CSE211 PROJECT 2ND SEMESTER

Report

REG: 949,948

Problem Statement

A new Airlines have only one plane of capacity 40. Your system will assign seats on each flight. 5% seats are reserved for first class and rest for economic class. Passengers are allowed to book single and group tickets. Passenger may be a Prime category passenger (first class) or normal category (economic class). Generate a passenger list sorted on category if 60% tickets are sold. Senior citizens will have preference over normal category. Passengers may enquire about seat through interactive mode.

Algorithm

1. Initialize the variables `**max**` and `**seat**` to 0.

2. Define a structure `**node**` with members for name, passport number, email, seat number, and a pointer to the next node.

3. Define a function `**insert**` that takes the head of the linked list, name, passport number, and email as input and inserts a new node at the end of the list with the provided information. Update the `**max**` and `**seat**` variables accordingly. Return the updated head of the list.

4. Define a function `**RESERVATION**` that takes the head of the linked list as input. Prompt the user to enter their name, passport number, and email. If the maximum number of passengers (`**max**`) is less than or equal to 40, call the `**insert**` function to add the reservation to the list. If the maximum limit is reached, display a message stating the limit has been reached. Return the updated head of the list.

5. Define a function `**PRINT**` that takes the head of the linked list as input. Traverse the linked list and print the details (name, passport number, email, and seat number) of each node. If the list is empty, display a message stating there are no entries.

6. Define a function `**CANCEL**` that takes the head of the linked list as input. Prompt the user to enter the passport number of the passenger to cancel. If the first node in the list matches the entered passport number, update the head to point to the next node, free the memory of the canceled node, and decrement the `**max**` variable. If a matching passport number is found in the middle of the list, update the previous node's next pointer to skip the canceled

node, free the memory of the canceled node, and decrement the `**max**` variable. If no matching passport number is found, display an error message.

7. Define a function `**SAVEFILE**` that takes the head of the linked list as input. Open a file named "**AIRLINE RESERVATION**" in write mode. If the file fails to open, display an error message. Traverse the linked list and write the passport number, name, and email of each node to the file. Close the file and display a message stating that the details have been saved.

8. Define a function `**SHOW_NUMBER_OF_PASSENGERS**` that displays the total number of reservations (`**max**`) and the number of available reservations (**40 -** `**max**`).

9. In the `**main**` function, display a welcome message. Initialize the head of the linked list as NULL.

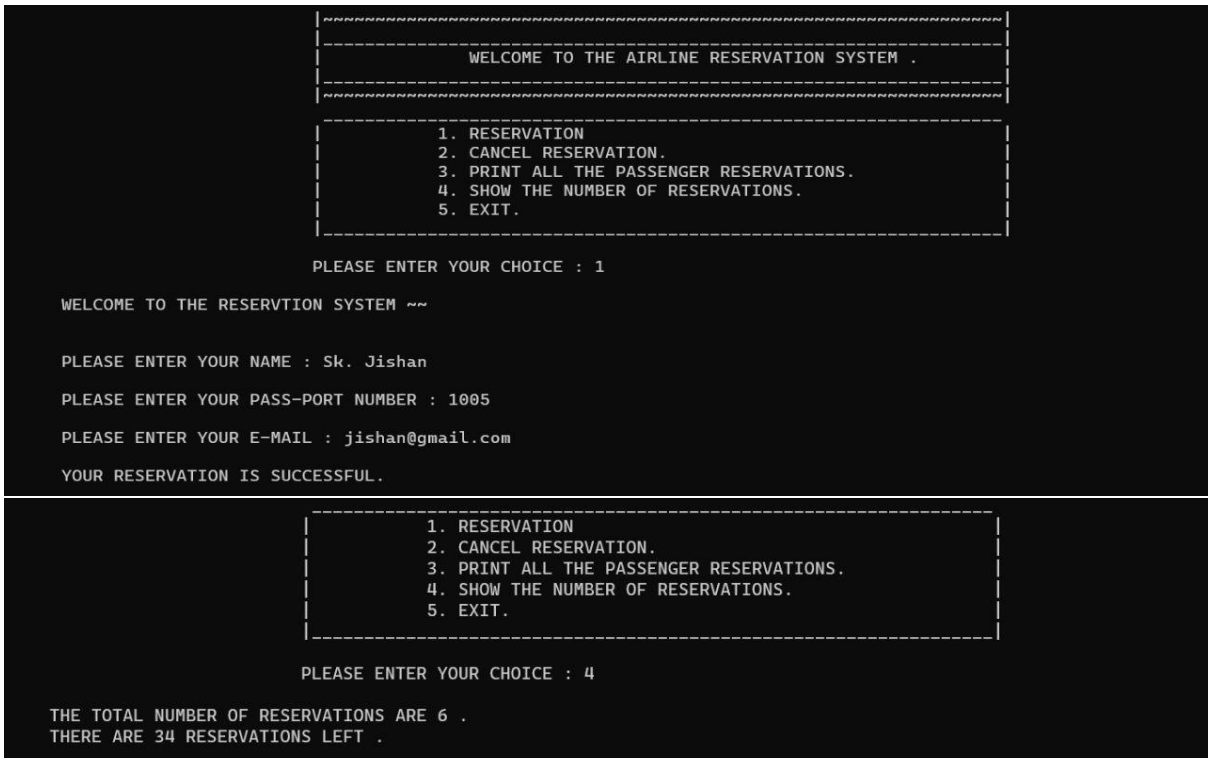
10. Use a do-while loop to display a menu and prompt the user to enter a choice. Based on the choice, call the corresponding function. Repeat the loop until the user chooses to exit.

11. **Return 0** to indicate successful program execution.

Time Complexity:

O(n) for both insertion and cancellation.

Output



```
 ____________________________________________________________
|          1. RESERVATION                                    |
|          2. CANCEL RESERVATION.                            |
|          3. PRINT ALL THE PASSENGER RESERVATIONS.          |
|          4. SHOW THE NUMBER OF RESERVATIONS.               |
|          5. EXIT.                                          |
|____________________________________________________________|

PLEASE ENTER YOUR CHOICE : 2

PLEASE ENTER THE PASSSPORT-NUMBER OF THE PASSENGER YOU WANT TO CANCEL : 1000

ERROR ! YOU HAVE ENTERED THE WRONG PASSPORT NUMBER .
 ____________________________________________________________
|          1. RESERVATION                                    |
|          2. CANCEL RESERVATION.                            |
|          3. PRINT ALL THE PASSENGER RESERVATIONS.          |
|          4. SHOW THE NUMBER OF RESERVATIONS.               |
|          5. EXIT.                                          |
|____________________________________________________________|

PLEASE ENTER YOUR CHOICE : 2

PLEASE ENTER THE PASSSPORT-NUMBER OF THE PASSENGER YOU WANT TO CANCEL : 5486

BOOKING HAS BEEN DELETED .
```

```
 ____________________________________________________________
|          1. RESERVATION                                    |
|          2. CANCEL RESERVATION.                            |
|          3. PRINT ALL THE PASSENGER RESERVATIONS.          |
|          4. SHOW THE NUMBER OF RESERVATIONS.               |
|          5. EXIT.                                          |
|____________________________________________________________|

 PLEASE ENTER YOUR CHOICE : 2

PLEASE ENTER THE PASSSPORT-NUMBER OF THE PASSENGER YOU WANT TO CANCEL : 5486

BOOKING HAS BEEN DELETED .
 ____________________________________________________________
|          1. RESERVATION                                    |
|          2. CANCEL RESERVATION.                            |
|          3. PRINT ALL THE PASSENGER RESERVATIONS.          |
|          4. SHOW THE NUMBER OF RESERVATIONS.               |
|          5. EXIT.                                          |
|____________________________________________________________|

 PLEASE ENTER YOUR CHOICE : 4

THE TOTAL NUMBER OF RESERVATIONS ARE 5 .
THERE ARE 35 RESERVATIONS LEFT .
```

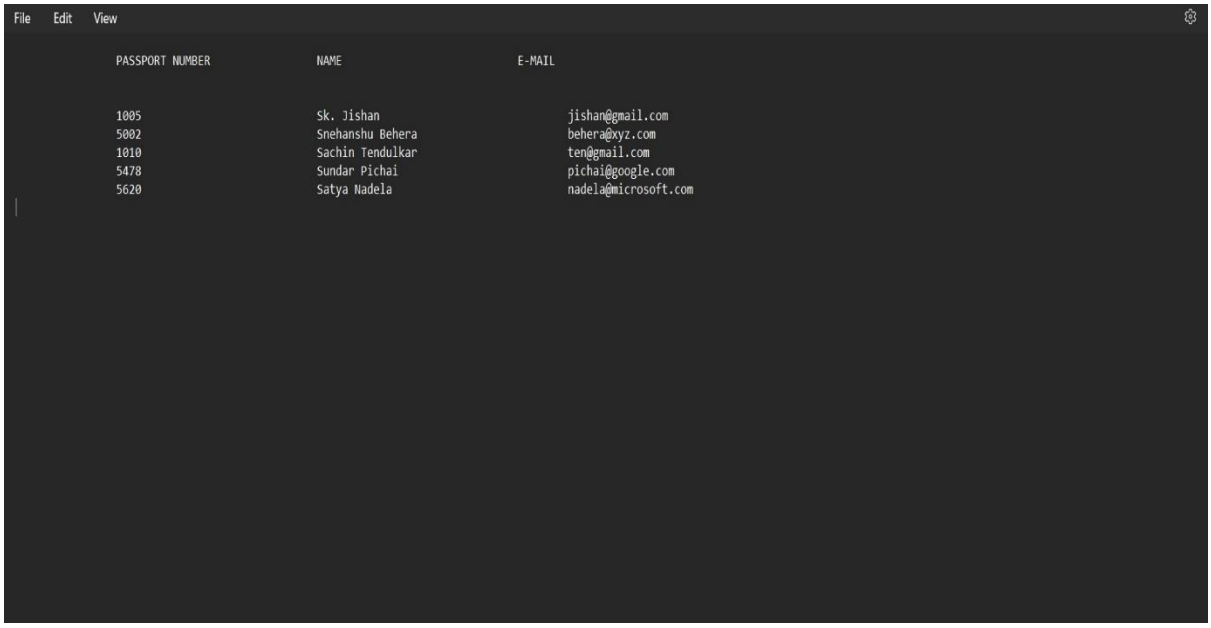
```
 ____________________________________________________________
|          1. RESERVATION                                    |
|          2. CANCEL RESERVATION.                            |
|          3. PRINT ALL THE PASSENGER RESERVATIONS.          |
|          4. SHOW THE NUMBER OF RESERVATIONS.               |
|          5. EXIT.                                          |
|____________________________________________________________|

PLEASE ENTER YOUR CHOICE : 2

PLEASE ENTER THE PASSSPORT-NUMBER OF THE PASSENGER YOU WANT TO CANCEL : 1000

ERROR ! YOU HAVE ENTERED THE WRONG PASSPORT NUMBER .
 ____________________________________________________________
|          1. RESERVATION                                    |
|          2. CANCEL RESERVATION.                            |
|          3. PRINT ALL THE PASSENGER RESERVATIONS.          |
|          4. SHOW THE NUMBER OF RESERVATIONS.               |
|          5. EXIT.                                          |
|____________________________________________________________|

PLEASE ENTER YOUR CHOICE : 2

PLEASE ENTER THE PASSSPORT-NUMBER OF THE PASSENGER YOU WANT TO CANCEL : 5486

BOOKING HAS BEEN DELETED .
```

```
                                 ____________________________________________________________
                                |           1. RESERVATION                                     |
                                |           2. CANCEL RESERVATION.                             |
                                |           3. PRINT ALL THE PASSENGER RESERVATIONS.           |
                                |           4. SHOW THE NUMBER OF RESERVATIONS.                |
                                |           5. EXIT.                                           |
                                |______________________________________________________________|

                                PLEASE ENTER YOUR CHOICE : 3

            NAME            : Sk. Jishan
            PASSPORT NUMBER : 1005
            E-MAIL          : jishan@gmail.com
            SEAT NUMBER     : 2A-1

            NAME            : Snehanshu Behera
            PASSPORT NUMBER : 5002
            E-MAIL          : behera@xyz.com
            SEAT NUMBER     : 2A-2

            NAME            : Sachin Tendulkar
            PASSPORT NUMBER : 1010
            E-MAIL          : ten@gmail.com
            SEAT NUMBER     : 2A-4

            NAME            : Sundar Pichai
            PASSPORT NUMBER : 5478
            E-MAIL          : pichai@google.com
            SEAT NUMBER     : 2A-5

            NAME            : Satya Nadela
            PASSPORT NUMBER : 5620
            E-MAIL          : nadela@microsoft.com
            SEAT NUMBER     : 2A-6
```

```
                              ____________________________________________________________
                             |           1. RESERVATION                                     |
                             |           2. CANCEL RESERVATION.                             |
                             |           3. PRINT ALL THE PASSENGER RESERVATIONS.           |
                             |           4. SHOW THE NUMBER OF RESERVATIONS.                |
                             |           5. EXIT.                                           |
                             |______________________________________________________________|

                             PLEASE ENTER YOUR CHOICE : 5


     THE DETAILS HAVE BEEN SAVED IN FILE(AIRLINE RESERVATION).
```

```
                                  ____________________________________________________________
                                 |          1. RESERVATION                                     |
                                 |          2. CANCEL RESERVATION.                             |
                                 |          3. PRINT ALL THE PASSENGER RESERVATIONS.           |
                                 |          4. SHOW THE NUMBER OF RESERVATIONS.                |
                                 |          5. EXIT.                                           |
                                 |_____________________________________________________________|

                                 PLEASE ENTER YOUR CHOICE : 10

YOU HAVE ENTERED THE WRONG OPTION .
```

File showing the listed details of the passenger:



Discussion

Limitations:

1. This is an easy-to-use airline reservation system that functions as a ticket booking system by interacting with passengers (such reserving or cancelling tickets).
2. It is missing the ability to group passengers into classes like first class or economy.
3. It does not entail reserving a small number of seats for certain categories of passengers.