

Basi di Dati: Laboratorio



MySQL: Installazione e uso base

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Corso di Basi di Dati

Anno Accademico 2018/19

Outline

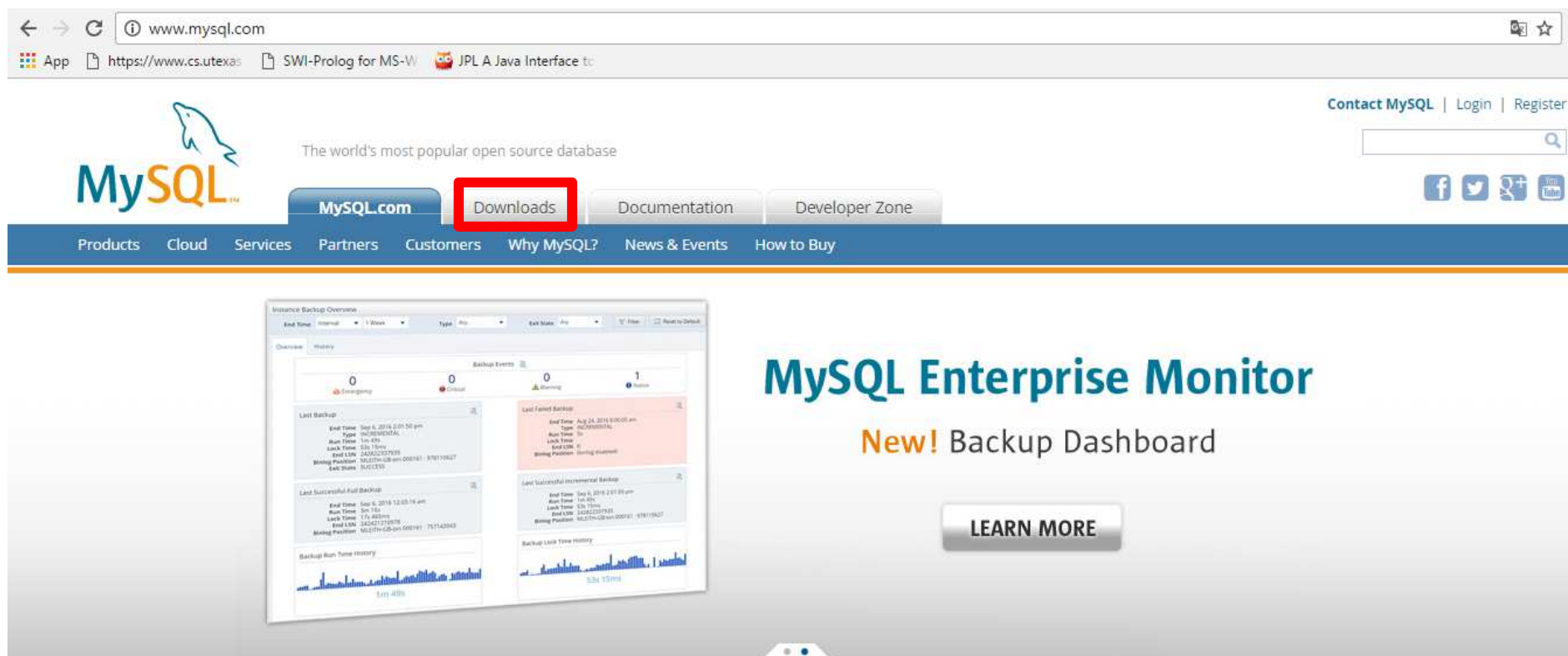
- ▶ Cos'è MySQL
- ▶ Download ed Installazione
- ▶ Configurazione
- ▶ MySQL Workbench
- ▶ Un caso di studio: database di un'università
 - ▶ Creazione di un database
 - ▶ Creazione di tabelle
 - ▶ Definizione dei vincoli di integrità referenziale
 - ▶ Inserimento e modifica dei dati

MySQL

- ▶ MySQL è un Database Management System (DBMS) Relazionale
- ▶ È uno dei DBMS più utilizzati al mondo perché:
 - ▶ È Open Source, ed è gratuito;
 - ▶ È disponibile su Molti sistemi operativi;
 - ▶ È relativamente leggero;
 - ▶ È semplice da amministrare;
 - ▶ È molto performante, non è un DBMS giocattolo
- ▶ Supporta transazioni ACID, Stored Procedure, Viste, Trigger, Transazioni distribuite, DBMS Federati...

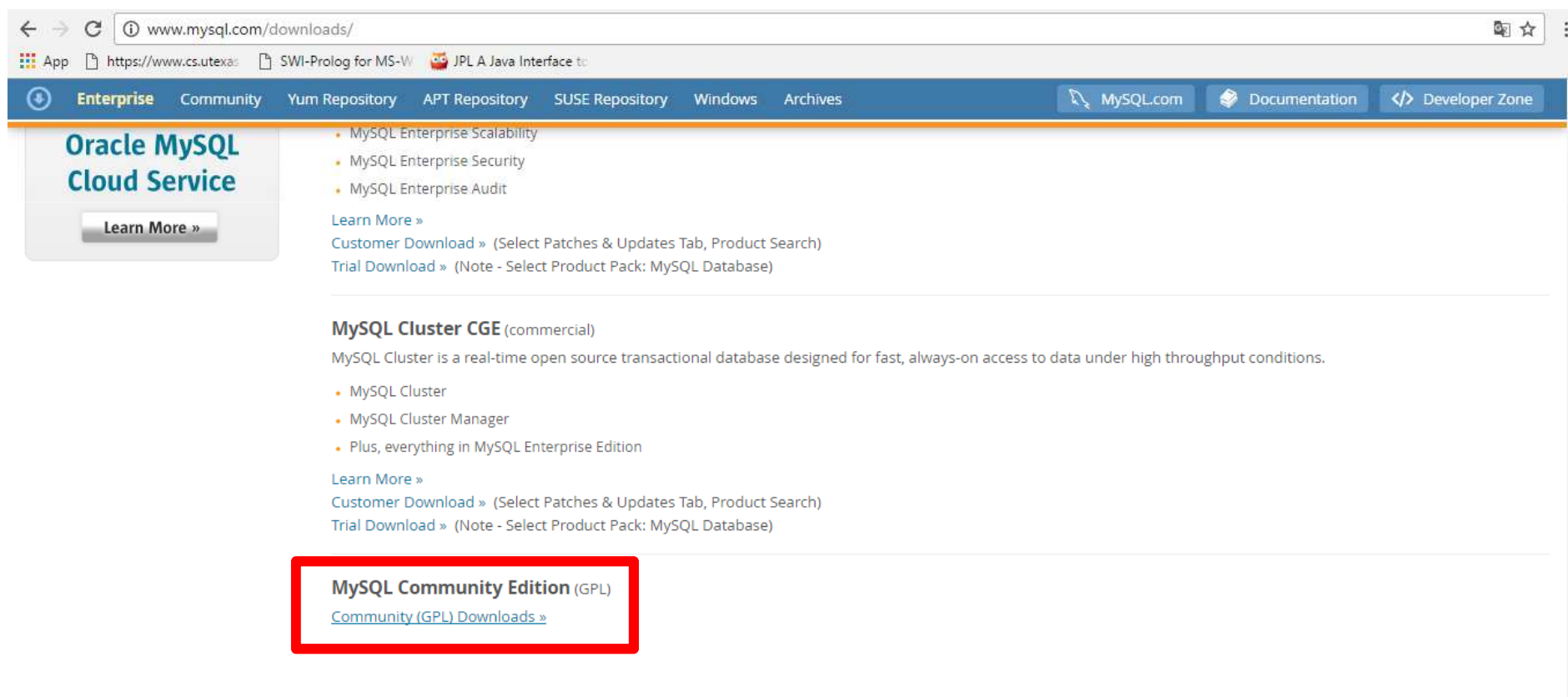
Download ed Installazione

- ▶ È attualmente disponibile gratuitamente
 - ▶ <http://www.mysql.com>



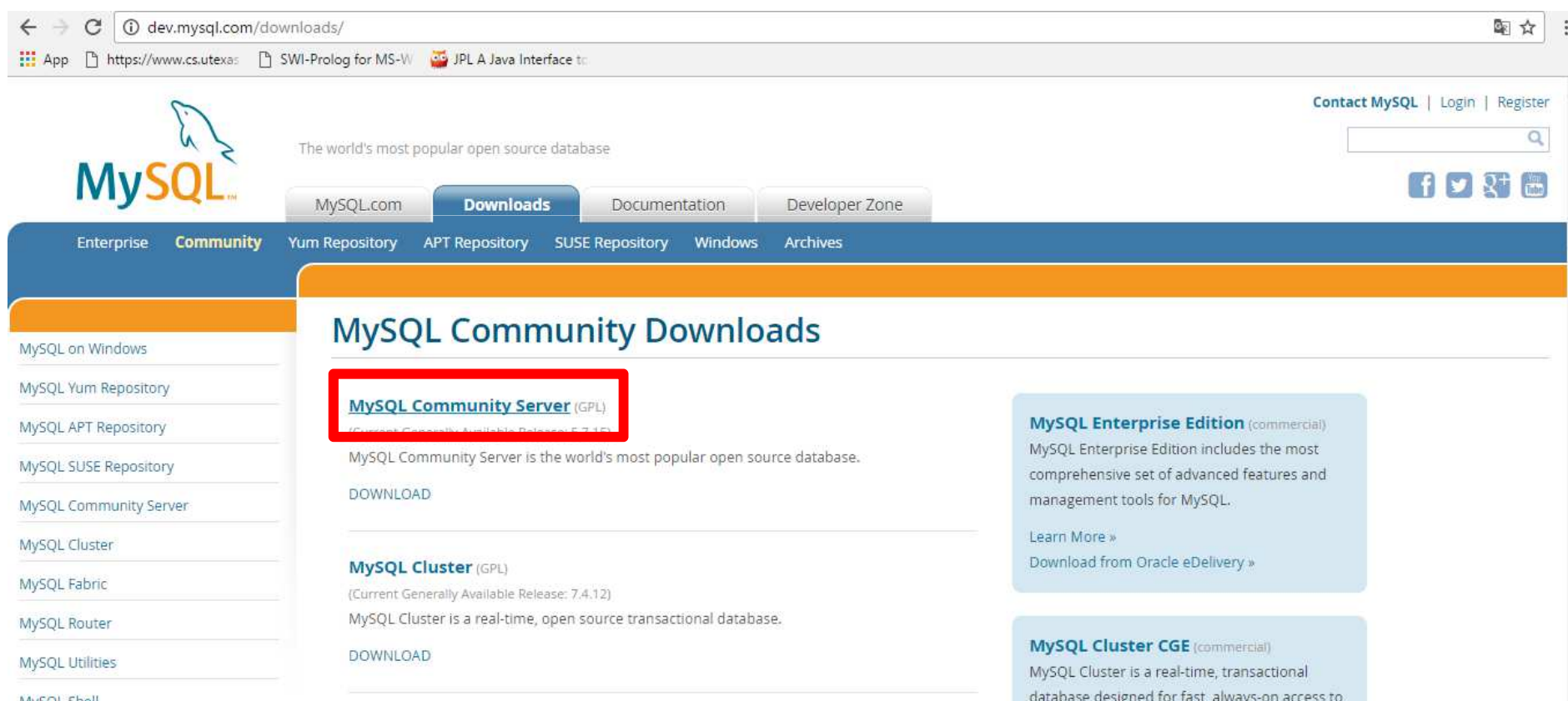
Download ed Installazione

- ▶ È attualmente disponibile gratuitamente
- ▶ <http://www.mysql.com/downloads/>

A screenshot of the MySQL download page on the official website. The browser address bar shows 'www.mysql.com/downloads/'. The page has a blue navigation bar with links for Enterprise, Community, Yum Repository, APT Repository, SUSE Repository, Windows, Archives, MySQL.com, Documentation, and Developer Zone. On the left, there's a sidebar for 'Oracle MySQL Cloud Service' with a 'Learn More »' button. The main content area lists MySQL Enterprise Scalability, Security, and Audit, followed by a 'Learn More »' link and 'Customer Download »' and 'Trial Download »' links. Below this, it features 'MySQL Cluster CGE (commercial)' with a description and a list of features: MySQL Cluster, MySQL Cluster Manager, and 'Plus, everything in MySQL Enterprise Edition'. It also has 'Learn More »', 'Customer Download »', and 'Trial Download »' links. At the bottom, a red box highlights the 'MySQL Community Edition (GPL)' section, which includes a link to 'Community (GPL) Downloads »'.

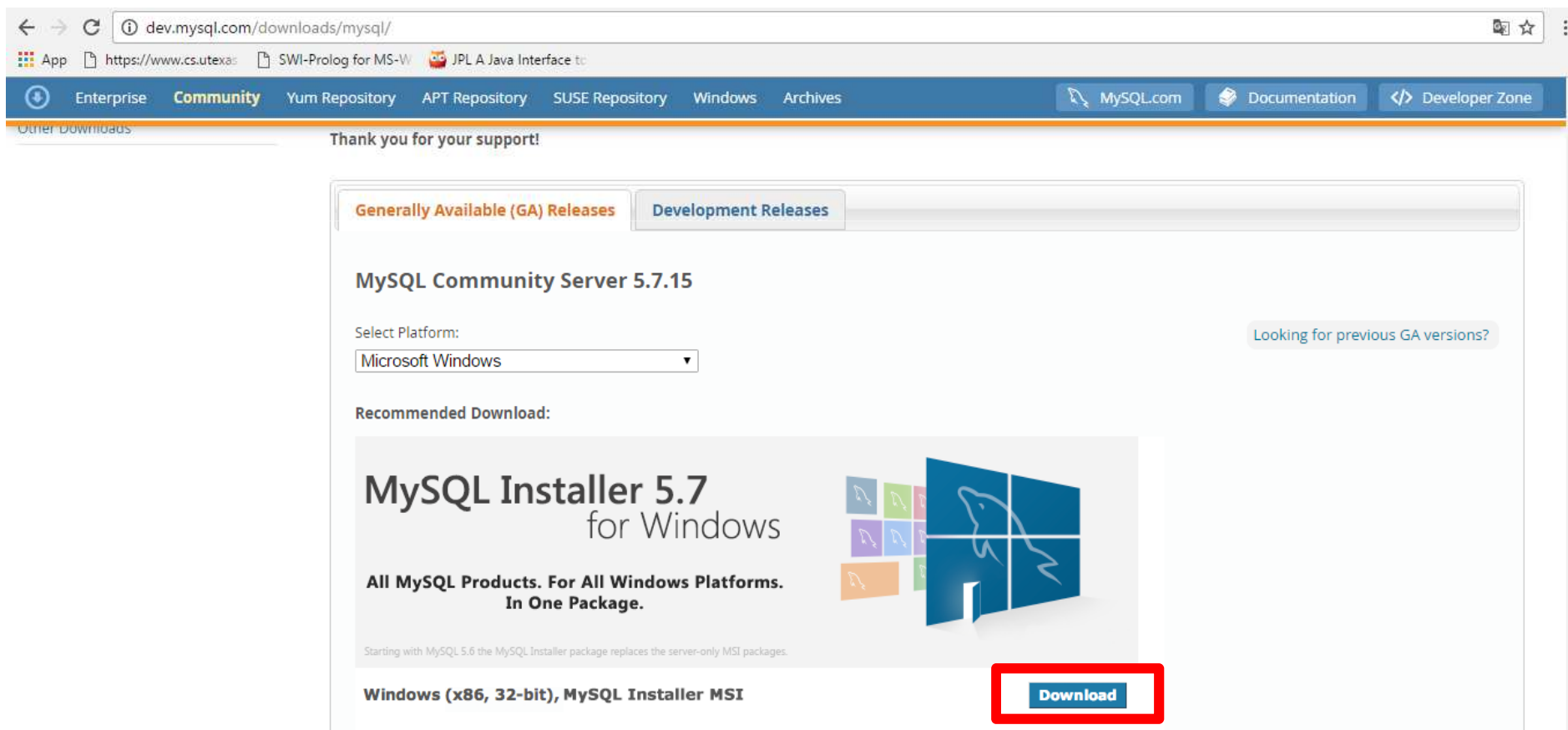
Download ed Installazione

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- ▶ <http://www.mysql.com/downloads/>



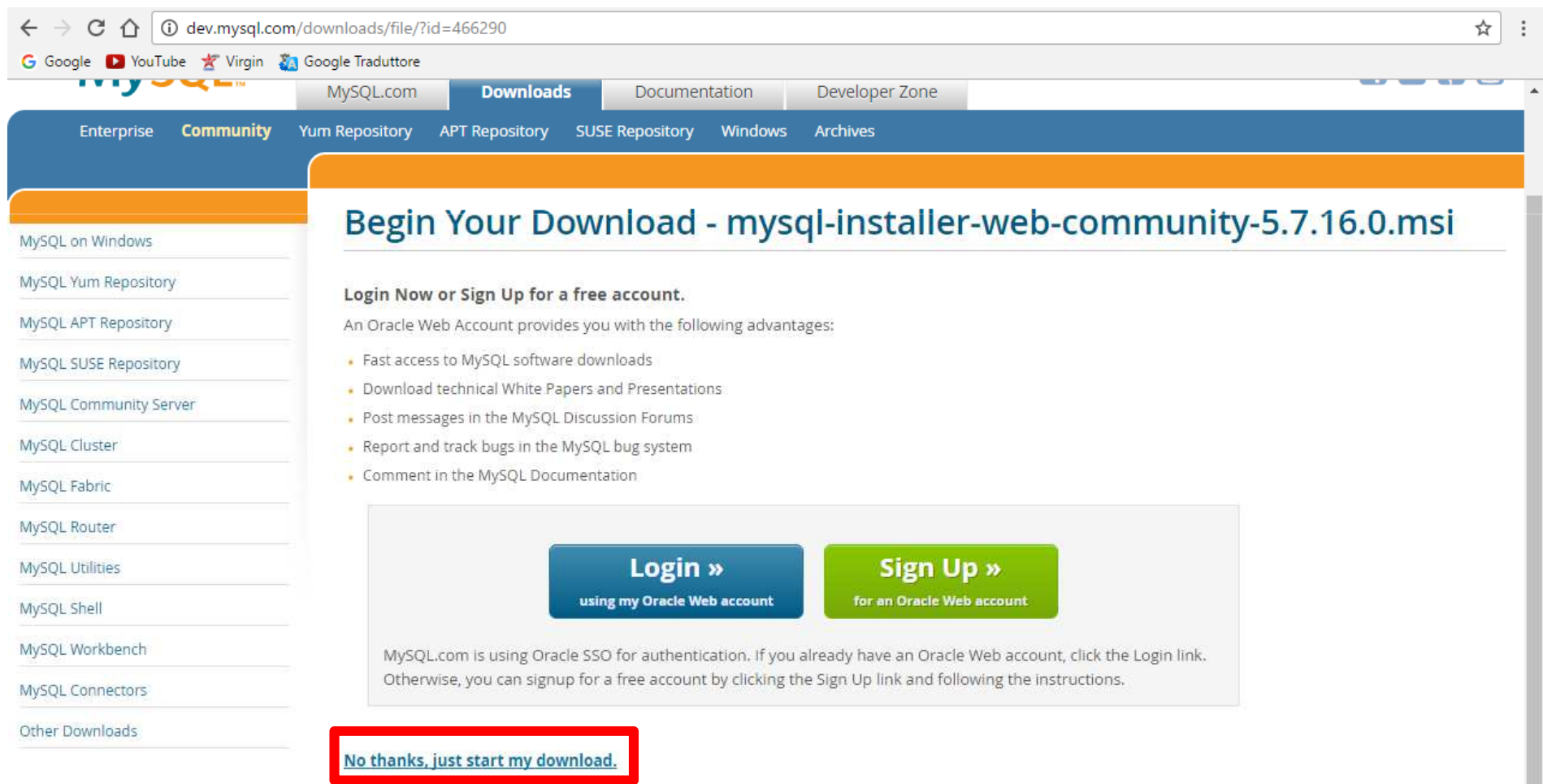
Download ed Installazione

- ▶ È attualmente disponibile gratuitamente
- ▶ <http://www.mysql.com/downloads/>



Download ed Installazione

- ▶ È attualmente disponibile gratuitamente
- ▶ <http://www.mysql.com/downloads/>



The screenshot shows a web browser window with the URL `dev.mysql.com/downloads/file/?id=466290`. The page is titled "Begin Your Download - mysql-installer-web-community-5.7.16.0.msi". It features a navigation bar with links to "Enterprise", "Community", "Yum Repository", "APT Repository", "SUSE Repository", "Windows", and "Archives". A sidebar on the left lists various MySQL products. The main content area prompts the user to "Login Now or Sign Up for a free account." and lists advantages of an Oracle Web Account. Two buttons, "Login »" and "Sign Up »", are provided. A red box highlights the link "No thanks, just start my download." at the bottom.

MySQL on Windows

MySQL Yum Repository

MySQL APT Repository

MySQL SUSE Repository

MySQL Community Server

MySQL Cluster

MySQL Fabric

MySQL Router

MySQL Utilities

MySQL Shell

MySQL Workbench

MySQL Connectors

Other Downloads

Begin Your Download - mysql-installer-web-community-5.7.16.0.msi

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
- Comment in the MySQL Documentation

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.](#)

Download ed Installazione

MySQL Installer - Community



Please wait while Windows configures MySQL Installer - Community

Gathering required information...



Cancel



MySQL Installer 1.4

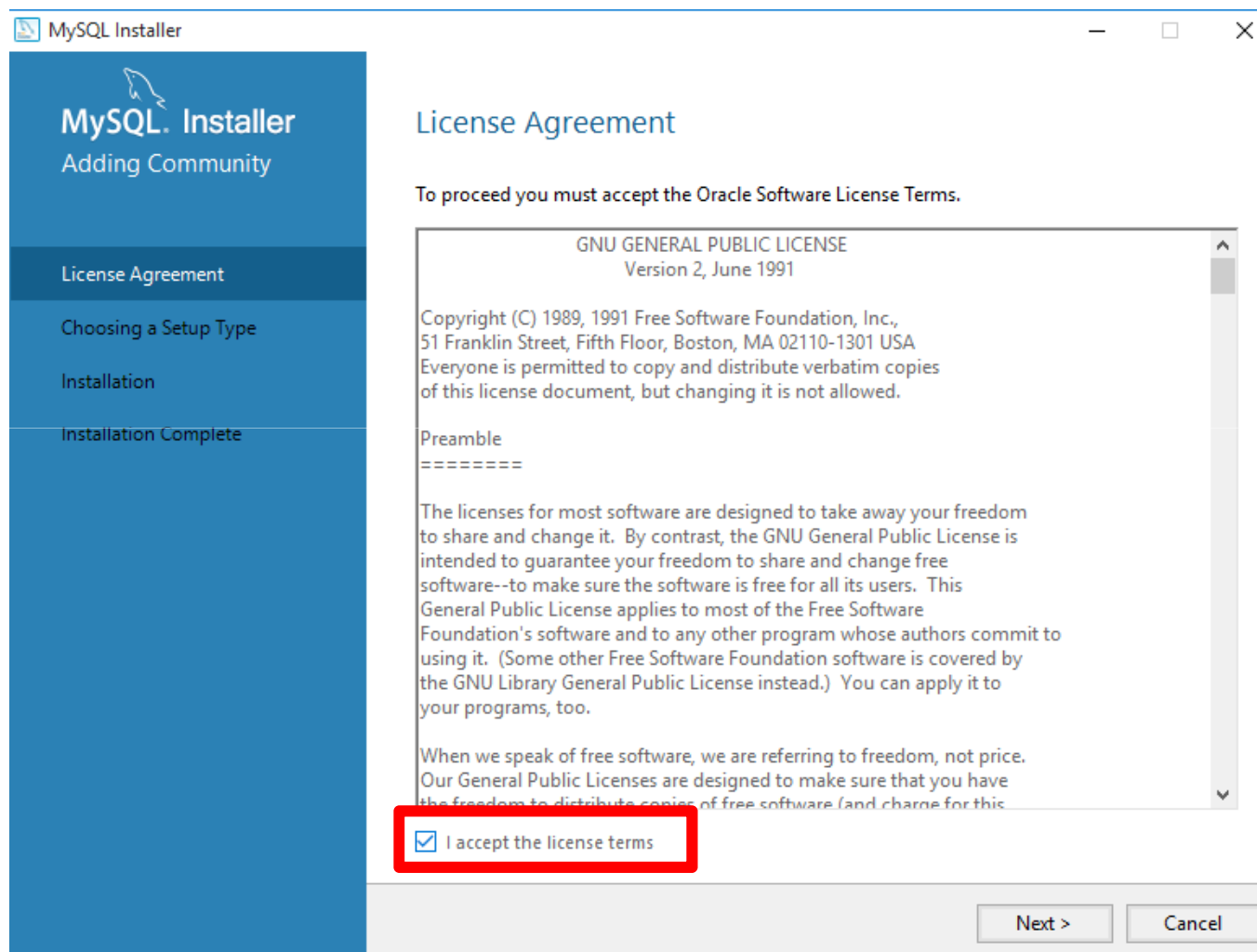
Finding all installed packages.

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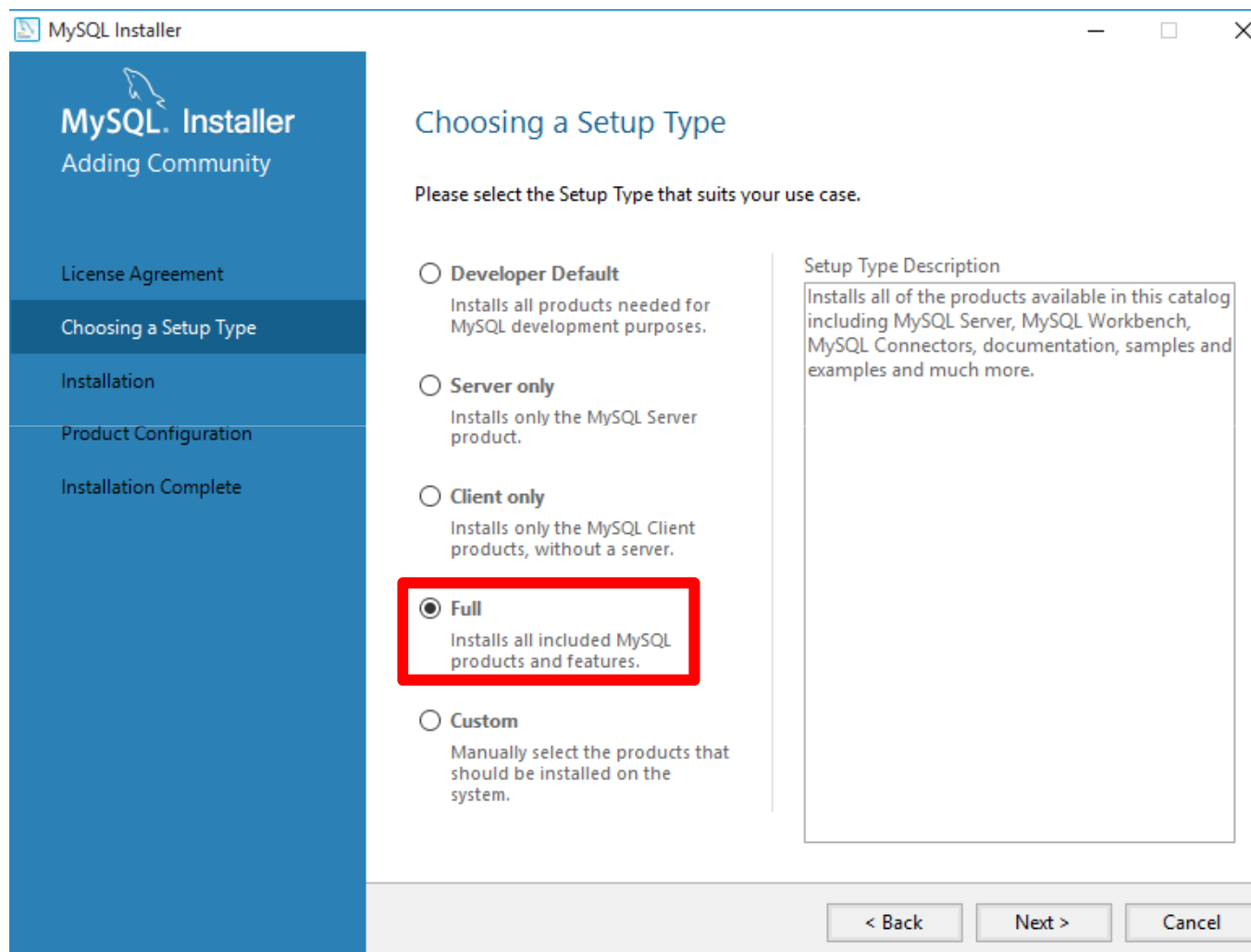
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Other names may be trademarks of their respective owners.

ORACLE

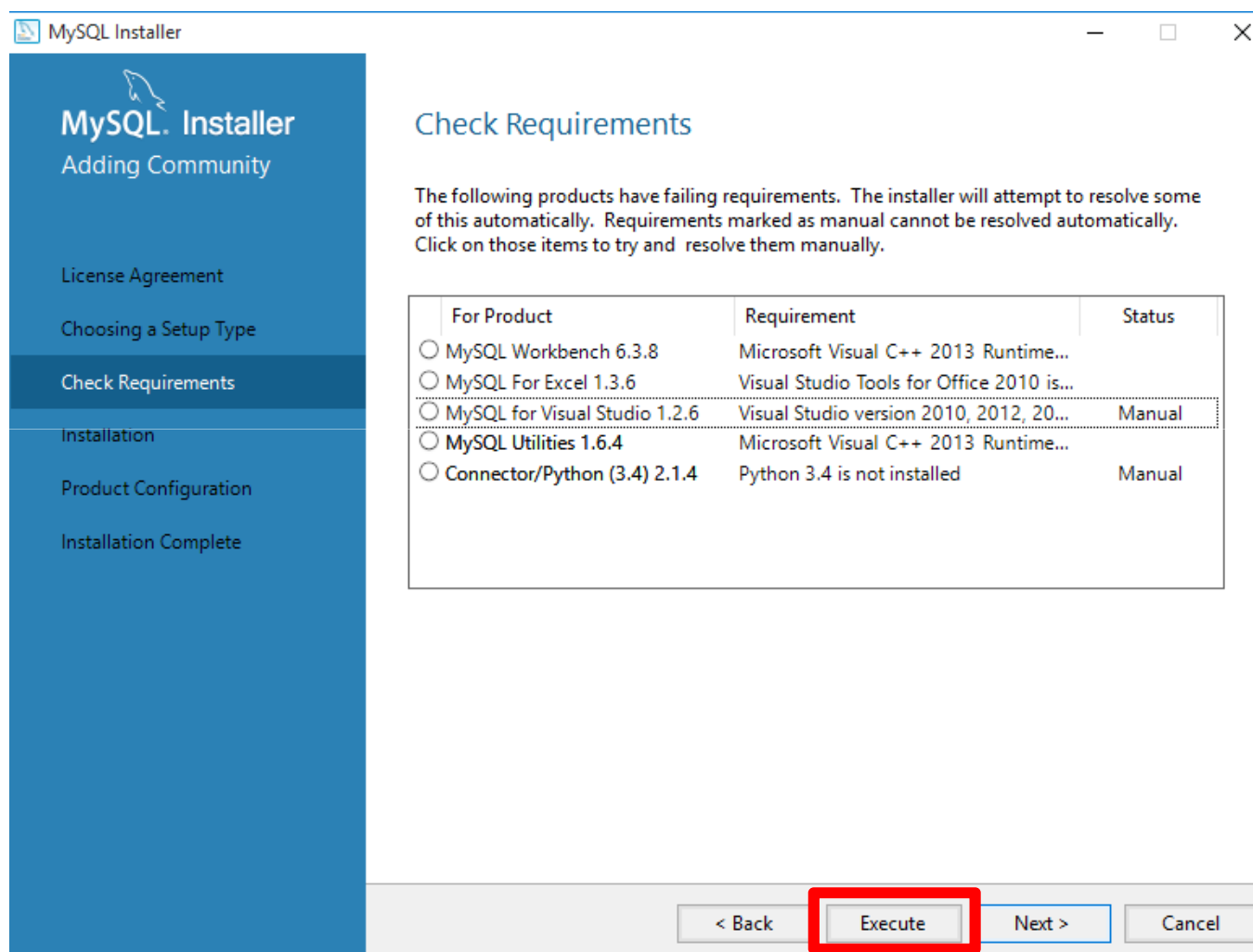
Download ed Installazione



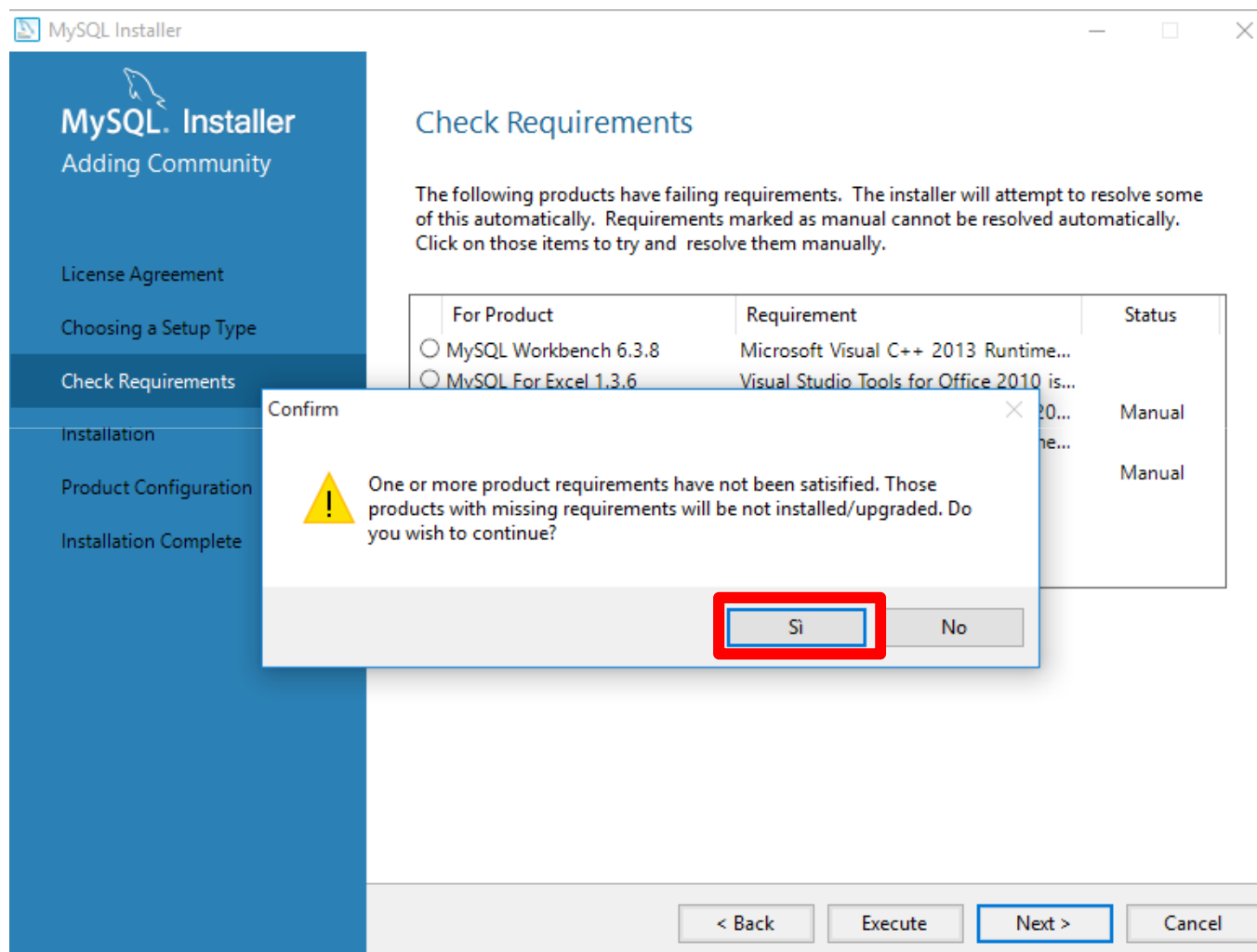
Download ed Installazione



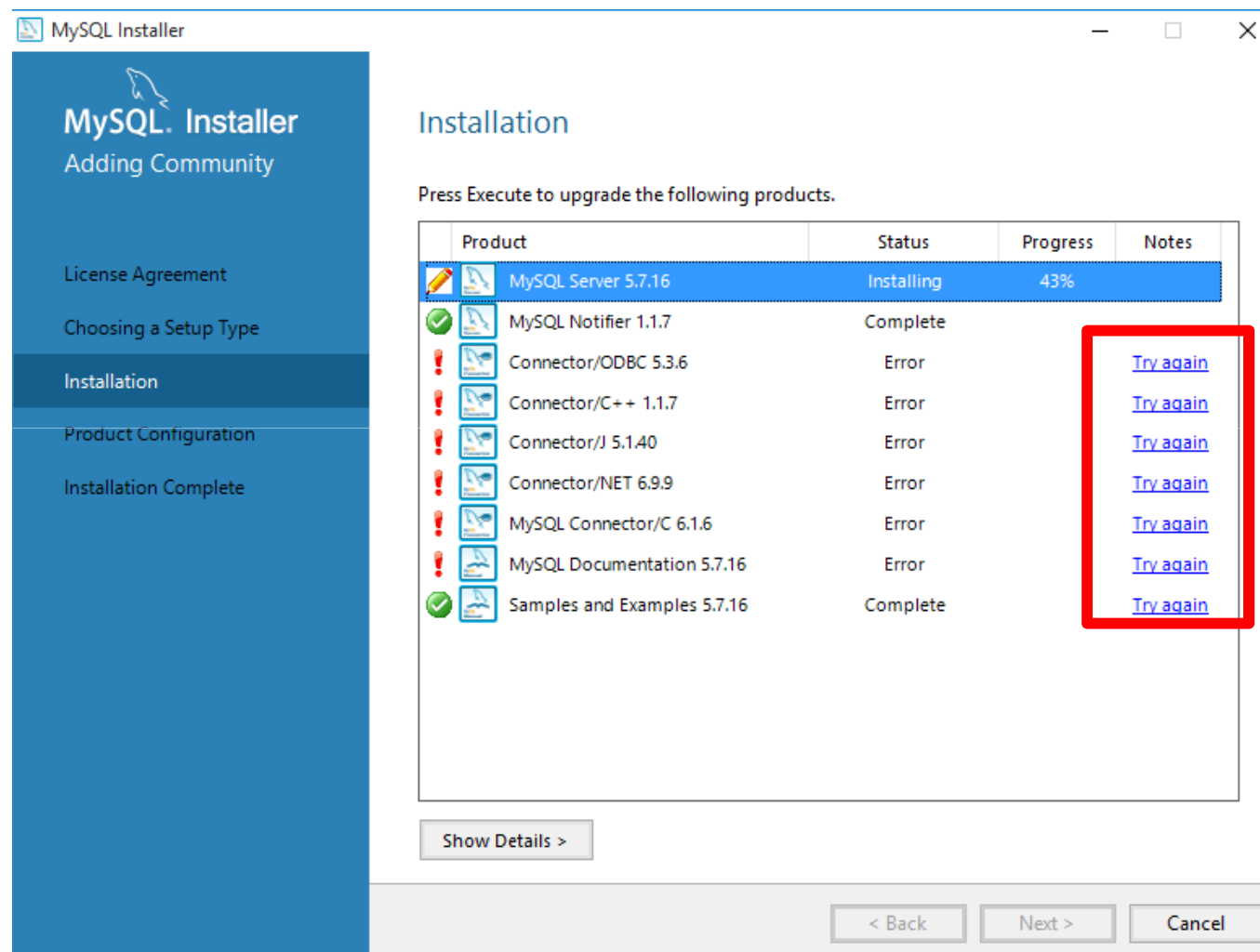
Download ed Installazione



Download ed Installazione



Download ed Installazione



Configurazione

The screenshot shows the 'MySQL Installer' window for 'MySQL Server 5.7.16'. The left sidebar contains a list of configuration steps: 'Type and Networking' (selected), 'Accounts and Roles', 'Windows Service', 'Plugins and Extensions', 'Advanced Options', and 'Apply Server Configuration'. The main area is titled 'Type and Networking' and contains the following sections:

- Server Configuration Type**: A description stating that this setting defines system resources. The 'Config Type' dropdown is set to 'Development Machine'.
- Connectivity**: A description asking how to connect to the server. It includes three options:
 - ☒ TCP/IP: Port Number is set to 3306.
 - ☒ Open Firewall port for network access.
 - ☐ Named Pipe: Pipe Name is set to MYSQL.
 - ☐ Shared Memory: Memory Name is set to MYSQL.
- Advanced Configuration**: A description asking for additional configuration options. The checkbox 'Show Advanced Options' is checked and highlighted with a red rectangle.

At the bottom right, there are 'Next >' and 'Cancel' buttons.

Configurazione

► Inserire la password e confermarla

MySQL Installer

MySQL. Installer
MySQL Server 5.7.16

Type and Networking

Accounts and Roles

Windows Service

Plugins and Extensions

Advanced Options

Apply Server 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 Username	Host	User Role
----------------	------	-----------

Add User

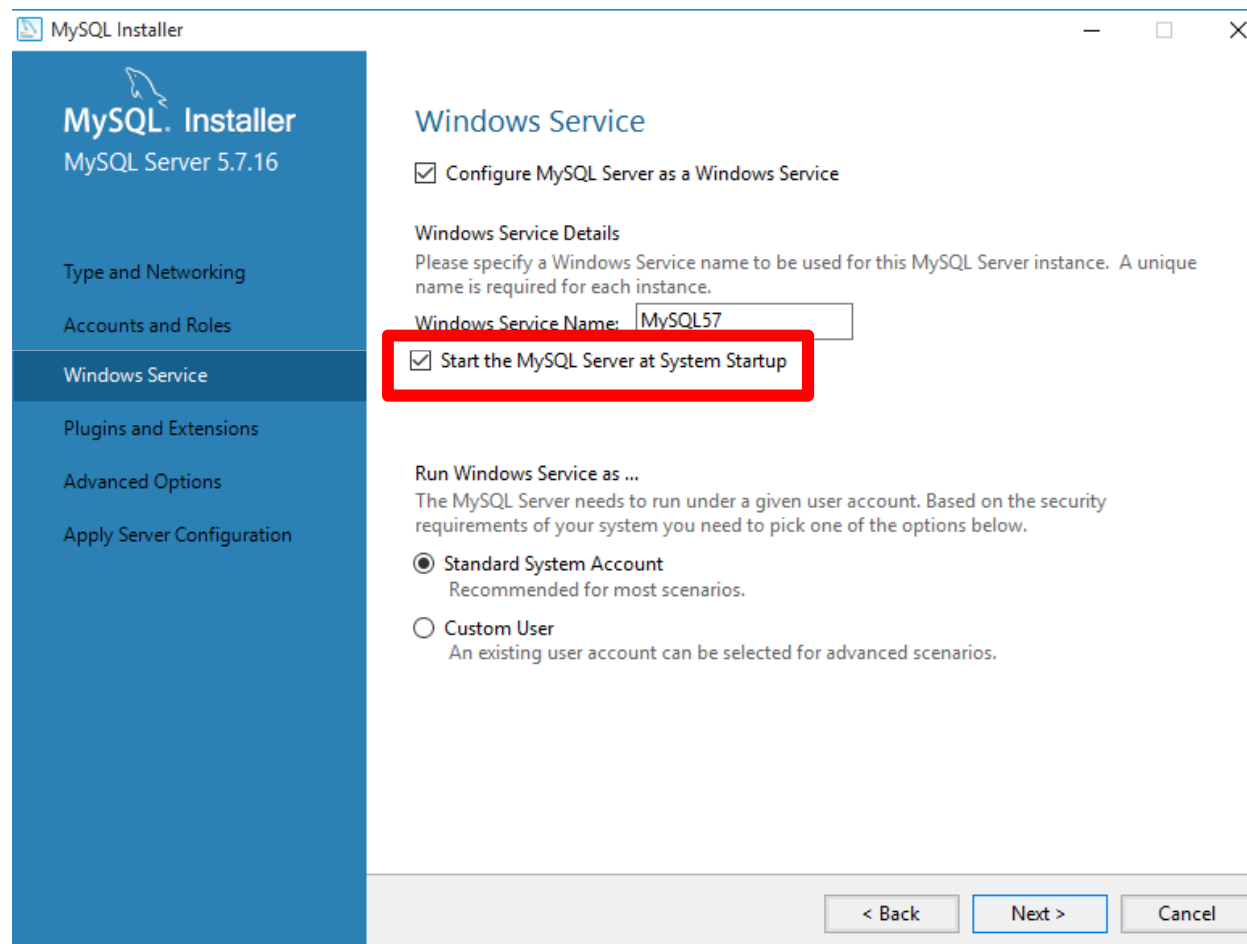
Edit User

Delete

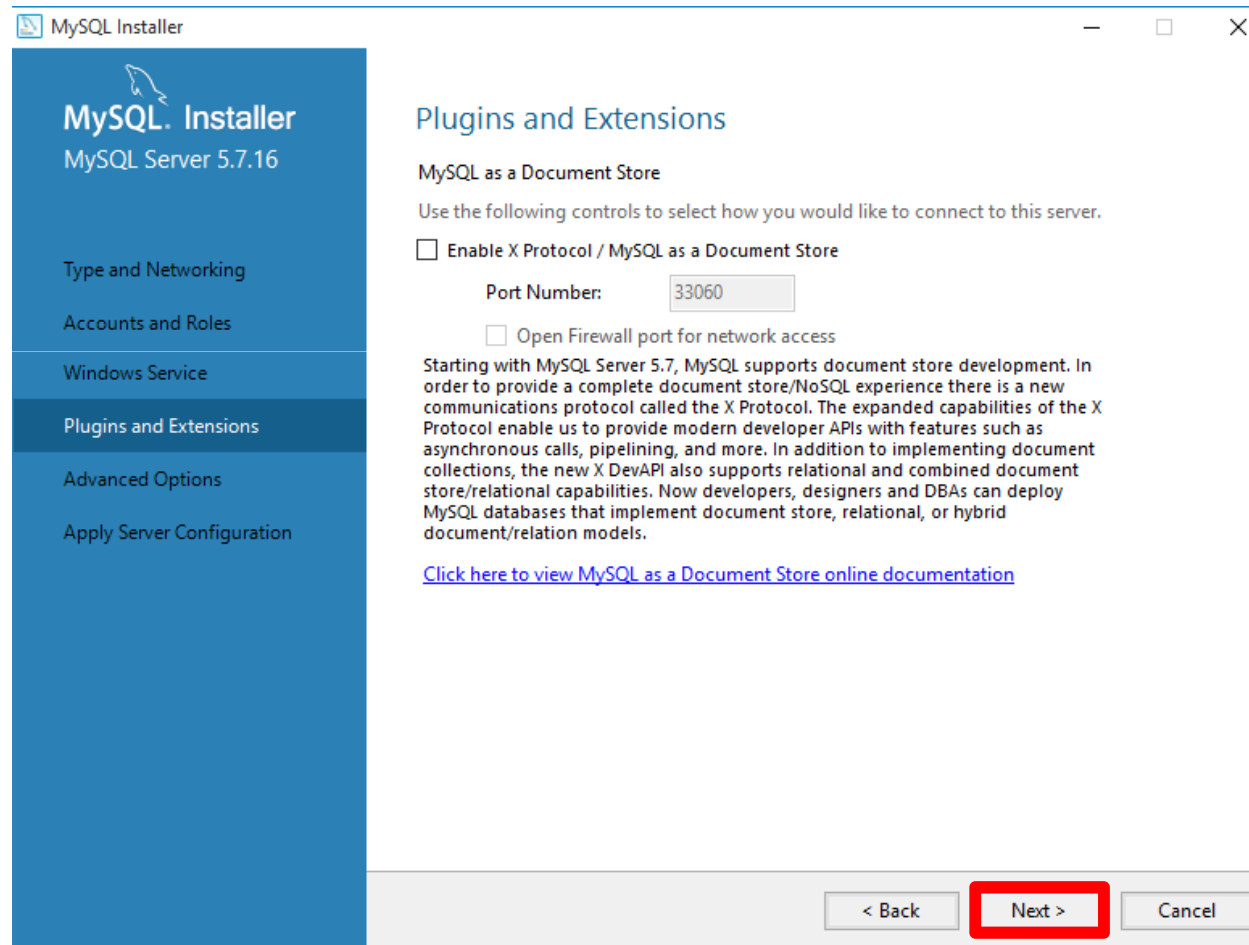
< Back Next > Cancel

Configurazione

- Decidere se si vuole lanciare MySQL all'avvio del sistema



Configurazione



Configurazione

MySQL Installer

MySQL Server 5.7.16

Type and Networking

Accounts and Roles

Windows Service

Plugins and Extensions

Advanced Options

Apply Server Configuration

Advanced Options

Logging Options

Please select the logs you want to activate for this server in addition to the Error Log. On production machines it can be beneficial to separate the log files from the data.

Error Log: ...

☐ General Log

The general query log is a general record of what the MySQL Server is doing. It should only be used to track down issues.

File Path: ...

☒ Slow Query Log

The slow query log consists of SQL statements that took more than the given value of seconds to execute. It is recommended to turn this log on.

File Path: ... Seconds:

☐ Bin Log

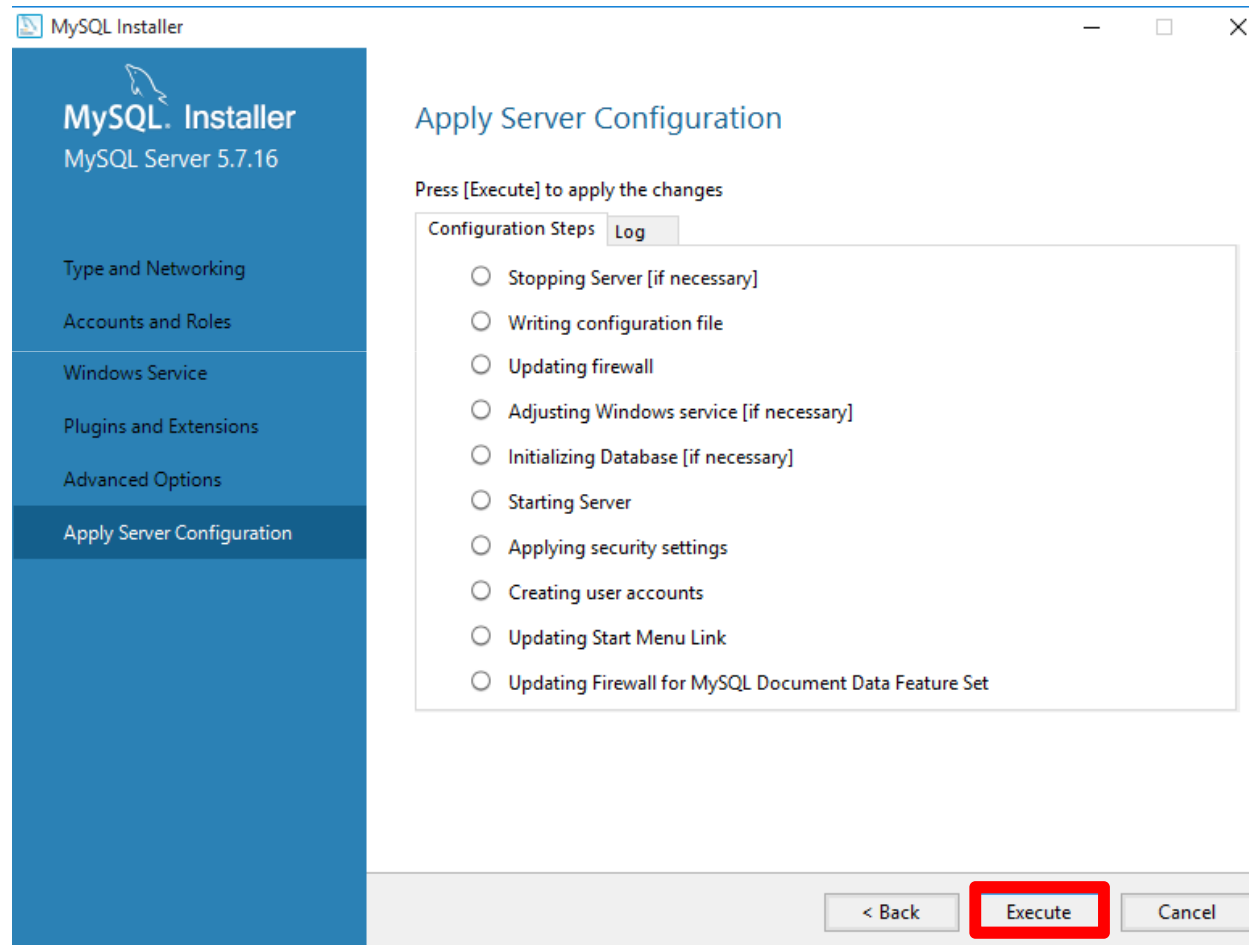
The binary log contains all database events and is used for replication and data recovery operations. It has a performance impact on the server. Only a filename base should be given as the server will append an appropriate extension

File Path: ...

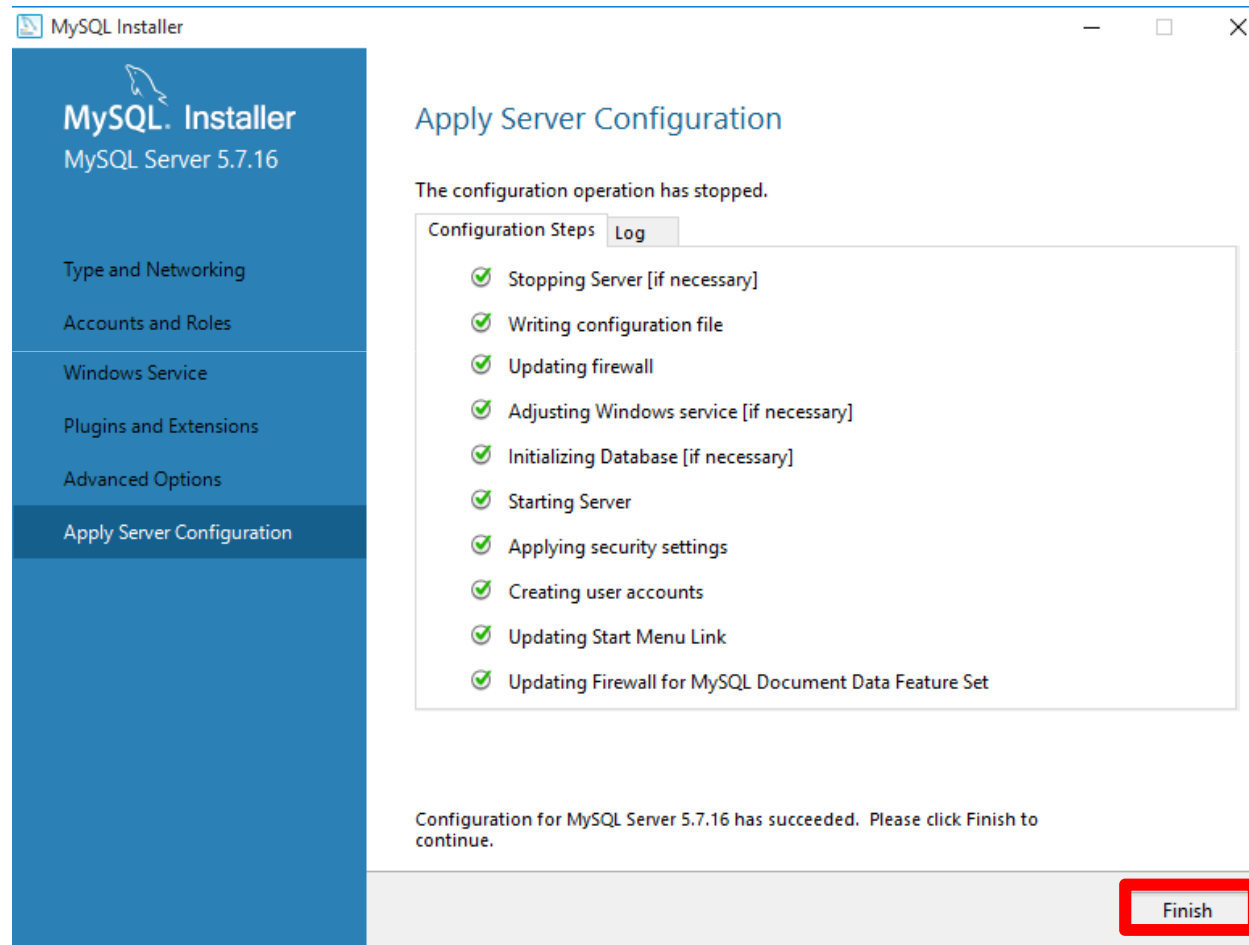
Server Id:

< Back **Next >** Cancel

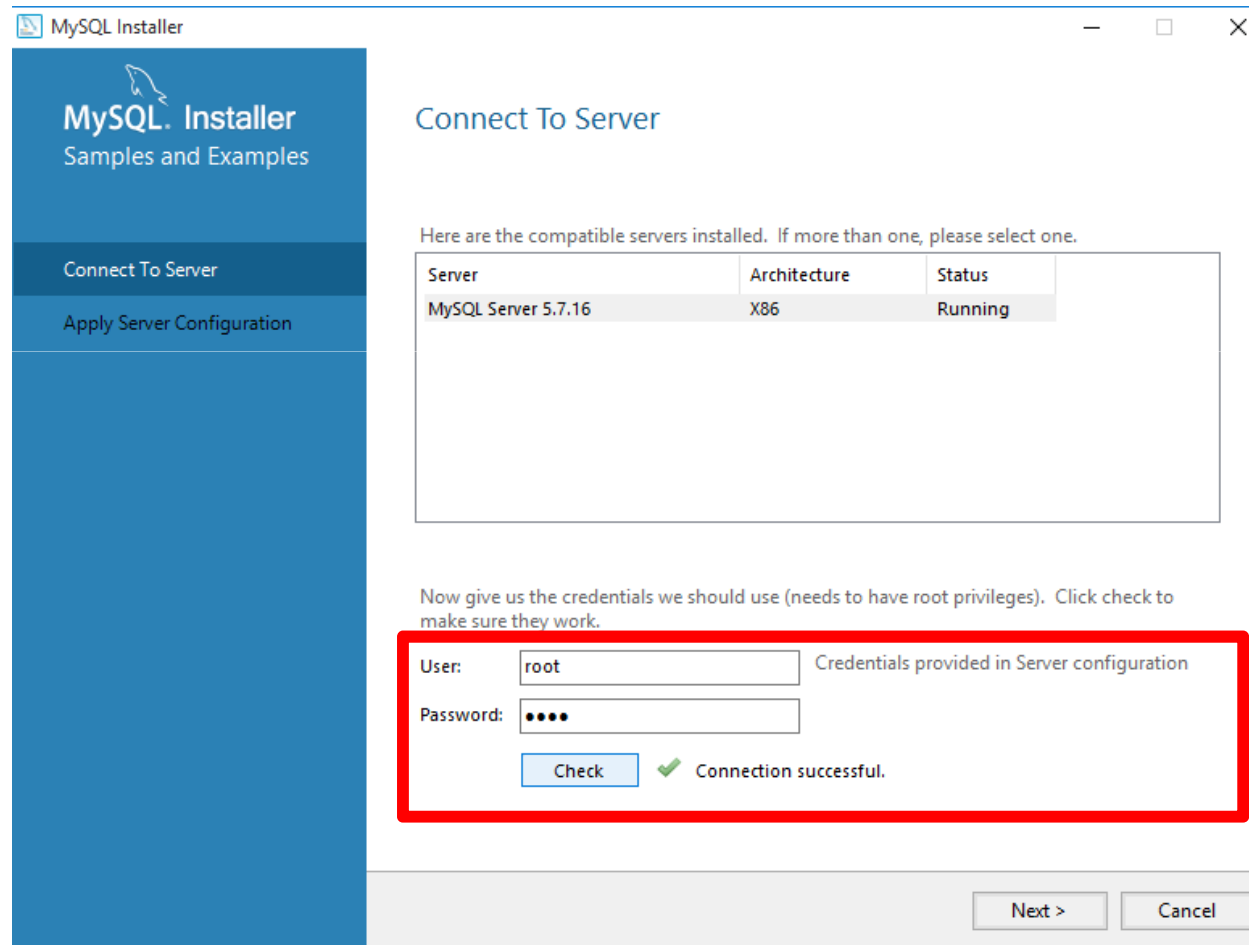
Configurazione



Configurazione



Configurazione



The image shows the 'Connect To Server' window of the MySQL Installer. On the left is a blue sidebar with the MySQL logo and the text 'MySQL. Installer Samples and Examples'. Below the logo are two buttons: 'Connect To Server' (highlighted) and 'Apply Server Configuration'. The main area is titled 'Connect To Server' and contains the text: 'Here are the compatible servers installed. If more than one, please select one.' Below this is a table with three columns: 'Server', 'Architecture', and 'Status'. The table contains one row: 'MySQL Server 5.7.16', 'X86', and 'Running'. Below the table is the text: 'Now give us the credentials we should use (needs to have root privileges). Click check to make sure they work.' This is followed by a form with two input fields: 'User:' with the value 'root' and 'Password:' with four dots. To the right of the 'User' field is the text 'Credentials provided in Server configuration'. Below the input fields is a 'Check' button. To the right of the button is a green checkmark and the text 'Connection successful.'. At the bottom right of the window are two buttons: 'Next >' and 'Cancel'.

MySQL Installer

MySQL. Installer
Samples and Examples

Connect To Server

Apply Server Configuration

Connect To Server


Here are the compatible servers installed. If more than one, please select one.

Server	Architecture	Status
MySQL Server 5.7.16	X86	Running

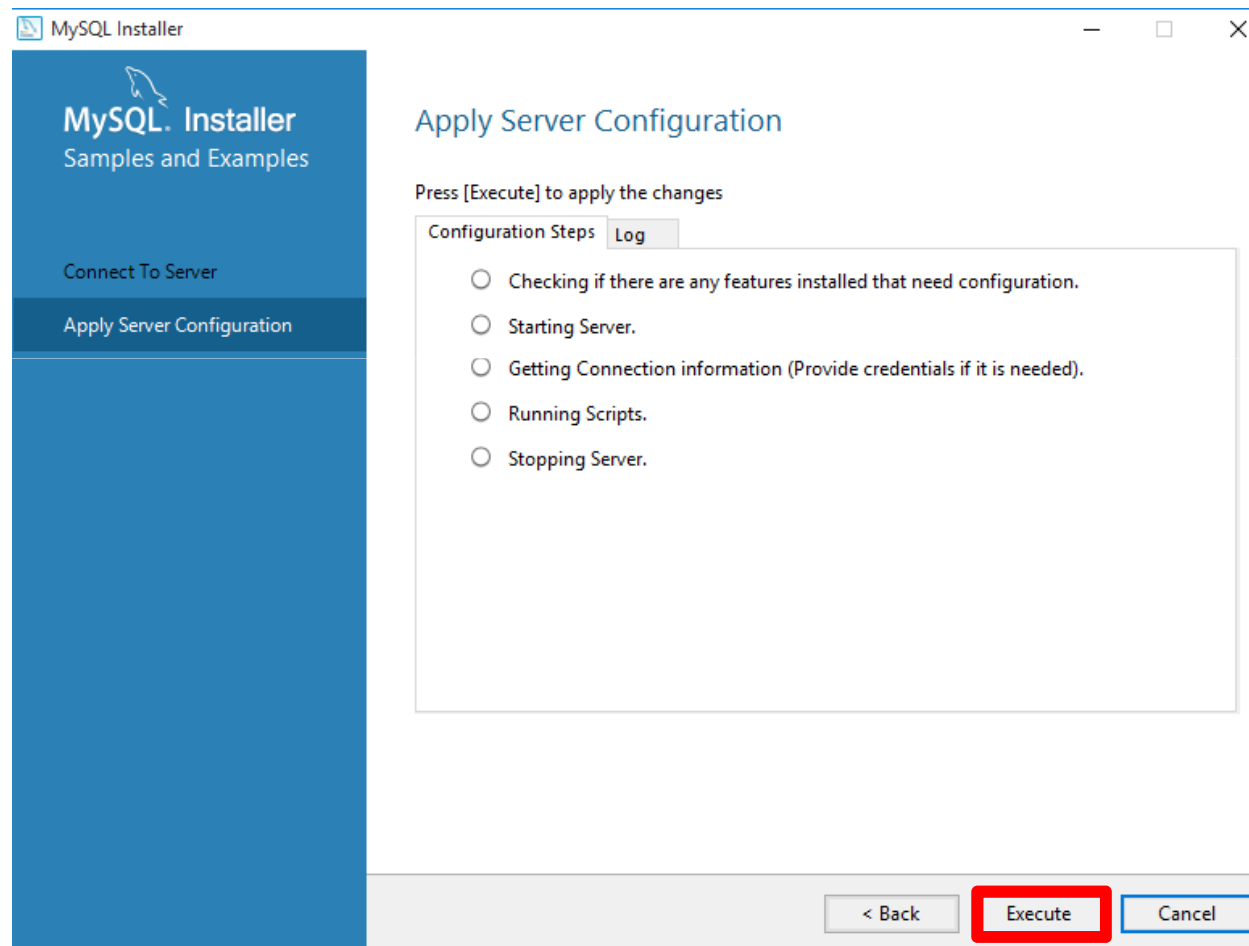
Now give us the credentials we should use (needs to have root privileges). Click check to make sure they work.

User: Credentials provided in Server configuration

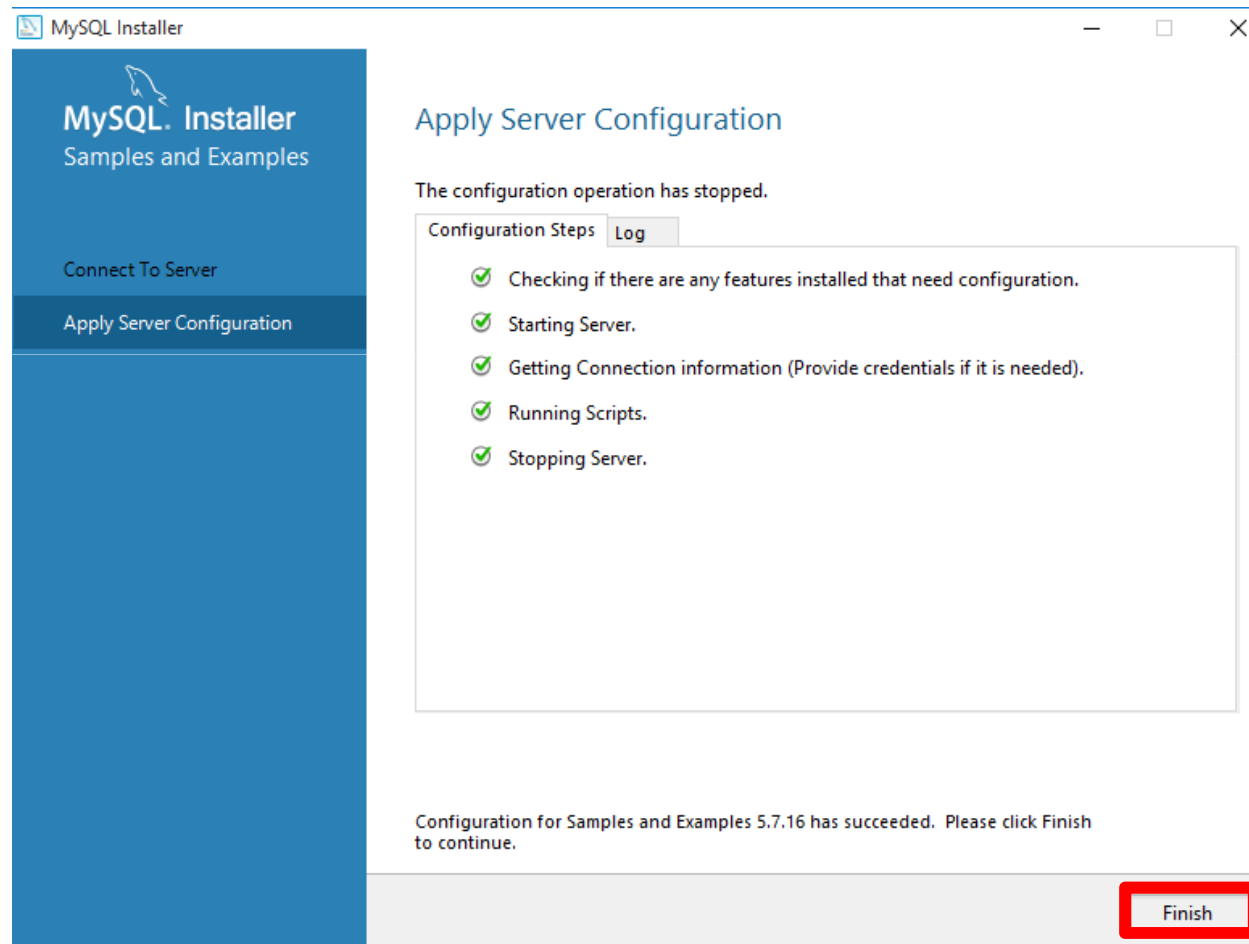
Password:

 Connection successful.

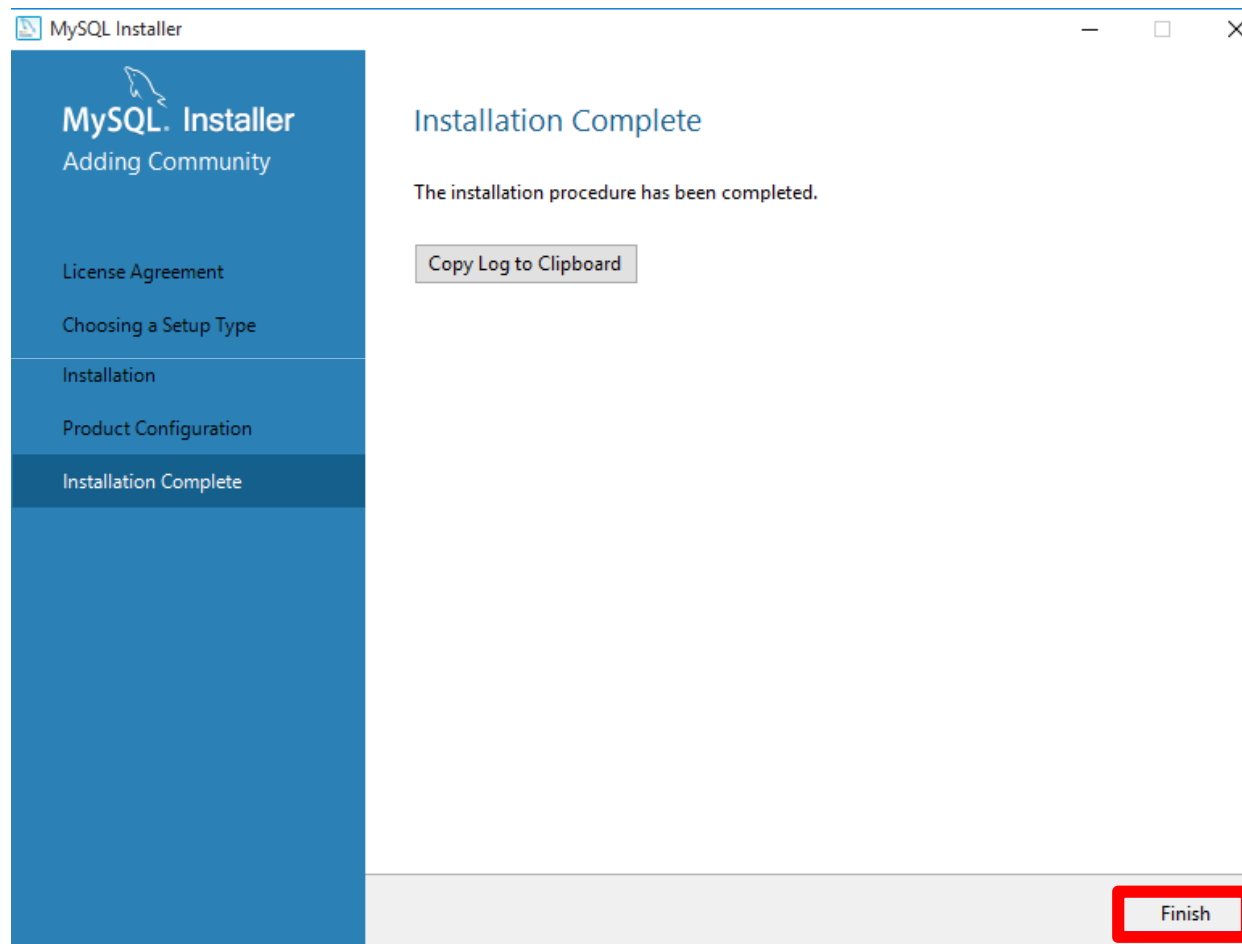
Configurazione



Configurazione

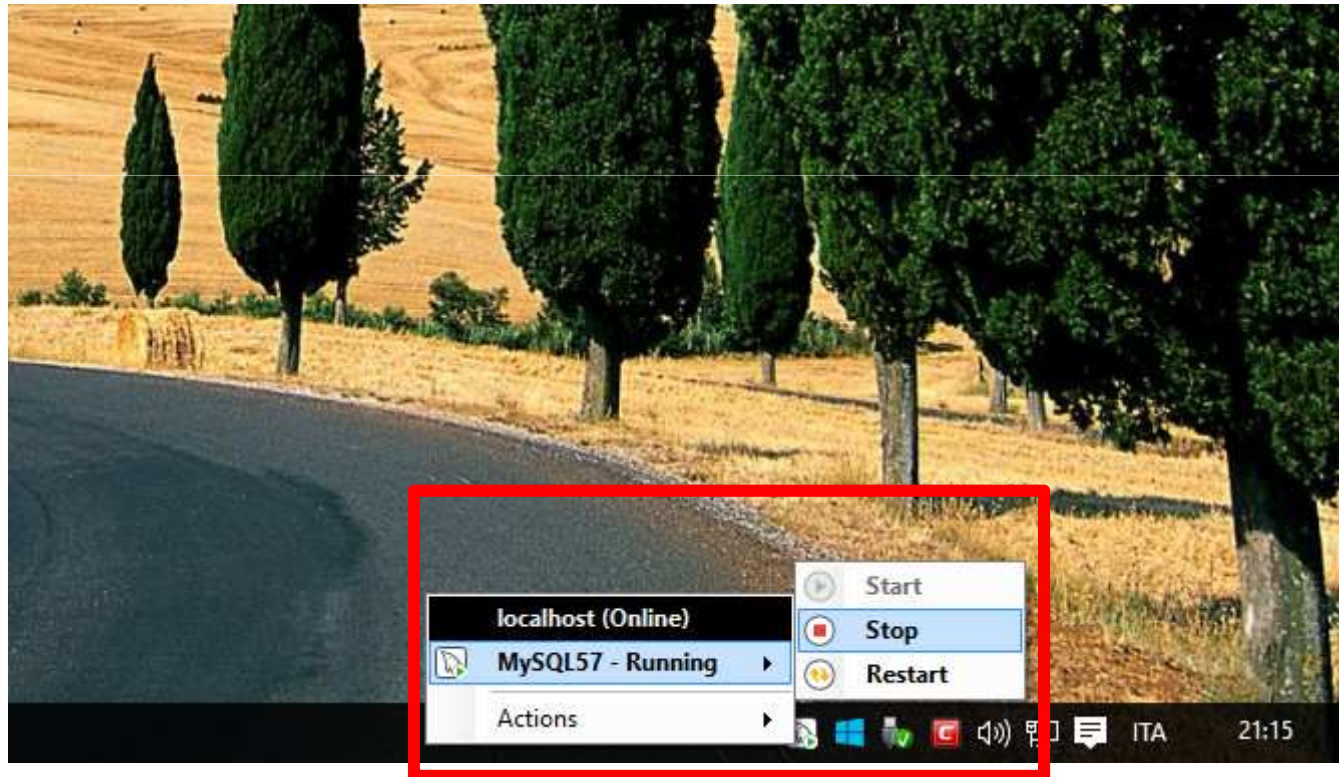


Configurazione

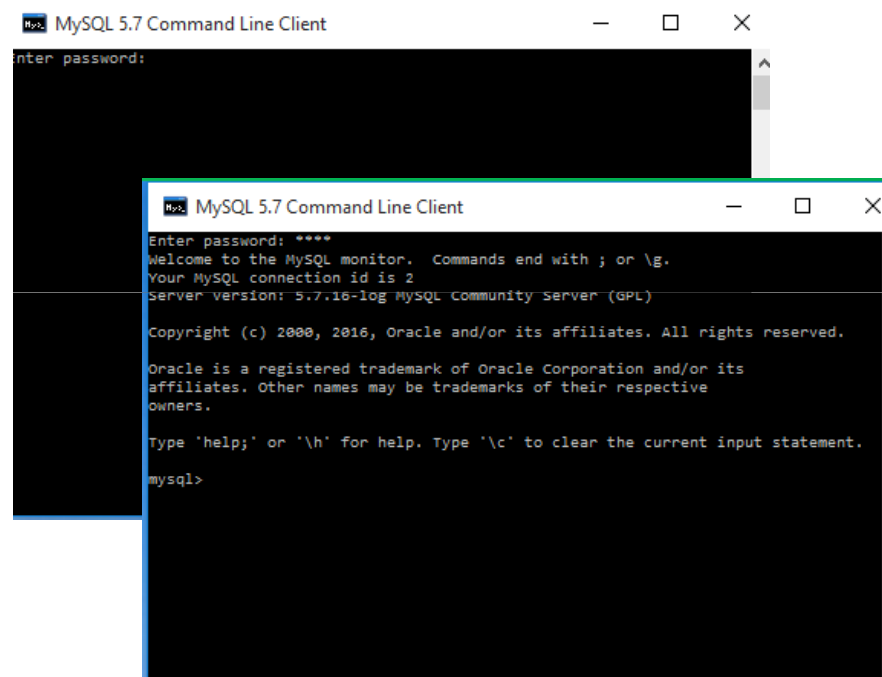
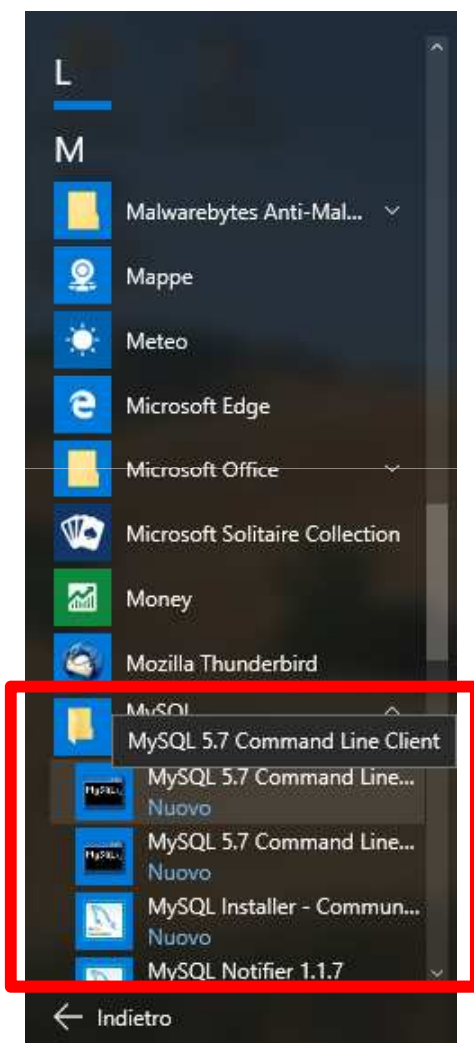


Esecuzione del Server MySQL

- ▶ Con l'installazione di MySQL è stato installato anche il MySQL Notifier
 - ▶ Attraverso il quale è possibile avviare o stoppare il server

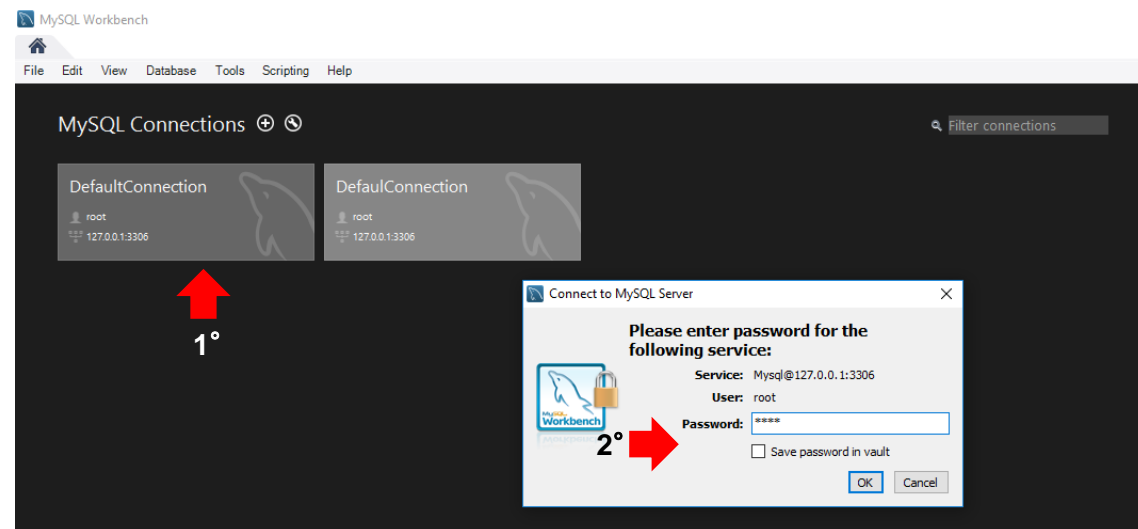
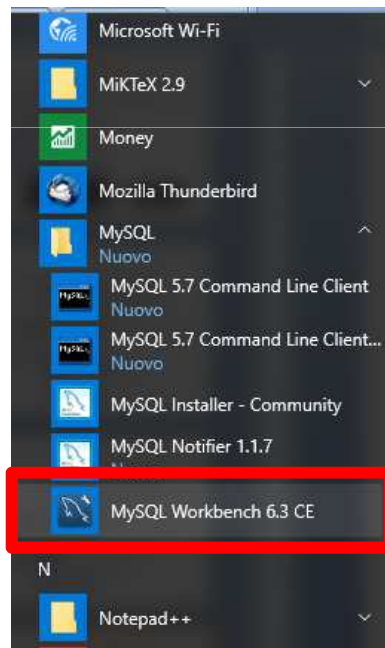


Esecuzione del Client MySQL



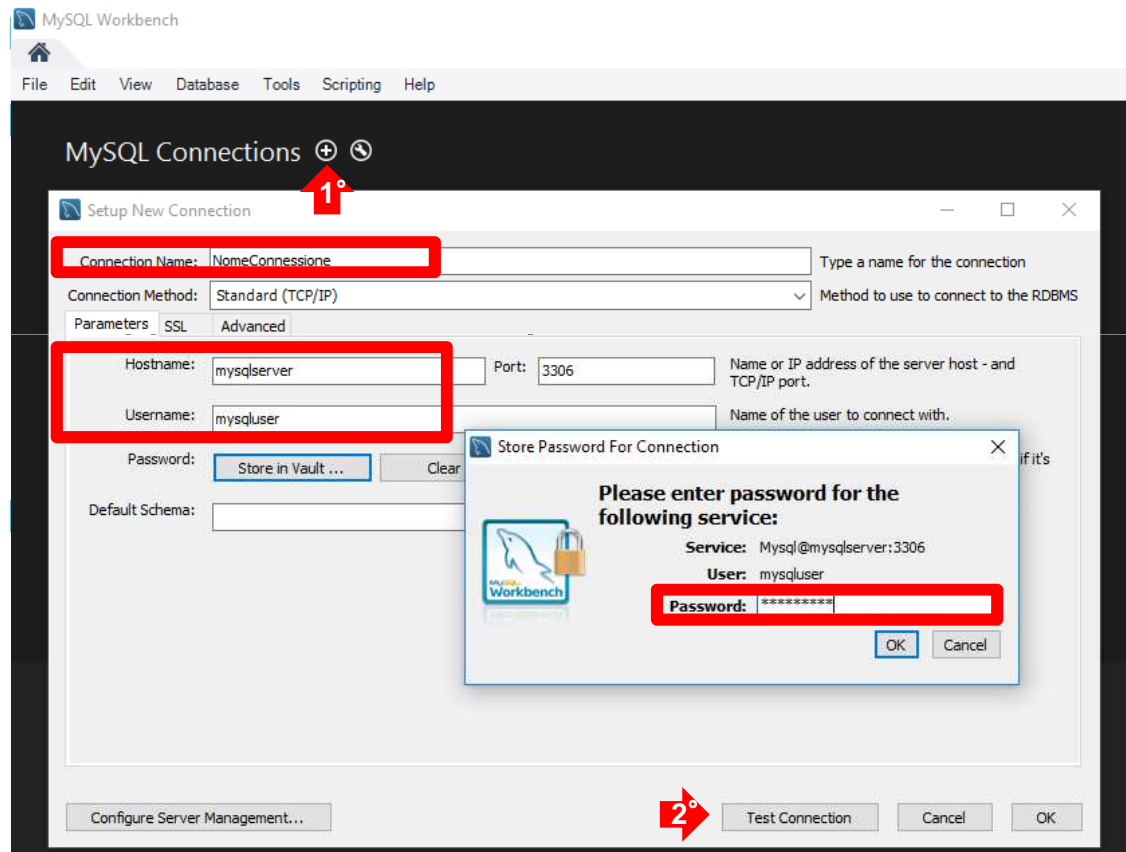
MySQL Workbench

- ▶ Con l'installazione di MySQL è stato installato anche il MySQL Workbench
 - ▶ Un client MySQL con interfaccia grafica



Collegamento al Server del laboratorio

- Per collegarsi al server del laboratorio è necessario

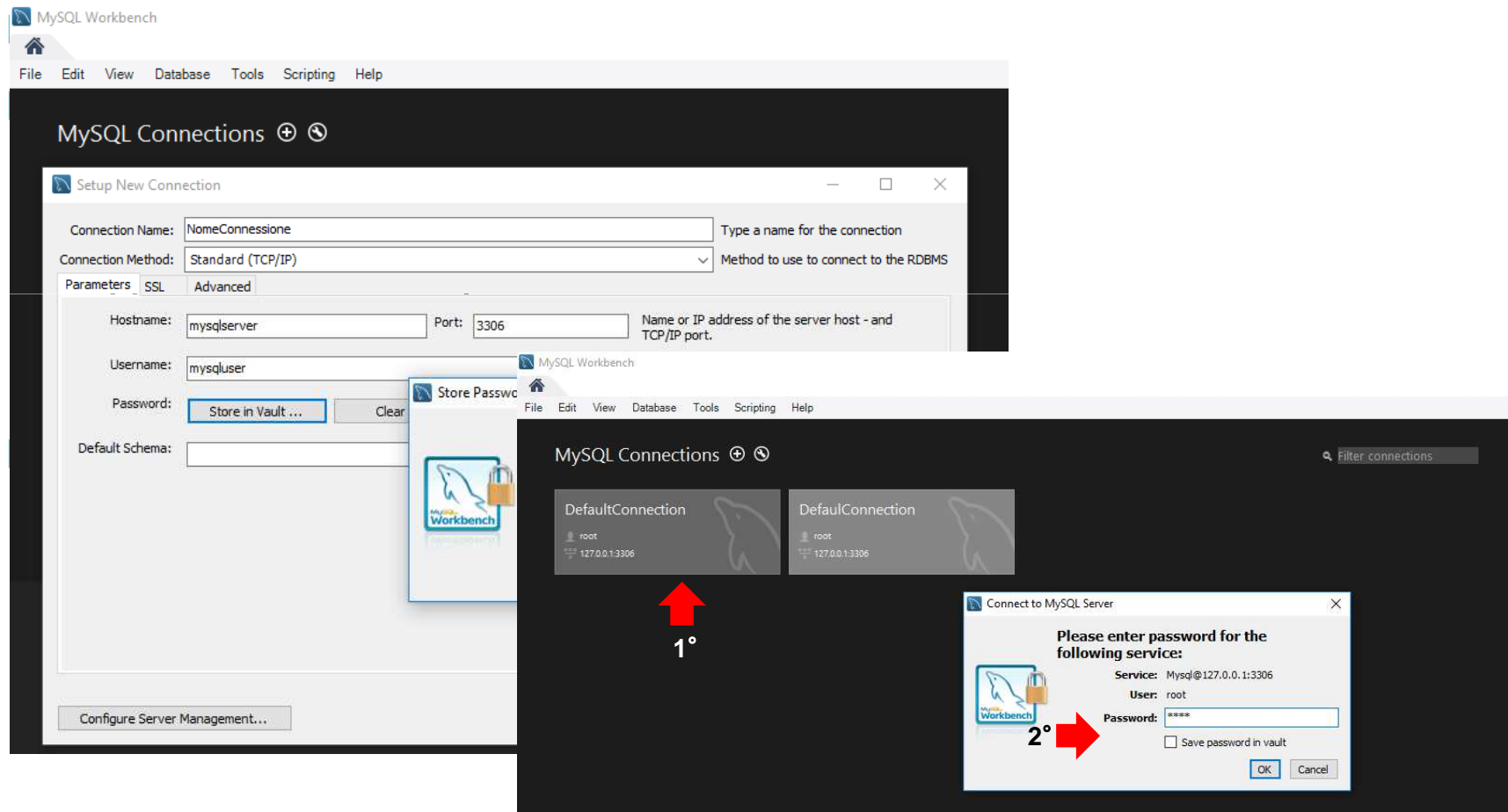


Collegamento al Server del laboratorio

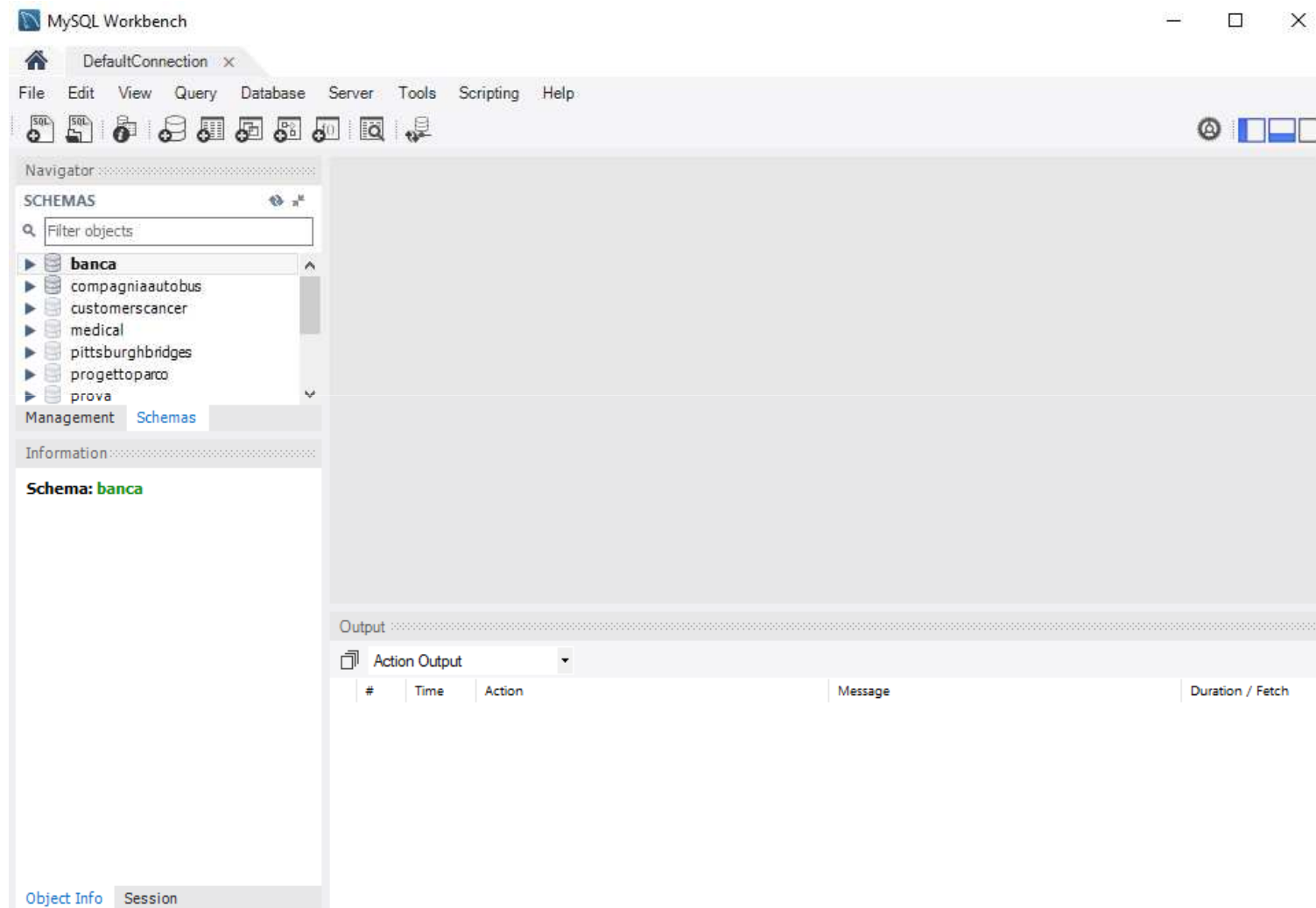
- ▶ Per collegarsi al server del laboratorio è necessario
 - ▶ Lanciare MySQL Workbench
 - ▶ Creare una nuova connessione
 - ▶ Connection Name: <NomeConnessione>
 - ▶ Hostname: mysqlserver
 - ▶ Username: mysqluser
 - ▶ Password: mysqluser
 - ▶ Attivare la connessione

Collegamento al Server del laboratorio

- Per collegarsi al server del laboratorio è necessario



MySQL Workbench



Outline

- ▶ Un caso di studio: database di un'università
 - ▶ Creazione di un database
 - ▶ Creazione di tabelle
 - ▶ Definizione dei vincoli di integrità referenziale
 - ▶ Inserimento e modifica dei dati

Un caso di studio: database di un'università

studenti

Matricola	Cognome	Nome	Data di nascita
6554	Rossi	Mario	05/12/1978
8765	Neri	Paolo	03/11/1976
9283	Verdi	Luisa	12/11/1979
3456	Rossi	Maria	01/02/1978

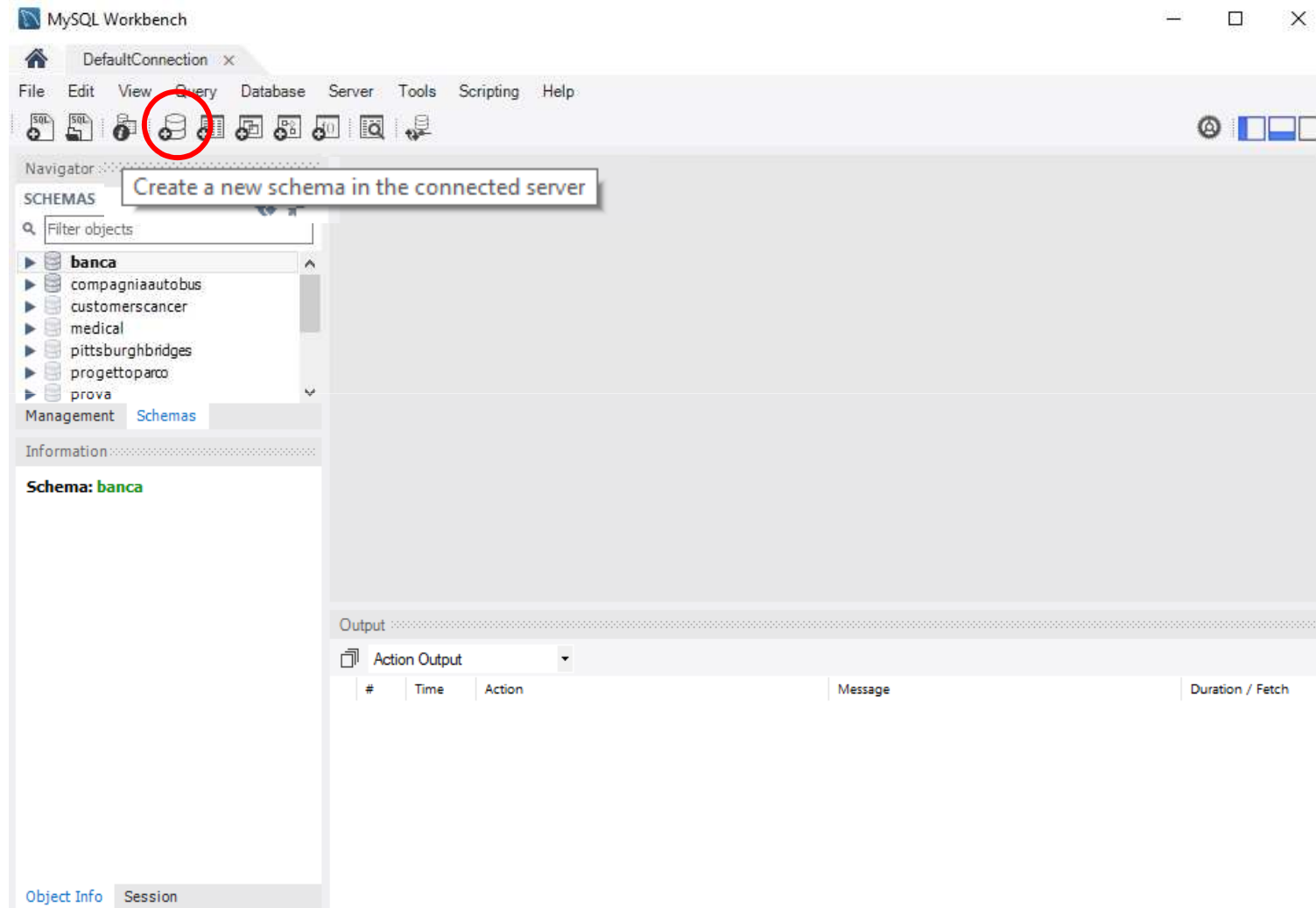
esami

Studente	Voto	Corso
3456	30	04
3456	24	02
9283	28	01
6554	26	01

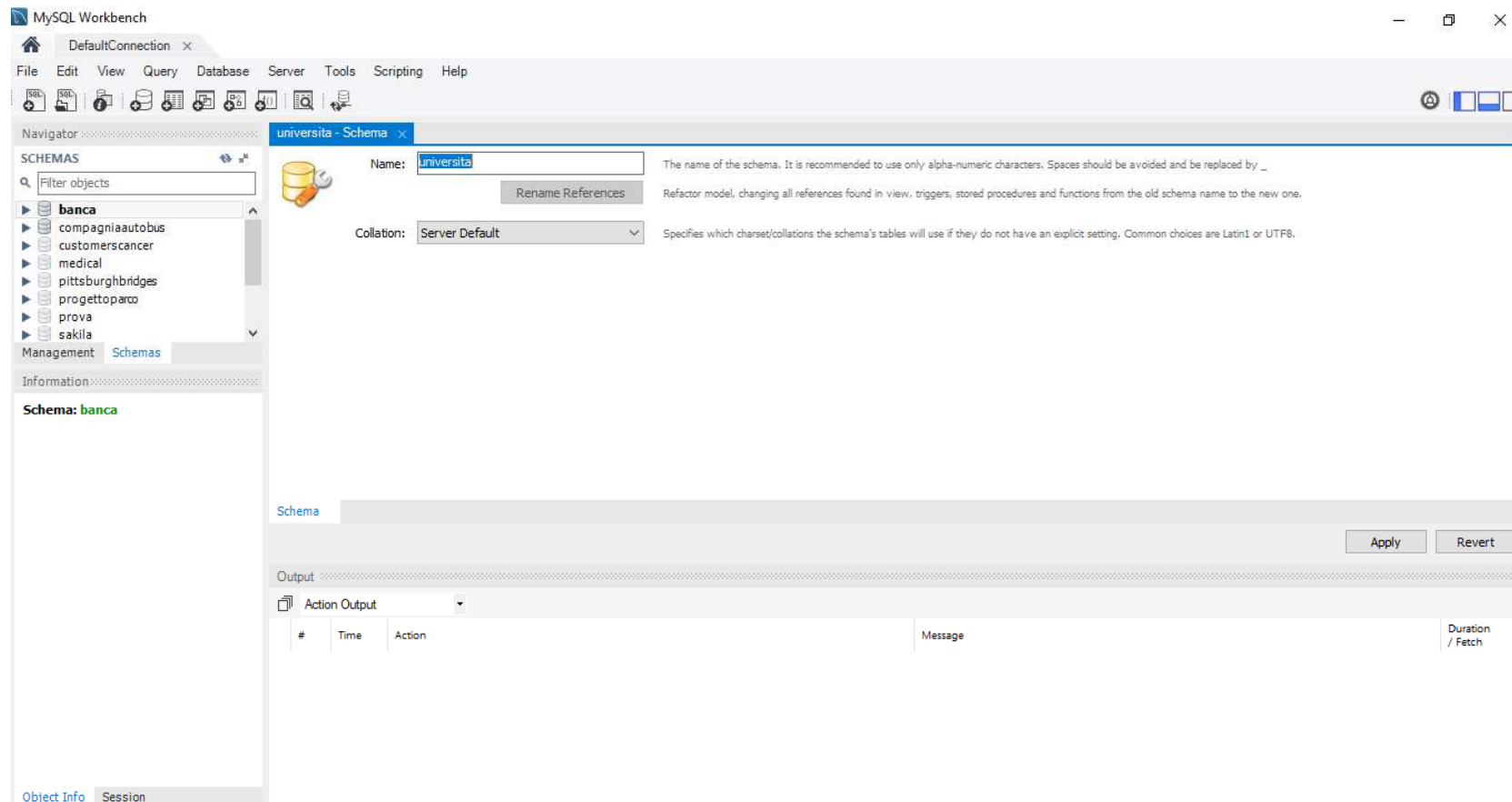
corsi

Codice	Titolo	Docente
01	Analisi	Mario
02	Chimica	Bruni
04	Chimica	Verdi

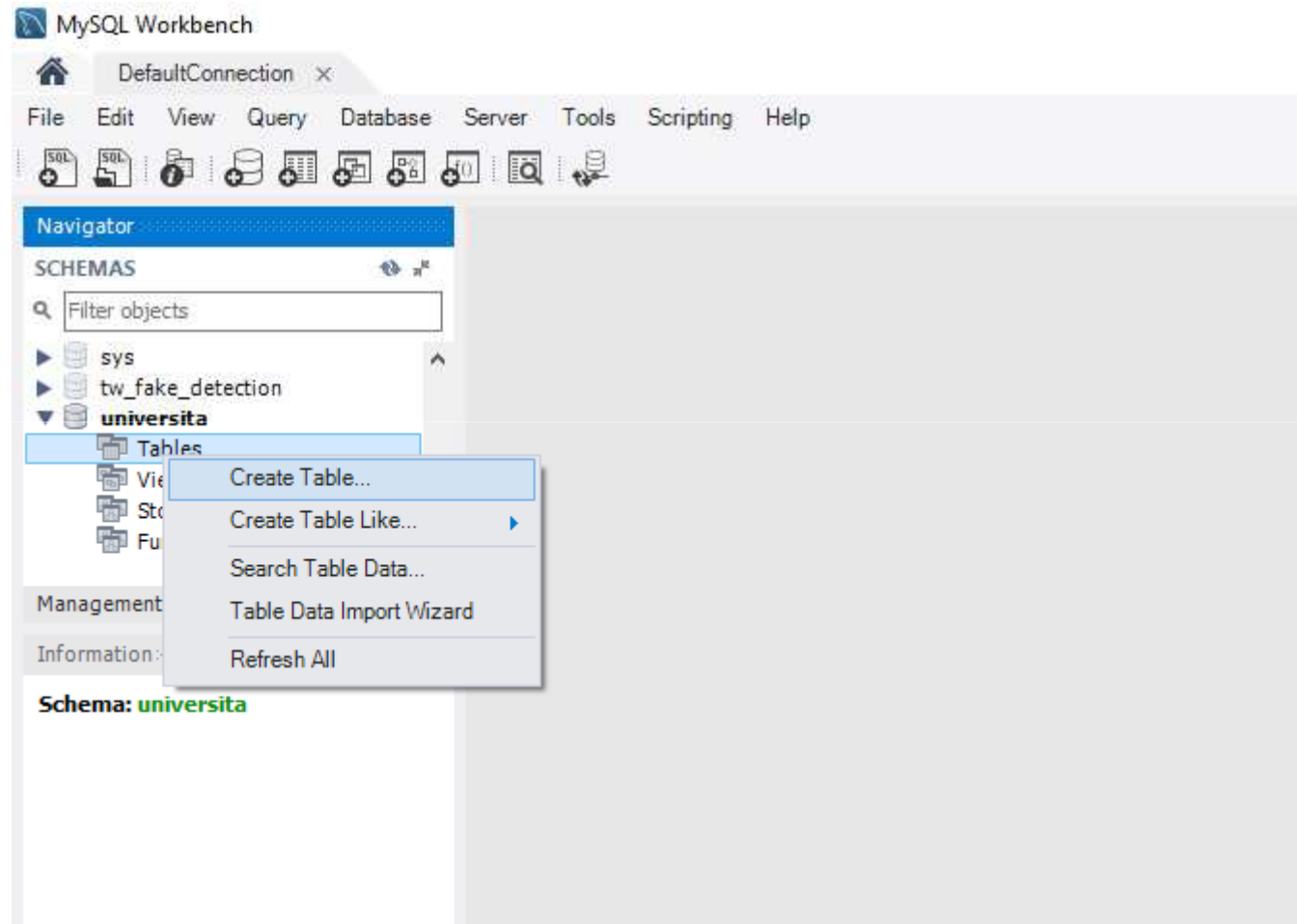
Creazione di un database



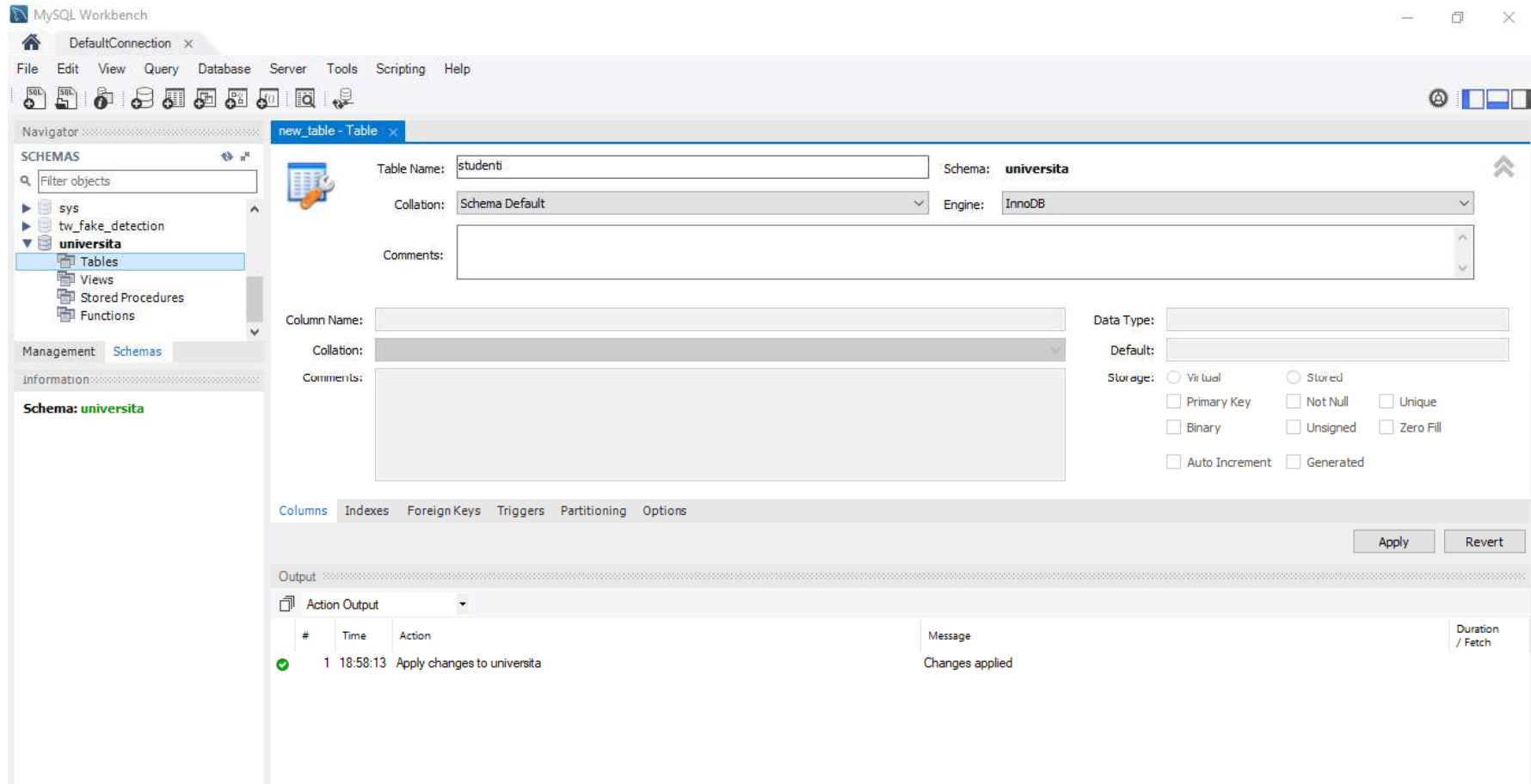
Creazione di un database



Creazione di tabelle



Creazione di tabelle



Creazione di tabelle

The screenshot shows the MySQL Workbench interface. On the left, the 'Navigator' pane shows the 'universita' schema with a tree view containing 'Tables', 'Views', 'Stored Procedures', and 'Functions'. The 'Tables' folder is expanded, and the 'studenti' table is selected. The main workspace shows the 'studenti' table definition. The table has four columns: 'matricola' (VARCHAR(13)), 'cognome' (VARCHAR(45)), 'nome' (VARCHAR(45)), and 'dataNascita' (DATE). The 'dataNascita' column is selected, and its properties are shown on the right. The 'Data Type' is 'DATE', and the 'Default' is empty. The 'Storage' options are 'Virtual' and 'Stored'. The 'Primary Key', 'Not Null', 'Unique', 'Binary', 'Unsigned', 'Zero Fill', 'Auto Increment', and 'Generated' options are all unchecked. The 'Collation' is 'Table Default'. The 'Comments' field is empty. The 'Columns' tab is selected, and the 'Apply' and 'Revert' buttons are visible. The 'Output' pane at the bottom shows the 'Action Output' table with two rows: a successful action at 18:58:13 and an error at 19:03:29.

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
matricola	VARCHAR(13)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
cognome	VARCHAR(45)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
nome	VARCHAR(45)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
dataNascita	DATE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

#	Time	Action	Message	Duration / Fetch
1	18:58:13	Apply changes to universita	Changes applied	
2	19:03:29	Apply changes to studenti	Error 1064: You have an error in your SQL syntax; check the manual that corresponds to your M...	

Creazione di tabelle

The screenshot displays the MySQL Workbench interface for creating a new table. The main window shows the 'corsi' table definition within the 'universita' schema. The table has three columns: 'codice' (INT, Primary Key, Not Null, Auto Increment), 'titolo' (VARCHAR(45)), and 'docente' (VARCHAR(70)). The 'Columns' tab is selected, showing the column details and options. The 'Output' panel at the bottom shows the results of the table creation process, including a successful message 'Changes applied' and an error message 'Error 1064: You have an error in your SQL syntax; check the manual that corresponds to your M...'. The error message is highlighted in red.

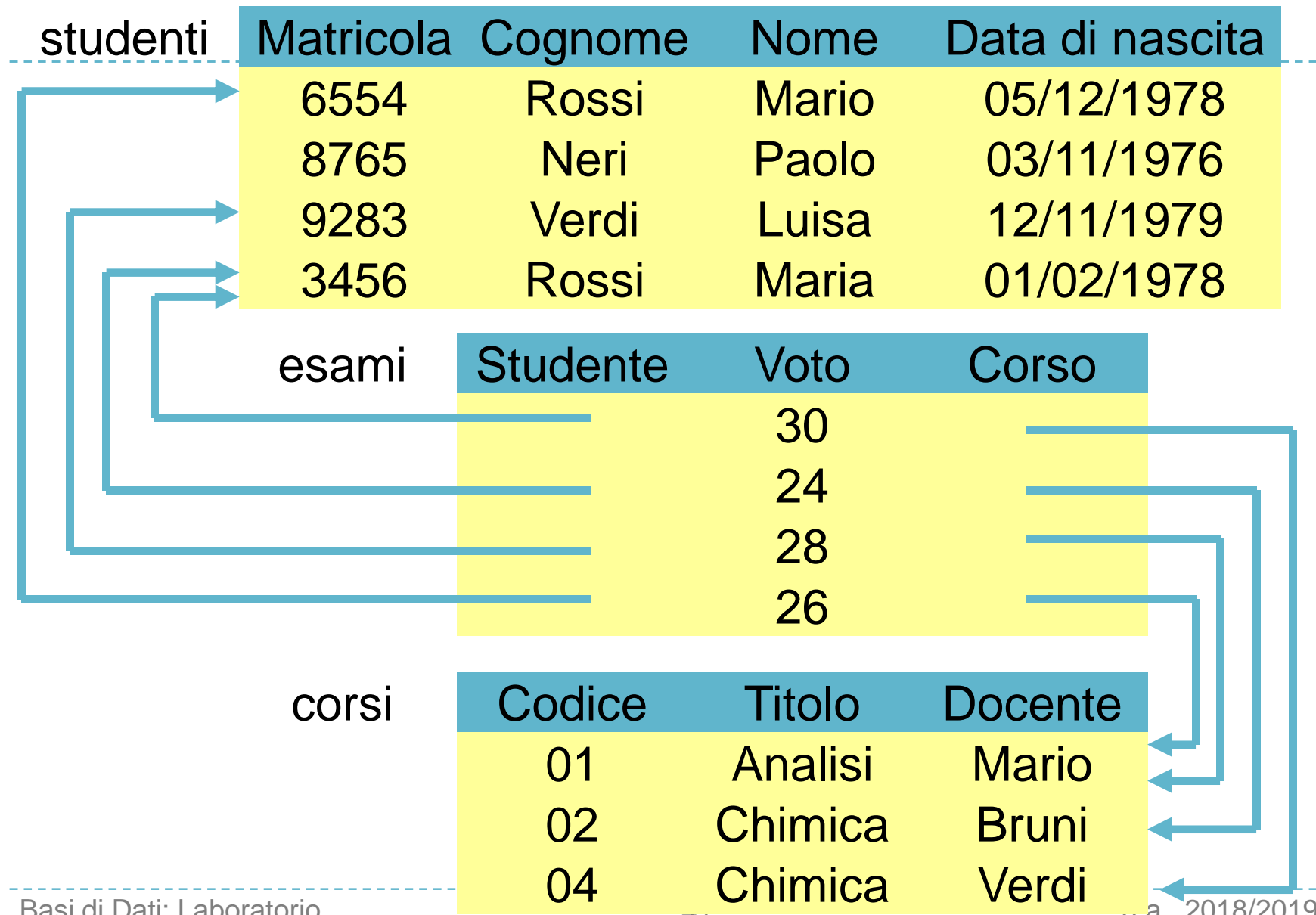
Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
codice	INT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
titolo	VARCHAR(45)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
docente	VARCHAR(70)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Column Name: Data Type:
Collation: Default:
Storage: ☒ Virtual ☐ Stored
☒ Primary Key ☒ Not Null ☐ Unique
☐ Binary ☐ Unsigned ☐ Zero Fill
☒ Auto Increment ☐ Generated

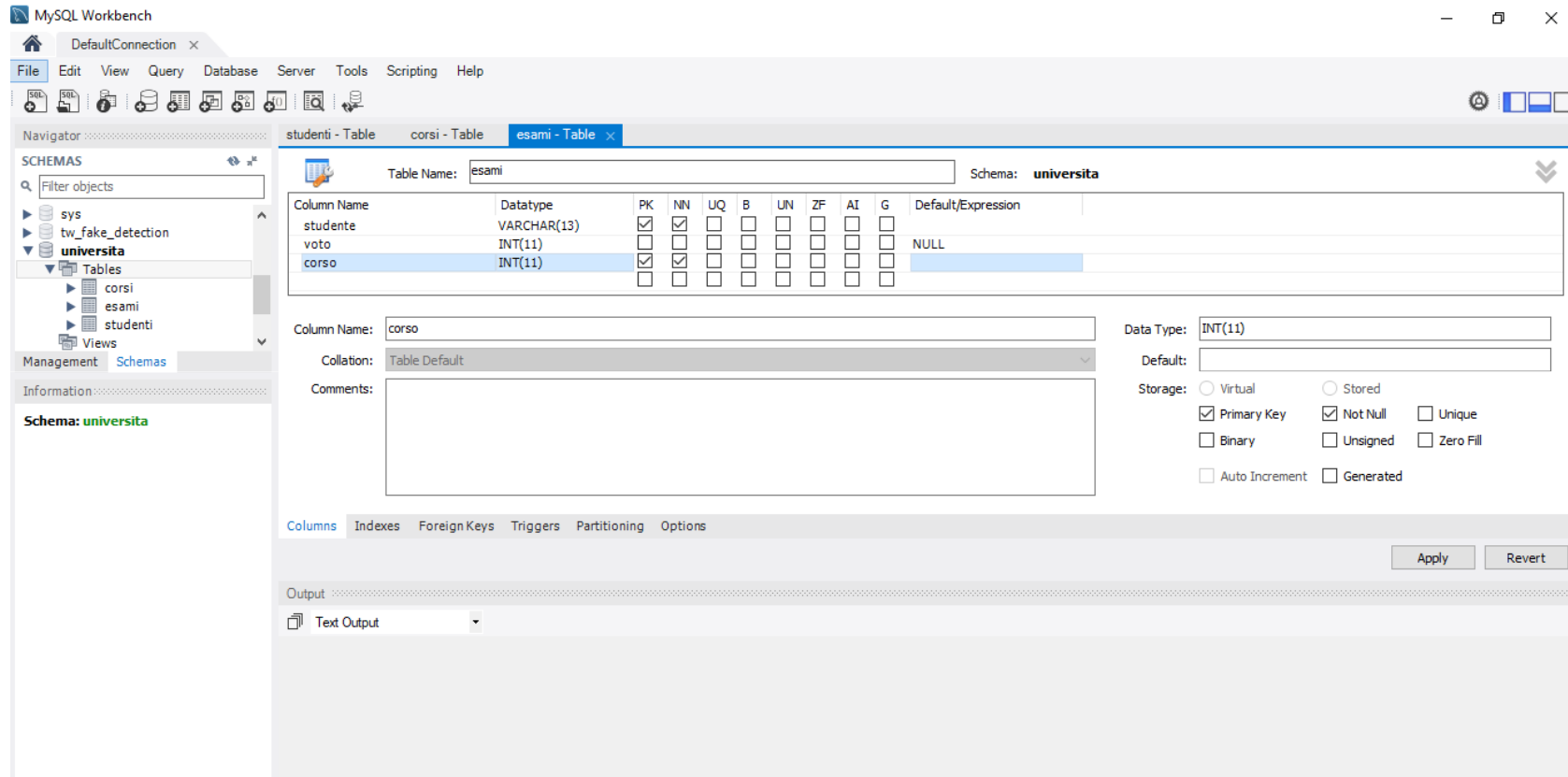
Output

#	Time	Action	Message	Duration / Fetch
1	18:58:13	Apply changes to universita	Changes applied	
2	19:03:29	Apply changes to studenti	Error 1064: You have an error in your SQL syntax; check the manual that corresponds to your M...	
3	19:09:57	Apply changes to studenti	Changes applied	

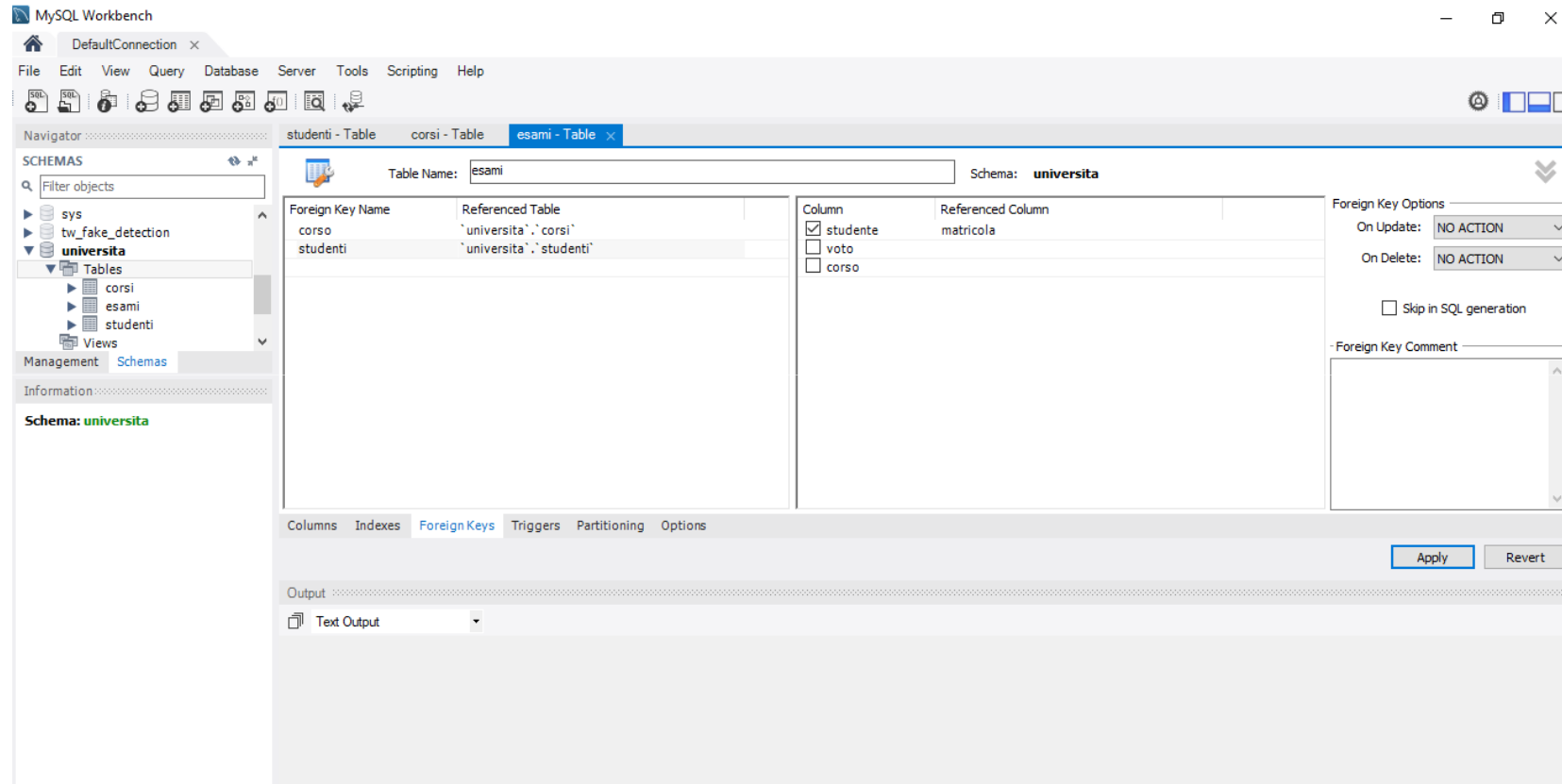
Definizione di vincoli di integrità referenziale



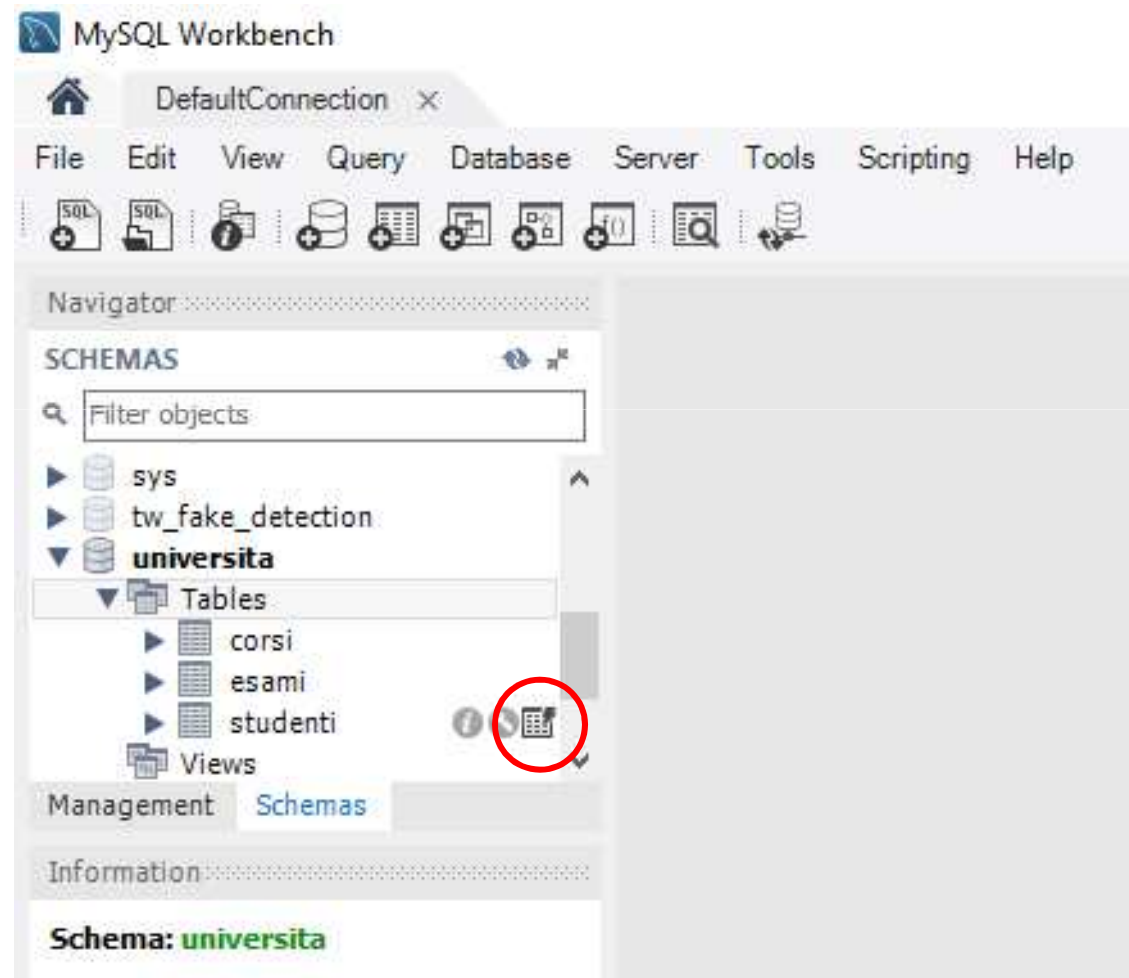
Definizione di vincoli di integrità referenziale



Definizione di vincoli di integrità referenziale



Inserimento e modifica dei dati



Inserimento e modifica dei dati

studenti

	matricola	cognome	nome	dataNascita
▶	3456	Rossi	Maria	1978-02-01
	6554	Rossi	Mario	1978-12-05
	8765	Neri	Paolo	1976-11-03
	9283	Verdi	Luisa	1979-11-12
✱	NULL	NULL	NULL	NULL



esami







	studente	voto	corso
▶	3456	24	2
	3456	30	3
	6554	26	1
	9283	28	1
✱	NULL	NULL	NULL



corsi

	codice	titolo	docente
▶	1	Analisi	Mario
	2	Chimica	Bruni
	3	Chimica	Verdi
✱	NULL	NULL	NULL

Inserimento e modifica dei dati

Result Grid   Filter Rows:

Edit:    Export/Import:   Wrap Cell Content: 

	studente	voto	corso
	3456	24	2
	3456	30	3
	6554	26	1
	9283	28	1
	NULL	NULL	NULL