



Database System (CS-103)

Introduction to the lab, software installation, and creating
simple database

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Google Classroom

Code: sstvwf6

Link: <https://classroom.google.com/c/NjU1ODEyMzcxODMz?cjc=sstvwf6>



About me

➤ Education:

MSCS from NUCES-Islamabad Pakistan in 2023

➤ Experience (Industry+ Academia = 3 Year)

- Serving as a Lecturer from March 29, 2023 – present at MY university
- Teacher Assistant at FAST-NUCES Islamabad from August 2022 – January 2023
- Web Developer at Cognizant Innovation from October 2017 – August 2019

➤ Publications

- H. Javed *et al.*, "Blockchain-Based Logging to Defeat Malicious Insiders: The Case of Remote Health Monitoring Systems," in *IEEE Access*, vol. 12, pp. 12062-12079, 2024, doi: 10.1109/ACCESS.2023.3346432.
- "iAFP-ET: A robust approach for accurate identification of antifungal peptides using extra tree classifier and multi-view fusion."
- iEnhancer-DNN: An Accurate identification of enhancer sites by heterogeneous feature using Deep Neural Network

➤ Research Area

1. Blockchain
2. Data Science/Data analytics
3. Data visualization



Class Introduction

- i. Name
- ii. Why Computing
- iii. Area of Interest



Tentative Grading Policy

Quizzes.....	05%
Lab Projects.....	40%
Mid term.....	20%
Final Exam.....	35%



Attendance Policy

75% attendance is must; deficient students will not be allowed to appear in the final examination.



Class Policies and Guidelines

Don'ts

- **Use of cell phones**
- **Discussion with fellows during class**
- **Early leave**
- **Frequent movement In-out of class**

Do's

- **Be interactive**
- **Participate in the lecture**
- **Relax and learn**



Cheating and Plagiarism

Zero tolerance

If found guilty will be panelized.

- Zero in all quizzes and projects
- Case will be sent to disciplinary committee

Plagiarism

- Copying all or part of the assignment or code from classmate
- Coping all or part of the assignment or code from internet and book without rephrasing



Agenda

- | | |
|---|--|
| 1 Language & Tool | 5 Microsoft Access Overview |
| 2 MySQL Downloading Steps | 6 Creating Database in Microsoft Access |
| 3 MySQL workbench Installation | 7 Creating table, Form, Report |
| 4 Creating Scheme in MySQL workbench | 8 Creating Front end and inserting data |



Language & Tool

❑ Programming Language : SQL

❑ Tools : There are a number of software that can work with the SQL, such as:

- i. MySQL Workbench
- ii. Microsoft SQL server
- iii. SQLite
- iv. XAMP
- v. WAMP

❑ It's up to you to decide but recommend to use **MySQL Workbench**



MySQL Workbench Downloading Steps

Download link: <https://dev.mysql.com/downloads/installer/>

Video link:

<https://classroom.google.com/c/NjU1ODEyMzcwODMz/m/NjY3ODgxMTc1NzQ3/details>



MySQL Workbench Installation

The image shows the MySQL Installer (OFFLINE) window. The title bar reads "MySQL Installer (OFFLINE)". The left sidebar contains the following steps: "MySQL. Installer Adding Community", "Choosing a Setup Type" (highlighted), "Select Products", "Installation", "Product Configuration", and "Installation Complete". The main area is titled "Choosing a Setup Type" and contains the instruction "Please select the Setup Type that suits your use case." There are four radio button options: "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), and "Custom" (Manually select the products that should be installed on the system). The "Custom" option is selected. To the right of these options is a "Setup Type Description" box with the text: "Allows you to select exactly which products you would like to install. This also allows to pick other server versions and architectures (depending on your OS)." At the bottom right, there are "Next >" and "Cancel" buttons.

MySQL Installer (OFFLINE)

MySQL. Installer
Adding Community

Choosing a Setup Type

Select Products

Installation

Product Configuration

Installation Complete

Choosing a Setup Type

Please select the Setup Type that suits your use case.

☐ **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.

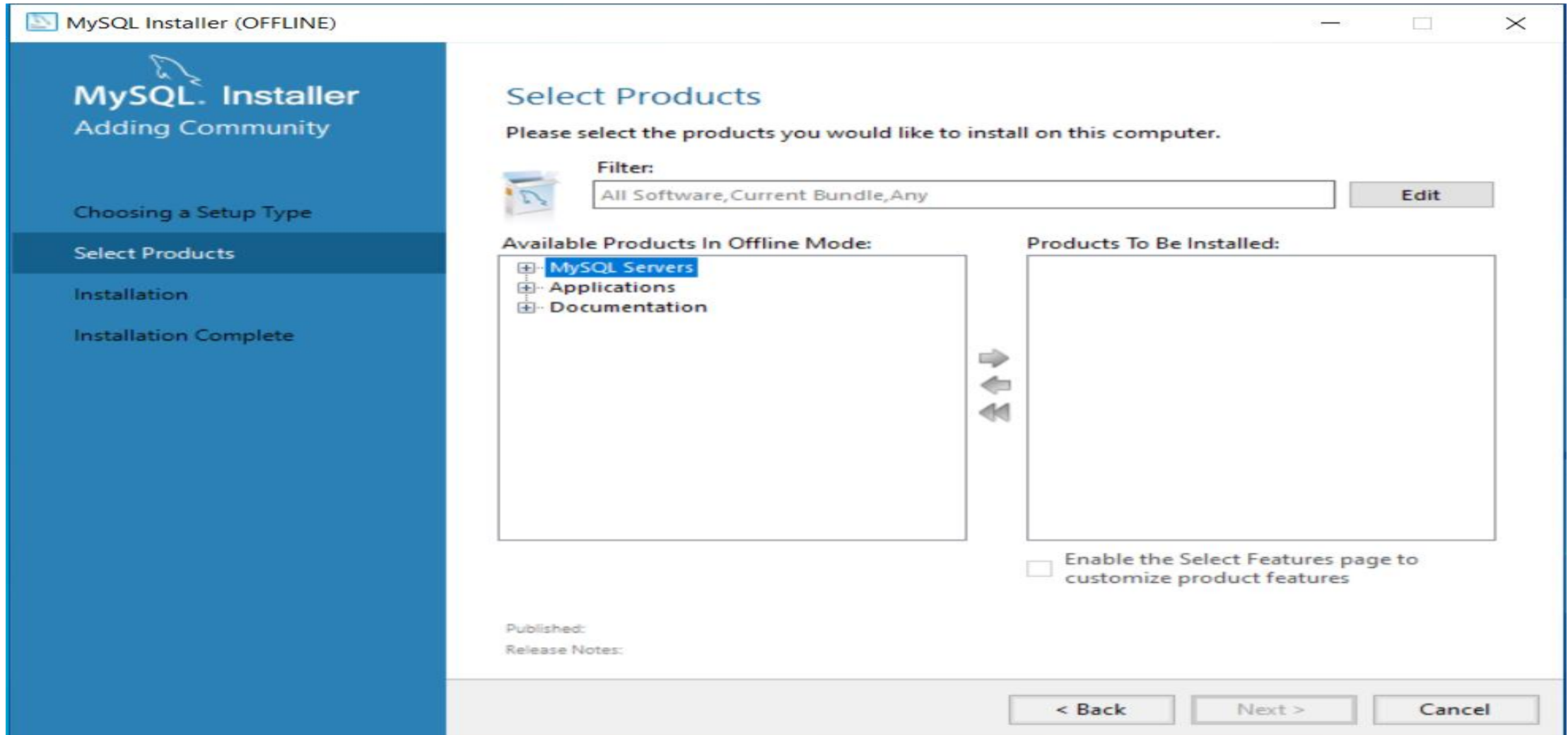
☒ **Custom**
Manually select the products that should be installed on the system.

Setup Type Description
Allows you to select exactly which products you would like to install. This also allows to pick other server versions and architectures (depending on your OS).

Next > Cancel

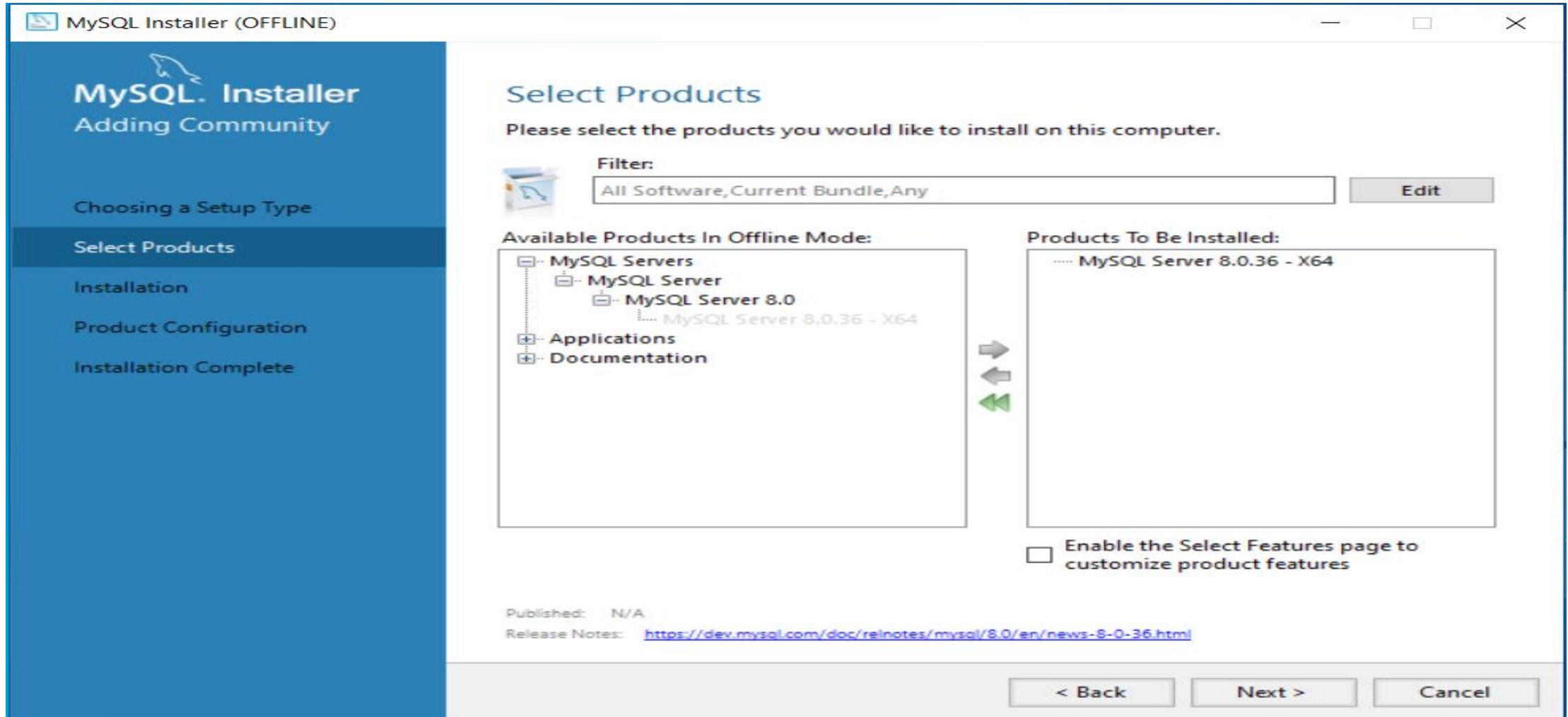


MySQL Workbench Installation



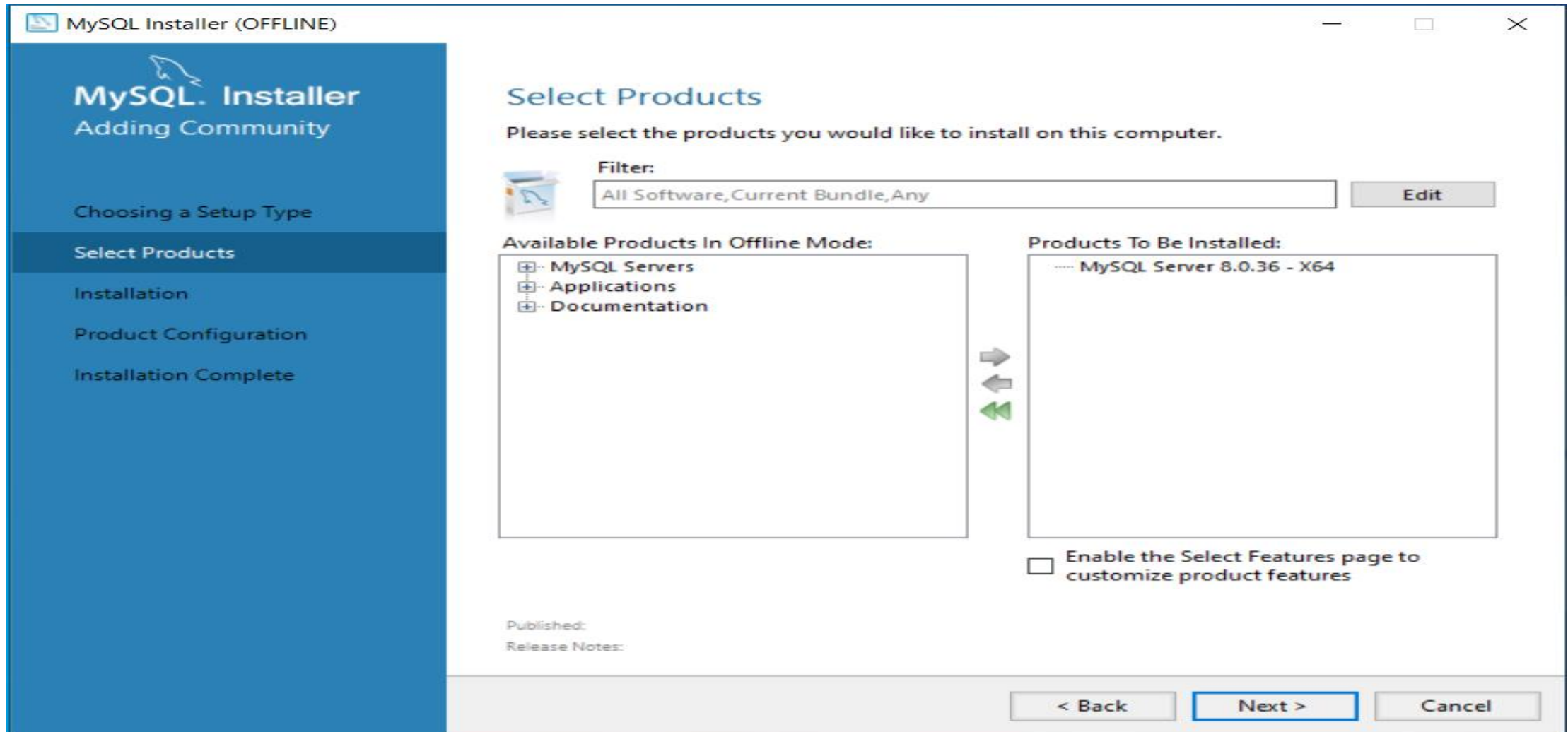


MySQL Workbench Installation



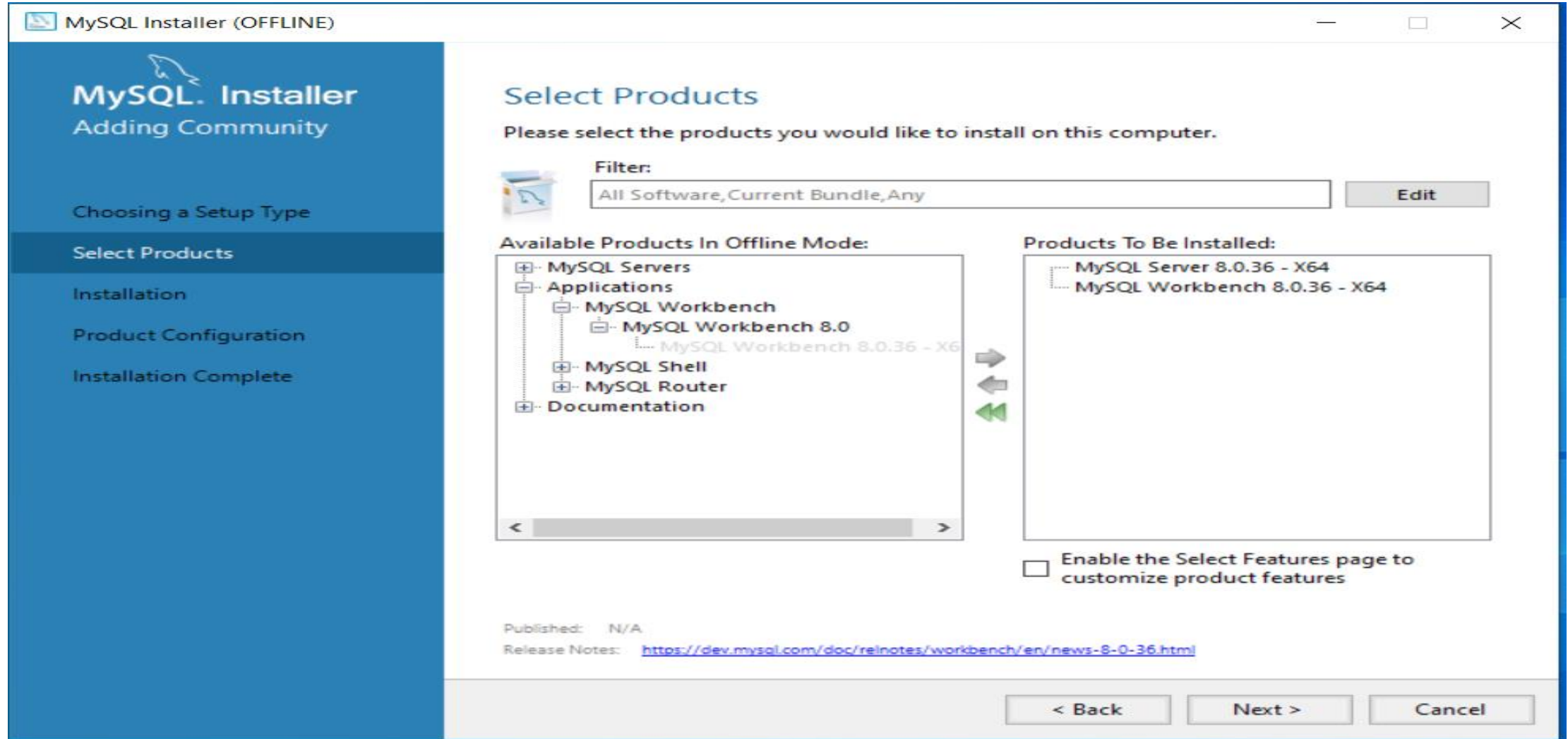


MySQL Workbench Installation



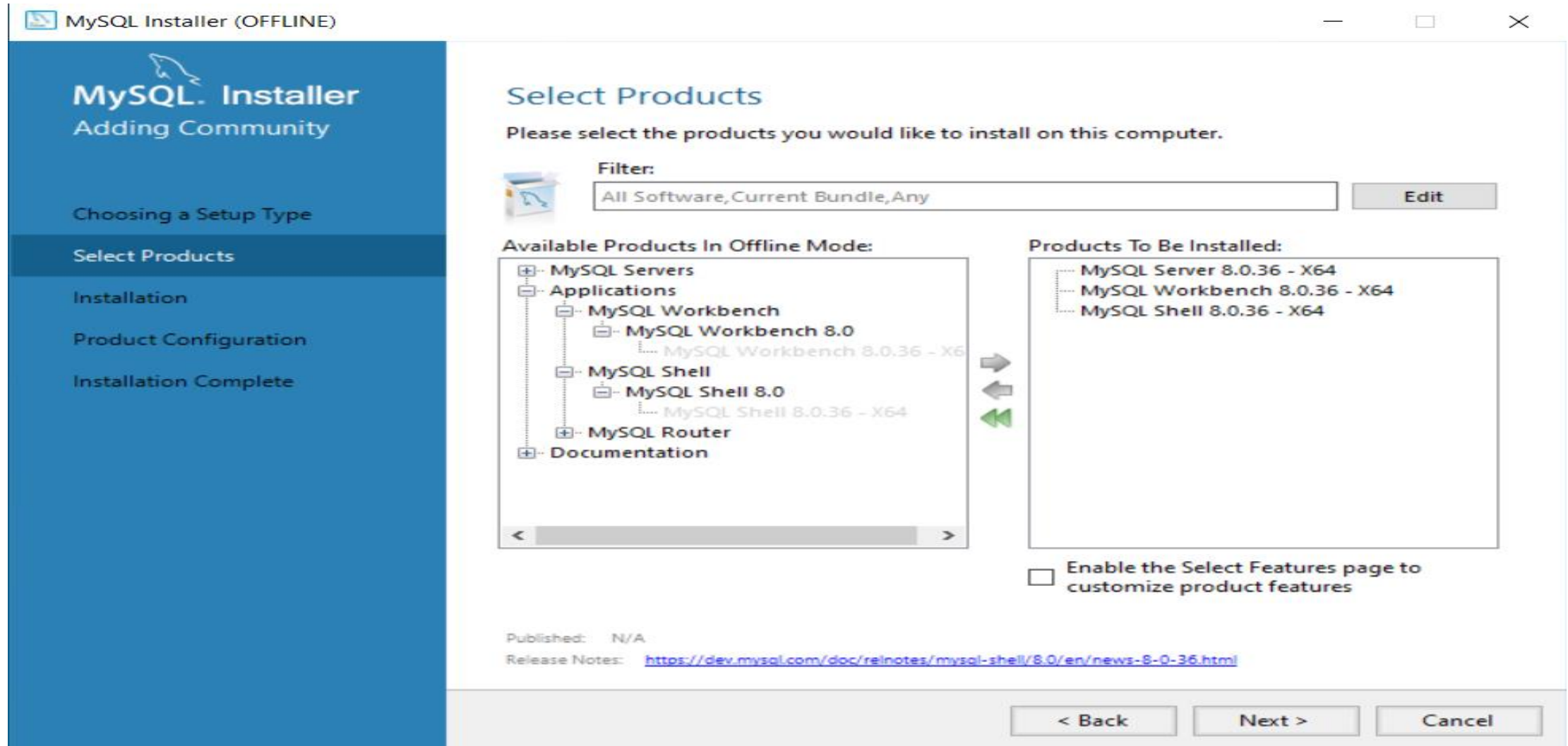


MySQL Workbench Installation





MySQL Workbench Installation





MySQL Workbench Installation

MySQL Installer (OFFLINE)

MySQL[®] Installer
Adding Community

Choosing a Setup Type

Select Products

Path Conflicts

Installation

Product Configuration

Installation Complete

Path Conflicts

Some products has path conflicts

Here are the list of the products that has path conflicts, please navigate between them and if is necessary change the path or paths below.

Product	Architecture
MySQL Server 8.0.36	X64
MySQL Workbench 8.0.36	X64

2 Warnings

You can use the same folder or change it to a new one, take in mind that the install process can overwrite the folder if already exists.

Install Directory:
C:\Program Files\MySQL\MySQL Server 8.0

Data Directory:
C:\ProgramData\MySQL\MySQL Server 8.0

The selected path already exists.

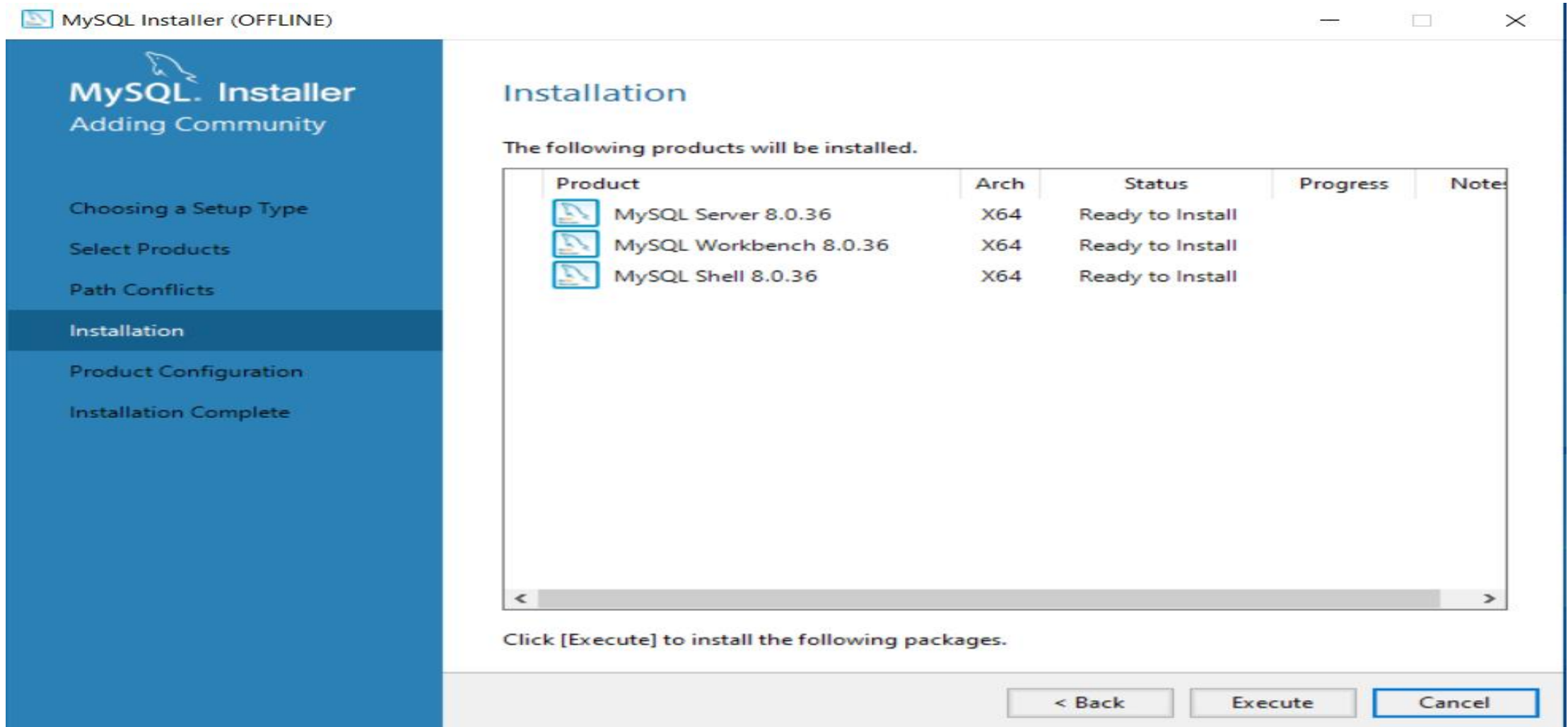
< Back

Next >

Cancel

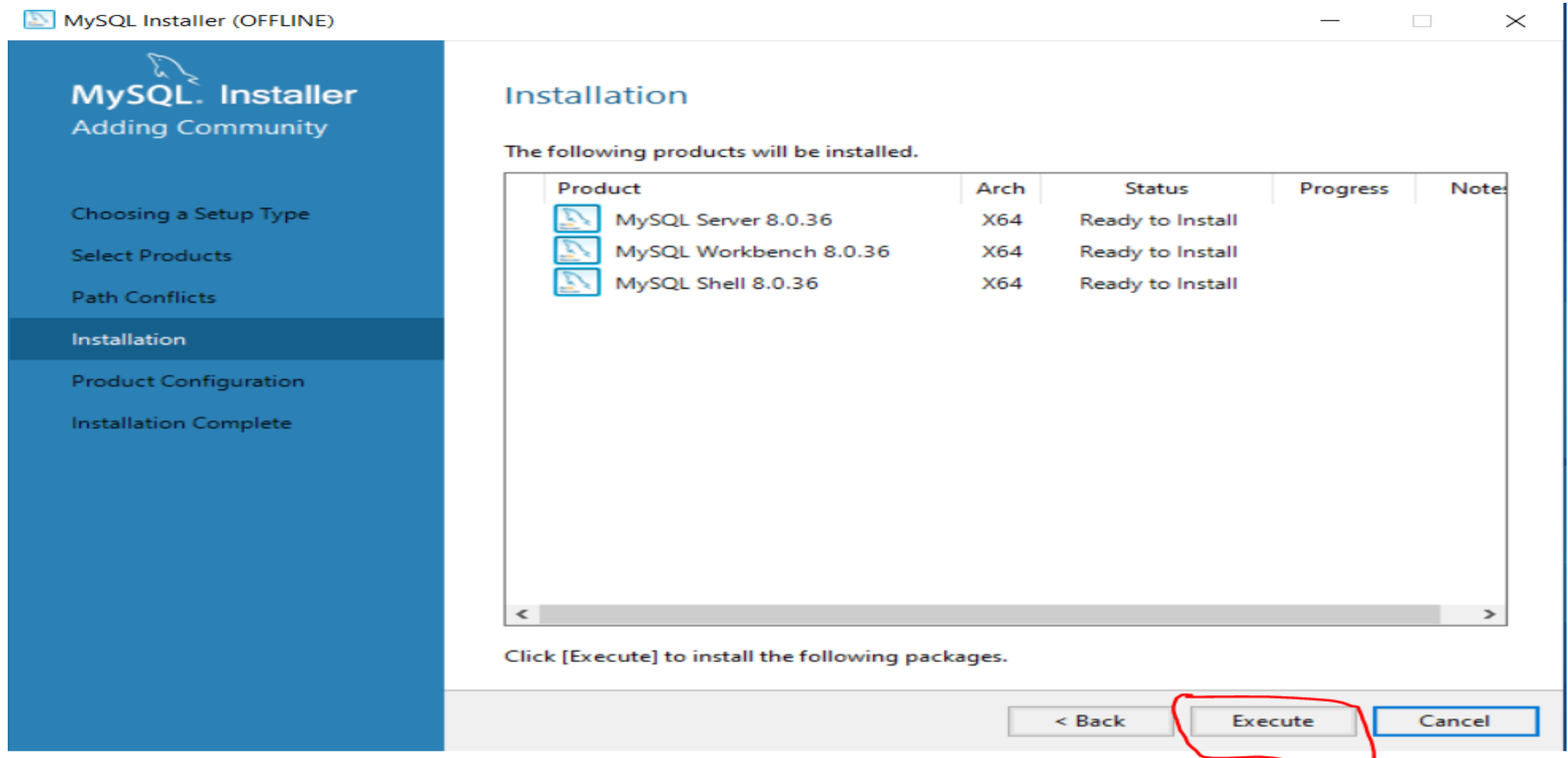


MySQL Workbench Installation



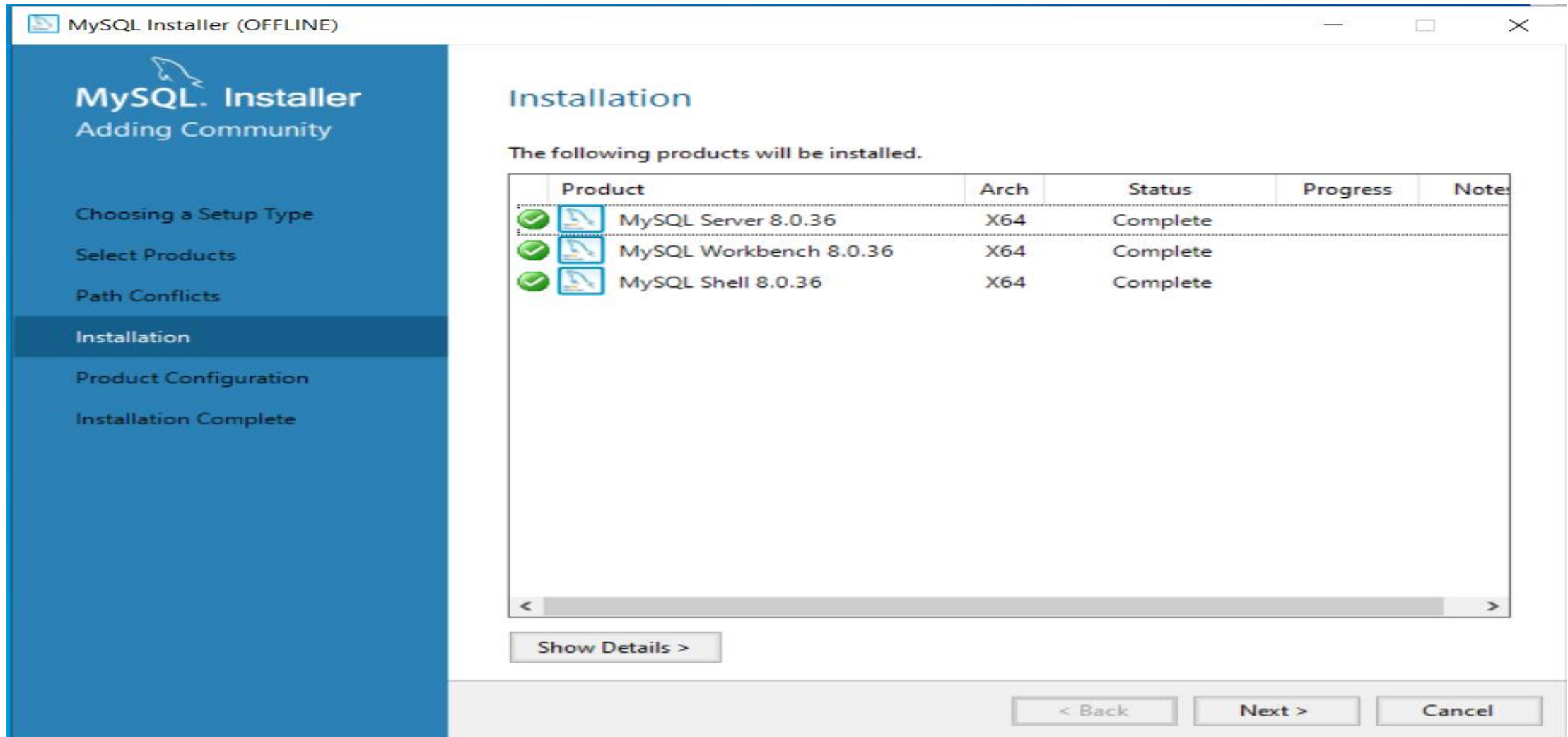


MySQL Workbench Installation



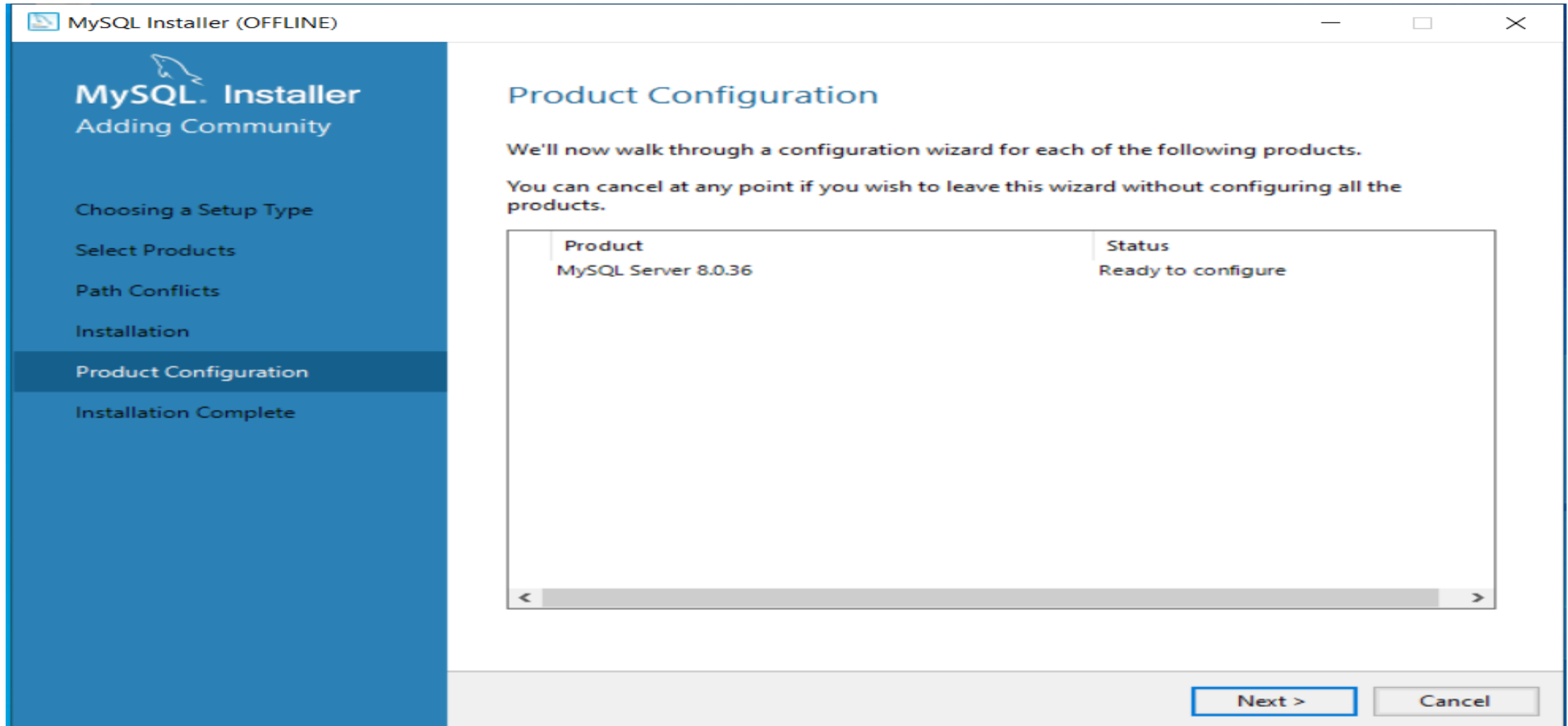


MySQL Workbench Installation





MySQL Workbench Installation





MySQL Workbench Installation

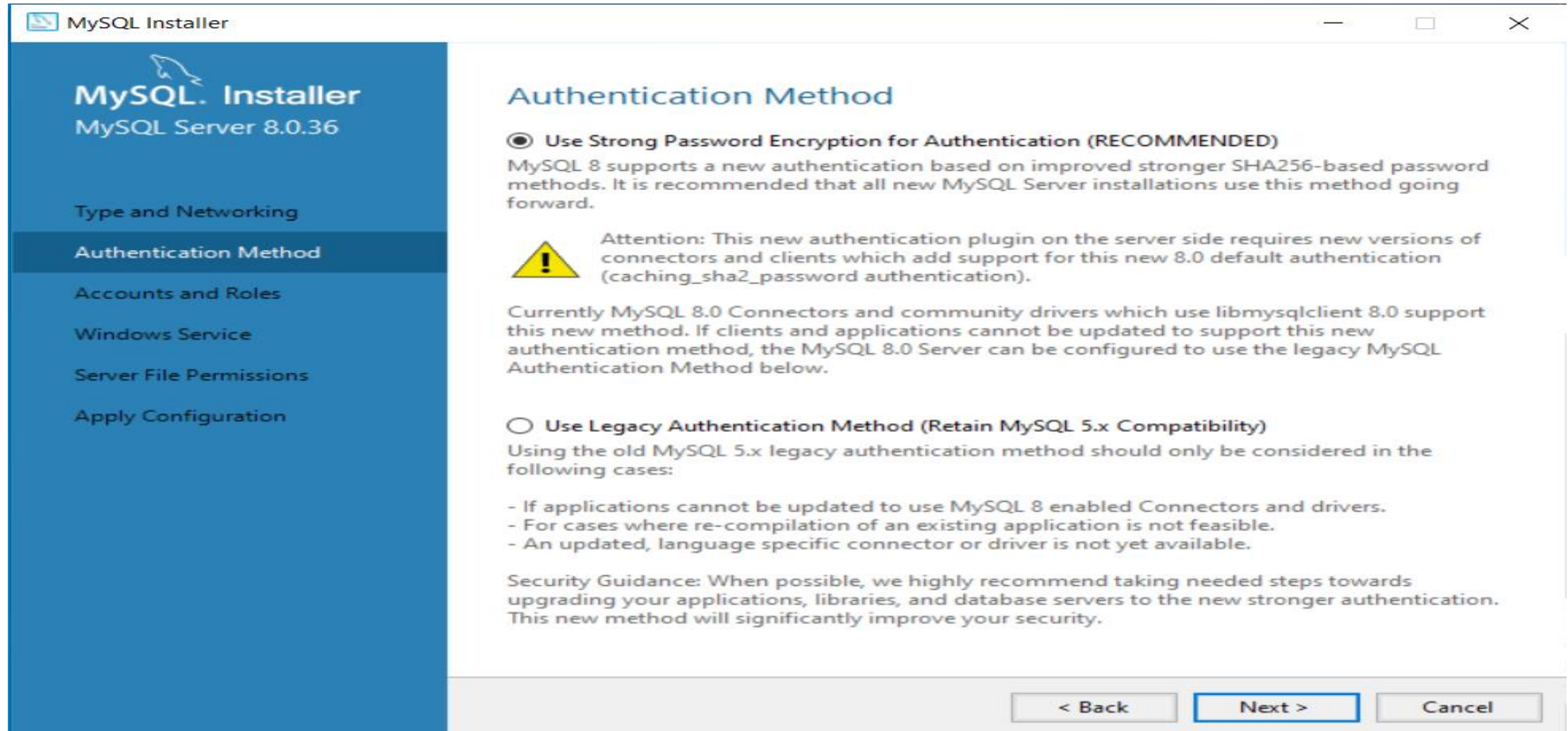
The image shows the MySQL Installer window for MySQL Server 8.0.36. The window has a blue sidebar on the left with the following menu items: 'Type and Networking' (selected), 'Authentication Method', 'Accounts and Roles', 'Windows Service', 'Server File Permissions', and 'Apply Configuration'. The main area is titled 'Type and Networking' and contains the following sections:

- 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:
- Connectivity**
Use the following controls to select how you would like to connect to this server.
 - ☒ TCP/IP Port: X Protocol Port:
 - ☒ Open Windows Firewall ports for network access
 - ☐ Named Pipe Pipe Name:
 - ☐ Shared Memory Memory Name:
- 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

At the bottom right of the window, there are two buttons: 'Next >' and 'Cancel'.



MySQL Workbench Installation





MySQL Workbench Installation

The screenshot shows the 'Accounts and Roles' step of the MySQL Installer. The left sidebar lists the installation steps: Type and Networking, Authentication Method, Accounts and Roles (selected), Windows Service, Server File Permissions, and Apply Configuration. The main area is titled 'Accounts and Roles' and contains two sections. The first section, 'Root Account Password', prompts the user to enter a password for the root account, with a field for the password and a field to repeat it. The password strength is indicated as 'Weak'. The second section, 'MySQL User Accounts', prompts the user to create MySQL user accounts and assign roles. It features a table with columns for 'MySQL User Name', 'Host', and 'User Role', and buttons for 'Add User', 'Edit User', and 'Delete'.

MySQL Installer

MySQL Server 8.0.36

Type and Networking

Authentication Method

Accounts and Roles

Windows Service

Server File Permissions

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
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MySQL Workbench Installation

MySQL Installer

MySQL Server 8.0.36

Type and Networking

Authentication Method

Accounts and Roles

Windows Service

Server File Permissions

Apply Configuration

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 Workbench Installation

MySQL Installer

MySQL Server 8.0.36

Type and Networking

Authentication Method

Accounts and Roles

Windows Service

Server File Permissions

Apply Configuration

Server File Permissions

MySQL Installer can secure the server's data directory by updating the permissions of files and folders located at:

C:\ProgramData\MySQL\MySQL Server 8.0\Data

Do you want MySQL Installer to update the server file permissions for you?

☒ Yes, grant full access to the user running the Windows Service (if applicable) and the administrators group only. Other users and groups will not have access.

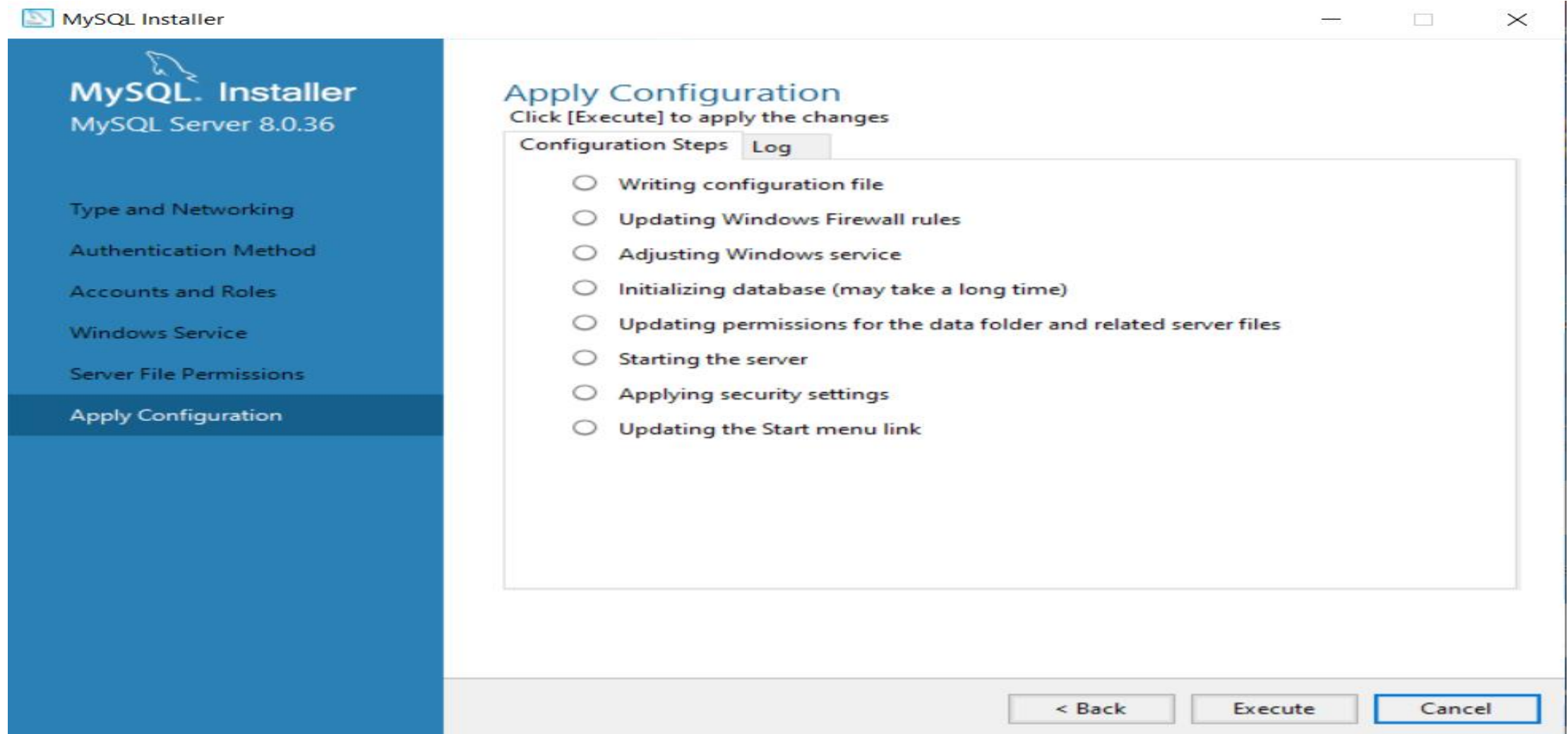
☐ Yes, but let me review and configure the level of access.

☐ No, I will manage the permissions after the server configuration.

< Back Next > Cancel

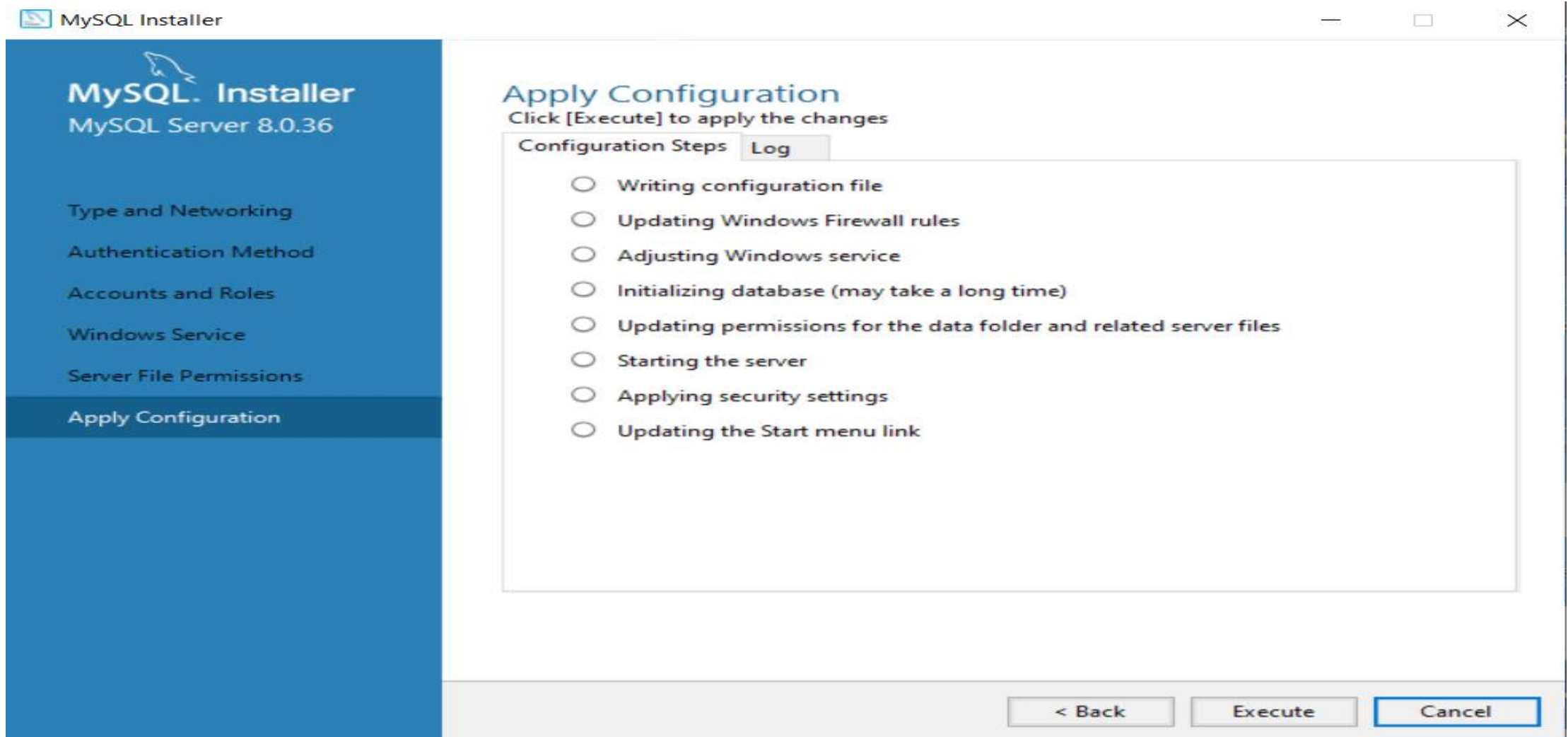


MySQL Workbench Installation



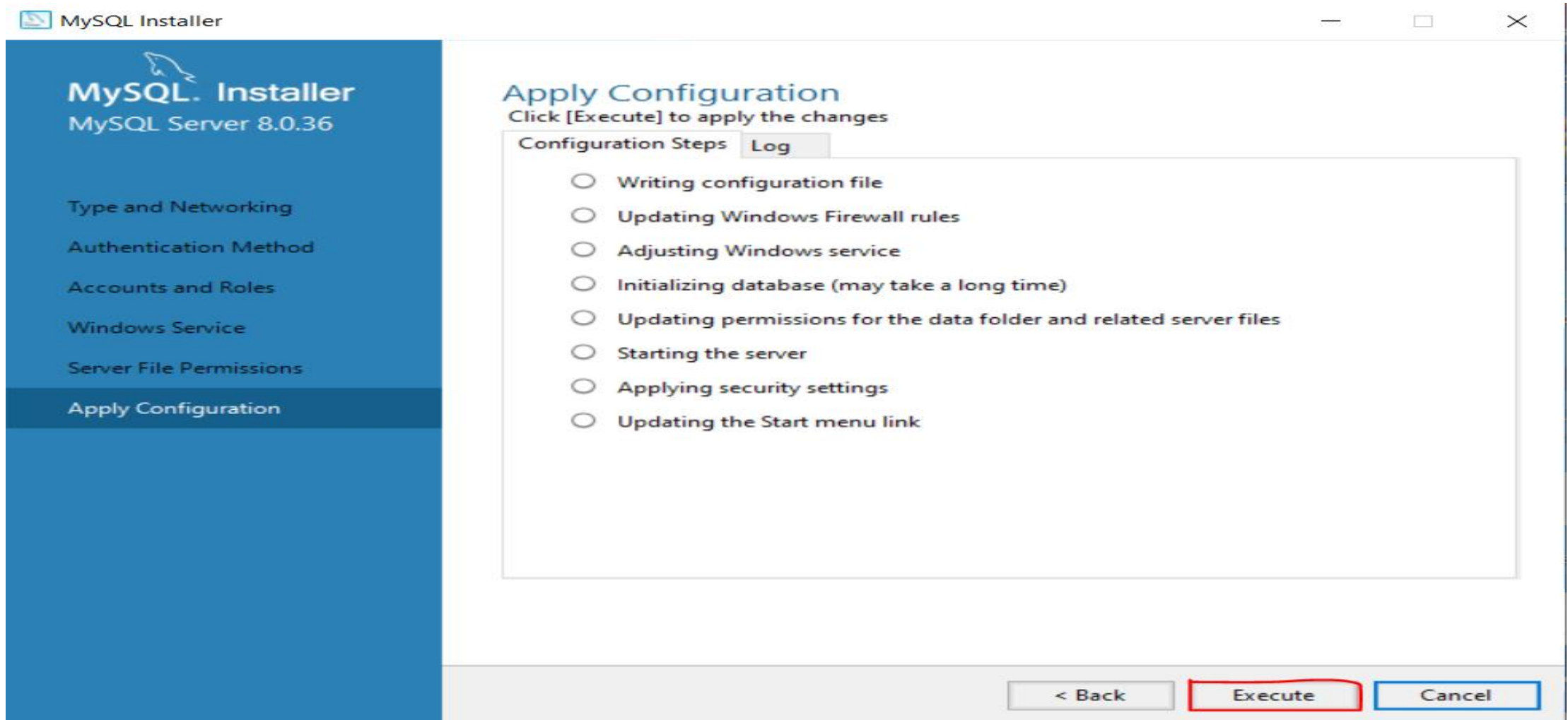


MySQL Workbench Installation



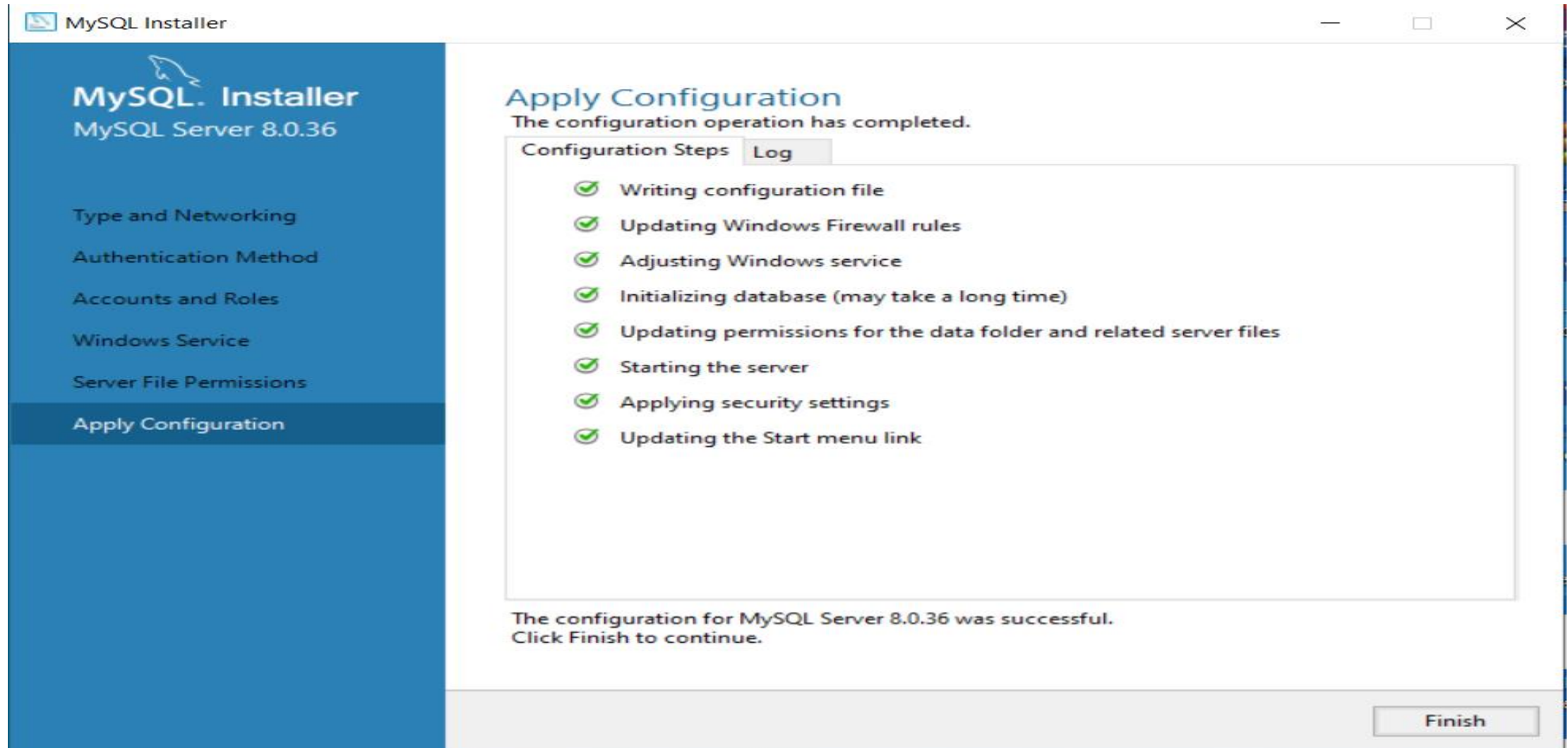


MySQL Workbench Installation



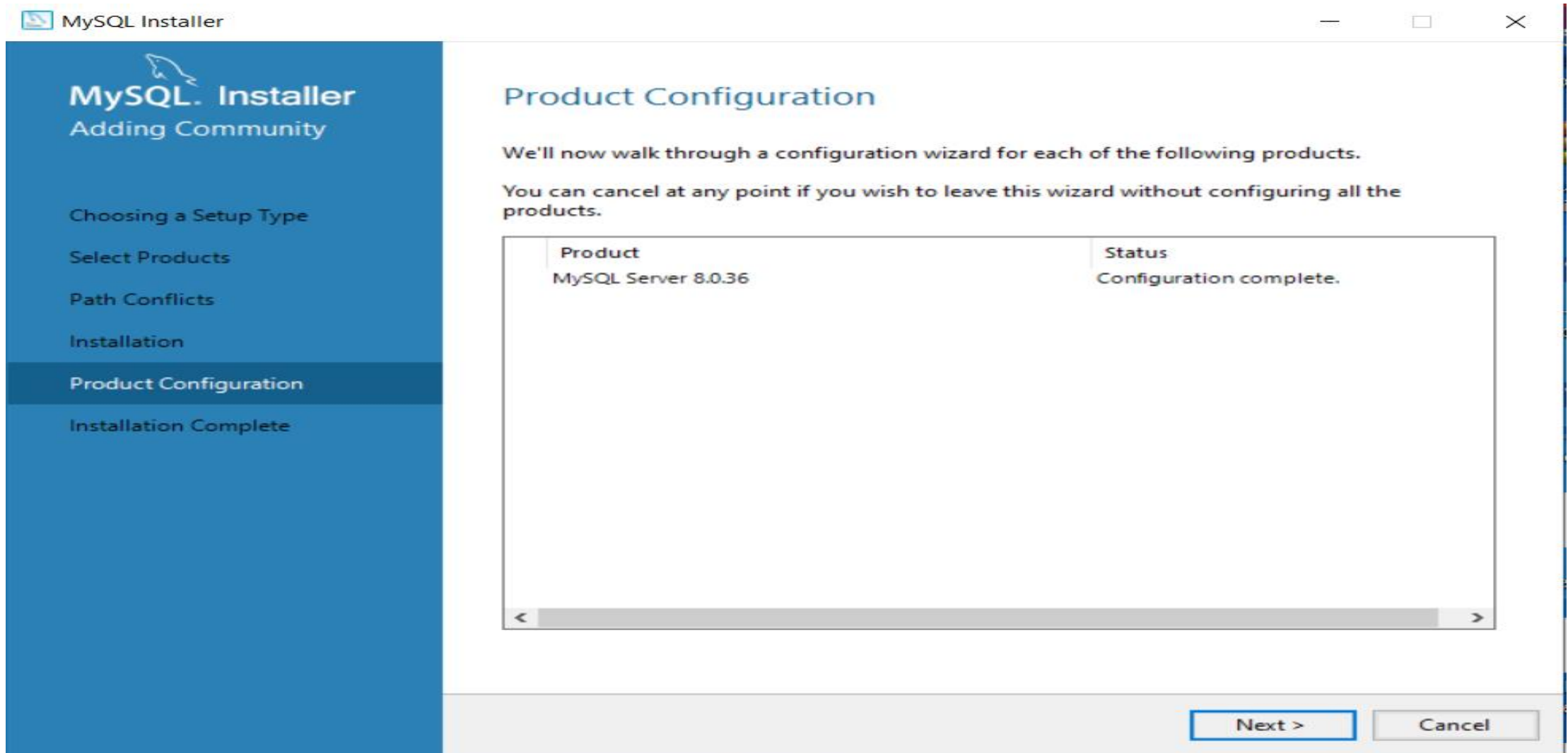


MySQL Workbench Installation





MySQL Workbench Installation





MySQL Workbench Installation

MySQL Installer

MySQL. Installer
Adding Community

Choosing a Setup Type

Select Products

Path Conflicts

Installation

Product Configuration

Installation Complete

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 InnoDB Cluster, an integrated solution for high availability and scalability of MySQL databases, without requiring advanced MySQL expertise.

```
graph LR; ClientApp[Client App] --> MySQLRouter[MySQL Router]; MySQLRouter --> MySQLShell[MySQL Shell]; MySQLShell --> InnoDBCluster((InnoDB Cluster));
```

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

[MySQL Shell Documentation](#)

[The All New MySQL InnoDB ReplicaSet Blog](#)

[Setting up a Real World Cluster Blog](#)

[Changing Cluster Options Live Blog](#)

[Finish](#)



MySQL Workbench Installation

Video link:

<https://classroom.google.com/c/NjU1ODEyMzcxODMz/m/NjY5MDMwOTM5NTUw/details>



MySQL Workbench Creating Schema

Navigator

SCHEMAS

Filter objects

student

- Tables
- Views
- Stored Procedures
- Functions

Administration Schemas

Information

Schema: student

Query 1

```
1 create database student;
```

Limit to 1000 rows

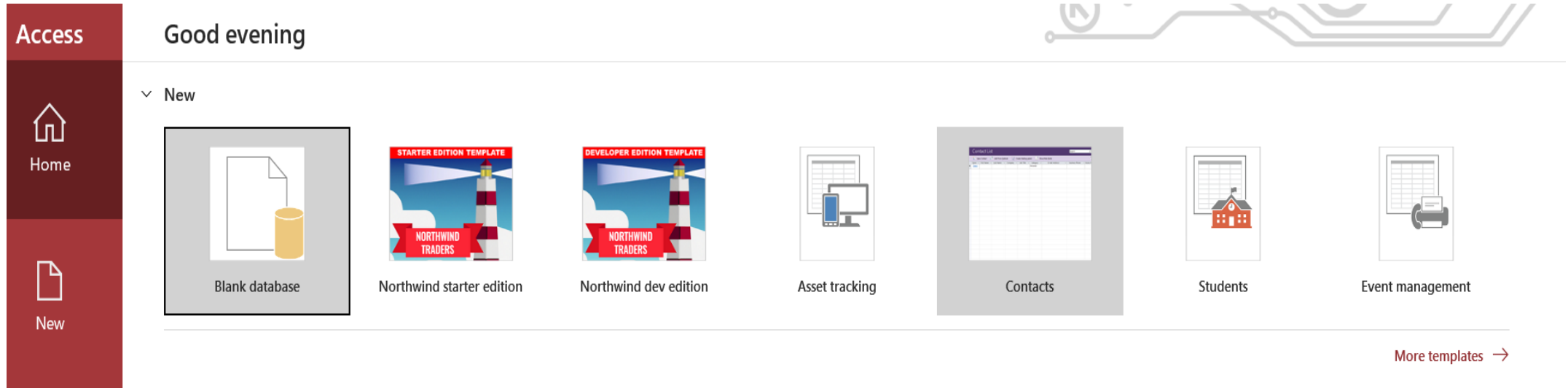
Output

Action Output

#	Time	Action	Message
✓ 1	22:56:26	DROP DATABASE 'sys'	101 row(s) affected
✓ 2	22:57:03	create database student	1 row(s) affected



Creating Database in Microsoft Access





Creating Tables



Courses

Tuesday, March 12, 2024

9:55:05 AM

ID	Course Name	Course Instructor	Duration	Fee	Starting Date
----	-------------	-------------------	----------	-----	---------------



Student

Tuesday, March 12, 2024

9:54:32 AM

ID	Student Name	Gender	Address	Mobile	Course ID	Instructor	Duration	Fee	Startingdate
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Creating Forms, Reports

ID	<input type="text" value="(New)"/>
Course Name	<input type="text"/>
Course Instructor	<input type="text"/>
Duration	<input type="text"/>
Fee	<input type="text"/>
Starting Date	<input type="text"/>



Creating Front end and inserting data





Lab Task: Hospital Management System

A Hospital Management System is an integrated information system for managing all aspects of a hospital's operations such as medical, financial, administrative, legal, and compliance. It includes electronic health records, business intelligence, and revenue cycle management. Hospitals and healthcare facilities improve the quality of healthcare services, reduce operating costs, and improve the revenue cycle by using such hospital management systems.

Your Task are Create Table, Form and Report which contain following information:

- i. Patient Detail
- ii. Patient Diagnosis
- iii. Diagnosis Detail
- iv. Doctor Detail
- v. Patient Diet Advice



Lab Task: Hospital Management System

i. Patient Details

Field Name
Registration_No
Registration_Date
Name
Address
City
TelePhone_Mobile_No
Marital_Status
Religion
Gender
Father_Husband_Name