



Learning Outcomes

- Generate valid and description names for database elements
- Choose an appropriate column type
- Explain the difference between CHAR and VARCHAR
- Select proper column properties
- Implement primary key indexes
- Access a MySQL database using the mysql client
- Access a MySQL database using phpMyAdmin



Naming Database Elements

- Only letters, numbers, and the underscore
- Cannot be the same as an existing SQL keyword
- Treat as case-sensitive
- Shorter than 64 characters
- Unique within its realm (e.g., database or table)



Primary Column Types

- Text
- Numbers
- Dates and times
- Special types (ENUM and SET)



Specific Text Types

- CHAR
- VARCHAR
- TINYTEXT
- TEXT
- MEDIUMTEXT
- LONGTEXT



CHAR vs VARCHAR

CHAR

- Fixed length
- Generally requires more disk space
- Generally faster
- Best used for values that will always be a fixed length

VARCHAR

- Variable length
- Generally requires less disk space
- Generally slower
- Best used for values that will be of any length



Specific Numeric Types

- TINYINT
- SMALLINT
- MEDIUMINT
- INT
- BIGINT
- FLOAT
- DOUBLE
- DECIMAL



Specific Date and Time Types

- DATE
- DATETIME
- TIMESTAMP
- TIME



Important Column Properties

- Length
- NULL/NOT NULL
- DEFAULT
- UNSIGNED
- ZEROFILL
- AUTO_INCREMENT



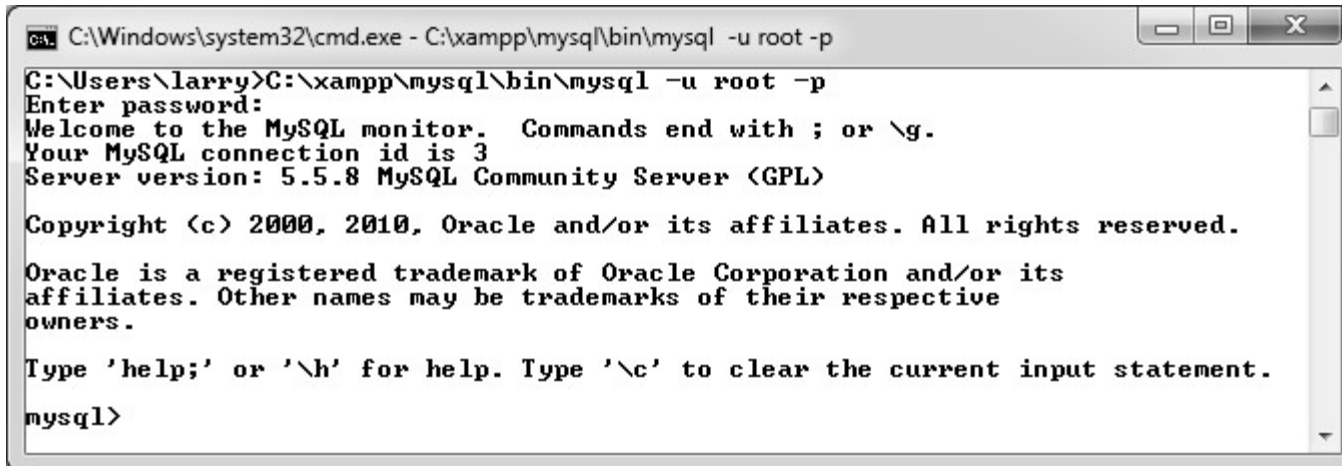
Primary Key

- Must always have a value
- The value must never change
- The value must be unique for each record in the table
- Almost always unsigned, not null integers
- Use `AUTO_INCREMENT` to set the value



The mysql Client

- /Applications/MAMP/Library/bin/mysql (Mac OS X, using MAMP)
- C:\xampp\mysql\bin\mysql (Windows, using XAMPP)
- `mysql -u username -h hostname -p`



```
C:\Windows\system32\cmd.exe - C:\xampp\mysql\bin\mysql -u root -p
C:\Users\larry>C:\xampp\mysql\bin\mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 3
Server version: 5.5.8 MySQL Community Server (GPL)

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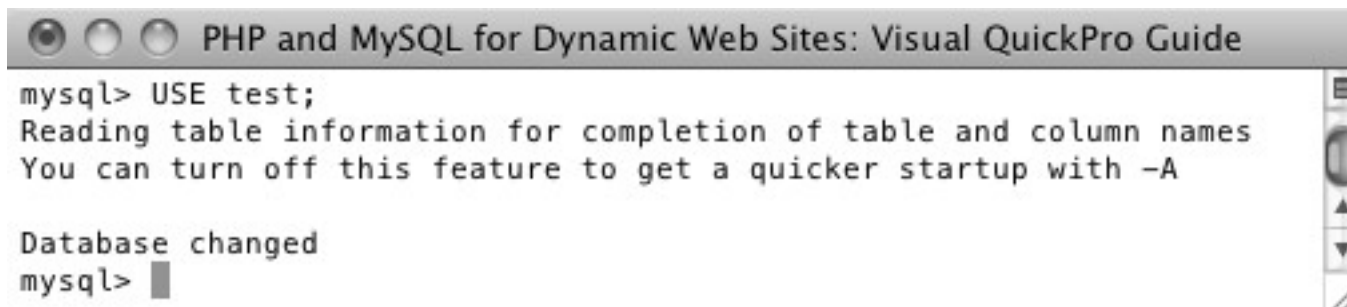
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```



Selecting a Database

- USE *databasename*;

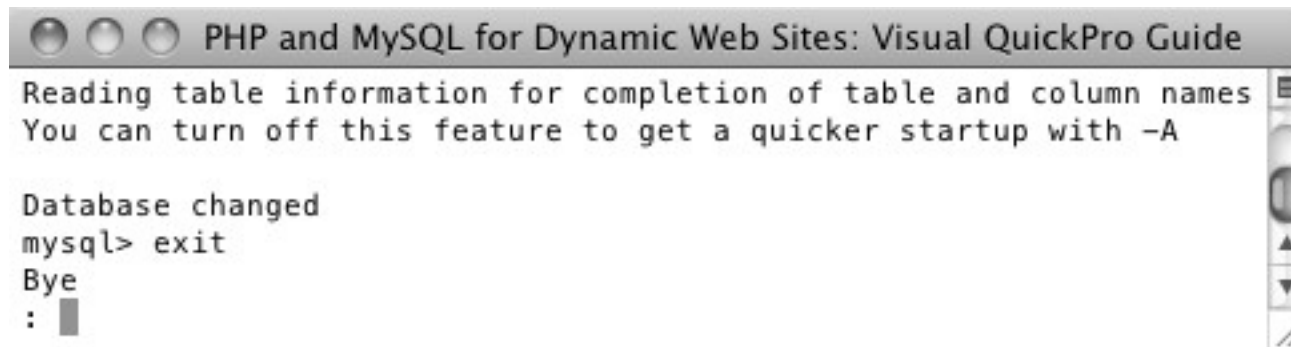


```
mysql> USE test;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> █
```



Leaving the mysql Client

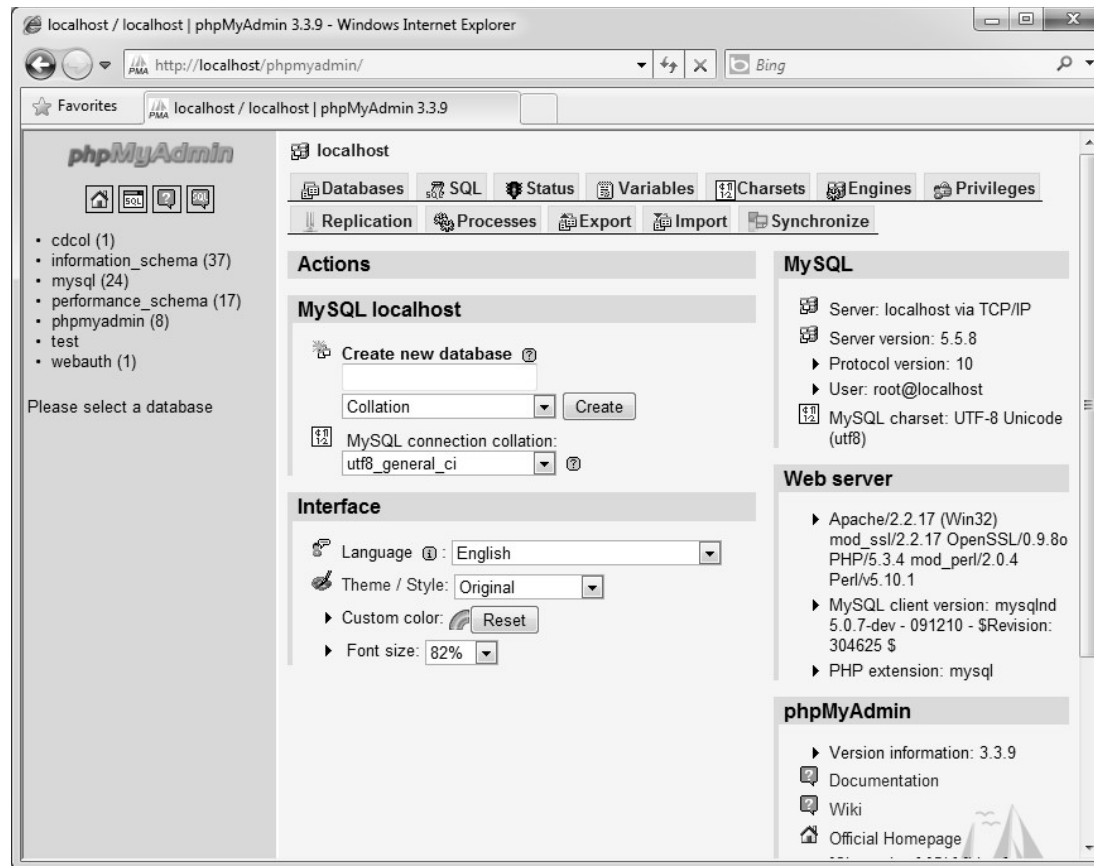


```
PHP and MySQL for Dynamic Web Sites: Visual QuickPro Guide
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> exit
Bye
: █
```



Using phpMyAdmin





Selecting a Database

The screenshot shows the phpMyAdmin interface. On the left, the 'Database' dropdown is set to 'phpmyadmin (8)'. Below it, a list of tables is shown, including 'pma_bookmark', 'pma_column_info', 'pma_designer_coors', 'pma_history', 'pma_pdf_pages', 'pma_relation', 'pma_table_coors', and 'pma_table_info'. The main panel shows the 'pma_history' table structure. The table has the following fields:

Field	Type	Collation	Attributes	Null	Default
<input type="checkbox"/> id	bigint(20)		UNSIGNED	No	None
<input type="checkbox"/> username	varchar(64)	utf8_bin		No	
<input type="checkbox"/> db	varchar(64)	utf8_bin		No	
<input type="checkbox"/> table	varchar(64)	utf8_bin		No	
<input type="checkbox"/> timevalue	timestamp		on update CURRENT_TIMESTAMP	No	CURRENT_TIMESTAMP
<input type="checkbox"/> sqlquery	text	utf8_bin		No	None

Below the table structure, there are options to 'Check All / Uncheck All With selected:' and a 'Print view' button. At the bottom, there is a section for 'Indexes:'.



Running Queries

