LAB – 5

AIM – Process Scheduling algorithm (FCFS, SJF)

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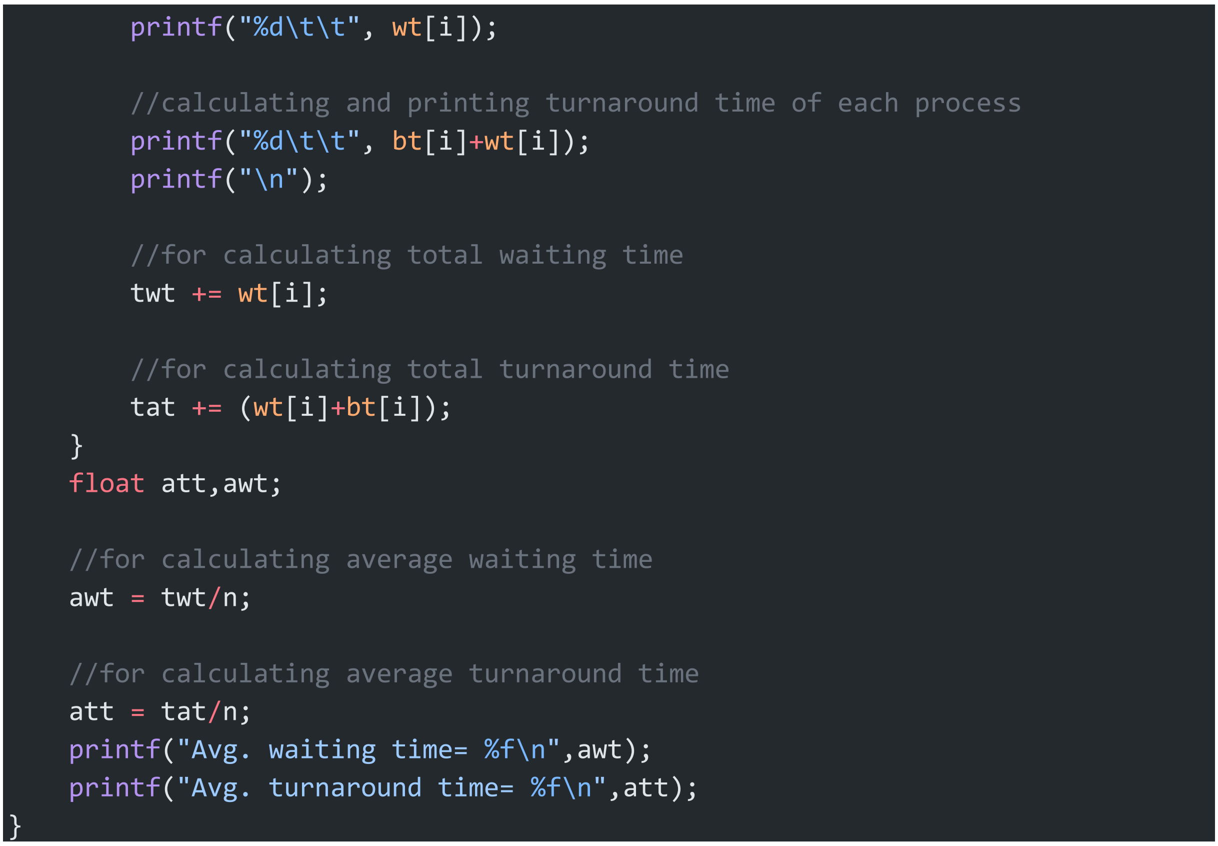
FCFS – First Come, First Served

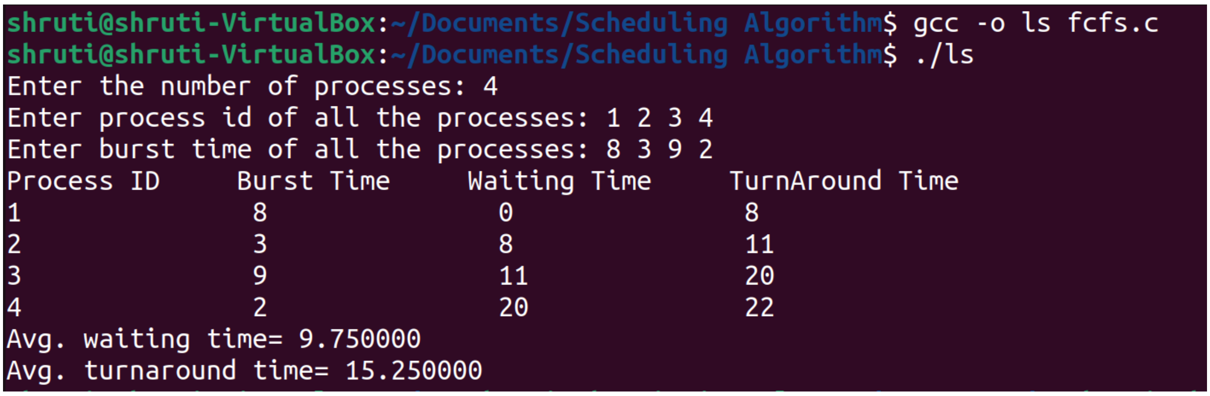
CODE:

```
#include <stdio.h>
int main()
{
    int pid[15];
    int bt[15];
    int n;
    printf("Enter the number of processes: ");
    scanf("%d",&n);

    printf("Enter process id of all the processes: ");
    for(int i=0;i<n;i++)
    {
        scanf("%d",&pid[i]);
    }

    printf("Enter burst time of all the processes: ");
    for(int i=0;i<n;i++)
    {
        scanf("%d",&bt[i]);
    }

    int i, wt[n];
    wt[0]=0;

    //for calculating waiting time of each process
    for(i=1; i<n; i++)
    {
        wt[i]= bt[i-1]+ wt[i-1];
    }

    printf("Process ID     Burst Time     Waiting Time     TurnAround 
Time\n");
    float twt=0.0;
    float tat= 0.0;
    for(i=0; i<n; i++)
    {
        printf("%d\t\t", pid[i]);
        printf("%d\t\t", bt[i]);
```



```
        printf("%d\t\t", wt[i]);

        //calculating and printing turnaround time of each process
        printf("%d\t\t", bt[i]+wt[i]);
        printf("\n");

        //for calculating total waiting time
        twt += wt[i];

        //for calculating total turnaround time
        tat += (wt[i]+bt[i]);
    }
    float att,awt;

    //for calculating average waiting time
    awt = twt/n;

    //for calculating average turnaround time
    att = tat/n;
    printf("Avg. waiting time= %f\n",awt);
    printf("Avg. turnaround time= %f\n",att);
}
```

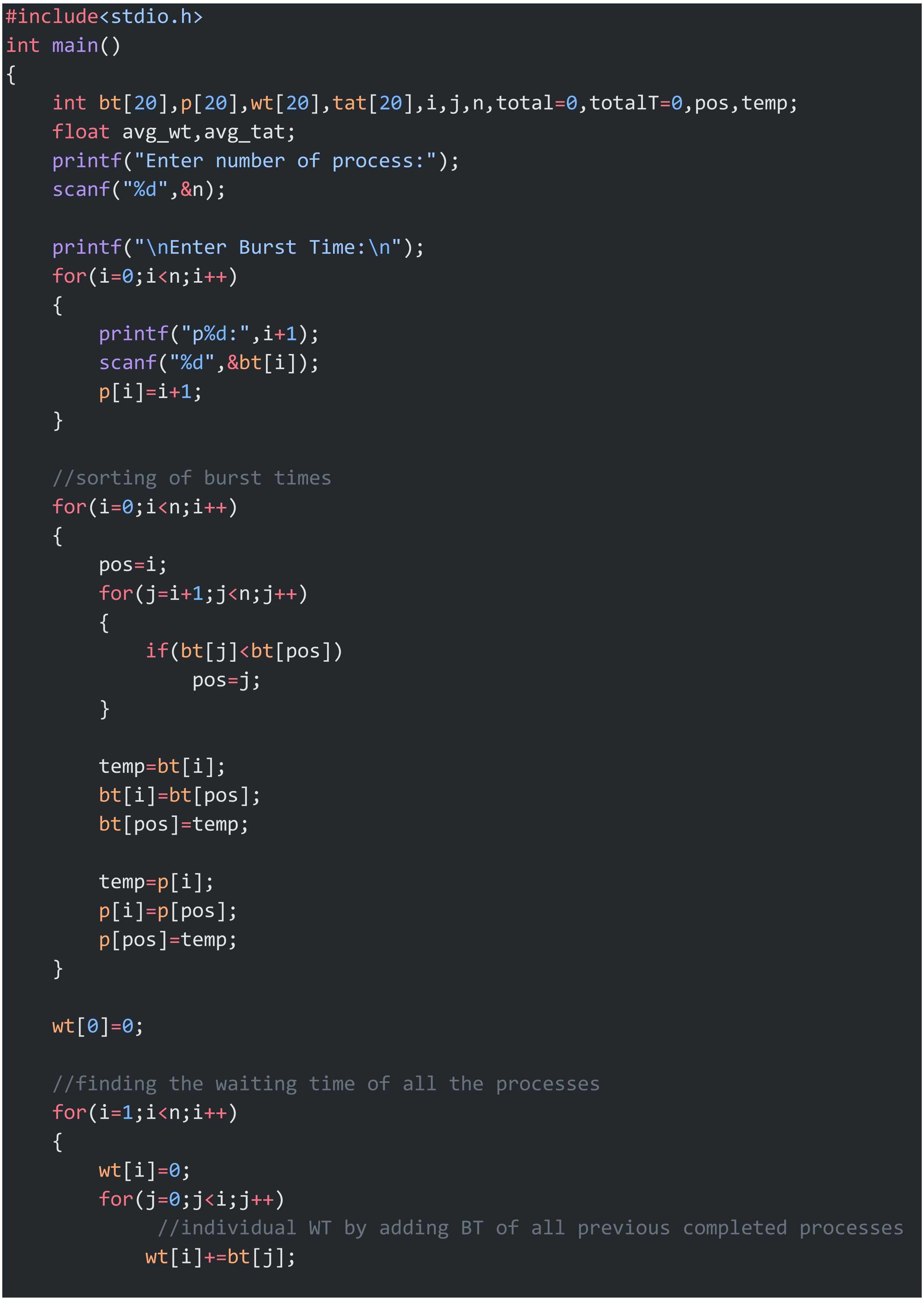
OUTPUT:



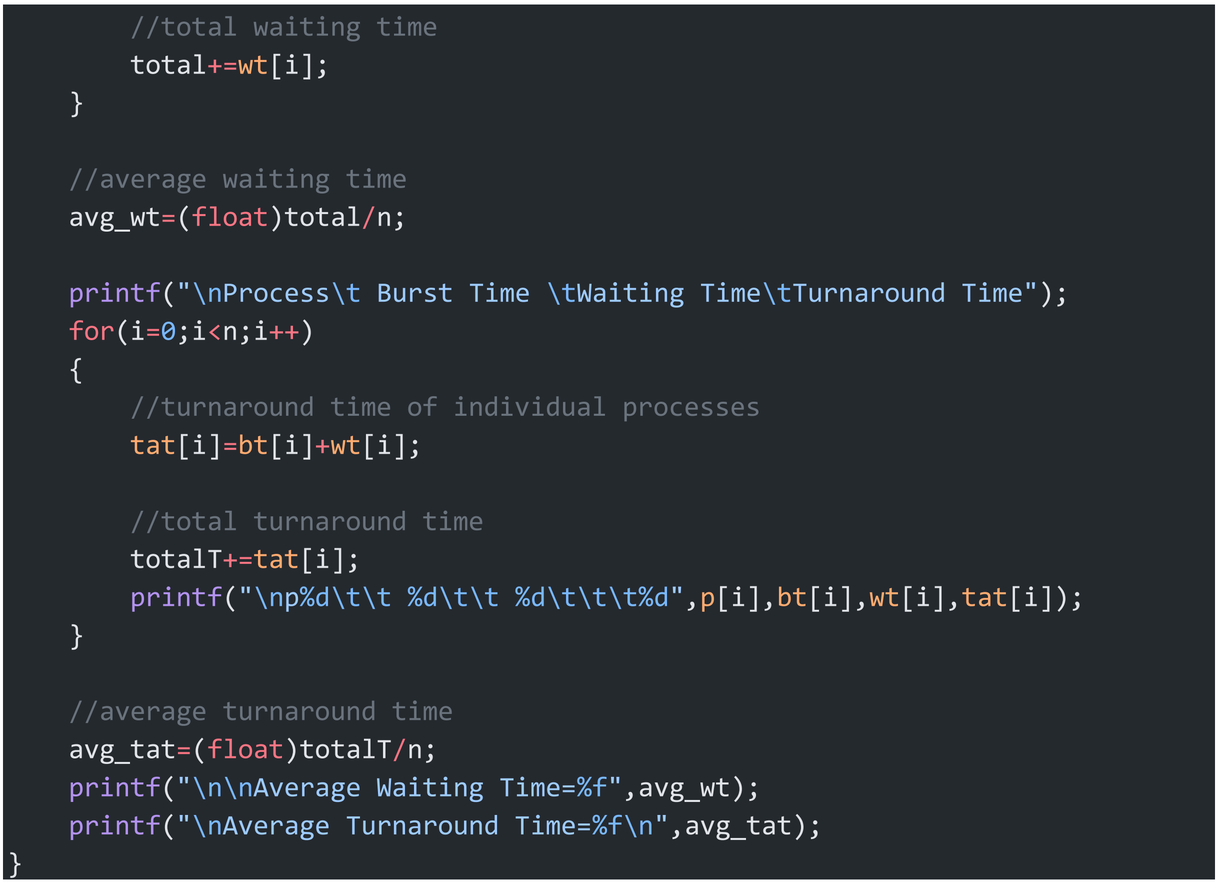
```
shruti@shruti-VirtualBox:~/Documents/Scheduling Algorithm$ gcc -o ls fcfs.c
shruti@shruti-VirtualBox:~/Documents/Scheduling Algorithm$ ./ls
Enter the number of processes: 4
Enter process id of all the processes: 1 2 3 4
Enter burst time of all the processes: 8 3 9 2
Process ID     Burst Time     Waiting Time     TurnAround Time
1               8               0               8
2               3               8               11
3               9               11              20
4               2               20              22
Avg. waiting time= 9.750000
Avg. turnaround time= 15.250000
```

<u>SJF</u> – Shortest job first

CODE

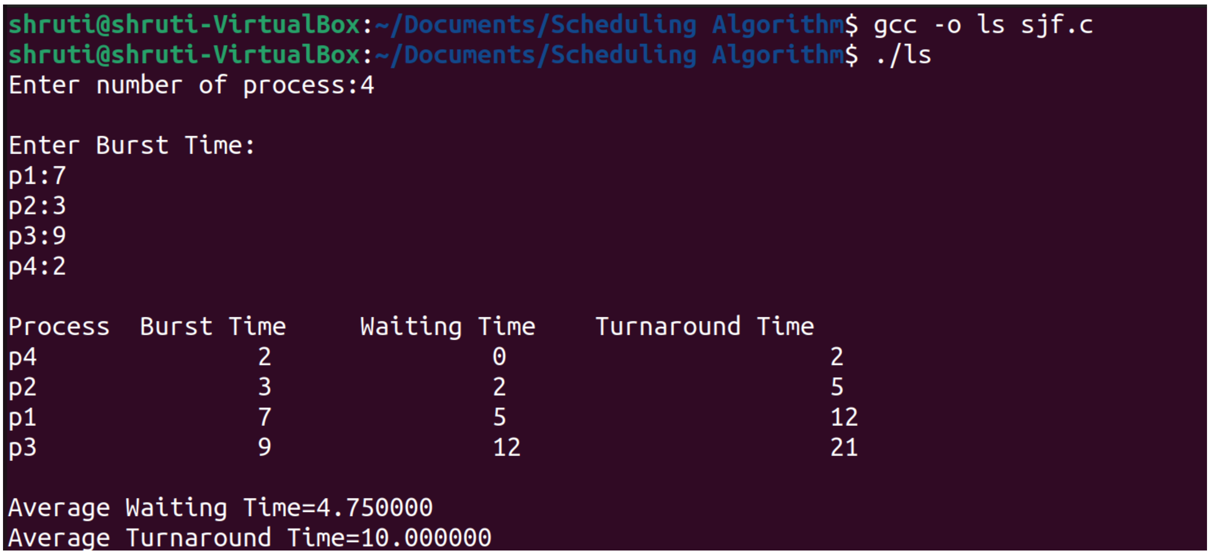


```
#include<stdio.h>
int main()
{
    int bt[20],p[20],wt[20],tat[20],i,j,n,total=0,totalT=0,pos,temp;
    float avg_wt,avg_tat;
    printf("Enter number of process:");
    scanf("%d",&n);

    printf("\nEnter Burst Time:\n");
    for(i=0;i<n;i++)
    {
        printf("p%d:",i+1);
        scanf("%d",&bt[i]);
        p[i]=i+1;
    }

    //sorting of burst times
    for(i=0;i<n;i++)
    {
        pos=i;
        for(j=i+1;j<n;j++)
        {
            if(bt[j]<bt[pos])
                pos=j;
        }

        temp=bt[i];
        bt[i]=bt[pos];
        bt[pos]=temp;

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

    wt[0]=0;

    //finding the waiting time of all the processes
    for(i=1;i<n;i++)
    {
        wt[i]=0;
        for(j=0;j<i;j++)
             //individual WT by adding BT of all previous completed processes
            wt[i]+=bt[j];
```



```
        //total waiting time
        total+=wt[i];
    }

    //average waiting time
    avg_wt=(float)total/n;

    printf("\nProcess\t Burst Time \tWaiting Time\tTurnaround Time");
    for(i=0;i<n;i++)
    {
        //turnaround time of individual processes
        tat[i]=bt[i]+wt[i];

        //total turnaround time
        totalT+=tat[i];
        printf("\np%d\t\t %d\t\t %d\t\t\t%d",p[i],bt[i],wt[i],tat[i]);
    }

    //average turnaround time
    avg_tat=(float)totalT/n;
    printf("\n\nAverage Waiting Time=%f",avg_wt);
    printf("\nAverage Turnaround Time=%f\n",avg_tat);
}
```

OUTPUT:



```
shruti@shruti-VirtualBox:~/Documents/Scheduling Algorithm$ gcc -o ls sjf.c
shruti@shruti-VirtualBox:~/Documents/Scheduling Algorithm$ ./ls
Enter number of process:4

Enter Burst Time:
p1:7
p2:3
p3:9
p4:2

Process  Burst Time     Waiting Time    Turnaround Time
p4              2               0                      2
p2              3               2                      5
p1              7               5                      12
p3              9               12                     21

Average Waiting Time=4.750000
Average Turnaround Time=10.000000
```