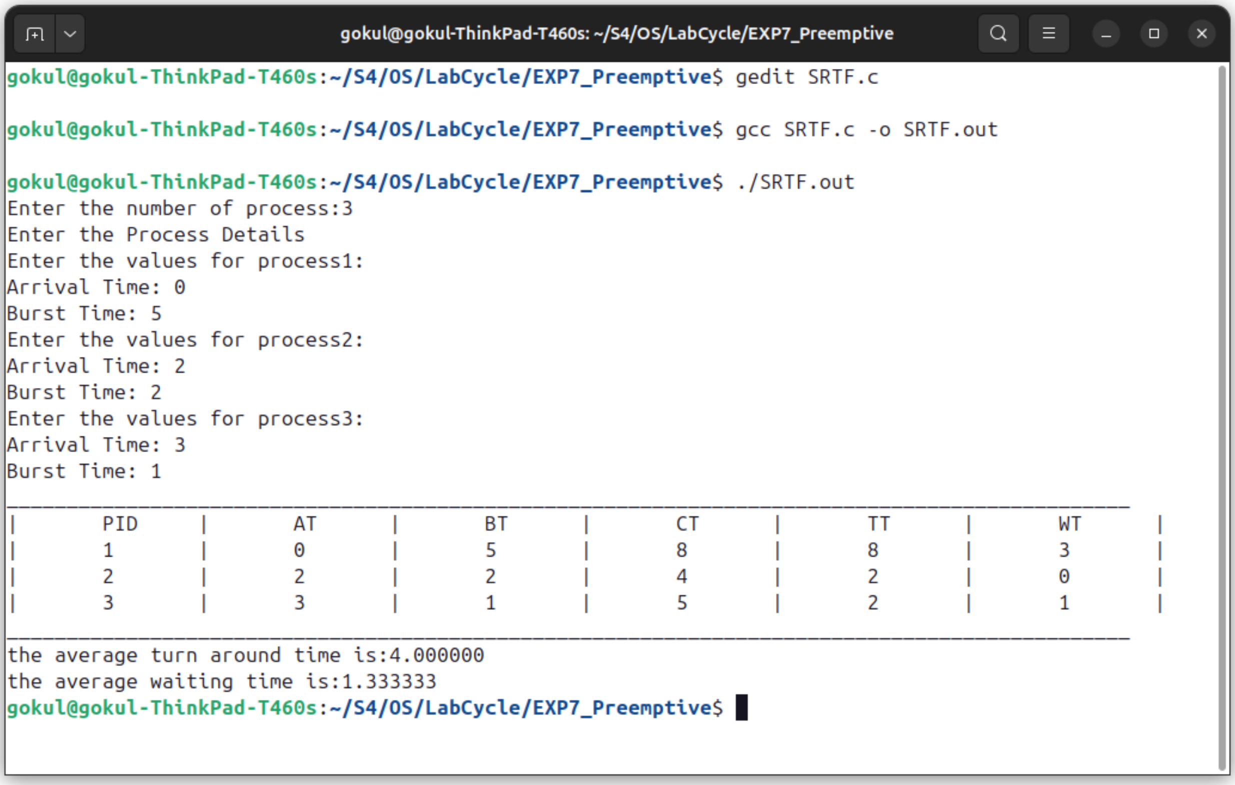
1)Shortest Remaining Time First

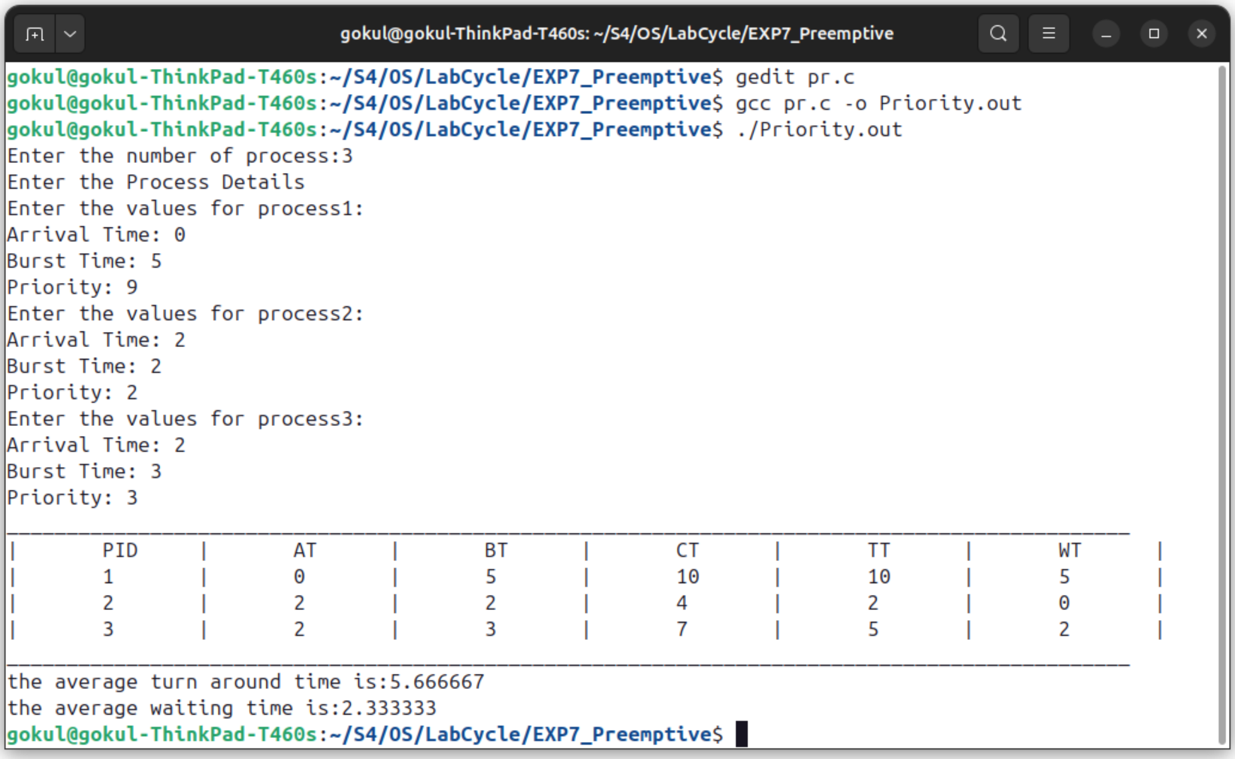
```
#include<stdio.h>
int main()
{
    int n,at[10],bt[10],temp[10],ct[10],wt[10],i,j,time=0,count=0,tat[10],smallest;
    float avg_tat,avg_wt,end=0;
    printf("Enter the number of process:");
    scanf("%d",&n);
    printf("Enter the Process Details\n");
    for(i=0;i<n;i++){
        printf("Enter the values for process%d:\n",i+1);
        printf("Arrival Time: ");
        scanf("%d",&at[i]);
        printf("Burst Time: ");
        scanf("%d",&bt[i]);
        temp[i]=bt[i];
    }
    bt[9]=1e9;
    for(time=0;count!=n;time++){
        smallest=9;
    for(i=0;i<n;i++){
        if(at[i]<=time&&bt[i]<bt[smallest]&&bt[i]>0){
            smallest=i;
        }
    }
        if(smallest!=9){
            bt[smallest]--;
            if(bt[smallest]==0)
            {
                count++;
                end=time+1;
                ct[smallest]=end;
                tat[smallest]=end-at[smallest];
                wt[smallest]=end-at[smallest]-temp[smallest];
            }
        }
    }

printf("___________________________________________________________________________
_____________________\n");
    printf("|\tPID\t|\tAT\t|\tBT\t|\tCT\t|\tTT\t|\tWT\t|\n");
    for(i=0;i<n;i++){
        printf("|\t%d\t|\t%d\t|\t%d\t|\t%d\t|\t%d\t|\t%d\t|\n",i+1,at[i],temp[i],ct[i],tat[i],wt[i]);
    }
printf("______________________________________________________________________________
____________________\n");
        for(i=0;i<n;i++){
                avg_tat+=tat[i];
                avg_wt+=wt[i];
        }
        printf("the average turn around time is:%4f\n",avg_tat/n);
        printf("the average waiting time is:%4f\n",avg_wt/n);
}
```


gokul@gokul-ThinkPad-T460s: ~/S4/OS/LabCycle/EXP7_Preemptive

```
gokul@gokul-ThinkPad-T460s:~/S4/OS/LabCycle/EXP7_Preemptive$ gedit SRTF.c

gokul@gokul-ThinkPad-T460s:~/S4/OS/LabCycle/EXP7_Preemptive$ gcc SRTF.c -o SRTF.out

gokul@gokul-ThinkPad-T460s:~/S4/OS/LabCycle/EXP7_Preemptive$ ./SRTF.out
Enter the number of process:3
Enter the Process Details
Enter the values for process1:
Arrival Time: 0
Burst Time: 5
Enter the values for process2:
Arrival Time: 2
Burst Time: 2
Enter the values for process3:
Arrival Time: 3
Burst Time: 1
______________________________________________________________________________________________
|       PID     |       AT      |       BT      |       CT      |       TT      |       WT      |
|       1       |       0       |       5       |       8       |       8       |       3       |
|       2       |       2       |       2       |       4       |       2       |       0       |
|       3       |       3       |       1       |       5       |       2       |       1       |
______________________________________________________________________________________________
the average turn around time is:4.000000
the average waiting time is:1.333333
gokul@gokul-ThinkPad-T460s:~/S4/OS/LabCycle/EXP7_Preemptive$ 
```

2)Priority

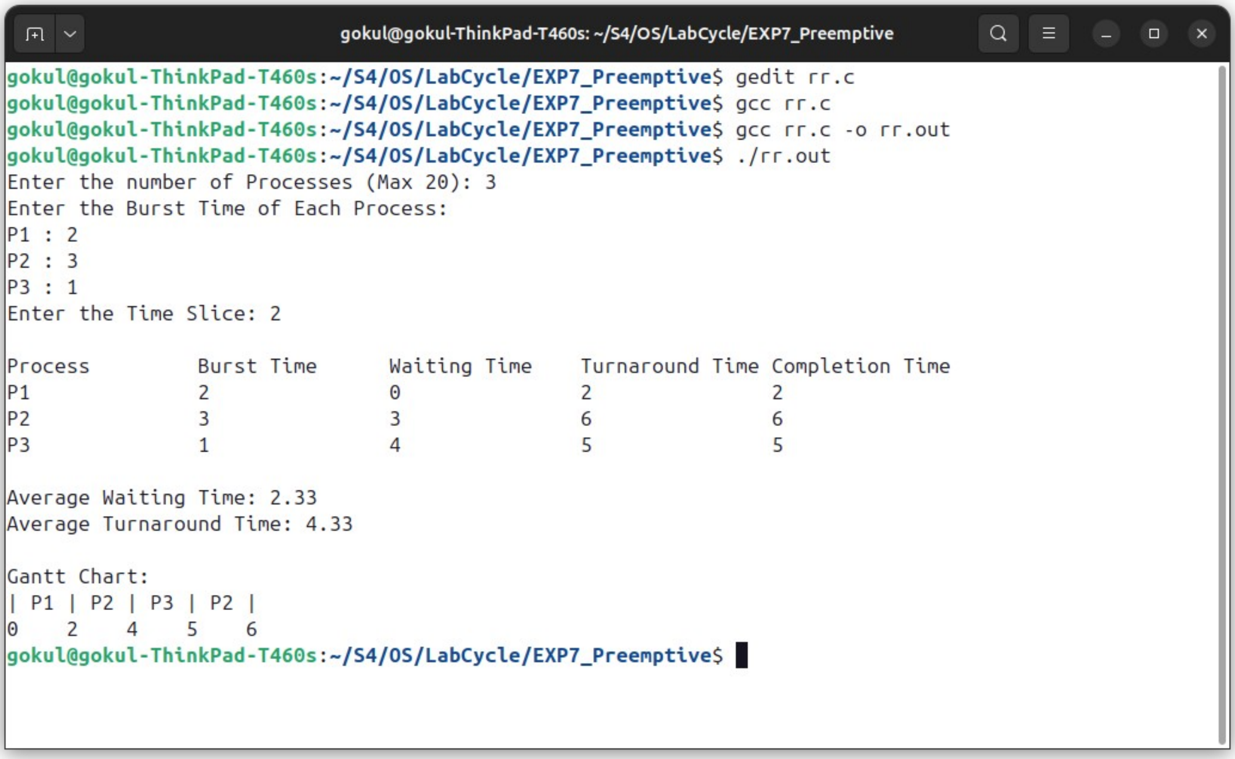
```
#include<stdio.h>
int main()
{
    int n,at[10],bt[10],temp[10],ct[10],wt[10],i,j,time=0,count=0,tat[10],smallest,pr[10];
    float avg_tat=0,avg_wt=0,end=0;
    printf("Enter the number of process:");
    scanf("%d",&n);
    printf("Enter the Process Details\n");
    for(i=0;i<n;i++){
        printf("Enter the values for process%d:\n",i+1);
        printf("Arrival Time: ");
        scanf("%d",&at[i]);
        printf("Burst Time: ");
        scanf("%d",&bt[i]);
        printf("Priority: ");
        scanf("%d",&pr[i]);
        temp[i]=bt[i];
    }
    pr[9]=1e9;
    for(time=0;count!=n;time++){
        smallest=9;
    for(i=0;i<n;i++){
        if(at[i]<=time&&pr[i]<pr[smallest]&&bt[i]>0){
            smallest=i;
        }
    }
        if(smallest!=9){
            bt[smallest]--;
            if(bt[smallest]==0)
            {
                count++;
                end=time+1;
                ct[smallest]=end;
                tat[smallest]=end-at[smallest];
                wt[smallest]=end-at[smallest]-temp[smallest];
            }
        }
    }

printf("_______________________________________________________________________________
____________________\n");
    printf("|\tPID\t|\tAT\t|\tBT\t|\tCT\t|\tTT\t|\tWT\t|\n");
    for(i=0;i<n;i++){
        printf("|\t%d\t|\t%d\t|\t%d\t|\t%d\t|\t%d\t|\t%d\t|\n",i+1,at[i],temp[i],ct[i],tat[i],wt[i]);
    }
printf("_______________________________________________________________________________
______________________\n");
        for(i=0;i<n;i++){
                avg_tat+=tat[i];
                avg_wt+=wt[i];
        }
        printf("the average turn around time is:%4f\n",avg_tat/n);
        printf("the average waiting time is:%4f\n",avg_wt/n);
}
```


gokul@gokul-ThinkPad-T460s: ~/S4/OS/LabCycle/EXP7_Preemptive

```
gokul@gokul-ThinkPad-T460s:~/S4/OS/LabCycle/EXP7_Preemptive$ gedit pr.c
gokul@gokul-ThinkPad-T460s:~/S4/OS/LabCycle/EXP7_Preemptive$ gcc pr.c -o Priority.out
gokul@gokul-ThinkPad-T460s:~/S4/OS/LabCycle/EXP7_Preemptive$ ./Priority.out
Enter the number of process:3
Enter the Process Details
Enter the values for process1:
Arrival Time: 0
Burst Time: 5
Priority: 9
Enter the values for process2:
Arrival Time: 2
Burst Time: 2
Priority: 2
Enter the values for process3:
Arrival Time: 2
Burst Time: 3
Priority: 3
______________________________________________________________________________________________
|       PID       |       AT       |       BT       |       CT       |       TT       |       WT       |
|       1         |       0        |       5        |       10       |       10       |       5        |
|       2         |       2        |       2        |       4        |       2        |       0        |
|       3         |       2        |       3        |       7        |       5        |       2        |

______________________________________________________________________________________________
the average turn around time is:5.666667
the average waiting time is:2.333333
gokul@gokul-ThinkPad-T460s:~/S4/OS/LabCycle/EXP7_Preemptive$ 
```

3) Round Robin

```
#include <stdio.h>

void main() {
    int i, j, n, qt, count = 0, time = 0, index = 0;
    int bt[20], bt_cp[20], p[20], ct[20], wt[20], tt[20];
    int gantt_process[100], gantt_time[100];
    float wt_avg = 0, tt_avg = 0;

    printf("Enter the number of Processes (Max 20): ");
    scanf("%d", &n);

    printf("Enter the Burst Time of Each Process:\n");
    for (i = 0; i < n; i++) {
        p[i] = i + 1;
        printf("P%d : ", p[i]);
        scanf("%d", &bt[i]);
        bt_cp[i] = bt[i];
        ct[i] = 0;
    }

    printf("Enter the Time Slice: ");
    scanf("%d", &qt);

    while (count != n) {
        for (i = 0; i < n; i++) {
            if (bt_cp[i] == 0) {
                continue;
            }
            if (bt_cp[i] > qt) {
                gantt_process[index] = p[i];
                gantt_time[index] = time + qt;
                time += qt;
                bt_cp[i] -= qt;
            } else {
                gantt_process[index] = p[i];
                gantt_time[index] = time + bt_cp[i];
                time += bt_cp[i];
                bt_cp[i] = 0;
                ct[i] = time;
                count++;
            }
            index++;
        }
    }

    for (i = 0; i < n; i++) {
        tt[i] = ct[i];
        wt[i] = tt[i] - bt[i];
        wt_avg += wt[i];
        tt_avg += tt[i];
    }

    wt_avg /= n;
    tt_avg /= n;

    printf("\nProcess\t\tBurst Time\tWaiting Time\tTurnaround Time\tCompletion Time\n");
    for (i = 0; i < n; i++) {
        printf("P%d\t\t%d\t\t%d\t\t%d\t\t%d\n", p[i], bt[i], wt[i], tt[i], ct[i]);
    }

    printf("\nAverage Waiting Time: %.2f", wt_avg);
    printf("\nAverage Turnaround Time: %.2f\n", tt_avg);

    printf("\nGantt Chart:\n");
    for (i = 0; i < index; i++) {
        printf("| P%d ", gantt_process[i]);
    }
    printf("|\n");
    printf("0");
    for (i = 0; i < index; i++) {
        printf("    %d", gantt_time[i]);
    }
    printf("\n");
}
```



gokul@gokul-ThinkPad-T460s: ~/S4/OS/LabCycle/EXP7_Preemptive

```
gokul@gokul-ThinkPad-T460s:~/S4/OS/LabCycle/EXP7_Preemptive$ gedit rr.c
gokul@gokul-ThinkPad-T460s:~/S4/OS/LabCycle/EXP7_Preemptive$ gcc rr.c
gokul@gokul-ThinkPad-T460s:~/S4/OS/LabCycle/EXP7_Preemptive$ gcc rr.c -o rr.out
gokul@gokul-ThinkPad-T460s:~/S4/OS/LabCycle/EXP7_Preemptive$ ./rr.out
Enter the number of Processes (Max 20): 3
Enter the Burst Time of Each Process:
P1 : 2
P2 : 3
P3 : 1
Enter the Time Slice: 2

Process         Burst Time      Waiting Time    Turnaround Time Completion Time
P1              2               0               2               2
P2              3               3               6               6
P3              1               4               5               5

Average Waiting Time: 2.33
Average Turnaround Time: 4.33

Gantt Chart:
| P1 | P2 | P3 | P2 |
0    2    4    5    6
gokul@gokul-ThinkPad-T460s:~/S4/OS/LabCycle/EXP7_Preemptive$ 
```