

Database

Movies

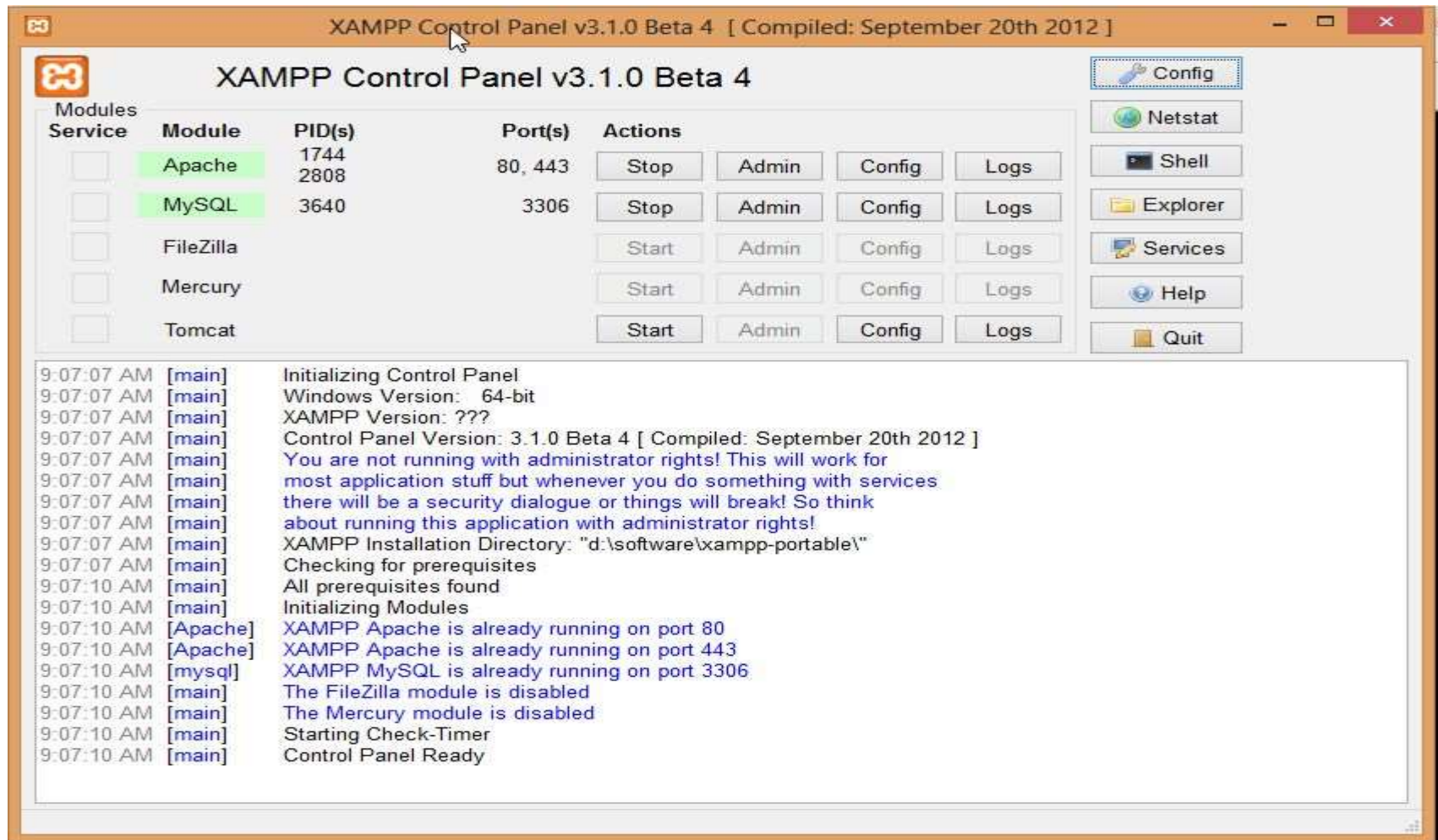
- www.imdb.com
- Internet Movie DataBase

XAMPP

- free and open source cross-platform web server solution stack package, consisting mainly of the Apache HTTP Server (TomCat), MySQL database, and interpreters for scripts written in the PHP and Perl programming languages
- www.apachefriends.org/en/xampp.html
- Cross-platform (Linux, Windows, Solaris, Mac OS X)
- LAMP – Linux Apache MySQL Php

Xampp Portable

- Xampp_start
- Xampp_stop
- Xampp_control



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

- MySQL Community Server (GPL)
 - (Current Generally Available Release: **8.0.13**)
 - MySQL Community Server is the world's most popular open source database.
-
- Prerequisites – Visual C Redistributable (2015)

MySQL Installer

MySQL Router 2.1.3

MySQL Router Configuration

Apply Configuration

MySQL Router Configuration

☒ **Configure MySQL Router for InnoDB cluster.**

This wizard can bootstrap the MySQL Router to route traffic between MySQL applications and a MySQL InnoDB cluster. Applications that connect to the router will be automatically directed to an available R/W or R/O member of the cluster.

Please provide a connection to the InnoDB cluster below. In order to register the MySQL Router for monitoring, use the current Read/Write instance of the cluster.

Hostname:

Port:

Management User:

Password:

MySQL Router requires specification of a base port (between 80 and 65532). This port is used for classic read/write connections. The other ports must come sequentially after the base port. If any port below is indicated as being unavailable, please change the base port.

Classic MySQL protocol connections to InnoDB cluster:

Read/Write:

Read Only:

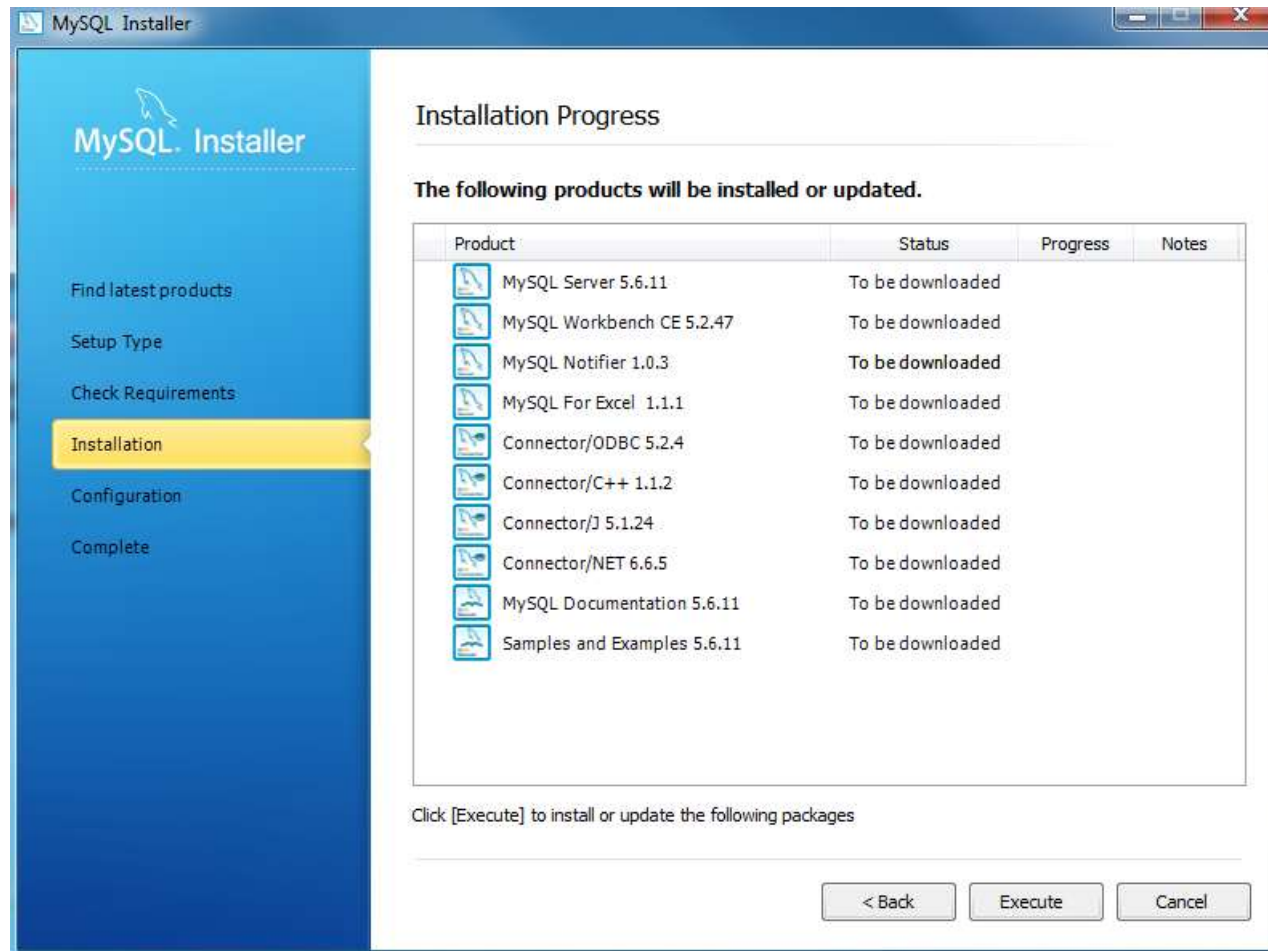
MySQL X Protocol connections to InnoDB cluster:

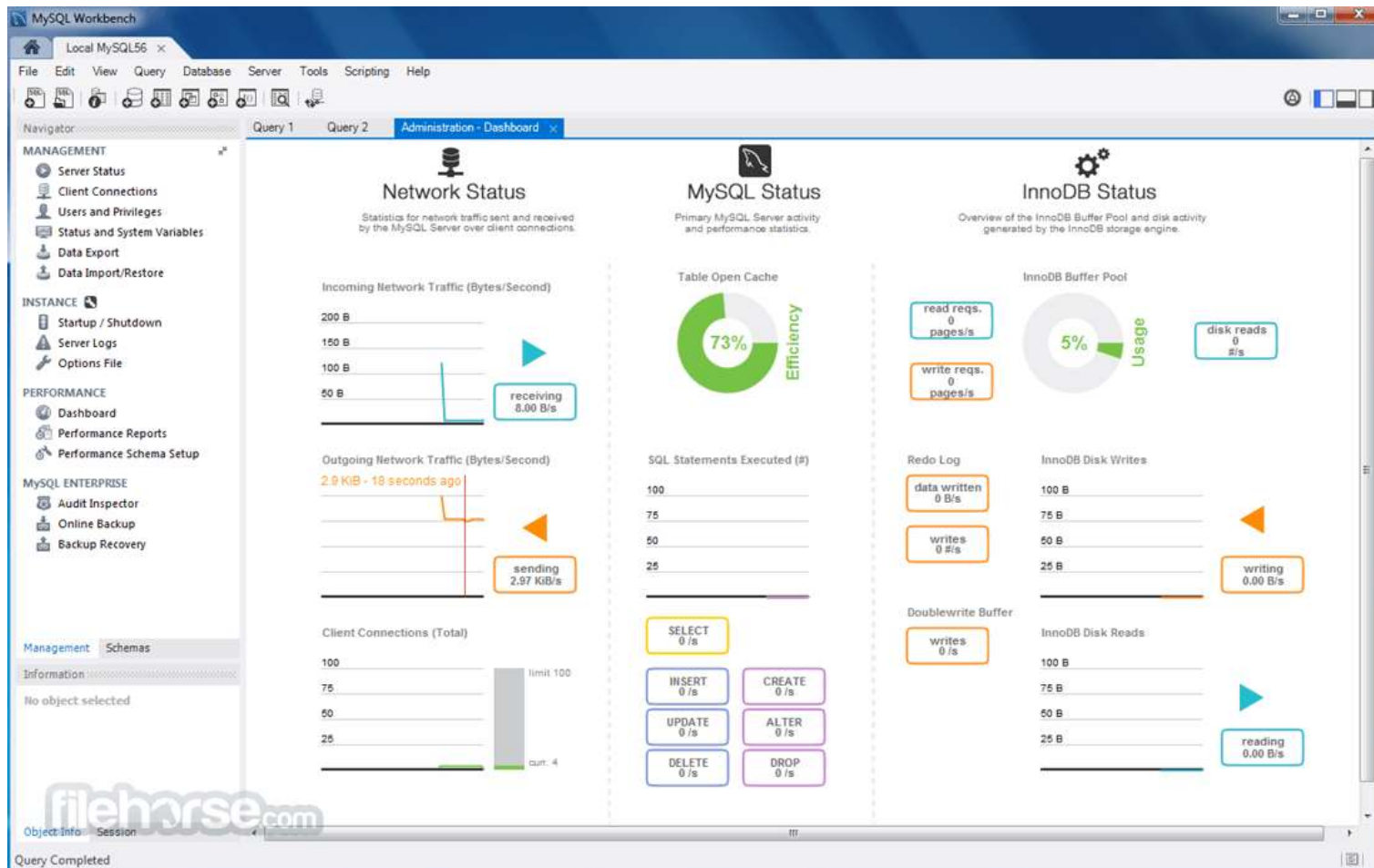
Read/Write:

Read Only:

Next >

Cancel

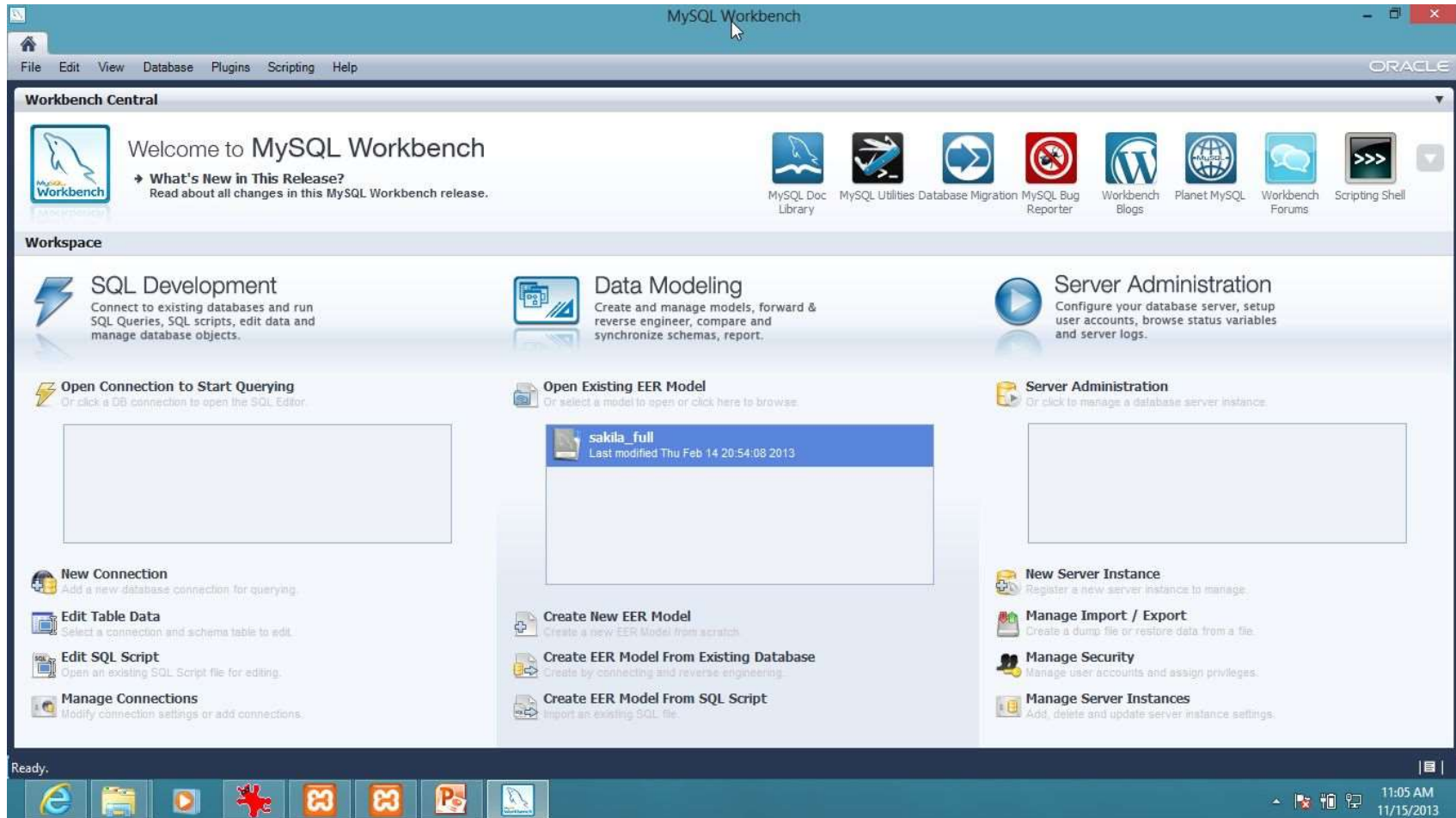




MySQL Workbench

- GNU General Public License or proprietary EULA
- visual database design tool that integrates SQL development, administration, database design, creation and maintenance into a single integrated development environment for the MySQL database system
- Oracle Corporation: mysqlworkbench.org
- Cross-platform

MySQL Workbench



- SQL Development
- Data Modeling
- DataBase Administration

SQL Development

Create New Connection to database server



Setup New Connection localhost

Setup New Connection

Connection Name: Type a name for the connection

Connection Method: Method to use to connect to the RDBMS

Parameters **Advanced**

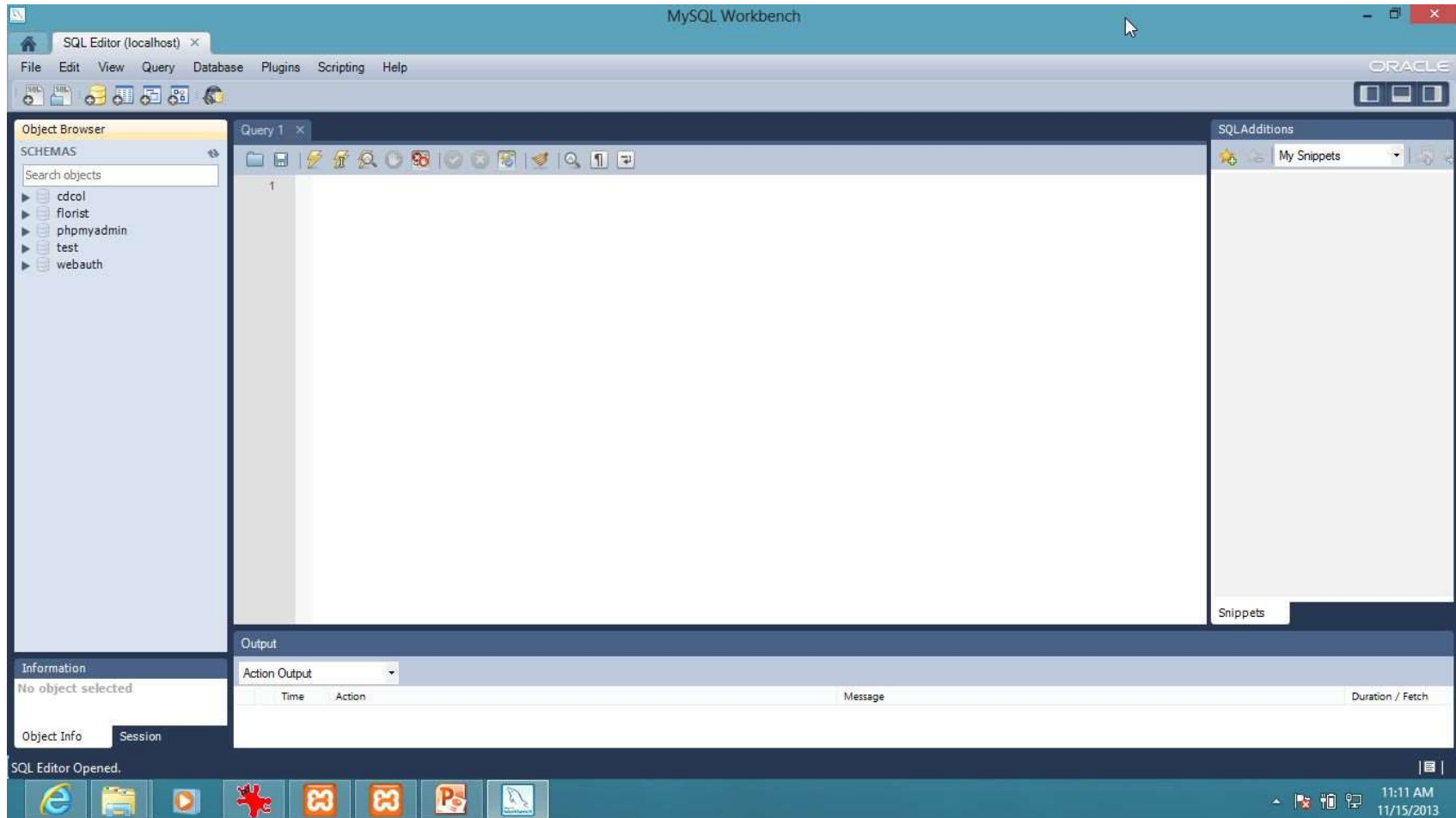
Hostname: Port: Name or IP address of the server host. - TCP/IP port.

Username: Name of the user to connect with.

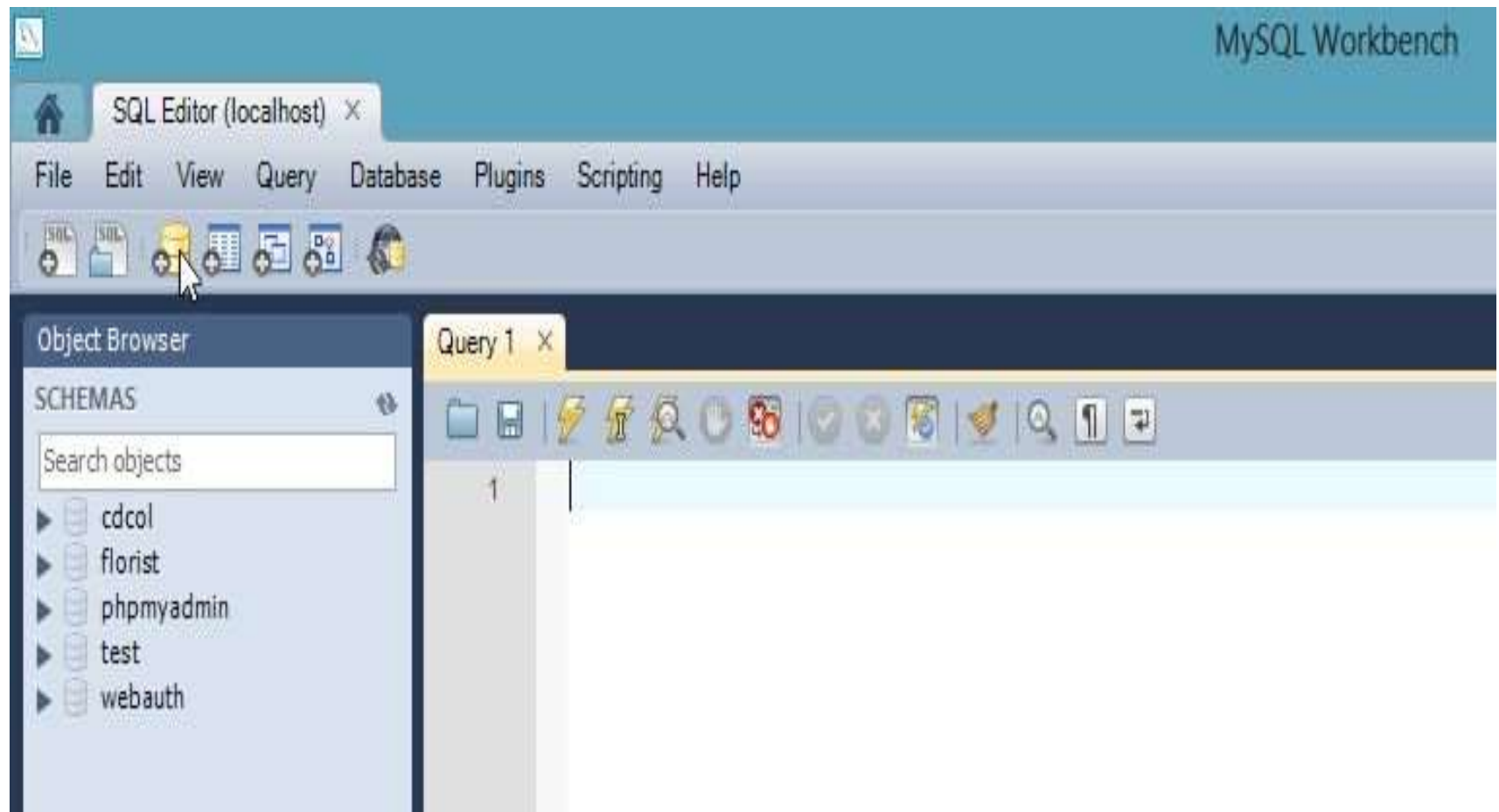
Password: The user's password. Will be requested later if it's not set.

Default Schema: The schema to use as default schema. Leave blank to select it later.

Open Connection to Start Querying



Create New Database Schema



Apply

Query 1 MyIMDB - Schema ×

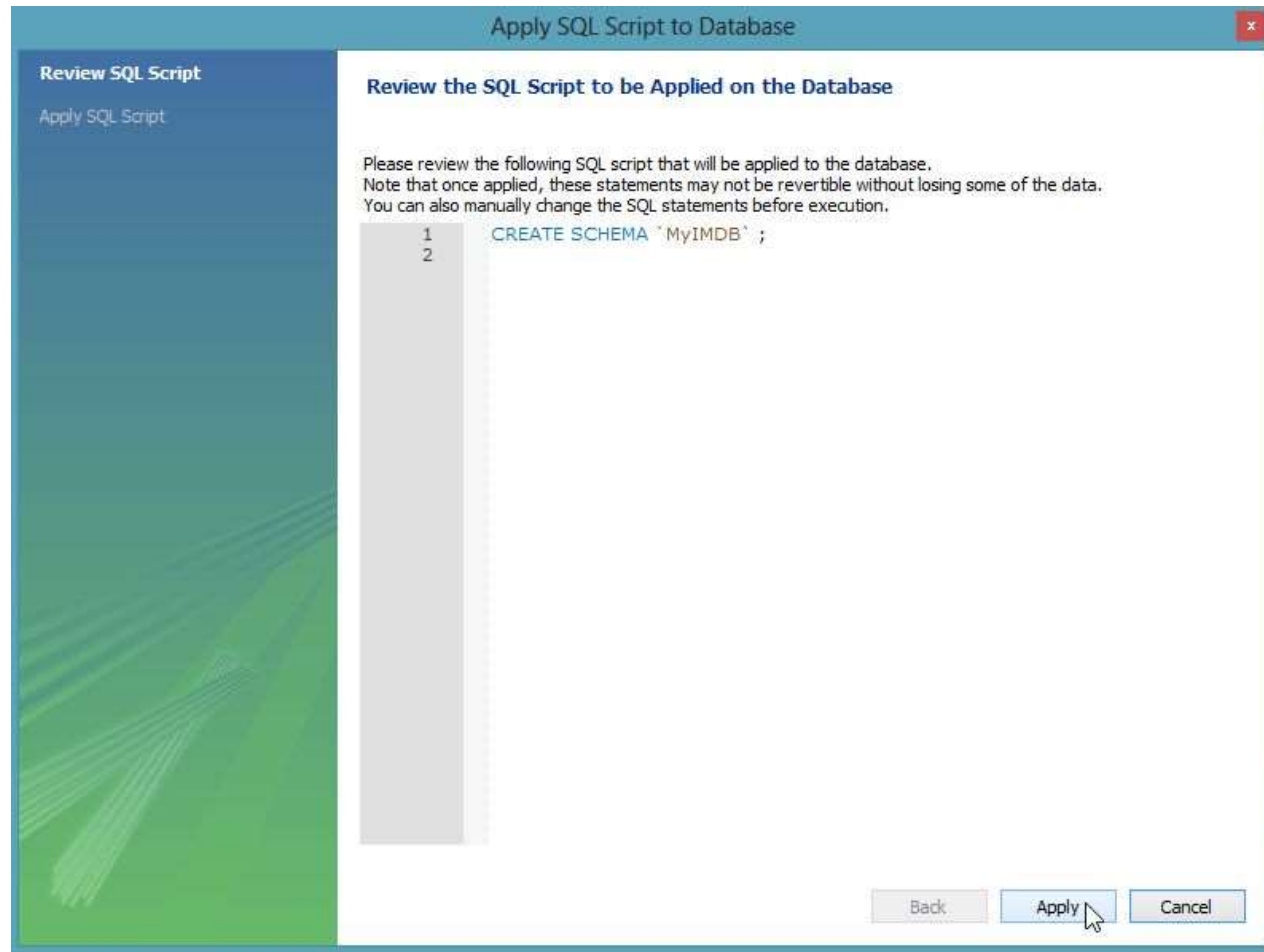
 Name: The name of the schema. It is recommended to use only alpha-numeric characters. Spaces should be avoided and be replaced by _

Collation: Specifies which charset/collations the schema's tables will use if they do not have an explicit setting. Common choices are Latin1 or UTF8.

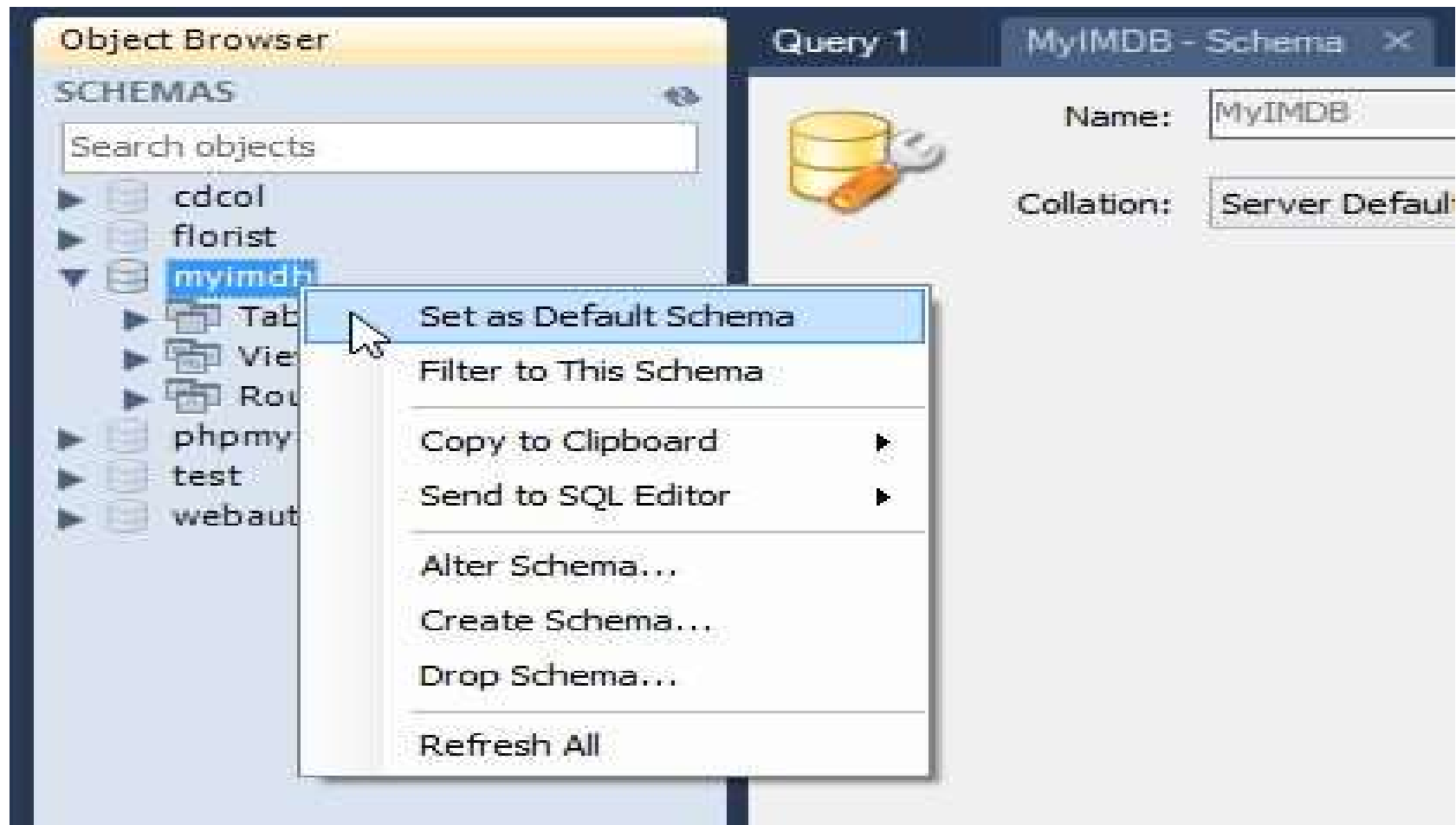
Schema

Apply Revert

SQL Script



Set as Default Schema



Create New Table

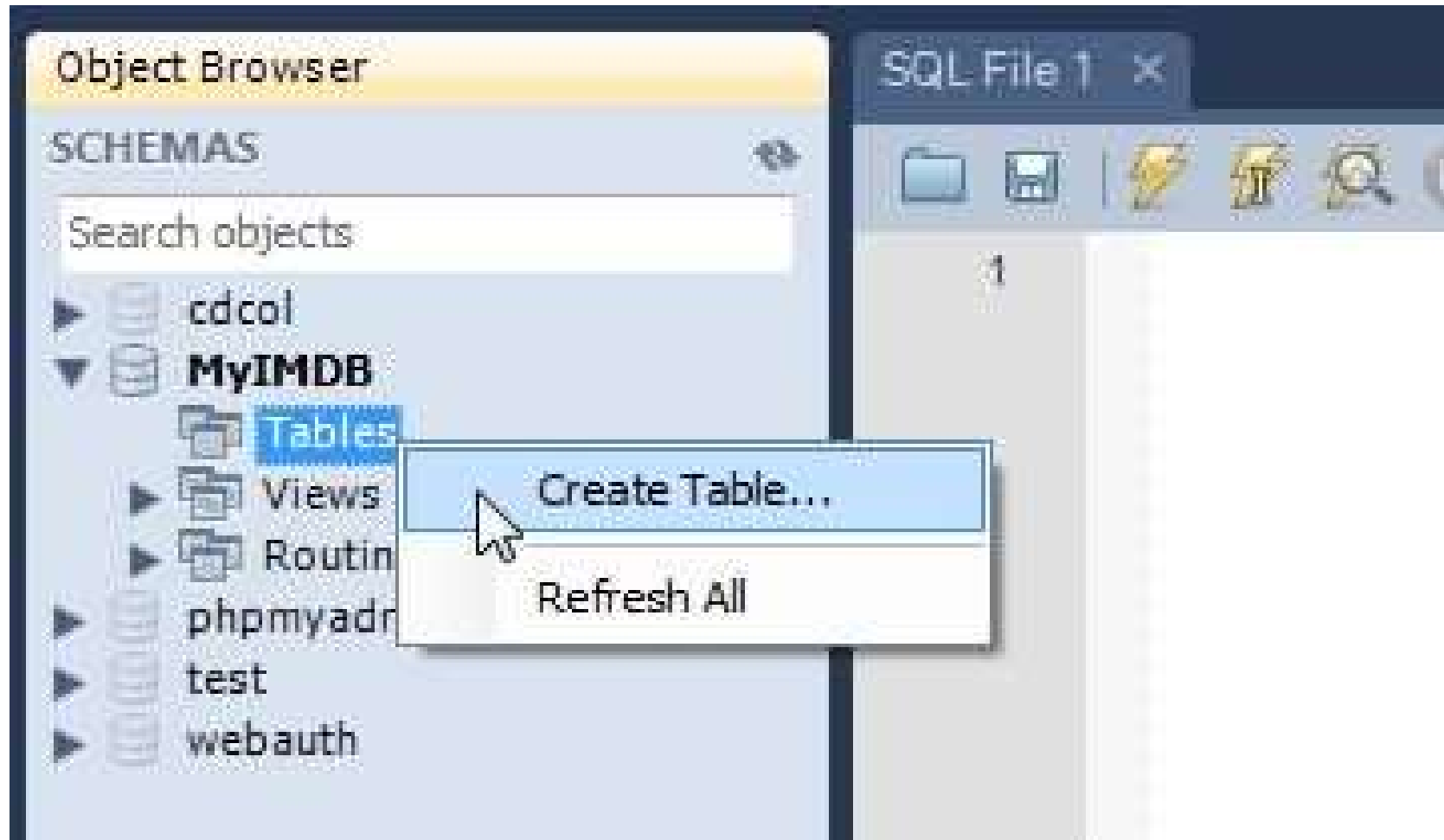


Table *person*

SQL File 1 person - Table x

Table Name: Schema: **MyIMDB**

Collation: Engine:

Comments:

| Column Name | Datatype | PK | NN | UQ | BIN | UN | ZF | AI | Default |
|----------------------|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="text"/> |

Column Name:

Collation:

Comments:

Data Type:

Default:

☐ Primary Key ☐ Not Null ☐ Unique

☐ Binary ☐ Unsigned ☐ Zero Fill

☐ Auto Increment

Columns Indexes Foreign Keys Triggers Partitioning Options

Apply Revert

(database) Engine - InnoDB



Idperson – INT - Primary Key, Auto Increment

| Column Name | Datatype | PK | NN | UQ | BIN | UN | ZF | AI | Default |
|-------------|----------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|---------|
| idperson | 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"/> | |

| | |
|--------------------------|---|
| Column Name: idperson | Data Type: INT |
| Collation: Table Default | Default: |
| Comments: | <input checked="" type="checkbox"/> Primary Key <input type="checkbox"/> Not Null <input type="checkbox"/> Unique |
| | <input type="checkbox"/> Binary <input type="checkbox"/> Unsigned <input type="checkbox"/> Zero Fill |
| | <input checked="" type="checkbox"/> Auto Increment |

Columns Indexes Foreign Keys Triggers Partitioning Options

Apply Revert

Name – VarChar(45) – Not NULL, Unique (Alt Key)

| Column Name | Datatype | PK | NN | UQ | BIN | UN | ZF | AI | Default |
|-------------|-------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|---------|
| idperson | 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"/> | |
| name | VARCHAR(45) | <input type="checkbox"/> | <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"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

| | |
|--------------------------|--|
| Column Name: name | Data Type: VARCHAR(45) |
| Collation: Table Default | Default: |
| Comments: | <input type="checkbox"/> Primary Key <input checked="" type="checkbox"/> Not Null <input checked="" type="checkbox"/> Unique |
| | <input type="checkbox"/> Binary <input type="checkbox"/> Unsigned <input type="checkbox"/> Zero Fill |
| | <input type="checkbox"/> Auto Increment |

Columns Indexes Foreign Keys Triggers Partitioning Options

Apply Revert

Date of Birth, Height, Bio

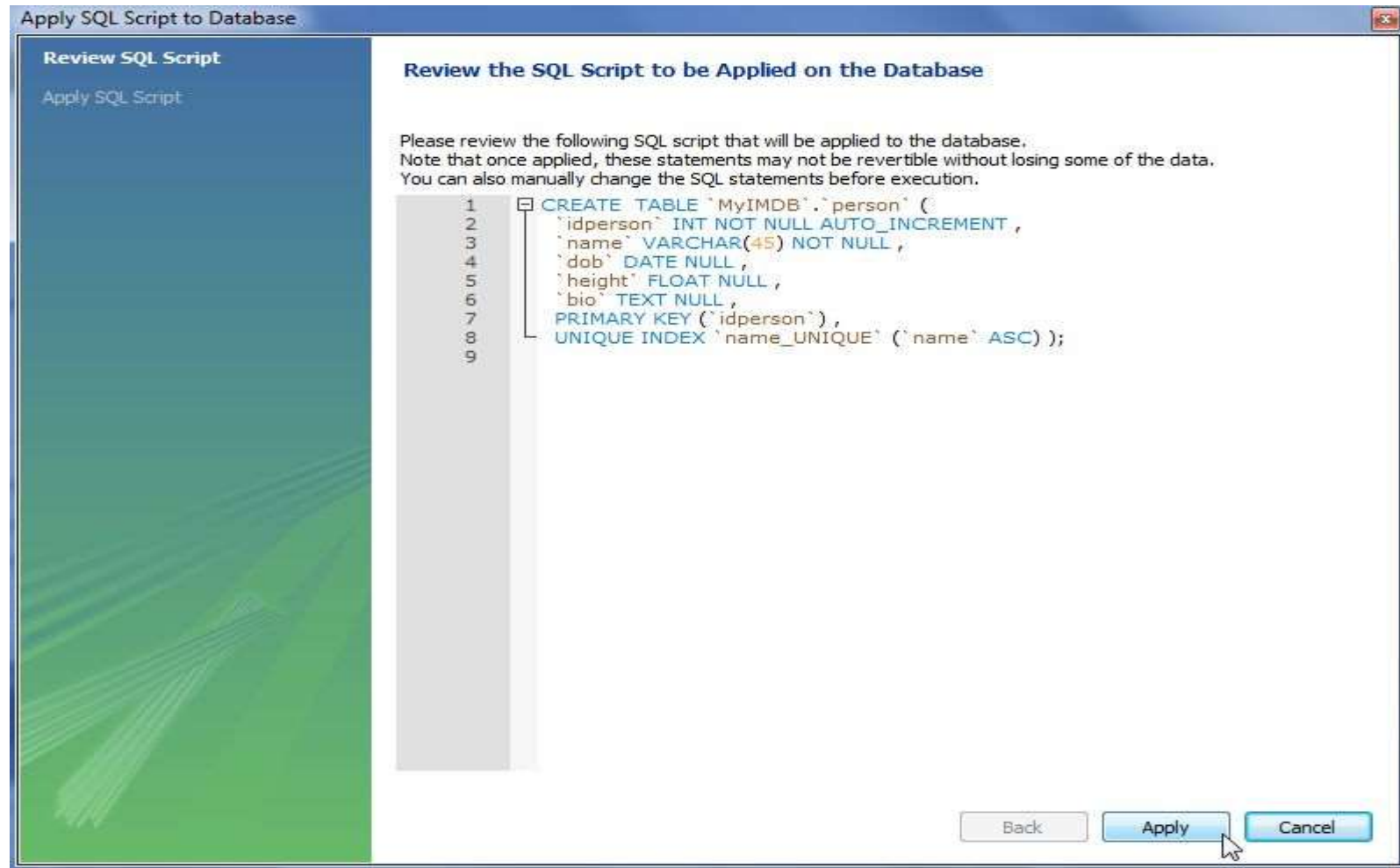
| Column Name | Datatype | PK | NN | UQ | BIN | UN | ZF | AI | Default |
|-------------|-------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------|
| name | VARCHAR(45) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| dob | DATE | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| height | FLOAT | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| bio | TEXT | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

| | |
|--------------------------|--|
| Column Name: bio | Data Type: TEXT |
| Collation: Table Default | Default: |
| Comments: | <input type="checkbox"/> Primary Key <input type="checkbox"/> Not Null <input type="checkbox"/> Unique |
| | <input type="checkbox"/> Binary <input type="checkbox"/> Unsigned <input type="checkbox"/> Zero Fill |
| | <input type="checkbox"/> Auto Increment |

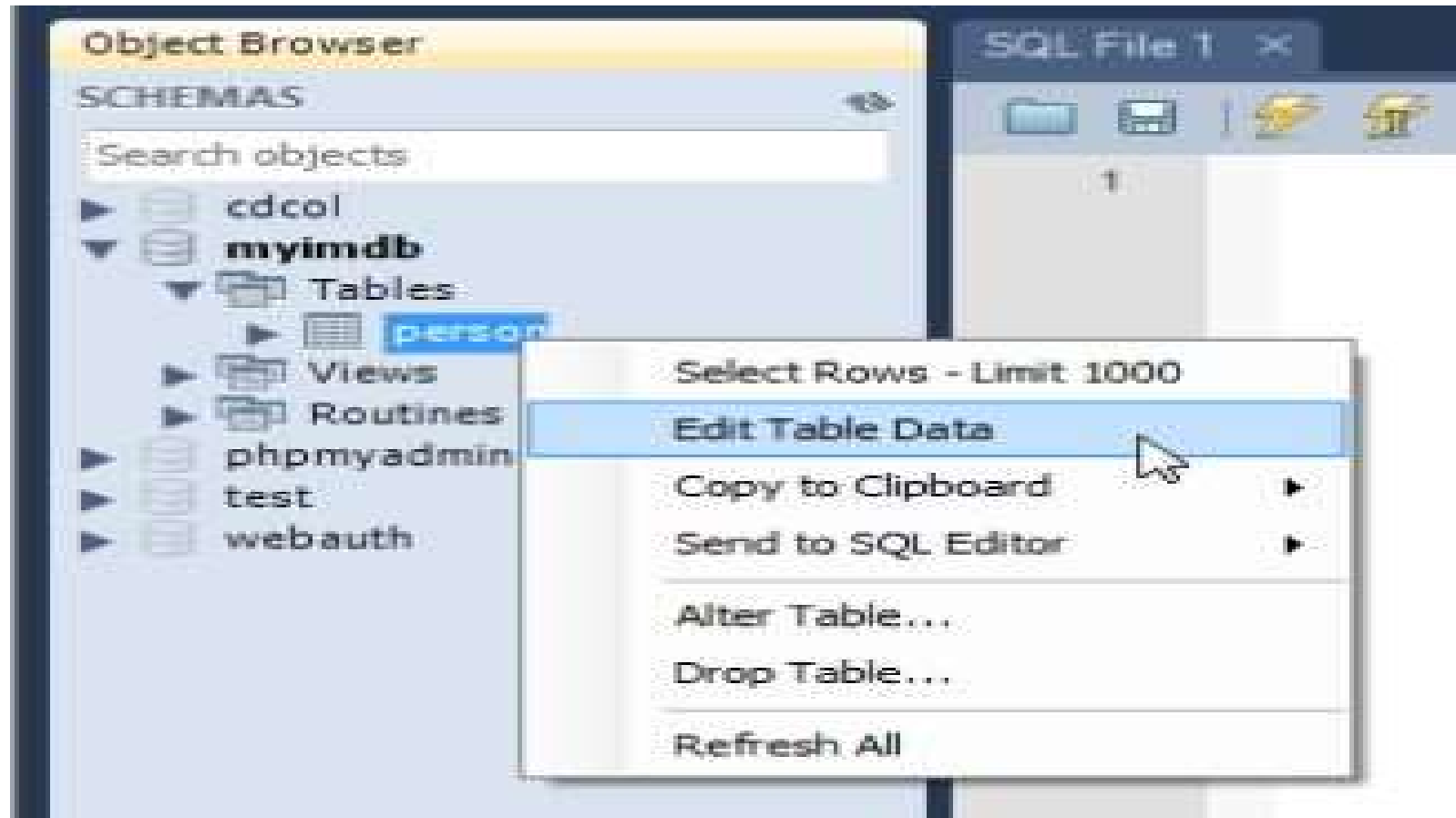
Columns Indexes Foreign Keys Triggers Partitioning Options

Apply Revert

Apply SQL Script



Edit Table Data



Edit Table Data

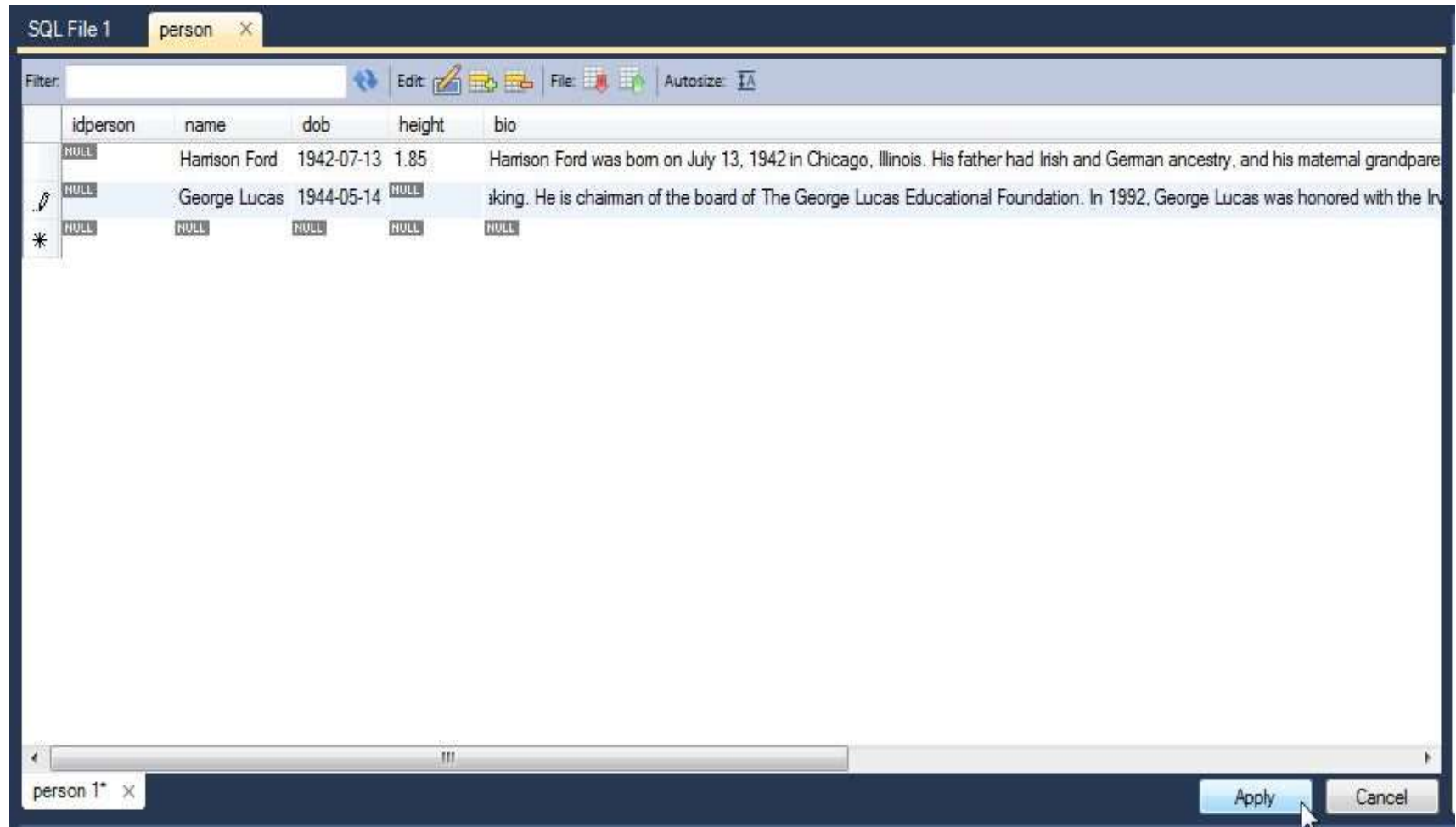
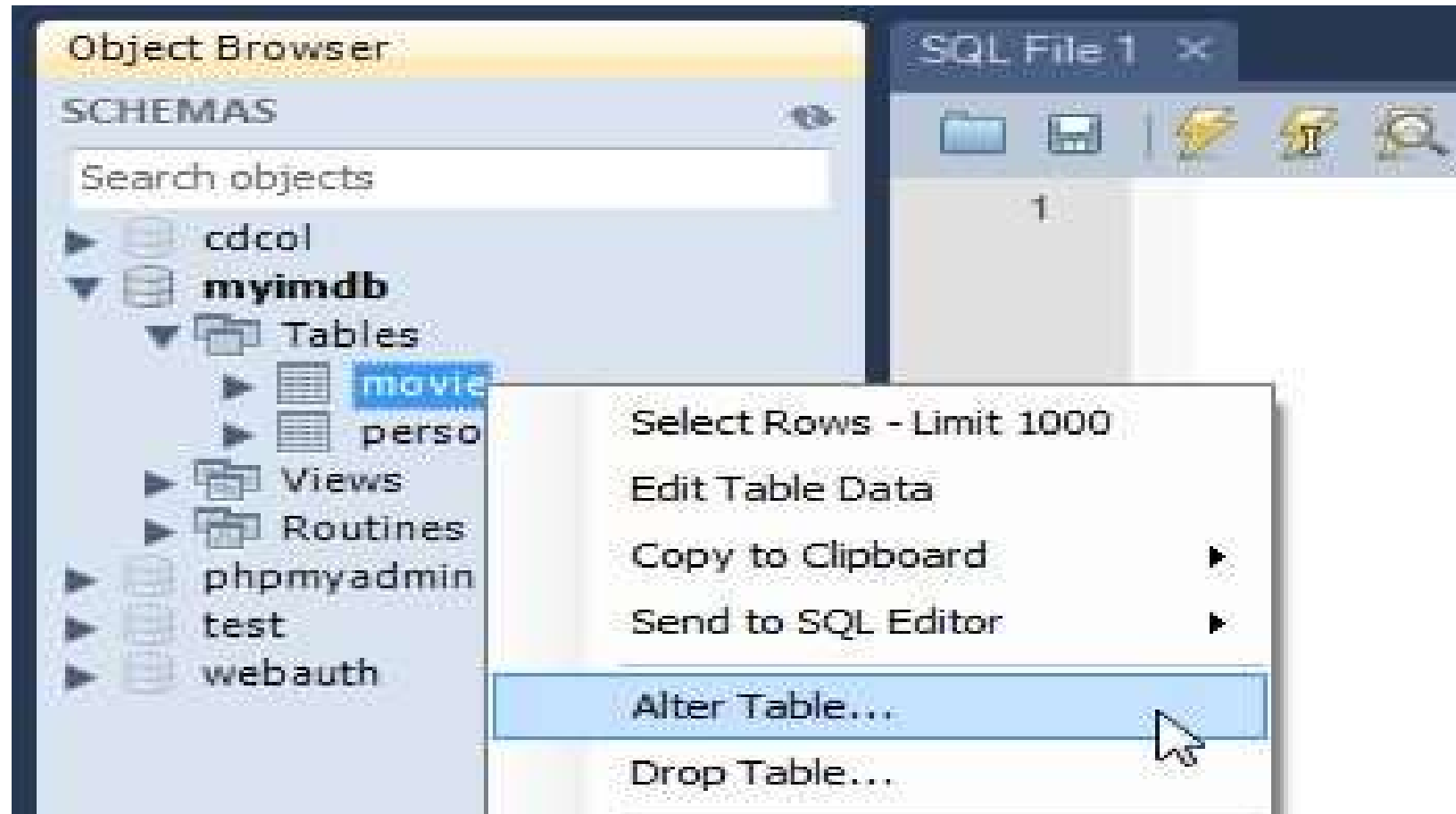


TABLE *movie*


- CREATE TABLE `myimdb`.`movie` (
 - `idmovie` INT NOT NULL AUTO_INCREMENT ,
 - `title` VARCHAR(150) NOT NULL ,
 - `director` INT NOT NULL ,
 - PRIMARY KEY (`idmovie`) ,
 - UNIQUE INDEX `title_UNIQUE` (`title` ASC));

Alter Table



Foreign Key

SQL File 1 movie - Table ×

 Table Name:

Collation:

Comments:

| Foreign Key Name | Referenced Table | Column |
|----------------------|------------------|--------|
| <input type="text"/> | | |

Columns Indexes **Foreign Keys** Triggers Partitioning Options

Referenced Table: Person



Referenced Column: director

| Column | Referenced Column |
|--|-------------------|
| <input type="checkbox"/> idmovie | |
| <input type="checkbox"/> title | |
| <input checked="" type="checkbox"/> director | idperson |

Foreign Key Options

On Update: NO ACTION ▼

On Delete: NO ACTION ▼

☐ Skip in SQL generation

Foreign Key Comment

- Primary Table: person
- Primary Key: idperson
- Must match
- Foreign Table: movie
- Foreign Key: director
- What to do on Update, Delete

Foreign Key Options

On Update:

RESTRICT

On Delete:

RESTRICT

- ALTER TABLE `myimdb`.`movie`
- ADD CONSTRAINT `director` FOREIGN KEY
(`director`) REFERENCES `myimdb`.`person`
(`idperson`)
- ON DELETE RESTRICT
- ON UPDATE RESTRICT,
- ADD INDEX `director_idx` (`director` ASC) ;

TABLE *roles*

(role could be reserved keyword)

- CREATE TABLE `myimdb`.`roles` (
 - `idroles` INT NOT NULL AUTO_INCREMENT ,
 - `rolename` VARCHAR(45) NOT NULL ,
 - PRIMARY KEY (`idroles`) ,
 - UNIQUE INDEX `rolename_UNIQUE`
(`rolename` ASC));

TABLE *casting*

- CREATE TABLE `myimdb`.`casting` (
 - `movie` INT NOT NULL , `person` INT NOT NULL , `RolePlay` INT NOT NULL , PRIMARY KEY (`movie`, `person`, `RolePlay`) ,
 - INDEX `castmovie_idx` (`movie` ASC) , INDEX `castpers_idx` (`person` ASC) , INDEX `castrole_idx` (`RolePlay` ASC) ,
 - CONSTRAINT `castmovie` FOREIGN KEY (`movie`) REFERENCES `myimdb`.`movie` (`idmovie`) ON DELETE RESTRICT ON UPDATE RESTRICT,
 - CONSTRAINT `castpers` FOREIGN KEY (`person`) REFERENCES `myimdb`.`person` (`idperson`) ON DELETE RESTRICT ON UPDATE RESTRICT,
 - CONSTRAINT `castrole` FOREIGN KEY (`RolePlay`) REFERENCES `myimdb`.`roles` (`idroles`) ON DELETE RESTRICT ON UPDATE RESTRICT);

TABLE *characterCast*

- CREATE TABLE `myimdb`.`characterCast` (
 - `idmovie` INT NOT NULL ,
 - `idperson` INT NOT NULL ,
 - `characterName` VARCHAR(45) NULL ,
 - `orderNo` INT NULL DEFAULT 1 ,
 - PRIMARY KEY (`idmovie`, `idperson`));

TABLE *characterCast*

- ALTER TABLE `myimdb`.`charactercast`
- ADD CONSTRAINT `movieCast` FOREIGN KEY (`idmovie`) REFERENCES `myimdb`.`movie` (`idmovie`) ON DELETE RESTRICT ON UPDATE RESTRICT,
- ADD CONSTRAINT `persCast` FOREIGN KEY (`idperson`) REFERENCES `myimdb`.`person` (`idperson`) ON DELETE RESTRICT ON UPDATE RESTRICT, ADD INDEX `movieCast_idx` (`idmovie` ASC) , ADD INDEX `persCast_idx` (`idperson` ASC) ;

Data Modeling

Create Entity Relationship Model from Existing Database

The screenshot displays the SQL Enterprise Manager interface, specifically the Data Modeling pane. At the top, there are two main sections: "Data Modeling" and "Server Administration".

Data Modeling Section:

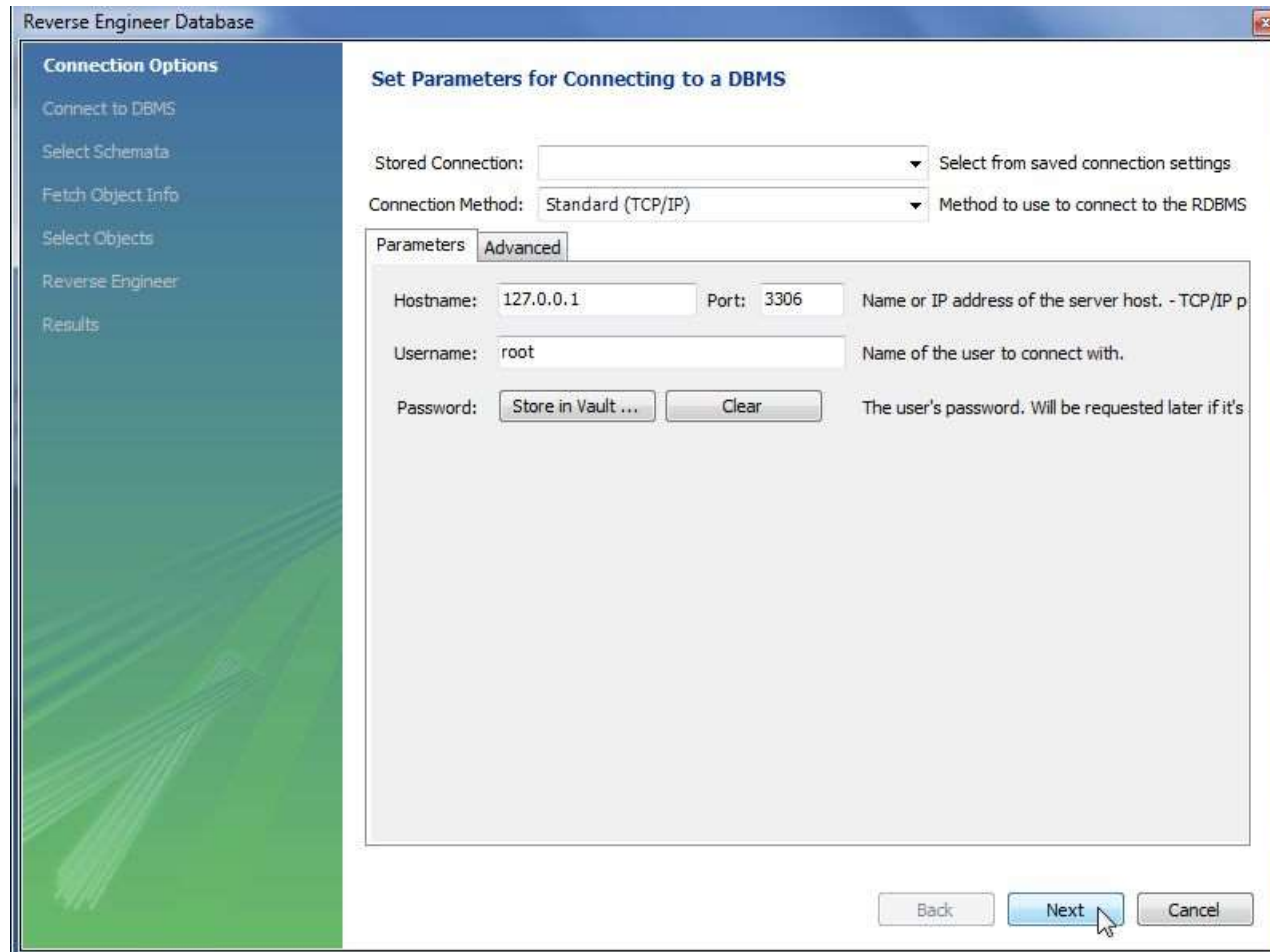
- Data Modeling:** Create and manage models, forward & reverse engineer, compare and synchronize schemas, report.
- Open Existing EER Model:** Or select a model to open or click here to browse. Below this, a list shows a model named "sakila_full" with the last modified date "Thu Feb 14 21:54:08 2013".
- Create New EER Model:** Create a new EER Model from scratch.
- Create EER Model From Existing Database:** Create by connecting and reverse engineering. This option is highlighted with a mouse cursor.
- Create EER Model From SQL Script:** Import an existing SQL file.

Server Administration Section:

- Server Administration:** Configure your database server, setup user accounts, browse status variables and server logs.
- Server Administration:** Or click to manage a database server instance. Below this, a list shows a server instance named "localhost" with the local type "Windows".
- New Server Instance:** Register a new server instance to manage.
- Manage Import / Export:** Create a dump file or restore data from a file.
- Manage Security:** Manage user accounts and assign privileges.
- Manage Server Instances:** Add, delete and update server instance settings.

Reverse Engineer

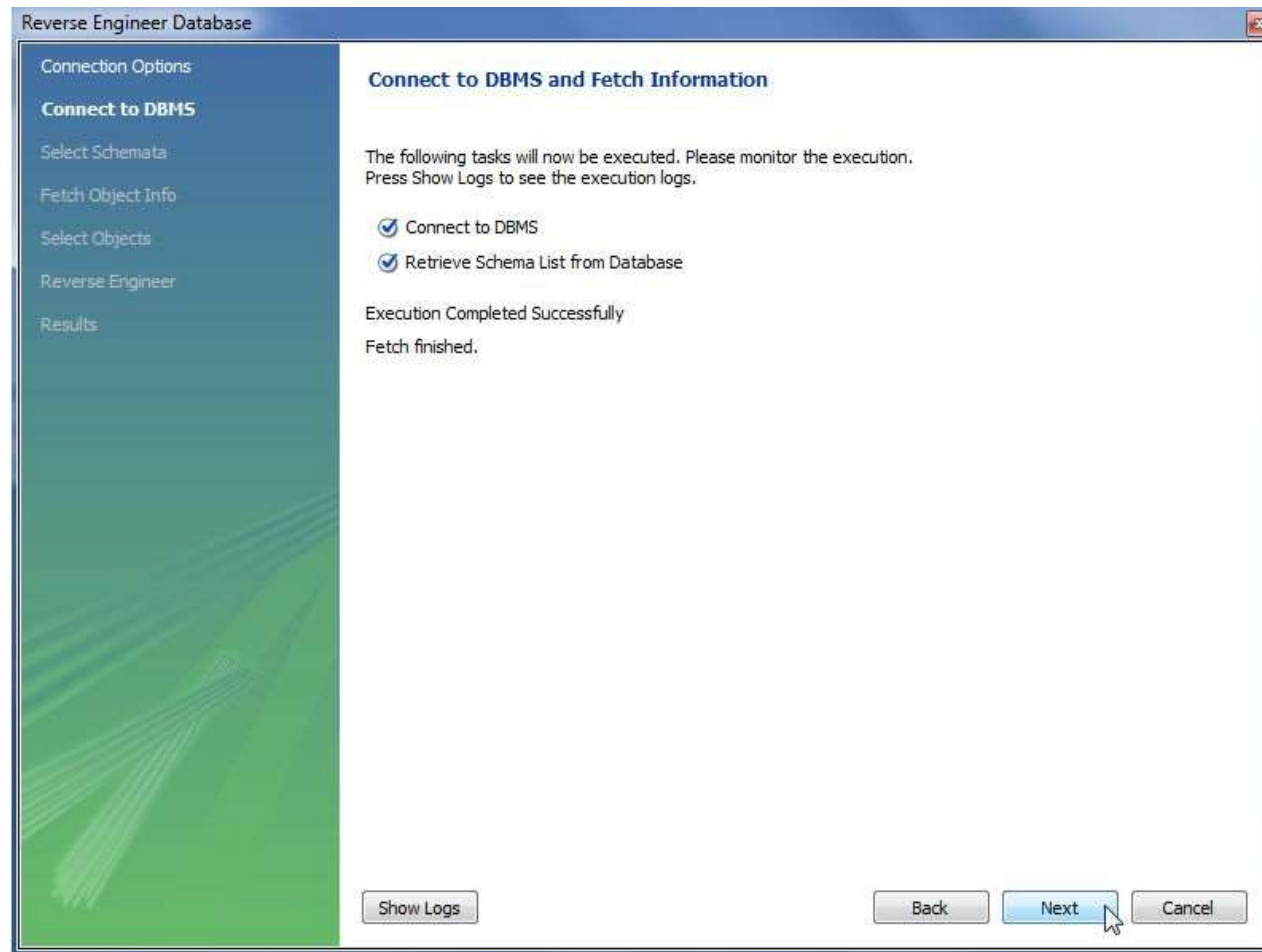
Stored Connection: localhost



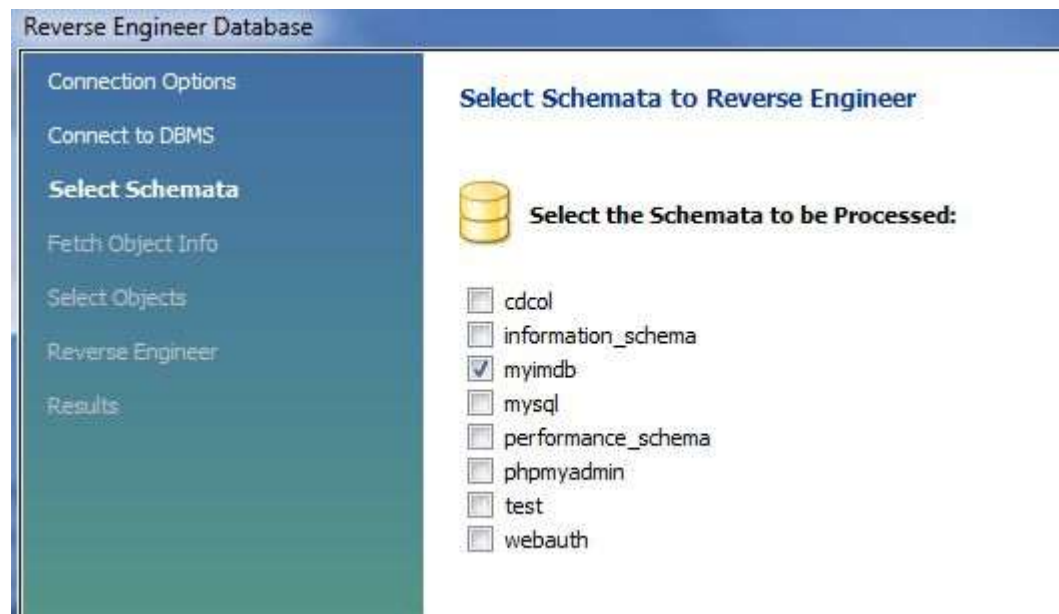
The screenshot shows the 'Reverse Engineer Database' application window. On the left is a sidebar with a tree view containing the following items: 'Connection Options' (selected), 'Connect to DBMS', 'Select Schemata', 'Fetch Object Info', 'Select Objects', 'Reverse Engineer', and 'Results'. The main area is titled 'Set Parameters for Connecting to a DBMS'. It contains the following fields and controls:

- 'Stored Connection:' dropdown menu with a downward arrow and the text 'Select from saved connection settings'.
- 'Connection Method:' dropdown menu with 'Standard (TCP/IP)' selected and the text 'Method to use to connect to the RDBMS'.
- 'Parameters' tab and 'Advanced' sub-tab.
- 'Hostname:' text box with '127.0.0.1' and 'Port:' text box with '3306'. To the right is the text 'Name or IP address of the server host. - TCP/IP p'.
- 'Username:' text box with 'root' and the text 'Name of the user to connect with.'.
- 'Password:' section with a 'Store in Vault ...' button, a 'Clear' button, and the text 'The user's password. Will be requested later if it's'.
- At the bottom right are three buttons: 'Back', 'Next' (highlighted with a mouse cursor), and 'Cancel'.

... Next ...

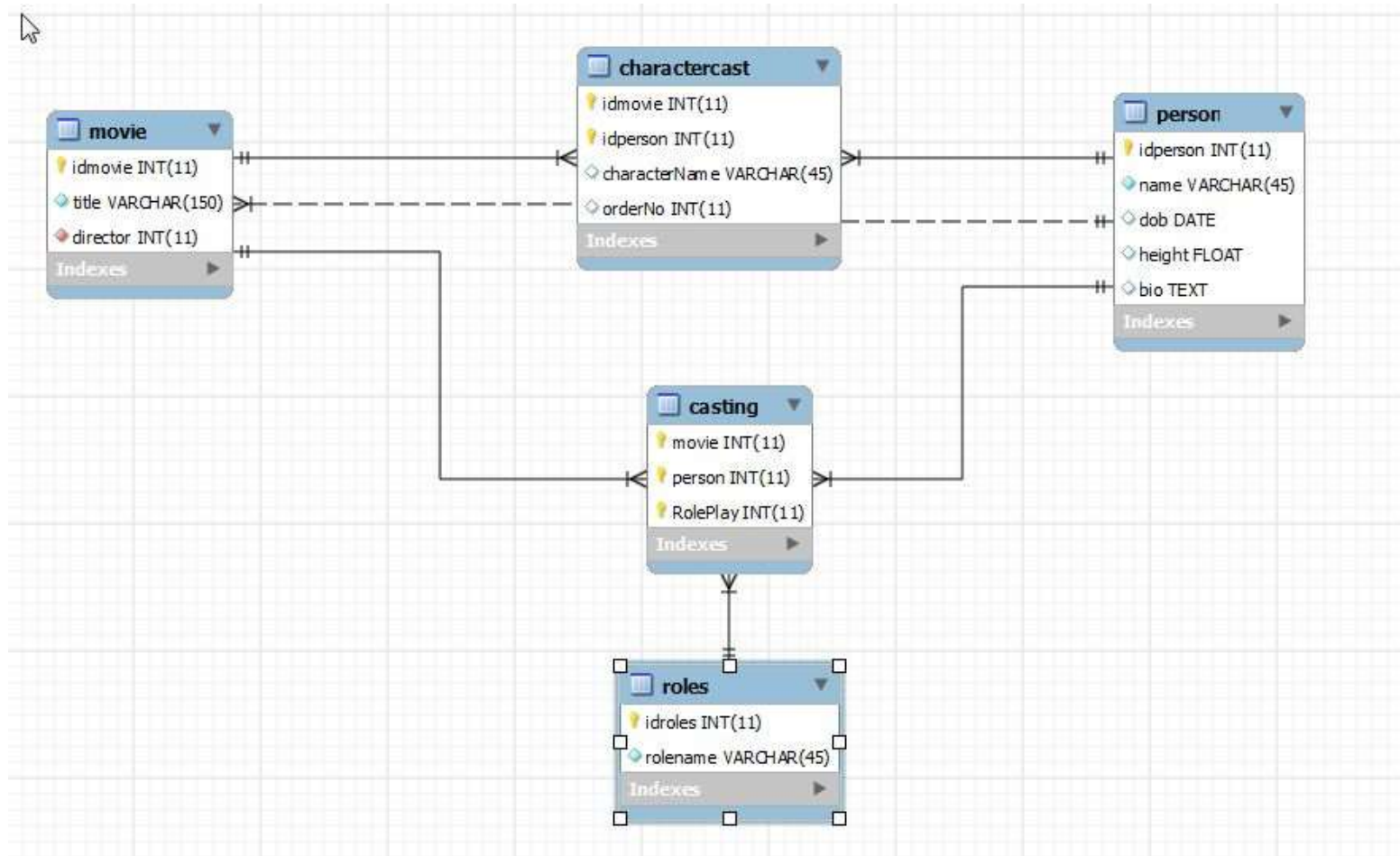


Select Database Schema to Reverse Engineer



DataBase Diagram

Entity Relationship Diagram



ER database diagram

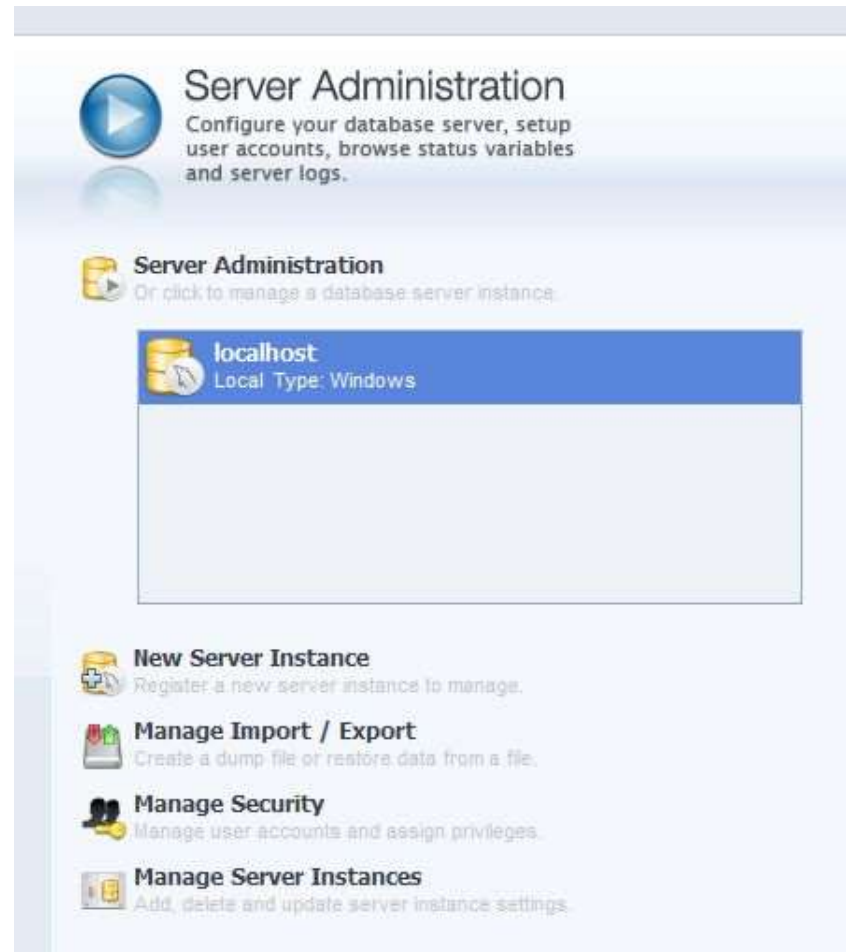
- One to Many (weak) Relationship between Person and Movie
 - One Person direct many Movies
 - One Movie is directed by one single person

ER database diagram

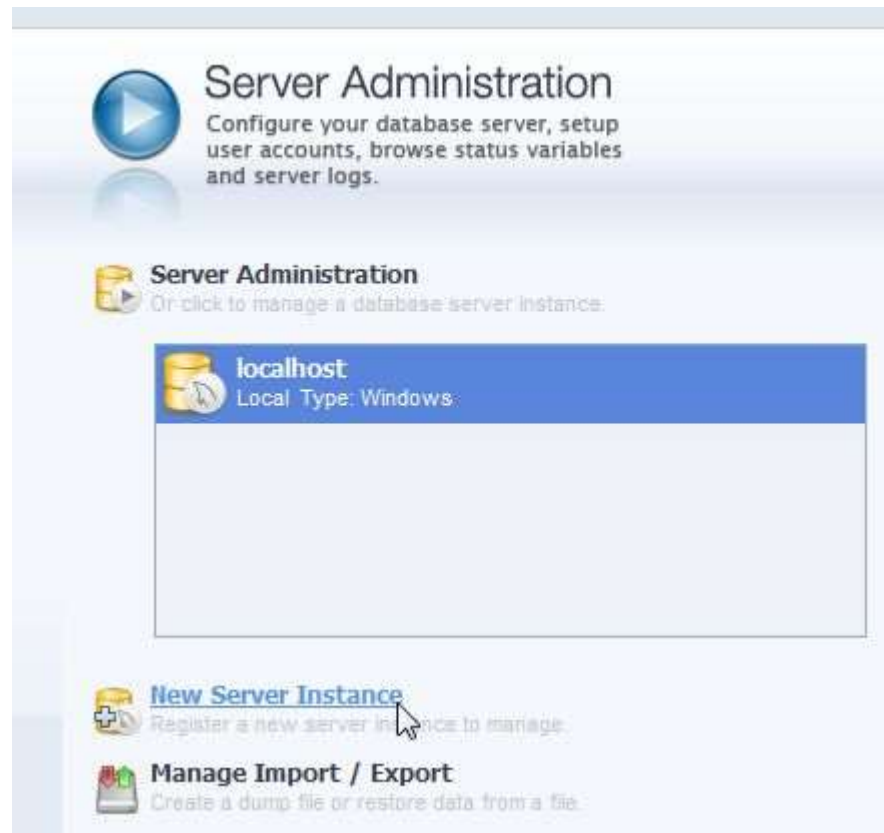
- Many to Many Relationship (Character Casting) between Movie and Person
 - Artistic roles
- Ternary Many to Many Relationship (Casting) between Movie and Person and Roles (Writer, ...)
 - Technical roles

DataBase Administration

Server Administration



Create New Server Instance



Localhost ... Next ...

The screenshot shows a Windows-style dialog box titled "Create New Server Instance Profile". On the left is a vertical sidebar with a blue header "Specify Host Machine" and several menu items: "Database Connection", "Test DB Connection", "Management and OS", "SSH Configuration", "Windows Management", "Test Settings", "Review Settings", "MySQL Config File", "Specify Commands", and "Complete Setup". The main area of the window has a title "Specify the Host Machine the Database Server is running on". Below the title is a paragraph of text explaining the wizard's purpose. Further down, there are three radio button options: "localhost" (which is selected), "Remote Host", and "Take Parameters from Existing Database Connection". The "Remote Host" option has an associated text input field labeled "Address:" with the placeholder text "Either IP Address or Hostname". The "Take Parameters from Existing Database Connection" option has a dropdown menu showing "localhost (User: root Host: 127.0.0.1:3306)". At the bottom right of the window are three buttons: "Back", "Next" (with a mouse cursor hovering over it), and "Cancel".

Create New Server Instance Profile

Specify Host Machine

Database Connection
Test DB Connection
Management and OS
SSH Configuration
Windows Management
Test Settings
Review Settings
MySQL Config File
Specify Commands
Complete Setup

Specify the Host Machine the Database Server is running on

This wizard will guide you through the creation of a Server Profile to manage a MySQL server. To fully support management of a remote MySQL server, an SSH daemon must be running on the target machine. Alternatively, if you are going to manage a Windows server from a Windows computer, you can also use native Windows management tools. Remote management is used to start and stop a server and do server configuration. You may create a Profile without remote management if you do not need that functionality.

If your database server is running on the same machine as this application select localhost. Otherwise please specify the TCP/IP address or the network name of the remote machine. You may also pick an existing database connection.

☒ localhost

☐ Remote Host

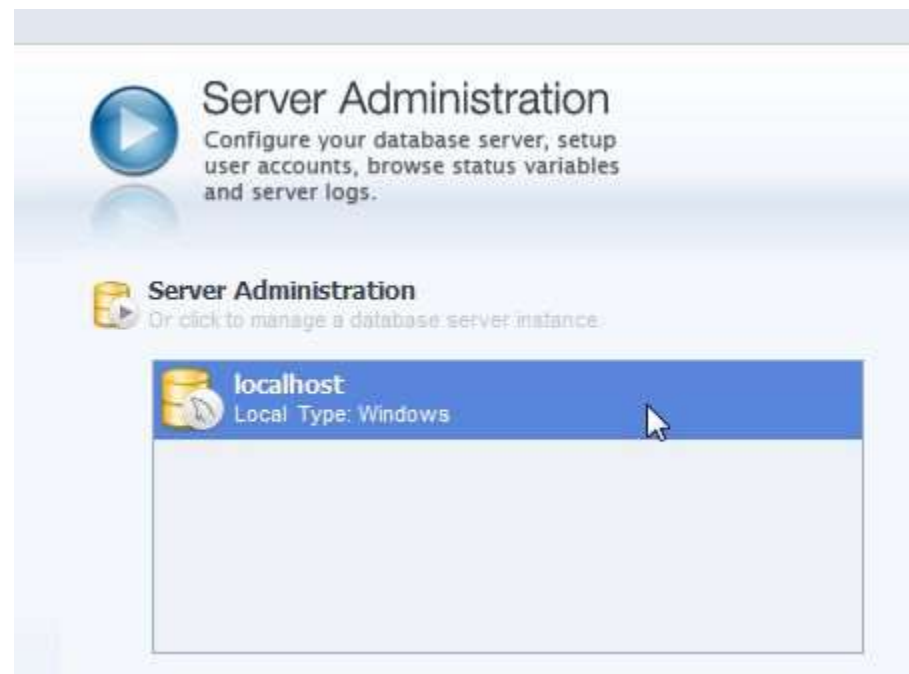
Address: Either IP Address or Hostname

☐ Take Parameters from Existing Database Connection

localhost (User: root Host: 127.0.0.1:3306)

Back Next Cancel

Administration of localhost server instance



MySQL Workbench

MySQL Model* x Admin (localhost) x

File Edit View Database Plugins Scripting Help

Task and Object Browser

MANAGEMENT

- Server Status
- Startup / Shutdown
- Status and System Variables
- Server Logs

CONFIGURATION

- Options File

SECURITY

- Users and Privileges

DATA EXPORT / RESTORE

- Data Export
- Data Import/Restore

Server Status

INFO

Name: localhost
Host: 127.0.0.1
Server: 5.5.27
Status: Running

SYSTEM

CPU: -- Mem: --

SERVER HEALTH

Connection Usage: -- Traffic: -- Query Cache Hitrate: -- Key Efficiency: --

CONNECTIONS

| Id | User | Host | DB | Command | Time | State | Info |
|----|------|-----------------|------|---------|------|-------|-----------------------|
| 31 | root | localhost:53644 | None | Query | 0 | None | SHOW FULL PROCESSLIST |
| 32 | root | localhost:53645 | None | Sleep | 0 | None | None |

Data Export

Task and Object Browser

MANAGEMENT

- Server Status
- Startup / Shutdown
- Status and System Variables
- Server Logs

CONFIGURATION

- Options File

SECURITY

- Users and Privileges

DATA EXPORT / RESTORE

- Data Export
- Data Import/Restore

Server Status

INFO

Name: **localhost**
Host: **127.0.0.1**
Server: **5.5.27**
Status: **Running**

SYSTEM

CPU: 0% Mem: 56%

SERVER HEALTH

Connection Usage: 2 Traffic:

CONNECTIONS

| Id | User | Host | DB | Command | Time | State |
|----|------|-----------------|------|---------|------|-------|
| 31 | root | localhost:53644 | None | Query | 0 | None |
| 32 | root | localhost:53645 | None | Sleep | 0 | |

Select Database objects to Export

Export to Self Contained File

Start Export

