

## Supplement K: Tutorial for MySQL

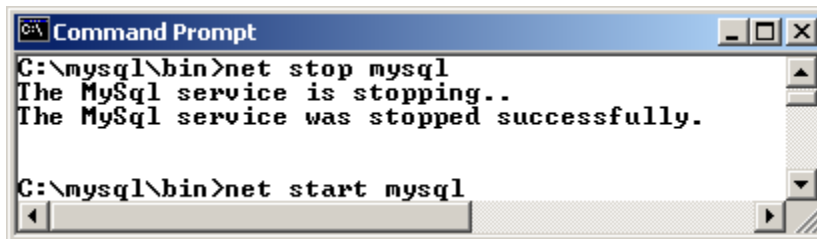
For Introduction to Java Programming, 5E  
By Y. Daniel Liang

### 0 Introduction

MySQL is a popular database with more than 4 million users. It is one of the fastest relational databases in the market. Many companies are using it to support their websites, data warehouses, and business applications. MySQL was developed by a Swedish company named MySQL AB. The product is distributed under GNU General Public License (GPL). It can support multiple users concurrently on the network. Students can access a MySQL database server standalone on their own computer or from the network. You can download it free from [www.mysql.com](http://www.mysql.com). MySQL runs on Windows, Linux and Solaris. This tutorial demonstrates using MySQL from the Windows operating system.

### 1 Starting MySQL for the First Time

After MySQL is installed, to start MySQL for the first time, type "net start mysql" from the MySQL bin directory as shown in Figure 1.1. Afterwards, MySQL will be automatically started after your computer is rebooted. You can stop it by typing the command `net stop mysql`.



```
Command Prompt
C:\mysql\bin>net stop mysql
The MySQL service is stopping..
The MySQL service was stopped successfully.

C:\mysql\bin>net start mysql
```

Figure 1.1

*You need to start MySQL only once after the installation.*

### 2 Using MySQL

Assume that you have installed MySQL with the default configuration; you can access MySQL from the DOS command prompt using the command `mysql` from the `c:\mysql\bin` directory, as shown in Figure 1.2.

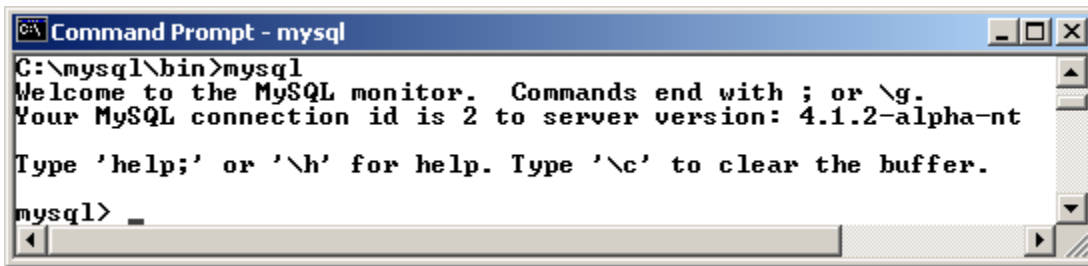


Figure 1.2

*You can access a MySQL database server from the command window.*

By default, the server contains two databases named `mysql` and `test`. You can see these two databases displayed in Figure 1.3 using the command `show databases`.

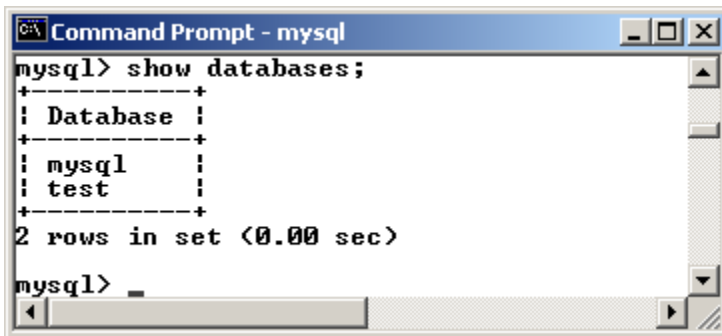


Figure 1.3

*The `show databases` command displays all available databases in the MySQL database server.*

The `mysql` database contains the tables that store the information about the server and its users. This database is intended for the server administrator to use. For example, the administrator can use it to create users and grant or revoke user privileges. Since you are the owner of the server installed on your system, you have full access to the `mysql` database. However, you should not create user tables in the `mysql` database. You can use the `test` database to store data or create new databases. You can also create a new database using the command `create database databasename` or drop an existing database using the command `drop database databasename`.

To select a database for use, type the `use databasename` command. Since the `test` database is created by default in every MySQL database, let us use it to demonstrate SQL commands. As shown in Figure 1.4, the `test` database is selected.

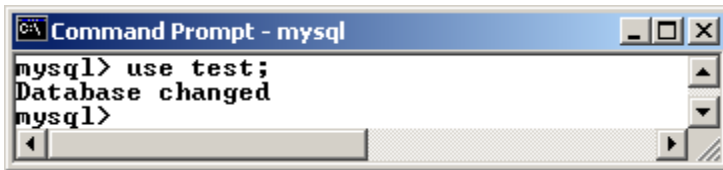


Figure 1.4

The use test command selects the test database.

Enter the following SQL statements from the MySQL command prompt, as shown in Figure 1.5. The create table statement creates a table named State. The insert statement inserts the values into the table. The select statement displays the contents from the table.

```
create table State(  
  name varchar(15) not null,  
  capital varchar(25),  
  population integer);  
  
insert into State values ('Georgia', 'Atlanta', 8383915);  
insert into State values ('New York', 'Albany', 19011378);  
  
select * from State;
```

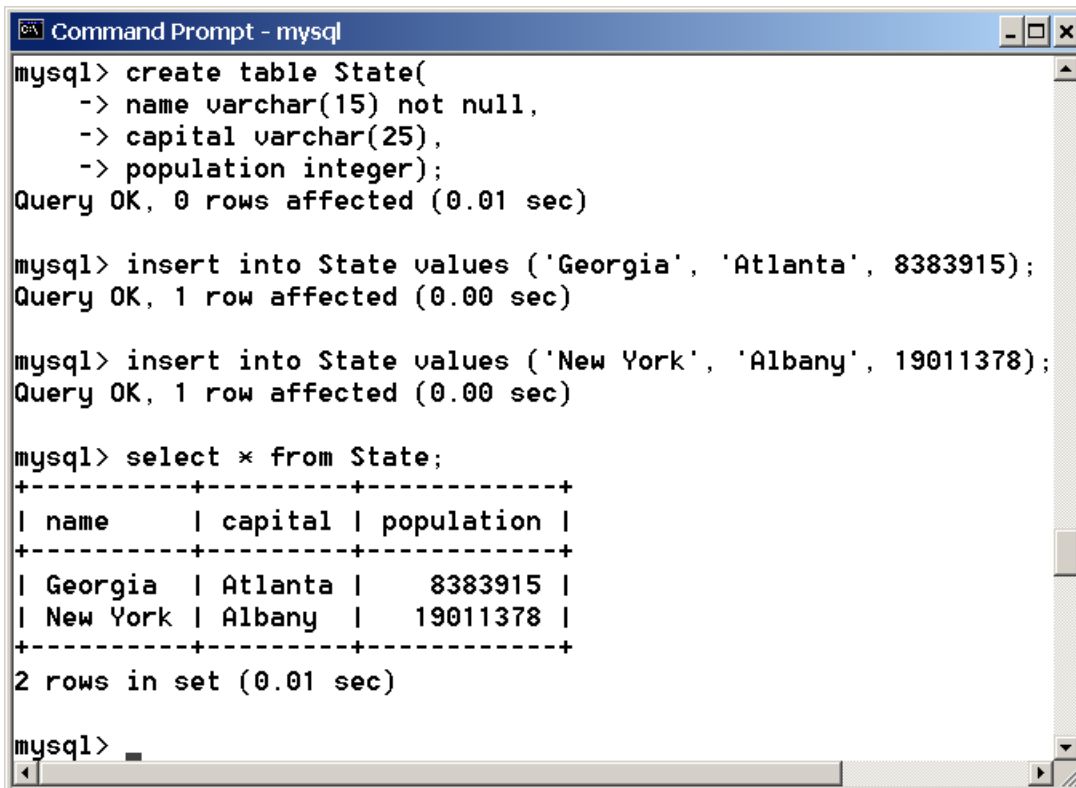
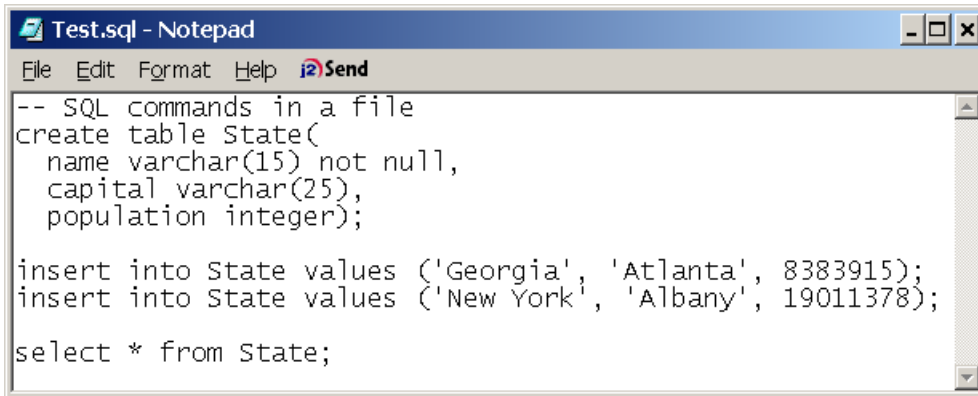


Figure 1.5

The execution result of the SQL statements is displayed in the MySQL command tool.

If you have typing errors, you have to retype the whole

command. To avoid retyping the whole command, you can save the command in a file, and then run the command from the file. To do so, create a text file, e.g., named `test.sql`, which contains the commands. You can create the text file using any text editor, e.g., Notepad, as shown in Figure 1.6. To comment a line, precede with two dashes. You can now run the script file by typing `source test.sql` from the SQL command prompt, as shown in Figure 1.7.



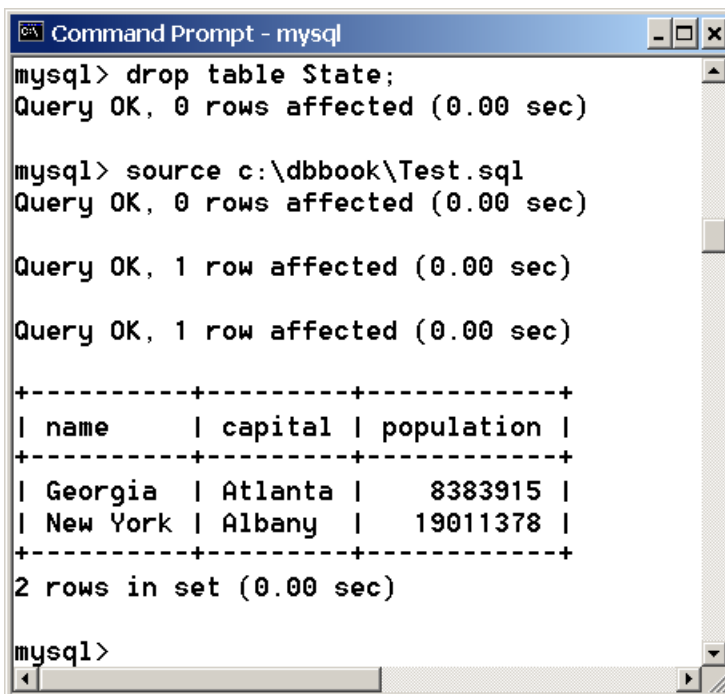
```
Test.sql - Notepad
File Edit Format Help i2 Send
-- SQL commands in a file
create table State(
  name varchar(15) not null,
  capital varchar(25),
  population integer);

insert into State values ('Georgia', 'Atlanta', 8383915);
insert into State values ('New York', 'Albany', 19011378);

select * from State;
```

**Figure 1.6**

*You can use Notepad to create a text file for SQL commands.*



```
Command Prompt - mysql
mysql> drop table State;
Query OK, 0 rows affected (0.00 sec)

mysql> source c:\dbbook\Test.sql
Query OK, 0 rows affected (0.00 sec)

Query OK, 1 row affected (0.00 sec)

Query OK, 1 row affected (0.00 sec)

+-----+-----+-----+
| name      | capital | population |
+-----+-----+-----+
| Georgia   | Atlanta | 8383915    |
| New York  | Albany  | 19011378   |
+-----+-----+-----+
2 rows in set (0.00 sec)

mysql>
```

**Figure 1.7**

*You can run the SQL commands in a script file from MySQL.*

### 3 MySQL Administrations

You can download MySQL Control Center from [www.mysql.com](http://www.mysql.com). MySQL Control Center is a valuable utility for administering MySQL databases. You can add and drop databases, create and remove users and tables, grant privileges from this easy-to-use GUI utility.

### 4 Accessing MySQL Using Java

NOTE: you are not familiar with SQL and JDBC, please Chapter 25 on basics of SQL and how to write Java database programs.

The JDBC driver for MySQL is `com.mysql.jdbc.Driver` contained in `c:\book\mysqljdbc.jar`. To run a Java program that accesses a MySQL database, you must put `mysqljdbc.jar` in the classpath.

The database URL for MySQL is `jdbc:mysql://hostname:port/dbname`. By default, the port number is 3306. For example, if the database is named test on the localhost, the URL is `jdbc:mysql://localhost/test`.

The following is a sample program

```
import java.sql.*;

public class SimpleJdbc {
    public static void main(String[] args)
        throws SQLException, ClassNotFoundException {
        // Load the JDBC driver
        Class.forName("com.mysql.jdbc.Driver");
        System.out.println("Driver loaded");

        // Establish a connection
        Connection connection = DriverManager.getConnection
        ("jdbc:mysql://localhost/test");
        System.out.println("Database connected");

        // Create a statement
        Statement statement = connection.createStatement();

        // Execute a statement
        ResultSet resultSet = statement.executeQuery
```

```
        ("select firstName, mi, lastName from Student where lastName "  
        + " = 'Smith'");  
  
        // Iterate through the result and print the student names  
        while (resultSet.next())  
            System.out.println(resultSet.getString(1) + "\t" +  
            resultSet.getString(2) + "\t" + resultSet.getString(3));  
  
        // Close the connection  
        connection.close();  
    }  
}
```