

## Create Tables using SQL Scripts and Load Data into Tables

We will learn how to run SQL scripts to create several tables at once, as well as how to load data into tables from .csv files.

## 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 activity we will utilize a Db2 database service on IBM Cloud. If you do not how to do this, please check the hands-on 1 of this module.

## Database Used in this Lab

The database used in this lab is an internal database. You will be working on a sample HR database. This HR database schema consists of 5 tables called **EMPLOYEES**, **JOB\_HISTORY**, **JOBS**, **DEPARTMENTS** and **LOCATIONS**. Each table has a few rows of sample data. The following diagram shows the tables for the HR database:

### SAMPLE HR DATABASE TABLES

**EMPLOYEES**

EMP_ID	F_NAME	L_NAME	SSN	B_DATE	SEX	ADDRESS	JOB_ID	SALARY	MANAGER_ID	DEP_ID
E1001	John	Thomas	123456	1976-01-09	M	5631 Rice, OakPark,IL	100	100000	30001	2
E1002	Alice	James	123457	1972-07-31	F	980 Berry ln, Elgin,IL	200	80000	30002	5
E1003	Steve	Wells	123458	1980-08-10	M	291 Springs, Gary,IL	300	50000	30002	5

**JOB\_HISTORY**

EMPL_ID	START_DATE	JOBS_ID	DEPT_ID
E1001	2000-01-30	100	2
E1002	2010-08-16	200	5
E1003	2016-08-10	300	5

**JOBS**

JOB_ID	JOB_TITLE	MIN_SALARY	MAX_SALARY
100	Sr. Architect	60000	100000
200	Sr.SoftwareDeveloper	60000	80000
300	Jr.SoftwareDeveloper	40000	60000

**DEPARTMENTS**

DEPT_ID_DEP	DEP_NAME	MANAGER_ID	LOC_ID
2	Architect Group	30001	L0001
5	Software Development	30002	L0002
7	Design Team	30003	L0003
5	Software	30004	L0004

**LOCATIONS**

LOCT_ID	DEP_ID_LOC
L0001	2
L0002	5
L0003	7

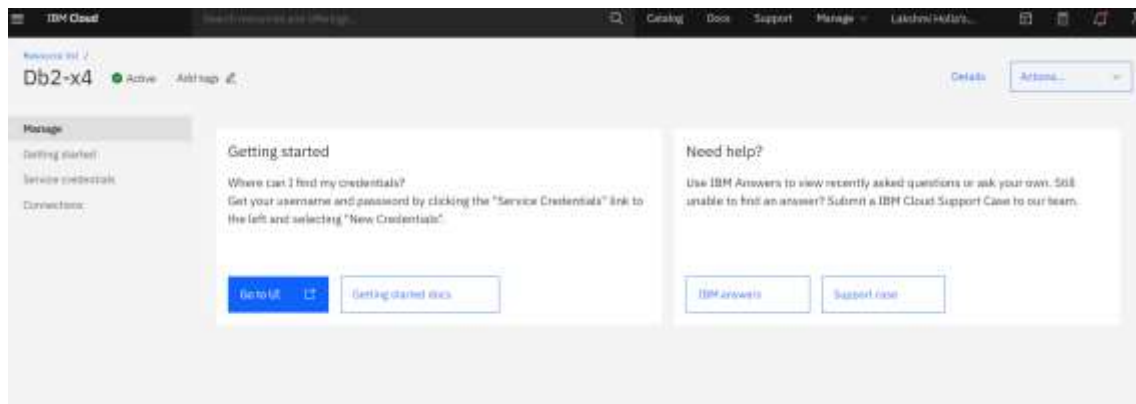
# Objectives

- Creating tables using SQL scripts
- Load data into tables

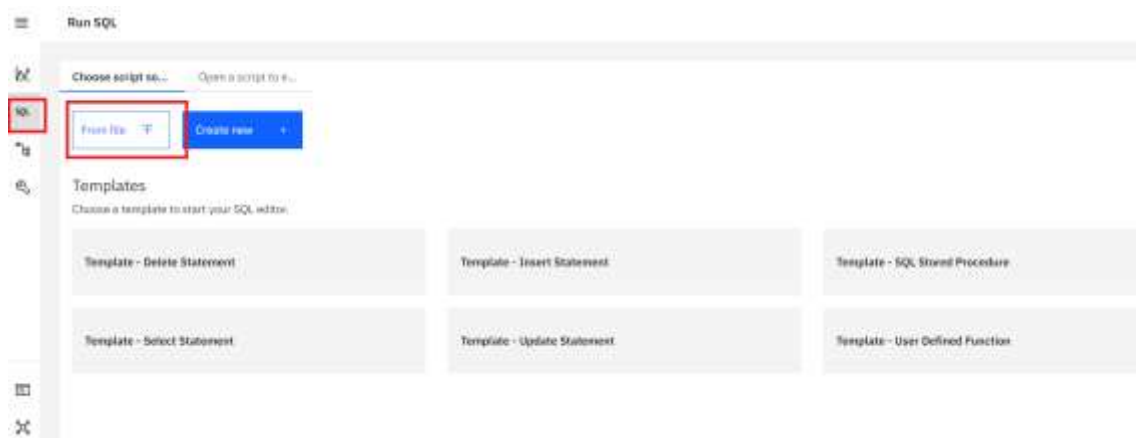
## Exercise 1: Create tables using SQL scripts

In this exercise, you will learn how to execute a script containing the CREATE TABLE commands for all the tables rather than create each table manually by typing the DDL commands in the SQL editor.

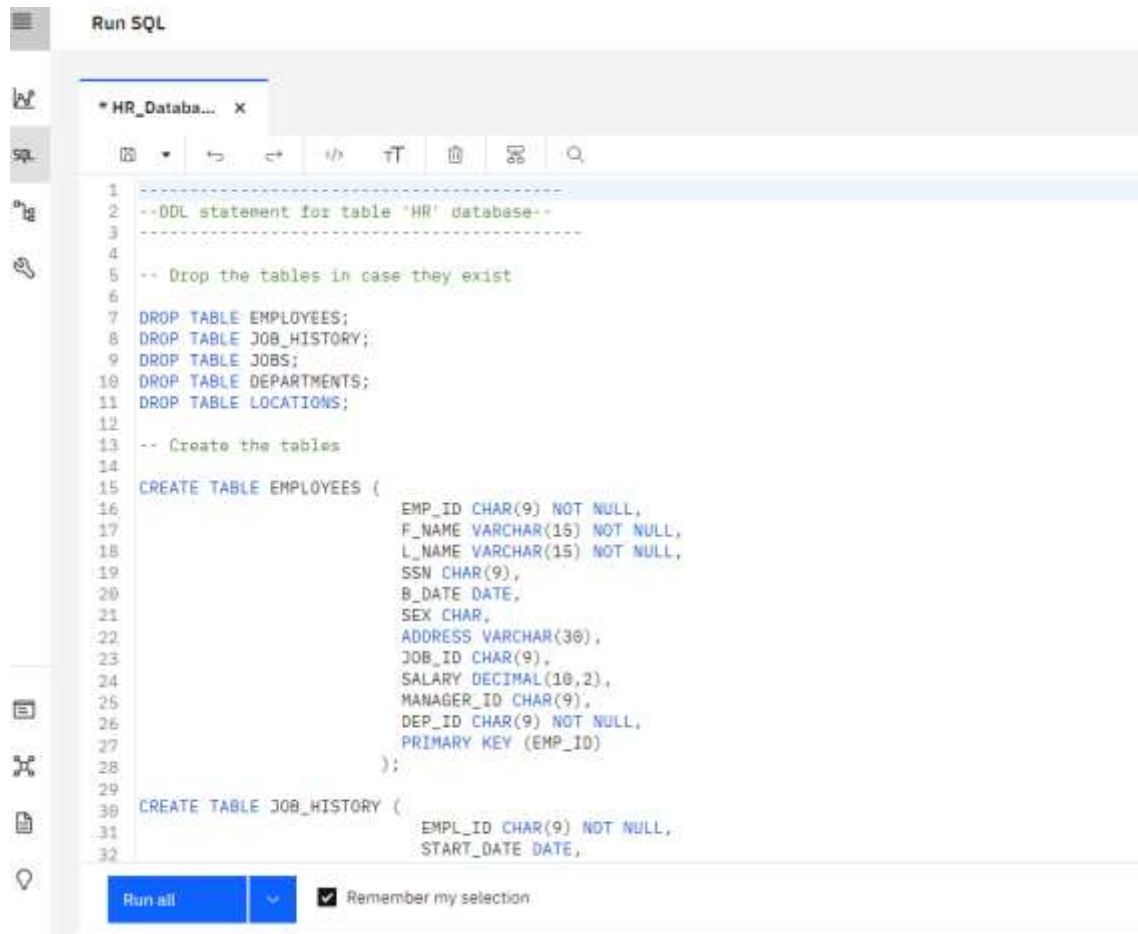
1. Download the script file to your computer:
  - [HR Database Create Tables Script.sql](#)
2. Login to IBM Cloud and go to the [Resource List](#) where you can find the Db2 service instance that you created in a previous lab under **Services** section. Click on the Db2-xx service. Next, click on **Go to UI** button.



3. Click on Run SQL on the left corner and select the from file option.



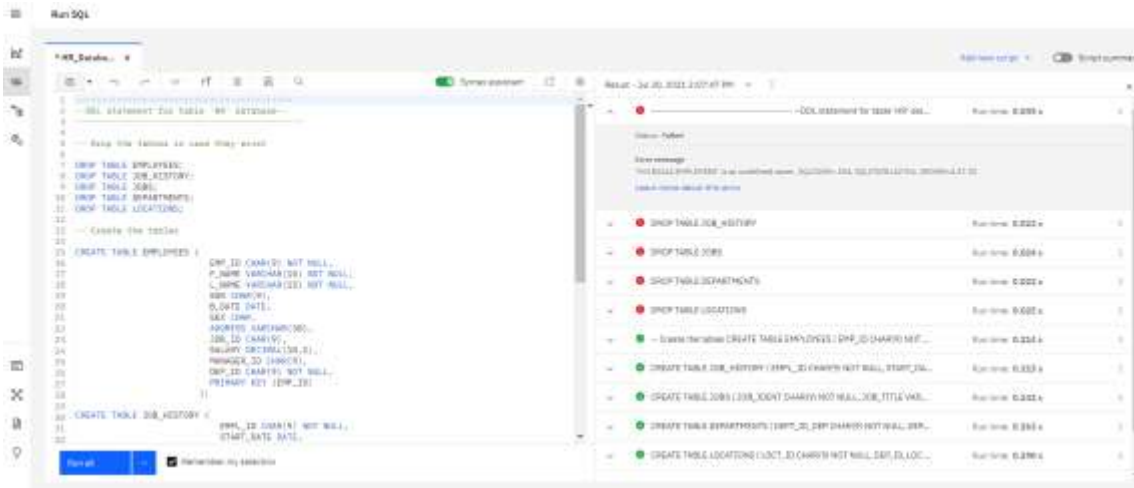
4. Locate the file **HR\_Database\_Create\_Tables\_Script.sql** that you downloaded to your computer earlier and open it.
5. Once the statements are in the SQL Editor tool , you can run the queries against the database by selecting the **Run All** button.



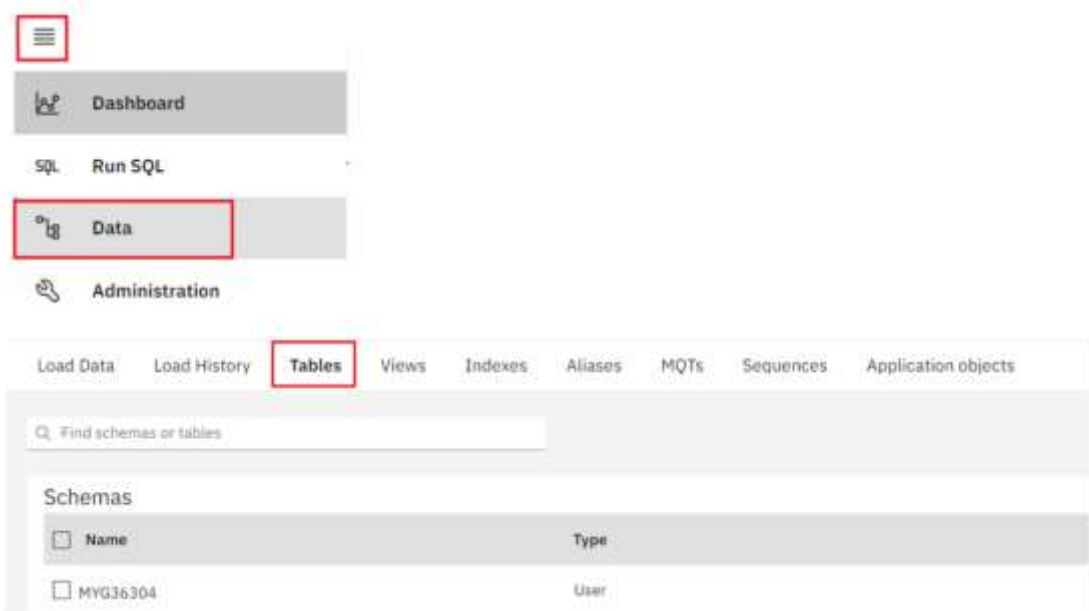
```
1  -----
2  --DDL statement for table 'HR' database--
3  -----
4
5  -- Drop the tables in case they exist
6
7  DROP TABLE EMPLOYEES;
8  DROP TABLE JOB_HISTORY;
9  DROP TABLE JOBS;
10 DROP TABLE DEPARTMENTS;
11 DROP TABLE LOCATIONS;
12
13 -- Create the tables
14
15 CREATE TABLE EMPLOYEES (
16     EMP_ID CHAR(9) NOT NULL,
17     F_NAME VARCHAR(15) NOT NULL,
18     L_NAME VARCHAR(15) NOT NULL,
19     SSN CHAR(9),
20     B_DATE DATE,
21     SEX CHAR,
22     ADDRESS VARCHAR(30),
23     JOB_ID CHAR(9),
24     SALARY DECIMAL(10,2),
25     MANAGER_ID CHAR(9),
26     DEP_ID CHAR(9) NOT NULL,
27     PRIMARY KEY (EMP_ID)
28 );
29
30 CREATE TABLE JOB_HISTORY (
31     EMPL_ID CHAR(9) NOT NULL,
32     START_DATE DATE,
```

Run all ☒ Remember my selection

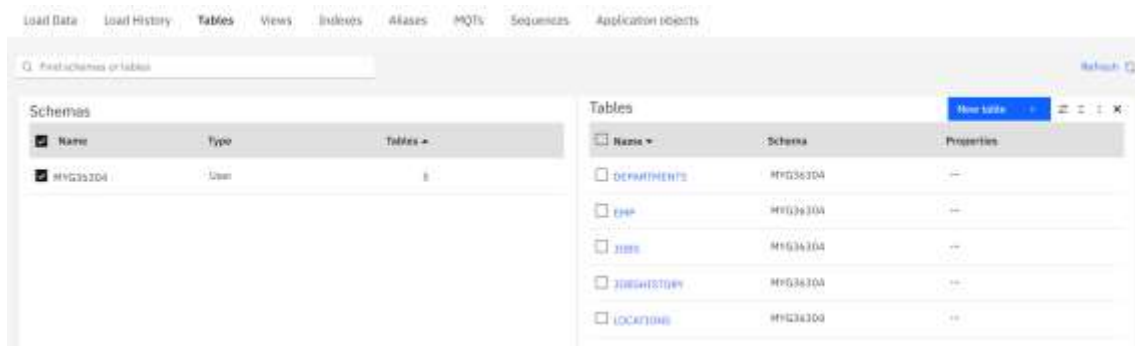
6. On the right side of the SQL editor window you will see a Result section. Clicking on a query in the Result section will show the execution details of the job like whether it ran successfully, or had any errors or warnings. Ensure your queries ran successfully and created all the tables.
  - o **Note:** You may see several errors before the successful creation of the tables. These errors relate to the dropping (removal) of any pre-existing version of these tables. You can ignore these errors.



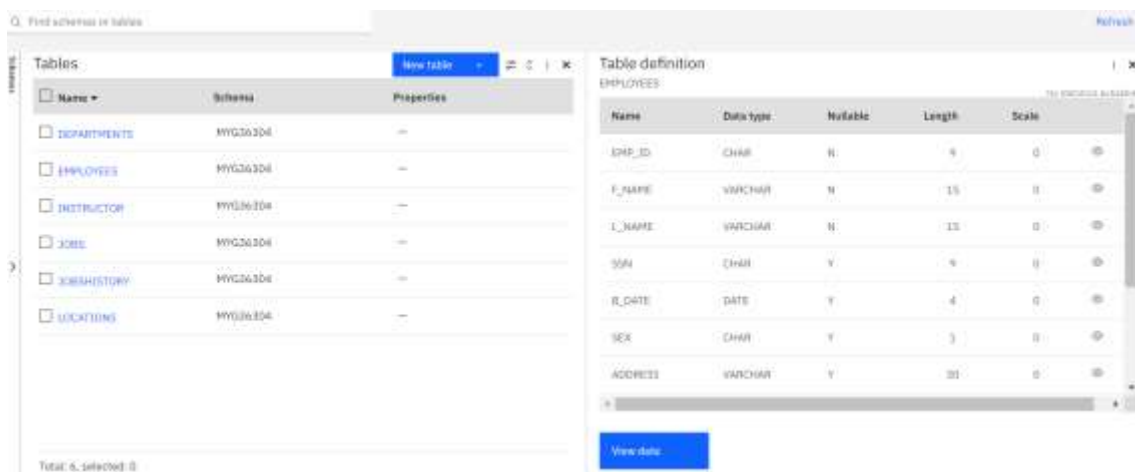
- Now you can look at the tables you created. Click on the data icon and then click on Tables tab



- Select the Schema corresponding to your Db2 userid. It typically starts with 3 letters (not SQL) followed by 5 numbers (but will be different from the **MYG36304** example below). Then on the right side of the screen you should see the 5 newly created tables listed – DEPARTMENTS, EMPLOYEES, JOBS, JOB\_HISTORY and LOCATIONS (plus any other tables you may have created in previous labs e.g. PETSALe, PETRESCUE, etc.).



- Click on any of the tables and you will see its Table Definition (that is, its list of columns, data types, etc).



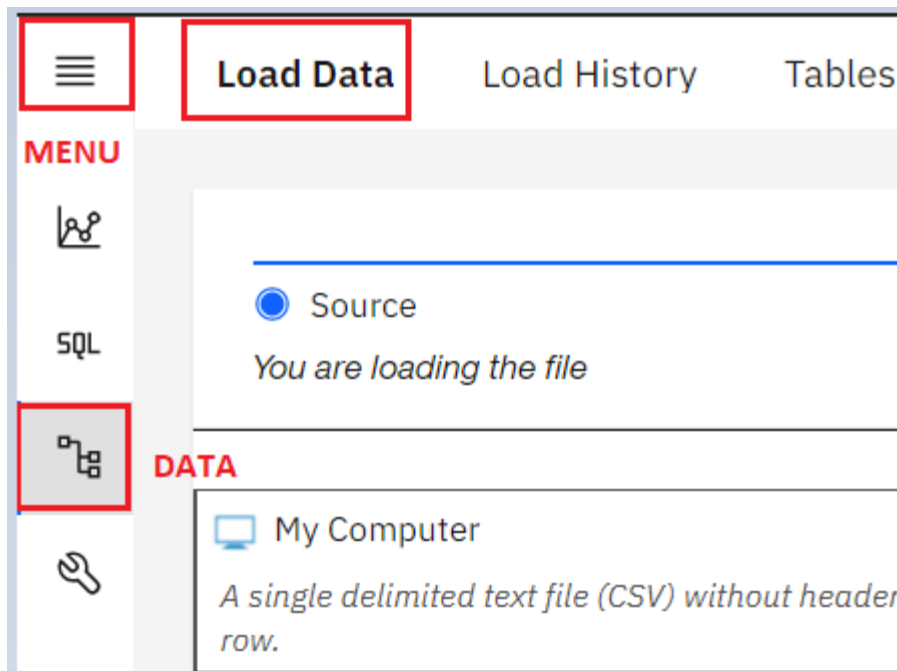
## Exercise 2: Load data into tables

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.

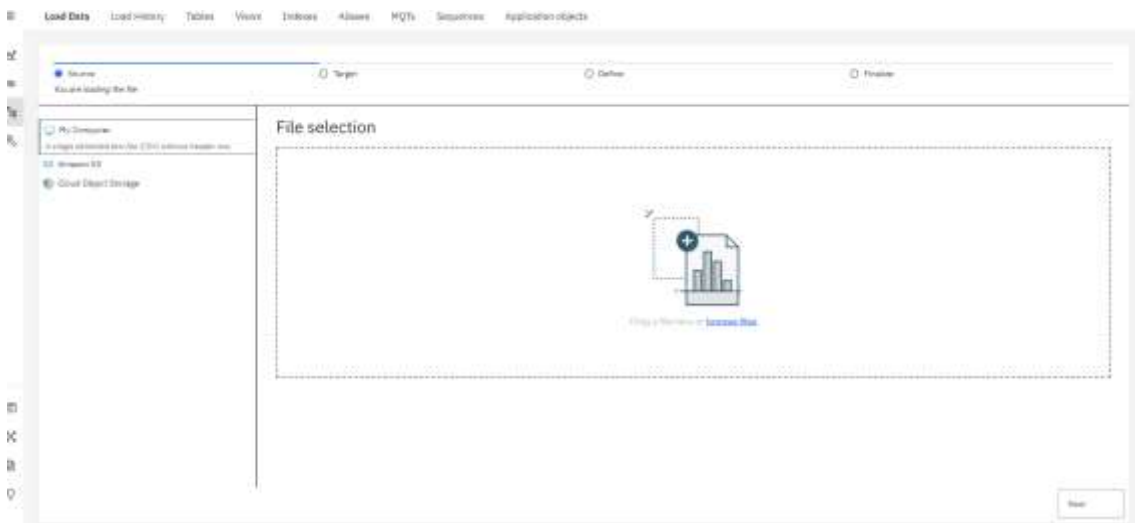
The steps below explain the process of loading data into the tables you created earlier in exercise 1.

- Download the 5 .csv files below to your local computer:
  - [Departments.csv](#)
  - [Employees.csv](#)
  - [Jobs.csv](#)
  - [Locations.csv](#)
  - [JobsHistory.csv](#)

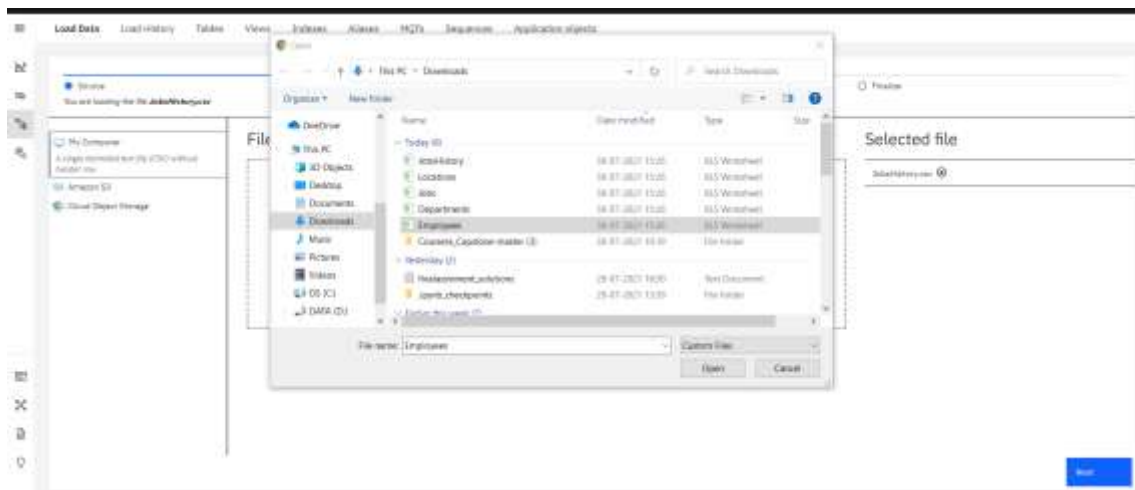
2. In the Db2 Console, from the 3-bar menu icon in the top left corner, click **Load**, and then select **Load Data**.



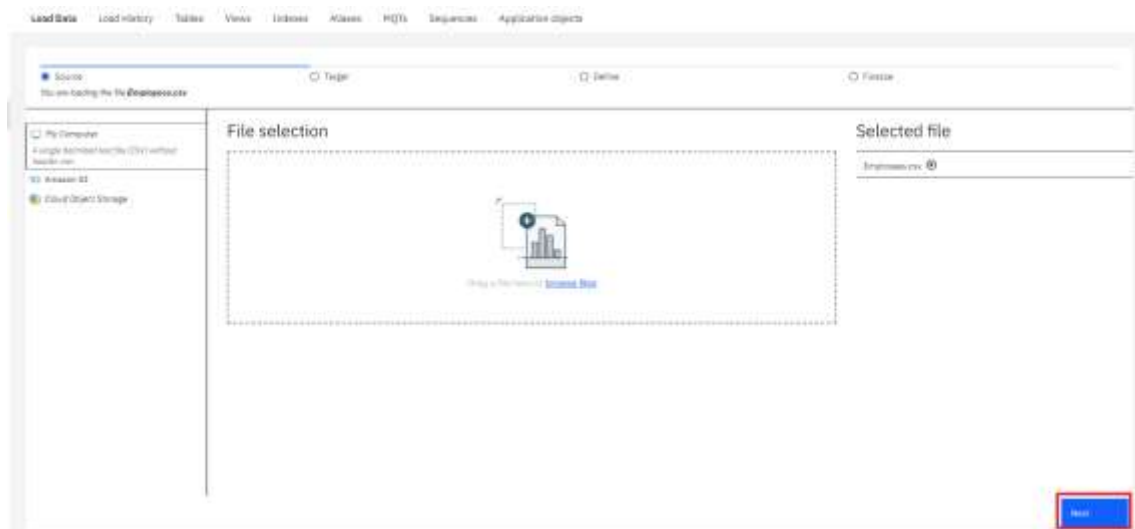
3. On the **Load Data** page that opens, ensure **My Computer** is selected as the source. Click on the **browse files** link.



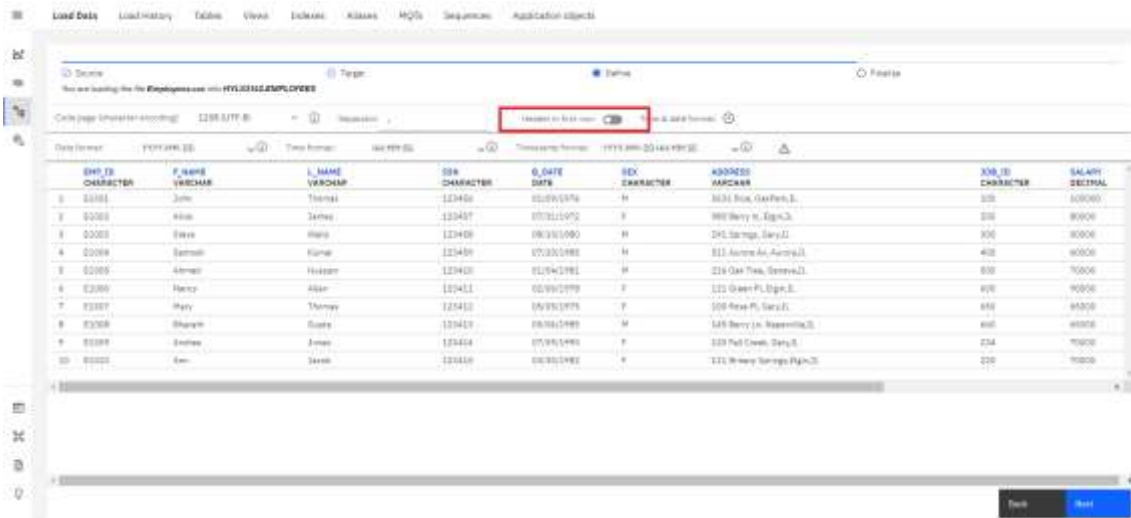
4. Choose the file **Employees.csv** that you downloaded to your computer and click **Open**.



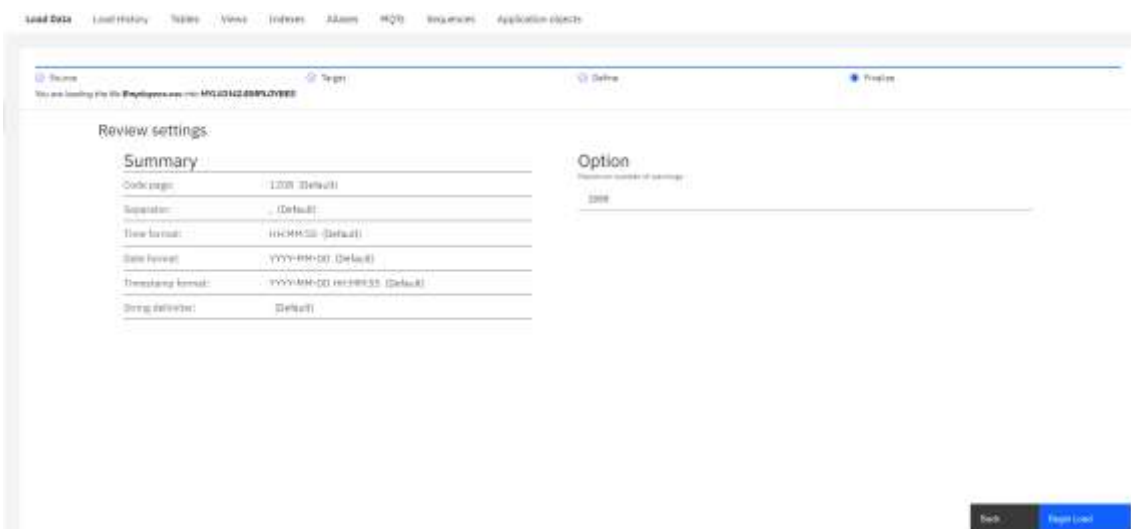
- Once the File is selected, click **Next** in the bottom right corner.



- Select the schema for your Db2 Userid (the one where you created the tables earlier). It will show all the tables that have been created in this schema previously, including the Employees table. Select the **EMPLOYEES** table, and in the new Table Definition tab that appears, choose **Overwrite table with new data** (note the warning message), then click **Next**. Select the **Employees** table.
- Since the source data files do not contain any rows with column labels, **turn off** the setting for **Header in first row**. Also, click on the down arrow next to **Date format** and choose **MM/DD/YYYY** since that is how the date is formatted in the source file.

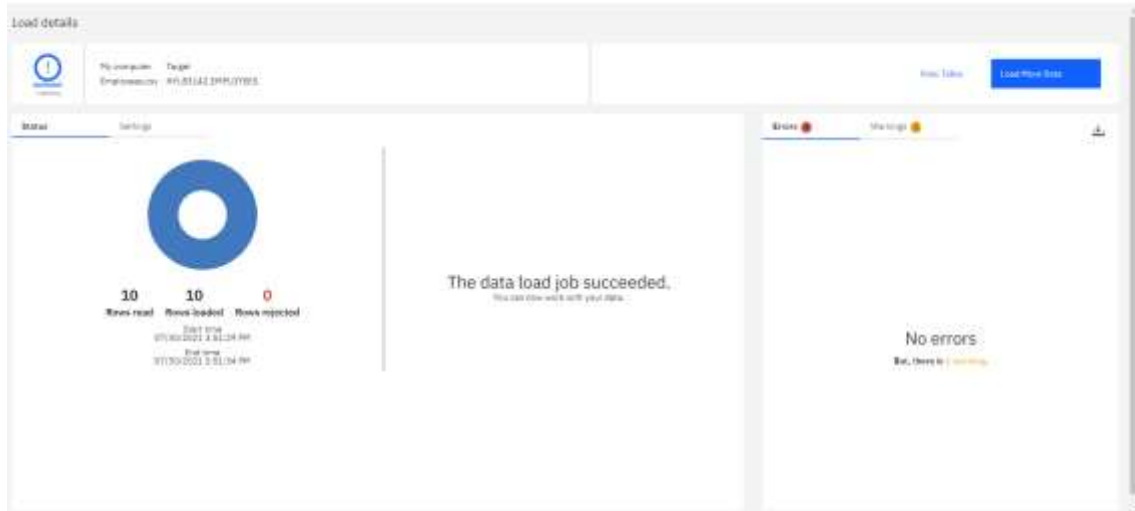


- Click **Next**. Review the load settings and click **Begin Load** in the bottom right corner.



- After loading has completed, you will notice that you were successful in loading all 10 rows of the Employees table. If there are any **Errors** or **Warnings**, you can see them on this screen.





10. Click on the **Tables** tab and then select the **EMPLOYEES** table and then click on **View data**.

The screenshot shows the 'Tables' tab in the database interface. The 'EMPLOYEES' table is selected. The table definition is shown on the right, listing columns and their data types. The 'View data' button is highlighted.

Table	Schema	Properties
EMPLOYEES	HVL01142	---

Column	Data type	Nullable	Length	Scale
EMP_ID	NUMBER	Y	4	0
EMP_NAME	VARCHAR2	Y	25	0
LAST_NAME	VARCHAR2	Y	25	0
DOB	DATE	Y	8	0
DOB_DATE	DATE	Y	8	0
DOB_TIME	DATE	Y	8	0
ADDRESS	VARCHAR2	Y	25	0
PHONE	NUMBER	Y	15	0
PHONE_EXTENSION	NUMBER	Y	15	0
PHONE_EXTENSION_2	NUMBER	Y	15	0
PHONE_EXTENSION_3	NUMBER	Y	15	0

11. Now you can view the table data.

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

HYLB3142.EMPLOYEES

Export to CSV

EMP_ID	F_NAME	L_NAME	SSN	H_DATE	SEX	ADDRESS	JOB_ID	SALARY	MANAGER_ID	GRP_ID
1001	John	Watson	101016	2016-01-01	M	1631 Waco, San Francisco, CA	100	10000.00	10001	1
1002	Alex	Turner	101017	1978-07-28	F	989 Henry St, San Francisco, CA	230	9000.00	10002	1
1003	Steve	Wales	101018	1998-08-10	M	2001 San Diego, San Diego, CA	230	9000.00	10003	1
1004	Deborah	Rump	101019	1980-07-07	M	9211 Aurora Dr, Aurora, IL	490	9000.00	10004	1
1005	Albert	Whalen	101020	1985-01-04	M	218 Oak Tree, Geneva, IL	1000	10000.00	10005	1
1006	Marina	Abel	101021	1979-02-04	F	6311 Green Pl, San Francisco, CA	490	9000.00	10006	1
1007	Phyllis	Wheeler	101022	1976-09-09	F	1000 Howe Pl, San Francisco, CA	490	9000.00	10007	1
1008	Shelley	Stearns	101023	1988-05-05	M	5101 Henry St, San Francisco, CA	490	9000.00	10008	1
1009	Adrian	Scott	101024	1976-07-05	M	1101 Park Creek, San Francisco, CA	234	9000.00	10009	1
1010	Amir	Debnath	101025	1980-03-05	F	1111 Browning, San Francisco, CA	230	9000.00	10010	1

12. Now it's your turn to load data to the remaining 4 tables of the HR database – **LOCATIONS**, **JOB\_HISTORY**, **JOBS**, and **DEPARTMENTS** from the remaining source files.

13. Click **Load More Data** and then follow the steps from **Step 3** above again to load the remaining 4 tables.

**IMPORTANT** Make sure you perform the steps in **Step 7** for each of the 4 remaining file loads.