



# Hands-on Lab : CREATE, ALTER, TRUNCATE, DROP

**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**.

```
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 Storage: 14% RUN SQL

\* Untitled - 1

```

1 CREATE TABLE PETSALe (
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 );
14
15
16
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28

```

Result - Dec 8, 2020 7:2...

CREATE TABLE PETSALe ( ID INTEGER NOT NULL, PET CHAR(20), SALEPRICE .. Runtime: 0.065 s  
Status: Success | Affected Rows: 0

CREATE TABLE PET ( ID INTEGER NOT NULL, ANIMAL VARCHAR(20), QU.. Runtime: 0.065 s  
Status: Success | Affected Rows: 0

Run all Remember my last behavior

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 Storage: 14% RUN SQL

\* Untitled - 1

```

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 INSERT INTO PET VALUES
8     (1,'Cat',3),
9     (2,'Dog',4),
10    (3,'Hamster',2);
11
12 SELECT * FROM PETSALe;
13 SELECT * FROM PET;
14
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29

```

Result - Dec 8, 2020 7:3...

INSERT INTO PETSALe VALUES (1,'Cat',450.09,100.47,'2018-05-29'), (2,... Runtime: 0.008 s  
Status: Success | Affected Rows: 5

INSERT INTO PET VALUES (1,'Cat',3), (2,'Dog',4), (3,'Hamster',... Runtime: 0.007 s  
Status: Success | Affected Rows: 3

SELECT \* FROM PETSALe Runtime: 0.004 s

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

SELECT \* FROM PET Runtime: 0.003 s

ID	ANIMAL	QUANTITY
1	Cat	3
2	Dog	4
3	Hamster	2

Run all Remember my last behavior

## 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. In the left pane, there is a script editor window titled "Untitled - 1" containing the following SQL code:

```
1  ALTER TABLE PETSALE
2  ADD COLUMN QUANTITY INTEGER;
3
4  SELECT * FROM PETSALE;
```

In the right pane, there are two results sections. The first result section shows the output of the ALTER statement:

```
ALTER TABLE PETSALE ADD COLUMN QUANTITY INTEGER
```

The second result section shows the output of the SELECT statement, which retrieves all records from the PETSALE table. The table has columns ID, PET, SALEPRICE, PROFIT, SALEDATE, and QUANTITY. The data is as follows:

ID	PET	SALEPRICE	PROFIT	SALEDATE	QUANTITY
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**.

```
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;
```

The screenshot shows the IBM Db2 on Cloud interface. In the left pane, there is a script editor window titled "Untitled - 1" containing the following SQL code:

```
1  UPDATE PETSALE SET QUANTITY = 9 WHERE ID = 1;
2  UPDATE PETSALE SET QUANTITY = 3 WHERE ID = 2;
3  UPDATE PETSALE SET QUANTITY = 2 WHERE ID = 3;
4  UPDATE PETSALE SET QUANTITY = 6 WHERE ID = 4;
5  UPDATE PETSALE SET QUANTITY = 24 WHERE ID = 5;

6  SELECT * FROM PETSALE;
```

In the right pane, there are five result sections corresponding to the UPDATE statements, each showing a success message and the number of affected rows (1). After these, there is a result section for the final SELECT statement:

Result set 1

ID	PET	SALEPRICE	PROFIT	SALEDATE	QUANTITY
1	Cat	450.09	100.47	2018-05-29	9
2	Dog	666.66	150.76	2018-06-01	3
3	Parrot	50.00	8.90	2018-06-04	2
4	Hamster	60.60	12.00	2018-06-11	6
5	Goldfish	48.48	3.50	2018-06-14	24

## 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;
```

The screenshot shows the IBM Db2 on Cloud interface. In the top navigation bar, it says "IBM Db2 on Cloud" and "Storage: 14%". On the right, there are links for "Cookie Preferences", "Discover", and "Result History". Below the navigation is a toolbar with various icons. The main area has a code editor on the left containing the following SQL code:

```
* Untitled - 1
1 ALTER TABLE PETSALE
2   DROP COLUMN PROFIT;
3
4 SELECT * FROM PETSALE;
```

To the right of the code editor is a results panel titled "Result - Dec 8, 2020 7:3...". It contains two entries:

- A successful execution of the `ALTER TABLE PETSALE DROP COLUMN PROFIT;` statement with a run time of `0.020 s`.
- A successful execution of the `SELECT * FROM PETSALE` statement with a run time of `0.004 s`. The result set is a table with columns ID, PET, SALEPRICE, SALEDATE, and QUANTITY, containing 5 rows of pet data.

At the bottom left of the interface is a "Run all" button, and at the bottom right is a blue message icon.

## 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;
```

The screenshot shows the IBM Db2 on Cloud interface. In the top navigation bar, it says "IBM Db2 on Cloud" and "Storage: 14%". On the right, there are links for "Cookie Preferences", "Discover", and "Result History". Below the navigation is a toolbar with various icons. The main area has a code editor on the left containing the following SQL code:

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

To the right of the code editor is a results panel titled "Result - Dec 8, 2020 7:3...". It contains two entries:

- A successful execution of the `ALTER TABLE PETSALE ALTER COLUMN PET SET DATA TYPE VARCHAR(20);` statement with a run time of `0.023 s`.
- A successful execution of the `SELECT * FROM PETSALE` statement with a run time of `0.005 s`. The result set is a table with columns ID, PET, SALEPRICE, SALEDATE, and QUANTITY, containing 5 rows of pet data.

At the bottom left of the interface is a "Run all" button, and at the bottom right is a blue message icon.

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 3 bar menu icon in the top left corner and click **Explore > Tables**. Find the **PETSALE** table from Schemas by clicking **Select All**. Click on the **PETSALE** table to open the Table Definition page of the table. Here, you can see all the current data type of the columns of the **PETSALE** table.

COLUMN NAME	DATA TYPE	NULLABLE	LENGTH	SCALE
ID	INTEGER	N	0	
PET	VARCHAR	Y	20	0
SALEPRICE	DECIMAL	Y	6	2
SALEDATE	DATE	Y	4	0
QUANTITY	INTEGER	Y		0

## Task D: ALTER using RENAME COLUMN

1. Rename the column **PET** to **ANIMAL** of 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
RENAME COLUMN PET TO ANIMAL;

SELECT * FROM PETSALE;
```

```
* Untitled - 1
1 ALTER TABLE PETSALE
2 RENAME COLUMN PET TO ANIMAL;
3
4 SELECT * FROM PETSALE;
```

**Result - Dec 8, 2020 7:3...**

ID	ANIMAL	SALEPRICE	SALEDATE	QUANTITY
1	Cat	450.09	2018-05-29	9
2	Dog	666.66	2018-06-01	3
3	Parrot	50.00	2018-06-04	2
4	Hamster	60.60	2018-06-11	6
5	Goldfish	48.48	2018-06-14	24

## Exercise 3: TRUNCATE

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**.

```
TRUNCATE TABLE PET IMMEDIATE;

SELECT * FROM PET;
```

The screenshot shows the IBM Db2 on Cloud interface. In the top left, it says "IBM Db2 on Cloud" and "Storage: 14%". On the right, there are links for "Cookie Preferences", "Discover", and a user icon. Below the header, it says "RUN SQL". The main area has a toolbar with icons for Run all, Undo, Redo, Copy, Paste, Find, Replace, Auto, and Script Library. A "Syntax assistant" icon is also present. The code editor window contains the following SQL statements:

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

The result set for the first query shows a success message: "Status: Success | Affected Rows: 0" and "Run time: 0.016 s". The result set for the second query shows a success message: "Status: Success | Affected Rows: 0" and "Run time: 0.005 s". The table "PET" has three columns: ID, ANIMAL, and QUANTITY. The table is currently empty, displaying a placeholder icon.

## Exercise 4: DROP

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**.

```
DROP TABLE PET;

SELECT * FROM PET;
```

The screenshot shows the IBM Db2 on Cloud interface. In the top left, it says "IBM Db2 on Cloud" and "Storage: 14%". On the right, there are links for "Cookie Preferences", "Discover", and a user icon. Below the header, it says "RUN SQL". The main area has a toolbar with icons for Run all, Undo, Redo, Copy, Paste, Find, Replace, Auto, and Script Library. A "Syntax assistant" icon is also present. The code editor window contains the following SQL statements:

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

The result set for the first query shows a success message: "Status: Success | Affected Rows: 0" and "Run time: 0.036 s". The result set for the second query shows a failure message: "Status: Failed" and "Run time: 0.004 s". The error message is: "Error message: 'TP200692.PET' is an undefined name.. SQLCODE=-204, SQLSTATE=42704, DRIVER=4.26.14". There is a link "Learn more about this error".

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

Author(s)

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## Other Contributor(s)

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## Changelog

Date	Version	Changed by	Change Description
2020-12-24	1.1	Steve Ryan	ID reviewed
2020-12-07	1.0	Sandip Saha Joy	Initial version created

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