

Lab: CREATE, ALTER, TRUNCATE, DROP Tables

Estimated time needed: 15 minutes

In this lab, you will learn some commonly used DDL (Data Definition Language) statements of SQL. First you will learn the CREATE statement, which is used to create a new table in a database. Next, you will learn the ALTER statement which is used to add, delete, or modify columns in an existing table. Then, you will learn the TRUNCATE statement which is used to remove all rows from an existing table without deleting the table itself. Lastly, you will learn the DROP statement which is used to delete an existing table in a database.

How does the syntax of a CREATE statement look?

```
CREATE TABLE table_name (  
    column1 datatype,  
    column2 datatype,  
    column3 datatype,  
    ....  
);
```

How does the syntax of an ALTER statement look?

```
ALTER TABLE table_name  
ADD COLUMN column_name data_type column_constraint;  
ALTER TABLE table_name  
DROP COLUMN column_name;  
ALTER TABLE table_name  
ALTER COLUMN column_name SET DATA TYPE data_type;  
ALTER TABLE table_name  
RENAME COLUMN current_column_name TO new_column_name;
```

How does the syntax of a TRUNCATE statement look?

```
TRUNCATE TABLE table_name;
```

How does the syntax of a DROP statement look?

```
DROP TABLE table_name;
```

Software Used in this Lab

In this lab, you will use [IBM Db2 Database](#). Db2 is a Relational Database Management System (RDBMS) from IBM, designed to store, analyze and retrieve the data efficiently.

To complete this lab you will utilize a Db2 database service on IBM Cloud. If you did not already complete this lab task earlier in this module, you will not yet have access to Db2 on IBM Cloud, and you will need to follow this lab first:

- [Hands-on Lab : Sign up for IBM Cloud, Create Db2 service instance and Get started with the Db2 console](#)

Database Used in this Lab

The databases used in this lab are internal databases.

Objectives

After completing this lab, you will be able to:

- Create a new table in a database
- Add, delete, or modify columns in an existing table
- Remove all rows from an existing table without deleting the table itself
- Delete an existing table in a database

Instructions

When you approach the exercises in this lab, follow the instructions to run the queries on Db2:

- Go to the [Resource List](#) of IBM Cloud by logging in where you can find the Db2 service instance that you created in a previous lab under **Services** section. Click on the **Db2-xx service**. Next, open the Db2 Console by clicking on **Open Console** button. Click on the 3-bar menu icon in the top left corner and go to the **Run SQL** page. The Run SQL tool enables you to run SQL statements.
 - If needed, follow [Hands-on Lab : Sign up for IBM Cloud, Create Db2 service instance and Get started with the Db2 console](#)

Exercise 1: CREATE

In this exercise, you will use the CREATE statement to create two new tables using Db2.

1. You need to create two tables, **PETSALE** and **PET**. To create the two tables PETSALe and PET, copy the code below and paste it to the textbox of the **Run SQL** page. Click **Run all**. In the **History** section below the editor box, you will be able to see if the query has been executed successfully or not.

```
CREATE TABLE PETSALe (  
  ID INTEGER NOT NULL,  
  PET CHAR(20),  
  SALEPRICE DECIMAL(6,2),  
  PROFIT DECIMAL(6,2),  
  SALEDATE DATE  
);  
  
CREATE TABLE PET (  
  ID INTEGER NOT NULL,  
  ANIMAL VARCHAR(20),  
  QUANTITY INTEGER  
);
```

IBM Db2 on Cloud

☰

SQL

DMT80331

Data objects

Find objects

Saved objects

DMT80331

* Untitled ...

CREATE TABLE PETALE (

ID INTEGER NOT NULL,

PET CHAR(20),

SALEPRICE DECIMAL(6,2),

PROFIT DECIMAL(6,2),

SALEDATE DATE

);

CREATE TABLE PET (

ID INTEGER NOT NULL,

ANIMAL VARCHAR(20),

QUANTITY INTEGER

);

History

Find history

| Script | Date | Status |
|---|-------------------------|--------|
| Untitled - 1 | Apr 21, 2023 4:03:57 PM | 2 |
| CREATE TABLE PETALE (ID INTEGER NOT NULL, PET CHAR(20), SALEPRIC... | | ✓ |
| CREATE TABLE PET (ID INTEGER NOT NULL, ANIMAL VARCHAR(20), QUANTI... | | ✓ |

2. Now insert some records into the two newly created tables and show all the records of the two tables. Copy the code below and paste it to the textbox of the **Run SQL** page. Click **Run all**.

```
INSERT INTO PETALE VALUES
(1, 'Cat', 450.09, 100.47, '2018-05-29'),
(2, 'Dog', 666.66, 150.76, '2018-06-01'),
(3, 'Parrot', 50.00, 8.9, '2018-06-04'),
(4, 'Hamster', 60.60, 12, '2018-06-11'),
(5, 'Goldfish', 48.48, 3.5, '2018-06-14');

INSERT INTO PET VALUES
(1, 'Cat', 3),
(2, 'Dog', 4),
(3, 'Hamster', 2);

SELECT * FROM PETALE;
SELECT * FROM PET;
```

The screenshot shows the IBM Db2 on Cloud interface. On the left, there's a sidebar with icons for Data objects, Saved objects, and SQL. The main area is divided into two panes. The top pane, titled 'Data objects', shows a search bar and a list of objects, including 'DMT80331'. The bottom pane, titled 'SQL', shows a code editor with the following SQL script:

```
1 INSERT INTO PETSale VALUES
2 (1, 'Cat', 450.09, 100.47, '2018-05-29'),
3 (2, 'Dog', 666.66, 150.76, '2018-06-01'),
4 (3, 'Parrot', 50.00, 8.9, '2018-06-04'),
5 (4, 'Hamster', 60.60, 12, '2018-06-11'),
6 (5, 'Goldfish', 48.48, 3.5, '2018-06-14');
7
8 INSERT INTO PET VALUES
9 (1, 'Cat', 3),
10 (2, 'Dog', 4),
11 (3, 'Parrot', 2),
12 (4, 'Hamster', 1),
13 (5, 'Goldfish', 1);
```

Below the code editor, there's a 'History' section with a search bar and a table of executed queries. The table has columns for Script, Date, and Status. The following table represents the data in the History section:

| Script | Date | Status |
|---|-------------------------|--------|
| Untitled - 1 | Apr 21, 2023 4:08:05 PM | ✓ 4 |
| INSERT INTO PETSale VALUES (1, 'Cat', 450.09, 100.47, '2018-05-29'), (... | | ✓ |
| INSERT INTO PET VALUES (1, 'Cat', 3), (2, 'Dog', 4), (3, 'Hamster', 2) | | ✓ |
| SELECT * FROM PETSale | | ✓ |
| SELECT * FROM PET | | ✓ |

You can click on the query in the History section to check its result:

Exercise 2: ALTER

In this exercise, you will use the ALTER statement to add, delete, or modify columns in two of the existing tables created in exercise 1.

Task A: ALTER using ADD COLUMN

1. Add a new **QUANTITY** column to the **PETSale** table and show the altered table. Copy the code below and paste it to the textbox of the **Run SQL** page. Click **Run all**.

```
ALTER TABLE PETSale
ADD COLUMN QUANTITY INTEGER;
SELECT * FROM PETSale;
```

The screenshot shows the IBM Db2 on Cloud interface. On the left, there's a sidebar with icons for navigation. The main area is divided into two panes: 'Data objects' and 'Saved objects'. The 'Data objects' pane shows a search bar and a list of objects, including 'DMT80331'. The 'Saved objects' pane is empty. The right pane shows a SQL editor with a query: `ALTER TABLE PETSale; ADD COLUMN QUANTITY INTEGER; SELECT * FROM PETSale;`. Below the editor, there's a 'Results' tab showing a table with 5 columns: ID, PET, SALEPRICE, PROFIT, and SALED. The table contains 5 rows of data.

| ID | PET | SALEPRICE | PROFIT | SALED |
|----|----------|-----------|--------|--------|
| 1 | Cat | 450.09 | 100.47 | 2018-1 |
| 2 | Dog | 666.66 | 150.76 | 2018-1 |
| 3 | Parrot | 50.00 | 8.90 | 2018-1 |
| 4 | Hamster | 60.60 | 12.00 | 2018-1 |
| 5 | Goldfish | 48.48 | 3.50 | 2018-1 |

2. Now update the newly added **QUANTITY** column of the **PETSale** table with some values and show all the records of the table. Copy the code below and paste it to the textbox of the **Run SQL** page. Click **Run all**. After the query has executed successfully, click on it to check the result set.

```
UPDATE PETSale SET QUANTITY = 9 WHERE ID = 1;
UPDATE PETSale SET QUANTITY = 3 WHERE ID = 2;
UPDATE PETSale SET QUANTITY = 2 WHERE ID = 3;
UPDATE PETSale SET QUANTITY = 6 WHERE ID = 4;
UPDATE PETSale SET QUANTITY = 24 WHERE ID = 5;
SELECT * FROM PETSale;
```

Task B: ALTER using DROP COLUMN

1. Delete the **PROFIT** column from the **PETSale** table and show the altered table. Copy the code below and paste it to the textbox of the **Run SQL** page. Click **Run all**.

```
ALTER TABLE PETSale
DROP COLUMN PROFIT;
SELECT * FROM PETSale;
```

IBM Db2 on Cloud

☰

SQL

Find objects

DMT80331

SQL

History

Results

Result set 1

Details

Filter table

| ID | PET | SALEPRICE | SALEDATE |
|----|----------|-----------|------------|
| 1 | Cat | 450.09 | 2018-05-29 |
| 2 | Dog | 666.66 | 2018-06-01 |
| 3 | Parrot | 50.00 | 2018-06-04 |
| 4 | Hamster | 60.60 | 2018-06-11 |
| 5 | Goldfish | 48.48 | 2018-06-14 |

* Untitled ...

SQL

ALTER TABLE PETSale

DROP COLUMN PROFIT;

SELECT * FROM PETSale;

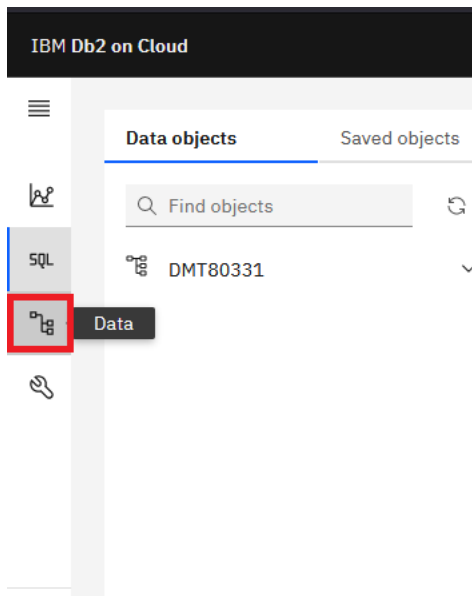
Syntax assi

Task C: ALTER using ALTER COLUMN

1. Change the data type to **VARCHAR(20)** type of the column **PET** of the table **PETSale** and show the altered table. Copy the code below and paste it to the textbox of the **Run SQL** page. Click **Run all**.

```
ALTER TABLE PETSale
ALTER COLUMN PET SET DATA TYPE VARCHAR(20);
SELECT * FROM PETSale;
```

2. Now verify if the data type of the column **PET** of the table **PETSale** changed to **VARCHAR(20)** type or not. Click on the Data Section in the left menu bar.



Then click on Tables:

Find your schema and choose the table **PETSALE**

You will see that the datatype of the column **PET** has changed to **VARCHAR(20)**

Task D: ALTER using RENAME COLUMN

1. In the **PETSALE** table, rename the column **PET** to **ANIMAL** and show the altered table. Copy the code below and paste it to the textbox of the **Run SQL** page. Click **Run all**.

```
ALTER TABLE PETSALE  
RENAME COLUMN PET TO ANIMAL;  
SELECT * FROM PETSALE;
```

In this exercise, you will use the TRUNCATE statement to remove all rows from an existing table created in exercise 1 without deleting the table itself.

1. Remove all rows from the **PET** table and show the empty table. Copy the code below and paste it to the textbox of the **Run SQL** page. Click **Run all**. You will see **no data in the Result section**.

```
TRUNCATE TABLE PET IMMEDIATE;  
SELECT * FROM PET;
```

In this exercise, you will use the DROP statement to delete an existing table created in exercise 1.

1. Delete the **PET** table and verify if the table still exists or not (SELECT statement won't work if a table doesn't exist). Copy the code below and paste it to the textbox of the **Run SQL** page. Click **Run all**. You will see that the **select statement fails**.

```
DROP TABLE PET;  
SELECT * FROM PET;
```

Congratulations! You have completed this Lab. You are ready for the next topic.

Author(s)

[Sandip Saha Joy](#)