
Roll Number: SYCOC303 Division: C

PRN Number: 122B2B303 Batch: C4

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Problem Statement:

The ticket booking system of Cinemax theatre has to be implemented using C++ program. There are 15 rows and 10 seats in each row. Doubly linked lists have to be maintained to keep track of free seats in rows. Assume some random booking to start with. Use an array to store pointers (Head pointer) to each row. On demand

- a. The list of available seats is to be displayed
- c. The seats are to be booked
- d. The booking can be cancelled

INPUT:

```
{
      char ch;
      int no;
      Node *prev,*next;
}*head;
Node* arr[15];
Node *tmp=NULL;
class Theatre
{
    int pswd;
       public:
             //creating a theatre seats
             void create()
              {
                     int i,j;
                    Node *head, *tmp;
                    int seatno=001;
                     for(i=0;i<15;i++)
                     {
                           Node *nn=new Node();
                           head=nn;
                            arr[i]=head;
                            nn->prev=NULL;
                            nn->ch='V';
                            nn->no=seatno;
                            seatno++;
                            tmp=nn;
                            for(j=1;j<10;j++)
                            {
                                  Node *nn1 = new Node();
                                  tmp->next=nn1;
                                  nn1->prev=tmp;
                                  nn1->next=NULL;
                                  nn1->ch='V';
                                  nn1->no=seatno;
                                        Page 2 of 9
```

```
seatno++;
                          tmp=nn1;
                    }
              }
       }
       //displaying the all seat status
       void display()
       {
             int i,j;
              cout<<"======================== Screen this way
              =====\n\n";
              for(i=0;i<15;i++)
              {
                    Node *tmp=arr[i];
                    for(j=0;j<10;j++)
                    {
                          cout<<"|"<<tmp->no<<"|"<<tmp->ch<<"|";
                          cout<<" ";
                          // cout<<"\t";
                          tmp=tmp->next;
                    }
                    cout<<"\n";</pre>
              }
       }
       //displaying only vacant seats
       void display_vacant()
              int i,j;
              cout<<"============ Screen this way
======\n\n";
              for(i=0;i<15;i++)
              {
                    Node *tmp=arr[i];
                    for(j=0;j<10;j++)
                    {
```

```
if(tmp->ch=='B')
                  {
                       cout<<"|"<<tmp->ch<<"|";</pre>
                       cout<<" ";
                  }
                  else{
                       cout<<"|"<<tmp->no<<"|"<<tmp->ch<<"|";
                       cout<<" ";
                       // cout<<"\t";
                  }
                     tmp=tmp->next;
              }
              cout << "\n";
       }
}
//function for booking a seat
void book()
{
    int no,row,col,i;
    cout<<"Enter seat number to book the seat: ";</pre>
    cin>>no;
    row = floor(no/10);
    col=no%10;
    Node *tmp;
    tmp=arr[row];
    if(tmp->ch=='V')
    {
        cout<<"Enter your security pin: ";</pre>
        cin>>pswd;
        for(i=1;i<col;i++)</pre>
        tmp=tmp->next;
        tmp->ch='B';
    }
    else
    {
        cout<<"This seat is already booked!";</pre>
```

```
}
}
//function for cancelling booking
void cancel()
{
    int no,row,col,i;
    cout<<"Enter seat number to cancel the seat: ";</pre>
    cin>>no;
    row = floor(no/10);
    col=no%10;
    Node *tmp;
    tmp=arr[row];
    for(i=1;i<col;i++)</pre>
        tmp=tmp->next;
    if(tmp->ch=='B')
    {
        int no1;
        cout<<"Enter your security pin: ";</pre>
        cin>>no1;
        if(pswd==no1)
         {
             tmp->ch='V';
             cout<<"Your booking has been successfullly cancelled!";</pre>
         }
        else
         {
             cout<<"\nSecurity password Mismatch!";</pre>
        }
    }
    else
    {
         cout<<"This seat is not booked!";</pre>
    }
}
```

};

```
int main()
{
      Theatre t;
       int ch;
      t.create();
       do{
       cout<<"======= Welcome to the Pavillion Multiplex=======";</pre>
cout << \verb"\n1. Display all seats status \verb| n2. Display vacant seats \verb| n3. Book a seat \verb| n4. Cancel a seat \verb| nEnter your choice: ";
       cin>>ch;
       switch(ch)
       {
           case 1:
               t.display();
           break;
           case 2:
               t.display_vacant();
           break;
           case 3:
               t.book();
           break;
           case 4:
               t.cancel();
           break;
       }
       cout<<"\nTo continue press 1: ";</pre>
       cin>>ch;
       }while(ch==1);
       cout<<"Thankyou!";</pre>
       return 0;
}
```

OUTPUT:

```
====== Welcome to the Pavillion Multiplex=======

    Display all seats status

2. Display vacant seats
Book a seat
Cancel a seat
Enter your choice: 1
 |1|V| | | | | | | | | | | | |
       |2|V| |3|V| |4|V| |5|V| |6|V|
                                          |7|V|
                                                 |8|V|
                                                         |9|V|
                                                                |10|V|
                |13|V|
                        |14|V|
                                 15 V
        |12|V|
                                         |16|V|
                                                                 119 V
                                                                          120 I V
|11|V|
                                                 |17|V
                                                         |18|V|
                         24 V
21 V
        22 V
                23 V
                                 25 V
                                         26 V
                                                 27 V
                                                          28 V
                                                                  29 I V
        32 V
|31|V|
                |33|V|
                         |34|V
                                 |35|V
                                         |36|V|
                                                 |37 | V |
                                                         |38|V|
                                                                  |39|V
                                                                          140 I V
41 V
        42 V
                [43 V
                         44 V
                                 45 V
                                                 47 V
                                                         48 V
                                                                  49 V
                                                                          150 V
                                         146 I V I
                                         |56|V|
51 V
        |52|V|
                |53|V|
                        54 V
                                 |55|V|
                                                 |57|V|
                                                         |58|V|
                                                                 |59|V
                                                                          |60|V
        62 V
                                                                          70 V
 61 V
                63 V
                         64 V
                                 |65|V|
                                                          68 V
                                                                 69 V
                                         |66|V|
                                                 67 V
 71 V
        |72|V|
                |73|V|
                         |74|V|
                                 |75|V|
                                         |76|V|
                                                 |77 | V |
                                                          78 V
                                                                  |79|V
                                                                          |80|V
81 V
        82 V
                83 V
                        84 V
                                 |85|V|
                                         |86|V|
                                                 87 V
                                                         |88|V|
                                                                  89 V
                                                                          |90|V|
                |93|V|
                                                         98 V
91 V
        92 V
                        94 V
                                |95|V|
                                         |96|V|
                                                 |97|V|
                                                                 199 V
                                                                          l 100 l V
101 V
         |102|V|
                  |103|V|
                           |104|V|
                                    |105|V|
                                              |106|V|
                                                       |107|V|
                                                                |108|V|
                                                                          |109|V
                                                                                   |110|V|
111 V
         |112|V|
                  |113|V|
                            |114|V|
                                     |115 | V |
                                              |116|V|
                                                                 |118|V
                                                                          |119|V
                                                                                   120 V
                                                       |117|V|
121 V
         122 V
                  123 V
                            124 V
                                     |125|V|
                                              126 V
                                                       |127|V|
                                                                 128 V
                                                                          129 V
                                                                                   130 V
131 V
         |132|V|
                  |133|V|
                            |134|V|
                                     |135|V|
                                              |136|V|
                                                       |137|V|
                                                                 |138|V|
                                                                          |139|V|
                                                                                   140 V
                                                                                   |150|V|
|141|V|
         |142|V|
                 |143|V|
                           |144|V|
                                    |145|V|
                                              |146|V|
                                                       |147|V|
                                                                148 V
                                                                          149 V
To continue press 1:
```

```
To continue press 1: 1

======== Welcome to the Pavillion Multiplex========

1. Display all seats status

2. Display vacant seats

3. Book a seat

4. Cancel a seat

Enter your choice: 3

Enter seat number to book the seat: 65

Enter your security pin: 1256
```

```
======= Screen this way ====================
              |3|V|
      2 V
                     |4|V| |5|V|
                                    |6|V|
                                           |7|V|
                                                   |8|V|
                                                           |9|V|
                                                                  |10|V|
        12 V
11 | V |
                 |13|V|
                         14 V
                                  |15|V|
                                          |16|V|
                                                   17 V
                                                           |18|V|
                                                                    |19|V|
                                                                            20 V
21 V
        22 V
                 |23|V|
                         24 V
                                  25 V
                                                   27 V
                                                           28 V
                                                                    29 V
                                                                            |30|V
                                          |26|V|
                                                   37 V
                                                           38 V
31 V
        32 V
                 |33|V|
                         |34|V|
                                  |35|V|
                                          |36|V|
                                                                    |39|V
                                                                            40 V
41 V
        42 V
                 43 V
                         |44|V|
                                 |45|V|
                                          |46|V|
                                                   47 V
                                                           48 V
                                                                    49 V
                                                                            150 V
51 V
        |52|V|
                 |53|V|
                         |54|V|
                                          |56|V|
                                                   |57|V|
                                                           |58|V|
                                                                    |59|V
                                                                            |60|V
61 V
        62 V
                 63 V
                         |64|V|
                                 [65]B
                                          66 V
                                                   [67 V
                                                           |68|V
                                                                    |69|V
                                                                            170 V
71 V
        |72|V|
                 |73|V|
                         |74|V|
                                          |76|V|
                                                   |77|V|
                                                           |78|V
                                                                    |79|V
                                                                             80 V
                                 |85|V|
                                                                            |90|V|
81 V
        82 V
                |83|V|
                         84 V
                                          86 V
                                                  |87|V|
                                                           88 V
                                                                    |89|V
                                 95 V
                                          96 V
91 V
        |92|V|
                |93|V|
                         94 V
                                                  97 V
                                                           |98|V|
                                                                   |99|V
                                                                            |100|V
101 V
         |102|V|
                  |103|V|
                            |104|V|
                                     |105|V|
                                               |106|V|
                                                         |107|V|
                                                                   |108|V
                                                                            |109|V
                                                                                      110 V
111 V
         112 V
                  |113|V
                            |114|V
                                      |115|V|
                                                116 V
                                                                   118 V
                                                         |117|V|
                                                                            |119|V
                                                                                      120 V
121 V
         122 V
                  |123|V|
                            124 V
                                      |125|V|
                                                126 V
                                                         |127|V|
                                                                   128 V
                                                                            |129|V|
                                                                                      130 V
|131|V|
         |132|V|
                  |133|V|
                            |134|V|
                                      |135|V|
                                                |136|V|
                                                         |137|V|
                                                                   |138|V|
                                                                            |139|V|
                                                                                      |140|V|
         142 V
                                                                                      |150|V| | | |
                 |143|V| |144|V|
|141|V|
                                     |145|V|
                                               |146|V|
                                                         |147|V|
                                                                  |148|V|
                                                                            |149|V|
```

```
To continue press 1: 1
======= Welcome to the Pavillion Multiplex=======

    Display all seats status

Display vacant seats
Book a seat
Cancel a seat
Enter your choice: 2
------ Screen this way ------
1 I V I
      |2|V| |3|V| |4|V| |5|V| |6|V| |7|V|
                                                |8|V|
                                                        |9|V|
                                                               10 V
                13|V|
        12 V
                        |14|V|
                                |15|V|
                                        |16|V|
                                                |17|V|
                                                         |18|V|
 11 | V |
                                                                 |19|V|
                                                                         |20|V
 21 | V |
        |22|V|
                23 V
                        [24 | V |
                                25 V
                                        26 V
                                                27 V
                                                         28 V
                                                                 29 V
                                                                         30 V
                                                                         40 V
 31 V
        32 V
                |33|V|
                        34 V
                                |35|V|
                                        |36|V|
                                                |37 | V |
                                                         |38|V|
                                                                 |39|V|
 41 V
        42 V
                43 V
                        44 V
                                45 V
                                        46 V
                                                47 V
                                                         48 V
                                                                 |49|V|
                                                                         50 V
 51 | V |
        |52|V|
                |53|V|
                        54 V
                                |55|V|
                                        |56|V|
                                                |57|V|
                                                        |58|V|
                                                                |59|V|
                                                                         60 V
                        |B| |B| |66|V| |67|V| |68|V|
 61 | V |
        |62|V|
                [63 V]
                                                         |69|V|
                                                                 |70|V|
 71 | V |
                        |74|V|
                                |75|V|
                                        |76|V|
                                                |77|V|
                                                        |78|V|
                                                                |79|V|
        |72|V|
                |73|V|
                                                                         |80|V|
 81 | V |
        82 V
                83 V
                        84 V
                               85 V
                                       |86|V|
                                                87 V
                                                        88 V
                                                                89 V
                                                                         90 V
                        |94|V| |95|V| |96|V| |97|V|
 91 | V |
        92 V
                |93|V|
                                                        98 V
                                                                |99|V|
                                                                         |100|V|
                           |104|V|
         102 V
 101 | V |
                  |103|V|
                                    |105|V|
                                             |106|V|
                                                      |107|V|
                                                               |108|V|
                                                                         |109|V|
                                                                                  |110|V|
 111 | V |
         |112|V|
                  |113|V|
                           |114|V|
                                    |115|V|
                                             |116|V|
                                                      |117|V|
                                                               |118|V|
                                                                        |119|V|
                                                                                  |120|V|
                                                      127 V
121 V
         |122|V|
                  |123|V|
                           124 V
                                   125 V
                                           |126|V| | | | | | | | | |
                                                               |128|V|
                                                                        |129|V|
                                                                                  |130|V|
                  |133|V| |134|V| |135|V| |136|V|
                                                      |137|V|
|131|V|
         |132|V|
                                                               |138|V|
                                                                        |139|V|
                                                                                  |140|V|
|141|V|
       |142|V|
                |143|V| |144|V| |145|V| |146|V|
                                                      |147|V|
                                                               |148|V|
                                                                        |149|V|
                                                                                 |150|V|
To continue press 1:
```

```
To continue press 1: 1
======= Welcome to the Pavillion Multiplex=======

    Display all seats status

Display vacant seats
Book a seat
4. Cancel a seat
Enter your choice: 4
Enter seat number to cancel the seat: 65
Enter your security pin: 1654
Security password Mismatch!
To continue press 1: 1
======= Welcome to the Pavillion Multiplex=======

    Display all seats status

Display vacant seats
3. Book a seat
Cancel a seat
Enter your choice: 4
Enter seat number to cancel the seat: 56
This seat is not booked!
To continue press 1: 1
```

```
Enter your choice: 2
                     ======= Screen this way ===================
              |3|V| |4|V| |5|V| |6|V| |7|V|
                                                   |8|V|
                                                           |9|V|
                                                                   |10|V|
       2 V
                 13|V|
                         |14|V|
                                                                             20 V
11 | V |
         |12|V|
                                  |15|V|
                                          |16|V|
                                                   |17|V
                                                            |18|V|
                                                                    |19|V|
                 23 V
21 V
         22 V
                          24 V
                                  25 V
                                           26 V
                                                   27 V
                                                            28 V
                                                                     29 V
                                                                             |30|V
                                                   [37 V
                                                            38 V
31 V
         |32|V|
                 |33|V|
                         134 | V |
                                  |35|V|
                                           36 V
                                                                    39 V
                                                                             140 I V
41 I V
         |42|V|
                 143 V
                         144 I V I
                                  145 | V |
                                          146 | V |
                                                   147 | V |
                                                            148 | V |
                                                                    149 VI
                                                                             150 I V
                                                   57 V
51 V
         |52 | V |
                         |54|V|
                                          |56|V|
                                                            |58|V|
                                                                    |59|V|
                 |53|V|
                                  |55|V|
                                                                              60 V
61 V
         62 V
                 63 V
                         64 V
                                  |B| |66|V|
                                              |67|V| |68|V| |69|V| |70|V|
71 V
                 |73 | V | | | | | | |
                         |74|V|
                                  |75|V| |76|V| |77|V|
                                                           |78|V|
                                                                    |79|V|
         72 V
                                                                              80 V
                                                   87 V
81 V
         82 V
                 183 V
                         184 I V I
                                  85 V
                                          86 V
                                                            188 V
                                                                     89 V
                                                                              90 I V I
91 | V |
         |92|V|
                 |93|V|
                         94 V
                                  |95|V|
                                          |96|V|
                                                   |97|V|
                                                           |98|V|
                                                                    |99|V
                                                                             100 V
         |102 | V |
                   103 V
                             104 V
                                      |105|V|
                                                         |107|V|
                                                                             |109|V|
101 V
                                               |106|V|
                                                                   |108|V|
                                                                                       |110|V
111 V
         |112|V|
                   |113|V|
                                                         117 V
                             |114|V|
                                      |115|V|
                                                |116|V|
                                                                             |119|V|
                                                                   |118|V|
                                                                                       |120|V
121 V
         122 V
                   1123 V
                             124 V
                                      1125 V
                                                |126|V|
                                                         |127 | V |
                                                                   |128|V|
                                                                             |129|V|
                                                                                      130 V
|131|V|
         |132|V|
                   |133|V|
                             |134|V|
                                      |135|V|
                                                |136|V|
                                                         |137|V|
                                                                   |138|V|
                                                                             |139|V|
                                                                                      |140|V|
|141|V|
        |142|V|
                   |143|V|
                             |144|V|
                                      |145|V|
                                               |146|V|
                                                         |147|V|
                                                                   |148|V|
                                                                             |149|V|
                                                                                      |150|V|
To continue press 1: 1
====== Welcome to the Pavillion Multiplex======

    Display all seats status

Display vacant seats
Book a seat
Cancel a seat
Enter your choice: 4
Enter seat number to cancel the seat: 65
Enter your security pin: 1256
Your booking has been successfullly cancelled!
To continue press 1: 1
```

```
======= Welcome to the Pavillion Multiplex=======

    Display all seats status

Display vacant seats
Book a seat
Cancel a seat
Enter your choice: 1
                    ======= Screen this way ====================
|1|V| | | | | | | | | | | | | | | |
       |2|V| |3|V| |4|V| |5|V| |6|V| |7|V|
                                                 |8|V|
                                                           |9|V|
                                                                 |10|V|
        12 V
                |13|V|
                         14 V
                                                                   |19|V|
|11|V|
                                 |15|V
                                          |16|V|
                                                  |17|V|
                                                           |18|V|
                                                                           20 V
21 V
                                                                   29 V
        22 V
                 23 V
                         24 V
                                  25 V
                                          26 V
                                                           28 V
                                                                           130 l V
                                                  |27|V|
 31 V
        32 V
                 |33|V|
                         34 V
                                  35 V
                                          36 V
                                                           |38|V|
                                                                   |39|V|
                                                                           40 V
                                                  |37|V|
41 V
                         44 V
                                                           48 V
                                                  47 V
                                                                   49 V
        42 V
                 43 V
                                  |45|V|
                                          46 V
                                                                           |50|V
                                          56 V
                                                           58 V
 51 V
                                                                   |59|V|
        |52|V|
                 |53|V|
                         54 V
                                                  |57 | V |
                                                                           60 V
                         64 V
                                |65|V|
 61 V
                                          66 V
                                                           |68|V|
                                                                   69 V
        62 V
                 63 V
                                                  67 V
                                                                           |70|V
 71 V
        |72 | V |
                 73 V
                         |74|V|
                                          76 V
                                                           |78|V|
                                                                   |79|V|
                                                  |77|V|
                                                                           80 V
                                  85 V
 81 V
        82 V
                83 V
                         |84|V|
                                          86 V
                                                  |87|V|
                                                           88 V
                                                                   89 V
                                                                           |90|V|
 91 | V |
        92 V
                |93|V|
                         94 V
                                 |95|V|
                                          |96|V|
                                                 |97|V|
                                                         |98|V|
                                                                   |99|V|
                                                                           |100|V|
         |102 | V |
                   |103|V|
                            |104|V|
                                               |106|V|
                                                        |107|V|
                                                                 108 V
 101 V
                                     |105|V|
                                                                           |109|V|
                                                                                     |110|V|
                   113 V
                                                        117 V
                                                                                     120 V
          112 V
                            |114|V|
                                      |115|V|
                                               |116|V
                                                                  |118|V|
 111 V
                                                                           |119|V|
 121 V
          122 V
                   |123|V|
                            |124|V|
                                      |125|V|
                                               |126|V|
                                                        |127|V|
                                                                  128 V
                                                                           |129|V|
                                                                                     130 V
                                                                           139 V
 131 V
          132 V
                   |133|V|
                            |134|V|
                                     |135|V|
                                               |136|V|
                                                        |137|V|
                                                                  138 V
                                                                                     140 V
         |142|V|
                   |143|V|
                            |144|V|
                                     |145|V|
                                               |146|V|
                                                        |147|V|
                                                                  |148|V|
                                                                           |149|V|
                                                                                     |150|V|
|141|V|
To continue press 1:
```
