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Database Management System Lab



BE(SE) (Bachelor of Engineering in Software Engineering)

**DEPARTMENT:**

**Air Aviation Company**

**Project Report**

**Project Title: Database Management System for Air Aviation Company**

**Introduction:**

The primary objective of this project is to design and implement a highly optimized and normalized Database Management System (DBMS) for an aviation company. This system will efficiently store and manage comprehensive information about airlines, airplanes, flights, passengers, and staff, ensuring data integrity, minimizing redundancy, and enhancing data retrieval efficiency.

**Overview:**

The primary objective of this project is to create a highly optimized and normalized database management system for an aviation company. The system will store and manage detailed information about airlines, airplanes, flights, passengers, and staff. The key components of the system include:

**Airlines:** Information about different airlines operating within the system.

**Airplanes:** Details of airplanes including model number, registration number, and passenger capacity.

**Flights:** Data on flight schedules, including departure and arrival information.

**Passengers:** Personal information of passengers, including their booking details.

**Staff:** Information about staff members including pilots, hostesses, and ground personnel.

**System Components**

**Airlines:**

This component stores information about different airlines operating within the system. Each airline entry includes specific details that distinguish it from others, ensuring clear identification and management.

**Airplanes:**

This module captures detailed information about each airplane, including:

1. Model Number: The manufacturer's model identifier for the airplane.
2. Registration Number: A unique identifier assigned to each airplane.
3. Passenger Capacity: The maximum number of passengers the airplane can accommodate.

**Flights**

The flights module maintains comprehensive data on flight schedules, ensuring precise tracking and management. Key details include:

1. Flight Number: A unique identifier for each flight.
2. Departure Airport: The airport from which the flight departs.
3. Destination Airport: The airport where the flight arrives.
4. Departure Date and Time: The scheduled departure date and time.
5. Arrival Date and Time: The scheduled arrival date and time.

Each flight is associated with a single airplane, ensuring a clear relationship between flights and the airplanes used.

**Passengers:**

The passengers module stores personal and booking information, ensuring a seamless booking process and accurate passenger management. Each passenger entry includes:

1. Given Names: The first and middle names of the passenger.
2. Surname: The last name of the passenger.
3. Email Address: A unique email address for the passenger, ensuring unique identification.

Passengers can book seats on flights, and this relationship is managed within the system to track and manage bookings efficiently.

**Staff:**

This component manages information about the aviation company’s staff, including:

1. Pilots
2. Hostesses
3. Ground Personnel

Each staff member's details are meticulously recorded to ensure efficient management and scheduling.

**Database Normalization and Optimization**

The database is designed following normalization principles to eliminate redundancy and ensure data integrity. The normalization process involves structuring the database into tables and establishing relationships between them, thereby reducing data anomalies and improving query performance.

**Entity Relation Diagram (ERD):**

|  |
| --- |
|  |

**SQL Server Implementation:**

**Queries:**

|  |
| --- |
| CREATE DATABASE Air\_Line\_System;  USE Air\_Line\_System;  -- Airline Table  CREATE TABLE Airline (  airline\_id INT PRIMARY KEY,  name VARCHAR(100)  );  -- Airplane Table  CREATE TABLE Airplane (  airplane\_id INT PRIMARY KEY,  model\_number VARCHAR(50),  registration\_number VARCHAR(50) UNIQUE,  capacity INT,  airline\_id INT,  FOREIGN KEY (airline\_id) REFERENCES Airline(airline\_id)  );  -- Flight Table  CREATE TABLE Flight (  flight\_id INT PRIMARY KEY,  flight\_number VARCHAR(50) UNIQUE,  departure\_airport VARCHAR(100),  destination\_airport VARCHAR(100),  departure\_datetime DATETIME,  arrival\_datetime DATETIME,  airplane\_id INT,  FOREIGN KEY (airplane\_id) REFERENCES Airplane(airplane\_id)  );  -- Passenger Table  CREATE TABLE Passenger (  passenger\_id INT PRIMARY KEY,  given\_name VARCHAR(100),  surname VARCHAR(100),  email VARCHAR(100) UNIQUE,  flight\_id INT,  FOREIGN KEY (flight\_id) REFERENCES Flight(flight\_id)  );  -- Booking Table  CREATE TABLE Booking (  booking\_id INT PRIMARY KEY,  passenger\_id INT,  flight\_id INT,  booking\_date DATE,  FOREIGN KEY (passenger\_id) REFERENCES Passenger(passenger\_id),  FOREIGN KEY (flight\_id) REFERENCES Flight(flight\_id)  );  -- Pilot Table  CREATE TABLE Pilot (  pilot\_id INT PRIMARY KEY,  name VARCHAR(100),  flight\_id INT,  FOREIGN KEY (flight\_id) REFERENCES Flight(flight\_id)  );  -- Staff Table  CREATE TABLE Staff (  staff\_id INT PRIMARY KEY,  name VARCHAR(100),  role VARCHAR(50),  flight\_id INT,  FOREIGN KEY (flight\_id) REFERENCES Flight(flight\_id)  );  -- Populate Airline Table  INSERT INTO Airline (airline\_id, name) VALUES  (1, 'Singapore Airlines'),  (2, 'Qatar Airways'),  (3, 'Fly Emirates'),  (4, 'Japan Airlines'),  (5, 'Pakistan International Airlines'),  (6, 'Turkish Airlines'),  (7, 'Korean Air'),  (8, 'British Airways'),  (9, 'Etihad Airways'),  (10, 'Japan Airlines');  SELECT\*  FROM Airline  -- Populate Airplane Table  INSERT INTO Airplane (airplane\_id, model\_number, registration\_number, capacity, airline\_id) VALUES  (1, 'Boeing 777-300ER', '9V-SNA', 264, 1),  (2, 'Airbus A350-900', 'A7-ALA', 283, 2),  (3, 'Airbus A380-800', 'A6-EDA', 517, 3),  (4, 'Boeing 787-9', 'JA861J', 195, 4),  (5, 'Boeing 777-200ER', 'AP-BGY', 314, 5),  (6, 'Airbus A330-300', 'TC-JNC', 289, 6),  (7, 'Boeing 747-8I', 'HL7630', 368, 7),  (8, 'Airbus A320-200', 'G-EUUC', 180, 8),  (9, 'Boeing 787-10', 'A6-BMH', 299, 9),  (10, 'Boeing 777-200ER', 'JA703J', 244, 10);  SELECT\*  FROM Airplane;  -- Populate Flight Table  INSERT INTO Flight (flight\_id, flight\_number, departure\_airport, destination\_airport, departure\_datetime, arrival\_datetime, airplane\_id) VALUES  (1, 'SQ318', 'SIN', 'LHR', '2024-05-01 08:00', '2024-05-01 11:00', 1),  (2, 'QR001', 'DOH', 'LHR', '2024-05-02 09:00', '2024-05-02 12:00', 2),  (3, 'EK007', 'DXB', 'LHR', '2024-05-03 10:00', '2024-05-03 13:00', 3),  (4, 'JL043', 'NRT', 'LAX', '2024-05-04 11:00', '2024-05-04 14:00', 4),  (5, 'PK785', 'ISB', 'LHR', '2024-05-05 12:00', '2024-05-05 15:00', 5),  (6, 'TK1979', 'IST', 'LHR', '2024-05-06 13:00', '2024-05-06 16:00', 6),  (7, 'KE901', 'ICN', 'LHR', '2024-05-07 14:00', '2024-05-07 17:00', 7),  (8, 'BA108', 'DXB', 'LHR', '2024-05-08 15:00', '2024-05-08 18:00', 8),  (9, 'EY011', 'AUH', 'LHR', '2024-05-09 16:00', '2024-05-09 19:00', 9),  (10, 'JL044', 'LAX', 'NRT', '2024-05-10 17:00', '2024-05-10 20:00', 10);  SELECT\*  FROM Flight;  -- Populate Passenger Table  INSERT INTO Passenger (passenger\_id, given\_name, surname, email, flight\_id) VALUES  -- Flight ID 1  (1, 'Abdullah', 'Soomro', 'abdullahsoomro771@gmail.com', 1),  (2, 'Muhammad', 'Arham', 'muhammadarham161@gmail.com', 1),  (3, 'Tameem', 'Zahid', 'tameemzahid123@gmail.com', 1),  (4, 'Zahid', 'Khursheed', 'zahidkhursheed321@gmail.com', 1),  (5, 'Charlie', 'Davis', 'charliedavis988@gmail.com', 1),  (6, 'Faisal', 'Abbas', 'faisalabbas345@gmail.com', 1),  (7, 'Ali', 'Raza', 'aliraza545@gmail.com', 1),  (8, 'Asad', 'Raza', 'asadraza567@gmail.com', 1),  (9, 'Ahmed', 'Faraz', 'ahmedfaraz467@gmail.com', 1),  (10, 'Ish', 'Sodhi', 'ishsodhi234@gmail.com', 1),  (11, 'Urooj', 'Fatima', 'uroojfatima980@gmail.com', 1),  (12, 'Jack', 'White', 'jackwhite123@gmail.com', 1),  (13, 'Leo', 'Messi', 'leomessi789@gmail.com', 1),  (14, 'Leo', 'Martin', 'leomartin009@gmail.com', 1),  (15, 'Hamza', 'Yaseen', 'hamzayaseen677@gmail.com', 1),  (16, 'Bilal', 'Sheikh', 'bilalsheikh007@gmail.com', 1),  (17, 'Cristin', 'Martinez', 'cristinmartinez666@gmail.com', 1),  (18, 'Sheraz', 'Khan', 'sherazkhan545@gmail.com', 1),  (19, 'Hashim', 'Amla', 'hashimamla366@gmail.com', 1),  (20, 'Tasmiya', 'Ansari', 'tasmiyaansari680@gmail.com', 1),  -- Flight ID 2  (21, 'John', 'Doe', 'johndoe21@gmail.com', 2),  (22, 'Jane', 'Doe', 'janedoe22@gmail.com', 2),  (23, 'Alice', 'Johnson', 'alicejohnson23@gmail.com', 2),  (24, 'Bob', 'Smith', 'bobsmith24@gmail.com', 2),  (25, 'Charlie', 'Brown', 'charliebrown25@gmail.com', 2),  (26, 'David', 'Williams', 'davidwilliams26@gmail.com', 2),  (27, 'Eve', 'Miller', 'evemiller27@gmail.com', 2),  (28, 'Frank', 'Jones', 'frankjones28@gmail.com', 2),  (29, 'Grace', 'Garcia', 'gracegarcia29@gmail.com', 2),  (30, 'Hank', 'Martinez', 'hankmartinez30@gmail.com', 2),  (31, 'Ivy', 'Lopez', 'ivylopez31@gmail.com', 2),  (32, 'Jack', 'Gonzalez', 'jackgonzalez32@gmail.com', 2),  (33, 'Kate', 'Wilson', 'katewilson33@gmail.com', 2),  (34, 'Leo', 'Anderson', 'leoanderson34@gmail.com', 2),  (35, 'Mia', 'Thomas', 'miathomas35@gmail.com', 2),  (36, 'Nina', 'Taylor', 'ninataylor36@gmail.com', 2),  (37, 'Oscar', 'Lee', 'oscarlee37@gmail.com', 2),  (38, 'Paul', 'Harris', 'paulharris38@gmail.com', 2),  (39, 'Quinn', 'Clark', 'quinnclark39@gmail.com', 2),  (40, 'Rachel', 'Lewis', 'rachellewis40@gmail.com', 2),  -- Flight ID 3  (41, 'Sam', 'Robinson', 'samrobinson41@gmail.com', 3),  (42, 'Tina', 'Walker', 'tinawalker42@gmail.com', 3),  (43, 'Uma', 'Young', 'umayoung43@gmail.com', 3),  (44, 'Vince', 'Allen', 'vinceallen44@gmail.com', 3),  (45, 'Wendy', 'King', 'wendyking45@gmail.com', 3),  (46, 'Xander', 'Wright', 'xanderwright46@gmail.com', 3),  (47, 'Yara', 'Scott', 'yarascott47@gmail.com', 3),  (48, 'Zane', 'Green', 'zanegreen48@gmail.com', 3),  (49, 'Ava', 'Hill', 'avahill49@gmail.com', 3),  (50, 'Ben', 'Adams', 'benadams50@gmail.com', 3),  (51, 'Clara', 'Baker', 'clarabaker51@gmail.com', 3),  (52, 'Dylan', 'Carter', 'dylancarter52@gmail.com', 3),  (53, 'Ella', 'Mitchell', 'ellamitchell53@gmail.com', 3),  (54, 'Finn', 'Perez', 'finnperez54@gmail.com', 3),  (55, 'Gina', 'Roberts', 'ginaroberts55@gmail.com', 3),  (56, 'Hugo', 'Turner', 'hugoturner56@gmail.com', 3),  (57, 'Isla', 'Phillips', 'islaphillips57@gmail.com', 3),  (58, 'Jake', 'Campbell', 'jakecampbell58@gmail.com', 3),  (59, 'Kara', 'Parker', 'karaparker59@gmail.com', 3),  (60, 'Liam', 'Evans', 'liamevans60@gmail.com', 3),  -- Flight ID 4  (61, 'Mona', 'Edwards', 'monaedwards61@gmail.com', 4),  (62, 'Noah', 'Collins', 'noahcollins62@gmail.com', 4),  (63, 'Olive', 'Stewart', 'olivestewart63@gmail.com', 4),  (64, 'Pete', 'Sanchez', 'petesanchez64@gmail.com', 4),  (65, 'Quincy', 'Morris', 'quincymorris65@gmail.com', 4),  (66, 'Rita', 'Rogers', 'ritarogers66@gmail.com', 4),  (67, 'Sean', 'Reed', 'seanreed67@gmail.com', 4),  (68, 'Tara', 'Cook', 'taracook68@gmail.com', 4),  (69, 'Uri', 'Morgan', 'urimorgan69@gmail.com', 4),  (70, 'Vera', 'Bell', 'verabell70@gmail.com', 4),  (71, 'Will', 'Murphy', 'willmurphy71@gmail.com', 4),  (72, 'Xena', 'Bailey', 'xenabailey72@gmail.com', 4),  (73, 'Yusuf', 'Rivera', 'yusufrivera73@gmail.com', 4),  (74, 'Zara', 'Cooper', 'zaracooper74@gmail.com', 4),  (75, 'Adam', 'Richardson', 'adamrichardson75@gmail.com', 4),  (76, 'Beth', 'Cox', 'bethcox76@gmail.com', 4),  (77, 'Carl', 'Howard', 'carlhoward77@gmail.com', 4),  (78, 'Dana', 'Ward', 'danaward78@gmail.com', 4),  (79, 'Eli', 'Peterson', 'elipeterson79@gmail.com', 4),  (80, 'Fay', 'Gray', 'faygray80@gmail.com', 4),  -- Flight ID 5  (81, 'Zain', 'Ahmed', 'zainahmed81@gmail.com', 5),  (82, 'Sara', 'Khan', 'sarakhan82@gmail.com', 5),  (83, 'Hamza', 'Butt', 'hamzabutt83@gmail.com', 5),  (84, 'Ayesha', 'Iqbal', 'ayesha.iqbal84@gmail.com', 5),  (85, 'Bilal', 'Saeed', 'bilalsaeed85@gmail.com', 5),  (86, 'Farhan', 'Ali', 'farhan.ali86@gmail.com', 5),  (87, 'Hira', 'Malik', 'hiramalik87@gmail.com', 5),  (88, 'Sana', 'Rehman', 'sanarehman88@gmail.com', 5),  (89, 'Noman', 'Qureshi', 'nomanqureshi89@gmail.com', 5),  (90, 'Usman', 'Tariq', 'usmantariq90@gmail.com', 5),  (91, 'Areeba', 'Hussain', 'areebahussain91@gmail.com', 5),  (92, 'Kamran', 'Shahid', 'kamranshahid92@gmail.com', 5),  (93, 'Imran', 'Rashid', 'imranrashid93@gmail.com', 5),  (94, 'Laiba', 'Khan', 'laibakhan94@gmail.com', 5),  (95, 'Shahid', 'Afridi', 'shahidafridi95@gmail.com', 5),  (96, 'Junaid', 'Akram', 'junaidakram96@gmail.com', 5),  (97, 'Kiran', 'Bashir', 'kiranbashir97@gmail.com', 5),  (98, 'Tahir', 'Mehmood', 'tahirmehmood98@gmail.com', 5),  (99, 'Waseem', 'Akhtar', 'waseemakhtar99@gmail.com', 5),  (100, 'Saba', 'Javed', 'saba.javed100@gmail.com', 5),  -- Flight ID 6  (101, 'Nadia', 'Aslam', 'nadiaaslam101@gmail.com', 6),  (102, 'Irfan', 'Haider', 'irfanhaider102@gmail.com', 6),  (103, 'Faiza', 'Mustafa', 'faizamustafa103@gmail.com', 6),  (104, 'Zeeshan', 'Shafi', 'zeeshanshafi104@gmail.com', 6),  (105, 'Adnan', 'Ali', 'adnan.ali105@gmail.com', 6),  (106, 'Saima', 'Raza', 'saimaraza106@gmail.com', 6),  (107, 'Jawad', 'Shah', 'jawadshah107@gmail.com', 6),  (108, 'Nida', 'Malik', 'nidamalik108@gmail.com', 6),  (109, 'Sikandar', 'Riaz', 'sikandarriazi109@gmail.com', 6),  (110, 'Hassan', 'Ahmed', 'hassanahmed110@gmail.com', 6),  (111, 'Umar', 'Khalid', 'umarkhalid111@gmail.com', 6),  (112, 'Raza', 'Naqvi', 'razanaqvi112@gmail.com', 6),  (113, 'Arif', 'Hussain', 'arifhussain113@gmail.com', 6),  (114, 'Naila', 'Khan', 'nailakhan114@gmail.com', 6),  (115, 'Anum', 'Faisal', 'anumfaisal115@gmail.com', 6),  (116, 'Zahid', 'Ali', 'zahid.ali116@gmail.com', 6),  (117, 'Salman', 'Khan', 'salmankhan117@gmail.com', 6),  (118, 'Shafaq', 'Butt', 'shafaqbutt118@gmail.com', 6),  (119, 'Adeel', 'Riaz', 'adeelriaz119@gmail.com', 6),  (120, 'Mariam', 'Akhtar', 'mariam.akhtar120@gmail.com', 6),  -- Flight ID 7  (121, 'John', 'Doe', 'johndoe121@gmail.com', 7),  (122, 'Jane', 'Doe', 'janedoe122@gmail.com', 7),  (123, 'Alice', 'Johnson', 'alicejohnson123@gmail.com', 7),  (124, 'Bob', 'Smith', 'bobsmith124@gmail.com', 7),  (125, 'Charlie', 'Brown', 'charliebrown125@gmail.com', 7),  (126, 'David', 'Williams', 'davidwilliams126@gmail.com', 7),  (127, 'Eve', 'Miller', 'evemiller127@gmail.com', 7),  (128, 'Frank', 'Jones', 'frankjones128@gmail.com', 7),  (129, 'Grace', 'Garcia', 'gracegarcia129@gmail.com', 7),  (130, 'Hank', 'Martinez', 'hankmartinez130@gmail.com', 7),  (131, 'Ivy', 'Lopez', 'ivylopez131@gmail.com', 7),  (132, 'Jack', 'Gonzalez', 'jackgonzalez132@gmail.com', 7),  (133, 'Kate', 'Wilson', 'katewilson133@gmail.com', 7),  (134, 'Leo', 'Anderson', 'leoanderson134@gmail.com', 7),  (135, 'Mia', 'Thomas', 'miathomas135@gmail.com', 7),  (136, 'Nina', 'Taylor', 'ninataylor136@gmail.com', 7),  (137, 'Oscar', 'Lee', 'oscarlee137@gmail.com', 7),  (138, 'Paul', 'Harris', 'paulharris138@gmail.com', 7),  (139, 'Quinn', 'Clark', 'quinnclark139@gmail.com', 7),  (140, 'Rachel', 'Lewis', 'rachellewis140@gmail.com', 7),  -- Flight ID 8  (141, 'Sam', 'Robinson', 'samrobinson141@gmail.com', 8),  (142, 'Tina', 'Walker', 'tinawalker142@gmail.com', 8),  (143, 'Uma', 'Young', 'umayoung143@gmail.com', 8),  (144, 'Vince', 'Allen', 'vinceallen144@gmail.com', 8),  (145, 'Wendy', 'King', 'wendyking145@gmail.com', 8),  (146, 'Xander', 'Wright', 'xanderwright146@gmail.com', 8),  (147, 'Yara', 'Scott', 'yarascott147@gmail.com', 8),  (148, 'Zane', 'Green', 'zanegreen148@gmail.com', 8),  (149, 'Ava', 'Hill', 'avahill149@gmail.com', 8),  (150, 'Ben', 'Adams', 'benadams150@gmail.com', 8),  (151, 'Clara', 'Baker', 'clarabaker151@gmail.com', 8),  (152, 'Dylan', 'Carter', 'dylancarter152@gmail.com', 8),  (153, 'Ella', 'Mitchell', 'ellamitchell153@gmail.com', 8),  (154, 'Finn', 'Perez', 'finnperez154@gmail.com', 8),  (155, 'Gina', 'Roberts', 'ginaroberts155@gmail.com', 8),  (156, 'Hugo', 'Turner', 'hugoturner156@gmail.com', 8),  (157, 'Isla', 'Phillips', 'islaphillips157@gmail.com', 8),  (158, 'Jake', 'Campbell', 'jakecampbell158@gmail.com', 8),  (159, 'Kara', 'Parker', 'karaparker159@gmail.com', 8),  (160, 'Liam', 'Evans', 'liamevans160@gmail.com', 8),  -- Flight ID 9  (161, 'Mona', 'Edwards', 'monaedwards161@gmail.com', 9),  (162, 'Noah', 'Collins', 'noahcollins162@gmail.com', 9),  (163, 'Olive', 'Stewart', 'olivestewart163@gmail.com', 9),  (164, 'Pete', 'Sanchez', 'petesanchez164@gmail.com', 9),  (165, 'Quincy', 'Morris', 'quincymorris165@gmail.com', 9),  (166, 'Rita', 'Rogers', 'ritarogers166@gmail.com', 9),  (167, 'Sean', 'Reed', 'seanreed167@gmail.com', 9),  (168, 'Tara', 'Cook', 'taracook168@gmail.com', 9),  (169, 'Uri', 'Morgan', 'urimorgan169@gmail.com', 9),  (170, 'Vera', 'Bell', 'verabell170@gmail.com', 9),  (171, 'Will', 'Murphy', 'willmurphy171@gmail.com', 9),  (172, 'Xena', 'Bailey', 'xenabailey172@gmail.com', 9),  (173, 'Yusuf', 'Rivera', 'yusufrivera173@gmail.com', 9),  (174, 'Zara', 'Cooper', 'zaracooper174@gmail.com', 9),  (175, 'Adam', 'Richardson', 'adamrichardson175@gmail.com', 9),  (176, 'Beth', 'Cox', 'bethcox176@gmail.com', 9),  (177, 'Carl', 'Howard', 'carlhoward177@gmail.com', 9),  (178, 'Dana', 'Ward', 'danaward178@gmail.com', 9),  (179, 'Eli', 'Peterson', 'elipeterson179@gmail.com', 9),  (180, 'Fay', 'Gray', 'faygray180@gmail.com', 9),  -- Flight ID 10  (181, 'Zain', 'Ahmed', 'zainahmed181@gmail.com', 10),  (182, 'Sara', 'Khan', 'sarakhan182@gmail.com', 10),  (183, 'Hamza', 'Butt', 'hamzabutt183@gmail.com', 10),  (184, 'Ayesha', 'Iqbal', 'ayesha.iqbal184@gmail.com', 10),  (185, 'Bilal', 'Saeed', 'bilalsaeed185@gmail.com', 10),  (186, 'Farhan', 'Ali', 'farhan.ali186@gmail.com', 10),  (187, 'Hira', 'Malik', 'hiramalik187@gmail.com', 10),  (188, 'Sana', 'Rehman', 'sanarehman188@gmail.com', 10),  (189, 'Noman', 'Qureshi', 'nomanqureshi189@gmail.com', 10),  (190, 'Usman', 'Tariq', 'usmantariq190@gmail.com', 10),  (191, 'Areeba', 'Hussain', 'areebahussain191@gmail.com', 10),  (192, 'Kamran', 'Shahid', 'kamranshahid192@gmail.com', 10),  (193, 'Imran', 'Rashid', 'imranrashid193@gmail.com', 10),  (194, 'Laiba', 'Khan', 'laibakhan194@gmail.com', 10),  (195, 'Shahid', 'Afridi', 'shahidafridi195@gmail.com', 10),  (196, 'Junaid', 'Akram', 'junaidakram196@gmail.com', 10),  (197, 'Kiran', 'Bashir', 'kiranbashir197@gmail.com', 10),  (198, 'Tahir', 'Mehmood', 'tahirmehmood198@gmail.com', 10),  (199, 'Waseem', 'Akhtar', 'waseemakhtar199@gmail.com', 10),  (200, 'Saba', 'Javed', 'saba.javed200@gmail.com', 10);  SELECT\*  FROM Passenger;  -- Populate Booking Table  INSERT INTO Booking (booking\_id, passenger\_id, flight\_id, booking\_date) VALUES  (1, 1, 1, '2023-03-24'),  (2, 2, 1, '2023-03-24'),  (3, 3, 1, '2023-03-24'),  (4, 4, 1, '2023-03-24'),  (5, 5, 1, '2023-03-24'),  (6, 6, 1, '2023-03-24'),  (7, 7, 1, '2023-03-24'),  (8, 8, 1, '2023-03-24'),  (9, 9, 1, '2023-03-24'),  (10, 10, 1, '2023-03-24'),  (11, 11, 2, '2023-03-24'),  (12, 12, 2, '2023-03-24'),  (13, 13, 2, '2023-03-24'),  (14, 14, 2, '2023-03-24'),  (15, 15, 2, '2023-03-24'),  (16, 16, 2, '2023-03-24'),  (17, 17, 2, '2023-03-24'),  (18, 18, 2, '2023-03-24'),  (19, 19, 2, '2023-03-24'),  (20, 20, 2, '2023-03-24'),  (21, 21, 3, '2023-03-24'),  (22, 22, 3, '2023-03-24'),  (23, 23, 3, '2023-03-24'),  (24, 24, 3, '2023-03-24'),  (25, 25, 3, '2023-03-24'),  (26, 26, 3, '2023-03-24'),  (27, 27, 3, '2023-03-24'),  (28, 28, 3, '2023-03-24'),  (29, 29, 3, '2023-03-24'),  (30, 30, 3, '2023-03-24'),  (31, 31, 4, '2023-03-24'),  (32, 32, 4, '2023-03-24'),  (33, 33, 4, '2023-03-24'),  (34, 34, 4, '2023-03-24'),  (35, 35, 4, '2023-03-24'),  (36, 36, 4, '2023-03-24'),  (37, 37, 4, '2023-03-24'),  (38, 38, 4, '2023-03-24'),  (39, 39, 4, '2023-03-24'),  (40, 40, 4, '2023-03-24'),  (41, 41, 5, '2023-03-24'),  (42, 42, 5, '2023-03-24'),  (43, 43, 5, '2023-03-24'),  (44, 44, 5, '2023-03-24'),  (45, 45, 5, '2023-03-24'),  (46, 46, 5, '2023-03-24'),  (47, 47, 5, '2023-03-24'),  (48, 48, 5, '2023-03-24'),  (49, 49, 5, '2023-03-24'),  (50, 50, 5, '2023-03-24'),  (51, 51, 6, '2023-03-24'),  (52, 52, 6, '2023-03-24'),  (53, 53, 6, '2023-03-24'),  (54, 54, 6, '2023-03-24'),  (55, 55, 6, '2023-03-24'),  (56, 56, 6, '2023-03-24'),  (57, 57, 6, '2023-03-24'),  (58, 58, 6, '2023-03-24'),  (59, 59, 6, '2023-03-24'),  (60, 60, 6, '2023-03-24'),  (61, 61, 7, '2023-03-24'),  (62, 62, 7, '2023-03-24'),  (63, 63, 7, '2023-03-24'),  (64, 64, 7, '2023-03-24'),  (65, 65, 7, '2023-03-24'),  (66, 66, 7, '2023-03-24'),  (67, 67, 7, '2023-03-24'),  (68, 68, 7, '2023-03-24'),  (69, 69, 7, '2023-03-24'),  (70, 70, 7, '2023-03-24'),  (71, 71, 8, '2023-03-24'),  (72, 72, 8, '2023-03-24'),  (73, 73, 8, '2023-03-24'),  (74, 74, 8, '2023-03-24'),  (75, 75, 8, '2023-03-24'),  (76, 76, 8, '2023-03-24'),  (77, 77, 8, '2023-03-24'),  (78, 78, 8, '2023-03-24'),  (79, 79, 8, '2023-03-24'),  (80, 80, 8, '2023-03-24'),  (81, 81, 9, '2023-03-24'),  (82, 82, 9, '2023-03-24'),  (83, 83, 9, '2023-03-24'),  (84, 84, 9, '2023-03-24'),  (85, 85, 9, '2023-03-24'),  (86, 86, 9, '2023-03-24'),  (87, 87, 9, '2023-03-24'),  (88, 88, 9, '2023-03-24'),  (89, 89, 9, '2023-03-24'),  (90, 90, 9, '2023-03-24'),  (91, 91, 10, '2023-03-24'),  (92, 92, 10, '2023-03-24'),  (93, 93, 10, '2023-03-24'),  (94, 94, 10, '2023-03-24'),  (95, 95, 10, '2023-03-24'),  (96, 96, 10, '2023-03-24'),  (97, 97, 10, '2023-03-24'),  (98, 98, 10, '2023-03-24'),  (99, 99, 10, '2023-03-24'),  (100, 100, 10, '2023-03-24'),  (101, 101, 6, '2023-03-24'),  (102, 102, 6, '2023-03-24'),  (103, 103, 6, '2023-03-24'),  (104, 104, 6, '2023-03-24'),  (105, 105, 6, '2023-03-24'),  (106, 106, 6, '2023-03-24'),  (107, 107, 6, '2023-03-24'),  (108, 108, 6, '2023-03-24'),  (109, 109, 6, '2023-03-24'),  (110, 110, 6, '2023-03-24'),  (111, 111, 7, '2023-03-24'),  (112, 112, 7, '2023-03-24'),  (113, 113, 7, '2023-03-24'),  (114, 114, 7, '2023-03-24'),  (115, 115, 7, '2023-03-24'),  (116, 116, 7, '2023-03-24'),  (117, 117, 7, '2023-03-24'),  (118, 118, 7, '2023-03-24'),  (119, 119, 7, '2023-03-24'),  (120, 120, 7, '2023-03-24'),  (121, 121, 8, '2023-03-24'),  (122, 122, 8, '2023-03-24'),  (123, 123, 8, '2023-03-24'),  (124, 124, 8, '2023-03-24'),  (125, 125, 8, '2023-03-24'),  (126, 126, 8, '2023-03-24'),  (127, 127, 8, '2023-03-24'),  (128, 128, 8, '2023-03-24'),  (129, 129, 8, '2023-03-24'),  (130, 130, 8, '2023-03-24'),  (131, 131, 9, '2023-03-24'),  (132, 132, 9, '2023-03-24'),  (133, 133, 9, '2023-03-24'),  (134, 134, 9, '2023-03-24'),  (135, 135, 9, '2023-03-24'),  (136, 136, 9, '2023-03-24'),  (137, 137, 9, '2023-03-24'),  (138, 138, 9, '2023-03-24'),  (139, 139, 9, '2023-03-24'),  (140, 140, 9, '2023-03-24'),  (141, 141, 10, '2023-03-24'),  (142, 142, 10, '2023-03-24'),  (143, 143, 10, '2023-03-24'),  (144, 144, 10, '2023-03-24'),  (145, 145, 10, '2023-03-24'),  (146, 146, 10, '2023-03-24'),  (147, 147, 10, '2023-03-24'),  (148, 148, 10, '2023-03-24'),  (149, 149, 10, '2023-03-24'),  (150, 150, 10, '2023-03-24'),  (151, 151, 6, '2023-03-24'),  (152, 152, 6, '2023-03-24'),  (153, 153, 6, '2023-03-24'),  (154, 154, 6, '2023-03-24'),  (155, 155, 6, '2023-03-24'),  (156, 156, 6, '2023-03-24'),  (157, 157, 6, '2023-03-24'),  (158, 158, 6, '2023-03-24'),  (159, 159, 6, '2023-03-24'),  (160, 160, 6, '2023-03-24'),  (161, 161, 7, '2023-03-24'),  (162, 162, 7, '2023-03-24'),  (163, 163, 7, '2023-03-24'),  (164, 164, 7, '2023-03-24'),  (165, 165, 7, '2023-03-24'),  (166, 166, 7, '2023-03-24'),  (167, 167, 7, '2023-03-24'),  (168, 168, 7, '2023-03-24'),  (169, 169, 7, '2023-03-24'),  (170, 170, 7, '2023-03-24'),  (171, 171, 8, '2023-03-24'),  (172, 172, 8, '2023-03-24'),  (173, 173, 8, '2023-03-24'),  (174, 174, 8, '2023-03-24'),  (175, 175, 8, '2023-03-24'),  (176, 176, 8, '2023-03-24'),  (177, 177, 8, '2023-03-24'),  (178, 178, 8, '2023-03-24'),  (179, 179, 8, '2023-03-24'),  (180, 180, 8, '2023-03-24'),  (181, 181, 9, '2023-03-24'),  (182, 182, 9, '2023-03-24'),  (183, 183, 9, '2023-03-24'),  (184, 184, 9, '2023-03-24'),  (185, 185, 9, '2023-03-24'),  (186, 186, 9, '2023-03-24'),  (187, 187, 9, '2023-03-24'),  (188, 188, 9, '2023-03-24'),  (189, 189, 9, '2023-03-24'),  (190, 190, 9, '2023-03-24'),  (191, 191, 10, '2023-03-24'),  (192, 192, 10, '2023-03-24'),  (193, 193, 10, '2023-03-24'),  (194, 194, 10, '2023-03-24'),  (195, 195, 10, '2023-03-24'),  (196, 196, 10, '2023-03-24'),  (197, 197, 10, '2023-03-24'),  (198, 198, 10, '2023-03-24'),  (199, 199, 10, '2023-03-24'),  (200, 200, 10, '2023-03-24');  SELECT\*  FROM Booking;  -- Populate Pilot Table  INSERT INTO Pilot (pilot\_id, name, flight\_id) VALUES  (1, 'Captain Richard Lee', 1),  (2, 'Captain Abdullah Khan', 2),  (3, 'Captain James Williams', 3),  (4, 'Captain Takashi Yamamoto', 4),  (5, 'Captain Aamir Shah', 5),  (6, 'Captain Mehmet Yildiz', 6),  (7, 'Captain Sung-Jin Park', 7),  (8, 'Captain Elizabeth Brown', 8),  (9, 'Captain Ahmed Ali', 9),  (10, 'Captain Haruto Sato', 10);  SELECT\*  FROM Pilot;  -- Populate Staff Table  INSERT INTO Staff (staff\_id, name, role, flight\_id) VALUES  (1, 'Sarah Lim', 'Hostess', 1),  (2, 'Ahmed Ali', 'Guard', 1),  (3, 'Layla Ahmed', 'Administrator', 1),  (4, 'Yuki Yamamoto', 'Booking Officer', 1),  (5, 'Fatima Ahmed', 'Hostess', 2),  (6, 'Elif Kaya', 'Guard', 2),  (7, 'Eun-ji Han', 'Administrator', 2),  (8, 'James Smith', 'Booking Officer', 2),  (9, 'Mariam Khalid', 'Hostess', 3),  (10, 'Jack', 'Guard', 3),  (11, 'Karen', 'Administrator', 3),  (12, 'Leo', 'Booking Officer', 3),  (13, 'Mia', 'Hostess', 4),  (14, 'Nina', 'Guard', 4),  (15, 'Oscar', 'Administrator', 4),  (16, 'Paul', 'Booking Officer', 4),  (17, 'Quinn', 'Hostess', 5),  (18, 'Rose', 'Guard', 5),  (19, 'Steve', 'Administrator', 5),  (20, 'Tina', 'Booking Officer', 5),  (21, 'Umar', 'Hostess', 6),  (22, 'Violet', 'Guard', 6),  (23, 'Wendy', 'Administrator', 6),  (24, 'Xander', 'Booking Officer', 6),  (25, 'Yasmin', 'Hostess', 7),  (26, 'Zach', 'Guard', 7),  (27, 'Anna', 'Administrator', 7),  (28, 'Brian', 'Booking Officer', 7),  (29, 'Carmen', 'Hostess', 8),  (30, 'David', 'Guard', 8),  (31, 'Eva', 'Administrator', 8),  (32, 'Frank', 'Booking Officer', 8),  (33, 'Grace', 'Hostess', 9),  (34, 'Henry', 'Guard', 9),  (35, 'Ivy', 'Administrator', 9),  (36, 'Jake', 'Booking Officer', 9),  (37, 'Katie', 'Hostess', 10),  (38, 'Liam', 'Guard', 10),  (39, 'Mona', 'Administrator', 10),  (40, 'Nathan', 'Booking Officer', 10);  SELECT\*  FROM Staff;  -- Retrieve booking details for passengers flying on 24-03-2023  SELECT \*  FROM Booking  WHERE booking\_date = '2023-03-24';  -- Delete booking details for the date 20-03-2023  DELETE  FROM Booking  WHERE booking\_date = '2023-03-20';  -- Create a view on the flights table  CREATE VIEW FlightView AS  SELECT flight\_number, departure\_airport, destination\_airport  FROM Flight;  -- Update the view such that the flight on 24-03-2023 departs from Dubai and arrives in Pakistan  ALTER VIEW FlightView AS  SELECT  flight\_number,  CASE  WHEN departure\_datetime = '2023-03-24' THEN 'Dubai'  ELSE departure\_airport  END AS departure\_airport,  CASE  WHEN departure\_datetime = '2023-03-24' THEN 'Pakistan'  ELSE destination\_airport  END AS destination\_airport  FROM Flight;  SELECT\*  FROM Flight  SELECT \*  FROM Airplane  ---------------------------------------------------------------  -- Adding Join to etracts multiple data from different tables  SELECT A.passenger\_id, A.given\_name, A.surname, A.email, A.flight\_id, B.booking\_id, B.booking\_date AS Passenger\_Details  FROM Passenger A  JOIN Booking B ON A.flight\_id = B.booking\_id  SELECT A.passenger\_id, A.given\_name, A.surname, A.email, A.flight\_id, B.booking\_id, B.booking\_date AS Passenger\_Details  FROM Passenger A  JOIN Booking B ON A.flight\_id = B.booking\_id  where B.booking\_date = '2023-03-24';  SELECT \*  FROM Passenger |

**Output:**

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**Conclusion:**

This project shows how to design and create a complete database system for an aviation company. We made a well-organized database that helps manage and retrieve data efficiently. Using SQL Server, we put database concepts into practice and ran queries to show that the system can handle real-world needs. This project meets academic goals and offers a scalable solution for managing complex data in the aviation industry.