

Fall, 2020

COMP2121 E-Business

Lab 1: Setup Development Environment and Launch your first Website

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Tentative Plan

There are 10 or 11 labs for building e-commerce websites with HTML, CSS, Javascript, and Mysql.

No revision class in Week 13.
Please work on your group project.

- Lab 1: Development and Deployment Environment
- Lab 2: HTML
- Lab 3: CSS
- Lab 4: JavaScript
- Lab 5: JavaScript
- Lab 6: PHP
- Lab 7: PHP
- Lab 8: MYSQL
- Lab 9: MYSQL
- Labs 10 & 11: API such as React.js, AJAX

Lab 1: Learning outcomes

After this class, you should be able to

1. Deploy and Launch your first Hello world web page in your PolyU web application server from your home.
2. Set up the development environment (Apache HTTP server, MySQL, , PHP Engine, Xdebug, and Apache Netbeans IDE) in your own computer.
3. Run some Demo's
4. Understand and use some HTML

Accessing your personal page from UNIX/Linux

All COMP students may set up their personal homepages in their Unix accounts. You have to write your own html file(s) before following the procedures below:

1. Create a directory named `public_html` in `/webhome/<Your COMP ID>/`.
Enter `mkdir /webhome/<Your COMP ID>/public_html`.
2. Make the `public_html` readable and executable for the others.
Enter `chmod a+rx /webhome/<Your COMP ID>/public_html`.
3. Copy your html file(s) to the `public_html` directory.
4. Make all your html files readable to the others.
Enter `chmod a+r *.html` in the `public_html` directory.

The URL of your personal homepage is

`http://www2.comp.polyu.edu.hk/~<your COMP ID>`

e.g. `http://www2.comp.polyu.edu.hk/~01234567d`

`http://www4.comp.polyu.edu.hk/~kf2yuen/`

<https://intranet.comp.polyu.edu.hk/TechServices/TechnicalTips/89>

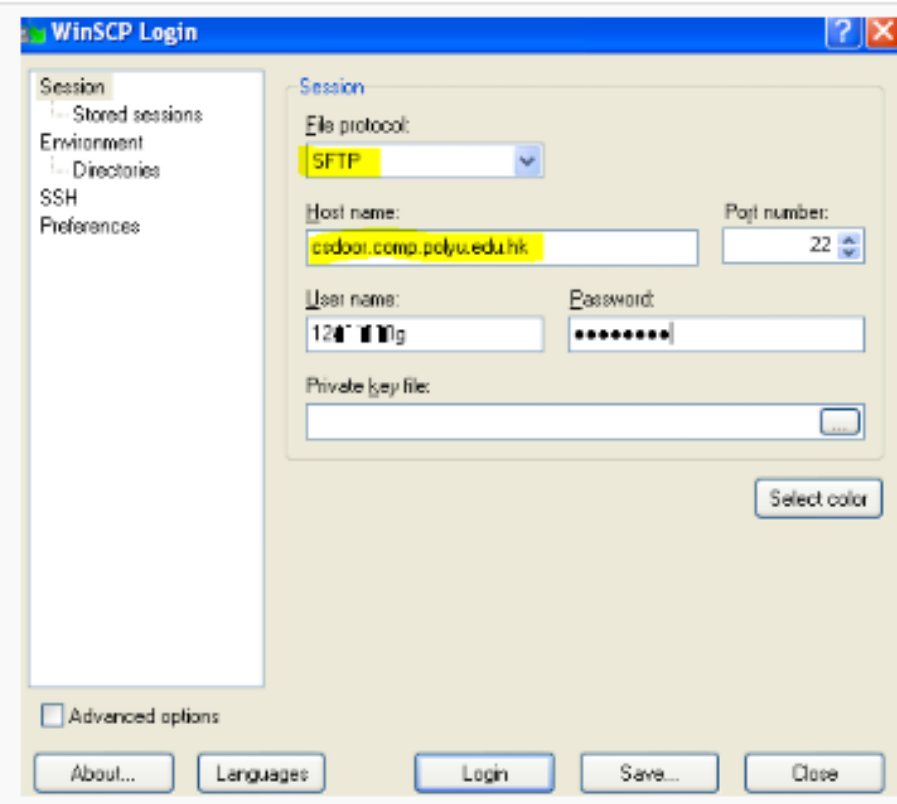
You need to login by your COMP account.

Accessing your personal page directory from LAB PCs

- You can access your profile in the Lab Computer with W: Drive.


Accessing your personal page directory with WinSCP

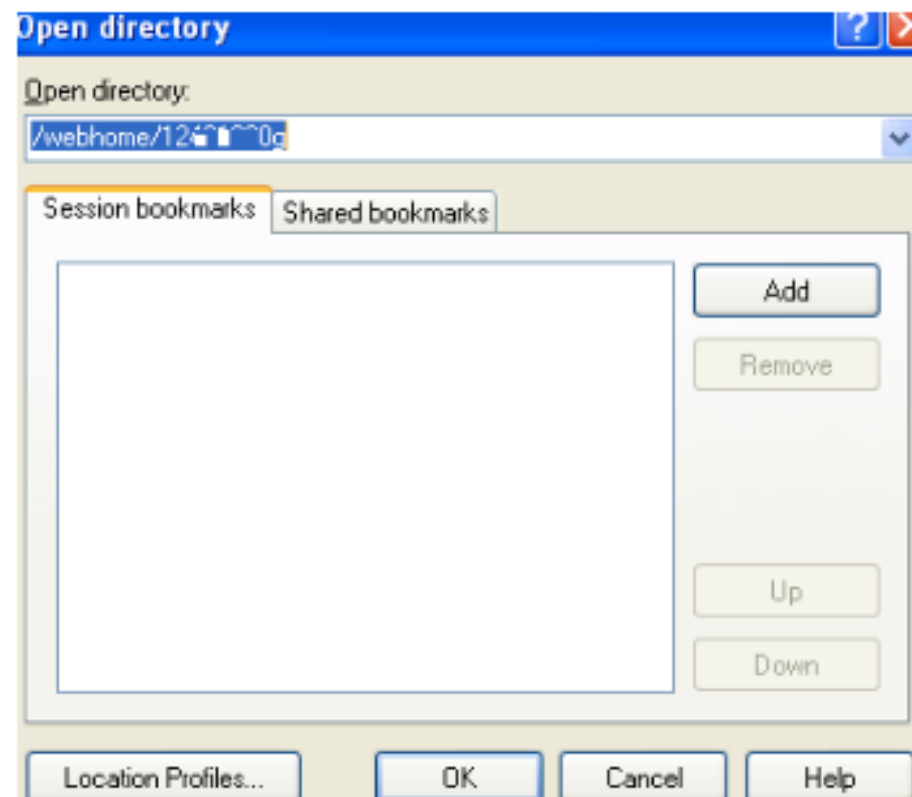
1. Download and install WinSCP. Start WinSCP and connect to our UNIX/Linux Host, e.g. csdoor.comp.polyu.edu.hk



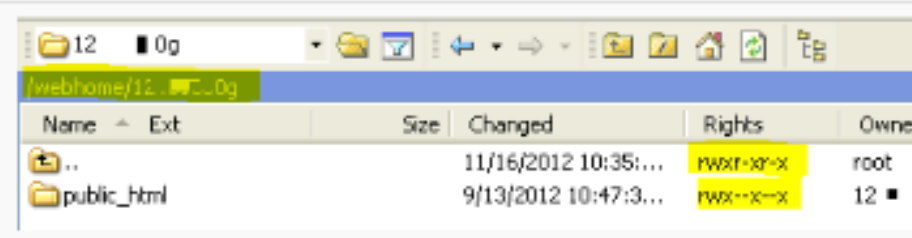
<http://winscp.net/eng/index.php>

csdoor.comp.polyu.edu.hk

2. Click  to open directory and type `/webhome/<your_comp_id>` in Open Directory and OK.

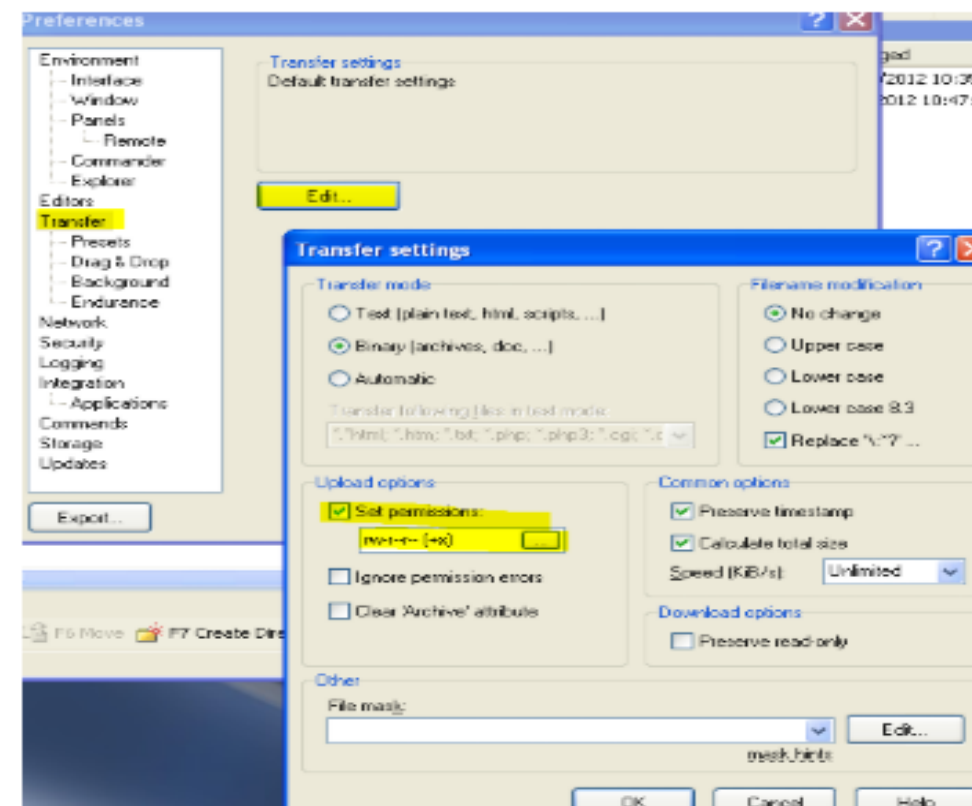


3. You are in your `/webhome/<your_comp_id>`, you have to make sure the access right of your web directory at least `rwX--X--X` or `rwXr-Xr-X`



4. Setup default rights of your upload files

- You can do so by click Options -> Preferences -> Transfer -> Edit -> Set Permissions in Upload Options



About using PHP Session

By default, COMP web server uses `memcache` as session handler. It is not necessary to use `session_save_path()` to define the path to store session. Otherwise, error message will be shown.

Lab 2: Set up local Environment

Notes

- Create a folder containing everything in the lab environment for this course
 - E.g. [D:\eBusinessKevinYuenLabs](#), the name is just based on your preference.
- Or install components in separate locations
- This lab is based on window platform. If you use the other platform (e.g. Linux or MacOX), please refer to the related documents by yourself.
- Or install virtual machine of window 10 in your machine to perform this lab.

1.1 Install Apache HTTP Server

- Download the Apache2 HTTP server.
1. <http://httpd.apache.org/download.cgi> , choose apachelounge
 2. <https://www.apachelounge.com/download/>

Apache 2.4.46 Win64

 [httpd-2.4.46-win64-VS16.zip](#) 05 Aug '20 10.224k

[PGP Signature](#) (Public [PGP key](#)), [SHA1-SHA512 Checksums](#)

Apache 2.4.46 Win32

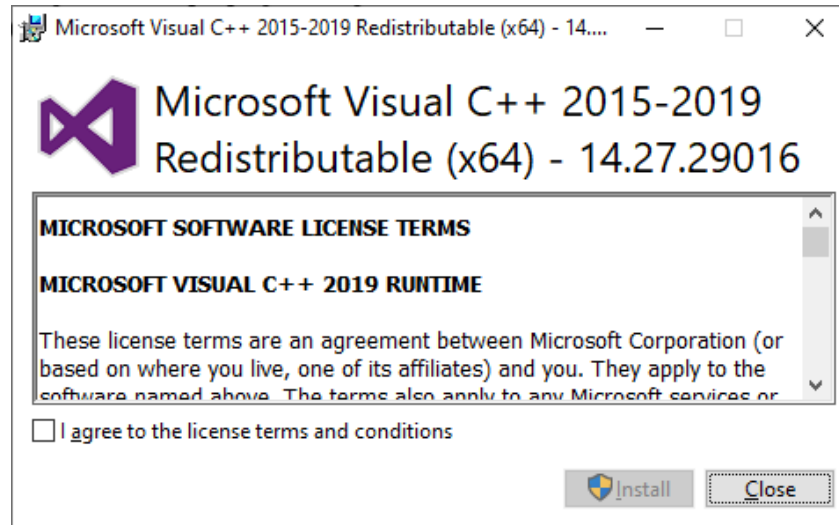
 [httpd-2.4.46-win32-VS16.zip](#) 05 Aug '20 9.344k

[PGP Signature](#) (Public [PGP key](#)), [SHA1-SHA512 Checksums](#)

Be sure you installed latest 14.26.28720.3
Visual C++ Redistributable for Visual Studio
2015-2019

: [vc_redist_x64](#) or [vc_redist_x86](#) see [Re distributable](#)

https://aka.ms/vs/16/release/vc_redist.x64.exe



1.2. Run and Test your Apache Server

- For more information, Click the [readme.txt](#) after unzip the apache zip file downloaded.

Open a [command prompt](#) window and `cd` to the `D:\eBusinessKevinYuenLabs \Apache24\bin` folder.

To Start Apache in the command prompt type:

```
>httpd.exe
```

Press Enter. If there are any errors it, will tell you.

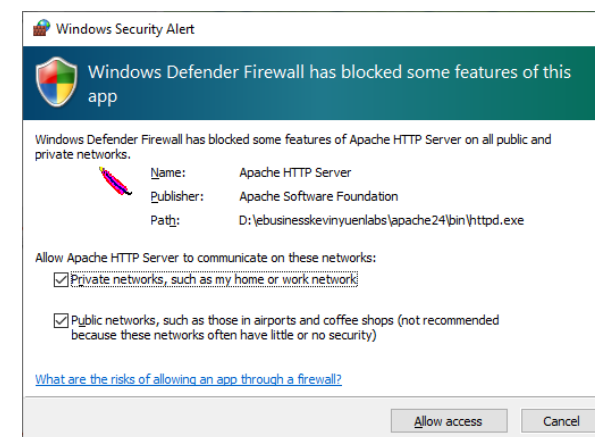
Warnings will not stop Apache from working, they do need to be addressed none the less.

If there are no errors the cursor will sit and blink on the next line.

```
D:\eBusinessKevinYuenLabs\Apache24\bin>httpd
httpd: Syntax error on line 39 of D:/eBusinessKevinYuenLabs/Apache24/conf/httpd.conf: Server
Root must be a valid directory
```

Use notepad or the other editor to open `\Apache24\conf\ httpd.conf`

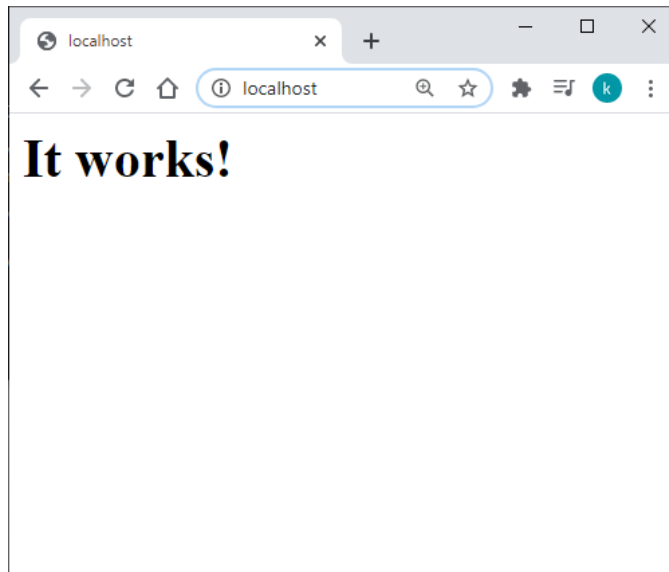
```
37  #Define SRVROOT "c:/Apache24"
38  Define SRVROOT "D:/eBusinessKevinYuenLabs/Apache24" |
39
40  ServerRoot "${SRVROOT}"
41
```



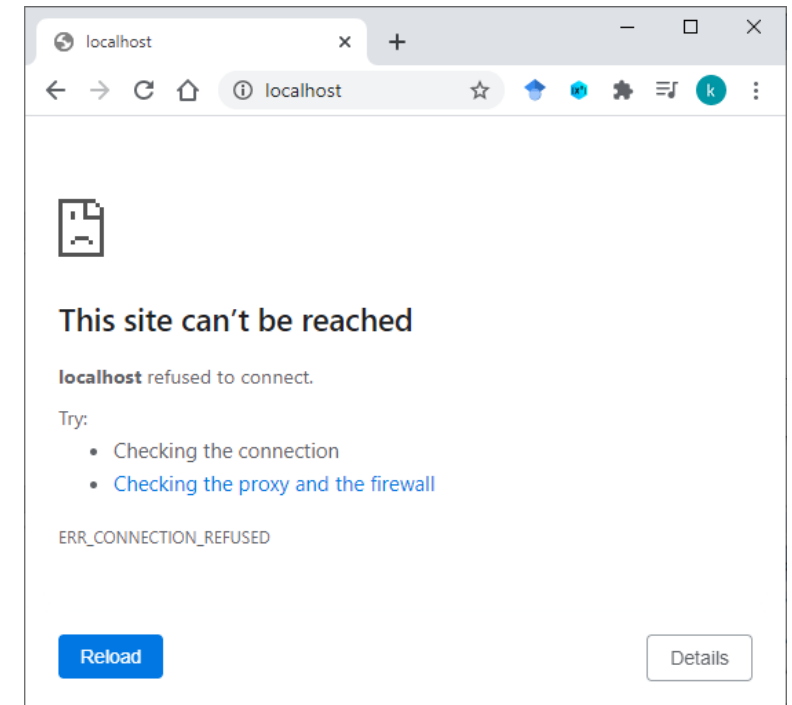
1.2. Run and Test your Apache Server

You can test your installation by opening up your Browser and typing in the address:

`http://localhost`



shut down Apache
by pressing Ctrl+C (It may
take a few seconds)



The index.html in `.\Apache24\htdocs`

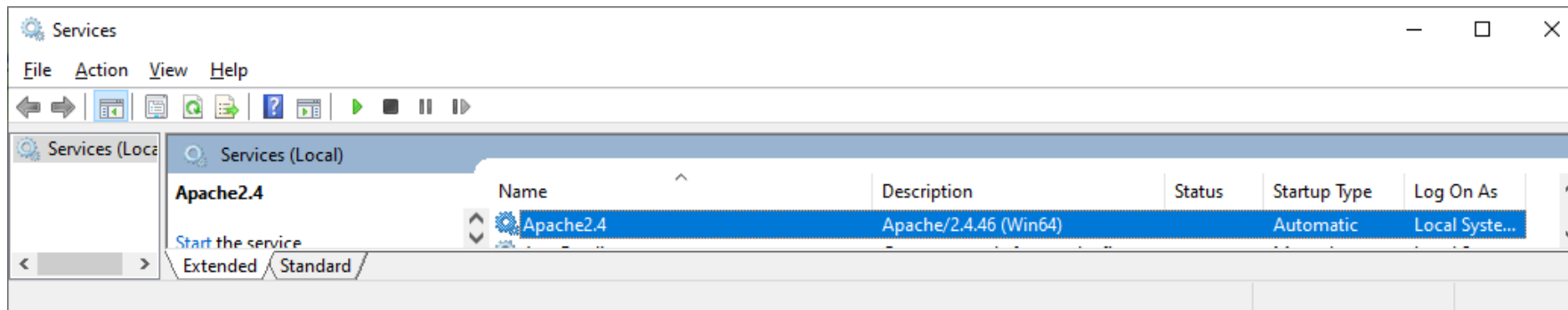
1.3. Apache Server in Window Services

To install as a service. Open command prompt as Administrator and type:

```
>httpd.exe -k install
```

You can start/stop the service with the command:

```
>services.msc
```



Start the Apache service and Try again: <http://localhost>

1.4. Set ServerName

How can we solve the error/warning messages of “ServerName”??

<https://cwiki.apache.org/confluence/display/HTTPD/CouldNotDetermineServerName>

Use notepad or the other editor to open \Apache24\conf\ httpd.conf

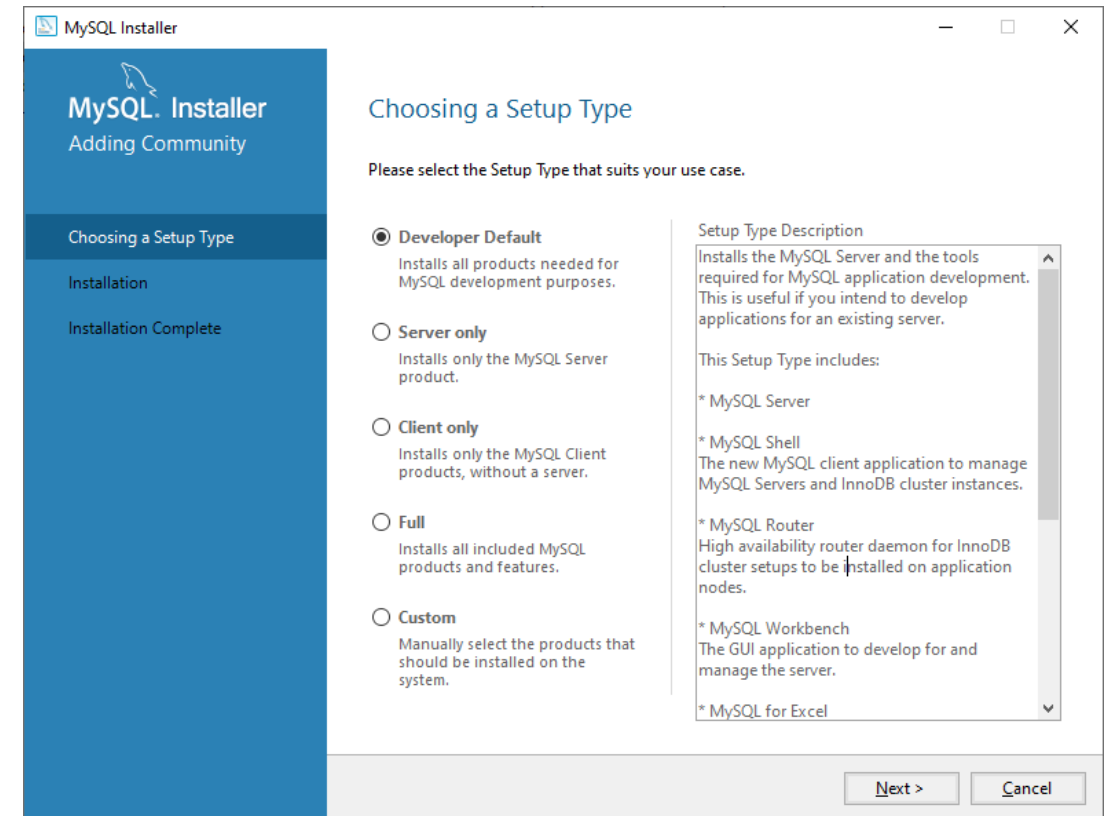
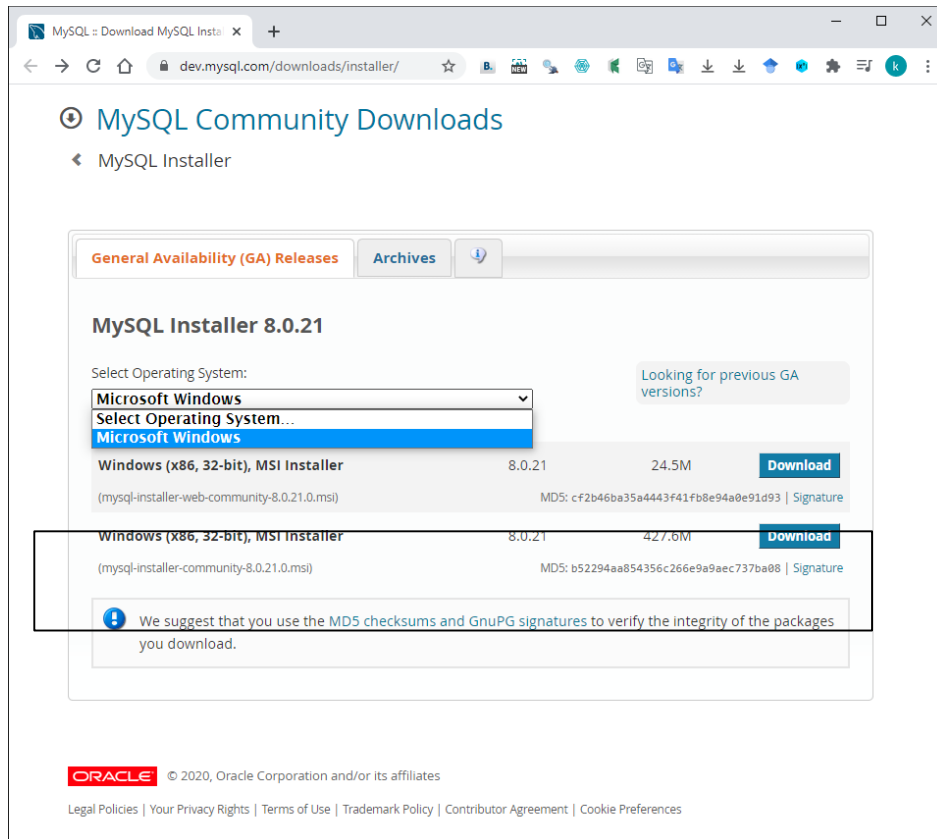
```
222 # ServerName gives the name and port that the server uses to identify itself.
223 # This can often be determined automatically, but we recommend you specify
224 # it explicitly to prevent problems during startup.
225 #
226 # If your host doesn't have a registered DNS name, enter its IP address here.
227 #
228 #ServerName www.example.com:80
```

To see all Command line options:

>httpd -h

2. Install MySQL Server

- <https://dev.mysql.com/doc/mysql-installation-excerpt/5.7/en/>
- <https://dev.mysql.com/downloads/>



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 8.0.21 | Ready to Install | | |
| MySQL Workbench 8.0.21 | Ready to Install | | |
| MySQL Notifier 1.1.8 | Ready to Install | | |
| MySQL For Excel 1.3.8 | Ready to Install | | |
| MySQL for Visual Studio 1.2.9 | Ready to Install | | |
| MySQL Shell 8.0.21 | Ready to Install | | |
| MySQL Router 8.0.21 | Ready to Install | | |
| Connector/ODBC 8.0.21 | Ready to Install | | |
| Connector/C++ 8.0.21 | Ready to Install | | |
| Connector/J 8.0.21 | Ready to Install | | |
| Connector/NET 8.0.21 | Ready to Install | | |
| Connector/Python 8.0.21 | Ready to Install | | |
| MySQL Documentation 8.0.21 | Ready to Install | | |

Click [Execute] to install the following packages.

Execute **Cancel**

Installation

The following products will be installed.

| Product | Status | Progress | Notes |
|-------------------------------|----------|----------|-------|
| MySQL Notifier 1.1.8 | Complete | | |
| MySQL For Excel 1.3.8 | Complete | | |
| MySQL for Visual Studio 1.2.9 | Complete | | |
| MySQL Shell 8.0.21 | Complete | | |
| MySQL Router 8.0.21 | Complete | | |
| Connector/ODBC 8.0.21 | Complete | | |
| Connector/C++ 8.0.21 | Complete | | |
| Connector/J 8.0.21 | Complete | | |
| Connector/NET 8.0.21 | Complete | | |
| Connector/Python 8.0.21 | Complete | | |
| MySQL Documentation 8.0.21 | Complete | | |
| Samples and Examples 8.0.21 | Complete | | |

Show Details >

< Back **Next >** **Cancel**


You may be asked to install some required packages.
You may skip them and move to this page.
Or install the required packages for future use.

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 8.0.21 | Ready to configure |
| MySQL Router 8.0.21 | Ready to configure |
| Samples and Examples 8.0.21 | Ready to configure |



MySQL. Installer

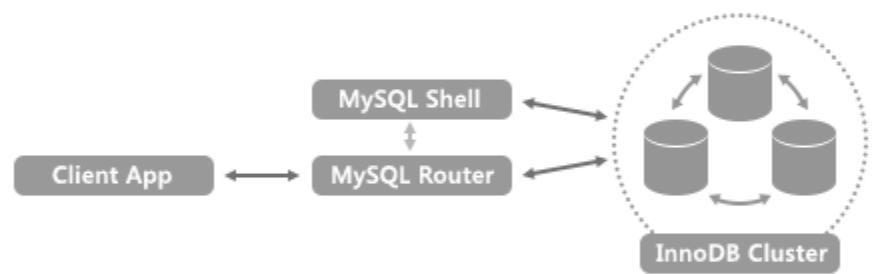
MySQL Server 8.0.21

- High Availability
- Type and Networking
- Authentication Method
- Accounts and Roles
- Windows Service
- Logging Options
- Advanced Options
- Apply Configuration

High Availability

☒ **Standalone MySQL Server / Classic MySQL Replication**
Choose this option to run the MySQL instance as a standalone database server with the opportunity to configure classic replication later. With this option, you can provide your own high-availability solution, if required.

☐ **InnoDB Cluster**
The InnoDB cluster technology provides an out-of-the-box high availability (HA) solution for MySQL using Group Replication.



Note: [InnoDB cluster](#) requires a minimum of three MySQL server instances to provide a fully automated HA solution. Members of a cluster should be located such that network communication latency between servers is low.

Next >

Cancel

MySQL Installer

MySQL Server 8.0.21

High Availability

Type and Networking

Authentication Method

Accounts and Roles

Windows Service

Apply Configuration

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

< Back Next > Cancel

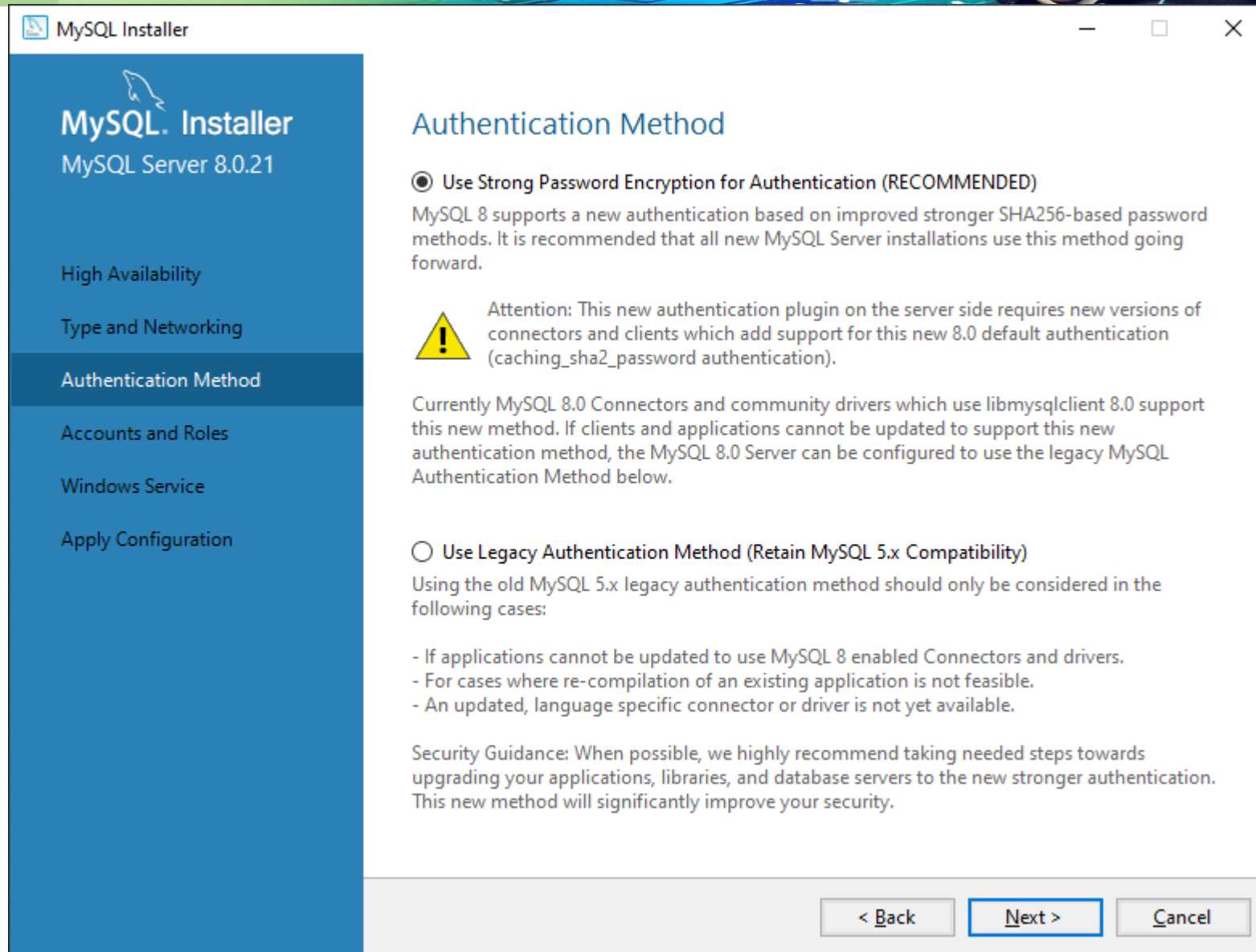
Accept Default setting

Development Computer

Development Computer
This is a development computer, and many other applications will be installed on it. A minimal amount of memory will be used by MySQL.

Server Computer
Several server applications will be running on this computer. Choose this option for web or application servers. MySQL will have medium memory usage.

Dedicated Computer
This computer is dedicated to running the MySQL database server. No other servers, such as web servers, will be run. MySQL will make use of all available memory.



MySQL Installer

MySQL Server 8.0.21

- High Availability
- 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 |
|--|------|-----------|
|  mysqldev | % | DB Admin |

[Add User](#)
[Edit User](#)
[Delete](#)

< Back Next > Cancel

Windows Service

☒ 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

MySQL Installer
MySQL Server 8.0.21

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

Apply Configuration
Click [Execute] to apply the changes

Configuration Steps Log

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

< Back Execute **Cancel**

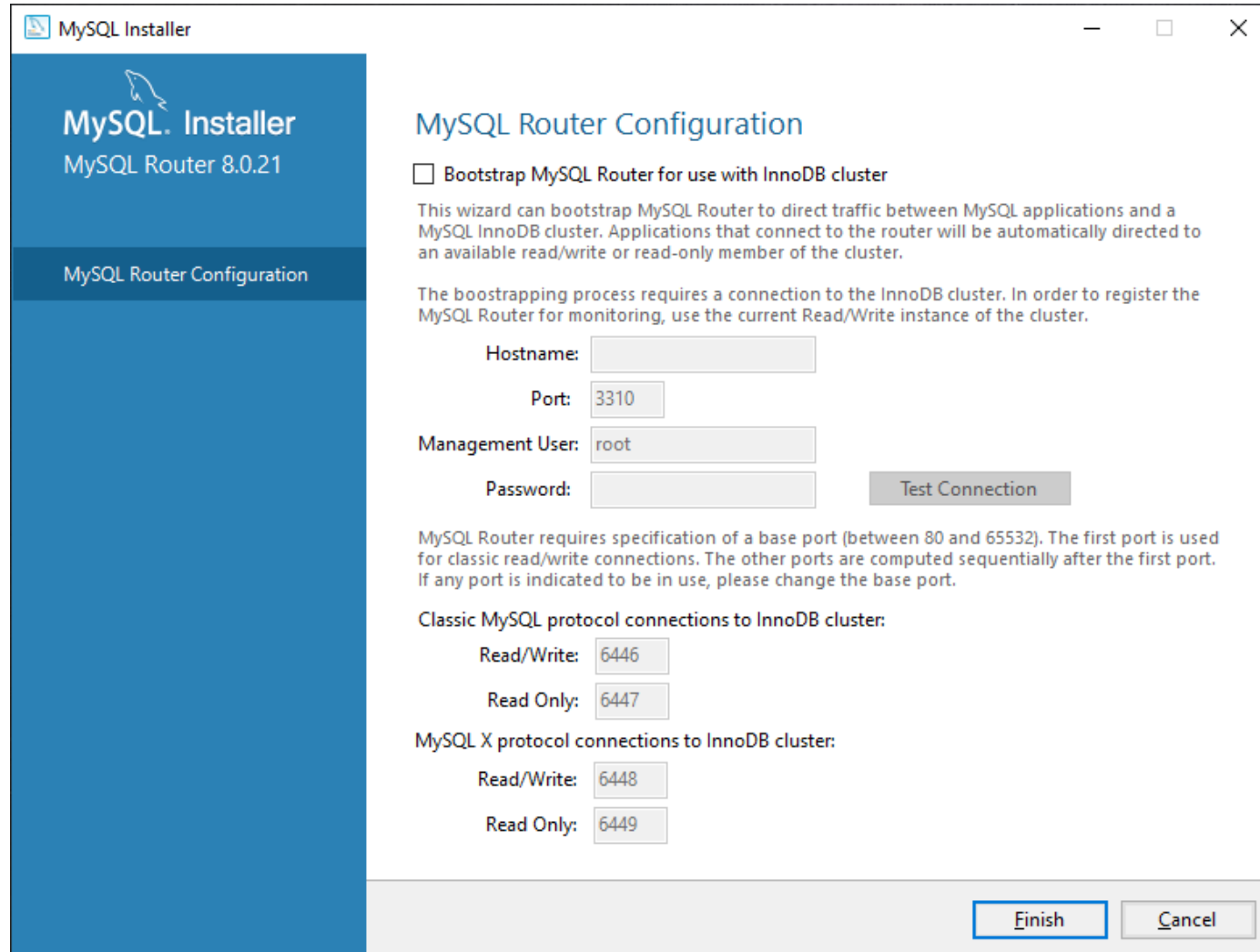
Apply Configuration
The configuration operation has completed.

Configuration Steps Log

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

The configuration for MySQL Server 8.0.21 was successful.
Click Finish to continue.

Finish



The screenshot shows the 'MySQL Router Configuration' window of the MySQL Installer. The window title is 'MySQL Installer'. The left sidebar shows 'MySQL Router 8.0.21' and 'MySQL Router Configuration'. The main area is titled 'MySQL Router Configuration'. It contains a checkbox 'Bootstrap MySQL Router for use with InnoDB cluster' which is unchecked. Below it is a paragraph explaining the wizard's purpose. Another paragraph explains the bootstrapping process. There are input fields for 'Hostname', 'Port' (3310), 'Management User' (root), and 'Password'. A 'Test Connection' button is next to the password field. Below these fields is a paragraph explaining the base port requirement. Then, there are sections for 'Classic MySQL protocol connections to InnoDB cluster' and 'MySQL X protocol connections to InnoDB cluster', each with 'Read/Write' and 'Read Only' port input fields. At the bottom right are 'Finish' and 'Cancel' buttons.

MySQL Installer
MySQL Router 8.0.21

MySQL Router Configuration

☐ Bootstrap MySQL Router for use with InnoDB cluster

This wizard can bootstrap MySQL Router to direct traffic between MySQL applications and a MySQL InnoDB cluster. Applications that connect to the router will be automatically directed to an available read/write or read-only member of the cluster.

The bootstrapping process requires a connection to the InnoDB cluster. In order to register the MySQL Router for monitoring, use the current Read/Write instance of the cluster.

Hostname:

Port:

Management User:

Password:

Test Connection

MySQL Router requires specification of a base port (between 80 and 65532). The first port is used for classic read/write connections. The other ports are computed sequentially after the first port. If any port is indicated to be in use, please change the base port.

Classic MySQL protocol connections to InnoDB cluster:

Read/Write:

Read Only:

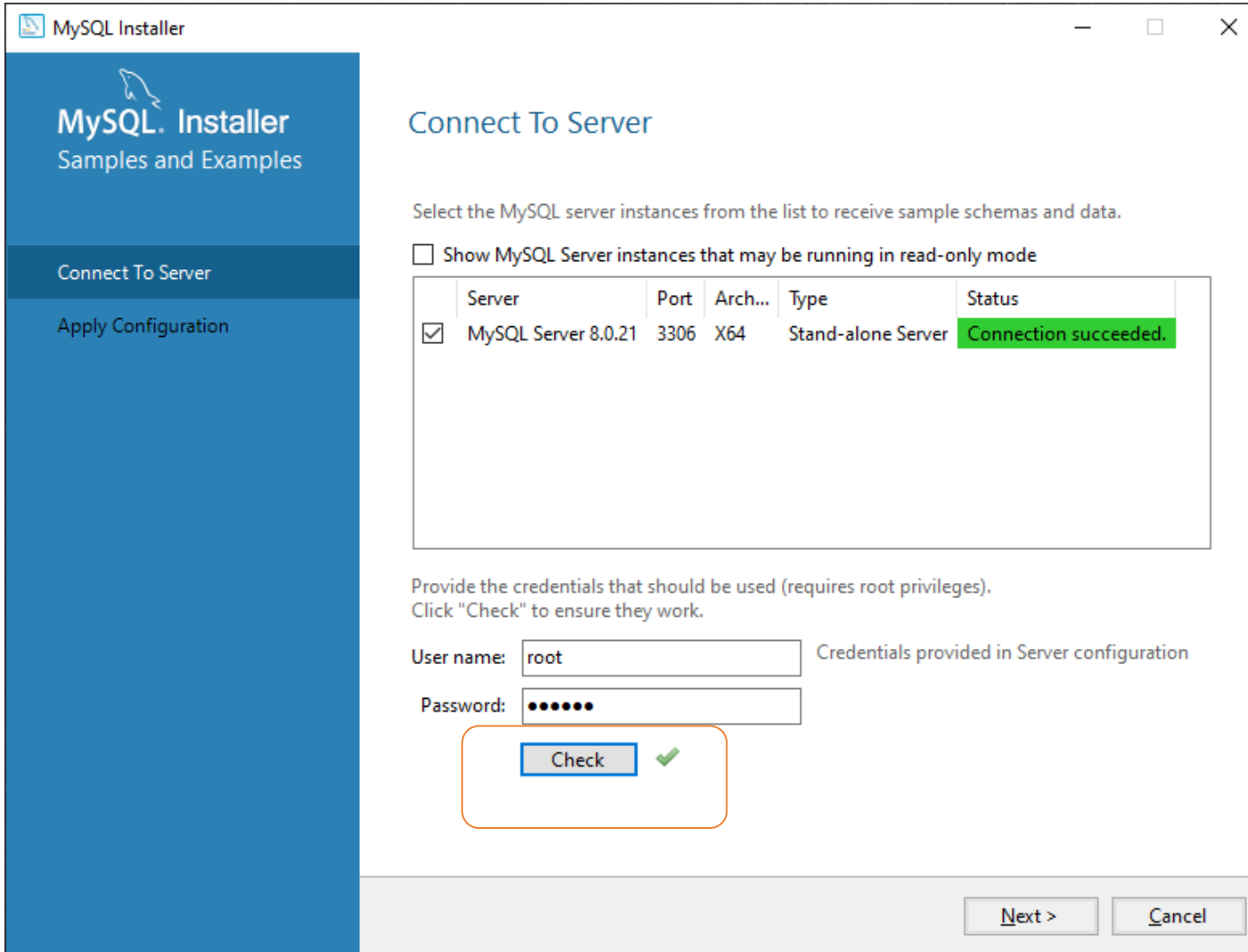
MySQL X protocol connections to InnoDB cluster:

Read/Write:

Read Only:

Finish Cancel

Accept by default and finish



The screenshot shows the 'Connect To Server' step of the MySQL Installer. On the left is a blue sidebar with 'MySQL. Installer Samples and Examples' at the top, and 'Connect To Server' and 'Apply Configuration' as buttons below. The main area is titled 'Connect To Server' and contains instructions to select MySQL server instances. A checkbox for 'Show MySQL Server instances that may be running in read-only mode' is present. Below it is a table with one row: 'MySQL Server 8.0.21' on port '3306', 'X64' architecture, 'Stand-alone Server' type, and a green status bar saying 'Connection succeeded.'. Below the table, there are fields for 'User name: root' and 'Password: ●●●●●●', with a note 'Credentials provided in Server configuration'. A 'Check' button with a green checkmark is highlighted by an orange box. At the bottom right are 'Next >' and 'Cancel' buttons.

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.

☐ Show MySQL Server instances that may be running in read-only mode

| Server | Port | Arch... | Type | Status |
|---|------|---------|--------------------|-----------------------|
| <input checked="" type="checkbox"/> MySQL Server 8.0.21 | 3306 | X64 | Stand-alone Server | Connection succeeded. |

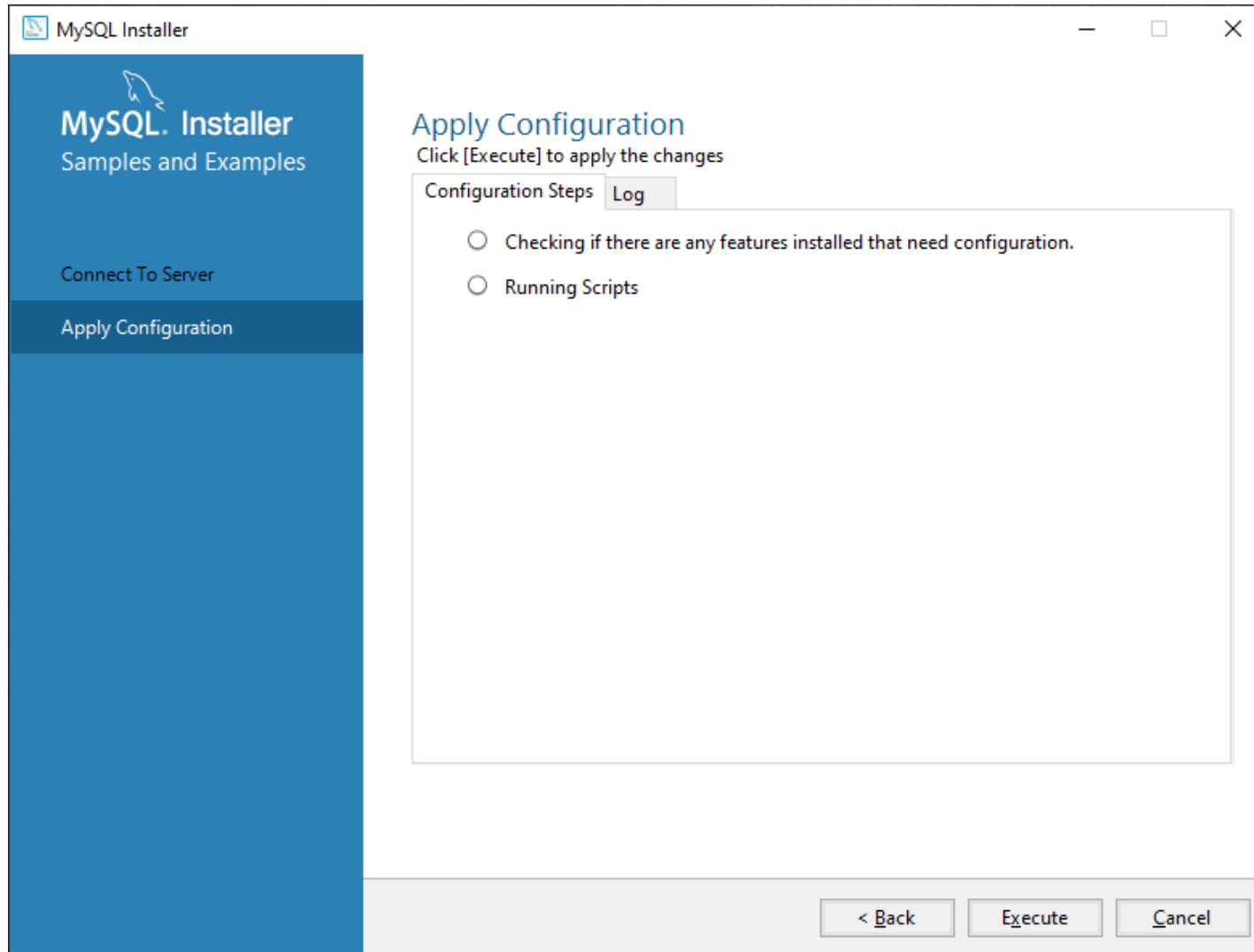
Provide the credentials that should be used (requires root privileges).
Click "Check" to ensure they work.

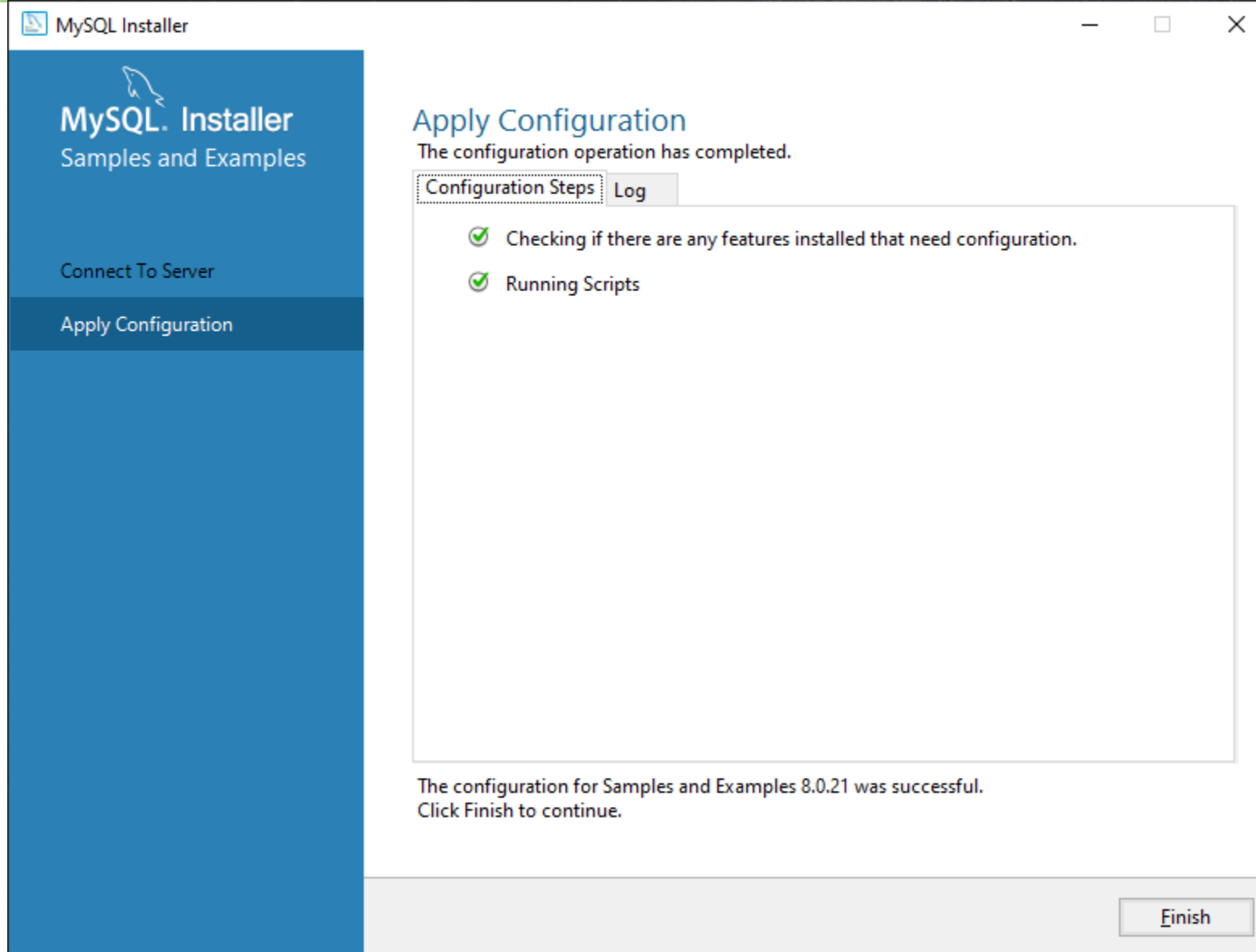
User name: Credentials provided in Server configuration

Password:

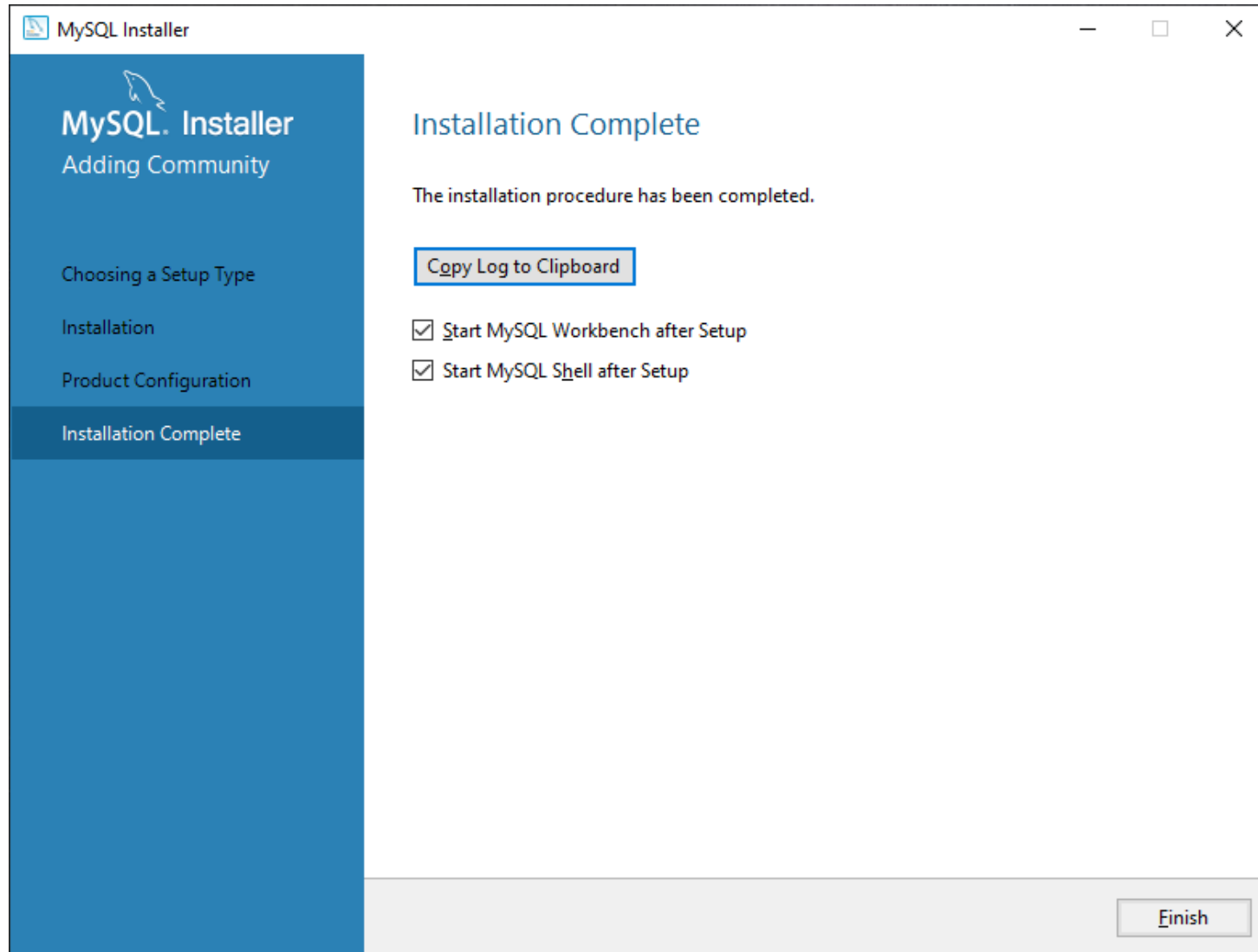
✓

Don't forget the password that
you have just created.





Congratulations!
Installation has been completed.



We can start and use Workbench and Shell.
We still study these in the future.

3. Install PHP to Apache

- <https://www.php.net/manual/en/install.php>
- <https://windows.php.net/download/>

If you use x64 system, download the file below. Otherwise, choose the appropriate one.

VC15 x64 Thread Safe (2020-Sep-01 21:06:24)

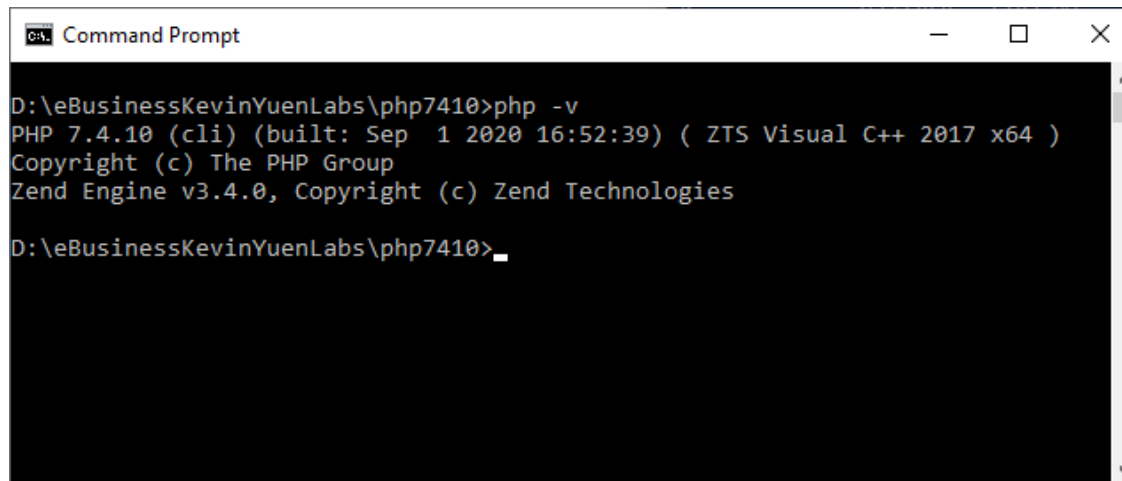
- [Zip](#) [24.94MB]

sha256: 5d6b1025d4467575dc71f91956f3351d25078114ab9d6d7a9ea6e918d3f76e5f

<https://windows.php.net/downloads/releases/php-7.4.10-Win32-vc15-x64.zip>

3.1 unzip the file

- Unzip the file,
 - E.g. D:\eBusinessKevinYuenLabs\php7410
- Check the installation
- Use cmd to open Command Prompt; under the *php* folder, type
> php -v



```
Command Prompt
D:\eBusinessKevinYuenLabs\php7410>php -v
PHP 7.4.10 (cli) (built: Sep  1 2020 16:52:39) ( ZTS Visual C++ 2017 x64 )
Copyright (c) The PHP Group
Zend Engine v3.4.0, Copyright (c) Zend Technologies
D:\eBusinessKevinYuenLabs\php7410>
```

Successful!

3.2 Change php.ini in php folder

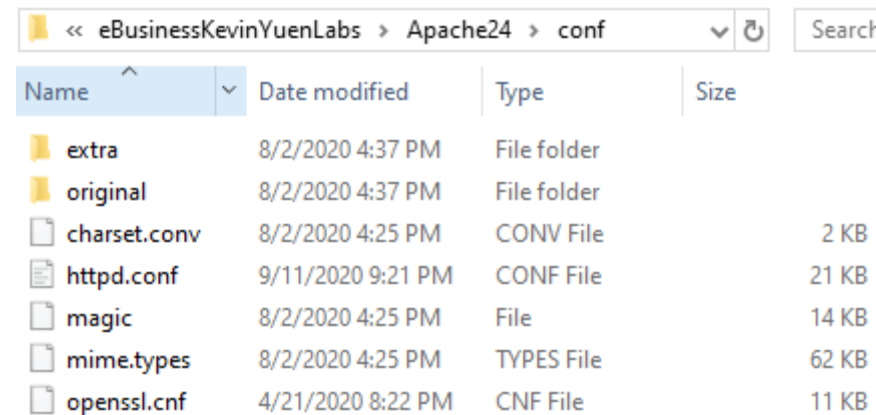
Under the unzipped *php* folder,

| | | | |
|---------------------|------------------|--------------------|-------|
| php.ini-development | 9/2/2020 2:05 AM | INI-DEVELOPMEN... | 73 KB |
| php.ini-production | 9/2/2020 2:05 AM | INI-PRODUCTION ... | 73 KB |

Change **php.ini-development** to **php.ini**

3.3 Install PHP to Apache

- Open the \Apache24\conf\httpd.conf file,



The screenshot shows a Windows File Explorer window with the address bar set to 'eBusinessKevinYuenLabs > Apache24 > conf'. The window displays a list of files and folders:

| Name | Date modified | Type | Size |
|--------------|-------------------|-------------|-------|
| extra | 8/2/2020 4:37 PM | File folder | |
| original | 8/2/2020 4:37 PM | File folder | |
| charset.conv | 8/2/2020 4:25 PM | CONV File | 2 KB |
| httpd.conf | 9/11/2020 9:21 PM | CONF File | 21 KB |
| magic | 8/2/2020 4:25 PM | File | 14 KB |
| mime.types | 8/2/2020 4:25 PM | TYPES File | 62 KB |
| openssl.cnf | 4/21/2020 8:22 PM | CNF File | 11 KB |

add the codes as below

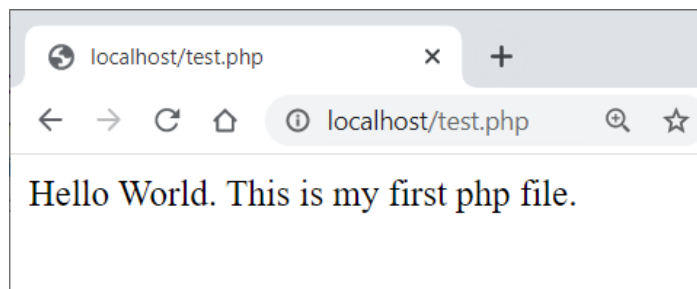
```
543 LoadModule php7_module "D:/eBusinessKevinYuenLabs/php7410/php7apache2_4.dll"  
544 AddHandler application/x-httpd-php .php  
545 # configure the path to php.ini  
546 PHPIniDir "D:/eBusinessKevinYuenLabs/php7410"
```

3.4. Test

- Restart the apache services
- Under D:\eBusinessKevinYuenLabs\Apache24\htdocs, create a *php* file, e.g. test.php with the content below. You can simply use notepad (or other IDE) to handle it.

```
D: > eBusinessKevinYuenLabs > Apache24 > htdocs > test.php
1  <?php
2  echo 'Hello World. This is my first php file.'
3  ?>
```

- Use the browser to test it



Successful!

4. Install Apache NetBeans IDE

- You can use the other IDE as you like. For this course, we will use netbeans.
- <https://netbeans.apache.org/download/index.html>

Apache NetBeans 12 LTS (NB 12.0)

Latest LTS version of the IDE, released on June 4, 2020.

Features

Download

4. Install Apache NetBeans IDE

<https://netbeans.apache.org/download/nb120/nb120.html>

Downloading Apache NetBeans 12.0

Apache NetBeans 12.0 was released on June 4, 2020. See [Apache NetBeans 12.0 Features](#) for a full list of features.

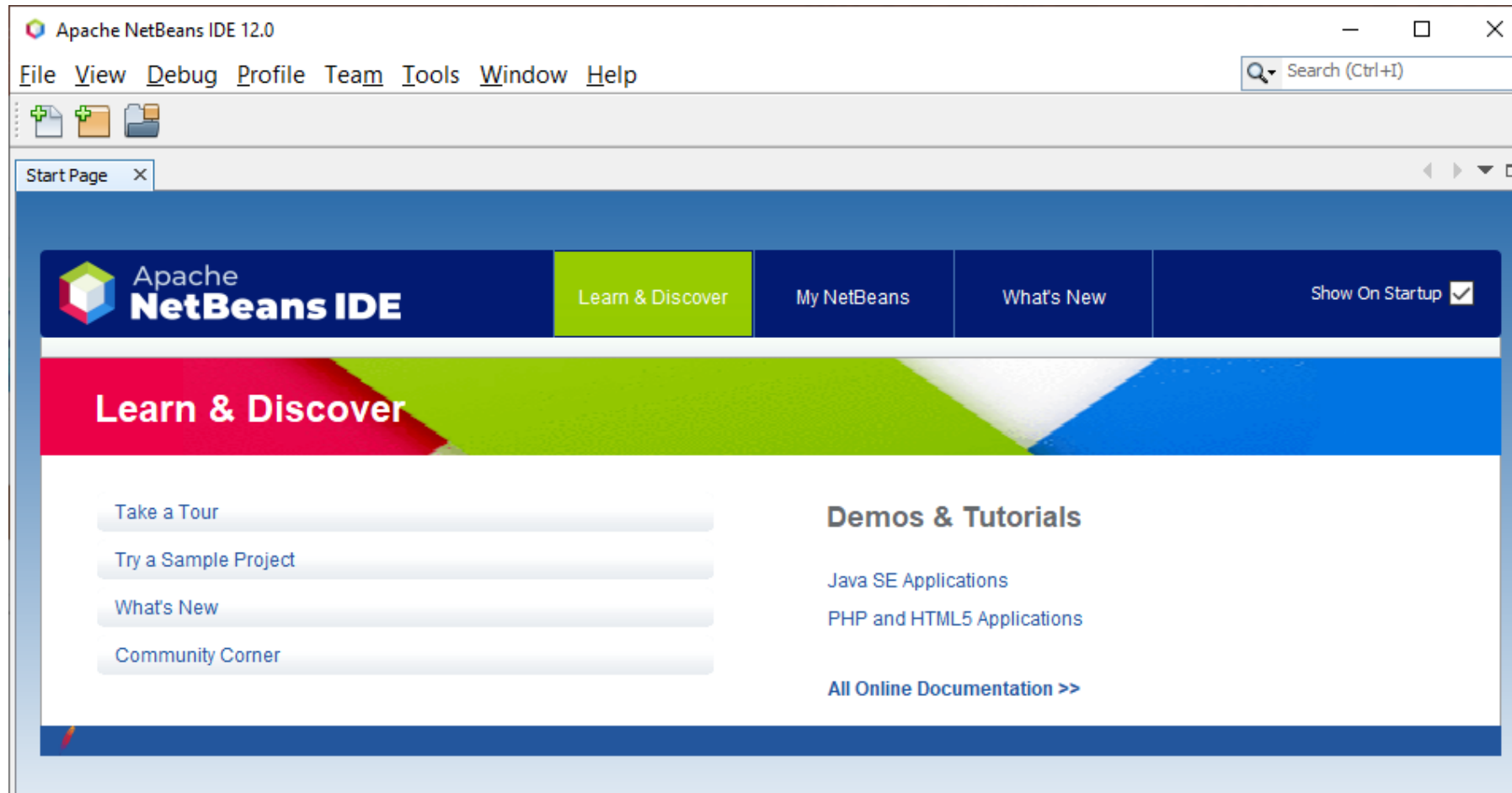
Apache NetBeans 12.0 is available for download from your closest Apache mirror.

- Binaries: [netbeans-12.0-bin.zip](#) (SHA-512, PGP ASC)
- Source: [netbeans-12.0-source.zip](#) (SHA-512, PGP ASC)
- Installers:
 - [Apache-NetBeans-12.0-bin-windows-x64.exe](#) (SHA-512, PGP ASC)
 - [Apache-NetBeans-12.0-bin-linux-x64.sh](#) (SHA-512, PGP ASC)
 - [Apache-NetBeans-12.0-bin-macosx.dmg](#) (SHA-512, PGP ASC)
- Javadoc for this release is available at <https://bits.netbeans.org/12.0/javadoc>

<http://apache.communilink.net/netbeans/netbeans/12.0/Apache-NetBeans-12.0-bin-windows-x64.exe>

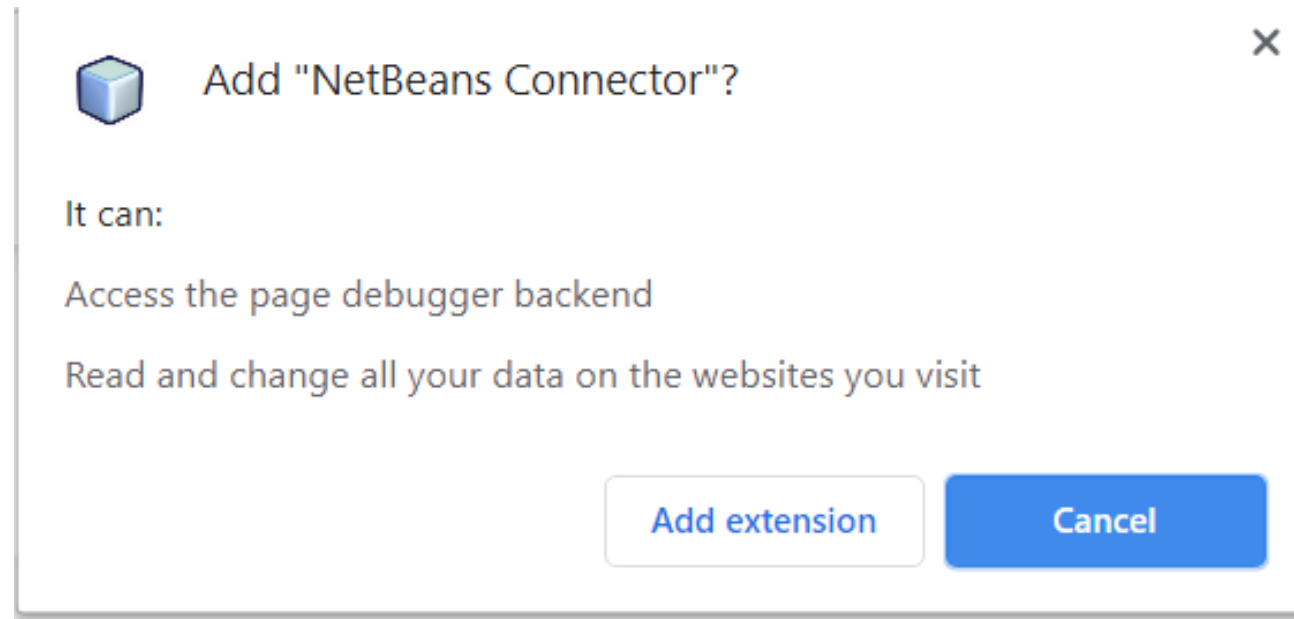
Use all Default setting to install

4. Open Apache NetBeans IDE

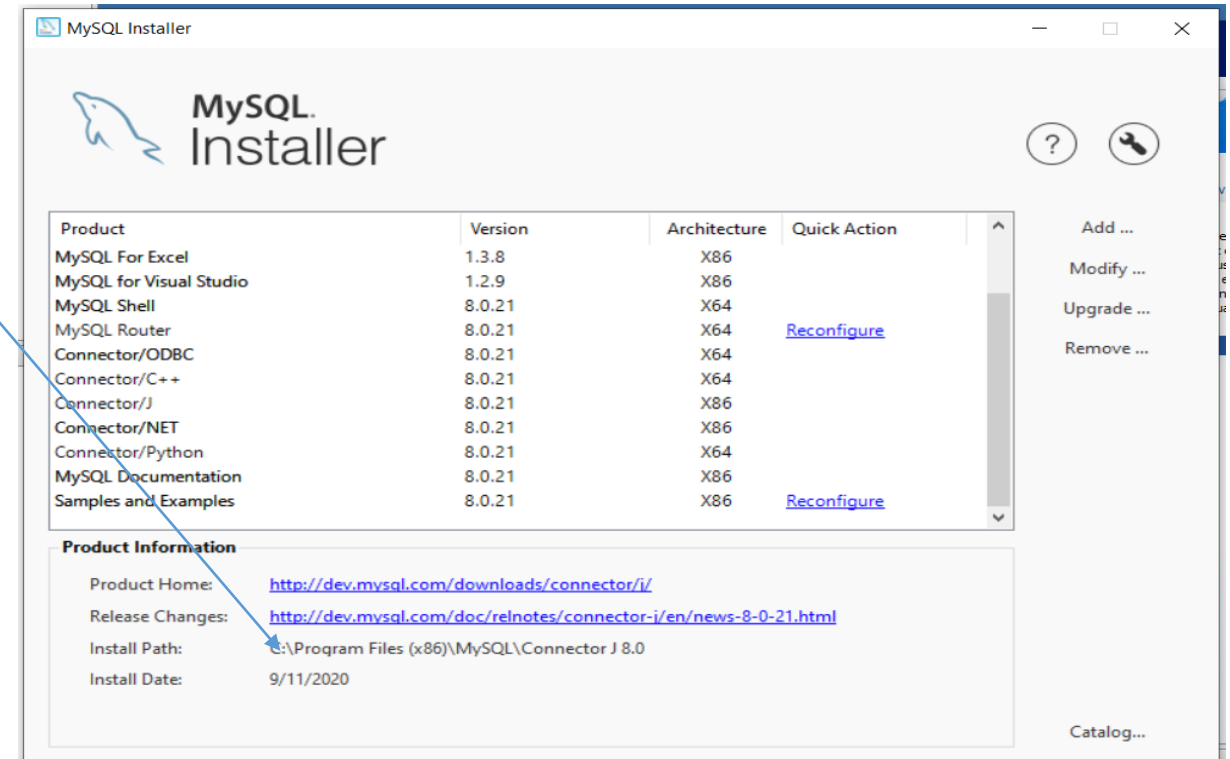
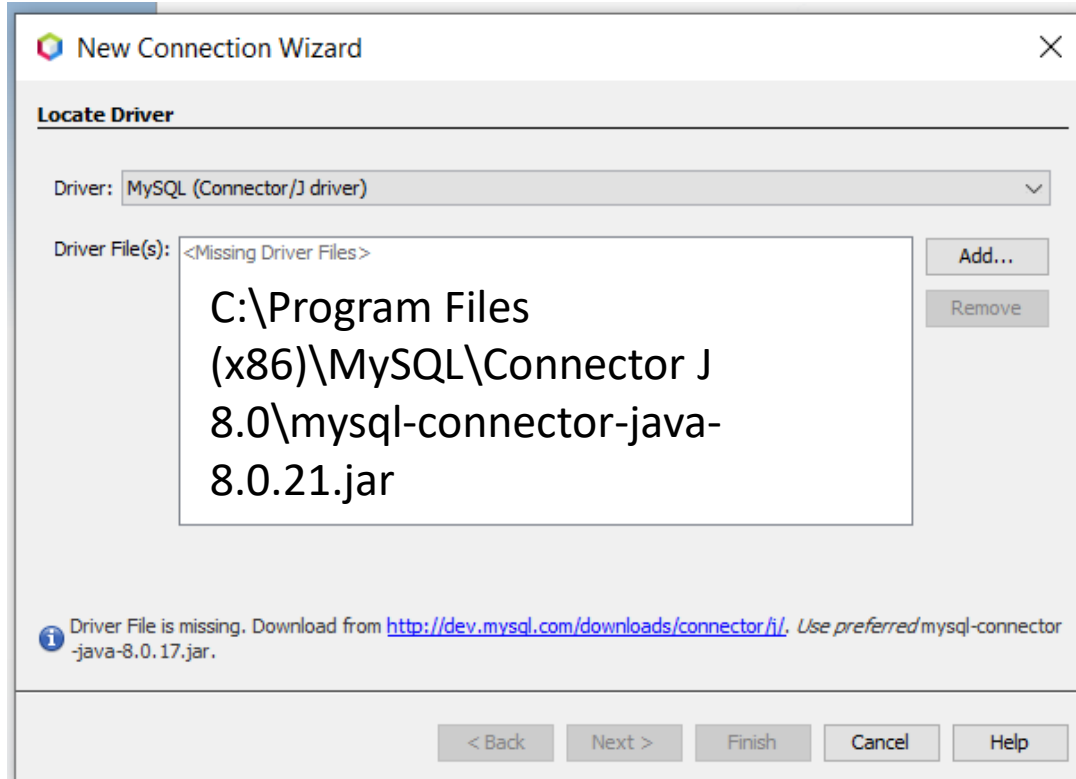


Use Chrome browser

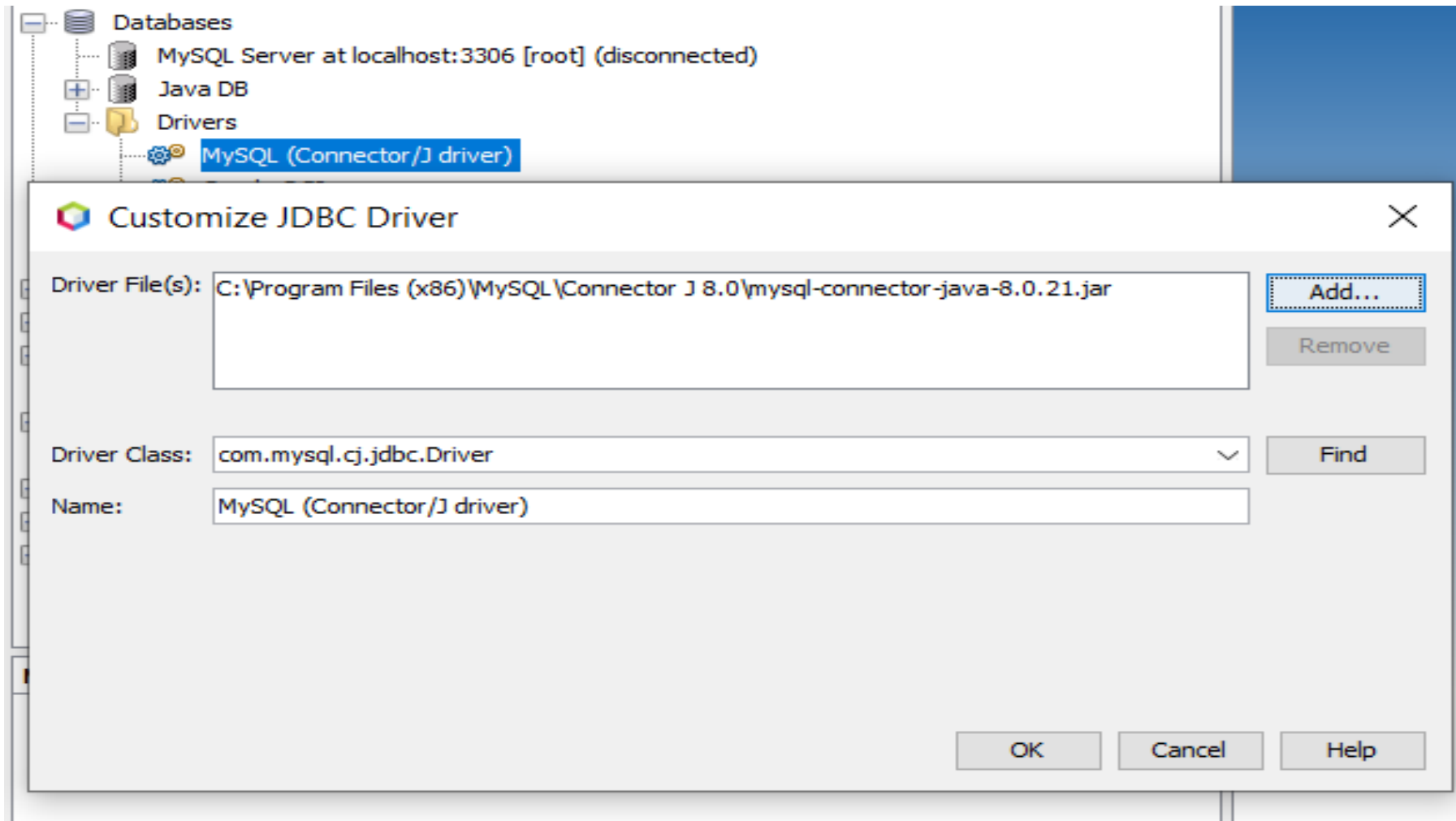
1. Go to <https://chrome.google.com/webstore>
2. Search and install *netbeans-connector*



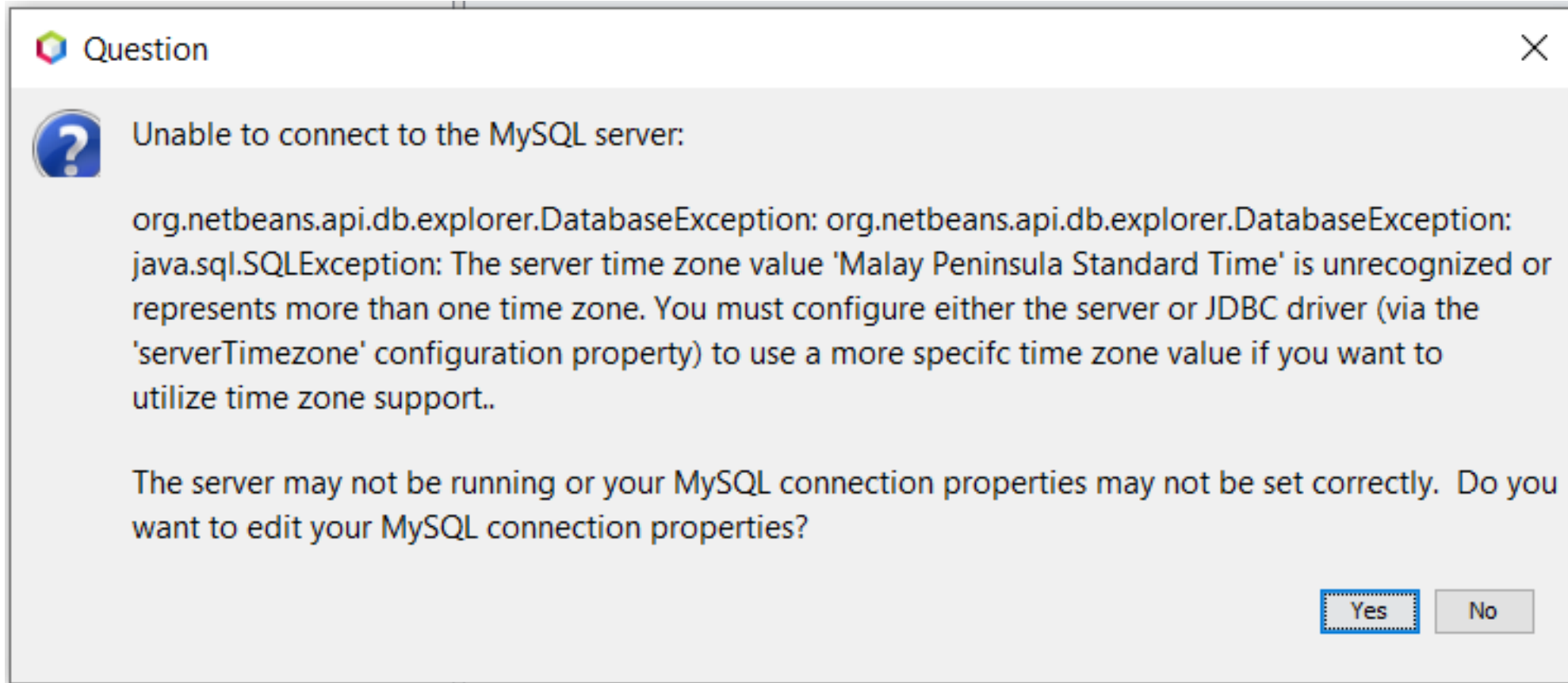
Setup MySQL Connector/J driver



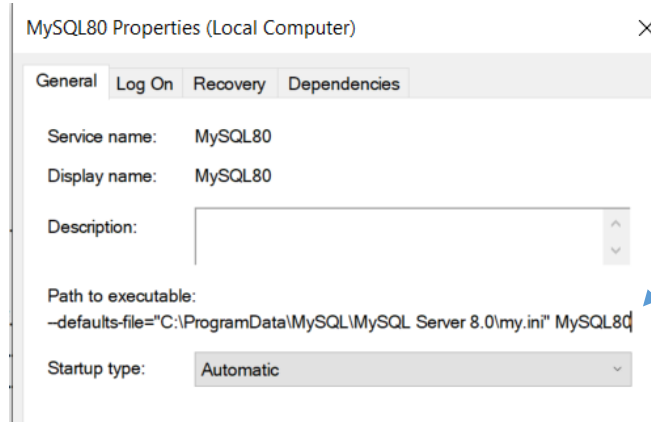
Setup MySQL Connector/J driver



Error: Unable to connect to the MySQL server due to time zone setting



- Open MySQL window services to find the location of my.ini, the MySQL configuration file.

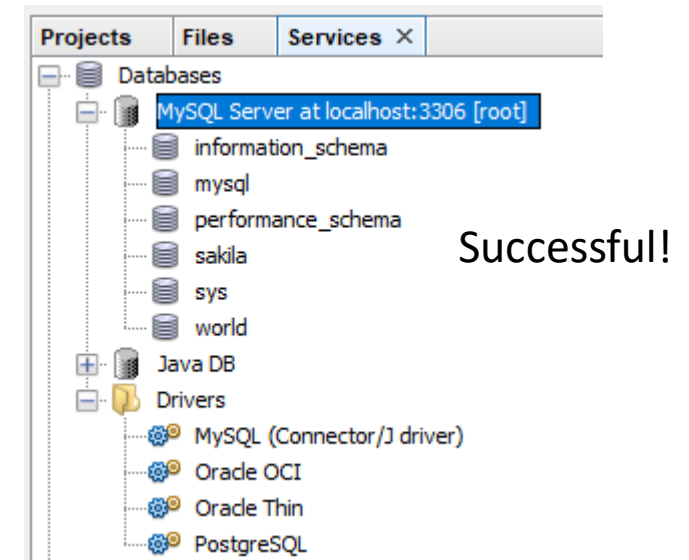


"C:\\Program Files\\MySQL\\MySQL Server 8.0\\bin\\mysqld.exe" --defaults-file="C:\\ProgramData\\MySQL\\MySQL Server 8.0\\my.ini" MySQL80

- After the end of the file, my.ini, add the code to set a default time zone

```
405 # Set default time zone
406 # Hong Kong, Singapore time zone
407 default-time-zone = '+08:00'
```

- Save the file and Restart the MySQL window services.



New database Connection

Right Click Databases
and
Add new connection

New Connection Wizard

Customize Connection

Driver Name: MySQL (Connector/J driver)

Host: localhost Port: 3306

Database: mysql

User Name: root

Password: •••••

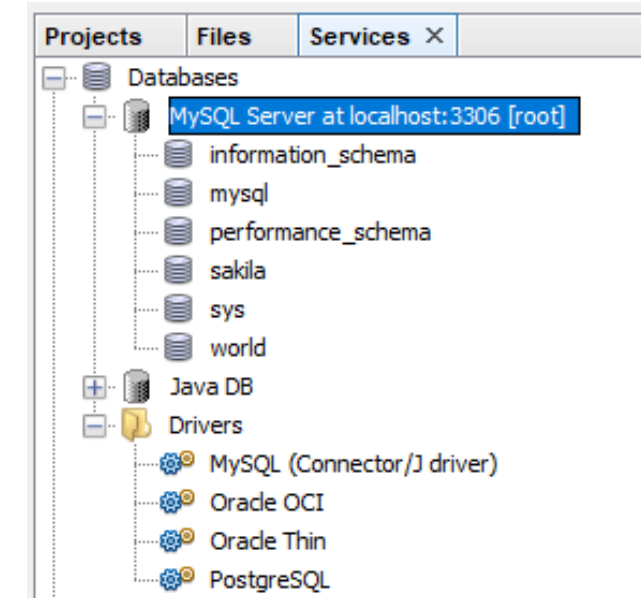
☐ Remember password

Connection Properties Test Connection

JDBC URL: jdbc:mysql://localhost:3306/mysql?zeroDateTimeBehavior=CONVERT_TO_NULL

Connection Succeeded.

< Back Next > Finish Cancel Help



End
Thank you