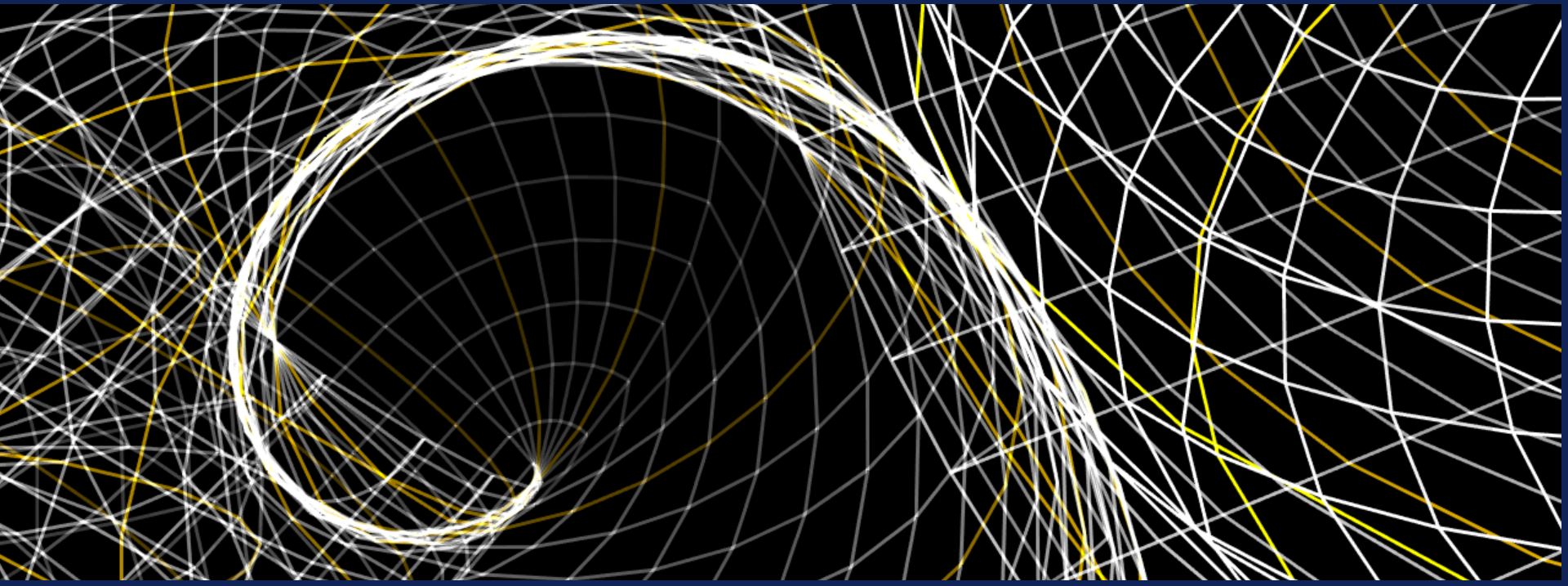


# Coding Basic Web Pages

Dr Alex Singleton

Department of Geography and Planning

UNIVERSITY OF LIVERPOOL

www.alex-singleton.com

# Overview and Structure

- HTML
- CSS
  - Bootstrap (and other frameworks)
- Interactivity
  - Javascript and frameworks
  - PHP
  - Node.js

# Web Pages

- Components
  - HTML - structure
  - CSS – style / design
  - Javascript - interactivity
  - Other
    - PHP, ASP etc

# HTML

- Based on “tags” (start and end), and “content”
  - <atag>Some content</atag>
- The tag is closed with </>
- Many different tags for numerous functions

# HTML File

- The are text files and typically have the extension “.html” or “.htm” extension
- Top of the file (content goes …)

```
<!DOCTYPE html>
<html>
…
</html>
```

# HTML File

- Meta information & title in the **<head>**

```
<!DOCTYPE html>
<html>
<head>
<meta charset="utf-8”>
<title>Title here </title>
</head>
</html>
```

# HTML File

- The **<body>** contains the webpage content

```
<!DOCTYPE html>
<html>
<head>
<meta charset="utf-8”>
<title>Title here </title>
</head>
<body>
Content here…
</body>
</html>
```

# HTML Content Examples…

```
<h1> Heading One</h1>
<h2> Heading Two</h2>
<h3> Heading Three</h3>
```

**Heading One**

**Heading Two**

**Heading Three**

# HTML Content Examples…

```
<p>Some text here</p>
<p>Some more text here</p>
```

Some text here

Some more text here

# HTML Content Examples…

```
<ul>
<li>One</li>
<li>Two</li>
</ul>
```

- One
- Two

# HTML Content Examples…

```
<ol>
<li>One</li>
<li>Two</li>
</ol>
```

1. One
2. Two

# HTML Content Examples…

```
<p>We can also make some text
<em>italic</em> or other text
<strong>bold</strong>.
</p>
```

We can also make some text *italic* or other text **bold**.

# HTML Content Examples…

```
<img
src="https://upload.wikimedia.org/wikipedia/
en/e/e6/University_of_Liverpool_logo_2007.pn
g" alt=”UoL Logo">
```

# HTML Content Examples…

```
<a href="http://www.liv.ac.uk">This is a
hyperlink</a>
<a href="http://www.liv.ac.uk"><img
src="https://upload.wikimedia.org/wikipedia/en/e/e6/
University_of_Liverpool_logo_2007.png" alt="UoL
Logo">
</a>
```

This is a hyperlink.

# HTML Content Examples…

```
<p>We can also navigate to <a href
=“#S1”>sections</a> within the page.</p>

<h1 id=“S1”>Another Heading</h1>
```

We can also navigate to sections within the page.

**Another Heading**

# CSS

- CSS
  - *Selector* – HTML tag
  - *Property* - attribute of HTML tag
  - *Value* – what is assigned

selector { property: value; }

table{ border :1px solid #000000; }

Multiple values

# CSS

- Types of selectors
  - Universal

```
* {
color: #FFFFFF;
}
```

  - Descendant

```
Ol em { color: #FFFFFF;
}
```

- Class

```
.green { color: #00ff00;
}
h2.green { color: #00ff00;
   }
```

<h2 class = “green”> Title <h2>

# CSS

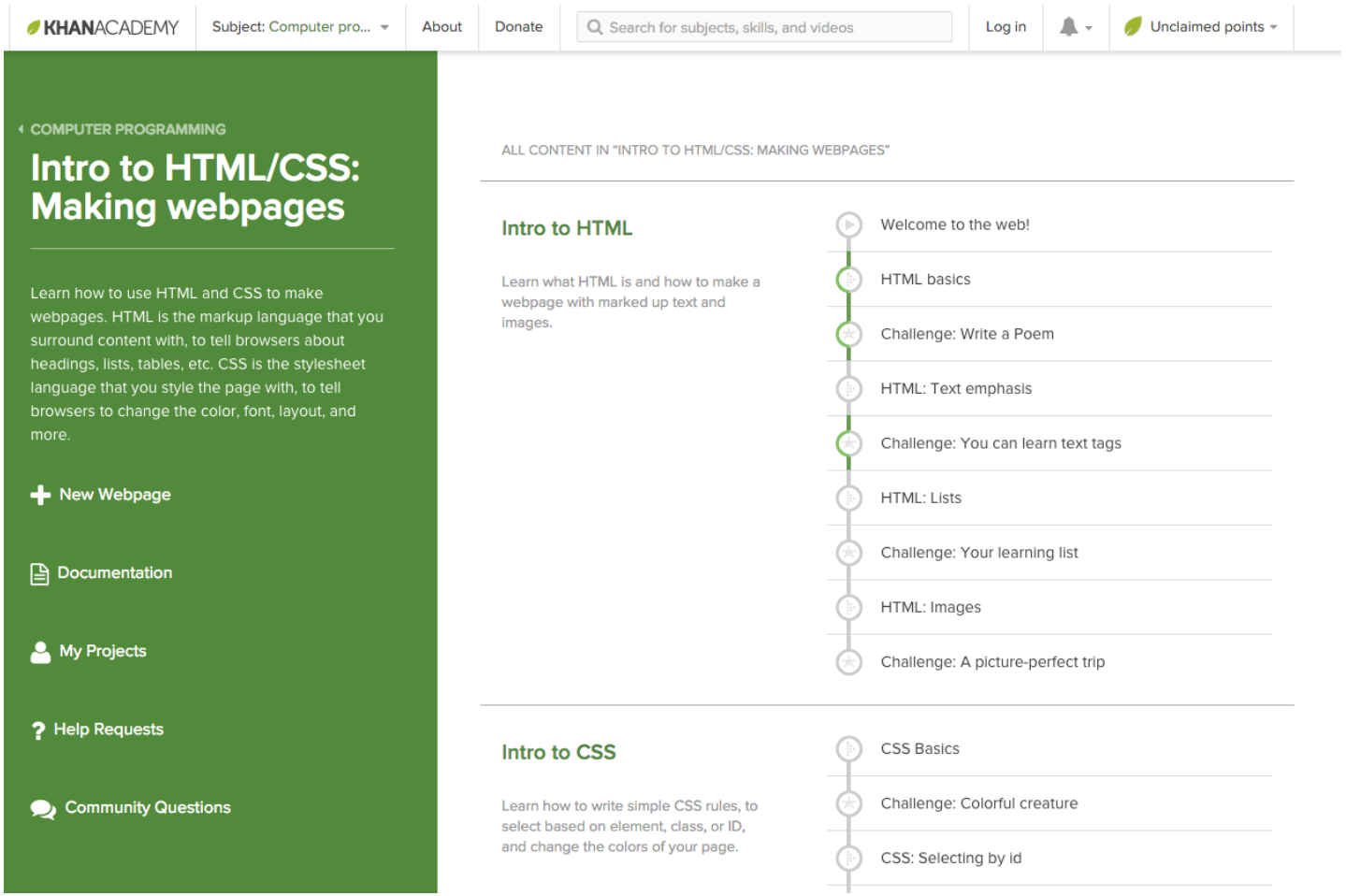
- Adding CSS to a document

e.g. screen, print etc – different media for different uses

```
<!DOCTYPE html>
<html>
    <head>
        <style type = "text/css" media = "all">
            body {
                background-color: #243a6a;
            }
            h1 {
                color: #85cbff;
                margin-left: 50px;
            }
            </style>
    </head>

    <body>
        <h1>This is a heading</h1>
        <p>This is a paragraph.</p>
    </body>
</html>
```

<link type = "text/css" href = "..." media = "..." />

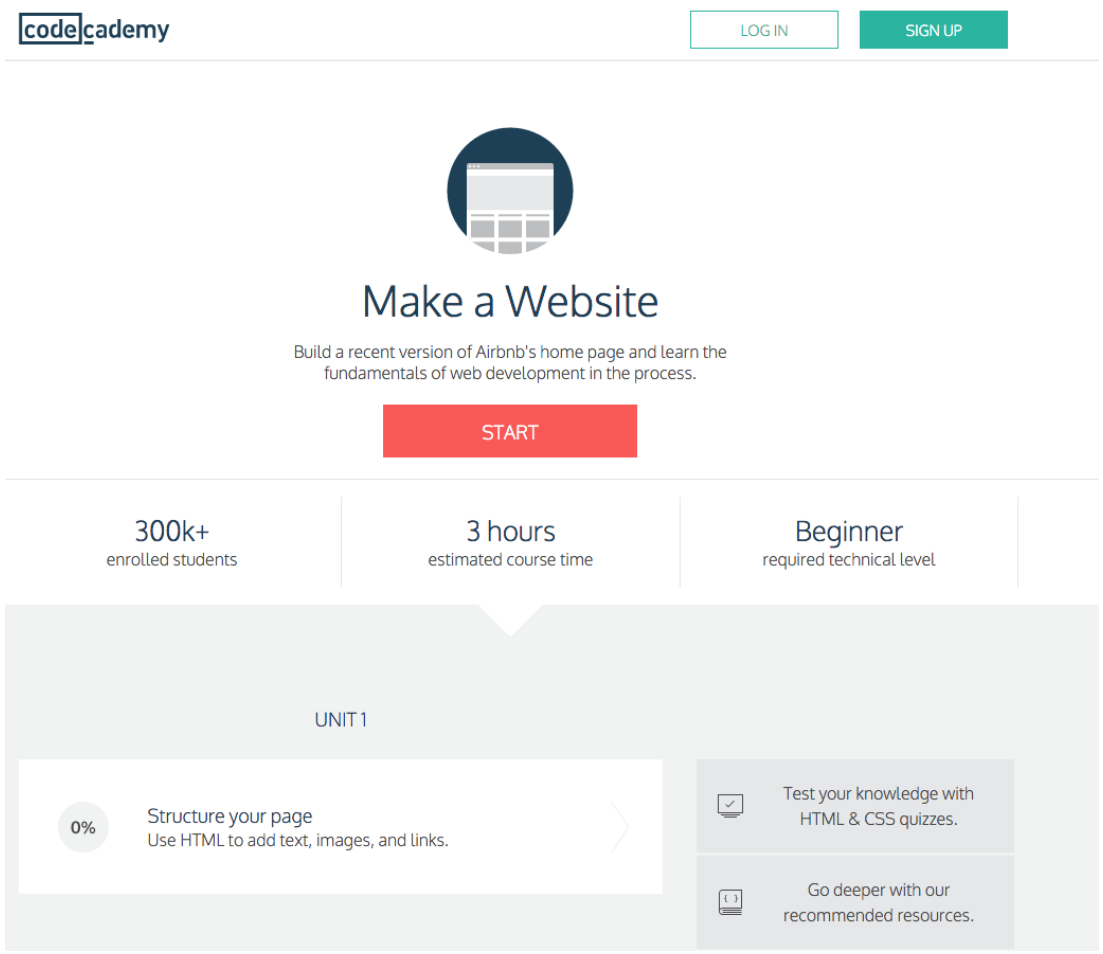
# More…




UNIVERSITY OF LIVERPOOL

https://www.khanacademy.org/computing/computer-programming/html-css

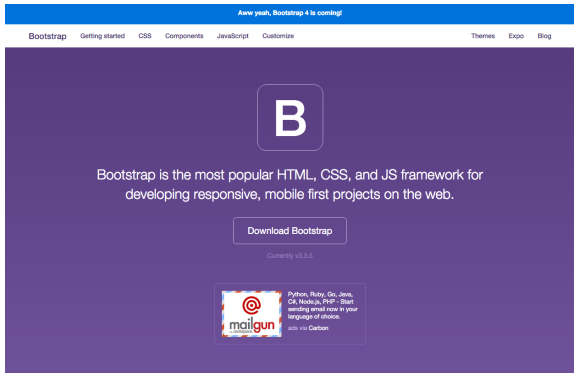
# More…



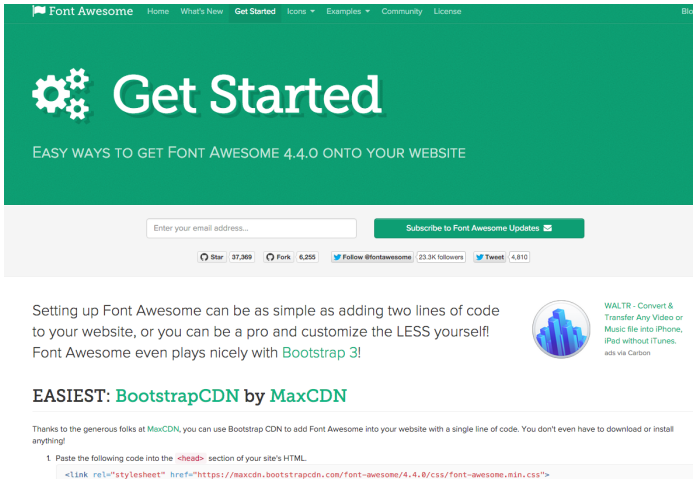


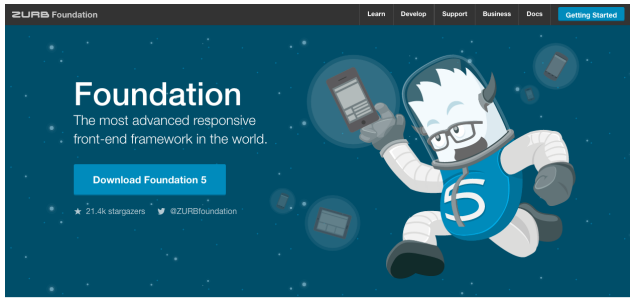

https://www.codecademy.com/en/skills/make-a-website

# CSS Frameworks




http://getbootstrap.com/



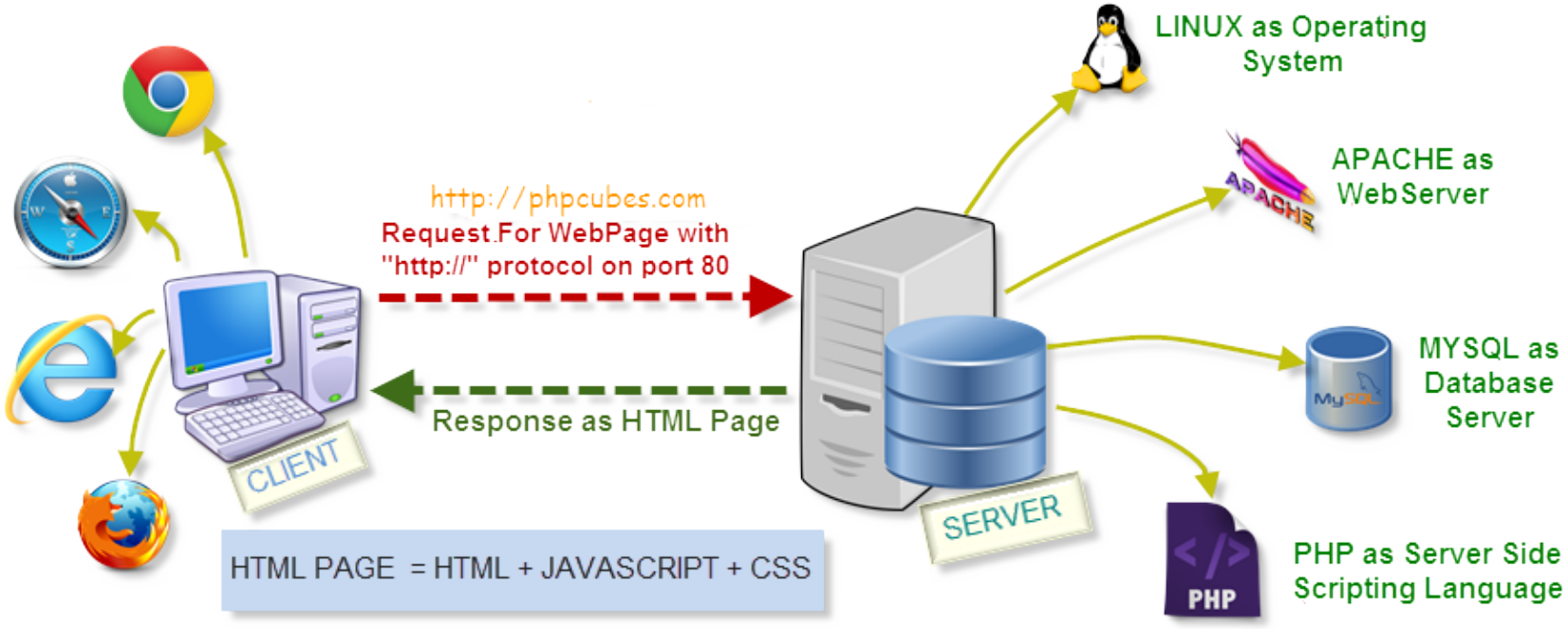

http://foundation.zurb.com/

UNIVERSITY OF LIVERPOOL

# Interactivity: a few tech jargons

- **HTML and CSS:** display (static) web contents **Javascript:** Human-Website interaction
- **PHP:** Dynamic web contents (with a database)
- **Node.js:** Similar to PHP, but written in Javascript language.

# A simple web architecture



# Interactivity: JavaScript

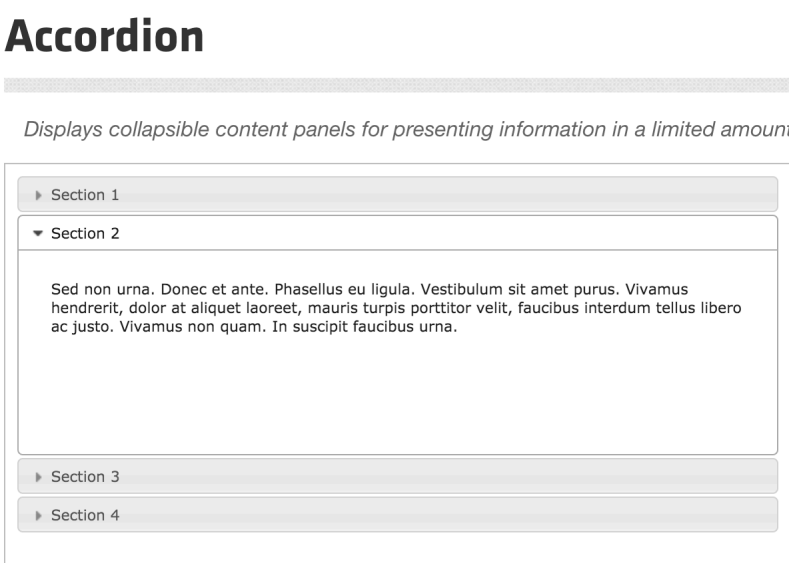
- JavaScript is NOT Java
- A programming language for HTML/CSS
- Power of JavaScript:
  - Many libraries/framework
  - Simple enough to learn (and play with)
  - Widely-supported
- Things you can do with JavaScript:
  - Dynamic/complex visualisation
  - Events handling (mouse click, key press, etc)
  - And many more…

# JavaScript: an example

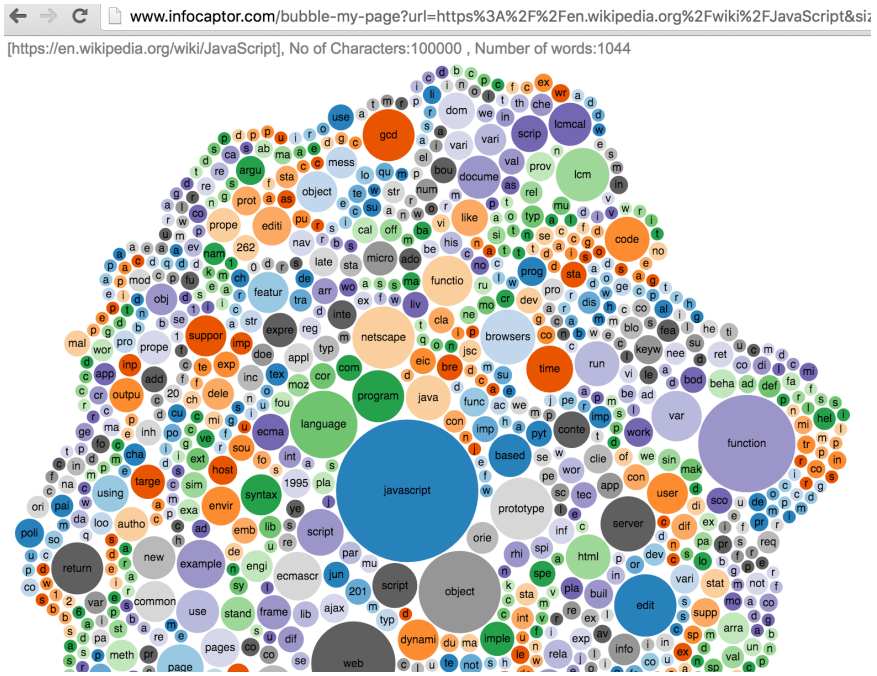
```
1   <html>
2   <!-- Begin JavaScript bits-->
3   <script type="text/javascript">
4           function sayHello(text) {
5               document.getElementById("output").innerHTML = 'Hello ' + text;
6           }
7       </script>
8   <!-- End JavaScript bits-->
9   <body>
10      <h1>JavaScript can handle events</h1>
11      <input id="nametext" placeholder="What is your name?">
12      <button type="button" onclick="sayHello(nametext.value)">Submit</button>
13      <p id="output"></p>
14  </body>
15  </html>
```

# JavaScript frameworks:

## jQuery and D3.js: Complex visualisation/interacivity




jQuery/jQueryUI: a fast/light-weight JavaScript libraries for user interface building and interactivity




D3.js/C3.js: JavaScript frameworks for complex visualisation/charts

UNIVERSITY OF LIVERPOOL

# JavaScript frameworks:

## AngularJS: JavaScript without programming

### The Basics

index.html

```
1.  <!doctype html>
2.  <html ng-app>
3.    <head>
4.      <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.4.7/
      angular.min.js"></script>
5.    </head>
6.    <body>
7.      <div>
8.        <label>Name:</label>
9.        <input type="text" ng-model="yourName" placeholder="Enter a name her
      e">
10.       <hr>
11.       <h1>Hello {{yourName}}!</h1>
12.     </div>
13.   </body>
14. </html>
```

*Hint:* Click me .

Edit Me

Name:

Alex

**Hello Alex!**

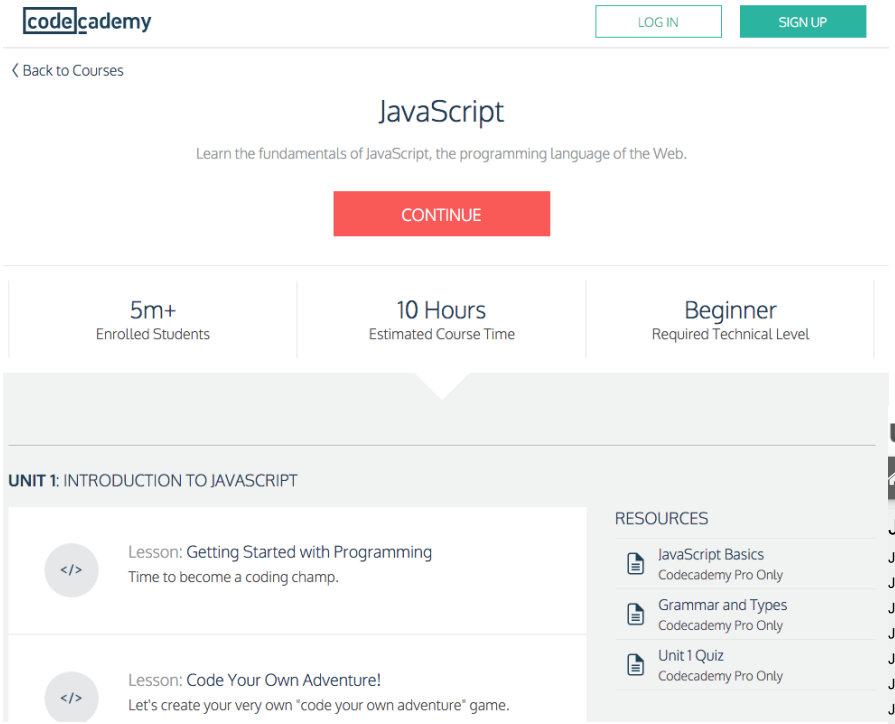
**Watch as we build this app**

# JavaScript frameworks:

## Node.js – JavaScript for Server Side

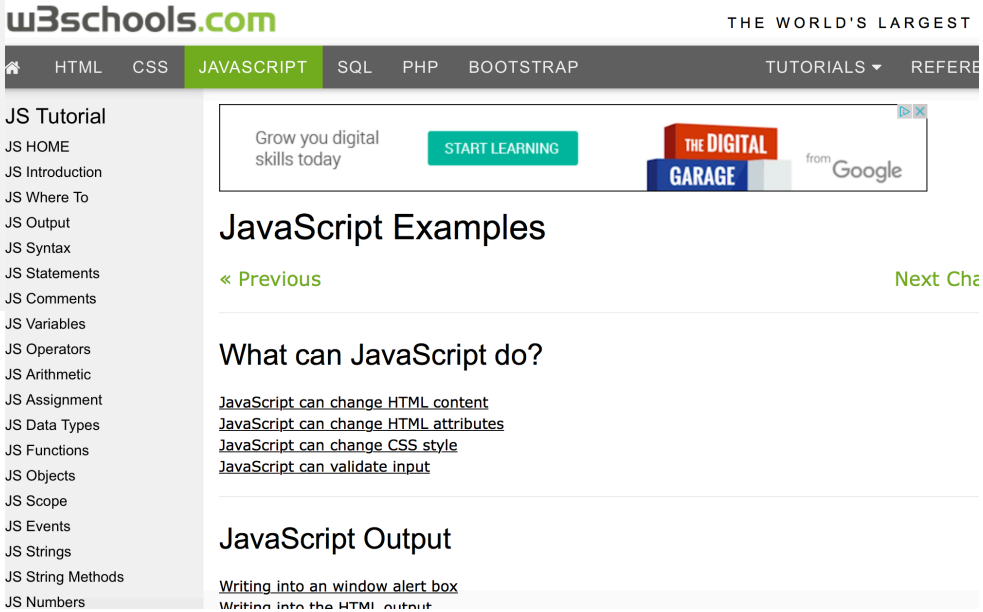
```
var mysql      = require('mysql');
var connection = mysql.createConnection({
  host     : 'localhost',
  user     : '< MySQL username >',
  password : '< MySQL password >',
  database : '<your database name>'
});

connection.connect();

connection.query('SELECT * from < table name >', function(err, rows, fields)
  if (!err)
    console.log('The solution is: ', rows);
  else
    console.log('Error while performing Query.');
});

connection.end();
```

# Where to learn JavaScript




https://www.codecademy.com/learn/javascript

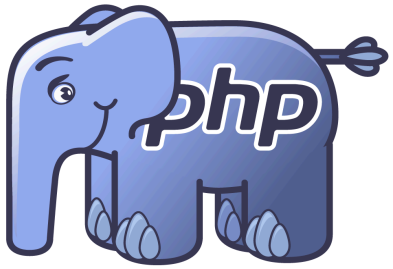
http://www.w3schools.com/js/




UNIVERSITY OF LIVERPOOL

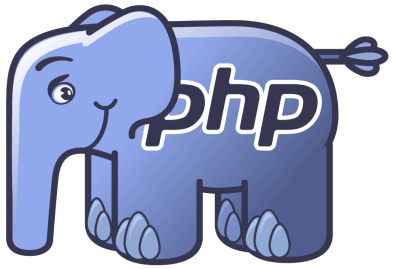
# PHP: the Server-side programming language

- JavaScript + CSS + HTML: static web pages
- Contents are normally:
  - Not ready to be displayed as webpages
  - Stored in a database (MySQL, MongoDB, etc.)
- PHP tasks:
  - Pull data from/push data to the database
  - Process data if needed
  - Retrieve/send data from/to clients (web-browsers)



# A taste of PHP: searching user's data

```php
<?php
// create a connection to database
$db=mysql_connect  ("servername", "username",  "password") or die ('I cannot connect to the
    database  because: ' . mysql_error());
// choose database
$mydb=mysql_select_db("exampleDatabase");
// prepare the query
$sql="SELECT  FirstName, LastName, Job FROM Users WHERE FirstName LIKE '%" . $keyword . "%'";
//-run  the query against the mysql query function
$result=mysql_query($sql);

// If there is any result, show them
while($row=mysql_fetch_array($result)){
    // each row is one result
        echo  "<ul>\n";
        echo  "<li>" .$row['FirstName'] . " " . $row['LastName'] . " is a ".$row['Job']. "</li>\n";
        echo  "</ul>";
}
?>
```

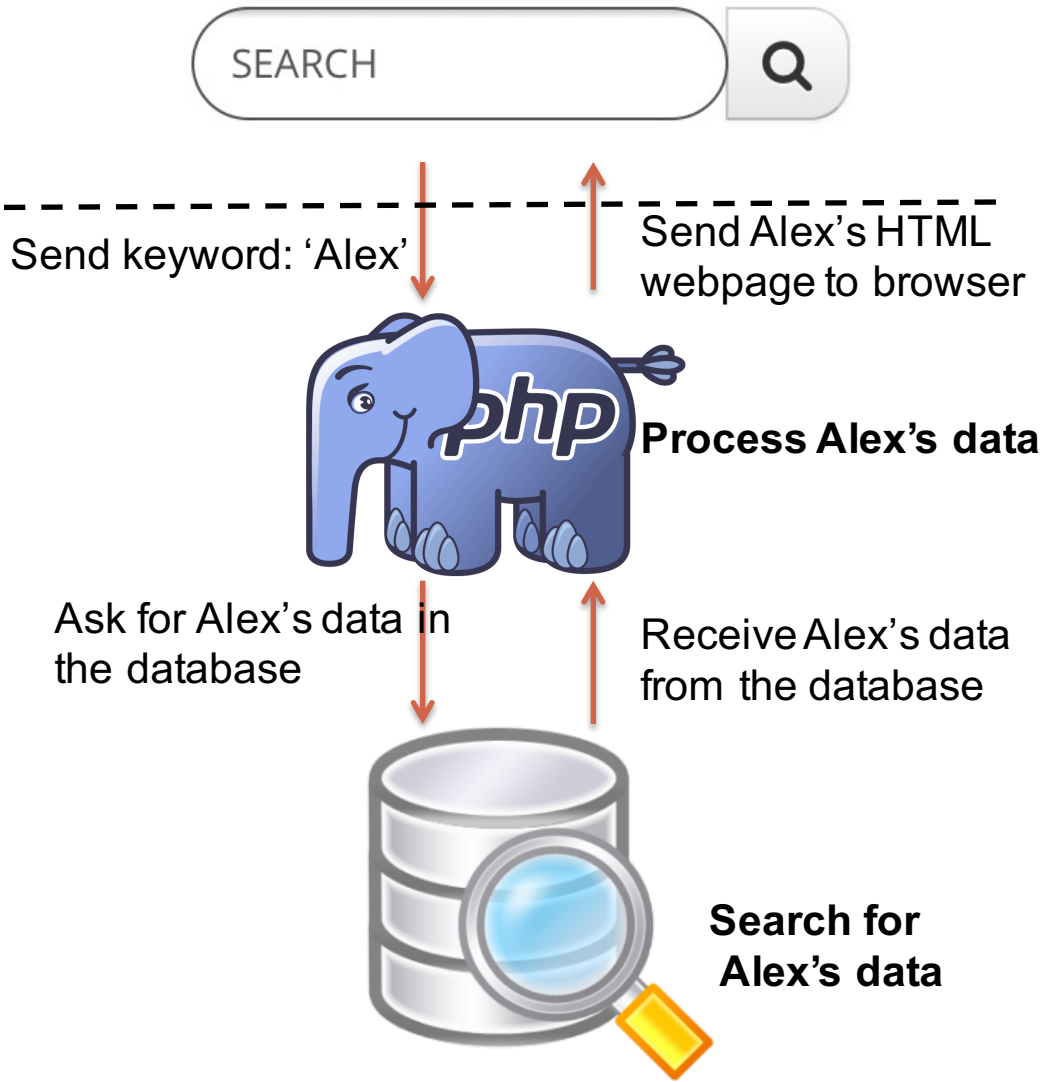


# Example: search facility

**HTML + CSS + JavaScript**

**PHP/Node.JS**

**MySQL/POSTGIS**




UNIVERSITY OF LIVERPOOL

# Many thanks…

UNIVERSITY OF LIVERPOOL