Group 2: Introduction to SQL using SQLite

Basic Functionality of SQL

Megan Lerman, Pradeep Singh and Alexis Donaldson

May 2, 2018

Goals

- Find and work with a basic dataset using SQL
- Introduce some basic SQL functionality for new users

We will cover:

- Basic SQL functions
- Manipulating and editing the table
- Creating new databases and tables

Find and Download a Basic Dataset

The data that we will be using is from the Consumer Finance Protection Bureau. Click here for more information. To download the dataset, scroll down and select "Download all complaint data — CSV"

SQL Comments

Add comments in SQL with −− (two hyphens). Comments cannot extend to a new line.

```
−− This is a comment.
−− This is also a comment
```

Select

select data (columns) from a dataset (tables).

```
SELECT *
FROM ConsumerComplaints;

SELECT ProductName, State
FROM ConsumerComplaints;
```

Select Distinct

Return distinct values in the specified columns.

```
SELECT DISTINCT State,
FROM ConsumerComplaints;
```

Where

Used to filter data.

```
SELECT ProductName
FROM ConsumerComplaints
WHERE State = 'CA';
```

And, Or, Not

The WHERE clause can be combined with AND, OR, and NOT operators.

```
SELECT ProductName, .
FROM ConsumerComplaints
WHERE State = 'CA' AND Tags = 'Older American';
```

Order By

The ORDER BY keyword is used to order our results set.

```
SELECT DateReceived, ID
FROM ConsumerComplaints
ORDER BY DateReceived DESC;
```

Insert Into

The INSERT INTO statement is used to insert new records in a table.

```
INSERT INTO ConsumerComplaints (ProductName, SubProd,
SubIssue)
VALUES (Mortgage, "Credit Card");
```

Update

Used to modify existing data

```
UPDATE ConsumerComplaints
SET Tags = NULL
WHERE Tags = ""
```

Null Values

A null value is a field where data was not entered

```
SELECT Tags
FROM ConsumerComplaints
WHERE Tags is NOT NULL
```

Delete

Delete existing records from the table

```
DELETE FROM ConsumerComplaints
WHERE Tags is NULL
```

Like

LIKE is meant to be used with a WHERE statement. If you are searching for something but do not have all the information, it can give you information similar to what you are looking for.

ConsumerComplaints WHERE State LIKE 'a%' A state that starts with A

Wildcards

Wildcards are the characters used with the LIKE function

The % character signifies that it could be any character. The _ represents one character space

In

IN is used with a WHERE statement to search through multiple values

WHERE State IN (CA, CO, CN)

Between

BETWEEN is used to search within a range. It is used with the WHERE statement.

```
SELECT Zip FROM ConsumerComplaints
WHERE Zip BETWEEN 48382 AND 48384;
```

Group By

The GROUP BY statement is used to group the given data (columns, rows, table) together on the basis of some condition.

```
SELECT Company, State
FROM ConsumerComplaints
GROUP BY State
```

Having

The HAVING statement is similar to GROUP BY and is used to do GROUP BY operation with some aggregate function.

```
SELECT Company, State
FROM ConsumerComplaints
GROUP BY State
HAVING Company = "Bank of America";
```

Create Database

In SQLite, following command is used to create a new database.

SYNTAX: sqlite3 testDB.db

Find Database

To find a database in a list of databases type .databases command.

sqlite> .databases

Export Complete Database

To export complete database in a text file use .dump dot command.

testDB.db .dump> testDB.sql

Create Table

To create a table use CREATE TABLE statement.

```
CREATE TABLE database_name.table_name();
```

Find Tables

To find tables in any given database use following .tables command. It will list down all the tables in an attached database.

```
sqlite> .tables
```

Get Tables Info

To get complete information about a table use the following .schema command.

```
sqlite> .schema COMPANY
```

Drop Table

To delete/ drop a table from a databse use following DROP TABLE command.

DROP TABLE database_name.table_name;

Attach Database

ATTACH DATABASE statement is used to select a particular database, and after this command, all statements will be executed under the attached database.

ATTACH DATABASE 'DatabaseName' As 'Alias-Name';

Detach Database

DETACH DATABASE statement is used to detach and dissociate a named database from a database connection which was previously attached using ATTACH statement.

ATTACH DATABASE 'DatabaseName' As 'Alias-Name';

Quit Sqlite

You can quite SQLite using .quit command to come out of the sqlite prompt −

```
sqlite> .quit
```

SQL Resources

Some useful resources to learn and practice SQL and Databse concepts – Click on following links:

* W3Schools SQL Tutorial
* Codecademy Learn SQL
* Khan Academy Intro to SQL
* SQLZoo
* Tutorials Point Learn SQL

Thanks a lot.