Hands-on Lab: Create Tables using SQL Scripts and Load Data into Tables

Estimated time needed: 30 minutes

In this lab, you 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 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 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_IDENT	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

After completing this lab, you will be able to:

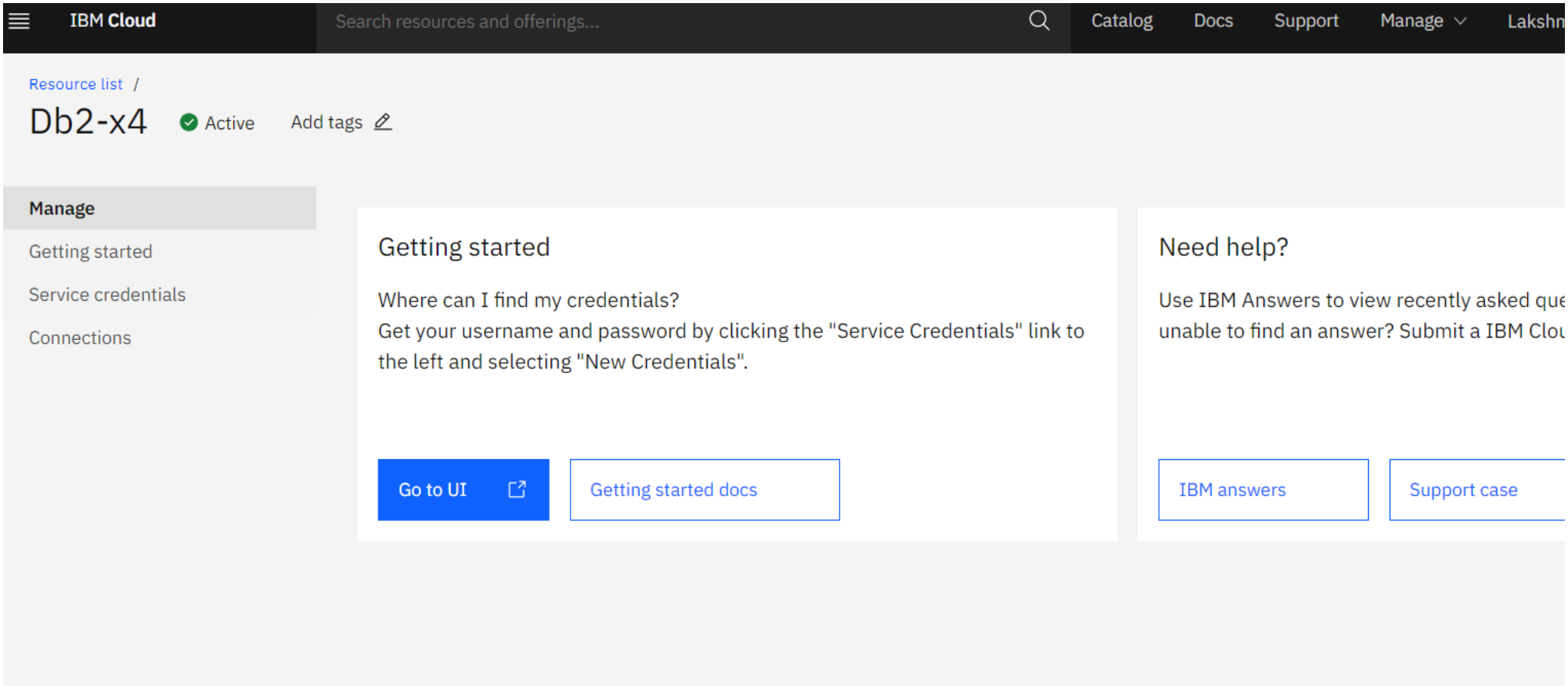
- Create tables using SQL scripts
- Load data into tables

> **NOTE : Make sure that you are using the CSV file and datasets from the same instruction file.**

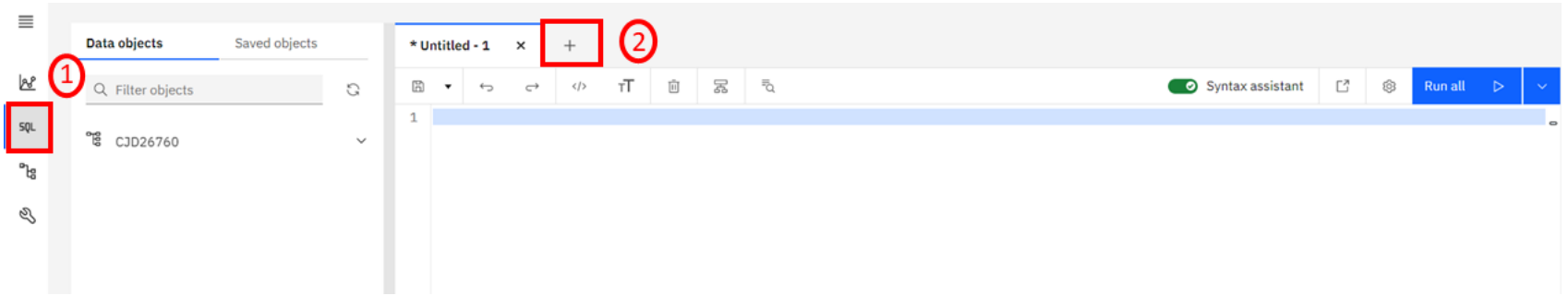
Exercise 1: Create tables using SQL scripts

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.

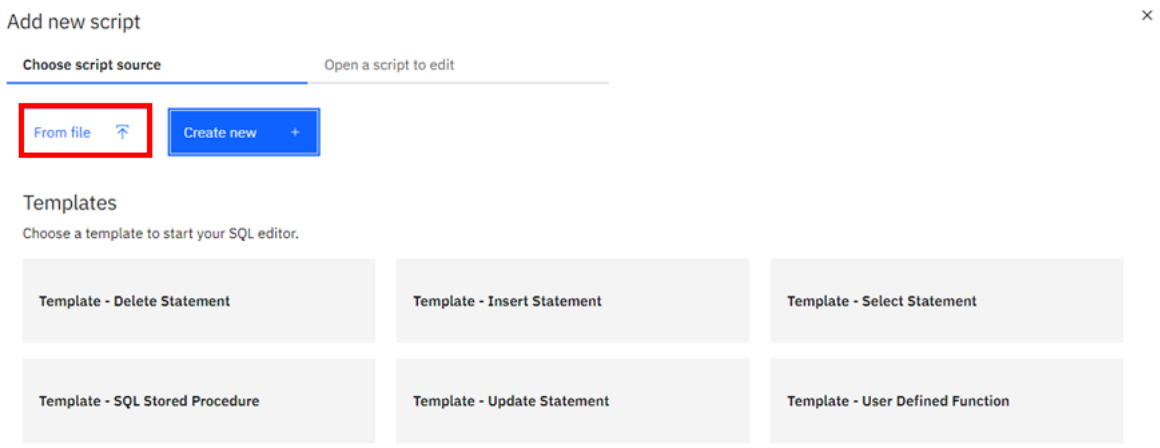
1. Download the script file to your computer:
    - HR_Database_Create_Tables_Script.sql
2. Login to IBM Cloud and go to the Resource List where you can find the Db2 service instance that you created in a previous lab under **Services** section. Click on the Db2-xx service. Next, click on **Go to UI**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



3. Click on **SQL** on the left corner and click the +icon

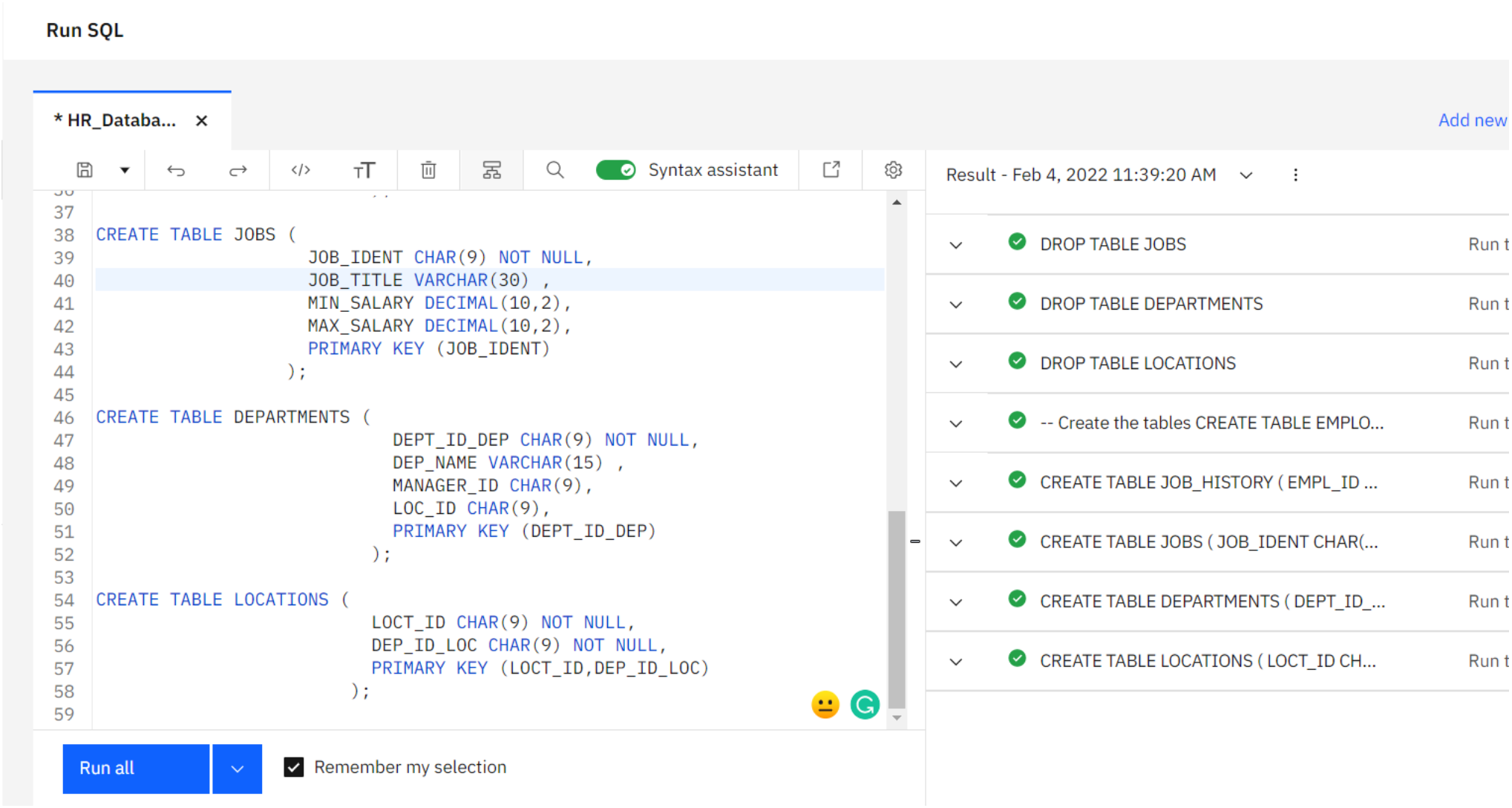


Select the **From File** option.

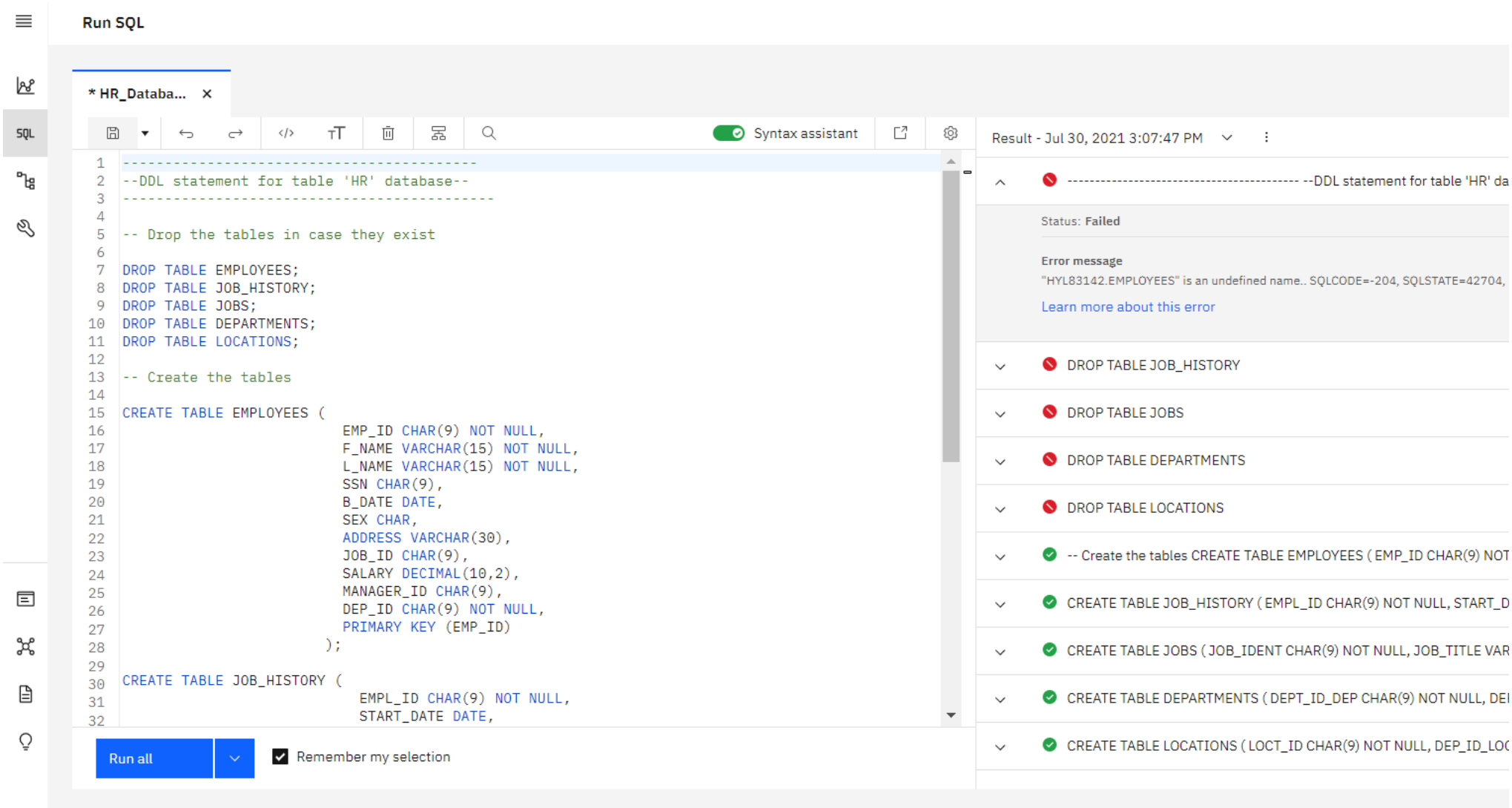


4. Locate the file **HR_Database_Create_Tables_Script.sql** that you downloaded to your computer earlier and open it.

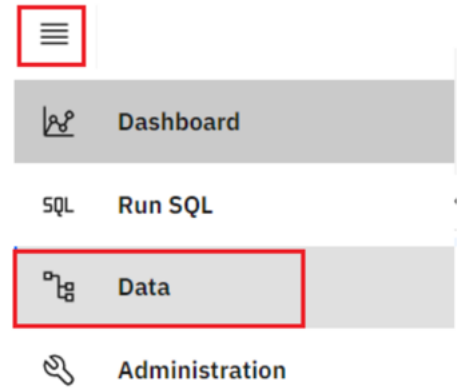
5. Once the statements are in the SQL Editor tool , you can run the queries against the database by selecting the **Run All** button.

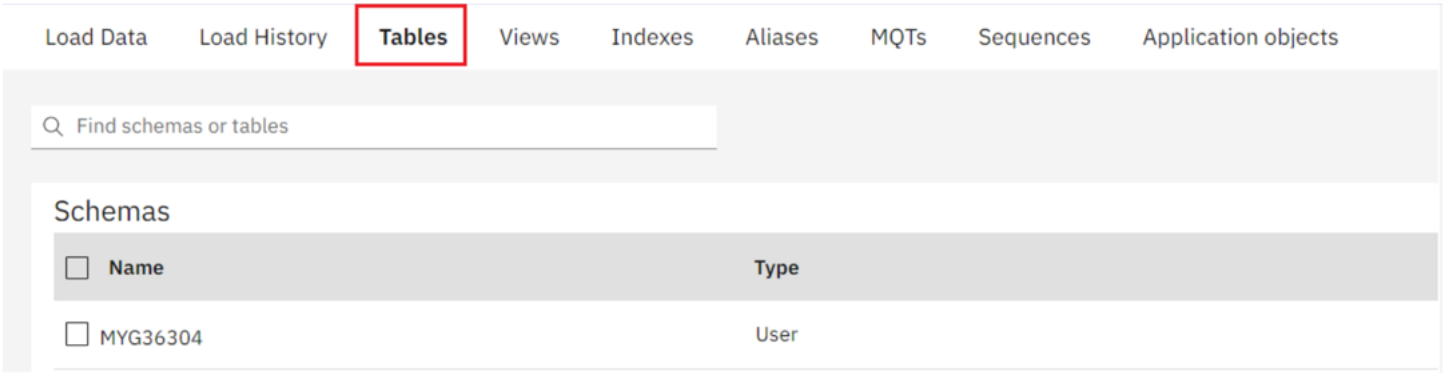


6. On the right side of the SQL editor window you will see a Result section. Clicking on a query in the Result section will show the execution details of the job like whether it ran successfully, or had any errors or warnings. Ensure your queries ran successfully and created all the tables.
    - **Note:** 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.

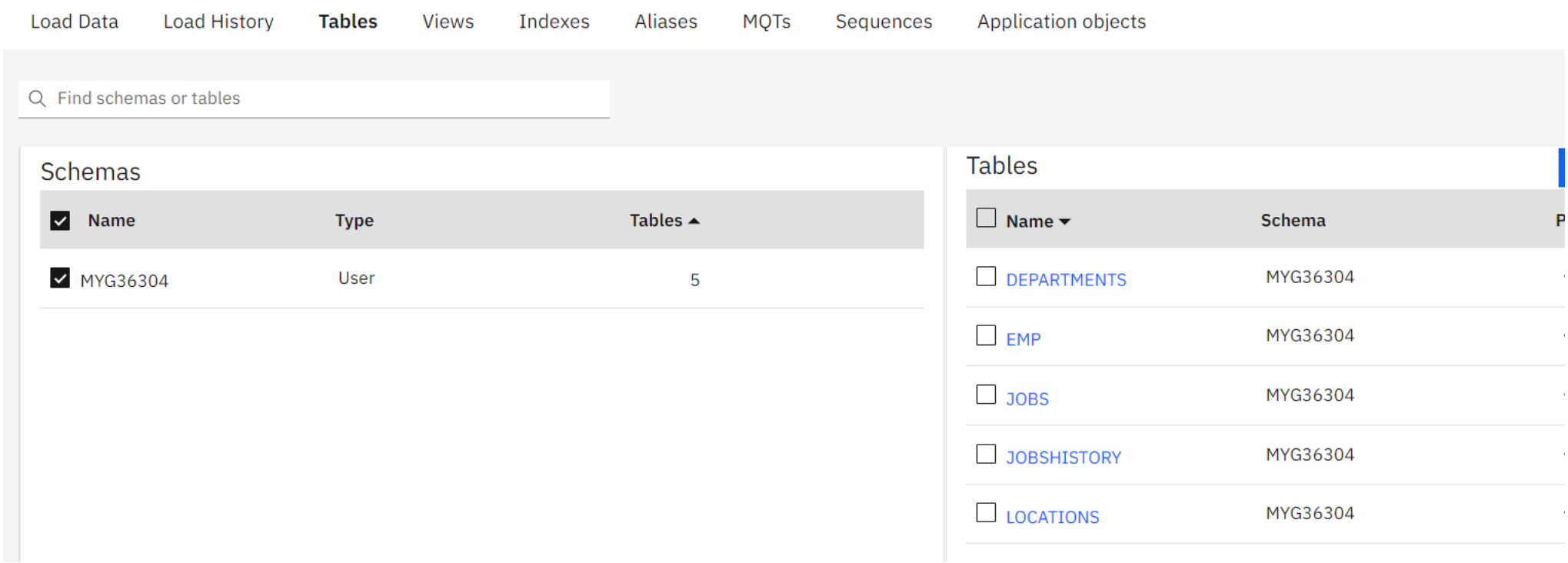


7. Now you can look at the tables you created. Click on the data icon and then click on Tables tab

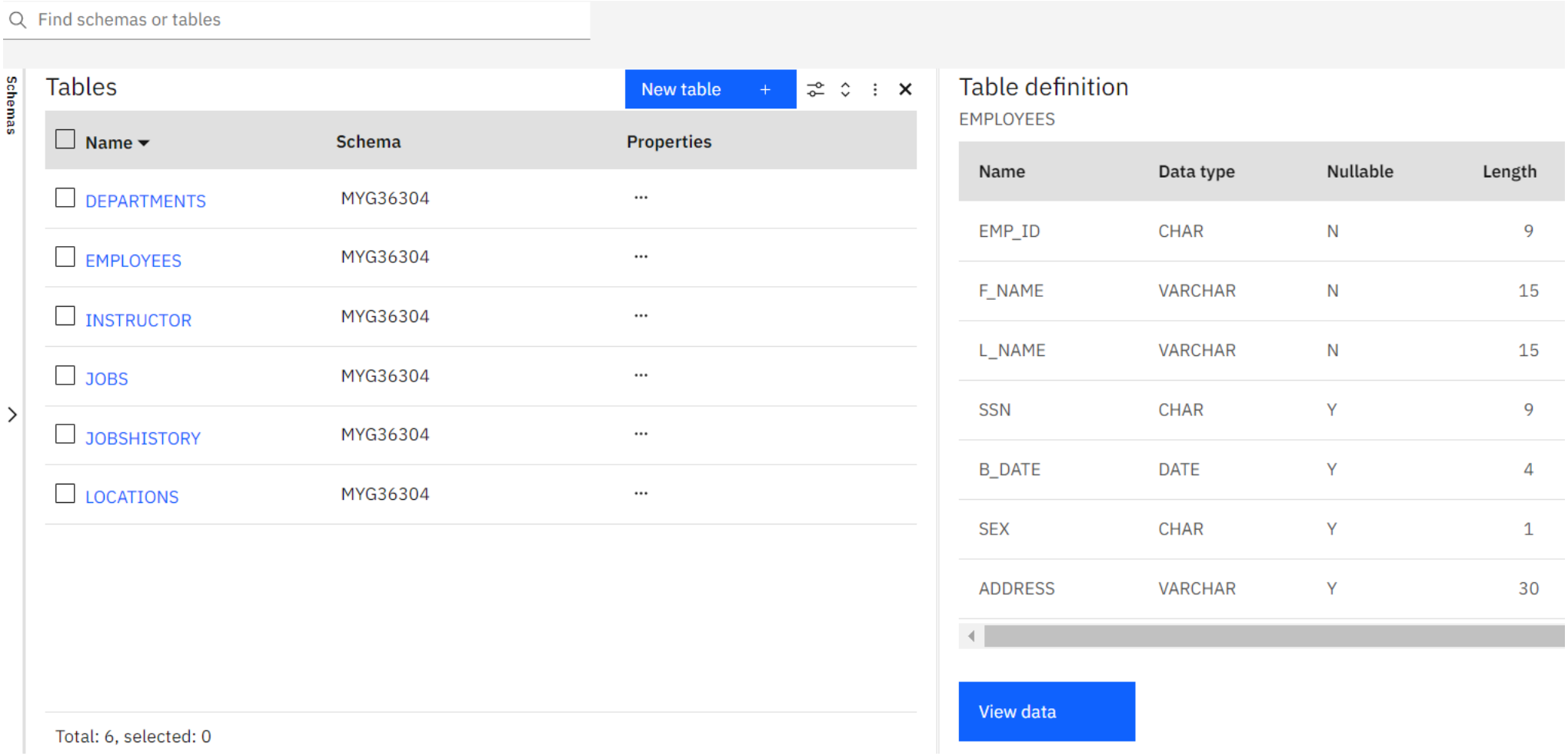




8. Select the Schema corresponding to your Db2 userid. It typically starts with 3 letters (not SQL) followed by 5 numbers (but will be different from the **MYG36304** example below). Then on the right side of the screen you should see the 5 newly created tables listed – DEPARTMENTS, EMPLOYEES, JOBS,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



9. 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.

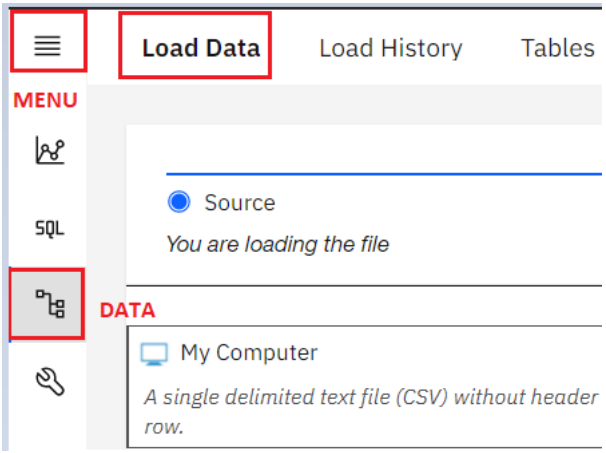
1. Download the 5 .csv files below to your local computer:

   - Departments.csv
   - Employees.csv
   - Jobs.csv
   - Locations.csv
   - JobsHistory.csv

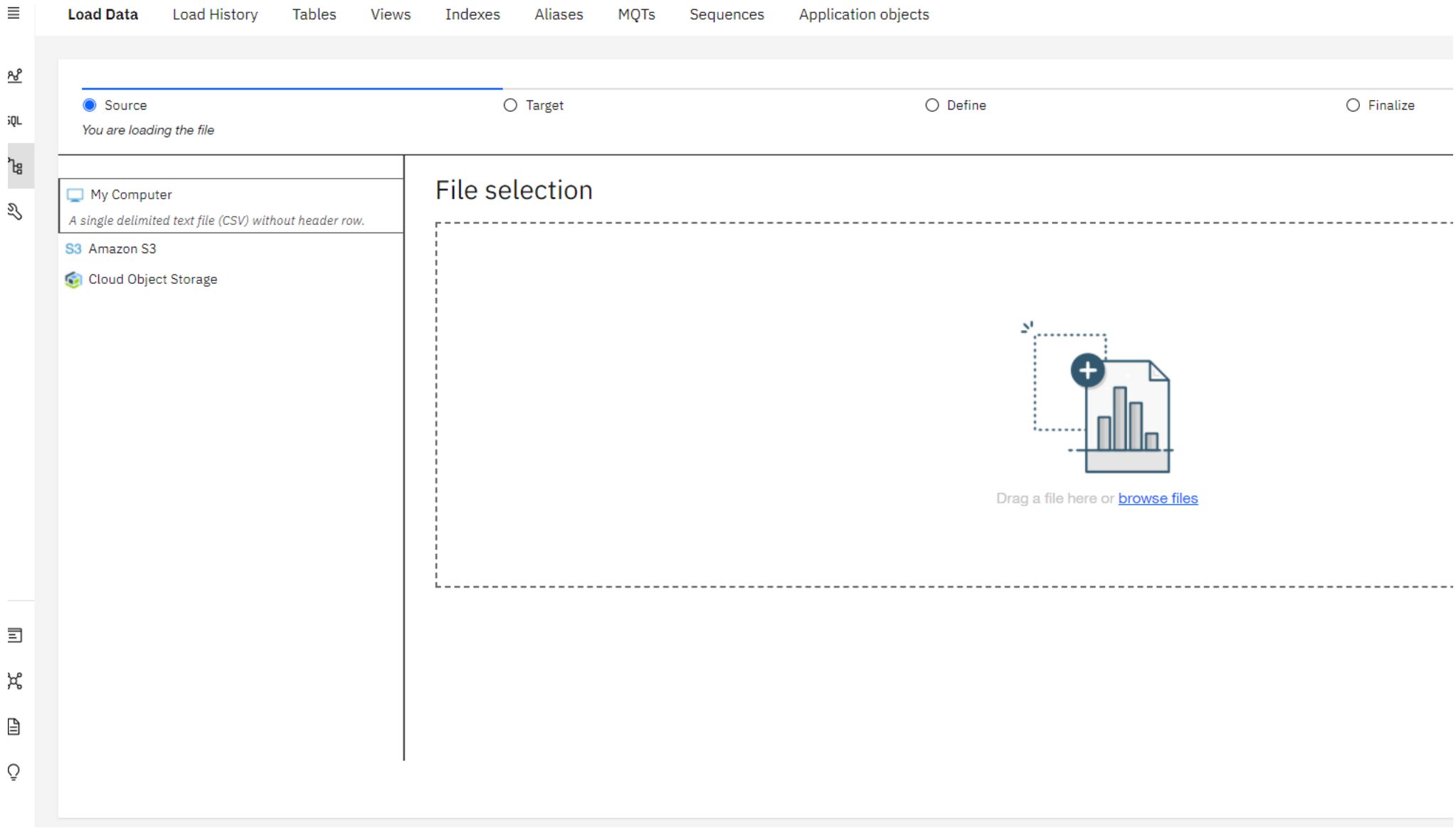
Note: For learners who are encountering issues with loading from .csv in Db2 using Firefox, they can download the .txt files and try with those:

- Departments.txt
- Employees.txt
- Jobs.txt
- Locations.txt
- JobsHistory.txt

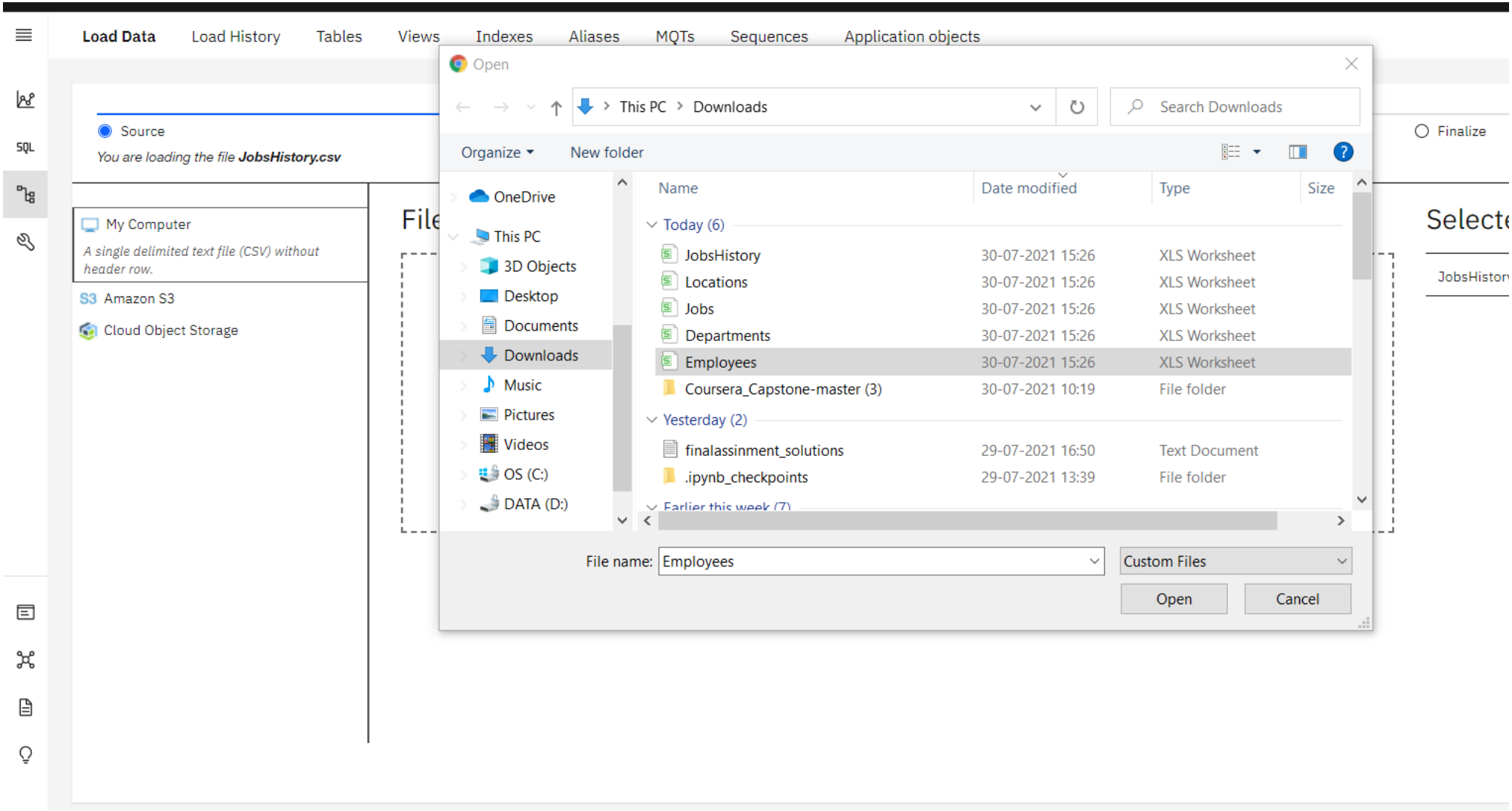
2. In the Db2 Console, from the 3-bar menu icon in the top left corner, click **Load**, and then select **Load Data**.



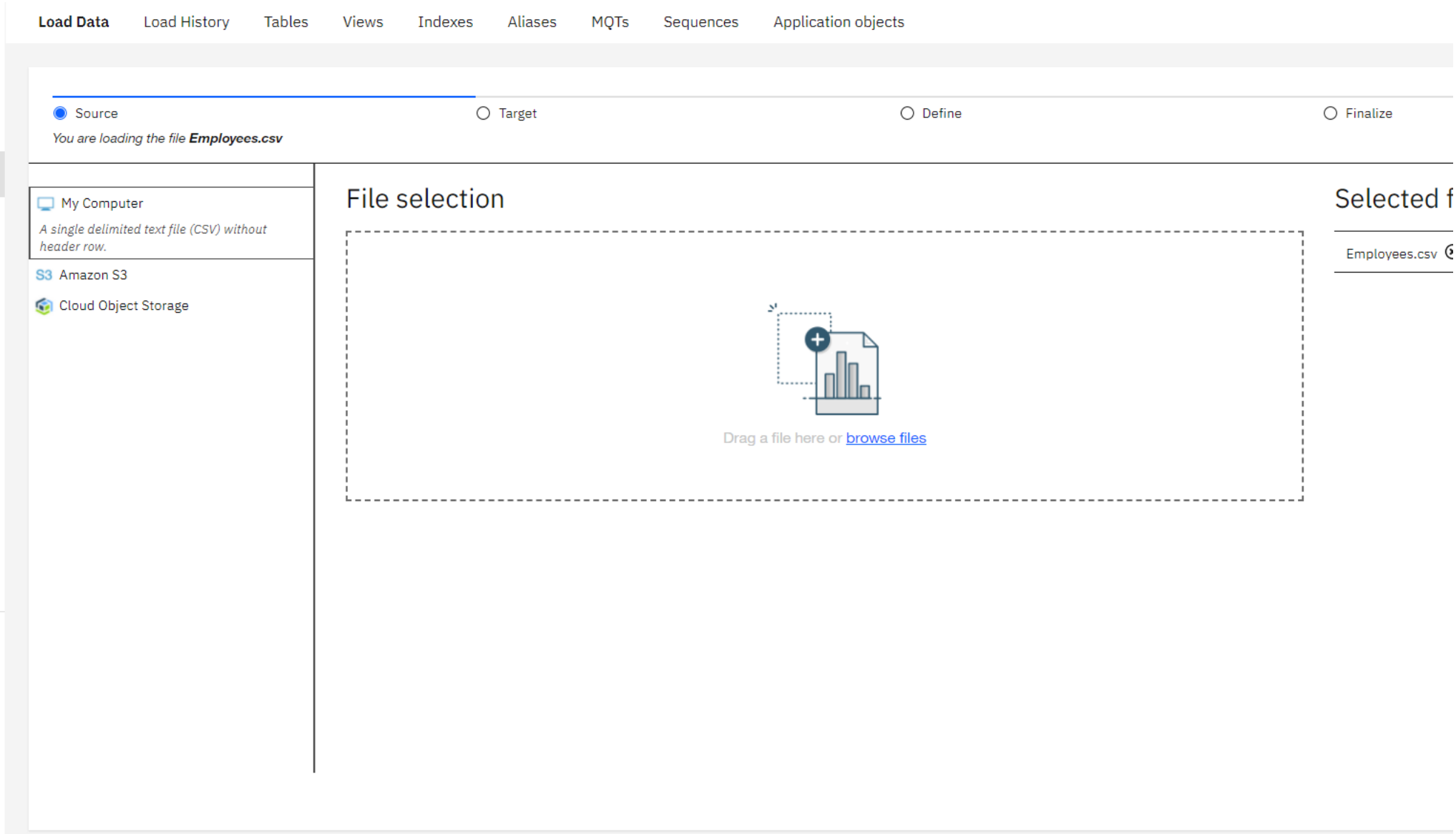
3. On the **Load Data** page that opens, ensure **My Computer** is selected as the source. Click on the **browse files** link.



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



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



6. 1. 1
   1. 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 **

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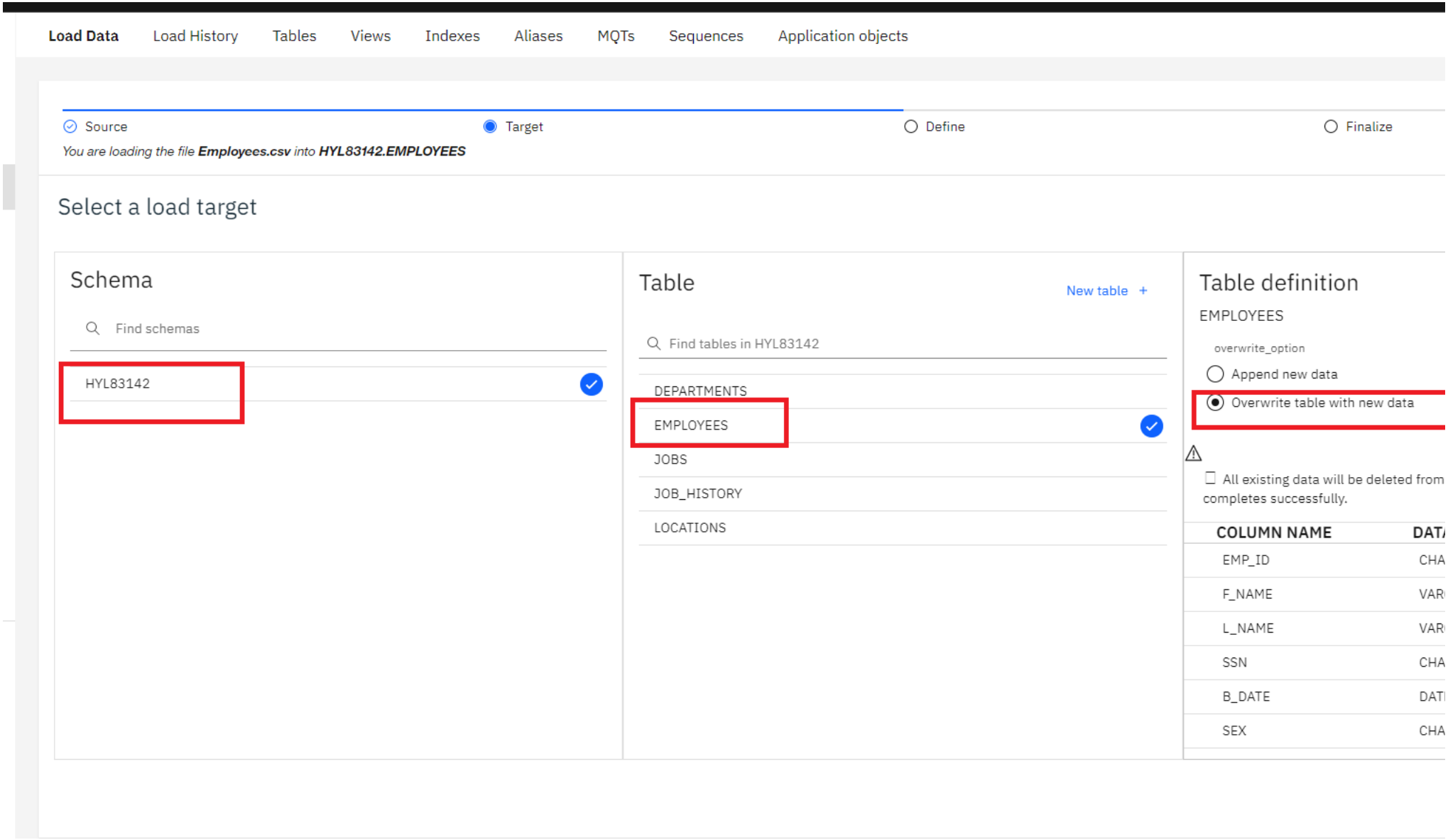
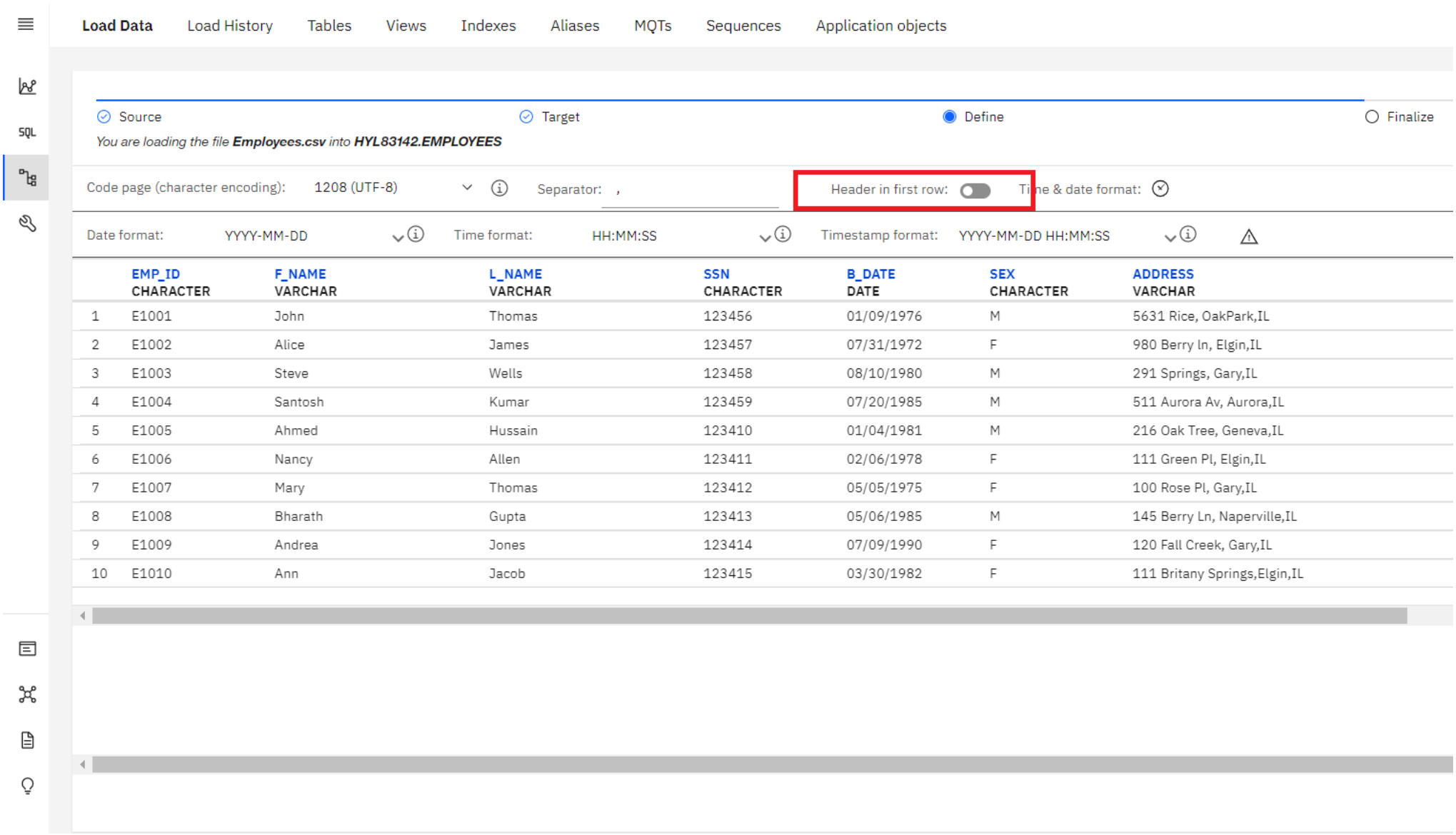
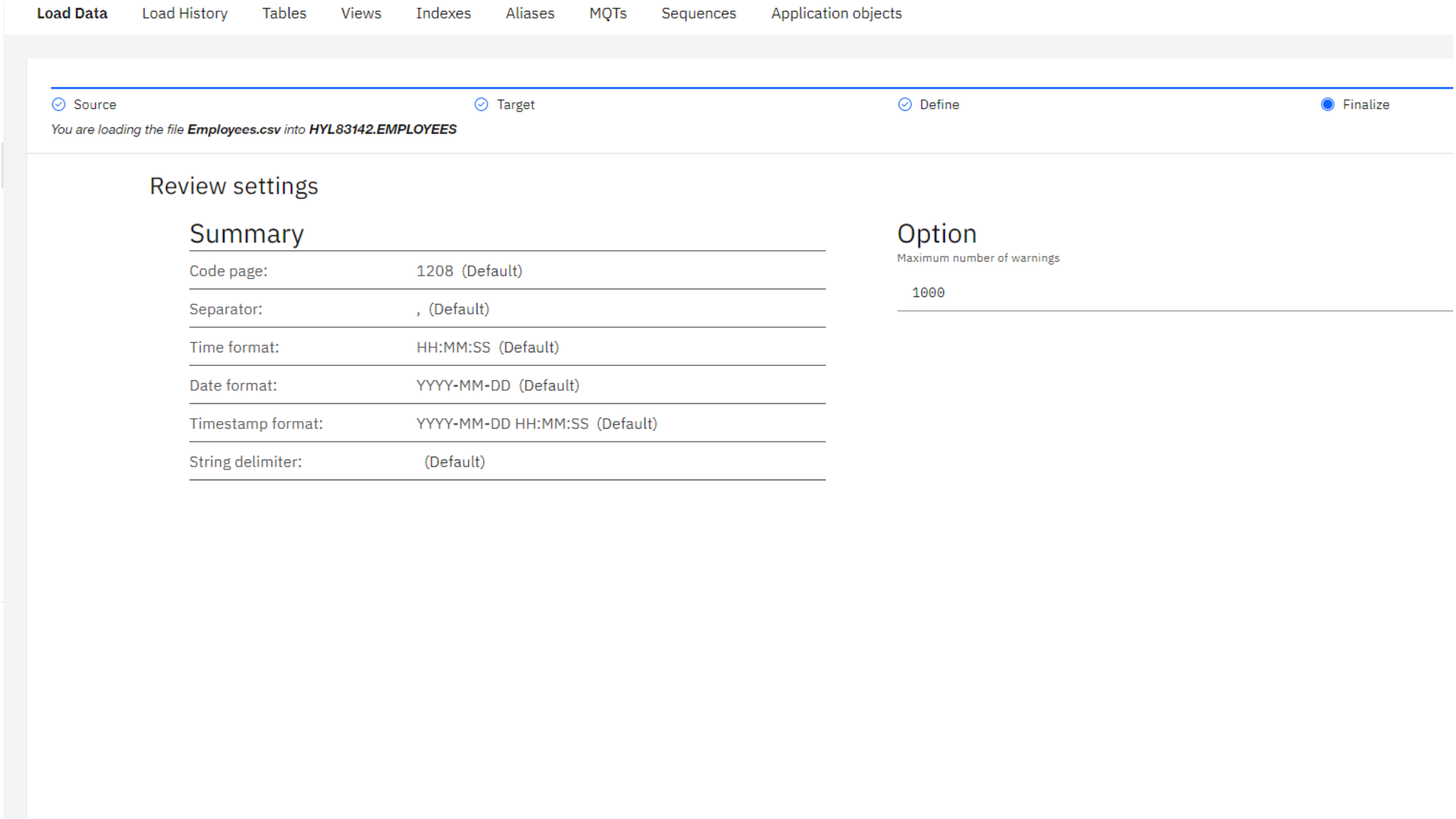


7. Since the source data files do not contain any rows with column labels, **turn off** the setting for **Header in first row**. Also, click on the down arrow next to **Date format** and choose **MM/DD/YYYY** since that is how the date is formatted in the source file.

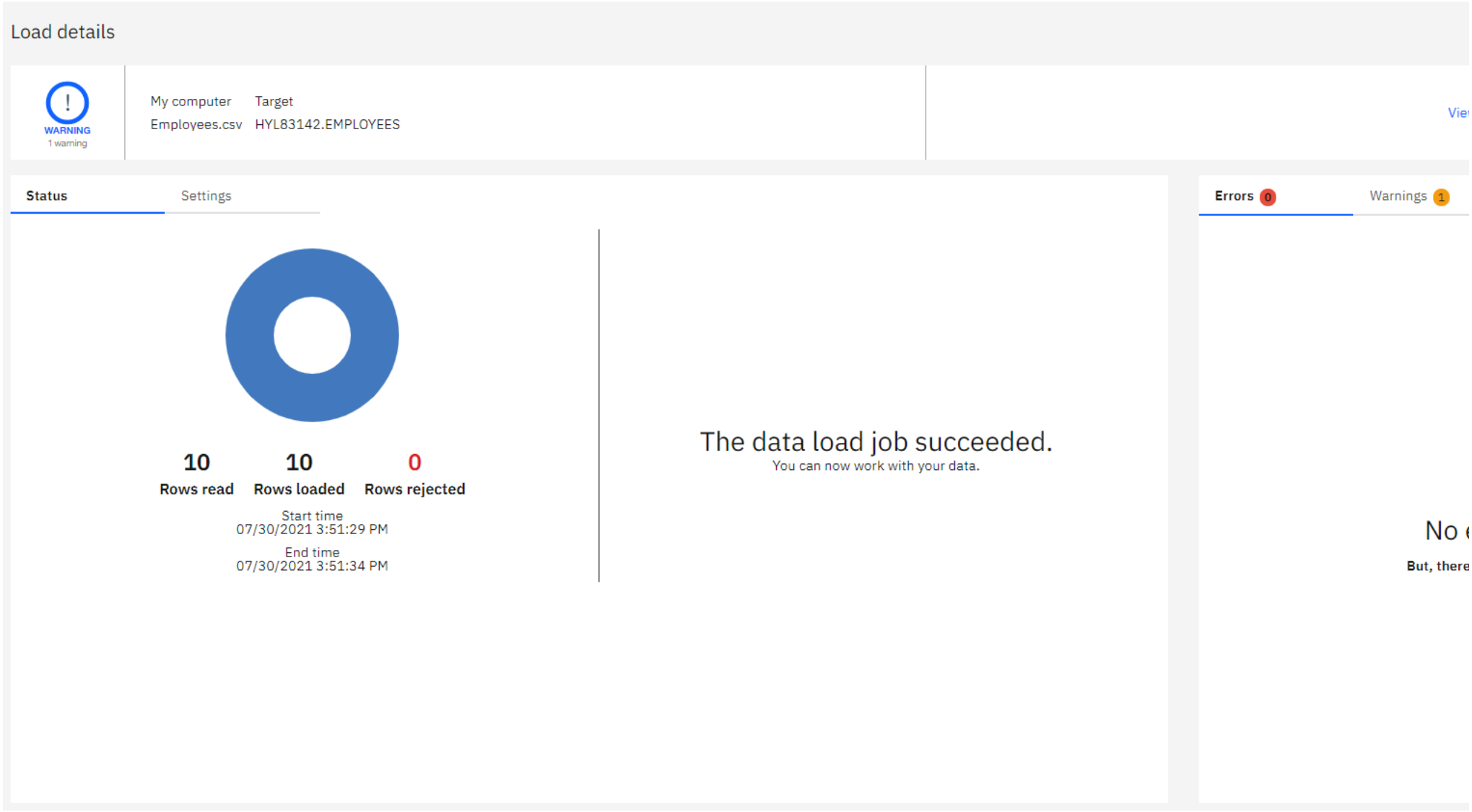


	EMP_ID CHARACTER	F_NAME VARCHAR	L_NAME VARCHAR	SSN CHARACTER	B_DATE DATE	SEX CHARACTER	ADDRESS VARCHAR
1	E1001	John	Thomas	123456	01/09/1976	M	5631 Rice, OakPark,IL
2	E1002	Alice	James	123457	07/31/1972	F	980 Berry ln, Elgin,IL
3	E1003	Steve	Wells	123458	08/10/1980	M	291 Springs, Gary,IL
4	E1004	Santosh	Kumar	123459	07/20/1985	M	511 Aurora Av, Aurora,IL
5	E1005	Ahmed	Hussain	123410	01/04/1981	M	216 Oak Tree, Geneva,IL
6	E1006	Nancy	Allen	123411	02/06/1978	F	111 Green Pl, Elgin,IL
7	E1007	Mary	Thomas	123412	05/05/1975	F	100 Rose Pl, Gary,IL
8	E1008	Bharath	Gupta	123413	05/06/1985	M	145 Berry Ln, Naperville,IL
9	E1009	Andrea	Jones	123414	07/09/1990	F	120 Fall Creek, Gary,IL
10	E1010	Ann	Jacob	123415	03/30/1982	F	111 Britany Springs,Elgin,IL

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



9. 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. 1. 1
    1. Click on the **Tables** tab and then select the **EMPLOYEES** table and then click on **View data**.

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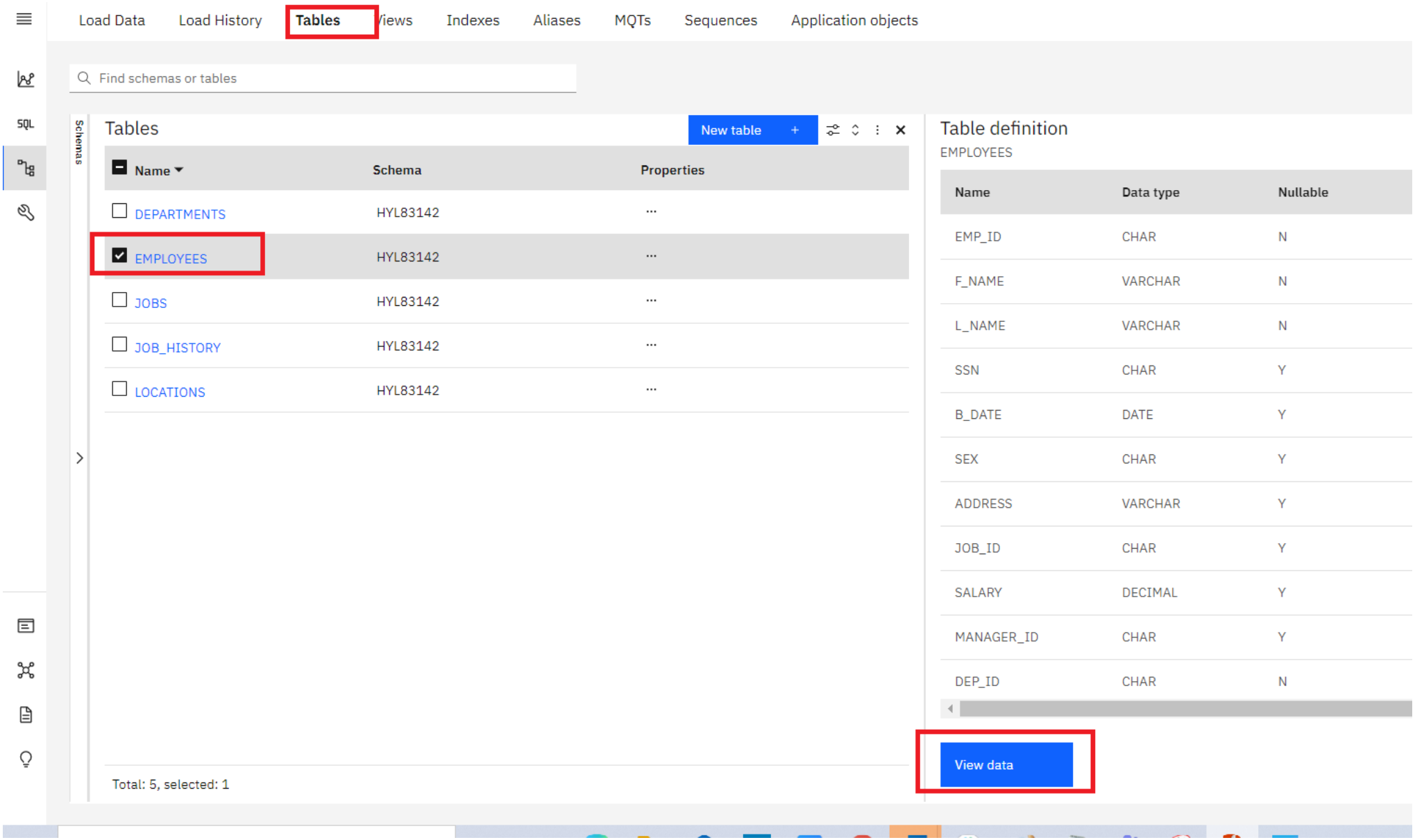
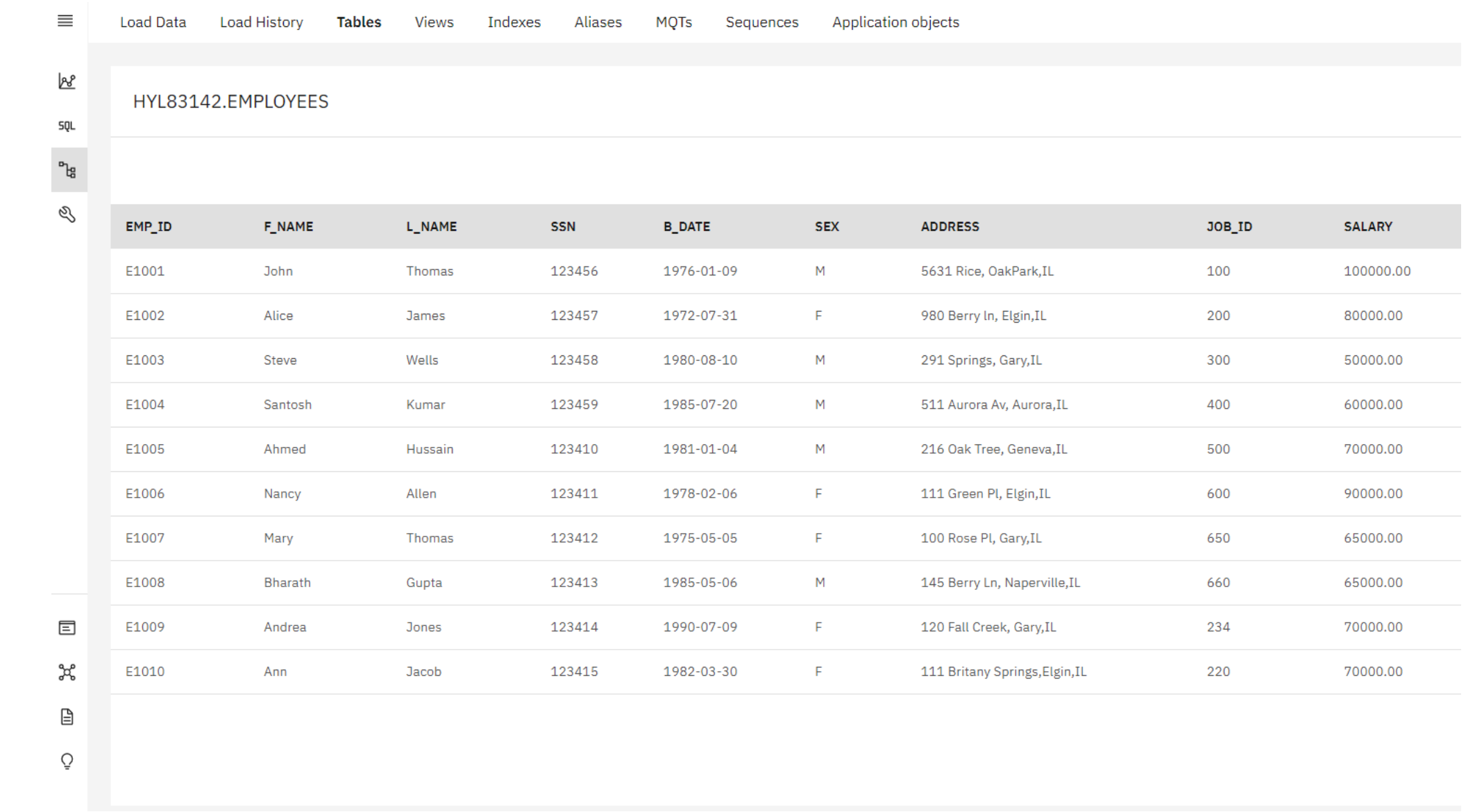


11. Now you can view the table data.



EMP_ID	F_NAME	L_NAME	SSN	B_DATE	SEX	ADDRESS	JOB_ID	SALARY
E1001	John	Thomas	123456	1976-01-09	M	5631 Rice, OakPark,IL	100	100000.00
E1002	Alice	James	123457	1972-07-31	F	980 Berry ln, Elgin,IL	200	80000.00
E1003	Steve	Wells	123458	1980-08-10	M	291 Springs, Gary,IL	300	50000.00
E1004	Santosh	Kumar	123459	1985-07-20	M	511 Aurora Av, Aurora,IL	400	60000.00
E1005	Ahmed	Hussain	123410	1981-01-04	M	216 Oak Tree, Geneva,IL	500	70000.00
E1006	Nancy	Allen	123411	1978-02-06	F	111 Green Pl, Elgin,IL	600	90000.00
E1007	Mary	Thomas	123412	1975-05-05	F	100 Rose Pl, Gary,IL	650	65000.00
E1008	Bharath	Gupta	123413	1985-05-06	M	145 Berry Ln, Naperville,IL	660	65000.00
E1009	Andrea	Jones	123414	1990-07-09	F	120 Fall Creek, Gary,IL	234	70000.00
E1010	Ann	Jacob	123415	1982-03-30	F	111 Britany Springs,Elgin,IL	220	70000.00

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.

Congratulations! You have completed this lab, and you are ready for the next topic.

Author(s)

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Changelog

Date	Version	Changed by	Change Description
2022-08-19	2.4	D.M.Naidu	Upload .txt files
2021-07-30	2.3	Lakshmi Holla	Updated screenshot of DB2
2021-07-08	2.2	Malika	Updated screenshot
2020-12-23	2.1	Steve Ryan	ID Review
2020-12-08	2.0	Sandip Saha Joy	Created revised version from DB0201EN
2020	1.0	Rav Ahuja	Created initial version