Write a cprogram to execute FCFS, SJF and SRTF for process scheduling

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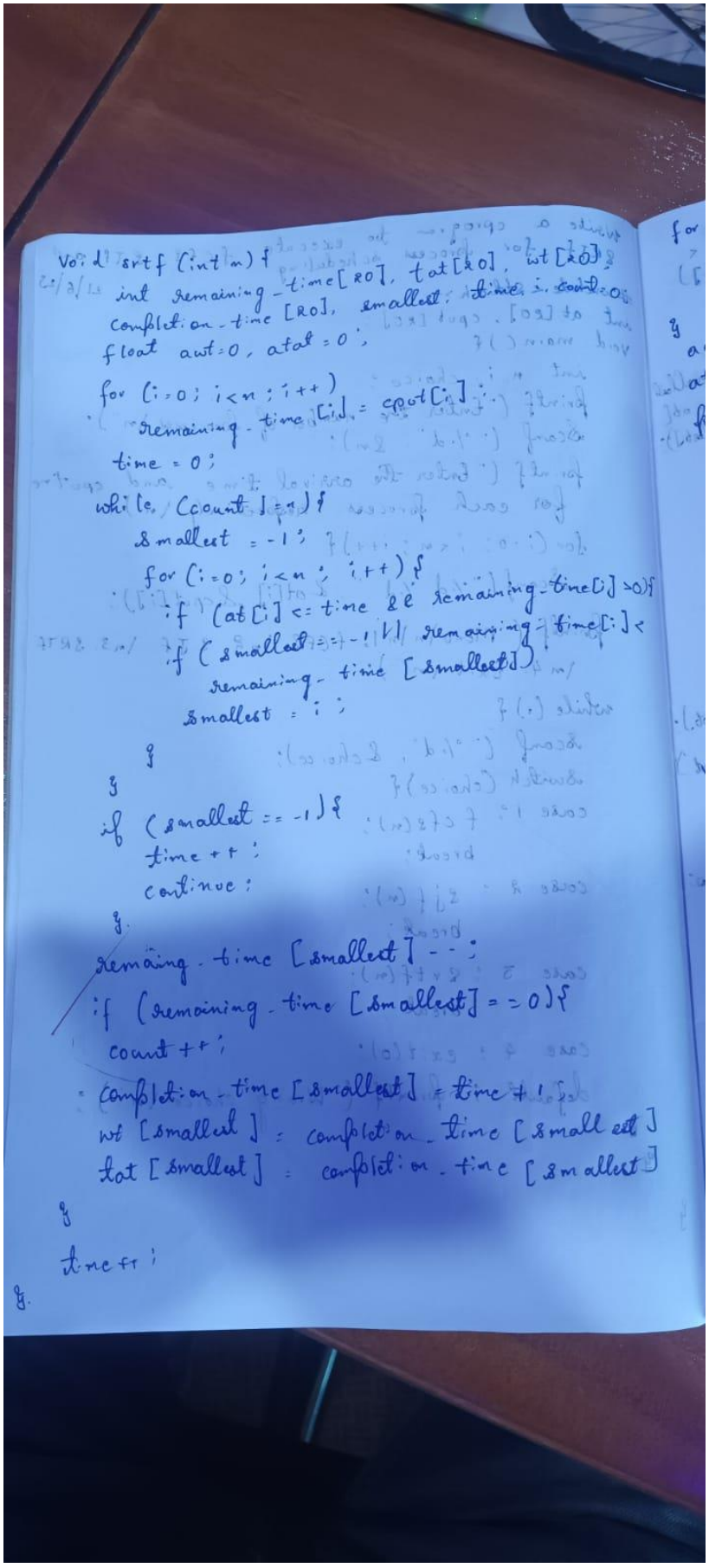
```
#include <stdio.h>
int at[20], cput[20];
void main(){
    int n, i, choice;
    printf("Enter the number of processes\n");
    scanf("%d", &n);
    printf("Enter the arrival time and cputime
      for each process respectively\n");
    for(i=0; i<n; i++){
      scanf("%d %d", &at[i], &cput[i]);
    printf("Menu\n\n1. FCFS\n2. SJF\n3. SRTF
      \n4. Exit\n");
    while(1){
      scanf("%d", &choice);
      switch(choice){
      case 1: fcfs(n);
              break;
      case 2: sjf(n);
              break;
      case 3: srtf(n);
              break;
      case 4: exit(0);
      default: printf("Wrong choice\n");
    }
}
```



```
void srtf (int n) {
    int remaining_time[20], tat[20], wt[20],
    completion_time[20], smallest, time, i, count=0;
    float awt=0, atat=0;

    for (i=0; i<n; i++)
        remaining_time[i] = cput[i];
    time = 0;
    while (count != n) {
        smallest = -1;
        for (i=0; i<n; i++) {
            if (at[i] <= time && remaining_time[i] >0){
            if (smallest==-1 || remaining_time[i] <
                remaining_time [smallest])
            smallest = i;
        }
    }
    if (smallest == -1) {
        time++;
        continue;
    }
    remaining_time [smallest] --;
    if (remaining_time [smallest] == 0) {
    count++;
    completion_time [smallest] = time + 1;
    wt [smallest] = completion_time [smallest]
    tat [smallest] = completion_time [smallest]
    }
    time++;
}
```

```
for (i=0 ; i<n ; i++) {
    awt += wt[i];
    atat += tat[i];
}
awt = awt/n;
atat = atat/n;
printf ("\n Process \tArrival time \t CPU Time \t
    Turnaround Time\n");
for (i=0 ; i<n ; i++) {
    printf ("%d \t %d \t \t %d \t \t %d \t \t %d\n"
        , at[i], cput[i], wt[i], tat[i]);
}
printf ("\n Average Waiting Time -- %f", awt);
printf ("\n Average Turnaround Time -- %f\n", atat);
}
void sjf(int n) {
    int cput[20], tat[20], wt[20], cput1[20];
    float awt=0, atat=0, sum_burst_time=0;
    int sum=0, i, j, smallest;
    printf ("\t Process \t WAITING TIME \t
        TURNAROUND TIME \n");
    for (i=0 ; i<n ; i++) {
        cput1[i] = cput[i];
        sum_burst_time += cput[i];
    }
    cput1[9] = 9999;
    while (sum < sum_burst_time)
    {
        smallest = 9;
```

```
        cput [i+1] = temp;
        temp = pname[i];
        pname [i] = pname [i+1];
        pname [i+1] = temp;
    }
}
for (i=0; i<n; i++){
    sum += cput[i];
    cmpt[i] = cmpt[i] - at[i];
    wt[i] = tat[i] - cput[i];
}
for (i=0; i<n; i++){
    awt += wt[i];
    atat += tat[i];
}
awt = awt/n;
atat = atat/n;
printf ("\t PROCESS \t ARRIVAL TIME \t CPU
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", pname[i], at[i], cput[i], wt[i],
    tat[i]);
}
printf ("\n Average Waiting Time -- %f", awt);
printf ("\n Average Turn around Time -- %f \n", atat);
getch();
}
```

Output:

Enter the number of process 4

Enter arrival time and cpu time for each process

0 3
1 6
4 4
6 2

Menu

1) FCFS
2) STF
3) SRTF
4) Exit

1)

Process	Arrival time	CPU time	Waiting time	Turnaround Time
P_0	0	3	0	3
P_1	1	4	2	8
P_4	4	6	5	9
P_6	6	2	7	9

Average Waiting Time - 3.50000

Average Turnaround Time - 7.25000

2)

Process	Waiting time	Turn around time
P[0]	3	0
P[1]	8	2
P[3]	5	3
P[2]	11	7

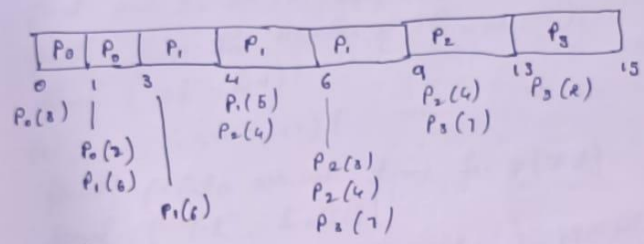
Average waiting time - 6.75000

Average Turn around time - 3.0000

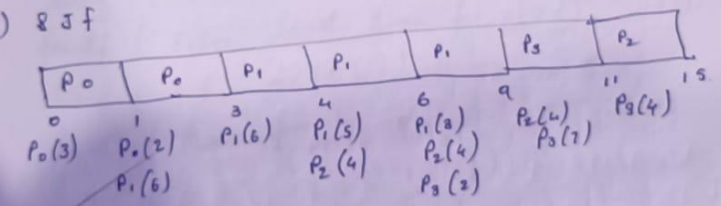
Process	Arrival Time	CPU Time	Waiting Time	Turnaround Time
0	0	3	0	3
1	1	6	8	14
2	4	4	0	4
3	6	2	2	4

Average Waiting Time - 2.500000
Average Tornaround Time - 6.250000

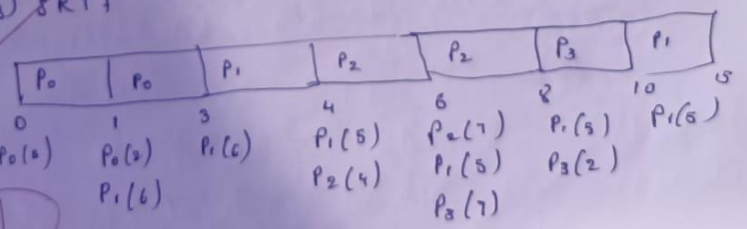
1) fcfs



2) SJf



3) SRTf



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Output:

```
Enter the number of processes
4
Enter arrival time and cpu time for each process respectively
0 3
1 6
4 4
6 2
Menu

1.FCFS
2.SJF(Non Preemptive)
3.SRTF(Preemptive)
4.Exit
1
        PROCESS         ARRIVAL TIME    CPU TIME        WAITING TIME    TURNAROUND TIME

        P0              0               3               0               3
        P1              1               6               2               8
        P2              4               4               5               9
        P3              6               2               7               9
Average Waiting Time -- 3.500000
Average Turnaround Time -- 7.250000

2
        PROCESS         WAITING TIME    TURNAROUND TIME
        P[0]            3               0
        P[1]            8               2
        P[3]            5               3
        P[2]            11              7

Average Waiting Time -- 6.750000
Average Turnaround Time -- 3.000000
3
```

```
Average Waiting Time -- 6.750000
Average Turnaround Time -- 3.000000
3

Process Arrival Time    CPU Time        Waiting Time    Turnaround Time
0       0               3               0               3
1       1               6               8               14
2       4               4               0               4
3       6               2               2               4

Average Waiting Time -- 2.500000
Average Turnaround Time -- 6.250000
```

```
Enter the number of processes
5
Enter arrival time and cpu time for each process respectively
0 8
0 1
3 6
4 2
8 3
Menu

1.FCFS
2.SJF(Non Preemptive)
3.SRTF(Preemptive)
4.Exit
1
        PROCESS         ARRIVAL TIME    CPU TIME        WAITING TIME    TURNAROUND TIME

        P1              0               1               0               1
        P0              0               8               1               9
        P2              3               6               6               12
        P3              4               2               11              13
        P4              8               3               9               12
Average Waiting Time -- 5.400000
Average Turnaround Time -- 9.400000
```