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3) Write a C program to simulate multi-level queue scheduling algorithm considering the following scenario. All the processes in system are divided into 2 categories - system processes are to and user processes. System processes are to be given higher priority than user processes. Use FCFS scheduling for the processes in each queue.

→
```
#include <stdio.h>
void main(){
    int p[20], bt[20], su[20], wt[20], tat[20], at[20],
    ct[20], i, k, n, t;
    float wtavg, tatavg;
    printf("Enter the no of processes \n");
    scanf("%d", &n);
    for(i=0; i<n; i++){
        p[i]=i;
        printf("Enter AT of process %d -- \n", i);
        scanf("%d", &at[i]);
        printf("Enter BT of process %d -- \n", i);
        scanf("%d", &bt[i]);
        printf("System/User Process (0/1)? \n");
        scanf("%d", &su[i]);
    }
    for(i=0; i<n; i++){
        for(k=i+1; k<n; k++){
            if(at[i] > at[k] || (at[i] == at[k] &&
              su[i] > su[k])){
                t = p[i];
                p[i] = p[k];
                p[k] = t;
```

```
        t = bt[i];
        bt[i] = bt[k];
        bt[k] = t;

        t = su[i];
        su[i] = su[k];
        su[k] = t;

        t = at[i];
        at[i] = at[k];
        at[k] = t;
      }
    }
  }
wtavg = wt[0] = 0;
tatavg = tat[0] = bt[0];
ct[0] = at[0] + bt[0];
for(i=1; i<n; i++){
    if(ct[i-1] < at[i]){
      ct[i] = at[i] + bt[i];
    }
    else{
      ct[i] = ct[i-1] + bt[i];
    }
    wt[i] = ct[i] - at[i] - bt[i];
    tat[i] = ct[i] - at[i];
    wtavg += wt[i];
    tatavg += tat[i];
}
printf("Process \t\t AT \t S/U Process \t BT \t WT \t
    TAT \n");
```

```
for (i=0; i<n; i++){
    printf("%d \t\t %d \t\t %d \t\t %d \t\t %d \t\t %d\n",
        p[i], at[i], su[i], bt[i], wt[i], tat[i]);
}
printf("AWT is -- %f \n", wtavg/n);
printf("ATAT is -- %f \n", tatavg/n);
}
```

→ OUTPUT :-

```
Enter the nor of processes -- 4
Enter AT of Process 0 -- 0
Enter BT of Process 0 -- 2
Enter S/U process (0/1)? -- 0
Enter AT of Process 1 -- 0
Enter BT of process 1 -- 1
Enter S/U process (0/1)? -- 1
Enter AT of process 2 -- 0
Enter BT of process 2 -- 5
Enter S/U process (0/1)? -- 0
Enter AT of process 3 -- 0
Enter BT of process 3 -- 3
Enter S/U process (0/1)? -- 1
```

Process	AT	S/U	BT	WT	TAT
0	0	0	2	0	2
2	0	0	5	2	7
1	0	1	1	7	8
3	0	1	3	8	11

Avg WT is -- 4.250000
Avg TAT is -- 7.000000

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