-- 1. Create Tables with Primary and Foreign Keys

-- Create Person Table

CREATE TABLE Person (

driver\_id INT PRIMARY KEY,

name VARCHAR(100) UNIQUE,

address VARCHAR(255) NOT NULL

);

-- Create Car Table

CREATE TABLE Car (

license VARCHAR(20) PRIMARY KEY,

model VARCHAR(50),

year INT

);

-- Create Accident Table

CREATE TABLE Accident (

report\_number INT PRIMARY KEY,

date DATE,

location VARCHAR(255)

);

-- Create Owns Table (Foreign Keys)

CREATE TABLE Owns (

driver\_id INT,

license VARCHAR(20),

PRIMARY KEY (driver\_id, license),

FOREIGN KEY (driver\_id) REFERENCES Person(driver\_id),

FOREIGN KEY (license) REFERENCES Car(license)

);

-- Create Participated Table (Foreign Keys)

CREATE TABLE Participated (

report\_number INT,

license VARCHAR(20),

driver\_id INT,

damage\_amount DECIMAL(10, 2),

PRIMARY KEY (report\_number, license, driver\_id),

FOREIGN KEY (report\_number) REFERENCES Accident(report\_number),

FOREIGN KEY (license) REFERENCES Car(license),

FOREIGN KEY (driver\_id) REFERENCES Person(driver\_id)

);

-- 2. Insert 5 records into each table

-- Insert records into Person table

INSERT INTO Person (driver\_id, name, address) VALUES

(1, 'John Smith', '123 Oak Street'),

(2, 'Alice Brown', '456 Maple Avenue'),

(3, 'Robert Johnson', '789 Pine Road'),

(4, 'David Lee', '101 Elm Street'),

(5, 'Emily Davis', '202 Birch Blvd');

-- Insert records into Car table

INSERT INTO Car (license, model, year) VALUES

('ABC123', 'Toyota Camry', 2005),

('XYZ456', 'Honda Accord', 2008),

('LMN789', 'Mazda 3', 2010),

('JKL012', 'Ford Focus', 2007),

('DEF345', 'Chevrolet Malibu', 2012);

-- Insert records into Accident table

INSERT INTO Accident (report\_number, date, location) VALUES

(1001, TO\_DATE('2009-05-15', 'YYYY-MM-DD'), 'New York'),

(1002, TO\_DATE('2009-07-20', 'YYYY-MM-DD'), 'Los Angeles'),

(1003, TO\_DATE('2010-03-05', 'YYYY-MM-DD'), 'Chicago'),

(1004, TO\_DATE('2011-06-30', 'YYYY-MM-DD'), 'Miami'),

(1005, TO\_DATE('2009-09-10', 'YYYY-MM-DD'), 'San Francisco');

-- Insert records into Owns table

INSERT INTO Owns (driver\_id, license) VALUES

(1, 'ABC123'),

(2, 'XYZ456'),

(3, 'LMN789'),

(4, 'JKL012'),

(5, 'DEF345');

-- Insert records into Participated table

INSERT INTO Participated (report\_number, license, driver\_id, damage\_amount) VALUES

(1001, 'ABC123', 1, 2500.00),

(1002, 'XYZ456', 2, 1500.00),

(1003, 'LMN789', 3, 3000.00),

(1005, 'DEF345', 5, 2000.00),

(1004, 'JKL012', 4, 5000.00);

-- 3. Add unique key for the 'name' column in Person table

ALTER TABLE Person ADD CONSTRAINT unique\_name UNIQUE (name);

-- 4. Add NOT NULL constraint for the 'address' column in Person table (already done in the creation)

-- (This step is redundant as address already has NOT NULL constraint)

-- 5. Find the total number of people who owned cars involved in accidents in 2009

SELECT COUNT(DISTINCT p.driver\_id) AS total\_people\_involved

FROM Person p

JOIN Owns o ON p.driver\_id = o.driver\_id

JOIN Participated pa ON o.license = pa.license

JOIN Accident a ON pa.report\_number = a.report\_number

WHERE EXTRACT(YEAR FROM a.date) = 2009;

-- 6. Add a new accident to the database (Assume required values for the new accident)

INSERT INTO Accident (report\_number, date, location) VALUES

(1006, TO\_DATE('2012-08-15', 'YYYY-MM-DD'), 'Dallas');

-- Add participation record for the new accident (assuming car 'ABC123' and driver 'John Smith')

INSERT INTO Participated (report\_number, license, driver\_id, damage\_amount) VALUES

(1006, 'ABC123', 1, 3500.00);

-- 7. Delete the Mazda belonging to “John Smith”

DELETE FROM Owns WHERE driver\_id = (SELECT driver\_id FROM Person WHERE name = 'John Smith') AND license = 'LMN789';