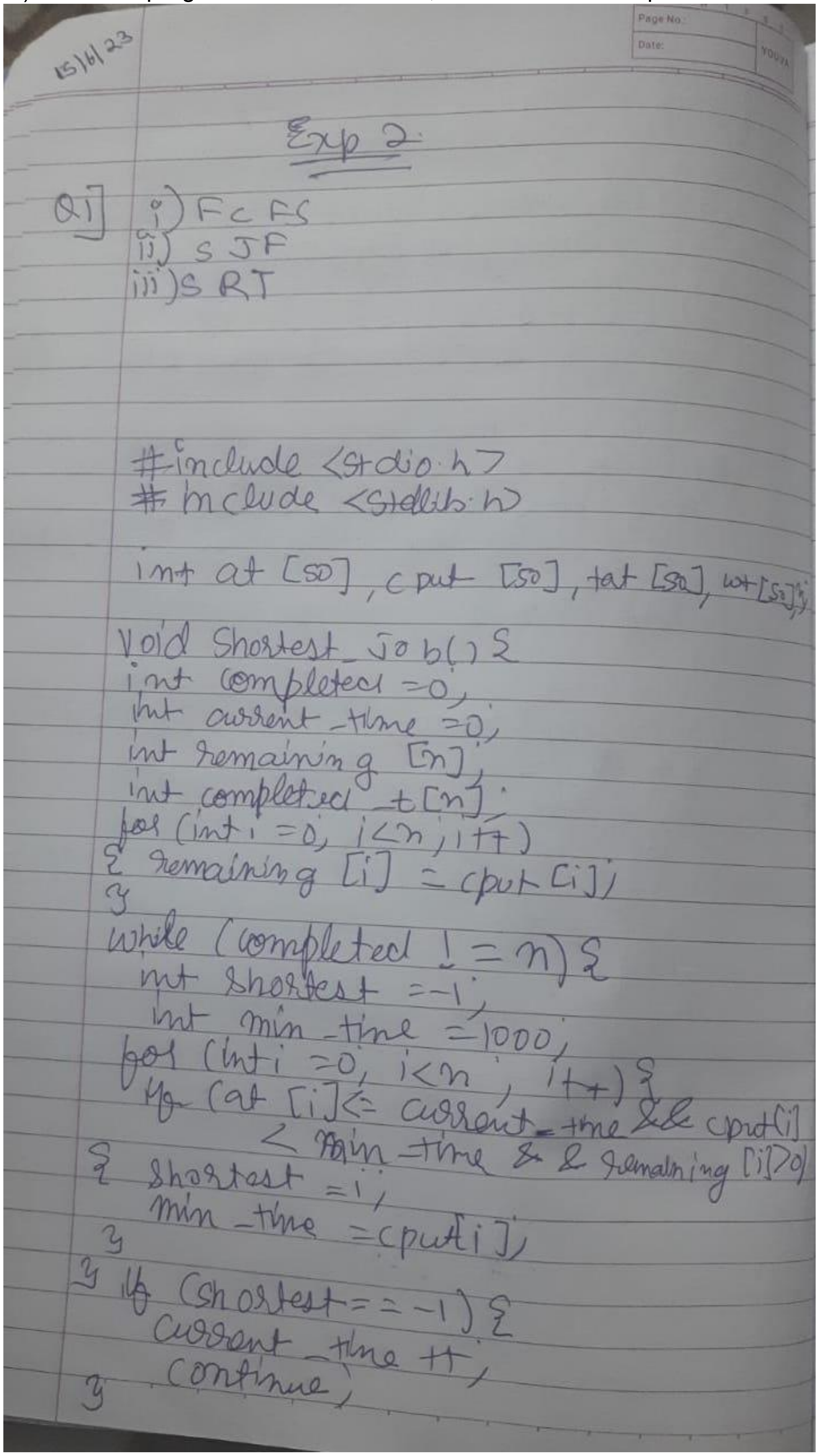
Q) Write a C program to execute FCFS, SJF and SRTF for process scheduling



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Exp 2

Q1] i) FCFS
ii) SJF
iii) SRT

```
#include <stdio.h>
#include <stdlib.h>

int at [50], cput [50], tat [50], wt[50];

void Shortest_job() {
int completed =0;
int current_time =0;
int remaining [n];
int completed _t[n];
for (int i =0; i<n; i++)
{ remaining [i] = cput [i];
}
while (completed != n) {
  int shortest =-1;
  int min_time =1000;
for (int i =0, i<n ; i++) {
 if (at [i]<= current_time && cput[i]
        < min_time && remaining [i]>0)
{ shortest =i;
  min_time =cput[i];
 }
} if (shortest==-1) {
  current_time ++;
  continue;
}
```

```
completed _t [shortest] = current _time +
remaining [shortest];

current _time += remaining [shortest];
remaining [shortest] = 0;
 tat [shortest] = completed _t [shortest]
 - at [shortest];

 wt [shortest] = tat [shortest] -
 cput [shortest];

 completed ++;
 }
}
void shortest _job_t ()
{
int completed = 0;
int current_time = 0;
int remaining [n];
int completed _t [n];

for (int i = 0; i < n; i++)
{ remaining [i] = cput [i];
}
while (completed != n)
{ int shortest = -1;
int min _time = 1000;
for (int i = 0; i < n; i++)
{  if (at [i] <= current_time &&
remaining [i] < min_time &&
remaining [i] > 0) {
        shortest = i;
min _time = remaining [i];
 }
}
```

```
if (Shortest == -1)
{
current_time ++;
 continue;
 }
current_time += 1;
remaining [Shortest ]-= 1;
if (remaining [shortest]==0)
 { completed++;
  completed_t [Shortest ] = current_time
}
tat [Shortest ] = completed_t [shortest]
- at [shortest];
  wt [Shortest ] = tat [Shortest] -
   cput [Shortest];
}
}
int main ()
{ printf ("Enter number of process:");
  Scanf ("%d", &n);
printf ("\n Enter arrival & CPU
        time:\n");
for (int i =0; i<n ;i++) {
 Scanf ("%d %d", &at[i], & cput(i));
}
Shortest_job_t();
int count=0;
for (int i =0; i<n ;i++) {
  count += tat [i];
  printf ("%d", tat [i]);
}
printf ("\n AvgTAT = %f\n", (float)
 count /n);
```

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```
int * wtarr = (int*)malloc (n* sizeof (int));
int * tatarr (int * )malloc (n * sizeof (int));
int * atarr = (int * )malloc (n * sizeof(int));
int * cpu utarr = (int * )malloc (n* sizeof(int));
printf ("\n Enter the arrival & burst length
    of each process:\n"),
 int awt = 0;
 int atat = 0,
  int sumtime = 0;
for (int i = 0; i<n ; i++){
 scanf ("%d %d", atarr+i, cpu utarr
sumtime += * (cputarr+i);   +i),
* (tatarr +i) = sumtime;
* (w tarr +i) = * (tatarr +i) -
                * (cputarr +i);
awt += * (w tarr +i);
~~a~~ atat += * (tatarr +i);
}
 for (int i = 0; i<n ; i ++) {
  printf(" P%d : Waiting time =
  %d \t turnaround time = %d\n"
  i, * (wt arr +i), *(t atarr +i));
 }
printf ("the average waiting time =
 %d\n", i * (wtarr +i), * (tat arr+i));
 }
printf ("The avg waiting time %.f\n
  the avg Turnaround time = %.f\n",
(float) awt /n, (float )atat /n);
 free (w tarr),
 free (tatarr );
 free ( atarr)
  free ( cpu utarr);
return 0;
}
```

Output

```
Enter the number of process
4
Enter arrival time and CPU time
Respectively.

0   0   3
0   1   6
3   4   4
5   6   2
~~10~~ 5

Menu
1. FCFS
2. Non premitive
3. Premitive
4. Exit.
```

1.
```
Process  Arrivaltime  Cputime  waittime  TAT

P0           0           3        0       3
P1           1           4        2       8
P2           4           6        5       9
P3           6           2        7       9

  Avg waiting time = 3.50000
  Avg Turnaround time = 7.25000
```

2.

Process	Waiting time	TAT
P[0]	3	0
P[1]	8	2
P[3]	5	3
P[2]	,1	7

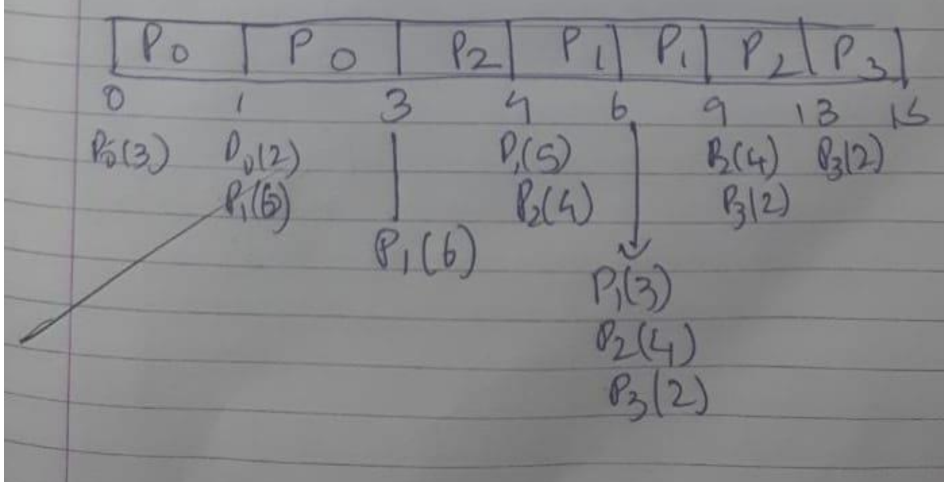
Avg waiting time = 6.7 5000
Avg TAT = 3.0000

3.

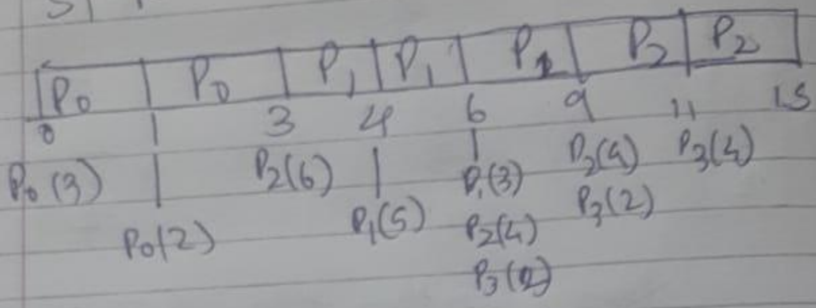
Process	Arrival time	CPU time	waiting time	TAT
0	0	3	0	3
1	1	6	8	14
2	4	4	0	4
3	6	2	2	4

Avg waiting time = 2.5000
Avg Turnaround time = 6. 25000

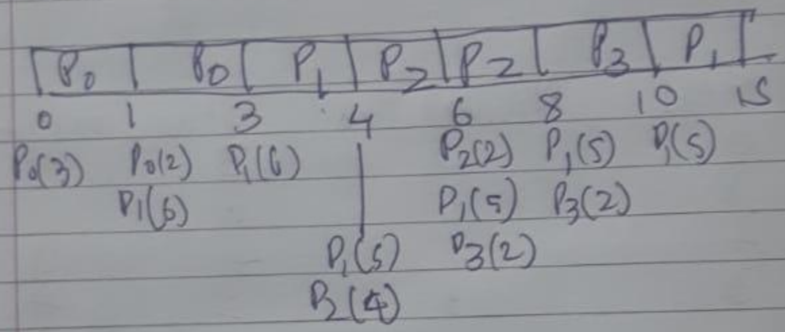
① FCFS



② STF


P0 | P0 | P1 | P1 | P1 | P2 | P2
0 1 3 4 6 9 11 15
P0(3)
P0(2)
P2(6)
P1(5)
P1(3) P2(4) P3(2)
P3(4) P3(2)
P3(4)

③ SRTF


P0 | P0 | P1 | P2 | P2 | P3 | P1
0 1 3 4 6 8 10 15
P0(3)
P0(2) P1(6)
P1(6)
P1(5) P2(4)
P2(2) P1(5) P3(2)
P1(5) P3(2)
P1(5)

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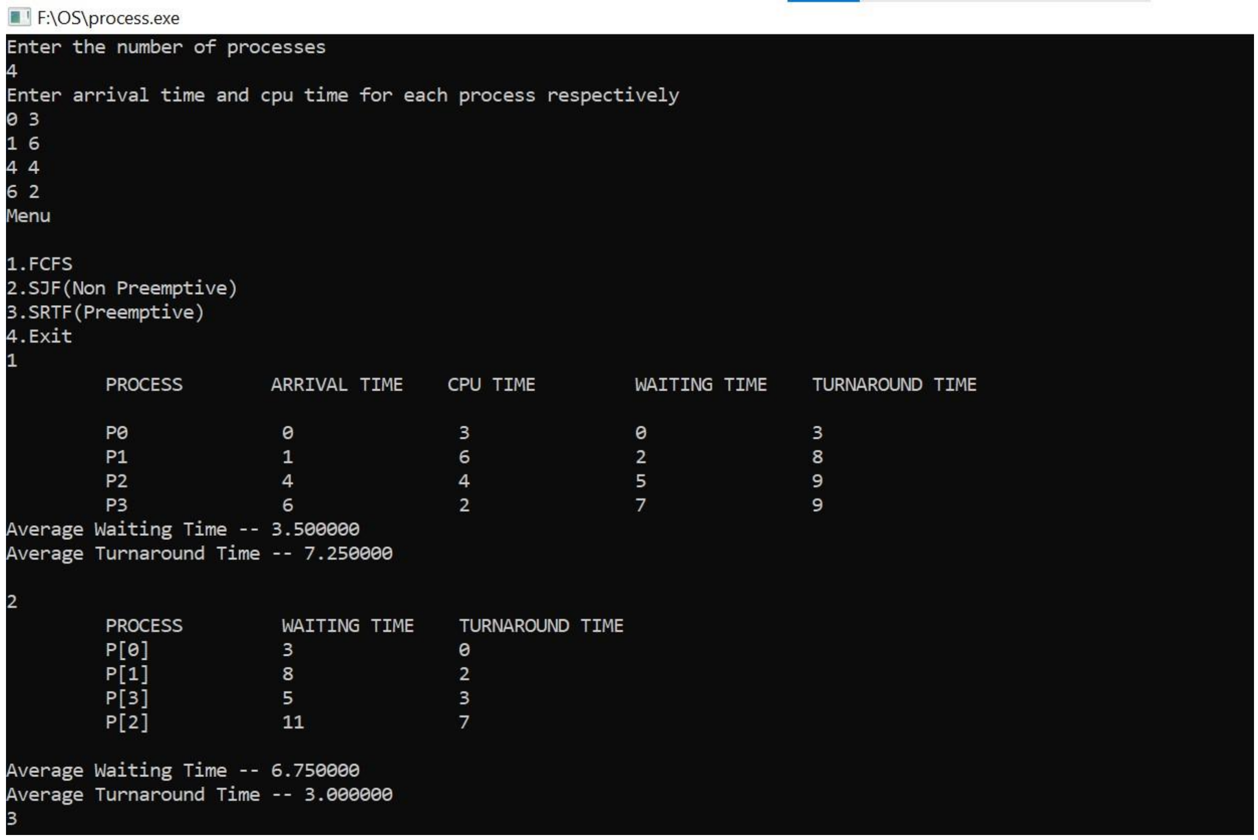
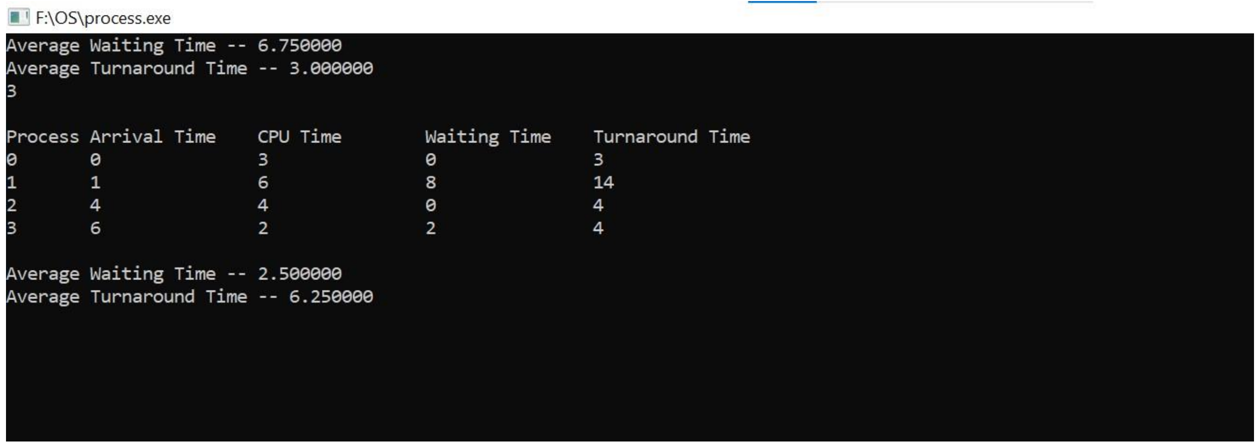
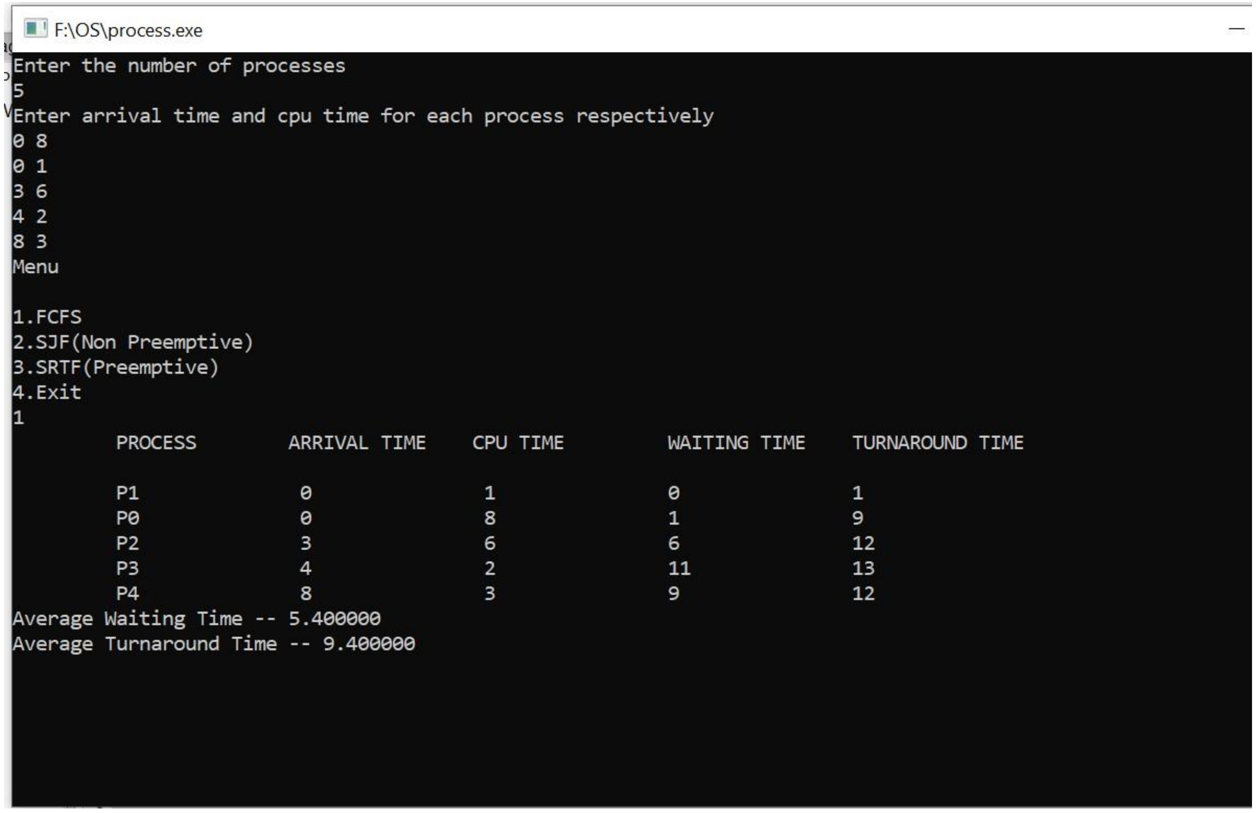
Output:



```
F:\OS\process.exe
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
```



```
F:\OS\process.exe
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
```


F:\OS\process.exe

```
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
```