

Estimated time needed: 20 minutes

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

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  
;
```

Software Used in this Lab

In this lab, you will use [Datasette](#), an open source multi-tool for exploring and publishing data.

Database Used in this Lab

The dataset used in this lab is an internal database.

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

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.

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.

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

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	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 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 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 into the Datasette tool. Then click **Submit query**.

```
SELECT * FROM Instructor;
```

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

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

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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.

▼ 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
4 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	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

▼ 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

```
1 INSERT INTO Instructor(ins_id, lastname, firstname, city, country)
2 VALUES(8, 'Ryan', 'Steve', 'Barlby', 'GB'), (9, 'Sannareddy', 'Ramesh', 'Hyderabad', 'IN');
3
4 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(8, 'Ryan', 'Steve', 'Barlby', 'GB'), (9, 'Sannareddy', 'Ramesh', 'Hyderabad', 'IN')
2 rows affected
```

```
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	Edmonton	CA
5	Doe	John	Sydney	AU
6	Doe	Jane	Dhaka	BD
7	Cagliano	Antonio	Vancouver	CA
8	Ryan	Steve	Barlby	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.

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:

SELECT * FROM instructor;

5. 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	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:

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

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

```
SELECT * FROM Instructor;
```

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

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.

1. Problem:

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

▼ Hint

Follow example 1 of the UPDATE exercise.

▼ Solution

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

SELECT * FROM Instructor;
```

▼ Output

1	Ahuja	Rav	Markham	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

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.

▼ Solution

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

SELECT * FROM Instructor;
```

▼ Output

```
5 SELECT * FROM Instructor;
```

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	Ahuja	Rav	Markham	CA
2	Chong	Raul	Toronto	CA
3	Vasudevan	Hima	Chicago	US
4	Saha	Sandip	Dhaka	BD
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

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 u

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 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 into the Datasette tool. Then click **Submit query**.

```
SELECT * FROM Instructor;
```

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

The screenshot shows the 'Practice SQL' interface. At the top, the database is 'Instructors'. The query entered is 'SELECT * FROM Instructor;'. A tip suggests using Ctrl+Enter or Cmd+Enter for autocomplete. The 'Submit query' button is visible. Below the query, a green bar indicates 'All commands ran successfully'. The results section shows the query 'SELECT * FROM Instructor' and a table with 9 rows of instructor data.

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.

▼ Output

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

Tip: Autocomplete with Ctrl+Enter or Cmd+Enter

Submit query

Results

All commands ran successfully

DELETE FROM instructor
WHERE firstname = 'Hima'
1 row affected

SELECT * FROM Instructor

ins_id	lastname	firstname	city	country
1	Ahuja	Rav	Markham	CA
2	Chong	Raul	Toronto	CA
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

Support

Congratulations! You have completed this Lab.

Author(s)

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Other Contributor(s)

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Changelog

Date	Version	Changed by	Change Description
2020-12-23	1.1	Steve Ryan	ID Review
2020-11-30	1.0	Sandip Saha Joy	Initial version created

