More loops

while loops

Control structures / flow control

- if ... else
- Switch
- for loops
- while ... do ..
- do ... while ...

Much of this material is explained in PHP programming 2nd Ed. Chap 2

Control structures / flow control

- if ... else
- Switch
- for loops
- while ... do ..
- do ... while ...

} Done these

Much of this material is explained in PHP programming 2nd Ed. Chap 2

Loops / Iteration / doing things over and over and over and over ....

Three standard loop types

for

while ...

do ... while

Loops / Iteration / doing things over and over and over and over ....

Three standard loop types

for
while ...
do ... while

Choose a for-loop if the number of times the loop will run is known 'in advance'

The loop will run 4 times
The loop will run 1000 times
The loop will run 'n' times

Loops / Iteration / doing things over and over and over and over ....

Three standard loop types

for
while ...
do ... while

...or you are processing an array

Loops / Iteration / doing things over and over and over and over ....

Three standard loop types

for
while ...
do ... while

Choose a while-loop if the loop will run 0 or more times till some condition becomes false

Loops / Iteration / doing things over and over and over and over ....

Three standard loop types

for
while ...
do ... while

Choose a do-while-loop if the loop will run 1 or more times till some condition becomes false

Loops / Iteration / doing things over and over and over and over ....

Three standard loop types

for

while ...

do ... while

With these we typically don't know in advance how many times the loop will execute...

Loops / Iteration / doing things over and over and over and over ....

Three standard loop types

for

while ...

do ... while

..but we must know the minimum number of times the loop will work to choose between while or do ... while

i.e. 0 or 1

while loop

The structure of a while statement is:

```
while (condition)
   statement
```

Loop continues whilst condition is true

or with many statements -

```
while (condition){
   statement;
   statement;
   statement;
   statement;
};
```

Do something in here to change the condition (unless you want it to continue ∞)

while loop

```
$today="Monday";

while($today<>"Friday"){
print "<p>Today is ".$today."</p>";
if (rand(1,10)>7){
    $today="Friday";
    };
};

print "Final value of today is ".$today;
```

If the condition is initially false, the loop doesn't execute at all (i.e. 0 times)

while loop

```
$today="Friday";

while($today<>"Friday"){
print "<p>Today is ".$today."</p>";
if (rand(1,10)>7){
    $today="Friday";
    };
};

print "Final value of today is ".$today;
```

If the condition is initially false, the loop doesn't execute at all (i.e. 0 times)

do .. while loop

The structure of a do .. while statement is:

```
do
    statement;
while (condition)
```

Will loop at least once

or with many statements -

```
do {
    statement;
    statement;
    statement;
    statement;
 }
 while (condition);
```

Do something in here to change the condition (unless you want it to continue ∞)

do .. while loop

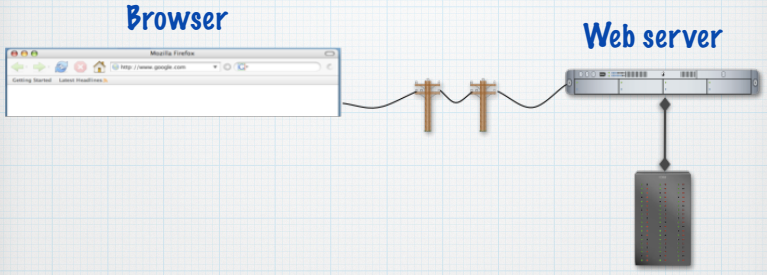
```
do {
$i=rand(1,10);
print "<p>This time i had the value $i</p>";
} while ($i<8);
```

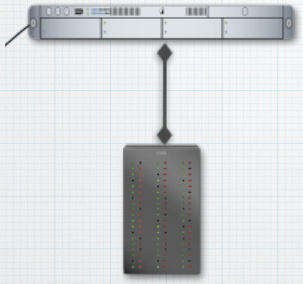
As condition is at the bottom of the structure the loop must execute at least once

Server side scripting and databases

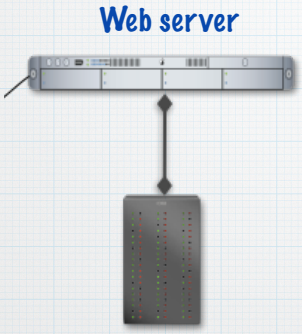
How Web Applications interact with server side databases

Three components used in typical web application

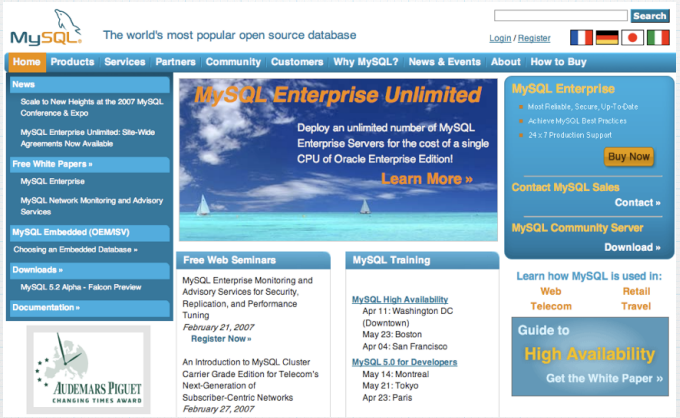




These can be on different machines in physically different places



mySQL - http://www.mysql.com/



mySQL

Open Source database, issued under a dual commercial license as well

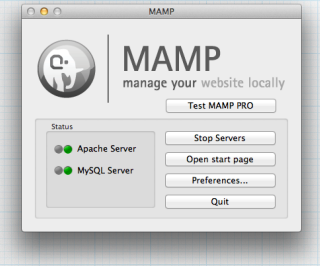
Rather than just being one program, actually consists of many separate components

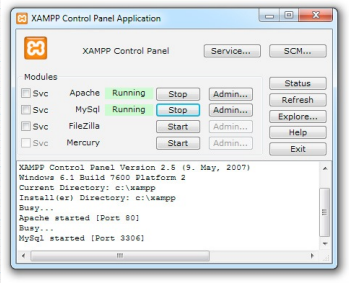
... if doing this on your own machine...

Aim to download a complete pack containing apache, PHP and mySQL (XAMPP pc or MAMP mac)

mySQL - local

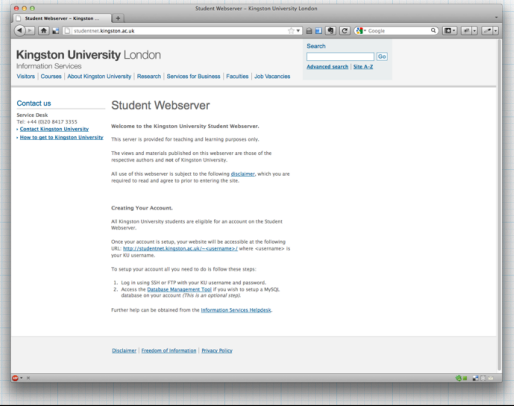
Start the database process in the background





mySQL - dedicated server

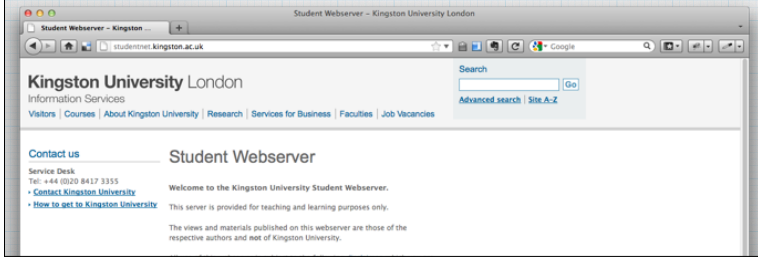
Use whatever interface is supplied to create a DB



mySQL - dedicated server

Use whatever interface is supplied to create a DB

studentnet.kingston.ac.uk



mySQL - dedicated server

Use whatever interface is supplied to create a DB

Creating Your Account.

All Kingston University students are eligible for an account on the Student Webserver.

Once your account is setup, your website will be accessible at the following URL: http://studentnet.kingston.ac.uk/~<username>/ where <username> is your KU username.

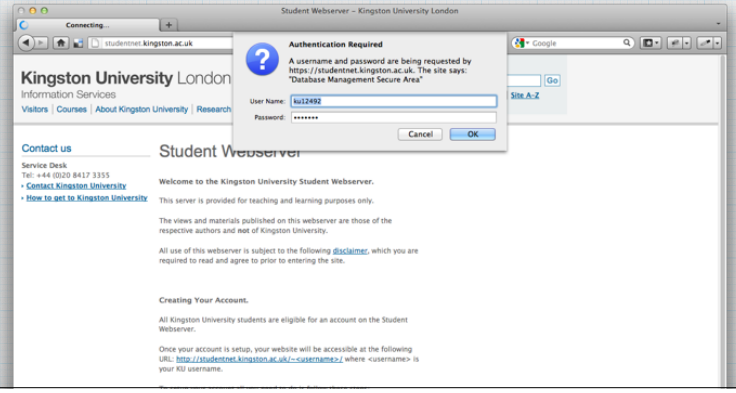
To setup your account all you need to do is follow these steps:

1. Log in using SSH or FTP with your KU username and password.
2. Access the Database Management Tool if you wish to setup a MySQL database on your account *(This is an optional step)*.

Further help can be obtained from the Information Services Helpdesk.

mySQL - dedicated server

Use whatever interface is supplied to create a DB



mySQL - dedicated server

Use whatever interface is supplied to create a DB

Database Management

Through this interface you can manage the MySQL database associated with your account on the Studentnet Web Server.

Create MySQL Database

Database Name: db_ku12492

Username: ku12492

Database Password:

Confirm Password:

Create Database

Keep a note of these values

DON'T use your normal password

mySQL - dedicated server

Use whatever interface is supplied to create a DB

Database Management

The database db_ku12492 has been successfully created.

You can now access the database using the following connection parameters:

- **Database Host:** studentnet.kingston.ac.uk
- **Port:** 3306
- **Username:** ku12492
- **Password:** *As provided in the previous form*

You can now:

1. Go back to the Database Management Tool
2. Manage your database with phpMyAdmin
3. Visit your Student Website? *(You will need to have logged in to the Student Webserver for this to be available)*

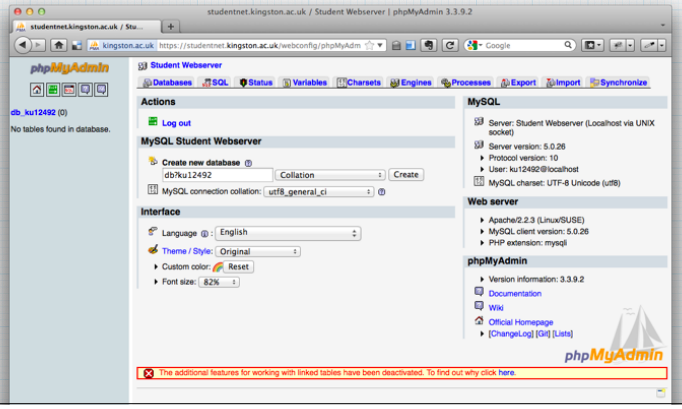
Keep a note of these values

phpMyAdmin

Use a web interface to setup DBs, tables

phpMyAdmin

Use a web interface to setup DBs, tables



phpMyAdmin - database setup at kingston

One database is created by the setup process

```
db_kxxxxxxxxx
```

If using your own machine...

On your own machine create a database

Call this database studentDB

Example table

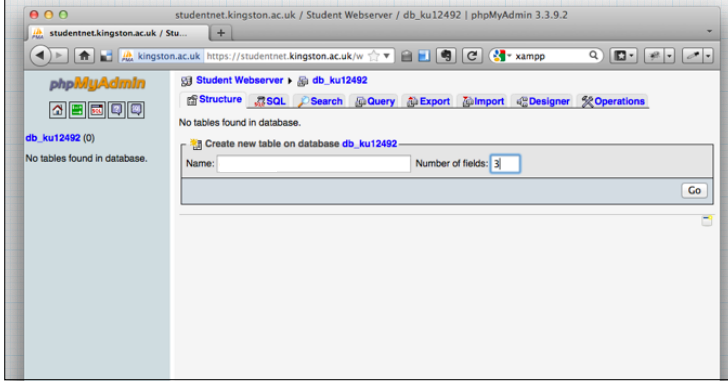
student

student

kuid	char
lastname	char
money	int

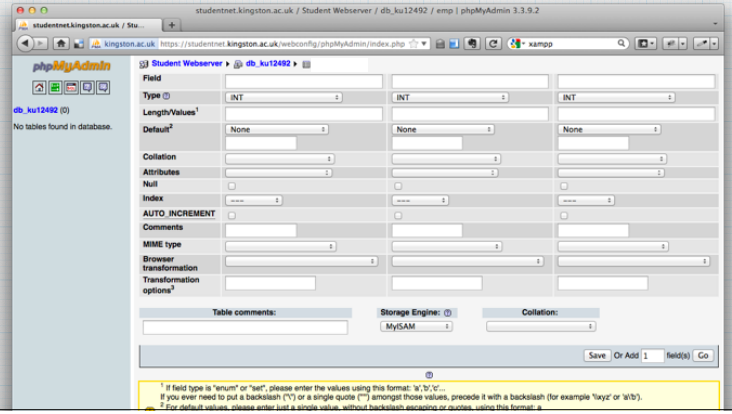
To create a table

Click on structure, add name and number of fields

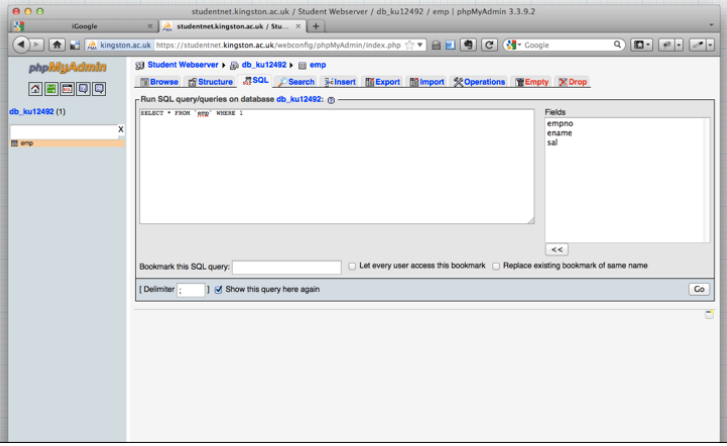


To create a table

Add fields ...



Alternative - creating a table using the DDL/SQL



Alternative - creating a table using the DDL

Syntax

```
create table tablename (
  fieldname type,
  fieldname type,
  ...);
```

Here used to create a table called student

```
create table student(kuid char(255), last name char(255), money int);
```

student

kuid	char
lastname	char
money	int

sql - inserting records using the DML

Syntax

```
insert into table [(columnname, columnname, …)]
values (value, value,…)
```

Here used to insert a record into student

```
insert into student (kuid,lastname,money) values
("ku1200012", "SMITH", 45);
```

sql - querying the database using the DQL

Syntax

```
select * or expression
from relations
[where expression]
```

Here used to show all rows in student

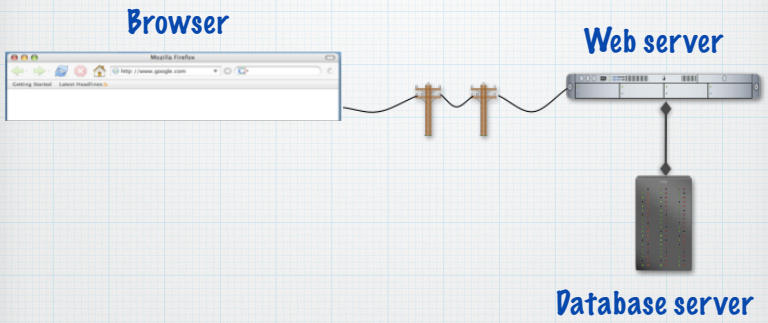
```
select * from student;

+-------+----------+-------+
| kuid  | lastname | money |
+-------+----------+-------+
| 120   | SMITH    | 45    |
+-------+----------+-------+
1 row in set (0.00 sec)
```

sql - running many SQL lines

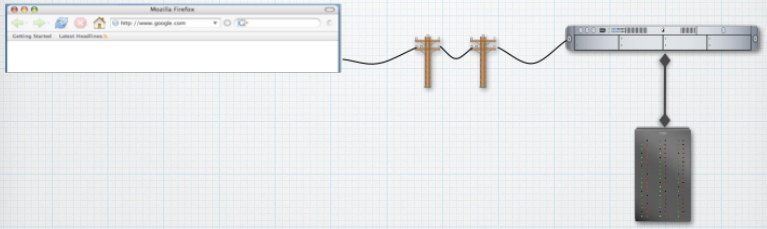
SQL statements separated by semicolons

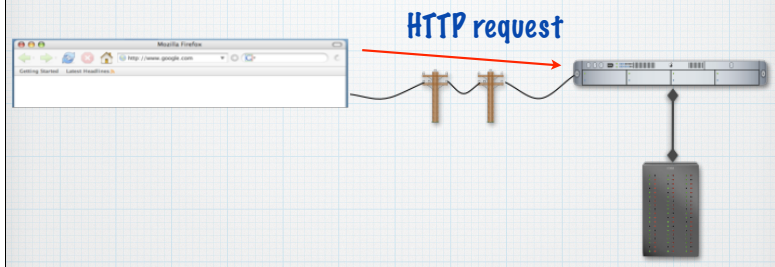
```
insert into student (kuid,lastname,money) values ("k1200012", "SMITH", 45);
insert into student (kuid,lastname,money) values ("k1243012", "AVERY", 22);
insert into student (kuid,lastname,money) values ("k1230012", "MITCHELL", 26);
insert into student (kuid,lastname,money) values ("k1034512", "WEBB", 22);
insert into student (kuid,lastname,money) values ("k1000012", "TENNENT", 22);
insert into student (kuid,lastname,money) values ("k1219912", "RUSSELL", 10);
```

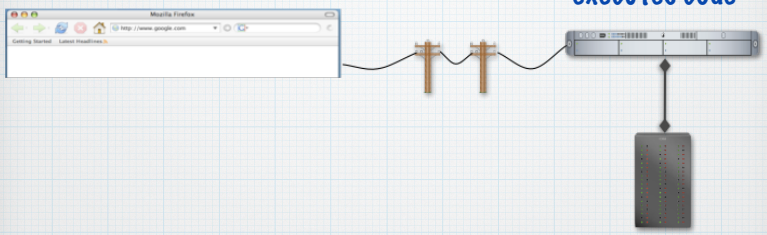
Three components used in typical web application

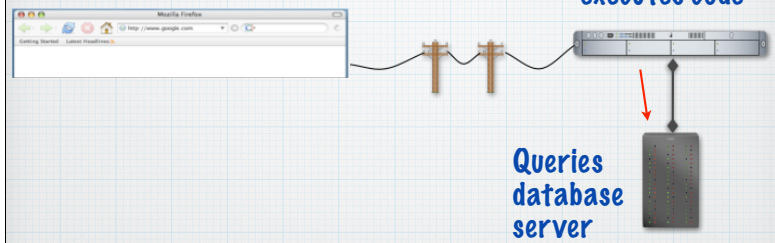


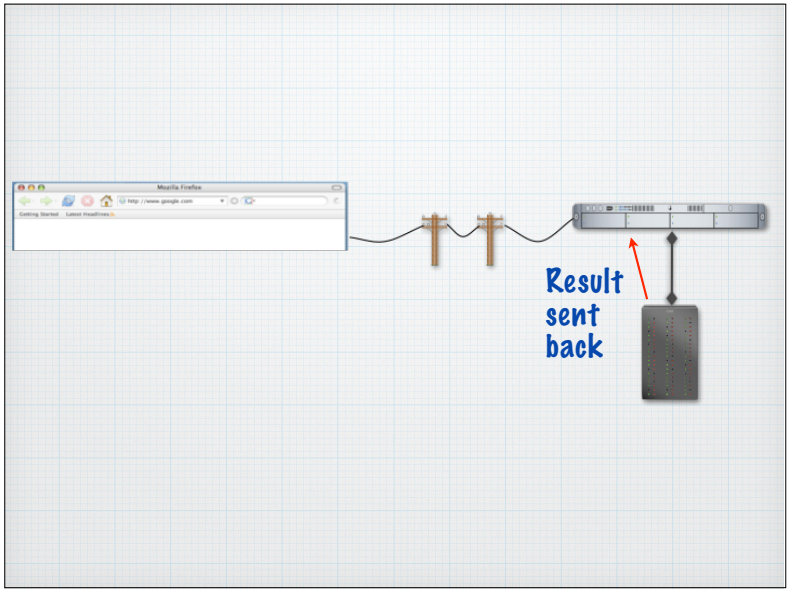
How many items in stock?

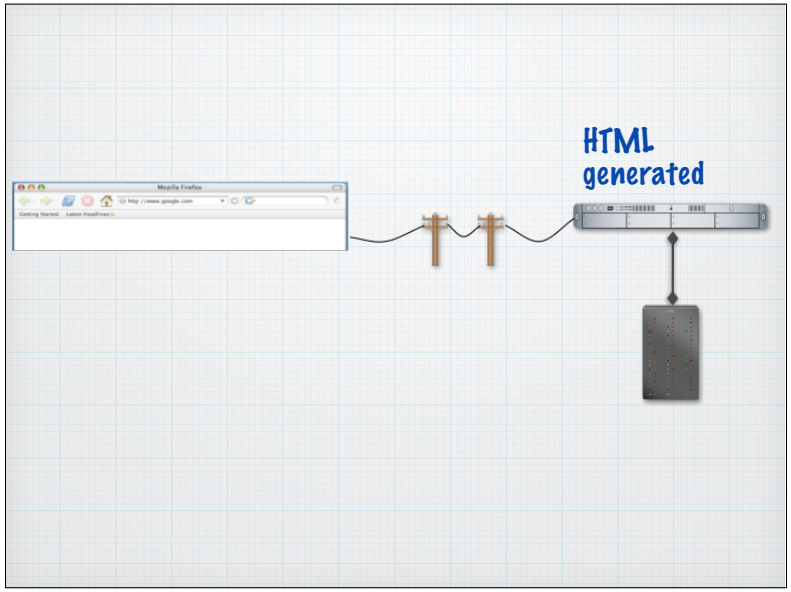


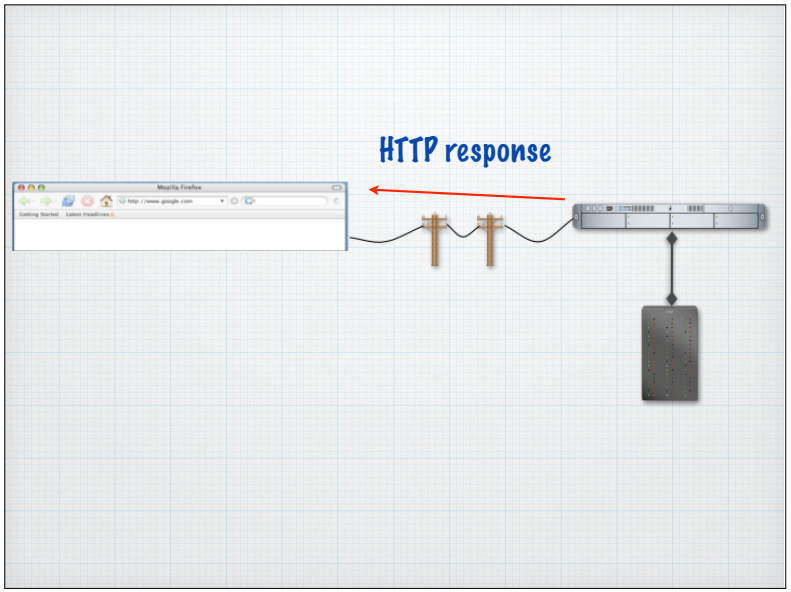


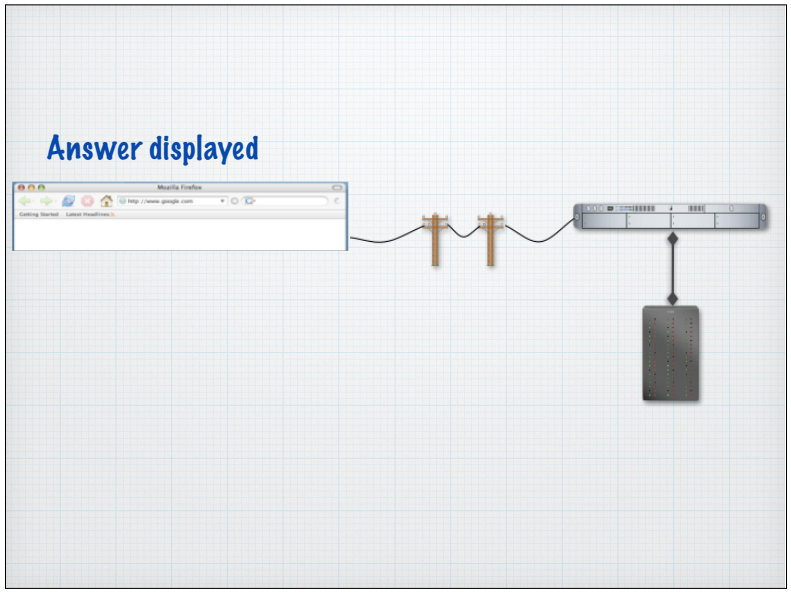





Result
sent
back


HTML
generated


HTTP response


Answer displayed

Connecting and using mySQL from PHP

PHP provides many mySQL specific functions

mysql_connect	Open a link/connection to a mysql database
mysql_select_db	Choose a specific database on a mySQL server
mysql_query	run an SQL statement on an opened database
mysql_fetch_array	process a result set
mysql_close	Close a mySQL connection

Opening a connection to a mysql server

Use mysql_connect

mysql_connect (PHP 4, PHP 5)

Open a connection to a MySQL Server

Description
resource mysql_connect ([string $server [, string $username [, string $password [, bool $new_link [, int $client_flags]]]]])

Opens or reuses a connection to a MySQL server.

Opening a connection to a mysql server

Use mysql_connect

```
<?php
// we connect to example.com and port 3307
$link = mysql_connect('example.com:3307', 'user5', 'qwerty5');
if (!$link) {
   die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';
mysql_close($link);
```

Opens a connection to the mysql server on example.com:3307, using user5 with password qwerty5

Kingston mySQL version

To connect to the Kingston Uni. mysql database

```
<?php
// Create connection
$link = mysql_connect('studentnet.kingston.ac.uk:3306', 'kxxxx', 'password');
if (!$link) {
   die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';
mysql_close($link);
?>
```

MAMP - Local version

To connect to a local mysql database - mamp

```
<?php
// Create connection
$link = mysql_connect('localhost:8889', 'root', 'root');
if (!$link) {
   die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';
mysql_close($link);
?>
```

XAMPP - Local version

To connect to a local mysql database - xampp

```
<?php
// Create connection
$link = mysql_connect('localhost', 'root', '');
if (!$link) {
   die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';
mysql_close($link);
?>
```

Kingston version

This example will fail to connect ...

```
<?php
// Create connection
$link = mysql_connect('studentnet.kingston.ac.uk:3306', 'kxxxx', 'missing');
if (!$link) {
   die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';
mysql_close($link);
?>
```

$link is only really used for testing the connection and for closing the connection - $link is of type resource - a built in PHP type for this kind of connection

Select a particular database on a mysql server

Use mysql_select_db

mysql_select_db (PHP 4, PHP 5)

Select a MySQL database

Description
bool mysql_select_db (string $database_name [, resource $link_identifier])

Sets the current active database on the server that's associated with the specified link identifier. Every subsequent call to mysql_query() will be made on the active database.

Opens a distinct connection to a particular named database on the previously opened mysql server

Select a particular database on a mysql server

Use mysql_select_db

```
<?php
// we connect to example.com and port 3307
$link = mysql_connect('example.com:3307', 'user5', 'qwerty5');
if (!$link) {
   die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';

$db_selected = mysql_select_db('foo', $link);
if (!$db_selected) {
   die ('Cannot use foo : ' . mysql_error());
};

mysql_close($link);
```

Opens a connection to the database foo, using the $link resource

Kingston mySQL version

To open your db_kxxxxxxx database

```
<?php
// we connect to localhost
$link = mysql_connect('studentnet.kingston.ac.uk:3306', 'kxxxx', 'password');
if (!$link) {
   die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';

$db_selected = mysql_select_db('db_kxxxxxxx', $link);
if (!$db_selected) {
   die ('Cannot use database : ' . mysql_error());
}
else {
  print “Opened database correctly”;
};

mysql_close($link);
?>
```

MAMP mySQL version

To open your studentDB database

```
<?php
// we connect to localhost
$link = mysql_connect('localhost:8889', 'root', 'root');
if (!$link) {
   die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';

$db_selected = mysql_select_db('studentDB', $link);
if (!$db_selected) {
   die ('Cannot use database : ' . mysql_error());
}
else {
  print “Opened database correctly”;
};

mysql_close($link);
?>
```

XAMPP mySQL version

To open your studentDB database

```
<?php
// we connect to localhost
$link = mysql_connect('localhost', 'root', '');
if (!$link) {
   die('Could not connect: ' . mysql_error());
}
echo 'Connected successfully';

$db_selected = mysql_select_db('studentDB', $link);
if (!$db_selected) {
   die ('Cannot use database : ' . mysql_error());
}
else {
  print “Opened database correctly”;
};

mysql_close($link);
?>
```

Running a SQL statement against the database

Use mysql_query

mysql_query (PHP 4, PHP 5)

Send a MySQL query

Description
resource mysql_query (string $query [, resource $link_identifier])

mysql_query() sends an unique query (multiple queries are not supported) to the currently active database on the server that's associated with the specified link_identifier.

Runs an SQL statement against the opened DB

Running a SQL statement against the database

Use mysql_query

```
$result = mysql_query('insert into foo (field1, field2, field3) values (120,
2000, 22000)');
if (!$result) {
   die('Invalid query: ' . mysql_error());
}
```

Runs the SQL query - if DDL or DML the result will indicate whether the query ran successfully or not (bool)

Version for KU, MAMP and XAMPP

Use mysql_query

```
$result = mysql_query('insert into student (kuid, lastname, money) values
(“ku123456”, “HARRIS”, 10)');
if (!$result) {
   die('Invalid query: ' . mysql_error());
}
```

This inserts a single record (or fails)

inserting, deleting and updating

SQL for inserting, deleting and updating

insert into student (kuid, lastname, money) values ("ku123456", "HARRIS", 10);

delete from student where kuid="xxxxx";

update student set lastname="JONES" where lastname="xxx";

update student set money=money*2 where lastname="xxx";

Try some out - ie create lines like...

```
$result = mysql_query('insert into student (kuid, lastname, money) values
(“ku123456”, “HARRIS”, 10)');
```

To close a database connection

Use mysql_close

mysql_close (PHP 4, PHP 5)

Close MySQL connection

Description
bool mysql_close ([resource $link_identifier])

mysql_close() closes the non-persistent connection to the MySQL server that's associated with the specified link identifier. If link_identifier isn't specified, the last opened link is used.

Closes the connection and releases the resources

Local version

To close the database connection

```
<?php
// we connect to the server
$link = mysql_connect(.. etc);

....

mysql_close($link);
?>
```