Lab Assignment-4

Name: Sadman Sharif

ID: 20101107

Section: 02

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Task-1

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


int main(){

    int n;

    printf("No of processes: ");

    scanf("%d",&n);

    int process[n];

    for(int i=0;i<n;i++){
        process[i] = i+1;
    }

    int BT[n],AT[n],TAT[n],WT[n],CT[n];


    printf("Enter arrival and burst time\n");

    for(int i=0;i<n;i++){
            printf("%d: ",i);
            scanf("%d%d",&AT[i],&BT[i]);
    }

    int rem[n];

    for (int i = 0; i < n; ++i){
        rem[i] = BT[i];

    }


    int completed=0;

    int temp;
```

```c
    for(int ST=0;completed != n; ST++){
        int min_BT=100000;


        for (int i=0;i < n; i++){
            if (AT[i] <= ST && rem[i]> 0 && rem[i]<= min_BT){
                min_BT=rem[i];
                temp=i;
            }
        }

        rem[temp]=rem[temp] - 1;


        if (rem[temp]==0){

            completed++;

            CT[temp]=ST + 1;
            TAT[temp]=CT[temp]-AT[temp];
            WT[temp]=CT[temp]-AT[temp]-BT[temp];
            BT[temp]=TAT[temp]-WT[temp];
            AT[temp]=CT[temp]-TAT[temp];

        }
    }


    float wt=0;
    float tat=0;

    for (int i = 0; i < n; ++i){

        tat=tat+TAT[i];
        wt=wt+WT[i];

        printf("P%d: CT=%d ; AT=%d; TAT=%d; BT=%d ;
WT=%d\n",process[i],CT[i],AT[i],TAT[i],BT[i],WT[i]);
    }

    printf("Average waiting time: %0.1f\n", wt/n);
    printf("Average turnaround time: %0.1f", tat/n);

}
```

Task-1 (Output)

```c
1  #include <stdlib.h>
2  #include <stdio.h>
3  #include <math.h>
4
5  int main(){
6
7      int n;
8      printf("No of processes: ");
9      scanf("%d",&n);
10
11     int process[n];
12     for(int i=0;i<n;i++){
13         process[i] = i+1;
14     }
15
16     int BT[n],AT[n],TAT[n],WT[n],CT[n];
17
18
19     printf("Enter arrival and burst time\n");
20
21     for(int i=0;i<n;i++){
22             printf("%d: ",i);
23             scanf("%d%d",&AT[i],&BT[i]);
24     }
25
26     int rem[n];
27     for (int i = 0; i < n; ++i){
28         rem[i] = BT[i];
29
30     }
31
32
33     int completed=0;
34     int temp;
35
36     for(int ST=0;completed != n; ST++){
```

```
Output

/tmp/jojqvNbNkn.o
No of processes: 5
Enter arrival and burst time
0: 0
5
1: 2
2
2: 3
7
3: 4
4
4: 5
5
P1: CT=7  ; AT=0; TAT=7;  BT=5  ; WT=2
P2: CT=4  ; AT=2; TAT=2;  BT=2  ; WT=0
P3: CT=23 ; AT=3; TAT=20; BT=7  ; WT=13
P4: CT=11 ; AT=4; TAT=7;  BT=4  ; WT=3
P5: CT=16 ; AT=5; TAT=11; BT=5  ; WT=6
Average waiting time: 4.8
Average turnaround time: 9.4
```

Task-2

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

int main(){

    int n,TQ;

    printf("No of processes: ");
    scanf("%d",&n);

    printf("The time quantum: ");
    scanf("%d",&TQ);


    int process[n];

    for(int i=0;i<n;i++){
        process[i] = i+1;
    }

    int BT[n],WT[n],CT[n],TAT[n];
    printf("Enter burst time of the process\n");

    for(int i=0;i<n;i++){
            printf("%d: ",i);
            scanf("%d",&BT[i]);
    }

    int rem[n];

    for (int i = 0; i < n; ++i){
        rem[i] = BT[i];
    }

    int cou=-1;
    int comp=0;
    int s=0;

    for(int ST=0;comp!= n; ST++){
        cou++;
```

```c
        if (ST>0 && cou % TQ == 0){
            s=(s+1)% n;
        }

        for(int i=0;i<n;i++){

            if (rem[s] == 0)
            {
                s=(s+1) % n;
            }
            else {
                break;
            }
        }

        rem[s]=rem[s]-1;

        if(rem[s]==0){
            comp++;
            cou=-1;
            CT[s]=ST+1;
            TAT[s]=CT[s]-0; // arrival time assumed 0
            WT[s]= CT[s]-0-BT[s];
            BT[s]=TAT[s]-WT[s];

        }

    }

    float wt=0;
    float tat=0;

    for (int i = 0; i < n; ++i){

        tat=tat+TAT[i];
        wt=wt+WT[i];

        printf("P%d: CT=%d;TAT=%d
;WT=%d;AT=%d;BT=%d\n",process[i],CT[i],TAT[i],WT[i],0,BT[i]);
    }

    printf("Average waiting time: %0.1f\n", wt/n);
    printf("Average turnaround time: %0.1f", tat/n);

}
```

Task-2 (Output)

```
main.c                                    [ ]  (G)  Run     Output

1   #include <stdlib.h>                                     /tmp/ZfKetLAMO3.o
2   #include <stdio.h>                                      No of processes: 4
3   #include <math.h>                                       The time quantum: 20
4                                                           Enter burst time of the process
5 ▾ int main(){                                             0: 53
6                                                           1: 17
7       int n,TQ;                                           2: 68
8                                                           3: 24
9       printf("No of processes: ");                        P1: CT=134;TAT=134 ;WT=81;AT=0;BT=53
10      scanf("%d",&n);                                     P2: CT=37;TAT=37 ;WT=20;AT=0;BT=17
11                                                          P3: CT=162;TAT=162 ;WT=94;AT=0;BT=68
12      printf("The time quantum: ");                       P4: CT=121;TAT=121 ;WT=97;AT=0;BT=24
13      scanf("%d",&TQ);                                    Average waiting time: 73.0
14                                                          Average turnaround time: 113.5
15
16      int process[n];
17
18 ▾    for(int i=0;i<n;i++){
19          process[i] = i+1;
20      }
21
22      int BT[n],WT[n],CT[n],TAT[n];
23      printf("Enter burst time of the process\n");
24
25 ▾    for(int i=0;i<n;i++){
26              printf("%d: ",i);
27              scanf("%d",&BT[i]);
28      }
29
30      int rem[n];
31
32 ▾    for (int i = 0; i < n; ++i){
33          rem[i] = BT[i];
34      }
35
36      int cou=-1;
37      int comp=0;
```

Task-3

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


int main(){

    int n;

    printf("No of processes: ");

    scanf("%d",&n);

    int process[n];

    for(int i=0;i<n;i++){

        process[i]=i+1;
    }


    int BT[n],AT[n],TAT[n],WT[n],CT[n],pri[n];

    printf("Enter arrival and burst time and also priority value\n");

    for(int i=0;i<n;i++){

            printf("%d: ",i);
            scanf("%d%d%d",&AT[i],&BT[i],&pri[i]);
    }


    int rem[n];

    for (int i=0; i<n; ++i){

        rem[i]=BT[i];
    }
```

```c
    int comp=0;

    int s;

    for(int ST = 0;comp!=n; ST++){

        int m_pri=10000;

        for (int i = 0; i < n; i++){

            if (AT[i] <= ST && rem[i]>0 && pri[i]<=m_pri){
                m_pri=pri[i];
                s=i;
            }
        }

        rem[s]=rem[s]-1;

        if (rem[s]==0){
            comp++;

            CT[s]=ST+1;
            TAT[s]=CT[s]-AT[s];
            WT[s]=CT[s]-AT[s]-BT[s];
            BT[s]=TAT[s]-WT[s];
            AT[s]=CT[s]-TAT[s];
        }
    }


    float wt=0;
    float tat=0;

    for (int i = 0; i < n; ++i){

        tat=tat+TAT[i];
        wt=wt+WT[i];

        printf("P%d: CT=%d;BT=%d;AT=%d;TAT=%d;
WT=%d\n",process[i],CT[i],BT[i],AT[i],TAT[i],WT[i]);
    }

    printf("Average waiting time: %0.1f\n", wt/n);
    printf("Average turnaround time: %0.1f", tat/n);
}
```

Task-3 (Output)

```c
1   #include <stdlib.h>
2   #include <stdio.h>
3   #include <math.h>
4
5 - int main(){
6       int n;
7       printf("No of processes: ");
8       scanf("%d",&n);
9
10      int process[n];
11
12 -    for(int i=0;i<n;i++){
13          process[i]=i+1;
14      }
15
16      int BT[n],AT[n],TAT[n],WT[n],CT[n],pri[n];
17
18      printf("Enter arrival and burst time and also priority value\n");
19
20 -    for(int i=0;i<n;i++){
21          printf("%d: ",i);
22          scanf("%d%d%d",&AT[i],&BT[i],&pri[i]);
23      }
24
25      int rem[n];
26
27 -    for (int i=0; i<n; ++i){
28          rem[i]=BT[i];
29      }
30
31      int comp=0;
32      int s;
33
34 -    for(int ST = 0;comp!=n; ST++){
35
36          int m_pri=10000;
```

Output

```
/tmp/VJ19a3nNxu.o
No of processes: 5
Enter arrival and burst time and also priority value
0: 0
15
2
1: 14
5
4
2: 3
10
0
3: 9
22
3
4: 7
16
1
P1: CT=41;BT=15;AT=0;TAT=41; WT=26
P2: CT=68;BT=5;AT=14;TAT=54; WT=49
P3: CT=13;BT=10;AT=3;TAT=10; WT=0
P4: CT=63;BT=22;AT=9;TAT=54; WT=32
P5: CT=29;BT=16;AT=7;TAT=22; WT=6
Average waiting time: 22.6
Average turnaround time: 36.2
```