OS Lab 4
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Task 1:

```c
#include <stdio.h>

//Abubakar 10662

int main() {
    printf("Abubakar 10662");
    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 \t BURST 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);
    }
    return 0;
}
```

```
D:\University\OS Lab\Lab Task 4\LabTask4.exe
Enter the number of processes -- 3

Enter Burst Time for Process 0 -- 12

Enter Burst Time for Process 1 -- 2

Enter Burst Time for Process 2 -- 3
         PROCESS         BURST TIME      WAITING TIME    TURNAROUND TIME


         P0              12              0               12
Average Waiting Time -- 8.666667
Average Turnaround Time -- 14.333333
         P1              2               12              14
Average Waiting Time -- 8.666667
Average Turnaround Time -- 14.333333
         P2              3               14              17
Average Waiting Time -- 8.666667
Average Turnaround Time -- 14.333333
--------------------------------
Process exited after 4.259 seconds with return value 0
Press any key to continue . . .
```

Task 2:

```c

main() {
    printf("Abubakar 10662");
    int p[20], bt[20], wt[20], tat[20],i, k, n, temp;
    float wtavg, tatavg;
    printf("\nEnter the number of processes - ");
    scanf("%d",&n);
    for(i=0;i<n;i++){
        p[i]=i;
    printf("Enter Burst Time for Process %d-",i);
    scanf("%d",&bt[0]);
     }
    for(i=0;i<n;i++)
        for(k=i+1;k<n; k++){
            if(bt[i]>bt[k]) {
                temp=bt[i];
                bt[i]=bt[k];
                bt[k]=temp;
                temp=p[i];
                p[i]=p[k];
                p[k]=temp;
            }
    }
    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[-1] -bt[i];
        wtavg = wtavg + wt[i];
        tatavg = tatavg+tat[i];
    }
    printf("\n\t PROCESS \tBURST TIME \t WAITING TIME \t TURNAROUND TIME\n");
    for(i=0;i<n;i++ )
    printf("\n\t%d\t\t%d\t\t %d", p[i],bt[i],wt[i],tat[i]);
    printf("\nAverage Waiting Time -- %f", wtavg/n);
    printf("\nAverage Turnaround Time - %f", tatavg/n);

```

```
D:\University\OS Lab\Lab Task 4\LabTask4.exe
Abubakar 10662
Enter the number of processes - 3
Enter Burst Time for Process 0-12
Enter Burst Time for Process 1-10
Enter Burst Time for Process 2-11

         PROCESS        BURST TIME      WAITING TIME      TURNAROUND TIME

        1               0
 0
        2               3
 0
        0               11
 3
Average Waiting Time -- 1.000000
Average Turnaround Time - -4.666667
--------------------------------
Process exited after 6.513 seconds with return value 0
Press any key to continue . . .
```

Task 3:

```c
#include<stdio.h>

//Abubakar 10662

int main()
{
    printf("Abubakar 10662\n");
    int n,bt[20],wt[20],tat[20],avwt=0,avtat=0,i,j;
    printf("Enter total number of processes:");
    scanf("%d",&n);
    printf("\nEnter Process Burst Time\n");
    for(i=0;i<n;i++)
    {
        printf("P[%d]:",i+1);
        scanf("%d",&bt[i]);
    }
    wt[0]=0;
    for(i=1;i<n;i++)
    {
        wt[i]=0;
        for(j=0;j<i;j++)
            wt[i]+=bt[j];
    }
    printf("\nProcess\t\tBurst Time\tWaiting Time\tTurnaround Time");
    for(i=0;i<n;i++)
    {
        tat[i]=bt[i]+wt[i];
        avwt+=wt[i];
        avtat+=tat[i];
        printf("\nP[%d]\t\t%d\t\t%d\t\t%d",i+1,bt[i],wt[i],tat[i]);
    }
    avwt/=i;
    avtat/=i;
    printf("\n\nAverage Waiting Time:%d",avwt);
    printf("\nAverage Turnaround Time:%d",avtat);
    return 0;
}
```

```
D:\University\OS Lab\Lab Task 4\LabTask4.exe
Abubakar 10662
Enter total number of processes:3

Enter Process Burst Time
P[1]:2
P[2]:3
P[3]:5

Process         Burst Time      Waiting Time    Turnaround Time
P[1]            2               0               2
P[2]            3               2               5
P[3]            5               5               10

Average Waiting Time:2
Average Turnaround Time:5
--------------------------------
Process exited after 12.29 seconds with return value 0
Press any key to continue . . .
```

Task 4:

b) 2