

Hands-on Lab : INSERT, UPDATE, DELETE



Estimated time needed: 20 minutes

In this lab, you will learn some commonly used DML (Data Manipulation Language) statements of SQL other than SELECT. First, you will learn the INSERT statement, which is used to insert new rows into a table. Next, you will learn the UPDATE statement which is used to update the data in existing rows in the table. Lastly, you will learn the DELETE statement which is used to remove rows from a table.

Objectives

After completing this lab, you will be able to:

- Insert new rows into a table
- Update data in existing rows of the table
- Remove rows from a table

Concepts covered

How does the syntax of an INSERT statement look?

1. 1
 2. 2
 3. 3
- ```
1. INSERT INTO table_name (column1, column2, ...)
2. VALUES (value1, value2, ...)
3. ;
```

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**How does the syntax of an UPDATE statement look?**

1. 1
  2. 2
  3. 3
  4. 4
- ```
1. UPDATE table_name
2. SET column1 = value1, column2 = value2, ...
3. WHERE condition
4. ;
```

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How does the syntax of a DELETE statement look?

1. 1
 2. 2
 3. 3
- ```
1. DELETE FROM table_name
2. WHERE condition
3. ;
```

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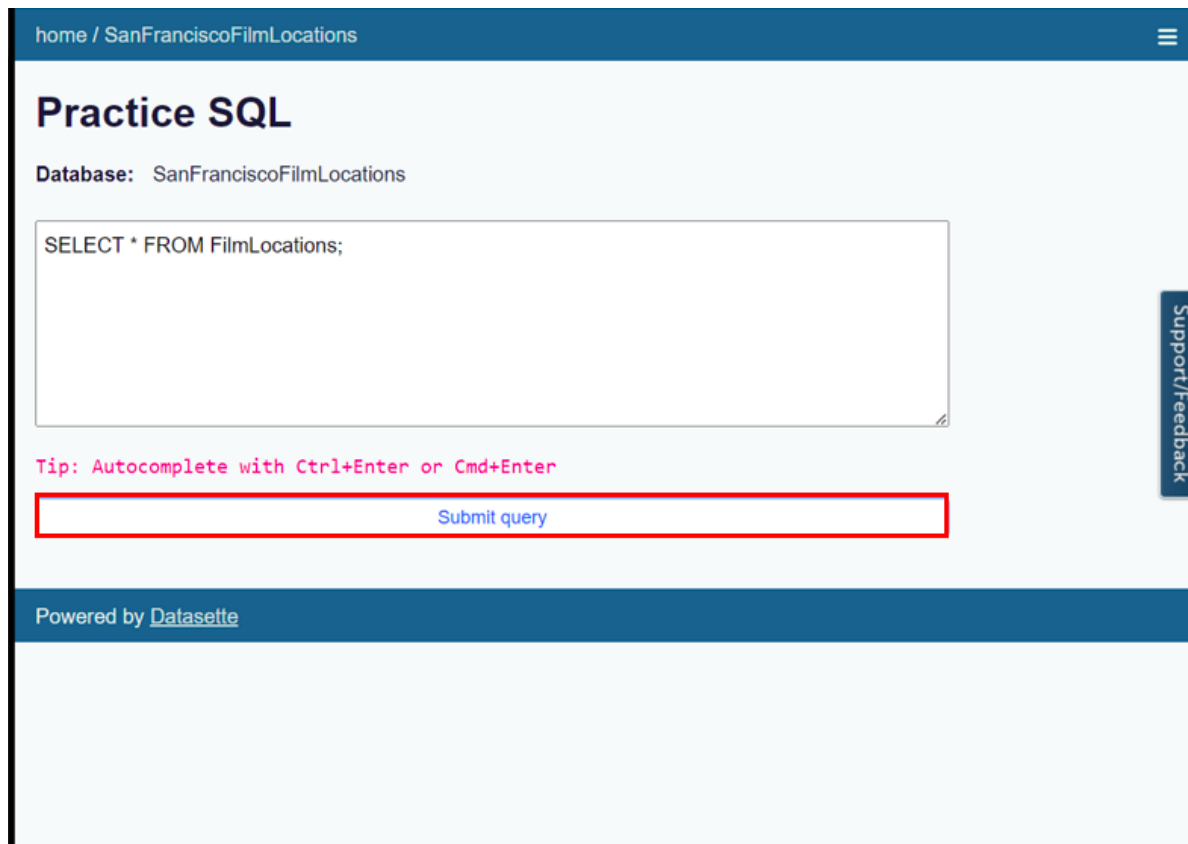
## Introduction to Lab Environment

## Software Used in this Lab

In this lab, you will use Datasette, an open source tool for exploring and publishing data. You can visit the [Datasette GitHub repository here](#).

### Working with Datasette

The **Datasette** tool offers a platform to input and execute SQL queries. By clicking the **Submit query** button, you can execute the SQL query.



## Database Used in this Lab

The dataset used in this lab is an internal database.

## Exploring the Database

Let us first explore the **Instructors** database using the **Datasette** tool:

1. If the first statement listed below is not already in the Datasette textbox on the right, then copy the code below by clicking on the little copy button on the bottom right of the codeblock below and then paste it into the textbox of the Datasette tool using either **Ctrl+V** or right-click in the text box and choose **Paste**.

```
1. 1
1. SELECT * FROM Instructor;
```

Copied!

[home](#) / [Practice SQL](#) / [Instructors](#)

## Practice SQL

Database: Instructors

```
1 SELECT * FROM Instructors;
```

Tip: Autocomplete with Ctrl+Enter or Cmd+Enter

Submit query

2. Click **Submit Query**.

3. Now you can scroll down the table and explore all the columns and rows of the **Instructor** table to get an overall idea of the table contents.

| ins_id | lastname  | firstname | city    | country |
|--------|-----------|-----------|---------|---------|
| 1      | Ahuja     | Rav       | Toronto | CA      |
| 2      | Chong     | Raul      | Toronto | CA      |
| 3      | Vasudevan | Hima      | Chicago | US      |

4. These are the column attribute descriptions from the **Instructor** table:

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
1. Instructor (
2. ins_id: unique identification number of the instructors,
3. lastname: last name of the instructors,
4. firstname: first name of the instructors,
5. city: name of the cities where instructors are located,
6. country: two-letter country code of the countries where instructors are located
7.)
```

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## Exercise 1: INSERT

In this exercise, you will first go through some examples of using INSERT in queries and then solve some exercise problems by using it.

## Task A

### Example exercises on INSERT

Let us go through some examples of INSERT related queries:

1. In this example, suppose we want to insert a new single row into the **Instructor** table.

1. Problem:

*Insert a new instructor record with id 4 for Sandip Saha who lives in Edmonton, CA into the "Instructor" table.*

2. Solution:

```

1. 1
2. 2
1. INSERT INTO Instructor(ins_id, lastname, firstname, city, country)
2. VALUES(4, 'Saha', 'Sandip', 'Edmonton', 'CA');

```

Copied!

- Copy the solution code above by clicking on the little copy button on the bottom right of the codeblock below and paste it to the textbox of the Datasette tool. Then click **Submit query**.
- Copy the code below by clicking on the little copy button on the bottom right of the codeblock below and paste it to the textbox of the Datasette tool. Then click **Submit query**.

```

1. 1
1. SELECT * FROM Instructor;

```

Copied!

- Your output resultset should look like the image below:

The screenshot shows the 'Practice SQL' interface. At the top, it says 'Database: Instructors'. Below that, a text box contains the query 'SELECT \* FROM Instructor;'. A tip below the text box says 'Tip: Autocomplete with Ctrl+Enter or Cmd+Enter'. Below the tip is a 'Submit query' button. Underneath, a green bar indicates 'All commands ran successfully'. Below that, the query 'SELECT \* FROM Instructor' is shown. At the bottom, a table displays the results of the query.

| ins_id | lastname  | firstname | city     | country |
|--------|-----------|-----------|----------|---------|
| 1      | Ahuja     | Rav       | Toronto  | CA      |
| 2      | Chong     | Raul      | Toronto  | CA      |
| 3      | Vasudevan | Hima      | Chicago  | US      |
| 4      | Saha      | Sandip    | Edmonton | CA      |

Powered by Datasette

- In this example, suppose we want to insert some new multiple rows into the **Instructor** table.

- Problem:

*Insert two new instructor records into the "Instructor" table. First record with id 5 for John Doe who lives in Sydney, AU. Second record with id 6 for Jane Doe who lives in Dhaka, BD.*

- Solution:

```

1. 1
2. 2
1. INSERT INTO Instructor(ins_id, lastname, firstname, city, country)
2. VALUES(5, 'Doe', 'John', 'Sydney', 'AU'), (6, 'Doe', 'Jane', 'Dhaka', 'BD');

```

Copied!

- Copy the solution code above by clicking on the little copy button on the bottom right of the codeblock below and paste it to the textbox of the Datasette tool. Then click **Submit query**.
- Copy the code below by clicking on the little copy button on the bottom right of the codeblock below and paste it to the textbox of the Datasette tool. Then click **Submit query**.

```

1. 1
1. SELECT * FROM Instructor;

```

Copied!

- Your output resultset should look like the image below:

home / Practice SQL / Instructors

## Practice SQL

Database: Instructors

```
1 SELECT * FROM Instructors;
```

Tip: Autocomplete with Ctrl+Enter or Cmd+Enter

Submit query

### Results

All commands ran successfully

SELECT \* FROM Instructors

| ins_id | lastname  | firstname | city     | country |
|--------|-----------|-----------|----------|---------|
| 1      | Ahuja     | Rav       | Toronto  | CA      |
| 2      | Chong     | Raul      | Toronto  | CA      |
| 3      | Vasudevan | Hima      | Chicago  | US      |
| 4      | Saha      | Sandip    | Edmonton | CA      |
| 5      | Doe       | John      | Sydney   | AU      |
| 6      | Doe       | Jane      | Dhaka    | BD      |

Powered by [Datasette](#)

## Task B

### Practice exercises on INSERT

Now, let us practice creating and running some INSERT related queries.

#### 1. Problem:

*Insert a new instructor record with id 7 for Antonio Cangiano who lives in Vancouver, CA into the "Instructor" table.*

- Hint
- Solution
- Output

#### 2. Problem:

*Insert two new instructor records into the "Instructor" table. First record with id 8 for Steve Ryan who lives in Barlby, GB. Second record with id 9 for Ramesh Sannareddy who lives in Hyderabad, IN.*

- Hint
- Solution
- Output

## Exercise 2: UPDATE

In this exercise, you will first go through some examples of using UPDATE in queries and then solve some exercise problems by using it.

## Task A

### Example exercises on UPDATE

Let us go through some examples of UPDATE related queries:

1. In this example, we want to update one column of an existing row of the table.

1. Problem:

*Update the city for Sandip to Toronto.*

2. Solution:

```
1. 1
2. 2
3. 3
1. UPDATE Instructor
2. SET city='Toronto'
3. WHERE firstname="Sandip";
```

Copied!

3. Copy the solution code above by clicking on the little copy button on the bottom right of the codeblock below and paste it to the textbox of the Datasette tool. Then click **Submit query**.

4. Copy the code below by clicking on the little copy button on the bottom right of the codeblock below and paste it to the textbox of the Datasette tool. Then click **Submit query**.

```
1. 1
1. SELECT * FROM Instructor;
```

Copied!

5. Your output resultset should look like the image below:

The screenshot shows a database query tool interface. At the top, there is a text input field containing the SQL query `SELECT * FROM Instructor;`. Below the input field, a tip reads: "Tip: Autocomplete with Ctrl+Enter or Cmd+Enter". To the right of the input field is a "Submit query" button. Below the input field, a green banner displays the message "All commands ran successfully". Underneath this banner, the query `SELECT * FROM Instructor` is repeated. At the bottom, a table displays the result set with 9 rows and 5 columns: `ins_id`, `lastname`, `firstname`, `city`, and `country`.

| ins_id | lastname   | firstname | city      | country |
|--------|------------|-----------|-----------|---------|
| 1      | Ahuja      | Rav       | Toronto   | CA      |
| 2      | Chong      | Raul      | Toronto   | CA      |
| 3      | Vasudevan  | Hima      | Chicago   | US      |
| 4      | Saha       | Sandip    | Edmonton  | CA      |
| 5      | Doe        | John      | Sydney    | AU      |
| 6      | Doe        | Jane      | Dhaka     | BD      |
| 7      | Cangiano   | Antonio   | Vancouver | CA      |
| 8      | Ryan       | Steve     | Barlby    | GB      |
| 9      | Sannareddy | Ramesh    | Hyderabad | IN      |

2. In this example, we want to update multiple columns of an existing row of the table.

1. Problem:

*Update the city and country for Doe with id 5 to Dubai and AE respectively.*

2. Solution:

```
1. 1
2. 2
```

```
3. 3
1. UPDATE Instructor
2. SET city='Dubai', country='AE'
3. WHERE ins_id=5;
```

Copied!

- Copy the solution code above by clicking on the little copy button on the bottom right of the codeblock below and paste it to the textbox of the Datasette tool. Then click **Submit query**.
- Copy the code below by clicking on the little copy button on the bottom right of the codeblock below and paste it to the textbox of the Datasette tool. Then click **Submit query**.

```
1. 1
1. SELECT * FROM Instructor;
```

Copied!

- Your output resultset should look like the image below:

## Practice SQL

**Database:** Instructors

```
1 SELECT * FROM Instructor;
```

Tip: Autocomplete with Ctrl+Enter or Cmd+Enter

Submit query

### Results

All commands ran successfully

SELECT \* FROM Instructor

| ins_id | lastname   | firstname | city      | country |
|--------|------------|-----------|-----------|---------|
| 1      | Ahuja      | Rav       | Toronto   | CA      |
| 2      | Chong      | Raul      | Toronto   | CA      |
| 3      | Vasudevan  | Hima      | Chicago   | US      |
| 4      | Saha       | Sandip    | Toronto   | CA      |
| 5      | Doe        | John      | Dubai     | AE      |
| 6      | Doe        | Jane      | Dhaka     | BD      |
| 7      | Cangiano   | Antonio   | Vancouver | CA      |
| 8      | Ryan       | Steve     | Barlby    | GB      |
| 9      | Sannareddy | Ramesh    | Hyderabad | IN      |

## Task B

### Practice exercises on UPDATE

Now, let us practice creating and running some UPDATE related queries.

- Problem:

*Update the city of the instructor record to Markham whose id is 1.*

- Hint
- ▼ Solution

```
1. 1
2. 2
3. 3
4. 4
5. 5
1. UPDATE Instructor
2. SET city='Markham'
3. WHERE ins_id=1;
4.
5. SELECT * FROM Instructor;
```

Copied!

► Output

2. Problem:

*Update the city and country for Sandip with id 4 to Dhaka and BD respectively.*

► Hint

▼ Solution

```
1. 1
2. 2
3. 3
4. 4
5. 5
1. UPDATE Instructor
2. SET city='Dhaka', country='BD'
3. WHERE ins_id=4;
4.
5. SELECT * FROM Instructor;
```

Copied!

► Output

## Exercise 3: DELETE

In this exercise, you will first go through an example of using DELETE in a query and then solve an exercise problem by using it.

## Task A

### Example exercise on DELETE

Let us go through an example of a DELETE related query:

1. In this example, we want to remove a row from the table.

1. Problem:

*Remove the instructor record of Doe whose id is 6.*

2. Solution:

```
1. 1
2. 2
1. DELETE FROM instructor
2. WHERE ins_id = 6;
```

Copied!

3. Copy the solution code above by clicking on the little copy button on the bottom right of the codeblock below and paste it to the textbox of **Custom SQL query** of the Datasette tool. Then click **Submit query**.

4. Copy the code below by clicking on the little copy button on the bottom right of the codeblock below and paste it to the textbox of the Datasette tool. Then click **Submit query**.

```
1. 1
1. SELECT * FROM Instructor;
```

Copied!



5. Your output resultset should look like the image below:

The screenshot shows a web interface for practicing SQL. At the top, it says 'home / Practice SQL / Instructors'. Below that is the title 'Practice SQL' and 'Database: Instructors'. A text input field contains the query 'SELECT \* FROM Instructor;'. Below the input is a 'Submit query' button. A green message bar says 'All commands ran successfully'. Below that, the query 'SELECT \* FROM Instructor' is shown above a table of results.

| ins_id | lastname   | firstname | city      | country |
|--------|------------|-----------|-----------|---------|
| 1      | Ahuja      | Rav       | Markham   | CA      |
| 2      | Chong      | Raul      | Toronto   | CA      |
| 3      | Vasudevan  | Hima      | Chicago   | US      |
| 4      | Saha       | Sandip    | Dhaka     | BD      |
| 5      | Doe        | John      | Dubai     | AE      |
| 7      | Cangiano   | Antonio   | Vancouver | CA      |
| 8      | Ryan       | Steve     | Barlby    | GB      |
| 9      | Sannareddy | Ramesh    | Hyderabad | IN      |

## Task B

### Practice exercise on DELETE

Now, let us practice creating and running a DELETE related query.

1. Problem:

*Remove the instructor record of Hima.*

#### ▼ Hint

Follow example 1 of the DELETE exercise.

1. 1
2. 2
3. 3
4. 4
1. DELETE FROM tablename
2. WHERE [columnname] = 'Hima';
- 3.
4. SELECT \* FROM tablename;

Copied!

#### ▼ Solution

1. 1
2. 2
3. 3
4. 4
1. DELETE FROM instructor
2. WHERE firstname = 'Hima';
- 3.
4. SELECT \* FROM Instructor;

Copied!

#### ► Output

**Thank you for completing the Hands-on Lab : INSERT, UPDATE, DELETE! where you learnt to perform operations on tables like inserting and removing rows, and updating the data in existing rows.**

## Author(s)

- [Sandip Saha Joy](#)

## Changelog

| Date       | Version | Changed by                 | Change Description      |
|------------|---------|----------------------------|-------------------------|
| 2023-07-11 | 1.6     | Lakshmi Holla              | Updated labs            |
| 2023-05-11 | 1.6     | Eric Hao & Vladislav Boyko | Updated Page Frames     |
| 2023-05-10 | 1.5     | Eric Hao & Vladislav Boyko | Updated Page Frames     |
| 2023-05-05 | 1.4     | Benny Li                   | Republished             |
| 2022-08-03 | 1.3     | Sathya Priya               | updated HTML tag        |
| 2022-07-27 | 1.2     | Lakshmi Holla              | updated HTML tag        |
| 2020-12-23 | 1.1     | Steve Ryan                 | ID Review               |
| 2020-11-30 | 1.0     | Sandip Saha Joy            | Initial version created |

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