

# Using R to Connect MySQL

# 使用R連結MySQL

Ming-Chang Lee, PhD

<https://www.youtube.com/@alan9956>

<http://rwepa.blogspot.com/>

[alan9956@gmail.com](mailto:alan9956@gmail.com)

# 大綱

- 1. MySQL 安裝
- 2. MySQL Workbench
- 3. MySQL Shell
- 4. RStudio 連接MySQL三大方法

# 1. MySQL 安裝

# MySQL 下載與安裝

- Google → MySQL Community Download
- MySQL成為Oracle旗下產品, 2009.



# MySQL 下載與安裝 (續)

## ④ MySQL Community Downloads

- MySQL Yum Repository
- MySQL APT Repository
- MySQL SUSE Repository
- MySQL Community Server
- MySQL NDB Cluster
- MySQL Router
- MySQL Shell
- MySQL Operator
- MySQL NDB Operator
- MySQL Workbench
- MySQL Installer for Windows
- C API (libmysqlclient)
- Connector/C++
- Connector/J
- Connector/.NET
- Connector/Node.js
- Connector/ODBC
- Connector/Python
- MySQL Native Driver for PHP
- MySQL Benchmark Tool
- Time zone description tables
- Download Archives



# MySQL Installer 8.0.37

- <https://dev.mysql.com/downloads/installer/>

General Availability (GA) Releases Archives ⓘ

## MySQL Installer 8.0.37

**Note:** MySQL 8.0 is the final series with MySQL Installer. As of MySQL 8.1, use a MySQL product's MSI or Zip archive for installation. MySQL Server 8.1 and higher also bundle MySQL Configurator, a tool that helps configure MySQL Server.

Select Version:

8.0.37

Select Operating System:

Microsoft Windows

Download Type	Version	File Size	Action
Windows (x86, 32-bit), MSI Installer (mysql-installer-web-community-8.0.37.0.msi)	8.0.37	2.1M	<a href="#">Download</a>
Windows (x86, 32-bit), MSI Installer (mysql-installer-community-8.0.37.0.msi)	8.0.37	296.1M	<a href="#">Download</a>

# MySQL 下載與安裝 (續)

- <https://dev.mysql.com/get/Downloads/MySQLInstaller/mysql-installer-community-8.0.37.0.msi>

## MySQL Community Downloads

Login Now or Sign Up for a free account.

An Oracle Web Account provides you with the following advantages:

- Fast access to MySQL software downloads
- Download technical White Papers and Presentations
- Post messages in the MySQL Discussion Forums
- Report and track bugs in the MySQL bug system

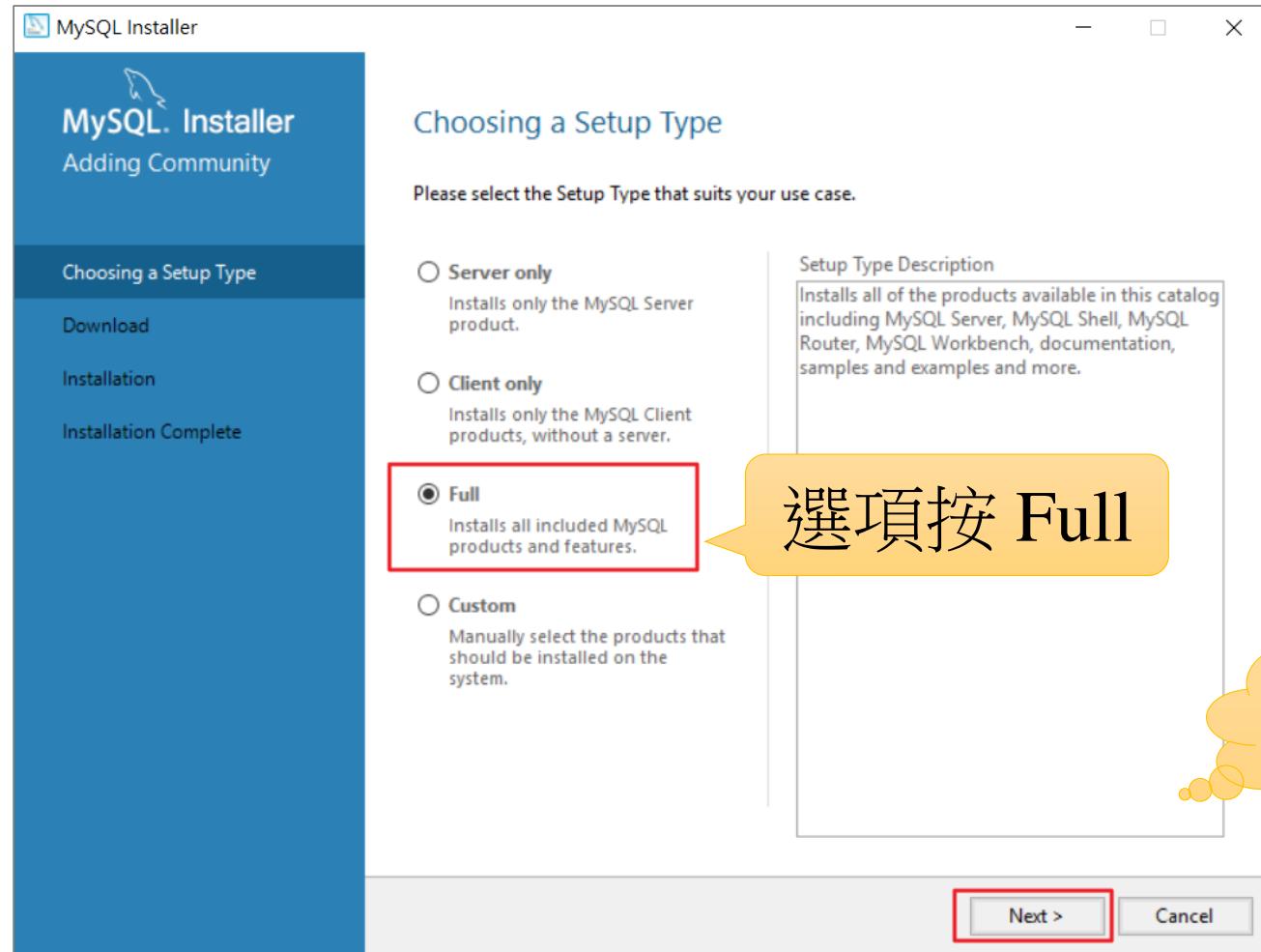
**Login »**  
using my Oracle Web account

**Sign Up »**  
for an Oracle Web account

MySQL.com is using Oracle SSO for authentication. If you already have an Oracle Web account, click the Login link. Otherwise, you can signup for a free account by clicking the Sign Up link and following the instructions.

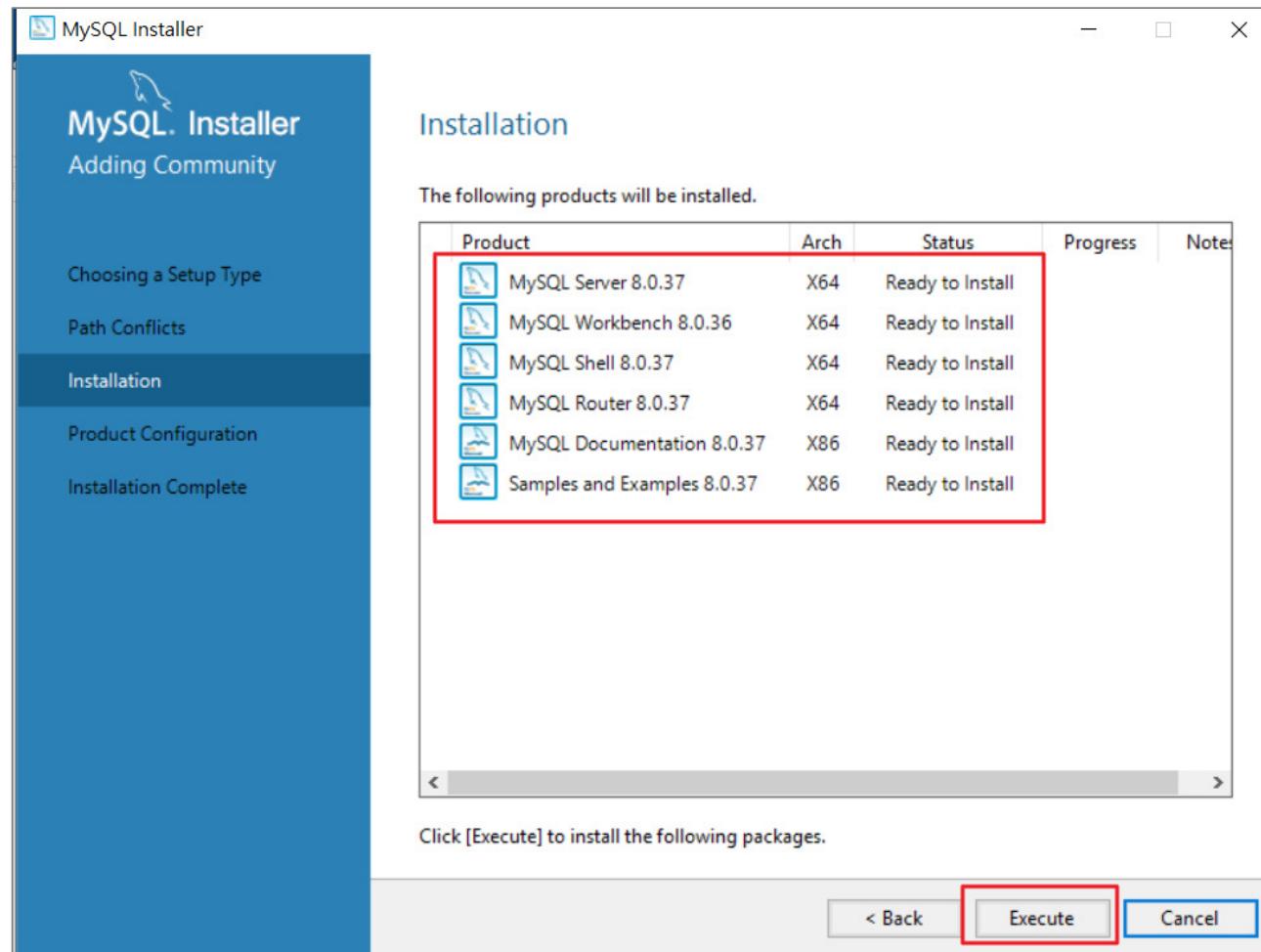
No thanks, just start my download.

# Choosing a Setup Type

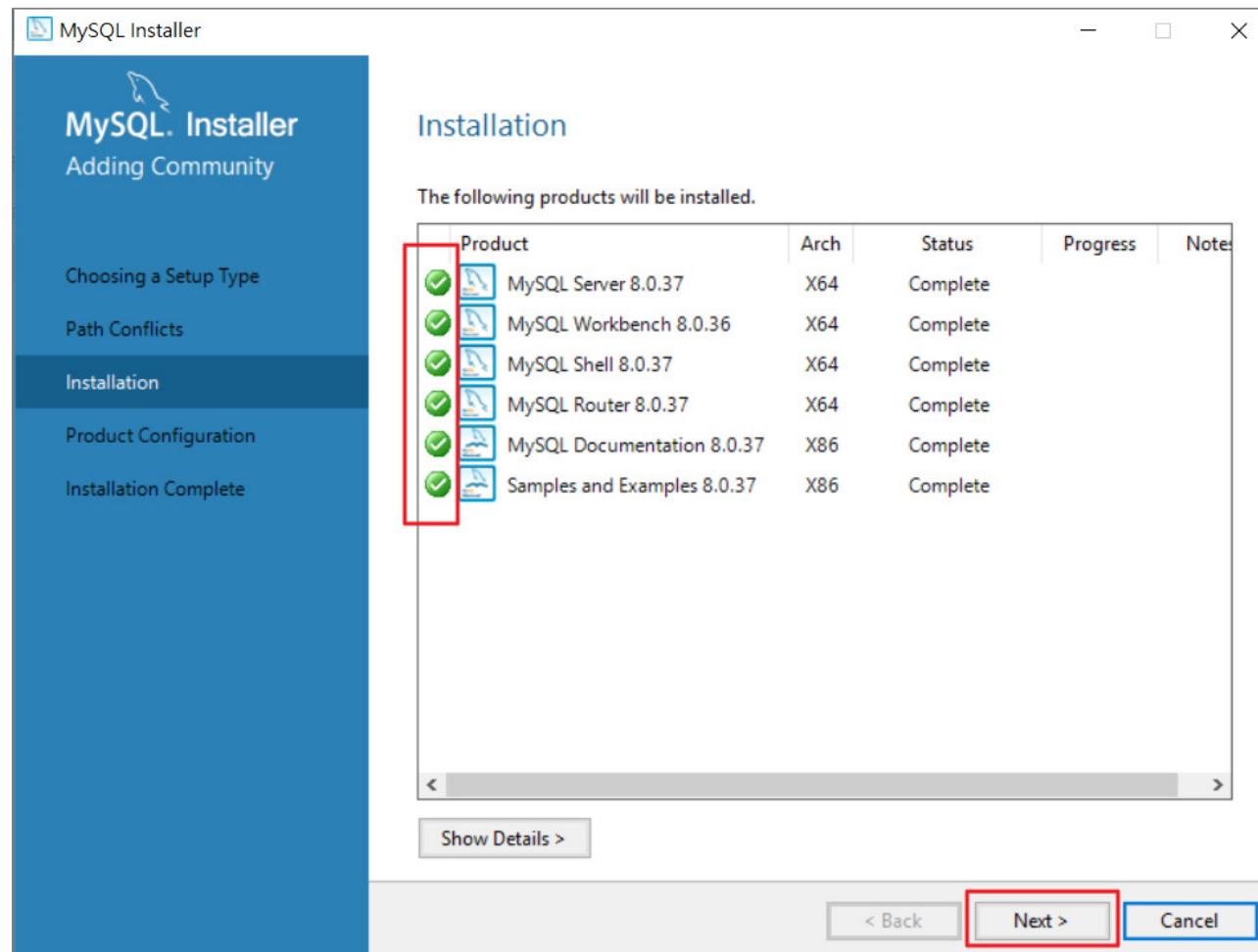


設定 root 密碼:  
123456

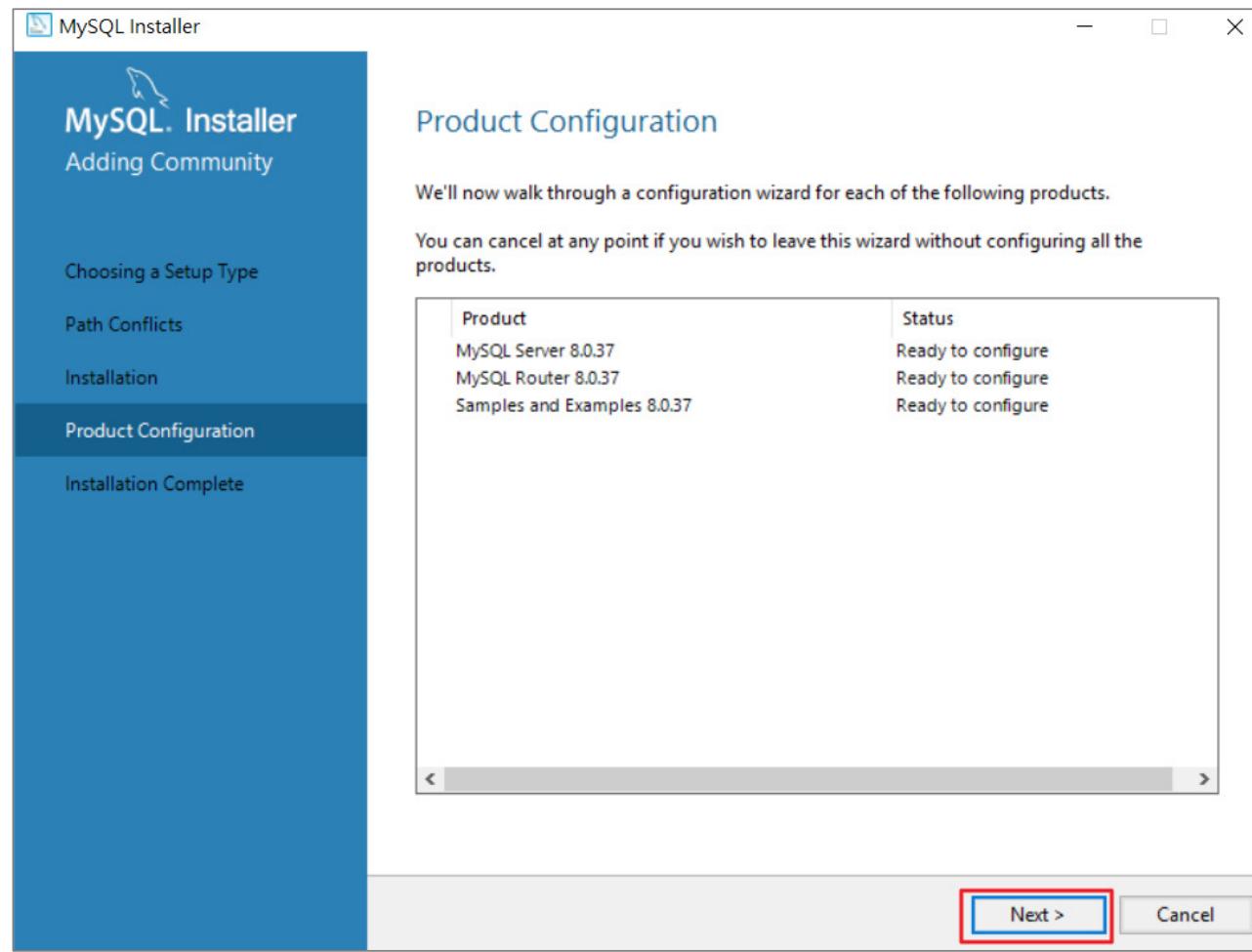
# 安裝產品



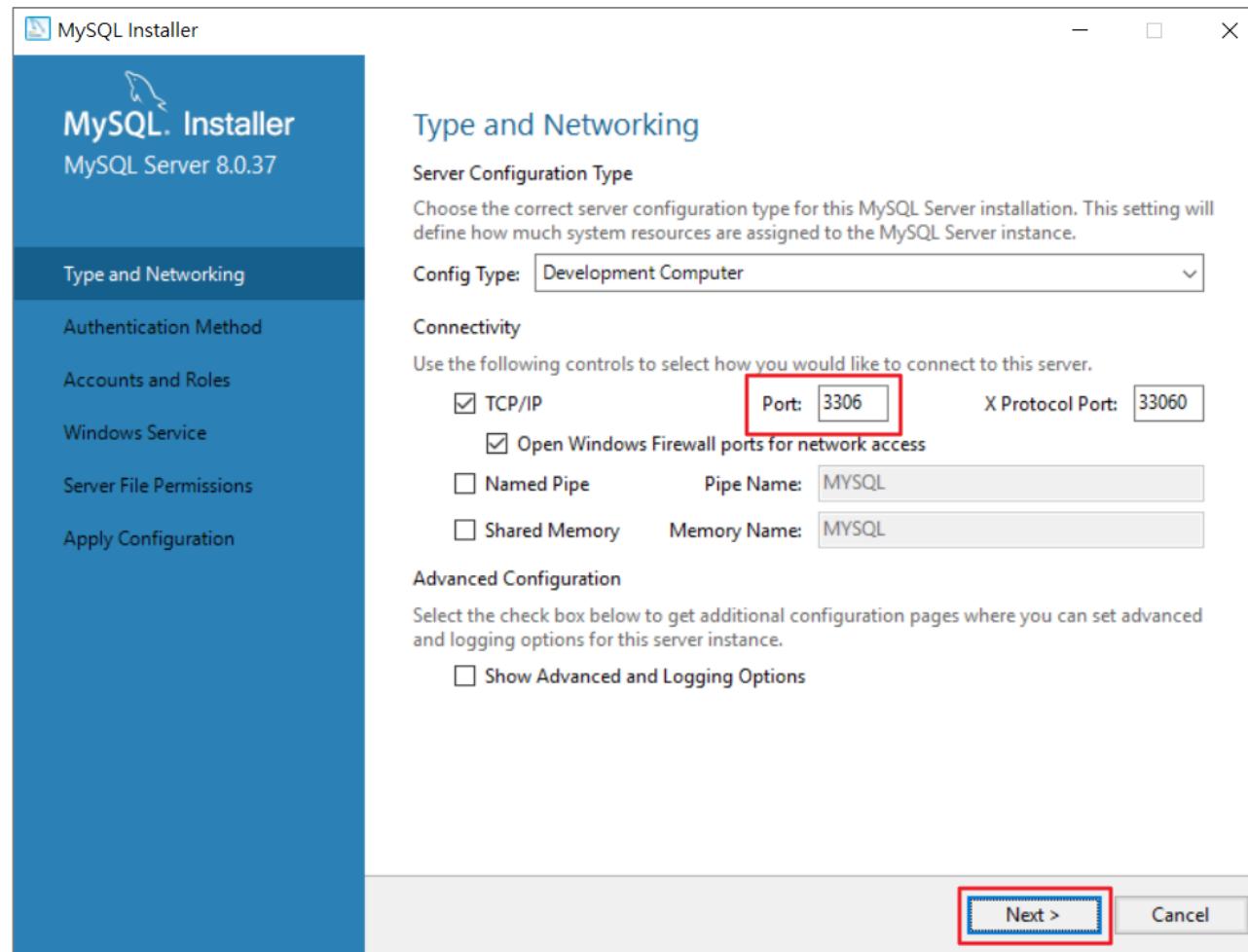
# 安裝完成



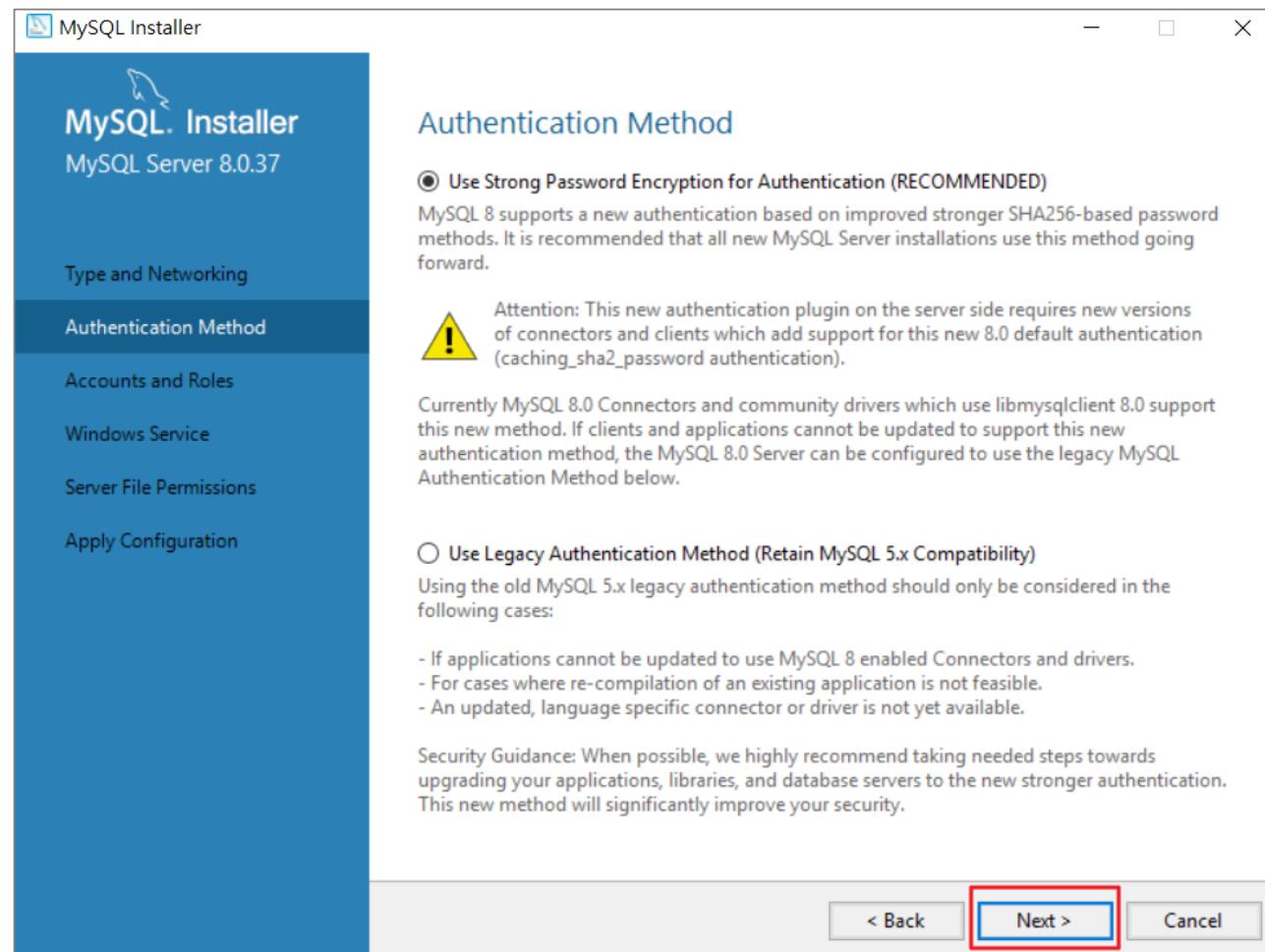
# 產品組態



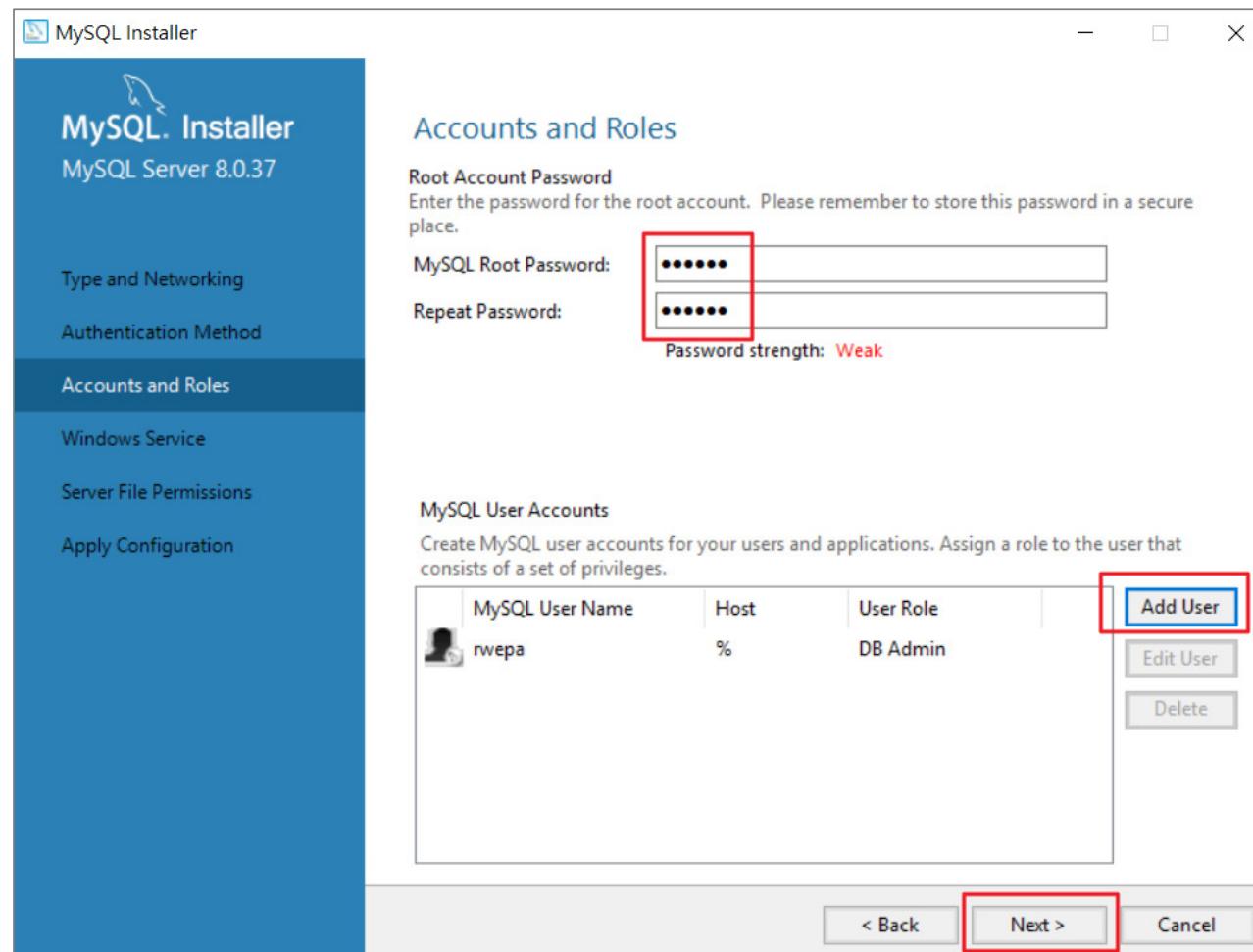
# 主機型式與網路設定



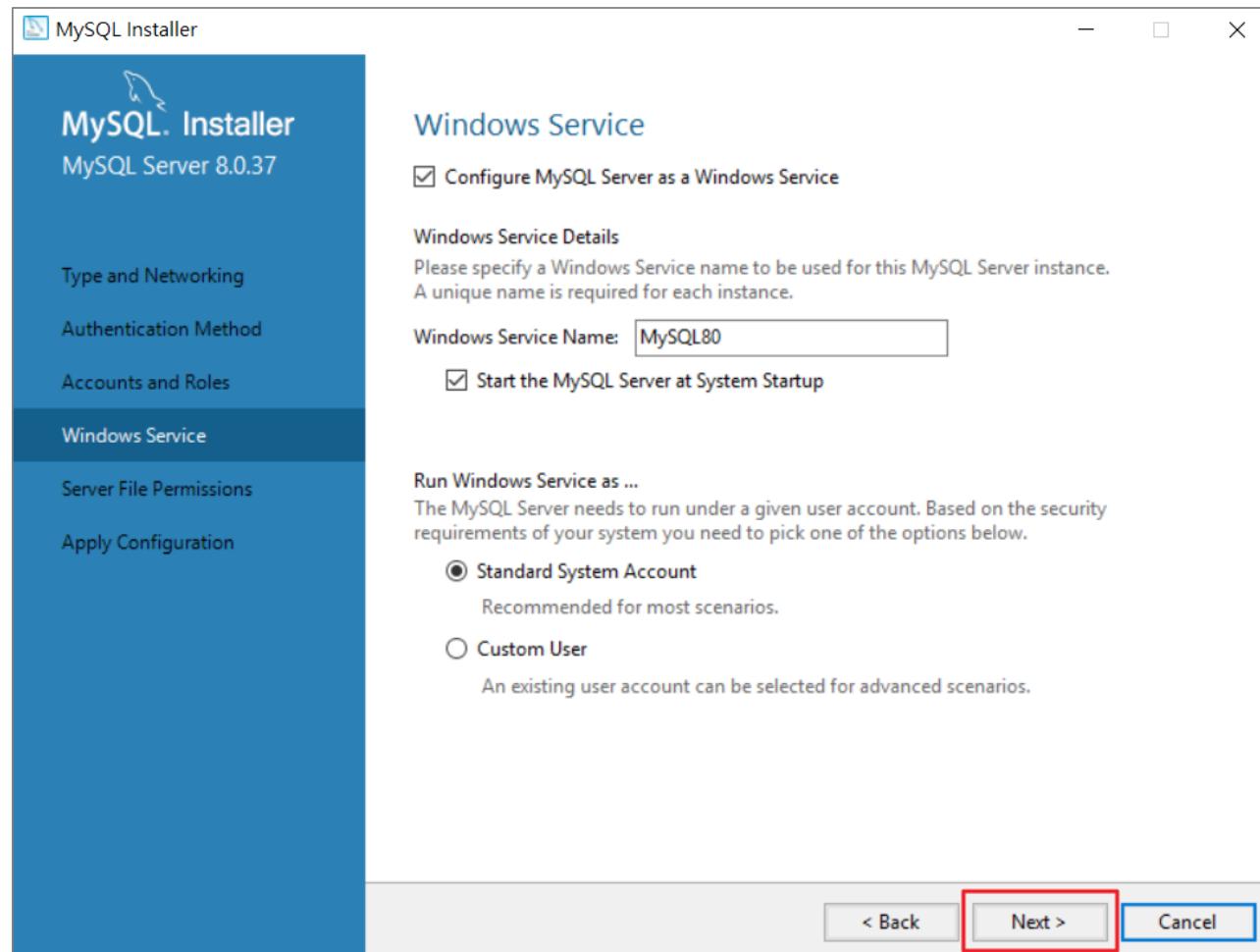
# 認証方法



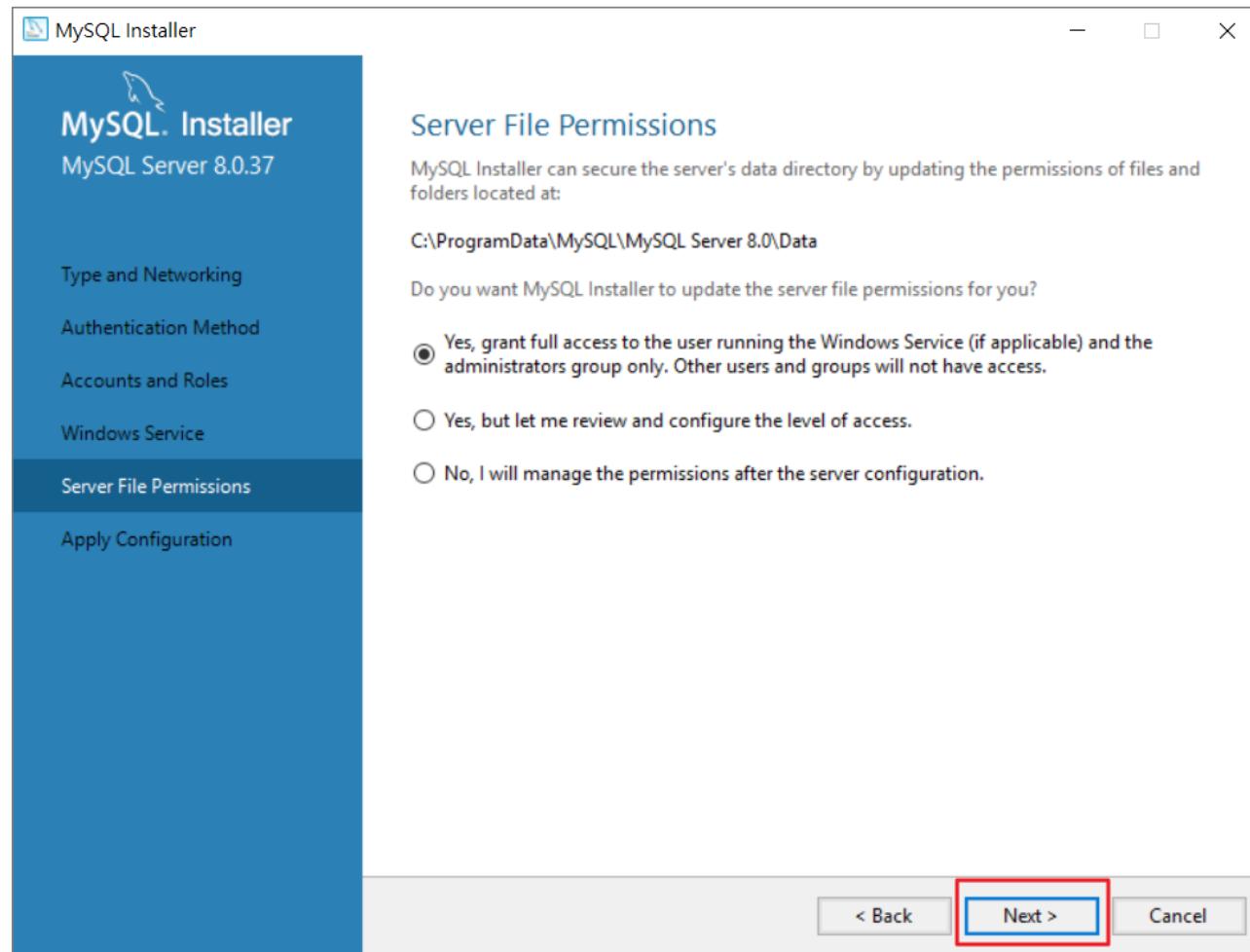
# 帳號與角色



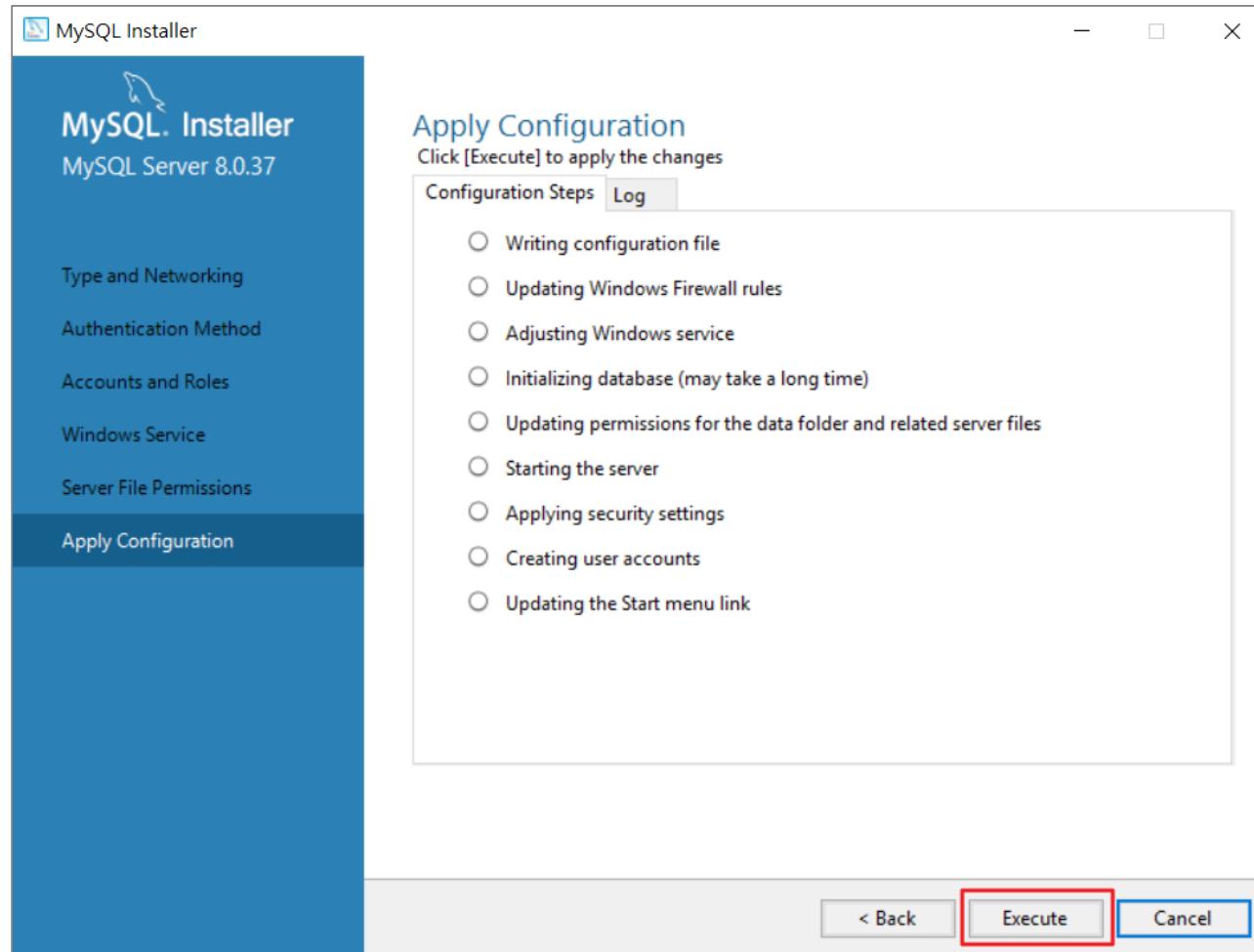
# Windows 服務設定



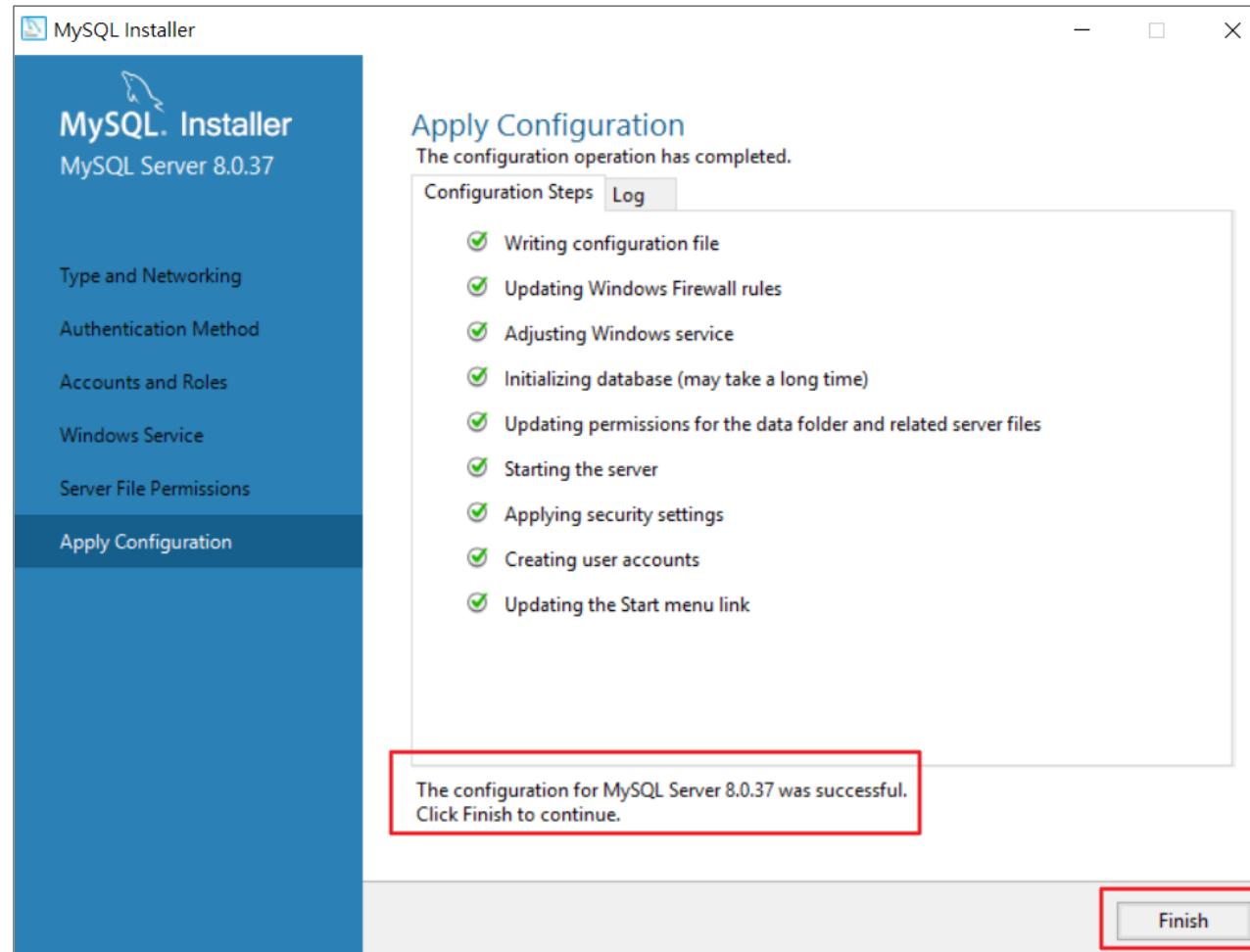
# 伺服器檔案權限



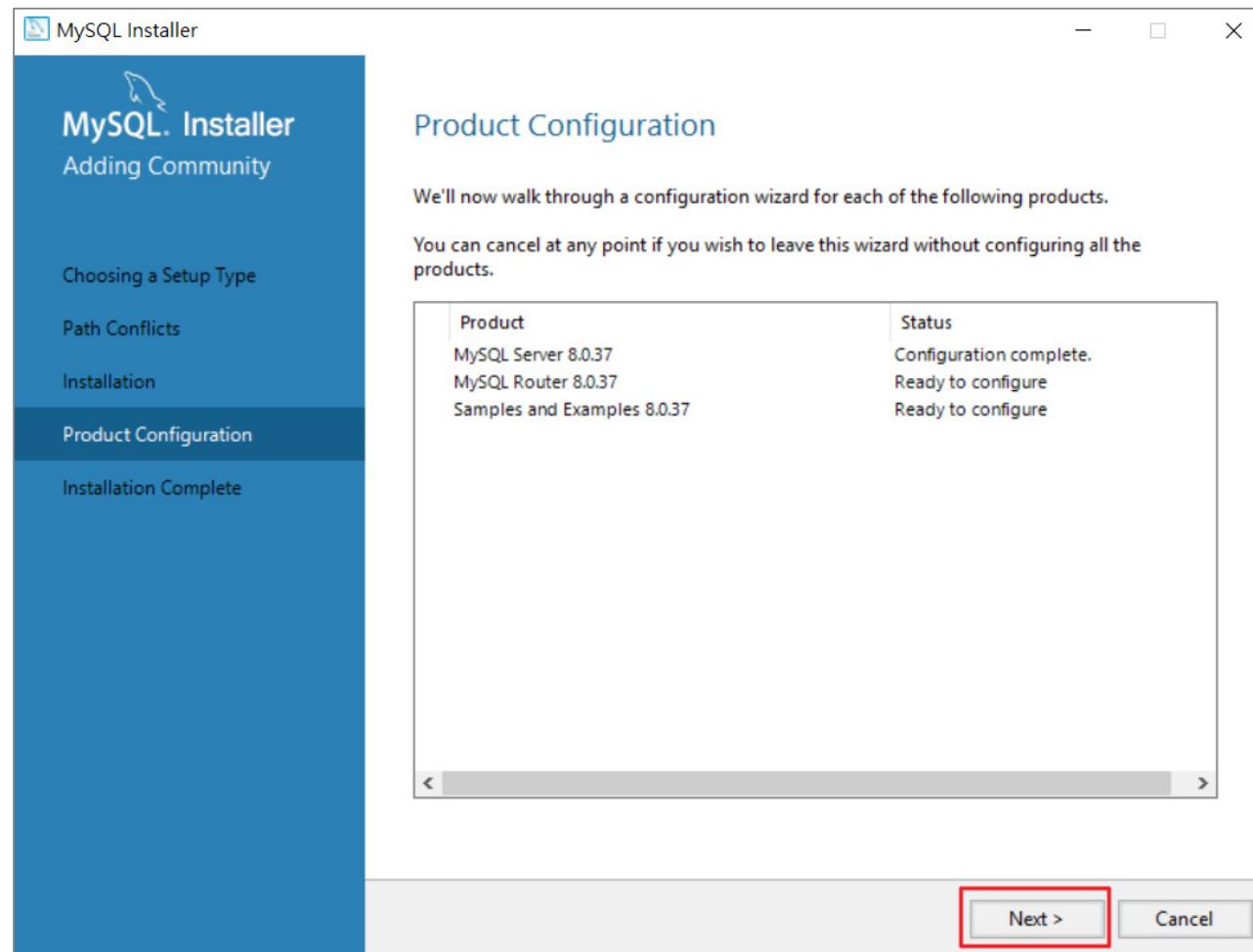
# 套用組態



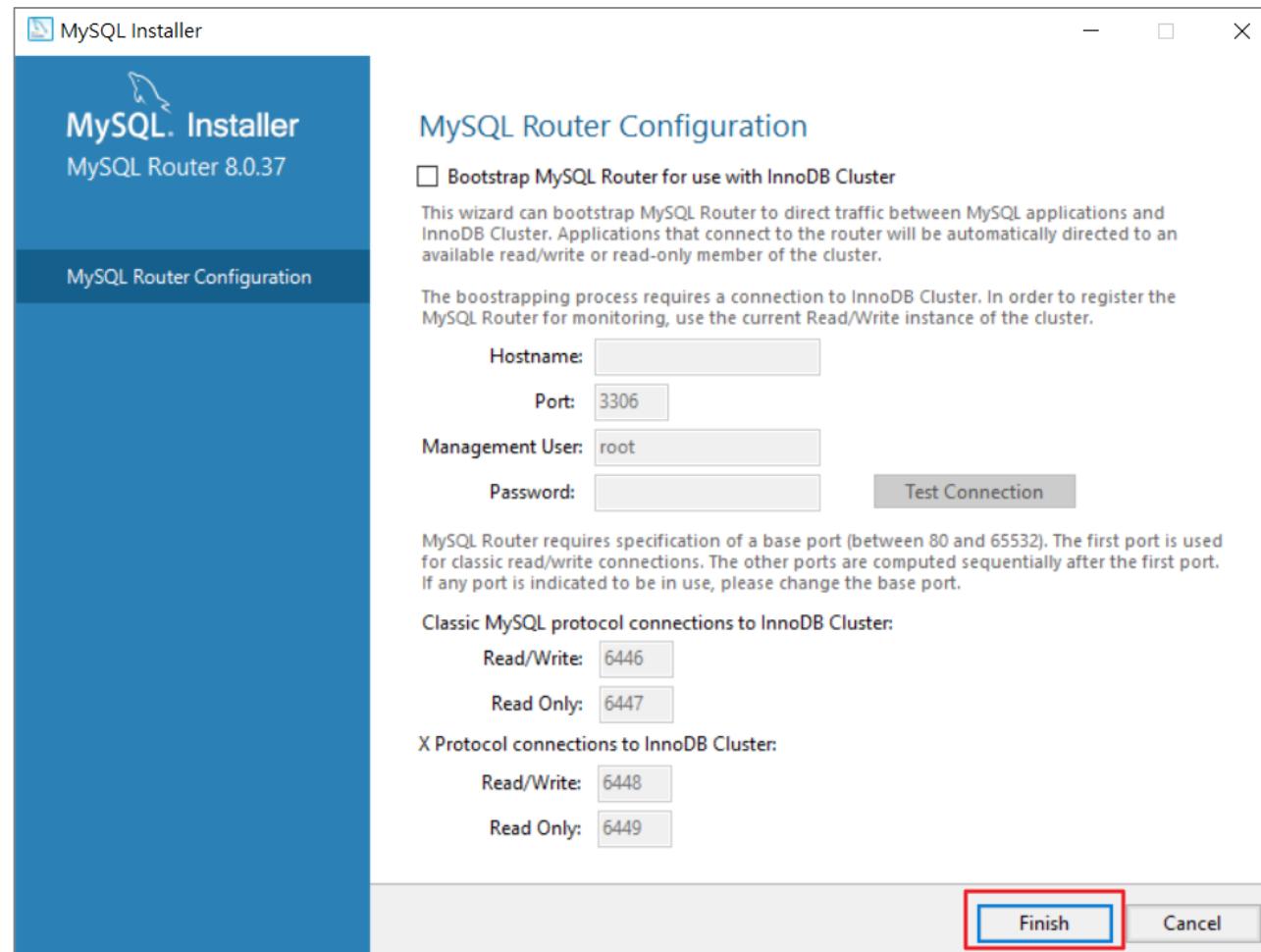
# 套用組態-完成



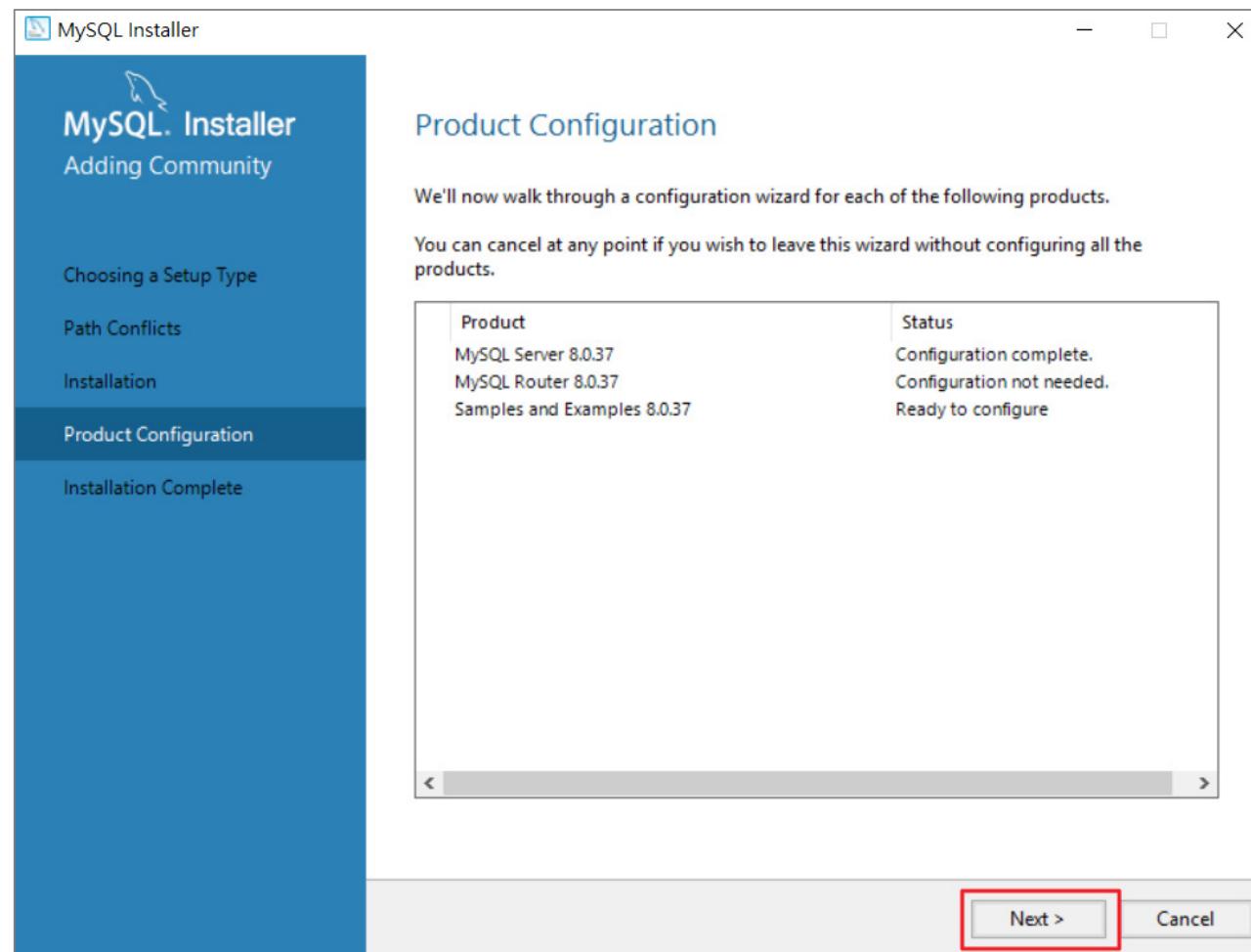
# 產品組態



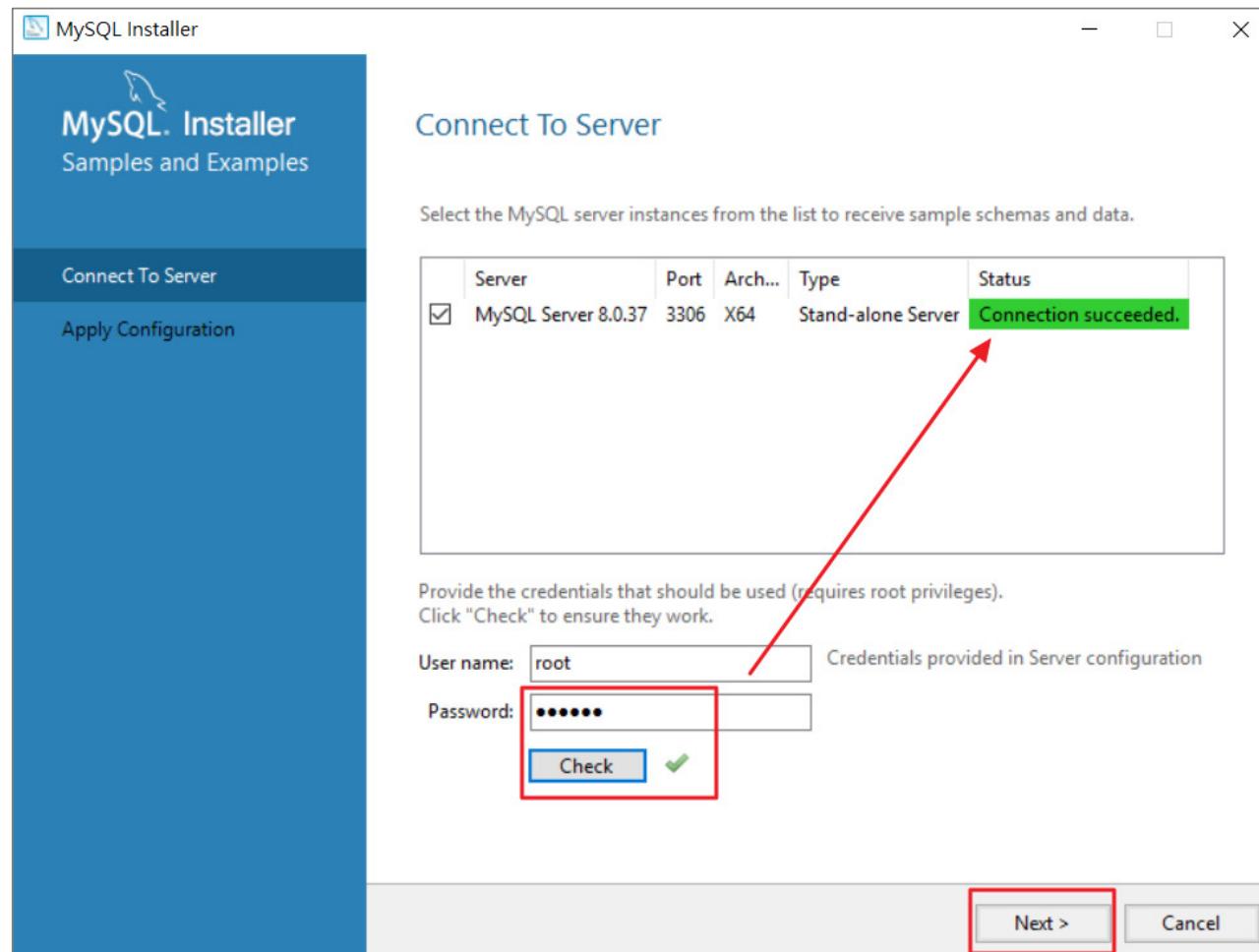
# MySQL 路由組態



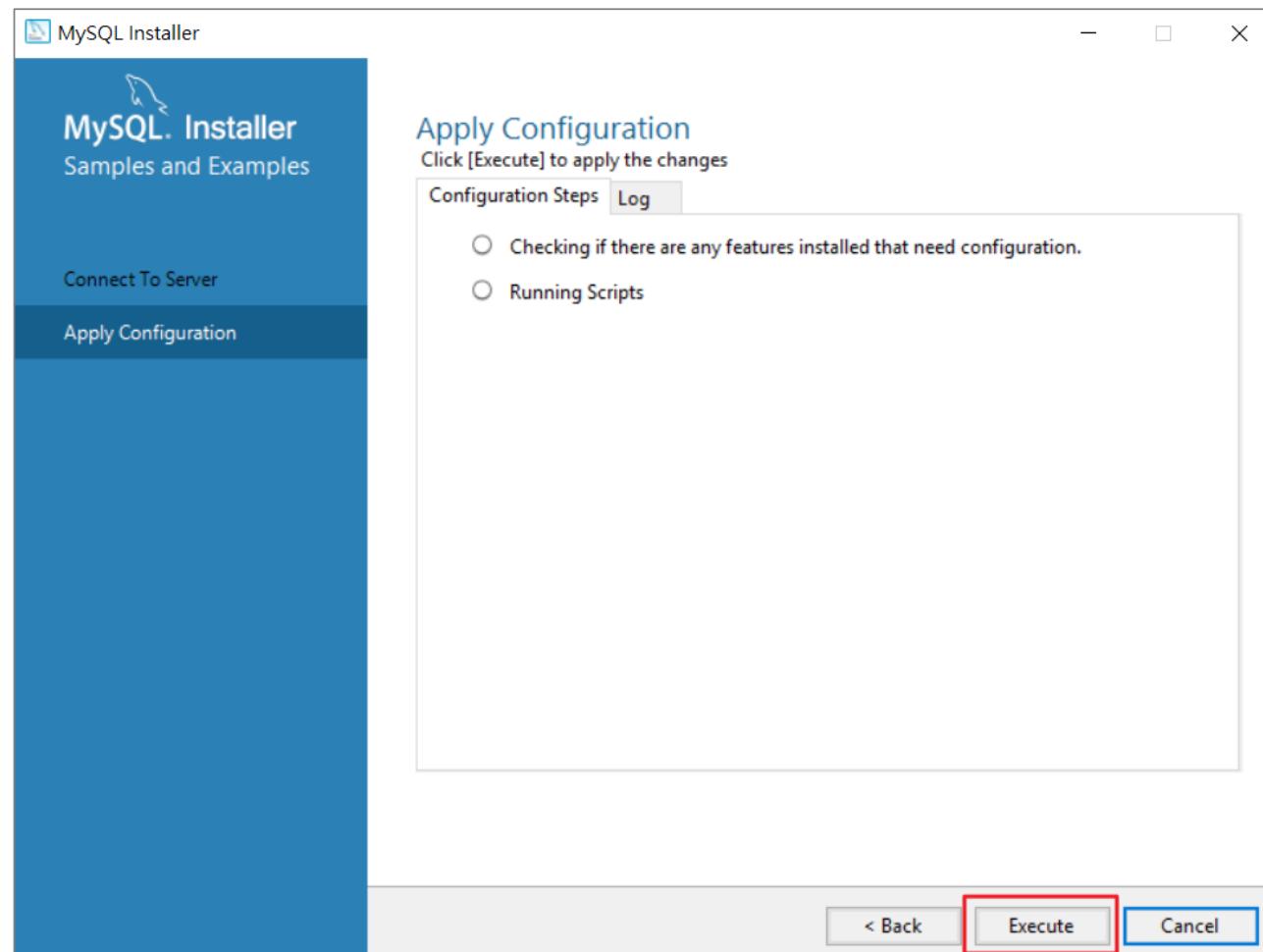
# 產品組態



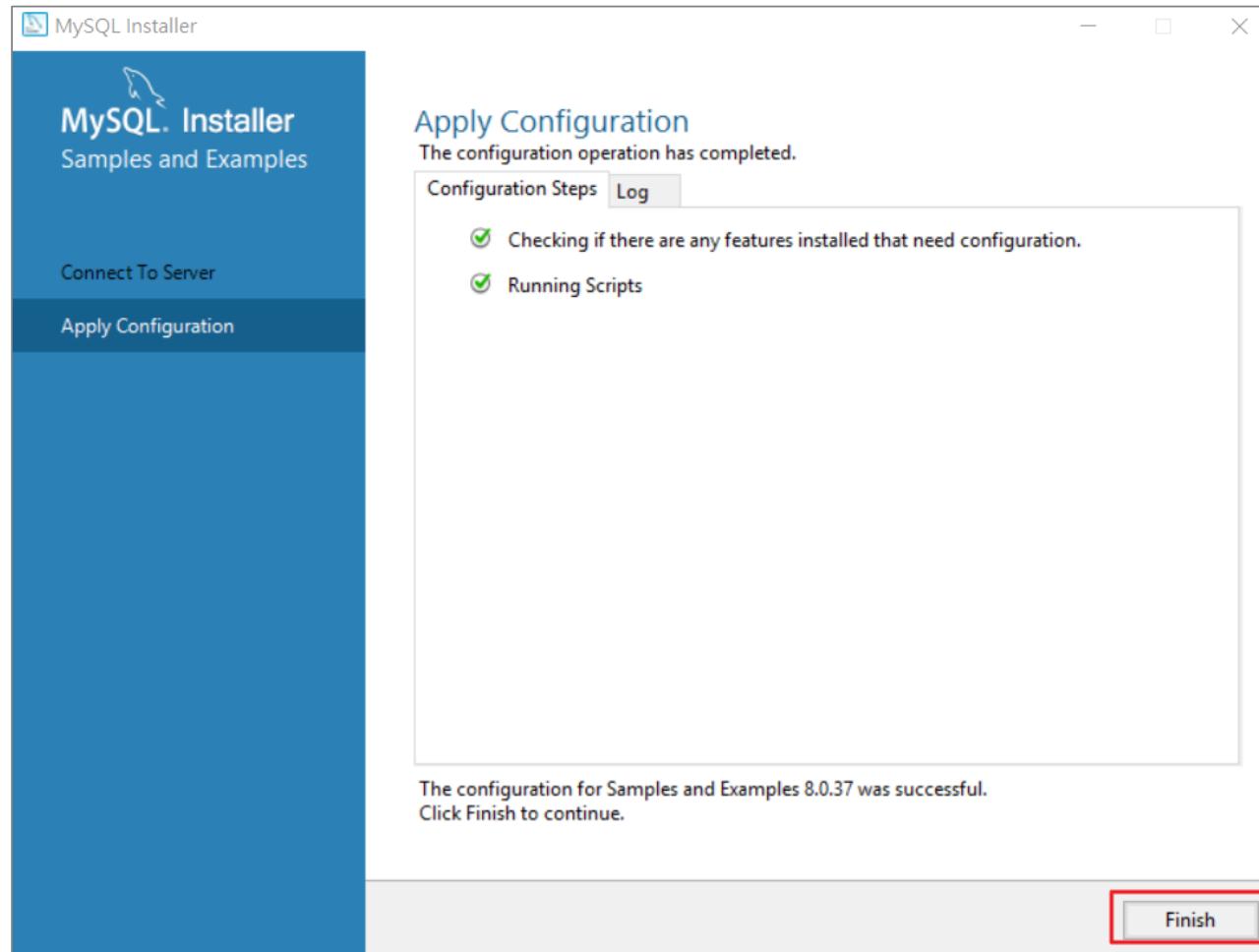
# 連接主機測試



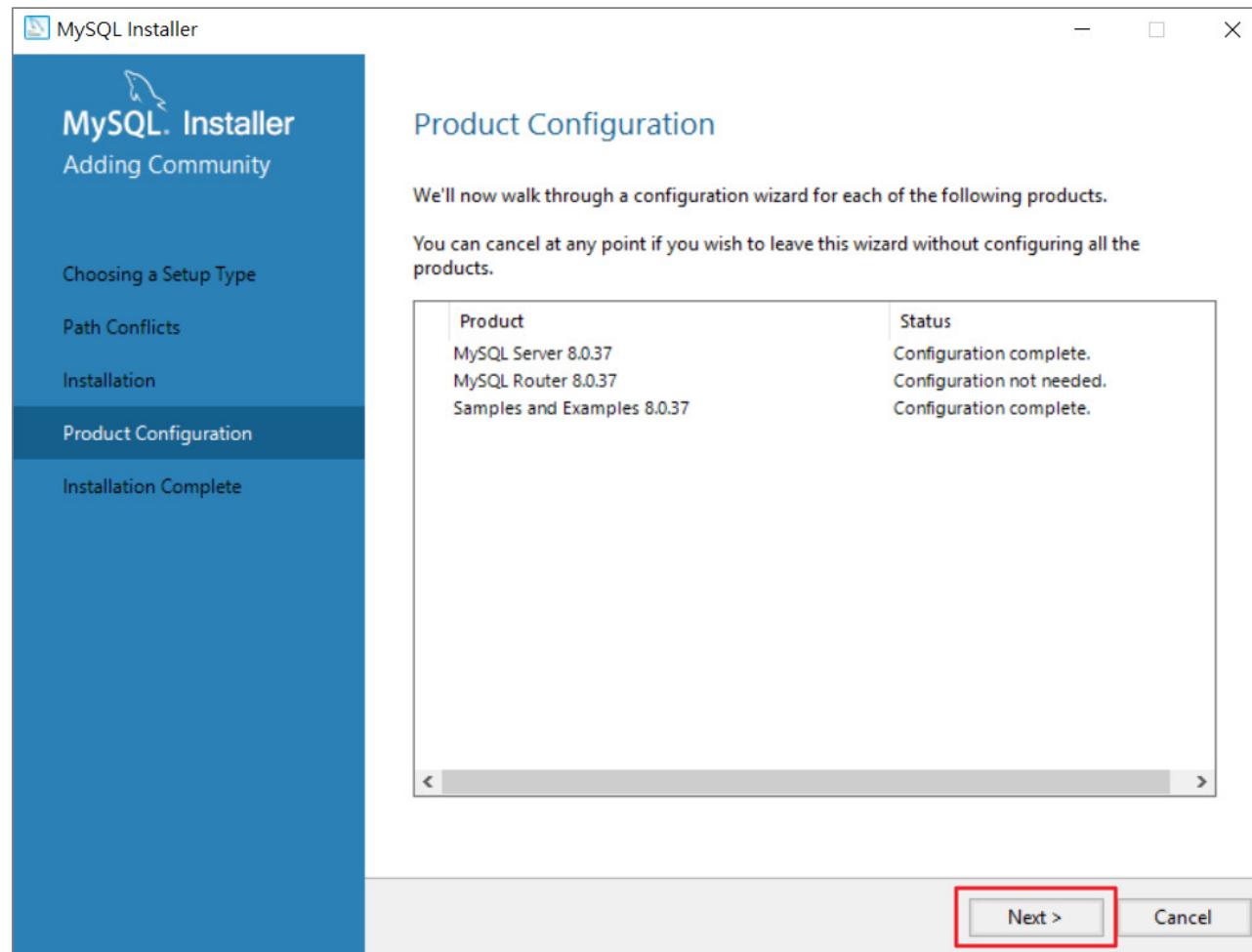
# 套用組態



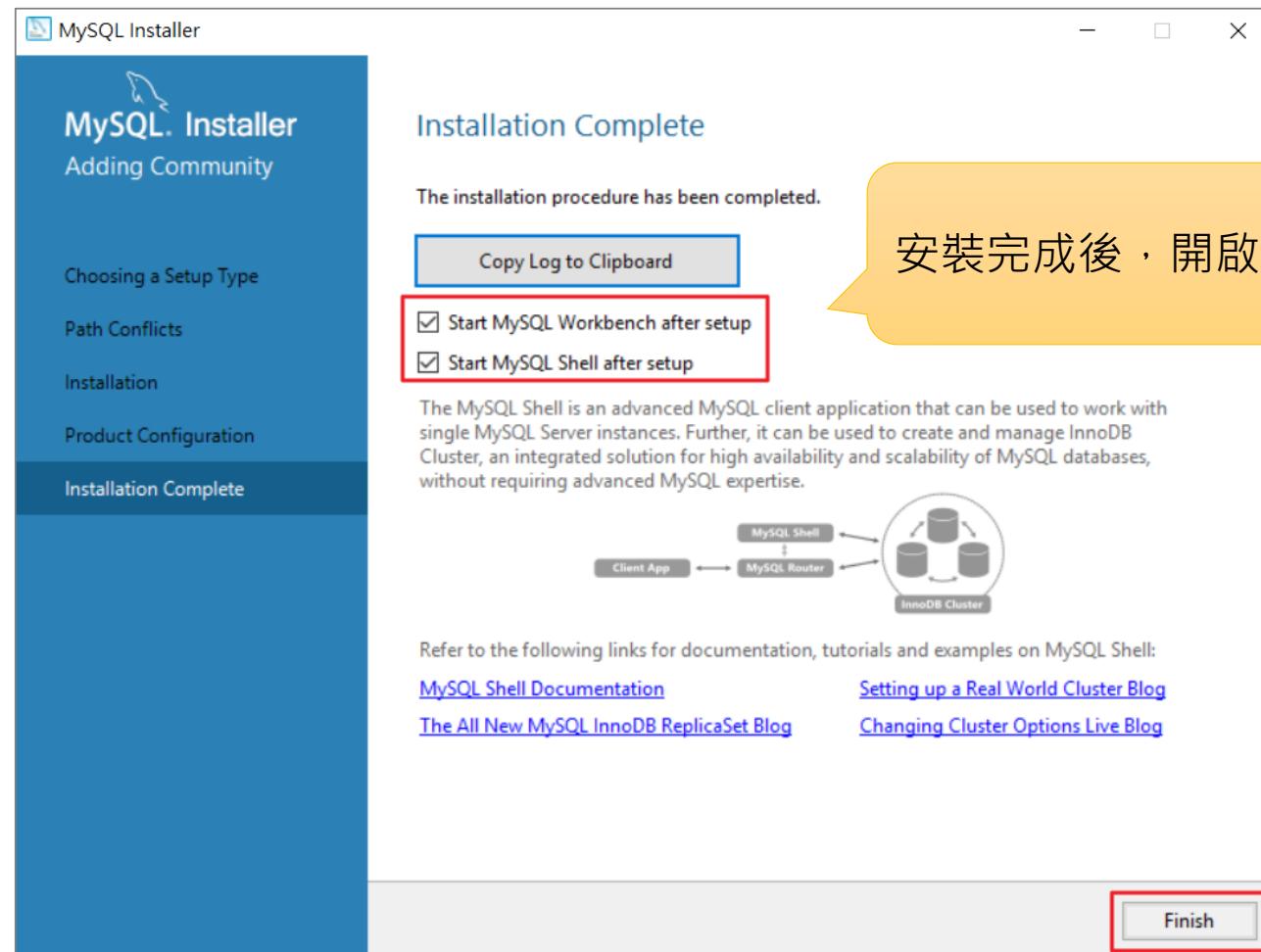
# 套用組態-完成



# 產品組態



# 安裝完成



安裝完成後，開啟二個視窗。

## 2. MySQL Workbench

# MySQL Workbench

The screenshot shows the MySQL Workbench application window. The title bar reads "MySQL Workbench". The menu bar includes File, Edit, View, Database, Tools, Scripting, and Help. The left sidebar has icons for Home, Recent Databases, and Recent Scripts. The main area displays the "Welcome to MySQL Workbench" message. Below it, a paragraph describes MySQL Workbench's features: "MySQL Workbench is the official graphical user interface (GUI) tool for MySQL. It allows you to design, create and browse your database schemas, work with database objects and insert data as well as design and run SQL queries to work with stored data. You can also migrate schemas and data from other database vendors to your MySQL database." At the bottom of the main area are three links: "Browse Documentation >", "Read the Blog >", and "Discuss on the Forums >". The "MySQL Connections" section shows a single connection named "Local instance MySQL80" with a user "root" and host "localhost:3306". This connection is highlighted with a red rectangular border. A "Filter connections" button is located to the right of the connection list.

MySQL Workbench

File Edit View Database Tools Scripting Help

Welcome to MySQL Workbench

MySQL Workbench is the official graphical user interface (GUI) tool for MySQL. It allows you to design, create and browse your database schemas, work with database objects and insert data as well as design and run SQL queries to work with stored data. You can also migrate schemas and data from other database vendors to your MySQL database.

Browse Documentation >

Read the Blog >

Discuss on the Forums >

MySQL Connections + ?

Local instance MySQL80

root  
localhost:3306

Filter connections

# MySQL Workbench

The screenshot shows the MySQL Workbench interface with the following highlights:

- 1** The title bar "MySQL Workbench" is highlighted with a red box.
- 2** The SQL editor window titled "Query 1" contains the following code:

```
1 • USE sakila;
2 • SELECT * FROM rental;|
```

The second line of the code, "SELECT \* FROM rental;", is highlighted with a red box.
- 3** The "Result Grid" pane displays the results of the executed query. The first three rows of the "rental" table are shown:

rental_id	rental_date	inventory_id	customer_id	return_date
1	2005-05-24 22:53:30	367	130	2005-05-26 22:00:00
2	2005-05-24 22:54:33	1525	459	2005-05-28 19:53:00
3	2005-05-24 23:03:39	1711	408	2005-06-01 22:00:00

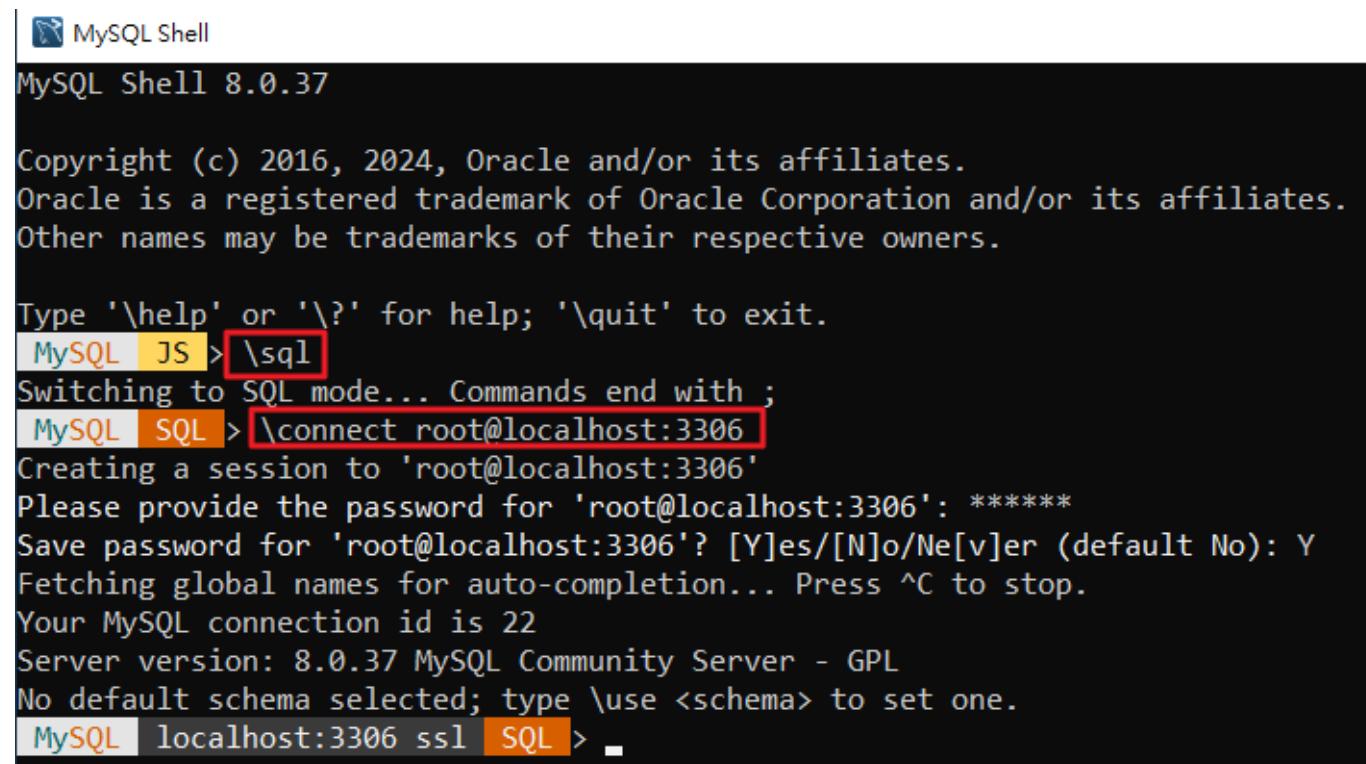
A red box highlights the entire result grid area, and a callout bubble points to the "Result Grid" button in the toolbar above the grid.

- USE sakila;
- SELECT \* FROM rental;

### 3. MySQL Shell

# MySQL Shell – SQL 範例

- \sql 切換至SQL模式
- \connect root@localhost:3306 連接資料庫



```
MySQL Shell 8.0.37

Copyright (c) 2016, 2024, Oracle and/or its affiliates.
Oracle is a registered trademark of Oracle Corporation and/or its affiliates.
Other names may be trademarks of their respective owners.

Type '\help' or '\?' for help; '\quit' to exit.
MySQL JS > \sql
Switching to SQL mode... Commands end with ;
MySQL SQL > \connect root@localhost:3306
Creating a session to 'root@localhost:3306'
Please provide the password for 'root@localhost:3306': *****
Save password for 'root@localhost:3306'? [Y]es/[N]o/Ne[v]er (default No): Y
Fetching global names for auto-completion... Press ^C to stop.
Your MySQL connection id is 22
Server version: 8.0.37 MySQL Community Server - GPL
No default schema selected; type \use <schema> to set one.
MySQL localhost:3306 ssl SQL >
```

# \status 資料庫狀態

```
選取 MySQL Shell
MySQL localhost:3306 ssl SQL > \status
MySQL Shell version 8.0.37

Connection Id: 22
Current schema:
Current user: root@localhost
SSL: Cipher in use: TLS_AES_256_GCM_SHA384 TLSv1.3
Using delimiter: ;
Server version: 8.0.37 MySQL Community Server - GPL
Protocol version: Classic 10
Client library: 8.0.37
Connection: localhost via TCP/IP
TCP port: 3306
Server characterset: utf8mb4
Schema characterset: utf8mb4
Client characterset: utf8mb4
Conn. characterset: utf8mb4
Result characterset: utf8mb4
Compression: Disabled
Uptime: 1 hour 24 min 35.0000 sec

Threads: 2 Questions: 6575 Slow queries: 0 Opens: 367 Flush tables: 3 Open tables: 275 Queries per second avg: 1.295
MySQL localhost:3306 ssl SQL >
```

# SHOW databases; 顯示資料庫

```
MySQL | localhost:3306 ssl SQL > SHOW databases;
+-----+
| Database           |
+-----+
| information_schema |
| mysql               |
| performance_schema |
| sakila              |
| sys                |
| world               |
+-----+
6 rows in set (0.0021 sec)
MySQL | localhost:3306 ssl SQL >
```

包括 sakila, world 等資料庫

# USE sakila; 使用資料庫

## SELECT \* FROM rental limit 6; 檢詢前6筆資料

```
選取 MySQL Shell
MySQL | localhost:3306 ssl SQL > USE sakila;
Default schema set to `sakila`.
Fetching global names, object names from `sakila` for auto-completion... Press ^C to stop.
MySQL | localhost:3306 ssl sakila SQL > SELECT * FROM rental limit 6;
+-----+-----+-----+-----+-----+-----+-----+
| rental_id | rental_date | inventory_id | customer_id | return_date | staff_id | last_update |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | 2005-05-24 22:53:30 | 367 | 130 | 2005-05-26 22:04:30 | 1 | 2006-02-15 21:30:53 |
| 2 | 2005-05-24 22:54:33 | 1525 | 459 | 2005-05-28 19:40:33 | 1 | 2006-02-15 21:30:53 |
| 3 | 2005-05-24 23:03:39 | 1711 | 408 | 2005-06-01 22:12:39 | 1 | 2006-02-15 21:30:53 |
| 4 | 2005-05-24 23:04:41 | 2452 | 333 | 2005-06-03 01:43:41 | 2 | 2006-02-15 21:30:53 |
| 5 | 2005-05-24 23:05:21 | 2079 | 222 | 2005-06-02 04:33:21 | 1 | 2006-02-15 21:30:53 |
| 6 | 2005-05-24 23:08:07 | 2792 | 549 | 2005-05-27 01:32:07 | 1 | 2006-02-15 21:30:53 |
+-----+-----+-----+-----+-----+-----+-----+
6 rows in set (0.0024 sec)
MySQL | localhost:3306 ssl sakila SQL >
```

## 4.RStudio 連接MySQL三大方法

# RStudio 連結MySQL

- 方法1 使用 RStudio \ Connections 視窗
- 方法2 使用`odbc::dbConnect`+寫入密碼 → 資安問題!
- 方法3 使用`odbc::dbConnect`+詢問密碼



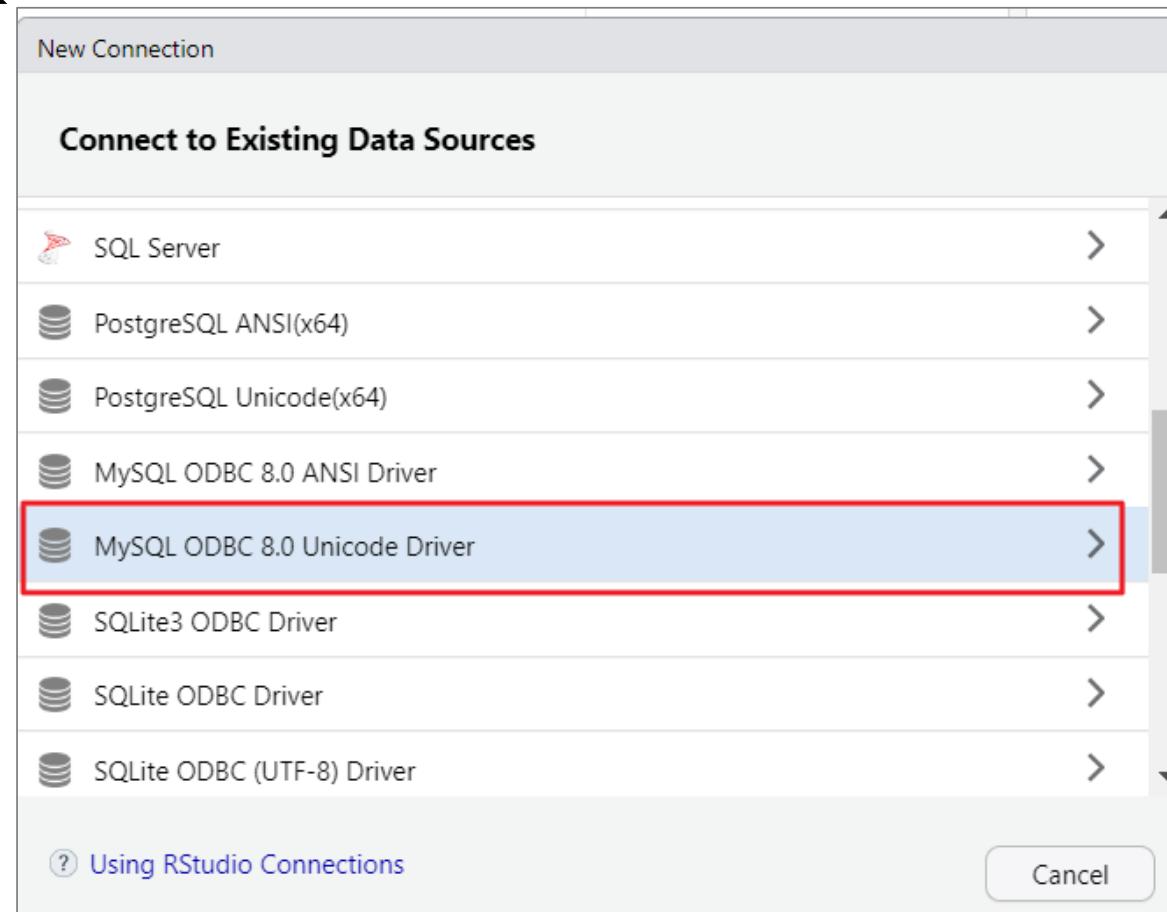
# 方法1使用 RStudio \ Connections 視窗

- RStudio \ Connections \ New Connection



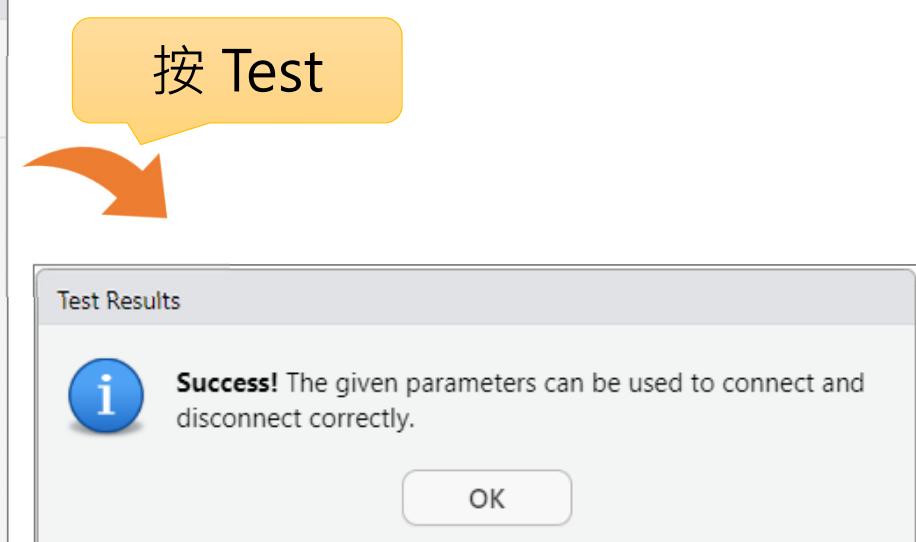
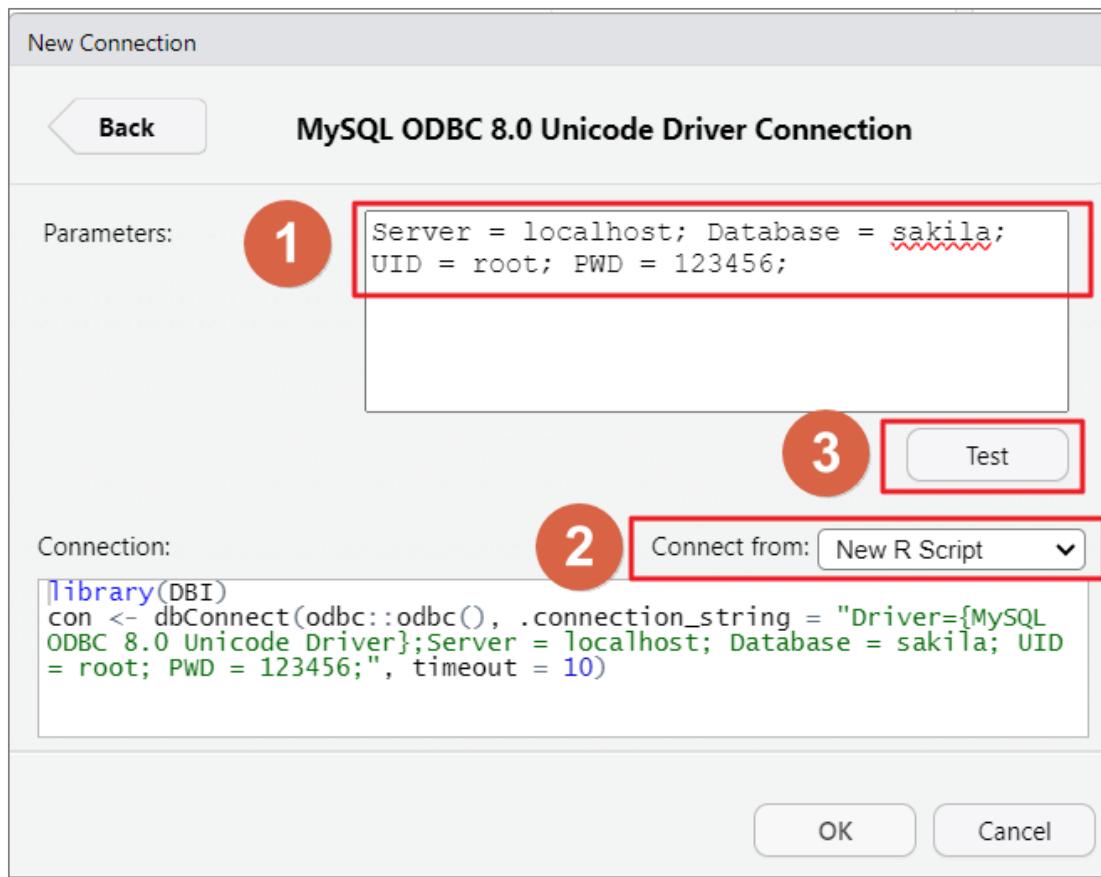
# New Connection

- 選取 MySQL ODBC 8.0 Unicode Driver



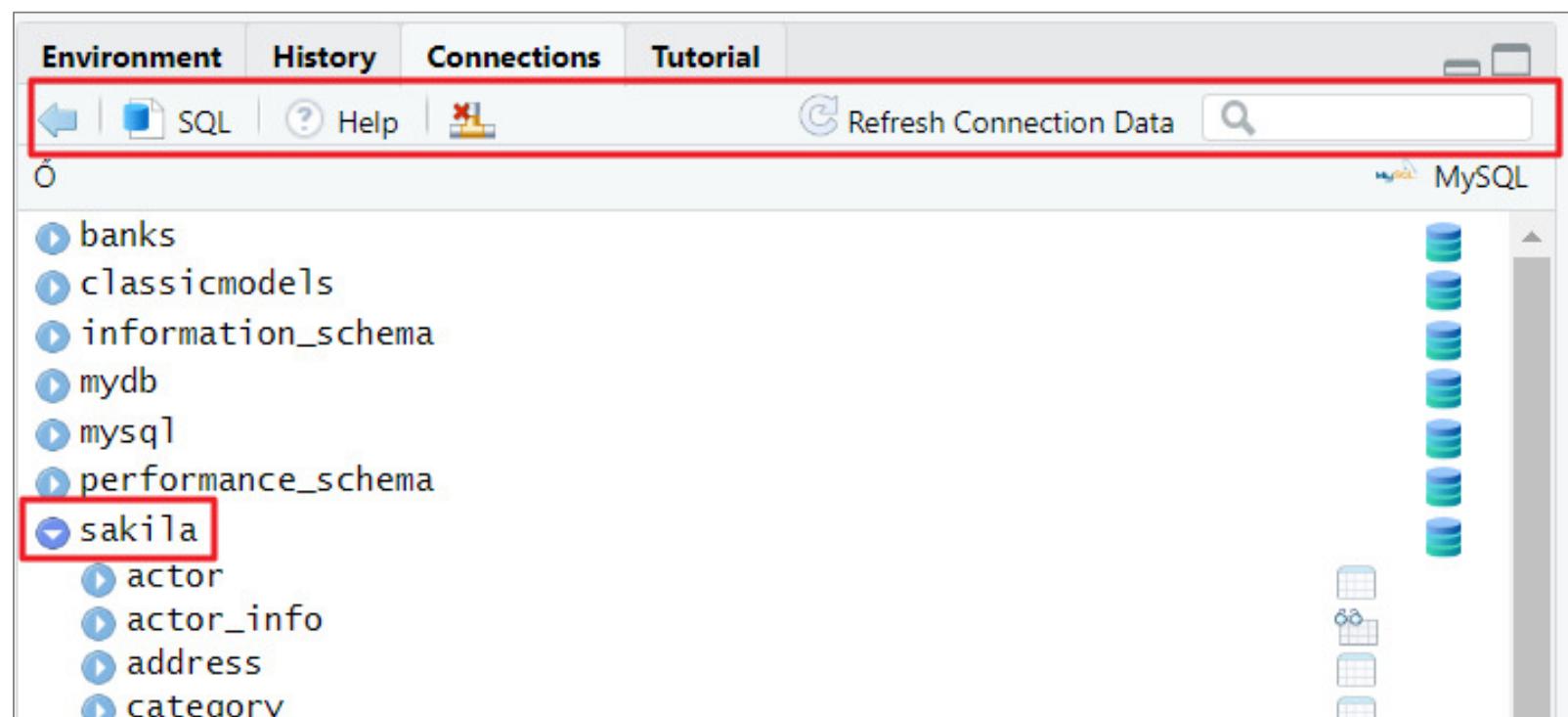
# Test Results

- Server = localhost; Database = sakila; UID = root; PWD = 123456;



# sakila 資料庫

- 取消連線



# 方法2 使用odbc::dbConnect+寫入密碼

- 資安問題!

```
# 方法2 使用dbConnect+寫入密碼
library(odbc)
con <- dbConnect(odbc::odbc(), .connection_string = "Driver={MySQL ODBC 8.0 Unicode Driver}
;Server = localhost; Database = sakila; UID = root; PWD = 123456;", timeout = 10)
```



# odbcListObjects

```
> # 顯示資料庫  
> odbcListObjects(con)  
      name    type  
1      banks catalog  
2 classicmodels catalog  
3 information_schema catalog  
4      mydb catalog  
5      mysql catalog  
6 performance_schema catalog  
7      sakila catalog  
8      sys catalog  
9      world catalog  
>
```

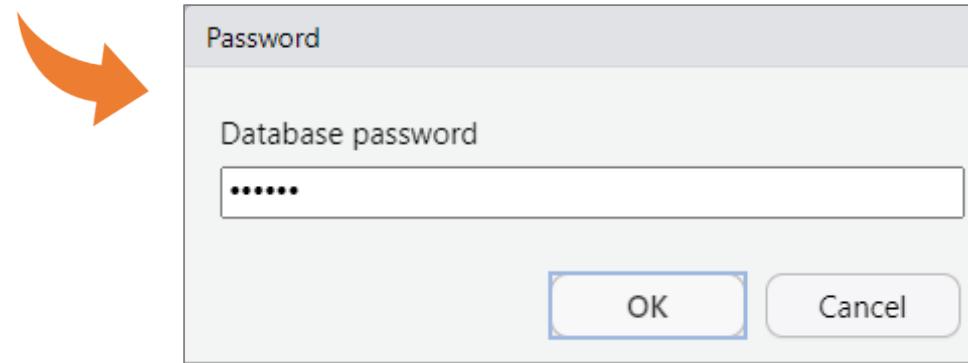
```
> # 顯示資料庫中資料表, 檢視等物件  
> odbcListObjects(con, catalog="sakila")  
      name    type  
1      actor table  
2 actor_info view  
3      address table  
4      category table  
5      city table  
6      country table  
7      customer table  
8 customer_list view  
9      datetimedata table  
10      film table
```

# dbGetQuery

```
> # 使用 SQL查詢資料
> df <- dbGetQuery(con, "SELECT * FROM rental")
> class(df) # data.frame
[1] "data.frame"
> head(df)
  rental_id      rental_date inventory_id customer_id      return_date staff_id      last_update
1          1 2005-05-24 22:53:30         367          130 2005-05-26 22:04:30          1 2006-02-15 21:30:53
2          2 2005-05-24 22:54:33        1525          459 2005-05-28 19:40:33          1 2006-02-15 21:30:53
3          3 2005-05-24 23:03:39        1711          408 2005-06-01 22:12:39          1 2006-02-15 21:30:53
4          4 2005-05-24 23:04:41        2452          333 2005-06-03 01:43:41          2 2006-02-15 21:30:53
5          5 2005-05-24 23:05:21        2079          222 2005-06-02 04:33:21          1 2006-02-15 21:30:53
6          6 2005-05-24 23:08:07        2792          549 2005-05-27 01:32:07          1 2006-02-15 21:30:53
```

# 方法3 使用dbConnect+詢問密碼

```
# 方法3 使用dbConnect+詢問密碼
con <- dbConnect(odbc::odbc(),
                  Driver= "MySQL ODBC 8.0 Unicode Driver",
                  Server = "localhost",
                  Database = "sakila",
                  UID = "root",
                  PWD = rstudioapi::askForPassword("Database password"))
```



# 謝謝您的聆聽

## Q & A



李明昌

*alan9956@gmail.com*

<https://www.youtube.com/@alan9956>

<http://rwepa.blogspot.tw/>