

MySQL Tutorial

MSBA7024/MACC7020

What will you learn in this tutorial?

- Install MySQL Database and MySQL Workbench on Win10 X64 or MacOS
- Build Entity–Relationship Models with MySQL Workbench.
- Forward Engineer Entity–Relationship Model into MySQL Database
- Use MySQL Workbench to Import Data into MySQL Database
- Use MySQL Workbench to Extract Data from MySQL Database
- Use MySQL Command Line

Learning by Doing

- All students are expected to follow the steps in this tutorial.
- Practical question: How to establish a database system to support stock price prediction?

Installation

- We now install the following software:
 1. MySQL Community Server
 2. MySQL Workbench
- For Windows, both (1) and (2) are in the same download package.
- For MacOS, you will need to download and install them separately.

Installing MySQL on Windows

Installation on a Windows computer

- MySQL Community Server
- MS Windows:
 - msi installer: <https://dev.mysql.com/get/Downloads/MySQLInstaller/mysql-installer-community-8.0.35.0.msi>

Install

The screenshot shows the MySQL Installer interface. The title bar reads "MySQL Installer". The main window title is "MySQL® Installer" with a subtitle "Adding Community". On the left, a sidebar lists "Choosing a Setup Type", "Download", "Installation", and "Installation Complete". The main content area is titled "Choosing a Setup Type" with the instruction "Please select the Setup Type that suits your use case." A list of setup types is shown with "Developer Default" selected:

- Developer Default**
Installs all products needed for MySQL development purposes.
- Server only**
Installs only the MySQL Server product.
- Client only**
Installs only the MySQL Client products, without a server.
- Full**
Installs all included MySQL products and features.
- Custom**
Manually select the products that should be installed on the system.

A "Setup Type Description" panel on the right provides details for the selected "Developer Default" option:

Setup Type Description

Installs the MySQL Server and the tools required for MySQL application development. This is useful if you intend to develop applications for an existing server.

This Setup Type includes:

- * MySQL Server
- * MySQL Shell
The new MySQL client application to manage MySQL Servers and InnoDB cluster instances.
- * MySQL Router
High availability router daemon for InnoDB cluster setups to be installed on application

At the bottom right are "Next >" and "Cancel" buttons.

Install

The MySQL Installer window is titled "MySQL. Installer" and shows the "Adding Community" edition. On the left sidebar, under "Choosing a Setup Type", the "Check Requirements" option is selected, highlighted in blue. The main content area is titled "Check Requirements" and contains the following text:
The following products have failing requirements. MySQL Installer will attempt to resolve them automatically. Requirements marked as manual cannot be resolved automatically. Click on each item to try and resolve it manually.

For Product	Requirement	Status
<input type="radio"/> MySQL for Visual Studio 1.2.10	Visual Studio version 2015, 2017 or 2...	Manual

At the bottom of the window are three buttons: "< Back", "Next >", and "Cancel".

Install

MySQL Installer

MySQL. Installer

Adding Community

Choosing a Setup Type

Check Requirements

Installation

Product Configuration

Installation Complete

Check Requirements

The following products have failing requirements. MySQL Installer will attempt to resolve them automatically. Requirements marked as manual cannot be resolved automatically. Click on each item to try and resolve it manually.

For Product	Requirement	Status
<input type="radio"/> MySQL for Visual Studio 1.2.10	Visual Studio version 2015, 2017 or 2...	Manual

MySQL Installer

One or more product requirements have not been satisfied

Those products with missing requirements will not be installed or

Do you want to continue?

Yes No

< Back Next > Cancel

Install

MySQL Installer

MySQL. Installer

Adding Community

Choosing a Setup Type

Installation

Product Configuration

Installation Complete

Installation

The following products will be installed.

Product	Status	Progress	Notes
MySQL Server 8.0.27	Ready to Install		
MySQL Workbench 8.0.27	Ready to Install		
MySQL Shell 8.0.27	Ready to Install		
MySQL Router 8.0.27	Ready to Install		
Connector/ODBC 8.0.27	Ready to Install		
Connector/C++ 8.0.27	Ready to Install		
Connector/J 8.0.27	Ready to Install		
Connector/.NET 8.0.27	Ready to Install		
Connector/Python 8.0.27	Ready to Install		
MySQL Documentation 8.0.27	Ready to Install		
Samples and Examples 8.0.27	Ready to Install		

Click [Execute] to install the following packages.

< Back Execute Cancel

Install

MySQL Installer

MySQL. Installer

Adding Community

Choosing a Setup Type

Installation

Product Configuration

Installation Complete

Installation

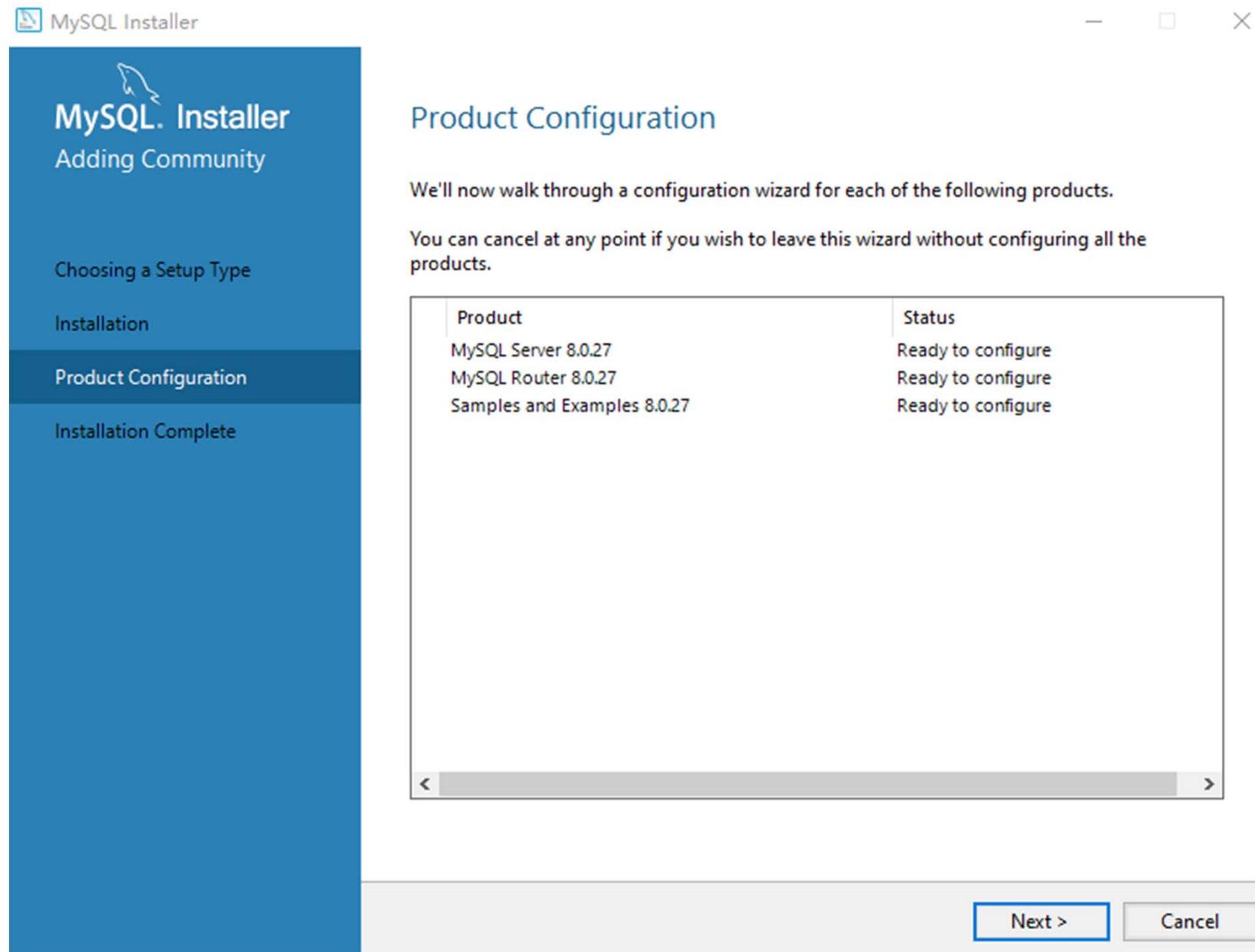
The following products will be installed.

Product	Status	Progress	Notes
MySQL Server 8.0.27	Complete		
MySQL Workbench 8.0.27	Complete		
MySQL Shell 8.0.27	Complete		
MySQL Router 8.0.27	Complete		
Connector/ODBC 8.0.27	Complete		
Connector/C++ 8.0.27	Complete		
Connector/J 8.0.27	Complete		
Connector/.NET 8.0.27	Complete		
Connector/Python 8.0.27	Complete		
MySQL Documentation 8.0.27	Complete		
Samples and Examples 8.0.27	Complete		

Show Details >

< Back Next > Cancel

Install



The image shows the MySQL Installer window. The title bar says "MySQL Installer". The main area has a blue header with the MySQL logo and the text "MySQL. Installer" and "Adding Community". Below the header is a sidebar with the following options:

- Choosing a Setup Type
- Installation** (selected)
- Product Configuration** (selected)
- Installation Complete

The main content area is titled "Product Configuration" and contains the following text:

We'll now walk through a configuration wizard for each of the following products.
You can cancel at any point if you wish to leave this wizard without configuring all the products.

Product	Status
MySQL Server 8.0.27	Ready to configure
MySQL Router 8.0.27	Ready to configure
Samples and Examples 8.0.27	Ready to configure

At the bottom right are "Next >" and "Cancel" buttons. The "Next >" button is highlighted with a blue border.

Install

MySQL Installer

MySQL. Installer

MySQL Server 8.0.27

Type and Networking

Server Configuration Type

Choose the correct server configuration type for this MySQL Server installation. This setting will define how much system resources are assigned to the MySQL Server instance.

Config Type: Development Computer

Connectivity

Use the following controls to select how you would like to connect to this server.

TCP/IP Port: 3306 ! X Protocol Port: 33060

Open Windows Firewall ports for network access

Named Pipe Pipe Name: MYSQL

Shared Memory Memory Name: MYSQL

Advanced Configuration

Select the check box below to get additional configuration pages where you can set advanced and logging options for this server instance.

Show Advanced and Logging Options

Next > Cancel

The screenshot shows the MySQL Installer window for MySQL Server 8.0.27. The main title bar says 'MySQL Installer' with the MySQL logo. Below it, the sub-title is 'MySQL Server 8.0.27'. On the left, a sidebar menu lists 'Type and Networking' (selected), 'Authentication Method', 'Accounts and Roles', 'Windows Service', and 'Apply Configuration'. The main content area is titled 'Type and Networking' and 'Server Configuration Type'. It asks to choose the correct configuration type for the MySQL Server installation, noting it defines resource allocation. A dropdown menu shows 'Development Computer' selected. The 'Connectivity' section allows selecting connection methods: TCP/IP (selected), Named Pipe, and Shared Memory. It also includes fields for port numbers (3306 and 33060) and pipe/memory names (both set to 'MYSQL'). An 'Advanced Configuration' section offers a checkbox for 'Show Advanced and Logging Options'. At the bottom are 'Next >' and 'Cancel' buttons.

Install

MySQL Installer

MySQL® Installer

MySQL Server 8.0.27

Type and Networking

Authentication Method

Accounts and Roles

Windows Service

Apply Configuration

Authentication Method

Use Strong Password Encryption for Authentication (RECOMMENDED)

MySQL 8 supports a new authentication based on improved stronger SHA256-based password methods. It is recommended that all new MySQL Server installations use this method going forward.

 Attention: This new authentication plugin on the server side requires new versions of connectors and clients which add support for this new 8.0 default authentication (caching_sha2_password authentication).

Currently MySQL 8.0 Connectors and community drivers which use libmysqlclient 8.0 support this new method. If clients and applications cannot be updated to support this new authentication method, the MySQL 8.0 Server can be configured to use the legacy MySQL Authentication Method below.

Use Legacy Authentication Method (Retain MySQL 5.x Compatibility)

Using the old MySQL 5.x legacy authentication method should only be considered in the following cases:

- If applications cannot be updated to use MySQL 8 enabled Connectors and drivers.
- For cases where re-compilation of an existing application is not feasible.
- An updated, language specific connector or driver is not yet available.

Security Guidance: When possible, we highly recommend taking needed steps towards upgrading your applications, libraries, and database servers to the new stronger authentication. This new method will significantly improve your security.

< Back Next > Cancel

REMEMBER YOUR PASSWORD

MySQL Installer

MySQL® Installer

MySQL Server 8.0.27

Type and Networking

Authentication Method

Accounts and Roles

Windows Service

Apply Configuration

Accounts and Roles

Root Account Password
Enter the password for the root account. Please remember to store this password in a secure place.

MySQL Root Password: **••••**

Repeat Password: **••••**

Password strength: **Weak**

MySQL User Accounts

Create MySQL user accounts for your users and applications. Assign a role to the user that consists of a set of privileges.

MySQL User Name	Host	User Role

Add User

Edit User

Delete

< Back

Next >

Cancel

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Install

MySQL Installer

MySQL. Installer
MySQL Server 8.0.27

Type and Networking
Authentication Method
Accounts and Roles
Windows Service
Apply Configuration

Configure MySQL Server as a Windows Service

Windows Service Details
Please specify a Windows Service name to be used for this MySQL Server instance.
A unique name is required for each instance.

Windows Service Name:

Start the MySQL Server at System Startup

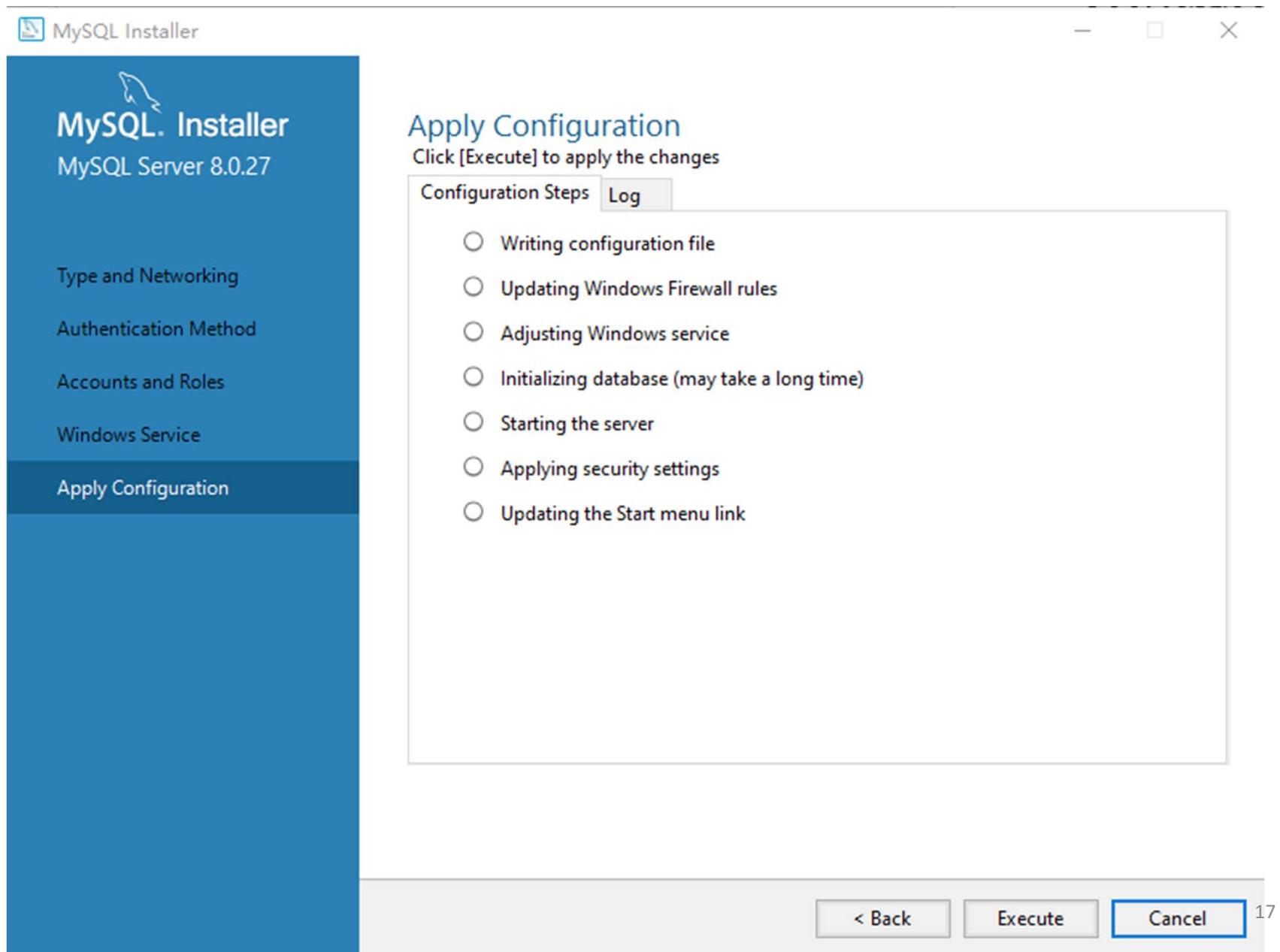
Run Windows Service as ...
The MySQL Server needs to run under a given user account. Based on the security requirements of your system you need to pick one of the options below.

Standard System Account
Recommended for most scenarios.

Custom User
An existing user account can be selected for advanced scenarios.

< Back Next > Cancel

Install



Install

The screenshot shows the MySQL Installer window for MySQL Server 8.0.27. On the left, a sidebar lists several configuration steps: Type and Networking, Authentication Method, Accounts and Roles, Windows Service, and Apply Configuration. The 'Apply Configuration' step is currently selected. The main pane is titled 'Apply Configuration' and displays a message: 'The configuration operation has completed.' Below this, a list of configuration steps is shown, each preceded by a green checkmark:

- Writing configuration file
- Updating Windows Firewall rules
- Adjusting Windows service
- Initializing database (may take a long time)
- Starting the server
- Applying security settings
- Updating the Start menu link

At the bottom of the main pane, a message states: 'The configuration for MySQL Server 8.0.27 was successful. Click Finish to continue.' In the bottom right corner of the main pane, there is a 'Finish' button.

Install

MySQL Installer

The screenshot shows the MySQL Installer window. The title bar says "MySQL Installer". The main area has a blue header with the MySQL logo and the text "MySQL® Installer" and "Adding Community". Below the header is a sidebar with four options: "Choosing a Setup Type", "Installation" (which is selected), "Product Configuration" (which is highlighted with a dark blue background), and "Installation Complete". To the right of the sidebar is the "Product Configuration" content area. It contains the heading "Product Configuration" and two paragraphs of text. Below the text is a table with three rows. At the bottom of the table is a navigation bar with arrows and a status bar with "Next >" and "Cancel" buttons.

MySQL® Installer
Adding Community

Choosing a Setup Type

Installation

Product Configuration

Installation Complete

Product Configuration

We'll now walk through a configuration wizard for each of the following products.

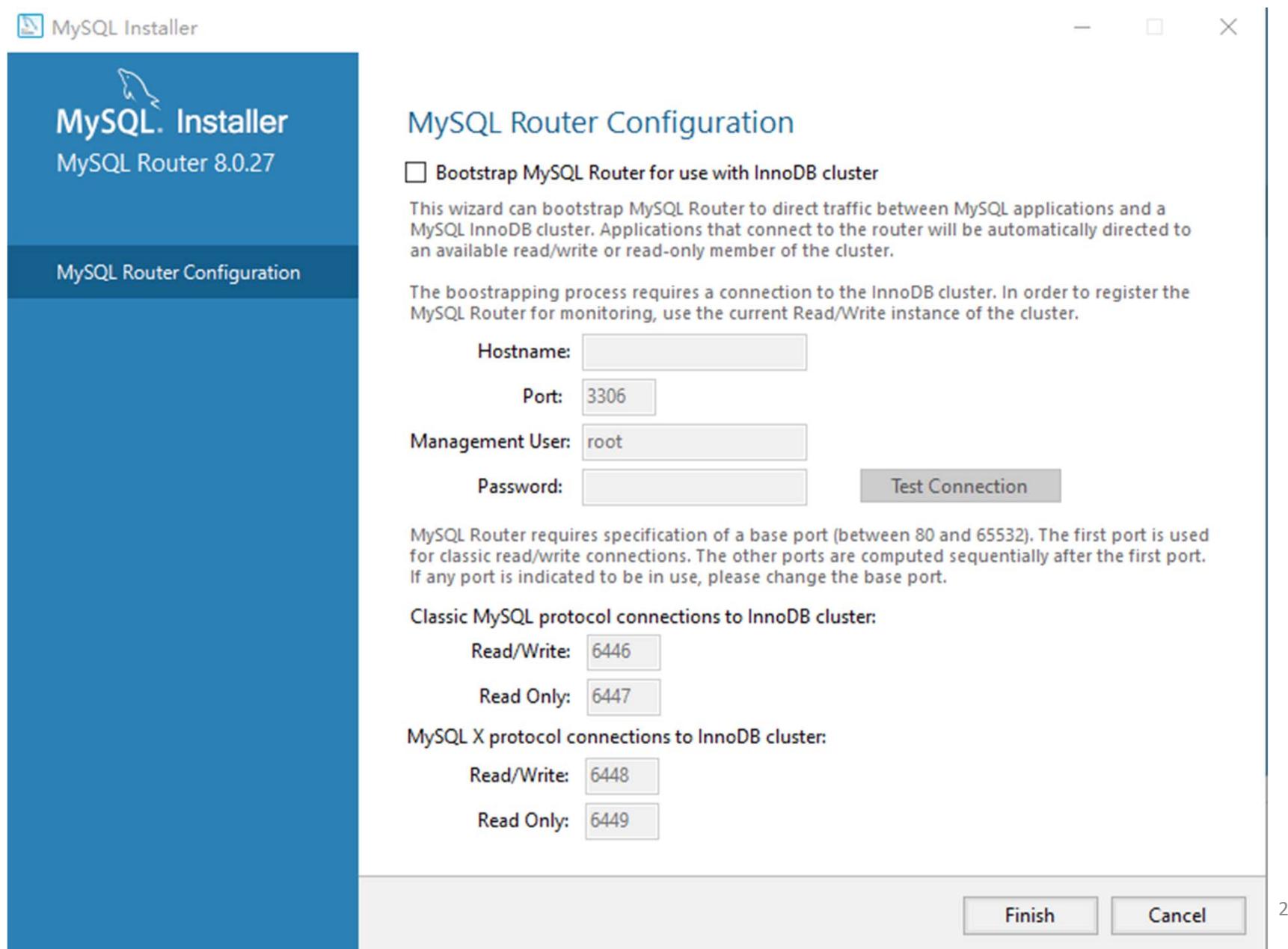
You can cancel at any point if you wish to leave this wizard without configuring all the products.

Product	Status
MySQL Server 8.0.27	Configuration complete.
MySQL Router 8.0.27	Ready to configure
Samples and Examples 8.0.27	Ready to configure

< >

Next > Cancel

Install



Install

The screenshot shows the MySQL Installer window. The title bar says "MySQL Installer". The main area has a blue sidebar on the left with the following options:

- Choosing a Setup Type
- Installation
- Product Configuration** (highlighted)
- Installation Complete

The main content area is titled "Product Configuration". It contains the following text:

We'll now walk through a configuration wizard for each of the following products.
You can cancel at any point if you wish to leave this wizard without configuring all the products.

Product	Status
MySQL Server 8.0.27	Configuration complete.
MySQL Router 8.0.27	Configuration not needed.
Samples and Examples 8.0.27	Ready to configure

At the bottom right are "Next >" and "Cancel" buttons. The page number "21" is in the bottom right corner of the slide.

Install

MySQL Installer

MySQL. Installer

Samples and Examples

Connect To Server

Apply Configuration

Connect To Server

Select the MySQL server instances from the list to receive sample schemas and data.

	Server	Port	Arch...	Type	Status
<input checked="" type="checkbox"/>	MySQL Server 8.0.27	3307	X64	Stand-alone Server	Connection succeeded.

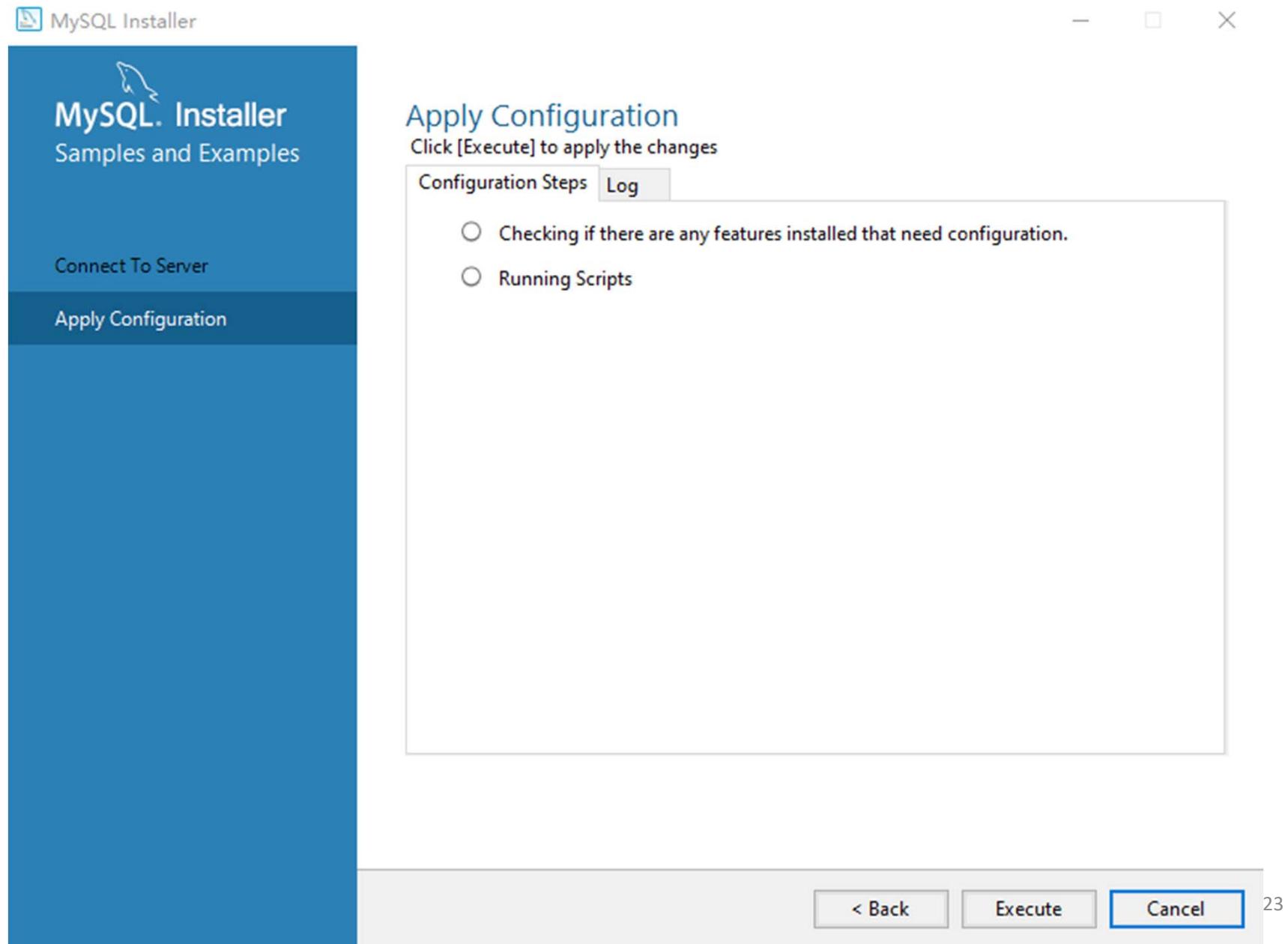
Provide the credentials that should be used (requires root privileges).
Click "Check" to ensure they work.

User name: Credentials provided in Server configuration

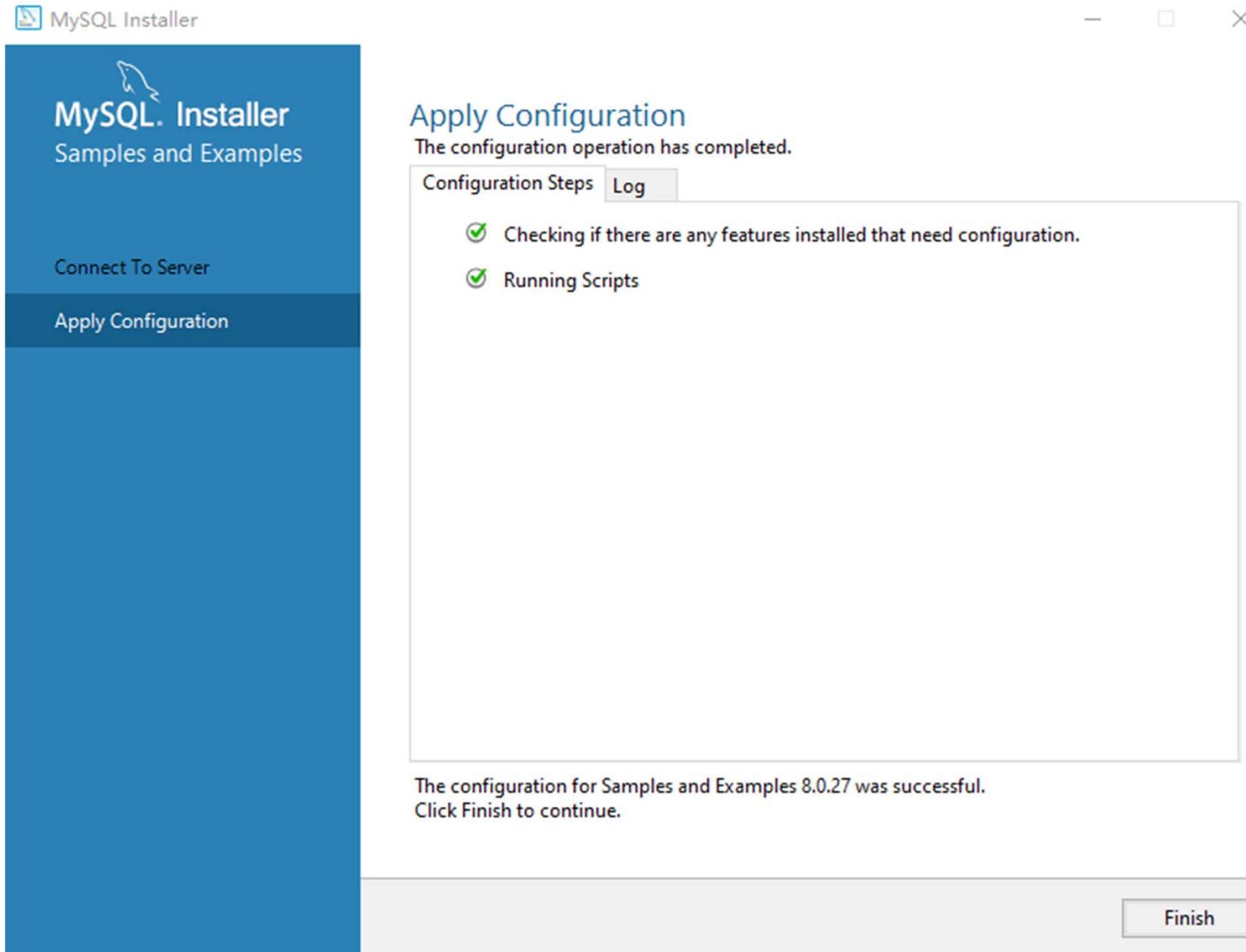
Password:

✓

Install



Install



Finish

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Install

MySQL Installer

MySQL® Installer

Adding Community

- Choosing a Setup Type
- Installation
- Product Configuration
- Installation Complete

The installation procedure has been completed.

Copy Log to Clipboard

Start MySQL Workbench after setup
 Start MySQL Shell after setup

The MySQL Shell is an advanced MySQL client application that can be used to work with single MySQL Server instances. Further, it can be used to create and manage an InnoDB cluster, an integrated solution for high availability and scalability of MySQL databases, without requiring advanced MySQL expertise.



Refer to the following links for documentation, tutorials and examples on MySQL Shell:

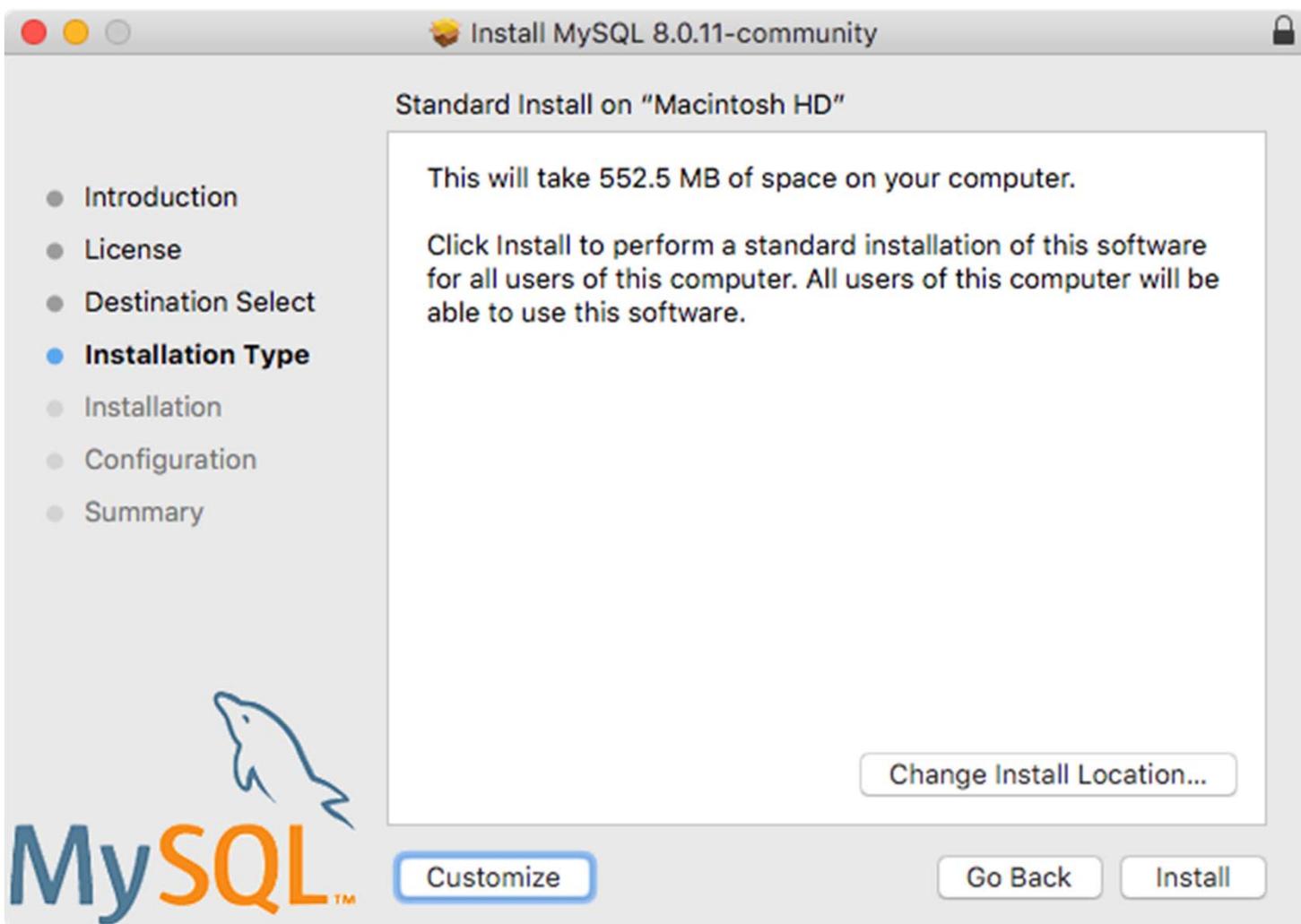
[MySQL Shell Documentation](#) [Setting up a Real World Cluster Blog](#)
[The All New MySQL InnoDB ReplicaSet Blog](#) [Changing Cluster Options Live Blog](#)

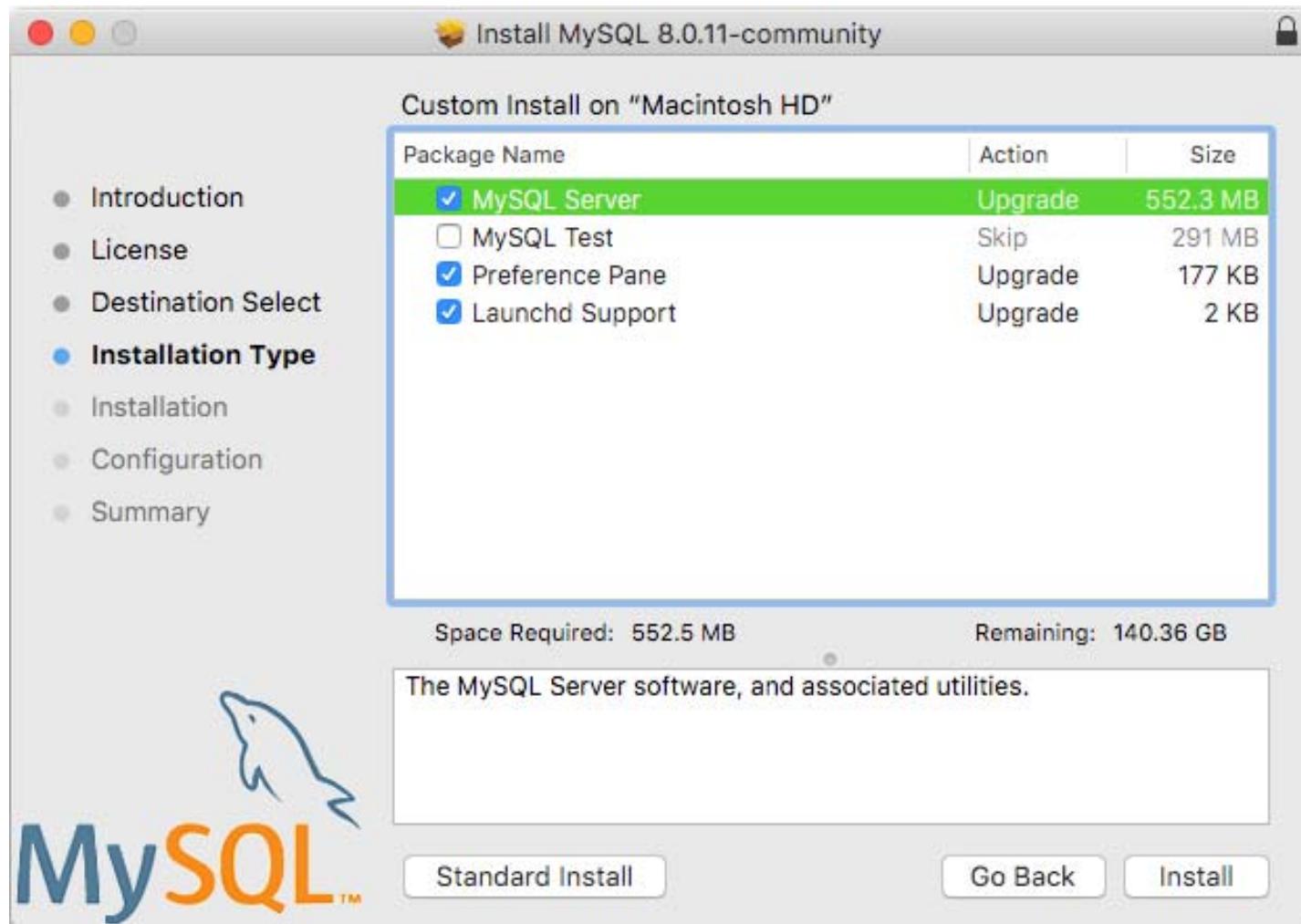
Finish

Installing MySQL on MacOS

Installation on MacOS

- Download the MySQL Community Server:
 - https://dev.mysql.com/get/Downloads/MySQL-8.0/mysql-8.0.35-macos13-x86_64.dmg (if your MacOS is running on Intel chip)
 - <https://dev.mysql.com/get/Downloads/MySQL-8.0/mysql-8.0.35-macos13-arm64.dmg> (if your MacOS is running on ARM)
- Check the MacOS version!
- Follow the instructions here:
 - <https://dev.mysql.com/doc/mysql-macos-excerpt/8.0/en/macos-installation-pkg.html>





 MySQL™

Install MySQL 8.0.11-community

Configure MySQL Server

- Introduction
- License
- Destination Select
- Installation Type
- Installation
- Configuration**
- Summary

Use Strong Password Encryption

MySQL 8 supports a new, stronger authentication method based on SHA256. All new installations of MySQL Server should use this method.

Connectors and clients that don't support this method will be unable to connect to MySQL Server. Currently, connectors and community drivers that use libmysqlclient 8.0 support the new method.

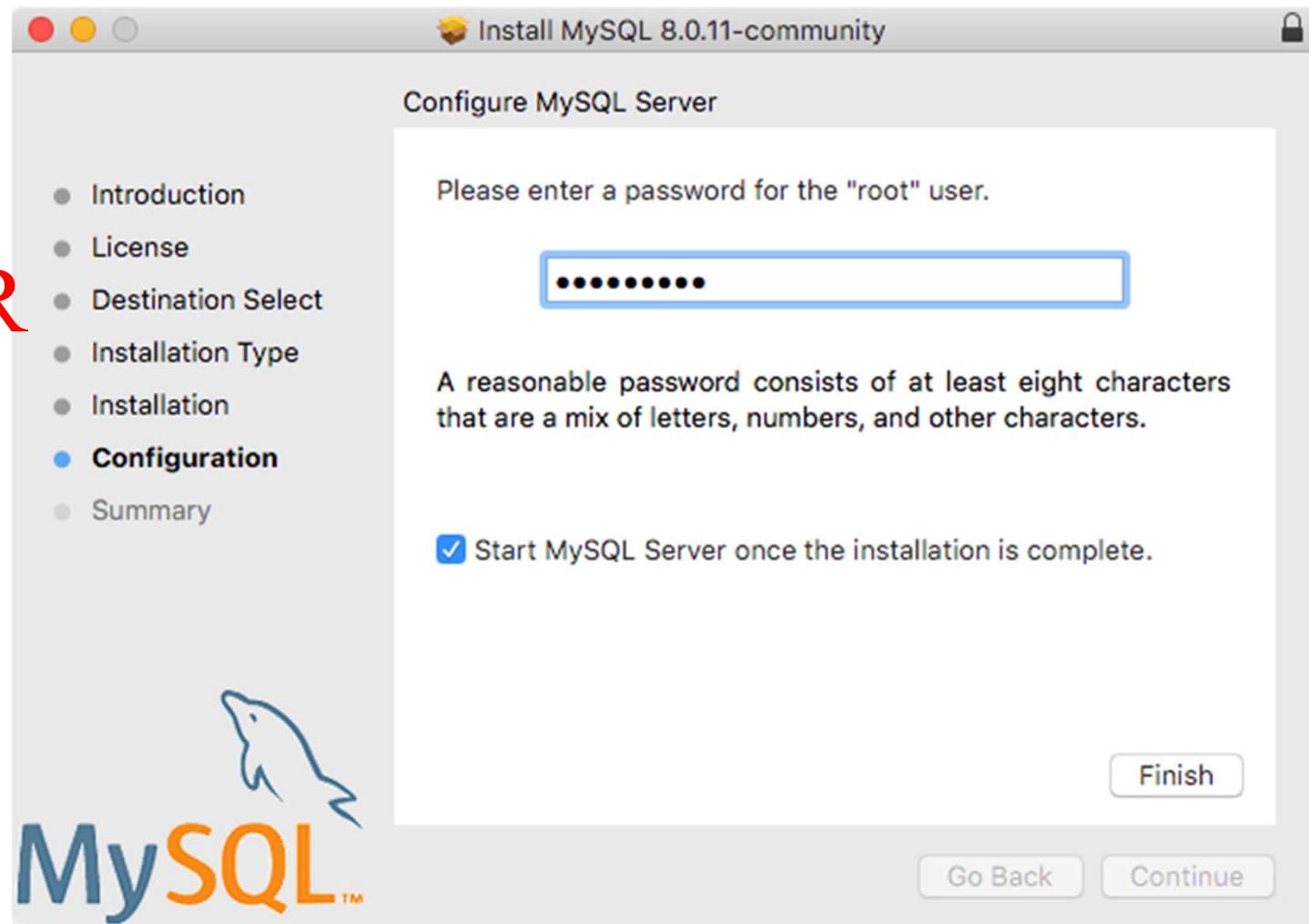
Use Legacy Password Encryption

The legacy authentication method should only be used when compatibility with MySQL 5.x connectors or clients is required and a client upgrade is not feasible.

Next

Go Back Continue

REMEMBER YOUR PASSWORD





Installation on MacOS

- Download the MySQL Workbench:
 - https://dev.mysql.com/get/Downloads/MySQLGUITools/mysql-workbench-community-8.0.34-macos-x86_64.dmg (if your MacOS is running on Intel chip)
 - <https://dev.mysql.com/get/Downloads/MySQLGUITools/mysql-workbench-community-8.0.34-macos-arm64.dmg> (if your MacOS is running on ARM)

- Drag the MySQL Workbench icon onto the Applications icon

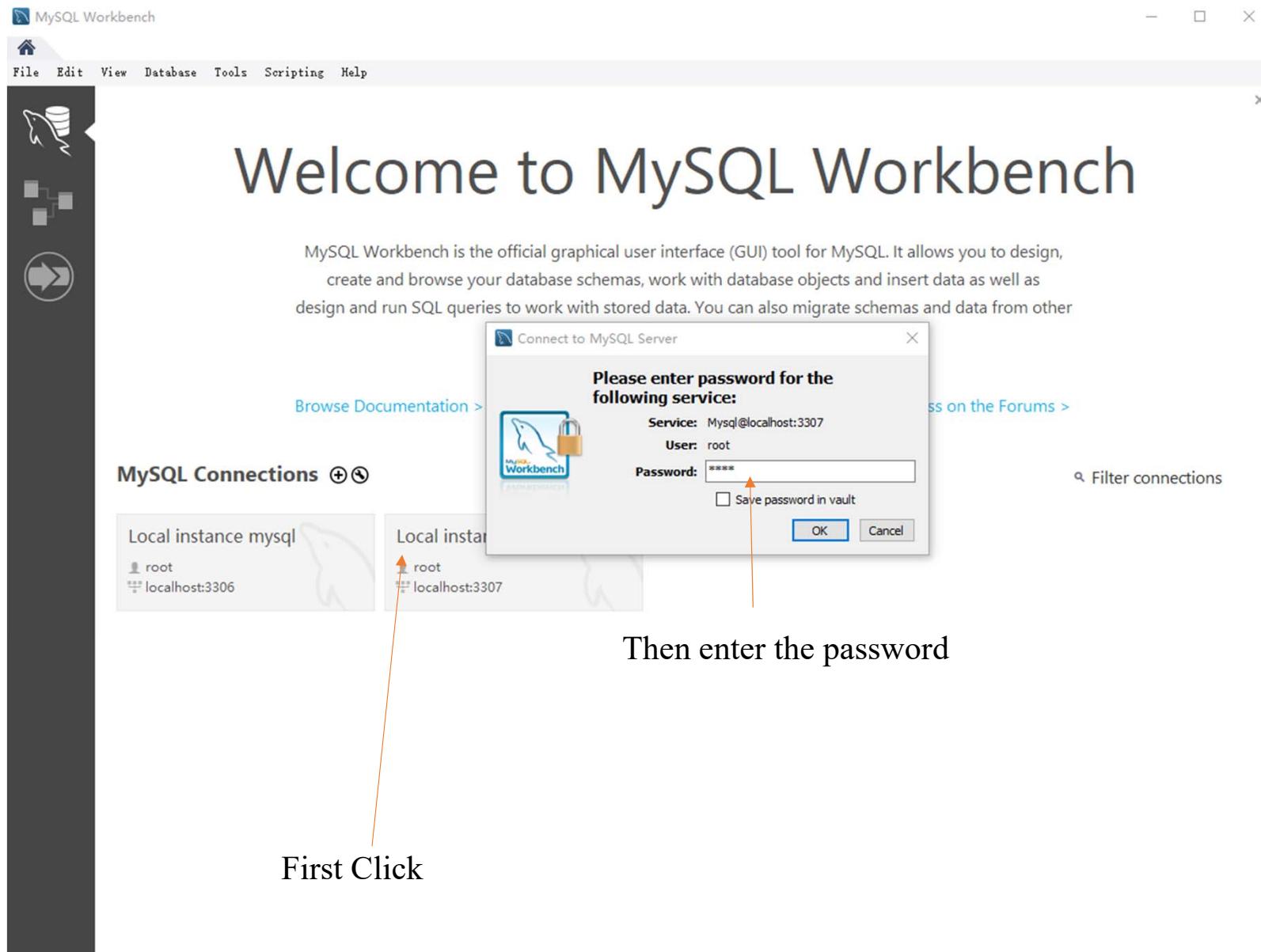


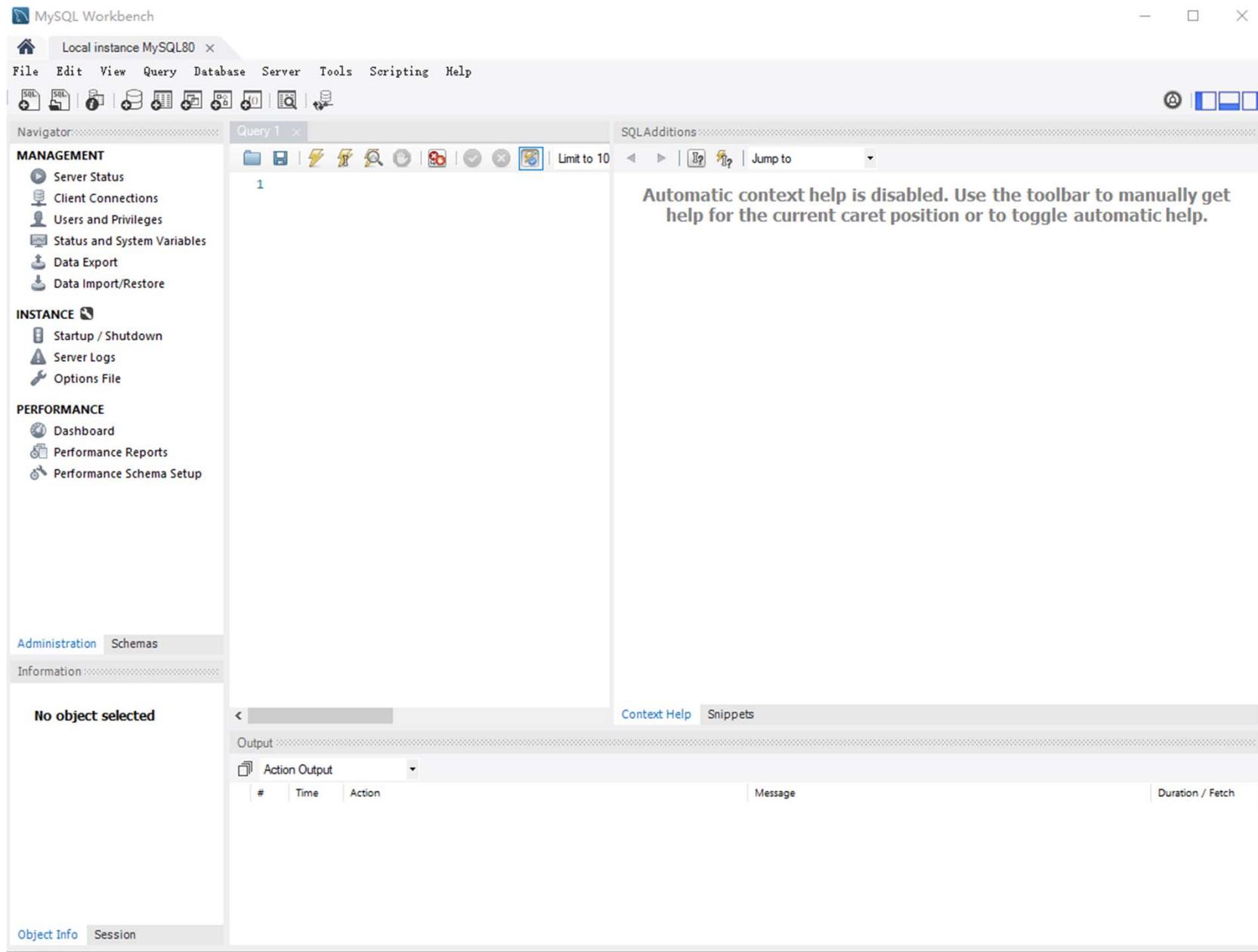
- You can now launch MySQL Workbench from the Applications folder

Building ER Diagram with MySQL Workbench

Sample data download

- Sample Data from Moodle Hands-on Materials: Please put “FS.csv”, “DP.csv”, and “Articles.csv” in “D:\MSBA7024”





Build ER Diagram with MySQL Workbench

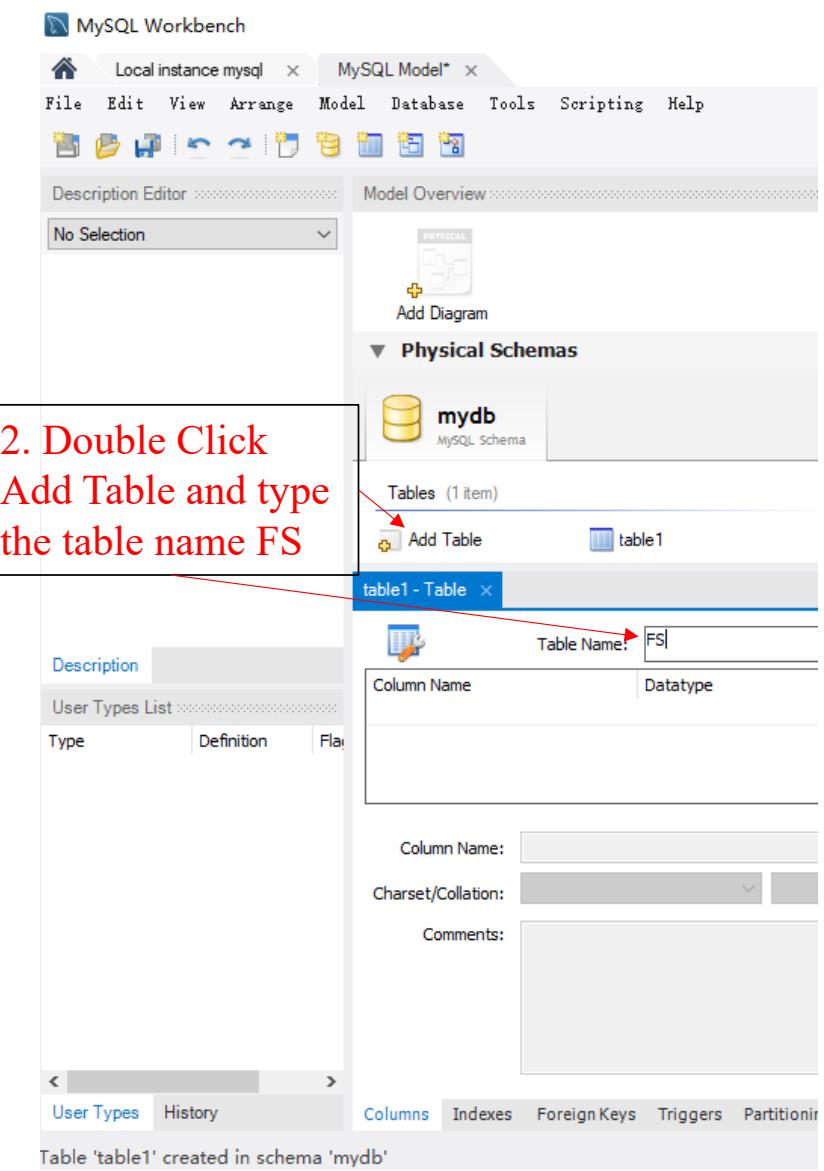
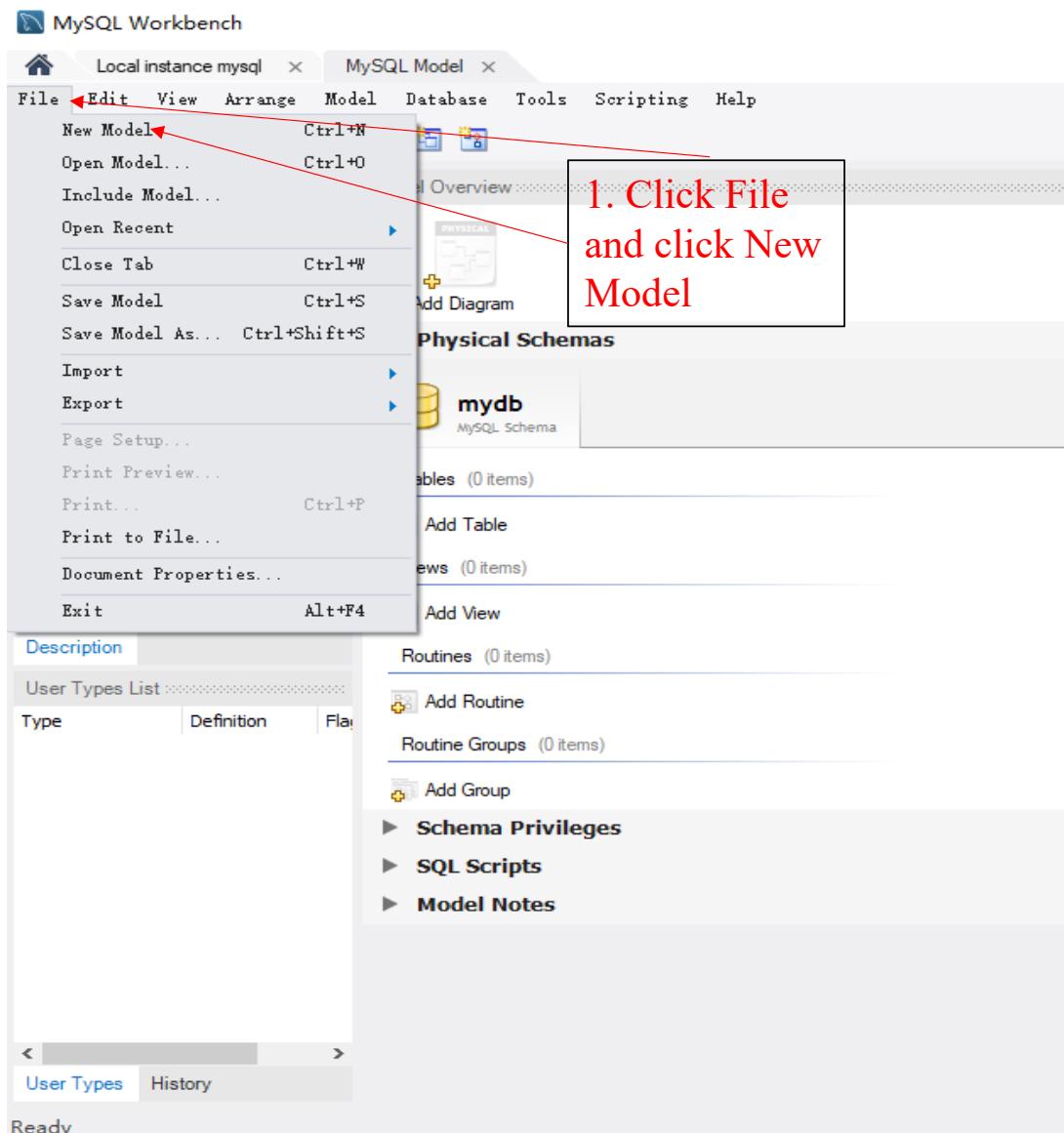
- What are the factors influencing stock price? Maybe Too Many?
- Traditional Factors:
- Fama French 3/5-factor model
- Financial Information (e.g. 3 Financial Statements)
- Analyst Opinion (e.g. Downgrade, Upgrade, Number)
- Corporate Structure (e.g. Institution Ownership Percentage)
- Others (e.g. Volatility)

Build ER Diagram with MySQL Workbench

- What are the factors influencing stock price? Maybe Too Many?
- Alternative Factors:
 - Traditional Media (e.g. Dow Jones News, Bloomberg, Financial Times)
 - Social Media (e.g. Seeking Alpha, Twitter, Facebook, Stocktwits)
 - Weather (e.g. Temperature, Humidity, Windspeed, Precipitation)
 - Investor Attention (e.g. Google Trends)

Simplified ER Diagram Tables

- Table 1: Financial Statements (FS.csv)
 - Columns: Ticker, Year, Total Assets...
- Table 2: Daily Price (DP.csv)
 - Columns: Ticker, Date, Close Price, Volume...
- Table 3: Articles (Articles.csv)
 - Columns: Article_Id, Title, Author, Date, Content, Ticker...



Physical Schemas

mydb MySQL Schema

Tables (1 item)

Add Table FS

FS - Table

Table Name: FS

Column Name	Datatype	PK	NN
idFS	INT	<input type="checkbox"/>	<input checked="" type="checkbox"/>

1. Double Click the blank area and type the column name Ticker

Column Name: idFS

Charset/Collation: Default Charset

Comments:

MySQL Model

Physical Schemas

mydb MySQL Schema

Tables (1 item)

Add Table FS

FS - Table

Table Name: FS

Column Name	Datatype	PK	NN
Ticker	CHAR(10)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

2. Choose the data type CHAR()

Column Name: Ticker

BLOB
—
BINARY()
BLOB()
LONGBLOB
MEDIUMBLOB
TINYBLOB
VARBINARY()
—
DATE
DATETIME()
TIME()
TIMESTAMP()
YEAR()
—
GEOMETRY
GEOMETRYCOLLECTION
LINESTRING
MULTILINESTRING
MULTIPOINT
MULTIPOLYGON
POINT
POLYGON
—
BIGINT()
DECIMAL
DOUBLE
FLOAT
INT()
MEDIUMINT()
REAL
SMALLINT()
TINYINT()
—
CHAR()
JSON
NCHAR()
NTEXT
TEXT
VARCHAR()
—
INT

3. Type 10 in CHAR() and uncheck PK and NN

ER Diagram Exercise

- Build the 3 Tables in MySQL Workbench and Draw ER Diagram
 - TY: Ticker_Year Group; TD: Ticker_Date Group
 - Table 1: Financial Statements
 - Columns: TY (PK), Ticker, Year, Total_Assets,
 - Table 2: Daily Price
 - Columns: TD (PK), Ticker, Date, Close_Price, Volume, Year, TY,
 - Table 3: Articles
 - Columns: Article_ID (PK), Title, Author, Ticker, Date, Year, Content, TY, TD

MySQL Workbench

Local instance MySQL80 x MySQL Model* x

File Edit View Arrange Model Database Tools Scripting Help

Description Editor: Articles: MySQL Table

Model Overview

Physical Schemas

- mydb MySQL Schema

Tables (3 items)

- Add Table
- DP
- FS
- Articles

Views (0 items)

Routines (0 items)

Add Routine

Routine Groups (0 items)

Add Group

Schema Privileges

SQL Scripts

Model Notes

Description

User Types List

Type Definition Flags

Articles - Table

Table Name: Articles Schema: mydb

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
Article_ID	INT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>						
Title	LONGTEXT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Author	LONGTEXT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ticker	CHAR(10)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Column Name: Data Type: Default:

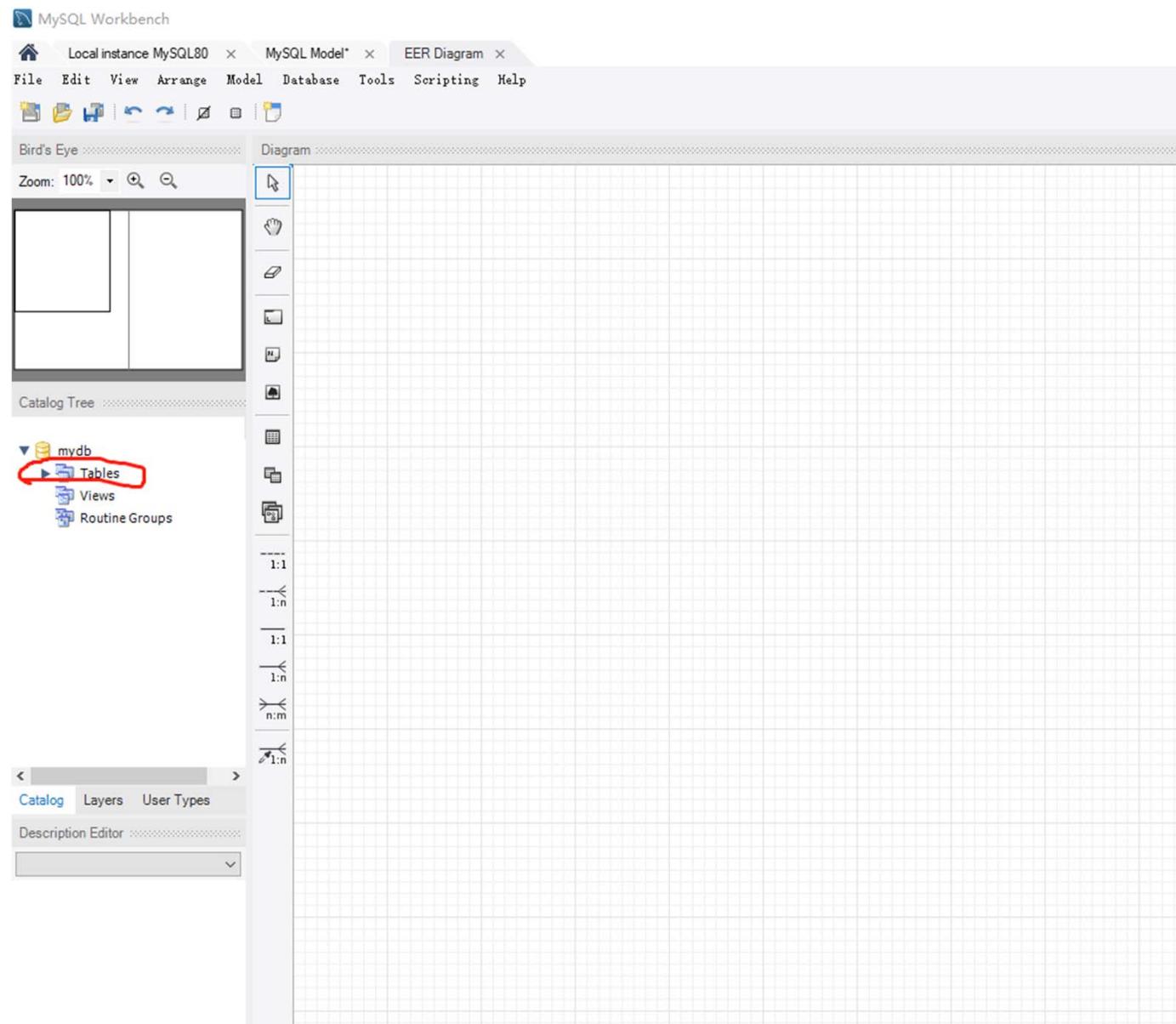
Charset/Collation:

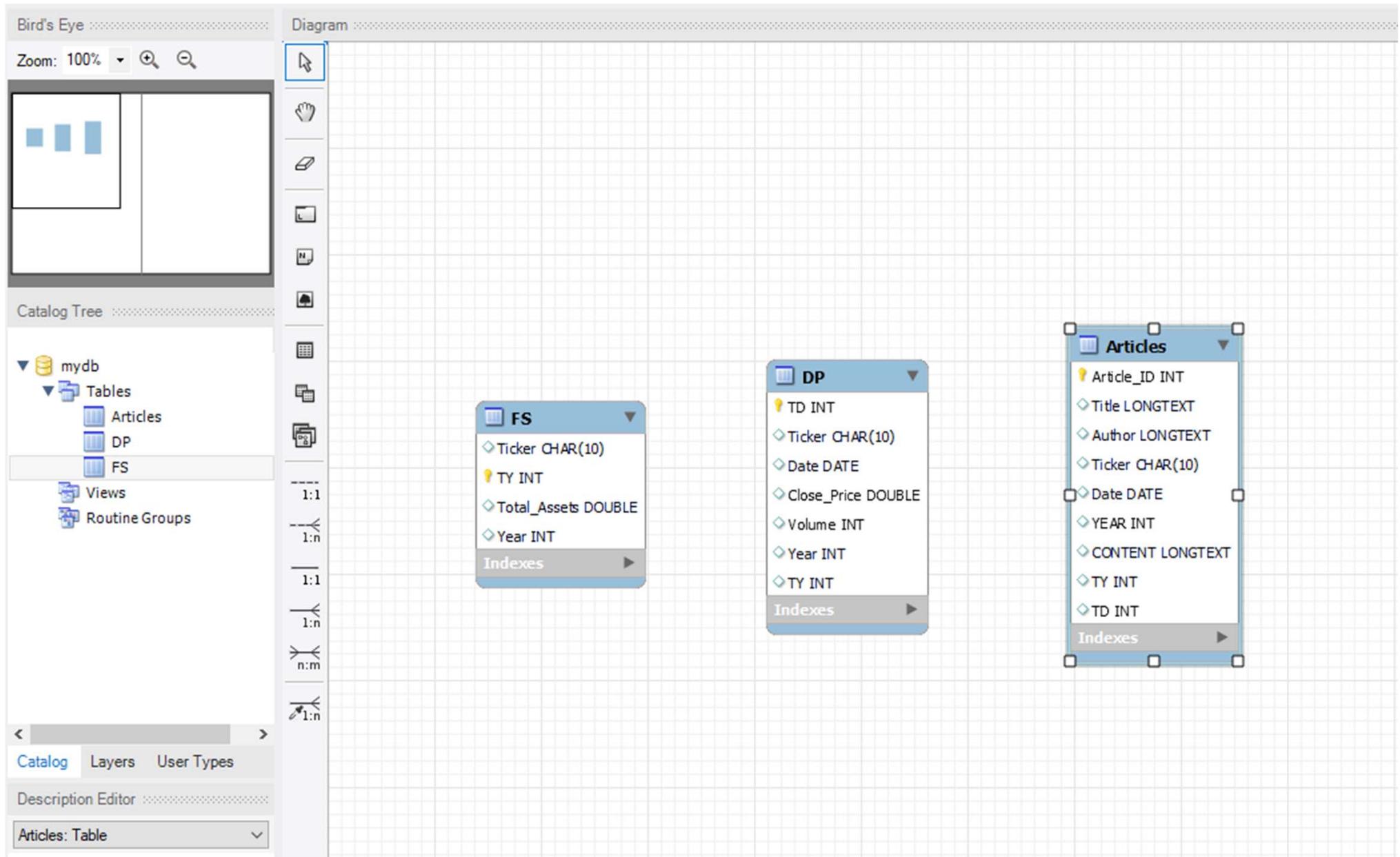
Comments:

Storage: Virtual Stored
 Primary Key Not Null Unique
 Binary Unsigned Zero Fill
 Auto Increment Generated

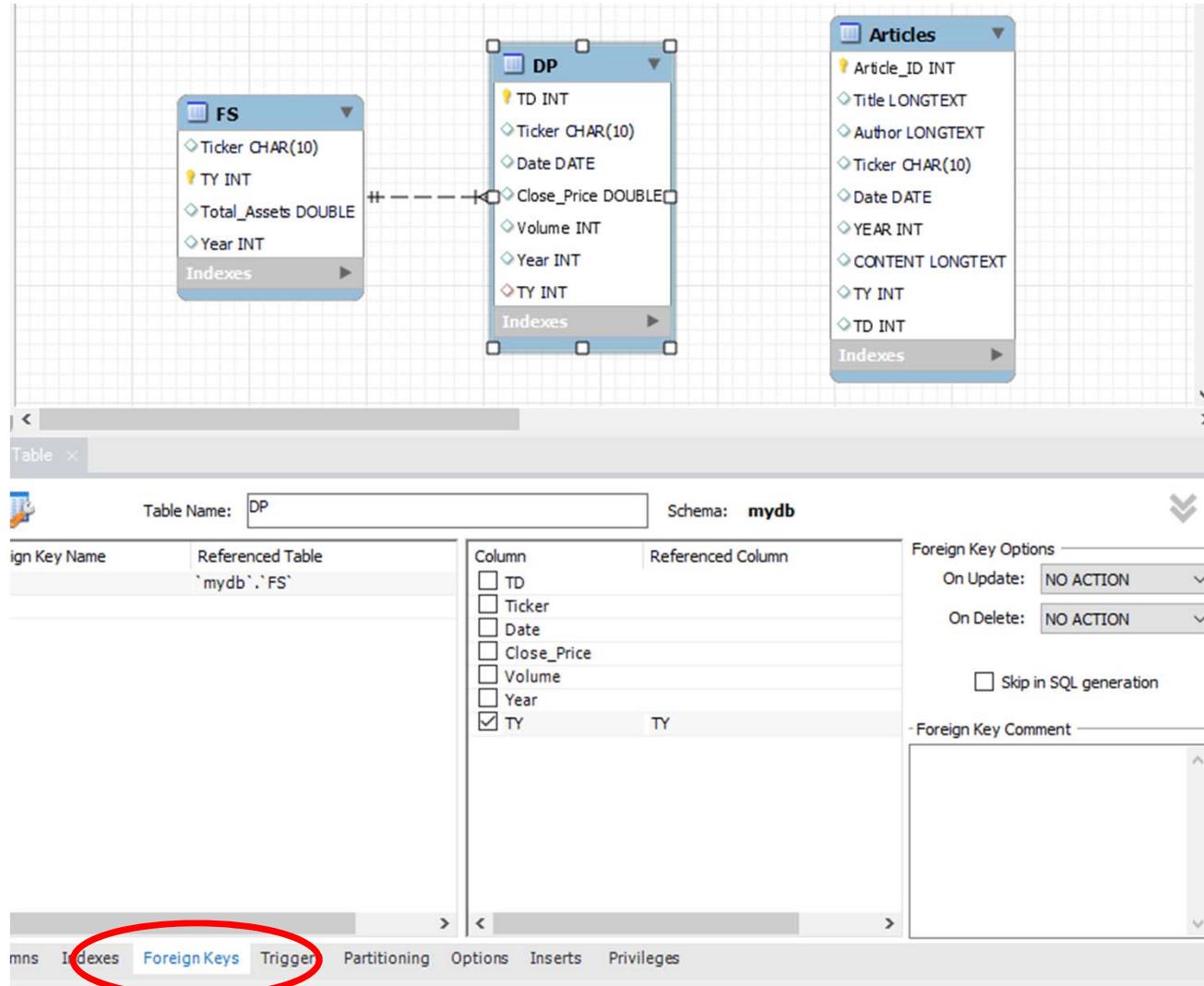
User Types History > Columns Indexes Foreign Keys Triggers Partitioning Options Inserts Privileges Templates

Ready

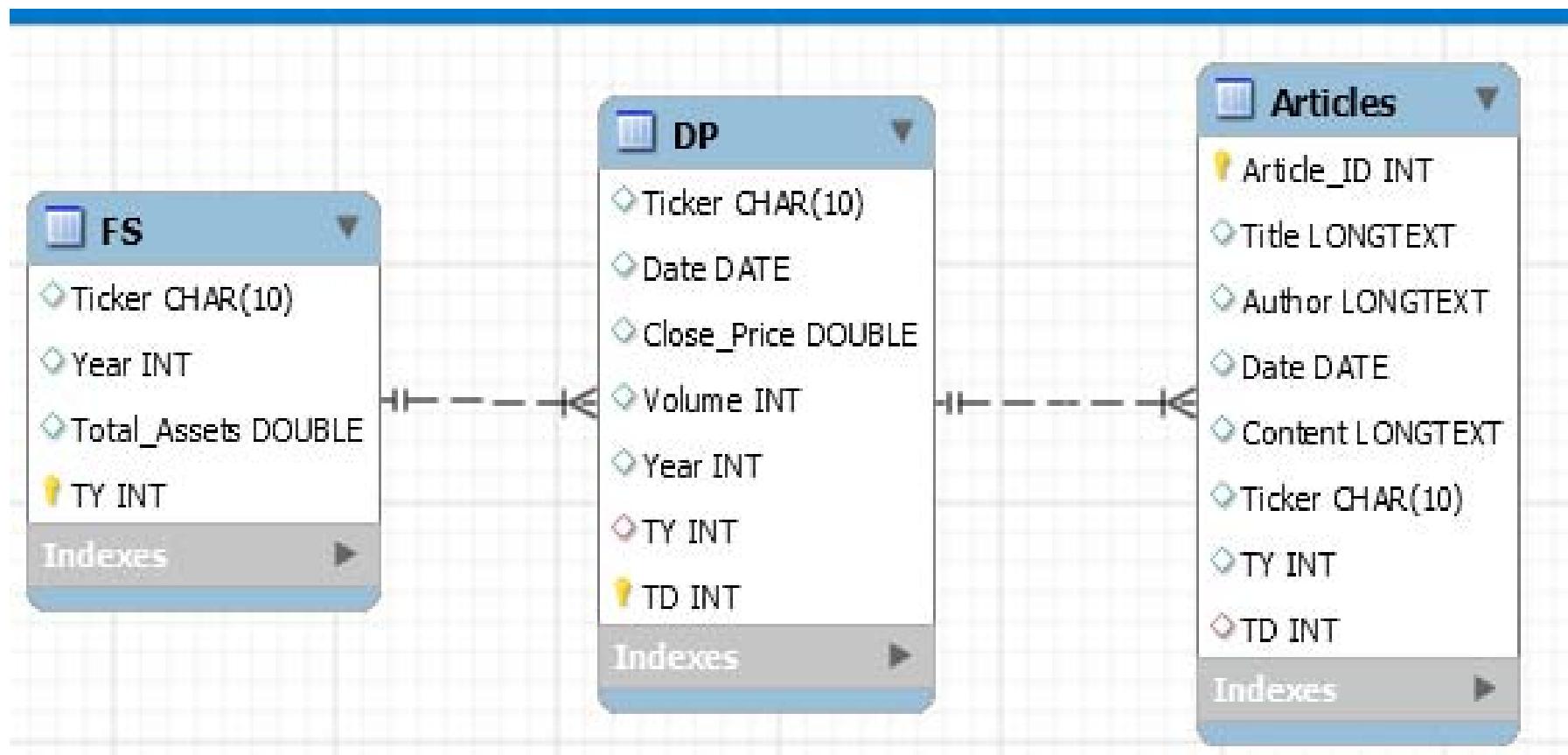




Build a One-to-Many Relationship



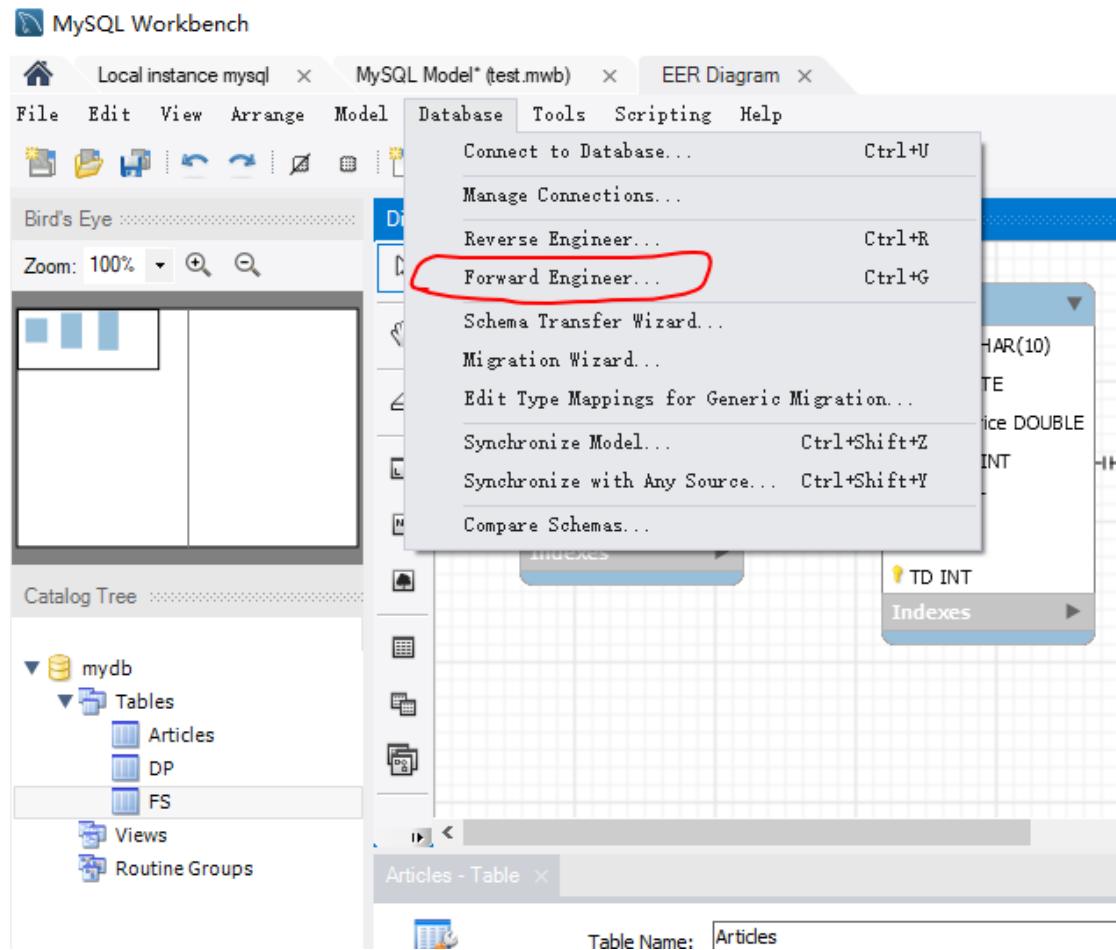
ER Diagram Exercise



SQL Exercise

- Write SQLs to build the 3 tables. Primary key and foreign key should also be established.

Forward Engineer ER Model into MySQL DB



Forward Engineer ER Model into MySQL DB

Forward Engineer to Database X

Connection Options

- Options
- Select Objects
- Review SQL Script
- Commit Progress

Set Parameters for Connecting to a DBMS

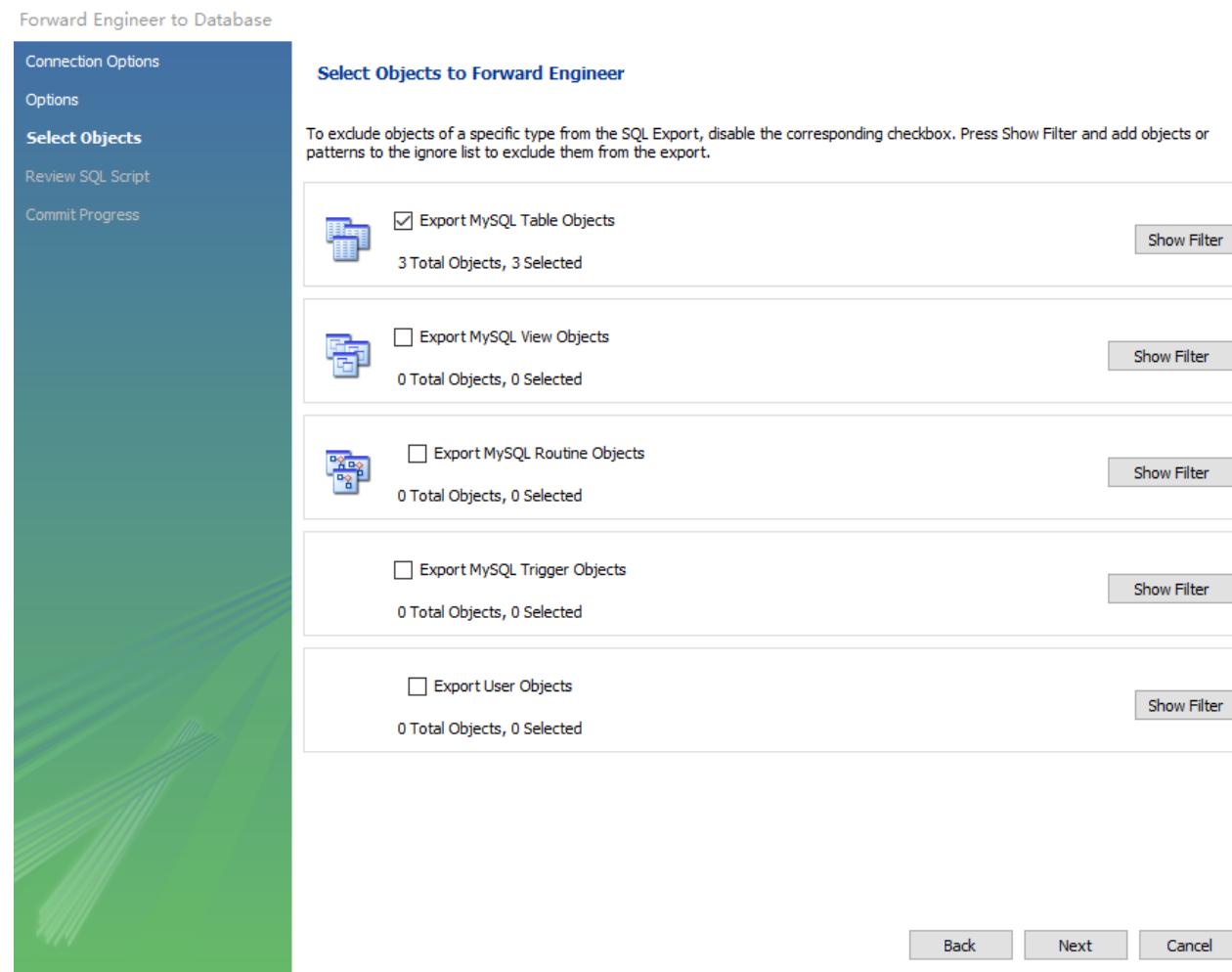
Stored Connection: Select from saved connection settings

Connection Method: Method to use to connect to the RDBMS

Parameters **SSL** **Advanced**

Hostname:	<input type="text" value="localhost"/>	Port:	<input type="text" value="3307"/>	Name or IP address of the server host - and TCP/IP port.
Username:	<input type="text" value="root"/>			Name of the user to connect with.
Password:	<input type="button" value="Store in Vault ..."/>	<input type="button" value="Clear"/>	The user's password. Will be requested later if it's not set.	
Default Schema:	<input type="text"/>			The schema to use as default schema. Leave blank to select it later.

Forward Engineer ER Model into MySQL DB



Forward Engineer ER Model into MySQL DB

Forward Engineer to Database

Connection Options
Options
Select Objects
Review SQL Script
Commit Progress

Review the SQL Script to be Executed

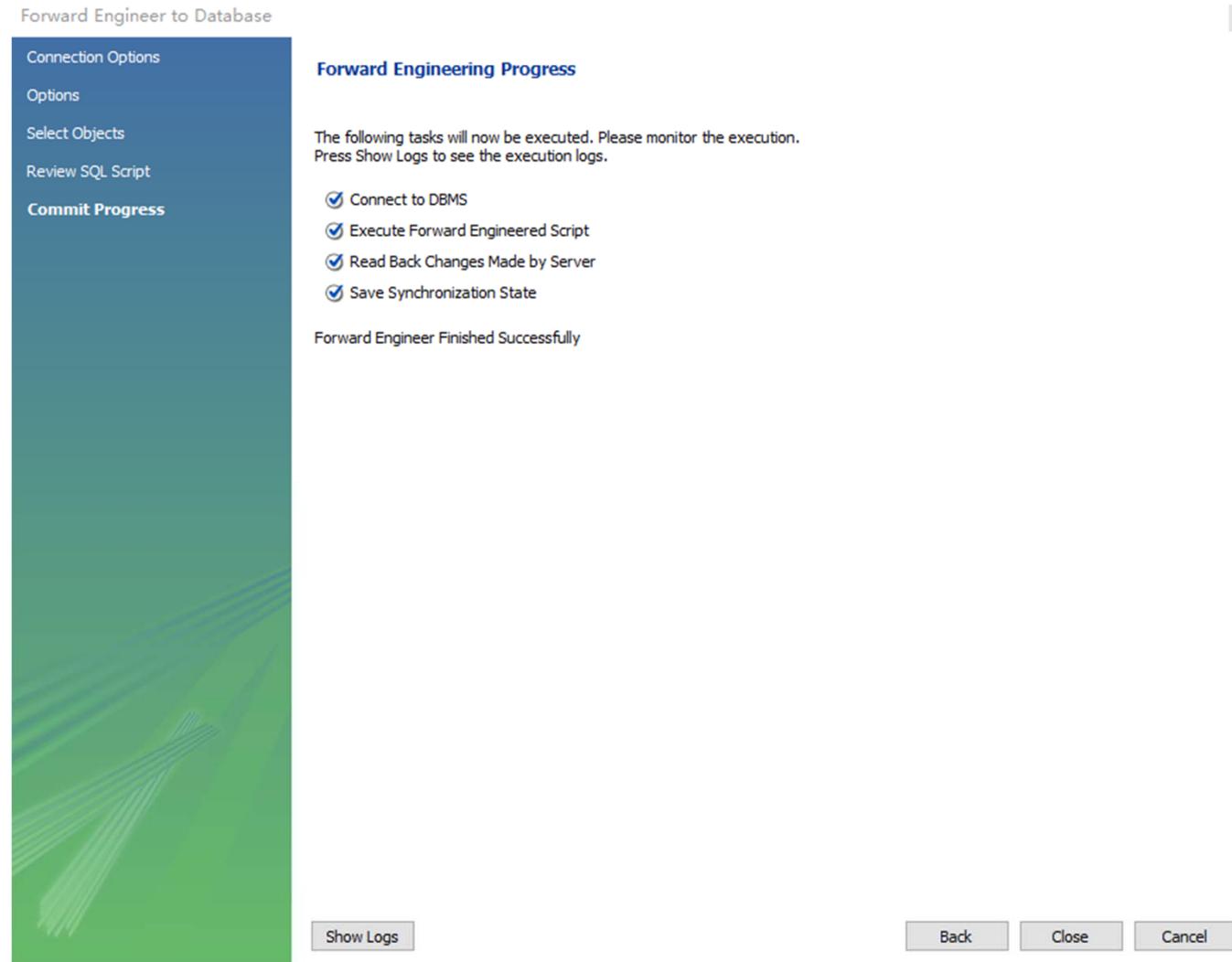
This script will now be executed on the DB server to create your databases.
You may make changes before executing.

```
1 -- MySQL Workbench Forward Engineering
2
3 SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0;
4 SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS, FOREIGN_KEY_CHECKS=0;
5 SET @OLD_SQL_MODE=@@SQL_MODE, SQL_MODE='ONLY_FULL_GROUP_BY,STRICT_TRANS_TABLES';
6
7 -----
8 -- Schema mydb
9 -----
10 -----
11 -- Schema mydb
12 -----
13 -----
14 CREATE SCHEMA IF NOT EXISTS `mydb` DEFAULT CHARACTER SET utf8 ;
15 USE `mydb` ;
16
17 -----
18 -- Table `mydb`.`FS`
19 -----
20 CREATE TABLE IF NOT EXISTS `mydb`.`FS` (
21     `Ticker` CHAR(10) NULL,
22     `TY` INT NOT NULL,
23     `Total_Assets` DOUBLE NULL,
24     `Year` INT NULL,
```

Save to File... Copy to Clipboard

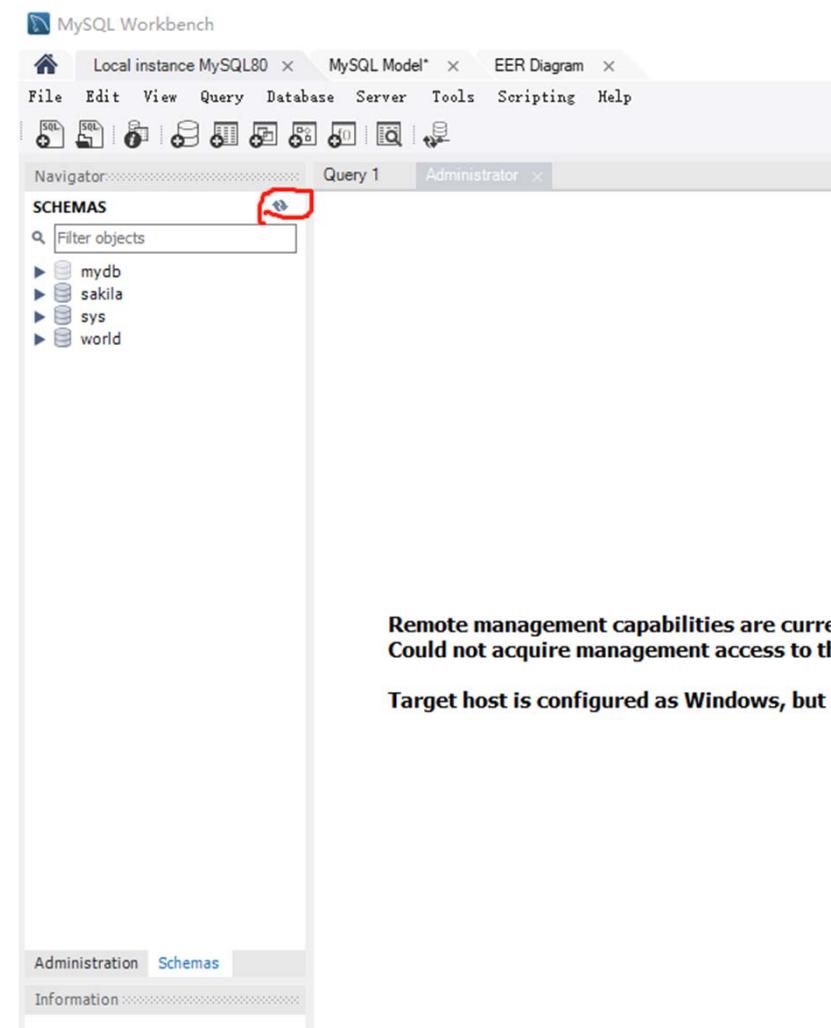
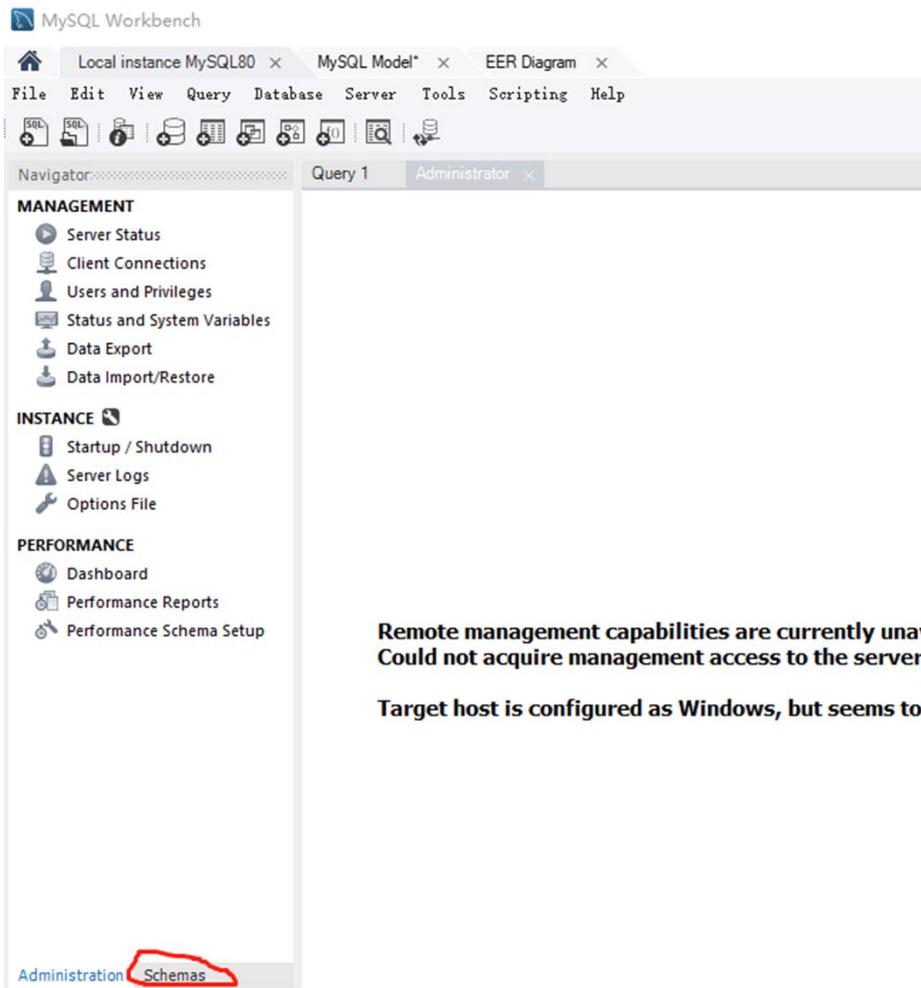
Back Next Cancel

Forward Engineer ER Model into MySQL DB

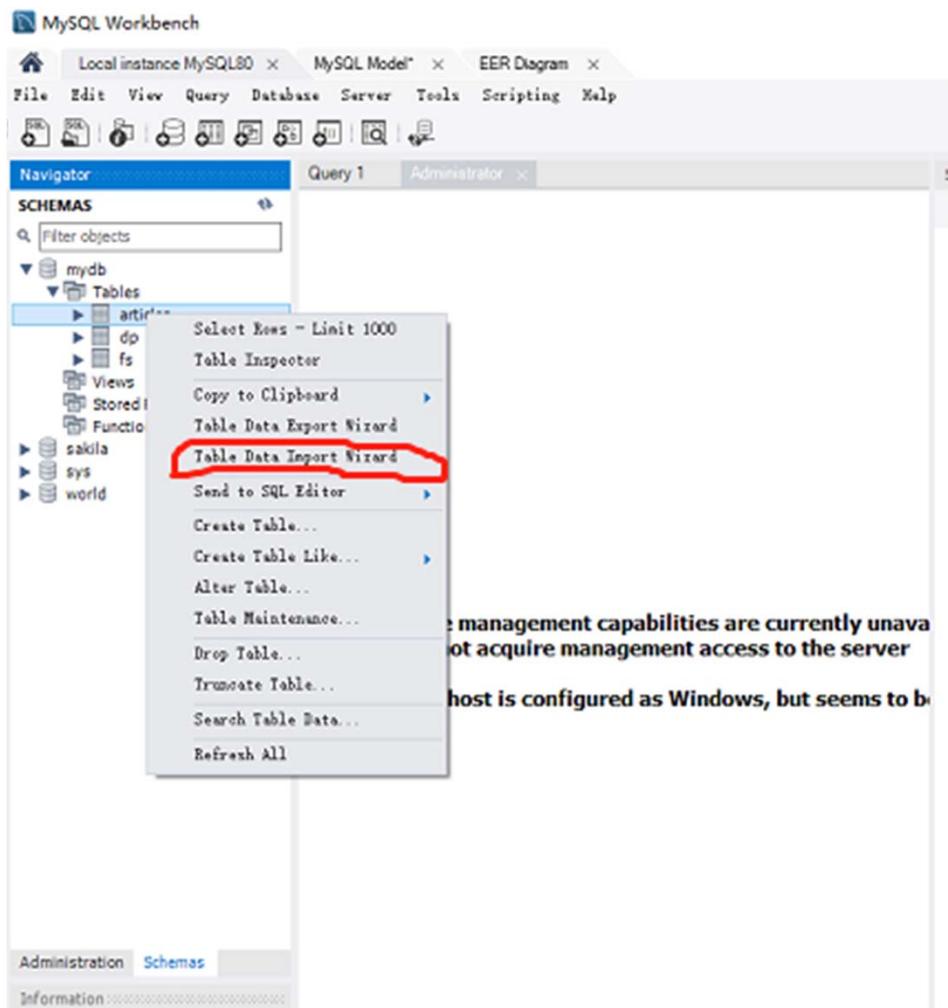


Using MySQL Workbench to Import Data

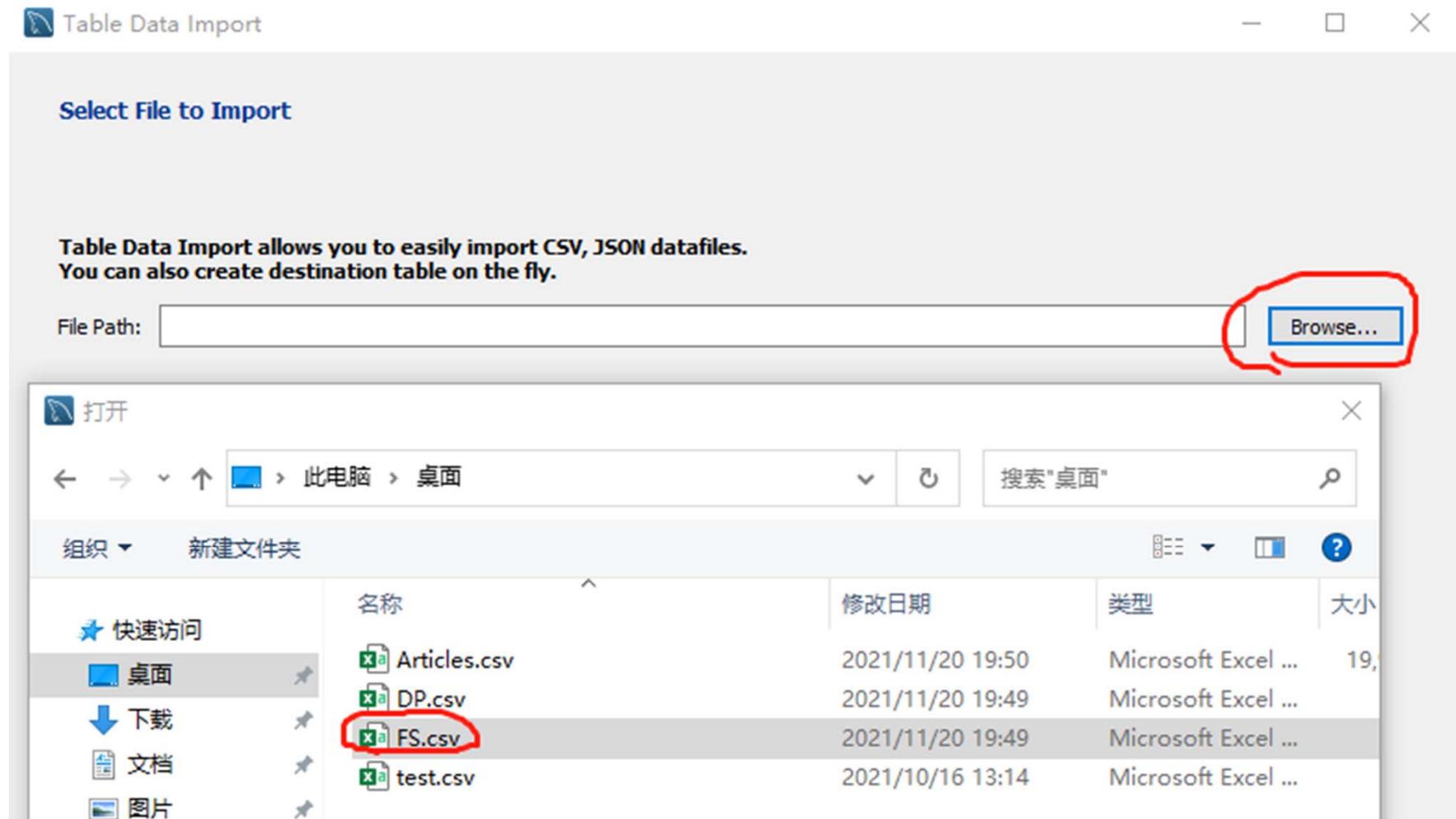
Use Workbench to Import Data into MySQL DB



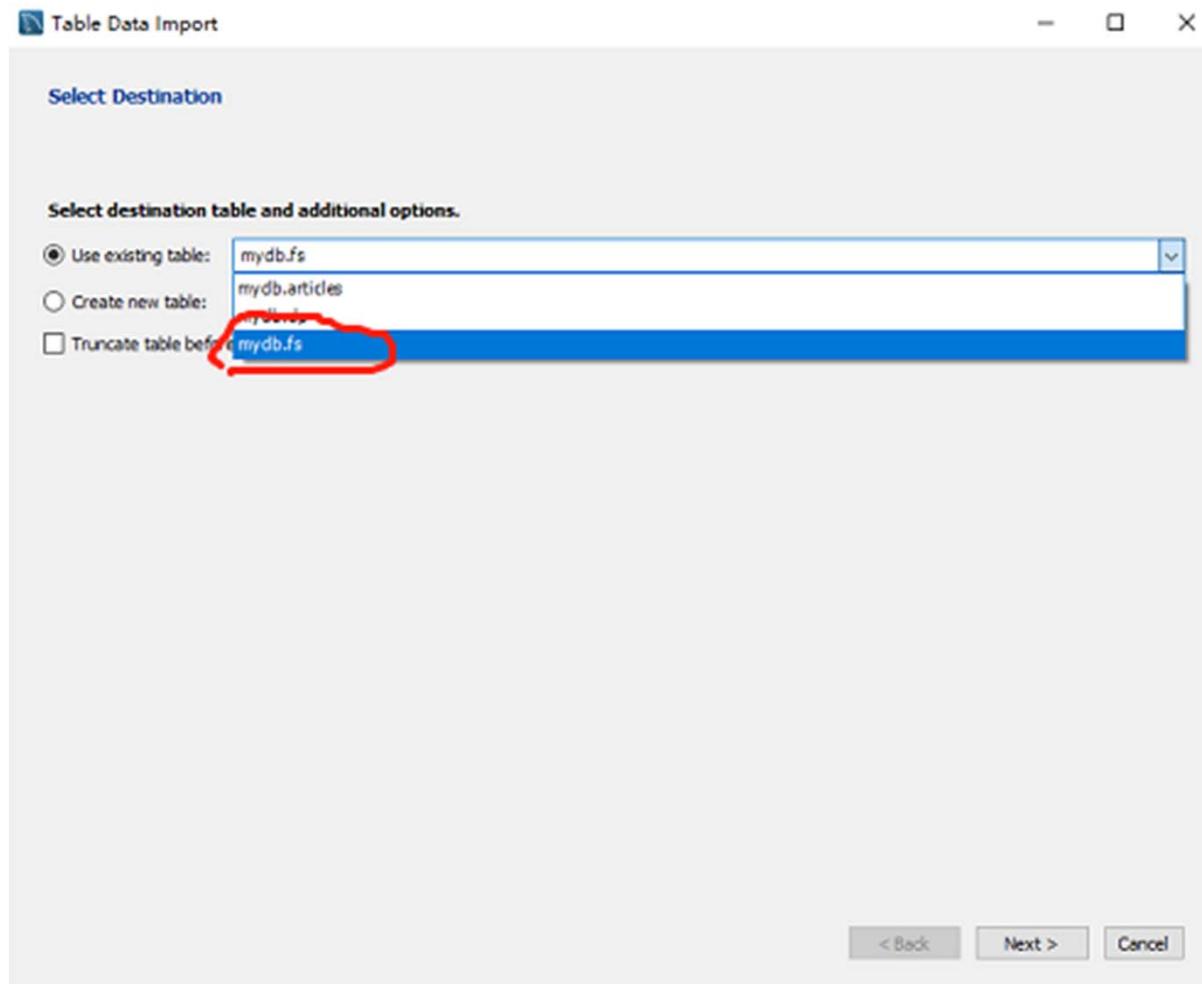
Use Workbench to Import Data into MySQL DB



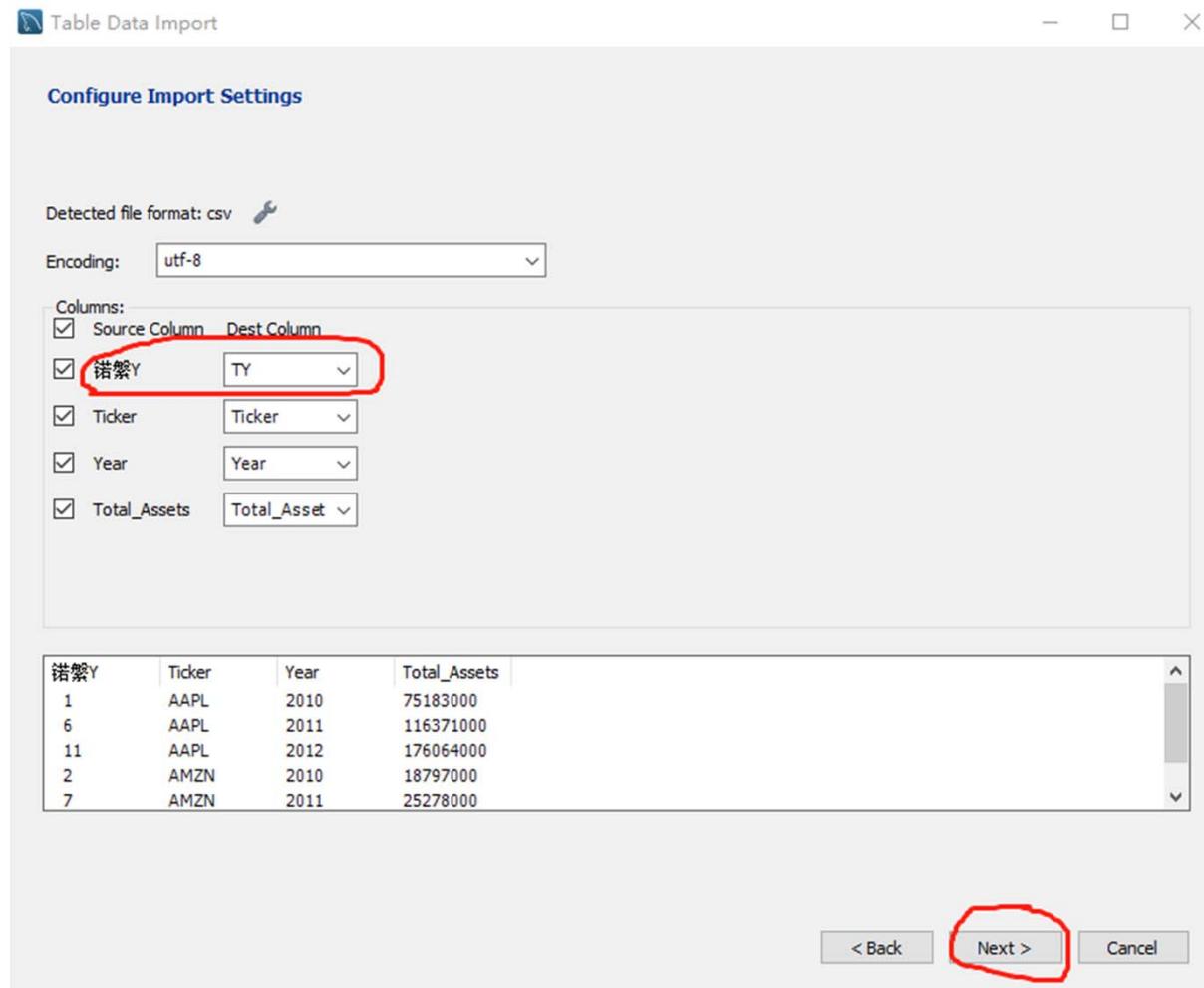
Use Workbench to Import Data into MySQL DB



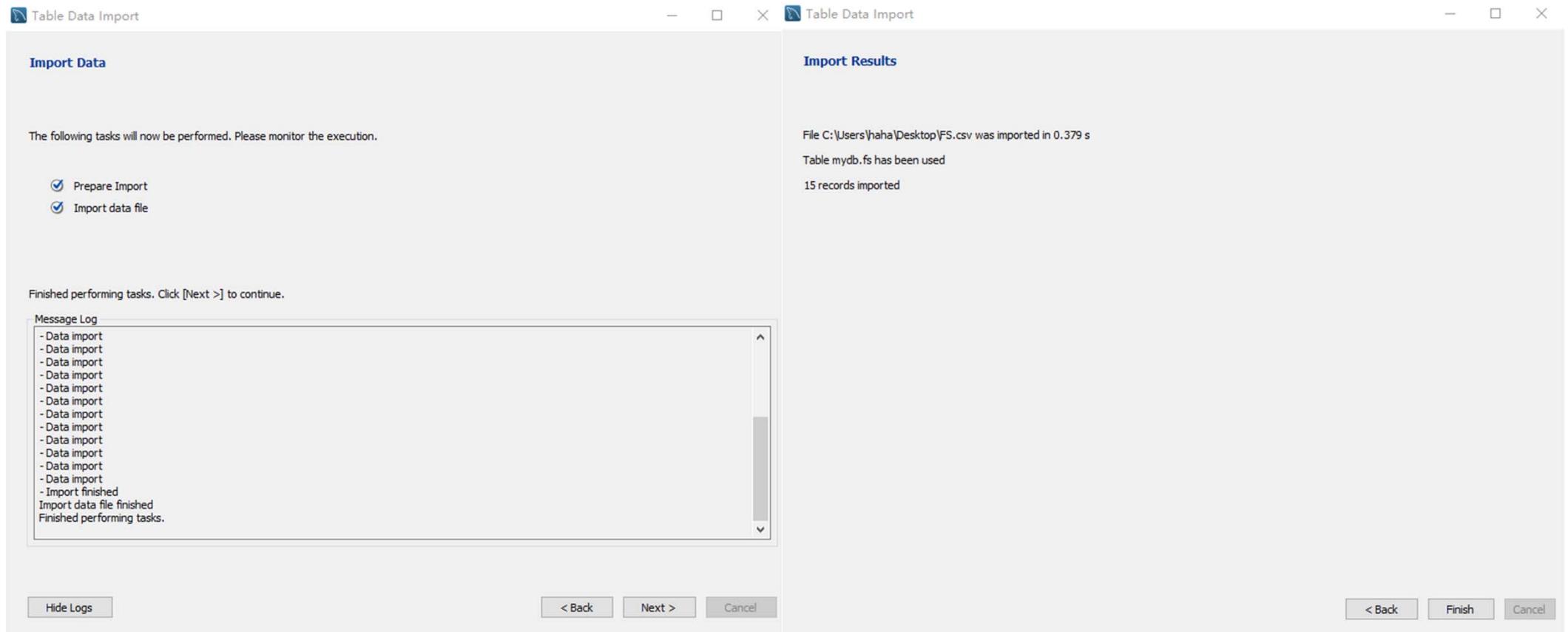
Use Workbench to Import Data into MySQL DB



Use Workbench to Import Data into MySQL DB



Use Workbench to Import Data into MySQL DB



Check the Imported Data

The screenshot shows the SSMS interface with the following details:

- Navigator:** Shows the database schema. The 'mydb' database is selected, and the 'Tables' node is expanded, showing 'articles', 'dp', and 'fs'. The 'fs' table is currently selected.
- Query Editor:** The query 'SELECT * FROM mydb.fs;' is run, and the results are displayed in a grid.
- Context Menu:** A context menu is open over the 'fs' table entry in the Navigator. The 'Select Rows - Limit 1000' option is highlighted with a red underline.
- Result Grid:** The results of the query are shown in a grid format. The columns are labeled 'TY', 'Total_Assets', and 'Year'. The data rows are:

TY	Total_Assets	Year
0	75183000	2010
1	18797000	2010
2	113450000	2010
3	72921000	2010
4	86113000	2010
5	116371000	2011
6	25278000	2011
7	116433000	2011
8	79974000	2011
9	108704000	2011
10	176064000	2012
11	32555000	2012
12	119213000	2012
13	86174000	2012
14	121271000	2012
15	NULL	NULL
- Right Panel:** A vertical panel on the right contains icons for Result Grid, Form Editor, Field Types, Query Stats, and Execution Plan.

Exercise: Import Table DP and Articles into MySQL

Navigator

Query 1 articles dp x

SCHEMAS

Filter objects

- mydb
 - Tables
 - articles
 - dp
 - fs
 - Views
 - Stored Procedures
 - Functions
- sakila
- sys
- world

1 • SELECT * FROM mydb.dp;

Result Grid | Filter Rows: | Edit: | E

TD	Ticker	Date	Close_Price	Volume	Year	TY
1	AAPL	2010-01-04	6.593425751	493729600	2010	1
2	AMZN	2010-01-04	133.8999939	7599900	2010	2
3	IBM	2010-01-04	92.16388702	6155300	2010	3
4	KO	2010-01-04	18.81751251	13870400	2010	4
5	MSFT	2010-01-04	24.10536003	38409100	2010	5
6	AAPL	2010-01-05	6.60482502	601904800	2010	1
7	AMZN	2010-01-05	134.6900024	8851900	2010	2
8	IBM	2010-01-05	91.05054474	6841400	2010	3
9	KO	2010-01-05	18.5898819	23172400	2010	4
10	MSFT	2010-01-05	24.11314774	49749600	2010	5
11	AAPL	2010-01-06	6.49976778	552160000	2010	1
12	AMZN	2010-01-06	132.25	7178800	2010	2
13	IBM	2010-01-06	90.45907593	5605300	2010	3
14	KO	2010-01-06	18.58328247	19264600	2010	4
15	MSFT	2010-01-06	23.96516418	58182400	2010	5
16	AAPL	2010-01-07	6.487752438	477131200	2010	1
17	AMZN	2010-01-07	130	11030200	2010	2
18	IBM	2010-01-07	90.14592743	5840600	2010	3

Administration Schemas Information

Table: articles

Columns:

Article_ID	Title	Author	Ticker	Date	YEAR	CONTE
180790	This is only a sample title.	Larry Dignan	AAPL	2010-01-04	2010	This is c
180876	This is only a sample title.	Stockerblog	AAPL	2010-01-05	2010	This is c
180949	This is only a sample title.	TechCrunch	AAPL	2010-01-05	2010	This is c
180971	This is only a sample title.	Zacks Investment Research	AAPL	2010-01-05	2010	This is c
181548	This is only a sample title.	eChristian Investing	IBM	2010-01-08	2010	This is c
181870	This is only a sample title.	Shelly Palmer	AMZN	2010-01-11	2010	This is c
181897	This is only a sample title.	Fred Wilson	AAPL	2010-01-11	2010	This is c
181974	This is only a sample title.	Felix Salmon	AAPL	2010-01-11	2010	This is c
182281	This is only a sample title.	Jason Schwarz	AAPL	2010-01-13	2010	This is c
182306	This is only a sample title.	TechCrunch	MSFT	2010-01-13	2010	This is c
182346	This is only a sample title.	Stefan Sid Ahmed	AAPL	2010-01-13	2010	This is c
182533	This is only a sample title.	Scot Wingo	AMZN	2010-01-14	2010	This is c
182753	This is only a sample title.	TechCrunch	AMZN	2010-01-15	2010	This is c
183094	This is only a sample title.	Jett Winter	IBM	2010-01-19	2010	This is c
183218	This is only a sample title.	Theflyonthewall	IBM	2010-01-19	2010	This is c
183261	This is only a sample title.	Sam Diaz	IBM	2010-01-19	2010	This is c
183270	This is only a sample title.	eChristian Investing	AAPL	2010-01-19	2010	This is c
183287	This is only a sample title.	SA Transcripts	IBM	2010-01-19	2010	This is c
183308	This is only a sample title.	BlindReason	AAPL	2010-01-20	2010	This is c
183400	This is only a sample title.	Ockham Research	IBM	2010-01-20	2010	This is c
183404	This is only a sample title.	TechCrunch	AMZN	2010-01-20	2010	This is c
183444	This is only a sample title.	Zacks Investment Research	IBM	2010-01-20	2010	This is c
183952	This is only a sample title.	optionMONSTER	AAPL	2010-01-22	2010	This is c
183957	This is only a sample title.	Jett Winter	AAPL	2010-01-22	2010	This is c
183958	This is only a sample title.	Theflyonthewall	AAPL	2010-01-22	2010	This is c

articles 1 x

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap C

SQL Exercises

SQL Exercise

- 1. Display the number of articles published on SeekingAlpha by Ticker and Year.

SQL Exercise

- 2. Find the top 10 article IDs with the largest number of words

Using MySQL Command Line

Start the MySQL Command Line tool

- Windows:
 - Go to the Command Prompt
 - "c:\Program Files\MySQL\MySQL Server 8.0\bin\mysql" -u root -p
- Mac:
 - Go to Terminal
 - /usr/local/mysql/bin/mysql -u root -p

```
Command Prompt - "c:\Program Files\MySQL\MySQL Server 8.0\bin\mysql" -... ━ ━ ━ X
Your MySQL connection id is 24
Server version: 8.0.11 MySQL Community Server - GPL

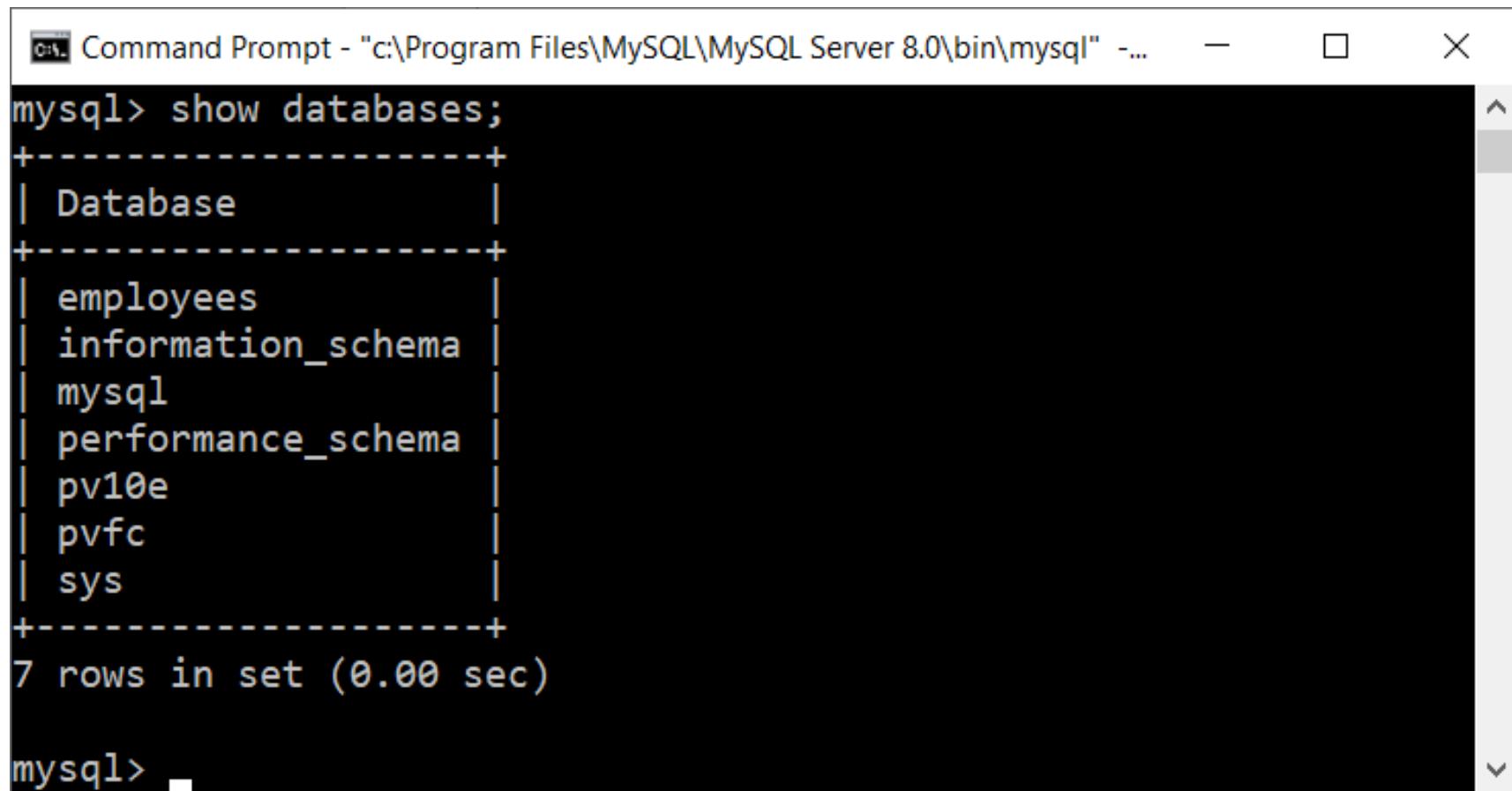
Copyright (c) 2000, 2018, Oracle and/or its affiliates. All rights reserved.

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> █
```

show databases;

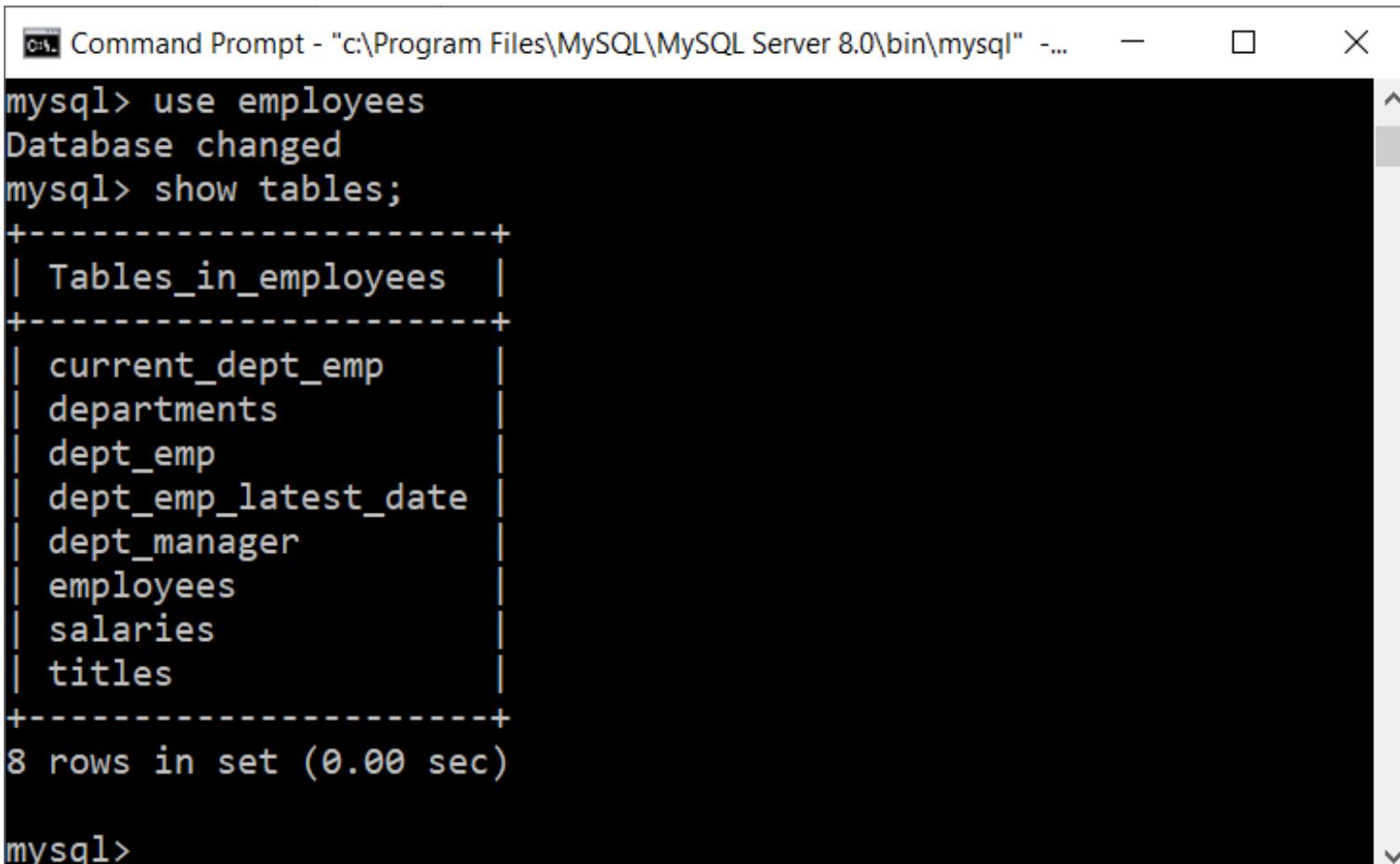


Command Prompt - "c:\Program Files\MySQL\MySQL Server 8.0\bin\mysql" ...

```
mysql> show databases;
+-----+
| Database      |
+-----+
| employees     |
| information_schema |
| mysql          |
| performance_schema |
| pv10e          |
| pvfc           |
| sys            |
+-----+
7 rows in set (0.00 sec)

mysql> ■
```

use database_name;
show tables;

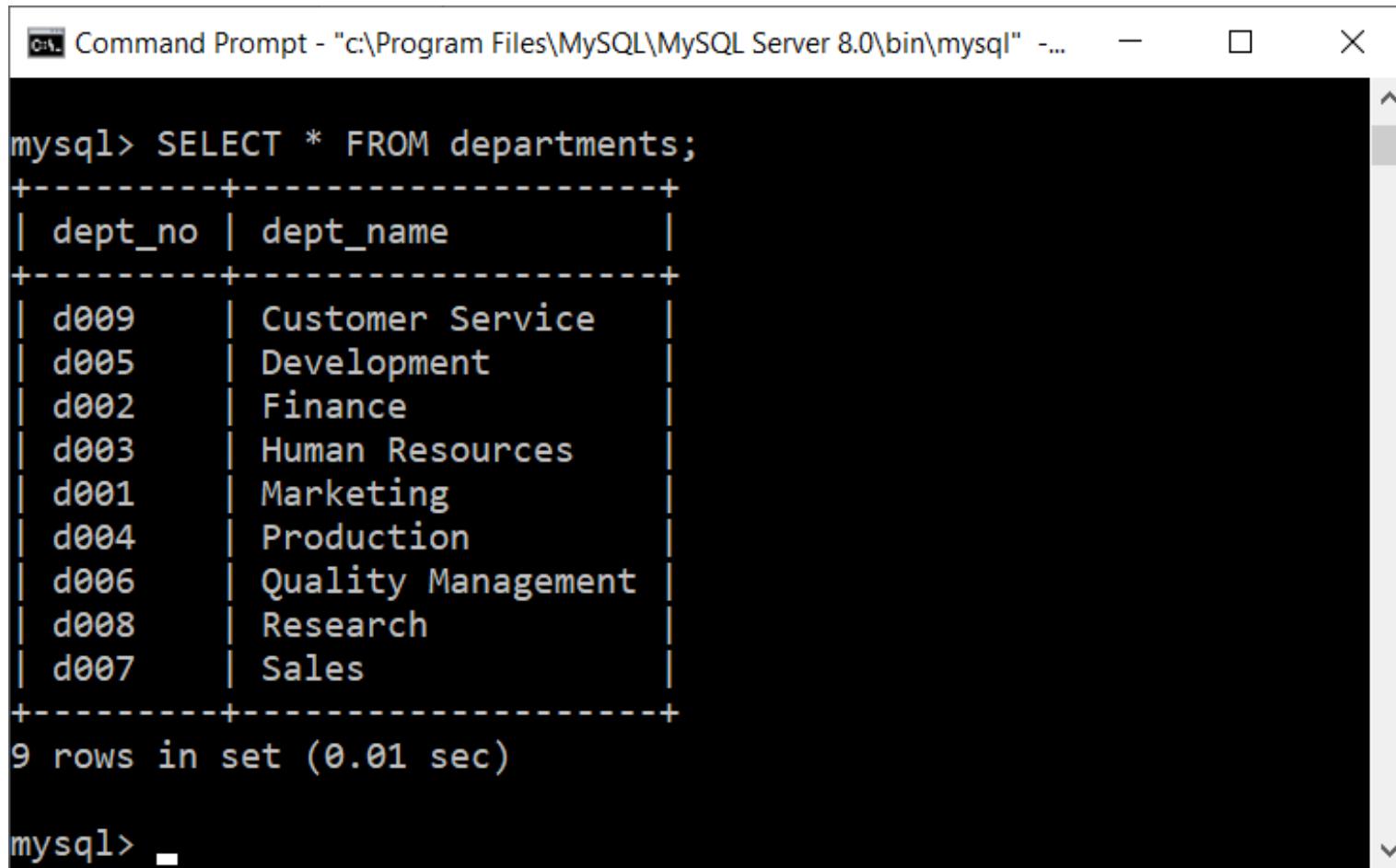


Command Prompt - "c:\Program Files\MySQL\MySQL Server 8.0\bin\mysql" -...

```
mysql> use employees
Database changed
mysql> show tables;
+-----+
| Tables_in_employees |
+-----+
| current_dept_emp    |
| departments          |
| dept_emp              |
| dept_emp_latest_date |
| dept_manager          |
| employees             |
| salaries              |
| titles                |
+-----+
8 rows in set (0.00 sec)

mysql>
```

Run queries for this database



The screenshot shows a Command Prompt window with the title "Command Prompt - 'c:\Program Files\MySQL\MySQL Server 8.0\bin\mysql' - ...". The window displays the output of a MySQL query:

```
mysql> SELECT * FROM departments;
+-----+-----+
| dept_no | dept_name |
+-----+-----+
| d009    | Customer Service |
| d005    | Development      |
| d002    | Finance          |
| d003    | Human Resources |
| d001    | Marketing         |
| d004    | Production        |
| d006    | Quality Management|
| d008    | Research          |
| d007    | Sales             |
+-----+-----+
9 rows in set (0.01 sec)

mysql>
```

Using Python with MySQL

(For Reference Only)

Use Python to Import Data Into MySQL DB

Package Needed: sqlalchemy, pymysql, pandas

```
from sqlalchemy import create_engine
import pandas as pd
database_connect =
create_engine('mysql+pymysql://root:YourPassword@localhost:3306/mydb?char
set=utf8')
fs=pd.read_csv(r'D:\MSBA7024\FS.csv')
fs.to_sql(name='fs', con=database_connect, if_exists='append', index=False)
```

```
# mydb is the database name
# name is the table name in the database
Mac: fs=pd.read_csv('/Users/haha/Documents/FS.csv')
```

Python-MySQL Interaction Exercise

- Using Python to Import Table DP and Articles into MySQL

Use Python to Extract Data from MySQL DB

Package Needed: sqlalchemy, pymysql, pandas

```
from sqlalchemy import create_engine
import pandas as pd
database_connect =
create_engine('mysql+pymysql://root:456@localhost:3306/mydb?charset=utf8')
t1=pd.read_sql(r'select * from fs', con=database_connect)
```

Python-MySQL Interaction Exercise

- Using Python to Export Table FS and Articles from MySQL

Q&A