Using the integrated development environment in MySQL workbench to learn database design and SQL

### 利用MySQL workbench 整合開發環境 學習數據庫設計及 SQL 指令

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Hong Kong True Light College

### MySQL Community Edition Server

- Open-source database system
- Popular RDBMS developed by Oracle
- Used by many famous IT company

MySQL® ORACLE

# MySQL Workbench

- MySQL IDE tool
- GUI/CLI SQL development
- Visual modelling
- Database/user administration





### Installation environment

### Standalone

Windows, Linux, macOS etc

### Client-sever

Dedicate/shared server: Windows Server, Linux etc Client PC: Windows, Linux, macOS etc

RMDBS Software: MySQL Installer 8.0.29 (latest version) (Including MySQL Community Server, MySQL Workbench)

# Download MySQL Installer

- Output Community Downloads
  - MySQL Installer

Genera	l Availability	(GA)	Releases	Archives
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#### MySQL Installer 8.0.29



1)

We suggest that you use the MD5 checksums and GnuPG signatures to verify the integrity of the packages you download.

### Execute MySQL Installer



<u>C</u>ancel

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### Standalone computer

MySQL Installer

MySQL Server MySQL Workbench

#### MySQL. Installer Select Products Adding Community Please select the products you would like to install on this computer. Filter: All Software, Current GA, Any Edit Choosing a Setup Type Products To Be Installed: Available Products: Select Products MySQL Workbench 8.0.29 - X64 MySQL Servers MySQL Server MySQL Server 8.0.29 - X64 Download MySQL Server 8.0 MySQL Server 5.7 Installation MySQL Server 5.6 Applications Product Configuration B MySQL Workbench MySQL Workbench 8.0 44 Installation Complete MySQL Shell MySQL Router MySQL Connectors Documentation Enable the Select Features page to customize product features Published: 2022年4月26日 Release Notes: https://dev.mysgl.com/doc/reinotes/mysgl/8.0/en/news-8-0-29.html < Back Next > Cancel

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### **Client-Server model**



### **Client-Server model**



#### × Client PC Select Products Please select the products you would like to install on this computer. Filter: 2 All Software, Current GA, Any Edit Products To Be Installed: Available Products: MySQL Workbench 8.0.29 - X64 MySQL Workbench 8.0 ^ 44 --- MySQL Workbench 8.0.18 - 👽 > €. Enable the Select Features page to customize product features Published: Release Notes < Back Next > Cancel

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Type and Networking	Config Type: Development Computer
Authentication Method	Connectivity
Accounts and Roles	Use the following controls to select how you would like to connect to this server.  Default TCP Port
Windows Service	✓ ICP/IP Poin: 3300 × Protocol Poin: 33000 ✓ Open Windows Firewall ports for network access
Apply Configuration	Named 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
	<u>N</u> ext > <u>Cancel</u>

Type and Networking

Server Configuration Type

#### MySQL Installer

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### MySQL Server 8.0.29

#### Type and Networking

Authentication Method

Accounts and Roles

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Next > Cancel

#### MySQL Installer

MySQL. Installer MySQL Server 8.0.29 Type and Networking Authentication Method	Accounts and Roles Root Account Password Enter the password for the root acco place. MySQL Root Password: Repeat Password:	
Accounts and Roles		
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#### MySQL Installer

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Authentication Method	A unique name is required for each instance. Windows Service Name: MySQL80
Accounts and Roles	Start the MySQL Server at System Startup
Windows Service	
Apply Configuration	<ul> <li>Run Windows Service as</li> <li>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.</li> <li>Standard System Account Recommended for most scenarios.</li> <li>Custom User An existing user account can be selected for advanced scenarios.</li> </ul>
	< <u>B</u> ack <u>N</u> ext >

#### MySQL Installer MySQL. Installer Apply Configuration The configuration operation has completed. MySQL Server 8.0.29 Configuration Steps Log ✓ Writing configuration file Type and Networking ✓ Updating Windows Firewall rules Authentication Method Ø Adjusting Windows service Initializing database (may take a long time) Ø Accounts and Roles Ø Starting the server Windows Service Ø Applying security settings Apply Configuration ✓ Updating the Start menu link

The configuration for MySQL Server 8.0.29 was successful. Click Finish to continue.  $\times$ 

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🔊 MySQL Workbench

MYSQL\_server × ile <u>E</u>dit <u>Vi</u>ew <u>Database Tools Scripting H</u>elp – 🗆 🗙

### 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 >

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MySQL Connections

Create Connection

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#### 📉 MySQL Workbench

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	MySQL Session       Time interval between sending keep-alive messages to DBMS. Set to 0 to not send keep-alive messages.	
	DBMS connection read timeout interval (in seconds): 30 The maximum amount of time the query can take to return data from the DBMS.Set 0 to skip the read timeout.	
	DBMS connection timeout interval (in seconds): 60 Maximum time to wait before a connection attempt is aborted. Other Other	
	Intern Workbench Schema: .mysqlworkbench This schema will be used by MySQL Workbench to store information required for certain operations.	
	Safe Updates (rejects UPDATEs and DELETEs with no restrictions)	¥
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### Create MySQL admin account

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📥 Data Import/Rest	mysql.session localhost	Login Name: user01	You may create multiple accounts with the to connect from different hosts.	ie same name
	newuser %			
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### Create MySQL admin account

🔊 MySQL Workbench					- 🗆	×
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# Create MySQL user/student account and database

- Create user
  - CREATE USER 'user\_id'@'%' IDENTIFIED BY ' user\_password ';
- Create database
  - CREATE DATABASE `user\_db`;
- Grant/remove rights on specific database
- GRANT ALL PRIVILEGES ON user\_db.\* TO 'user\_id'@'%';
- REVOKE DROP, ALTER ON user db.\* FROM 'user id'@'%';

### SQL sample script

- Student username: S2022001, password: s2022001Stu
- Create user and database
- CREATE USER 's2022001'@'%' IDENTIFIED BY 's2022001Stu';CREATE DATABASE `s2022001`;GRANT ALL PRIVILEGES ON s2022001.\* TO 's2022001'@'%';REVOKE DROP, ALTER ON s2022001.\* FROM 's2022001'@'%';

#### Create second database

CREATE DATABASE `s2022001\_classwork`;GRANT ALL PRIVILEGES ON s2022001\_classwork.\* TO 's2022001'@'%';REVOKE DROP, ALTER ON s2022001 classwork.\* FROM 's2022001'@'%';

# Create Bulk Users Accounts and databases from Excel spreadsheet

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	Username: root Name of the user to connect	with.
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rieve Objects	Press show Logs to see the execution logs.
ect Objects	
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	Execution Completed Successfully
	Fetch finished.

Show Logs

Back

Next Cancel

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Show Logs

Connection Options         Retrieve and Reverse Engineer Schema Objects           elect Schemas         The following tasks will now be executed. Please monitor the execution. Press Show Logs to see the execution logs.           elect Objects         Image: Retrieve Objects from Selected Schemas           everse Engineer         Image: Retrieval Completed Successfully           retrieve Image: Retrieval Completed Successfully         Finished.		Reverse Engineer Database
onnect to DBMS       The following tasks will now be executed. Please monitor the execution. Press Show Logs to see the execution logs.         elect Objects       Image: Completed Schemas         everse Engineer       Image: Completed Successfully         esuits       Retrieval Completed Successfully         Finished.       Finished.	on Options	Retrieve and Reverse Engineer Schema Objects
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	I Market I	

Next

Cancel

Back



	Reverse Engineer Database
Connection Options Connect to DBMS Select Schemas	Select Objects to Reverse Engineer
Retrieve Objects Select Objects Reverse Engineer Results	Import MySQL Table Objects     If the Filter     Import MySQL Table Objects     Itew.book     tew.loanrecord     tew.student
	Show Use the + button to exclude objects matching wildcards such as * and ?
	Import MySQL View Objects     Show Filter
	✓ Place imported objects on a diagram          Back       Execute >       Cancel

	Reverse Engineer Database
Connection Options	Reverse Engineering Progress
Connect to DBMS	
Select Schemas	The following tasks will now be executed. Please monitor the execution.
Retrieve Objects	Press Show Logs to see the execution logs.
Select Objects	
Reverse Engineer	Place Objects on Diagram
	Operation Completed Successfully
	Show Loos Back Nevt Cancel



### Remote Connections to MySQL server

Server/firewall/Router Setting

NAT

- Port forwarding (Don't use default TCP 3306)
- ACL on firewall
- Restrict local access of root account
  - Change "%" to "localhost" on "Limit to Hosts Matching"
- Use complex password
- MYSQL Workbench
  - Change IP address from private to public IP
  - Change TCP port