CS 380: (Software Engineering)
Spring 2023
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SQL COMMANDS

SQL is used in relational databases to store data in the form of structures. These structures are just tables with data in the form of fields and records.

cars

Car_ID	MAKER	REGISTRATION	MODEL	VIN

A table's structure must be defined in a SQL query to construct it. The structure consists of the name of a table and the names of the table's columns, as well as the data type of each column.

1. CREATE DATABASE

Syntax

```
CREATE DATABASE DatabaseName;
```

Using the USE statement in SQL, we can now make the cs380 the default database.

Example

```
mysql> create database cs380;
Query OK, 1 row affected (0.07 sec)

mysql> use cs380;
Database changed
mysql>
```

2. CREATE TABLE Statement

Syntax

```
CREATE TABLE table_name(
   column1 datatype,
   column2 datatype,
   column3 datatype,

   columnN datatype,
   PRIMARY KEY( one or more columns )
);
```

Example CREATE TABLE

```
CREATE TABLE CARS(
  Car_ID  INT          NOT NULL,
  MAKER VARCHAR(200)     NOT NULL,
  REGISTRATION  INT       NOT NULL,
  MODEL  CHAR (20) ,
  PRIMARY KEY (Car_ID));
```

Your database now has a CARS table that you can use to store the necessary car-related information.

```
mysql> CREATE TABLE CARS(
    -> CAR_ID INT NOT NULL,
    -> MAKER VARCHAR(200) NOT NULL,
    -> REGISTRATION INT NOT NULL,
    -> MODEL CHAR (20),
    -> PRIMARY KEY (CAR_ID));
Query OK, 0 rows affected (0.12 sec)

mysql>
```

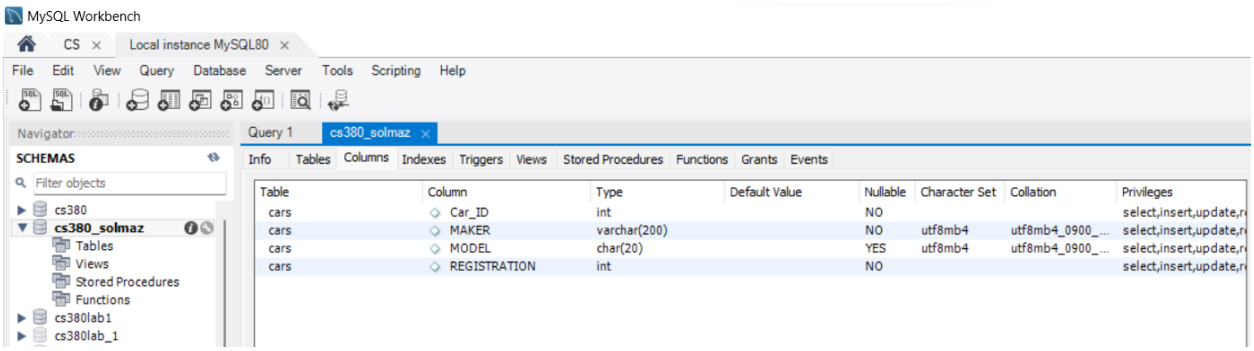
MySQL workbench GUI:

```
1  use cs380_solmaz;
2  CREATE TABLE cars_cs_solmaz (
3      Car_ID INT NOT NULL,
4      MAKER VARCHAR(200) NOT NULL,
5      REGISTRATION VARCHAR(200) NOT NULL,
6      MODEL CHAR(20),
7      VIN INT NOT NULL,
8      PRIMARY KEY (Car_ID)
9  );
```

Verification MySQL command line

```
mysql> DESC CARS;
+--------------+--------------+------+-----+---------+-------+
| Field        | Type         | Null | Key | Default | Extra |
+--------------+--------------+------+-----+---------+-------+
| CAR_ID       | int          | NO   | PRI | NULL    |       |
| MAKER        | varchar(200) | NO   |     | NULL    |       |
| REGISTRATION | int          | NO   |     | NULL    |       |
| MODEL        | char(20)     | YES  |     | NULL    |       |
+--------------+--------------+------+-----+---------+-------+
4 rows in set (0.04 sec)
```

MySQL workbench GUI:



SQL - INSERT Query

The SQL INSERT INTO Statement adds new rows of data to a database table.

Syntax

```
INSERT INTO TABLE_NAME VALUES (value1,value2,value3,...valueN);
```

Example INSERT

```
INSERT INTO cars_cs_solmaz (Car_ID,MAKER,REGISTRATION,MODEL,VIN)
VALUES (1, 'Ford', 'solmaz', 'SUV', 2023 ), (2, 'Toyota',  'solmazsm','TRUCK', 2023 ), (3,
'Chevrolet',  'seyedmonir_cs380', 'SPORTT', 2024);
```

MySQL workbench GUI:

```
10    INSERT INTO cars_cs_solmaz (Car_ID,MAKER,REGISTRATION,MODEL,VIN)
11    VALUES (1, 'Ford', 'solmaz', 'SUV', 2023 ), (2, 'Toyota',  'solmazsm','TRUCK', 2023 ), (3, 'Chevrolet',  'seyedmonir_cs380', 'SPORTT', 2024 );
```

Example

A select list consisting only of a single unqualified * can be used as shorthand to select all columns from all tables:

```
use cs380_solmaz;
CREATE TABLE cars_cs_solmaz (
    Car_ID INT NOT NULL,
    MAKER VARCHAR(200) NOT NULL,
    REGISTRATION VARCHAR(200) NOT NULL,
    MODEL CHAR(20),
    VIN INT NOT NULL,
    PRIMARY KEY (Car_ID)
);
INSERT INTO cars_cs_solmaz (Car_ID,MAKER,REGISTRATION,MODEL,VIN)
VALUES (1, 'Ford', 'solmaz', 'SUV', 2023 ), (2, 'Toyota',  'solmazsm','TRUCK', 2023 ), (3,
'Chevrolet',  'seyedmonir_cs380', 'SPORTT', 2024 );
DESC cars_cs_solmaz;
SELECT
    *
FROM
    cars_cs_solmaz;
```

SQL - ORDER BY Clause

ORDER BY with DESC

- **We use the keyword ASC to organize the data in ascending order.**
- **We use the keyword DESC to organize the data in decreasing order.**

MySQL workbench GUI:

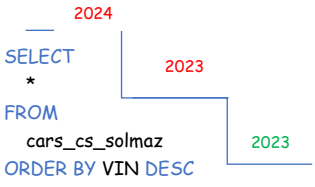
```
17      SELECT
18          *
19      FROM
20          cars_cs_solmaz
21      ORDER BY VIN DESC
22
```

Result Grid | Filter Rows: | Edit:

Car_ID	MAKER	REGISTRATION	MODEL	VIN
3	Chevrolet	seyedmonir_cs380	SPORTT	2024
1	Ford	solmaz	SUV	2023
2	Toyota	solmazsm	TRUCK	2023
NULL	NULL	NULL	NULL	NULL

Syntax

```
SELECT
    *
FROM
    cars_cs_solmaz
ORDER BY VIN DESC
```




```
SELECT
    *
FROM
    cars_cs_solmaz
ORDER BY VIN DESC
```

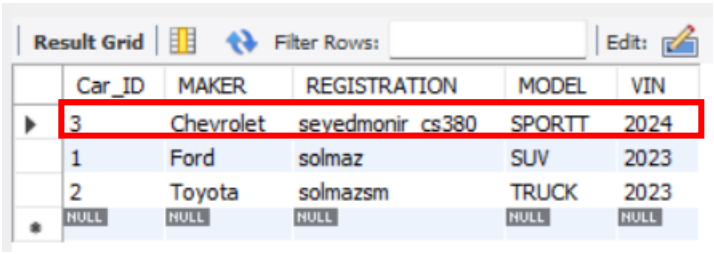
SQL - DELETE Query

Syntax

```
DELETE FROM table_name
WHERE [condition];
```

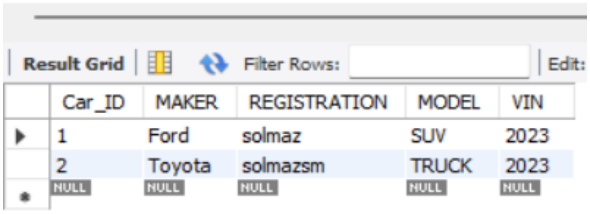
Example

Consider the cars_cs_solmaz table, which contains the records listed below.



The following code has a query, which will DELETE a cars_cs_solmaz, whose Car_ID is 3.

```
18 •  DELETE FROM
19    cars_cs_solmaz
20    WHERE Car_ID = 3;
```



Syntax

```
DELETE FROM
cars_cs_solmaz
WHERE Car_ID = 3;
```

Resource:

https://dev.mysql.com/doc/refman/8.0/en/select.html