



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	NAME	LAST_NAME	FIRST_NAME	EMAIL	PHONE_NUMBER	JOB_ID	DEPT_ID	MANAGER_ID	EMP_ID
1000	John	Thomas		123456	555-123-4567	JOB1	DEPT1	1000	1
1001	Alice	Jones		123457	555-123-4568	JOB2	DEPT2	1000	2
1002	Steve	Martin		123458	555-123-4569	JOB3	DEPT3	1000	3
1003	David	Kim		123459	555-123-4570	JOB4	DEPT4	1000	4
1004	Pat	DeHaan		123460	555-123-4571	JOB5	DEPT5	1000	5
1005	Walter	Telfer		123461	555-123-4572	JOB6	DEPT6	1000	6
1006	Greg	Stevens		123462	555-123-4573	JOB7	DEPT7	1000	7
1007	John	Abel		123463	555-123-4574	JOB8	DEPT8	1000	8
1008	Lex	Deane		123464	555-123-4575	JOB9	DEPT9	1000	9
1009	Anna	Hartstein		123465	555-123-4576	JOB10	DEPT10	1000	10
1010	Mark	Walle		123466	555-123-4577	JOB11	DEPT11	1000	11
1011	Pat	Whalen		123467	555-123-4578	JOB12	DEPT12	1000	12
1012	Neena	Kochhar		123468	555-123-4579	JOB13	DEPT13	1000	13
1013	Lex	Deane		123469	555-123-4580	JOB14	DEPT14	1000	14
1014	Anna	Hartstein		123470	555-123-4581	JOB15	DEPT15	1000	15
1015	Mark	Walle		123471	555-123-4582	JOB16	DEPT16	1000	16
1016	Pat	Whalen		123472	555-123-4583	JOB17	DEPT17	1000	17
1017	Neena	Kochhar		123473	555-123-4584	JOB18	DEPT18	1000	18
1018	Lex	Deane		123474	555-123-4585	JOB19	DEPT19	1000	19
1019	Anna	Hartstein		123475	555-123-4586	JOB20	DEPT20	1000	20
1020	Mark	Walle		123476	555-123-4587	JOB21	DEPT21	1000	21
1021	Pat	Whalen		123477	555-123-4588	JOB22	DEPT22	1000	22
1022	Neena	Kochhar		123478	555-123-4589	JOB23	DEPT23	1000	23
1023	Lex	Deane		123479	555-123-4590	JOB24	DEPT24	1000	24
1024	Anna	Hartstein		123480	555-123-4591	JOB25	DEPT25	1000	25
1025	Mark	Walle		123481	555-123-4592	JOB26	DEPT26	1000	26
1026	Pat	Whalen		123482	555-123-4593	JOB27	DEPT27	1000	27
1027	Neena	Kochhar		123483	555-123-4594	JOB28	DEPT28	1000	28
1028	Lex	Deane		123484	555-123-4595	JOB29	DEPT29	1000	29
1029	Anna	Hartstein		123485	555-123-4596	JOB30	DEPT30	1000	30
1030	Mark	Walle		123486	555-123-4597	JOB31	DEPT31	1000	31
1031	Pat	Whalen		123487	555-123-4598	JOB32	DEPT32	1000	32
1032	Neena	Kochhar		123488	555-123-4599	JOB33	DEPT33	1000	33
1033	Lex	Deane		123489	555-123-4600	JOB34	DEPT34	1000	34
1034	Anna	Hartstein		123490	555-123-4601	JOB35	DEPT35	1000	35
1035	Mark	Walle		123491	555-123-4602	JOB36	DEPT36	1000	36
1036	Pat	Whalen		123492	555-123-4603	JOB37	DEPT37	1000	37
1037	Neena	Kochhar		123493	555-123-4604	JOB38	DEPT38	1000	38
1038	Lex	Deane		123494	555-123-4605	JOB39	DEPT39	1000	39
1039	Anna	Hartstein		123495	555-123-4606	JOB40	DEPT40	1000	40
1040	Mark	Walle		123496	555-123-4607	JOB41	DEPT41	1000	41
1041	Pat	Whalen		123497	555-123-4608	JOB42	DEPT42	1000	42
1042	Neena	Kochhar		123498	555-123-4609	JOB43	DEPT43	1000	43
1043	Lex	Deane		123499	555-123-4610	JOB44	DEPT44	1000	44
1044	Anna	Hartstein		123500	555-123-4611	JOB45	DEPT45	1000	45
1045	Mark	Walle		123501	555-123-4612	JOB46	DEPT46	1000	46
1046	Pat	Whalen		123502	555-123-4613	JOB47	DEPT47	1000	47
1047	Neena	Kochhar		123503	555-123-4614	JOB48	DEPT48	1000	48
1048	Lex	Deane		123504	555-123-4615	JOB49	DEPT49	1000	49
1049	Anna	Hartstein		123505	555-123-4616	JOB50	DEPT50	1000	50
1050	Mark	Walle		123506	555-123-4617	JOB51	DEPT51	1000	51
1051	Pat	Whalen		123507	555-123-4618	JOB52	DEPT52	1000	52
1052	Neena	Kochhar		123508	555-123-4619	JOB53	DEPT53	1000	53
1053	Lex	Deane		123509	555-123-4620	JOB54	DEPT54	1000	54
1054	Anna	Hartstein		123510	555-123-4621	JOB55	DEPT55	1000	55
1055	Mark	Walle		123511	555-123-4622	JOB56	DEPT56	1000	56
1056	Pat	Whalen		123512	555-123-4623	JOB57	DEPT57	1000	57
1057	Neena	Kochhar		123513	555-123-4624	JOB58	DEPT58	1000	58
1058	Lex	Deane		123514	555-123-4625	JOB59	DEPT59	1000	59
1059	Anna	Hartstein		123515	555-123-4626	JOB60	DEPT60	1000	60
1060	Mark	Walle		123516	555-123-4627	JOB61	DEPT61	1000	61
1061	Pat	Whalen		123517	555-123-4628	JOB62	DEPT62	1000	62
1062	Neena	Kochhar		123518	555-123-4629	JOB63	DEPT63	1000	63
1063	Lex	Deane		123519	555-123-4630	JOB64	DEPT64	1000	64
1064	Anna	Hartstein		123520	555-123-4631	JOB65	DEPT65	1000	65
1065	Mark	Walle		123521	555-123-4632	JOB66	DEPT66	1000	66
1066	Pat	Whalen		123522	555-123-4633	JOB67	DEPT67	1000	67
1067	Neena	Kochhar		123523	555-123-4634	JOB68	DEPT68	1000	68
1068	Lex	Deane		123524	555-123-4635	JOB69	DEPT69	1000	69
1069	Anna	Hartstein		123525	555-123-4636	JOB70	DEPT70	1000	70
1070	Mark	Walle		123526	555-123-4637	JOB71	DEPT71	1000	71
1071	Pat	Whalen		123527	555-123-4638	JOB72	DEPT72	1000	72
1072	Neena	Kochhar		123528	555-123-4639	JOB73	DEPT73	1000	73
1073	Lex	Deane		123529	555-123-4640	JOB74	DEPT74	1000	74
1074	Anna	Hartstein		123530	555-123-4641	JOB75	DEPT75	1000	75
1075	Mark	Walle		123531	555-123-4642	JOB76	DEPT76	1000	76
1076	Pat	Whalen		123532	555-123-4643	JOB77	DEPT77	1000	77
1077	Neena	Kochhar		123533	555-123-4644	JOB78	DEPT78	1000	78
1078	Lex	Deane		123534	555-123-4645	JOB79	DEPT79	1000	79
1079	Anna	Hartstein		123535	555-123-4646	JOB80	DEPT80	1000	80
1080	Mark	Walle		123536	555-123-4647	JOB81	DEPT81	1000	81
1081	Pat	Whalen		123537	555-123-4648	JOB82	DEPT82	1000	82
1082	Neena	Kochhar		123538	555-123-4649	JOB83	DEPT83	1000	83
1083	Lex	Deane		123539	555-123-4650	JOB84	DEPT84	1000	84
1084	Anna	Hartstein		123540	555-123-4651	JOB85	DEPT85	1000	85
1085	Mark	Walle		123541	555-123-4652	JOB86	DEPT86	1000	86
1086	Pat	Whalen		123542	555-123-4653	JOB87	DEPT87	1000	87
1087	Neena	Kochhar		123543	555-123-4654	JOB88	DEPT88	1000	88
1088	Lex	Deane		123544	555-123-4655	JOB89	DEPT89	1000	89
1089	Anna	Hartstein		123545	555-123-4656	JOB90	DEPT90	1000	90
1090	Mark	Walle		123546	555-123-4657	JOB91	DEPT91	1000	91
1091	Pat	Whalen		123547	555-123-4658	JOB92	DEPT92	1000	92
1092	Neena	Kochhar		123548	555-123-4659	JOB93	DEPT93	1000	93
1093	Lex	Deane		123549	555-123-4660	JOB94	DEPT94	1000	94
1094	Anna	Hartstein		123550	555-123-4661	JOB95	DEPT95	1000	95
1095	Mark	Walle		123551	555-123-4662	JOB96	DEPT96	1000	96
1096	Pat	Whalen		123552	555-123-4663	JOB97	DEPT97	1000	97
1097	Neena	Kochhar		123553	555-123-4664	JOB98	DEPT98	1000	98
1098	Lex	Deane		123554	555-123-4665	JOB99	DEPT99	1000	99
1099	Anna	Hartstein		123555	555-123-4666	JOB100	DEPT100	1000	100
1100	Mark	Walle		123556	555-123-4667	JOB101	DEPT101	1000	101
1101	Pat	Whalen		123557	555-123-4668	JOB102	DEPT102	1000	102
1102	Neena	Kochhar		123558	555-123-4669	JOB103	DEPT103	1000	103
1103	Lex	Deane		123559	555-123-4670	JOB104	DEPT104	1000	104
1104	Anna	Hartstein		123560	555-123-4671	JOB105	DEPT105	1000	105
1105	Mark	Walle		123561	555-123-4672	JOB106	DEPT106	1000	106
1106	Pat	Whalen		123562	555-123-4673	JOB107	DEPT107	1000	107
1107	Neena	Kochhar		123563	555-123-4674	JOB108	DEPT108	1000	108
1108	Lex	Deane		123564	555-123-4675	JOB109	DEPT109	1000	109
1109	Anna	Hartstein		123565	555-123-4676	JOB110	DEPT110	1000	110
1110	Mark	Walle		123566	555-123-4677	JOB111	DEPT111	1000	111
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1112	Neena	Kochhar		123568	555-123-4679	JOB113	DEPT113	1000	113
1113	Lex	Deane		123569	555-123-4680	JOB114	DEPT114	1000	114
1114	Anna	Hartstein		123570	555-123-4681	JOB115	DEPT115	1000	115
1115	Mark	Walle		123571	555-123-4682	JOB116	DEPT116	1000	116
1116	Pat	Whalen		123572	555-123-4683	JOB117	DEPT117	1000	117
1117	Neena	Kochhar		123573	555-123-4684	JOB118	DEPT118	1000	118
1118	Lex	Deane		123574	555-123-4685	JOB119	DEPT119	1000	119
1119	Anna	Hartstein		123575	555-123-4686	JOB120	DEPT120	1000	120
1120	Mark	Walle		123576	555-123-4687	JOB121	DEPT121	1000	121
1121	Pat	Whalen		123577	555-123-4688	JOB122	DEPT122	1000	122
1122	Neena	Kochhar		123578	555-123-4689	JOB123	DEPT123	1000	123
1123	Lex	Deane		123579	555-123-4690	JOB124	DEPT124	1000	124
1124	Anna	Hartstein		123580	555-123-4691	JOB125	DEPT125	1000	125
1125	Mark	Walle		123581	555-123-4692	JOB126	DEPT126	1000	126
1126	Pat	Whalen		123582	555-123-4693	JOB127	DEPT127	1000	127
1127	Neena	Kochhar		123583	555-123-4694	JOB128	DEPT128	1000	128
1128	Lex	Deane		123584	555-123-4695	JOB129	DEPT129	1000	129
1129	Anna	Hartstein		123585	555-123-4696	JOB130	DEPT130	1000	130
1130	Mark	Walle		123586	555-123-4697	JOB131	DEPT131	1000	131
1131	Pat	Whalen		123587	555-123-4698	JOB132	DEPT132	1000	132
1132	Neena	Kochhar		123588	555-123-4699	JOB133	DEPT133	1000	133
1133	Lex	Deane		123589	555-123-4700	JOB134	DEPT134		

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.

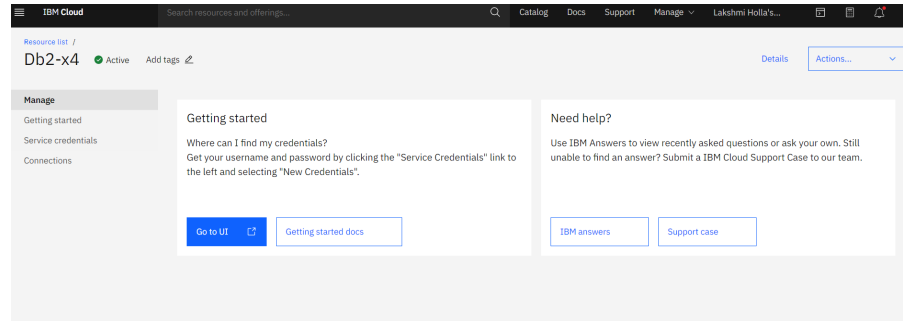
Exercise 1: Create tables using SQL scripts

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.

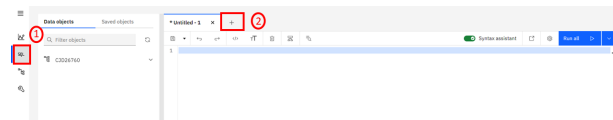
1. Download the script file to your computer:

[HR_Database_Create_Tables_Script.sql](#)

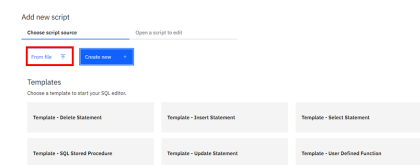
2. Login to IBM Cloud and go to the [Resource List](#) where you can find the Db2 service instance that you created in a previous lab under Services section. Click on the Db2-xx service. Next, click on **Go to UI** button.



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

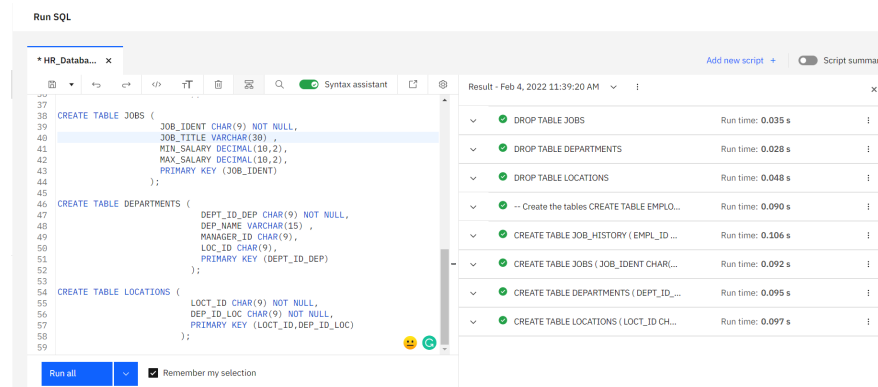


Select the **From File** option.



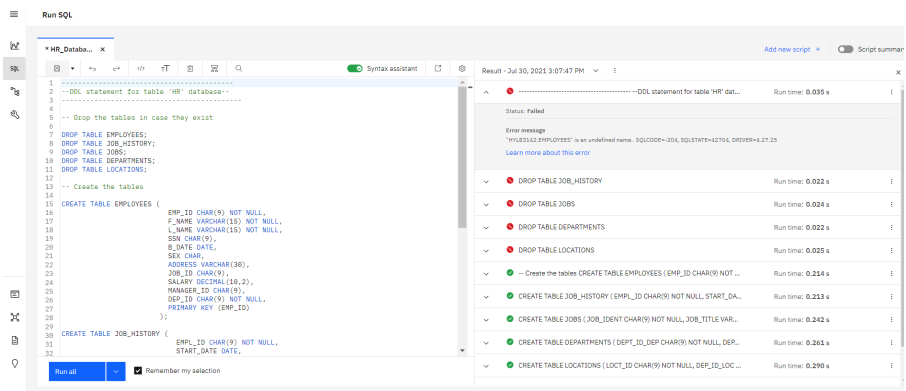
4. Locate the file **HR_Database_Create_Tables_Script.sql** that you downloaded to your computer earlier and open it.

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

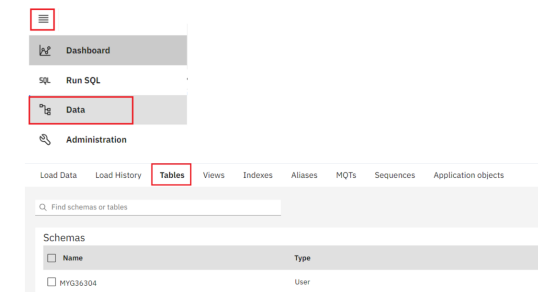


6. On the right side of the SQL editor window you will see a **Result** section. Clicking on a query in the Result section will show the execution details of the job like whether it ran successfully, or had any errors or warnings. Ensure your queries run successfully and created all the tables.

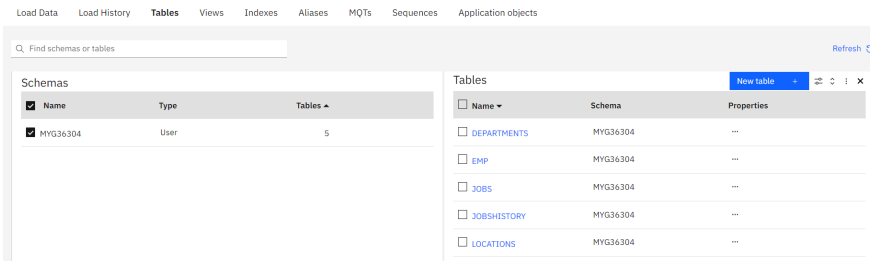
Note: You may see several errors before the successful creation of the tables. These errors relate to the dropping (removal) of any pre-existing version of these tables. You can ignore these errors.



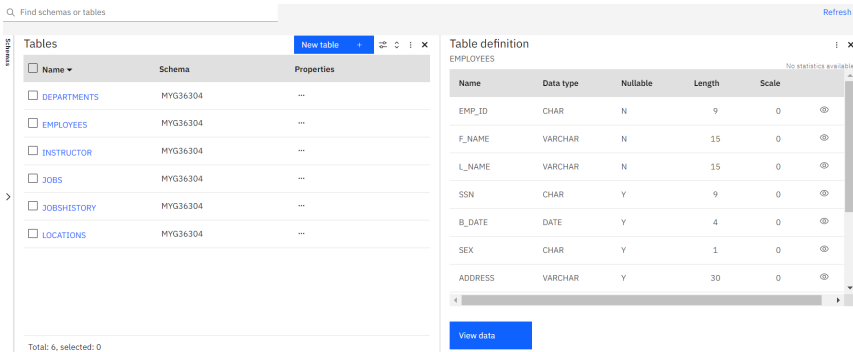
7. Now you can look at the tables you created. Click on the data icon and then click on Tables tab



8. Select the Schema corresponding to your DB2 used. It typically starts with 3 letters (not SQL) followed by 5 numbers (that 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.

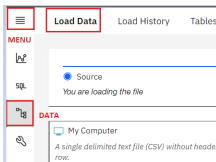
1. Download the 5 .csv files below to your local computer:

- [Departments.csv](#)
- [Employees.csv](#)
- [Jobs.csv](#)
- [Locations.csv](#)
- [Jobshistory.csv](#)

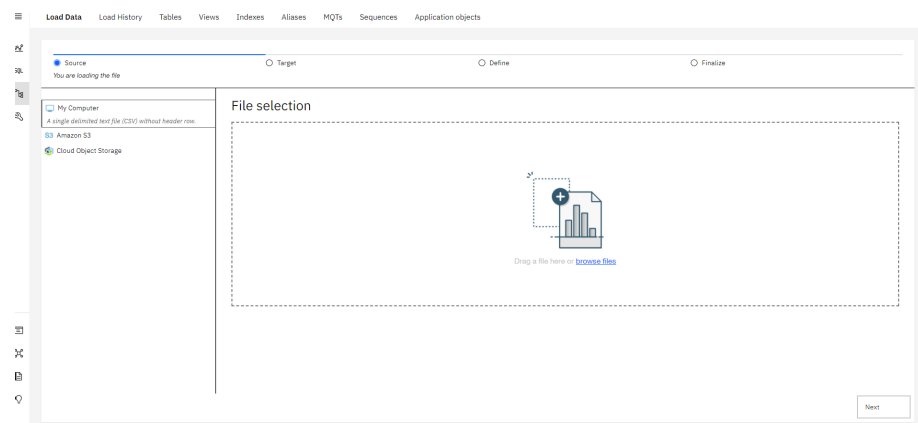
Note: For learners who are encountering issues with loading from .csv in DB2 using Firefox, they can download the .txt files and try with those:

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

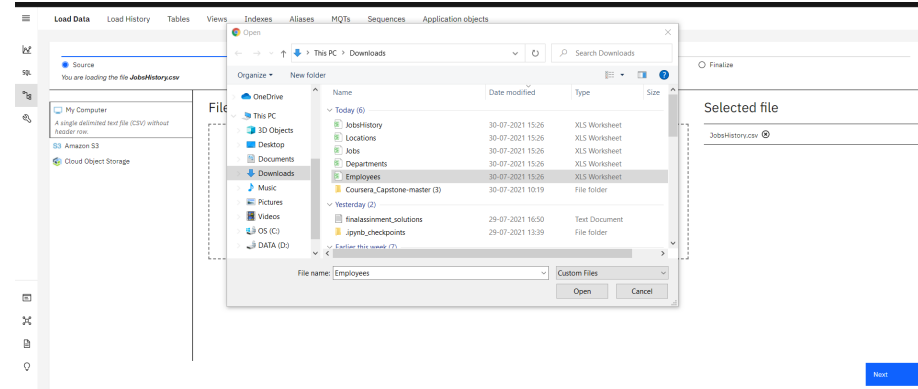
2. In the DB2 Console, from the 3-bar menu icon in the top left corner, click **Load**, and then select **Load Data**.



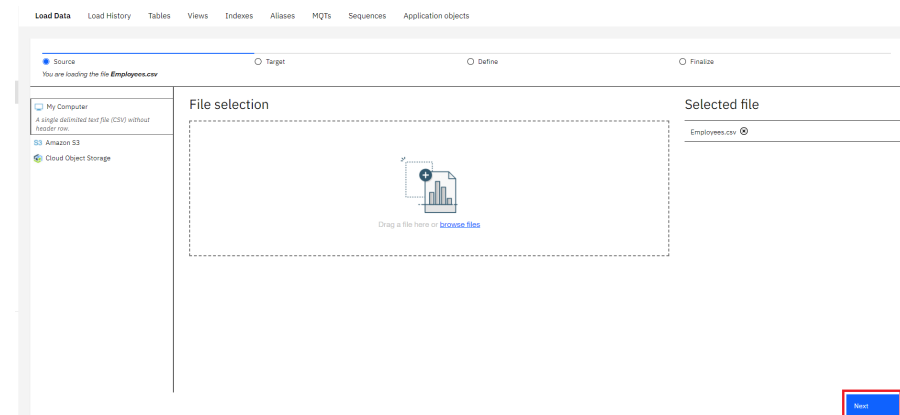
3. On the **Load Data** page that opens, ensure **My Computer** is selected as the source. Click on the **browse files** link.



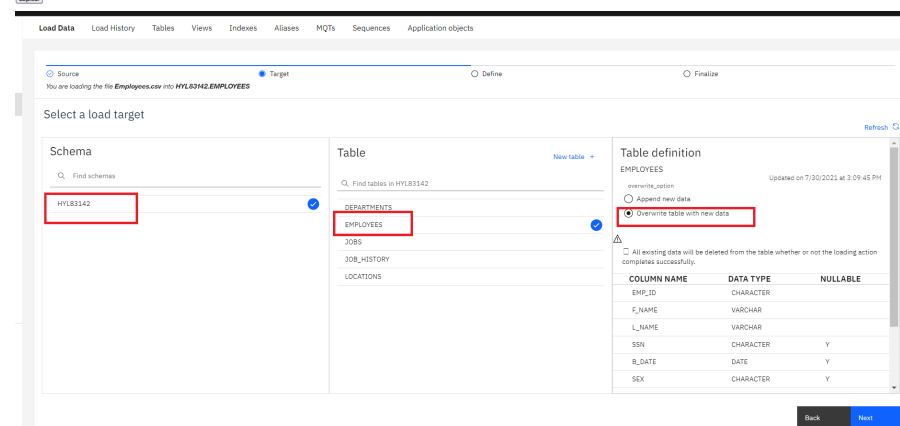
4. Choose the file **Employees.csv** that you downloaded to your computer and click **Open**.



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



6. 1-1. Select the schema for your S3 bucket (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.



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 data is formatted in the source file.

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

Source Target Define Finalize

You are loading the file **HYLB3142.EMPLOYEES**

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

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

EMP_ID	F_NAME	L_NAME	SSN	B_DATE	SEX	ADDRESS	JOB_ID	SALARY
CHARACTER	VARCHAR	VARCHAR	CHARACTER	DATE	CHARACTER	VARCCHAR	CHARACTER	DECIMAL
1	E1001	John	Thomas	123456	01/09/1976	M	5631 Rose, OakPark,IL	100
2	E1002	Alice	James	123457	07/31/1972	F	980 Barry St, Egin,IL	200
3	E1003	Steve	Wells	123458	08/10/1980	M	291 Springs, Gery,IL	300
4	E1004	Santosh	Kumar	123459	07/20/1985	M	511 Aurora Ave, Aurora,IL	400
5	E1005	Ahmed	Hussain	123410	01/04/1981	M	216 Oak Tree, Geneva,IL	500
6	E1006	Nancy	Allen	123411	02/04/1978	F	111 Green Pl, Egin,IL	600
7	E1007	Mary	Thomas	123412	05/05/1975	F	100 Rose Pl, Gery,IL	650
8	E1008	Bharath	Gupte	123413	05/06/1985	M	145 Berry Ln, Naperville,IL	660
9	E1009	Andrea	Jonas	123414	07/09/1990	F	120 Fall Creek, Gery,IL	234
10	E1010	Ann	Jacob	123415	03/30/1982	F	111 Britany Springs,Egin,IL	220

Back Next

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

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

Source Target Define Finalize

You are loading the file **HYLB3142.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

Back Begin Load

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.

Load details

My computer Target
Employees.csv HYLB3142.EMPLOYEES

View Table Load More Data

Status Settings

10 Rows read 10 Rows loaded 0 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.

Errors 0 Warnings 0

No errors
But, there is 0 warning.

10. 1. 1. Click on the **Tables** tab and then select the **EMPLOYEES** table and then click on **View data**.

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

Find schemas or tables

Refresh

Tables

Name	Schema	Properties
<input type="checkbox"/> DEPARTMENTS	HYLB3142	---
<input checked="" type="checkbox"/> EMPLOYEES	HYLB3142	---
<input type="checkbox"/> JOBS	HYLB3142	---
<input type="checkbox"/> JOB_HISTORY	HYLB3142	---
<input type="checkbox"/> LOCATIONS	HYLB3142	---

Total: 5, selected: 1

Table definition

EMPLOYEES

Name	Data type	Nullable	Length	Scale
EMP_ID	CHAR	N	9	0
F_NAME	VARCHAR	N	15	0
L_NAME	VARCHAR	N	15	0
SSN	CHAR	Y	9	0
B_DATE	DATE	Y	4	0
SEX	CHAR	Y	1	0
ADDRESS	VARCHAR	Y	30	0
JOB_ID	CHAR	Y	9	0
SALARY	DECIMAL	Y	10	2
MANAGER_ID	CHAR	Y	9	0
DEP_ID	CHAR	N	9	0

View data

11. Now you can view the table data.

Load Data

Load History

Tables

Views

Indexes

Aliases

MQTs

Sequences

Application objects

HYLB3142.EMPLOYEES

Back

Export to CSV

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	100000.00	30001	2
E1002	Alice	James	123457	1972-07-31	F	980 Berry Ln, Elgin,IL	200	80000.00	30002	5
E1003	Steve	Walls	123458	1980-08-10	M	291 Springs, Gary,IL	300	60000.00	30002	5
E1004	Santosh	Kumar	123459	1985-07-20	M	511 Aurora Av, Aurora,IL	400	60000.00	30004	5
E1005	Ahmed	Hussain	123410	1981-01-04	M	216 Oak Tree, Geneva,IL	500	70000.00	30001	2
E1006	Nancy	Allen	123411	1978-02-06	F	111 Green Pl, Elgin,IL	600	90000.00	30001	2
E1007	Mary	Thomas	123412	1975-05-05	F	100 Rose Pl, Gary,IL	650	65000.00	30003	7
E1008	Bharath	Gupta	123413	1985-05-06	M	145 Berry Ln, Naperville,IL	660	65000.00	30003	7
E1009	Andrea	Jones	123414	1990-07-09	F	120 Fall Creek, Gary,IL	234	70000.00	30003	7
E1010	Ann	Jacob	123415	1982-03-30	F	111 Brihany Springs, Elgin,IL	220	70000.00	30004	5

12. Now it's your turn to load data to the remaining 4 tables of the HR database: **EMPLOYEES**, 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 Holle	Updated screenshot of DB2
2021-07-08 2:2		Matika	Updated screenshot
2020-12-23 2:1		Steve Ryan	ID Review
2020-12-08 2:0		Sandip Saha	Any Created revised version from DBM201EN
2020	1.0	Ray Ahuja	Created initial version

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