

# 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  
);
```

The screenshot shows the IBM Db2 console interface. At the top, there's a header bar with 'IBM Db2 on Cloud', 'Storage: 14%', and navigation links like 'Cookie Preferences', 'Discover', and a user profile icon. Below this is the 'RUN SQL' section. On the left, there's a code editor with a file named 'Untitled - 1'. It contains the SQL code to create two tables: PETSALE and PET. The code is as follows:

```
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  
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28
```

On the right side of the interface, there's a 'Result' panel showing the execution results. It displays two successful queries:

- ✓ CREATE TABLE PETSALE ( ID INTEGER NOT NULL, PET CHAR(20), SALEPRICE ... Run time: 0.065 s  
Status: Success | Affected Rows: 0
- ✓ CREATE TABLE PET ( ID INTEGER NOT NULL, ANIMAL VARCHAR(20), QU... Run time: 0.065 s  
Status: Success | Affected Rows: 0

At the bottom left, there's a 'Run all' button and a checkbox labeled '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% | Cookie Preferences | Discover

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

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

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

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

✓ SELECT \* FROM PETSale Run time: 0.004 s

Result set 1

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 Run time: 0.003 s

Result set 1

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 Run SQL interface. The left pane contains the following SQL code:

```

1 ALTER TABLE PETSale
2 ADD COLUMN QUANTITY INTEGER;
3
4 SELECT * FROM PETSale;
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19

```

The right pane shows the execution results. The first query, `ALTER TABLE PETSale ADD COLUMN QUANTITY INTEGER`, was successful and affected 0 rows. The second query, `SELECT * FROM PETSale`, returned a result set with 5 rows:

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	

- 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 Run SQL interface. The left pane contains 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
7 SELECT * FROM PETSale;
8
9
10
11
12
13
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22

```

The right pane shows the execution results. The first five queries, each updating a row's QUANTITY, were successful and affected 1 row each. The final query, `SELECT * FROM PETSale`, returned a result set with 5 rows:

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

- 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 RUN SQL interface. The SQL editor on the left contains the following code:

```

1 ALTER TABLE PETSale
2 DROP COLUMN PROFIT;
3
4 SELECT * FROM PETSale;
5
6
7
8
9
10
11
12
13
14
15
16
17
18

```

The right pane shows the execution results. The first command, `ALTER TABLE PETSale DROP COLUMN PROFIT`, was successful with 0 affected rows. The second command, `SELECT * FROM PETSale`, returned a result set with 5 rows:

ID	PET	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

The bottom of the interface shows a `Run all` button and a checkbox for `Remember my last behavior`.

## 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 RUN SQL interface. The SQL editor on the left contains the following code:

```

1 ALTER TABLE PETSale
2 ALTER COLUMN PET SET DATA TYPE VARCHAR(20);
3
4 SELECT * FROM PETSale;
5
6
7
8
9
10
11
12
13
14
15
16
17

```

The right pane shows the execution results. The first command, `ALTER TABLE PETSale ALTER COLUMN PET SET DATA TYPE VARCHAR(20)`, was successful with 0 affected rows. The second command, `SELECT * FROM PETSale`, returned a result set with 5 rows:

ID	PET	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

The bottom of the interface shows a `Run all` button and a checkbox for `Remember my last behavior`.

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.

**Schemas**  
☒ Select All  
 (+) New implicit schema  
 TPZ00692 2 tables  
 AUDIT 0 table  
 DB2INST1 0 table  
 ERRORSHEMA 0 table  
 SQL74730 0 table  
 ST\_INFORMTN\_SCHEMA 0 table

**Tables**  
☒ NAME  
 SCHEMA  
 PROPERTIES  
 PETRESCUE TPZ00692 ...  
 PETSALE TPZ00692 ...

**Table Definition**  
 PETSALE  
 Approximate 5 rows (32 KB)  
 Updated on 2020-12-09 22:26:28
 

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;
```

IBM Db2 on Cloud  
 Storage: 14%  
 Cookie Preferences  
 Discover

**RUN SQL**  
 \*Untitled - 1  
 Syntax assistant  
 1 ALTER TABLE PETSALE  
 2 RENAME COLUMN PET TO ANIMAL;  
 3  
 4 SELECT \* FROM PETSALE;  
 5  
 6  
 7  
 8  
 9  
 10  
 11  
 12  
 13  
 14  
 15  
 16  
 17

Script Library  
 Result History  
 Result - Dec 8, 2020 7:3...  
 ALTER TABLE PETSALE RENAME COLUMN PET TO ANIMAL  
 Status: Success | Affected Rows: 0  
 Run time: 0.021 s  
 SELECT \* FROM PETSALE  
 Run time: 0.004 s  
 Result set 1  

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

Run all

Remember my last behavior

## 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 RUN SQL interface. The SQL editor on the left contains the following code:

```

1 TRUNCATE TABLE PET IMMEDIATE;
2
3 SELECT * FROM PET;
4
5
6
7
8
9
10
11
12
13
14
15
16

```

The right pane displays the execution results for the script "Result - Dec 8, 2020 7:3...". It shows two successful statements:

- TRUNCATE TABLE PET IMMEDIATE:** Status: Success, Affected Rows: 0, Run time: 0.016 s.
- SELECT \* FROM PET:** Status: Success, Affected Rows: 0, Run time: 0.005 s.

Below the second statement, a table header is visible with columns: ID, ANIMAL, and QUANTITY. The table body is empty, displaying "No available items to display".

At the bottom left, there is a "Run all" button and a checkbox labeled "Remember my last behavior".

## 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 RUN SQL interface after executing the DROP statement. The SQL editor on the left contains the following code:

```

1 DROP TABLE PET;
2
3 SELECT * FROM PET;
4
5
6
7
8
9
10
11
12
13
14
15

```

The right pane displays the execution results. The first statement, **DROP TABLE PET**, was successful (Status: Success, Affected Rows: 0, Run time: 0.036 s). However, the second statement, **SELECT \* FROM PET**, failed (Status: Failed, Run time: 0.004 s).

The error message for the failed statement is: "TPZ00692.PET" is an undefined name. SQLCODE=-204, SQLSTATE=42704, DRIVER=4.26.14. A link "Learn more about this error" is provided.

At the bottom left, there is a "Run all" button and a checkbox labeled "Remember my last behavior".

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

## Author(s)

- [Sandip Saha Joy](#)

## 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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