PHP AND DATABASE (PART 2)

MIS 4530
Dr. Garrett

Selecting a Database

- The `mysql` database contains user accounts and information that is required for installation of the MySQL database server
- The `test` database is installed to ensure that the database server is working properly
- Use the `SHOW DATABASES` statement to view the databases that are available
- Use the `SELECT DATABASE()` statement to display the name of the currently selected database

Selecting a Database (continued)

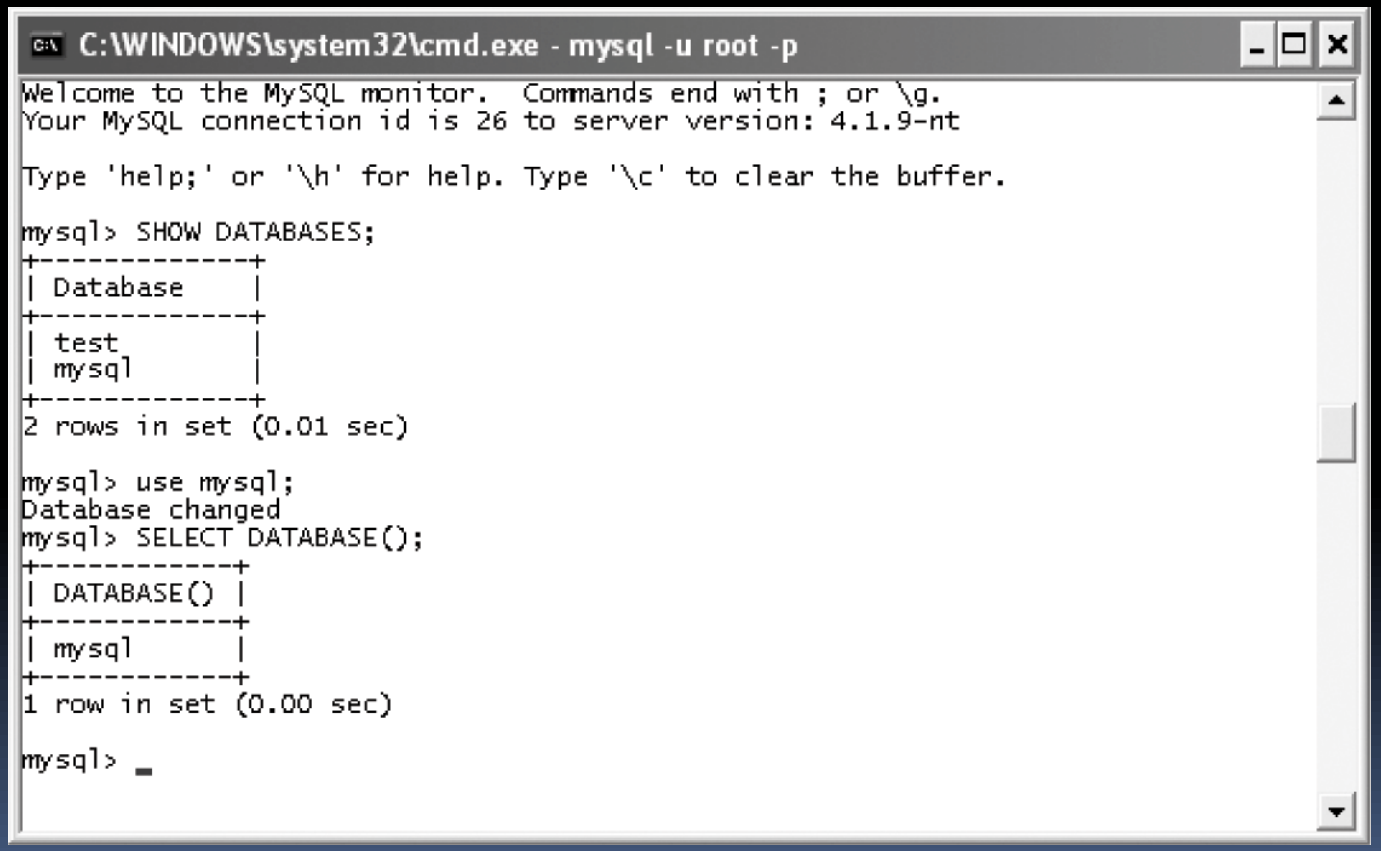

Figure 8-10 MySQL Monitor after selecting a database

Creating Databases

- Use the `CREATE DATABASE` statement to create a new database:

```
mysql> CREATE DATABASE guitars;
Query OK, 1 row affected (0.02 sec)
```

- To use a new database, select it by executing the `use` *`database`* statement
- Before adding records to a new database, first define the tables and fields that will store the data

Deleting Databases

- Use the `DROP DATABASE` statement to remove all tables from the database and to delete the database
- The syntax for the `DROP DATABASE` statement is:

```
DROP DATABASE database;
```

- You must be logged in as the root user or have `DROP` privileges to delete a database

Securing the Initial MySQL Accounts

- Deleting the Anonymous User Account

```
mysql> DELETE FROM mysql.user WHERE User = '';
mysql> FLUSH PRIVILEGES;
```

- Assigning a Password to the Root Account

```
mysql> UPDATE mysql.user SET Password = PASSWORD('newpwd')
    -> WHERE User = 'root';
mysql> FLUSH PRIVILEGES;
```

- The password assigned to the root account and other user accounts is case sensitive

Creating Users

- A **proxy** is someone or something that acts or performs a request for another person
- Create a separate account for each Web application that needs to access a database
- Use a `GRANT` statement to create user accounts and assign privileges
- **Privileges** are the operations that a user can perform with a database

Creating Users (continued)

Privilege	Description
ALL	Assigns all privileges to the user
CREATE	Allows the user to create databases, tables, and indexes
DROP	Allows the user to delete databases and tables
ALTER	Allows the user to modify table structure
DELETE	Allows the user to delete records
INDEX	Allows the user to create and delete indexes
INSERT	Allows the user to add records
SELECT	Allows the user to select records
UPDATE	Allows the user to modify records
USAGE	Creates a user with no privileges

Table 8-2 Common MySQL database privileges

GRANT Statement

- The syntax for the GRANT statement is:

```
GRANT privilege [(column)] [, privilege [(columns)]] ...
    ON {table | * | *.* | database.*}
    TO user [IDENTIFIED BY 'password'];
```

- The GRANT statement creates the user account if it does not exist and assigns the specified privileges
- If the user account already exists, the GRANT statement just updates the privileges

Revoking Privileges

- The syntax for the `REVOKE` statement is:

```
REVOKE privilege [(column)] [, privilege [(columns)]] ...
    ON {table | * | *.* | database.*}
    FROM user;
```

- The `REVOKE ALL PRIVILEGES` statement removes all privileges from a user account for a specified table or database
- You must be logged in with the `root` account or have sufficient privileges to revoke privileges from another user account

Deleting Users

- To delete a user:
  - Revoke all privileges assigned to the user account for all databases
  - Use the `REVOKE ALL PRIVILEGES` statement
  - View the privileges assigned to a user account with the `SHOW GRANTS FOR` *`user`* statement
- To delete an existing user, use the `DROP USER` statement
- Use the `DROP USER` *`user`* statement to delete the account from the user table in the `mysql` database

Specifying Field Data Types

Type	Range	Storage
BOOL	-128 to 127; 0 is considered false	1 byte
INT or INTEGER	-2147483648 to 2147483647	4 bytes
FLOAT	-3.402823466E+38 to -1.175494351E-38, 0, and 1.175494351E-38 to 3.402823466E+38	4 bytes
DOUBLE	-1.7976931348623157E+308 to -2.2250738585072014E-308, 0, and 2.2250738585072014E-308 to 1.7976931348623157E+308	8 bytes
DATE	'1000-01-01' to '9999-12-31'	Varies
TIME	'-838:59:59' to '838:59:59'	Varies

Table 8-3 Common MySQL data types

Specifying Field Data Types (continued)

Type	Range	Storage
CHAR(*m*)	Fixed length string between 0 to 255 characters	Number of bytes specified by *m*
VARCHAR(*m*)	Variable length string between 1 to 65,535 characters	Varies according to the number of bytes specified by *m*

Table 8-3 Common MySQL data types (continued)

Creating Tables

- The `CREATE TABLE` statement specifies the table and column names and the data type for each column
- The syntax for the `CREATE TABLE` statement is:

```
CREATE TABLE table_name (column_name TYPE,
  ...);
```

- Execute the `USE` statement to select a database before executing the `CREATE TABLE` statement

Deleting Tables

- The `DROP TABLE` statement removes all data and the table definition
- The syntax for the `DROP TABLE` statement is:

```
DROP TABLE table;
```

- You must be logged in as the `root` user or have `DROP` privileges to delete a table

Adding Records

- Use the INSERT statement to add individual records to a table
- The syntax for the INSERT statement is:

```
INSERT INTO table_name VALUES(value1, value2,
...);
```

- The values entered in the VALUES list must be in the same order in which you defined the table fields
- Specify NULL in any fields for which you do not have a value

Retrieving Records

- Use the `SELECT` statement to retrieve records from a table:

```
SELECT criteria FROM table_name;
```

- Use the asterisk (*) wildcard with the `SELECT` statement to retrieve all fields from a table
- To return multiple fields, separate field names with a comma

```
mysql> SELECT model, quantity FROM
inventory;
```

Sorting Query Results

- Use the `ORDER BY` keyword with the `SELECT` statement to perform an alphanumeric sort of the results returned from a query

```
mysql> SELECT make, model FROM inventory ORDER BY make,
   model;
```

- To perform a reverse sort, add the `DESC` keyword after the name of the field by which you want to perform the sort

```
mysql> SELECT make, model FROM inventory ORDER BY make DESC,
model;
```

Filtering Query Results

- The **criteria** portion of the `SELECT` statement determines which fields to retrieve from a table
- You can also specify which records to return by using the `WHERE` keyword

```
mysql> SELECT * FROM inventory WHERE make='Martin';
```

- Use the keywords `AND` and `OR` to specify more detailed conditions about the records you want to return

```
mysql> SELECT * FROM inventory WHERE make='Washburn'
    -> AND price<400;
```

Updating Records

- To update records in a table, use the `UPDATE` statement
- The syntax for the `UPDATE` statement is:

```
UPDATE table_name
SET column_name=value
WHERE condition;
```

  - The `UPDATE` keyword specifies the name of the table to update
  - The `SET` keyword specifies the value to assign to the fields in the records that match the condition in the `WHERE` keyword

Deleting Records

- Use the DELETE statement to delete records in a table
- The syntax for the DELETE statement is:

```
DELETE FROM table_name
WHERE condition;
```

- The DELETE statement deletes all records that match the condition
- To delete all the records in a table, leave off the WHERE keyword