FLIGHT RESERVATION AND BOOKING SYSTEM

Members:

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This project focus on developing an advanced flight reservation function by creating and organizing database tables. This involved the execution of Data Definition Language (DDL) and Data Manipulation Language (DML) queries to create, insert and test the database structure to manage it effectively. This Project aims to ensure the new reservation system that will handle all aspects of flight bookings, including passenger details, flight schedules, and seat allocations, with enhanced efficiency and reliability.
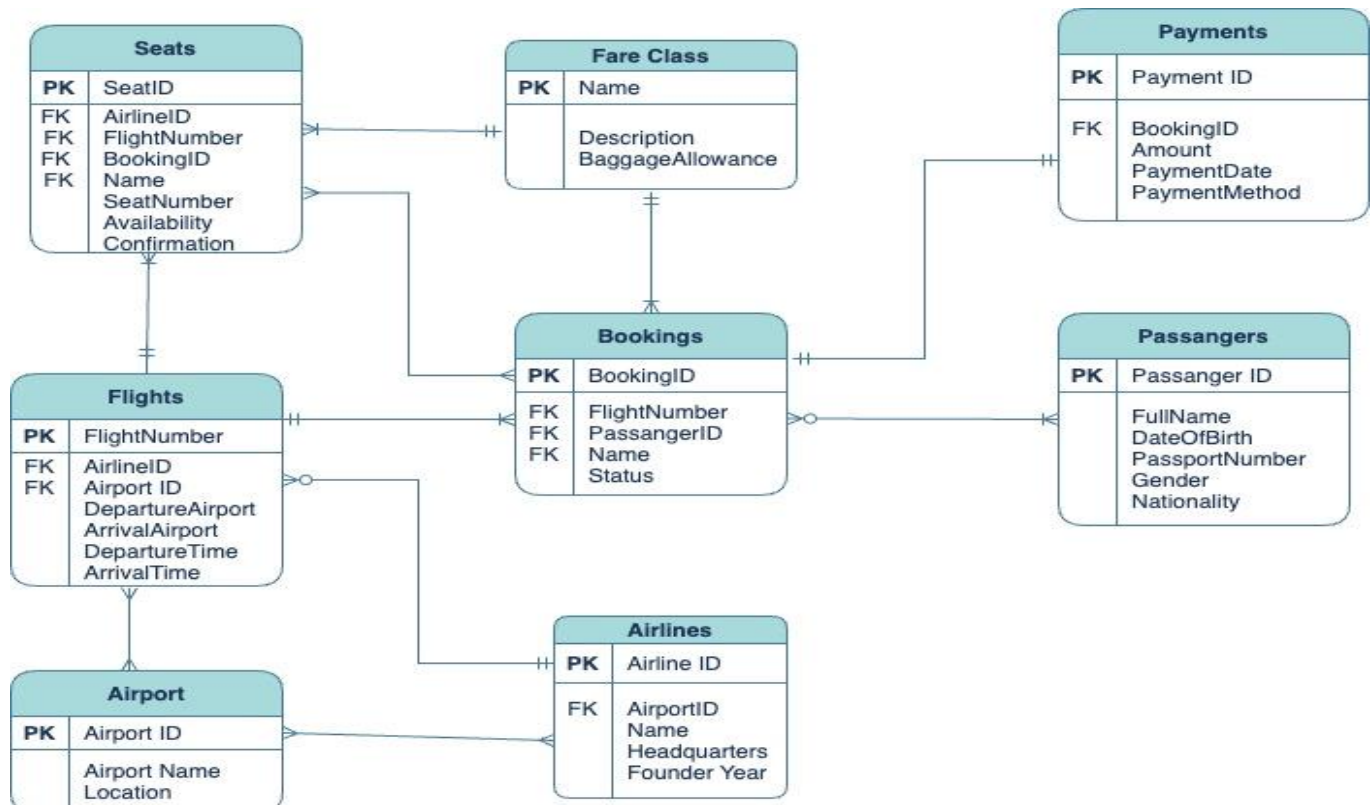
Database Design

The database design includes Database "**Flight Reservation**" and incorporates several entities and attributes to represent the aspects of airline operations.

Entities

1. Airlines- AirlineID(PK), Name, Headquarters, FoundedYear.

2. Flight- FlightNumbe(PK), AirlineID(FK), DepartureAirport(FK), ArrivalAirport(FK), DepartureTime, ArrivalTime.

3. Passengers-PassengerID(PK), FullName, Nationality, DateofBirth, Gender, Passport Number.

4. Bookings-BookingID(PK), FlightNumber(FK), PassengerID(FK), BookingDate, FareClass(FK), Status .

5. Payments -PaymentID(PK), BookingID(FK), Amount, PaymentDate, PaymentMethod.

6. Seats - Seat ID(PK),AirlineID(FK),class,confirmation,FlightNumber(FK), SeatNumber, Availability.

7. Fairclass-Fare class (PK), Name, Description, BaggageAllowance.

8. Airport- Airport ID(PK), Airport Name, Location.

ER Diagram

Database Setup- creating table, primary and foreign keys.

- **Set up for Airlines Table**

```sql
CREATE TABLE Airlines (
    AirlineID INT,
    Name VARCHAR(255) NOT NULL,
    Headquarters VARCHAR(255),
    FoundedYear INT,
    AirportID VARCHAR(255),
    FOREIGN KEY (AirportID) REFERENCES Airport(AirportID),
    PRIMARY KEY(AirlineID)
);
```

- **Set up for Flight Table**

```sql
1   CREATE TABLE Flights (
2       FlightNumber VARCHAR(255),
3       AirlineID INT,
4       DepartureAirport VARCHAR(255),
5       ArrivalAirport VARCHAR(255),
6       DepartureTime DATETIME,
7       ArrivalTime DATETIME,
8       AirportID VARCHAR(255),
9       FOREIGN KEY (AirlineID) REFERENCES Airlines(AirlineID),
10      FOREIGN KEY (AirportID) REFERENCES Airport(AirportID),
11      PRIMARY KEY (FlightNumber)
12  );
13
```

- **Set up for Passengers Table**

```sql
 1  CREATE TABLE Passengers (
 2      PassengerID INT,
 3      FullName VARCHAR(255) NOT NULL,
 4      Nationality VARCHAR(255),
 5      DateOfBirth DATE,
 6      Gender CHAR(1),
 7      PassportNumber VARCHAR(255) UNIQUE,
 8      PRIMARY KEY (PassengerID)
 9  );
10
```

- **Set up for Bookings Table**

```sql
 1  CREATE TABLE Bookings (
 2      BookingID INT,
 3      FlightNumber VARCHAR(255),
 4      PassengerID INT,
 5      BookingDate DATE,
 6      Name VARCHAR(255),
 7      Status VARCHAR(255),
 8      FOREIGN KEY (FlightNumber) REFERENCES Flights(FlightNumber),
 9      FOREIGN KEY (PassengerID) REFERENCES Passengers(PassengerID),
10      FOREIGN KEY (Name) REFERENCES FareClass(Name),
11      PRIMARY KEY (BookingID)
12  );
```

- **Set up for Payments Table**

```sql
 1  CREATE TABLE Payments (
 2      PaymentID INT,
 3      BookingID INT,
 4      Amount DECIMAL(10, 2),
 5      PaymentDate DATE,
 6      PaymentMethod VARCHAR(255),
 7      FOREIGN KEY (BookingID) REFERENCES Bookings(BookingID),
 8      PRIMARY KEY (PaymentID)
 9  );
10
```

- **Set up for Seats Table**

```sql
CREATE TABLE Seats (
    SeatID INT,
    AirlineID INT,
    BookingID INT,
    Name VARCHAR(255),
    Confirmation VARCHAR(255),
    FlightNumber VARCHAR(255),
    SeatNumber VARCHAR(255),
    Availability BOOLEAN,
    FOREIGN KEY (AirlineID) REFERENCES Airlines(AirlineID),
    FOREIGN KEY (FlightNumber) REFERENCES Flights(FlightNumber),
    FOREIGN KEY (BookingID) REFERENCES Bookings(BookingID),
    FOREIGN KEY (Name) REFERENCES FareClass(Name),
    PRIMARY KEY (SeatID)
);
```

- **Set up for Fairclass Table**

```sql
CREATE TABLE FareClass (
    FareClassID INT,
    Name VARCHAR(255) NOT NULL,
    Description TEXT,
    BaggageAllowance INT,
    PRIMARY KEY (FareClassID)
);
```

- **Set up for Airport Table**

```sql
CREATE TABLE Airport (
    AirportID VARCHAR(255),
    AirportName VARCHAR(255) NOT NULL,
    Location VARCHAR(255) NOT NULL,
    PRIMARY KEY (AirportID)
);
```

Load Data- Insert queries for all the Tables.

- **Airport Table**

Query :

```
1 INSERT INTO Airport (AirportID, AirportName, Location) VALUES ('1','Hartsfield,ÄìJackson Atlanta International
  Airport','Atlanta, USA');
2 INSERT INTO Airport (AirportID, AirportName, Location) VALUES ('2','Heathrow Airport','London, UK');
3 INSERT INTO Airport (AirportID, AirportName, Location) VALUES ('3','Dubai International Airport','Dubai, UAE');
4 INSERT INTO Airport (AirportID, AirportName, Location) VALUES ('4','Tokyo Haneda Airport','Tokyo, Japan');
5 INSERT INTO Airport (AirportID, AirportName, Location) VALUES ('5','Los Angeles International Airport','Los
  Angeles, USA');
6
7 |
```

Loaded Data :

AirportID	AirportName	Location
1	Hartsfield,ÄìJackson Atlanta International Airport	Atlanta, USA
2	Heathrow Airport	London, UK
3	Dubai International Airport	Dubai, UAE
4	Tokyo Haneda Airport	Tokyo, Japan
5	Los Angeles International Airport	Los Angeles, USA

- **Airline Table**

Query :

```
1 insert into Airlines (AirlineID, Name, Headquarters, FoundedYear, AirportID ) values ('1','Delta Air
  Lines','Atlanta, Georgia, USA','1929','1');
2 insert into Airlines (AirlineID, Name, Headquarters, FoundedYear, AirportID ) values ('2','British
  Airways','London, England, UK','1974','2');
3 insert into Airlines (AirlineID, Name, Headquarters, FoundedYear, AirportID ) values ('3','Emirates','Dubai,
  United Arab Emirates','1985','3');
4 insert into Airlines (AirlineID, Name, Headquarters, FoundedYear, AirportID ) values ('4','All Nippon
  Airways','Tokyo, Japan','1952','4');
5
```

Loaded Data :

AirlineID	Name	Headquarters	FoundedYear	AirportID
1	Delta Air Lines	Atlanta, Georgia, USA	1929	1
2	British Airways	London, England, UK	1974	2
3	Emirates	Dubai, United Arab Emirates	1985	3
4	All Nippon Airways	Tokyo, Japan	1952	4

- **Passengers Table**

```
INSERT INTO Passengers (PassengerID, FullName, Nationality, DateOfBirth, Gender, PassportNumber) VALUES
('1','Mary Williams','Chinese','1969-09-26 00:00:00','F','ZD419512');
INSERT INTO Passengers (PassengerID, FullName, Nationality, DateOfBirth, Gender, PassportNumber) VALUES
('2','Elizabeth Garcia','Russian','1964-06-19 00:00:00','M','PD080610');
INSERT INTO Passengers (PassengerID, FullName, Nationality, DateOfBirth, Gender, PassportNumber) VALUES
('3','Michael Johnson','German','1973-01-05 00:00:00','F','PO350818');
INSERT INTO Passengers (PassengerID, FullName, Nationality, DateOfBirth, Gender, PassportNumber) VALUES
('4','James Smith','Canadian','2002-10-29 00:00:00','M','UF001831');
INSERT INTO Passengers (PassengerID, FullName, Nationality, DateOfBirth, Gender, PassportNumber) VALUES
('5','Linda Miller','Spanish','1979-06-04 00:00:00','F','OJ262404');
INSERT INTO Passengers (PassengerID, FullName, Nationality, DateOfBirth, Gender, PassportNumber) VALUES
('6','Patricia Garcia','Canadian','1991-01-01 00:00:00','M','BK151438');
INSERT INTO Passengers (PassengerID, FullName, Nationality, DateOfBirth, Gender, PassportNumber) VALUES
('7','Linda Smith','Chinese','1989-05-10 00:00:00','F','SF980113');
INSERT INTO Passengers (PassengerID, FullName, Nationality, DateOfBirth, Gender, PassportNumber) VALUES
('8','Linda Johnson','Canadian','1977-06-10 00:00:00','M','FG805287');
INSERT INTO Passengers (PassengerID, FullName, Nationality, DateOfBirth, Gender, PassportNumber) VALUES
```

Loaded Data :

PassengerID	FullName	Nationality	DateOfBirth	Gender	PassportNumber
1	Mary Williams	Chinese	1969-09-26	F	ZD419512
2	Elizabeth Garcia	Russian	1964-06-19	M	PD080610
3	Michael Johnson	German	1973-01-05	F	PO350818
4	James Smith	Canadian	2002-10-29	M	UF001831
5	Linda Miller	Spanish	1979-06-04	F	OJ262404
6	Patricia Garcia	Canadian	1991-01-01	M	BK151438
7	Linda Smith	Chinese	1989-05-10	F	SF980113
8	Linda Johnson	Canadian	1977-06-10	M	FG805287
9	Michael Garcia	Indian	1972-10-28	F	PO008520
10	Jennifer Williams	Indian	2001-05-13	M	FK911424
11	William Brown	Japanese	1997-11-28	F	GU620923
12	Robert Smith	Spanish	1984-07-24	M	BE795969
13	William Brown	Canadian	1986-08-25	F	EV171069
14	Elizabeth Rodriguez	Chinese	1964-09-26	M	MT526665
15	Michael Jones	Canadian	1976-05-20	F	HS454365
16	Robert Brown	German	1972-06-23	M	MX783725
17	Jennifer Johnson	German	1989-08-29	F	YV531700
18	Jennifer Williams	French	1983-02-02	M	SW096306
19	Michael Johnson	Chinese	1964-12-20	F	LD944382
20	Michael Rodriguez	Japanese	1987-04-22	M	SN227652
21	John Johnson	Indian	1981-04-20	F	TX567444
22	Jennifer Martinez	Canadian	1967-03-14	M	MZ508838
23	Robert Rodriguez	French	1980-06-14	F	MJ728298
24	William Garcia	Spanish	1969-06-16	M	ZT916570
25	Elizabeth Rodriguez	German	2000-12-05	F	AQ501989
26	Michael Jones	German	1987-01-20	M	QO885487
27	James Martinez	Japanese	2000-02-18	F	TY799572

PassengerID	FullName	Nationality	DateOfBirth	Gender	PassportNumber
28	John Martinez	French	1973-09-02	M	HS759891
29	Elizabeth Rodriguez	French	1966-04-26	F	OD894139
30	Elizabeth Martinez	Japanese	1972-02-25	M	RY656284
31	William Jones	Russian	2002-07-07	F	BP830332
32	James Jones	Indian	1964-06-10	M	UB785477
33	Linda Garcia	French	1988-12-02	F	LB194647
34	Jennifer Davis	Canadian	1976-11-18	M	VX086878
35	John Smith	French	2005-01-31	F	TV885808
36	Linda Miller	Russian	1989-11-18	M	PY535398
37	Patricia Jones	Spanish	1996-01-06	F	TQ609103
38	William Brown	Canadian	1967-12-18	M	ZQ959366
39	Robert Martinez	Indian	1970-05-01	F	AV083399
40	Mary Jones	Indian	2005-11-29	M	IL944243
41	John Miller	Chinese	1976-12-28	F	ND814366
42	Jennifer Rodriguez	Japanese	1998-03-29	M	RN403612
43	James Rodriguez	Mexican	1974-10-30	F	SC697584
44	Jennifer Williams	Indian	1967-07-10	M	EH375848
45	Mary Garcia	Russian	1985-06-02	F	MV411512
46	Elizabeth Martinez	Mexican	1987-01-14	M	II554593
47	Michael Jones	Indian	1980-08-05	F	JY453482
48	Linda Johnson	Chinese	2000-02-03	M	NG337681
49	Jennifer Rodriguez	Russian	1966-12-03	F	AH293320
50	John Davis	German	1978-01-02	M	JS261845

Flight Table

Query :

```sql
INSERT INTO Flights (FlightNumber, AirlineID, DepartureAirport, ArrivalAirport,
DepartureTime,ArrivalTime,AirportID) VALUES ('F001','2','Heathrow Airport','Dubai International Airport','2024-
02-11:10:00','2024-02-11:12:00','2');
INSERT INTO Flights (FlightNumber, AirlineID, DepartureAirport, ArrivalAirport,
DepartureTime,ArrivalTime,AirportID) VALUES ('F002','3','Dubai International Airport','Tokyo Haneda
Airport','2024-02-12:10:00','2024-02-12:12:00','3');
INSERT INTO Flights (FlightNumber, AirlineID, DepartureAirport, ArrivalAirport,
DepartureTime,ArrivalTime,AirportID) VALUES ('F003','4','Tokyo Haneda Airport','Los Angeles International
Airport','2024-02-13:10:00','2024-02-13:12:00','4');
INSERT INTO Flights (FlightNumber, AirlineID, DepartureAirport, ArrivalAirport,
DepartureTime,ArrivalTime,AirportID) VALUES ('F004','1','Los Angeles International Airport','Hartsfield-Jackson
Atlanta International Airport','2024-02-14:10:00','2024-02-14:12:00','5');
INSERT INTO Flights (FlightNumber, AirlineID, DepartureAirport, ArrivalAirport,
DepartureTime,ArrivalTime,AirportID) VALUES ('F005','2','Hartsfield-Jackson Atlanta International
Airport','Heathrow Airport','2024-02-15:10:00','2024-02-15:12:00','1');
INSERT INTO Flights (FlightNumber, AirlineID, DepartureAirport, ArrivalAirport,
DepartureTime,ArrivalTime,AirportID) VALUES ('F006','3','Heathrow Airport','Dubai International Airport','2024-
```

Loaded Data :

FlightNumber	AirlineID	DepartureAirport	ArrivalAirport	DepartureTime	ArrivalTime	AirportID
F001	2	Heathrow Airport	Dubai International Airport	2024-02-11 10:00:00	2024-02-11 12:00:00	2
F0010	3	Hartsfield–Jackson Atlanta International Airport	Heathrow Airport	2024-02-20 10:00:00	2024-02-20 12:00:00	1
F002	3	Dubai International Airport	Tokyo Haneda Airport	2024-02-12 10:00:00	2024-02-12 12:00:00	3
F003	4	Tokyo Haneda Airport	Los Angeles International Airport	2024-02-13 10:00:00	2024-02-13 12:00:00	4
F004	1	Los Angeles International Airport	Hartsfield–Jackson Atlanta International Airport	2024-02-14 10:00:00	2024-02-14 12:00:00	5
F005	2	Hartsfield–Jackson Atlanta International Airport	Heathrow Airport	2024-02-15 10:00:00	2024-02-15 12:00:00	1
F006	2	Heathrow Airport	Dubai International Airport	2024-02-11 10:00:00	2024-02-11 12:00:00	2
F007	4	Dubai International Airport	Tokyo Haneda Airport	2024-02-17 10:00:00	2024-02-17 12:00:00	3
F008	1	Tokyo Haneda Airport	Los Angeles International Airport	2024-02-18 10:00:00	2024-02-18 12:00:00	4
F009	2	Los Angeles International Airport	Hartsfield–Jackson Atlanta International Airport	2024-02-19 10:00:00	2024-02-19 12:00:00	5

- **Booking Table**
  ### Query :

```sql
INSERT INTO Bookings (BookingID, FlightNumber, PassengerID, BookingDate, Name, Status) VALUES
('1','F002','1','2023-08-31 00:00:00','Business','Confirmed');
INSERT INTO Bookings (BookingID, FlightNumber, PassengerID, BookingDate, Name, Status) VALUES
('2','F003','2','2023-03-24 00:00:00','Economy','Confirmed');
INSERT INTO Bookings (BookingID, FlightNumber, PassengerID, BookingDate, Name, Status) VALUES
('3','F004','3','2023-08-19 00:00:00','Business','Confirmed');
INSERT INTO Bookings (BookingID, FlightNumber, PassengerID, BookingDate, Name, Status) VALUES
('4','F005','4','2023-02-05 00:00:00','Economy','Confirmed');
INSERT INTO Bookings (BookingID, FlightNumber, PassengerID, BookingDate, Name, Status) VALUES
('5','F006','5','2023-09-08 00:00:00','Business','Confirmed');
INSERT INTO Bookings (BookingID, FlightNumber, PassengerID, BookingDate, Name, Status) VALUES
('6','F007','6','2023-07-11 00:00:00','Economy','Confirmed');
INSERT INTO Bookings (BookingID, FlightNumber, PassengerID, BookingDate, Name, Status) VALUES
('7','F008','7','2023-02-11 00:00:00','Business','Confirmed');
```

BookingID	FlightNumber	PassengerID	BookingDate	Name	Status
1	F002	1	2023-08-31	Business	Confirmed
2	F003	2	2023-03-24	Economy	Confirmed
3	F004	3	2023-08-19	Business	Confirmed
4	F005	4	2023-02-05	Economy	Confirmed
5	F006	5	2023-09-08	Business	Confirmed
6	F007	6	2023-07-11	Economy	Confirmed
7	F008	7	2023-02-11	Business	Confirmed
8	F009	8	2023-03-08	Economy	Confirmed
9	F0010	9	2023-04-10	Business	Confirmed
10	F001	10	2023-06-28	Economy	Confirmed
11	F002	11	2023-01-12	Business	Confirmed
12	F003	12	2023-08-27	Economy	Confirmed
13	F004	13	2023-04-22	Business	Confirmed
14	F005	14	2023-09-11	Economy	Confirmed
15	F006	15	2023-11-03	Business	Confirmed
16	F007	16	2023-05-29	Economy	Confirmed
17	F008	17	2023-10-08	Business	Confirmed
18	F009	18	2023-03-01	Economy	Confirmed
19	F0010	19	2023-03-19	Business	Confirmed
20	F001	20	2023-05-27	Economy	Confirmed
21	F002	21	2023-06-07	Business	Confirmed
22	F003	22	2023-07-27	Economy	Confirmed
23	F004	23	2023-07-28	Business	Confirmed
24	F005	24	2023-05-24	Economy	Confirmed
25	F006	25	2023-02-03	Business	Confirmed

BookingID	FlightNumber	PassengerID	BookingDate	Name	Status
26	F007	26	2023-08-08	Economy	Confirmed
27	F008	27	2023-01-31	Business	Confirmed
28	F009	28	2023-03-11	Economy	Confirmed
29	F0010	29	2023-06-22	Business	Confirmed
30	F001	30	2023-01-07	Economy	Confirmed
31	F002	31	2023-08-14	Business	Confirmed
32	F003	32	2023-08-20	Economy	Confirmed
33	F004	33	2023-06-11	Business	Confirmed
34	F005	34	2023-11-07	Economy	Confirmed
35	F006	35	2023-09-05	Business	Confirmed
36	F007	36	2023-09-03	Economy	Confirmed
37	F008	37	2023-04-24	Business	Confirmed
38	F009	38	2023-07-15	Economy	Confirmed
39	F0010	39	2023-05-25	Business	Confirmed
40	F001	40	2023-11-20	Economy	Confirmed
41	F002	41	2023-09-15	Business	Confirmed
42	F003	42	2023-08-07	Economy	Confirmed
43	F004	43	2023-04-03	Business	Confirmed
44	F005	44	2023-03-30	Economy	Confirmed
45	F006	45	2023-10-24	Business	Confirmed
46	F007	46	2023-04-11	Economy	Confirmed
47	F008	47	2023-06-21	Business	Confirmed
48	F009	48	2023-08-24	Economy	Confirmed
49	F0010	49	2023-03-20	Business	Confirmed
50	F001	50	2023-10-17	Economy	Confirmed

- **Payment Table**
  Query :

```sql
INSERT INTO Payments (PaymentID, BookingID, Amount , PaymentDate, PaymentMethod) VALUES ('1','1','205','2023-12-02 00:00:00','Debit Card');
INSERT INTO Payments (PaymentID, BookingID, Amount , PaymentDate, PaymentMethod) VALUES ('2','2','210','2023-12-02 00:00:00','PayPal');
INSERT INTO Payments (PaymentID, BookingID, Amount , PaymentDate, PaymentMethod) VALUES ('3','3','215','2023-12-02 00:00:00','PayPal');
INSERT INTO Payments (PaymentID, BookingID, Amount , PaymentDate, PaymentMethod) VALUES ('4','4','220','2023-12-02 00:00:00','PayPal');
INSERT INTO Payments (PaymentID, BookingID, Amount , PaymentDate, PaymentMethod) VALUES ('5','5','225','2023-12-02 00:00:00','PayPal');
INSERT INTO Payments (PaymentID, BookingID, Amount , PaymentDate, PaymentMethod) VALUES ('6','6','230','2023-12-02 00:00:00','Credit Card');
INSERT INTO Payments (PaymentID, BookingID, Amount , PaymentDate, PaymentMethod) VALUES ('7','7','235','2023-12-02 00:00:00','Bank Transfer');
INSERT INTO Payments (PaymentID, BookingID, Amount , PaymentDate, PaymentMethod) VALUES ('8','8','240','2023-12-02 00:00:00','Credit Card');
INSERT INTO Payments (PaymentID, BookingID, Amount , PaymentDate, PaymentMethod) VALUES ('9','9','245','2023-12-
```

Loaded Data :

PaymentID	BookingID	Amount	PaymentDate	PaymentMethod
1	1	205.00	2023-12-02	Debit Card
2	2	210.00	2023-12-02	PayPal
3	3	215.00	2023-12-02	PayPal
4	4	220.00	2023-12-02	PayPal
5	5	225.00	2023-12-02	PayPal
6	6	230.00	2023-12-02	Credit Card
7	7	235.00	2023-12-02	Bank Transfer
8	8	240.00	2023-12-02	Credit Card
9	9	245.00	2023-12-02	PayPal
10	10	250.00	2023-12-02	PayPal
11	11	255.00	2023-12-02	Credit Card
12	12	260.00	2023-12-02	PayPal
13	13	265.00	2023-12-02	Bank Transfer
14	14	270.00	2023-12-02	PayPal
15	15	275.00	2023-12-02	Credit Card
16	16	280.00	2023-12-02	Credit Card
17	17	285.00	2023-12-02	Bank Transfer
18	18	290.00	2023-12-02	Debit Card
19	19	295.00	2023-12-02	PayPal
20	20	300.00	2023-12-02	Bank Transfer
21	21	305.00	2023-12-02	Credit Card
22	22	310.00	2023-12-02	Credit Card
23	23	315.00	2023-12-02	Debit Card
24	24	320.00	2023-12-02	PayPal
25	25	325.00	2023-12-02	Debit Card

PaymentID	BookingID	Amount	PaymentDate	PaymentMethod
26	26	330.00	2023-12-02	Debit Card
27	27	335.00	2023-12-02	Bank Transfer
28	28	340.00	2023-12-02	PayPal
29	29	345.00	2023-12-02	Credit Card
30	30	350.00	2023-12-02	Debit Card
31	31	355.00	2023-12-02	Debit Card
32	32	360.00	2023-12-02	Debit Card
33	33	365.00	2023-12-02	Credit Card
34	34	370.00	2023-12-02	Debit Card
35	35	375.00	2023-12-02	Bank Transfer
36	36	380.00	2023-12-02	Debit Card
37	37	385.00	2023-12-02	PayPal
38	38	390.00	2023-12-02	Credit Card
39	39	395.00	2023-12-02	Debit Card
40	40	400.00	2023-12-02	PayPal
41	41	405.00	2023-12-02	PayPal
42	42	410.00	2023-12-02	Bank Transfer
43	43	415.00	2023-12-02	Debit Card
44	44	420.00	2023-12-02	PayPal
45	45	425.00	2023-12-02	Bank Transfer
46	46	430.00	2023-12-02	Credit Card
47	47	435.00	2023-12-02	PayPal
48	48	440.00	2023-12-02	Bank Transfer
49	49	445.00	2023-12-02	PayPal
50	50	450.00	2023-12-02	Bank Transfer

- **Seat Table**
  Query :

```
INSERT INTO Seats (SeatID, AirlineID, Name, Confirmation, FlightNumber, SeatNumber, Availability,BookingID)
VALUES (K198('1','1','Business','Yes','F002','2A','0','1'));
INSERT INTO Seats (SeatID, AirlineID, Name, Confirmation, FlightNumber, SeatNumber, Availability,BookingID)
VALUES (K198('2','2','Economy','Yes','F003','3A','1','2'));
INSERT INTO Seats (SeatID, AirlineID, Name, Confirmation, FlightNumber, SeatNumber, Availability,BookingID)
VALUES (K198('3','2','Business','Yes','F004','4A','1','3'));
INSERT INTO Seats (SeatID, AirlineID, Name, Confirmation, FlightNumber, SeatNumber, Availability,BookingID)
VALUES (K198('4','3','Economy','Yes','F005','5A','1','4'));
INSERT INTO Seats (SeatID, AirlineID, Name, Confirmation, FlightNumber, SeatNumber, Availability,BookingID)
VALUES( K198('5','3','Business','Yes','F006','1A','0','5'));
INSERT INTO Seats (SeatID, AirlineID, Name, Confirmation, FlightNumber, SeatNumber, Availability,BookingID)
VALUES (K198('6','4','Economy','Yes','F007','2A','1','6'));
INSERT INTO Seats (SeatID, AirlineID, Name, Confirmation, FlightNumber, SeatNumber, Availability,BookingID)
VALUES (K198('7','4','Business','Yes','F008','3A','0','7'));
INSERT INTO Seats (SeatID, AirlineID, Name, Confirmation, FlightNumber, SeatNumber, Availability,BookingID)
VALUES (K198('8','5','Economy','Yes','F009','4A','1','8'));
```

  Loaded Data :

SeatID	AirlineID	Name	Confirmation	FlightNumber	SeatNumber	Availability	BookingID
1	1	Business	Yes	F002	2A	0	1
2	2	Economy	Yes	F003	3A	1	2
3	2	Business	Yes	F004	4A	1	3
4	3	Economy	Yes	F005	5A	1	4
5	3	Business	Yes	F006	1A	0	5
6	4	Economy	Yes	F007	2A	1	6
7	4	Business	Yes	F008	3A	0	7
8	1	Economy	Yes	F009	4A	1	8
9	2	Business	Yes	F0010	5A	1	9
10	1	Economy	Yes	F001	1A	1	10
11	1	Business	Yes	F002	2A	0	11
12	2	Economy	Yes	F003	3A	1	12
13	2	Business	Yes	F004	4A	1	13
14	3	Economy	Yes	F005	5A	1	14
15	3	Business	Yes	F006	1A	0	15
16	4	Economy	Yes	F007	2A	0	16
17	4	Business	Yes	F008	3A	1	17
18	2	Economy	Yes	F009	4A	0	18
19	2	Business	Yes	F0010	5A	1	19
20	1	Economy	Yes	F001	1A	1	20
21	1	Business	Yes	F002	2A	0	21
22	2	Economy	Yes	F003	3A	1	22
23	2	Business	Yes	F004	4A	1	23
24	3	Economy	Yes	F005	5A	1	24
25	3	Business	Yes	F006	1A	0	25

SeatID	AirlineID	Name	Confirmation	FlightNumber	SeatNumber	Availability	BookingID
26	4	Economy	Yes	F007	2A	1	26
27	4	Business	Yes	F008	3A	1	27
28	4	Economy	Yes	F009	4A	0	28
29	4	Business	Yes	F0010	5A	0	29
30	1	Economy	Yes	F001	1A	0	30
31	1	Business	Yes	F002	2A	0	31
32	2	Economy	Yes	F003	3A	0	32
33	2	Business	Yes	F004	4A	0	33
34	3	Economy	Yes	F005	5A	1	34
35	3	Business	Yes	F006	1A	1	35
36	4	Economy	Yes	F007	2A	0	36
37	4	Business	Yes	F008	3A	1	37
38	2	Economy	Yes	F009	4A	0	38
39	2	Business	Yes	F0010	5A	0	39
40	1	Economy	Yes	F001	1A	0	40
41	1	Business	Yes	F002	2A	1	41
42	2	Economy	Yes	F003	3A	1	42
43	2	Business	Yes	F004	4A	0	43
44	3	Economy	Yes	F005	5A	1	44
45	3	Business	Yes	F006	1A	0	45
46	4	Economy	Yes	F007	2A	0	46
47	4	Business	Yes	F008	3A	0	47
48	3	Economy	Yes	F009	4A	0	48
49	3	Business	Yes	F0010	5A	1	49
50	1	Economy	Yes	F001	1A	0	50

- **Fare Table**
  Query :

```sql
INSERT INTO Fareclass (FareClassID, Name, Description, BaggageAllowance) VALUES ('1','Economy','Standard
seating','1 piece, 23kg');
INSERT INTO Fareclass (FareClassID, Name, Description, BaggageAllowance) VALUES ('2','Business','Enhanced
comfort, extra legroom, premium service','2 pieces, 32kg each');
```

Loaded Data :

FareClassID	Name	Description	BaggageAllowance
2	Business	Enhanced comfort, extra legroom, premium service	2
1	Economy	Standard seating	1

SQL Queries for testing

1. **Booking Process Testing**
- **To Verify Booking Details**
  Query :

```sql
SELECT b.BookingID, p.FullName, f.FlightNumber,a.AirportName, b.BookingDate, b.Name, b.Status
FROM Bookings b
JOIN Passengers p ON b.PassengerID = p.PassengerID
JOIN Flights f ON b.FlightNumber = f.FlightNumber
JOIN airport a ON a.AirportID = f.AirportID
JOIN Seats s ON b.BookingID = s.BookingID
WHERE b.BookingID in (4,8,18,43);
```

Result:

BookingID	FullName	FlightNumber	AirportName	BookingDate	Name	Status
4	James Smith	F005	Hartsfield,ÄìJackson Atlanta International Airport	2023-02-05	Economy	Confirmed
8	Linda Johnson	F009	Los Angeles International Airport	2023-03-08	Economy	Confirmed
18	Jennifer Williams	F009	Los Angeles International Airport	2023-03-01	Economy	Confirmed
43	James Rodriguez	F004	Los Angeles International Airport	2023-04-03	Business	Confirmed

- **To check the booking for a particular flight**
  Query :

```sql
SELECT b.BookingID, p.FullName, b.BookingDate, b.Name,a.Name,b.FlightNumber,b.Status
FROM Bookings b
JOIN Passengers p ON b.PassengerID = p.PassengerID
JOIN flights f ON f.FlightNumber = b.FlightNumber
JOIN airlines a ON a.AirlineID = f.AirlineID
WHERE b.FlightNumber in ('F001','F003','F007','F0010');
```

Result:

BookingID	FullName	BookingDate	Name	Name	FlightNumber	Status
10	Jennifer Williams	2023-06-28	Economy	British Airways	F001	Confirmed
20	Michael Rodriguez	2023-05-27	Economy	British Airways	F001	Confirmed
30	Elizabeth Martinez	2023-01-07	Economy	British Airways	F001	Confirmed
40	Mary Jones	2023-11-20	Economy	British Airways	F001	Confirmed
50	John Davis	2023-10-17	Economy	British Airways	F001	Confirmed
9	Michael Garcia	2023-04-10	Business	Emirates	F0010	Confirmed
19	Michael Johnson	2023-03-19	Business	Emirates	F0010	Confirmed
29	Elizabeth Rodriguez	2023-06-22	Business	Emirates	F0010	Confirmed
39	Robert Martinez	2023-05-25	Business	Emirates	F0010	Confirmed
49	Jennifer Rodriguez	2023-03-20	Business	Emirates	F0010	Confirmed
2	Elizabeth Garcia	2023-03-24	Economy	All Nippon Airways	F003	Confirmed
12	Robert Smith	2023-08-27	Economy	All Nippon Airways	F003	Confirmed
22	Jennifer Martinez	2023-07-27	Economy	All Nippon Airways	F003	Confirmed
32	James Jones	2023-08-20	Economy	All Nippon Airways	F003	Confirmed
42	Jennifer Rodriguez	2023-08-07	Economy	All Nippon Airways	F003	Confirmed
6	Patricia Garcia	2023-07-11	Economy	All Nippon Airways	F007	Confirmed
16	Robert Brown	2023-05-29	Economy	All Nippon Airways	F007	Confirmed
26	Michael Jones	2023-08-08	Economy	All Nippon Airways	F007	Confirmed
36	Linda Miller	2023-09-03	Economy	All Nippon Airways	F007	Confirmed
46	Elizabeth Martinez	2023-04-11	Economy	All Nippon Airways	F007	Confirmed

2. **Payment Processing Testing**
- **To check recorded payment for the booking**
  Query :

```
SELECT p.PaymentID, p.BookingID, p.Amount, p.PaymentDate, p.PaymentMethod, ps.FullName
FROM Payments p
JOIN Bookings b ON p.BookingID = b.BookingID
JOIN Passengers ps ON ps.PassengerID = b.PassengerID
WHERE p.BookingID IN (6, 7, 42, 18);
```

Result:

PaymentID	BookingID	Amount	PaymentDate	PaymentMethod	FullName
6	6	230.00	2023-12-02	Credit Card	Patricia Garcia
17	17	285.00	2023-12-02	Bank Transfer	Jennifer Johnson
18	18	290.00	2023-12-02	Debit Card	Jennifer Williams
42	42	410.00	2023-12-02	Bank Transfer	Jennifer Rodriguez

- **To check payment accuracy by flight**
  Query :

```sql
SELECT f.FlightNumber,a.Name as FlightName,f.DepartureAirport,SUM(p.Amount) AS TotalPayments
FROM Payments p
JOIN Bookings b ON p.BookingID = b.BookingID
JOIN Flights f ON b.FlightNumber = f.FlightNumber
JOIN Airlines a ON a.AirlineID = f.AirlineID
WHERE f.DepartureAirport in ('Dubai International Airport','Los Angeles International Airport','Heathrow
Airport','Hartsfield-Jackson Atlanta International Airport','Tokyo Haneda Airport')
GROUP BY f.FlightNumber;
```

Result:

FlightNumber	FlightName	DepartureAirport	TotalPayments
F001	British Airways	Heathrow Airport	1750.00
F0010	Emirates	Hartsfield-Jackson Atlanta International Airport	1725.00
F002	Emirates	Dubai International Airport	1525.00
F003	All Nippon Airways	Tokyo Haneda Airport	1550.00
F004	Delta Air Lines	Los Angeles International Airport	1575.00
F005	British Airways	Hartsfield-Jackson Atlanta International Airport	1600.00
F006	British Airways	Heathrow Airport	1625.00
F007	All Nippon Airways	Dubai International Airport	1650.00
F008	Delta Air Lines	Tokyo Haneda Airport	1675.00
F009	British Airways	Los Angeles International Airport	1700.00

3. Seat Allocating Testing

- **To verify seat assigned for a passenger.**
  Query :

```sql
1  SELECT a.Name,p.FullName,b.BookingID, s.SeatNumber, s.Class
2  FROM Bookings b
3  JOIN Seats s ON b.FlightNumber = s.FlightNumber AND b.BookingID = s.BookingID
4  JOIN Passengers p ON b.PassengerID = p.PassengerID
5  JOIN airlines a ON  s.AirlineID = a.AirlineID
6  WHERE p.PassengerID in (1,4,43,19,9,18,43) AND b.FlightNumber IN ('F004','F007','F008','F001','F005','F009');
```

Result:

Name	FullName	BookingID	SeatNumber	Class
British Airways	Jennifer Williams	18	4A	Economy
British Airways	James Rodriguez	43	4A	Business
Emirates	James Smith	4	5A	Economy

- **To Check seat Allocation for a flight**

```
1 SELECT s.SeatNumber, s.Availability,s.FlightNumber
2 FROM Seats s
3 WHERE s.FlightNumber in ('F003','F008','F002','F006','F0010')
4 ORDER BY s.SeatNumber;
```

SeatNumber ▲ 1	Availability	FlightNumber
1A	0	F006
1A	0	F006
1A	0	F006
1A	1	F006
1A	0	F006
2A	0	F002
2A	0	F002
2A	0	F002
2A	0	F002
2A	1	F002
3A	1	F003
3A	0	F008
3A	1	F003
3A	1	F008
3A	1	F003
3A	1	F008
3A	0	F003
3A	1	F008
3A	1	F003
3A	0	F008
5A	1	F0010
5A	1	F0010
5A	0	F0010
5A	0	F0010
5A	1	F0010

4. Listing all the flights from a particular airport

Query :

```
SELECT FlightNumber,a.Name, DepartureAirport, ArrivalAirport, DepartureTime, ArrivalTime
FROM Flights f
JOIN airlines a ON a.AirlineID = f.AirlineID
WHERE DepartureAirport IN ('Los Angeles International Airport', 'Dubai International Airport', 'Heathrow
Airport')
ORDER BY DepartureTime;
```

Result:

FlightNumber	Name	DepartureAirport	ArrivalAirport	DepartureTime ▲ 1	ArrivalTime
F001	British Airways	Heathrow Airport	Dubai International Airport	2024-02-11 10:00:00	2024-02-11 12:00:00
F006	British Airways	Heathrow Airport	Dubai International Airport	2024-02-11 10:00:00	2024-02-11 12:00:00
F002	Emirates	Dubai International Airport	Tokyo Haneda Airport	2024-02-12 10:00:00	2024-02-12 12:00:00
F004	Delta Air Lines	Los Angeles International Airport	Hartsfield–Jackson Atlanta International Airport	2024-02-14 10:00:00	2024-02-14 12:00:00
F007	All Nippon Airways	Dubai International Airport	Tokyo Haneda Airport	2024-02-17 10:00:00	2024-02-17 12:00:00
F009	British Airways	Los Angeles International Airport	Hartsfield–Jackson Atlanta International Airport	2024-02-19 10:00:00	2024-02-19 12:00:00

5. To find all the passengers of a particular nationality

- Query :

```
1  SELECT PassengerID, FullName, Nationality
2  FROM Passengers
3  WHERE Nationality in ('Chinese','Canadian','German','Indian');
4  |
```

PassengerID	FullName	Nationality
1	Mary Williams	Chinese
3	Michael Johnson	German
4	James Smith	Canadian
6	Patricia Garcia	Canadian
7	Linda Smith	Chinese
8	Linda Johnson	Canadian
9	Michael Garcia	Indian
10	Jennifer Williams	Indian
13	William Brown	Canadian
14	Elizabeth Rodriguez	Chinese
15	Michael Jones	Canadian
16	Robert Brown	German
17	Jennifer Johnson	German
19	Michael Johnson	Chinese
21	John Johnson	Indian
22	Jennifer Martinez	Canadian
25	Elizabeth Rodriguez	German
26	Michael Jones	German
32	James Jones	Indian
34	Jennifer Davis	Canadian
38	William Brown	Canadian
39	Robert Martinez	Indian
40	Mary Jones	Indian

| 41 | John Miller | Chinese |
| 44 | Jennifer Williams | Indian |

5. To check the average price of booking for a specific fare class

Query :

```
1 SELECT fareclass.Name,AVG(Amount) AS AvgPrice
2 FROM Payments
3 JOIN Bookings ON Payments.BookingID = Bookings.BookingID
4 JOIN FareClass ON Bookings.Name = FareClass.Name
5 WHERE FareClass.Name = 'Business';
```

Result:

Name	AvgPrice
Business	325.000000

6. To find flights for a particular airline

Query :

```
1 SELECT Flights.FlightNumber, Airlines.Name, DepartureAirport, ArrivalAirport
2 FROM Flights
3 JOIN Airlines ON Flights.AirlineID = Airlines.AirlineID
4 WHERE Airlines.Name in ('Delta Air Lines','British Airways','Emirates','All Nippon Airways');
```

Result:

FlightNumber	Name	DepartureAirport	ArrivalAirport
F004	Delta Air Lines	Los Angeles International Airport	Hartsfield–Jackson Atlanta International Airport
F008	Delta Air Lines	Tokyo Haneda Airport	Los Angeles International Airport
F001	British Airways	Heathrow Airport	Dubai International Airport
F005	British Airways	Hartsfield–Jackson Atlanta International Airport	Heathrow Airport
F006	British Airways	Heathrow Airport	Dubai International Airport
F009	British Airways	Los Angeles International Airport	Hartsfield–Jackson Atlanta International Airport
F0010	Emirates	Hartsfield–Jackson Atlanta International Airport	Heathrow Airport
F002	Emirates	Dubai International Airport	Tokyo Haneda Airport
F003	All Nippon Airways	Tokyo Haneda Airport	Los Angeles International Airport
F007	All Nippon Airways	Dubai International Airport	Tokyo Haneda Airport

7. To check the flights between specific date and destination

- Query :

```
1 SELECT FlightNumber, AirlineID, DepartureAirport, ArrivalAirport, DepartureTime, ArrivalTime
2 FROM Flights
3 WHERE DepartureTime BETWEEN '2024-02-11' AND '2024-02-15'
4   AND ArrivalAirport LIKE 'Tokyo%'
5 ORDER BY FlightNumber ASC;
```

Result:

FlightNumber	AirlineID	DepartureAirport	ArrivalAirport	DepartureTime	ArrivalTime
F002	3	Dubai International Airport	Tokyo Haneda Airport	2024-02-12 10:00:00	2024-02-12 12:00:00

5. To find the passengers with high value fare

- Query :

```
1 SELECT DISTINCT b.PassengerID,p.FullName,py.Amount
2 FROM bookings b
3 JOIN fareclass f ON f.Name = b.Name
4 JOIN passengers p ON b.PassengerID = p.PassengerID
5 JOIN payments py ON py.BookingID = b.BookingID
6 WHERE b.Name IN (
7   SELECT f.Name
8   FROM FareClass
9   WHERE f.Name LIKE '%Business%'
0   AND py.Amount > 350
1 );
```

Result:

PassengerID	FullName	Amount
31	William Jones	355.00
33	Linda Garcia	365.00
35	John Smith	375.00
37	Patricia Jones	385.00
39	Robert Martinez	395.00
41	John Miller	405.00
43	James Rodriguez	415.00
45	Mary Garcia	425.00
47	Michael Jones	435.00
49	Jennifer Rodriguez	445.00