Air Travel Project

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Data:-Airport we used ;

IATA Code	Airport Name	Location	Latitud e	Longitude
BOM	Chhatrapati Shivaji Maharaj International Airport	Mumbai	19.0896	72.8656
BLR	Kempegowda International Airport	Bangalore	13.1986	77.7066
DEL	Indira Gandhi International Airport	New Delhi	28.5681	77.1126
MAA	Chennai International Airport	Chennai	12.9900	80.1690
CCU	Netaji Subhas Chandra Bose International Airport	Kolkata	22.6522	88.4466
HYD	Rajiv Gandhi International Airport	Hyderabad	17.2316	78.4292
COK	Cochin International Airport	Kochi	10.1520	76.4017
PNQ	Pune Airport	Pune	18.5822	73.9197
GOI	Goa International Airport	Dabolim, Goa	15.3801	73.8319
AMD	Sardar Vallabhbhai Patel International Airport	Ahmedabad	23.0778	72.6348
JAI	Jaipur International Airport	Jaipur	26.8241	75.8129
GAU	Lokpriya Gopinath Bordoloi International Airport	Guwahati	26.1060	91.5859
TRV	Trivandrum International Airport	Thiruvananthapura m	8.4821	76.9209
CCJ	Calicut International Airport	Kozhikode	11.1395	75.9553
BBI	Biju Patnaik International Airport	Bhubaneswar	20.2520	85.8173
VTZ	Visakhapatnam International Airport	Visakhapatnam	17.7215	83.2245
IXB	Bagdogra Airport	Bagdogra	26.6841	88.3247
IXC	Chandigarh International Airport	Chandigarh	30.6737	76.7894
IDR	Devi Ahilya Bai Holkar Airport	Indore	22.7215	75.8011
PAT	Jai Prakash Narayan International Airport	Patna	25.5941	85.0908
IXR	Birsa Munda Airport	Ranchi	23.3171	85.3215

Here's the flight information;

Flight No.	Departure	Destination	Departure Time	Departure Date	Aircraft
SG501	BOM	MAA	03:30 PM	22nd March 2024	aircraft1
9W601	CCU	BLR	04:00 PM	23rd March 2024	aircraft2
AI401	DEL	HYD	05:30 PM	24th March 2024	aircraft3
6E501	BOM	GOI	06:00 PM	25th March 2024	aircraft4

SG601	MAA	CCU	07:30 PM	26th March 2024	aircraft5
AI501	DEL	COK	08:00 PM	27th March 2024	aircraft6
6E601	BOM	PNQ	09:30 PM	28th March 2024	aircraft1
SG701	BLR	GOI	10:00 PM	29th March 2024	aircraft2
AI801	DEL	AMD	11:30 PM	30th March 2024	aircraft3
6E901	MAA	JAI	12:00 AM	31st March 2024	aircraft4
SG901	BLR	GAU	01:30 AM	1st April 2024	aircraft5
AI1001	BOM	TRV	02:00 AM	2nd April 2024	aircraft6
6E1101	DEL	CCJ	03:30 AM	3rd April 2024	aircraft1
SG1101	MAA	BBI	04:00 AM	4th April 2024	aircraft2

Here's the aircraft details.

Aircraft	Capacity	Economy Seats	Business Seats	First Class Seats
Boeing 747	150	50	20	20
Airbus A320	120	30	15	15
Embraer E190	100	20	10	10
Bombardier Q400	80	15	5	5
ATR 72	70	10	5	5
Boeing 737	130	40	15	15

Explanation which algorithm and data structure we used

- 1. Unordered Map: The unordered_map containes to store mappings between strings (such as flight numbers, airport codes) and corresponding objects (such as Flight, Airport).
- 2. Graph Representation: The flight connections between airports are represented using an adjacency list, stored in flight Graph, which is a unordered_map<string, vector<string>>. So, we can easily traverse.
- 3. Haversine Formula: The calculateDistance method computes the distance between two airports using the Haversine formula.
- 4. seats are initialized and stored in the "availableSeats" vector.
- 5. OOPs:
- a. Classes: The code defines several classes, each representing a real-world entity:
 - Seat: Represents a seat on an aircraft.
 - Aircraft: Represents an aircraft with its model and seat counts.
 - Flight: Represents a flight with details such as flight number, departure airport, destination airport, departure time, date, aircraft information, and available seats.
 - Airport: Represents an airport with details such as airport code, name, location, latitude, and longitude.

• Airline: Represents an airline and manages flights and airports.

b. Encapsulation: Each class encapsulates its data members and provides methods to interact with them. Like:

The Flight class encapsulates details about a flight and provides methods to initialize seats, display seat details, etc. The Airport class encapsulates details about an airport and provides methods to access its information.

- c. Abstraction: The classes abstract away complex implementation details. Users interact with objects through well-defined interfaces without needing to know the internal workings.
- d. Inheritance: While not explicitly demonstrated in the provided code, inheritance could be used to model relationships such as different types of aircraft sharing common attributes and behaviours.

CODE:-

```
#include <iostream>
#include <unordered_map>
#include <vector>
#include <string>
#include <cmath>
using namespace std;
// Enum for seat types // enum used for epresent a fixed set of constants.
enum class SeatType {
   ECONOMY,
   BUSINESS,
   FIRST CLASS
};
// Class to represent seat details
class Seat {
public:
    SeatType seatType;
   string seatNumber;
   // Constructor to initialize seat type and seat number
    Seat(SeatType type, const string& number) : seatType(type),
seatNumber(number) {}
};
// Class to represent an aircraft
class Aircraft {
public:
 string model;
```

```
size_t economySeats;
    size t businessSeats;
    size_t firstClassSeats;
    // Constructor to initialize aircraft model and seat counts
    Aircraft(const string& mdl, size_t economy, size_t business, size_t
firstClass)
        : model(mdl), economySeats(economy), businessSeats(business),
firstClassSeats(firstClass) {}
};
// Class to represent a flight
class Flight {
public:
    string flightNumber;
    string departureAirport;
    string destinationAirport;
    string departureTime;
    string date;
   Aircraft aircraft; // Include an instance of the Aircraft class
    vector<Seat> availableSeats;
   // Constructor to initialize flight details
    Flight(const string& number, const string& departure, const string&
destination,
           const string& time, const string& d, const Aircraft& ac)
        : flightNumber(number), departureAirport(departure),
destinationAirport(destination),
          departureTime(time), date(d), aircraft(ac) {
              // Initialize available seats
              initializeSeats();
   // Add any additional flight details or methods as needed
   // Display seat details for the flight
    void displaySeatDetails() const {
        cout << "Seat Details for " << flightNumber << ":" << endl;</pre>
        displaySeatDetailsByClass(SeatType::ECONOMY, "Economy Class");
        displaySeatDetailsByClass(SeatType::BUSINESS, "Business Class");
        displaySeatDetailsByClass(SeatType::FIRST_CLASS, "First Class");
        cout << endl;</pre>
private:
```

```
void displaySeatDetailsByClass(SeatType seatClass, const string&
className) const {
       cout << " " << className << ":" << endl;</pre>
        for (const auto& seat : availableSeats) {
            if (seat.seatType == seatClass) {
                cout << endl;</pre>
    // In this function we initialize the seat and push in the dynamic array
    void initializeSeats() {
       // Economic Class
       for (size t i = 1; i <= aircraft.economySeats; ++i) {</pre>
            availableSeats.push_back(Seat(SeatType::ECONOMY, "E" +
to_string(i))); //it creates a vector of Seat objects named availableSeats
       }
        for (size t i = 1; i <= aircraft.businessSeats; ++i) {</pre>
            availableSeats.push_back(Seat(SeatType::BUSINESS, "B" +
to_string(i)));
        for (size_t i = 1; i <= aircraft.firstClassSeats; ++i) {</pre>
            availableSeats.push back(Seat(SeatType::FIRST CLASS, "F" +
to_string(i));
};
// Class to represent particular airports
class Airport {
public:
    string airportCode;
   string airportName;
    string location;
   double latitude;
    double longitude;
   // Constructor to initialize airport details including latitude and
longitude
    Airport(const string& code, const string& name, const string& loc, double
lat, double lon)
        : airportCode(code), airportName(name), location(loc), latitude(lat),
longitude(lon) {}
```

```
// Class to represent the airline and manage flights and airports
class Airline {
private:
    unordered map<string, Airport> airports;
    unordered_map<string, Flight> flights;
    unordered_map<string, vector<string>> flightGraph; // Adjacency list
representation
public:
    void addAirport(const string& code, const string& name, const string&
location, double lat, double lon) {
        airports.emplace(code, Airport(code, name, location, lat, lon));
    void addFlight(const string& number, const string& departure, const
string& destination,
                   const string& time, const string& date, const Aircraft&
aircraft) {
        flights.emplace(number, Flight(number, departure, destination, time,
date, aircraft));
        flightGraph[departure].push_back(destination); // Add directed edge
    // Display flight schedule
    void displayFlightSchedule() const {
        cout << "Flight Schedule:" << endl;</pre>
        for (const auto& flight : flights) {
            string airlineName = getAirlineName(flight.first); // Get airline
name from flight number
            cout << "Airline: " << airlineName << endl; // Display airline</pre>
name
            cout << "Flight Number: " << flight.second.flightNumber << endl;</pre>
            cout << " Departure Airport: " << flight.second.departureAirport</pre>
<< endl;
            cout << "
                         Destination Airport: " <<
flight.second.destinationAirport << endl;</pre>
                        Departure Time: " << flight.second.departureTime <<</pre>
            cout << "
end1;
                        Date: " << flight.second.date << endl;</pre>
            cout << "
            cout << "
                        Aircraft Model: " << flight.second.aircraft.model <<</pre>
endl;
            cout << "
                         Available Seats: " <<
flight.second.availableSeats.size() << endl;
            cout << endl;</pre>
        }
```

```
// Display airport details
    void displayAirportDetails() const {
        cout << "Airport Details:" << endl;</pre>
        for (const auto& airport : airports) {
            cout << "Airport Code: " << airport.second.airportCode << endl;</pre>
            cout << "
                       Airport Name: " << airport.second.airportName << endl;</pre>
            cout << "
                        Location: " << airport.second.location << endl;</pre>
            cout << " Latitude: " << airport.second.latitude << endl;</pre>
            cout << " Longitude: " << airport.second.longitude << endl;</pre>
            cout << endl;</pre>
        }
    // Display flight graph (connectivity between airports) ----- it show
the our directed graph
    void displayFlightGraph() const {
        cout << "Flight Graph (Directed):" << endl;</pre>
        for (const auto& entry : flightGraph) {
            cout << entry.first << " -> ";
            for (const auto& destination : entry.second) {
                cout << destination << " ";</pre>
            }
            cout << endl;</pre>
        }
    // Display seat details for all flights
    void displaySeatDetailsForAllFlights() const {
        cout << "Seat Details for All Flights:" << endl;</pre>
        for (const auto& flight : flights) {
            flight.second.displaySeatDetails();
private:
    // this function to get airline name from flight number
    string getAirlineName(const string& flightNumber) const {
        if (flightNumber.substr(0, 2) == "6E") {
            return "Indigo";
        } else if (flightNumber.substr(0, 2) == "SG") {
            return "SpiceJet";
        } else if (flightNumber.substr(0, 2) == "AI") {
            return "Air India";
        } else {
            return "Indigo"; // Assign any unknown flights to Indigo
        }
```

```
// This is function to calculate distance between two airports using
Haversine formula
    double calculateDistance(const Airport& source, const Airport&
destination) const {
        // here we convert latitude and longitude from degrees to radians
       double lat1 = source.latitude * M_PI / 180.0;
        double lon1 = source.longitude * M_PI / 180.0;
       double lat2 = destination.latitude * M_PI / 180.0;
        double lon2 = destination.longitude * M_PI / 180.0;
       // Earth radius in kilometers
       const double R = 6371.0;
       // Haversine formula
       // The haversine formula is a very accurate way of computing distances
between
       // two points on the surface of a sphere using the latitude and
longitude of the two points
       double dlon = lon2 - lon1; // distance of longitude
       double dlat = lat2 - lat1; // distance of latitude
       double a = sin(dlat / 2) * sin(dlat / 2) + cos(lat1) * cos(lat2) *
sin(dlon / 2) * sin(dlon / 2);
       double c = 2 * atan2(sqrt(a), sqrt(1 - a));
        double distance = R * c;
       return distance;
};
int main() {
   Airline airline;
    //Declare the airport
    //In input we gives 1.Airport code 2. name of airport 3. Location/city
4.langitude 5.latitude
    airline.addAirport("BOM", "Chhatrapati Shivaji Maharaj International
Airport", "Mumbai", 19.0896, 72.8656);
    airline.addAirport("BLR", "Kempegowda International Airport", "Bangalore",
13.1986, 77.7066);
    airline.addAirport("DEL", "Indira Gandhi International Airport", "New
Delhi", 28.5681, 77.1126);
    airline.addAirport("MAA", "Chennai International Airport", "Chennai",
12.9900, 80.1690);
    airline.addAirport("CCU", "Netaji Subhas Chandra Bose International
Airport", "Kolkata", 22.6522, 88.4466);
```

```
airline.addAirport("HYD", "Rajiv Gandhi International Airport",
"Hyderabad", 17.2316, 78.4292);
    airline.addAirport("COK", "Cochin International Airport", "Kochi",
10.1520, 76.4017);
    airline.addAirport("PNQ", "Pune Airport", "Pune", 18.5822, 73.9197);
    airline.addAirport("GOI", "Goa International Airport", "Dabolim, Goa",
15.3801, 73.8319);
    airline.addAirport("AMD", "Sardar Vallabhbhai Patel International
Airport", "Ahmedabad", 23.0778, 72.6348);
    airline.addAirport("JAI", "Jaipur International Airport", "Jaipur",
26.8241, 75.8129);
    airline.addAirport("GAU", "Lokpriya Gopinath Bordoloi International
Airport", "Guwahati", 26.1060, 91.5859);
    airline.addAirport("TRV", "Trivandrum International Airport",
"Thiruvananthapuram", 8.4821, 76.9209);
    airline.addAirport("CCJ", "Calicut International Airport", "Kozhikode",
11.1395, 75.9553);
    airline.addAirport("BBI", "Biju Patnaik International Airport",
"Bhubaneswar", 20.2520, 85.8173);
    airline.addAirport("VTZ", "Visakhapatnam International Airport",
'Visakhapatnam", 17.7215, 83.2245);
    airline.addAirport("IXB", "Bagdogra Airport", "Bagdogra", 26.6841,
88.3247);
    airline.addAirport("IXC", "Chandigarh International Airport",
'Chandigarh", 30.6737, 76.7894);
    airline.addAirport("IDR", "Devi Ahilya Bai Holkar Airport", "Indore",
22.7215, 75.8011);
    airline.addAirport("PAT", "Jai Prakash Narayan International Airport",
"Patna", 25.5941, 85.0908);
    airline.addAirport("IXR", "Birsa Munda Airport", "Ranchi", 23.3171,
85.3215);
   // Type of aircraft use in India
   Aircraft aircraft1("Boeing 747", 150, 50, 20);
   Aircraft aircraft2("Airbus A320", 120, 30, 15);
   Aircraft aircraft3("Embraer E190", 100, 20, 10);
    Aircraft aircraft4("Bombardier Q400", 80, 15, 5);
   Aircraft aircraft5("ATR 72", 70, 10, 5);
   Aircraft aircraft6("Boeing 737", 130, 40, 15);
   // Available Flight
   // in this airlinr represent by this code
    // "SG"= SpiceJet ----- "AI"=Air India ----- "6E" = Indigo <- else
other code also come Airline Indigo
    // then com Airport code and then destination airport come
```

```
// then time and date of departure
    // then which aircraft we used
    airline.addFlight("SG501", "BOM", "MAA", "03:30 PM", "22nd March 2024",
aircraft1);
    airline.addFlight("9W601", "CCU", "BLR", "04:00 PM", "23rd March 2024",
aircraft2);
    airline.addFlight("AI401", "DEL", "HYD", "05:30 PM", "24th March 2024",
aircraft3);
    airline.addFlight("6E501", "BOM", "GOI", "06:00 PM", "25th March 2024",
aircraft4);
    airline.addFlight("SG601", "MAA", "CCU", "07:30 PM", "26th March 2024",
aircraft5);
    airline.addFlight("AI501", "DEL", "COK", "08:00 PM", "27th March 2024",
aircraft6);
    airline.addFlight("6E601", "BOM", "PNQ", "09:30 PM", "28th March 2024",
aircraft1);
    airline.addFlight("SG701", "BLR", "GOI", "10:00 PM", "29th March 2024",
aircraft2);
    airline.addFlight("AI801", "DEL", "AMD", "11:30 PM", "30th March 2024",
aircraft3);
    airline.addFlight("6E901", "MAA", "JAI", "12:00 AM", "31st March 2024",
aircraft4);
    airline.addFlight("SG901", "BLR", "GAU", "01:30 AM", "1st April 2024",
aircraft5);
    airline.addFlight("AI1001", "BOM", "TRV", "02:00 AM", "2nd April 2024",
    airline.addFlight("6E1101", "DEL", "CCJ", "03:30 AM", "3rd April 2024",
aircraft1);
    airline.addFlight("SG1101", "MAA", "BBI", "04:00 AM", "4th April 2024",
aircraft2);
    airline.displayFlightSchedule();
    airline.displayAirportDetails();
    airline.displayFlightGraph();
   // Displaying seat details for all flights
    airline.displaySeatDetailsForAllFlights();
    return 0;
```

Output of the code:

Output of the code:

Flight Schedule:
Airline: Indigo
Flight Number: 9W601
Departure Airport: CCU
Destination Airport: BLR
Departure Time: 04:00 PM
Date: 23rd March 2024
Aircraft Model: Airbus A320
Available Seats: 165

Airline: Air India
Flight Number: Al501
Departure Airport: DEL
Destination Airport: COK
Departure Time: 08:00 PM
Date: 27th March 2024
Aircraft Model: Boeing 737
Available Seats: 185

Airline: Indigo Flight Number: 6E501 Departure Airport: BOM Destination Airport: GOI Departure Time: 06:00 PM Date: 25th March 2024 Aircraft Model: Bombardier Q400

Available Seats: 100

Airline: SpiceJet
Flight Number: SG601
Departure Airport: MAA
Destination Airport: CCU
Departure Time: 07:30 PM
Date: 26th March 2024
Aircraft Model: ATR 72
Available Seats: 85

Airline: SpiceJet
Flight Number: SG701
Departure Airport: BLR
Destination Airport: GOI
Departure Time: 10:00 PM
Date: 29th March 2024
Aircraft Model: Airbus A320
Available Seats: 165

Airline: Indigo Flight Number: 6E601 Departure Airport: BOM Destination Airport: PNQ Departure Time: 09:30 PM Date: 28th March 2024 Aircraft Model: Boeing 747 Available Seats: 220

Airline: Air India Flight Number: Al801 Departure Airport: DEL Destination Airport: AMD Departure Time: 11:30 PM Date: 30th March 2024 Aircraft Model: Embraer E190 Available Seats: 130

Airline: Air India
Flight Number: Al401
Departure Airport: DEL
Destination Airport: HYD
Departure Time: 05:30 PM
Date: 24th March 2024
Aircraft Model: Embraer E190
Available Seats: 130

Airline: Indigo

Flight Number: 6E901 Departure Airport: MAA Destination Airport: JAI Departure Time: 12:00 AM Date: 31st March 2024

Aircraft Model: Bombardier Q400

Available Seats: 100

Airline: Indigo

Flight Number: 6E1101 Departure Airport: DEL Destination Airport: CCJ Departure Time: 03:30 AM Date: 3rd April 2024 Aircraft Model: Boeing 747 Available Seats: 220

Airline: SpiceJet
Flight Number: SG1101
Departure Airport: MAA
Destination Airport: BBI
Departure Time: 04:00 AM
Date: 4th April 2024
Aircraft Model: Airbus A320
Available Seats: 165

Airline: SpiceJet
Flight Number: SG901
Departure Airport: BLR
Destination Airport: GAU
Departure Time: 01:30 AM
Date: 1st April 2024
Aircraft Model: ATR 72
Available Seats: 85

Airline: SpiceJet
Flight Number: SG501
Departure Airport: BOM
Destination Airport: MAA
Departure Time: 03:30 PM
Date: 22nd March 2024
Aircraft Model: Boeing 747
Available Seats: 220

Airline: Air India
Flight Number: Al1001
Departure Airport: BOM
Destination Airport: TRV
Departure Time: 02:00 AM
Date: 2nd April 2024
Aircraft Model: Boeing 737
Available Seats: 185

Airport Details: Airport Code: PAT

Airport Name: Jai Prakash Narayan International Airport

Location: Patna Latitude: 25.5941 Longitude: 85.0908

Airport Code: IXC

Airport Name: Chandigarh International Airport

Location: Chandigarh Latitude: 30.6737 Longitude: 76.7894

Airport Code: BBI

Airport Name: Biju Patnaik International Airport

Location: Bhubaneswar Latitude: 20.252 Longitude: 85.8173

Airport Code: IXB

Airport Name: Bagdogra Airport

Location: Bagdogra Latitude: 26.6841 Longitude: 88.3247

Airport Code: CCJ

Airport Name: Calicut International Airport

Location: Kozhikode Latitude: 11.1395 Longitude: 75.9553

Airport Code: BOM

Airport Name: Chhatrapati Shivaji Maharaj International Airport

Location: Mumbai Latitude: 19.0896 Longitude: 72.8656

Airport Code: BLR

Airport Name: Kempegowda International Airport

Location: Bangalore Latitude: 13.1986 Longitude: 77.7066

Airport Code: CCU

Airport Name: Netaji Subhas Chandra Bose International Airport

Location: Kolkata Latitude: 22.6522 Longitude: 88.4466

Airport Code: MAA

Airport Name: Chennai International Airport

Location: Chennai Latitude: 12.99 Longitude: 80.169

Airport Code: AMD

Airport Name: Sardar Vallabhbhai Patel International Airport

Location: Ahmedabad Latitude: 23.0778 Longitude: 72.6348

Airport Code: VTZ

Airport Name: Visakhapatnam International Airport

Location: Visakhapatnam Latitude: 17.7215 Longitude: 83.2245

Airport Code: HYD

Airport Name: Rajiv Gandhi International Airport

Location: Hyderabad Latitude: 17.2316 Longitude: 78.4292

Airport Code: PNQ

Airport Name: Pune Airport

Location: Pune Latitude: 18.5822 Longitude: 73.9197

Airport Code: COK

Airport Name: Cochin International Airport

Location: Kochi Latitude: 10.152 Longitude: 76.4017 Airport Code: IDR

Airport Name: Devi Ahilya Bai Holkar Airport

Location: Indore Latitude: 22.7215 Longitude: 75.8011

Airport Code: JAI

Airport Name: Jaipur International Airport

Location: Jaipur Latitude: 26.8241 Longitude: 75.8129

Airport Code: IXR

Airport Name: Birsa Munda Airport

Location: Ranchi Latitude: 23.3171 Longitude: 85.3215

Airport Code: DEL

Airport Name: Indira Gandhi International Airport

Location: New Delhi Latitude: 28.5681 Longitude: 77.1126

Airport Code: GOI

Airport Name: Goa International Airport

Location: Dabolim, Goa Latitude: 15.3801 Longitude: 73.8319

Airport Code: GAU

Airport Name: Lokpriya Gopinath Bordoloi International Airport

Location: Guwahati Latitude: 26.106 Longitude: 91.5859

Airport Code: TRV

Airport Name: Trivandrum International Airport

Location: Thiruvananthapuram

Latitude: 8.4821 Longitude: 76.9209

Flight Graph (Directed): MAA -> CCU JAI BBI DEL -> HYD COK AMD CCJ

BLR -> GOI GAU CCU -> BLR

BOM -> MAA GOI PNQ TRV Seat Details for All Flights: Seat Details for 9W601:

Economy Class:

E1	E2	E3	E4	E5 I	E6 E7	E8	E9	E10	E11	E12	E13	E14	E15	E16	E17
E18	E19	E20	E21	E22	E23	E24	E25	E26	E27	E28	E29	E30	E31	E32	E33
E34	E35	E36	E37	E38	E39	E40	E41	E42	E43	E44	E45	E46	E47	E48	E49
E50	E51	E52	E53	E54	E55	E56	E57	E58	E59	E60	E61	E62	E63	E64	E65
E66	E67	E68	E69	E70	E71	E72	E73	E74	E75	E76	E77	E78	E79	E80	E81
E82	E83	E84	E85	E86	E87	E88	E89	E90	E91	E92	E93	E94	E95	E96	E97
E98	E99	E100	E101	E10	02 E10	03 I	E104	E105	E106	E107	E108	E1	109	E110	E111
E440	E440			4	- 4 4 0 -	447	E440	E440	E400						

E112 E113 E114 E115 E116 E117 E118 E119 E120

Business Class:

B5 B7 B8 B9 B12 B3 B4 B6 B10 B11 B13 **B14** B15 B16 B17 В1 B2 B18 B19 B20 B22 B23 B24 B26 B28 B29 B30 First Class:

F15

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12 F13 F14

Seat Details for Al501:

Economy Class:

E1	E2	E3	E4	E5	E6	E7 E	8 E9	E10	E11	E12	E13	E14	E15	E16	E17
E18	E19	E20	E21	E22	E23	3 E24	E25	E26	E27	E28	E29	E30	E31	E32	E33
E34	E35	E36	E37	E38	E39	9 E40	E41	E42	E43	E44	E45	E46	E47	E48	E49
E50	E51	E52	E53	E54	E5	5 E56	E57	E58	E59	E60	E61	E62	E63	E64	E65
E66	E67	E68	E69	E70	E7	1 E72	E73	E74	E75	E76	E77	E78	E79	E80	E81
E82	E83	E84	E85	E86	E87	7 E88	E89	E90	E91	E92	E93	E94	E95	E96	E97
E98	E99	E100	E101	E1	102	E103	E104	E105	E106	E107	E108	E	109	E110	E111

E126 E127 E	14 E115 28 E129	E116 E E130	E117	E118	E119	E120) E1:	21 E	122	E123	E124	E125	
Business Class: B1 B2 B3 B18 B19 B20 B34 B35 B36		B6 B7 22 B23 38 B39	7 B8 B24 B40	B9 B25	B10 B26	B11 B27	B12 B28	B13 B29	B14 B30	B15 B31	B16 B32	B17 B33	
First Class: F1 F2 F3	F4 F5	F6 F7	F8	F9	F10	F11	F12	F13	F14	F15			
Seat Details for 6E5 Economy Class:	01:												
E1 E2 E3 E18 E19 E20 E34 E35 E36 E50 E51 E52 E66 E67 E68	E37 E E53 E	E6 E7 22 E23 38 E39 54 E55 70 E71	E24 E40 E56 E72	E9 E25 E41 E57 E73	E10 E26 E42 E58 E74	E11 E27 E43 E59 E75	E12 E28 E44 E60 E76	E13 E29 E45 E61 E77	E14 E30 E46 E62 E78	E15 E31 E47 E63 E79	E16 E32 E48 E64 E80	E17 E33 E49 E65	
Business Class: B1 B2 B3 First Class: F1 F2 F3	B4 B5 F4 F5	B6 B7	7 B8	В9	B10	B11	B12	B13	B14	B15			
Seat Details for SG6													
Economy Class: E1 E2 E3 E18 E19 E20 E34 E35 E36	E4 E5 E21 E	E6 E7 22 E23	' E8 E24	E9 E25	E10 E26	E11 E27	E12 E28	E13 E29	E14 E30	E15 E31	E16 E32	E17 E33	
E37 E38 E39 E53 E54 E55 E69 E70		E41 E42 57 E58	E43 E59	E44 E60	E45 E61	E46 E62	E47 E63	E48 E64	E49 E65	E50 E66	E51 E67	E52 E68	
Business Class: B1 B2 B3 First Class: F1 F2 F3	B4 B5 F4 F5	B6 B7	7 B8	В9	B10								
Seat Details for SG7													
Economy Class: E1 E2 E3 E18 E19 E20 E34 E35 E36 E50 E51 E52 E66 E67 E68 E82 E83 E84 E98 E99 E100 E112 E113 E1	E4 E5 E21 E E37 E E53 E E69 E E85 E	22 E23 38 E39 54 E55 70 E71 86 E87 E102 E1	E24 E40 E56 E72 E88	E9 E25 E41 E57 E73 E89 E104 E118	E10 E26 E42 E58 E74 E90 E105 E119	E11 E27 E43 E59 E75 E91 E106 E120	E12 E28 E44 E60 E76 E92 E10	E13 E29 E45 E61 E77 E93 7 E1	E14 E30 E46 E62 E78 E94	E15 E31 E47 E63 E79 E95	E16 E32 E48 E64 E80 E96	E17 E33 E49 E65 E81 E97	
Business Class: B1 B2 B3 B18 B19 B20 First Class:	B4 B5 B21 B	B6 B7 22 B23	7 B8 B24	B9 B25	B10 B26	B11 B27	B12 B28	B13 B29	B14 B30	B15	B16	B17	
F1 F2 F3	F4 F5	F6 F7	F8	F9	F10	F11	F12	F13	F14	F15			
Seat Details for 6E6 Economy Class:	01:												
E1 E2 E3 E18 E19 E20 E34 E35 E36 E50 E51 E52 E66 E67 E68 E82 E83 E84 E98 E99 E100 E112 E113 E1 E126 E127 E	E37 E E53 E E69 E E85 E	22 E23 38 E39 54 E55 70 E71 86 E87 E102 E1 E116 E	7 E8 E24 E40 E56 E72 E88 03 E E117 E131 E145	E9 E25 E41 E57 E73 E89 E104 E118 E132 E146	E10 E26 E42 E58 E74 E90 E105 E119 E133		34 E	21 E 135 I		E15 E31 E47 E63 E79 E95 E109 E123 E123	E16 E32 E48 E64 E80 E96 E110 E124 E138	E17 E33 E49 E65 E81 E97 E111 E125 E139	9
B1 B2 B3 B18 B19 B20 B34 B35 B36		B6 B7 22 B23 38 B39	B8 B24 B40	B9 B25 B41	B10 B26 B42	B11 B27 B43	B12 B28 B44	B13 B29 B45	B14 B30 B46	B15 B31 B47	B16 B32 B48	B17 B33 B49	
B50 First Class: F1 F2 F3 F19 F20	F4 F5	F6 F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18
Seat Details for AI80 Economy Class: E1 E2 E3 E18 E19 E20	E4 E5	E6 E7 22 E23	' E8 E24	E9 E25	E10 E26	E11 E27	E12 E28	E13 E29	E14 E30	E15 E31	E16 E32	E17 E33	

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 First Class:
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Seat Details for AI401:
 Economy Class:
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Seat Details for 6E901:
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 Business Class:
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Seat Details for 6E1101:
 Economy Class:
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 Business Class:
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 First Class:
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Seat Details for SG1101:
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 Business Class:
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Seat Details for SG901:
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 Business Class:
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 First Class:
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Seat Details for SG501:
 Economy Class:
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 First Class:
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Seat Details for Al1001:
Economy Class:
                 E4
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            E114 E115 E116
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E112
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     E127
                    E129
             F128
                           E130
F126
 Business Class:
  B1 B2
            В3
                  B4
                      B5
                            B6 B7
                                      В8
                                          В9
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B18 B19
B34 B35
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            B36
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                             B39
                                    B40
 First Class:
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F9

F8

F3

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