Os week 1

FCFS:

PROGRAM :

```
n=int(input())
p=list(map(str,input().split()))
at=list(map(int,input().split()))
bt=list(map(int,input().split()))
at1=at.copy()
gt=[]
ct=[0]*n
tat=[0]*n
wt=[0]*n


k=min(at)
ind=at.index(k)
gt.append(p[ind])
ct[ind]=bt[ind]
tat[ind]=ct[ind]-at[ind]
wt[ind]=tat[ind]-bt[ind]
at[ind]=99999
pre=ind
i=0
while i<n-1:
    r=min(at)
    rind=at.index(r)
    kk=ct[pre]
    kkk=at[rind]
    if(at[rind]<=ct[pre]):
        ct[rind]=ct[pre]+bt[rind]
    elif(at[rind]>ct[pre]):
        ct[rind]=at[rind]+bt[rind]
    gt.append(p[rind])
    tat[rind]=ct[rind]-at[rind]
    wt[rind]=tat[rind]-bt[rind]
    pre=rind
    at[rind]=999999
    i+=1

print("-----")
```

```
for i in range(0,n):


    print("|",gt[i],end="|")

print()
print('Average completion time is \t:',sum(ct)/n)
print('Average turn around time is \t:',sum(tat)/n)
print('Average waiting time is \t:',sum(wt)/n)
print("process id\tat\tct\tbt\ttat\twt\n")
for i in range(0,n):

print(p[i],"\t\t",at1[i],"\t\t",bt[i],"\t\t",ct[i],"\t\t",tat[i],"\t\t",wt[i])
```

Output:

```
PS E:\books and pdfs\sem4 pdfs\os lab\WEEK1> PYTHON FCFS.PY
5
p1 p2 p3 p4 p5
0 1 2 3 4
3 1 5 2 4
-----
| p1|| p2|| p3|| p4|| p5|
Average completion time is      : 8.4
Average turn around time is     : 6.4
Average waiting time is         : 3.4
process id      at      ct      bt      tat     wt

p1              0               3               3               3               0
p2              1               1               4               3               2
p3              2               5               9               7               2
p4              3               2               11              8               6
p5              4               4               15              11              7
PS E:\books and pdfs\sem4 pdfs\os lab\WEEK1>
```

SJF:

PROGRAM:

```
n=int(input())
p=list(map(str,input().split()))
at=list(map(int,input().split()))


bt=list(map(int,input().split()))
#shortest job
bt1=bt.copy()
k=min(at)
ind=at.index(k)
gt=[]
tat=[0]*n
wt=[0]*n
ct=[0]*n
gt.append(p[ind])


ct[ind]=bt[ind]
tat[ind]=ct[ind]-at[ind]
wt[ind]=tat[ind]-bt[ind]

bt[ind]=999999
pre=ind
i=1
while i<n:
    r=min(bt)
    rind=bt.index(r)
    if at[rind]<ct[pre]:
        ct[rind]=ct[pre]+bt[rind]
        pre=rind
        tat[rind]=ct[rind]-at[rind]
        wt[rind]=tat[rind]-bt[rind]
        gt.append(p[rind])
        # print(rind,at[rind],ct[pre],gt[rind])
        bt[rind]=999999
        i+=1
print("-----")
for i in range(0,n):
    print("|",gt[i],end="|")
print()
print('Average completion time is \t:',sum(ct)/n)
print('Average turn around time is \t:',sum(tat)/n)
print('Average waiting time is \t:',sum(wt)/n)
```

```
print("process id\tat\tct\tbt\ttat\twt\n")
for i in range(0,n):

print(p[i],"\t\t",at[i],"\t\t",bt1[i],"\t\t",ct[i],"\t\t",tat[i],"\t\t",wt[
i])
```

Output:

```
PS E:\books and pdfs\sem4 pdfs\os lab\WEEK1> PYTHON sjf.PY
5
p1 p2 p3 p4 p5
2 1 4 0 2
1 5 1 6 3
-----
| p4|| p1|| p3|| p5|| p2|
Average completion time is      : 9.6
Average turn around time is     : 7.8
Average waiting time is         : 4.6
process id      at      ct      bt      tat     wt

p1              2               1               7               5               4
p2              1               5               16              15              10
p3              4               1               8               4               3
p4              0               6               6               6               0
p5              2               3               11              9               6
PS E:\books and pdfs\sem4 pdfs\os lab\WEEK1>
```

Round robbin:

Program:

```
n = int(input("enter number of process : "))
process = list(map(str, input("enter process names : ").split()))
Arrival_time = list(map(int, input("enter arrival time : ").split()))
Burst_time = list(map(int, input("enter burst time : ").split()))
t = int(input("Time Quantum : "))
Atl =  sorted(Arrival_time)
Bt1 = Burst_time.copy()
gantt_chart = []
ready_queue = []
completion_time = [0]*(n)
waiting_time = [0]*(n)
turn_around_time = [0]*(n)
response_time = [0]*n
val = cnt = flg = i = 0
s = sum(Burst_time)
while (max(completion_time)!=s):
   while(i<len(Atl) and cnt>=Atl[i]):
       ready_queue.append(Atl[i])
       i+=1
   if flg==1:
      ready_queue.append(Arrival_time[x])
   x = Arrival_time.index(ready_queue[0])
   if process[x] not in gantt_chart:
       response_time[x] = val-Arrival_time[x]
   gantt_chart.append(process[x])
   ready_queue.remove(Arrival_time[x])
   if Burst_time[x]<=t and Burst_time[x]!=0:
       completion_time[x] = Burst_time[x] + cnt
       turn_around_time[x] = completion_time[x]-Arrival_time[x]
       waiting_time[x] = turn_around_time[x]-Bt1[x]
       val += Burst_time[x]
       cnt +=Burst_time[x]
       Burst_time[x]=0
       flg=0
   else:
       Burst_time[x] = Burst_time[x]-t
       cnt+=t
       val = cnt
       flg=1
print("Process ArrivalTime BurstTime CompletionTime TurnAroundTime
WaitingTime ResponseTime")
for i in range(0,len(process)):
   print(" ",process[i],"   \t",Arrival_time[i],"
```

```
\t",Bt1[i],"\t\t",completion_time[i],"
\t",turn_around_time[i],"\t\t",waiting_time[i],"\t",response_time[i])
print("Gantt Chart  :",gantt_chart)
print("Avg Turn Around Time:", round(sum(turn_around_time)/n,3))
print("Avg Wating Time :", round(sum(waiting_time)/n,3))
```

Output:

```
PS E:\books and pdfs\sem4 pdfs\os lab\WEEK1> python rr.py
enter number of process : 5
enter process names : p1 p2 p3 p4 p5
enter arrival time : 0 5 1 6 8
enter burst time : 8 2 7 3 5
Time Quantum : 3
Process ArrivalTime BurstTime CompletionTime TurnAroundTime WaitingTime ResponseTime
  p1            0       8              22      22              14      0
  p2            5       2              11      6               4       4
  p3            1       7              23      22              15      2
  p4            6       3              14      8               5       5
  p5            8       5              25      17              12      9
Gantt Chart  : ['p1', 'p3', 'p1', 'p2', 'p4', 'p3', 'p5', 'p1', 'p3', 'p5']
Avg Turn Around Time: 15.0
Avg Wating Time : 10.0
PS E:\books and pdfs\sem4 pdfs\os lab\WEEK1>
```

Priority scheduling:

Program:

```
n=int(input())
p=list(map(str,input().split()))
pr=list(map(int,input().split()))
at=list(map(int,input().split()))
bt=list(map(int,input().split()))
pr1=pr.copy()
gt=[]
```

```
ct=[0]*n
tat=[0]*n
wt=[0]*n

ind=at.index(min(at))
pr[ind]=999999
ct[ind]=bt[ind]
gt.append(p[ind])
tat[ind]=ct[ind]-at[ind]
wt[ind]=tat[ind]-bt[ind]

pre=ind

while ct[pre]!=sum(bt):
    rind=pr.index(min(pr))
    if at[rind]>ct[pre]:
        pr1[rind]=999999
        rind=pr1.index(min(pr1))
    ct[rind]=ct[pre]+bt[rind]
    pre=rind
    tat[rind]=ct[rind]-at[rind]
    wt[rind]=tat[rind]-bt[rind]
    pr[rind]=999999
    gt.append(p[rind])

print("-----")
for i in range(0,n):
    print("|",gt[i],end="|")
print()

print("process id\tat\tct\tbt\ttat\twt\n")
for i in range(0,n):

print(p[i],"\t\t",at[i],"\t\t",bt[i],"\t\t",ct[i],"\t\t",tat[i],"\t\t",wt[i
])
```

Output:

```
PS E:\books and pdfs\sem4 pdfs\os lab\WEEK1> python priority.py
7
p1 p2 p3 p4 p5 p6 p7
3 4 4 5 2 6 1
0 1 3 4 5 6 10
8 2 4 1 6 5 1
-----
| p1|| p5|| p7|| p2|| p3|| p4|| p6|
process id      at      ct      bt      tat     wt

p1              0               8               8               8               0
p2              1               2               17              16              14
p3              3               4               21              18              14
p4              4               1               22              18              17
p5              5               6               14              9               3
p6              6               5               27              21              16
p7              10              1               15              5               4
PS E:\books and pdfs\sem4 pdfs\os lab\WEEK1>
```