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# Setting Up the world\_x Database

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This document describes `world_x` sample database installation, structure, usage, and history.

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## 1 Preface and Legal Notices

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## 2 Installation

To enable MySQL users to perform manipulation of the `world_x` sample database using MySQL, the data set is available as a set of four tables:

- `country`: Information about countries of the world.
- `city`: Information about some of the cities in those countries.
- `countrylanguage`: Languages spoken in each country.

- `countryinfo`: Information about each country represented as a JSON document.

The `world_x.sql` file containing the `world_x` database is available for download at <https://dev.mysql.com/doc/index-other.html>. The file is provided as a compressed `tar` file or Zip archive.

### Note

The `world_x` database uses features specific to X DevAPI, and thus requires MySQL 5.7 or higher. A `world` database variant also exists that does not use X DevAPI features and may be used with MySQL 5.5 and higher. See [Setting Up the world Database](#).

To install the `world_x` sample database, follow these steps:

1. Download the installation archive to a temporary location such as `C:\temp\` or `/tmp/` and unpack it. Unpacking the archive results in a directory named `world_x-db` containing files named `README.txt` and `world_x.sql`.
2. Execute the `world_x.sql` script to create the database structure and insert the data using one of the following methods:

- Use MySQL Shell:

```
shell> mysqlsh -u root --sql --recreate-schema world_x < C:\temp\world_x-db\world_x.sql
```

- Use the standard MySQL command-line client:

Connect to MySQL:

```
shell> mysql -u root -p
```

From the `mysql` client, load the file:

```
mysql> SOURCE C:/temp/world_x-db/world_x.sql;
```

Enter your password when prompted. A non-`root` account can be used, provided that the account has privileges to create new databases.

Replace the path to the `world_x.sql` file with the actual path on your system.

### Note

On Windows, use slashes rather than backslashes when executing the `SOURCE` command.

3. To confirm that the sample `world_x` database is installed correctly, execute the following statements. You should see output similar to that shown here.

```
mysql> USE world_x;
Database changed

mysql> SHOW TABLES;
+-----+
| Tables_in_world_x |
+-----+
| city               |
| country            |
| countryinfo        |
| countrylanguage    |
+-----+
```

```

4 rows in set (0.00 sec)

mysql> SELECT COUNT(*) FROM city;
+-----+
| COUNT(*) |
+-----+
|      4079 |
+-----+
1 row in set (0.02 sec)

mysql> SELECT COUNT(*) FROM country;
+-----+
| COUNT(*) |
+-----+
|       239 |
+-----+
1 row in set (0.00 sec)

```

You now have the `world_x` sample database installed.

Another popular sample database is the Sakila database. For additional details, see <http://dev.mysql.com/doc/sakila/en/>.

### 3 History

September 2016

Prior releases used mixed-case table names. Because MySQL Shell is case-sensitive, table names are changed to lowercase.

December 2019

The `world_x.sql` file was changed to address several issues:

- The `world_x` database used `utf8`, but MySQL as of 8.0 uses a default character set of `utf8mb4`. Converting the database to use `utf8mb4` brings it up to date with MySQL 8.0, while retaining compatibility with older series.

Conversion of the database to `utf8mb4` was done as follows:

```

USE world_x;

-- turn off foreign key checking; otherwise, the ALTER TABLE
-- statements fail with incompatible foreign key errors.
SET SESSION foreign_key_checks=0;

-- convert database and tables to utf8mb4
ALTER DATABASE world CHARACTER SET utf8mb4;
ALTER TABLE city CONVERT TO CHARACTER SET utf8mb4;
ALTER TABLE country CONVERT TO CHARACTER SET utf8mb4;
ALTER TABLE countrylanguage CONVERT TO CHARACTER SET utf8mb4;
ALTER TABLE countryinfo CONVERT TO CHARACTER SET utf8mb4;
ALTER TABLE countryinfo
  MODIFY `_id` varchar(32) GENERATED ALWAYS AS
  (json_unquote(json_extract(`doc`,_utf8mb4'$_id')))) STORED NOT NULL;

-- re-enable foreign key checking
SET SESSION foreign_key_checks=1;

```

Using `mysqldump` with options of `--default-character-set=utf8mb4` to set the character set and `--set-charset` so the dump includes `SET NAMES` for that character set writes a `utf8mb4`-encoded dump file.

- MySQL 8.0.17 deprecates these features:
  - Number of digits in floating-point column definitions; for example, `FLOAT(10,2)`.
  - Display width in integer column definitions; for example, `INT(10)`.

The `world_x.sql` file used both features, causing load warnings in MySQL 8.0.17 and higher.

To avoid number of digits in `FLOAT` columns, it is necessary to manually alter the relevant column. That was done as follows, by altering `FLOAT(M,D)` to `DECIMAL(M,D)`:

```
USE world_x;  
  
ALTER TABLE countrylanguage  
  MODIFY Percentage DECIMAL(4,1) NOT NULL DEFAULT '0.0';
```

To produce integer column definitions without display widths in the dump file, it suffices to use `mysqldump` from MySQL 8.0.19 or higher.

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