

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

Data objects

Find objects

DMT80331

SQL

*Untitled ...

1 CREATE TABLE PETALE (

2 ID INTEGER NOT NULL,

3 PET CHAR(20),

4 SALEPRICE DECIMAL(6,2),

5 PROFIT DECIMAL(6,2),

6 SALEDATE DATE

7);

8

9 CREATE TABLE PET (

10 ID INTEGER NOT NULL,

11 ANIMAL VARCHAR(20),

12 QUANTITY INTEGER

13);

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', contains a search bar 'Find objects' and a list of objects including 'DMT80331'. The bottom pane, titled 'SQL', contains 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

```

Below the code editor, there's a 'History' section with a search bar 'Find history' and a table of executed scripts:

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:

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', contains a search bar 'Find objects' and a list of objects including 'DMT80331'. The bottom pane, titled 'SQL', contains the same SQL script as the previous screenshot. Below the code editor, there's a 'Results' section with a search bar 'Filter table' and a table of results:

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
5	Goldfish	48.48	3.50

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 Data objects, SQL, and other tools. The main area is divided into two tabs: 'Data objects' and 'Saved objects'. Under 'Data objects', there's a search bar 'Find objects' and a list of objects including 'DMT80331'. The right pane shows a SQL editor with a query: `ALTER TABLE PETSAL
ADD COLUMN QUANTITY INTEGER;
SELECT * FROM PETSAL;`. Below the editor, there's a 'Results' tab showing 'Result set 1' with a table of 5 rows and 5 columns: ID, PET, SALEPRICE, PROFIT, and SALED. The table contains data for Cat, Dog, Parrot, Hamster, and Goldfish.

ID	PET	SALEPRICE	PROFIT	SALED
1	Cat	450.09	100.47	2018-01-01
2	Dog	666.66	150.76	2018-01-01
3	Parrot	50.00	8.90	2018-01-01
4	Hamster	60.60	12.00	2018-01-01
5	Goldfish	48.48	3.50	2018-01-01

2. Now update the newly added **QUANTITY** column of the **PETSAL** 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 PETSAL SET QUANTITY = 9 WHERE ID = 1;
UPDATE PETSAL SET QUANTITY = 3 WHERE ID = 2;
UPDATE PETSAL SET QUANTITY = 2 WHERE ID = 3;
UPDATE PETSAL SET QUANTITY = 6 WHERE ID = 4;
UPDATE PETSAL SET QUANTITY = 24 WHERE ID = 5;
SELECT * FROM PETSAL;
```

The screenshot shows the IBM Db2 on Cloud interface after running the update query. The SQL editor now contains the following code: `UPDATE PETSAL SET QUANTITY = 9 WHERE ID = 1;
UPDATE PETSAL SET QUANTITY = 3 WHERE ID = 2;
UPDATE PETSAL SET QUANTITY = 2 WHERE ID = 3;
UPDATE PETSAL SET QUANTITY = 6 WHERE ID = 4;
UPDATE PETSAL SET QUANTITY = 24 WHERE ID = 5;
SELECT * FROM PETSAL;`. The 'Results' tab shows 'Result set 1' with the same table as before, but the 'SALED' column is now truncated to 10 characters.

ID	PET	SALEPRICE	PROFIT	SALED
1	Cat	450.09	100.47	2018-01-01
2	Dog	666.66	150.76	2018-01-01
3	Parrot	50.00	8.90	2018-01-01
4	Hamster	60.60	12.00	2018-01-01
5	Goldfish	48.48	3.50	2018-01-01

Task B: ALTER using DROP COLUMN

1. Delete the **PROFIT** column from the **PETSAL** 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 PETSAL  
DROP COLUMN PROFIT;
```

```
SELECT * FROM PETALE;
```

IBM Db2 on Cloud

Data objects Saved objects

Find objects

SQL DMT80331

```
1 ALTER TABLE PETALE
2 DROP COLUMN PROFIT;
3
4 SELECT * FROM PETALE;
```

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

Task C: ALTER using ALTER COLUMN

1. Change the data type to **VARCHAR(20)** type of the column **PET** of the table **PETALE** 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 PETALE
ALTER COLUMN PET SET DATA TYPE VARCHAR(20);
SELECT * FROM PETALE;
```

IBM Db2 on Cloud

Data objects Saved objects

Find objects

SQL DMT80331

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

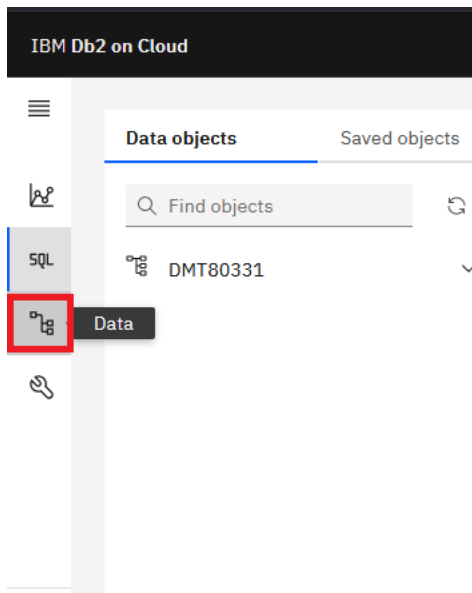
History Results

Result set 1 Details

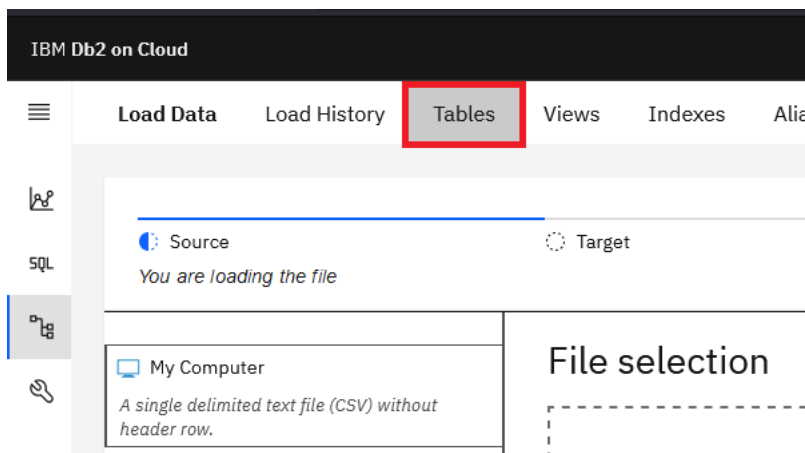
Filter table

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

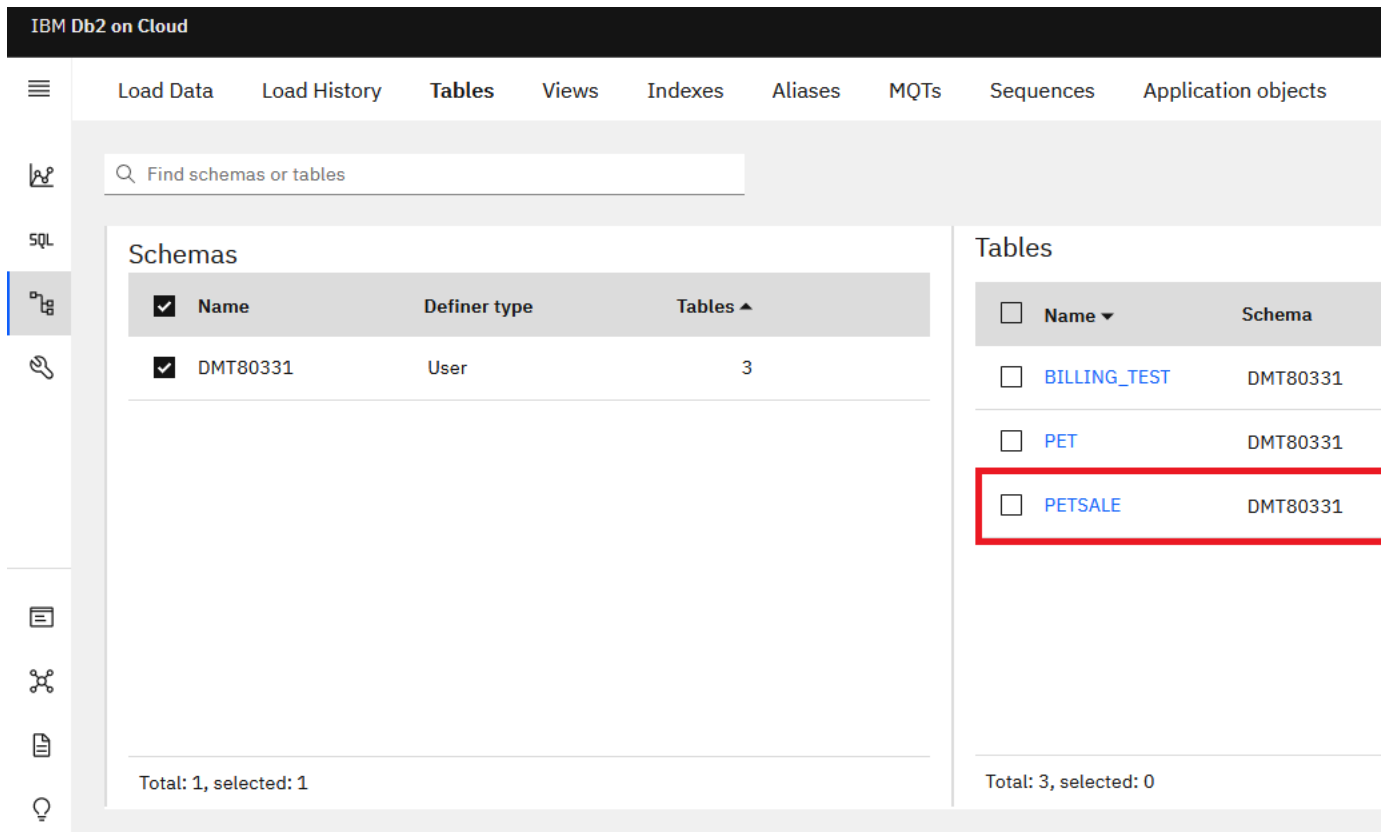
2. Now verify if the data type of the column **PET** of the table **PETALE** changed to **VARCHAR(20)** type or not. Click on the Data Section in the left menu bar.



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)**

IBM Db2 on Cloud

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

Find schemas or tables

SQL

Schemas

Tables New table +

Name	Schema	Properties
BILLING_TEST	DMT80331	...
PET	DMT80331	...
PETSALE	DMT80331	...

Total: 3, selected: 0

Table definition

PETSALE

Name	Data type	Nullabl
ID	INTEGER	N
PET	VARCHAR	Y
SALEPRICE	DECIMAL	Y
SALEDATE	DATE	Y
QUANTITY	INTEGER	Y

View data

Task D: ALTER using RENAME COLUMN

- 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

* Untitled ... x +

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

History Results

Result set 1 Details

Filter table

ID	ANIMAL	SALEPRICE	SALEDATI
1	Cat	450.09	2018-05-
2	Dog	666.66	2018-06-
3	Parrot	50.00	2018-06-
4	Hamster	60.60	2018-06-
5	Goldfish	48.48	2018-06-

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.

- 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

SQL

*Untitled ...

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

History Results

Result set 1 Details

Filter table

ID	ANIMAL	QUAN
You don't have any data currently		

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

SQL

*Untitled ...

```
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
DROP TABLE PET		✓
SELECT * FROM PET		✗

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

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