

Chapter 2

How to use MySQL Workbench and other development tools

Objectives

Applied

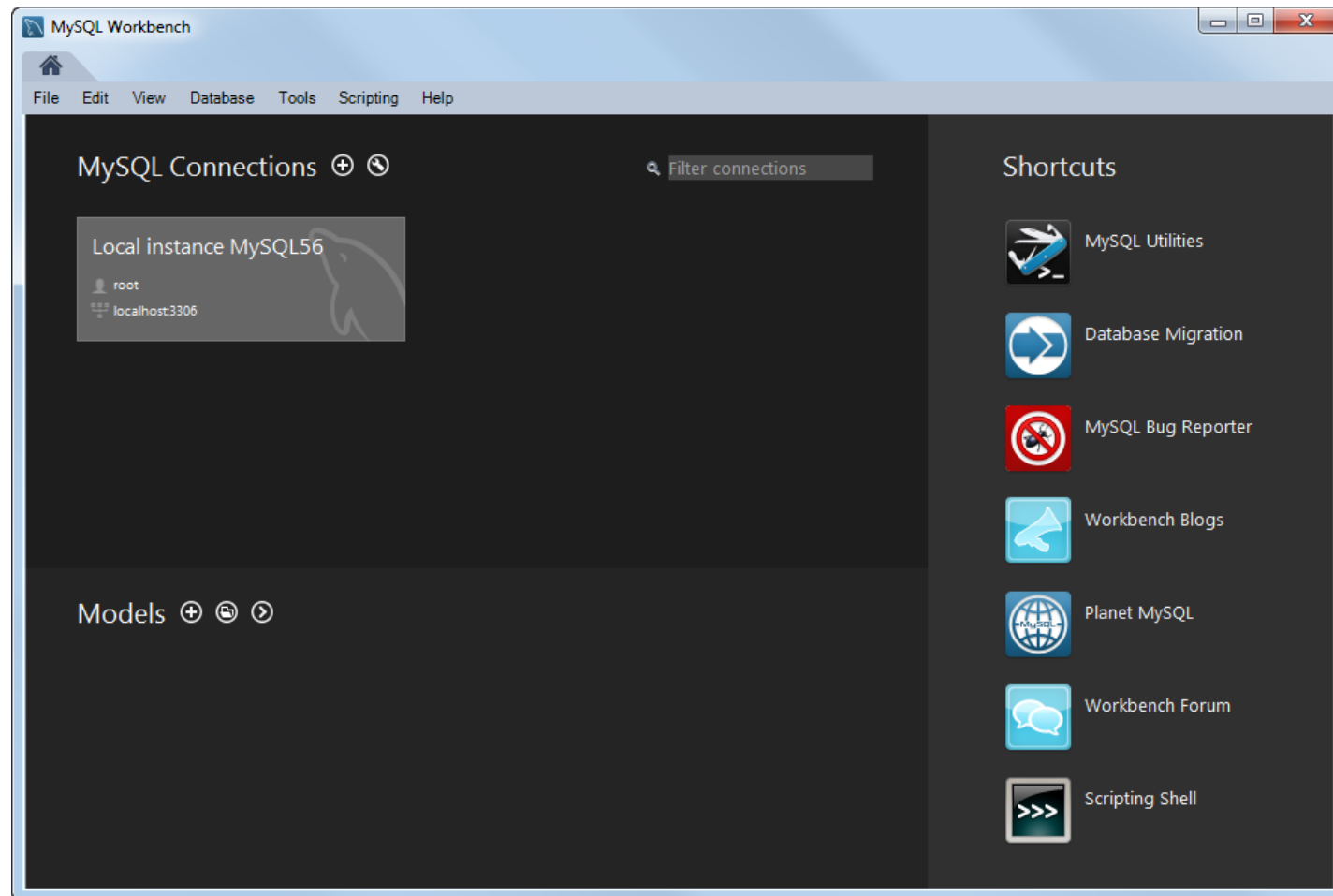
- Start or stop the MySQL database server.
- Use MySQL Workbench to do any of the following:
 - Create a database connection
 - Navigate through the objects of a database
 - View the column definitions for a table
 - View the data for a table
 - Edit the column definitions for a table
- Use MySQL Workbench to enter, run, open, and save SQL statements and scripts.
- Use the MySQL Reference Manual to look up information about SQL statements.
- Use MySQL Command Line Client to run a SQL statement.

Objectives (cont.)

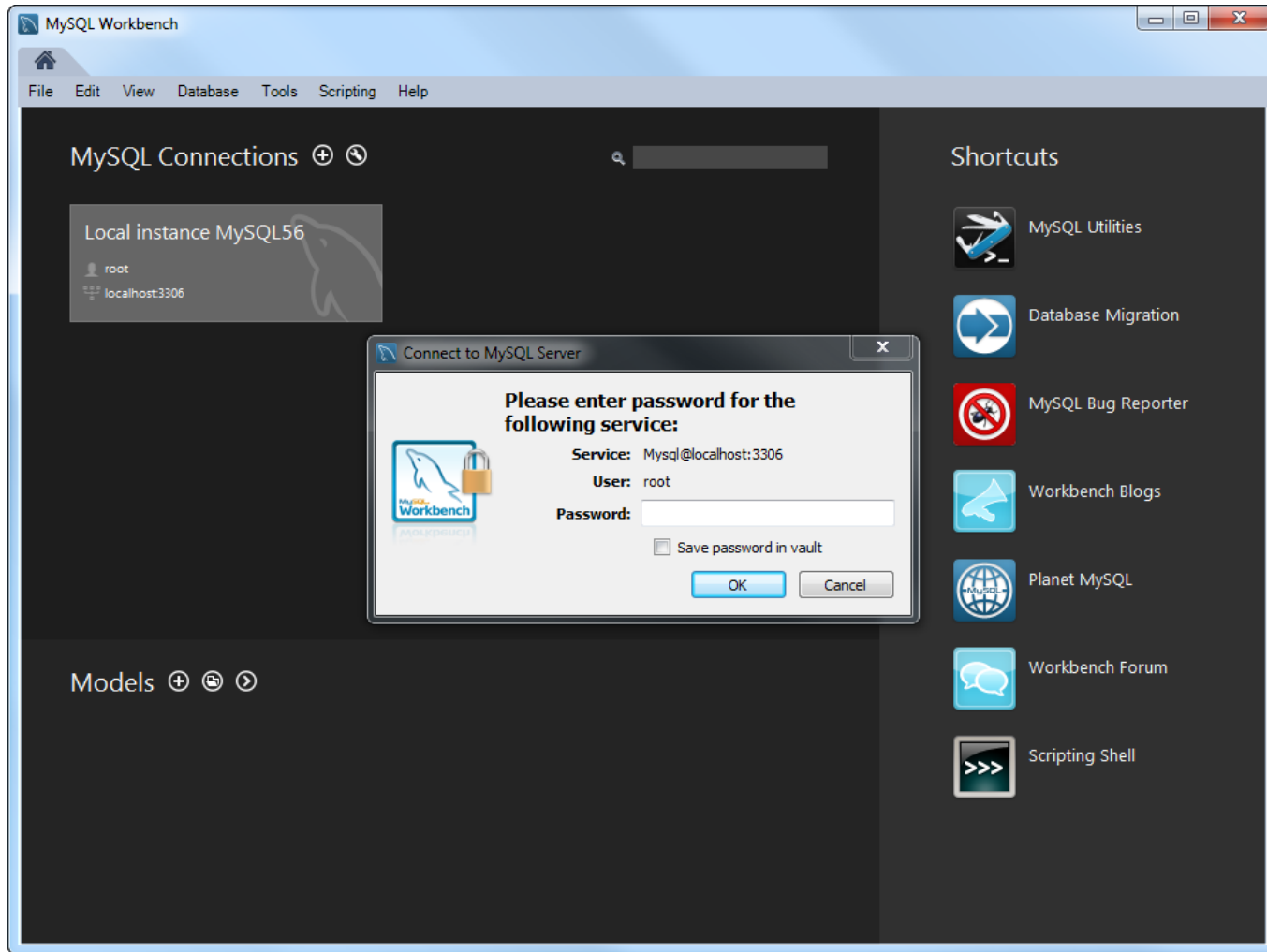
Knowledge

- Briefly describe the function of each of these client tools: the MySQL Command Line Client, MySQL Workbench, and the MySQL Reference Manual.

The Home tab of MySQL Workbench



The dialog box for opening database connections



How to connect as the root user

1. Click on a stored connection named “Local instance MySQL56”.
2. Enter a password if prompted.

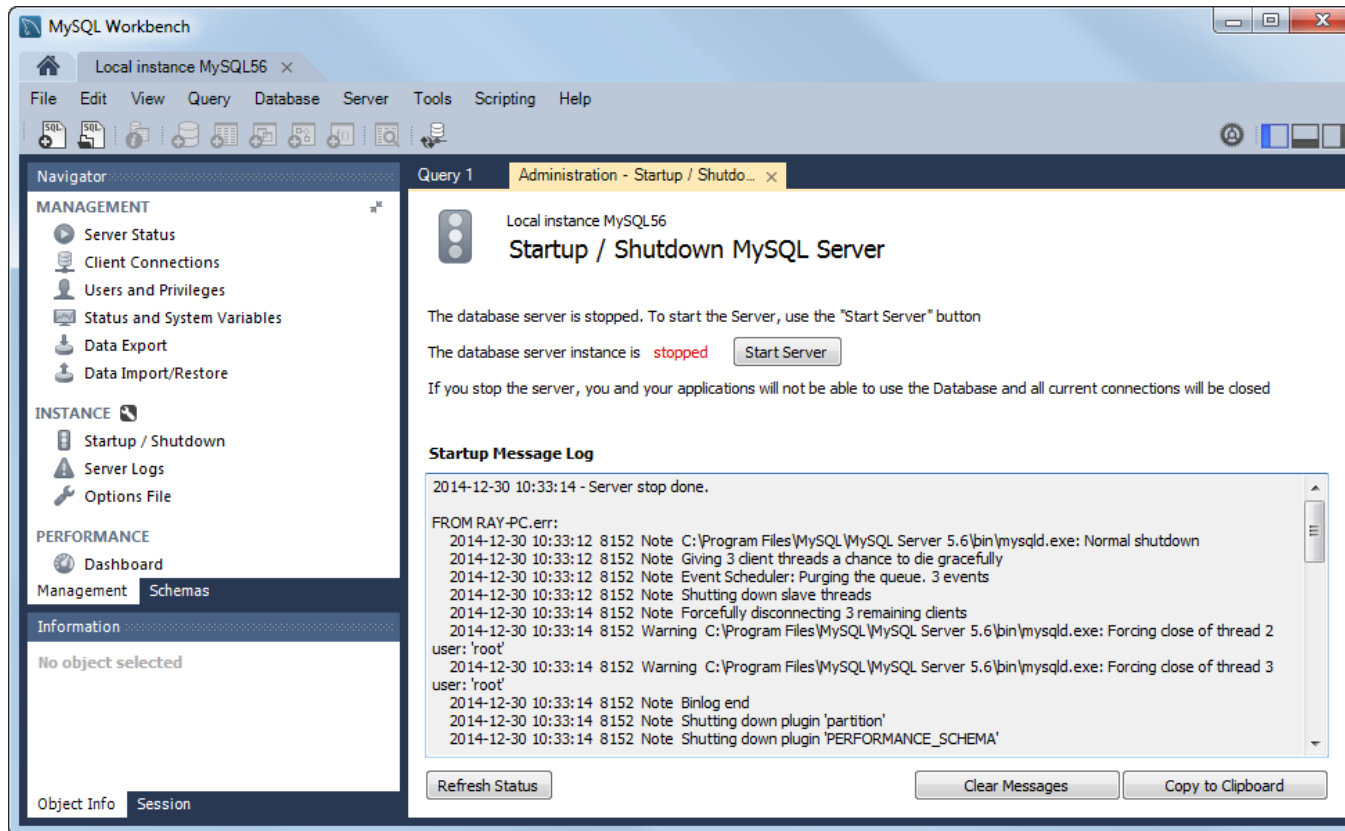
How to specify your own connection parameters

3. Right-click the connection, select the Edit Connection item.
4. Enter the connection parameters and click the Close button.
5. Enter a password if prompted.

How to create a new connection

6. Right-click the connection, select the New Connection item.
7. Enter the connection parameters and click the Close button to save the connection in the list of connections.

The Startup/Shutdown option of MySQL Workbench



How to stop and start the database server

1. Display the Home tab of MySQL Workbench.
2. Click on the Local MySQL56 item and enter a password if prompted.
3. In the Navigator window, select the Startup/Shutdown option.
4. Click on the Stop Server button to stop the database server, or click on the Start Server button to start it.

Note

- After you install the MySQL Community Server, the *database server* usually starts automatically each time you start your computer.

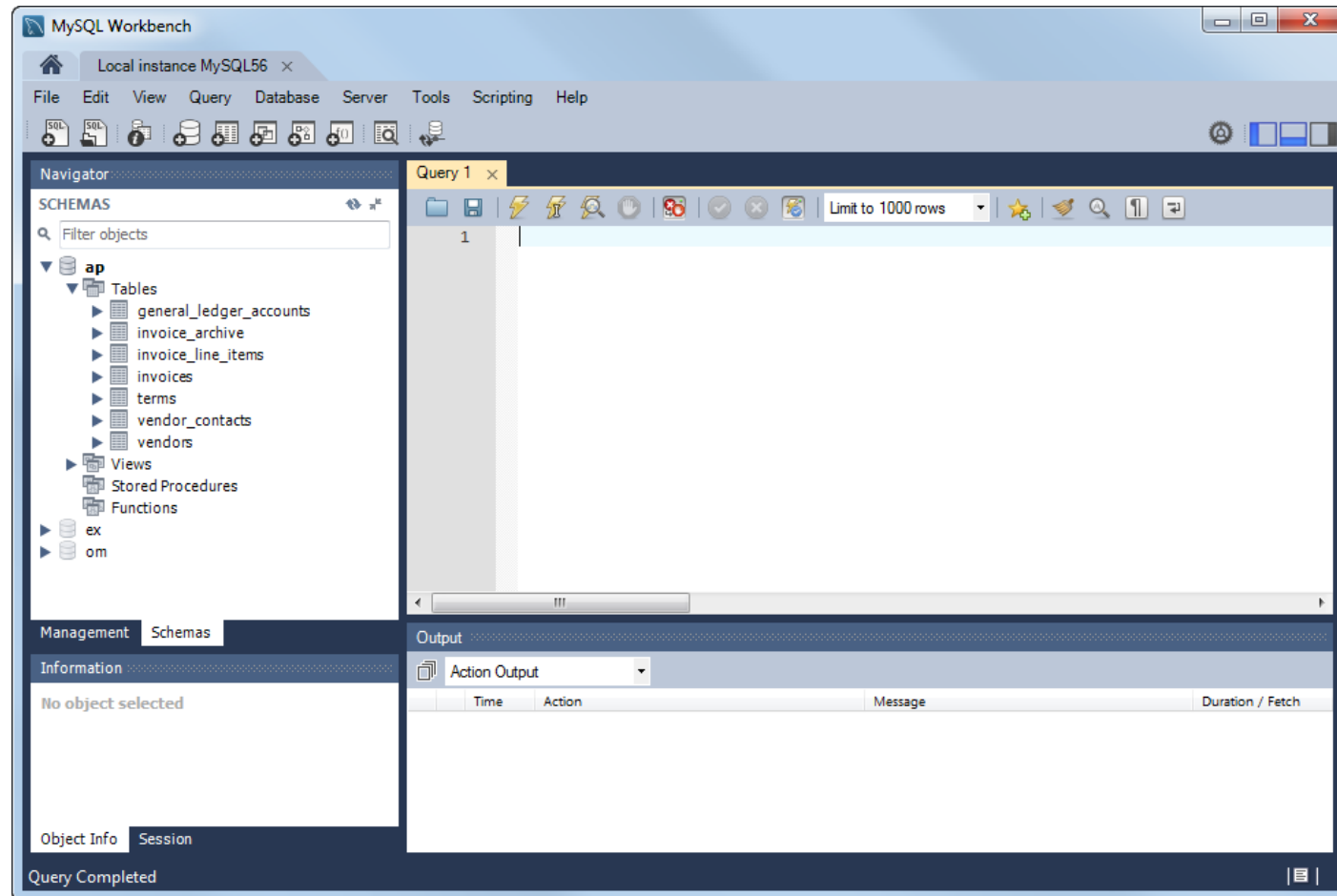
How to save a password

- Check the “Save password in vault” option when prompted for your password.

How to clear a password

1. Right-click the connection,
2. Select the Edit Connection item
3. Click the Clear button.

The tables available for the AP database



The data for the Invoices table in a Result grid

The screenshot shows the MySQL Workbench interface. The left sidebar contains a Navigator pane with a tree view of the database schema. The 'ap' database is selected, and the 'invoices' table is highlighted. Below the Navigator is the 'Information' pane, which displays the structure of the 'invoices' table, including columns like invoice_id, vendor_id, invoice_number, invoice_date, invoice_total, payment_total, credit_total, terms_id, invoice_due_date, and payment_date.

The main window displays the 'invoices' table data in a 'Result Grid'. The query editor at the top shows the query: `SELECT * FROM ap.invoices;`. The Result Grid shows 9 rows of data. The columns are: invoice_id, vendor_id, invoice_number, invoice_date, invoice_total, payment_total, credit_total, terms_id, and invoice.

invoice_id	vendor_id	invoice_number	invoice_date	invoice_total	payment_total	credit_total	terms_id	invoice
1	122	989319-457	2011-04-08	3813.33	3813.33	0.00	3	2011-0
2	123	263253241	2011-04-10	40.20	40.20	0.00	3	2011-0
3	123	963253234	2011-04-13	138.75	138.75	0.00	3	2011-0
4	123	2-000-2993	2011-04-16	144.70	144.70	0.00	3	2011-0
5	123	963253251	2011-04-16	15.50	15.50	0.00	3	2011-0
6	123	963253261	2011-04-16	42.75	42.75	0.00	3	2011-0
7	123	963253237	2011-04-21	172.50	172.50	0.00	3	2011-0
8	89	125520-1	2011-04-24	95.00	95.00	0.00	1	2011-0
9	121	97/488	2011-04-24	601.95	601.95	0.00	3	2011-0

Below the Result Grid is the 'Output' pane, which shows the execution details of the query. It indicates that the query was executed at 14:46:17, returned 114 row(s), and took 0.031 sec to execute.

How to view the data for a table

1. Right-click on the table in the Schemas section of the Navigator window.
2. Select the Select Rows – Limit 1000 command to display it in a Result grid.

How to edit the data for a table

1. View the data.
2. Use the buttons at the top of the Result grid to insert, update, and delete rows.
3. Click the Apply button at the bottom of the tab to apply the changes.

Note

- You can also cancel the changes for a table by clicking the Revert button.

The column definitions for the Vendors table

The screenshot shows the MySQL Workbench interface. The left sidebar displays the 'Schemas' tree with 'ap' selected, showing a list of tables including 'vendors'. The main window is titled 'Query 1 vendors - Table' and shows the table's metadata. The 'Table Name' is 'vendors', the 'Schema' is 'ap', the 'Collation' is 'utf8 - default collation', and the 'Engine' is 'InnoDB'. Below this, a table lists the column definitions for 'vendors'.

Column Name	Datatype	PK	NN	UQ	BIN	UN	ZF	AI	Default
vendor_id	INT(11)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
vendor_name	VARCHAR(50)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
vendor_address1	VARCHAR(50)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
vendor_address2	VARCHAR(50)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
vendor_city	VARCHAR(50)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
vendor_state	CHAR(2)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
vendor_zip_code	VARCHAR(20)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
vendor_phone	VARCHAR(50)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
vendor_contact_last_name	VARCHAR(50)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
vendor_contact_first_name	VARCHAR(50)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
default_terms_id	INT(11)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
default_account number	INT(11)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Below the table, there are fields for 'Column Name', 'Data Type', 'Collation', 'Default', and 'Comments'. To the right of these fields are checkboxes for 'Primary', 'Not Null', 'Unique', 'Binary', 'Unsigned', 'Zero Fill', and 'Auto Increment'. At the bottom, there are tabs for 'Columns', 'Indexes', 'Foreign Keys', 'Triggers', 'Partitioning', and 'Options', along with 'Apply' and 'Revert' buttons.

How to view the column definitions

1. Right-click on the table name in the Navigator window and select the Alter Table command.
2. Select the Columns tab at the bottom of the window that's displayed.

How to edit the column definitions

1. View the column definitions.
2. Use the resulting window to add new columns and modify and delete existing columns.

A SELECT statement and its results

The screenshot displays the MySQL Workbench interface. On the left, the Navigator pane shows the 'ap' schema with tables like 'general_ledger_accounts', 'invoice_archive', 'invoice_line_items', 'invoices', 'terms', 'vendor_contacts', and 'vendors'. The 'vendors' table is selected. The main Query Editor shows a SQL query: `SELECT vendor_name, vendor_city, vendor_state FROM vendors ORDER BY vendor_name`. The Result Grid pane displays the query results in a table format. The table has three columns: 'vendor_name', 'vendor_city', and 'vendor_state'. The results are sorted by 'vendor_name'.

vendor_name	vendor_city	vendor_state
Abbey Office Furnishings	Fresno	CA
American Booksellers Assoc	Tarrytown	NY
American Express	Los Angeles	CA
ASC Signs	Fresno	CA
Ascom Hasler Mailing Systems	Shelton	CT
AT&T	Phoenix	AZ
Aztek Label	Anaheim	CA
Baker & Taylor Books	Charlotte	NC
Bertelsmann Industry Svcs. Inc	Valencia	CA
BFI Industries	Fresno	CA
Bill Jones	Sacramento	CA
Bill Marvin Electric Inc	Fresno	CA
Blanchard & Johnson Associates	Mission Viejo	CA
Blue Cross	Oxnard	CA
Blue Shield of California	Anaheim	CA
Boucher Communications Inc	Fort Washi...	PA
Cahners Publishing Company	The Lake	NV
Cal State Termite	Selma	CA
California Business Machines	Fresno	CA

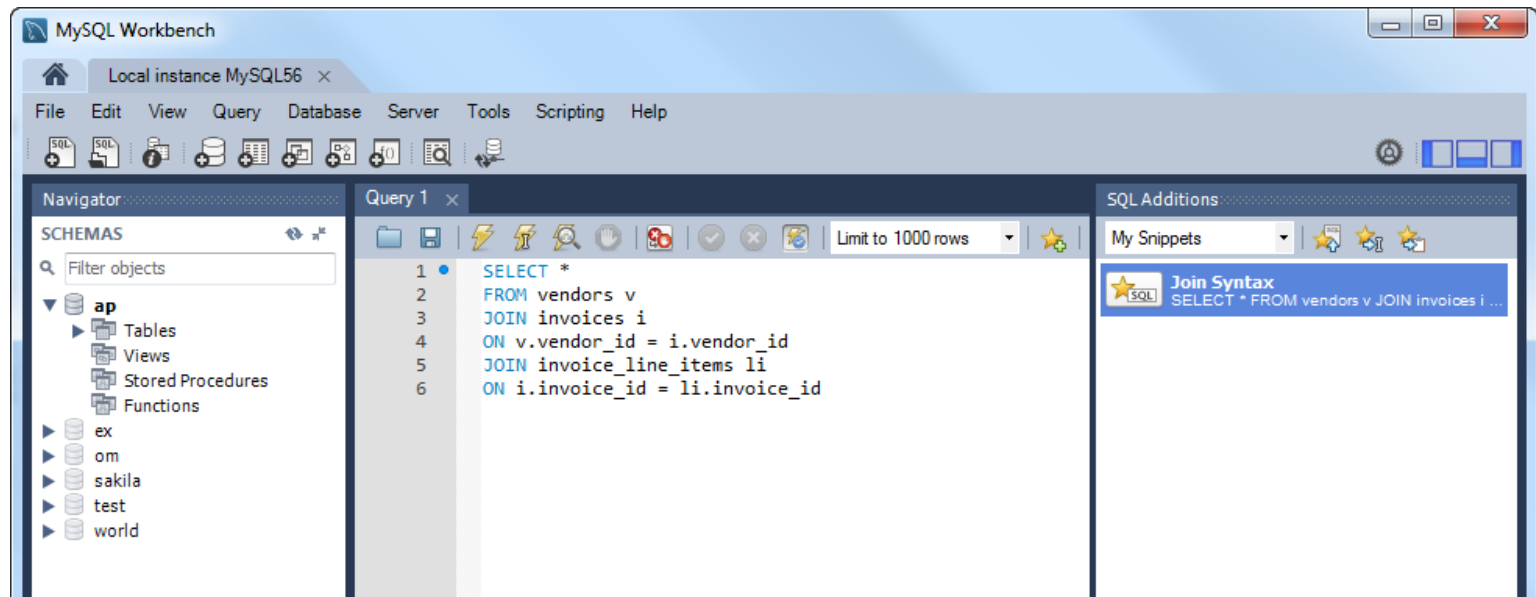
How to enter a SQL statement

1. Press the Ctrl+T keys or click the Create New SQL Tab button in the SQL Editor toolbar to open a new code editor tab.
2. Double-click a database in the Schemas tab of the Navigator window to select it.
3. Type the SQL statement into the SQL editor.

How to execute a SQL statement

- Select the Query→Execute Current Statement command, press the Ctrl+Enter keys, or click the Execute Current Statement button in the code editor toolbar.
- If a SELECT statement retrieves data, the data is displayed in a Result grid.

The SQL Additions tab with a snippet created by a user



How to use a snippet

1. To display any category of snippets, select the category from the drop-down list at the top of the SQL Additions tab.
2. Click the Insert Snippet button at the top of the SQL Additions tab.
3. Edit the snippet code so it's appropriate for your SQL statement.

How to replace code with a snippet

1. Select the code.
2. Select the snippet you want to replace the code with.
3. Click the Replace Current Text button.

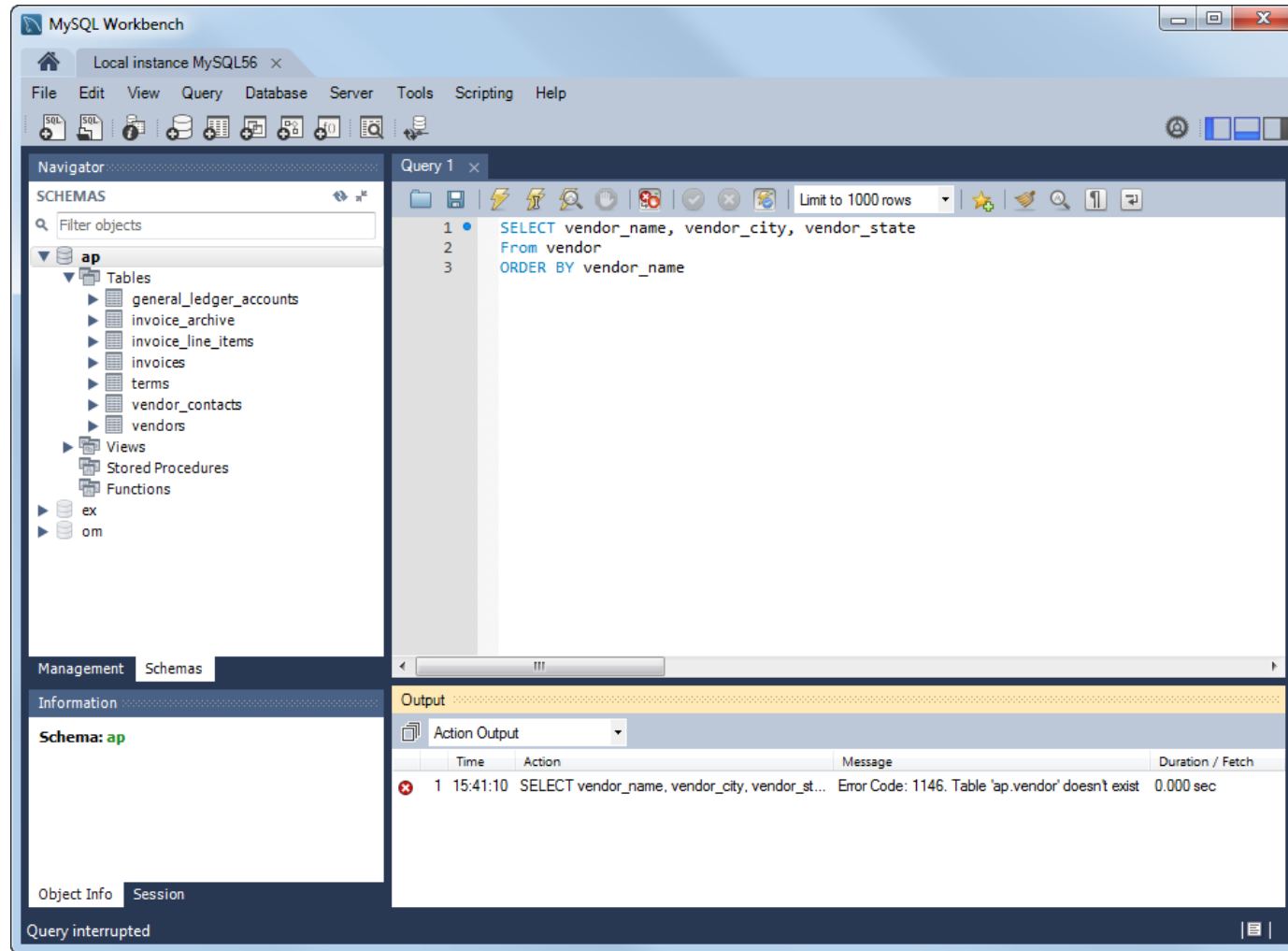
How to create your own snippet

1. Enter the code for the snippet into a SQL Editor.
2. Select the category where you want to save the snippet.
3. Click the Add New Snippet button and enter a name for the snippet.

How to delete a snippet

1. Select the snippet in the SQL Additions tab.
2. Click the Delete Snippet item.

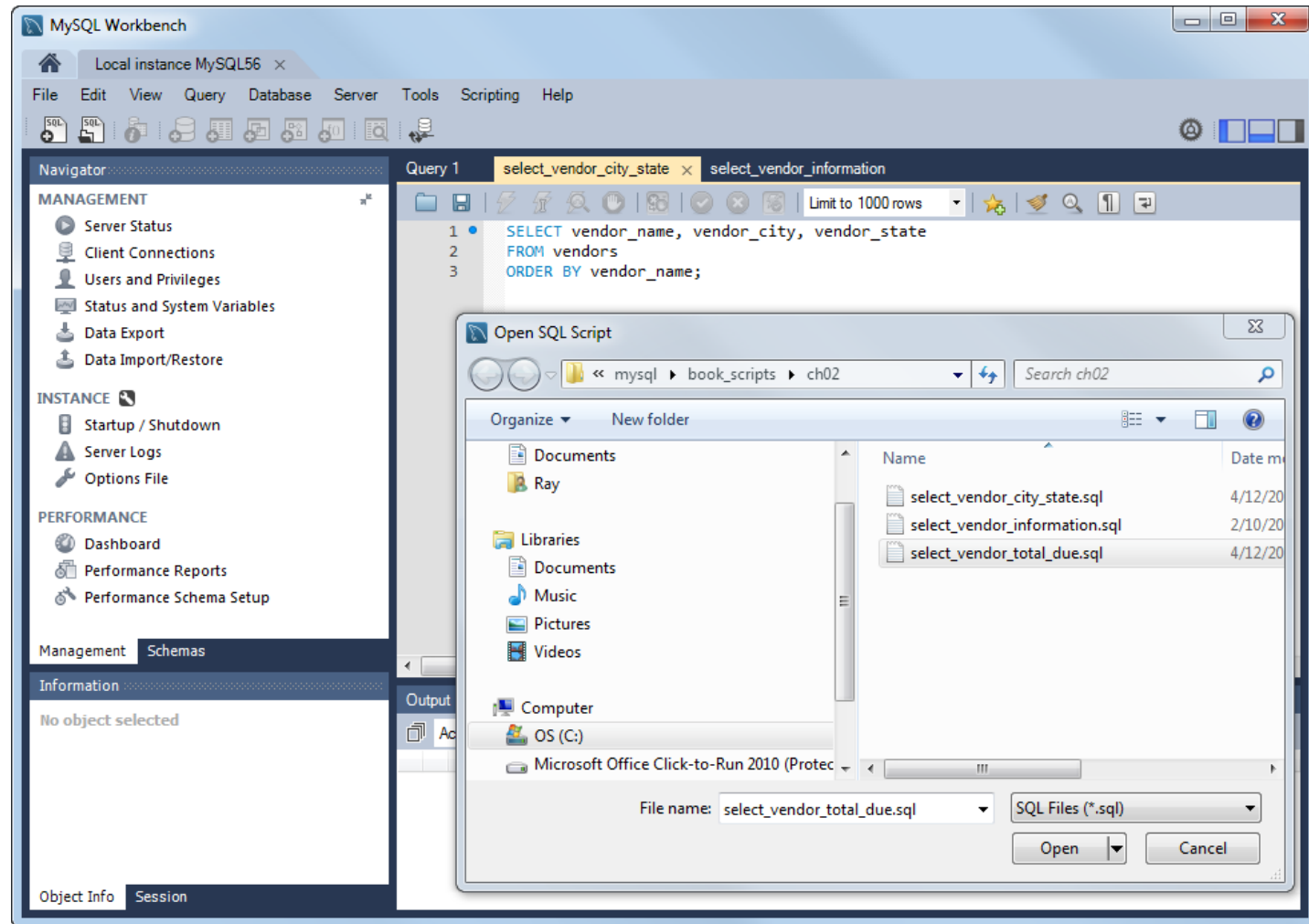
How to handle syntax errors



Common causes of errors

- Having the wrong database selected
- Misspelling the name of a table or column
- Misspelling a keyword
- Omitting the closing quotation mark for a character string

The Open SQL Script dialog box



How to open a SQL script

1. Click the Open SQL Script File button in the SQL Editor toolbar, or press the Ctrl+Shift+O keys.
2. Use the Open SQL Script dialog box to locate and open the SQL script.

How to switch between open files

- Select the appropriate tab.

How to cut, copy, and past code

- Use standard techniques.

How to save a new SQL script

1. Click the Save button in the SQL editor toolbar or press Ctrl+S.
2. Use the Save SQL Script dialog box to specify a location and name for the file.

How to save a modified script to a new file

1. Press the Ctrl+Shift+S keys, or select the File→Save Script As command.
2. Use the Save SQL Script dialog box to specify a location and name for the file.

A SQL script and its results

The screenshot displays the MySQL Workbench interface for a local instance of MySQL 5.6. The left sidebar contains a 'Navigator' pane with sections for 'MANAGEMENT' (Server Status, Client Connections, Users and Privileges, Status and System Variables, Data Export, Data Import/Restore) and 'INSTANCE' (Startup / Shutdown, Server Logs, Options File). Below this is a 'PERFORMANCE' section (Dashboard, Performance Reports, Performance Schema Setup) and tabs for 'Management' and 'Schemas'. The 'Information' pane shows 'No object selected'. The main area is titled 'Query 1' and contains a SQL script with two queries. The first query selects vendor information, and the second query calculates the total due for a specific vendor. The 'Result Grid' shows the results of the first query, displaying a single row for vendor 'IBM' in 'San Francisco'. The 'Output' pane shows the execution details of both queries, including the time taken and the number of rows returned.

Query 1 `select_vendor_information`

```
1 • SELECT vendor_name, vendor_city
2   FROM vendors
3  WHERE vendor_id = 34;
4
5 • SELECT COUNT(*) AS number_of_invoices,
6       SUM(invoice_total - payment_total - credit_total) AS total_due
7   FROM invoices
8  WHERE vendor_id = 34;
```

Result Grid

vendor_name	vendor_city
IBM	San Francisco

Output

	Time	Action	Message	Duration / Fetch
✓ 1	10:12:48	SELECT vendor_name, vendor_city FROM ve...	1 row(s) returned	0.047 sec / 0.000 sec
✓ 2	10:12:48	SELECT COUNT(*) AS number_of_invoices, ...	1 row(s) returned	0.328 sec / 0.000 sec

Query Completed

How to run an entire script

- Press the Ctrl+Shift+Enter keys or click the Execute SQL Script button.

How to run one statement within a script

1. Move the insertion point into the statement you want to execute.
2. Press the Ctrl+Enter keys or click the Execute Current Statement button.

How to run two or more statements in a script

1. Select the statements you want to execute.
2. Press the Ctrl+Shift+Enter keys or click the Execute SQL Script button.

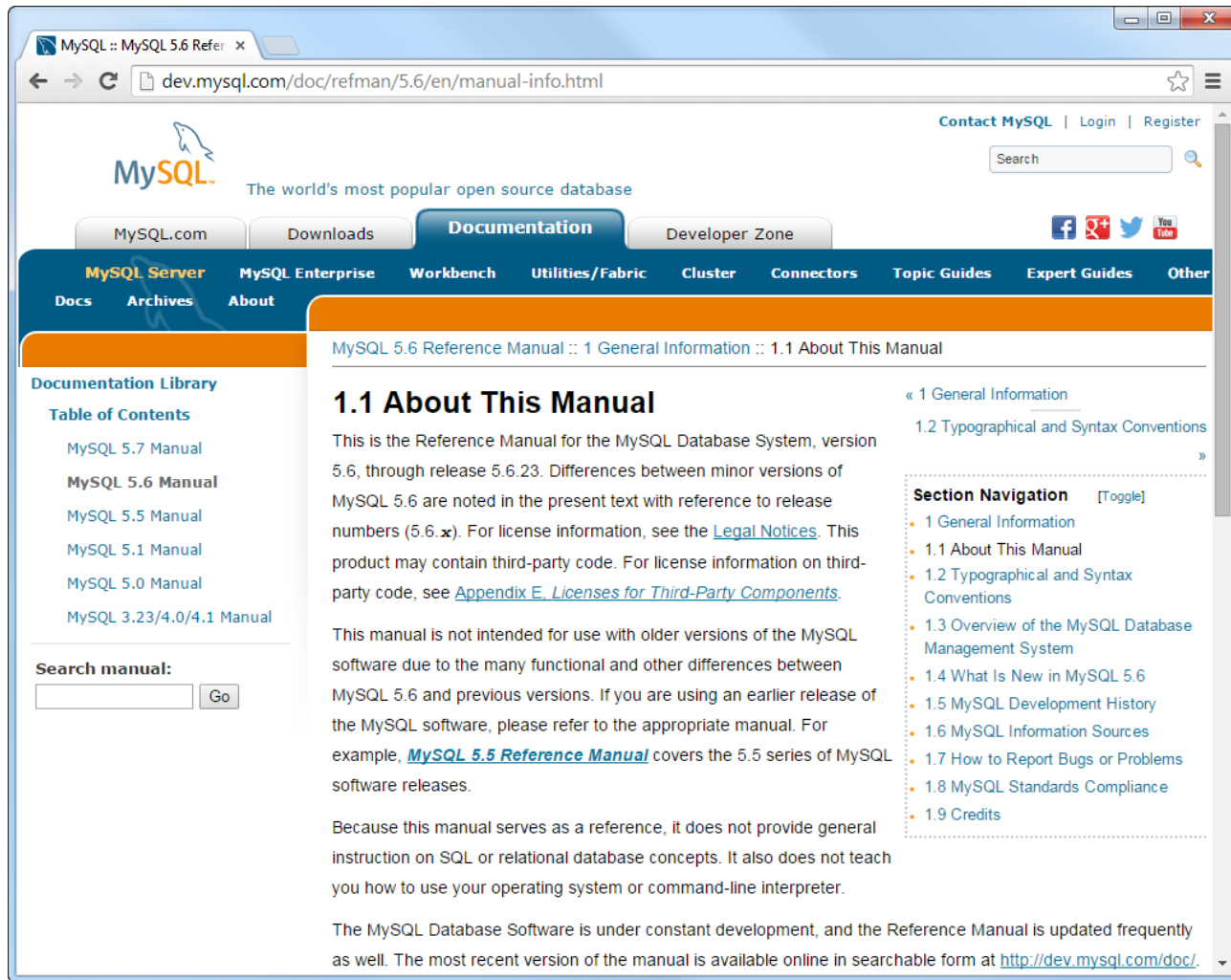
Notes

- The results of each statement that returns data are displayed in a separate Result grid.
- If a script contains more than one statement, you must code a semicolon at the end of each statement.

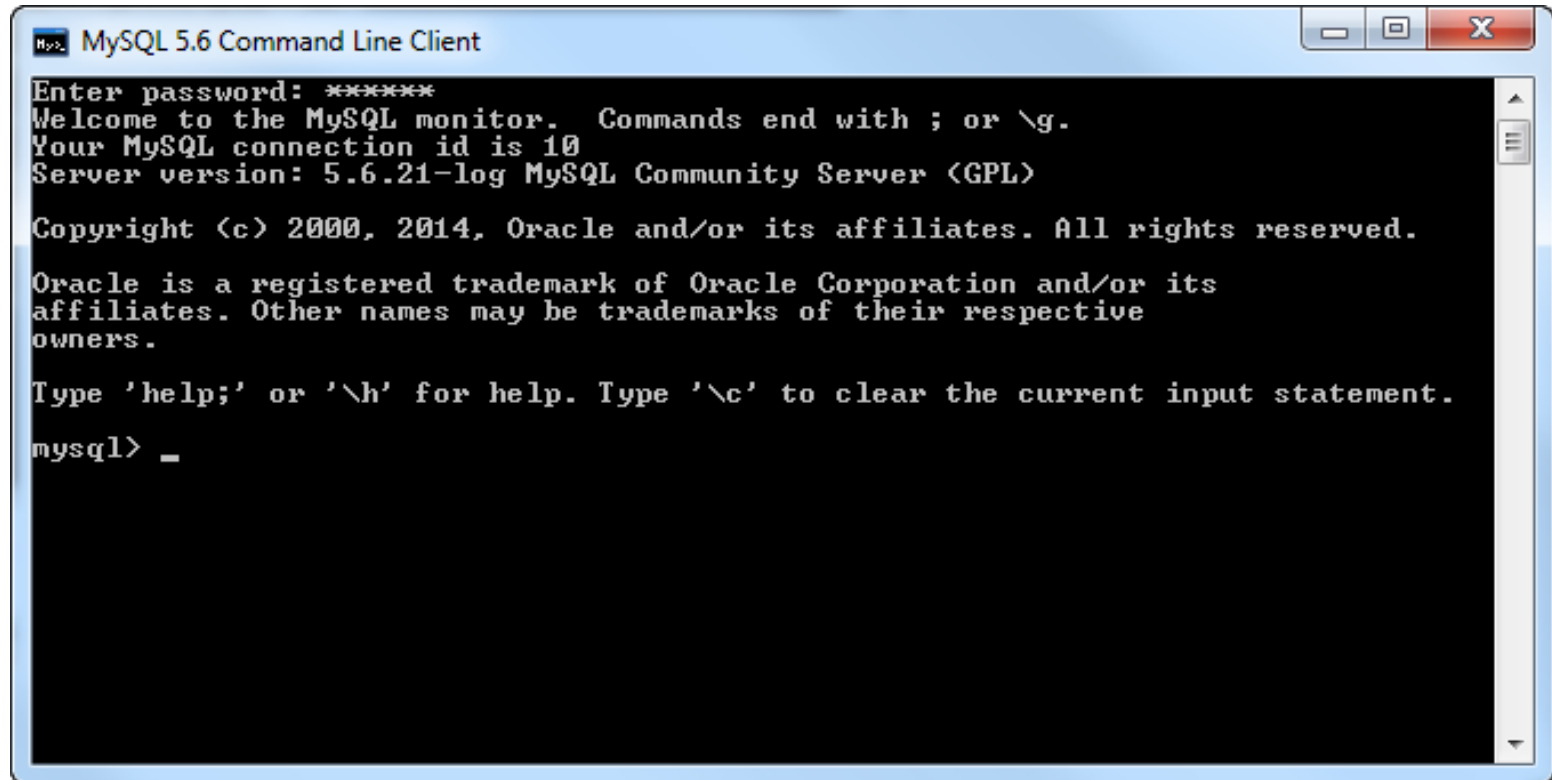
The web address for the MySQL 5.6 Reference Manual

<http://dev.mysql.com/doc/refman/5.6/en/>

A web page from the MySQL Reference Manual



The MySQL Command Line Client displayed by Windows



```
MySQL 5.6 Command Line Client
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 5.6.21-log MySQL Community Server (GPL)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
mysql> _
```

How to start the MySQL Command Line Client from the Windows Start menu

Start → All Programs → MySQL → MySQL Server 5.6 →
MySQL 5.6 Command Line Client

How to start the MySQL Command Line Client from Windows Command Prompt window

```
cd \Program Files\MySQL\MySQL Server 5.6\bin  
mysql -u root -p
```

How to start the MySQL Command Line Client from a Mac Terminal window

```
cd /usr/local/mysql/bin  
./mysql -u root -p
```

The syntax of the mysql command

```
mysql -h hostname -u username -p
```

Examples of the mysql command

```
mysql -u ap_tester -p
```

```
mysql -h localhost -u root -p
```

```
mysql -h murach.com -u ap_tester -p
```

How to exit from the MySQL Command Line Client

```
mysql>exit;
```


How to list the names of all databases managed by the server

```
mysql> show databases;
+-----+
| Database                |
+-----+
| information_schema       |
| ap                       |
| ex                       |
| mysql                   |
| om                       |
| performance_schema       |
| test                     |
+-----+
7 rows in set (0.05 sec)
```

How to select a database for use

```
mysql> use ap;  
Database changed
```

How to select data from a database

```
mysql> select vendor_name from vendors limit 5;  
+-----+  
| vendor_name |  
+-----+  
| Abbey Office Furnishings |  
| American Booksellers Assoc |  
| American Express |  
| ASC Signs |  
| Ascom Hasler Mailing Systems |  
+-----+  
5 rows in set (0.09 sec)
```