Exercises: Introduction to Databases

This document defines the **exercise assignments** for the "Databases Basics - MySQL" course @ Software University.

Problem 11. Download and Install MySQL Community Server

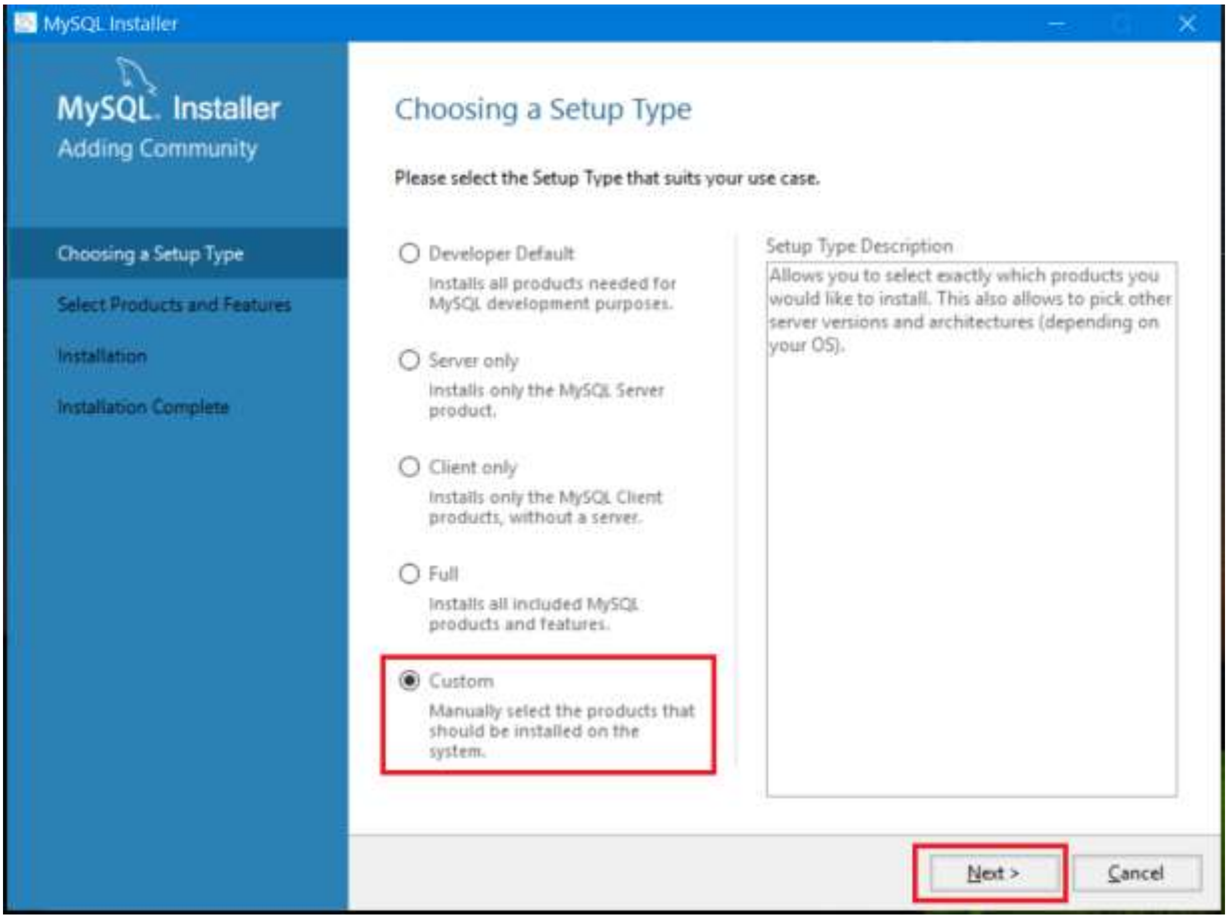
Download and install MySQL Community Server. Do not install unneeded features of MySQL Community Server.

Task 1. Download MySQL Community Server

Go to the MySQL web site and download MySQL Community Server http://dev.mysql.com/downloads/mysql/

Task 2. Install the MySQL Community Server

1. Open installation file and choose the **Setup type** to be **Custom**. Then click **Next.**



MySQL Installer

MySQL. Installer
Adding Community

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.

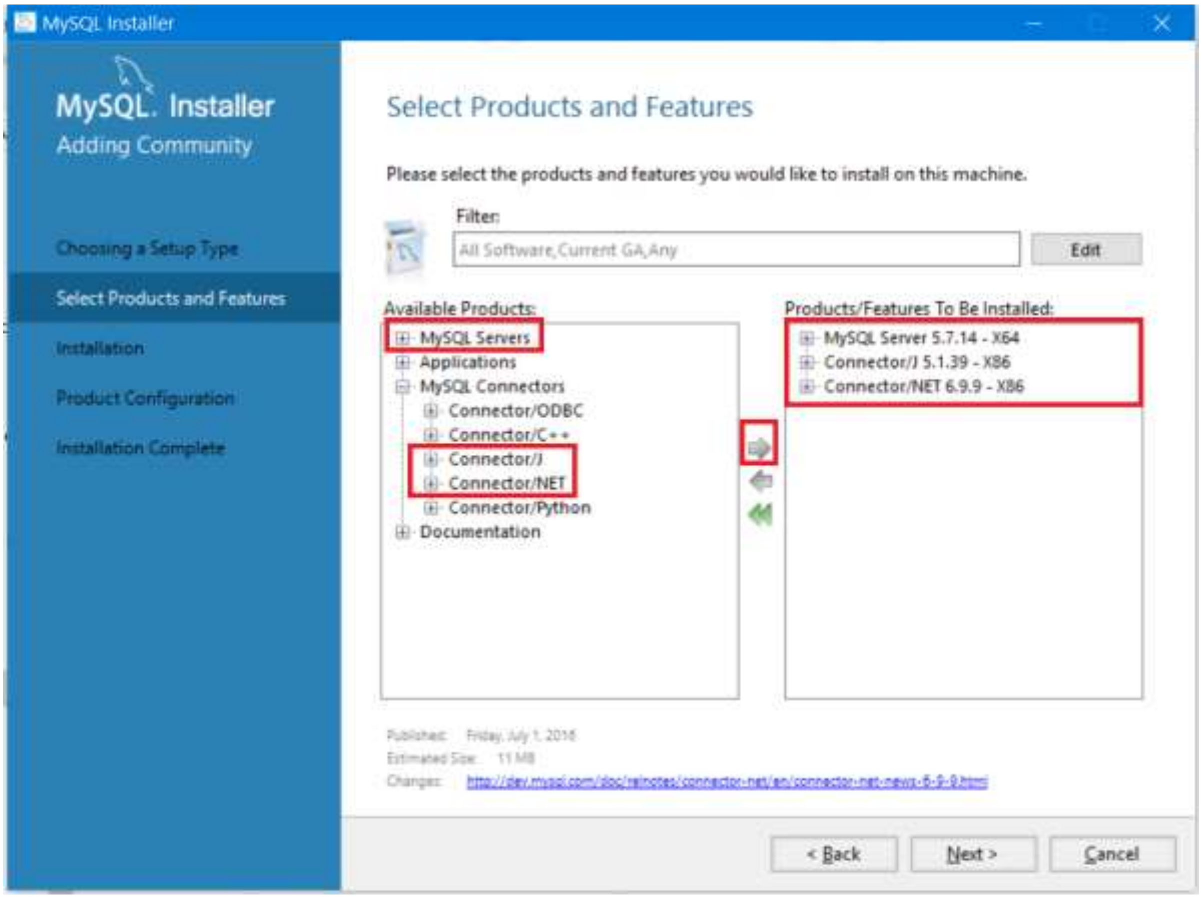
○ Client only
Installs only the MySQL Client products, without a server.

○ Full
Installs all included MySQL products and features.

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

Setup Type Description
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).

2. All the features we need are **MySQL Server**, **Connector/J** and **Connector/NET**. All other features are optional and won't be needed for that course.



Select Products and Features

Please select the products and features you would like to install on this machine.

Filter: All Software,Current GA,Any

Available Products:

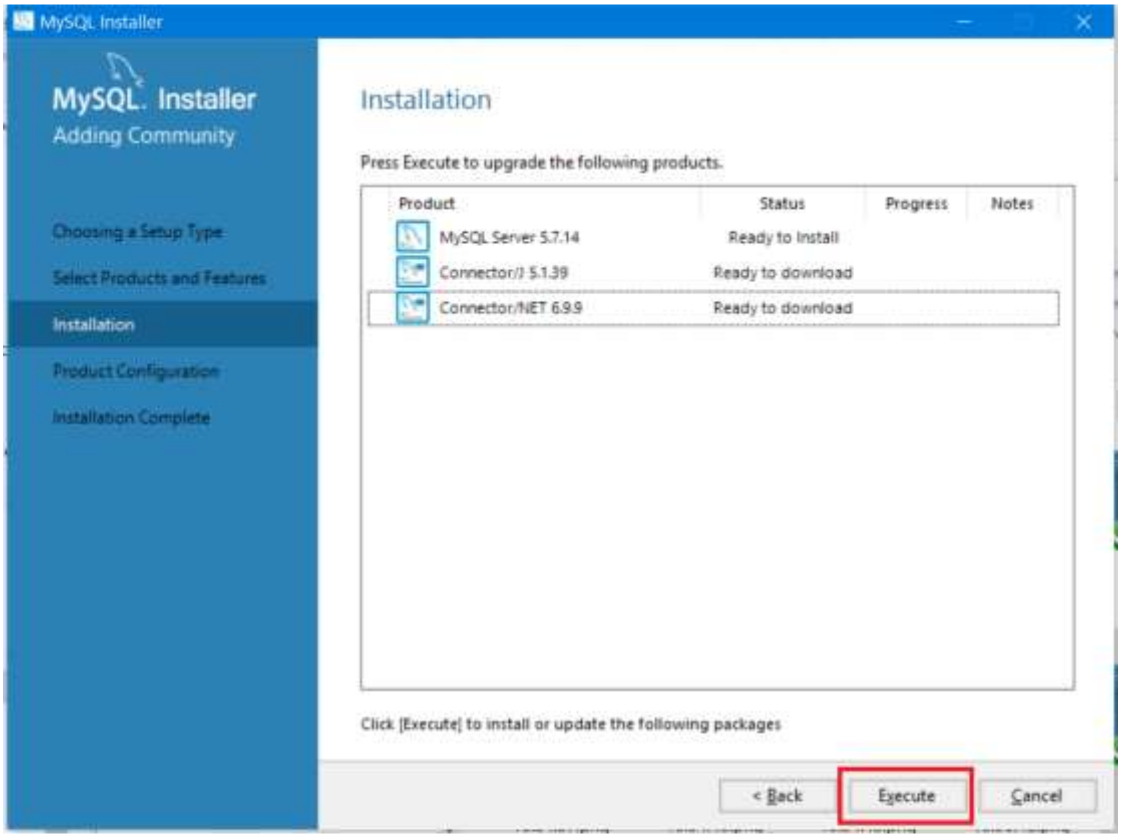
- MySQL Servers
- Applications
- MySQL Connectors
  - Connector/ODBC
  - Connector/C++
  - Connector/J
  - Connector/NET
  - Connector/Python
- Documentation

Products/Features To Be Installed:

- MySQL Server 5.7.14 - X64
- Connector/J 5.1.39 - X86
- Connector/NET 6.9.9 - X86

Published: Friday, July 1, 2016
Estimated Size: 11 MB
Changes: http://dev.mysql.com/doc/relnotes/connector-net/en/connector-net-news-6-9-9.html

3. Just click **Execute** and the setup will install these features



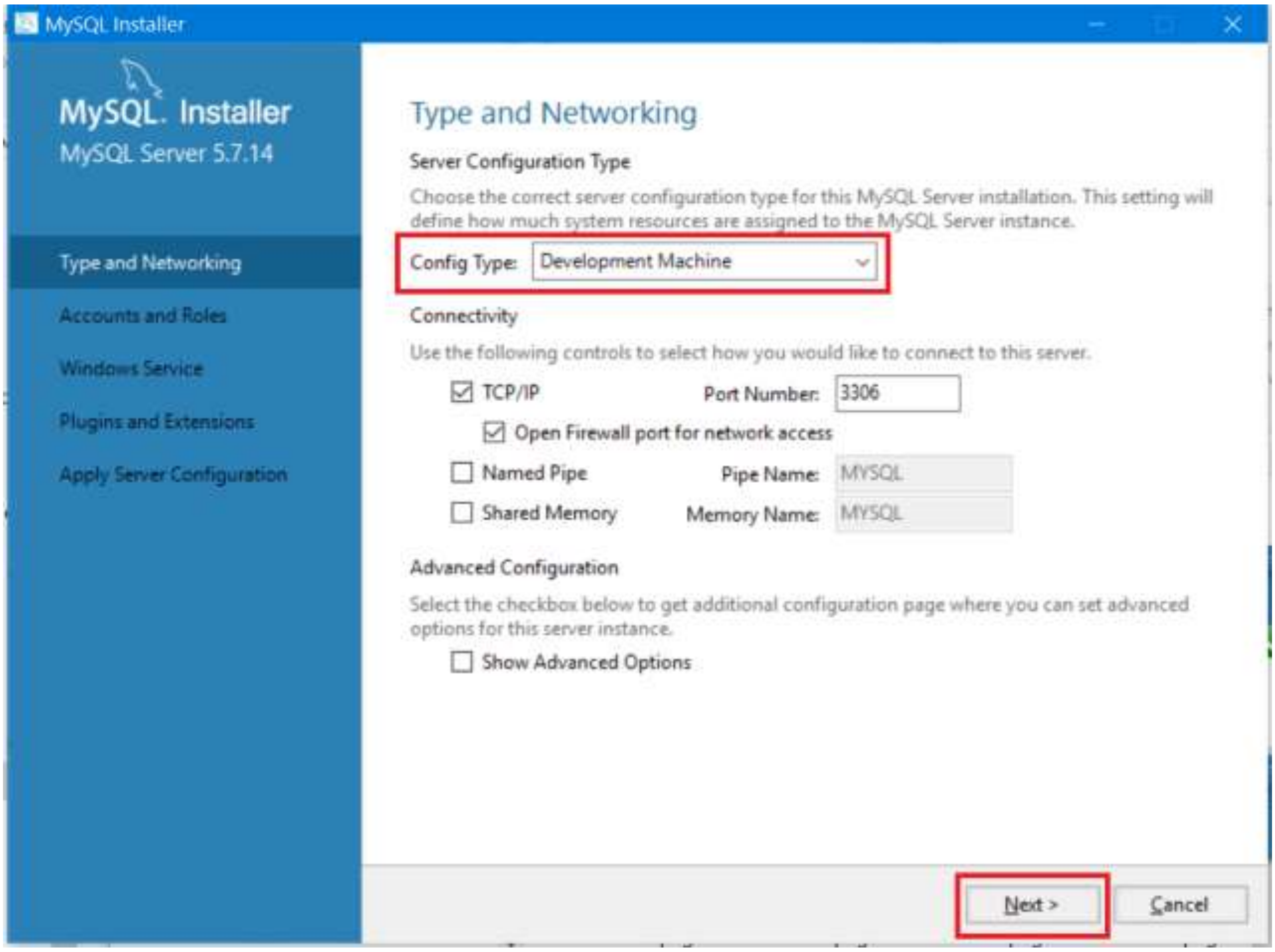
Installation

Press Execute to upgrade the following products.

Product	Status	Progress	Notes
MySQL Server 5.7.14	Ready to Install		
Connector/J 5.1.39	Ready to download		
Connector/NET 6.9.9	Ready to download		

Click [Execute] to install or update the following packages

4. Choose the configuration type to be a **Development Machine** and click on Next.



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 Machine

Connectivity

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

☑ TCP/IP Port Number: 3306

☑ Open Firewall port for network access

□ Named Pipe Pipe Name: MYSQL

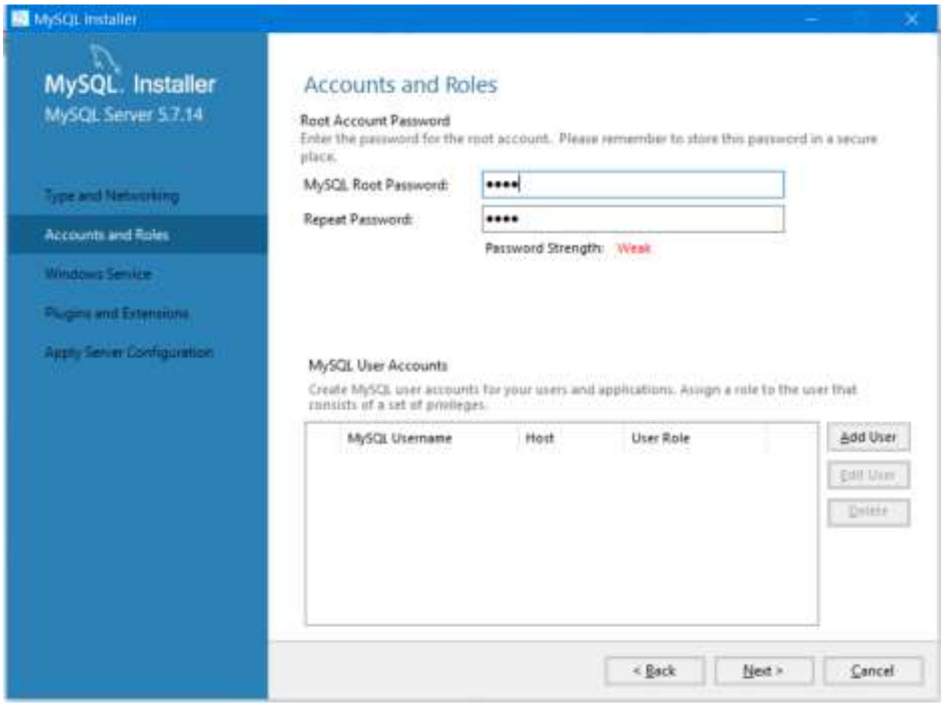
□ Shared Memory Memory Name: MYSQL

Advanced Configuration

Select the checkbox below to get additional configuration page where you can set advanced options for this server instance.

□ Show Advanced Options

5. Set password to the Root account.



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: ••••

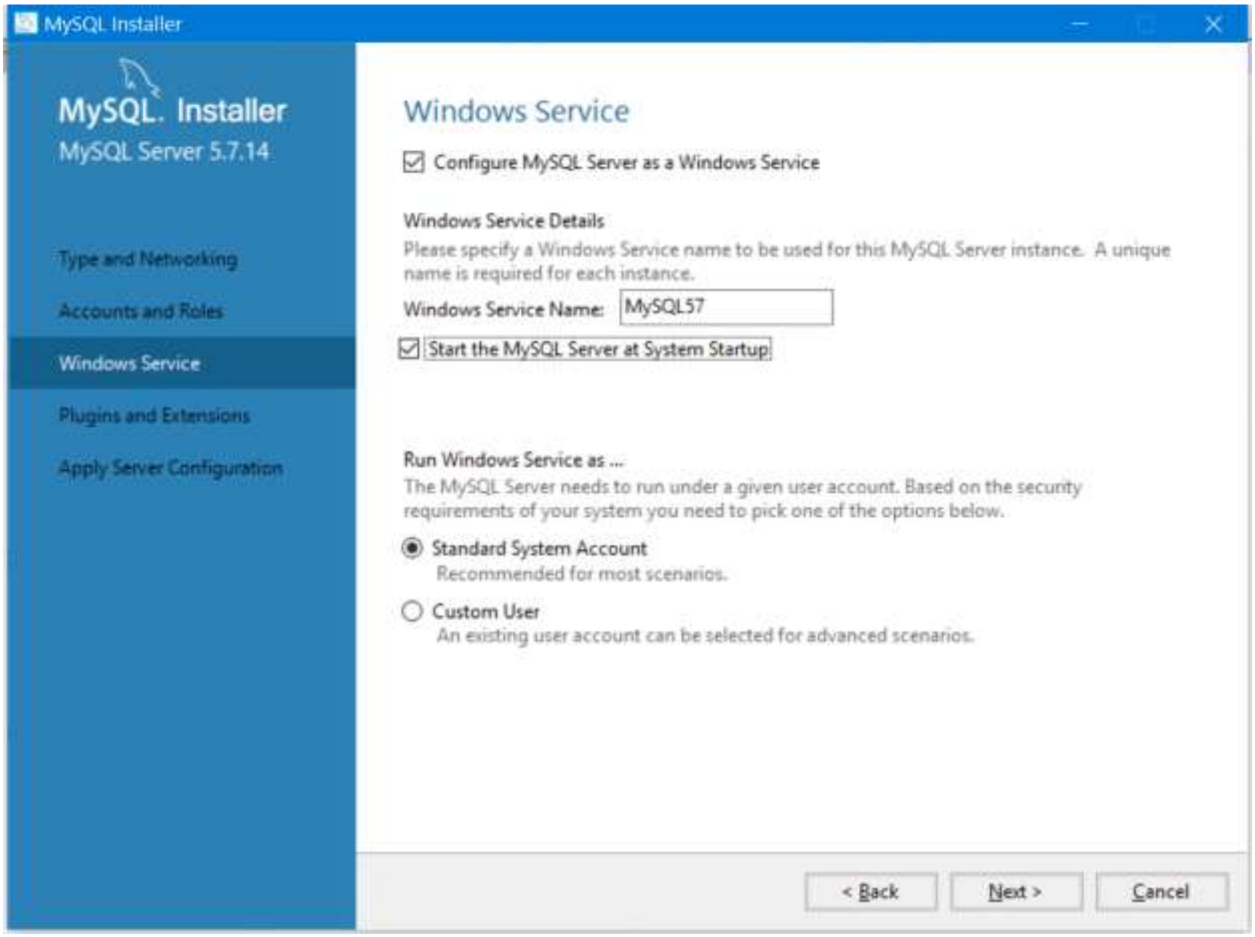
Password Strength: Weak

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 Username	Host	User Role

6. Here you can set the **MySQL Server** to run as **Windows Service** and to start automatically at Windows start up. This is the recommended way. Otherwise you must start up MySQL every time before working with the database.



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: MySQL57

☑ 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.

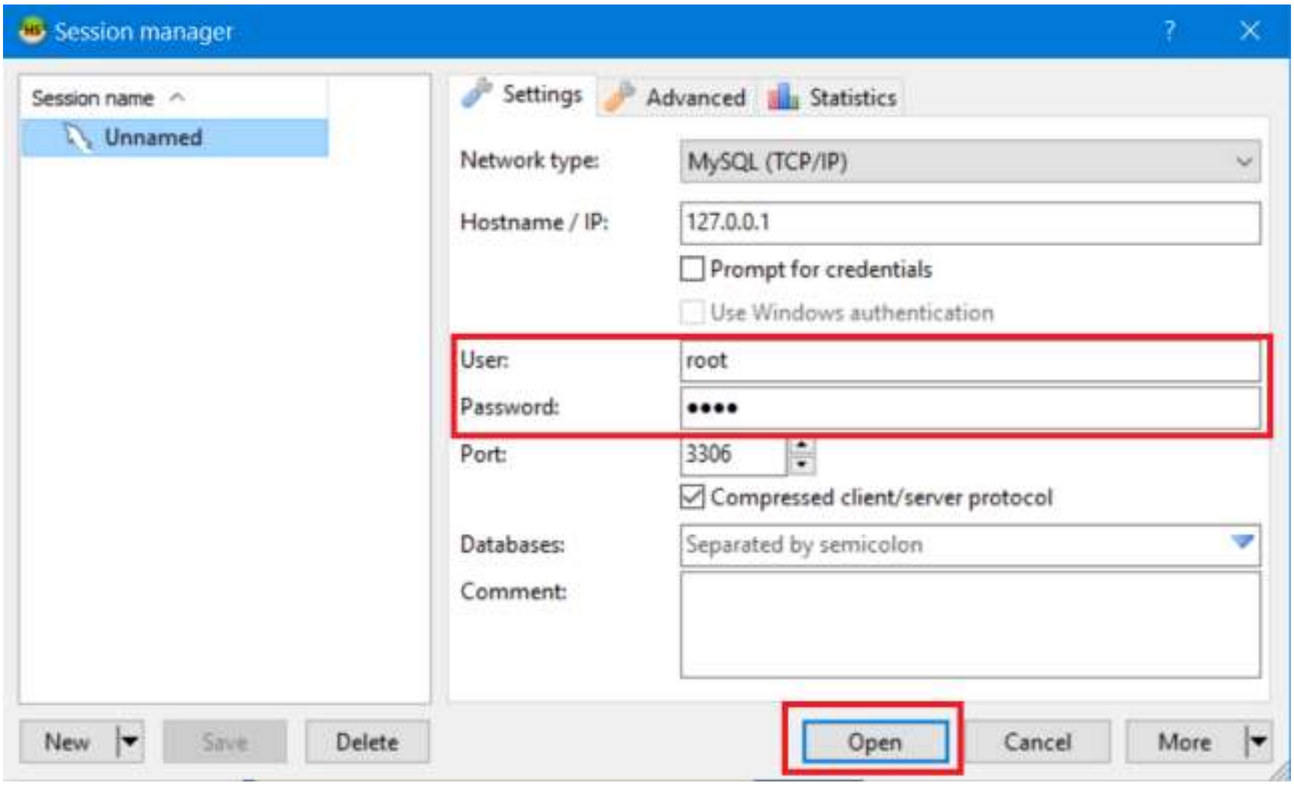
7. Click **Next >** to start the installation and wait until it finishes installing

Problem 2. Download and Install HeidiSQL

Go to the HeidiSQL web site and **download HeidiSQL** http://www.heidisql.com/download.php. Then **install** it.

Problem 3. Create New Database

- Connect to MySQL Server with user **root** and the password you set up earlier.



Network type: MySQL (TCP/IP)

Hostname / IP: 127.0.0.1

☐ Prompt for credentials

☐ Use Windows authentication

User: root

Password: ••••

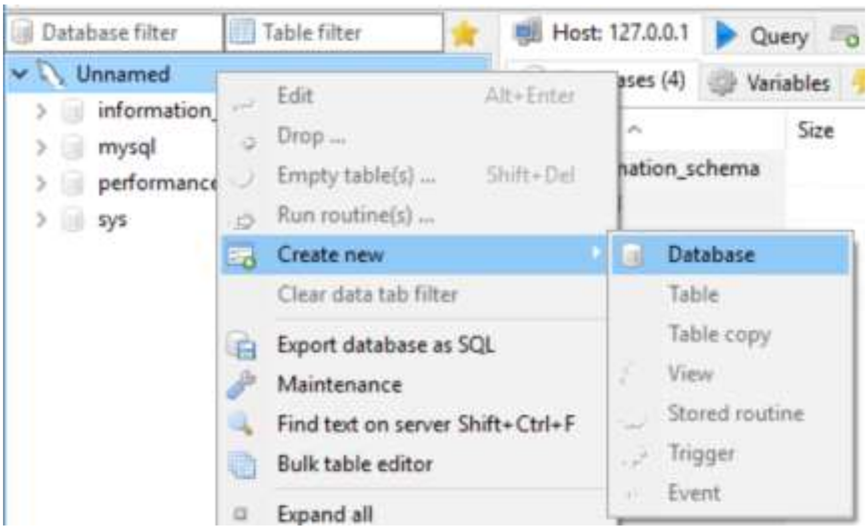
Port: 3306

☑ Compressed client/server protocol

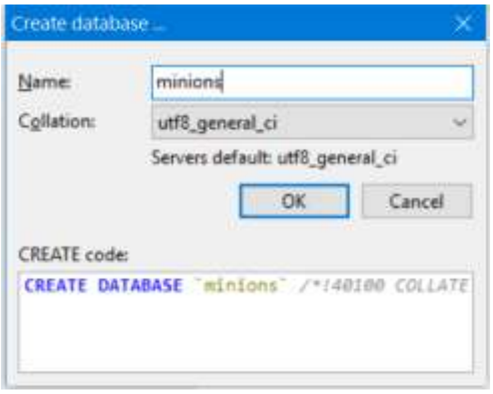
Databases: Separated by semicolon

Comment:

- Create new database



- Type the name of the database and click OK. This will create your database.



Name: minions

Collation: utf8_general_ci

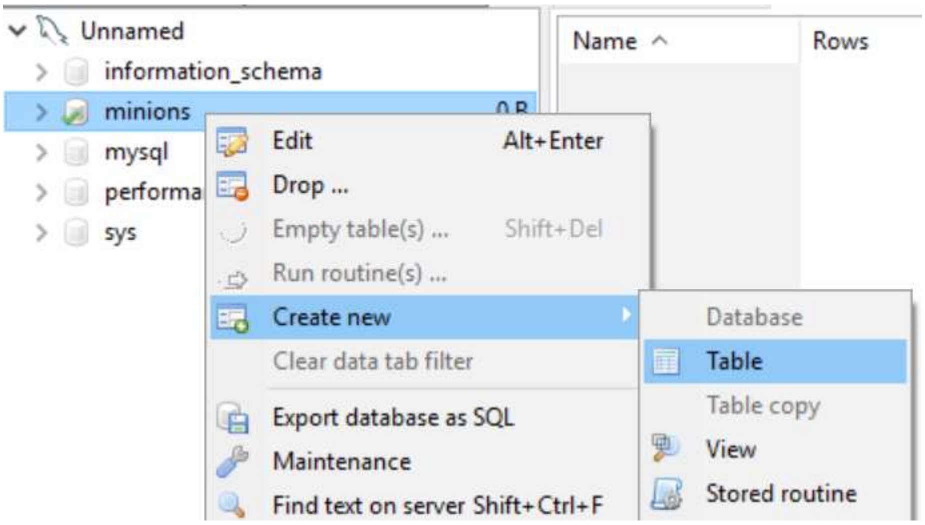
Servers default: utf8_general_ci

CREATE code:

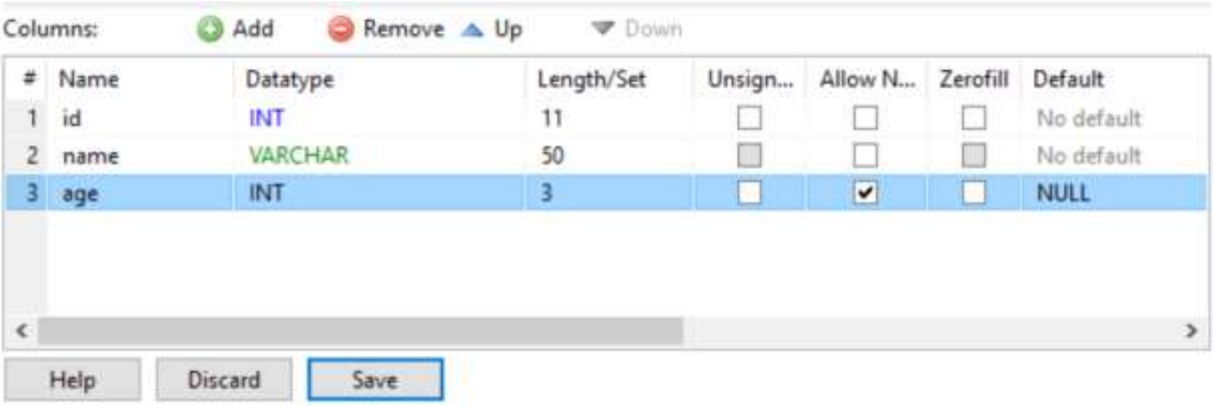
```
CREATE DATABASE `minions` /*!40100 COLLATE
```

Problem 4. Create Table

- Create **table Minions**

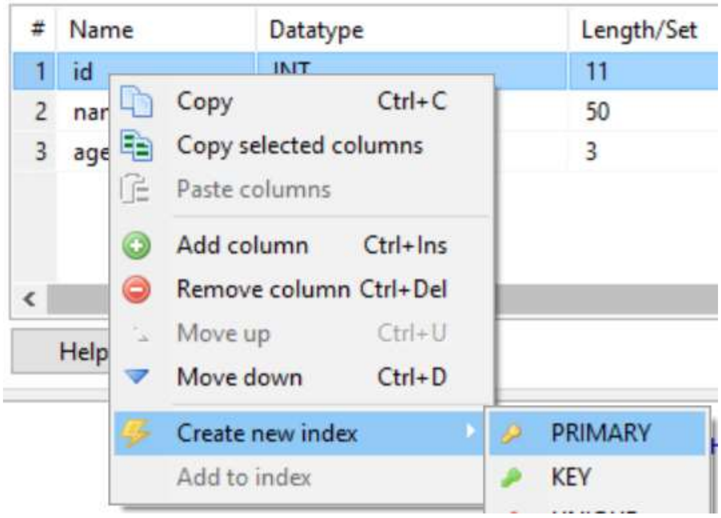


- Create columns **id, name, age**. Id and name are **required**; Age should **allow null values**.



#	Name	Datatype	Length/Set	Unsign...	Allow N...	Zerofill	Default
1	id	INT	11	□	□	□	No default
2	name	VARCHAR	50	□	□	□	No default
3	age	INT	3	□	☑	□	NULL

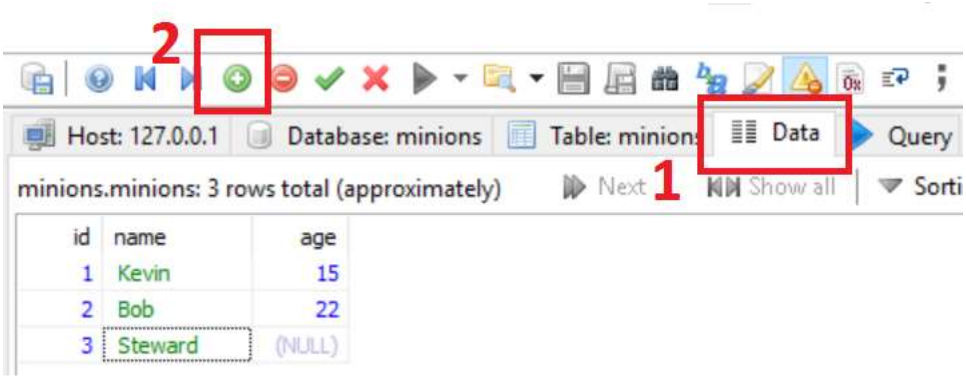
- Set the **id** as **primary key**.



#	Name	Datatype	Length/Set
1	id	INT	11
2	nar		50
3	age		3

Problem 5. Insert Data in the Table

Insert data in the table as its show on the picture

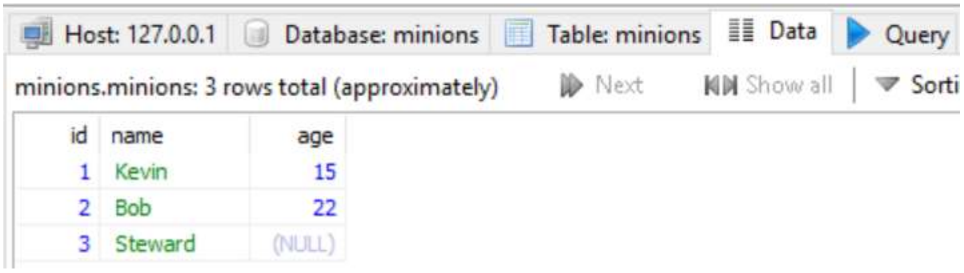


minions.minions: 3 rows total (approximately)

id	name	age
1	Kevin	15
2	Bob	22
3	Steward	(NULL)

Problem 6. Select Data from Table

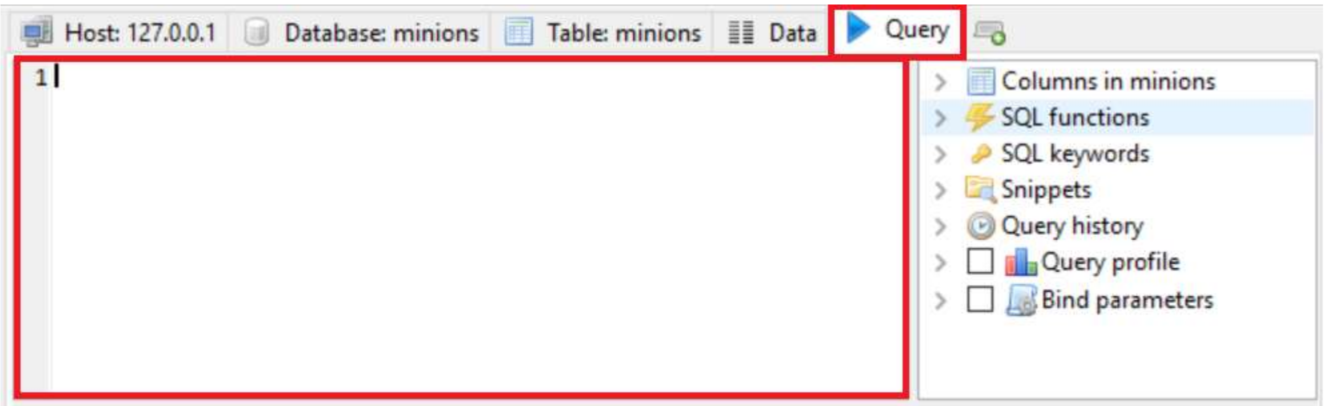
- Select **all columns** from the Minions table.



minions.minions: 3 rows total (approximately)

id	name	age
1	Kevin	15
2	Bob	22
3	Steward	(NULL)

- Open Query tab, then write the SQL.
  - * Select **only names** from Minions table.
  - ** **Order** them **ascending by name**



Problem 7. Update One Record

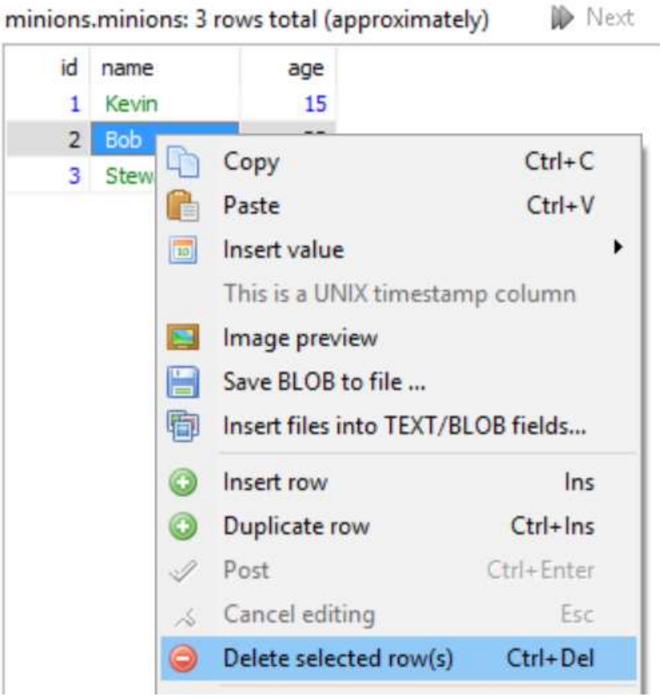
Change **Stuart's age** from **NULL** to **10**

Problem 8. Update All Records

Change all of the Minions age to be + 1 years.

Problem 9. Delete Record

Open Data tab for the table, **right click** on the row where **Bob** is situated and delete it.



minions.minions: 3 rows total (approximately)

id	name	age
1	Kevin	15
2	Bob	
3	Stew	

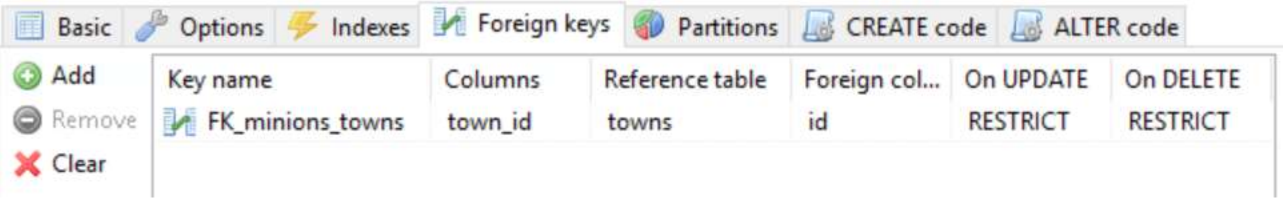
Problem 10. Create New Table

Create new table **towns**. Every town has **id (int)** and **name (text)**. Make the **id** column **primary key**.

Problem 11. **Connect Tables

Now let's make a connection (or relationship) between our two tables. First we need modify our minions table. Add column **town_id** in it **(IMPORTANT: The type of the column must be the same as the type of the column id of the towns table)**.

Hint



Key name	Columns	Reference table	Foreign col...	On UPDATE	On DELETE
FK_minions_towns	town_id	towns	id	RESTRICT	RESTRICT

Problem 12. Create New Database

Now on your own create a new database **school**. Add a few tables to the database: **students (id, name, age, phone_number)**, **classes (id, name, max_students), teachers(id, name, class)**. Add columns for the tables. Populate the tables with random content. Then delete and make changes in some records.

Problem 13. *Generate SQL Script

Generate SQL script from the **school** database. View the script file and try to understand different commands. Execute the script.