

MySQL

MySQL

- structured query language
- My is the name of one of the co-founders daughters

MySQL

- a language for interacting with a relational database
- technically a bit math-ish
- practically: tables, rows, columns
- for basic web dev you don't need much fanciness

tables

Coffee Shops

name	neighborhood	rating
Jet's Espressoaria	East Pearl	8
Ozo	West Pearl	7
Ozo	East Arapahoe	8
Pekoe	Ideal	7

field ← **row**

↑ **column**

tables

Messages

name	title	email	message	timestamp
Eric	hi there	eric@patternleaf.com	lorem ipsum, yo.	<time>
Pirate	arrrrr	arr@black-pearl.net	Arrrr. Ar.	<time>
Pickle	pickles are great	dill@kosher.net	aren't they magnificent?	<time>

MySQL server/client

- server stores data
- client interacts with server
- basic client is command-line

MySQL CLI client

- \$> mysql
- mysql> show databases;

hierarchy

- server has databases
 - databases have tables
 - tables have columns
 - tables have rows
 - rows have fields

create & select a database

```
mysql> create database test_database;  
mysql> use test_database;
```

defining a table

```
mysql> create table entries (
    `name` VARCHAR(255),
    `title` VARCHAR(255),
    `message` TEXT,
    `timestamp` DATETIME
);
```

) ;

field name

field type

database types

- number
- string
- date/time
- [spatial]
- <http://dev.mysql.com/doc/refman/5.0/en/storage-requirements.html>

listing tables

```
mysql> show tables;
+-----+
| Tables_in_test_database |
+-----+
| entries                  |
+-----+
1 row in set (0.00 sec)
```

```
mysql> describe entries;
```

adding data to a table

```
mysql> insert into entries values (
    "Eric",
    "A message for you.",
    "This is a message, la la la la la la.",
    "2012-10-03 16:57:00" ← (MySQL datetime format)
);
mysql> insert into entries values (
    "Mr. Pirate",
    "Arrrrrr.",
    "Yarr. Yarr. Yarrrrrrr.",
    "2012-10-04 16:59:00"
);
```

querying all values

```
mysql> select * from entries;
```

name	title	message	timestamp
Eric	A message for you!	This is a message, la la la la la.	2012-10-03 16:01:00
Mr. Pirate	Arrrrr.	Yarr. Yarr. Yarrrrrrr.	2012-10-04 16:59:00

```
2 rows in set (0.00 sec)
```

querying for a specifc value

```
mysql> select * from entries where name = "Eric";
+-----+-----+-----+
| name | title          | message                                | timestamp
+-----+-----+-----+
| Eric | A message for you! | This is a message, la la la la la. | 2012-10-03 16:01:00 |
+-----+-----+-----+
1 row in set (0.00 sec)
```

querying for specific column

```
mysql> select title, message from entries;  
+-----+-----+  
| title | message |  
+-----+-----+  
| A message for you! | This is a message, la la la la la.  
| A message for you. | This is a message, yarrr yarrr yarrrrrrrr.  
+-----+-----+  
2 rows in set (0.00 sec)
```

date-based query

```
mysql> select title, message from entries where timestamp < "2012-10-04";
+-----+-----+
| title      | message          |
+-----+-----+
| A message for you! | This is a message, la la la la la. |
+-----+-----+
1 row in set (0.00 sec)
```

gui clients

- MySQL Workbench (windows, mac)
- Sequel Pro (mac—simpler)

MySQL Advantages

- very fast queries with sophisticated conditions
- much more to it... just getting started

php as a MySQL client

- older: mysql functions
- newer: **mysqli** procedural or OO interface
- <http://php.net/mysqli>

steps to use MySQL in PHP

1. connect to server (`mysqli_connect`)
2. query as needed (`mysqli_query`)
3. use query result (`mysqli_fetch_assoc`)
4. (close connection (`mysqli_close`))*

typical connection

```
$connection = mysqli_connect(  
    'localhost',           // hostname  
    'patternleaf',         // mysql server username  
    'asdlfkjadl',          // password  
    'test_database'        // database to use on connection  
);  
  
$queryResult = mysqli_query($connection, '  
    select * from entries;  
' );  
  
if ($queryResult) {  
    while ($row = mysqli_fetch_assoc($queryResult)) {  
        print ($row['name'] . ' says: ' . $row['message']);  
    }  
}  
else {  
    print('Query failed! ' . mysqli_error($connection));  
}
```

while: assignment + test

- assignment statements actually evaluate to a result

1. assign result of function to \$row
2. \$row is evaluated by the while



```
while ($row = mysqli_fetch_assoc($queryResult)) {  
    print ($row['name'] . ' says: ' . $row['message']);  
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while ($row = mysqli_fetch_assoc($queryResult)) {  
    print ($row['name'] . ' says: ' . $row['message']);  
}
```

be super-careful to distinguish between == and =

sanitization and mysql

- input can contain mysql commands that are interpreted literally
- use `mysqli_real_escape_string` to make data safe
- pattern/type checks:
 - `is_numeric` for numbers
 - `strtotime` for string dates