

## Relational Model

```
CREATE TABLE IF NOT EXISTS airline (  
  Id CHAR(2),  
  Name VARCHAR(100) NOT NULL,  
  PRIMARY KEY (Id));  
  
CREATE TABLE IF NOT EXISTS AdvPurchaseDiscount (  
  AirlineID CHAR(2),  
  Days INTEGER NOT NULL,  
  DiscountRate NUMERIC(10,2) NOT NULL,  
  PRIMARY KEY (AirlineID, Days),  
  FOREIGN KEY (AirlineID) REFERENCES Airline(Id)  
  ON DELETE CASCADE,  
  CHECK (Days > 0),  
  CHECK (DiscountRate > 0 AND DiscountRate < 100));  
  
CREATE TABLE IF NOT EXISTS Flight (  
  AirlineID CHAR(2),  
  FlightNo INTEGER NOT NULL,  
  NoOfSeats INTEGER NOT NULL,  
  DaysOperating CHAR(7) NOT NULL,  
  MinLengthOfStay INTEGER NOT NULL,  
  MaxLengthOfStay INTEGER NOT NULL,  
  OnTime Boolean Not Null,  
  PRIMARY KEY (AirlineID, FlightNo),  
  FOREIGN KEY (AirlineID) REFERENCES Airline(Id)  
  ON DELETE CASCADE,  
  CHECK (NoOfSeats > 0),  
  CHECK (MinLengthOfStay >= 0),  
  CHECK (MaxLengthOfStay > MinLengthOfStay)
```

);

CREATE TABLE IF NOT EXISTS Airport (

Id CHAR(3),

Name VARCHAR(100) NOT NULL,

City VARCHAR(50) NOT NULL,

Country VARCHAR(50) NOT NULL,

PRIMARY KEY (Id));

CREATE TABLE IF NOT EXISTS Leg (

AirlineID CHAR(2),

FlightNo INTEGER NOT NULL,

LegNo INTEGER NOT NULL,

DepAirportID CHAR(3) NOT NULL,

ArrAirportID CHAR(3) NOT NULL,

ArrTime DATETIME NOT NULL,

DepTime DATETIME NOT NULL,

PRIMARY KEY (AirlineID, FlightNo, LegNo),

UNIQUE(AirlineID, FlightNo, DepAirportID),

FOREIGN KEY (AirlineID, FlightNo) REFERENCES Flight(AirlineID, FlightNo)

ON DELETE CASCADE,

FOREIGN KEY (DepAirportID) REFERENCES Airport(Id)

ON DELETE CASCADE,

FOREIGN KEY (ArrAirportID) REFERENCES Airport(Id)

ON DELETE CASCADE,

CHECK (LegNo > 0)

);

CREATE TABLE IF NOT EXISTS Fare (

AirlineID CHAR(2) NOT NULL,

FlightNo INTEGER NOT NULL,

FareType VARCHAR(20) NOT NULL,

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Class VARCHAR(20) NOT NULL,  
Fare NUMERIC(10,2) NOT NULL,  
PRIMARY KEY (AirlineID, FlightNo, FareType, Class),  
FOREIGN KEY (AirlineID, FlightNo) REFERENCES Flight(AirlineID, FlightNo)  
ON DELETE CASCADE,  
CHECK (Fare > 0)  
);
```

```
CREATE TABLE IF NOT EXISTS Person (  
Id INTEGER,  
FirstName VARCHAR(50) NOT NULL,  
LastName VARCHAR(50) NOT NULL,  
Address VARCHAR(100) NOT NULL,  
City VARCHAR(50) NOT NULL,  
State VARCHAR(50) NOT NULL,  
ZipCode INTEGER NOT NULL,  
PRIMARY KEY (Id),  
CHECK (Id > 0),  
CHECK (ZipCode > 0)  
);
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CREATE TABLE IF NOT EXISTS Customer (  
Id INTEGER NOT NULL,  
AccountNo INTEGER,  
CreditCardNo CHAR(16),  
Phone VARCHAR(15),  
Email VARCHAR(50),  
CreationDate DateTime NOT NULL,  
Rating INTEGER,  
PRIMARY KEY (AccountNo),  
FOREIGN KEY (Id) REFERENCES Person (Id)
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ON DELETE CASCADE,
CHECK (Rating >= 0 AND Rating <= 10)
);

CREATE TABLE IF NOT EXISTS CustomerPreferences(
AccountNo INTEGER NOT NULL,
Preference VARCHAR(50) NOT NULL,
PRIMARY KEY (AccountNo, Preference),
FOREIGN KEY(AccountNo) REFERENCES Customer (AccountNo)
ON DELETE CASCADE
);

CREATE TABLE IF NOT EXISTS Employee (
Id INTEGER NOT NULL,
SSN INTEGER,
IsManager BOOLEAN NOT NULL,
StartDate DATE NOT NULL,
HourlyRate NUMERIC(10,2) NOT NULL,
PRIMARY KEY (SSN),
FOREIGN KEY (Id) REFERENCES Person (Id)
ON DELETE CASCADE,
UNIQUE (Id),
CHECK (SSN > 0),
CHECK (HourlyRate > 0)
);

CREATE TABLE IF NOT EXISTS Passenger (
Id INTEGER,
AccountNo INTEGER,
Phone VARCHAR(15),
Email VARCHAR(50),
PRIMARY KEY (Id, AccountNo),

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FOREIGN KEY (Id) REFERENCES Person(Id)
ON DELETE CASCADE,
FOREIGN KEY (AccountNo) REFERENCES Customer(AccountNo)
ON DELETE CASCADE
);
CREATE TABLE IF NOT EXISTS Reservation (
    ResrNo INTEGER,
    ResrDate DATETIME NOT NULL,
    BookingFee NUMERIC(10,2) NOT NULL,
    TotalFare NUMERIC(10,2) NOT NULL,
    RepSSN INTEGER,
    AccountNo INTEGER NOT NULL,
    PRIMARY KEY (ResrNo),
    FOREIGN KEY (RepSSN) REFERENCES Employee (SSN)
    ON DELETE CASCADE,
    FOREIGN KEY (AccountNo) REFERENCES Customer (AccountNo)
    ON DELETE CASCADE,
    CHECK (ResrNo > 0),
    CHECK (BookingFee >= 0),
    CHECK (TotalFare > BookingFee)
);
CREATE TABLE IF NOT EXISTS Includes (
    ResrNo INTEGER,
    AirlineID CHAR(2),
    FlightNo INTEGER,
    LegNo INTEGER,
    Date DATE NOT NULL,
    PRIMARY KEY (ResrNo, AirlineID, FlightNo, LegNo),
    FOREIGN KEY (ResrNo) REFERENCES Reservation (ResrNo)
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ON DELETE CASCADE,
FOREIGN KEY (AirlineID, FlightNo, LegNo) REFERENCES Leg(AirlineID, FlightNo, LegNo)
ON DELETE CASCADE
);

CREATE TABLE IF NOT EXISTS ReservationPassenger (
    ResrNo INTEGER,
    Id INTEGER,
    AccountNo INTEGER,
    SeatNo varchar(5) NOT NULL,
    Class VARCHAR(20) NOT NULL,
    Meal VARCHAR(50),
    PRIMARY KEY (ResrNo, Id, AccountNo),
    FOREIGN KEY (ResrNo) REFERENCES Reservation (ResrNo)
    ON DELETE CASCADE,
    FOREIGN KEY (Id, AccountNo) REFERENCES Passenger (Id, AccountNo)
    ON DELETE CASCADE
);

CREATE TABLE IF NOT EXISTS Auctions (
    AccountNo INTEGER,
    AirlineID CHAR(2),
    FlightNo INTEGER,
    Class VARCHAR(20),
    Date DATETIME,
    LegNo INTEGER NOT NULL,
    NYOP NUMERIC(10,2) NOT NULL,
    Accepted BOOLEAN,
    PRIMARY KEY (AccountNo, AirlineID, FlightNo, Class, Date, LegNo),
    FOREIGN KEY (AccountNo) REFERENCES Customer(AccountNo)
    ON DELETE CASCADE,

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FOREIGN KEY (AirlineID, FlightNo) REFERENCES Flight(AirlineID, FlightNo)
ON DELETE CASCADE,
CHECK (NYOP > 0)
);
```