**Setting up the PI as a Web Server**

To setup a web server, we will need to install Apache, MySQL and PHP. Run the following commands.

*sudo apt-get update*

*sudo apt-get install apache2 php5 php5-mysql mysql-server*

View the default web page from laptop, using <http://192.168.0.10/> (you may need to replace this with IP address of PI).

The default web page on PI is stored in /var/www/index.html

**CoderDojo SQL and PHP**

We're going to learn a bit of SQL which is a database programming language and PHP which is a programming language used to create webpages. PHP and MySQL are often used together to create all kinds of websites which store and display data. All kinds of sites use MySQL and PHP from the simplest web page to the biggest sites in the world....(Facebook use them....)

**Simple programming in SQL**

Data is stored in databases in tables. We're going to create a table to hold highscores for a game and learn a little about SQL.

Open a terminal and access the MySQL database

**mysql**

First thing we're going to create our own database to keep our data from anyone else who might be using mysql

**mysql> create database coderdojo;**

**mysql> use coderdojo;**

Now we create our high score table which is going to hold the player name, game name, high score and when the high score was recorded

**mysql> create table highscore (**

**PlayerName varchar(64),**

**GameName varchar(64),**

**Score int(11) default 0,**

**Scoretime datetime NOT NULL**

**);**

*varchar(64) means that this column in the table will score text – the player name/game name, and int(11) means its going to have a number – the high score.*

Now we're going to put some high scores into our table

**mysql> insert into highscore values ('Bob Smith','X-Type',116400, now());**

**mysql> insert into highscore values ('Bob Smith','Spyhunter',83400, now());**

**mysql> insert into highscore values ('Bob Smith','Buggy Challenge',42000, now());**

**mysql> insert into highscore values ('Bob Smith','Out Run',95000, now());**

**mysql> insert into highscore values ('John Brown','Spyhunter',80000, now());**

**mysql> insert into highscore values ('John Brown','Out Run',60000, now());**

**mysql> insert into highscore values ('Mike Walsh','Out Run',60000, now());**

**mysql> insert into highscore values ('Mike Walsh','Spyhunter',48000, now());**

***'now()' is a MySQL function that returns the current time.***

See all the high score entries you have put in the table so far

**mysql> select \* from highscore;**

Add a few more rows using your name and some of the above game names (or other games if you want)

Say you want to list the high scores for a particular player

**mysql> select \* from highscore where PlayerName = 'Bob Smith';**

See if you can just list your own high scores. Then see if you can see all the high scores for one of the games only – e.g. 'Spyhunter'. If you figure out that add this to the end **' order by Score desc';** and see what it does. How might you get it to order by lowest first?

What if John beats his high score on Spyhunter? Lets update it.

> update highscore set score = '100000' where playername = 'John Brown' and gamename = 'Spyhunter';

We should really have updated the time the high score was recorded? Lets try that again.

> update highscore set score = '100000', scoretime = now() where playername = 'John Brown' and gamename = 'Spyhunter';

*What do you think would have happened of we only had put where the condition for playername = 'John Brown'and not the condition for the game name?*

Lets find out all the player's who have high scores recorded for them

> Select playername from highscore;

What's the obvious problem with that last list? Why did that happen? Try this small change

> Select distinct playername from highscore;

How would you get all the game names that have high scores recorded for them?

How would you list player names who had a high score recorded for the game 'X-Type?

How would you list player names who had a high score greater than 50000 in 'Spyhunter'? Hint '>' is the symbol for 'greater than' in the same way '='is used for 'equal to'.

How would you list John's high scores making sure that his most recent high score update is presented first? And last?

**Simple programming in PHP**

We're going to use a simple PHP file to download display the information from our database on a web page.

Download the highscores.php file from dropbox. From a terminal open the folder where the apache web server web files are stored:

> cd /var/www

> sudo wget http://dl.dropbox.com/u/7056036/highscores.php

This file will:

* Connect to the mysql database (you will need to change the username & password values)
* Get all the records from our highscores table using the SQL commands we practised
* Display all these records in a table.

To see the file in action, open a browser and enter the URL <http://127.0.0.1/highscores.php>

Highscores.php combines normal HTML code that you used before with some php programming code to do this. It should be easy to figure out what this simple example is doing.

Try update the highscores.php page to show some additional tables:

* A table with only the high scores details for the “Out Run” game with the lowest score top
* A table with only the high scores details for the “Spyhunter”with the latest high score top
* A table with only your high scores with the highest score top