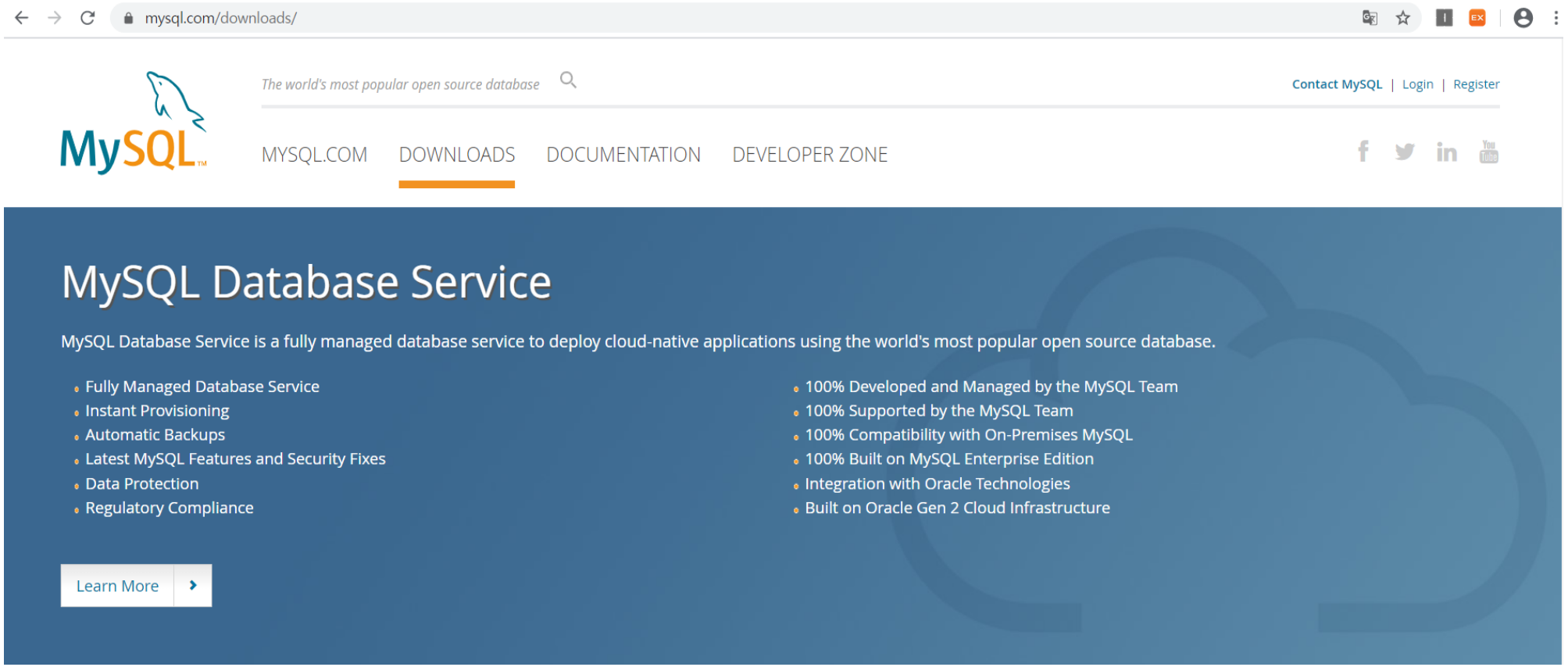
MySQL

안 화 수

MySQL Download

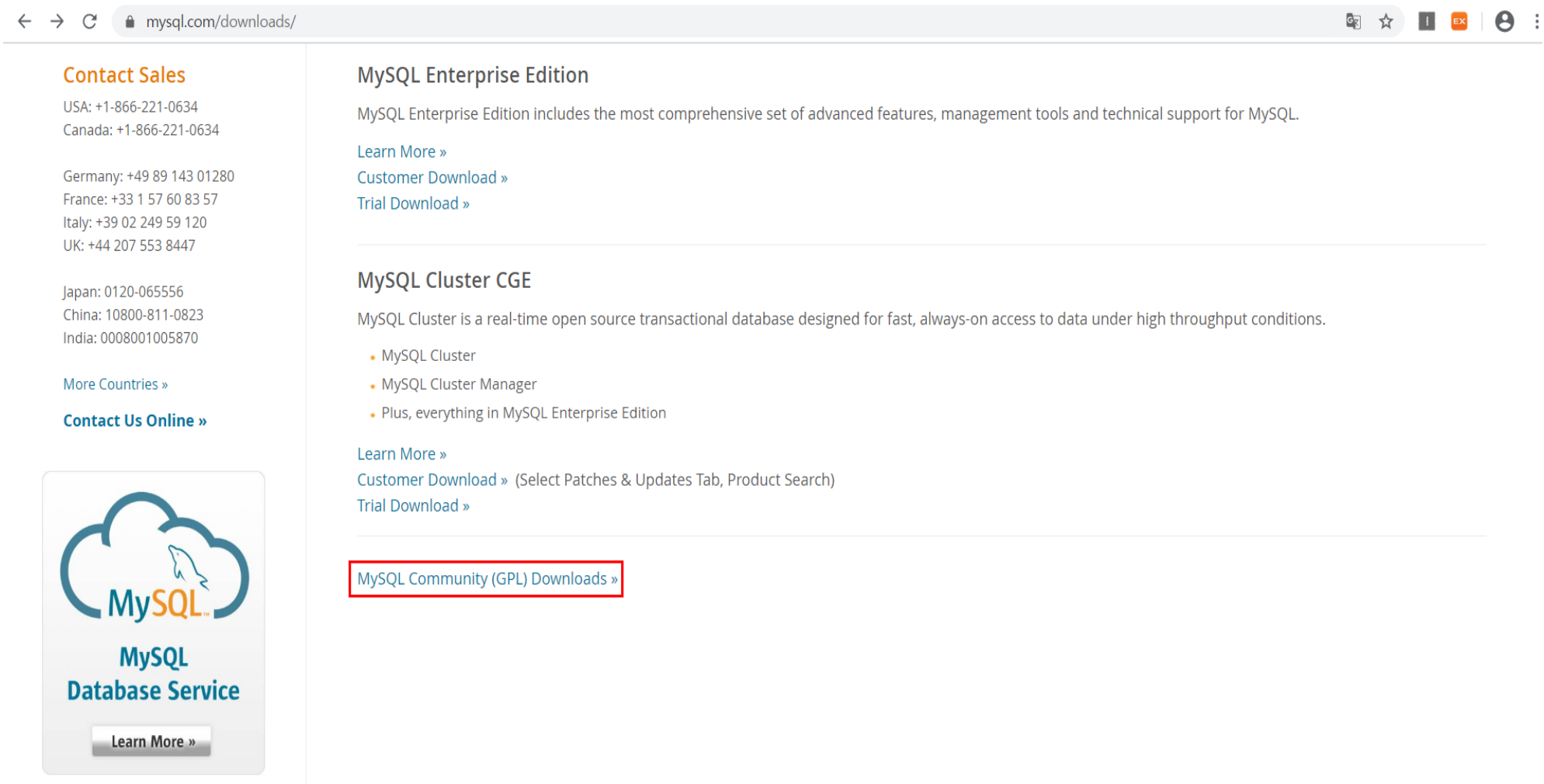
- MySQL 다운로드

https://www.mysql.com/downloads/



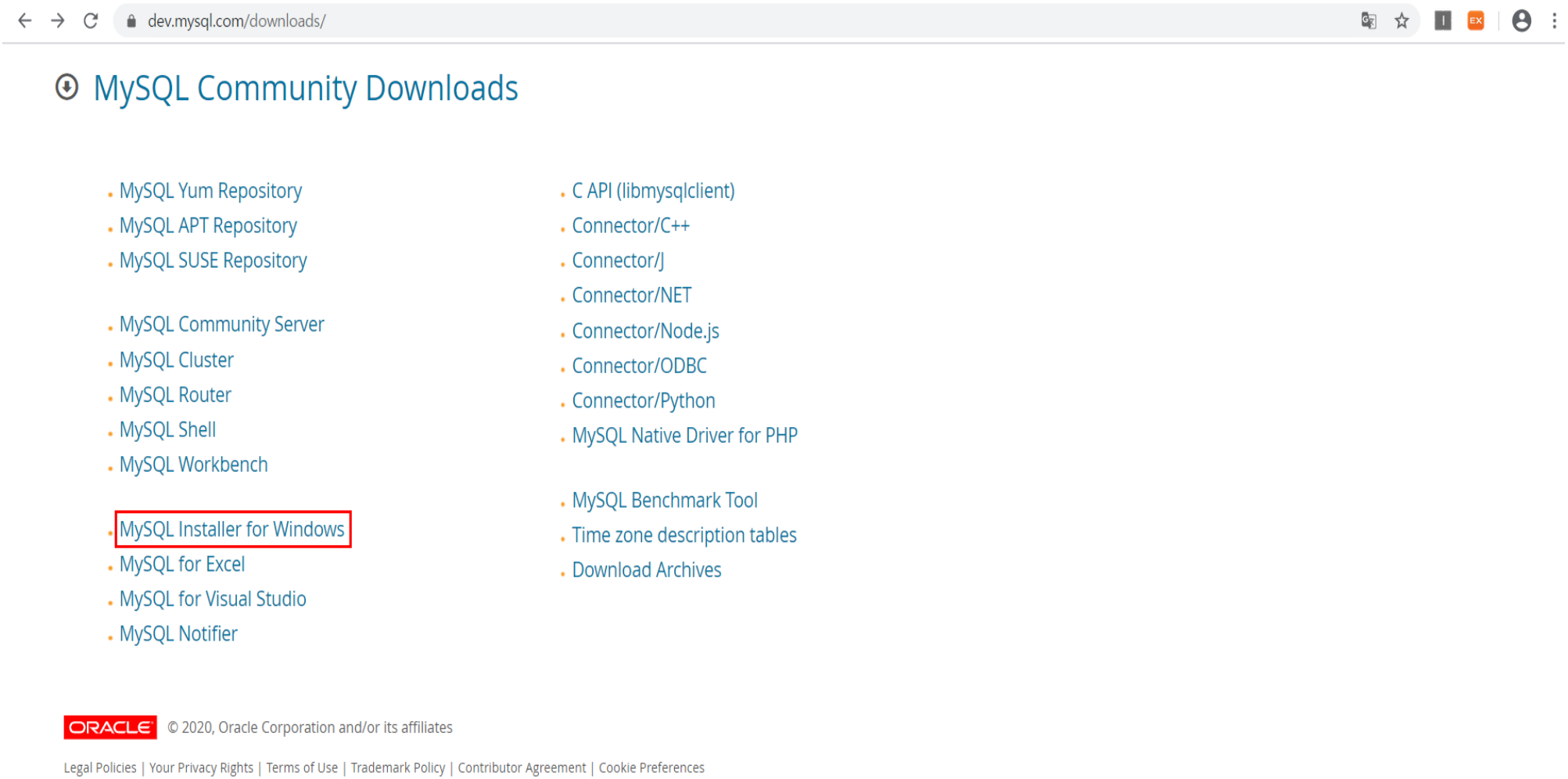
MySQL Download

- MySQL 다운로드



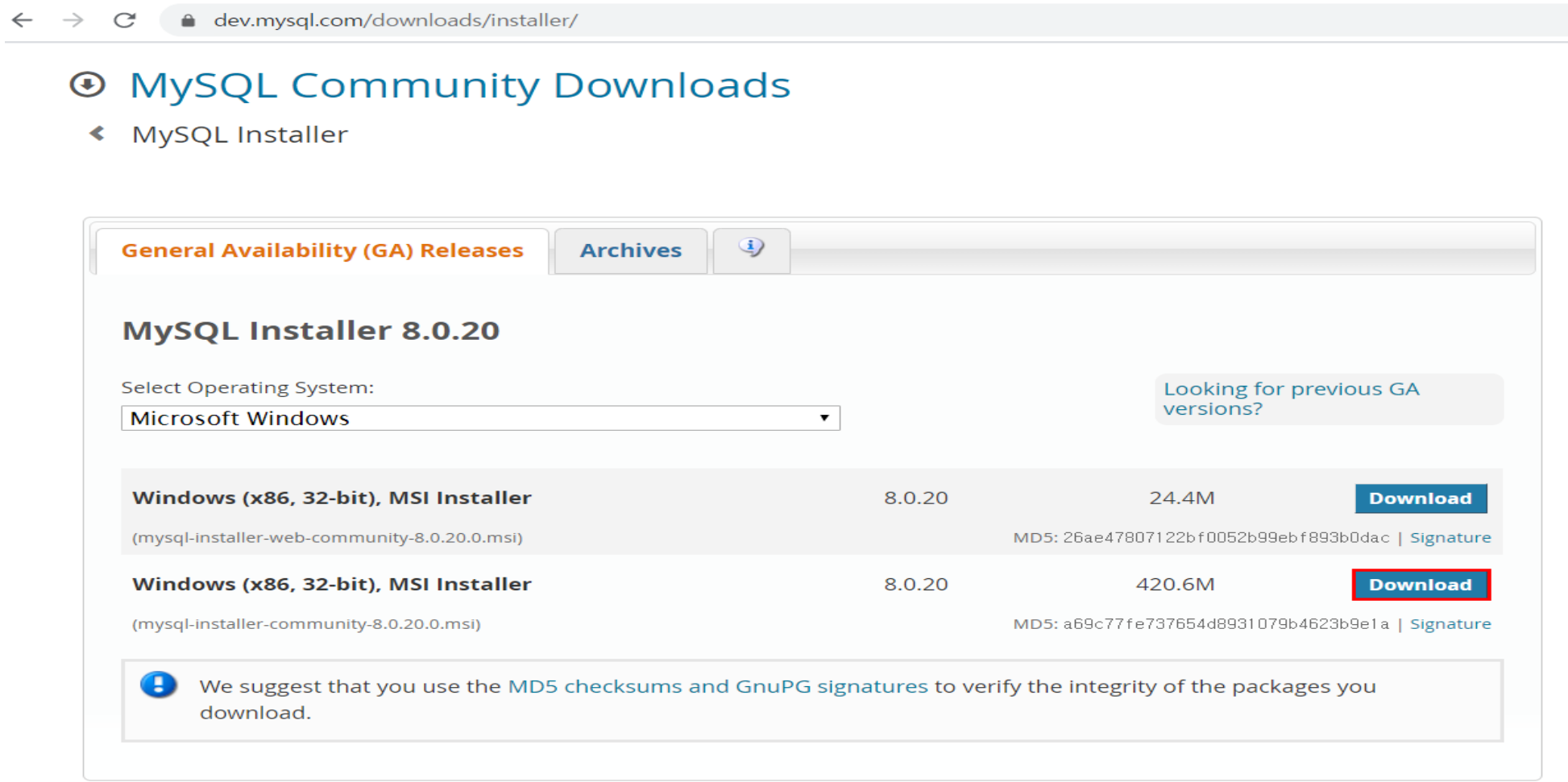
MySQL Download

MySQL 다운로드

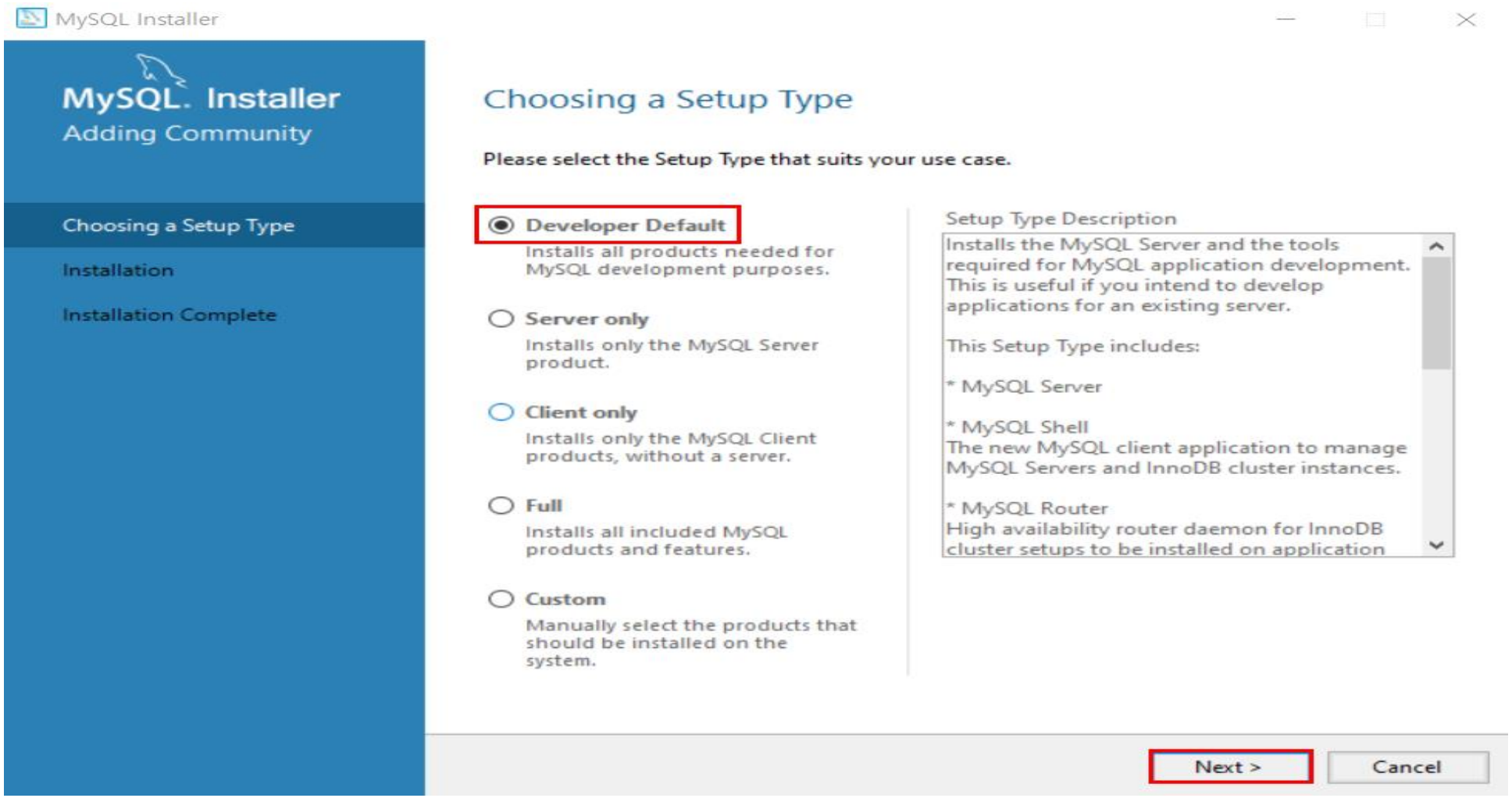


MySQL Download

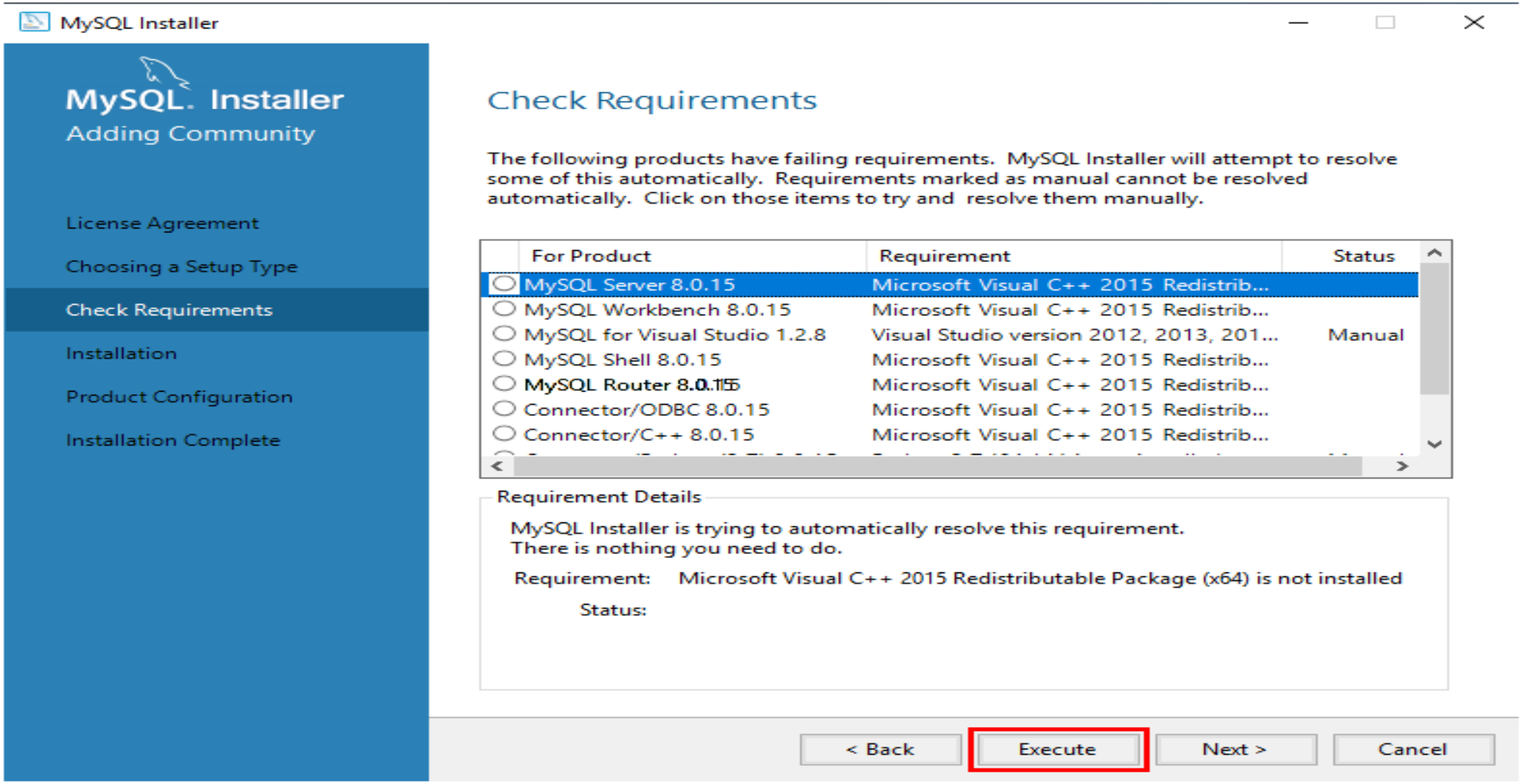
- MySQL 다운로드



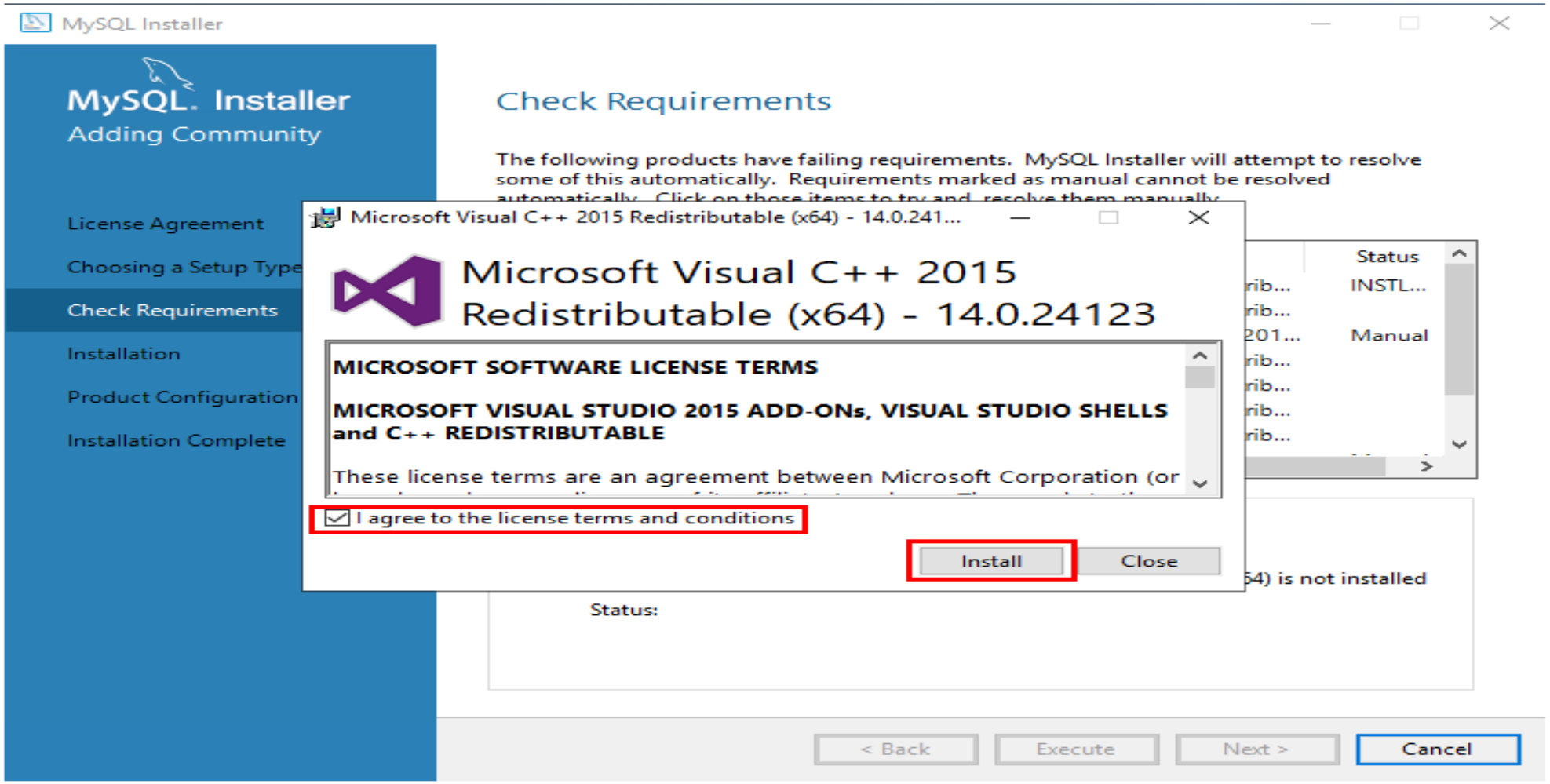
MySQL 설치


MySQL Installer
MySQL. Installer
Adding Community
Choosing a Setup Type
Installation
Installation Complete
Choosing a Setup Type
Please select the Setup Type that suits your use case.
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.
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
Next >
Cancel

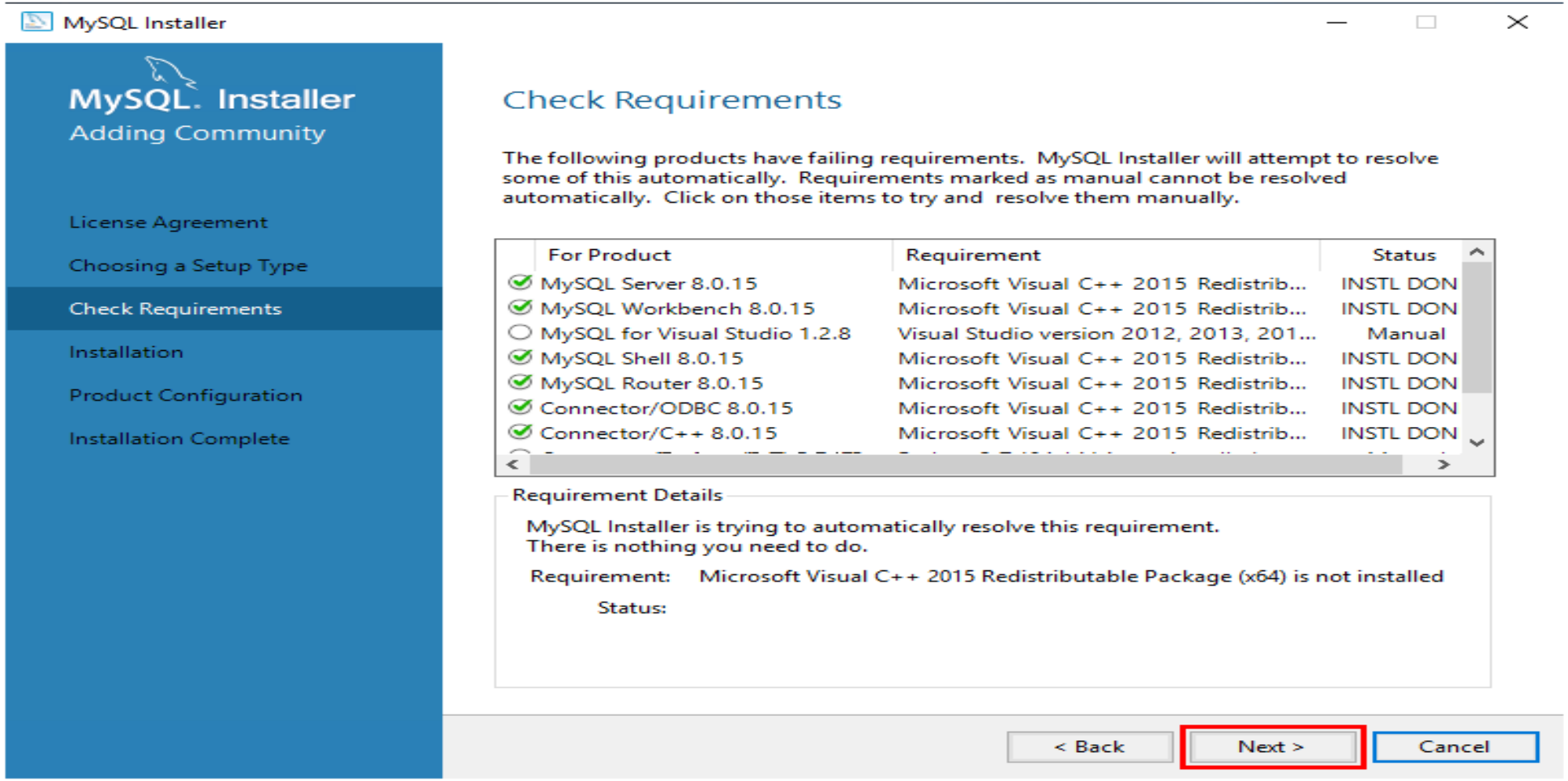
MySQL 설치


MySQL Installer
MySQL. Installer
Adding Community
License Agreement
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 some of this automatically. Requirements marked as manual cannot be resolved automatically. Click on those items to try and resolve them manually.
For Product
Requirement
Status
MySQL Server 8.0.15
Microsoft Visual C++ 2015 Redistrib...
MySQL Workbench 8.0.15
Microsoft Visual C++ 2015 Redistrib...
MySQL for Visual Studio 1.2.8
Visual Studio version 2012, 2013, 201...
Manual
MySQL Shell 8.0.15
Microsoft Visual C++ 2015 Redistrib...
MySQL Router 8.0.15
Microsoft Visual C++ 2015 Redistrib...
Connector/ODBC 8.0.15
Microsoft Visual C++ 2015 Redistrib...
Connector/C++ 8.0.15
Microsoft Visual C++ 2015 Redistrib...
Requirement Details
MySQL Installer is trying to automatically resolve this requirement.
There is nothing you need to do.
Requirement: Microsoft Visual C++ 2015 Redistributable Package (x64) is not installed
Status:
< Back
Execute
Next >
Cancel

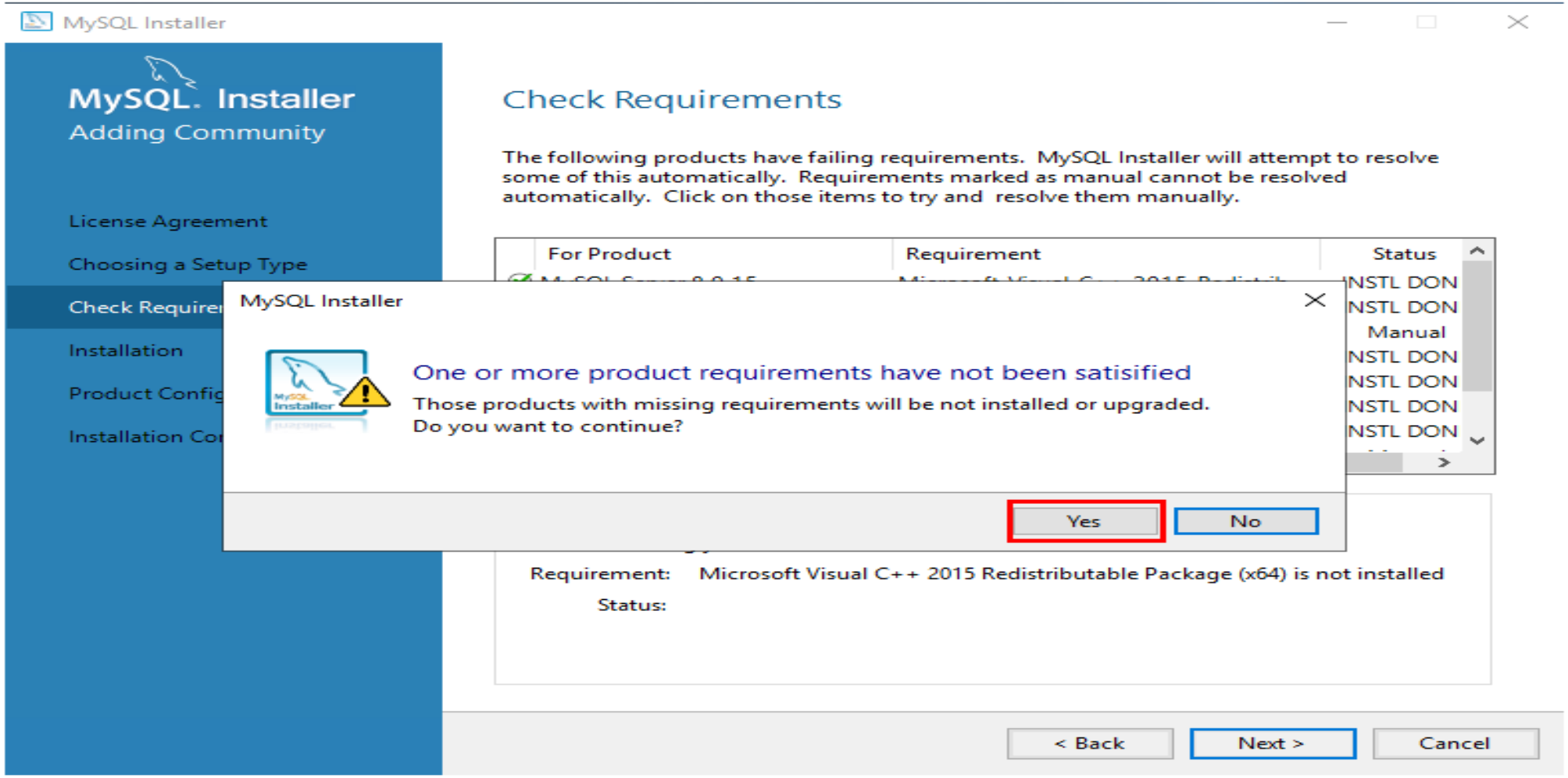
MySQL 설치


MySQL Installer
MySQL. Installer
Adding Community
License Agreement
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 some of this automatically. Requirements marked as manual cannot be resolved
Status
INSTL...
Manual
Microsoft Visual C++ 2015 Redistributable (x64) - 14.0.241...
Microsoft Visual C++ 2015 Redistributable (x64) - 14.0.24123
MICROSOFT SOFTWARE LICENSE TERMS
MICROSOFT VISUAL STUDIO 2015 ADD-ONs, VISUAL STUDIO SHELLS and C++ REDISTRIBUTABLE
These license terms are an agreement between Microsoft Corporation (or
I agree to the license terms and conditions
Install
Close
64) is not installed
Status:
< Back
Execute
Next >
Cancel

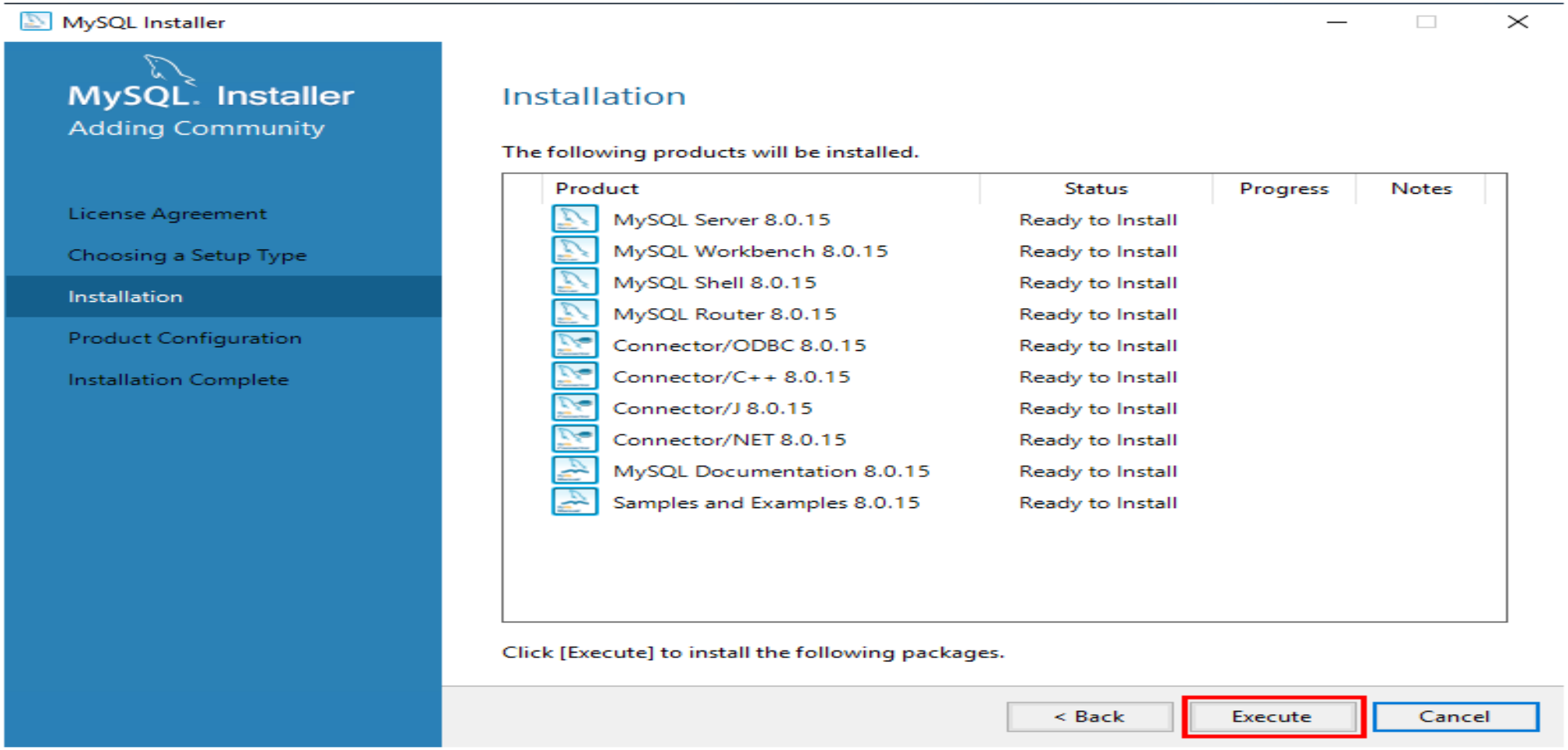
MySQL 설치


MySQL Installer
MySQL. Installer
Adding Community
License Agreement
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 some of this automatically. Requirements marked as manual cannot be resolved automatically. Click on those items to try and resolve them manually.
For Product
Requirement
Status
MySQL Server 8.0.15
Microsoft Visual C++ 2015 Redistrib...
INSTL DON
MySQL Workbench 8.0.15
Microsoft Visual C++ 2015 Redistrib...
INSTL DON
MySQL for Visual Studio 1.2.8
Visual Studio version 2012, 2013, 201...
Manual
MySQL Shell 8.0.15
Microsoft Visual C++ 2015 Redistrib...
INSTL DON
MySQL Router 8.0.15
Microsoft Visual C++ 2015 Redistrib...
INSTL DON
Connector/ODBC 8.0.15
Microsoft Visual C++ 2015 Redistrib...
INSTL DON
Connector/C++ 8.0.15
Microsoft Visual C++ 2015 Redistrib...
INSTL DON
Requirement Details
MySQL Installer is trying to automatically resolve this requirement.
There is nothing you need to do.
Requirement: Microsoft Visual C++ 2015 Redistributable Package (x64) is not installed
Status:
< Back
Next >
Cancel

MySQL 설치


MySQL Installer
MySQL. Installer
Adding Community
License Agreement
Choosing a Setup Type
Check Requirements
Installation
Product Config
Installation Co
Check Requirements
The following products have failing requirements. MySQL Installer will attempt to resolve some of this automatically. Requirements marked as manual cannot be resolved automatically. Click on those items to try and resolve them manually.
For Product
Requirement
Status
NSTL DON
NSTL DON
Manual
NSTL DON
NSTL DON
NSTL DON
NSTL DON
MySQL Installer
One or more product requirements have not been satisfied
Those products with missing requirements will be not installed or upgraded.
Do you want to continue?
Yes
No
Requirement: Microsoft Visual C++ 2015 Redistributable Package (x64) is not installed
Status:
< Back
Next >
Cancel

MySQL 설치


MySQL Installer
MySQL. Installer
Adding Community
License Agreement
Choosing a Setup Type
Installation
Product Configuration
Installation Complete
Installation
The following products will be installed.
Product
Status
Progress
Notes
MySQL Server 8.0.15
Ready to Install
MySQL Workbench 8.0.15
Ready to Install
MySQL Shell 8.0.15
Ready to Install
MySQL Router 8.0.15
Ready to Install
Connector/ODBC 8.0.15
Ready to Install
Connector/C++ 8.0.15
Ready to Install
Connector/J 8.0.15
Ready to Install
Connector/NET 8.0.15
Ready to Install
MySQL Documentation 8.0.15
Ready to Install
Samples and Examples 8.0.15
Ready to Install
Click [Execute] to install the following packages.
< Back
Execute
Cancel

MySQL 설치

MySQL Installer

MySQL. Installer
MySQL Server 8.0.15

- Group Replication
- Type and Networking
- Authentication Method
- Accounts and Roles
- Windows Service
- Apply Configuration

Group Replication

(●) Standalone MySQL Server / Classic MySQL Replication

Choose this option if you want to run the MySQL Server either standalone with the opportunity to later configure classic MySQL Replication.

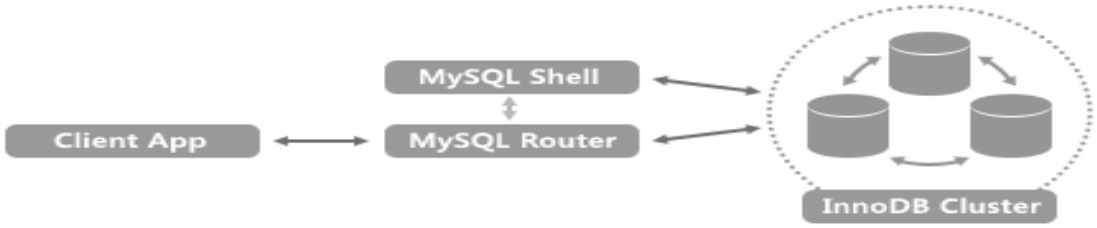
Using this option you can manually configure your replication setup and provide your own high availability solution if required.

( ) Sandbox InnoDB Cluster Setup (for testing only)

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

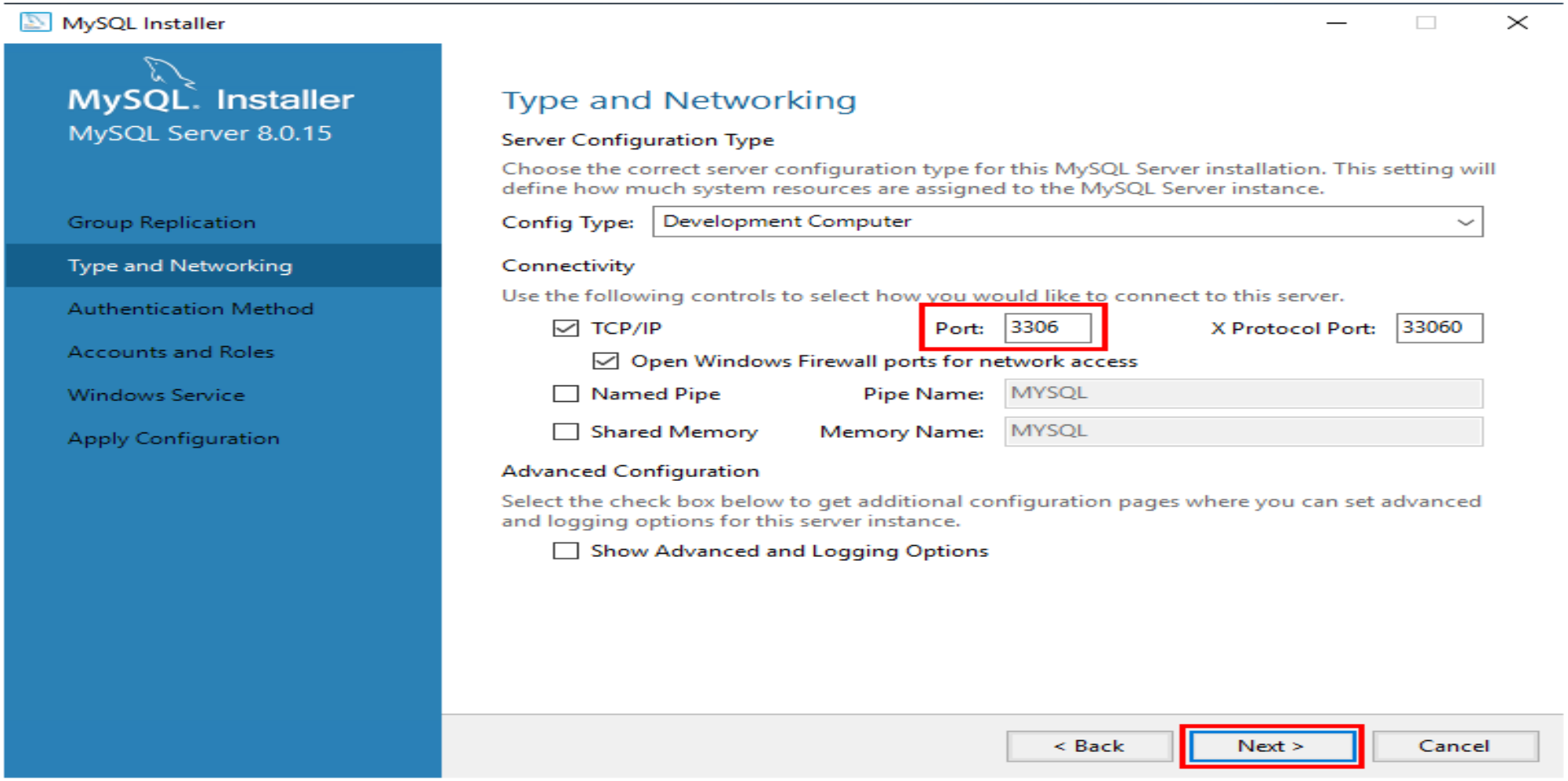
This option allows you to test an InnoDB cluster setup on your local computer using several MySQL Server sandbox instances. Read more about this here.

To setup a real-world production InnoDB cluster please choose the standard MySQL Server configuration instead on all desired hosts and use the MySQL Shell afterwards to create or expand the InnoDB cluster setup.

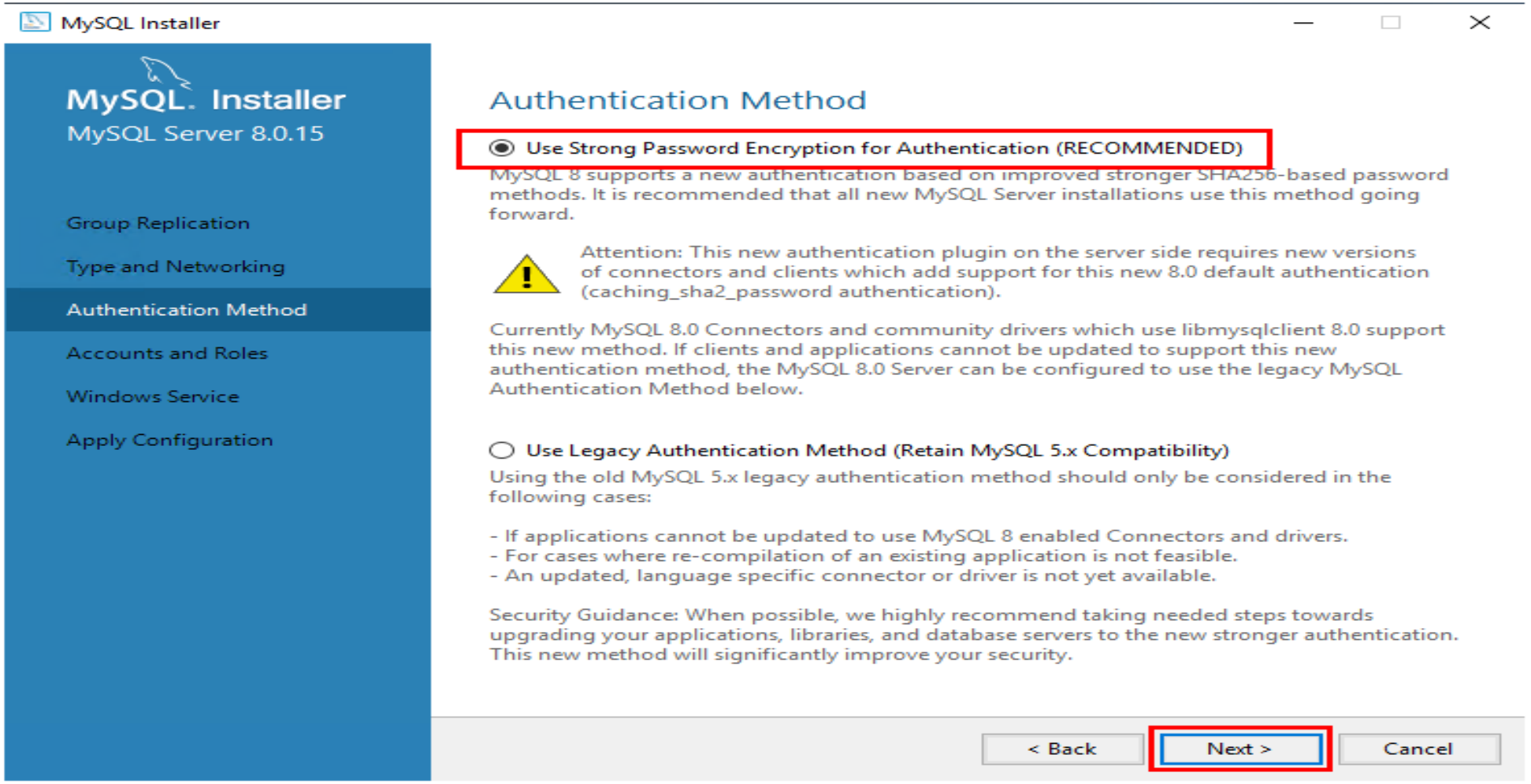


Next > Cancel

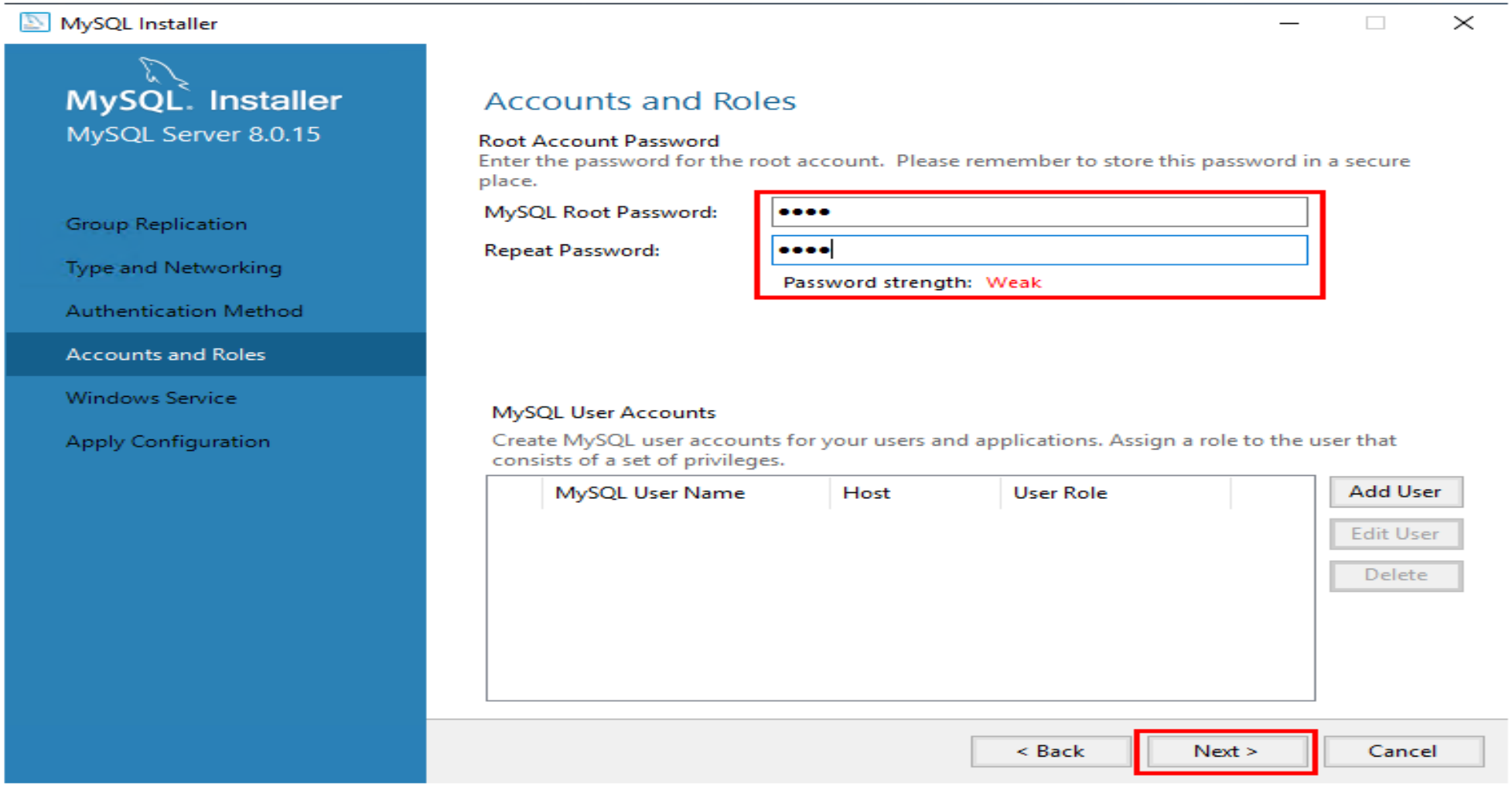
MySQL 설치


MySQL Installer
MySQL. Installer
MySQL Server 8.0.15
Group Replication
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

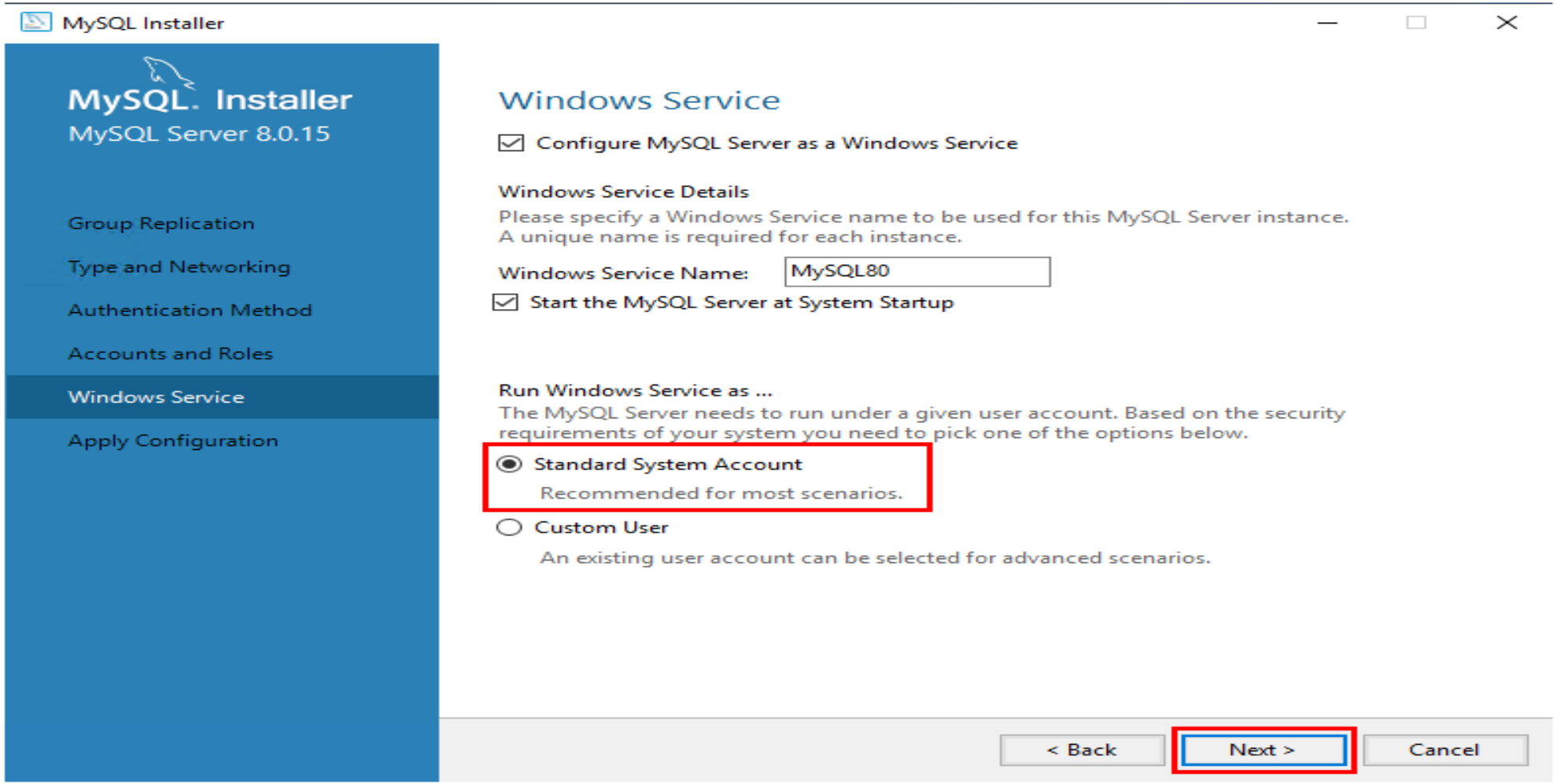
MySQL 설치


MySQL Installer
MySQL. Installer
MySQL Server 8.0.15
Group Replication
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

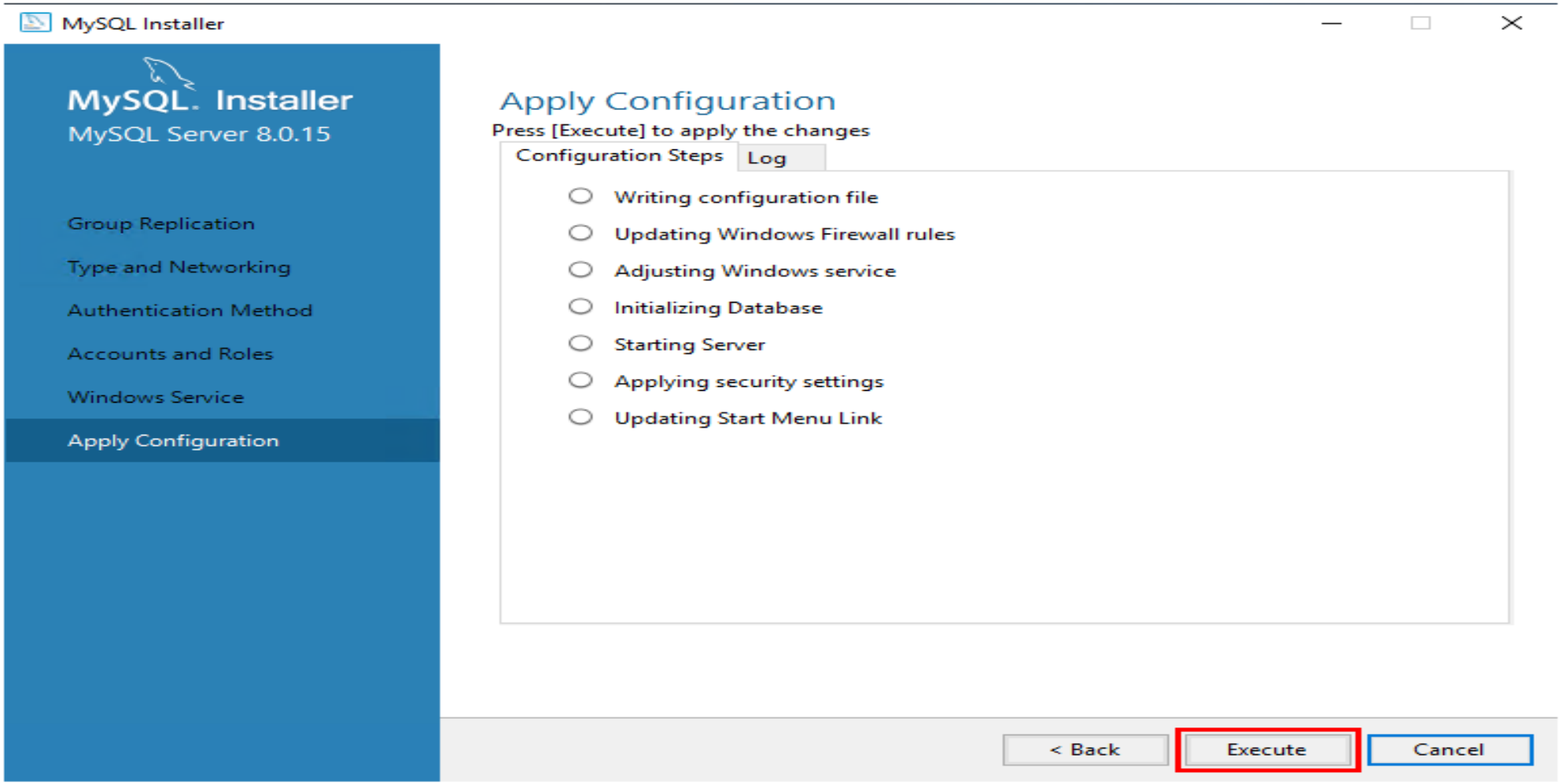
MySQL 설치


MySQL Installer
MySQL. Installer
MySQL Server 8.0.15
Group Replication
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

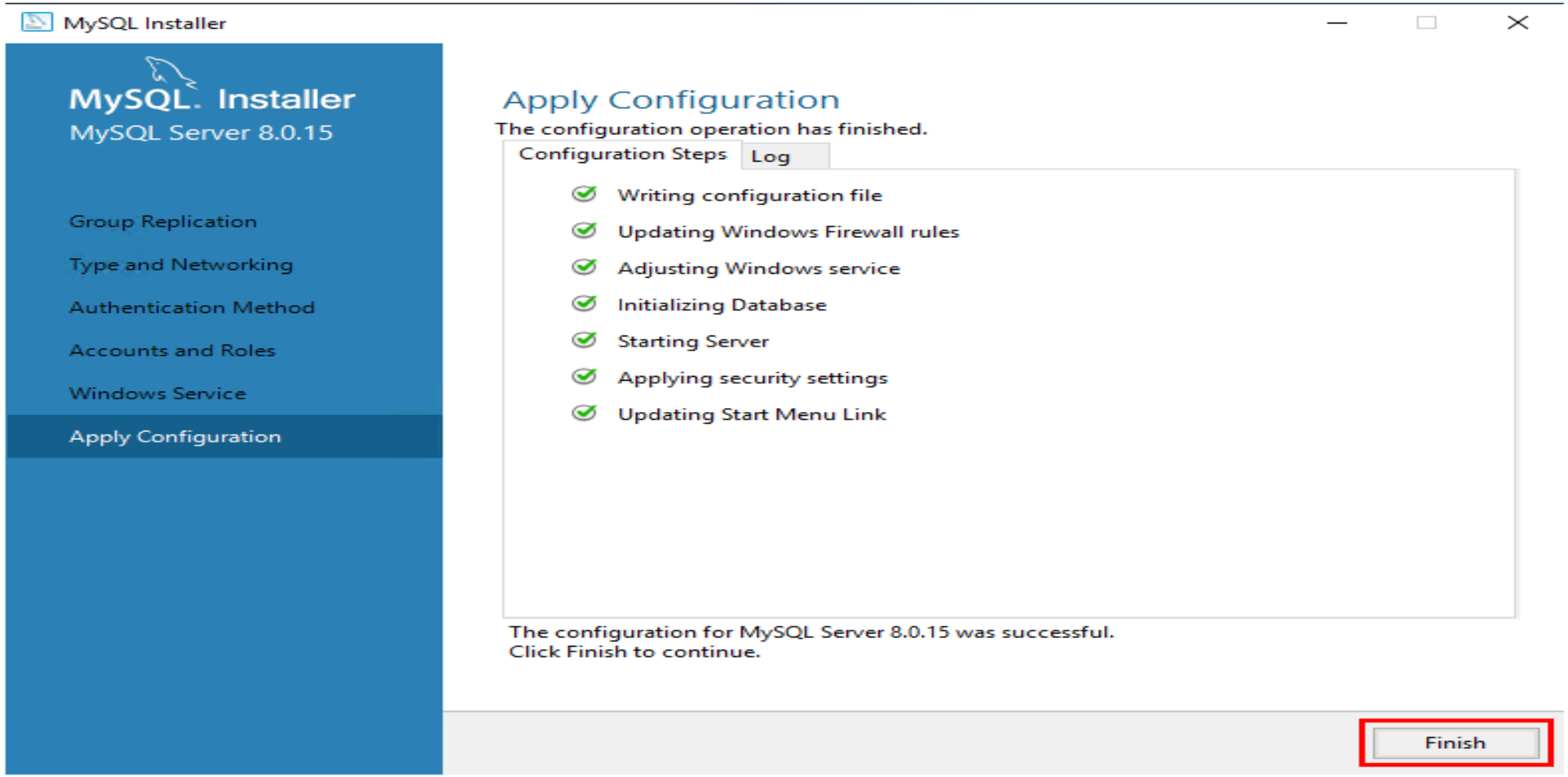
MySQL 설치


MySQL Installer
MySQL Installer
MySQL Server 8.0.15
Group Replication
Type and Networking
Authentication Method
Accounts and Roles
Windows Service
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:
MySQL80
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

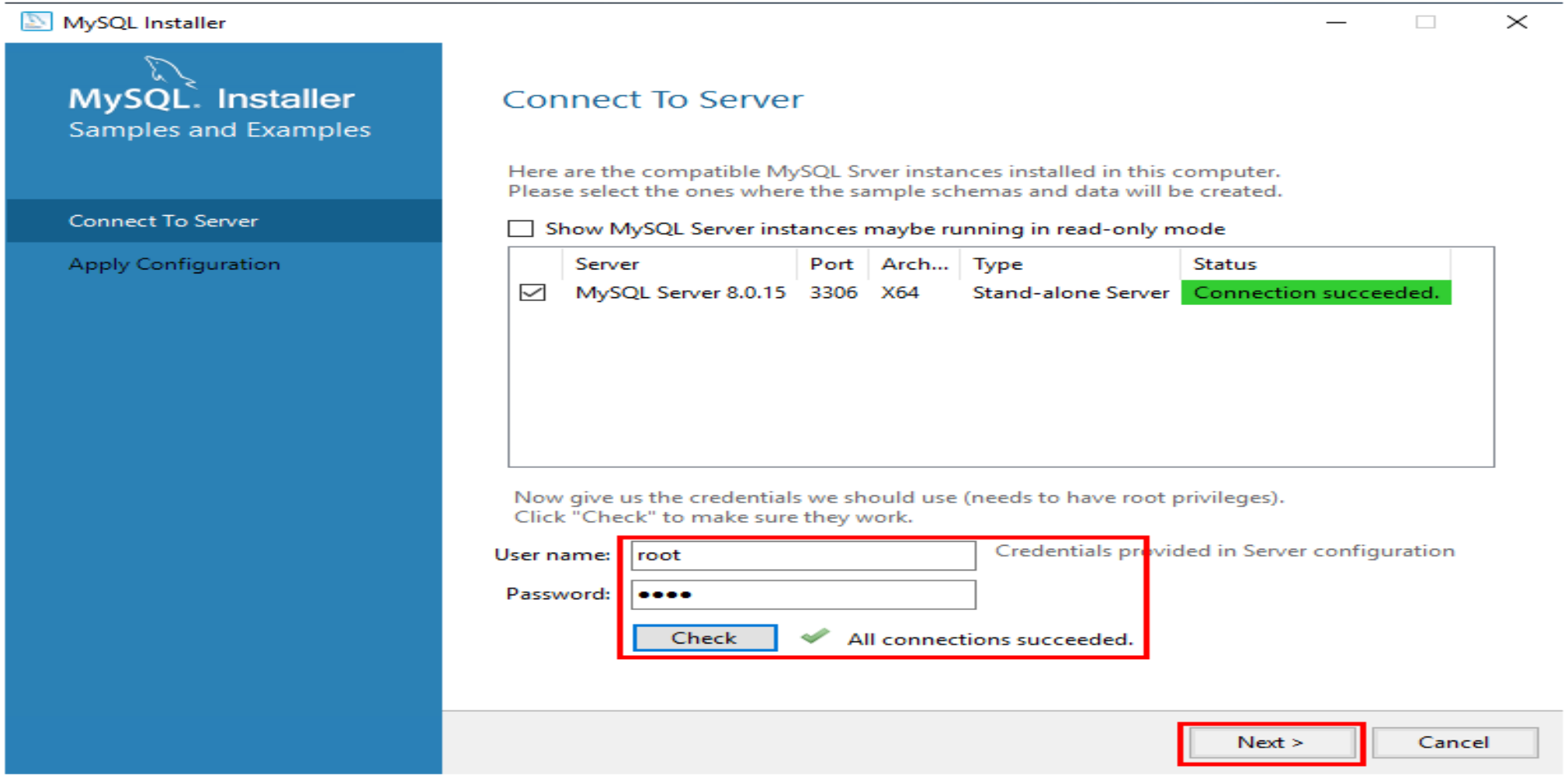
MySQL 설치


MySQL Installer
MySQL. Installer
MySQL Server 8.0.15
Group Replication
Type and Networking
Authentication Method
Accounts and Roles
Windows Service
Apply Configuration
Apply Configuration
Press [Execute] to apply the changes
Configuration Steps
Log
Writing configuration file
Updating Windows Firewall rules
Adjusting Windows service
Initializing Database
Starting Server
Applying security settings
Updating Start Menu Link
< Back
Execute
Cancel

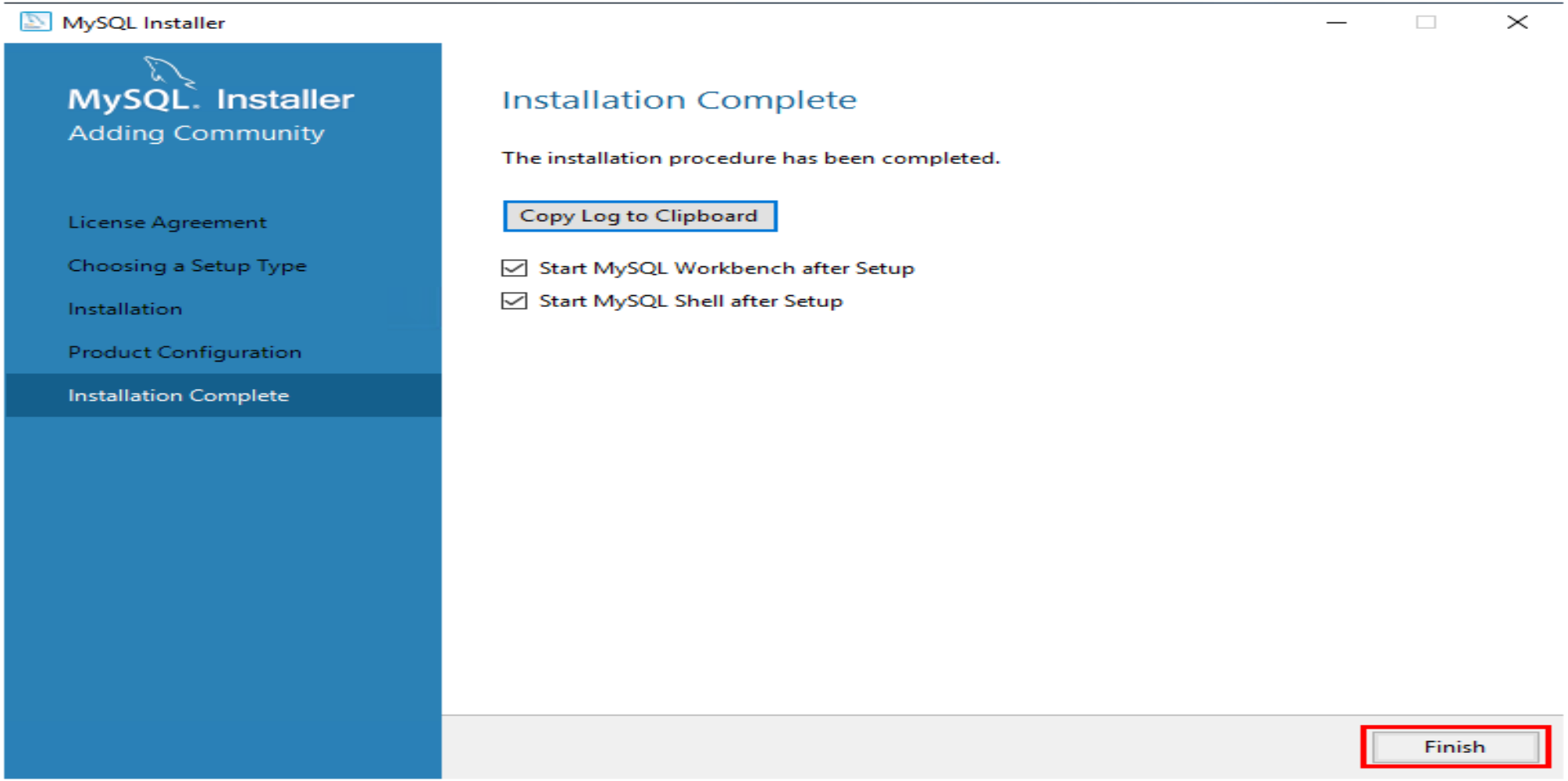
MySQL 설치


MySQL Installer
MySQL. Installer
MySQL Server 8.0.15
Group Replication
Type and Networking
Authentication Method
Accounts and Roles
Windows Service
Apply Configuration
Apply Configuration
The configuration operation has finished.
Configuration Steps
Log
Writing configuration file
Updating Windows Firewall rules
Adjusting Windows service
Initializing Database
Starting Server
Applying security settings
Updating Start Menu Link
The configuration for MySQL Server 8.0.15 was successful.
Click Finish to continue.
Finish

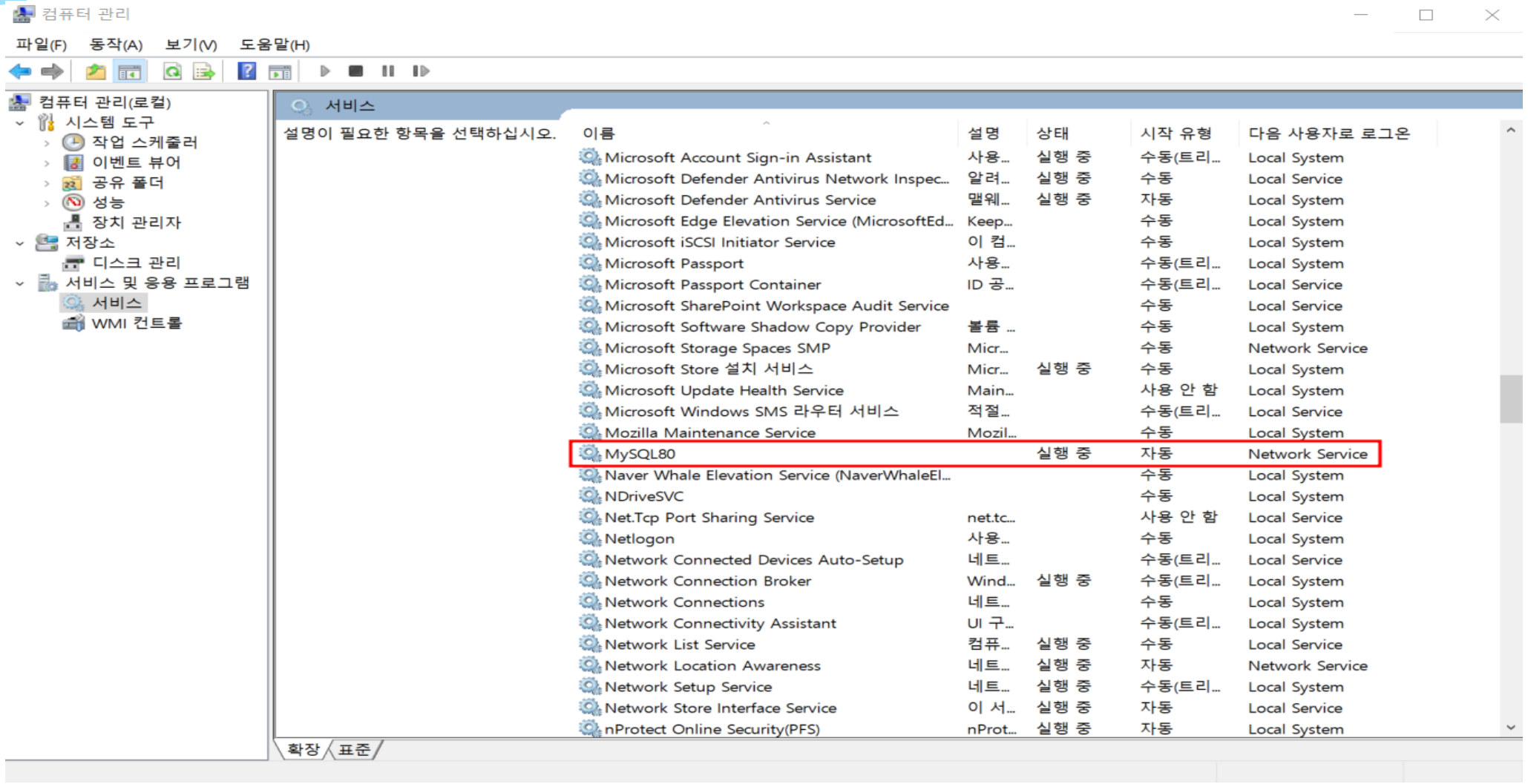
MySQL 설치


MySQL Installer
MySQL. Installer
Samples and Examples
Connect To Server
Apply Configuration
Connect To Server
Here are the compatible MySQL Srver instances installed in this computer.
Please select the ones where the sample schemas and data will be created.
Show MySQL Server instances maybe running in read-only mode
Server
Port
Arch...
Type
Status
MySQL Server 8.0.15
3306
X64
Stand-alone Server
Connection succeeded.
Now give us the credentials we should use (needs to have root privileges).
Click "Check" to make sure they work.
User name:
root
Credentials provided in Server configuration
Password:
Check
All connections succeeded.
Next >
Cancel

MySQL 설치


MySQL Installer
MySQL. Installer
Adding Community
License Agreement
Choosing a Setup Type
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
Finish

MySQL Server 구동



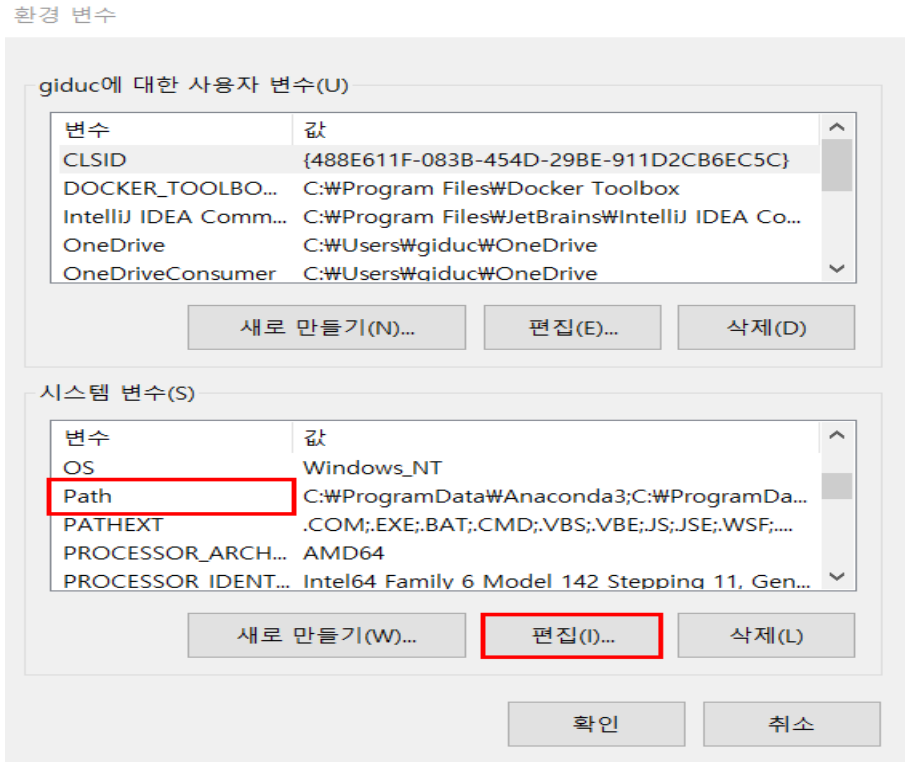
MySQL Server 접속

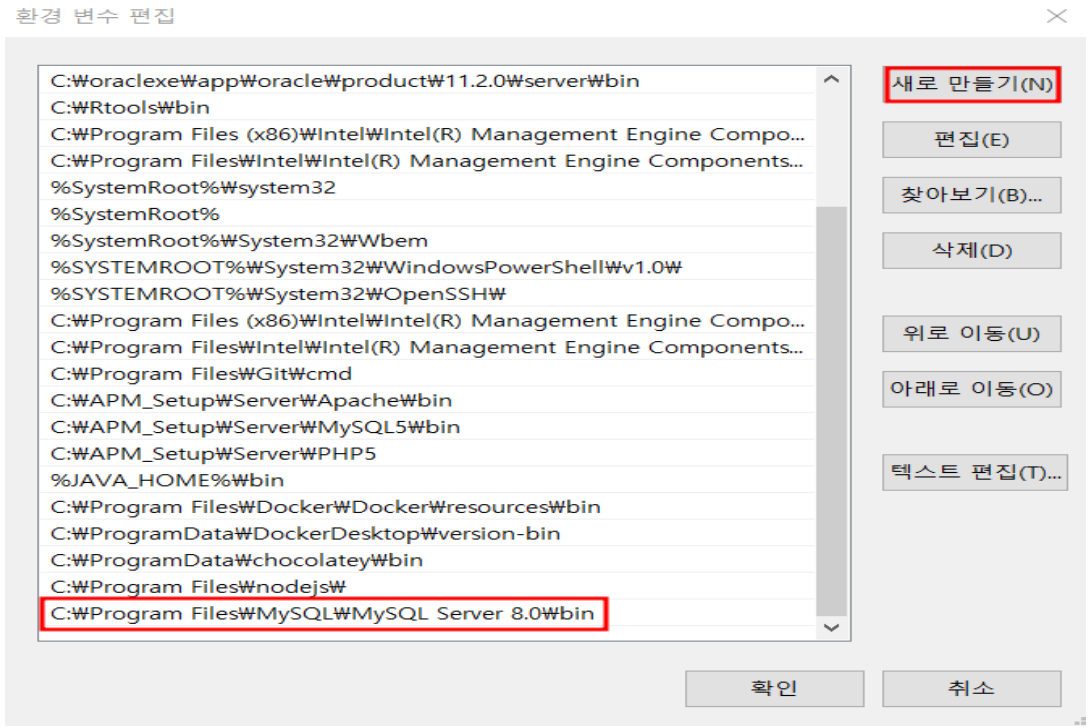
❖ path 설정

MySQL 설치 경로 까지 path 설정

C:₩Program Files₩MySQL₩MySQL Server 8.0₩bin

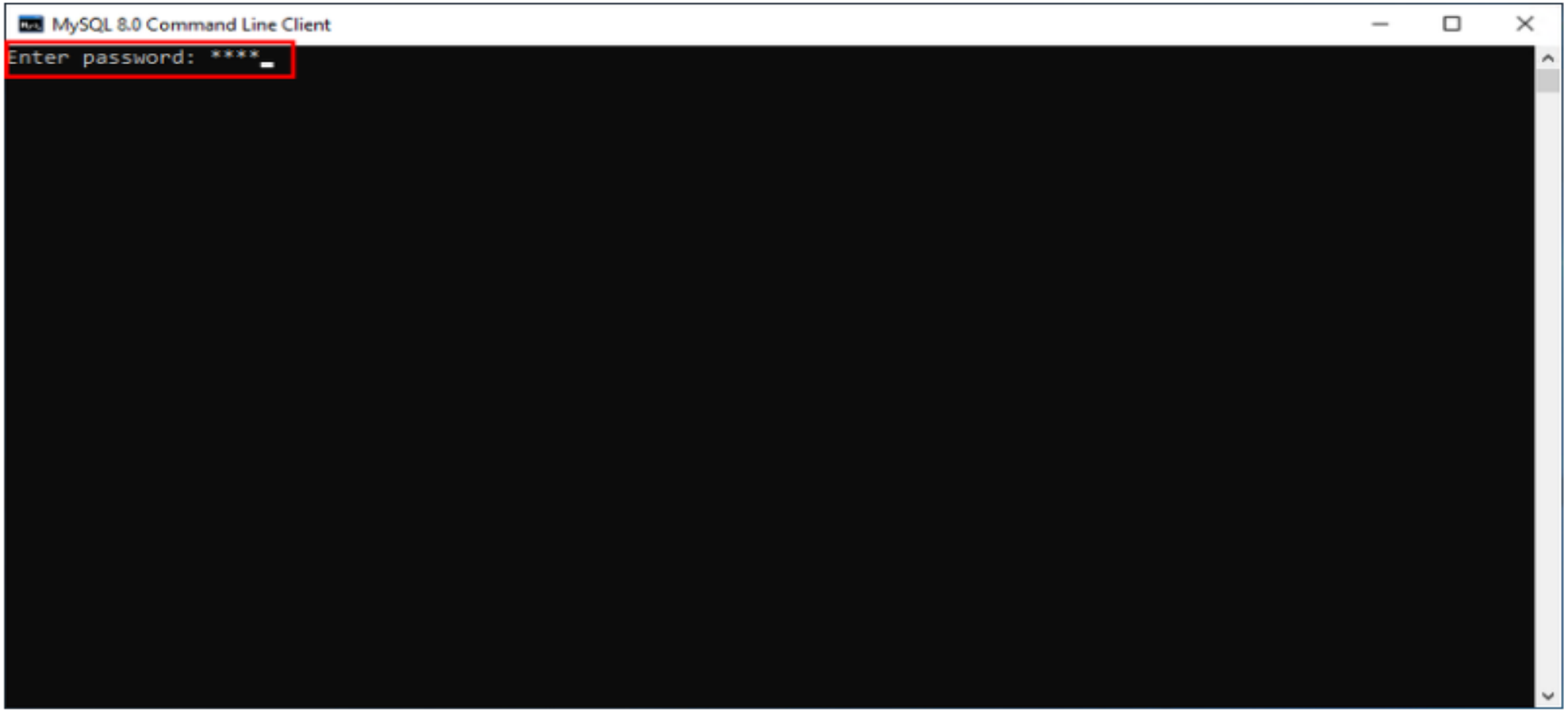
내PC – 오른마우스(속성) – 고급시스템 설정 – 고급Tab – 환경변수





MySQL Server 접속

- MySQL 8.0 Command Line Client 프로그램 실행후 root 계정의 비번 입력후 접속



MySQL Server 접속

- MySQL 8버전 부터는 MySQL 8.0 Command Line Client 프로그램으로만 접속할 수 있다.

```
c:₩> mysql     -uroot        -p1234          mysql
       명령어   -u계정명      -p비밀번호      접속할DB명
```

```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sakila             |
| sys                |
| world              |
+--------------------+
6 rows in set (0.00 sec)
```

MySQL Server 접속

- Table 목록 확인

```
mysql> show tables;
+---------------------------+
| Tables_in_mysql           |
+---------------------------+
| columns_priv              |
| db                        |
| engine_cost               |
| event                     |
| func                      |
| general_log               |
| gtid_executed             |
| help_category             |
| help_keyword              |
| help_relation             |
| help_topic                |
| innodb_index_stats        |
| innodb_table_stats        |
| ndb_binlog_index          |
| plugin                    |
| proc                      |
| procs_priv                |
| proxies_priv              |
| server_cost               |
| servers                   |
| slave_master_info         |
| slave_relay_log_info      |
| slave_worker_info         |
| slow_log                  |
| tables_priv               |
| time_zone                 |
| time_zone_leap_second     |
| time_zone_name            |
| time_zone_transition      |
| time_zone_transition_type |
| user                      |
+---------------------------+
31 rows in set (0.00 sec)
```

MySQL 계정 등록

- 일반 계정 등록

DB명: jsptest
user : jspid
password : jsppass

1. root 계정으로 접속
   c:₩> mysql -uroot -p1234 mysql

2. 새로운 데이터베이스 생성(jsptest)
   방법1. console 상태
   c:₩> mysqladmin -u root -p create jsptest

   방법2. 데이터베이스에 접속된 상태
   mysql> create database jsptest;

MySQL 계정 등록

3. 계정 생성 및 권한 부여

- MySQL 5.7 까지

```
mysql> grant all privileges on jsptest.* to jspid@'%' identified by 'jsppass' with grant option;
mysql> flush privileges;
```

- MySQL 8 에서는 계정 생성과 DB권한 부여를 각각 수행해야 한다.

```
mysql> create user jspid@'%' identified by 'jsppass' ;
mysql> grant all privileges on jsptest.* to jspid@'%' with grant option ;
mysql> flush privileges ;
```

4. 종료

```
mysql> quit;
```

MySQL 계정 등록

5. 생성된 데이터베이스에 접속

```
c:₩> mysql   -ujspid   -pjsppass   jsptest
```

6. 테이블 생성

```
mysql> create table member(
                    id varchar(20),
                    name varchar(20),
                    email varchar(20),
                    address varchar(100));
```

MySQL 자료형

1. 숫자형
   int

   auto_incrment : 자동으로 번호를 1씩 증가시켜 주는 역할

2. 문자형
   char
   varchar
   text

3. 날짜, 시간형
   date
   time
   datetime
   timestamp

sysdate(), now() : 시스템의 날짜, 시간 정보를 구해주는 함수

MySQL 예제

- 테이블 생성

```
create table boardtest(
        no   int   auto_increment   primary key,
        writer   varchar(20),
        subject   varchar(100),
        content   varchar(1000),
        register   date );
```

- 데이터 입력

```
insert into boardtest( writer, subject, content, register )
            values( '홍길동' , '게시판 연습' , '게시판 내용입니다.' ,  sysdate() );
```

no 컬럼은 1부터 1씩 증가된 값이 자동으로 입력됨

MySQL 예제

- 데이터 검색

  select * from boardtests ;

- 데이터 정렬

  order by 컬럼명 정렬형식

  오름차순(asc) or 내림차순(desc)

  select * from boardtest order by no desc;

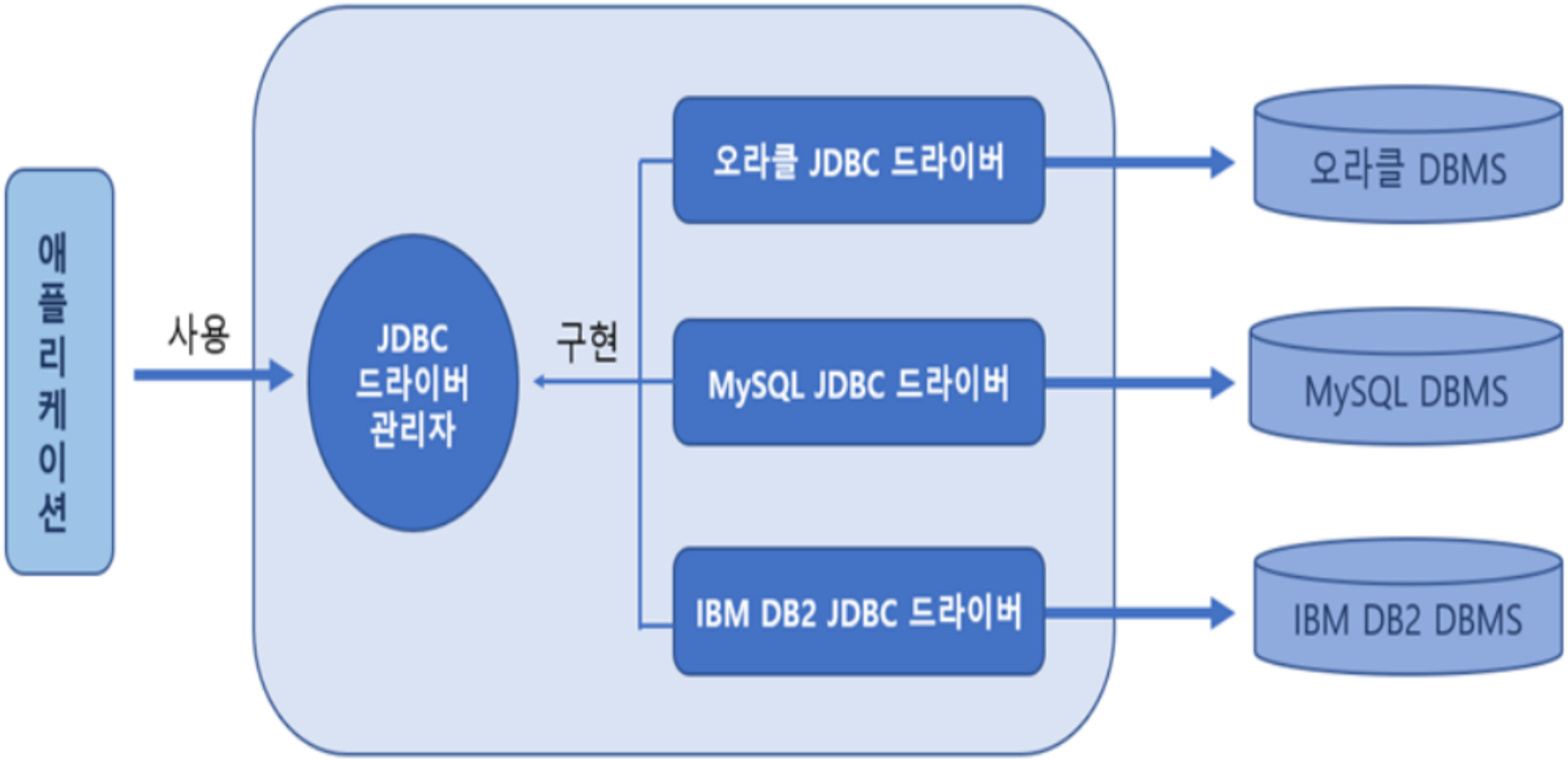
- 최근글 5개 검색

  limit 추출할데이터의 인덱스번호 , 추출할 데이터 갯수

  select * from boardtest order by no desc limit 0, 5 ;

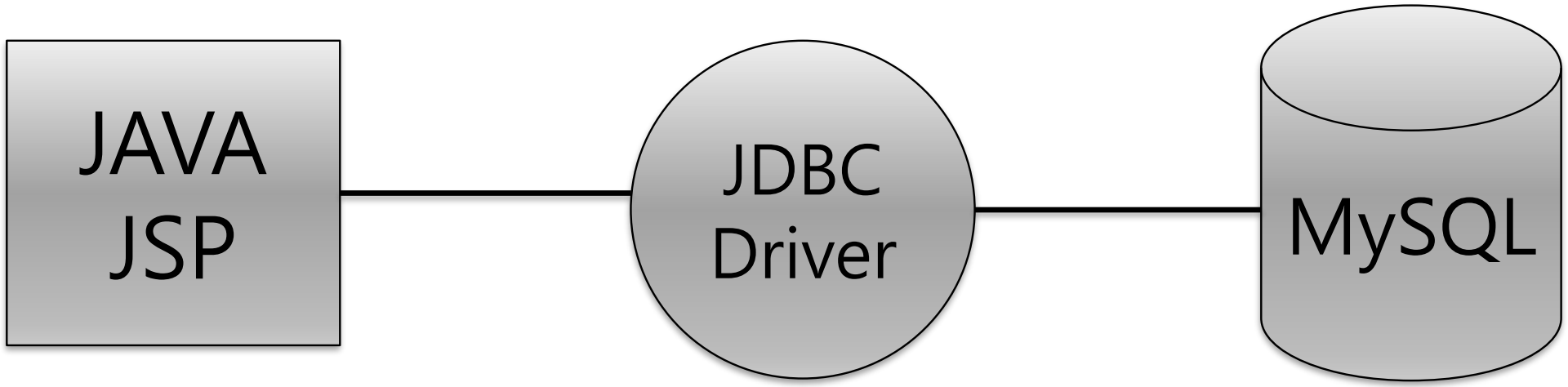
JDBC

- JDBC(Java DataBase Connectivity)



JDBC

- JDBC Driver



JDBC

- JDBC(Java Database Connectivity)

  - JDBC는 자바 애플리케이션에서 표준화된 방법으로 다양한 데이터베이스에 접속할 수 있도록 설계된 인터페이스

  - JDBC 스펙에 따라 데이터베이스 개발 회사는 자사 제품에 접속할 수 있는 JDBC 드라이버를 제공

JDBC Driver

- JDBC Driver download

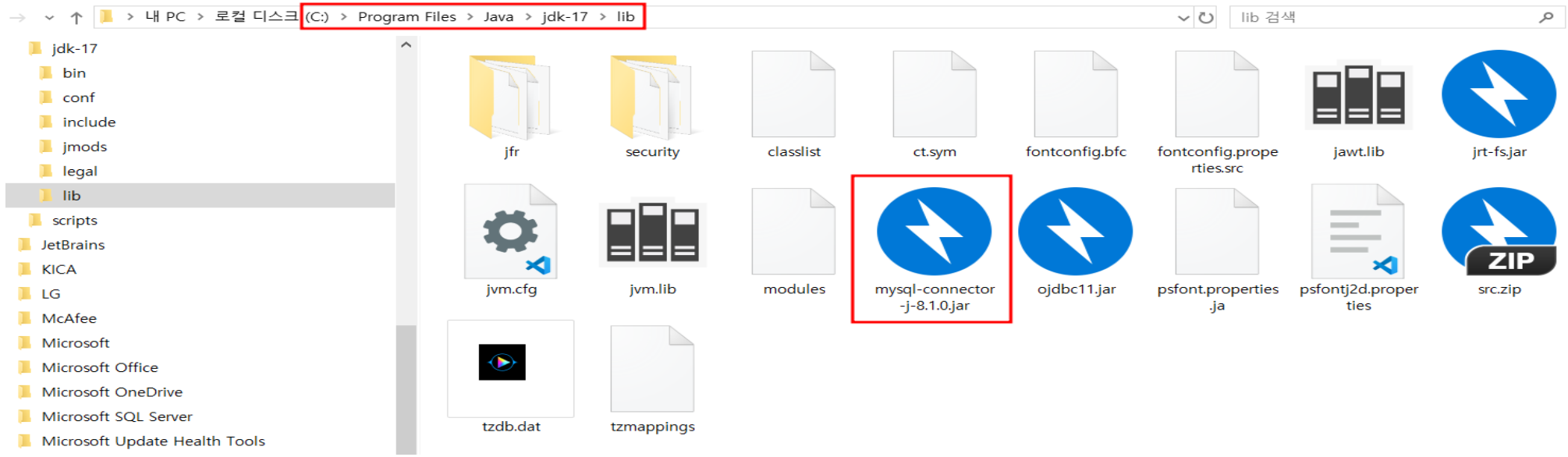
https://dev.mysql.com/downloads/connector/j/

JDBC Driver

- JDBC(Java Database Connectivity) 드라이버

- JDBC 드라이버 저장하기
  다운로드 받은 JDBC 드라이버는 아무 곳이나 저장해도 되지만, 우리는 자바가 설치된 곳에 저장하도록 하자.

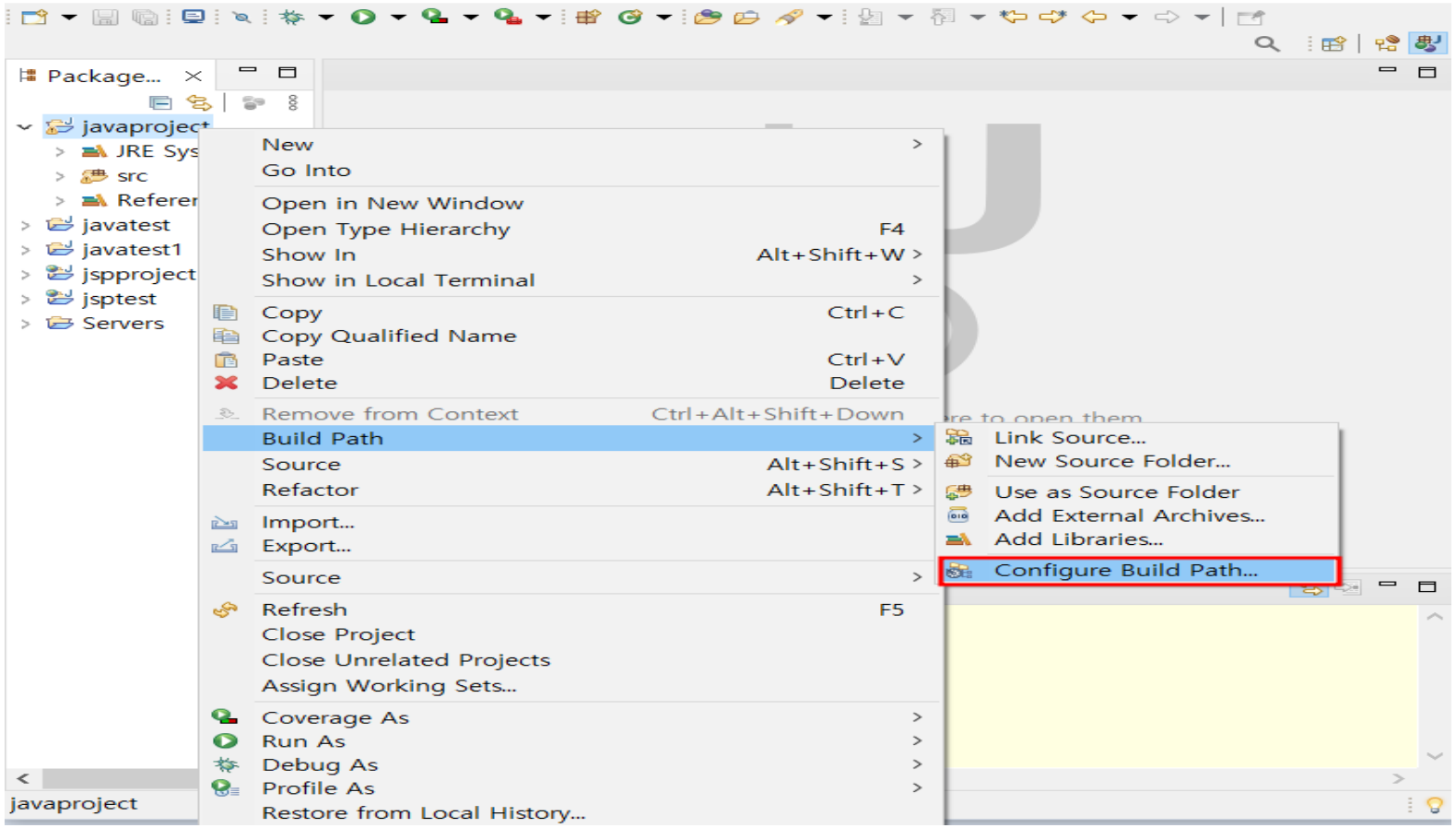
C:₩Program Files₩Java₩jdk-17₩lib



JDBC Driver

- JDBC 드라이버 path 설정

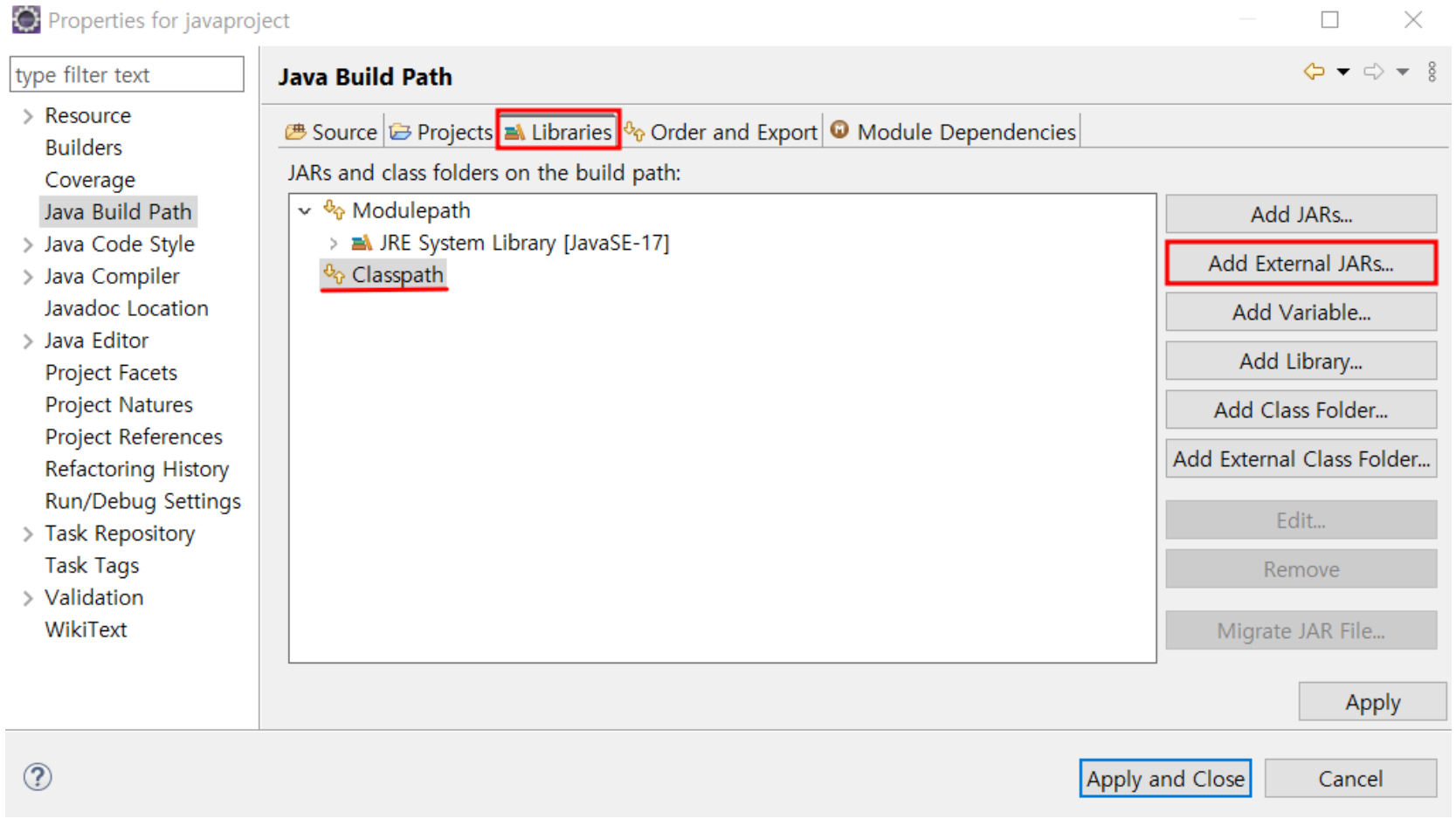
1. javaproject –Build Path – Configure Build Path… 클릭



JDBC Driver

- JDBC 드라이버 path 설정

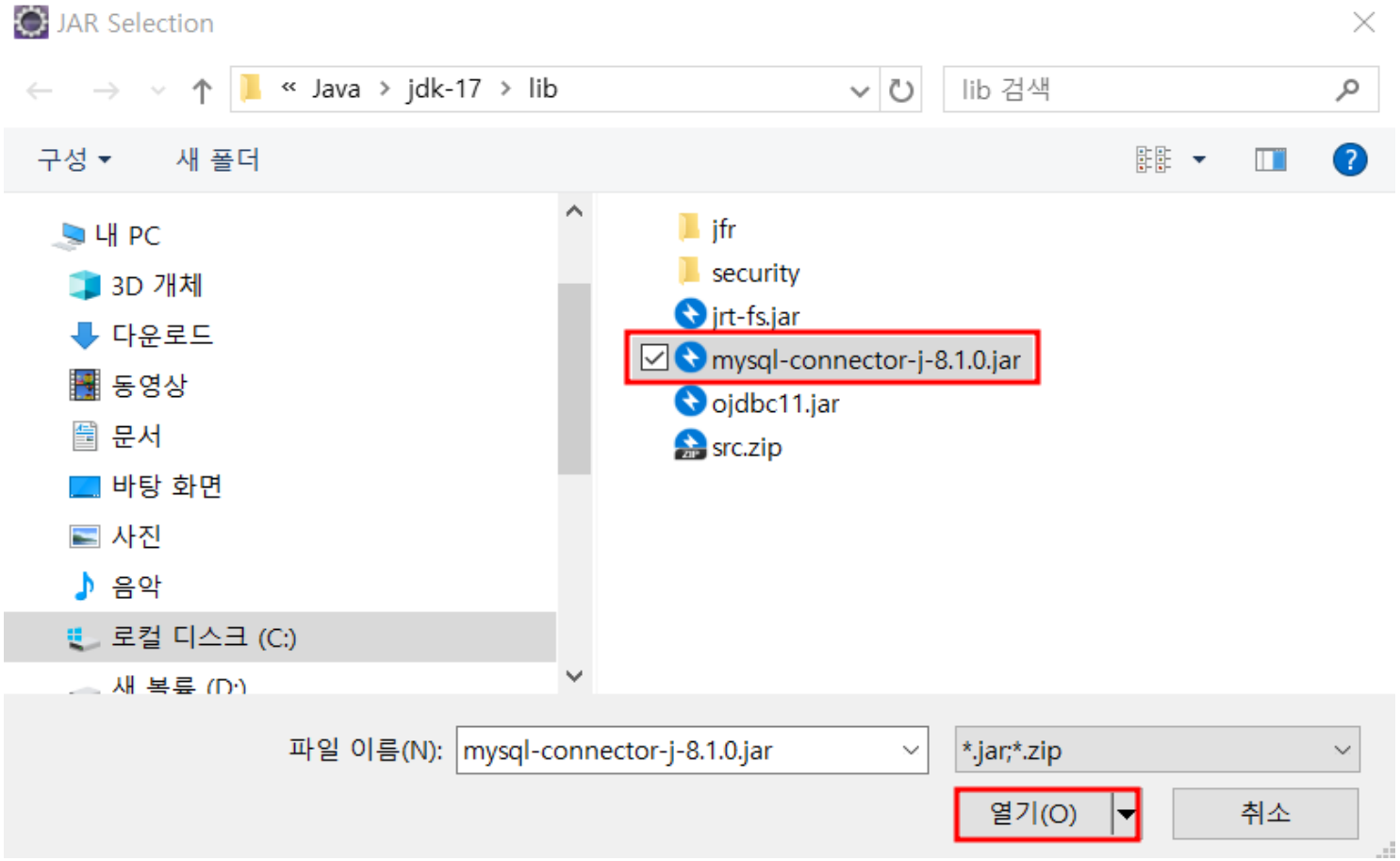
2. Library 탭 – Classpath 클릭 – Add External JARs… 클릭



JDBC Driver

JDBC 드라이버 path 설정

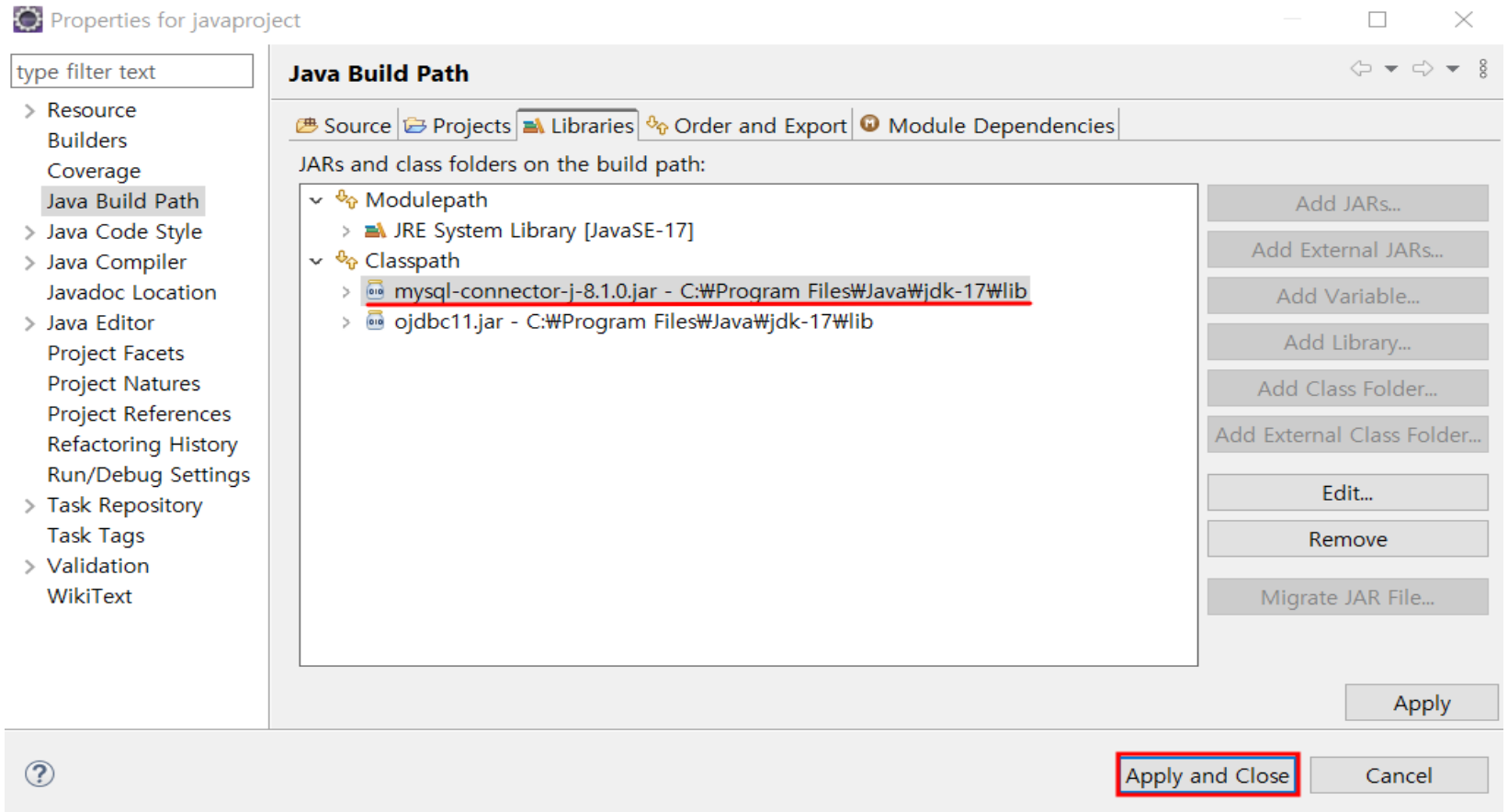
3. JDBC 드라이버 저장 위치에서 mysql-connector-j-8.1.0.jar 선택 후 열기버튼 클릭



JDBC Driver

JDBC 드라이버 path 설정

4. Classpath – mysql-connector-j-8.1.0.jar 추가되면 성공~!!



JAVA – MySQL 연동

- Java – MySQL 연동 (공통 코드)

```
String driver ="com.mysql.jdbc.Driver";          //  driver 5.x
String driver ="com.mysql.cj.jdbc.Driver";       //  driver 8.x

String url = "jdbc:mysql://localhost:3306/jsptest;

Class.forName(driver);
Connection con=DriverManager.getConnection(url, “jspid” , “jsppass” );
```

JAVA – MySQL 연동

```
public class JDBC_Connect2{

  public static void main(String[] args)  {
            String driver ="com.mysql.cj.jdbc.Driver";
            String url = "jdbc:mysql://localhost:3306/jsptest?serverTimezone=UTC";
            Connection con = null;
    try{
            Class.forName(driver);
            con = DriverManager.getConnection(url, "jspid", "jsppass" );

            System.out.println("데이터베이스 연결 성공~!!");
    } catch(Exception e){
            System.out.println("데이터베이스 연결 실패~!!");
            e.printStackTrace();
    } finally{
            try{
                  if( con != null )  con.close();
            } catch(Exception e){  e.printStackTrace();   }
    }
  }
}
```

JSP – MySQL 연동

JDBC.jsp

```
<%@ page contentType="text/html; charset=utf-8" %>
<%@ page import="java.sql.*" %>

<%
        Connection con=null;

  try{
        String driver = "com.mysql.cj.jdbc.Driver";
        String url = "jdbc:mysql://localhost:3306/jsptest?serverTimezone=UTC";

        Class.forName(driver);
        con=DriverManager.getConnection(url, “jspid” , “jsppass” );

        out.println("제대로 연결되었습니다.");

   }catch(Exception e){
        e.printStackTrace();
   }
%>
```

MySQL URL 설정

MySQL URL 설정

- MySQL URL 형식
  jdbc:mysql://ip주소 : port번호/DB스키마명?characterEncoding=UTF-8&serverTimezone=UTC

  jdbc:mysql://localhost:3306/jsptest?characterEncoding=UTF-8&serverTimezone=UTC

  만약,The reference to entity "serverTimezone" must end with the ';' delimiter. 에러가 발생할 경우& 대신에 & 사용한다.

- MySQL URL 형식(에러수정)
  jdbc:mysql://ip:port/TestDB?characterEncoding=UTF-8&serverTimezone=UTC

  jdbc:mysql://localhost:3306/jsptest?characterEncoding=UTF-8&serverTimezone=UTC

실습

- Table 생성

```
create table customer( no int(4) auto_increment primary key,
                       name varchar(20),
                       email varchar(20),
                       tel varchar(20),
                       address varchar(50),
                       reg_date timestamp );
```

- 테이블 목록 확인

```
show tables;
```

실습

- 자바 프로그램 작성
  PreparedStatement로 실행

  - JDBC_Insert02.java
  - JDBC_Select02.java
  - JDBC_Update02.java
  - JDBC_Delete02.java

실습

- 게시판 작성

```
create table board(
        no int auto_increment primary key,
        writer varchar(20) not null,
        passwd varchar(20) not null,
        subject varchar(100) not null,
        content varchar(1000) not null,
        reg_date timestamp );
```

실습

- 게시판 작성

  - 글작성 : InsertBoard.java
  - 글목록 : SelectBoard.java
  - 글수정 : UpdateBoard.java
  - 글삭제 : DeleteBoard.java