

# 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?

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

How does the syntax of an UPDATE statement look?

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

How does the syntax of a DELETE statement look?

```
DELETE FROM table_name
WHERE condition
;
```

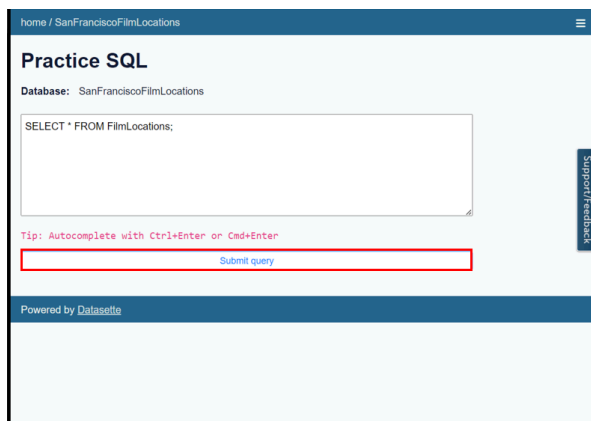
## Introduction to Lab Environment

### 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

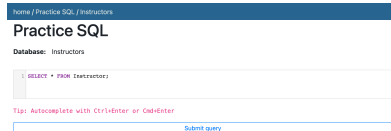
The dataset used in this lab is an internal database.

## 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**.

```
SELECT * FROM Instructor;
```



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:

```
Instructor (
  ins_id:      unique identification number of the instructors,
  lastname:    last name of the instructors,
  firstname:   first name of the instructors,
  city:        name of the cities where instructors are located,
  country:     two-letter country code of the countries where instructors are located
)
```

## 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:

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

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**.

```
SELECT * FROM Instructor;
```

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

Search (Optional SQL) | Instructor

Practice SQL

Database: Instructor

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	John	John	Toronto	CA
2	Cheng	Paul	Toronto	CA
3	Vanderson	Steve	Chicago	US
4	Saha	Sandip	Edmonton	CA

Powered by Datasette

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

1. 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.*
2. Solution:

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

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**.

```
SELECT * FROM Instructor;
```

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

Search (Optional SQL) | Instructor

Practice SQL

Database: Instructor

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	John	John	Toronto	CA
2	Cheng	Paul	Toronto	CA
3	Vanderson	Steve	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
- Follow example 1 of the INSERT exercise.

```
INSERT INTO table_name([column1],[column2],[column3],[column4],[column5])
VALUES(7, 'Cangiano', 'Antonio', 'Vancouver', 'CA');
SELECT * FROM tablename;
```

▼ Solution

```
INSERT INTO Instructor(ins_id, lastname, firstname, city, country)
VALUES(7, 'Cangiano', 'Antonio', 'Vancouver', 'CA');
SELECT * FROM Instructor;
```

▼ Output

1 INSERT INTO Instructor(ins\_id, lastname, firstname, city, country)
2 VALUES(7, 'Cangiano', 'Antonio', 'Vancouver', 'CA');
3 SELECT \* FROM Instructor;

Tip: Autocomplete with Ctrl+Enter or Cmd+Enter

Submit query

Results

All commands ran successfully

INSERT INTO Instructor(ins\_id, lastname, firstname, city, country)
VALUES(7, 'Cangiano', 'Antonio', 'Vancouver', 'CA')
1 row affected

SELECT \* FROM Instructor

ins_id	lastname	firstname	city	country
1	John	John	Toronto	CA
2	Cheng	Paul	Toronto	CA
3	Vanderson	Steve	Chicago	US
4	Saha	Sandip	Edmonton	CA
5	Doe	John	Sydney	AU
6	Doe	Jane	Dhaka	BD
7	Cangiano	Antonio	Vancouver	CA

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
- Follow example 2 of the INSERT exercise.
- INSERT INTO table\_name([column1],[column2],[column3],[column4],[column5])
VALUES(8, 'Ryan', 'Steve', 'Barlby', 'GB'), (9, 'Sannareddy', 'Ramesh', 'Hyderabad', 'IN');
SELECT \* FROM tablename;
- ▼ Solution
- INSERT INTO Instructor(ins\_id, lastname, firstname, city, country)
VALUES(8, 'Ryan', 'Steve', 'Barlby', 'GB'), (9, 'Sannareddy', 'Ramesh', 'Hyderabad', 'IN');
SELECT \* FROM Instructor;
- ▼ Output

```
INSERT INTO Instructor (ins_id, lastname, firstname, city, country)
VALUES (5, 'Ravi', 'Ravi', 'Hyderabad', 'IN'), (6, 'Sannareddy', 'Ramesh', 'Hyderabad', 'IN');
-- SELECT * FROM Instructors;
```

Tip: Autocomplete with Ctrl+Enter or Cmd+Enter

Submit query

## Results

All commands ran successfully

```
INSERT INTO Instructor (ins_id, lastname, firstname, city, country)
VALUES (5, 'Ravi', 'Ravi', 'Hyderabad', 'IN'), (6, 'Sannareddy', 'Ramesh', 'Hyderabad', 'IN');
2 rows affected
```

SELECT \* FROM Instructor

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

## 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:

```
UPDATE Instructor
SET city='Toronto'
WHERE firstname='Sandip';
```

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 Dataset 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 Dataset tool. Then click **Submit query**.

```
SELECT * FROM Instructor;
```

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

## Results

All commands ran successfully

SELECT \* FROM Instructor

ins_id	lastname	firstname	city	country
1	Ahuja	Ravi	Toronto	CA
2	Chong	Raul	Toronto	CA
3	Vasudevan	Hima	Chicago	US
4	Saha	Sandip	Toronto	CA
5	Doe	John	Sydney	AU
6	Doe	Jane	Dhaka	BD
7	Cangiano	Antonio	Vancouver	CA
8	Ryan	Steve	Barby	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:

```
UPDATE Instructor
SET city='Dubai', country='AE'
WHERE ins_id=5;
```

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 Dataset 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 Dataset tool. Then click **Submit query**.

```
SELECT * FROM Instructor;
```

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

## 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 Instructor

ins_id	lastname	firstname	city	country
1	Ahuja	Ravi	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	Barby	GB
9	Sannareddy	Ramesh	Hyderabad	IN

### Task B

#### Practice exercises on UPDATE

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

1. Problem:

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

▼ Hint

Follow example 1 of the UPDATE exercise.

```
UPDATE table_name
SET [column1]='Markham'
WHERE [specifiedcolumn]=1;
SELECT * FROM tablename;
```

▼ Solution

```
UPDATE Instructor
SET city='Markham'
WHERE ins_id=1;
SELECT * FROM Instructor;
```

▼ Output

1. SELECT \* FROM Instructors;

Tip: Autocomplete with Ctrl+Enter or Cmd+Enter

Submit query

Results

All commands ran successfully

```
UPDATE Instructor
SET city='Markham'
WHERE ins_id=1
1 row affected
```

```
SELECT * FROM Instructor
```

ins_id	lastname	firstname	city	country
1	Abbas	Raf	Markham	CA
2	Cheng	Raf	Toronto	CA
3	Woodward	John	Chicago	US
4	Saha	Sandip	Toronto	CA
5	Shin	John	Dallas	US
6	Shin	John	Dhaka	BD
7	Cheng	Andrew	Vancouver	CA
8	Reis	John	Berlin	DE
9	Sampandip	Ramish	Hyderabad	IN

2. Problem:

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

▼ Hint

Follow example 2 of the UPDATE exercise.

```
UPDATE table_name
SET [column1]='Dhaka', [column2]='BD'
WHERE [specifiedcolumn]=4;
SELECT * FROM tablename;
```

▼ Solution

```
UPDATE Instructor
SET city='Dhaka', country='BD'
WHERE ins_id=4;
SELECT * FROM Instructor;
```

▼ Output

1. SELECT \* FROM Instructors;

Tip: Autocomplete with Ctrl+Enter or Cmd+Enter

Submit query

Results

All commands ran successfully

```
UPDATE Instructor
SET city='Dhaka', country='BD'
WHERE ins_id=4
1 row affected
```

```
SELECT * FROM Instructor
```

ins_id	lastname	firstname	city	country
1	Abbas	Raf	Markham	CA
2	Cheng	Raf	Toronto	CA
3	Woodward	John	Chicago	US
4	Saha	Sandip	Dhaka	BD
5	Shin	John	Dallas	US
6	Shin	John	Dhaka	BD
7	Cheng	Andrew	Vancouver	CA
8	Reis	John	Berlin	DE
9	Sampandip	Ramish	Hyderabad	IN

## 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:

```
DELETE FROM instructor
WHERE ins_id = 6;
```

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**.

```
SELECT * FROM Instructor;
```

5. 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 Instructor
```

ins_id	lastname	firstname	city	country
1	Abbas	Raf	Markham	CA
2	Cheng	Raf	Toronto	CA
3	Woodward	John	Chicago	US
4	Saha	Sandip	Dhaka	BD
5	Shin	John	Dallas	US
6	Shin	John	Dhaka	BD
7	Cheng	Andrew	Vancouver	CA
8	Reis	John	Berlin	DE
9	Sampandip	Ramish	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.

```
DELETE FROM tablename
WHERE [columnname1] = 'Hima';
SELECT * FROM tablename;
```

▼ Solution

```
DELETE FROM instructor
WHERE Firstname = 'Hima';
SELECT * FROM Instructor;
```

▼ Output

```
1 delete from instructor
2 WHERE Firstname = 'Hima';
3 select * from instructor;
```

Tip: AutoComplete with Ctrl+Enter or Cmd+Enter

 Build query

Results

All commands ran successfully

```
DELETE FROM instructor
WHERE Firstname = 'Hima'
Rows affected: 1
```

```
SELECT * FROM instructor
```

id	firstname	lastname	city	country
1	Sham	Rao	Hyderabad	IN
2	Chang	Raj	Toronto	CA
3	Sara	Smith	Chicago	US
4	Don	John	Osaka	JP
5	Connelly	Anthony	Washington	CA
6	Nora	Stone	San Francisco	US
7	Srinivasulu	Ramani	Hyderabad	IN

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)

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