Name : Anupam Kunwar
Reg : 19bce1369

Q1.

```
#include <iostream>
using namespace std;

//Waiting Time different arrival time
void waitingTime(int p[],int n,int bt[],int wt[],int at[]){
int i;
int prev_tt[n];
prev_tt[0] = 0;
wt[0] = 0;
cout << endl;
cout << "Waiting Time" << endl;
for(i=1;i<n;i++){
prev_tt[i] = prev_tt[i-1]+bt[i-1];
wt[i] = prev_tt[i] - at[i];
cout << wt[i] << endl;
if(wt[i]<0)
wt[i]=0;
}
}

//waiting time same arrival time
void waitingTime(int p[],int n,int bt[],int wt[]){
wt[0] = 0;
int i;
for(i=1;i<n;i++){
wt[i] = bt[i-1]+wt[i-1];
}
}

//Turn Around Time
void turnAroundTime(int p[],int n,int bt[],int wt[],int tat[]){
int i;
for(i=0;i<n;i++){
tat[i]=bt[i]+wt[i];
}
}

//average time for different arrival times
void findavgTime(int processes[], int n, int bt[], int at[])
{
int wt[n], tat[n];
int ttat=0,twt=0;
int completion_time;
int i;

waitingTime(processes, n, bt, wt, at);
```

```
turnAroundTime(processes, n, bt, wt, tat);
cout << endl;
for(i=0;i<n;i++){
twt = twt + wt[i];
ttat = ttat + tat[i];
completion_time = tat[i] + at[i];
cout << "Completion time for process " << i+1 << " is : " << completion_time << endl;
}

cout << "\nTotal waiting Time : " << twt << endl;
cout << "Total Turn Around Time : " << ttat << endl;
cout << "Average waiting time : " << (double)twt/(double)n << endl;
cout << "Average Turn Around Time : " << (double)ttat/(double)n << endl;
}

//Average time for same arrival times
void findavgTime(int processes[], int n, int bt[])
{
int wt[n], tat[n];
int twt=0,ttat=0;
int i;

waitingTime(processes, n, bt, wt);

turnAroundTime(processes, n, bt, wt, tat);
cout << endl;
for(i=0;i<n;i++){
twt = twt+wt[i];
ttat = ttat+tat[i];
cout << "Completion time for process " << i+1 << " is : " << tat[i] << endl;
}

cout << "\nTotal waiting Time : " << twt << endl;
cout << "Total Turn Around Time : " << ttat << endl;
cout << "Average waiting time : " << (double)twt/(double)n << endl;
cout << "Average Turn Around Time : " << (double)ttat/(double)n << endl;
}

int main()
{
int i,n,a;
cout << "Enter the number of processes : ";
cin >> n;
int processes[n];
int burst_time[n];
int arrival_time[n];
cout << "Same or different arrival times ?? (0/1) : ";
cin >> a;
switch (a)
{
case 0:
```

```
for(i=0;i<n;i++){
processes[i] = i+1;
cout << "Enter the cpu burst time of process " << i+1 << " : ";
cin >> burst_time[i];
}
findavgTime(processes, n, burst_time);
break;
case 1:
for(i=0;i<n;i++){
processes[i] = i+1;
cout << "Enter the cpu burst time of process " << i+1 << " : ";
cin >> burst_time[i];
cout << "Enter the arrival time of process "<< i+1 << " : ";
cin >> arrival_time[i];
}
findavgTime(processes, n, burst_time, arrival_time);
break;
default:
break;
}
return 0;
}
```

Output :

.

```
piratepanda@SastaPC:~/Documents/oslab/week5$ ./fcfs.out
Enter the number of processes : 3
Same or different arrival times ?? (0/1) : 0
Enter the cpu burst time of process 1 : 2
Enter the cpu burst time of process 2 : 3
Enter the cpu burst time of process 3 : 4

Completion time for process 1 is : 2
Completion time for process 2 is : 5
Completion time for process 3 is : 9

Total waiting Time : 7
Total Turn Around Time : 16
Average waiting time : 2.33333
Average Turn Around Time : 5.33333
```

Q2.

```
#include<stdio.h>
int main()
{
int bt[20],p[20],wt[20],tat[20],i,j,n,total=0,pos,temp;
float avg_wt,avg_tat;
printf("Enter number of process:");
scanf("%d",&n);
printf("Enter 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;
for(i=1;i<n;i++)
{
wt[i]=0;
for(j=0;j<i;j++)
wt[i]+=bt[j];
total+=wt[i];
}
avg_wt=(float)total/n;
total=0;
printf("\nProcess\t Burst Time \tWaiting Time\tTurnaround Time");
for(i=0;i<n;i++)
{
tat[i]=bt[i]+wt[i];
total+=tat[i];
printf("\np%d\t\t %d\t\t %d\t\t\t%d",p[i],bt[i],wt[i],tat[i]);
}
avg_tat=(float)total/n;
printf("\nAverage Waiting Time=%f",avg_wt);
printf("\nAverage Turnaround Time=%f\n",avg_tat);
```

}

Output :

```
piratepanda@SastaPC:~/Documents/oslab/week5$ ./f3.out
Enter number of process:3
Enter Burst Time:
p1:2
p2:3
p3:4

Process     Burst Time          Waiting Time    Turnaround Time
p1                2                   0                   2
p2                3                   2                   5
p3                4                   5                   9
Average Waiting Time=2.333333
Average Turnaround Time=5.333333
piratepanda@SastaPC:~/Documents/oslab/week5$
```