }
    printf("\n\nAverage waiting time = %lf\n",avg/n);
    printf("Average Turnaround time = %lf",tt/n/n);
    return 0;
}

```

Output :

```

abhinav@abhinav:~/Assignment05$ gcc srtf-withpriority.c
abhinav@abhinav:~/Assignment05$ ./a.out

Enter Total Number of Process: 5

Enter Details of 5 Processes

Enter Arrival Time: 3
Enter Burst Time: 1
Enter Priority: 2

Enter Arrival Time: 1
Enter Burst Time: 4
Enter Priority: 4

Enter Arrival Time: 4
Enter Burst Time: 2
Enter Priority: 1

Enter Arrival Time: 0
Enter Burst Time: 6
Enter Priority: 3

Enter Arrival Time: 2
Enter Burst Time: 3
Enter Priority: 5

Process    Burst Time    Arrival Time    waiting-time    turnaround-time    completion-time
P[3]       1             4              2              4                8
P[1]       4             3              0              1                4
P[4]       2             0             10             16              16
P[2]       6             1              1              5                6
P[5]       3             2              6              9               11

Average waiting time = 3.800000
Average Turnaround time = 7.000000
abhinav@abhinav:~/Assignment05$

```

Code :

```
#include<stdio.h>

int main()
{
    int i, limit, total = 0, x, counter = 0, time_quantum;
    int wait_time = 0, turnaround_time = 0, arrival_time[10],
burst_time[10], temp[10];
    float average_wait_time, average_turnaround_time;
    printf("\nEnter Total Number of Processes:\t");
    scanf("%d", &limit);
    x = limit;
    for(i = 0; i < limit; i++)
    {
        printf("\nEnter Details of Process[%d]\n", i + 1);
        printf("Arrival Time:\t");
        scanf("%d", &arrival_time[i]);
        printf("Burst Time:\t");
        scanf("%d", &burst_time[i]);
        temp[i] = burst_time[i];
    }
    printf("\nEnter Time Quantum:\t");
    scanf("%d", &time_quantum);
    printf("\nProcess ID\t\tBurst Time\t Arrival Time\t Turnaround Time\t\nWaiting Time\n");
    for(total = 0, i = 0; x != 0;)
    {
        if(temp[i] <= time_quantum && temp[i] > 0)
        {
            total = total + temp[i];
            temp[i] = 0;
            counter = 1;
        }
        else if(temp[i] > 0)
        {
            temp[i] = temp[i] - time_quantum;
            total = total + time_quantum;
        }
        if(temp[i] == 0 && counter == 1)
        {
            x--;
            printf("\nProcess[%d]\t\t%d\t\t%d\t\t%d\t\t%d\t\t%d\t\t %d", i +
1, burst_time[i], arrival_time[i], total - arrival_time[i], total -
arrival_time[i] - burst_time[i]);
            wait_time = wait_time + total - arrival_time[i] -
burst_time[i];
            turnaround_time = turnaround_time + total -
arrival_time[i];
            counter = 0;
        }
        if(i == limit - 1)
        {
```

```

        i = 0;
    }
    else if(arrival_time[i + 1] <= total)
    {
        i++;
    }
    else
    {
        i = 0;
    }
}
average_wait_time = wait_time * 1.0 / limit;
average_turnaround_time = turnaround_time * 1.0 / limit;
printf("\n\nAverage Waiting Time:\t%f", average_wait_time);
printf("\nAvg Turnaround Time:\t%f\n", average_turnaround_time);
return 0;
}

```

Output :

```

abhinav@abhinav:~/Assignment05$ gcc RR.c
abhinav@abhinav:~/Assignment05$ ./a.out

Enter Total Number of Processes:      5

Enter Details of Process[1]
Arrival Time:  0
Burst Time:    5

Enter Details of Process[2]
Arrival Time:  1
Burst Time:    3

Enter Details of Process[3]
Arrival Time:  2
Burst Time:    1

Enter Details of Process[4]
Arrival Time:  3
Burst Time:    2

Enter Details of Process[5]
Arrival Time:  4
Burst Time:    3

Enter Time Quantum:      2

Process ID      Burst Time      Arrival Time      Turnaround Time      Waiting Time
Process[3]      1          2          3          2
Process[4]      2          3          4          2
Process[2]      3          1          11         8
Process[5]      3          4          9          6
Process[1]      5          0          14         9

Average Waiting Time:  5.400000
Avg Turnaround Time:  8.200000
abhinav@abhinav:~/Assignment05$

```


Round-Robin CPU Scheduling

R. Abhinav

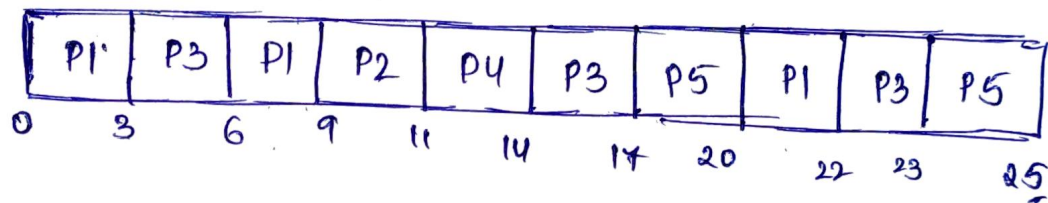
let us take;

Process	Arrival Time	Burst time
P1	0	8
P2	5	2
P3	1	7
P4	6	3
P5	8	5

Ready Queue:-

P1, P3, P1, P2, P4, P3, P5, P1, P3, P5

Gantt Chart:-



Completion Time for;

$$P1 = 22$$

$$P2 = 11$$

$$P3 = 23$$

$$P4 = 14$$

$$P5 = 25$$

Turn around Time for: $P1 = \text{Completion Time} - \text{Arrival} =$

$$P1 = 22 - 0 = 22$$

$$P2 = 11 - 5 = 6$$

$$P3 = 23 - 1 = 22$$

$$P4 = 14 - 6 = 8$$

$$P5 = 25 - 8 = 17$$

Waiting Time for, $P1 = \text{Turn around Time} - \text{Burst time}$

$$\Rightarrow P1 = 22 - 8 = 14$$

$$P2 = 6 - 2 = 4$$

$$P3 = 22 - 7 = 15$$

$$P4 = 8 - 3 = 5$$

$$P5 = 17 - 5 = 12$$

$$\text{Average waiting Time} = \frac{(14 + 4 + 15 + 5 + 12)}{5}$$

$$= \frac{50}{5} = \boxed{10.00}$$

$$\text{Average Turnaround Time} = \frac{(22 + 6 + 22 + 8 + 17)}{5}$$

$$= \frac{75}{5}$$

$$= \boxed{15.00}$$