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Aim: To create an airline reservation system using linked lists to reserve, cancle, search, and display passenger details and to maintain Passengers in alphabetical order for one or multiple flights.

Algorithm: (multi-Flight Linked List version)

1. Start the program
2. Initialize flight_head = NULL
3. Display menu options: 1. Add flight
   2. Reserve Ticket
   3. cancle Ticket
   4. Display passengers
   5. Exit.
4. If users select Add Flight
   4.1 Create a new FlightNode.
   4.2 Insert it into the flight linked list in alphabetical order.
5. If User selects Reserve Ticket
   5.1 Search the flight using get_flight().
   5.2 If flight found:
   - Create a new passenger Node
   - Insert into the passenger linked list in alphabetical order.
   5.3 If flight not found, display error.

6. If Users Select cancle Ticket:

6.1 Search for the flight

6.2 If found:

- Traverse passanger list
- If name matches delete the node.

6.3 Else display "Flight not found".

7. If User selects Display:

7.1 Traverse all flights

7.2 For each flight, print all passengers in alphabetical order.

8. Repeat the menu untill user chooses Exit.

9. Stop the program.

OUTPUT:

1. Add Flight

input: 1
AI202
1
6E101

Output: Flight AI202 added
Flight 6E101 added

2. Reserve Passengers

input: 2
AI202
Suvi
2
AI202
Arun

Output: Ravi Reserved on AI202
Arun Reserved on AI202

3. cancle a Reservation.

Input: 3
AI202
Arun

output: Arun canceled from AI202

4. Display flights & passengers.

Flight: 6E101
NO Passengers
Flight: AI202
Passengers: SUVI

# TIME COMPLEXITY

## Add Flight

- Traversing flights list → O(F)

  F = No. of flights

## Reserve Ticket

- Search flight → O(F)
- Insert passanger alphabetically → O(P)

  P = no. of passengers.

Total: O(F+P)

## Cancle Ticket

- Search flight → O(F)
- Search passenger → O(P)

Total O(F+P)

## Display Flights and Passengers

- Print all Flights : O(F)
- Print all passangers per flight : O(P)

Total : O(F+P)

```
--- Airline Reservation System ---
1. Add Flight
2. Reserve Ticket
3. Cancel Ticket
4. Display Flights & Passengers
5. Exit
Enter your choice: 1
Enter flight number: AE2012
Flight AE2012 added.

--- Airline Reservation System ---
1. Add Flight
2. Reserve Ticket
3. Cancel Ticket
4. Display Flights & Passengers
5. Exit
Enter your choice: 1
Enter flight number: BA0522
Flight BA0522 added.

--- Airline Reservation System ---
1. Add Flight
2. Reserve Ticket
3. Cancel Ticket
4. Display Flights & Passengers
5. Exit
Enter your choice: 2
Enter flight number: AE2012
Enter passenger name: Suvi
Suvi reserved on AE2012
```

```
--- Airline Reservation System ---
1. Add Flight
2. Reserve Ticket
3. Cancel Ticket
4. Display Flights & Passengers
5. Exit
Enter your choice: 2
Enter flight number: AE2012
Enter passenger name: Vars
Vars reserved on AE2012

--- Airline Reservation System ---
1. Add Flight
2. Reserve Ticket
3. Cancel Ticket
4. Display Flights & Passengers
5. Exit
Enter your choice: 2
Enter flight number: AE2012
Enter passenger name: Yogi
Yogi reserved on AE2012

--- Airline Reservation System ---
1. Add Flight
2. Reserve Ticket
3. Cancel Ticket
4. Display Flights & Passengers
5. Exit
Enter your choice: 3
Enter flight number: AE2012
Enter passenger name to cancel: vars
Passenger not found.
```

```
--- Airline Reservation System ---
1. Add Flight
2. Reserve Ticket
3. Cancel Ticket
4. Display Flights & Passengers
5. Exit
Enter your choice: 4

Flight: AE2012
  Passengers:
    - Suvi
    - Vars
    - Yogi

Flight: BA0522
  No passengers.

--- Airline Reservation System ---
1. Add Flight
2. Reserve Ticket
3. Cancel Ticket
4. Display Flights & Passengers
5. Exit
Enter your choice: 5
Exiting the system...
```