WEEK 5

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Q: Write a C program to simulate a multi-level queue scheduling algorithm considering the following scenario. All the processes in the system are divided into two categories – system processes and user processes. System processes are to be given higher priority than user processes. Use FCFS scheduling for the processes in each queue.

Process	Arrival Time	Burst Time	System(0)/User(1)
P1	0	3	0
P2	2	2	0
P3	4	4	1
P4	4	2	1
P5	8	2	0
P6	10	3	1

```
#include<stdio.h>
int main()
{
   int p[20],bt[20], su[20],at[20], wt[20],tat[20],i, k, n, temp;
   float wtavg, tatavg;
   printf("Enter the number of processes:");
```

```
scanf("%d",&n);
for(i=0;i<n;i++)
{
   p[i] = i;
   printf("Enter the Burst Time of Process%d:", i);
   scanf("%d",&bt[i]);
   printf("Enter the arrival time of process%d",i);
   scanf("%d",&at[i]);
   printf("System/User Process (0/1) ? ");
   scanf("%d", &su[i]);
}
for(i=0;i<n;i++)
   for(k=i+1;k<n;k++)
      if(su[i] > su[k])
      {
      temp=p[i];
      p[i]=p[k];
      p[k]=temp;
      temp=bt[i];
      bt[i]=bt[k];
      bt[k]=temp;
      temp=su[i];
      su[i]=su[k];
      su[k]=temp;
      }
wtavg = wt[0] = 0;
tatavg = tat[0] = bt[0];
for(i=1;i<n;i++)
{
   wt[i] = wt[i-1] + bt[i-1];
   tat[i] = tat[i-1] + bt[i];
   wtavg = wtavg + wt[i];
   tatavg = tatavg + tat[i];
```

```
    }
    printf("\nPROCESS\t\tARRIVAL TIME\t\tSYSTEM/USER
PROCESS\t\tBURST TIME\t\tWAITING TIME\t\tTURNAROUND TIME");
    for(i=0;i<n;i++)
        printf("\n%d\t\t\t%d\t\t\t%d\t\t\t%d\t\t\t%d\t\t\t %d
",p[i],at[i],su[i],bt[i],wt[i],tat[i]);
    printf("\nAverage Waiting Time is --- %f",wtavg/n);
    printf("\nAverage Turnaround Time is --- %f",tatavg/n);

    return 0;
}
```

OUTPUT:

```
Enter the number of processes:6
Enter the arrival time of process00
System/User Process (0/1) ? 0
Enter the Burst Time of Process1:2
Enter the arrival time of process12
System/User Process (0/1) ? 0
Enter the Burst Time of Process2:4
Enter the arrival time of process24
System/User Process (0/1) ? 1
Enter the Burst Time of Process3:2
Enter the arrival time of process34
System/User Process (0/1) ? 1
Enter the Burst Time of Process4:2
Enter the arrival time of process48
System/User Process (0/1) ? 0
Enter the Burst Time of Process5:3
Enter the arrival time of process510
System/User Process (0/1) ? 1

PROCESS         ARRIVAL TIME            SYSTEM/USER PROCESS             BURST TIME              WAITING TIME            TURNAROUND TIME
0               0                       0                       3                       0                       3
1               2                       0                       2                       3                       5
4               4                       0                       2                       5                       7
3               4                       1                       2                       7                       9
2               8                       1                       4                       9                       13
5               10                      1                       3                       13                      16
Average Waiting Time is --- 6.166667
Average Turnaround Time is --- 8.833333
```