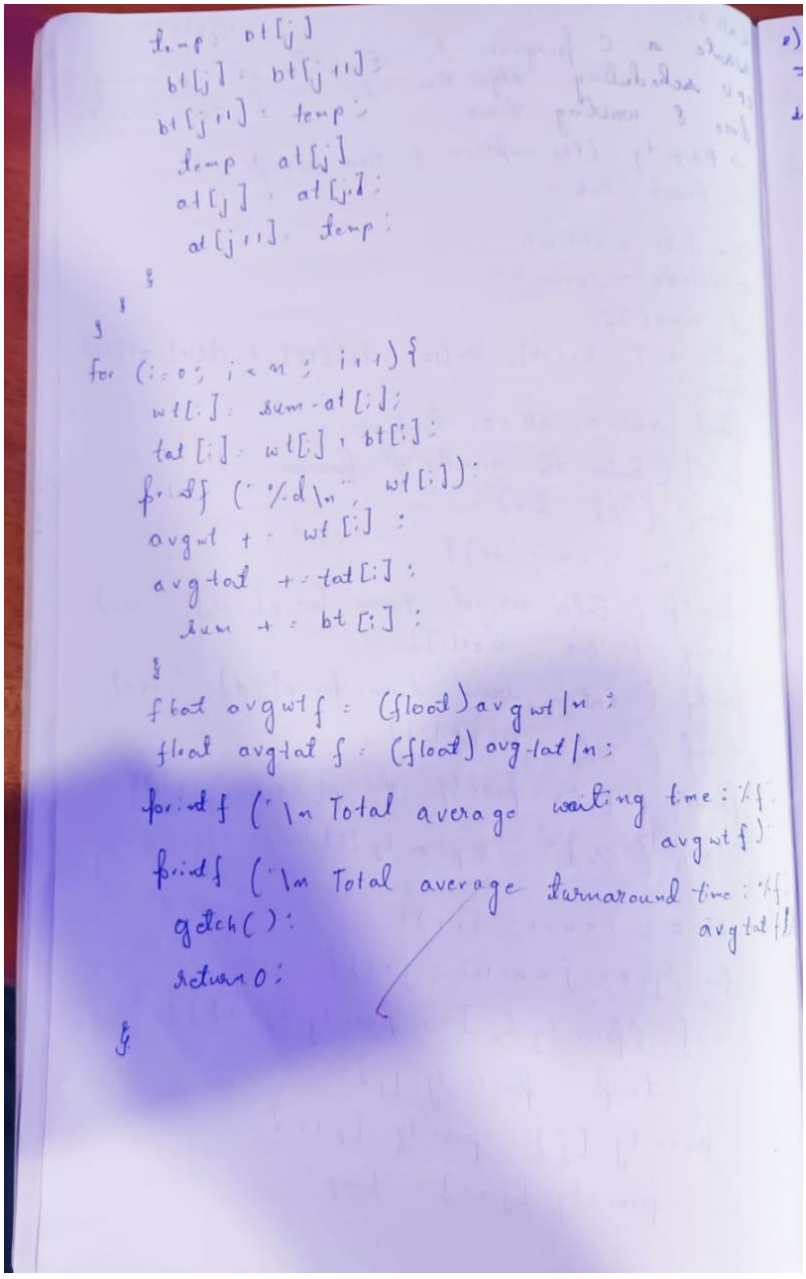
Lab 3: 18/6/23

Write a C program to simulate the following CPU scheduling algorithm to find turn around time & waiting time.

→ Priority (Pre-emptive & Non-preemptive)

→ Round Robin

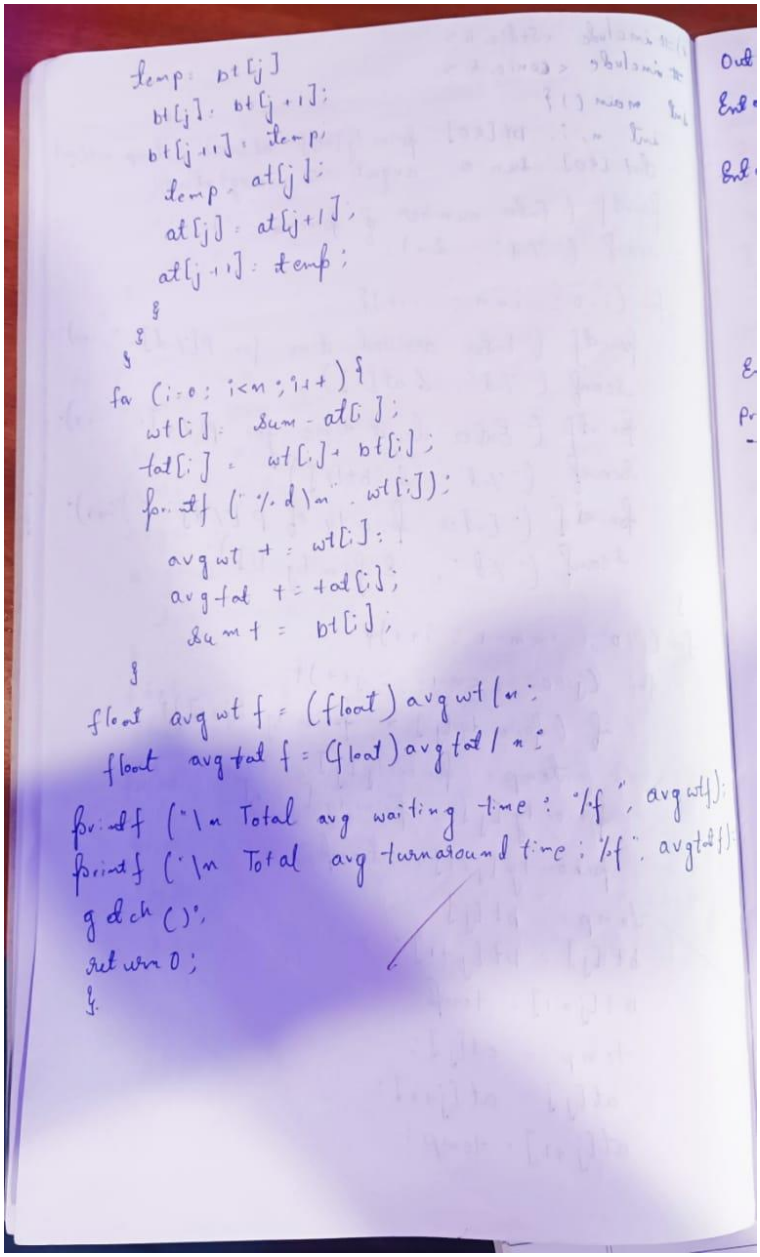
```
#include <stdio.h>
#include <conio.h>
int main(){
  int n, i, bu[10], wa[10], tat[10], t, ct[10], at[10],
  msc;
  float awt=0, att=0, temp=0;
  printf("Enter the number of process: ");
  scanf("%d", &n);
  for(i=0; i<n; i++){
  printf("Enter arrival time for p[%d]: ", i+1);
  scanf("%d", &at[i]);
  printf("Enter burst time for p[%d]: ", i+1);
  scanf("%d", &bt[i]);
  printf("Enter priority of p[%d]: " i+1);
  scanf("%d" &priority[i]);
}
for(i=0; i<n-1; i++){
  for(j=0; j<n-1-i; j++){
    if(priority[j] > priority[j+1]){
      temp = priority[j];
      priority[j] = priority[j+1];
      priority[j+1] = temp;
```



```
        temp = bt[j];
        bt[j] = bt[j+1];
        bt[j+1] = temp;
        temp = at[j];
        at[j] = at[j+1];
        at[j+1] = temp;
      }
    }
  }
  for (i=0; i<n; i++) {
    wt[i] = sum - at[i];
    tat[i] = wt[i] + bt[i];
    printf("%d\n", wt[i]);
    avgwt += wt[i];
    avgtat += tat[i];
    sum += bt[i];
  }
  float avgwtf = (float)avgwt/n;
  float avgtatf = (float)avgtat/n;
  printf("\n Total average waiting time: %f", avgwtf);
  printf("\n Total average turnaround time: %f", avgtatf);
  getch();
  return 0;
}
```

```
2) #include <stdio.h>
#include <conio.h>
int main(){
int n,i,bt[20],priority[20],at[20],j,temp,wt[20],
tat[20],sum=0,avgwt=0,avgtat=0;
printf("Enter number of process :");
scanf("%d",&n);

for(i=0;i<n;i++){
printf("Enter arrival time for p[%d]:",i+1);
scanf("%d",&at[i]);
printf("Enter burst time for p[%d]:",i+1);
scanf("%d",&bt[i]);
printf("Enter priority of p[%d]:",i+1);
scanf("%d",&priority[i]);
}
for(i=0;i<n-1;i++){
for(j=0;j<n-1-i;j++){
if(priority[j]>priority[j+1]){
temp=priority[j];
priority[j]=priority[j+1];
priority[j+1]=temp;
temp=bt[j]
bt[j]=bt[j+1];
bt[j+1]=temp;
temp=at[j];
at[j]=at[j+1];
at[j+1]=temp;
```



```
        temp = bt[j];
        bt[j] = bt[j+1];
        bt[j+1] = temp;
        temp = at[j];
        at[j] = at[j+1];
        at[j+1] = temp;
      }
    }
    for (i=0; i<n; i++) {
      wt[i] = sum - at[i];
      tat[i] = wt[i] + bt[i];
      printf("%d\n", wt[i]);
      avgwt += wt[i];
      avgtat += tat[i];
      sum += bt[i];
    }
    float avgwtf = (float) avgwt / n;
    float avgtatf = (float) avgtat / n;
    printf("\n Total avg waiting time : %f", avgwtf);
    printf("\n Total avg turnaround time : %f", avgtatf);
    getch();
    return 0;
    }
```

Output

Enter the number of process

5

Enter the arrival time CPU time

0 5
1 3
2 1
3 2
4 2

Enter the Time time quantum.

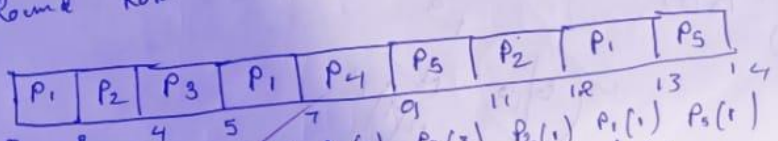
Process	Cpu time	Arrival time	TAT	WT
0	5	0	14	9
1	3	1	11	8
2	1	2	3	2
3	2	3	4	2
4	3	4	9	6

Average Turn around time : 8.20

Average Waiting time : 5.00

Grant chat

Round Robin



P1(3) P3(1) P4(3) P4(2) P5(3) P2(1) P1(1) P5(1)
P3(1) P1(5) P4(2) P5(3) P2(1) P1(1) P5(1)
P1(3) P4(2) P5(3) P2(1) P1(1) P5(1)
P5(3) P2(1) P1(1)
P2(1)

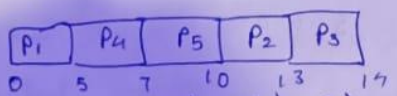
Enter the priorities of process

Process 0 : 3
Process 1 : 2
Process 2 : 1
Process 3 : 4
Process 4 : 3

Process	turnaround time	Waiting time
P[0]	5	0
P[2]	4	2
P[4]	6	3
P[1]	12	9
P[3]	12	11

Avg Waiting Time : 5.00
Avg Turnaround time : 7.80

Priority Non preemptive



$P_2(3)$ $P_2(3)$ $P_2(3)$ $P_3(1)$
$P_3(1)$ $P_3(1)$ $P_3(1)$
$P_4(2)$ $P_0(3)$
$P_5(3)$

Output:

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

1.Round Robin
2.Priority(Non Preemptive)
3.Exit
1
Enter the time quantum
2

ProcessCpu Time Arrival Time    Turnaround Time Waiting Time
0       5               0               14              9
1       3               1               11              8
2       1               2               3               2
3       2               3               4               2
4       3               4               9               6
Average Turnaround Time: 8.20
Average Waiting Time: 5.40
2
Enter the priorities of processes
Process 0: 3
Process 1: 2
Process 2: 1
Process 3: 4
Process 4: 3
         P[0]            5               0
         P[3]            4               2
         P[4]            6               3
         P[1]            12              9
         P[2]            12              11

Average Waiting Time -- 7.800000
Average Turnaround Time -- 5.000000
```