

Software Used in this Lab

In this lab, you will use [MySQL](#). MySQL is a Relational Database Management System (RDBMS) designed to efficiently store, manipulate, and retrieve data.



To complete this lab you will utilize MySQL relational database service available as part of IBM Skills Network Labs (SN Labs) Cloud IDE. SN Labs is a virtual lab environment used in this course.

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, Oak Park, 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

Objectives

After completing this lab, you will be able to use phpMyAdmin with MySQL to:

- Create a database.
- Create tables using SQL scripts
- Load data into tables

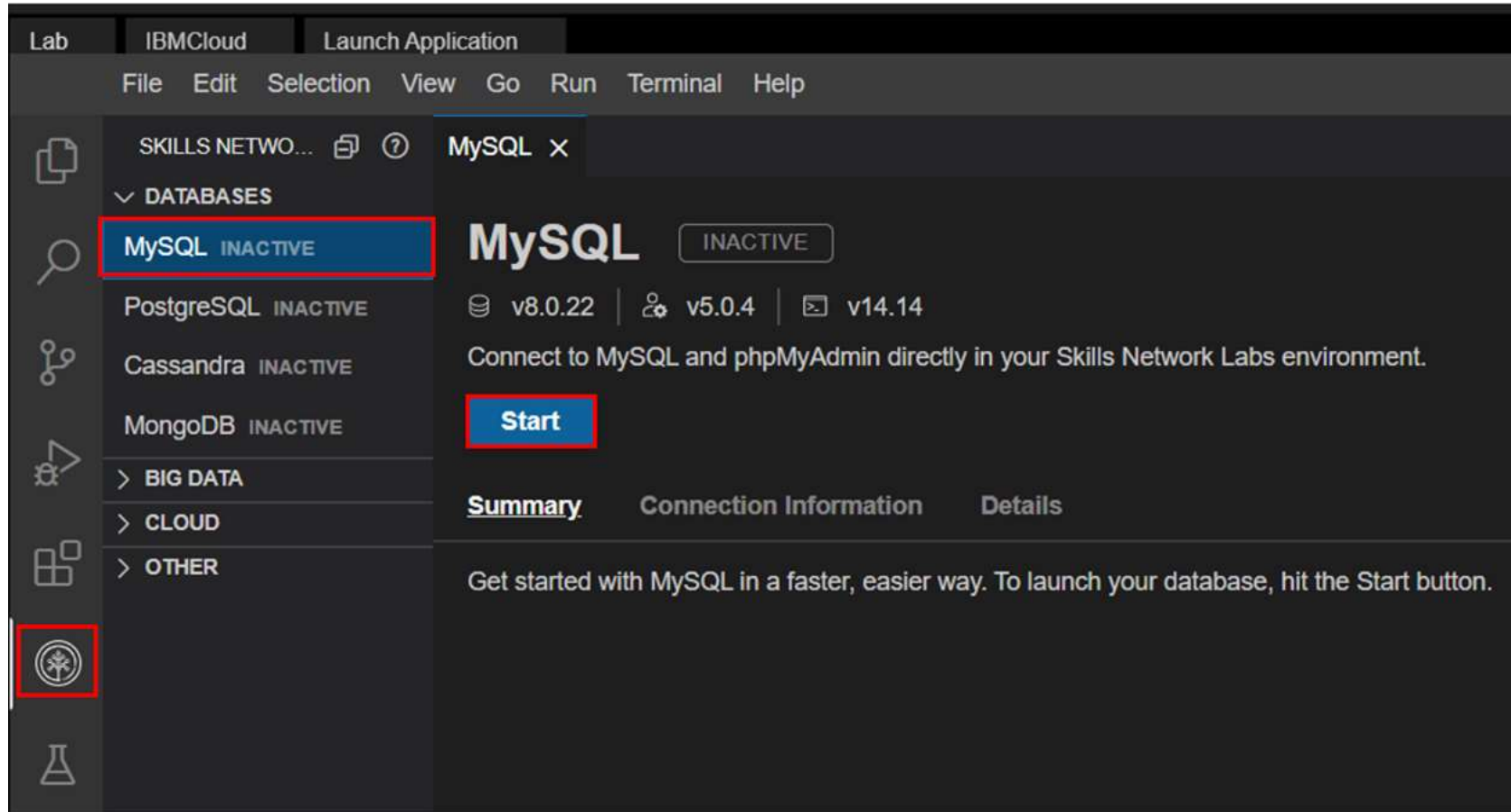
Exercise

In this exercise through different tasks, you will learn how to create tables and load data in the MySQL database service using the phpMyAdmin graphical user interface (GUI) tool.

Task A: Create a database

1. Click on **Skills Network Toolbox**. In **Database** section, click **MySQL**.

To start the MySQL click **Start**.



2. Once **MySQL** has started, click on **phpMyAdmin** button to open **phpMyAdmin** in the same window.

The screenshot shows a web-based interface for managing MySQL and phpMyAdmin. At the top, there is a menu bar with options: File, Edit, Selection, View, Go, Run, Terminal, and Help. Below the menu, there are tabs for 'MySQL' and 'phpMyAdmin'. The 'MySQL' tab is active, indicated by a green 'ACTIVE' button. The interface displays the MySQL version (v8.0.22), phpMyAdmin version (v5.0.4), and the environment version (v14.14). A message states: 'Connect to MySQL and phpMyAdmin directly in your Skills Network Labs environment.' Below this message is a blue 'Stop' button. There are three tabs: 'Summary', 'Connection Information', and 'Details'. The 'Summary' tab is selected. The summary text reads: 'Your database and phpMyAdmin server are now ready to use and available with the following login credentials. For more details on how to navigate MySQL, please check out the Details section.' Below this, the 'Username' is 'malikas' and the 'Password' is masked with a black box. There are copy icons next to both fields. Below the password field, it says 'You can manage MySQL via:' followed by a blue button labeled 'phpMyAdmin' with an external link icon. At the bottom, it says 'Or to interact with the database in the terminal, select one of these options:' followed by two buttons: 'MySQL CLI' and 'New Terminal'.

File Edit Selection View Go Run Terminal Help

MySQL x phpMyAdmin

MySQL

ACTIVE

v8.0.22 | v5.0.4 | v14.14

Connect to MySQL and phpMyAdmin directly in your Skills Network Labs environment.

Stop

Summary Connection Information Details

Your database and phpMyAdmin server are now ready to use and available with the following login credentials. For more details on how to navigate MySQL, please check out the Details section.

Username: malikas

Password: [REDACTED]

You can manage MySQL via:

phpMyAdmin

Or to interact with the database in the terminal, select one of these options:

MySQL CLI New Terminal

3. You will see the phpMyAdmin GUI tool.

← → ↻ 🏠 🔒 sandipsahajo-8080.theiadocker-27.proxy.cognitiveclass.ai

phpMyAdmin

🏠 📁 🔄 ⚙️ 💰

Recent Favorites

- New
- + information_schema
- + mysql
- + performance_schema
- + sakila
- + sys

← Server: mysql:3306

Databases SQL Status User accounts Ex

General settings

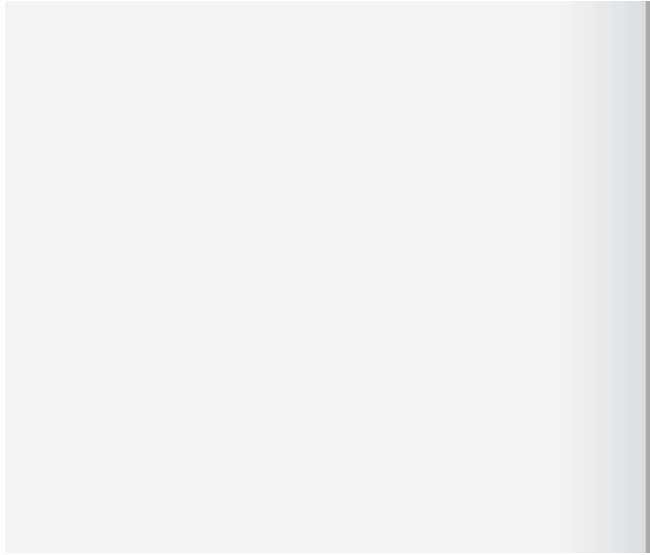
☰ Server connection collation: ⓘ utf8mb4_unicode_ci ▼

🔑 [More settings](#)

Appearance settings

🗣️ Language ⓘ English ▼

🎨 Theme: pmahomme ▼



4. In the tree-view, click **New** to create a new empty database. Then enter **HR** as the name of the database and click **Create**.

The encoding will be left as **utf8mb4_0900_ai_ci**. UTF-8 is the most commonly used character encoding for content or data.

Proceed to Task B.

Databases
SQL
Status
User accounts
Export
Import
Settings
Binary log
Replication
Variables
Charsets

Databases

Create database

HR utf8mb4_0900_ai_ci Create

Database	Collation	Master replication	Action
<input type="checkbox"/> information_schema	utf8_general_ci	✓ Replicated	Check privileges
<input type="checkbox"/> mysql	utf8mb4_0900_ai_ci	✓ Replicated	Check privileges
<input type="checkbox"/> Mysq!_learners	utf8mb4_0900_ai_ci	✓ Replicated	Check privileges
<input type="checkbox"/> performance_schema	utf8mb4_0900_ai_ci	✓ Replicated	Check privileges
<input type="checkbox"/> sys	utf8mb4_0900_ai_ci	✓ Replicated	Check privileges

Total: 5

☐ Check all
 With selected: Drop

Note: Enabling the database statistics here might cause heavy traffic between the web server and the MySQL server.

- **Enable statistics**

Console

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.

- Download the script file to your computer:
 - [HR_Database_Create_Tables_Script.sql](#)
- Select the HR database. Later click on the Import tab.
- Click on **choose file**. Browse for the file and upload it .
- Later scroll down and click on **Go**.

The screenshot shows the phpMyAdmin interface with the 'Import' tab selected. The left sidebar shows the database structure, with 'HR' highlighted. The main area displays the 'Importing into the database "HR"' page. The 'File to import:' section includes a 'Choose File' button and a text input field containing 'HR_Database...es_Script.sql (Max: 2,048KiB)'. Below this, there is a 'Partial import:' section with a checkbox for 'Allow the interruption of an import...' and a text input for 'Skip this number of queries...'. The 'Other options:' section has a checkbox for 'Enable foreign key checks'. The 'Format:' dropdown is set to 'SQL'.

- The script then gets imported successfully.

The screenshot shows the phpMyAdmin interface for a MySQL server (mysql:3306) and the HR database. The left sidebar displays the database structure, including tables like DEPARTMENTS, EMPLOYEES, JOBS, JOB_HISTORY, and LOCATIONS. The main panel shows the 'Structure' tab with a list of tables and their columns. Below the table list, there are several query execution results and error messages.

Recent Queries and Results:

- Import:** Import has been successfully finished, 10 queries executed. (HR_Database_Create_Tables_Script.sql)
- Query 1:** MySQL returned an empty result set (i.e. zero rows). (Query took 0.0033 seconds.)
`DROP TABLE IF EXISTS EMPLOYEES`
 Note: #1051 Unknown table 'HR.EMPLOYEES'
- Query 2:** MySQL returned an empty result set (i.e. zero rows). (Query took 0.0024 seconds.)
`DROP TABLE IF EXISTS JOB_HISTORY`
 Note: #1051 Unknown table 'HR.JOB_HISTORY'
- Query 3:** MySQL returned an empty result set (i.e. zero rows). (Query took 0.0051 seconds.)
`DROP TABLE IF EXISTS JOBS`
 Note: #1051 Unknown table 'HR.JOBS'
- Query 4:** MySQL returned an empty result set (i.e. zero rows). (Query took 0.0037 seconds.)

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

The screenshot shows the phpMyAdmin interface with the 'EMPLOYEES' table selected in the 'DEPARTMENTS' database. The 'Table structure' tab is active, displaying a list of columns with their attributes, nullability, and default values. Below the table structure, there are options to 'Check all', 'With selected', and various actions like 'Browse', 'Change', 'Drop', 'Primary', 'Unique', 'Index', and 'Fulltext'. At the bottom, there is a section for 'Indexes' showing a 'PRIMARY' index on the 'EMP_ID' column.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	EMP_ID	char(9)	utf8mb4_0900_ai_ci		No	None			Change Drop More
2	F_NAME	varchar(15)	utf8mb4_0900_ai_ci		No	None			Change Drop More
3	L_NAME	varchar(15)	utf8mb4_0900_ai_ci		No	None			Change Drop More
4	SSN	char(9)	utf8mb4_0900_ai_ci		Yes	NULL			Change Drop More
5	B_DATE	date			Yes	NULL			Change Drop More
6	SEX	char(1)	utf8mb4_0900_ai_ci		Yes	NULL			Change Drop More
7	ADDRESS	varchar(30)	utf8mb4_0900_ai_ci		Yes	NULL			Change Drop More
8	JOB_ID	char(9)	utf8mb4_0900_ai_ci		Yes	NULL			Change Drop More
9	SALARY	decimal(10,2)			Yes	NULL			Change Drop More
10	MANAGER_ID	char(9)	utf8mb4_0900_ai_ci		Yes	NULL			Change Drop More
11	DEP_ID	char(9)	utf8mb4_0900_ai_ci		No	None			Change Drop More

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Drop	PRIMARY	BTREE	Yes	No	EMP ID	0	A	No	

Exercise 2: Load data into tables

In this exercise, you will learn how data can be loaded into MySQL. You could manually insert each row into the table one by one, but that would take a long time. Instead, MySQL (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](#)

To load each table do the following steps.

- Select each table .
- Click on Import tab.
- Select the **csv** file and click on **Go** to load the csv file.

The screenshot displays the phpMyAdmin web interface. On the left sidebar, the database structure is shown, with the 'EMPLOYEES' table under the 'HR' database highlighted with a red box. The main panel shows the 'Import' tab selected for the 'EMPLOYEES' table. A red box highlights the title 'Importing into the table "EMPLOYEES"'. Below this, the 'File to import:' section includes a text area for the file name, a 'Choose File' button, and a file size limit of 2,048KiB. The 'Character set of the file:' is set to 'utf-8'. The 'Partial import:' section has a checked checkbox for 'Allow the interruption of an import...' and a text input for 'Skip this number of queries...' set to 0. The 'Other options:' section has a checked checkbox for 'Enable foreign key checks'. The 'Format:' section shows a dropdown menu set to 'CSV'. At the bottom, there is a 'Console' tab and a file path 'HR_Database_Crea....sql'.

phpMyAdmin

Recent Favorites

New

HR

New

DEPARTMENTS

EMPLOYEES

JOBS

JOB_HISTORY

LOCATIONS

information_schema

mysql

Mysql_learners

New

PETSALE

performance_schema

sys

Server: mysql:3306 » Database: HR » Table: EMPLOYEES

Browse Structure SQL Search Insert Export Import Privileges Operations Triggers

Importing into the table "EMPLOYEES"

File to import:

File may be compressed (gzip, bzip2, zip) or uncompressed.
A compressed file's name must end in **[format].[compression]**. Example: **.sql.zip**

Browse your computer: Employees.csv (Max: 2,048KiB)

You may also drag and drop a file on any page.

Character set of the file:

Partial import:

☒ Allow the interruption of an import in case the script detects it is close to the PHP timeout limit. *(This might be a good way to import large files, however it might cause data corruption)*

Skip this number of queries (for SQL) starting from the first one:

Other options:

☒ Enable foreign key checks

Format:

Console

HR_Database_Crea....sql

Once the tables are loaded , you will get a message that the records are inserted successfully.

The screenshot displays a database management tool interface with a menu bar at the top containing: Browse, Structure, SQL, Search, Insert, Export, Import, Privileges, Operations, and Triggers. Below the menu, five query execution results are shown, each with a green checkmark icon and a message: "1 row inserted. (Query took 0.0038 seconds.)", "1 row inserted. (Query took 0.0036 seconds.)", "1 row inserted. (Query took 0.0038 seconds.)", "1 row inserted. (Query took 0.0039 seconds.)", and "1 row inserted. (Query took 0.0051 seconds.)". Each message is followed by an SQL INSERT statement for the EMPLOYEES table. The statements are: 1. INSERT INTO `EMPLOYEES` VALUES ('E1004', 'Santosh', 'Kumar', '123459', '1985-07-20', 'M', '511 Aurora Av, Aurora,IL', '400', '60000', '30004', '5'); 2. INSERT INTO `EMPLOYEES` VALUES ('E1005', 'Ahmed', 'Hussain', '123410', '1981-04-01', 'M', '216 Oak Tree, Geneva,IL', '500', '70000', '30001', '2'); 3. INSERT INTO `EMPLOYEES` VALUES ('E1006', 'Nancy', 'Allen', '123411', '1978-06-02', 'F', '111 Green Pl, Elgin,IL', '600', '90000', '30001', '2'); 4. INSERT INTO `EMPLOYEES` VALUES ('E1007', 'Mary', 'Thomas', '123412', '1975-05-05', 'F', '100 Rose Pl, Gary,IL', '650', '65000', '30003', '7'); 5. INSERT INTO `EMPLOYEES` VALUES ('E1008', 'Bharath', 'Gupta', '123413', '1985-06-05', 'M', '145 Berry Ln, Naperville,IL', '660', '65000', '30003', '7'); Each statement is followed by links: [Edit inline] [Edit] []. At the bottom left, there is a "Console" button.

```
INSERT INTO `EMPLOYEES` VALUES ('E1004', 'Santosh', 'Kumar', '123459', '1985-07-20', 'M', '511 Aurora Av, Aurora,IL', '400', '60000', '30004', '5')
```

```
INSERT INTO `EMPLOYEES` VALUES ('E1005', 'Ahmed', 'Hussain', '123410', '1981-04-01', 'M', '216 Oak Tree, Geneva,IL', '500', '70000', '30001', '2')
```

```
INSERT INTO `EMPLOYEES` VALUES ('E1006', 'Nancy', 'Allen', '123411', '1978-06-02', 'F', '111 Green Pl, Elgin,IL', '600', '90000', '30001', '2')
```

```
INSERT INTO `EMPLOYEES` VALUES ('E1007', 'Mary', 'Thomas', '123412', '1975-05-05', 'F', '100 Rose Pl, Gary,IL', '650', '65000', '30003', '7')
```

```
INSERT INTO `EMPLOYEES` VALUES ('E1008', 'Bharath', 'Gupta', '123413', '1985-06-05', 'M', '145 Berry Ln, Naperville,IL', '660', '65000', '30003', '7')
```

Further you can click on browse and view the data of each table.

[Browse](#)
[Structure](#)
[SQL](#)
[Search](#)
[Insert](#)
[Export](#)
[Import](#)
[Privileges](#)
[Operations](#)
[Triggers](#)

Showing rows 0 - 9 (10 total, Query took 0.0007 seconds.)

SELECT * FROM `EMPLOYEES`

☐ Profiling [\[Edit inline\]](#) [\[Edit\]](#) [\[Explain SQL\]](#) [\[Create PHP\]](#)

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

	EMP_ID	F_NAME	L_NAME	SSN	B_DATE	SEX	ADDRESS	JOB_ID	SALARY	MANAGER_ID	DEP_ID
<input type="checkbox"/> Edit Copy Delete	E1001	John	Thomas	123456	1976-09-01	M	5631 Rice, OakPark,IL	100	100000.00	30001	2
<input type="checkbox"/> Edit Copy Delete	E1002	Alice	James	123457	1972-07-31	F	980 Berry Ln, Elgin,IL	200	80000.00	30002	5
<input type="checkbox"/> Edit Copy Delete	E1003	Steve	Wells	123458	1980-10-08	M	291 Springs, Gary,IL	300	50000.00	30002	5
<input type="checkbox"/> Edit Copy Delete	E1004	Santosh	Kumar	123459	1985-07-20	M	511 Aurora Av, Aurora,IL	400	60000.00	30004	5
<input type="checkbox"/> Edit Copy Delete	E1005	Ahmed	Hussain	123410	1981-04-01	M	216 Oak Tree, Geneva,IL	500	70000.00	30001	2
<input type="checkbox"/> Edit Copy Delete	E1006	Nancy	Allen	123411	1978-06-02	F	111 Green Pl, Elgin,IL	600	90000.00	30001	2
<input type="checkbox"/> Edit Copy Delete	E1007	Mary	Thomas	123412	1975-05-05	F	100 Rose Pl, Gary,IL	650	65000.00	30003	7
<input type="checkbox"/> Edit Copy Delete	E1008	Bharath	Gupta	123413	1985-06-05	M	145 Berry Ln, Naperville,IL	660	65000.00	30003	7
<input type="checkbox"/> Edit Copy Delete	E1009	Andrea	Jones	123414	1990-09-07	F	120 Fall Creek, Gary,IL	234	70000.00	30003	7
<input type="checkbox"/> Edit Copy Delete	E1010	Ann	Jacob	123415	1982-03-30	F	111 Britany Springs,Elgin,IL	220	70000.00	30004	5

☐ Check all | With selected: Edit Copy Delete Export

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

☐ Console

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

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Changelog

Date	Version	Changed by	Change Description
2023-05-11	0.8	Eric Hao & Vladislav Boyko	Updated Page Frames

Date	Version	Changed by	Change Description
2023-05-10	0.7	Eric Hao & Vladislav Boyko	Updated Page Frames
2023-05-10	0.6	Eric Hao & Vladislav Boyko	Updated Page Frames
2023-05-05	0.5	Benny Li	Updated and Re-Published
2022-08-03	0.4	Sathya Priya	Updated CSV Links
2022-07-27	0.3	Lakshmi Holla	Updated HTML tag
2022-04-07	0.2	Malika Singla	Updated screenshot
2021-11-01	0.1	Lakshmi Holla, Malika Singla	Initial Version

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