

Hands-on Lab: Create Tables and Load Data in Db2

Estimated time needed: 30 minutes

In this lab, you will learn how to create tables and load data in Db2.

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.

IBM Db2

To complete this lab, you will use a Db2 database service on IBM Cloud. If you did not complete the lab below earlier, you may not have access to Db2 on Cloud and should complete that lab before starting this lab.

- [Hands-on Lab : Sign up for IBM Cloud and Create Db2 service instance](#)

Data set used in this lab

Two data sets are used in this lab - PETSHOP and BOOKSHOP.

- PETSHOP table:

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

- BOOKSHOP table:

BOOK_ID	TITLE	AUTHOR_NAME	AUTHOR_BIO	AUTHOR_ID	PUBLICATION_DATE	PRICE_USD
B101	Introduction to Algorithms	Thomas H. Cormen	Thomas H. Cormen is the co-author of Introd...	123	2001-09-01	125.00
B201	Structure and Interpretation of Computer Pro...	Harold Abelson	Harold Abelson, Ph.D., is Class of 1922 Profe...	456	1996-07-25	65.50
B301	Deep Learning	Ian Goodfellow	Ian J. Goodfellow is a researcher working in ...	369	2016-11-01	82.70
B401	Algorithms Unlocked	Thomas H. Cormen	Thomas H. Cormen is the co-author of Introd...	123	2013-05-15	36.50
B501	Machine Learning: A Probabilistic Perspective	Kevin P. Murphy		157	2012-08-24	46.00

Objectives

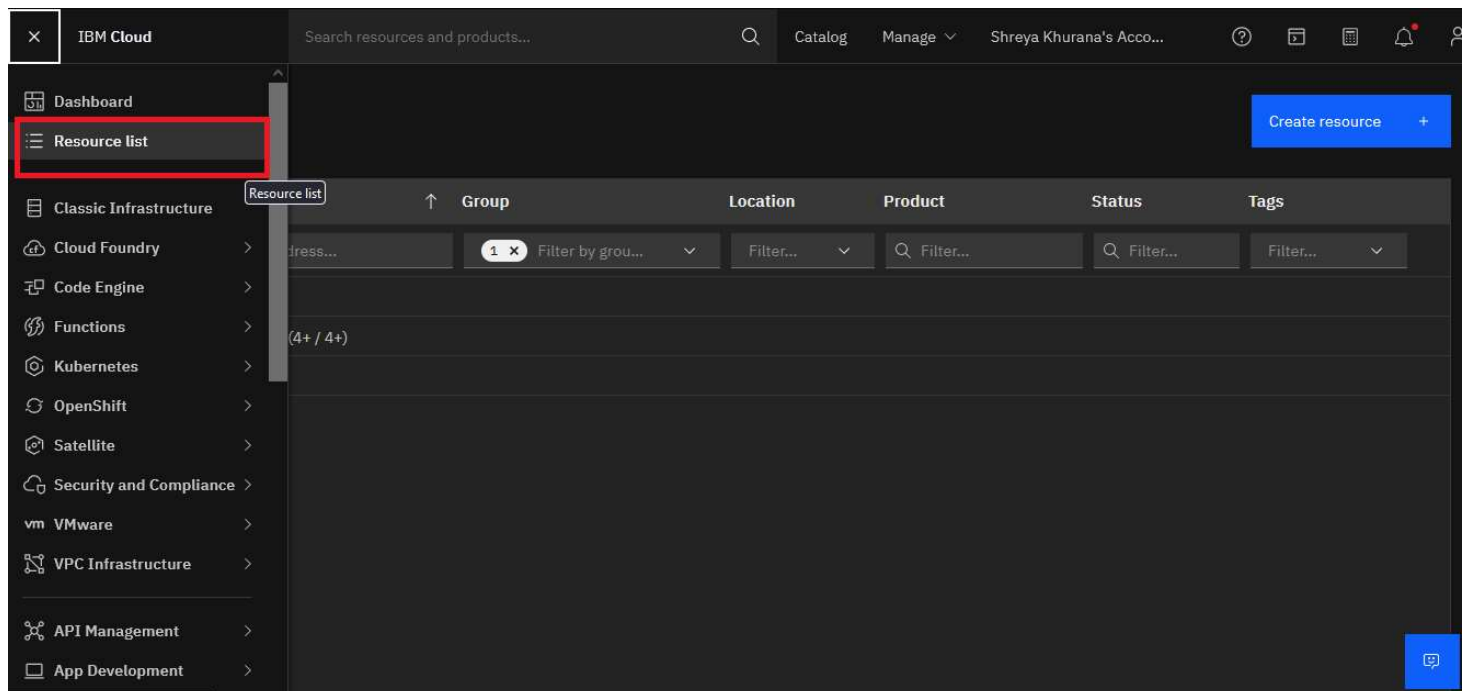
After completing this lab, you will be able to:

- Create a table structure using the Db2 UI
- Load data into a table from a CSV file
- Create a table structure and load data using an SQL script file

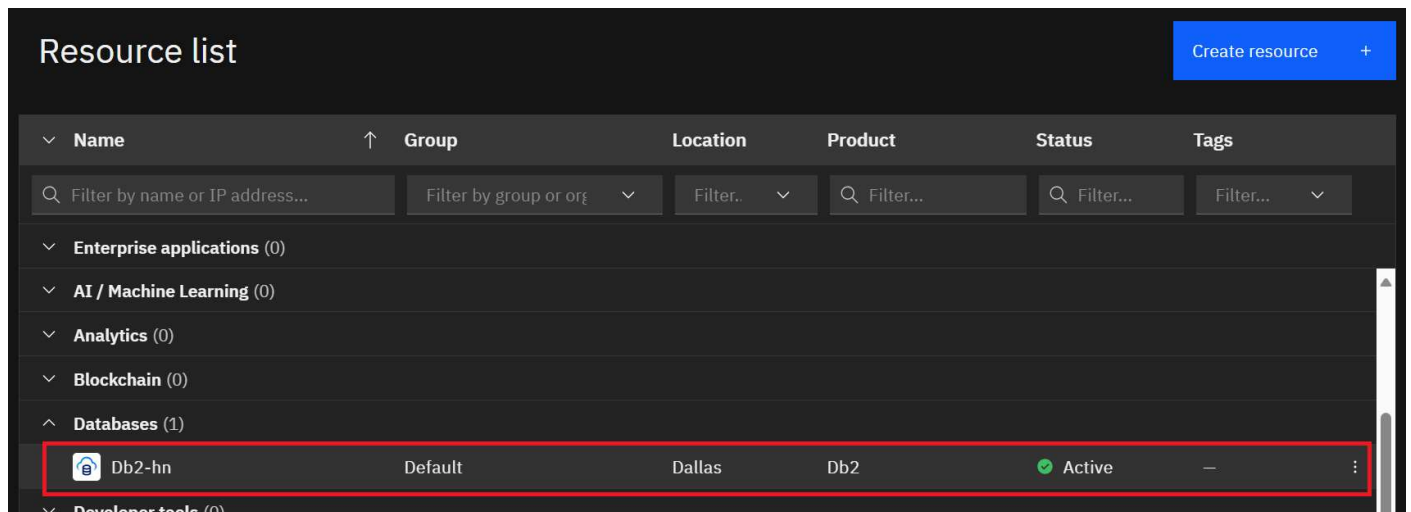
Exercise 1: Create table structure through Db2 UI

In this exercise, you will learn how to create a table structure using the Db2 UI.

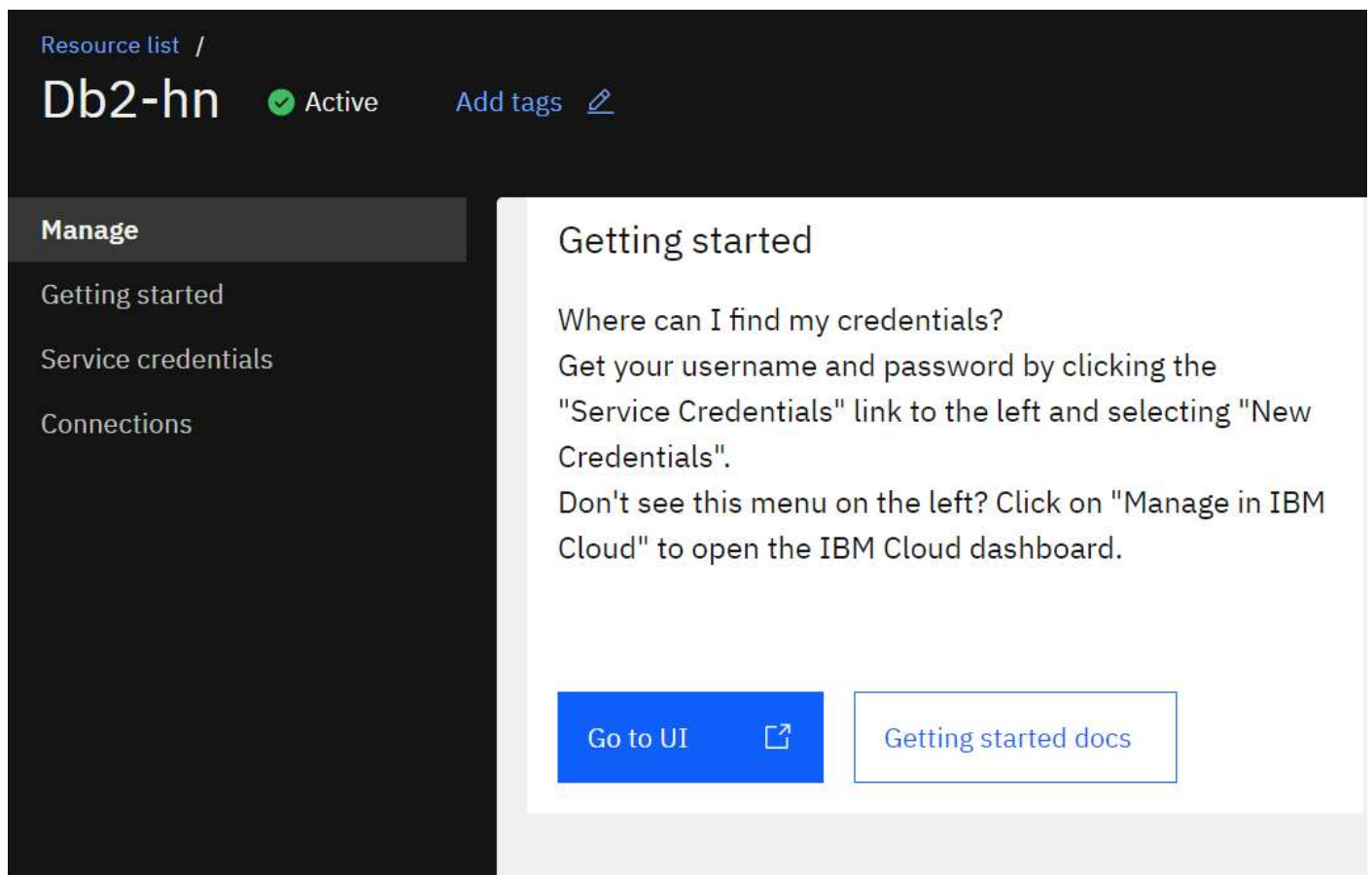
1. To access your database instance, go to your IBM Cloud Resource List (you may need to log into IBM Cloud in the process) directly at: cloud.ibm.com/resources



2. In the Resource list, you can locate your Db2 instance under the Databases section. Click on your instance of Db2. (The name typically starts with Db2-xx for example Db2-fk, Db2-50, etc.)



3. Click **Go to UI**.



4. Click on the data icon in the left corner and then click **Tables**. Later select your schema. It typically starts with 3 letters (not SQL) followed by 5 numbers (but will be different from the **SRW76180** example below). Then click **New table**.

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	Type	Tables
<input checked="" type="checkbox"/>	SRW76180	User	17

Tables

New table +

<input type="checkbox"/>	Name	Schema	Properties
<input type="checkbox"/>	BOARD	SRW76180	...
<input type="checkbox"/>	C1	SRW76180	...
<input type="checkbox"/>	C2	SRW76180	...
<input type="checkbox"/>	CHICAGO1	SRW76180	...
<input type="checkbox"/>	CHICAGO_PUBLIC_SCHO...	SRW76180	...
<input type="checkbox"/>	CROP_DATA	SRW76180	...
<input type="checkbox"/>	NATV EV	SRW76180	...

5. The **New Table** creation window will appear. Name the table as **PETSHOP**. Then add 4 more columns by clicking **Add column** four times.

New table X

SRW76180

PETSHOP

[Add column +](#)

Name	Data type	Nullable	Length	Scale
COL1	CHAR	Y	5	--
COL2	CHAR	Y	5	--
COL3	CHAR	Y	5	--
COL4	CHAR	Y	5	--
COL5	CHAR	Y	5	--

Generate DDL **Create**

6. Now configure the table structure like the image below. Then click **Create**.

New Table ×

QDW50830

PETSHOP

+ Add column

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

Create

Generate DDL

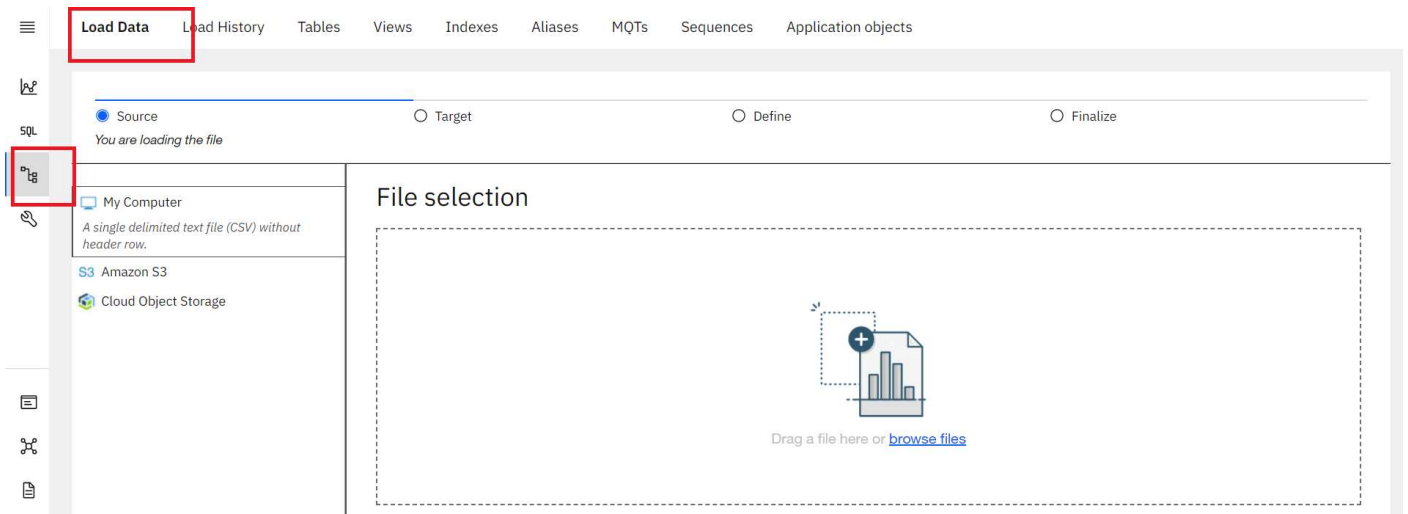
7. You have successfully created **PETSHOP** table.

Exercise 2: Load data into tables using CSV files

In this exercise, you will learn how data can be loaded into Db2. You could manually insert each row into the table one by one, but that would take a long time. Instead, Db2 (and almost every other database) allows you to load data from CSV files.

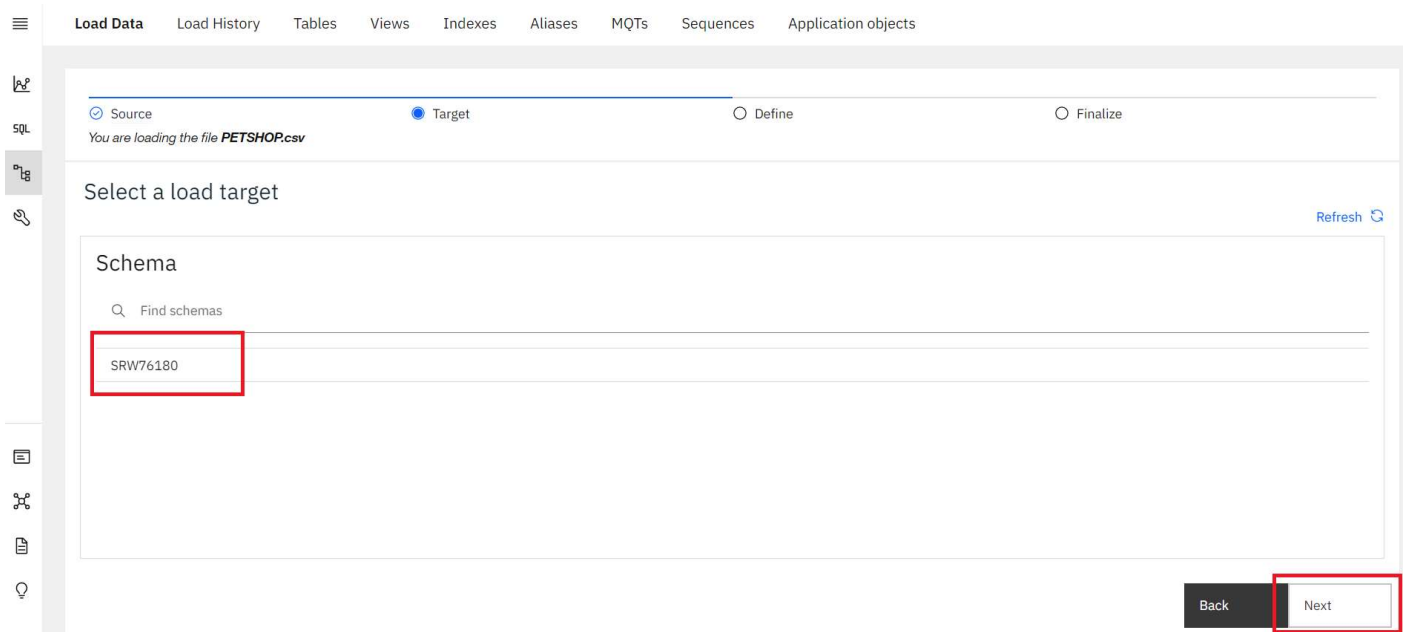
The steps below explain the process of loading data into the table you created earlier in Exercise 1.

1. Download the PETSHOP.csv file below to your local computer:
 - [PETSHOP.csv](#)
2. From the **data** icon on the left side of the **Go to UI** screen, click **Load Data**. Click on the **browse files** link. Later browse for your file on the local machine.



3. Choose the file **PETSHOP.csv** that you downloaded to your computer and click **Open**.

4. Once the file is selected, select your schema and then click **Next**.



5. It will show all the tables that have been created in this schema, including the PETSHOP table. Select the **PETSHOP** table, and in the new Table definition tab that appears, select **Overwrite table with new data** (note the warning message), then click **Next**.

Source Target Define Finalize

You are loading the file **PETSHOP.csv** into **SRW76180.PETSHOP**

Select a load target

Schema

Find schemas

SRW76180

Table

Find tables in SRW76180

PETSHOP

Table definition

PETSHOP Approximate -1.0 rows (-1.0 KB)
Updated on Invalid Date

overwrite_option

☐ Append new data

☒ Overwrite table with new data

☐ All existing data will be deleted from the table whether or not the loading action completes successfully.

COLUMN NAME	DATA TYPE	NULLABLE
ID	INTEGER	

Back Next

6. Because the source data file contains row with column labels, ensure that the **Header in first row** option is selected.

- **Note:** Sometimes you may need to select correct **Time & date format** according to the way the date is formatted in the source data file.

Source Target Define Finalize

You are loading the file **PETSHOP.csv** into **SRW76180.PETSHOP**

Code page (character encoding): 1208 (UTF-8) Separator: , Header in first row: ☒ Time & date format: ⌵

ID	ANIMAL	SALEPRICE	SALEDATE	QUANTITY
INTEGER	VARCHAR	DECIMAL	DATE	INTEGER
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

7. Click **Next**. Review the load settings and click **Begin Load** at the bottom right-hand corner.

Source Target Define Finalize

You are loading the file **PETSHOP.csv** into **SRW76180.PETSHOP**

Review settings

Summary

Code page: 1208 (Default)

Separator: , (Default)

Time format: HH:MM:SS (Default)

Date format: YYYY-MM-DD (Default)

Timestamp format: YYYY-MM-DD HH:MM:SS (Default)

String delimiter: (Default)

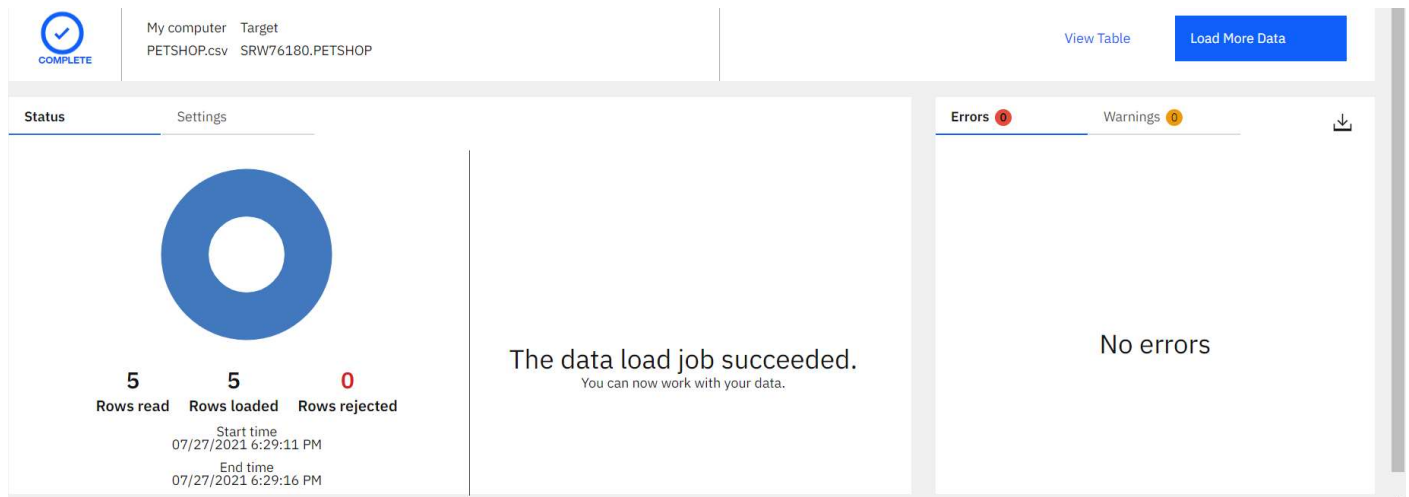
Option

Maximum number of warnings

1000

Back Begin Load

8. After loading has completed, you will notice that you were successful in loading all 5 rows of the PETSHOP table. If there are any **Errors** or **Warnings**, you can see them on this screen.



9. You can see the data that was loaded by clicking **View Table**.

Source Target Define Finalize

You are loading the file **PETSHOP.csv** into **SRW76180.PETSHOP**

Code page (character encoding): 1208 (UTF-8) Separator: , Header in first row: Time & date format:

ID INTEGER	ANIMAL VARCHAR	SALEPRICE DECIMAL	SALEDATE DATE	QUANTITY INTEGER
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

Back Next

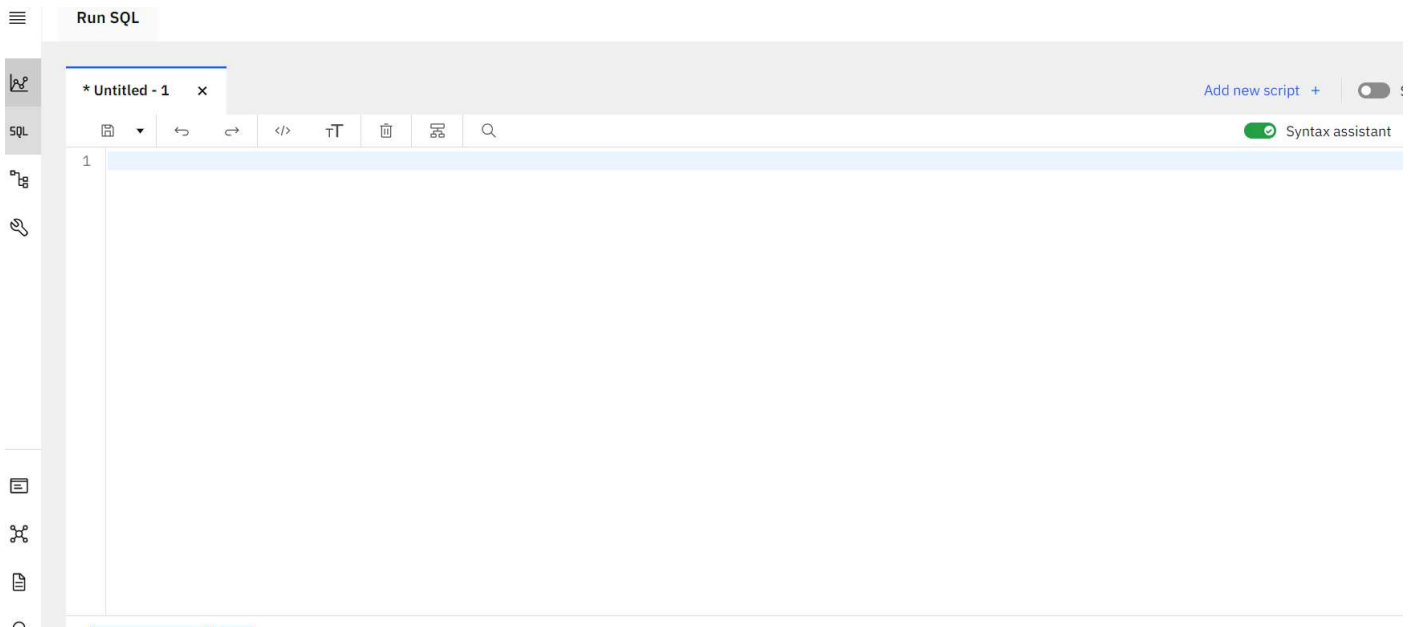
Exercise 3: Create table structure and load data using a SQL script file

In this exercise, you will learn how to create a table and load data into it by executing a script containing the CREATE and INSERT SQL commands.

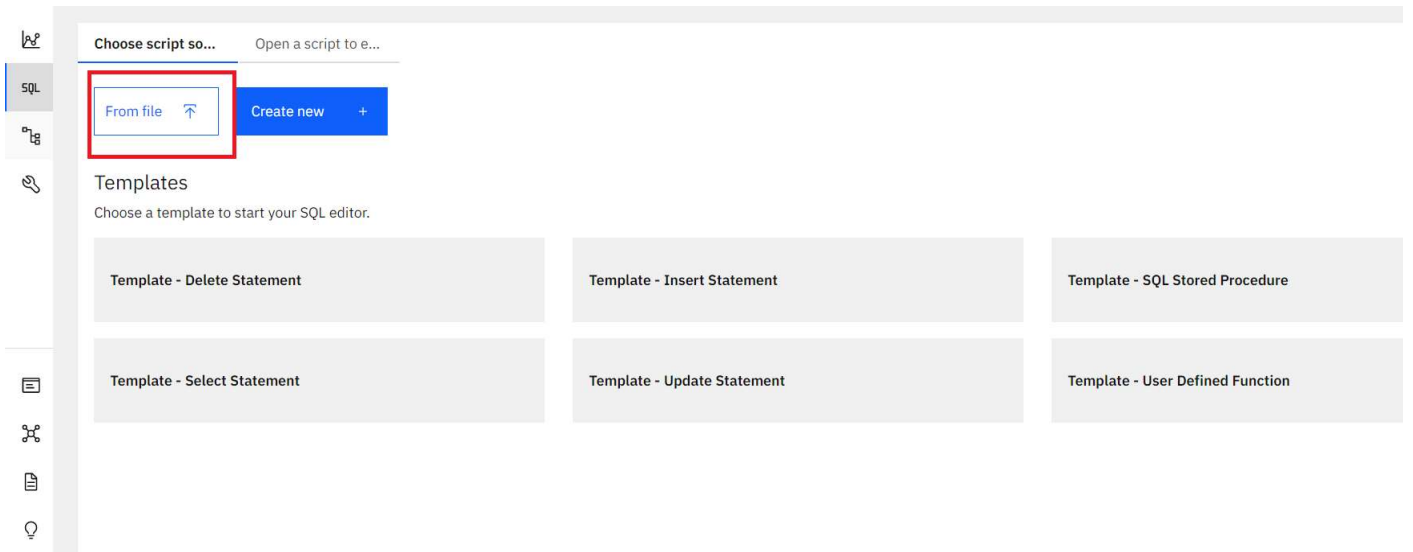
1. Download the script file to your computer:

- [BookShop-CREATE-INSERT.sql](#)

2. Click on the **RUN SQL** page in the **Go to UI** . The **RUN SQL** tool enables you to run SQL scripts/statements.



3. Click **From file**.



4. Locate the **BookShop-CREATE-INSERT.sql** file that you downloaded to your computer earlier and load it.

5. Once the statements are in the RUN SQL tool, you can run the queries against the database by clicking **Run all**.

On the right-hand side of the RUN SQL tool, you will see a Result section. Clicking on the expand button for a query in the Result section will display the execution details of the job, such as whether it ran successfully or had any errors or warnings. Ensure your queries ran successfully and created all the tables.

- **Note:** You may see several errors before the successful creation of the table. These errors relate to the dropping (removal) of any pre-existing versions of these tables. You can ignore these errors.

*** BookShop-... x**

Add new script + Script summary

```

1 -- Drop the tables in case they exist
2
3 DROP TABLE BookShop;
4 DROP TABLE BookShop_AuthorDetails;
5
6 -- Create the table
7
8 CREATE TABLE BookShop (
9     BOOK_ID VARCHAR(4) NOT NULL,
10    TITLE VARCHAR(100) NOT NULL,
11    AUTHOR_NAME VARCHAR(30) NOT NULL,
12    AUTHOR_BIO VARCHAR(250),
13    AUTHOR_ID INTEGER NOT NULL,
14    PUBLICATION_DATE DATE NOT NULL,
15    PRICE_USD DECIMAL(6,2) CHECK(PPrice_USD>0) NOT NULL
16 );
17
18 -- Insert sample data into the table
19
20 INSERT INTO BookShop VALUES
21 ('B101', 'Introduction to Algorithms', 'Thomas H. Cormen', 'Thomas H. Cormen',
22 
```

Run all Remember my selection

Result - Jul 27, 2021 6:34:33 PM

Status	Script Name	Run time
Success	-- Drop the tables in case they exist DROP ...	0.064 s
Success	Affected rows: 0	
Error	DROP TABLE BookShop_AuthorDetails	0.022 s
Success	-- Create the table CREATE TABLE BookSh...	0.100 s
Success	-- Insert sample data into the table INSER...	0.014 s
Success	-- Retrieve all records from the table SELE...	0.012 s

bookShop-CREATE....sql PETSHOP.csv Show all

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

Refresh

Schemas

<input checked="" type="checkbox"/> Name	Type	Tables ▲
<input checked="" type="checkbox"/> SRW76180	User	19

Total: 1, selected: 1

Tables

New table +

<input type="checkbox"/> Name ▼	Schema	Properties
<input type="checkbox"/> BOARD	SRW76180	...
<input type="checkbox"/> BOOKSHOP	SRW76180	...
<input type="checkbox"/> C1	SRW76180	...
<input type="checkbox"/> C2	SRW76180	...
<input type="checkbox"/> CHICAGO1	SRW76180	...
<input type="checkbox"/> CHICAGO_PUBLIC_SCHO...	SRW76180	...
<input type="checkbox"/> CROP_DATA	SRW76180	...
<input type="checkbox"/> DAILY_FX	SRW76180	...

Total: 19, selected: 0

7. Click on the table **BOOKSHOP** you created and you will see its table structure (that is, the list of columns, data types, and so on).

Find schemas or tables

Refresh

Schemas

Tables

New table +

Name

Schema

Properties

☐ BOARD
 SRW76180
 ...

☒ BOOKSHOP
 SRW76180
 ...

☐ C1
 SRW76180
 ...

☐ C2
 SRW76180
 ...

☐ CHICAGO1
 SRW76180
 ...

☐ CHICAGO_PUBLIC_SCHO...
 SRW76180
 ...

☐ CROP_DATA
 SRW76180
 ...

☐ DAILY_FX
 SRW76180
 ...

☐ FARM_PRICES
 SRW76180
 ...

Total: 19, selected: 1

Table definition

BOOKSHOP

No statistics available

Name	Data type	Nullable	Length	Scale
BOOK_ID	VARCHAR	N	4	0
TITLE	VARCHAR	N	100	0
AUTHOR_NAME	VARCHAR	N	30	0
AUTHOR_BIO	VARCHAR	Y	250	0
AUTHOR_ID	INTEGER	N		0
PUBLICATION_DATE	DATE	N	4	0
PRICE_USD	DECIMAL	N	6	2

View data

8. Click **View Data** to view the table data.

SRW76180.BOOKSHOP

Back

Export to CSV

BOOK_ID	TITLE	AUTHOR_NAME	AUTHOR_BIO	AUTHOR_ID	PUBLICATION_DATE	PRICE_USD
B101	Introduction to Algorithms	Thomas H. Cormen	Thomas H. Cormen is the co-author of Introduction to Algorithms, along with Charles Leiserson, Ron Rivest, and Cliff Stein. He is a Full Professor of computer science at Dartmouth College and currently Chair of the Dartmouth College Writing Program.	123	2001-09-01	125.00
B201	Structure and Interpretation of Computer Programs	Harold Abelson	Harold Abelson, Ph.D., is Class of 1922 Professor of Computer Science and Engineering in the Department of Electrical Engineering and Computer Science at MIT and a fellow of the IEEE.	456	1996-07-25	65.50
B301	Deep Learning	Ian Goodfellow	Ian J. Goodfellow is a researcher working in machine learning, currently employed at Apple Inc. as its director of machine learning in the Special Projects Group. He was previously employed as a research scientist at Google Brain.	369	2016-11-01	82.70
B401	Algorithms Unlocked	Thomas H. Cormen	Thomas H. Cormen is the co-author of Introduction to Algorithms, along with Charles Leiserson, Ron Rivest, and Cliff Stein. He is a Full Professor of computer science at Dartmouth College and currently Chair of the Dartmouth College Writing Program.	123	2013-05-15	36.50
B501	Machine Learning: A Probabilistic Perspective	Kevin P. Murphy		157	2012-08-24	46.00

Conclusion

Congratulations! You have completed this lab, and you have created a table structure and loaded data using a SQL script file.

Author: **Sandip Saha Joy**