Task-1:

```
#include<stdio.h>
        #include<stdlib.h>
        int main()
        {
                int
pn,pno[20],at[20],bt[20],i,tat[20],com[20],wt[20],temp,j,bttemp[20]={},temp1=0,temp2;
                float avg,avg2,avgtat,avgwt;
                printf("Number of process:\n");
                scanf("%d",&pn);
                printf("Enter the process no:\n");
                for(i=0;i<pn;i++)
                        scanf("%d",&pno[i]);
                printf("Process Arrival time:\n");
                for(i=0;i<pn;i++)
                        scanf("%d",&at[i]);
                printf("Process burst time:\n");
                for(i=0;i<pn;i++)
                        scanf("%d",&bt[i]);

                for(i=0;i<pn;i++)
                {
                        for(j=i+1;j<pn;j++)
                        {
                                if(at[i]>at[j])
                                {
                                        temp=at[i];
                                        at[i]=at[j];
                                        at[j]=temp;

                                        temp=pno[i];
                                        pno[i]=pno[j];
                                        pno[j]=temp;

                                        temp=bt[i];
                                        bt[i]=bt[j];
                                        bt[j]=temp;

                                }
                        }
                }

                temp2=1;
                temp1=bttemp[0]=bt[0]-1;
```

```
	com[0]=at[0]+1;

	for(i=1;i<pn;i++)
	{
		bttemp[i]=bt[i];
	}


if(bttemp[0]>bttemp[1])
{
	bttemp[pn]=temp2;

	for(i=0;i<=pn;i++)
	{
		for(j=i+1;j<=pn;j++)
		{
			if(bttemp[i]>bttemp[j])
			{
				temp=at[i];
				at[i]=at[j];
				at[j]=temp;

				temp=pno[i];
				pno[i]=pno[j];
				pno[j]=temp;

				temp=bttemp[i];
				bttemp[i]=bttemp[j];
				bttemp[j]=temp;

			}
		}
	}


	pno[0]=bttemp[0];
	at[0]=bttemp[0];


	if(at[1]<at[2])
	{
		com[1]=com[0]+bttemp[1];
```

```
for(i=0;i<=pn;i++)
{
	for(j=i+1;j<=pn;j++)
	{
		if(at[i]>at[j])
		{
			temp=at[i];
			at[i]=at[j];
			at[j]=temp;

			temp=pno[i];
			pno[i]=pno[j];
			pno[j]=temp;

			temp=bttemp[i];
			bttemp[i]=bttemp[j];
			bttemp[j]=temp;

		}
	}
}

com[2]=com[1]+bttemp[1];

for(i=0;i<=pn;i++)
{
	for(j=i+1;j<=pn;j++)
	{
		if(bttemp[i]>bttemp[j])
		{
			temp=at[i];
			at[i]=at[j];
			at[j]=temp;

			temp=pno[i];
			pno[i]=pno[j];
			pno[j]=temp;

			temp=bttemp[i];
			bttemp[i]=bttemp[j];
			bttemp[j]=temp;
```

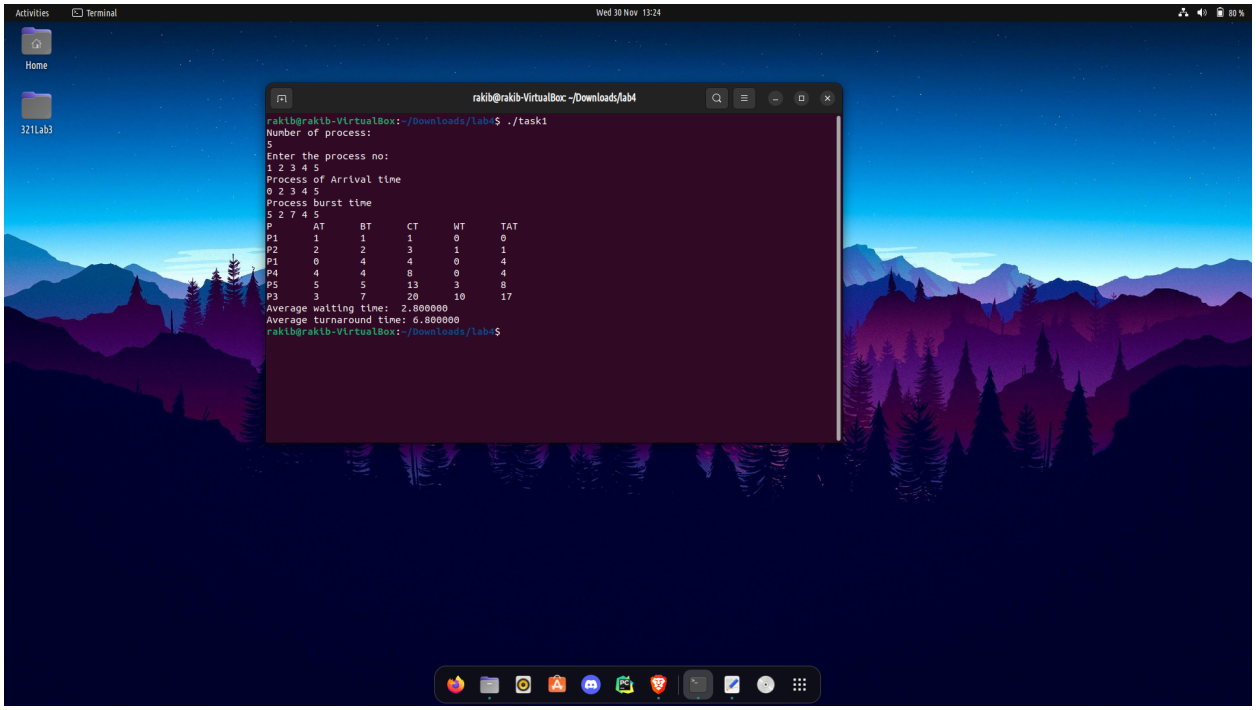
```
                        }
                    }
                }

tat[0]=0;
tat[1]=bttemp[0];


wt[0]=0;
for(i=3;i<=pn;i++)
        com[i]=abs(com[i-1]+bttemp[i]);

for(i=1;i<=pn;i++)
        tat[i]=abs(com[i]-at[i]);


for(i=1;i<=pn;i++)
{
        wt[i]=abs(tat[i]-bttemp[i]);
        if(wt[i]==temp1)
                wt[i]=wt[i]-1;

}
}
else
{
        for(i=0;i<=pn;i++)
        {
                for(j=i+1;j<=pn;j++)
                {
                        if(at[i]>at[j])
                        {
                                temp=at[i];
                                at[i]=at[j];
                                at[j]=temp;

                                temp=pno[i];
                                pno[i]=pno[j];
                                pno[j]=temp;

                                temp=bttemp[i];
                                bttemp[i]=bttemp[j];
                                bttemp[j]=temp;
```

```
                }
        }
}

com[1]=com[0]+bttemp[2];

for(i=0;i<=pn;i++)
{
        for(j=i+1;j<=pn;j++)
        {
                if(bttemp[i]>bttemp[j])
                {
                        temp=at[i];
                        at[i]=at[j];
                        at[j]=temp;

                        temp=pno[i];
                        pno[i]=pno[j];
                        pno[j]=temp;

                        temp=bttemp[i];
                        bttemp[i]=bttemp[j];
                        bttemp[j]=temp;

                }
        }
}


com[2]=com[1]+bttemp[1];


if(at[1]>at[2])
{
        temp=at[1];
        at[1]=at[2];
        at[2]=temp;

        temp=pno[1];
        pno[1]=pno[2];
        pno[2]=temp;

        temp=bttemp[1];
        bttemp[1]=bttemp[2];
```

```
                bttemp[2]=temp;
        }


tat[0]=0;
tat[1]=bttemp[0];


wt[0]=0;
for(i=3;i<=pn;i++)
        com[i]=abs(com[i-1]+bttemp[i]);

for(i=1;i<=pn;i++)
        tat[i]=abs(com[i]-at[i]);


for(i=1;i<=pn;i++)
{
        if(temp1==bttemp[i])
                bttemp[i]+=1;
        wt[i]=abs(tat[i]-bttemp[i]);
        if(wt[i]==temp1)
                wt[i]=wt[i]-1;

}

}



for(i=0;i<=pn;i++)
        avg=avg+tat[i];

avgtat=avg/pn;

for(i=0;i<=pn;i++)
        avg2=avg2+wt[i];

avgwt=avg2/pn;


printf("P\tAT\tBT\tCT\tWT\tTAT\t\n");
for(i=0;i<=pn;i++)
{
```

```
printf("P%d\t%d\t%d\t%d\t%d\t%d\n",pno[i],at[i],bttemp[i],com[i],wt[i],tat[i]);
                                }

                                printf("Average waiting time:  %f\nAverage turnaround time:
%f\n",avgwt,avgtat);
                        }
                        else
                        {

                                bttemp[0]=bttemp[0]+temp2;
                                com[0]=bttemp[0];
                                tat[0]=bttemp[0];
                                wt[0]=0;

                                for(i=1;i<pn;i++)
                                {
                                        for(j=i+1;j<pn;j++)
                                        {
                                                if(bttemp[i]>bttemp[j])
                                                {
                                                        temp=at[i];
                                                        at[i]=at[j];
                                                        at[j]=temp;

                                                        temp=pno[i];
                                                        pno[i]=pno[j];
                                                        pno[j]=temp;

                                                        temp=bttemp[i];
                                                        bttemp[i]=bttemp[j];
                                                        bttemp[j]=temp;

                                                }
                                        }
                                }


                                for(i=1;i<pn;i++)
                                        com[i]=abs(com[i-1]+bttemp[i]);

                                for(i=0;i<pn;i++)
                                        tat[i]=abs(com[i]-at[i]);
```

```
                                for(i=0;i<pn;i++)
                                        wt[i]=abs(tat[i]-bttemp[i]);

                                for(i=0;i<pn;i++)
                                        avg=avg+tat[i];

                                avgtat=avg/pn;

                                for(i=0;i<pn;i++)
                                        avg2=avg2+wt[i];

                                avgwt=avg2/pn;


                                printf("P\tAT\tBT\tCT\tWT\tTAT\t\n");
                                for(i=0;i<pn;i++)
                                {

printf("P%d\t%d\t%d\t%d\t%d\t%d\n",pno[i],at[i],bttemp[i],com[i],wt[i],tat[i]);
                                }

                                printf("Average waiting time:  %f\nAverage turnaround time:
%f\n",avgwt,avgtat);
                        }



                }
```



Task-2:

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
    int pn,pno[50]={0},at[50],bt[50],i,tat[50],com[50],wt[50],temp,j,qm,bttemp[50],btttemp[50]={0},tattemp[50]={0},tatat[50]={},tatttemp[50]={},wtbt[50],wttbt[50]={};
    float avg,avg2,avgtat,avgwt;
    printf("Number of process:\n");
    scanf("%d",&pn);
    printf("Enter the process:\n");
    for(i=0;i<pn;i++)
        scanf("%d",&pno[i]);
    printf("Process Arrival time\n");
    for(i=0;i<pn;i++)
        scanf("%d",&at[i]);
    printf("Process burst time\n");
    for(i=0;i<pn;i++)
        scanf("%d",&bt[i]);
    printf("Time quantum:\n");
        scanf("%d",&qm);

    for(i=0;i<pn;i++)
    {
```

```
        for(j=i+1;j<pn;j++)
        {
                if(at[i]>at[j])
                {
                        temp=at[i];
                        at[i]=at[j];
                        at[j]=temp;

                        temp=pno[i];
                        pno[i]=pno[j];
                        pno[j]=temp;

                        temp=bt[i];
                        bt[i]=bt[j];
                        bt[j]=temp;

                }
        }
}


for(i=0;i<pn;i++)
{
        bttemp[i]=bt[i]-qm;
        if(bttemp[i]<0)
        {
                bttemp[i]=bt[i];
                btttemp[i]=bttemp[i];
                bttemp[i]=0;
        }
        if(bt[i]<=qm)
                bttemp[i]=bt[i]-bt[i];

}


for(i=0;i<pn;i++)
{
        if(bttemp[i]==bttemp[i+1])
        {
                com[0]=bt[0]+at[0];
                tat[0]=bt[0];
                wt[0]=0;
                for(i=1;i<pn;i++)
```

```
                com[i]=abs(com[i-1]+bt[i]);
        for(i=0;i<pn;i++)
                tat[i]=abs(com[i]-at[i]);


        for(i=0;i<pn;i++)
                wt[i]=abs(tat[i]-bt[i]);

        for(i=0;i<pn;i++)
                avg=avg+tat[i];

        avgtat=avg/pn;

        for(i=0;i<pn;i++)
                avg2=avg2+wt[i];

        avgwt=avg2/pn;


        printf("Process\tAT\tBT\tCT\tWT\tTAT\t\n");
        for(i=0;i<pn;i++)
        {

printf("P%d\t%d\t%d\t%d\t%d\t%d\n",pno[i],at[i],bt[i],com[i],wt[i],tat[i]);
        }

                printf("Average waiting time:  %f\nAverage turnaround
time: %f\n",avgwt,avgtat);
        }
    else if(bttemp[i]>bttemp[i+1]||bttemp[i]<bttemp[i+1])
    {
        if(bttemp[0]>=qm)
                com[0]=at[0]+qm;
        else
                com[0]=at[0]+bt[0];

        for(i=1;i<pn;i++)
        {
                if(bt[i]>=qm)
                        com[i]=com[i-1]+qm;
                else
                        com[i]=com[i-1]+bt[i];

        }
```

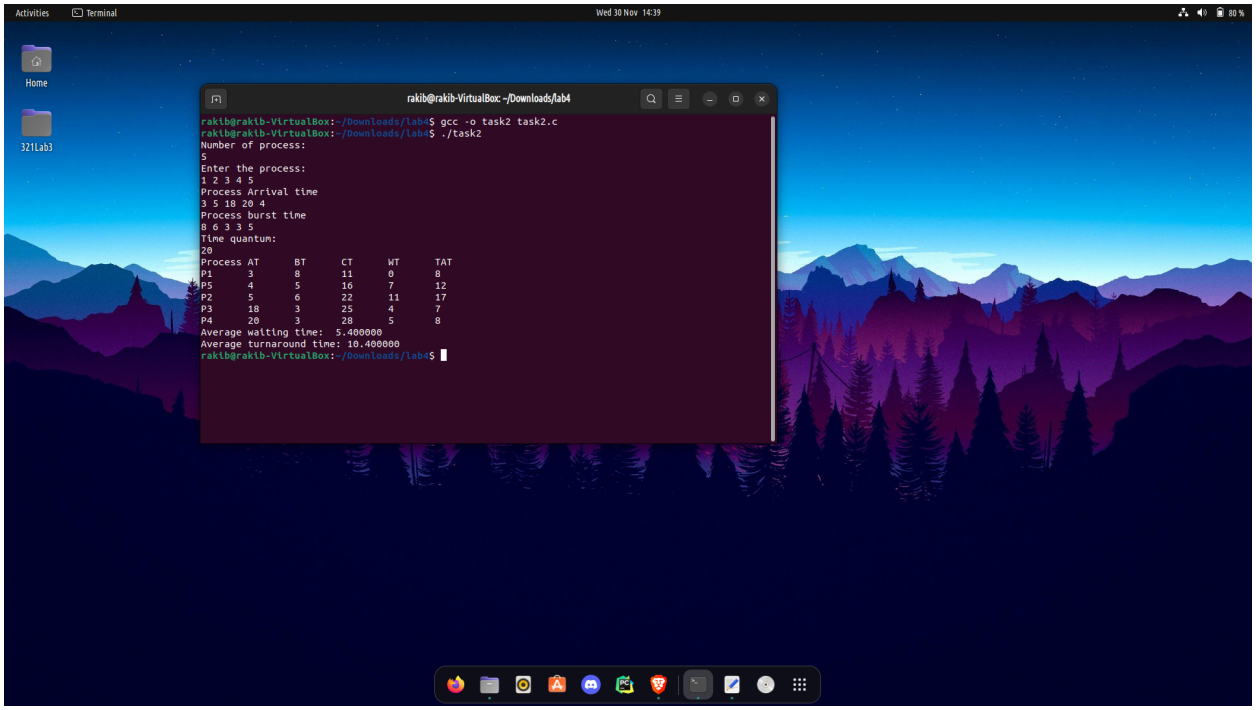
```
for(i=0;i<pn;i++)
{

        if(bttemp[i]>0)
        {
                pno[i+pn]=pno[i];
                at[i+pn]=at[i];
                bt[i+pn]=bt[i];
                bttemp[i+pn]=bttemp[i]-qm;
                if(bttemp[i+pn]<0)
                {
                        bttemp[i+pn]=bttemp[i];
                        btttemp[i]=bttemp[i+pn];
                        bttemp[i+pn]=0;
                }
                if(bttemp[i]<=qm)
                        bttemp[i+pn]=bttemp[i]-bttemp[i];

        }
        else
        {
                pno[i+pn]=0;
                at[i+pn]=0;
                bt[i+pn]=0;
                bttemp[i+pn]=0;
        }
}


for(i=0;i<pn;i++)
{
        if(bttemp[i+pn]!=-1)
        {
                if(bttemp[i+pn]>=qm)
                        com[i+pn]=com[i+pn-1]+qm;
                else
                        com[i+pn]=com[i+pn-1]+btttemp[i];
        }
        else
        {
                com[i+pn]=0;
        }
```

```
}
for(i=pn;i<pn+pn-1;i++)
{

        if(bttemp[i]>0)
        {
                pno[i+pn-1]=pno[i];
                at[i+pn-1]=at[i];
                bt[i+pn-1]=bt[i];
                bttemp[i+pn-1]=bttemp[i]-qm;
                if(bttemp[i+pn-1]<0)
                {
                        bttemp[i+pn-1]=bttemp[i];
                        btttemp[i]=bttemp[i+pn-1];
                        bttemp[i+pn-1]=0;
                }
                if(bttemp[i]<=qm)
                        bttemp[i+pn-1]=bttemp[i]-bttemp[i];
        }
        else
        {
                pno[i+pn-1]=0;
                at[i+pn-1]=0;
                bt[i+pn-1]=0;
                bttemp[i+pn-1]=0;
        }

}

for(i=pn;i<pn+pn-1;i++)
{
        if(bttemp[i+pn-1]!=-1)
        {
                if(bttemp[0+pn]>=qm)
                        com[i+pn-1]=com[i+pn-1]+qm;
                else
                        com[i+pn-1]=com[i+pn-1]+btttemp[i];
        }
        else
        {
                com[i+pn-1]=0;
        }
}
```

```
                    for(i=pn+pn-1;i<pn+pn+1;i++)
                    {
                            if(bttemp[i]>0)
                            {
                                    pno[i+1]=pno[i];
                                    at[i+1]=at[i];
                                    bt[i+1]=bt[i];
                                    bttemp[i+1]=bttemp[i]-qm;
                                    if(bttemp[i+1]<0)
                                    {
                                            bttemp[i+1]=bttemp[i];
                                            btttemp[i]=bttemp[i+1];
                                            bttemp[i+1]=0;
                                    }
                                    if(bttemp[i]<=qm)

bttemp[i+1]=bttemp[i]-bttemp[i];
                            }
                            else
                            {
                                    pno[i+1]=0;
                                    at[i+1]=0;
                                    bt[i+1]=0;
                                    bttemp[i+1]=0;
                            }

                    }

                    for(i=pn+pn-1;i<pn+pn+1;i++)
                    {
                            if(bttemp[i+1]!=-1)
                            {
                                    if(bttemp[i]>=qm)
                                            com[i+1]=com[i]+qm;
                                    else
                                            com[i+1]=com[i]+btttemp[i];
                            }
                            else
                            {
                                    com[i+1]=0;
                            }
                    }

                    for(i=0;i<pn+pn+1;i++)
```

```
{
        tattemp[i]=com[i];
        tatat[i]=at[i];
        wtbt[i]=bt[i];
}


for(i=0;i<pn+pn+1;i++)
{
        for(j=i+1;j<pn+pn+1;j++)
        {
                if(tatat[i]>tatat[j])
                {
                        temp=tatat[i];
                        tatat[i]=tatat[j];
                        tatat[j]=temp;

                        temp=tattemp[i];
                        tattemp[i]=tattemp[j];
                        tattemp[j]=temp;


                        temp=wtbt[i];
                        wtbt[i]=wtbt[j];
                        wtbt[j]=temp;

                }
        }
}

for(i=0;i<pn+pn+1;i++)
{
                if(tatat[i]!=tatat[i+1])
                {
                                tatttemp[i]=tattemp[i];
                                wttbt[i]=wtbt[i];

                }
}

for(i=0;i<pn+pn+1;i++)
{
                tat[i]=tatttemp[i]-tatat[i];
                if(tat[i]<0)
```

```
                                        tat[i]=0;
                                wt[i]=tat[i]-wttbt[i];
                                if(wt[i]<0)
                                        wt[i]=0;
                        }

                        for(i=0;i<pn+pn+1;i++)
                                avg=avg+tat[i];
                        avgtat=avg/pn;

                        for(i=0;i<pn+pn+1;i++)
                                avg2=avg2+wt[i];
                        avgwt=avg2/pn;


                        printf("Process\tAT\tBT\tCT\tWT\tTAT\t\n");
                        for(i=0;i<pn+pn+1;i++)
                        {

printf("P%d\t%d\t%d\t%d\t%d\t%d\n",pno[i],at[i],bt[i],com[i],wt[i],tat[i]);
                        }

                        printf("Average waiting time:  %f\nAverage turnaround
time: %f\n",avgwt,avgtat);
                }
        }

}
```



Task-3:

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
    int pn,pno[20],at[20],bt[20],pr[20],i,tat[20],com[20],wt[20],temp,j,bttemp[20]={},temp1=0,temp2;
    float avg,avg2,avgtat,avgwt;
    printf("Number of process:\n");
    scanf("%d",&pn);
    printf("Enter the process no:\n");
    for(i=0;i<pn;i++)
        scanf("%d",&pno[i]);
    printf("Process Arrival time:\n");
    for(i=0;i<pn;i++)
        scanf("%d",&at[i]);
    printf("Process burst time:\n");
    for(i=0;i<pn;i++)
        scanf("%d",&bt[i]);
    printf("Process priority:\n");
    for(i=0;i<pn;i++)
        scanf("%d",&pr[i]);

    for(i=0;i<pn;i++)
    {
```

```
        for(j=i+1;j<pn;j++)
        {
                if(at[i]>at[j])
                {
                        temp=at[i];
                        at[i]=at[j];
                        at[j]=temp;

                        temp=pno[i];
                        pno[i]=pno[j];
                        pno[j]=temp;

                        temp=bt[i];
                        bt[i]=bt[j];
                        bt[j]=temp;

                }
        }
}

temp2=1;
temp1=bttemp[0]=bt[0]-1;

        com[0]=at[0]+1;

        for(i=1;i<pn;i++)
        {
                bttemp[i]=bt[i];
        }


if(bttemp[0]>bttemp[1])
{
        bttemp[pn]=temp2;

        for(i=0;i<=pn;i++)
        {
                for(j=i+1;j<=pn;j++)
                {
                        if(bttemp[i]>bttemp[j])
                        {
                                temp=at[i];
                                at[i]=at[j];
                                at[j]=temp;
```

```
                        temp=pno[i];
                        pno[i]=pno[j];
                        pno[j]=temp;

                        temp=bttemp[i];
                        bttemp[i]=bttemp[j];
                        bttemp[j]=temp;

                }
        }
}


pno[0]=bttemp[0];
at[0]=bttemp[0];


if(at[1]<at[2])
{
        com[1]=com[0]+bttemp[1];



        for(i=0;i<=pn;i++)
        {
                for(j=i+1;j<=pn;j++)
                {
                        if(at[i]>at[j])
                        {
                                temp=at[i];
                                at[i]=at[j];
                                at[j]=temp;

                                temp=pno[i];
                                pno[i]=pno[j];
                                pno[j]=temp;

                                temp=bttemp[i];
                                bttemp[i]=bttemp[j];
                                bttemp[j]=temp;

                        }
                }
```

```
        }

        com[2]=com[1]+bttemp[1];

        for(i=0;i<=pn;i++)
        {
                for(j=i+1;j<=pn;j++)
                {
                        if(bttemp[i]>bttemp[j])
                        {
                                temp=at[i];
                                at[i]=at[j];
                                at[j]=temp;

                                temp=pno[i];
                                pno[i]=pno[j];
                                pno[j]=temp;

                                temp=bttemp[i];
                                bttemp[i]=bttemp[j];
                                bttemp[j]=temp;

                        }
                }
        }

tat[0]=0;
tat[1]=bttemp[0];


wt[0]=0;
for(i=3;i<=pn;i++)
        com[i]=abs(com[i-1]+bttemp[i]);

for(i=1;i<=pn;i++)
        tat[i]=abs(com[i]-at[i]);


for(i=1;i<=pn;i++)
{
        wt[i]=abs(tat[i]-bttemp[i]);
        if(wt[i]==temp1)
                wt[i]=wt[i]-1;
```

```
}
}
else
{
        for(i=0;i<=pn;i++)
        {
                for(j=i+1;j<=pn;j++)
                {
                        if(at[i]>at[j])
                        {
                                temp=at[i];
                                at[i]=at[j];
                                at[j]=temp;

                                temp=pno[i];
                                pno[i]=pno[j];
                                pno[j]=temp;

                                temp=bttemp[i];
                                bttemp[i]=bttemp[j];
                                bttemp[j]=temp;

                        }
                }
        }

        com[1]=com[0]+bttemp[2];

        for(i=0;i<=pn;i++)
        {
                for(j=i+1;j<=pn;j++)
                {
                        if(bttemp[i]>bttemp[j])
                        {
                                temp=at[i];
                                at[i]=at[j];
                                at[j]=temp;

                                temp=pno[i];
                                pno[i]=pno[j];
                                pno[j]=temp;

                                temp=bttemp[i];
                                bttemp[i]=bttemp[j];
```

```
                                        bttemp[j]=temp;

                                }
                        }
                }


                com[2]=com[1]+bttemp[1];


                if(at[1]>at[2])
                {
                        temp=at[1];
                        at[1]=at[2];
                        at[2]=temp;

                        temp=pno[1];
                        pno[1]=pno[2];
                        pno[2]=temp;

                        temp=bttemp[1];
                        bttemp[1]=bttemp[2];
                        bttemp[2]=temp;
                }


tat[0]=0;
tat[1]=bttemp[0];


wt[0]=0;
for(i=3;i<=pn;i++)
        com[i]=abs(com[i-1]+bttemp[i]);

for(i=1;i<=pn;i++)
        tat[i]=abs(com[i]-at[i]);


for(i=1;i<=pn;i++)
{
        if(temp1==bttemp[i])
                bttemp[i]+=1;
        wt[i]=abs(tat[i]-bttemp[i]);
        if(wt[i]==temp1)
```

```
                        wt[i]=wt[i]-1;

                }

                }



                for(i=0;i<=pn;i++)
                        avg=avg+tat[i];

                avgtat=avg/pn;

                for(i=0;i<=pn;i++)
                        avg2=avg2+wt[i];

                avgwt=avg2/pn;


                printf("P\tAT\tBT\tCT\tWT\tTAT\t\n");
                for(i=0;i<=pn;i++)
                {

printf("P%d\t%d\t%d\t%d\t%d\t%d\n",pno[i],at[i],bttemp[i],com[i],wt[i],tat[i]);
                }

                printf("Average waiting time:  %f\nAverage turnaround time:
%f\n",avgwt,avgtat);
        }
        else
        {

                bttemp[0]=bttemp[0]+temp2;
                com[0]=bttemp[0];
                tat[0]=bttemp[0];
                wt[0]=0;

                for(i=1;i<pn;i++)
                {
                        for(j=i+1;j<pn;j++)
                        {
                                if(bttemp[i]>bttemp[j])
                                {
                                        temp=at[i];
```

```
                    at[i]=at[j];
                    at[j]=temp;

                    temp=pno[i];
                    pno[i]=pno[j];
                    pno[j]=temp;

                    temp=bttemp[i];
                    bttemp[i]=bttemp[j];
                    bttemp[j]=temp;

                }
            }
        }


        for(i=1;i<pn;i++)
            com[i]=abs(com[i-1]+bttemp[i]);

        for(i=0;i<pn;i++)
            tat[i]=abs(com[i]-at[i]);


        for(i=0;i<pn;i++)
            wt[i]=abs(tat[i]-bttemp[i]);

        for(i=0;i<pn;i++)
            avg=avg+tat[i];

        avgtat=avg/pn;

        for(i=0;i<pn;i++)
            avg2=avg2+wt[i];

        avgwt=avg2/pn;


        printf("P\tAT\tBT\tCT\tWT\tTAT\t\n");
        for(i=0;i<pn;i++)
        {

printf("P%d\t%d\t%d\t%d\t%d\t%d\n",pno[i],at[i],bttemp[i],com[i],wt[i],tat[i]);
        }
```

```
                    printf("Average waiting time:  %f\nAverage turnaround time:
%f\n",avgwt,avgtat);
                }


            }
```