Задание БД - АВТОСАЛОН

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• Задание - 1

Да се проектира и реализира база от данни за АВТОСАЛОН, която да съхранява следната информация:

• Клиент - име, адрес, телефон;

Служител на автосалона име, позиция, телефон;

• Автомобил - марка, модел, година, цвят, километри, цена;

• Продажба - клиент, автомобил, служител, дата на продажба.

Правила:

• Всеки клиент може да закупи повече от един автомобил,

• Всеки автомобил може да бъде само от една марка/модел и да бъде закупен само от един клиент.

Базата от данни трябва да е нормализирана и да позволява:

1. Въвеждане и корекции на данни.

2. Търсене на автомобили по марка, модел, цвят, година, километри, цена.

3. Справки за:

• продадени автомобили от служител, подредени по дата на продажба;

последните 5 продажби подредени по цена;

• закупени автомобили от клиент;

• продажби за период.

Обяснителната записка към проекта трябва да съдържа:

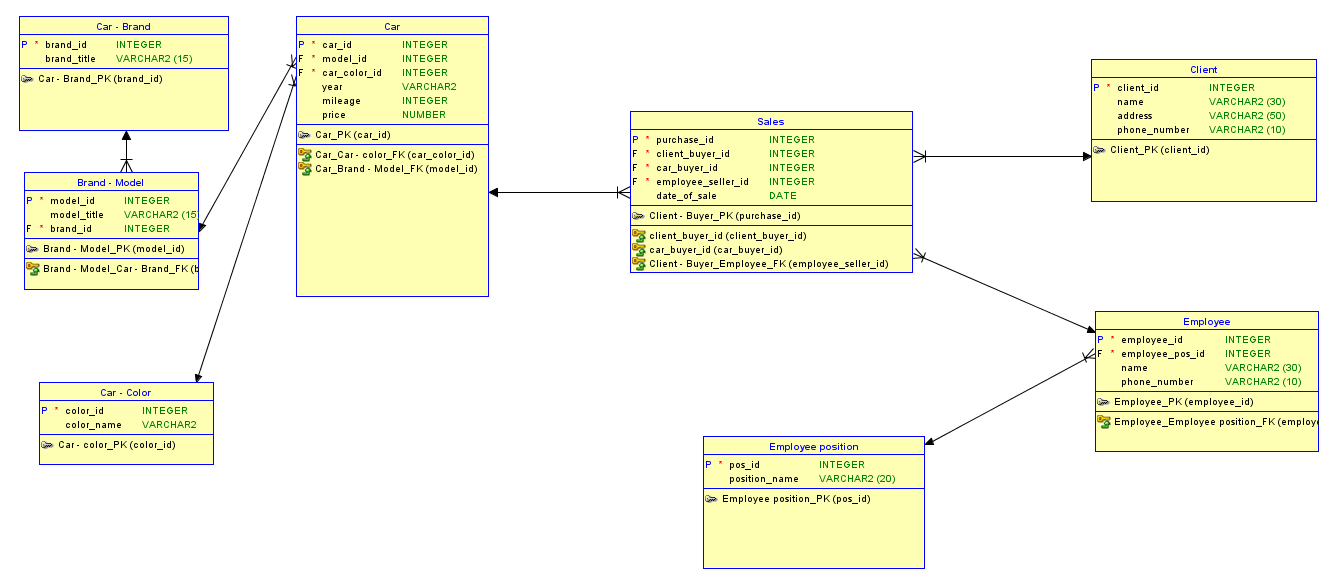
• Задание

• Модели (Oracle Data Modeler)

• Примерни данни

• SQL команди - DDL, DML

• Резултати от изпълнението на заявките

• Модели (Oracle Data Modeler)

• DDL script

CREATE TABLE Car (

car\_id INT PRIMARY KEY,

car\_model\_id INT,

car\_color\_id INT,

year INT,

mileage INT,

price DECIMAL(10, 2),

FOREIGN KEY (car\_model\_id) REFERENCES Brand\_Model(model\_id),

FOREIGN KEY (car\_color\_id) REFERENCES Car\_Color(color\_id)

);

CREATE TABLE Brand\_Model (

model\_id INT PRIMARY KEY,

model\_title VARCHAR(10),

brand\_id INT,

FOREIGN KEY (brand\_id) REFERENCES Car\_Brand(brand\_id)

);

CREATE TABLE Car\_Brand (

brand\_id INT PRIMARY KEY,

brand\_title VARCHAR(10)

);

CREATE TABLE Car\_Color (

color\_id INT PRIMARY KEY,

color\_name VARCHAR(30)

);

CREATE TABLE Sales (

purchase\_id INT PRIMARY KEY,

client\_buyer\_id INT,

car\_buyer\_id INT,

employee\_seller\_id INT,

date\_of\_sale DATE,

FOREIGN KEY (client\_buyer\_id) REFERENCES Client(client\_id),

FOREIGN KEY (car\_buyer\_id) REFERENCES Car(car\_id),

FOREIGN KEY (employee\_seller\_id) REFERENCES Employee(employee\_id)

);

CREATE TABLE Client (

client\_id INT PRIMARY KEY,

name VARCHAR2(30),

address VARCHAR2(50),

phone\_number VARCHAR2(10)

);

CREATE TABLE Employee (

employee\_id INT PRIMARY KEY,

employee\_pos\_id INT,

name VARCHAR2(30),

phone\_number VARCHAR2(10),

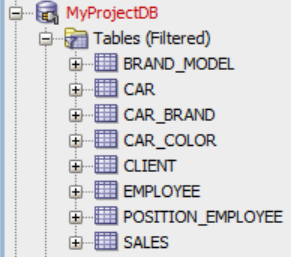
FOREIGN KEY (employee\_pos\_id) REFERENCES Position\_Employee(pos\_id)

);

CREATE TABLE Position\_Employee (

pos\_id INT PRIMARY KEY,

position\_name VARCHAR2(20)

);

• DML команди - INSERT, UPDATE , DELETE – примери

**Марки на автомобили:**

1. Mazda
2. Infinity
3. BMW
4. Mercedes
5. Lambo

**Модели на автомобили:**

1. Mazda - 323f BA
2. Infinity - QX70
3. Mazda - MX5
4. BMW - 630i
5. Mercedes - CLS 323
6. Lambo - Aventador

**Цветове на автомобили:**

1. Зелен
2. Черен
3. Червен
4. Бял
5. Сребрист
6. Оранжев

**Автомобили:**

1. Mazda 323f BA (Зелен, 1998, 141 000 мили, $2 500.00)
2. Infinity QX70 (Черен, 2007, 106 000 мили, $41 000.00)
3. Mazda MX5 (Червен, 2002, 162 000 мили, $3 000.00)
4. BMW 630i (Бял, 2007, 120 000 мили, $15 000.00)
5. Mercedes CLS 323 (Сребрист, 2000, 110 000 мили, $12 000.00)
6. Lambo Aventador (Оранжев, 2001, 16 000 мили, $84 000.00)

**Служители:**

1. Иван Петров - Консултант (Телефон: 3590000011)
2. Мария Иванова - Мениджър (Телефон: 3590000012)
3. Георги Георгиев - Техник (Телефон: 3590000013)

**Позиции:**

1. Консултант
2. Мениджър
3. Техник

**Клиенти:**

1. Стефан Стефанов (Адрес: ул. Осма 1, София, Телефон: 3590000014)
2. Анна Георгиева (Адрес: ул. Девета 2, Пловдив, Телефон: 3590000015)
3. Николай Иванов (Адрес: ул. Десета 3, Варна, Телефон: 3590000016)

**Продажби:**

1. Продажба №4 - Стефан Стефанов закупи BMW 630i от Иван Петров на 2023-04-10.
2. Продажба №5 - Анна Георгиева закупи Mercedes CLS 323 от Мария Иванова на 2023-05-15.
3. Продажба №6 - Николай Иванов закупи Mazda 323f BA от Георги Георгиев на 2023-06-20.
4. Продажба №7 - Стефан Стефанов закупи Infinity QX70 от Иван Петров на 2023-07-25.
5. Продажба №8 - Анна Георгиева закупи Mazda MX5 от Мария Иванова на 2023-08-30.
6. Продажба №9 - Анна Георгиева закупи Mazda MX5 от Мария Иванова на 2023-11-30.

------------------------------------------------------------------------------- Въвеждане на данни

-- Car\_Brand Table

INSERT INTO Car\_Brand (brand\_id, brand\_title) VALUES

(1, 'Mazda');

INSERT INTO Car\_Brand (brand\_id, brand\_title) VALUES

(2, 'Infinity');

INSERT INTO Car\_Brand (brand\_id, brand\_title) VALUES

(3, 'BMW');

INSERT INTO Car\_Brand (brand\_id, brand\_title) VALUES

(4, 'Mercedes');

INSERT INTO Car\_Brand (brand\_id, brand\_title) VALUES

(5, 'Lambo');

-- Brand\_Model Table

INSERT INTO Brand\_Model (model\_id, model\_title, brand\_id) VALUES

(1, '323f BA', 1);

INSERT INTO Brand\_Model (model\_id, model\_title, brand\_id) VALUES

(2, 'QX70', 2);

INSERT INTO Brand\_Model (model\_id, model\_title, brand\_id) VALUES

(3, 'MX5', 1);

INSERT INTO Brand\_Model (model\_id, model\_title, brand\_id) VALUES

(4, '630i', 3);

INSERT INTO Brand\_Model (model\_id, model\_title, brand\_id) VALUES

(5, 'CLS 323', 4);

INSERT INTO Brand\_Model (model\_id, model\_title, brand\_id) VALUES

(6, 'Aventador', 5);

-- Car\_Color Table

INSERT INTO Car\_Color (color\_id, color\_name) VALUES

(1, 'Green');

INSERT INTO Car\_Color (color\_id, color\_name) VALUES

(2, 'Black');

INSERT INTO Car\_Color (color\_id, color\_name) VALUES

(3, 'Red');

INSERT INTO Car\_Color (color\_id, color\_name) VALUES

(4, 'White');

INSERT INTO Car\_Color (color\_id, color\_name) VALUES

(5, 'Silver');

INSERT INTO Car\_Color (color\_id, color\_name) VALUES

(6, 'Orange');

-- Car Table

INSERT INTO Car (car\_id, car\_model\_id, car\_color\_id, year, mileage, price) VALUES

(1, 1, 1, 1998, 141000, 2500.00);

INSERT INTO Car (car\_id, car\_model\_id, car\_color\_id, year, mileage, price) VALUES

(2, 2, 2, 2007, 106000, 41000.00);

INSERT INTO Car (car\_id, car\_model\_id, car\_color\_id, year, mileage, price) VALUES

(3, 3, 3, 2002, 162000, 3000.00);

INSERT INTO Car (car\_id, car\_model\_id, car\_color\_id, year, mileage, price) VALUES

(4, 4, 4, 2007, 120000, 15000.00);

INSERT INTO Car (car\_id, car\_model\_id, car\_color\_id, year, mileage, price) VALUES

(5, 5, 5, 2000, 110000, 12000.00);

INSERT INTO Car (car\_id, car\_model\_id, car\_color\_id, year, mileage, price) VALUES

(6, 6, 6, 2001, 16000, 84000.00);

-- Employee Table

INSERT INTO Employee (employee\_id, employee\_pos\_id, name, phone\_number) VALUES

(1, 1, 'Иван Петров', '3590000011');

INSERT INTO Employee (employee\_id, employee\_pos\_id, name, phone\_number) VALUES

(2, 2, 'Мария Иванова', '3590000012');

INSERT INTO Employee (employee\_id, employee\_pos\_id, name, phone\_number) VALUES

(3, 3, 'Георги Георгиев', '3590000013');

-- Position\_Employee Table

INSERT INTO Position\_Employee (pos\_id, position\_name) VALUES

(1, 'Консултант');

INSERT INTO Position\_Employee (pos\_id, position\_name) VALUES

(2, 'Мениджър');

INSERT INTO Position\_Employee (pos\_id, position\_name) VALUES

(3, 'Техник');

-- Client Table

INSERT INTO Client (client\_id, name, address, phone\_number) VALUES

(1, 'Стефан Стефанов', 'ул. Осма 1, София', '3590000014');

INSERT INTO Client (client\_id, name, address, phone\_number) VALUES

(2, 'Анна Георгиева', 'ул. Девета 2, Пловдив', '3590000015');

INSERT INTO Client (client\_id, name, address, phone\_number) VALUES

(3, 'Николай Иванов', 'ул. Десета 3, Варна', '3590000016');

-- Sales Table

INSERT INTO Sales (purchase\_id, client\_buyer\_id, car\_buyer\_id, employee\_seller\_id, date\_of\_sale) VALUES

(4, 1, 4, 1, '2023-04-10');

INSERT INTO Sales (purchase\_id, client\_buyer\_id, car\_buyer\_id, employee\_seller\_id, date\_of\_sale) VALUES

(5, 2, 5, 2, '2023-05-15');

INSERT INTO Sales (purchase\_id, client\_buyer\_id, car\_buyer\_id, employee\_seller\_id, date\_of\_sale) VALUES

(6, 3, 1, 3, '2023-06-20');

INSERT INTO Sales (purchase\_id, client\_buyer\_id, car\_buyer\_id, employee\_seller\_id, date\_of\_sale) VALUES

(7, 1, 2, 1, '2023-07-25');

INSERT INTO Sales (purchase\_id, client\_buyer\_id, car\_buyer\_id, employee\_seller\_id, date\_of\_sale) VALUES

(8, 2, 3, 2, '2023-08-30');

INSERT INTO Sales (purchase\_id, client\_buyer\_id, car\_buyer\_id, employee\_seller\_id, date\_of\_sale) VALUES

(9, 2, 3, 2, '2023-11-30');

---------------------------------------------------------------------------------------------------------- Корекция на данни

-- Car\_Brand

UPDATE Car\_Brand SET brand\_title = 'Toyota' WHERE brand\_id = 1;

DELETE FROM Car\_Brand WHERE brand\_id = 2;

-- Brand\_Model

UPDATE Brand\_Model SET model\_title = 'Camry' WHERE model\_id = 1;

DELETE FROM Brand\_Model WHERE model\_id = 2;

-- Car\_Color

UPDATE Car\_Color SET color\_name = 'Purple' WHERE color\_id = 1;

DELETE FROM Car\_Color WHERE color\_id = 2;

-- Car

UPDATE Car SET mileage = 155000 WHERE car\_id = 1;

DELETE FROM Car WHERE car\_id = 2;

-- Sales

UPDATE Sales SET date\_of\_sale = '2023-09-10' WHERE purchase\_id = 1;

DELETE FROM Sales WHERE purchase\_id = 3;

-- Client

UPDATE Client SET address = 'ул. Шеста 4, София' WHERE client\_id = 1;

DELETE FROM Client WHERE client\_id = 2;

-- Employee

UPDATE Employee SET phone\_number = '3590000018' WHERE employee\_id = 1;

DELETE FROM Employee WHERE employee\_id = 3;

-- Position\_Employee

UPDATE Position\_Employee SET position\_name = 'Support Specialist' WHERE pos\_id = 1;

DELETE FROM Position\_Employee WHERE pos\_id = 2;

• Select - за търсене и справки + резултати от тях. (Име на търсенето/справката , код (като текст) и резултата като скрийншот)

--2. Търсене на автомобили по марка, модел, цвят, година, километри, цена

SELECT

Car\_Brand.brand\_title,

Brand\_Model.model\_title AS brand\_model,

Car\_Color.color\_name AS color,

Car.year,

Car.mileage,

Car.price

FROM

Car

JOIN Brand\_Model ON Car.car\_model\_id = Brand\_Model.model\_id

JOIN Car\_Color ON Car.car\_color\_id = Car\_Color.color\_id

JOIN Car\_Brand ON Brand\_Model.brand\_id = Car\_Brand.brand\_id

WHERE

Car\_Brand.brand\_title = 'Mazda'

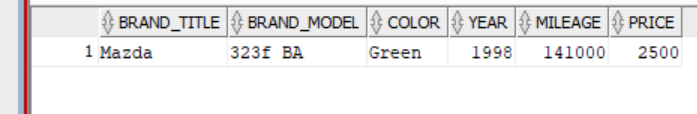
AND Brand\_Model.model\_title = '323f BA'

AND Car\_Color.color\_name = 'Green'

AND Car.year = 1998

AND Car.mileage < 1000000

AND Car.price BETWEEN 1000.00 AND 20000.00;



-- 3.

-- продадени автомобили от служител, подредени по дата на продажба

SELECT

Car\_Brand.brand\_title,

Brand\_Model.model\_title AS brand\_model,

Car\_Color.color\_name AS color,

Car.year,

Car.mileage,

Car.price,

Sales.date\_of\_sale,

Client.name AS buyer\_name,

Employee.name AS seller\_name

FROM

Sales

JOIN Car ON Sales.car\_buyer\_id = Car.car\_id

JOIN Brand\_Model ON Car.car\_model\_id = Brand\_Model.model\_id

JOIN Car\_Color ON Car.car\_color\_id = Car\_Color.color\_id

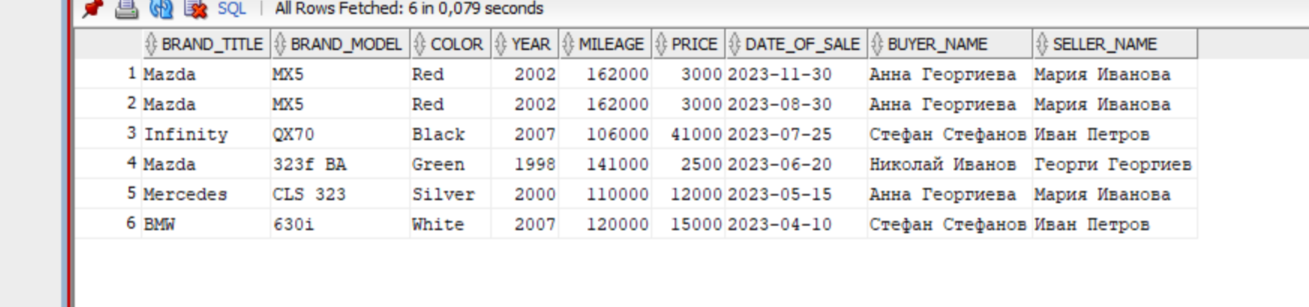
JOIN Car\_Brand ON Brand\_Model.brand\_id = Car\_Brand.brand\_id

JOIN Client ON Sales.client\_buyer\_id = Client.client\_id

JOIN Employee ON Sales.employee\_seller\_id = Employee.employee\_id

ORDER BY

Sales.date\_of\_sale DESC;



-- последните 5 продажби подредени по цена

SELECT

brand\_title,

brand\_model,

color,

year,

mileage,

price,

date\_of\_sale,

buyer\_name,

seller\_name

FROM (

SELECT

Car\_Brand.brand\_title,

Brand\_Model.model\_title AS brand\_model,

Car\_Color.color\_name AS color,

Car.year,

Car.mileage,

Car.price,

Sales.date\_of\_sale,

Client.name AS buyer\_name,

Employee.name AS seller\_name,

ROW\_NUMBER() OVER (ORDER BY Sales.date\_of\_sale DESC) AS row\_num

FROM

Sales

JOIN Car ON Sales.car\_buyer\_id = Car.car\_id

JOIN Brand\_Model ON Car.car\_model\_id = Brand\_Model.model\_id

JOIN Car\_Color ON Car.car\_color\_id = Car\_Color.color\_id

JOIN Car\_Brand ON Brand\_Model.brand\_id = Car\_Brand.brand\_id

JOIN Client ON Sales.client\_buyer\_id = Client.client\_id

JOIN Employee ON Sales.employee\_seller\_id = Employee.employee\_id

ORDER BY

Sales.date\_of\_sale DESC

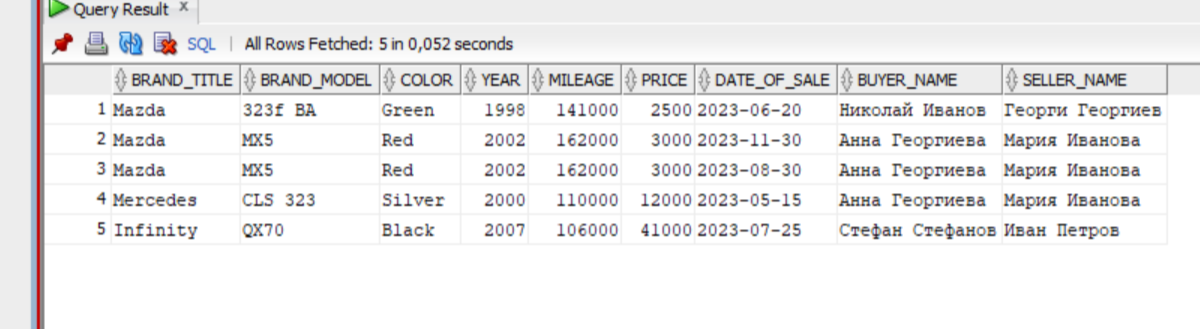
)

WHERE

row\_num <= 5

ORDER BY

price ASC;



-- закупени автомобили от клиент

SELECT

Car\_Brand.brand\_title,

Brand\_Model.model\_title AS brand\_model,

Car\_Color.color\_name AS color,

Car.year,

Car.mileage,

Car.price,

Sales.date\_of\_sale,

Employee.name AS seller\_name,

Client.name AS buyer\_name

FROM

Sales

JOIN Car ON Sales.car\_buyer\_id = Car.car\_id

JOIN Brand\_Model ON Car.car\_model\_id = Brand\_Model.model\_id

JOIN Car\_Color ON Car.car\_color\_id = Car\_Color.color\_id

JOIN Car\_Brand ON Brand\_Model.brand\_id = Car\_Brand.brand\_id

JOIN Employee ON Sales.employee\_seller\_id = Employee.employee\_id

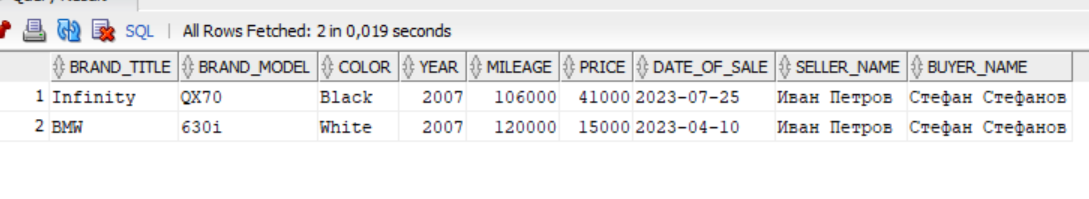
JOIN Client ON Sales.client\_buyer\_id = Client.client\_id

WHERE

Sales.client\_buyer\_id = (SELECT client\_id FROM Client WHERE name = 'Стефан Стефанов')

ORDER BY

Sales.date\_of\_sale DESC;



-- продажби за период

SELECT

Car\_Brand.brand\_title,

Brand\_Model.model\_title AS brand\_model,

Car\_Color.color\_name AS color,

Car.year,

Car.mileage,

Car.price,

Sales.date\_of\_sale,

Client.name AS buyer\_name,

Employee.name AS seller\_name

FROM

Sales

JOIN Car ON Sales.car\_buyer\_id = Car.car\_id

JOIN Brand\_Model ON Car.car\_model\_id = Brand\_Model.model\_id

JOIN Car\_Color ON Car.car\_color\_id = Car\_Color.color\_id

JOIN Car\_Brand ON Brand\_Model.brand\_id = Car\_Brand.brand\_id

JOIN Client ON Sales.client\_buyer\_id = Client.client\_id

JOIN Employee ON Sales.employee\_seller\_id = Employee.employee\_id

WHERE

Sales.date\_of\_sale BETWEEN '2023-05-30' AND '2023-12-31'

ORDER BY

Sales.date\_of\_sale DESC;

