

# CSE2005L – Operating Systems Lab

## Challenging Task

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### Question 1

Q.No.	Sub. Sec.	Question Description												
1		<p>In a hospital, to attend a patient token system is being followed. Assume that there are 5 patients waiting in a queue with token numbers</p> <table><tr><th>Patient. No</th><th>Consulting time required</th></tr><tr><td>T1</td><td>10</td></tr><tr><td>T2</td><td>1</td></tr><tr><td>T3</td><td>2</td></tr><tr><td>T4</td><td>1</td></tr><tr><td>T5</td><td>5</td></tr></table> <p>Find two algorithm (i) favours the order (ii) favours the patient and compare the waiting time involved in both the algorithm.</p>	Patient. No	Consulting time required	T1	10	T2	1	T3	2	T4	1	T5	5
Patient. No	Consulting time required													
T1	10													
T2	1													
T3	2													
T4	1													
T5	5													

#### Code:

```
#include <iostream>
using namespace std;
int main() {
    int time[10], ntime[10], n=0, i=0, j=0, wtime=0, temp=0, ntemp=0;
    cout<<"Enter the number of patients : ";
    cin>>n;
    for (i=0; i<n; i++) {
        cout<<"Enter time for patient "<<i+1<<" : ";
        cin>>time[i];
        ntime[i]=i;
    }
    cout<<"\n\nAlgorithm : Favoring the order \n";
    cout<<"Patient No\tTime required\tWaiting time\n";
    for (i=0; i<n; i++) {
        cout<<"T"<<i+1<<"\t"<<time[i]<<"\t"<<wtime<<"\n";
        wtime+=time[i];
    }
    wtime=0;
    cout<<"\n\nAlgorithm : Favoring the patient \n";
    for (i = 0; i < n; i++)
```

```

{
for (j = i; j >= 1; j--)
{
if (time[j] < time[j-1])
{
temp = time[j];
time[j] = time[j-1];
time[j-1] = temp;

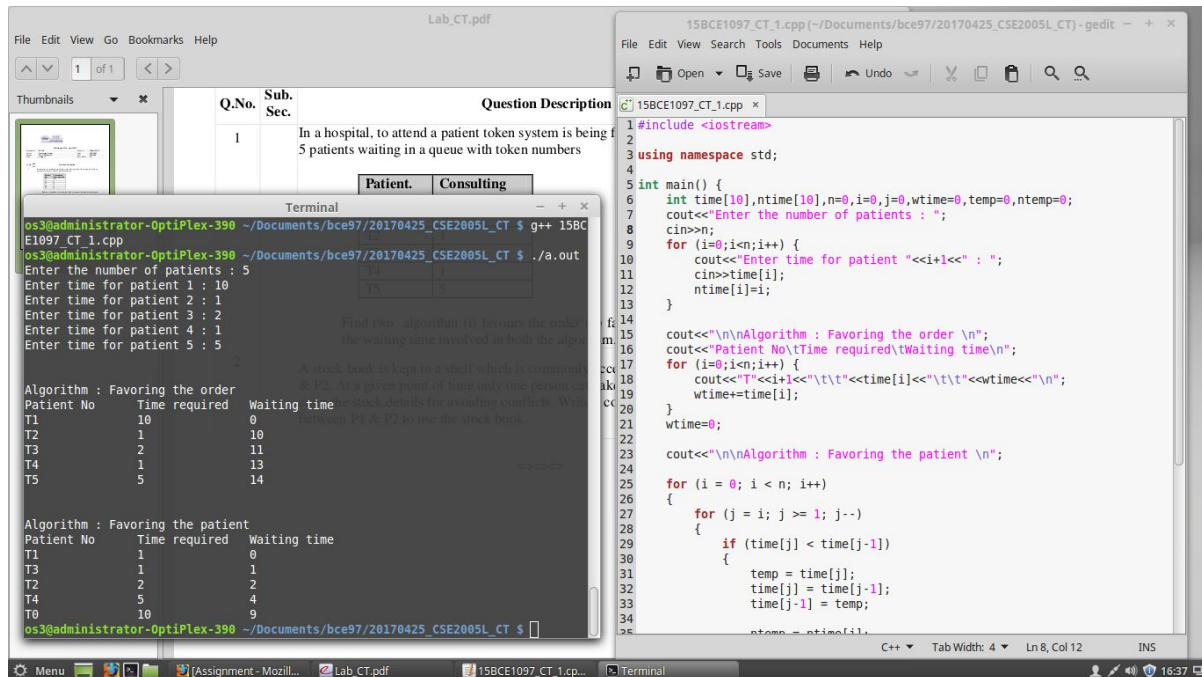
nntemp = nntime[j];

nntime[j] = nntime[j-1];
nntime[j-1] = nntemp;
}
else
break;
}

cout<<"Patient No\tTime required\tWaiting time\n";
for (i=0;i<n;i++) {
cout<<"T"<<nntime[i]<<"\t\t"<<time[i]<<"\t\t"<<wtime<<"\n";
wtime+=time[i];
}
wtime=0;
return 0;
}

```

**Output :**



## Question 2

2

A stock book is kept in a shelf which is commonly accessed between two persons P1 & P2. At a given point of time only one person can take the book and enter the stock details for avoiding conflicts. Write a code to eliminate conflict between P1 & P2 to use the stock book.

### Code:

```
#include <iostream>
```

```
using namespace std;
```

```
int main() {
```

```
    int FLAG=0,opt=0,cnfm=0,prg=0;
```

```
    cout<<"\n\n Stock Book Access Program \n\n";
```

```
    while(prg==0) {
```

```
        cout<<"\n\nBook Status : ";
```

```
        if (FLAG==0)
```

```
            cout<<"FREE TO ACCESS"<<endl;
```

```
        else if (FLAG==1)
```

```
            cout<<"TAKEN BY P1"<<endl;
```

```
        else
```

```
            cout<<"TAKEN BY P2"<<endl;
```

```
        cout<<"\n";
```

```
        cout<<"Select Person : 1)P1 2)P2 \n";
```

```
        cout<<"Enter 4 to Exit \n";
```

```
        cout<<"Enter Response :";
```

```
        cin>>opt;
```

```
        if (opt==1) {
```

```
            if (FLAG==0) {
```

```
                cout<<"Enter 1 to take book, 0 to cancel : ";
```

```
                cin>>cnfm;
```

```
                if (cnfm==1) {
```

```
                    cnfm=0;
```

```
                    FLAG=1;
```

```
                }
```

```

        else {
            cout<<"Cancelled Operation";
        }
    }
    else if (FLAG==1) {
        cout<<"Enter 1 to keep book, 0 to cancel : ";
        cin>>cnfm;
        if (cnfm==1) {
            cnfm=0;
            FLAG=0;
        }
        else {
            cout<<"Cancelled Operation";
        }
    }
    else {
        cout<<"\n\nSorry !!! Book taken by P2\n\n";
    }
}
else if (opt==2) {
    if (FLAG==0) {
        cout<<"Enter 1 to take book, 0 to cancel : ";
        cin>>cnfm;
        if (cnfm==1) {
            cnfm=0;
            FLAG=2;
        }
        else {
            cout<<"Cancelled Operation";
        }
    }
    else if (FLAG==2) {
        cout<<"Enter 1 to keep book, 0 to cancel : ";
        cin>>cnfm;
        if (cnfm==1) {
            cnfm=0;
            FLAG=0;
        }
        else {

```

```

        cout<<"Cancelled Operation";
    }
}
else {
    cout<<"\n\nSorry !!! Book taken by P1\n\n";
}
}
else if (opt==4) {
    prg=1;
}
else {
    cout<<"Invalid Option !!!";
}
}
return 0;
}

```

## Output:

The image shows a C++ program for a 'Stock Book Access Program' running in a terminal window and its source code in a text editor window.

**Terminal Output:**

```

Stock Book Access Program
Book Status : FREE TO ACCESS
Select Person : 1)P1 2)P2
Enter 4 to Exit
Enter Response :1
Enter 1 to take book, 0 to cancel : 1
Book Status : TAKEN BY P1
Select Person : 1)P1 2)P2
Enter 4 to Exit
Enter Response :2
Sorry !!! Book taken by P1
Book Status : TAKEN BY P1
Select Person : 1)P1 2)P2
Enter 4 to Exit
Enter Response :1
Enter 1 to keep book, 0 to cancel : 1
Book Status : FREE TO ACCESS
Select Person : 1)P1 2)P2
Enter 4 to Exit
Enter Response :2
Enter 1 to take book, 0 to cancel : 1
Book Status : TAKEN BY P2
Select Person : 1)P1 2)P2

```

**Source Code (15BCE1097\_CT\_2.cpp):**

```

1 #include <iostream>
2
3 using namespace std;
4
5 int main() {
6     int FLAG=0,opt=0,cnfm=0;
7     cout<<"\n\n Stock Book Access Program \n\n";
8     while(0==0) {
9         cout<<"\n\nBook Status : ";
10        if (FLAG==0)
11            cout<<"FREE TO ACCESS"<<endl;
12        else if (FLAG==1)
13            cout<<"TAKEN BY P1"<<endl;
14        else
15            cout<<"TAKEN BY P2"<<endl;
16        cout<<"\n";
17
18        cout<<"Select Person : 1)P1 2)P2 \n";
19        cout<<"Enter 4 to Exit \n";
20        cout<<"Enter Response : ";
21        cin>>opt;
22        if (opt==1) {
23            if (FLAG==0) {
24                cout<<"Enter 1 to take book, 0 to cancel : ";
25                cin>>cnfm;
26                if (cnfm==1) {
27                    cnfm=0;
28                    FLAG=1;
29                }
30                else {
31                    cout<<"Cancelled Operation";
32                }
33            }
34            else if (FLAG==1) {

```