

**Friendly Cars Dealership**  
**PROJECT MODULE #5**  
**CS457L - DATABASE TECHNOLOGIES LAB**  
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## **Step 6.1:**

### **Dealership table:**

Dealership(BusinessID, Location, BusinessName, BusinessEmail, BusinessPhone)

Functional Dependencies:

BusinessID → Location, BusinessName, BusinessEmail, BusinessPhone

### **BCNF Normalization:**

The table is already in BCNF since the BusinessID is the primary key, and all non-key attributes are fully dependent on it.

### **Customer table:**

Customer(CustomerID, Name, Address, Email, Phone)

Functional Dependencies:

CustomerID → Name, Address, Email, Phone

### **BCNF Normalization:**

The table is already in BCNF since the CustomerID is the primary key, and all non-key attributes are fully dependent on the CustomerID.

### **Employees Table:**

Employees(EIN, Name, Email, Phone, Position, SSN, Number of cars sold, Commission Percentage, CustomerID)

SSN+Position+No. Of cars sold→ Commission Percentage

CustomerID→Name, Address, Email, Phone

### **BCNF Normalization:**

Since there is a functional dependency between (SSN, Position, No. Of cars sold) and Commission Percentage, this table is not in BCNF.

Decompose the table into:

Employees1(SSN, Position, No. Of cars sold, Commission Percentage)

Employees2(EIN, Name, Email, Phone, CustomerID)

### **Commision Table:**

Commission(SSN, Position, No. of cars sold, Commission Percentage)

### **BCNF Normalization:**

The table is already in BCNF since the CustomerID is the primary key, and all non-key attributes are fully dependent on the CustomerID.

**Vehicle Table:**

Vehicle(VehicleID, VIN, License plate Number, Color, Model, Date of Manufacture, Place of Manufacture, Capacity, No. of cylinders, Type, Condition, No. of doors, Price)

VehicleID→ VIN, License plate Number, Color, Model, Date of Manufacture, Place of Manufacture, Capacity, No. of cylinders, Type, Condition, No. of doors, Price, Customer ID

CustomerID→ Name, Address, Email, Phone

**BCNF Normalization:**

Since VehicleID is the primary key and all non-key attributes are fully dependent on it, the table is already in BCNF.

**Inventory Table:**

Inventory(Inventory serial number, No. of cars, Capacity, Location, VehicleID)

Inventory serial number→ No. of cars, Capacity, Location, VehicleID

VehicleID→VehicleID, VIN, License plate Number, Color, Model, Date of Manufacture, Place of Manufacture, Capacity, No. of cylinders, Type, Condition, No. of doors, Price, CustomerID

**BCNF Normalization:**

Inventory serial number is the primary key and all non-key attributes are fully dependent on it, the table is already in BCNF.

**Warranty Table:**

Warranty(WarrantyID, Duration, Warranty Type, VehicleID)

WarrantyID→ Duration, Warranty Type, VehicleID

VehicleID→VehicleID, VIN, License plate Number, Color, Model, Date of Manufacture, Place of Manufacture, Capacity, No. of cylinders, Type, Condition, No. of doors, Price, CustomerID  
CustomerID

**BCNF Normalization:**

The table is already in BCNF since the WarrantyID is the primary key, and all non-key attributes are fully dependent on it.

**Registration Table:**

Registration(Reg no., Date of Expiration, VIN, License plate, Model, Date of Manufacture, Vehicle ID, CustomerID)

Vehicle ID → VehicleID, VIN, License plate Number, Color, Model, Date of Manufacture, Place of Manufacture, Capacity, No. of cylinders, Type, Condition, No. of doors, Price, CustomerID

#### **BCNF Normalization:**

The table is already in BCNF as there are no non-trivial functional dependencies

#### **Financing Table:**

Financing(Loan Number, VehicleID, CustomerID, Interest Rate, Payment Type, Financing Term, Plan)

Loan Number → VehicleID, CustomerID, Interest Rate, Payment Type, Financing Term, Plan

Vehicle ID → VehicleID, VIN, License plate Number, Color, Model, Date of Manufacture, Place of Manufacture, Capacity, No. of cylinders, Type, Condition, No. of doors, Price, CustomerID

#### **BCNF Normalization:**

The table is already in BCNF as there are no non-trivial functional dependencies. The table is already in BCNF since the Loan number is the primary key, and all non-key attributes are fully dependent on it.

#### **Customization Table:**

Customization(InvoiceID, Customization Type, Area of Customization, Cost, VehicleID)

InvoiceID → Customization Type, Area of Customization, Cost, VehicleID

Vehicle ID → VehicleID, VIN, License plate Number, Color, Model, Date of Manufacture, Place of Manufacture, Capacity, No. of cylinders, Type, Condition, No. of doors, Price, CustomerID

#### **BCNF Normalization:**

The table is already in BCNF as there are no non-trivial functional dependencies. The table is already in BCNF since the InvoiceID is the primary key, and all non-key attributes are fully dependent on it.

#### **Survey Table:**

Survey(Survey number, CustomerID, Survey Date, Overall Rating)

Survey number → CustomerID

CustomerID → Name, Address, Email, Phone

#### **BCNF Normalization:**

The table is already in BCNF since Survey number is the primary key and all non-key attributes are fully dependent on it.

## **Step 6.2:**

#### **Assumptions:**

- Each dealership has a unique Business ID.
- Each customer has a unique Customer ID.
- Each employee has a unique Employee Identification Number (EIN).
- Each vehicle has a unique Vehicle ID.
- Each inventory entry has a unique Inventory serial number.
- Each insurance policy has a unique Policy ID.
- Each warranty has a unique Warranty ID.
- Each registration has a unique Reg Number.
- Each financing loan has a unique Loan number.
- Each customization invoice has a unique Invoice ID.
- Each survey has a unique Survey number.
- Vehicles can be customized.
- One vehicle can have multiple customizations.
- Each customization is associated with one vehicle.
- Each employee can only manage one dealership.
- Each dealership can have multiple employees.
- Each vehicle can only have one registration, warranty, insurance, and financing associated with it.
- Each customer can fill out multiple surveys.
- Each customer can have multiple vehicles.
- Each dealership can own multiple inventories.
- Each inventory can accommodate multiple vehicles.

## **Data dictionary:**

Dealership:

- BusinessID:
  - Description: Primary key for identifying each dealership's business.
  - Data Type: INT
- Location:
  - Description: Physical location of the dealership.
  - Data Type: VARCHAR
- BusinessName:
  - Description: Name of the dealership's business.
  - Data Type: VARCHAR
- BusinessEmail:
  - Description: Email address of the dealership's business.
  - Data Type: VARCHAR
- BusinessPhone:
  - Description: Phone number of the dealership's business.
  - Data Type: VARCHAR

Customer:

- CustomerID:
  - Description: Unique identifier for each customer.
  - Data Type: INT
- Name:

- Description: Name of the customer.
  - Data Type: VARCHAR
- Address:
  - Description: Address of the customer.
  - Data Type: VARCHAR
- Email:
  - Description: Email address of the customer.
  - Data Type: VARCHAR
- Phone:
  - Description: Phone number of the customer.
  - Data Type: VARCHAR

**Employees:**

- EIN:
  - Description: Primary key for identifying each employee.
  - Data Type: INT
- Name:
  - Description: Name of the employee.
  - Data Type: VARCHAR
- Email:
  - Description: Email address of the employee.
  - Data Type: VARCHAR
- Phone:
  - Description: Phone number of the employee.
  - Data Type: VARCHAR
- Position:
  - Description: Position of the employee.
  - Data Type: VARCHAR
- SSN:
  - Description: Social Security Number of the employee.
  - Data Type: VARCHAR
- CarsSold:
  - Description: Number of cars sold by the employee.
  - Data Type: INT
- CommissionPercentage:
  - Description: Percentage of commission earned by the employee.
  - Data Type: DECIMAL

**Commission:**

- SSN:
  - Description: Social Security Number of the employee.
  - Data Type: VARCHAR
- Position:
  - Description: Position of the employee.
  - Data Type: VARCHAR
- CarsSold:

- Description: Number of cars sold by the employee.
  - Data Type: INT
- CommissionPercentage:
  - Description: Percentage of commission earned by the employee.
  - Data Type: DECIMAL

Vehicle:

- VehicleID:
  - Description: Unique identifier for each vehicle.
  - Data Type: INT
- VIN:
  - Description: Vehicle Identification Number.
  - Data Type: VARCHAR
- LicensePlateNumber:
  - Description: License plate number of the vehicle.
  - Data Type: VARCHAR
- Color:
  - Description: Color of the vehicle.
  - Data Type: VARCHAR
- Model:
  - Description: Model of the vehicle.
  - Data Type: VARCHAR
- ManufactureDate:
  - Description: Date when the vehicle was manufactured.
  - Data Type: DATE
- ManufacturePlace:
  - Description: Place where the vehicle was manufactured.
  - Data Type: VARCHAR
- Capacity:
  - Description: Engine capacity of the vehicle.
  - Data Type: INT
- NumberOfCylinders:
  - Description: Number of cylinders in the vehicle's engine.
  - Data Type: INT
- Type:
  - Description: Type of the vehicle.
  - Data Type: VARCHAR
- Condition:
  - Description: Condition of the vehicle.
  - Data Type: VARCHAR
- NumberOfDoors:
  - Description: Number of doors on the vehicle.
  - Data Type: INT
- Price:
  - Description: Price of the vehicle.

- Data Type: DECIMAL
- CustomerID:
  - Description: Foreign key referencing Customer ID in Customer table.
  - Data Type: INT

#### Inventory:

- InventorySerialNumber:
  - Description: Serial number for inventory tracking.
  - Data Type: INT
- NumberOfCars:
  - Description: Number of cars in the inventory.
  - Data Type: INT
- Capacity:
  - Description: Maximum capacity of the inventory.
  - Data Type: INT
- Location:
  - Description: Location of the inventory.
  - Data Type: VARCHAR
- VehicleID:
  - Description: Foreign key referencing Vehicle ID in Vehicle table.
  - Data Type: INT

#### Insurance:

- PolicyID:
  - Description: Unique identifier for each insurance policy.
  - Data Type: INT
- InsuranceCompanyName:
  - Description: Name of the insurance company.
  - Data Type: VARCHAR
- StartDate:
  - Description: Start date of the insurance policy.
  - Data Type: DATE
- EndDate:
  - Description: End date of the insurance policy.
  - Data Type: DATE
- PlanType:
  - Description: Type of insurance plan.
  - Data Type: VARCHAR
- VehicleID:
  - Description: Foreign key referencing Vehicle ID in Vehicle table.
  - Data Type: INT

#### Warranty:

- WarrantyID:
  - Description: Unique identifier for each warranty.
  - Data Type: INT
- Duration:

- Description: Duration of the warranty.
  - Data Type: INT
- WarrantyType:
  - Description: Type of warranty.
  - Data Type: VARCHAR
- VehicleID:
  - Description: Foreign key referencing Vehicle ID in Vehicle table.
  - Data Type: INT

**Registration:**

- RegNumber:
  - Description: Unique registration number for each vehicle.
  - Data Type: INT
- ExpirationDate:
  - Description: Expiration date of the vehicle registration.
  - Data Type: DATE
- VIN:
  - Description: Vehicle Identification Number.
  - Data Type: VARCHAR
- LicensePlate:
  - Description: License plate number of the vehicle.
  - Data Type: VARCHAR
- Model:
  - Description: Model of the vehicle.
  - Data Type: VARCHAR
- ManufactureDate:
  - Description: Date when the vehicle was manufactured.
  - Data Type: DATE
- VehicleID:
  - Description: Foreign key referencing Vehicle ID in Vehicle table.
  - Data Type: INT
- CustomerID:
  - Description: Foreign key referencing Customer ID in Customer table.
  - Data Type: INT

**Financing:**

- LoanNumber:
  - Description: Unique identifier for each loan.
  - Data Type: INT
- VehicleID:
  - Description: Foreign key referencing Vehicle ID in Vehicle table.
  - Data Type: INT
- CustomerID:
  - Description: Foreign key referencing Customer ID in Customer table.
  - Data Type: INT
- InterestRate:

- Description: Interest rate for the financing.
  - Data Type: DECIMAL
- PaymentType:
  - Description: Type of payment for the financing.
  - Data Type: VARCHAR
- FinancingTerm:
  - Description: Term of the financing.
  - Data Type: INT
- FinancingPlan:
  - Description: Plan for the financing.
  - Data Type: VARCHAR

Customization:

- InvoiceID:
  - Description: Unique identifier for the invoice.
  - Data Type: INT
- CustomizationType:
  - Description: Type of customization.
  - Data Type: VARCHAR
- Area:
  - Description: Area of the vehicle customized.
  - Data Type: VARCHAR
- CustomizationCost:
  - Description: Cost of the customization.
  - Data Type: DECIMAL
- VehicleID:
  - Description: Foreign key referencing Vehicle ID in Vehicle table.
  - Data Type: INT

Survey:

- SurveyNumber:
  - Description: Unique identifier for each survey.
  - Data Type: INT
- CustomerID:
  - Description: Foreign key referencing Customer ID in Customer table.
  - Data Type: INT
- SurveyDate:
  - Description: Date when the survey was conducted.
  - Data Type: DATE
- OverallRating:
  - Description: Overall rating provided in the survey.
  - Data Type: DECIMAL

Constraints:

- BusinessID is the primary key for the Dealership table.
- CustomerID is the primary key for the Customer table.
- EIN is the primary key for the Employees table.

- Employee's SSN, Position, and Number of cars sold uniquely determine Commission Percentage in the Employees table.
- SSN, Position, and Number of cars sold uniquely determine Commission Percentage in the Commission table.
- VehicleID is the primary key for the Vehicle table.
- InventorySerialNumber is the primary key for the Inventory table.
- WarrantyID is the primary key for the Warranty table.
- RegNumber is the primary key for the Registration table.
- LoanNumber is the primary key for the Financing table.
- InvoiceID is the primary key for the Customization table.
- SurveyNumber is the primary key for the Survey table.

## Step 6.3:

### **Dealership Table:**

- Dealership(BusinessID: INT PRIMARY KEY, Location: VARCHAR(25), BusinessName: VARCHAR(25), BusinessEmail: VARCHAR(55), BusinessPhone: VARCHAR(10))
- Constraints: BusinessID is the primary key.

### **Customer Table:**

- Customer(CustomerID: INT PRIMARY KEY, Name: VARCHAR(255), Address: VARCHAR(255), Email: VARCHAR(255), Phone: VARCHAR(100))
- Constraints: CustomerID is the primary key.

### **Employees Table:**

- Employees(EIN: INT PRIMARY KEY, Name: VARCHAR(255), Email: VARCHAR(255), Phone: VARCHAR(100), Position: VARCHAR(100), SSN: VARCHAR(20), Number of cars sold: INT, Commission Percentage: DECIMAL(5,2), CustomerID: INT)
- Constraints: EIN is the primary key. SSN+Position+No. Of cars sold uniquely determines Commission Percentage.

### **Commission Table:**

- Commission(SSN: VARCHAR(225), Position: VARCHAR(100), No. of cars sold: INT, Commission Percentage: DECIMAL(5,2))
- Constraints: Primary key may be a combination of SSN, Position, and No. of cars sold.

### **Vehicle Table:**

- Vehicle(VehicleID: INT PRIMARY KEY, VIN: VARCHAR(17), License plate Number: VARCHAR(10), Color: VARCHAR(50), Model: VARCHAR(100), Date of Manufacture: DATE, Place of Manufacture: VARCHAR(255), Capacity: INT, No. of cylinders: INT, Type: VARCHAR(100), Condition: VARCHAR(100), No. of doors: INT, Price: DECIMAL(10,2), Customer ID: INT)
- Constraints: VehicleID is the primary key.

#### **Inventory Table:**

- Inventory(Inventory serial number: INT PRIMARY KEY, No. of cars: INT, Capacity: INT, Location: VARCHAR(255), VehicleID: INT)
- Constraints: Inventory serial number is the primary key.

#### **Warranty Table:**

- Warranty(WarrantyID: INT PRIMARY KEY, Duration: INT, Warranty Type: VARCHAR(100), VehicleID: INT)
- Constraints: WarrantyID is the primary key.

#### **Registration Table:**

- Registration(Reg no.: INT PRIMARY KEY, Date of Expiration: DATE, VIN: VARCHAR(17), License plate: VARCHAR(10), Model: VARCHAR(100), Date of Manufacture: DATE, Vehicle ID: INT, CustomerID: INT)
- Constraints: Reg no. is the primary key.

#### **Financing Table:**

- Financing(Loan Number: INT PRIMARY KEY, VehicleID: INT, CustomerID: INT, Interest Rate: DECIMAL(5,2), Payment Type: VARCHAR(100), Financing Term: INT, Plan: VARCHAR(255))
- Constraints: Loan Number is the primary key.

#### **Customization Table:**

- Customization(InvoiceID: INT PRIMARY KEY, Customization Type: VARCHAR(100), Area of Customization: VARCHAR(255), Cost: DECIMAL(10,2), VehicleID: INT)
- Constraints: InvoiceID is the primary key.

#### **Survey Table:**

- Survey(Survey number: INT PRIMARY KEY, CustomerID: INT, Survey Date: DATE, Overall Rating: DECIMAL(1,2))
- Constraints: Survey number is the primary key.

## **Step 6.4 & 6.5**

Local Instance 3306

Administration Schemas Pro\* Module&\_Queries SQL File 5\* SQL File 6\*

Limit to 50000 rows

```

CREATE DATABASE P_M_5;
USE Project_Mod_5;
-- Create Dealership table
CREATE TABLE Dealership (
    BusinessID INT PRIMARY KEY,
    Location VARCHAR(255),
    BusinessName VARCHAR(255),
    BusinessEmail VARCHAR(555),
    BusinessPhone VARCHAR(100)
);

-- Create index on BusinessID
CREATE INDEX idx_Dealership_BusinessID ON Dealership(BusinessID);

-- Create Customer table
CREATE TABLE Customer (
    CustomerID INT PRIMARY KEY,
    Name VARCHAR(255),
    Address VARCHAR(255),
    Email VARCHAR(555),
    Phone VARCHAR(150)
);

-- Create index on CustomerID
CREATE INDEX idx_Customer_CustomerID ON Customer(CustomerID);

-- Create Employees table
CREATE TABLE Employees (
    EIN INT PRIMARY KEY,
    Name VARCHAR(255),
    Email VARCHAR(255),
    Address Varchar(255),
    Phone VARCHAR(150),
    Position VARCHAR(100),
    SSN VARCHAR(20),
    Number_of_cars_sold INT,
    Commission_Percentage DECIMAL(5,2),
    CustomerID INT,
    FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID)
);

-- CREATE COMMISSION TABLE
CREATE TABLE Commission (
    SSN VARCHAR(20),
    Position VARCHAR(100),
    NumberOfCarsSold INT,
    CommissionPercentage DECIMAL(5,2),
    PRIMARY KEY (SSN, Position, NumberOfCarsSold)
);

-- Create index on SSN
CREATE INDEX idx_Commission_SSN ON Commission(SSN);

-- Create Insurance Table:
CREATE TABLE Insurance (
    PolicyID INT PRIMARY KEY,
    InsuranceCompanyName VARCHAR(255),
    StartDate DATE,
    EndDate DATE,
    PlanType VARCHAR(100),
    VehicleID INT,
    FOREIGN KEY (VehicleID) REFERENCES Vehicle(VehicleID)
);

-- Create index on PolicyID
CREATE INDEX idx_Insurance_PolictID ON Insurance(PolicyID);

```

```
44      -- Create Vehicle table
45 • ⊖ CREATE TABLE Vehicle (
46     VehicleID INT PRIMARY KEY,
47     VIN VARCHAR(17),
48     License_plate_Number VARCHAR(10),
49     Color VARCHAR(50),
50     Model VARCHAR(100),
51     Date_of_Manufacture DATE,
52     Place_of_Manufacture VARCHAR(25),
53     Capacity INT,
54     No_of_cylinders INT,
55     Type VARCHAR(100),
56     Conditions VARCHAR(100),
57     No_of_doors INT,
58     Price DECIMAL(10,2),
59     CustomerID INT,
60     FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID)
61 );
62
63      -- Create index on VehicleID
64 •  CREATE INDEX idx_Vehicle_VehicleID ON Vehicle(VehicleID);
65
66      -- Create Inventory table
67 • ⊖ CREATE TABLE Inventory (
68     Inventory_serial_number INT PRIMARY KEY,
69     No_of_cars INT,
70     Capacity INT,
71     Location VARCHAR(25),
72     VehicleID INT,
73     FOREIGN KEY (VehicleID) REFERENCES Vehicle(VehicleID)
74 );
75
76      -- Create index on Inventory_serial_number
77 •  CREATE INDEX idx_Inventory_Inventory_serial_number ON Inventory(Inventory_serial_number);
```

```
79      -- Create Warranty table
80 • ⊖ CREATE TABLE Warranty (
81     WarrantyID INT PRIMARY KEY,
82     Duration INT,
83     Warranty_Type VARCHAR(100),
84     VehicleID INT,
85     FOREIGN KEY (VehicleID) REFERENCES Vehicle(VehicleID)
86 );
87
88      -- Create index on WarrantyID
89 •  CREATE INDEX idx_Warranty_WarrantyID ON Warranty(WarrantyID);
90
91      -- Create Registration table
92 • ⊖ CREATE TABLE Registration (
93     Reg_no INT PRIMARY KEY,
94     Date_of_Expiration DATE,
95     VIN VARCHAR(17),
96     License_plate VARCHAR(10),
97     Model VARCHAR(100),
98     Date_of_Manufacture DATE,
99     VehicleID INT,
100    CustomerID INT,
101    FOREIGN KEY (VehicleID) REFERENCES Vehicle(VehicleID),
102    FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID)
103 );
104
105      -- Create index on Reg_no
106 •  CREATE INDEX idx_Registration_Reg_no ON Registration(Reg_no);
107
108      -- Create Financing table
109 • ⊖ CREATE TABLE Financing (
110     Loan_Number INT PRIMARY KEY,
111     VehicleID INT,
112     CustomerID INT,
113     Interest_Rate DECIMAL(5,2),
114     Payment_Type VARCHAR(50),
115     Financing_Term INT,
116     Plan VARCHAR(25),
117     FOREIGN KEY (VehicleID) REFERENCES Vehicle(VehicleID),
```

```

118     FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID)
119 );
120
121 -- Create index on Loan_Number
122 • CREATE INDEX idx_Financing_Loan_Number ON Financing(Loan_Number);
123
124 -- Create Customization table
125 • ⊖ CREATE TABLE Customization (
126     InvoiceID INT PRIMARY KEY,
127     Customization_Type VARCHAR(50),
128     Area_of_Customization VARCHAR(25),
129     Cost DECIMAL(10,2),
130     VehicleID INT,
131     FOREIGN KEY (VehicleID) REFERENCES Vehicle(VehicleID)
132 );
133
134 -- Create index on InvoiceID
135 • CREATE INDEX idx_Customization_InvoiceID ON Customization(InvoiceID);

```

```

111
112 -- Survey table
113 • ⊖ CREATE TABLE Survey (
114     SurveyNumber INT PRIMARY KEY,
115     CustomerID INT,
116     SurveyDate DATE,
117     OverallRating INT,
118     FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID)
119 );

```

```

147 -- Create index on Survey_number
148 • CREATE INDEX idx_Survey_Survey_number ON Survey(Survey_number);
149

```

## Step 6.6:

```

147 -- Inserting values in Dealership table
148 • ⊖ INSERT INTO Dealership (BusinessID, Location, BusinessName, BusinessEmail,
149   BusinessPhone)
150   VALUES
151   ⊖ (001, 'Boston', 'Friendly Car Dealership', 'friendlycars@example.com', '713-555-
152   1234');
153 • select * from Dealership;
154

```

100% 1:154

**Result Grid** Filter Rows: Search Edit: Export/Import:

BusinessID	Location	BusinessName	BusinessEmail	BusinessPhone
1	Boston	Friendly Car Dealership	friendlycars@example.com	713-555- 1234

```
190  
191     -- Inserting values in Employees table  
192 • INSERT INTO Employees (EIN, Name, Email, Address, Phone, Position, SSN, Number_of_cars_sold, Commission_Percentage, CustomerID)  
193     VALUES (101, 'Tom Thompson', 'tom@company.com', '125 SUNDALE DR.', '1111111111', 'Salesman', '123-45-6789', 10, 5.00, 401),  
194     (102, 'Alice Johnson', 'alice@company.com', '156 Montague BLVD.', '2222222222', 'Salesman', '987-65-4321', 15, 7.50, 402),  
195     (103, 'Bob Smith', 'bob@company.com', '421 MIAMI DR.', '3333333333', 'Office Manager', '555-55-5555', NULL, NULL, NULL),  
196     (104, 'Emma Davis', 'emma@company.com', '567 IRVINGTON CMN.', '4444444444', 'Salesman', '444-44-4444', 20, 4.00, 404),  
197     (105, 'James Wilson', 'james@company.com', '181 WARMTH DR.', '5555555555', 'Salesman', '777-77-7777', 12, 5.50, 405);  
198 • Select * from Employees;  
199
```

```
200 -- Inserting values in Commission table
201 • INSERT INTO Commission (SSN, Position, NumberOfCarsSold, CommissionPercentage)
202     VALUES ('123-45-6789', 'Salesman', 10, 5.00),
203     ('987-65-4321', 'Salesman', 15, 7.50),
204     ('555-55-5555', 'Office Manager', 8, 6.00),
205     ('444-44-4444', 'Salesman', 23, 9.00),
206     ('777-77-7777', 'Salesman', 22, 8.50);
207 • Select * from Commission;
208
```

Employee Data				
SSN	Position	NumberOfCarsSold	CommissionPercentage	TotalSales
123-45-6789	Salesman	10	5.00	120000.00
444-44-4444	Salesman	23	9.00	250000.00
555-55-5555	Office Manager	8	6.00	100000.00
777-77-7777	Salesman	22	8.50	180000.00
987-65-4321	Salesman	15	7.50	140000.00
NUL	NUL	NUL	NUL	NUL

```
166 -- Inserting values in Vehicle table
167 • INSERT INTO Vehicle (VehicleID, VIN, License_plate_Number, Color, Model, Date_of_Manufacture, Place_of_Manufacture, Capacity, No_of_cylinders, Type, Conditions,
168     No_of_doors, Price, CustomerID)
169     VALUES
170     (1, '1HGCMA12345A67890', 'ABC123', 'Blue', 'Honda Accord', '2022-01-15', 'Japan', 5, 4, 'Sedan', 'New', 4, 25000.00, NULL),
171     (2, '5YJSA1E16HF188393', 'TESLA001', 'Red', 'Tesla Model S', '2021-12-30', 'USA', 5, 0, 'Electric', 'New', 4, 80000.00, NULL),
172     (3, '1C4RJFAG0HC812345', 'JEEP789', 'Black', 'Jeep Grand Cherokee', '2021-11-20', 'USA', 5, 6, 'SUV', 'Used', 4, 35000.00, NULL),
173     (4, '5LMCJ2D97LUL12345', 'LINCOLN456', 'Silver', 'Lincoln Corsair', '2022-02-05', 'USA', 5, 4, 'SUV', 'New', 4, 45000.00, NULL),
174     (5, '1GCVKREC1HZ100001', 'CHEVY789', 'White', 'Chevrolet Silverado', '2022-03-10', 'USA', 3, 8, 'Truck', 'New', 4, 40000.00, NULL);
175
176 • select * from Vehicle;
```

```

219
220    -- Inserting values in Inventory table
221 •  INSERT INTO Inventory (Inventory_serial_number, No_of_cars, Capacity, Location, VehicleID)
222     VALUES (1001, 5, 10, '446 Finale Ave., Boston', 1),
223     (1002, 3, 5, '424 Expressway Blvd., Boston', 2),
224     (1003, 2, 4, '56 Sunnyvale Cmn., Boston', 3),
225     (1004, 4, 8, '45 Houston St., Boston', 4),
226     (1005, 6, 12, '345 Miami Dr., Boston', 5);
227 •  Select * from Inventory;
228

```

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Result Grid Filter Rows:  Search Edit: Export/Import:

Inventory_serial_num...	No_of_cars	Capacity	Location	VehicleID	
1001	5	10	446 Finale Ave., Boston	1	
1002	3	5	424 Expressway Blvd., Boston	2	
1003	2	4	56 Sunnyvale Cmn., Boston	3	
1004	4	8	45 Houston St., Boston	4	
1005	6	12	345 Miami Dr., Boston	5	
NULL	NULL	NULL	NULL	NULL	

```

224    -- Inserting values in Warranty table
225

```

```

226 •  INSERT INTO Warranty (WarrantyID, Duration, Warranty_Type, VehicleID)
227     VALUES
228         (11, 3, 'Basic', 1),
229         (22, 5, 'Extended', 2),
230         (33, 2, 'Basic', 3),
231         (44, 4, 'Extended', 4),
232         (55, 3, 'Basic', 5);
233 •  Select * from Warranty;

```

100% ◊ 1:223 |

Result Grid Filter Rows:  Search Edit: Export/Import:

Inventory_serial_num...	No_of_cars	Capacity	Location	VehicleID	
1001	5	10	New York	1	
1002	3	5	Los Angeles	2	
1003	2	4	Chicago	3	
1004	4	8	Houston	4	
1005	6	12	Miami	5	
NULL	NULL	NULL	NULL	NULL	

```
180  
181 -- Inserting values in Customer table  
182 • INSERT INTO Customer (CustomerID, Name, Address, Email, Phone)  
183     VALUES (401, 'Alice Johnson', '456 Oak St, New York', 'alice@example.com', '222-333-4444'),  
184     (402, 'Bob Smith', '789 Pine St, Los Angeles', 'bob@example.com', '555-666-7777'),  
185     (403, 'Charlie Brown', '123 Maple St, Chicago', 'charlie@example.com', '888-999-0000'),  
186     (404, 'David Brown', '456 Park Ave, Houston', 'david@example.com', '111-222-3337'),  
187     (405, 'Olivia Martinez', '789 River Rd, Miami', 'olivia@example.com', '111-222-3338');  
188 • Select * from Customer  
189
```

Result Grid		Filter Rows:	Search	Edit:	Export/Import:
CustomerID	Name	Address	Email	Phone	
401	Alice Johnson	456 Oak St, New York	alice@example.com	222-333-4444	
402	Bob Smith	789 Pine St, Los Angeles	bob@example.com	555-666-7777	
403	Charlie Brown	123 Maple St, Chicago	charlie@example.com	888-999-0000	
404	David Brown	456 Park Ave, Houston	david@example.com	111-222-3337	
405	Olivia Martinez	789 River Rd, Miami	olivia@example.com	111-222-3338	
NULL	NULL	NULL	NULL	NULL	

```
222 -- Inserting values in Insurance table
223 • Ⓛ INSERT INTO Insurance (PolicyID, InsuranceCompanyName, StartDate, EndDate,
224 PlanType, VehicleID)
225 VALUES
226 (501, 'ABC Insurance', '2023-01-01', '2024-01-01', 'Comprehensive', 1),
227 (502, 'XYZ Insurance', '2023-02-01', '2024-02-01', 'Liability', 2),
228 (503, '123 Insurance', '2023-03-01', '2024-03-01', 'Collision', 3),|_
229 (504, 'XYZ Insurance', '2023-04-01', '2024-04-01', 'Comprehensive', 4),
230 (505, 'ABC Insurance', '2023-05-01', '2024-05-01', 'Liability', 5);
231 • Select * from Insurance;
```

```
244 -- Inserting values in Registration table
245 • INSERT INTO Registration (Reg_no, Date_of_Expiration, VIN, License_plate, Model, Date_of_Manufacture, VehicleID, CustomerID)
246 VALUES
247     (1001, '2023-01-31', '1HGCM12345A67890', 'ABC123', 'Honda Accord', '2022-01-15', 1, 401),
248     (1002, '2024-03-31', '5YJSA1E16HF188393', 'TESLA001', 'Tesla Model S', '2021-12-30', 2, 402),
249     (1003, '2023-05-15', '1C4RJFAG0HC812345', 'JEEP789', 'Jeep Grand Cherokee', '2021-11-20', 3, 403),
250     (1004, '2025-02-28', '5LMCJ2D97LUL12345', 'LINCOLN456', 'Lincoln Corsair', '2022-02-05', 4, 404),
251     (1005, '2023-04-30', '1GCVKREC1HZ100001', 'CHEVY789', 'Chevrolet Silverado', '2022-03-10', 5, 405);
252
253 • Select * from Registration;
```

Result Grid		Filter Rows:	Search	Edit:	Export/Import:		
Reg_no	Date_of_Expirat...	VIN	License_plate	Model	Date_of_Manufact...	VehicleID	CustomerID
1001	2023-01-31	1HGCME12345A67890	ABC123	Honda Accord	2022-01-15	1	401
1002	2024-03-31	5YJSA1E16HF188393	TESLA001	Tesla Model S	2021-12-30	2	402
1003	2023-05-15	1C1RJFAG0HC812345	JEEP789	Jeep Grand Cherokee	2021-11-20	3	403
1004	2025-02-28	5LMCJ2D97LUL12345	LINCOLN456	Lincoln Corsair	2022-02-05	4	404
1005	2023-04-30	1GCVKREC1HZ100001	CHEVY789	Chevrolet Silverado	2022-03-10	5	405
NULL	NULL	NULL	HULL	HULL	HULL	NULL	NULL

```
266 -- Inserting values in Customization table
267 • INSERT INTO Customization (InvoiceID, Customization_Type, Area_of_Customization, Cost, VehicleID)
268 VALUES
269     (20011, 'Interior', 'Leather Seats', 1500.00, 1),
270     (20022, 'Exterior', 'Tinted Windows', 300.00, 2),
271     (20033, 'Performance', 'Turbocharger Kit', 5000.00, 3),
272     (20044, 'Audio', 'Premium Sound System', 2000.00, 4),
273     (20055, 'Exterior', 'Roof Rack', 400.00, 5);
274
275 • Select * from Customization;
276
```

Result Grid		Filter Rows:		Search	Edit:	Export/Import:
InvoiceID	Customization_Type	Area_of_Customization	Cost	VehicleID		
20011	Interior	Leather Seats	1500.00	1		
20022	Exterior	Tinted Windows	300.00	2		
20033	Performance	Turbocharger Kit	5000.00	3		
20044	Audio	Premium Sound System	2000.00	4		
20055	Exterior	Roof Rack	400.00	5		
NUL	NUL	NUL	NUL	NUL		

```
255 -- Inserting values in Financing table
256 • INSERT INTO Financing (Loan_Number, VehicleID, CustomerID, Interest_Rate, Payment_Type, Financing_Term, Plan)
257 VALUES
258     (2001, 1, 401, 3.5, 'Loan', 60, 'Standard'),
259     (2002, 2, 402, 2.9, 'Lease', 36, 'Premium'),
260     (2003, 3, 403, 4.2, 'Loan', 48, 'Basic'),
261     (2004, 4, 404, 3.8, 'Loan', 60, 'Standard'),
262     (2005, 5, 405, 4.0, 'Loan', 72, 'Extended');
263 • select * from Financing;
```

```
290    -- Inserting values in Survey table
291 •  INSERT INTO Survey (SurveyNumber, CustomerID, SurveyDate, OverallRating)
292     VALUES
293     (1001, 401, '2024-01-03', 4),
294     (1002, 402, '2024-02-14', 5),
295     (1003, 403, '2024-04-15', 3),
296     (1004, 404, '2024-02-14', 4),
297     (1005, 405, '2024-02-14', 5);
298
299 •  Select * from Survey;
300
301
```

100% ◇ | 30:293 |

Result Grid Filter Rows:  Search  Edit: Export/Import:

SurveyNumber	CustomerID	SurveyDate	OverallRating	
1001	401	2024-01-03	4	
1002	402	2024-02-14	5	
1003	403	2024-04-15	3	
1004	404	2024-02-14	4	
1005	405	2024-02-14	5	

## Step 6.7:

Retrieve the names and email addresses of all customers who purchased vehicles with a warranty duration of more than 3 years.

```
291 •   SELECT c.Name, c.Email  
292     FROM Customer c  
293     JOIN Registration r ON c.CustomerID = r.CustomerID  
294     JOIN Warranty w ON r.VehicleID = w.VehicleID  
295     WHERE w.Duration > 3;  
296
```

100% | 1:290 |

Result Grid



Filter Rows:



Search

Export:



Name	Email
David Brown	david@example.com
Ava Adams	ava@example.com
Noah Thomas	noah@example.com

Find the names of all customers who have an active financing plan with the Standard Plan and interest rate over 3.60.

```
3 •   select name from customer where customerID in (  
4       select customerID from financing  
5       where plan = "Standard" and interest_rate >= 3.60);  
6
```

Result Grid



Filter Rows:



Export: Wrap Cell Content:



Result Grid

name

► David Brown

Find the names and phone numbers of all customers with an active customization process with a cost over 1700\$ taken place in a new car.

```
7      /*Find the names and phone number of all customers with an active customization with a cost over 1700$ taken place in a new car */
8 •     select name, phone from customer where customerID in (
9     select customerID from vehicle where conditions = "New" and vehicleID in (
10    select vehicleID from customization where cost > 1700));
11
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

	name	phone
▶	Olivia Martinez	111-222...

Find the names, vehicle model, registration expiration date, date of manufacture and insurance plan type of all customers who posses a vehicle and have a comprehensive insurance plan.

```
13 •   select customer.name, registration.model, registration.date_of_expiration,
14      registration.date_of_manufacture, insurance.plantype from customer
15      inner join registration
16      on customer.customerID = registration.customerID
17      inner join insurance
18      on registration.vehicleID = insurance.vehicleID where plantype = "comprehensive";
19
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

	name	model	date_of_expiration	date_of_manufacture	plantype
▶	Alice Johnson	Honda Accord	2023-01-31	2022-01-15	Comprehensive
	David Brown	Lincoln Corsair	2025-02-28	2022-02-05	Comprehensive

Find the vehicle VIN numbers, license plate numbers ,model ,expiration dates and registration numbers of all vehicles that cost over 30000\$ with an active current registration (expiration date after 04/10/2024).

```
21 •   select vehicle.VIN, vehicle.license_plate_number, vehicle.price,
22      registration.date_of_expiration, registration.reg_no from vehicle
23      inner join registration
24      on vehicle.vehicleID = registration.vehicleID
25      where vehicle.price >= 30000 and registration.date_of_expiration > '2024-04-09';
26
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

	VIN	license_plate_number	price	date_of_expiration	reg_no
▶	SLMCJ2D97LUL12345	LINCOLN456	45000.00	2025-02-28	1004

Find the customer name, vehicle model, vehicle type, warranty duration, warranty type and financing plan of all customers who have a vehicle manufactured in USA, a warranty duration of more than 2 years and a loan financial plan.

```
28 • select customer.name, vehicle.model, vehicle.type, warranty.duration, warranty.warranty_type, financing.plan from customer
29      inner join vehicle
30      on customer.customerID = vehicle.customerID
31      inner join warranty
32      on vehicle.vehicleID = warranty.vehicleID
33      inner join financing
34      on vehicle.vehicleID = financing.vehicleID
35      where vehicle.place_of_manufacture = "USA" and financing.payment_type = "loan" and warranty.duration > 2;
36
```

Result Grid						
	name	model	type	duration	warranty_type	plan
▶	Olivia Martinez	Lincoln Corsair	SUV	4	Extended	Standard
	David Brown	Chevrolet Silverado	Truck	3	Basic	Extended

Find all the customer information of all the customers who gave more than a 3 stars overall rating on a survey.

```
38 • ⚡ select * from customer where customerID in (
39         select customerID from survey where overallRating > 3);
40
41
```

Result Grid					
	CustomerID	Name	Address	Email	Phone
▶	401	Alice Johnson	456 Oak St, New York	alice@example.com	222-333- 4444
	402	Bob Smith	789 Pine St, Los Angeles	bob@example.com	555-666-7777
	404	David Brown	456 Park Ave, Houston	david@example.com	111-222-3337
	405	Olivia Martinez	789 River Rd, Miami	olivia@example.com	111-222- 3338
*	NULL	NULL	NULL	NULL	NULL