2CS301 Data Structure and Algorithms Innovative Assignment

Team Information :

21BCE247 Rana Parth
21BCE248 Shubh Ranpara
21BCE249 Abhishek Rathod

Topic Name :

Bus Booking System
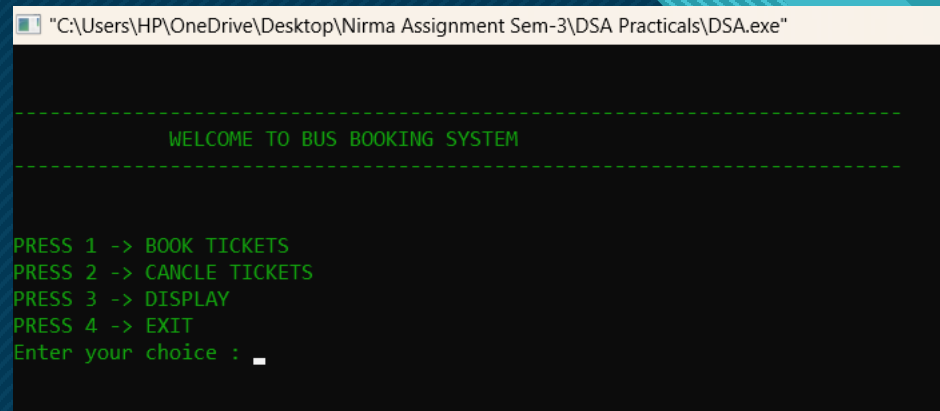
Major Concept used :

Doubly Circular Linked List

- In bus, every seat is represented as a node of Linked List
- Structure of Node :

```
typedef struct node
{
    struct node *next;
    struct node *prev;
    char name[50];
    long long int contact_no;
    int seat_no;
    char book;
    int pin;
} node;
```

- So that every node contains information of
  - Passenger name
  - Contact number
  - Seat number
  - char book : seat is booked or not
  - Unique pin number for every seat booking

Code Explanation :

```
----------------------------------------------------------------
                WELCOME TO BUS BOOKING SYSTEM
----------------------------------------------------------------


PRESS 1 -> BOOK TICKETS
PRESS 2 -> CANCLE TICKETS
PRESS 3 -> DISPLAY
PRESS 4 -> EXIT
Enter your choice : _
```

- In main function :

- First of all this window appears which asks user for
  - Book ticket
  - Cancel ticket
  - Display booked tickets arrangement
  - Exit from program

```
            <<---Seat Status--->>
--------------------------------------------------
|  1 -> - || 2 -> - || 3 -> - || 4 -> - || 5 -> - |
|  6 -> - || 7 -> - || 8 -> - || 9 -> - || 10 -> - |
| 11 -> - || 12 -> - || 13 -> - || 14 -> - || 15 -> - |
| 16 -> - || 17 -> - || 18 -> - || 19 -> - || 20 -> - |
| 21 -> - || 22 -> - || 23 -> - || 24 -> - || 25 -> - |
| 26 -> - || 27 -> - || 28 -> - || 29 -> - || 30 -> - |
| 31 -> - || 32 -> - || 33 -> - || 34 -> - || 35 -> - |
| 36 -> - || 37 -> - || 38 -> - || 39 -> - || 40 -> - |
| 41 -> - || 42 -> - || 43 -> - || 44 -> - || 45 -> - |
| 46 -> - || 47 -> - || 48 -> - || 49 -> - || 50 -> - |
| 51 -> - || 52 -> - || 53 -> - || 54 -> - || 55 -> - |

- = Available seats, * = Booked seats
--------------------------------------------------

Enter No of Tickets You Want to Buy : 2

Enter your name : parth

Enter your mobile number : 8320685404

Enter seat number(s) :-

      Select Seat Number(1) = 1

      Select Seat Number(2) = 2
--------------------------------------------------

THANK YOU..!

YOU HAVE SUCCESFULLY BOOKED THE SEATS

Seat No.(1) PIN : 11

Seat No.(2) PIN : 22

!!!!!!!!!!!!!!!!!!...KEEP PIN SAFELY...!!!!!!!!!!!!!!!!!

PINS ARE REQUIRED AT THE TIME OF CANCELATION OF SEATS
--------------------------------------------------
```

- When user enter 1 to book ticket...

- Program asks for no of seats passenger want to book
- And then take info of name & contact no of passenger
- Then asks passenger to enter the seat numbers user want to take
- And according to that it gives unique PIN ID to passenger (this unique PIN ID can be used at the time of cancel ticket)

- void book_seat() method :

- In this method program asks passenger for
  - no. of seat he want to book - n
  - Name
  - Contact number

- Then for n times for loop runs in which...
  - Input seat numbers
  - And check if entered seat number is taken already by any other passenger then it shows "INVALID CHOICE" "SEAT NUMBER IS ALREADY TAKEN"

- And then asks if passenger want to
  - Check seat status
  - Book other seat exit booking portal

```
PRESS 1 to check Seat Status
PRESS 2 to Book other seat
PRESS 3 to Exit Booking Portal
Enter Your choice : 3_
```

- And if we enter 1 to check seat status then it show booked and un-booked seat
- Here we can see that seat 1 & 2 are booked

- Then after entering 1 we can again go to the MAIN MENU
- Or by entering 2 WE CAN EXIT FROM BOOKING SYSTEM

```
PRESS 1 to check Seat Status
PRESS 2 to Book other seat
PRESS 3 to Exit Booking Portal
Enter Your choice : 1

          <<---Seat Status--->>
-------------------------------------------
| 1 -> * || 2 -> * || 3 -> - || 4 -> - || 5 -> - |
| 6 -> - || 7 -> - || 8 -> - || 9 -> - || 10 -> - |
| 11 -> - || 12 -> - || 13 -> - || 14 -> - || 15 -> - |
| 16 -> - || 17 -> - || 18 -> - || 19 -> - || 20 -> - |
| 21 -> - || 22 -> - || 23 -> - || 24 -> - || 25 -> - |
| 26 -> - || 27 -> - || 28 -> - || 29 -> - || 30 -> - |
| 31 -> - || 32 -> - || 33 -> - || 34 -> - || 35 -> - |
| 36 -> - || 37 -> - || 38 -> - || 39 -> - || 40 -> - |
| 41 -> - || 42 -> - || 43 -> - || 44 -> - || 45 -> - |
| 46 -> - || 47 -> - || 48 -> - || 49 -> - || 50 -> - |
| 51 -> - || 52 -> - || 53 -> - || 54 -> - || 55 -> - |

- = Available seats, * = Booked seats
-------------------------------------------------------


PRESS 1 to Main Menu
PRESS 2 To EXIT BOOKING SYSTEM
Enter your choice
```

- **void cancel() method :**

- How it works?

  ○ First of all it shows the seat arrangement in which passenger gets the info about booked & un-booked seats
  ○ Then it takes passenger's name , contact no & PIN ID of seat & seat number
  ○ If **seat number** and **PIN ID matches** then it asks for confirmation and then **cancels** the seat
  ○ If **seat number** and **PIN ID does not match** then it shows **"Invalid Seat number & PIN combination..!"**

  ○ And then program asks passenger to...
    ○ PRESS 1 to check seat status
    ○ PRESS 2 to cancle more tickets
    ○ PRESS 3 to exit cancelation portal

```
PRESS 1 -> BOOK TICKETS
PRESS 2 -> CANCLE TICKETS
PRESS 3 -> DISPLAY
PRESS 4 -> EXIT
Enter your choice : 2

          <<---Seat Status--->>
----------------------------------------------
| 1 -> * || 2 -> * || 3 -> - || 4 -> - || 5 -> -|
| 6 -> - || 7 -> - || 8 -> - || 9 -> - || 10 -> -|
| 11 -> - || 12 -> - || 13 -> - || 14 -> - || 15 -> -|
| 16 -> - || 17 -> - || 18 -> - || 19 -> - || 20 -> -|
| 21 -> - || 22 -> - || 23 -> - || 24 -> - || 25 -> -|
| 26 -> - || 27 -> - || 28 -> - || 29 -> - || 30 -> -|
| 31 -> - || 32 -> - || 33 -> - || 34 -> - || 35 -> -|
| 36 -> - || 37 -> - || 38 -> - || 39 -> - || 40 -> -|
| 41 -> - || 42 -> - || 43 -> - || 44 -> - || 45 -> -|
| 46 -> - || 47 -> - || 48 -> - || 49 -> - || 50 -> -|
| 51 -> - || 52 -> - || 53 -> - || 54 -> - || 55 -> -|

 - = Available seats, * = Booked seats
----------------------------------------------

SEAT CANCELATION

Enter your name : parth

Enter your contact number : 8320685404

Enter the SEAT NUMBER you want to delete : 2
Enter PIN of the SEAT NUMBER : 22

Are you sure u want to cancle the seat (y/n) y

SEAT CANCELED SUCCUESFULLY..!
```

```
SEAT CANCELED SUCCUESFULLY..!


PRESS 1 to check seat status
PRESS 2 to cancle more tickets
PRESS 3 to exit cancelation portal
Enter your choice : 2

Enter your name : parth

Enter your contact number : 8320685404

Enter the SEAT NUMBER you want to delete : 1
Enter PIN of the SEAT NUMBER : 123

Invalid Seat number & PIN combination..!
```

- Here we can see that when we enter wrong PIN ID it does not allow us to cancel the ticket

```
PRESS 1 to check seat status
PRESS 2 to cancle more tickets
PRESS 3 to exit cancelation portal
Enter your choice : 1


               <<---Seat Status--->>
---------------------------------------------------------
|  1 -> * | |  2 -> - | |  3 -> - | |  4 -> - | |  5 -> - |
|  6 -> - | |  7 -> - | |  8 -> - | |  9 -> - | | 10 -> - |
| 11 -> - | | 12 -> - | | 13 -> - | | 14 -> - | | 15 -> - |
| 16 -> - | | 17 -> - | | 18 -> - | | 19 -> - | | 20 -> - |
| 21 -> - | | 22 -> - | | 23 -> - | | 24 -> - | | 25 -> - |
| 26 -> - | | 27 -> - | | 28 -> - | | 29 -> - | | 30 -> - |
| 31 -> - | | 32 -> - | | 33 -> - | | 34 -> - | | 35 -> - |
| 36 -> - | | 37 -> - | | 38 -> - | | 39 -> - | | 40 -> - |
| 41 -> - | | 42 -> - | | 43 -> - | | 44 -> - | | 45 -> - |
| 46 -> - | | 47 -> - | | 48 -> - | | 49 -> - | | 50 -> - |
| 51 -> - | | 52 -> - | | 53 -> - | | 54 -> - | | 55 -> - |

- = Available seats, * = Booked seats
---------------------------------------------------------
```

- And then we enter 1 to check seat status we can see that...
  - Seat number 2 is deleted : we entered correct PIN ID
  - Seat number 1 is not deleted : we entered wrong PIN ID

- **void display() method :**

- It displays the seat arrangement in this manner

```
PRESS 1 -> BOOK TICKETS
PRESS 2 -> CANCLE TICKETS
PRESS 3 -> DISPLAY
PRESS 4 -> EXIT
Enter your choice : 3

           <<---Seat Status--->>
-----------------------------------------------------------
|  1 -> * ||  2 -> - ||  3 -> - ||  4 -> - ||  5 -> - |
|  6 -> - ||  7 -> - ||  8 -> - ||  9 -> - || 10 -> - |
| 11 -> - || 12 -> - || 13 -> - || 14 -> - || 15 -> - |
| 16 -> - || 17 -> - || 18 -> - || 19 -> - || 20 -> - |
| 21 -> - || 22 -> - || 23 -> - || 24 -> - || 25 -> - |
| 26 -> - || 27 -> - || 28 -> - || 29 -> - || 30 -> - |
| 31 -> - || 32 -> - || 33 -> - || 34 -> - || 35 -> - |
| 36 -> - || 37 -> - || 38 -> - || 39 -> - || 40 -> - |
| 41 -> - || 42 -> - || 43 -> - || 44 -> - || 45 -> - |
| 46 -> - || 47 -> - || 48 -> - || 49 -> - || 50 -> - |
| 51 -> - || 52 -> - || 53 -> - || 54 -> - || 55 -> - |

 - = Available seats, * = Booked seats
-----------------------------------------------------------


PRESS 1 to Main Menu
PRESS 2 To EXIT BOOKING SYSTEM
Enter your choice
2


-------------------------------------------------------------------------
                     EXIT SUCESSFULLY
-------------------------------------------------------------------------

Process returned 0 (0x0)    execution time : 596.644 s
Press any key to continue.
```

THANK YOU!

21BCE247 Parth Rana
21BCE248 Shubh Ranpara
21BCE249 Abhishek Rathod