

Hands-on Lab: Create Tables using SQL Script 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.

Software Used in this Lab

In this lab, you will use [IBM Db2 Database](#). Db2 is a Relational Database Management System (RDBMS) from IBM that allows you to store and retrieve data efficiently.

To complete this lab you will utilize a Db2 database service on IBM Cloud. If you did not already complete this lab, 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 contains several tables called **EMPLOYEES**, **JOB_HISTORY**, **JOBS**, **DEPARTMENTS** and **LOCATIONS**. Each table has a few rows of sample data.

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. Software Developer	60000	80000
300	Jr. Software Developer	40000	60000

DEPARTMENTS

DEPT_ID	DEPT_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

LOC_ID	DEPT_ID
L0001	2
L0002	5
L0003	7

IBM Cloud Search resources and offerings... Catalog Docs Support

Resource list / Db2-x4 Active Add tags

Manage

- Getting started
- Service credentials
- Connections

Getting started

Where can I find my credentials?
Get your username and password by clicking the "Service Credentials" link to the left and selecting "New Credentials".

[Go to UI](#) [Getting started docs](#)




Need help?

Use IBM Answers to v
unable to find an answ

[IBM answers](#)

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

Data objects Saved objects

 **SQL**  

Filter objects

CJD26760

*Untitled - 1 x

1


Select the **From File** option.

Add new script

Choose script source

Open a script to edit

From file 

Create new 

Templates

Choose a template to start your SQL editor.

Template - Delete Statement

Template - Insert Statement

Template - Select Stat

Template - SQL Stored Procedure

Template - Update Statement

Template - User Defin

Run SQL

*HR_Databa... x

SQL editor toolbar: Save, Undo, Redo, Toggle SQL, Format, Run, Syntax assistant, Settings.

```

37
38 CREATE TABLE JOBS (
39     JOB_ID CHAR(9) NOT NULL,
40     JOB_TITLE VARCHAR(30) ,
41     MIN_SALARY DECIMAL(10,2) ,
42     MAX_SALARY DECIMAL(10,2),
43     PRIMARY KEY (JOB_ID)
44 );
45
46 CREATE TABLE DEPARTMENTS (
47     DEPT_ID CHAR(9) NOT NULL,
48     DEPT_NAME VARCHAR(15) ,
49     MANAGER_ID CHAR(9),
50     LOC_ID CHAR(9),
51     PRIMARY KEY (DEPT_ID)
52 );
53
54 CREATE TABLE LOCATIONS (
55     LOC_ID CHAR(9) NOT NULL,
56     DEPT_ID CHAR(9) NOT NULL,
57     PRIMARY KEY (LOC_ID,DEPT_ID)
58 );
59

```

Run all [v] ☒ Remember my selection

Result - Feb 4, 2022 11:39:20 AM

- ✓ DROP TABLE JOBS
- ✓ DROP TABLE DEPARTMENTS
- ✓ DROP TABLE LOCATIONS
- ✓ -- Create the tables CREATE T
- ✓ CREATE TABLE JOB_HISTORY
- ✓ CREATE TABLE JOBS (JOB_ID
- ✓ CREATE TABLE DEPARTMENT
- ✓ CREATE TABLE LOCATIONS (L

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 you the result of the query, job like whether it ran successfully, or had any errors or warnings. Ensure your queries ran successfully and

- **Note:** You may see several errors before the successful creation of the tables. These errors relate to the version of these tables. You can ignore these errors.

Run SQL

*HR_Databa... x

SQL editor toolbar: Save, Undo, Redo, Toggle SQL, Format, Run, Syntax assistant, Settings.

```

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 [v] ☒ Remember my selection

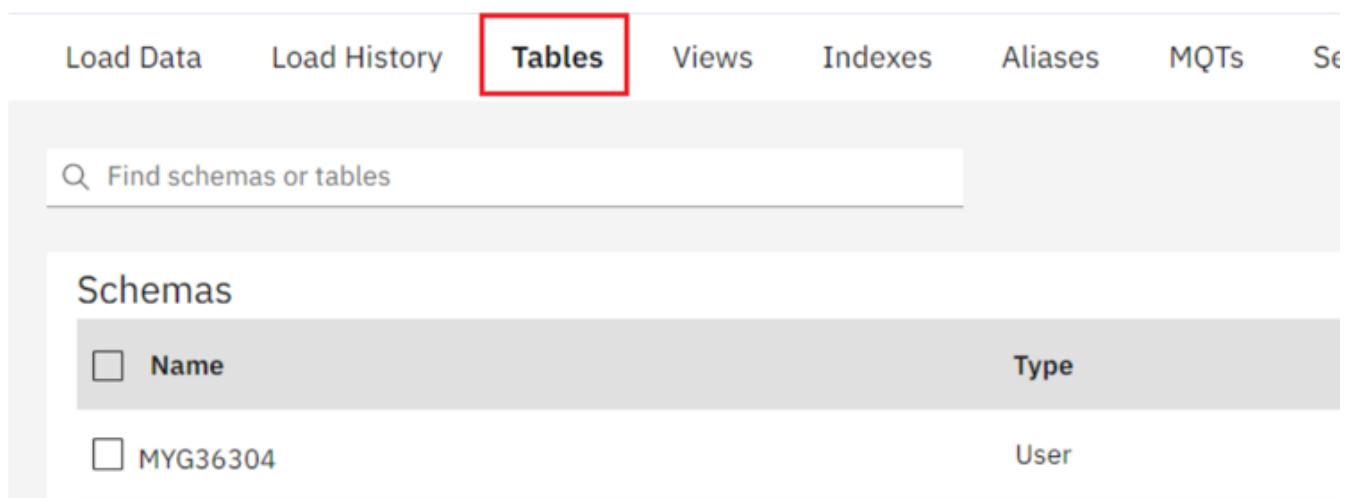
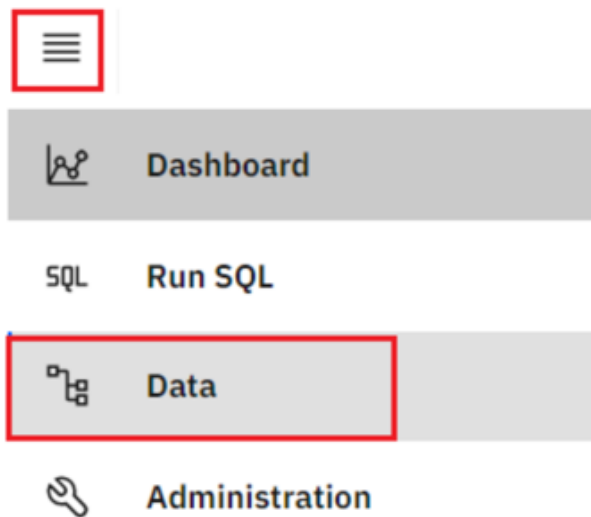
Result - Jul 30, 2021 3:07:47 PM

Status: Failed

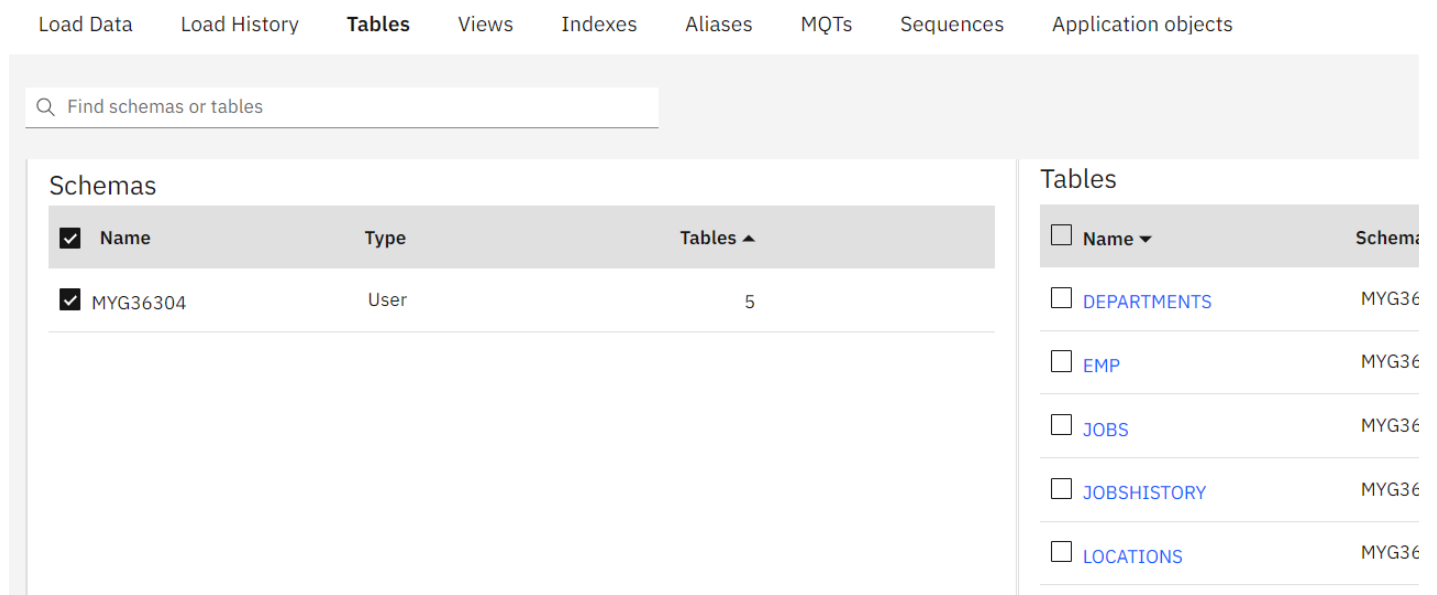
Error message
"HYL83142.EMPLOYEES" is an undefined name...

[Learn more about this error](#)

- ✗ DROP TABLE JOB_HISTORY
- ✗ DROP TABLE JOBS
- ✗ DROP TABLE DEPARTMENTS
- ✗ DROP TABLE LOCATIONS
- ✓ -- Create the tables CREATE TABLE EMP
- ✓ CREATE TABLE JOB_HISTORY (EMPL_I
- ✓ CREATE TABLE JOBS (JOB_ID CHA
- ✓ CREATE TABLE DEPARTMENTS (DEPT_
- ✓ CREATE TABLE LOCATIONS (LOC_ID C



8. Select the Schema corresponding to your Db2 userid. It typically starts with 3 letters (not SQL) followed by the **MYG36304** example below). Then on the right side of the screen you should see the 5 newly created tables: JOBS, JOB_HISTORY and LOCATIONS (plus any other tables you may have created in previous labs e.g. PET).



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. 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.

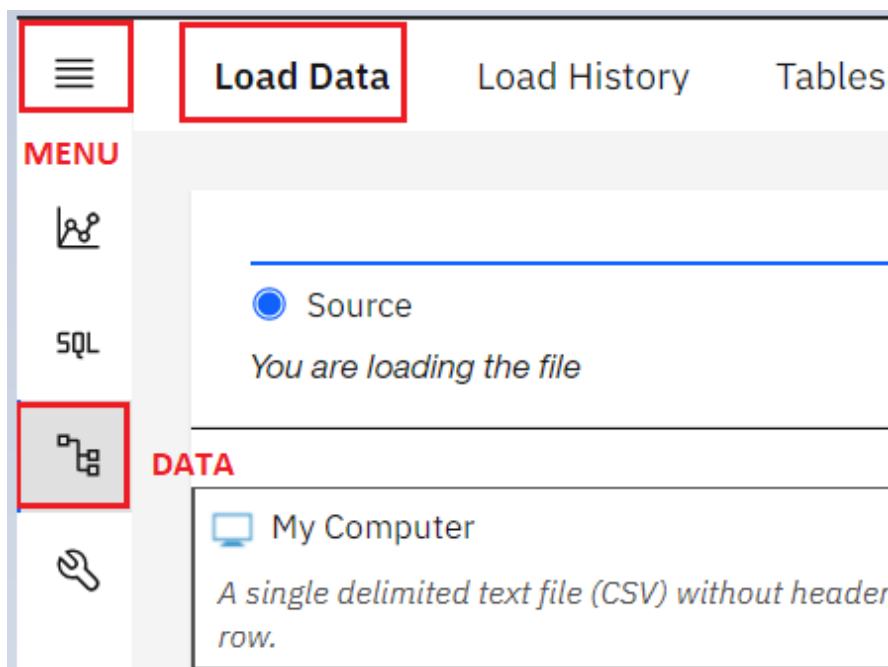
1. Download the 5 .csv files below to your local computer:

- [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 .txt files instead.

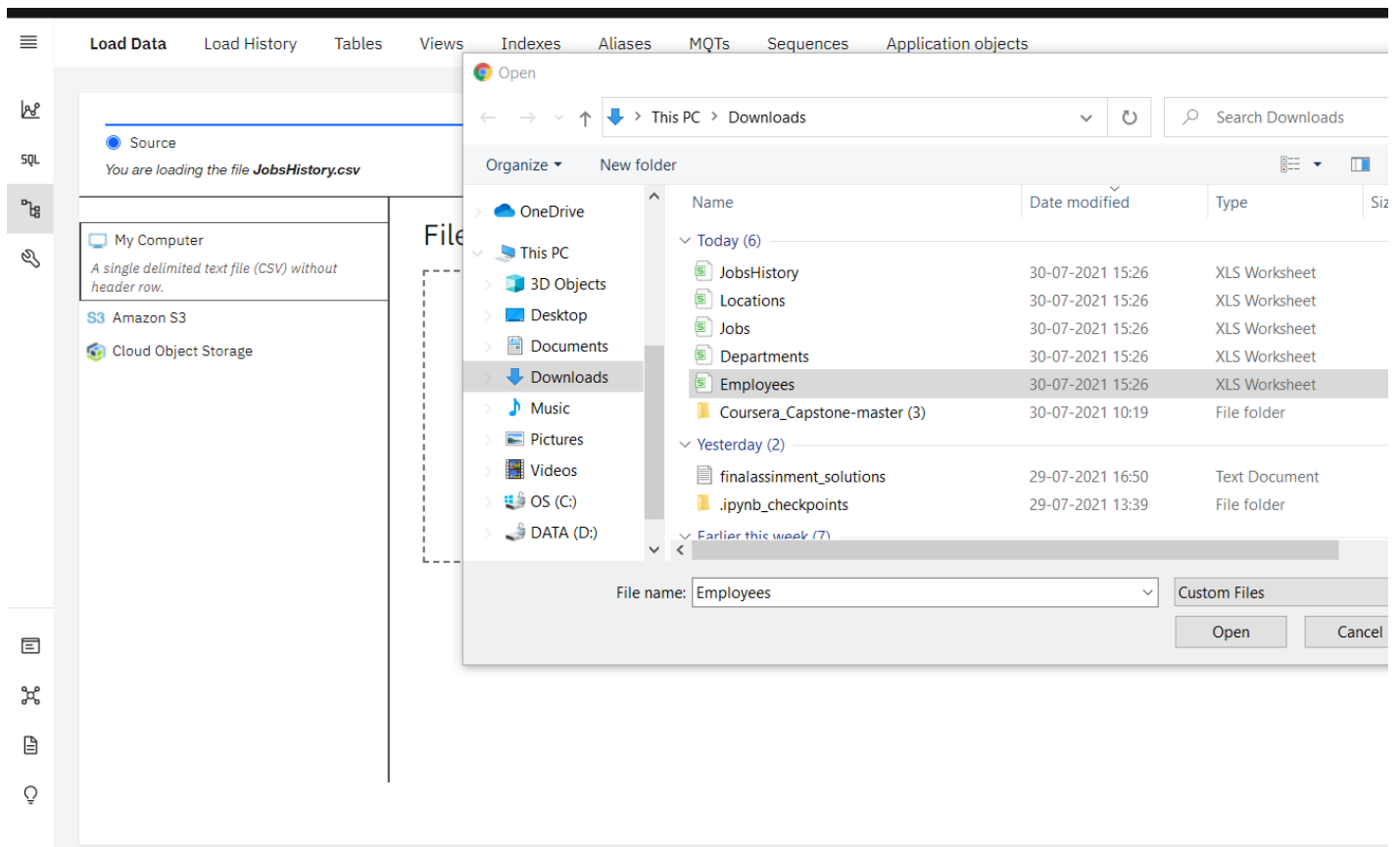
- [Departments.txt](#)
- [Employees.txt](#)
- [Jobs.txt](#)
- [Locations.txt](#)
- [JobsHistory.txt](#)

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

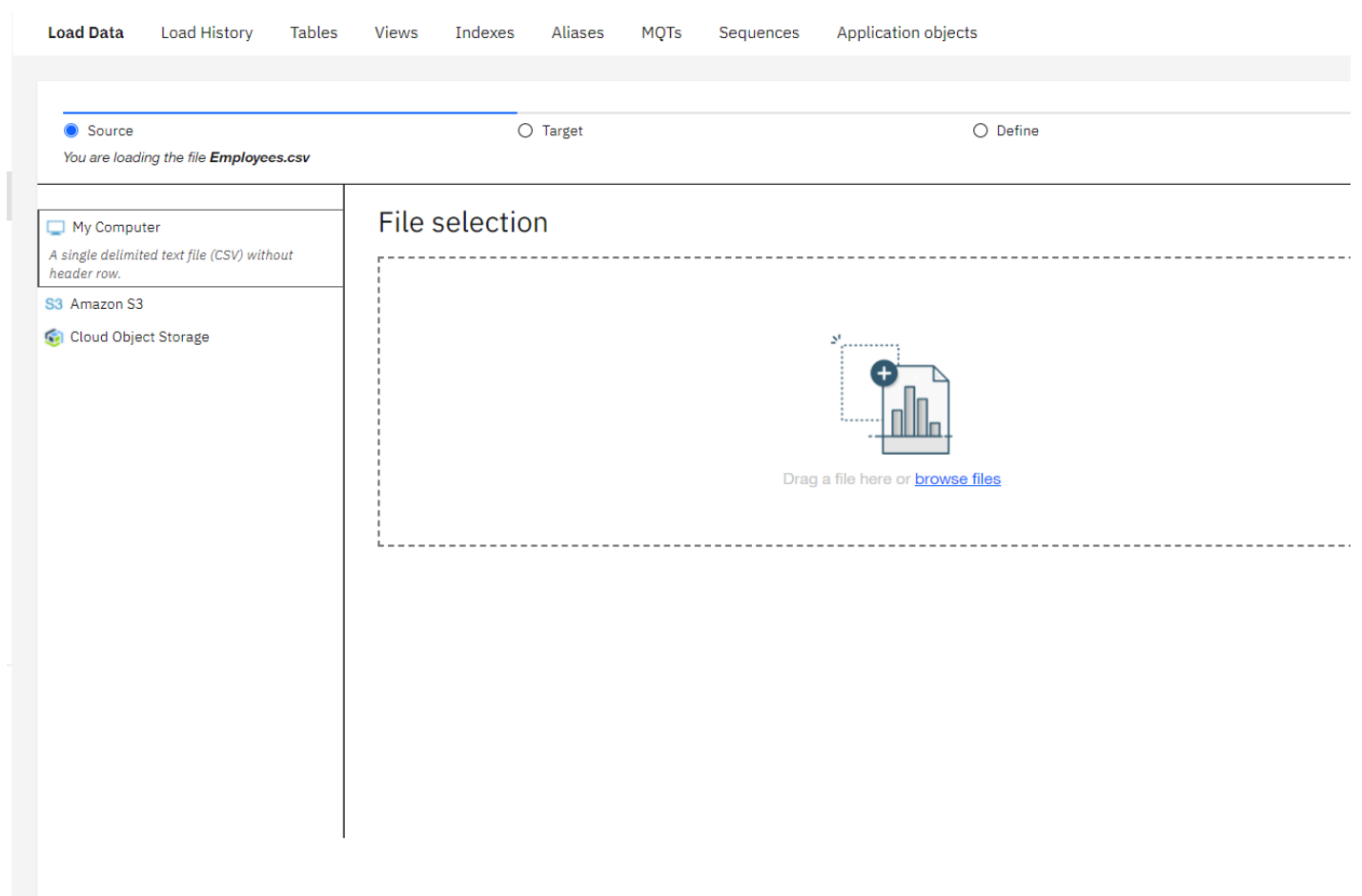


3. On the **Load Data** page that opens, ensure **My Computer** is selected as the source. Click on the **browse** file





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



6. Select the schema for your Db2 Hybrid (the one where you created the tables earlier).

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

Source Target Define

You are loading the file **Employees.csv** into **HYL83142.EMPLOYEES**

Select a load target

Schema

Find schemas

HYL83142

Table

Find tables in HYL83142

DEPARTMENTS

EMPLOYEES

JOBS

JOB_HISTORY

LOCATIONS

Table

EMPLOYEES

overwr

○ Appl

● Over

All e

comple

COLI

EMP

F_NA

L_NA

SSN

B_D

SEX

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

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

Source Target Define

You are loading the file **Employees.csv** into **HYL83142.EMPLOYEES**

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

Date format: YYYY-MM-DD Time format: HH:MM:SS Timestamp format: YYYY-MM-DD HH:MM:SS

	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,
5	E1005	Ahmed	Hussain	123410	01/04/1981	M	216 Oak Tree, Geneva,
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
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,Elg

Source

Target

Define

You are loading the file **Employees.csv** into **HYL83142.EMPLOYEES**

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

9. After loading has completed, you will notice that you were successful in loading all 10 rows of the Employee you can see them on this screen.

Load details



My computer Target
Employees.csv HYL83142.EMPLOYEES

Status

Settings

Errors



10 **10** **0**
Rows read Rows loaded Rows rejected

Start time
07/30/2021 3:51:29 PM
End time
07/30/2021 3:51:34 PM

The data load job succeeded.

You can now work with your data.

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

Find schemas or tables

Tables [New table](#) +

Name	Schema	Properties
<input type="checkbox"/> DEPARTMENTS	HYL83142	...
<input checked="" type="checkbox"/> EMPLOYEES	HYL83142	...
<input type="checkbox"/> JOBS	HYL83142	...
<input type="checkbox"/> JOB_HISTORY	HYL83142	...
<input type="checkbox"/> LOCATIONS	HYL83142	...

Total: 5, selected: 1

Table definition
EMPLOYEES

Name	Data type
EMP_ID	CHAR
F_NAME	VARCHAR
L_NAME	VARCHAR
SSN	CHAR
B_DATE	DATE
SEX	CHAR
ADDRESS	VARCHAR
JOB_ID	CHAR
SALARY	DECIMAL
MANAGER_ID	CHAR
DEP_ID	CHAR

[View data](#)

11. Now you can view the table data.

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

HYL83142.EMPLOYEES

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