

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  
);
```

The screenshot displays the IBM Db2 on Cloud interface. On the left, the 'Data objects' tab is active, showing a search bar and a list of objects including 'DMT80331'. The 'SQL' icon in the left sidebar is highlighted with a red box. The main area shows the SQL editor with two SQL statements: a 'CREATE TABLE PETALE' statement and a 'CREATE TABLE PET' statement. The 'History' panel at the bottom is also highlighted with a red box, showing a table of executed scripts.

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 PETSALe 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 PETSale;  
SELECT * FROM PET;
```

IBM Db2 on Cloud

Data objects Saved objects

Find objects

SQL DMT80331

*Untitled ... x +

Syntax assistant

```

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

```

History Results

Find history

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:

IBM Db2 on Cloud

Data objects Saved objects

Find objects

SQL DMT80331

*Untitled ... x +

Syntax assistant

```

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

```

History Results

Result set 1 Details

Filter table

ID	PET	SALEPRICE	PROFIT
1	Cat	450.09	100.47
2	Dog	666.66	150.76
3	Parrot	50.00	8.90
4	Hamster	60.60	12.00

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;
```

IBM Db2 on Cloud

Data objects

Saved objects

Find objects

DMT80331

*Untitled ...

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:

1 ALTER TABLE PETSALE

2 ADD COLUMN QUANTITY INTEGER;

3

4 SELECT * FROM PETSALE;

History

Results

Result set 1

Details

Filter table

ID	PET	SALEPRICE	PROFIT	SALEDATE
1	Cat	450.09	100.47	2018-05-29
2	Dog	666.66	150.76	2018-06-01
3	Parrot	50.00	8.90	2018-06-04
4	Hamster	60.60	12.00	2018-06-11
5	Goldfish	48.48	3.50	2018-06-14

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;
```

IBM Db2 on Cloud

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

Task C: ALTER using ALTER COLUMN

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

The screenshot shows the IBM Db2 on Cloud console. On the left, the 'Data objects' tab is selected, showing a search bar and a list of objects including 'DMT80331'. The main area displays the SQL editor with the following code:

```
1 ALTER TABLE PETSale
2 ALTER COLUMN PET SET DATA TYPE VARCHAR(20);
3
4 SELECT * FROM PETSale;
```

The 'Results' tab is active, showing 'Result set 1' with a table of 5 rows. The table has columns: ID, PET, SALEPRICE, and SALEDATE.

| 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 |

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.

The screenshot shows the IBM Db2 on Cloud console. The left menu bar is visible, and the 'Data' section is highlighted with a red box. The 'Data objects' tab is still selected, showing the search bar and the list of objects including 'DMT80331'.

Then click on Tables:



IBM Db2 on Cloud

Load Data Load History **Tables** Views Indexes Alias

Source Target

You are loading the file

My Computer

A single delimited text file (CSV) without header row.

File selection

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

IBM Db2 on Cloud

Load Data Load History **Tables** Views Indexes Aliases MQTs Sequences Application objects

Find schemas or tables

**Schemas**

| <input checked="" type="checkbox"/> | Name     | Definer type | Tables ▲ |
|-------------------------------------|----------|--------------|----------|
| <input checked="" type="checkbox"/> | DMT80331 | User         | 3        |

Total: 1, selected: 1

**Tables**

| <input type="checkbox"/> | Name ▼       | Schema   |
|--------------------------|--------------|----------|
| <input type="checkbox"/> | BILLING_TEST | DMT80331 |
| <input type="checkbox"/> | PET          | DMT80331 |
| <input type="checkbox"/> | PETSALE      | DMT80331 |

Total: 3, selected: 0

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

IBM Db2 on Cloud

Load DataLoad HistoryTablesViewsIndexesAliasesMQTsSequencesApplication objects

Find schemas or tables

SQL

Schemas

Tables

New table +

| <input type="checkbox"/> | Name ▾       | Schema   | Properties |
|--------------------------|--------------|----------|------------|
| <input type="checkbox"/> | BILLING_TEST | DMT80331 | ...        |
| <input type="checkbox"/> | PET          | DMT80331 | ...        |
| <input type="checkbox"/> | PETSALE      | DMT80331 | ...        |

Total: 3, selected: 0

Table definition

PETSALE

| Name      | Data type | Nullable |
|-----------|-----------|----------|
| ID        | INTEGER   | N        |
| PET       | VARCHAR   | Y        |
| SALEPRICE | DECIMAL   | Y        |
| SALEDATE  | DATE      | Y        |
| QUANTITY  | INTEGER   | Y        |

View data

## 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;
```

IBM Db2 on Cloud

Data objects

Saved objects

Find objects

DMT80331

SQL

\*Untitled ... x +

SQL assistant

1 ALTER TABLE PETALE

2 RENAME COLUMN PET TO ANIMAL;

3

4 SELECT \* FROM PETALE;

History

Results

Result set 1

Details

Filter table

| ID | ANIMAL   | 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 |

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;
```

IBM Db2 on Cloud

Data objects Saved objects

Find objects

DMT80331

\*Untitled ... x +

Syntax assistant

```

1 TRUNCATE TABLE PET IMMEDIATE;
2
3 SELECT * FROM PET;

```

History Results

Result set 1 Details

Filter table

| ID                                       | ANIMAL | QUANTITY |
|------------------------------------------|--------|----------|
| <p>You don't have any data currently</p> |        |          |

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;

```

IBM Db2 on Cloud

Data objects Saved objects

Find objects

DMT80331

\*Untitled ... x +

Syntax assistant

```

1 DROP TABLE PET;
2
3 SELECT * FROM PET;

```

History Results

Find history

| Script            | Date                    | Status  |
|-------------------|-------------------------|---------|
| Untitled - 1      | Apr 21, 2023 4:28:00 PM | ✓ 1 ✗ 1 |
| DROP TABLE PET    |                         | ✓       |
| SELECT * FROM PET |                         | ✗       |

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

**Author(s)**

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