# Practice with database usage

## Goal of this practice is getting real skills to use SQL, create table and add data, do "select" and do deletion of data and table.

Duration: 40 minutes.

Part1. Work with transactional database.
For this part we will use free service provided an access to MySQL database. Db4free.com

1. Signup into the service.
   1.1.Go to **https://www.db4free.net/signup.php**
   1.2.Add information:
      1.2.1. MySQL database name: <your last name>test1
      for example: Whitetest1
      You could use any unique name.
      1.2.2. MySQL username: <your last name>test1
      1.2.3. MySQL user password: <your unique password>,
      you could use simple one like "test1"
      1.2.4. MySQL user password verification: retype your password.
      1.2.5. Email address: please put you real email address, you will need to confirm the email service will send before real usage of service.
      1.2.6. Switch on "**I have read the conditions of use and I agree with them**"
      1.2.7. click "Signup" button.
   1.3.Confirm your email: click to conformation link.
2. Data manipulation in database
   2.1. Go to https://www.db4free.net/phpMyAdmin/
   2.2. Login into the service by using your user and password.
   2.3. Create a table for houses (see columns in the presentation).
      Add fields:
      - Id : integer
      - Address : text
      - Price: integer, in $ (like 500000)
      - Bed: integer (like: 3)

      ***Tips:***
      - *__Naming__: The rules for naming database objects (such as tables, columns, views, and database procedures) are as follows: **Names can contain only alphanumeric characters and must begin with an alphabetic character or an underscore (_)**. Database names must begin with an alphabetic character, and cannot begin with an underscore.*
      - *MySQL CREATE TABLE Statement:*

```
CREATE TABLE table_name (
    column1 datatype,
    column2 datatype,
    column3 datatype,
    ....
);
Example:
CREATE TABLE Persons (
    PersonID int,
    LastName varchar(255),
    FirstName varchar(255),
    Address varchar(255),
    City varchar(255)
);
```

*Where int – type for integer type, varchar(255) .*

2.4.Check what we have now in database by using select statement.

***Tips.***

- ***Select all lines from the table:***

  ```
  SELECT * FROM table_name;
  ```

- ***Select all lines, but particular columns from the table:***

  ```
  SELECT column1, column2, ...
  FROM table_name;
  ```

  ***Here, column1, column2, ... are the field names of the table you want to select data from. If you want to select all the fields available in the table, use the following syntax.***

2.5.Add 10 items from https://www.redfin.com as INSERT INTO house statement.

2.5.1. Add it manually in form for first two.

2.5.2. Use insert statement to add other lines.

***Tips. It is possible to write the INSERT INTO statement in two ways:***

- ***Specify both the column names and the values to be inserted:***

  ```
  INSERT INTO table_name (column1, column2, column3, ...)
  VALUES (value1, value2, value3, ...);
  ```

- ***If you are adding values for all the columns of the table, you do not need to specify the column names in the SQL query. However, make sure the order of the values is in the same order as the columns in the table. Here, the INSERT INTO syntax would be as follows:***

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

2.6. Do search for the price less then 400000 $ and check result: is it expected?

***Tips. The WHERE clause is used to filter records.***

***It is used to extract only those records that fulfill a specified condition.***

***WHERE Syntax***

```
SELECT column1, column2, ...
FROM table_name
WHERE condition;
```

*Example,*

```
SELECT * FROM Customers
WHERE Country = 'Mexico';
```

2.7. Working with Do group by beds: count how many houses presented by each type of bedroom.
Output (example):

```
Bedroom Count
1       1
2       4
3       5
```

***Tips.***

- ○ ***The GROUP BY statement*** *groups rows that have the same values into summary rows**, like "find the number of customers in each country". The GROUP BY statement is often used with aggregate functions ( COUNT() , MAX() , MIN() , SUM() , AVG() ) to group the result-set by one or more columns.***

***The MySQL GROUP BY Statement***

***The GROUP BY statement groups rows that have the same values into summary rows, like "find the number of customers in each country".***

***The GROUP BY statement is often used with aggregate functions (COUNT(), MAX(), MIN(), SUM(), AVG()) to group the result-set by one or more columns.***

***GROUP BY Syntax***

```
SELECT column_name(s)
FROM table_name
WHERE condition
GROUP BY column_name(s)
ORDER BY column_name(s);

Example,
SELECT COUNT(CustomerID), Country
FROM Customers
GROUP BY Country;
```

```
Or

SELECT COUNT(CustomerID), Country
FROM Customers
GROUP BY Country
ORDER BY COUNT(CustomerID) DESC;
```

2.8. Count for only 3 bedrooms.

Output (example):

3

***Tips.***

- ***Simple way:***

  ```
  SELECT COUNT(column_name)
  FROM table_name
  WHERE condition;
  ```

- ***The HAVING clause was added to SQL because the WHERE keyword cannot be used with aggregate functions.***

***HAVING Syntax:***

```
SELECT column_name(s)
FROM table_name
WHERE condition
GROUP BY column_name(s)
HAVING condition
ORDER BY column_name(s);
```

***Example,***

```
SELECT COUNT(CustomerID), Country
FROM Customers
GROUP BY Country
HAVING COUNT(CustomerID) > 5;
```

2.9. Create additional table Realtor

Add fields:

- Id : integer
- First name : text
- Last name : text

2.10. Add column realtorId int into houses table.

***Tips***

1. ***MySQL ALTER TABLE Statement***

   ***The ALTER TABLE statement is used to add, delete, or modify columns in an existing table.***

***The ALTER TABLE statement is also used to add and drop various constraints on an existing table.***

### 2. ALTER TABLE - ADD Column

***To add a column in a table, use the following syntax:***

```
ALTER TABLE table_name
ADD column_name datatype;
```

***Example,***

```
ALTER TABLE Customers
ADD Email varchar(255);
```

2.11. Add few items into Realtor table.
Example:
1 Linda Ferman
…

2.12. Update houses table – add identificator of Realtor table to several lines.

***Tips***

### 3. The The MySQL UPDATE Statement

***The UPDATE statement is used to modify the existing records in a table.***

***UPDATE Syntax***

```
UPDATE table_name
SET column1 = value1, column2 = value2, ...
WHERE condition;
```

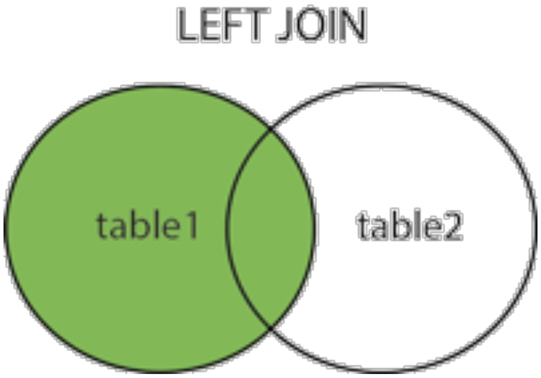
***Example,***

```
UPDATE Customers
SET ContactName = 'Alfred Schmidt', City = 'Frankfurt'
WHERE CustomerID = 1;
```

2.13. Do left join to show realtor First name and realtor last name for each house item if realtor id is presented.

### 4. MySQL LEFT JOIN Keyword

***The LEFT JOIN keyword returns all records from the left table (table1), and the matching records (if any) from the right table (table2).***



***LEFT JOIN Syntax***

```
SELECT column_name(s)
FROM table1
LEFT JOIN table2
ON table1.column_name = table2.column_name;
```

***Example***

```
SELECT Customers.CustomerName, Orders.OrderID
FROM Customers
LEFT JOIN Orders ON Customers.CustomerID = Orders.CustomerID
ORDER BY Customers.CustomerName;
```

*Note: **The LEFT JOIN keyword returns all records from the left table (Customers), even if there are no matches in the right table (Orders).***

Part2. Work with NoSQL database.
For this part we will use free service provided an access to Solr database. opensolr.com

1. Register **https://opensolr.com/users/login?registered=yes**
2. Log in
3. Go to **https://opensolr.com/search/fresh**
4. Try to find in NoSQL database Solr information – articles about Floride state
5. Think about Google search – is it similar to thing?