

DATABASE SYSTEMS

Introduction to MySQL



Database System Course, 2016

AGENDA FOR TODAY



Administration



Database Architecture on the web



Database history in a brief



Databases today



MySQL

What is it

How to use it



Homework

AGENDA (EXTENDED)

Administration

Database Architecture (recap?)

 Database as a software

 Database as a server

 Database in the context of a web application

Database history in a brief

 **Databases today:** RDBMS, Columnar, RDF, Documents database

MySQL

Introduction and History

Schema

How to connect remotely (SSH, different clients)

How to install locally (Xampp/MySql workbench/Phpmyadmin)

Executing queries

ADMINISTRATION

 **Course website:** <http://courses.cs.tau.ac.il/0368-3458/databases201516>

 **My Email:** (in the website)

 **TDBSoverflow:** Our new q&a platform:

- <http://www.cs.tau.ac.il/~amitsome/dbforum/index.php>
- Works like stackoverflow
- Material related questions will not be answered elsewhere.
- **Final grade bonus:** will be given to the top 5 users in the forum (rank): [2,2,3,3,5] for [5th,4th,3rd,2nd,1st)

ADMINISTRATION



Homework Submission

- Submission date is on the website.. (No late arrivals will be accepted)
- Work should be done in pairs
- Submission is done via moodle, by one of the partners
- Submit a zip file, with
 - an answers pdf that contains the full names and IDs of both partners on top of the page
 - A .sql file for every query. **Make sure it's runnable.**

ADMINISTRATION



The final project

- It's really useful and practical (now more than ever)
- Work in groups of 4-5.
- Project goal: to build a full-fledged web based application while tackling a real-life DB related development issue.
- One Milestone (see dates on the website)
- Using PHP or Python.

AGENDA FOR TODAY



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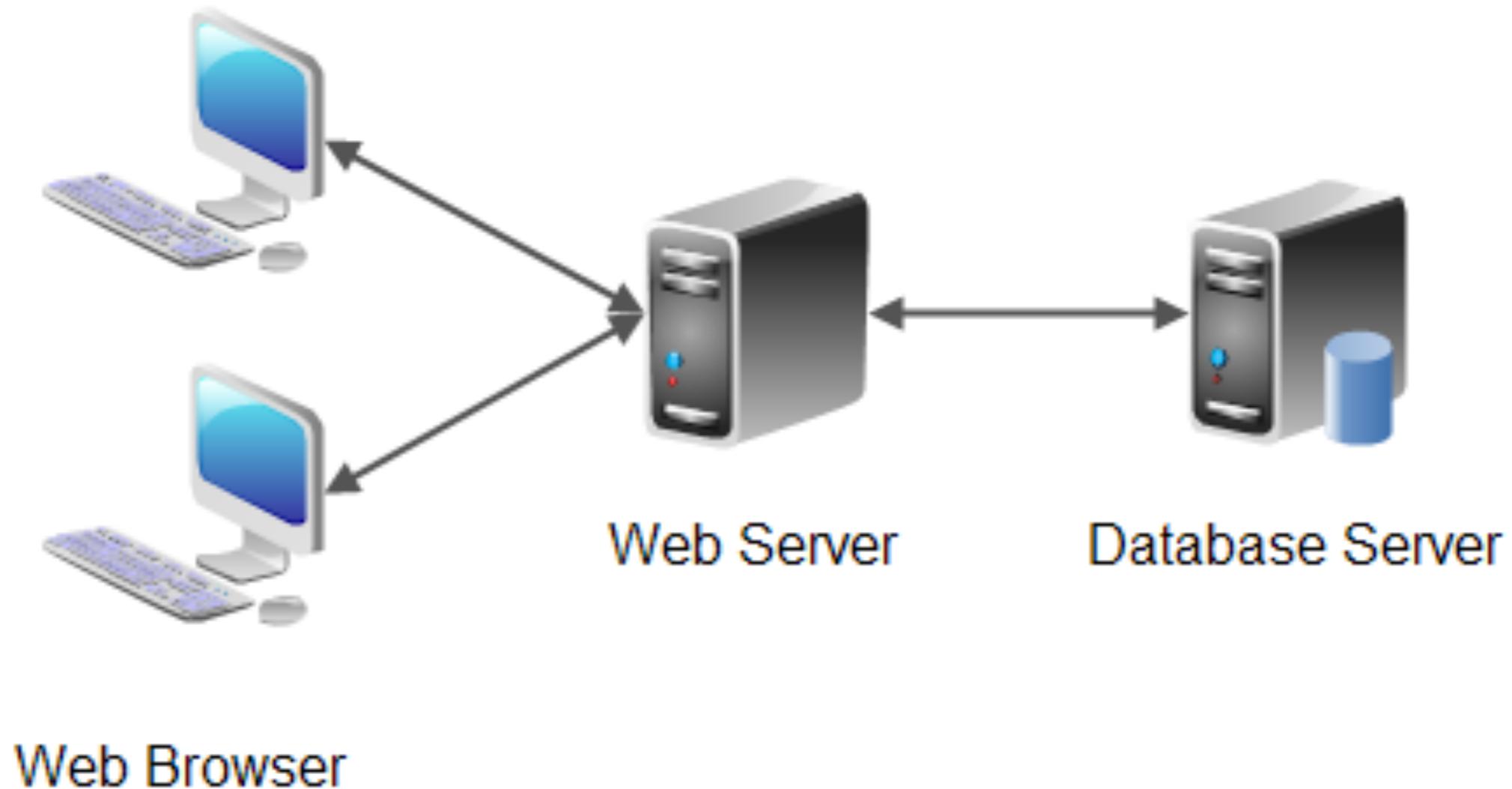


Homework

DATABASE ARCHITECTURE ON THE WEB (BRIEF)

-  Database server is a **standalone** server.
-  Database server is not accessible to web-users (when configured securely)
-  Only the web server communicates with the DB.
-  Administrators have special permissions to access to the database management system directly.

DATABASE ARCHITECTURE ON THE WEB (ILLUSTRATION)



DATABASE ARCHITECTURE ON THE WEB (EXTENDED)

 Database is a process, running within an operation system on a physical or virtual server.

 When running, the data base software process binds a listening network port on a local interface.

 A web server is also a process, binding a listing port.

 **Security configuration (e.g. in a Firewall)**

Only the web server is allowed to connect to the DB port.

Administrator user is allowed to connect to the DB port directly (in a secured connection, like you soon....^_^)

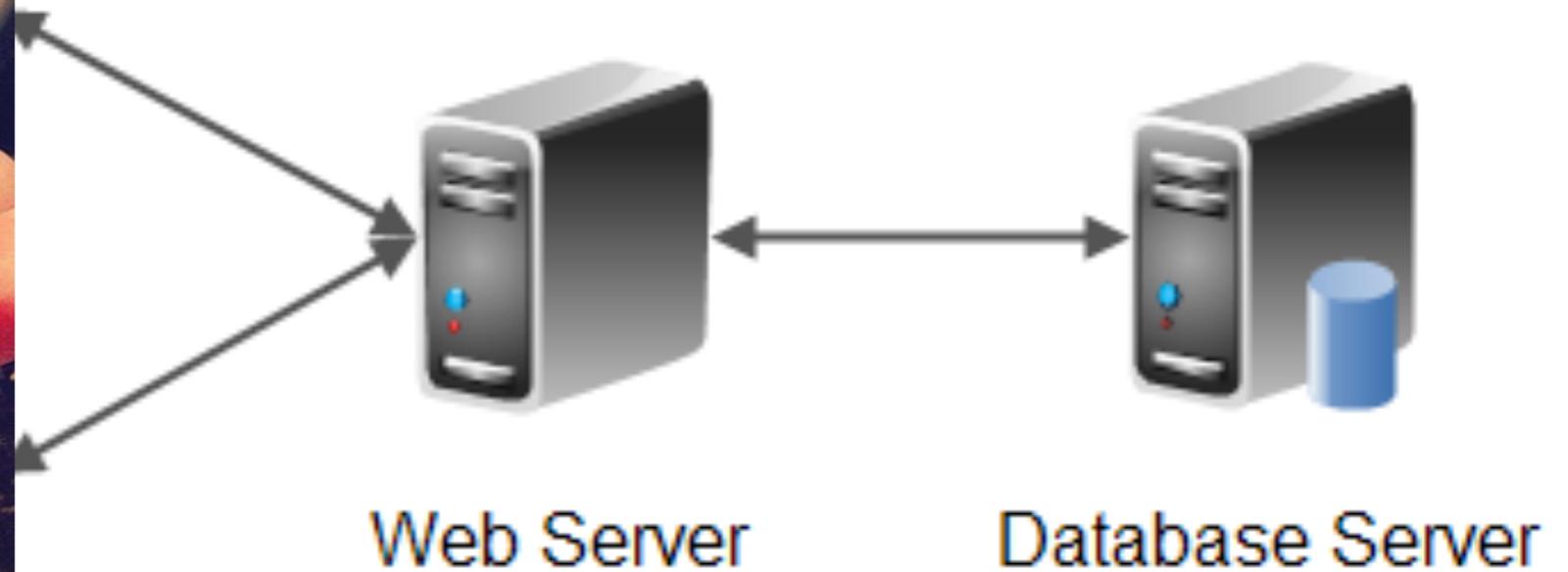
The web server is open to web-users.

DATABASE ARCHITECTURE ON THE WEB (EXTENDED)

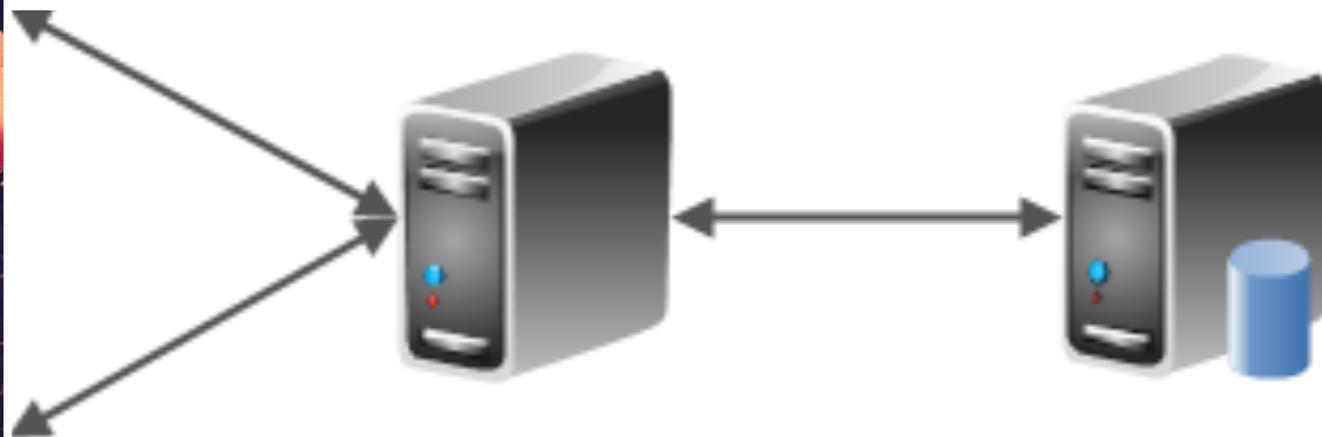
Web session illustration in 6 simple stages

1. A client opens a web browser in her computer
2. Within the web browser she type the URL of a website (e.g. ynet.co.il)
3. The browser issues an HTTP session to request the website's content.
4. The web server receive the HTTP request
5. The web server connects to the DB server to retrieve data (e.g., current articles of today)
6. The web server returns the client the content of the page.

HOW DOES INSTAGRAM WORKS?



HOW DOES INSTAGRAM WORKS?



Web Server

Database Server

- ★ Image Processing
- ★ UI operations

- ★ Authentication
- ★ Notifications
- ★ API

- ★ Images table
- ★ Users table

AGENDA FOR TODAY



Administration



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DATABASE HISTORY

1966 IBM: Information Management System

 Designed for the Apollo space program, to store inventory, components and materials for Saturn V rocket. It was running on an IBM mainframe computer.

 IMS was a **hierarchical database**, relying on the "manual" navigation of a linked data set which was formed into a large network. Applications could find records by one of three methods:

1. Use of a primary key (known as a CALC key, typically implemented by hashing)
2. Navigating relationships (called sets) from one record to another
3. Scanning all the records in a sequential order



DATABASE HISTORY

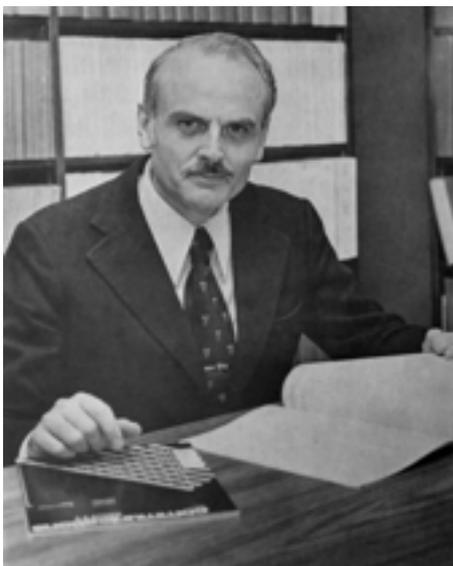
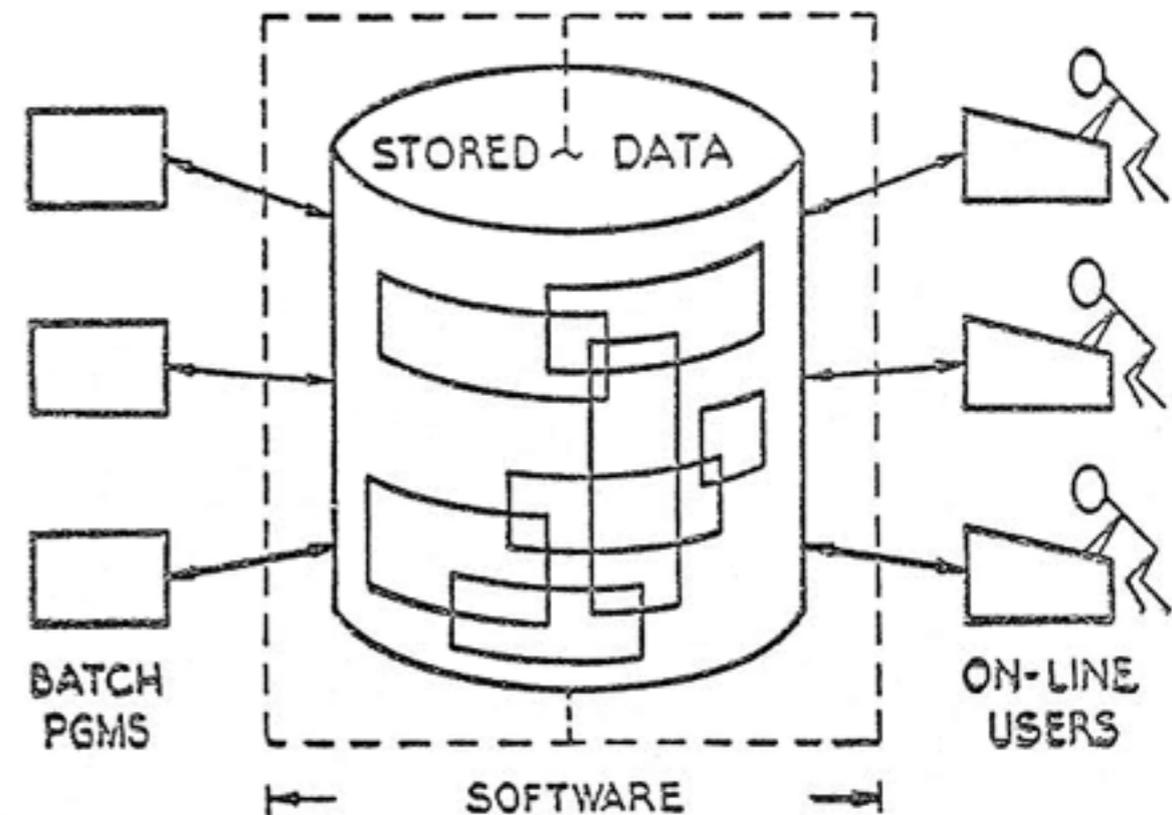
🐟 1970 The relational model (theoretical)

- 🐟 Mechanical hard drives invented
- 🐟 It's sucks to search in the hierarchical DB,
- 🐟 Invented by Edgar Codd from IBM

🐟 1974 IBM "System R"

- 🐟 R is for relational.
- 🐟 First implementation of SQL
- 🐟 Proving the performance and usability of the relational model

A DATABASE SYSTEM

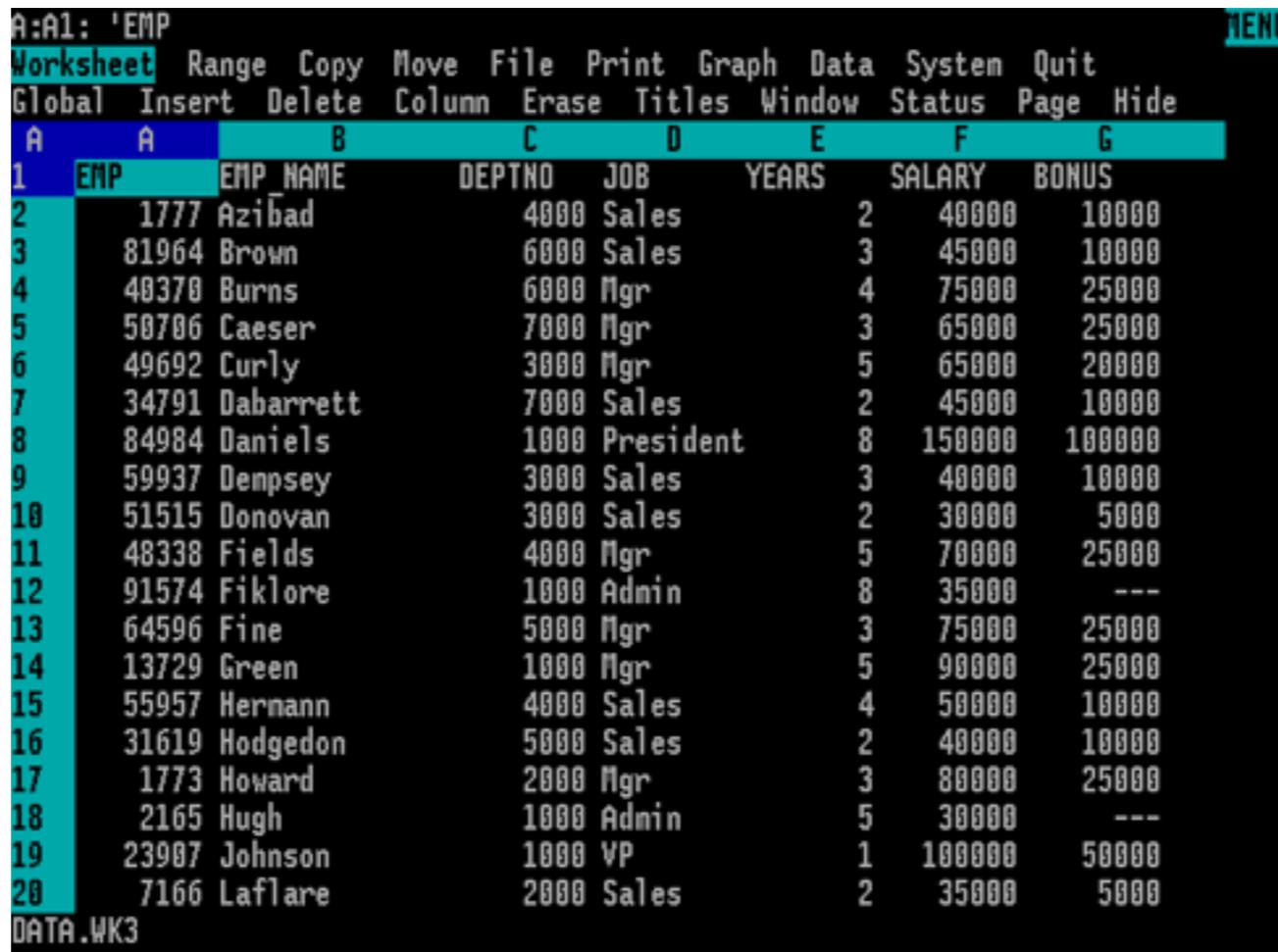


DATABASE HISTORY

1980 Personal Databases

 Desktops are introduced to the world

 People use spread-sheet software Like IBM Lotus



A: A1: 'EMP' MENU

Worksheet	Range	Copy	Move	File	Print	Graph	Data	System	Quit
Global	Insert	Delete	Column	Erase	Titles	Window	Status	Page	Hide
A	A	B	C	D	E	F	G		
1	EMP	EMP_NAME	DEPTNO	JOB	YEARS	SALARY	BONUS		
2	1777	Azibad	4000	Sales	2	40000	10000		
3	81964	Brown	6000	Sales	3	45000	10000		
4	40370	Burns	6000	Mgr	4	75000	25000		
5	50706	Caesar	7000	Mgr	3	65000	25000		
6	49692	Curly	3000	Mgr	5	65000	20000		
7	34791	Dabarrett	7000	Sales	2	45000	10000		
8	84984	Daniels	1000	President	8	150000	100000		
9	59937	Dempsey	3000	Sales	3	40000	10000		
10	51515	Donovan	3000	Sales	2	30000	5000		
11	48338	Fields	4000	Mgr	5	70000	25000		
12	91574	Fiklore	1000	Admin	8	35000	---		
13	64596	Fine	5000	Mgr	3	75000	25000		
14	13729	Green	1000	Mgr	5	90000	25000		
15	55957	Hernann	4000	Sales	4	50000	10000		
16	31619	Hodgedon	5000	Sales	2	40000	10000		
17	1773	Howard	2000	Mgr	3	80000	25000		
18	2165	Hugh	1000	Admin	5	30000	---		
19	23907	Johnson	1000	VP	1	100000	50000		
20	7166	Laflare	2000	Sales	2	35000	5000		

DATA.WK3

DATABASE TODAY

Distributed RDBMS

 **Apache Hadoop**

 **Map Reduce:** (2 stages: first “Map” a job to a node then “Reduce”, where each node process and return

In memory RDBMS

 **Apache SPARK** is both distributed and uses fast in-memory computations

NO-SQL

 Non sql data stores , e.g. Graph storages, Key-value (like “dictionaries” in Python)

Columnar Databases:

Stores columns instead of rows

Useful for data cubes and aggregations

Becoming less popular because of the “in-memory” analytics nowadays

DATABASES TODAY

Rank			DBMS	Database Model	Score		
Mar 2016	Feb 2016	Mar 2015			Mar 2016	Feb 2016	Mar 2015
1.	1.	1.	Oracle	Relational DBMS	1472.01	-4.13	+2.93
2.	2.	2.	MySQL 	Relational DBMS	1347.71	+26.59	+86.62
3.	3.	3.	Microsoft SQL Server	Relational DBMS	1136.49	-13.73	-28.31
4.	4.	4.	MongoDB 	Document store	305.33	-0.27	+30.32
5.	5.	5.	PostgreSQL	Relational DBMS	299.62	+10.97	+35.19
6.	6.	6.	DB2	Relational DBMS	187.94	-6.55	-10.91
7.	7.	7.	Microsoft Access	Relational DBMS	135.03	+1.95	-6.66
8.	8.	8.	Cassandra 	Wide column store	130.33	-1.43	+23.02
9.	 10.	 10.	Redis 	Key-value store	106.22	+4.14	+9.17
10.	 9.	 9.	SQLite	Relational DBMS	105.77	-1.01	+4.06
11.	 12.	 15.	Elasticsearch 	Search engine	80.17	+2.33	+21.24
12.	 11.	 11.	SAP Adaptive Server	Relational DBMS	76.64	-3.39	-8.72
13.	13.	13.	Teradata	Relational DBMS	74.07	+0.69	+1.29
14.	14.	 12.	Solr	Search engine	69.37	-2.91	-12.52
15.	 16.	 14.	HBase	Wide column store	52.41	+0.39	-8.32
16.	 15.	 17.	Hive	Relational DBMS	50.51	-2.26	+11.18
17.	17.	 16.	FileMaker	Relational DBMS	47.93	+0.90	-4.41
18.	18.	 19.	Splunk	Search engine	43.73	+0.90	+8.01
19.	19.	 21.	SAP HANA 	Relational DBMS	39.99	+1.91	+7.82
20.	 21.	 23.	Neo4j 	Graph DBMS	32.36	+0.07	+4.73

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MYSQL: INTRODUCTION

What is MySQL?

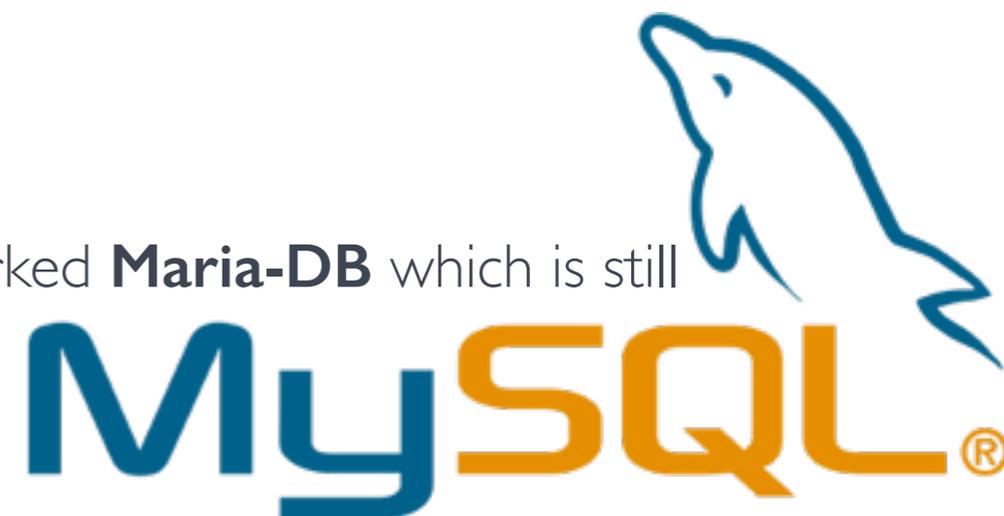
-  A relational database management system (RDBMS)
-  Free and open-source software written in C and C++

Why do we learn MySQL?

-  It's the most common database in the web (client-server model)
-  Uses by: Facebook, Google, Twitter,
-  Is super simple (comparing to Oracle, PostgreSQL)

3 things you (maybe) didn't know about MySQL

-  First version was out on 1995
-  It is actually owned by Oracle, since 2010
-  When it happened, one of the founders quit and forked **Maria-DB** which is still free under the GNU license



MYSQL: CONNECT REMOTELY

SQL Clients

 CLI (command-line interface) for 1337
haxors

 SQL Software (i.e. workbench)

 PhpMyAdmin (web based)

 **For security reasons, connection is over
SSH, remember?**



WAIT-A-MINUTE: SSH?

Secure Shell (SSH)

- ★ A network (layer 7) protocol
- ★ Providing secured channel to a remote host.
- ★ Built-in client in Unix based systems
- ★ Putty is required in Windows based systems.



MYSQL: CONNECT REMOTELY (+SSH)

 **Command line connection (unix)**

 Establish SSH connection to nova

```
→ ~ ssh amit@nova.cs.tau.ac.il
amit@nova.cs.tau.ac.il's password:
Last login: Mon Mar 14 22:44:02 2016 from 37.142.245.121
nova 1% █
```

 Use Mysql CLI tool to connect to mysqlsrv.tau.ac.il

```
[nova 1% mysql -h mysqlsrv.cs.tau.ac.il -u sakila -p
[Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 1368667
Server version: 5.5.35-1ubuntu1-log (Ubuntu)
```

MYSQL: CONNECT REMOTELY (+SSH)

 **Command line connection (unix)**

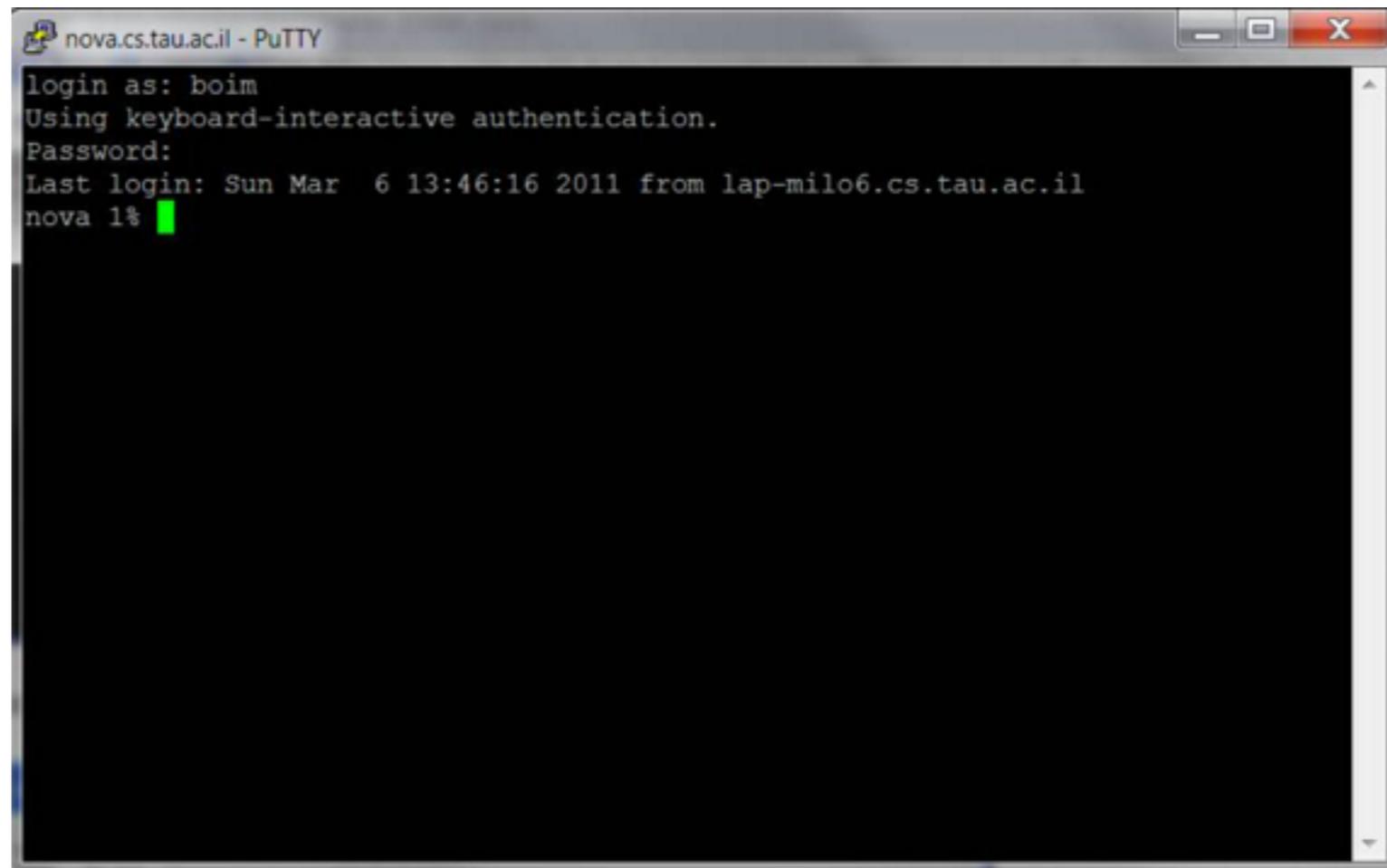
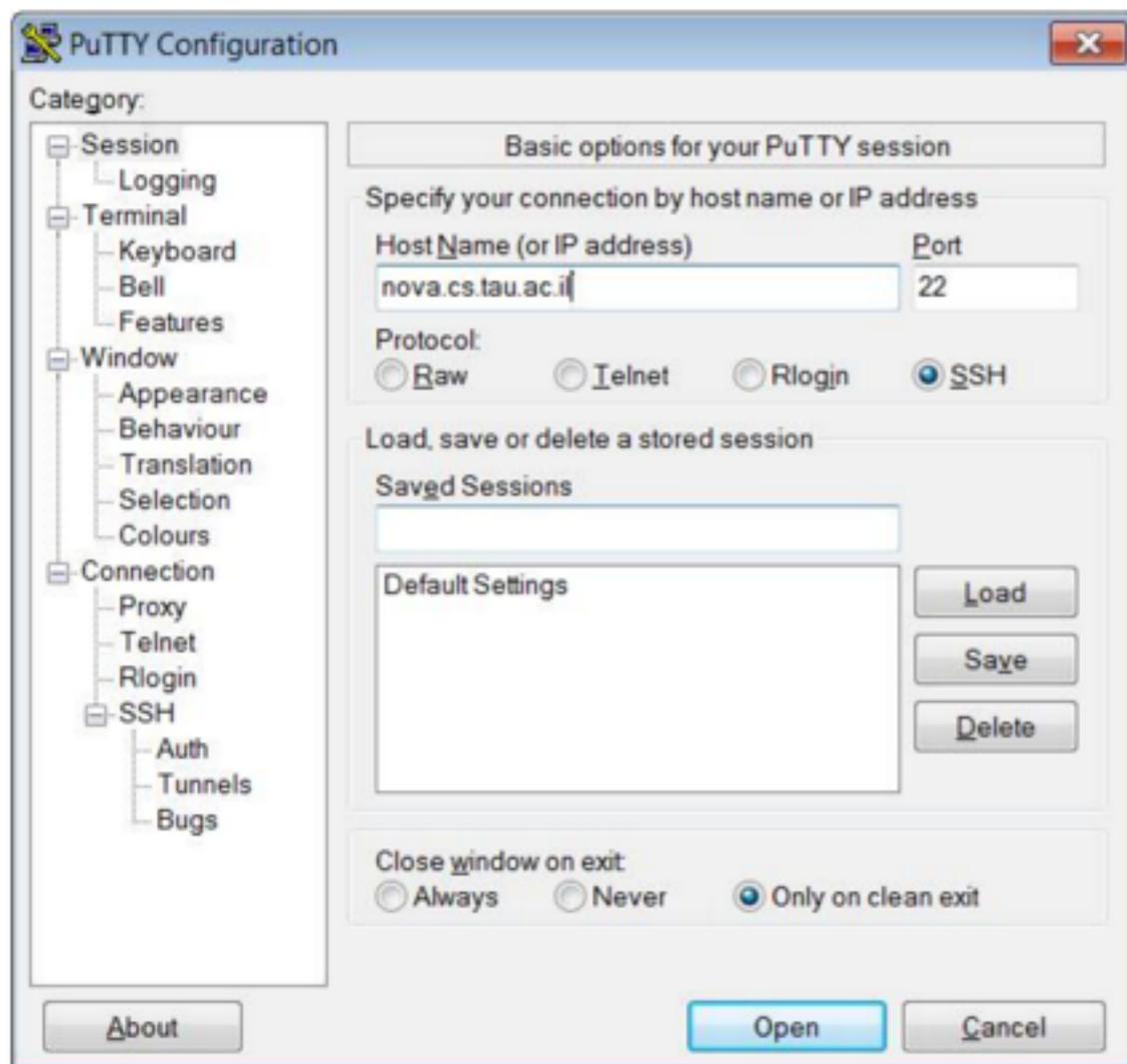
 Run queries for fun and profit.

```
[mysql> select 1;
+----+
| 1 |
+----+
| 1 |
+----+
1 row in set (0.00 sec)
```

MYSQL: CONNECT REMOTELY (+SSH)

 Command line connection (Windows)

 Using Putty to Nova



MYSQL: CONNECT REMOTELY (+SSH)

SQL Software (Windows, the hard way)

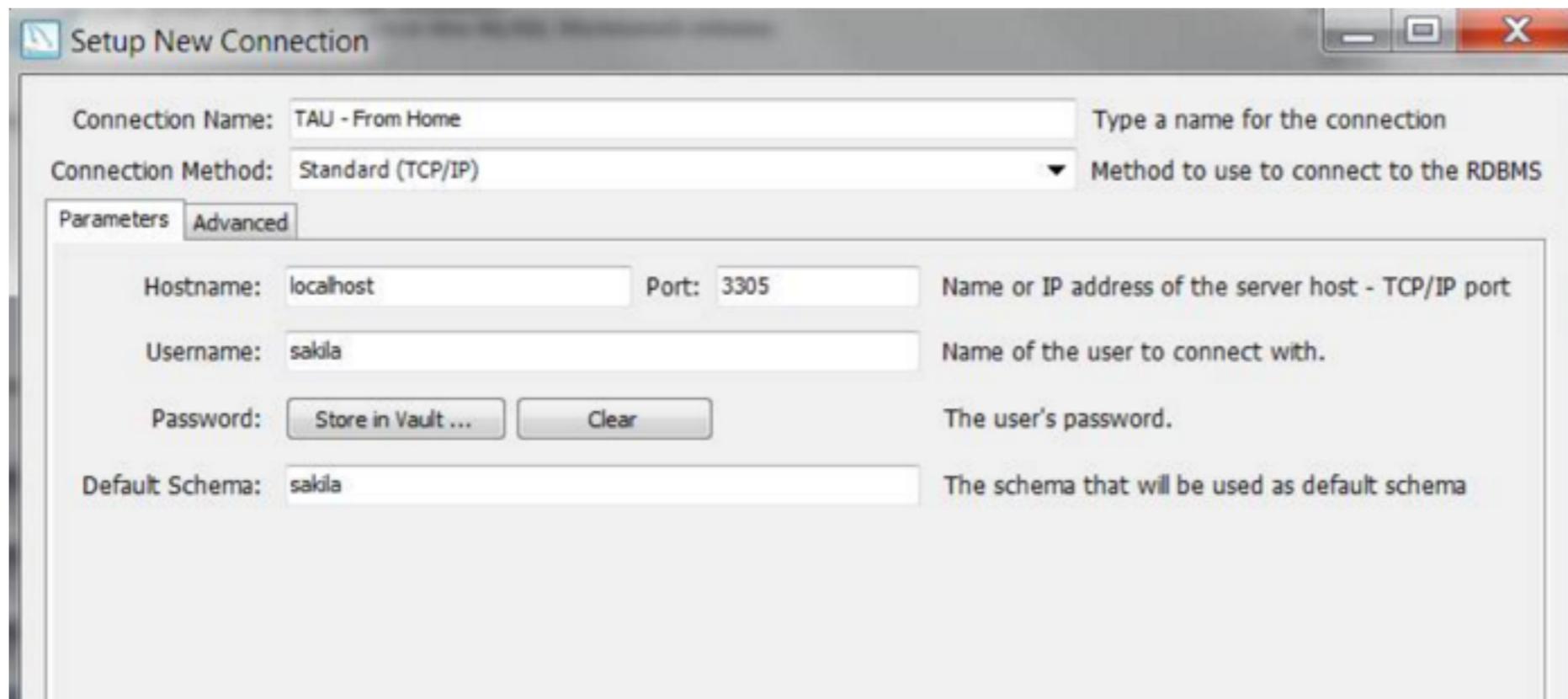
1. Download and install MySQL server for Windows from the official website, see the last slides for a step-by-step manual.
2. Read carefully the connection guide ([here](#))
3. Establish a **Tunnel** in putty as usual
4. In the Tunnel configuration, add a **Port Forwarding rule**:
 - from local port 3305
 - to mysqlsrv.cs.tau.ac.il, port 3306

MYSQL: CONNECT REMOTELY (+SSH)

SQL Software (Windows, the hard way)

4. Open Workbench, and create a new connection

5. Configure the software to connect to your local host at port 3305 (instead of mysqlsrv.cs.tau.ac.il)



Setup New Connection

Connection Name: TAU - From Home Type a name for the connection

Connection Method: Standard (TCP/IP) Method to use to connect to the RDBMS

Parameters **Advanced**

Hostname: localhost Port: 3305 Name or IP address of the server host - TCP/IP port

Username: sakila Name of the user to connect with.

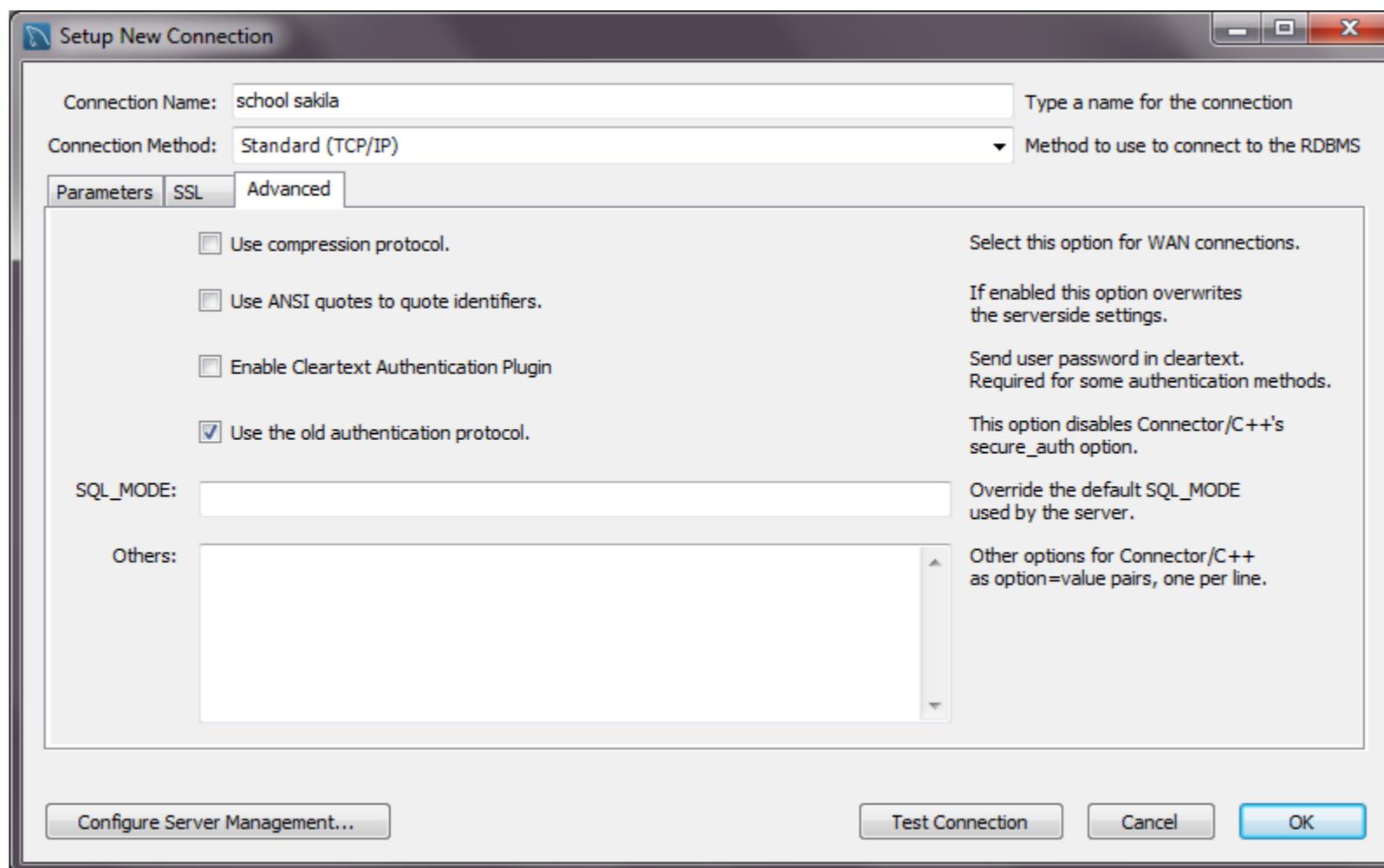
Password: The user's password.

Default Schema: sakila The schema that will be used as default schema

MYSQL: CONNECT REMOTELY (+SSH)

SQL Software (Windows, the hard way)

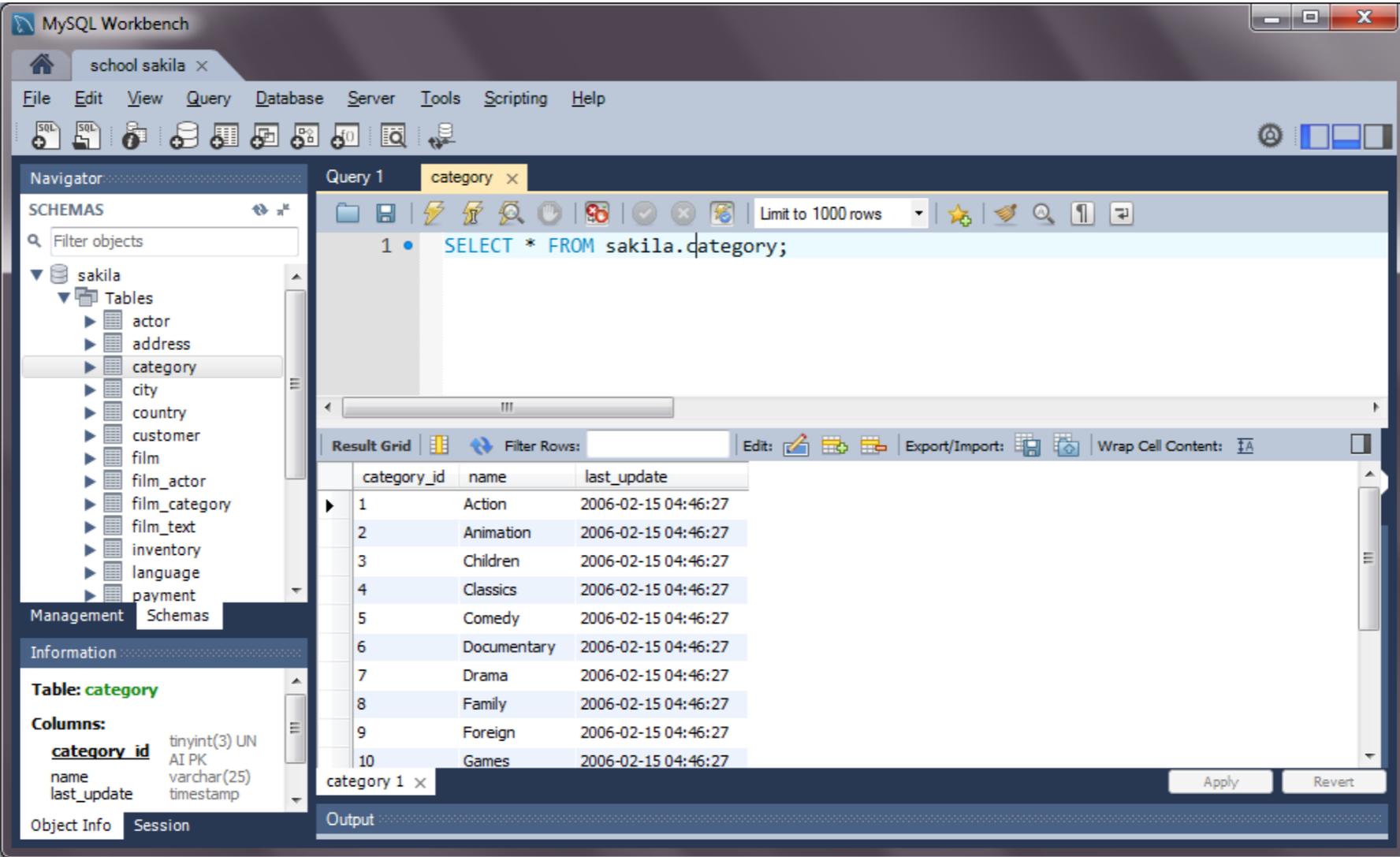
6. Support the old authentication protocol for some reason.



MYSQL: CONNECT REMOTELY (+SSH)

 SQL Software (Windows, the hard way)

7. Start querying for hw# 1



The screenshot shows the MySQL Workbench interface. The left sidebar displays the 'sakila' database schema with tables like actor, address, category, city, country, customer, film, film_actor, film_category, film_text, inventory, language, and payment. The 'category' table is selected. The main query editor shows the query: `SELECT * FROM sakila.category;`. The 'Result Grid' displays the following data:

category_id	name	last_update
1	Action	2006-02-15 04:46:27
2	Animation	2006-02-15 04:46:27
3	Children	2006-02-15 04:46:27
4	Classics	2006-02-15 04:46:27
5	Comedy	2006-02-15 04:46:27
6	Documentary	2006-02-15 04:46:27
7	Drama	2006-02-15 04:46:27
8	Family	2006-02-15 04:46:27
9	Foreign	2006-02-15 04:46:27
10	Games	2006-02-15 04:46:27

MYSQL: CONNECT REMOTELY (+SSH)

SQL Software (All platforms)

1. Install an SQL client that support SSH Tunnel

★ Windows: Heidi SQL

★ Mac: Sequel Pro

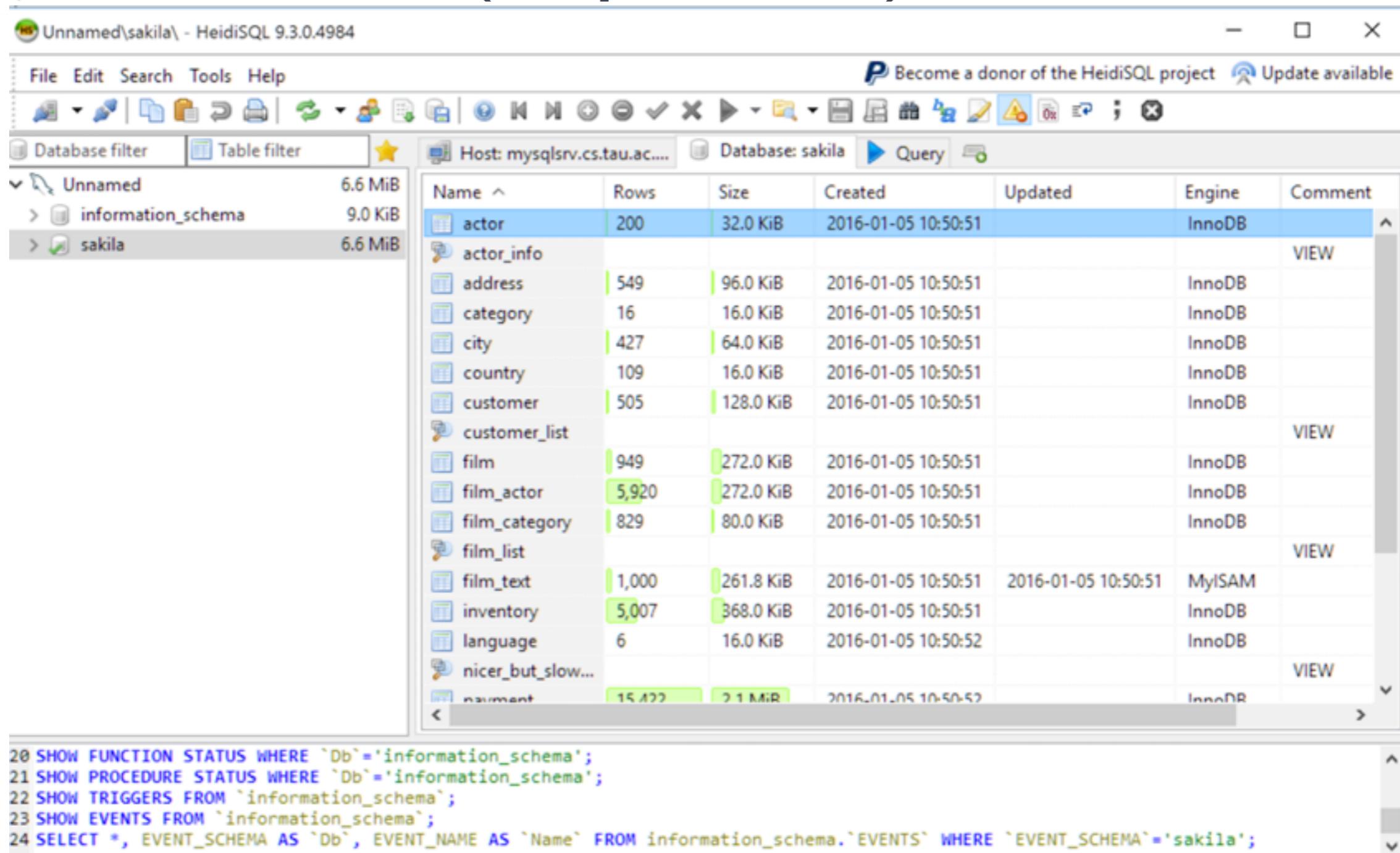
★ ALL Platforms: DBeaver

2. Configure the SSH server in the option tab

3. Start querying

MYSQL: CONNECT REMOTELY (+SSH)

 SQL Software (All platforms)



Unnamed\sakila\ - HeidiSQL 9.3.0.4984

File Edit Search Tools Help

Host: mysqlsrv.cs.tau.ac... Database: sakila Query

Name ^	Rows	Size	Created	Updated	Engine	Comment
actor	200	32.0 KiB	2016-01-05 10:50:51		InnoDB	
actor_info						VIEW
address	549	96.0 KiB	2016-01-05 10:50:51		InnoDB	
category	16	16.0 KiB	2016-01-05 10:50:51		InnoDB	
city	427	64.0 KiB	2016-01-05 10:50:51		InnoDB	
country	109	16.0 KiB	2016-01-05 10:50:51		InnoDB	
customer	505	128.0 KiB	2016-01-05 10:50:51		InnoDB	
customer_list						VIEW
film	949	272.0 KiB	2016-01-05 10:50:51		InnoDB	
film_actor	5,920	272.0 KiB	2016-01-05 10:50:51		InnoDB	
film_category	829	80.0 KiB	2016-01-05 10:50:51		InnoDB	
film_list						VIEW
film_text	1,000	261.8 KiB	2016-01-05 10:50:51	2016-01-05 10:50:51	MyISAM	
inventory	5,007	368.0 KiB	2016-01-05 10:50:51		InnoDB	
language	6	16.0 KiB	2016-01-05 10:50:52		InnoDB	
nicer_but_slow...						VIEW
payment	15,422	2.1 MiB	2016-01-05 10:50:52		InnoDB	

```
20 SHOW FUNCTION STATUS WHERE `Db`='information_schema';
21 SHOW PROCEDURE STATUS WHERE `Db`='information_schema';
22 SHOW TRIGGERS FROM `information_schema`;
23 SHOW EVENTS FROM `information_schema`;
24 SELECT *, EVENT_SCHEMA AS `Db`, EVENT_NAME AS `Name` FROM information_schema.`EVENTS` WHERE `EVENT_SCHEMA`='sakila';
```

MYSQL: CONNECT REMOTELY



Web based MySQL client, very common in shared hosting web platforms.

A screenshot of the phpMyAdmin web interface. The browser address bar shows the URL "http://www.cs.tau.ac.il/phpmyadmin/index.php?target=server_status.php&token=d3713df63248f28da97ab9c79t". The interface displays the "Structure" view for the "sakila" database. A table with columns "Table", "Action", "Records", "Type", "Collation", "Size", and "Overhead" is shown. The table lists 23 tables and views, including "actor", "actor_info", "address", "category", "city", "country", "customer", "customer_list", "film", "film_actor", "film_category", "film_list", "film_text", "inventory", "language", "nicer_but_slower_film_list", "payment", "rental", "sales_by_film_category", "sales_by_store", "staff", "staff_list", and "store". The "Records" column shows the number of records for each table, and the "Size" column shows the size in KiB. The "Type" column indicates the storage engine (InnoDB or MyISAM) and the "Collation" column shows the character set and collation (utf8_general_ci or latin1_swedish_ci).

Table	Action	Records	Type	Collation	Size	Overhead
actor		200	InnoDB	utf8_general_ci	32.0 KiB	-
actor_info		-0^2	View	---	-	-
address		403	InnoDB	utf8_general_ci	94.0 KiB	-
category		16	InnoDB	utf8_general_ci	16.0 KiB	-
city		400	InnoDB	utf8_general_ci	64.0 KiB	-
country		105	InnoDB	utf8_general_ci	16.0 KiB	-
customer		599	InnoDB	utf8_general_ci	128.0 KiB	-
customer_list		-0^2	View	---	-	-
film		1,000	InnoDB	utf8_general_ci	272.0 KiB	-
film_actor		4,442	InnoDB	utf8_general_ci	272.0 KiB	-
film_category		1,000	InnoDB	utf8_general_ci	80.0 KiB	-
film_list		-0^2	View	---	-	-
film_text		1,000	MyISAM	utf8_general_ci	217.8 KiB	-
inventory		4,301	InnoDB	utf8_general_ci	368.0 KiB	-
language		4	InnoDB	utf8_general_ci	16.0 KiB	-
nicer_but_slower_film_list		-0^2	View	---	-	-
payment		14,349	InnoDB	utf8_general_ci	2.1 MiB	-
rental		14,344	InnoDB	utf8_general_ci	2.7 MiB	-
sales_by_film_category		-0^2	View	---	-	-
sales_by_store		-0^2	View	---	-	-
staff		2	InnoDB	utf8_general_ci	96.0 KiB	-
staff_list		-0^2	View	---	-	-
store		2	InnoDB	utf8_general_ci	48.0 KiB	-
23 table(s)	Sum	-47,273	MyISAM	latin1_swedish_ci	6.6 MiB	0 B

MYSQL: META-DATA

Information_schema

 MySQL server has a default database called “information_schema”

 TABLES table contains information about each table in the database. e.g, name, type, number of rows etc.

 COLUMNS table contains information about each column, such as the table it's belong to, the data type, etc.

 USER_PRIVILEGES table contains information about the users listed in the database (do not confuse with web-users accessing the website).

MYSQL: META-DATA

MySQL Data types

 Each column has a predefined type and possibly a default value

★ Integers: TINYINT, MEDIUMINT, BIGINT

★ Strings: VARCHAR (strings), BLOB (for binaries)

★ Dates: TIMESTAMP, DATE, DATETIME

 Set when the database schema is created

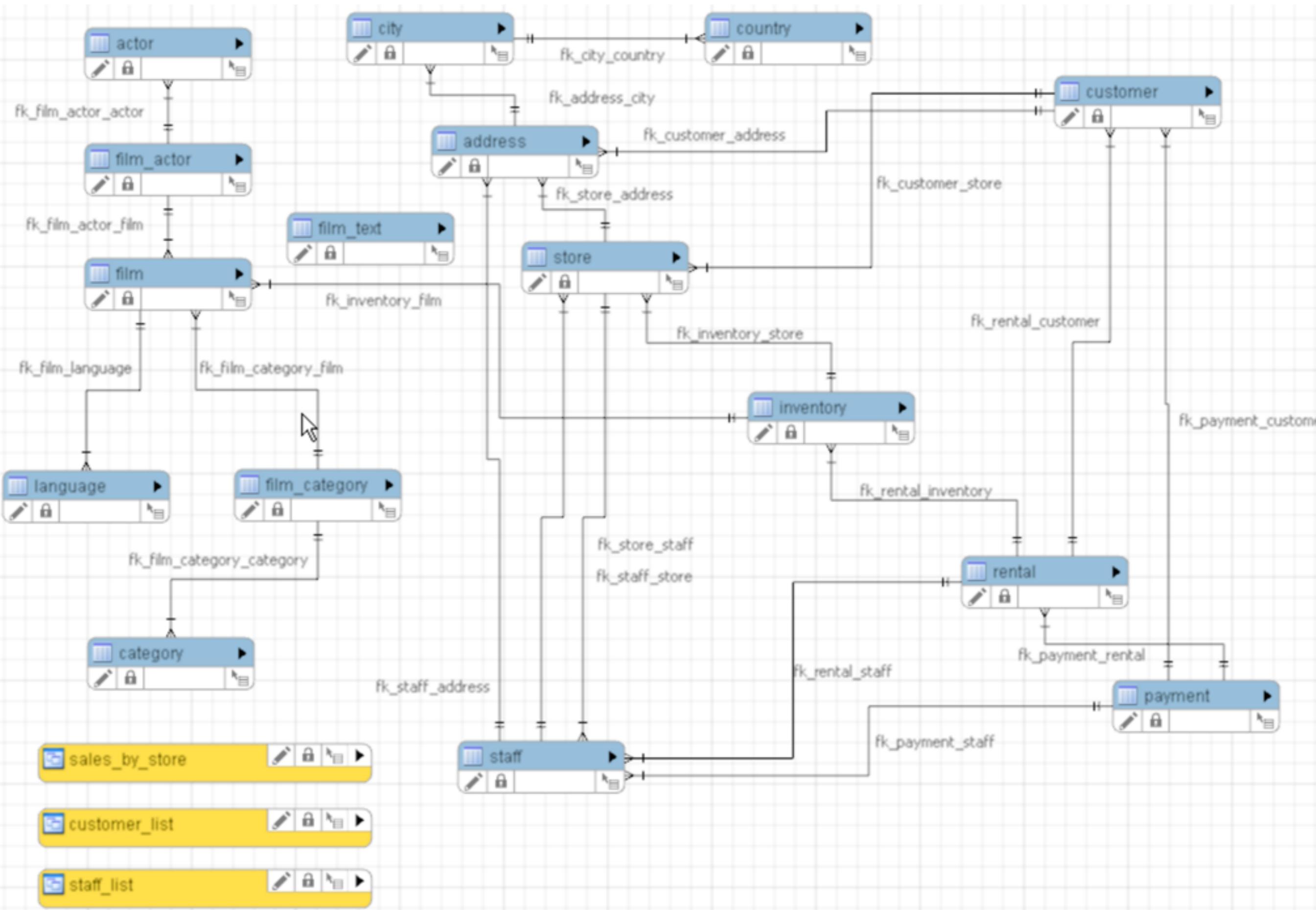
MYSQL: META-DATA

MySQL users privileges

 Root user: granting permissions, creating users, altering creating and deleting data

 Application users: usually read only, no grant.

 Don't every use root user in a DB connection string (we will discuss it over the next recitations)



MYSQL: SAKILA SCHEMA

 Example Query:

```
mysql> SELECT CONCAT(customer.last_name, ', ', customer.first_name) AS customer,  
-> address.phone, film.title  
-> FROM rental INNER JOIN customer ON rental.customer_id = customer.customer_id  
-> INNER JOIN address ON customer.address_id = address.address_id  
-> INNER JOIN inventory ON rental.inventory_id = inventory.inventory_id  
-> INNER JOIN film ON inventory.film_id = film.film_id  
-> WHERE rental.return_date IS NULL  
-> AND rental_date + INTERVAL film.rental_duration DAY < CURRENT_DATE()  
-> LIMIT 5;
```

MYSQL: SAKILA SCHEMA

Example Query:

```
mysql> SELECT CONCAT(customer.last_name, ', ', customer.first_name) AS customer,  
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-> INNER JOIN film ON inventory.film_id = film.film_id  
-> WHERE rental.return_date IS NULL  
-> AND rental_date + INTERVAL film.rental_duration DAY < CURRENT_DATE()  
-> LIMIT 5;
```

Results:

customer	phone	title
OLVERA, DWAYNE	62127829280	ACADEMY DINOSAUR
HUEY, BRANDON	99883471275	ACE GOLDFINGER
BROWN, ELIZABETH	10655648674	AFFAIR PREJUDICE
OWENS, CARMEN	272234298332	AFFAIR PREJUDICE
HANNON, SETH	864392582257	AFRICAN EGG

MYSQL: SAKILA SCHEMA

Example Query:

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HUEY, BRANDON	99883471275	ACE GOLDFINGER
BROWN, ELIZABETH	10655648674	AFFAIR PREJUDICE
OWENS, CARMEN	272234298332	AFFAIR PREJUDICE
HANNON, SETH	864392582257	AFRICAN EGG

YOUR BEST FRIENDS

 MySQL is the most common database used on the web.

 Therefore, **stackoverflow** is your friend.

 Another good friend you got : w3schools.com. for everything you need regarding web development and basic SQL use.

 MySQL cheatsheet:

 <https://en.wikibooks.org/wiki/MySQL/CheatSheet>

Install MySQL at Home

× MySQL Community Server

<http://www.mysql.com/downloads/mysql/>

MySQL Community Server 5.6.22

Select Platform:

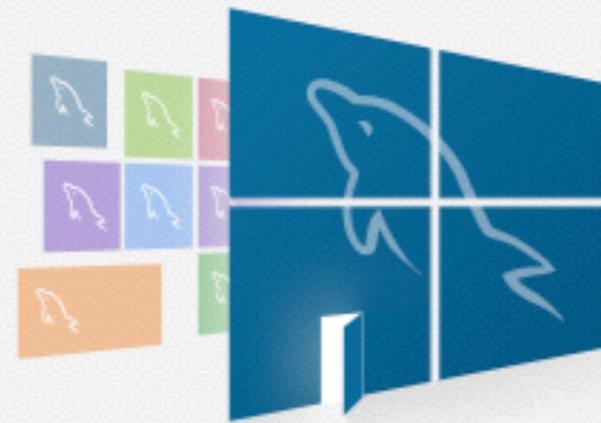
Microsoft Windows

Recommended Download:

MySQL Installer 5.6 for Windows

**All MySQL Products. For All Windows Platforms.
In One Package.**

Starting with MySQL 5.6 the MySQL Installer package replaces the server-only MSI packages.



Windows (x86, 64-bit), MySQL Installer MSI

Download

Registration is Optional

Begin Your Download - mysql-installer-community-5.6.22.0.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

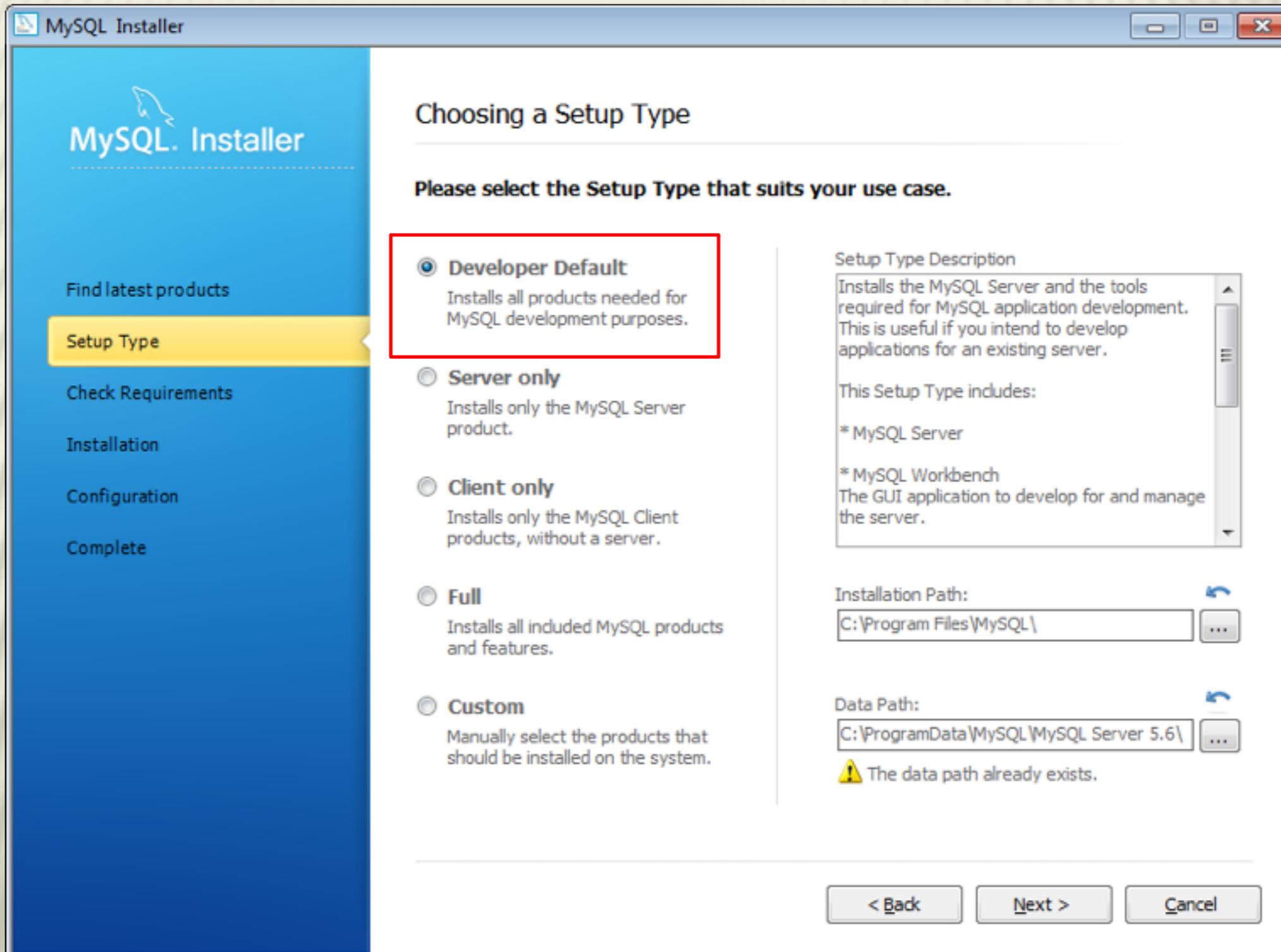
Sign Up »

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, link and following the instructions.

No thanks, just start my download.

Installation using an Installer



Configuration

The screenshot shows the MySQL Installer window for MySQL Server 5.6.22. The window title is 'MySQL Installer'. On the left, there is a blue sidebar with the MySQL logo and the text 'MySQL Installer MySQL Server 5.6.22'. Below this, there are four menu items: 'Type and Networking' (which is highlighted), 'Accounts and Roles', 'Windows Service', and 'Apply Server Configuration'. The main area of the window is titled 'Type and Networking' and contains the following sections:

- Server Configuration Type**: A dropdown menu labeled 'Config Type:' is set to 'Development Machine'. Below it is a descriptive text: '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.'
- Connectivity**: A section with the text 'Use the following controls to select how you would like to connect to this server.' It contains three options:
 - TCP/IP: Port Number: 3306
 - Open Firewall port for network access
 - Named Pipe: Pipe Name: MYSQL
 - Shared Memory: Memory Name: MYSQL
- Advanced Configuration**: A section with the text 'Select the checkbox below to get additional configuration page where you can set advanced options for this server instance.' It contains one option:
 - Show Advanced Options

At the bottom right of the window, there are two buttons: 'Next >' and 'Cancel'. The 'Next >' button is highlighted with a red rectangular box.

Installation using an Installer

MySQL Installer

MySQL Server Configuration 2 / 3

Root Account Password

Enter the password for the root account. Please remember to store this password in a secure place.

Current Root Password:

MySQL Root Password:

Repeat Password:

Password Strength: Strong

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
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Add User

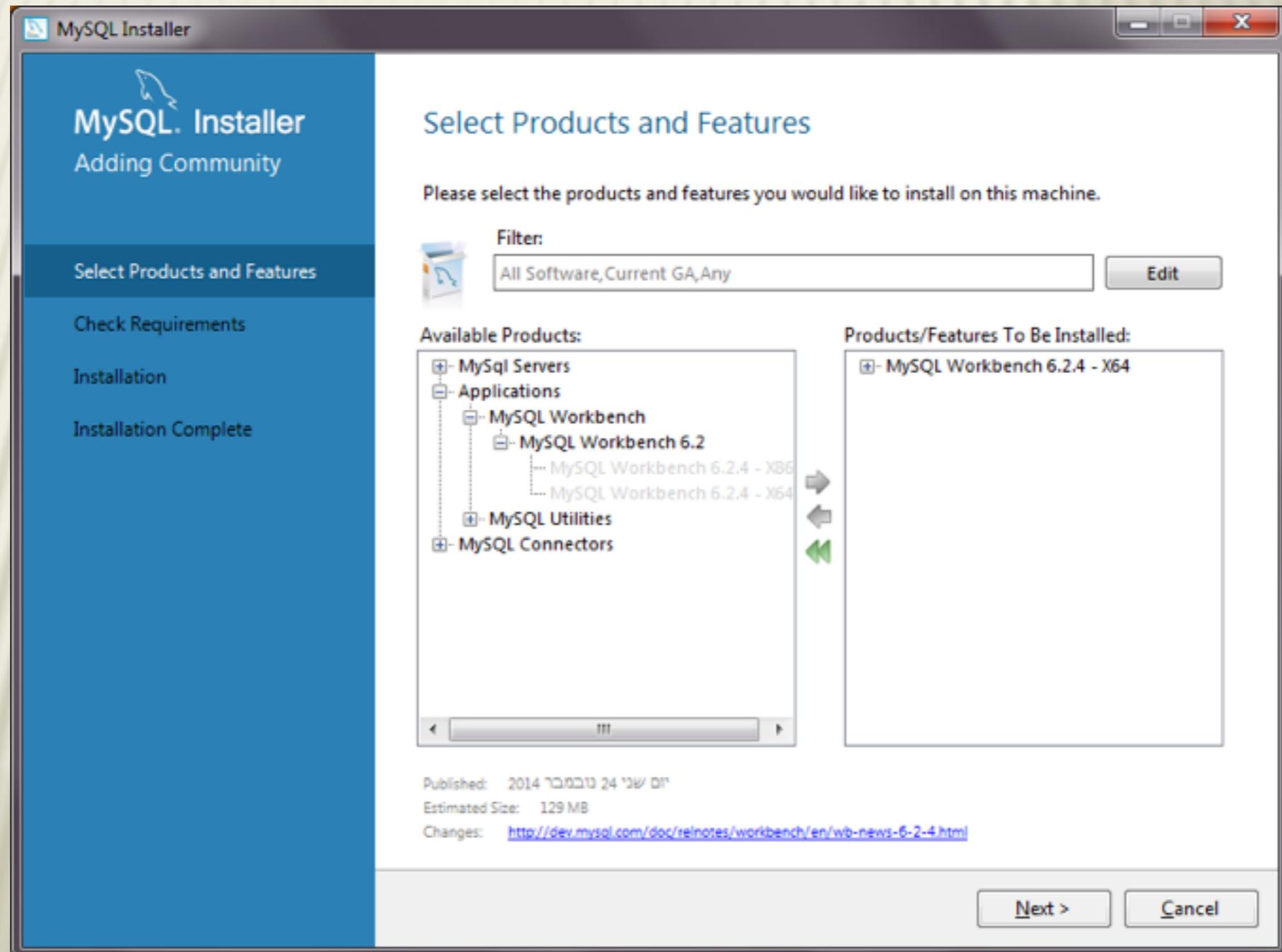
Edit User

Delete User

< Back Next > Cancel

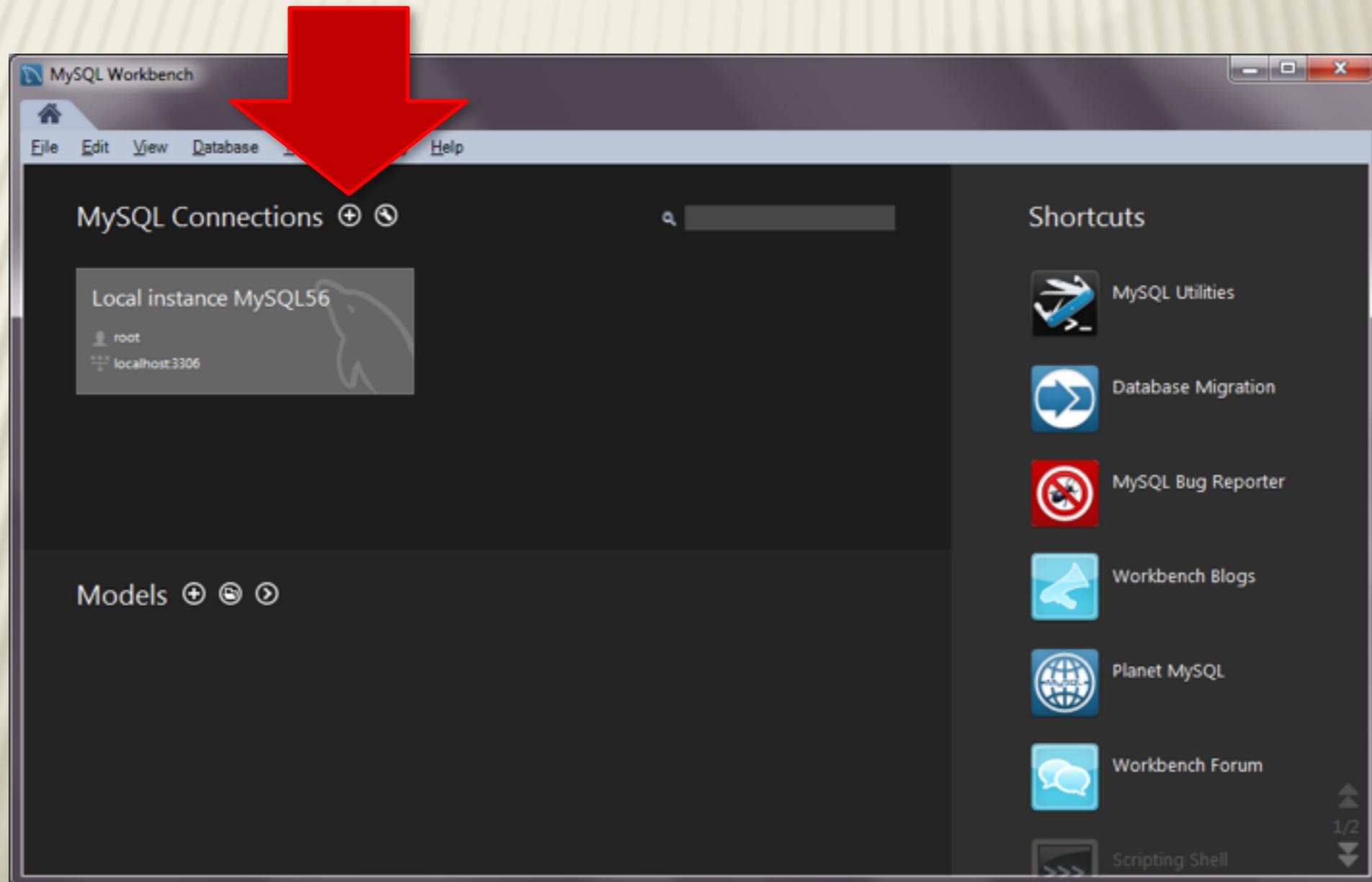
MySQL Workbench

- ✘ Make sure to install server, workbench and examples



Example: connecting to school server

- ✗ Open the tunnel!
- ✗ Then open workbench and create new connection



Configure the connection

Setup New Connection

Connection Name: Type a name for the connection

Connection Method: Method to use to connect to the RDBMS

Parameters

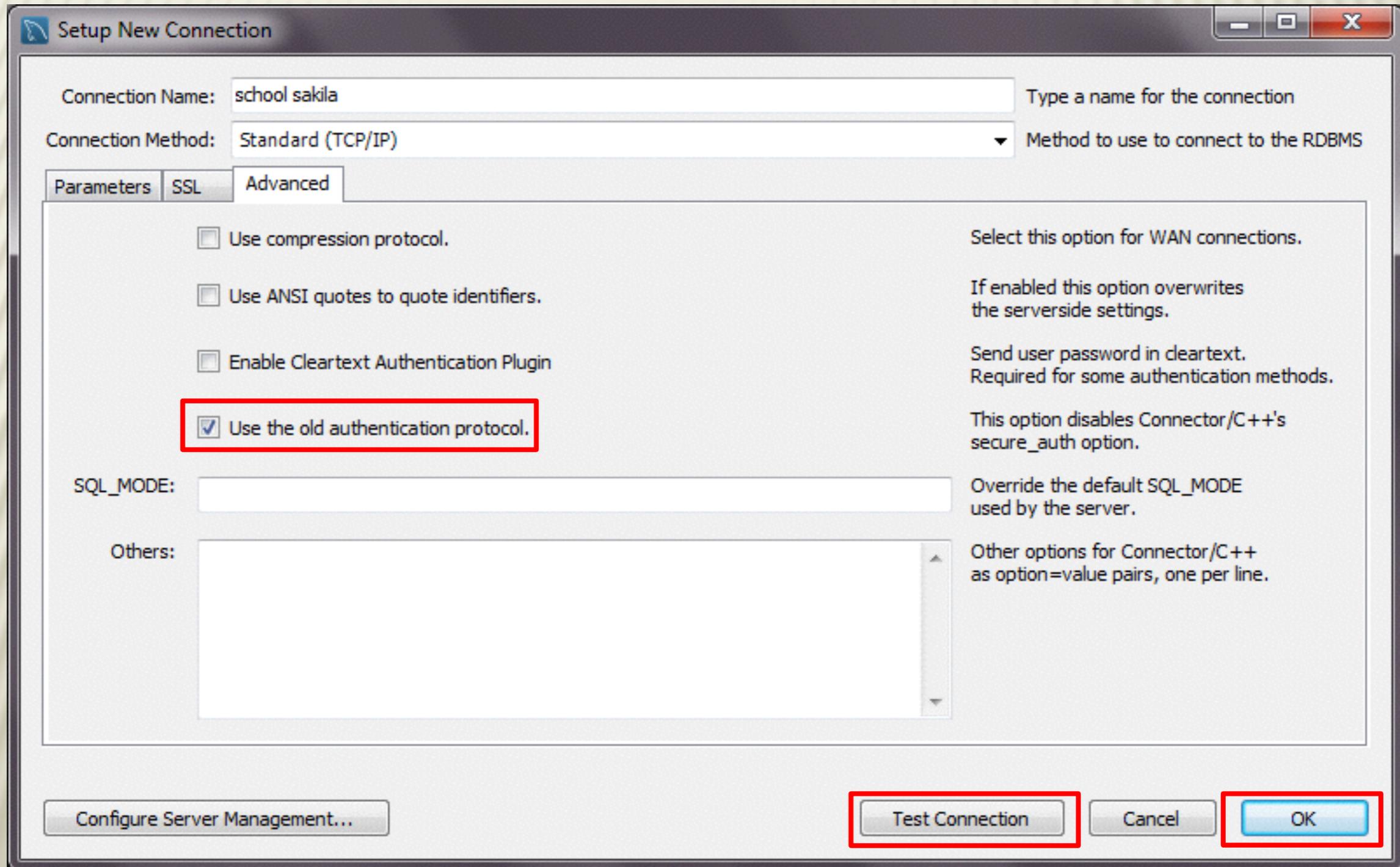
Hostname: Port: Name or IP address of the server host. - and TCP/IP port.

Username: Name of the user to connect with.

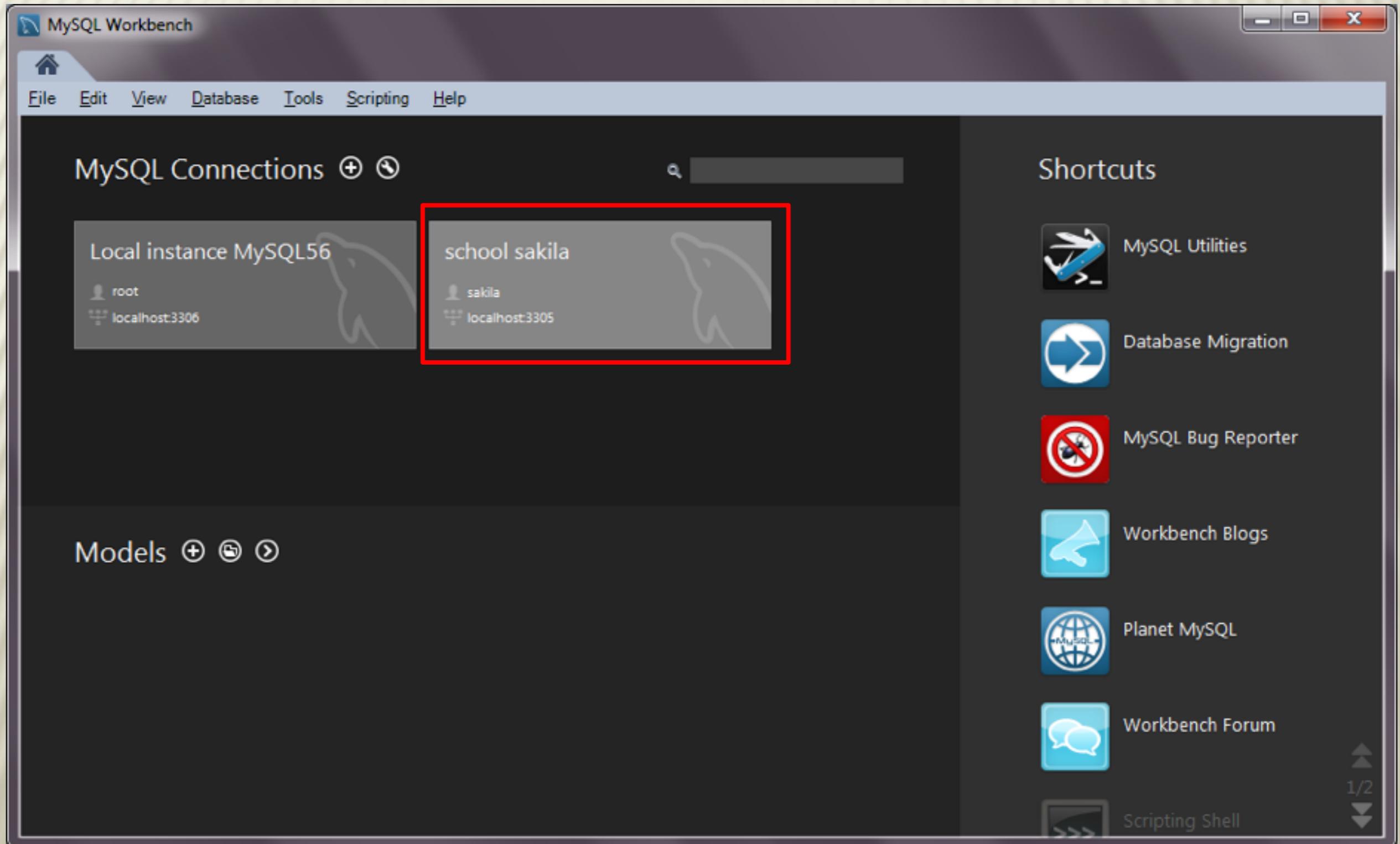
Password: The user's password. Will be requested later if it's not set.

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

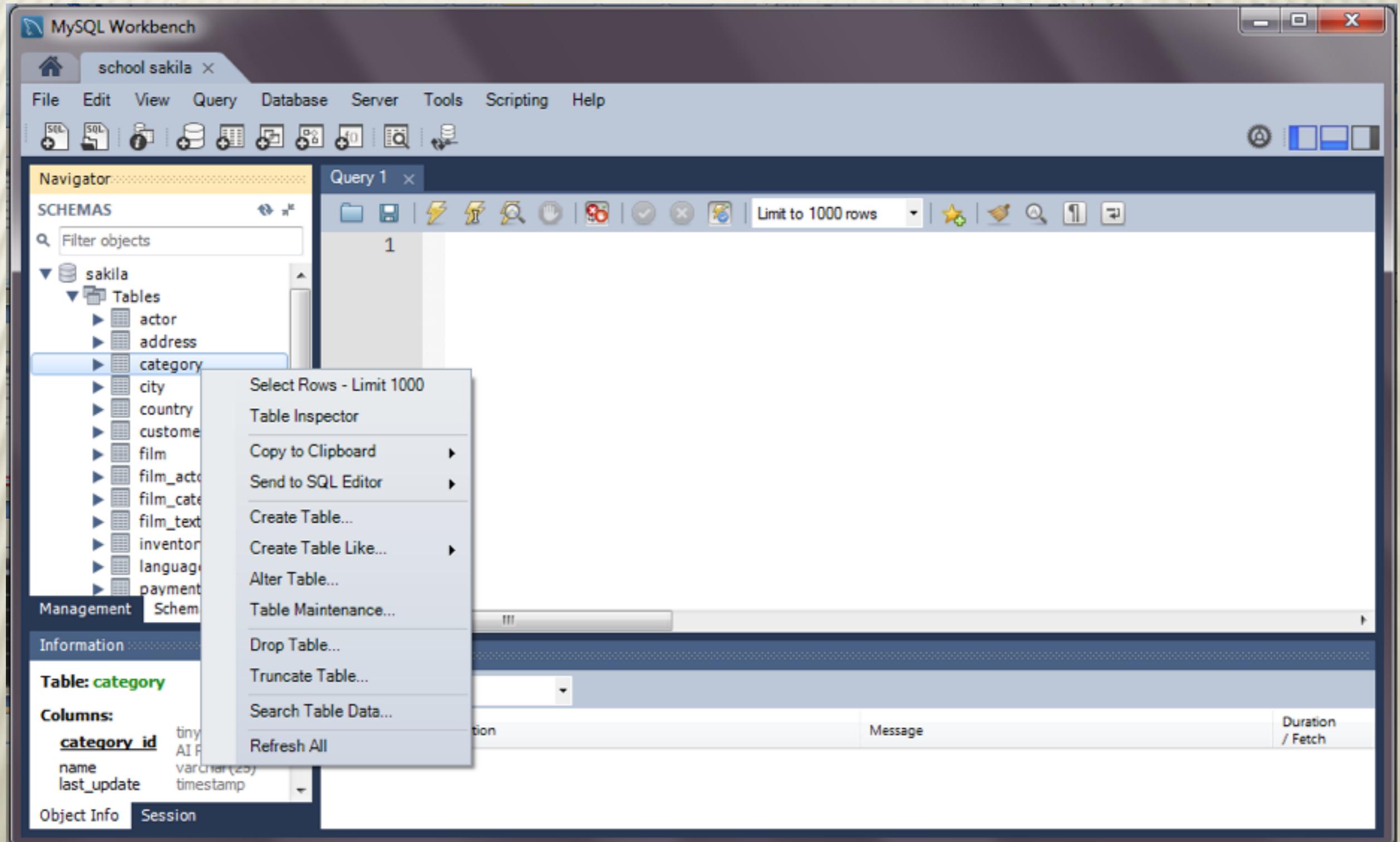
Support old authentication protocol



Open the new connection



Now you can query the SQL data



... and the result

The screenshot shows the MySQL Workbench interface. The 'Navigator' pane on the left displays the 'sakila' database schema with various tables. The 'Information' pane at the bottom left shows the structure of the 'category' table. The main editor window contains a SQL query: `SELECT * FROM sakila.category;`. The 'Result Grid' pane displays the following data:

category_id	name	last_update
1	Action	2006-02-15 04:46:27
2	Animation	2006-02-15 04:46:27
3	Children	2006-02-15 04:46:27
4	Classics	2006-02-15 04:46:27
5	Comedy	2006-02-15 04:46:27
6	Documentary	2006-02-15 04:46:27
7	Drama	2006-02-15 04:46:27
8	Family	2006-02-15 04:46:27
9	Foreign	2006-02-15 04:46:27
10	Games	2006-02-15 04:46:27