# TechnicalTuesday.js

Tian Lan

Department of Geography tian.t.lan@ucl.ac.uk

# JavaScript (JS)

• JavaScript ≠ Java!



(Source: Google Images)

# Technical Tuesdays

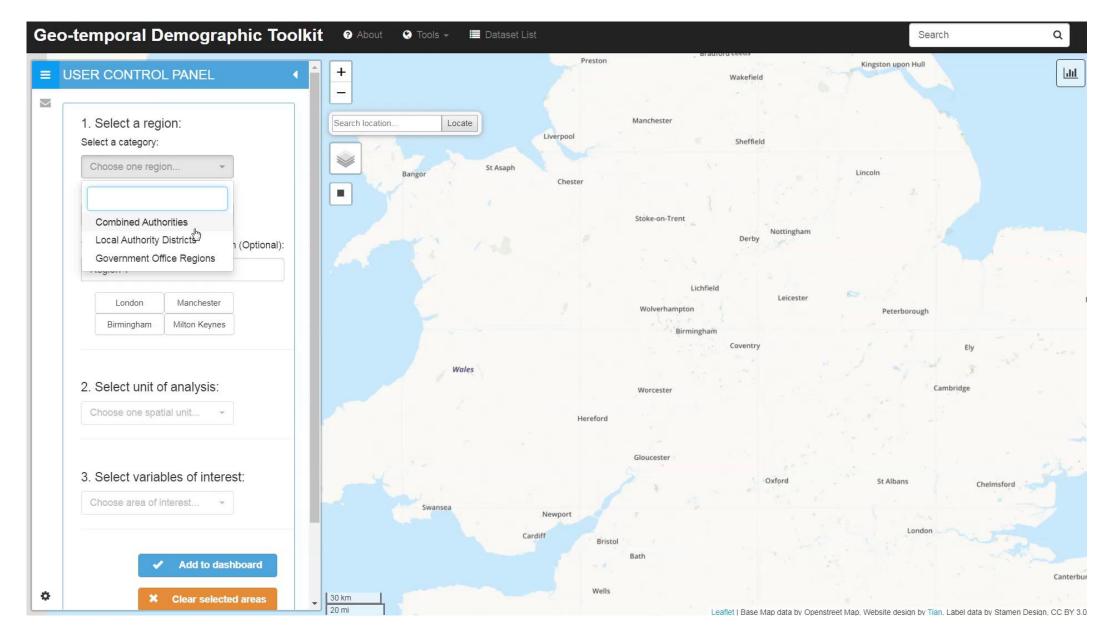


# Why JavaScript (JS)?

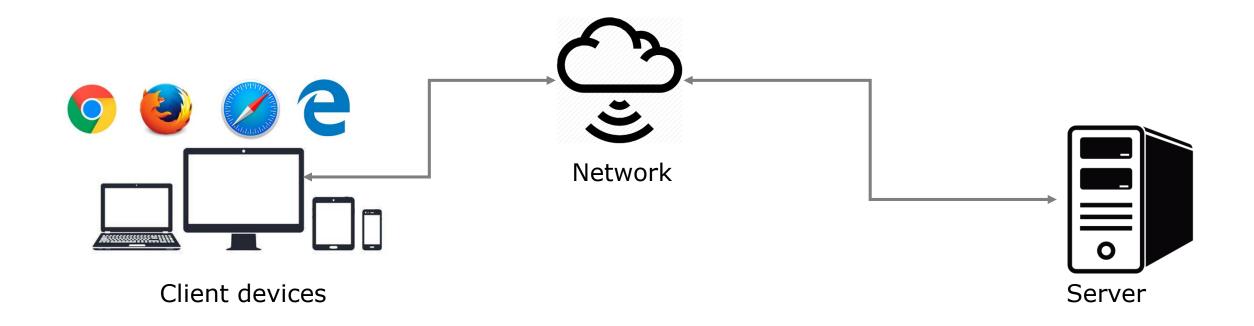


(Source: Google Images)

# An Example



# The C/S Architecture





#### Hyper Text Markup Language

```
<!DOCTYPE html>
 <body onload="initMap();">
  <div class="navbar navbar-inverse navbar-fixed-top" role="navigation">
    <div class="container-fluid">
      <div class="navbar-header";</pre>
       <div class="navbar-icon-container">
         <a href="#" class="navbar-icon pull-right visible-xs" id="nav-btn"><i class="fa fa-bars fa-lg white"></i></i></a>
       <a class="navbar-brand" href="#">Geo-temporal Demographic Toolkit</a>
      <div class="navbar-collapse collapse">
       <form class="navbar-form navbar-right" role="search">
         <div class="form-group has-feedback">
            <input id="searchbox" type="text" placeholder="Search" class="form-control">
            <span id="searchicon" class="fa fa-search form-control-feedback"></span>
        <a href="#" data-toggle="collapse" data-target=".navbar-collapse.in" id="about-btn"><i class="fa fa-question-circle white"></i>\%/i>\%nbsp;&nbsp;About</a>
          class="dropdown"
           <a id="toolsDrop" href="#" role="button" class="dropdown-toggle" data-toggle="dropdown"><i class="fa fa-globe white"></i>%nbsp;%nbsp;Tools <b class="caret"></b></a>
            <a href="#" data-toggle="collapse" data-target=".navbar-collapse.in" id="full-extent-btn"><i class="fa fa-arrows-alt"></i>%nosp;&nbsp;Zoom To Full Extent</a></a>
            <a href="#" data-toggle="collapse" data-target=".navbar-collapse.in" id="legend-btn"><i class="fa fa-picture-o"></i>\%i>&nbsp;&nbsp;&nosp;Show Legend</a>
            <a href="#" data-toggle="collapse" data-target=".navbar-collapse.in" id="login-btn"><i class="fa fa-user"></i>&nbsp;&nbsp;Login</a>
         class="hidden-xs"><a href="#" data-toggle="collapse" data-target=".navbar-collapse.in" id="list-btn"><i class="fa fa-list white"></i>&nbsp;&nbsp;Dataset List</a></a>
  <div id="sidebarl" class=" sidebar1">
     <div class="sidebar1-tabs">
            <a href="#home" role="tab"><i class="fa fa-bars"></i></a>
            <a href="#messages" role="tab"><i class="fa fa-envelope"></i></a>
         <a href="#settings" role="tab"><i class="fa fa-gear"></i></i></a></or>
      <div class="sidebar1-content" >
```

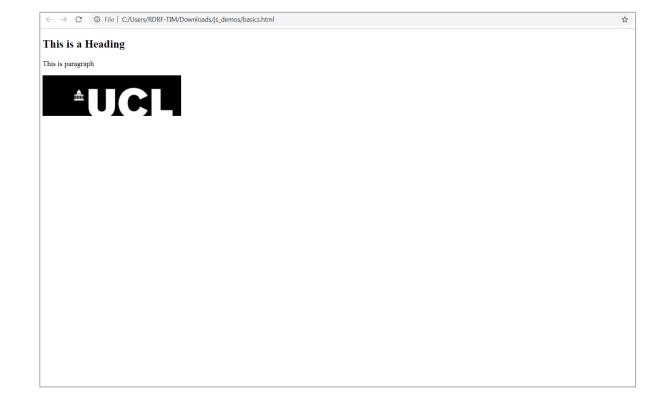
Hyper Text Markup Language file WinSCP length: 12,215 lines: 214 Ln: 99 Col: 11 Sel: 0 | 0 Windows (CRLF) UTF-8 IN



#### The basic structure:

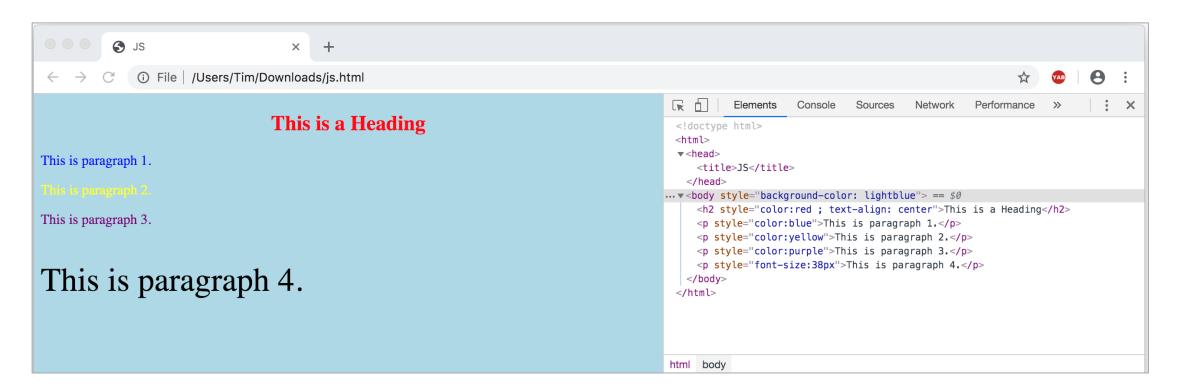
- Pairs of tags
- Document root
- <head> + <body>

```
1 <!DOCTYPE html>
 2 <html>
3 <head>
 4 <title>JS</title>
 5 </head>
   <body>
8 <h2>This is a Heading</h2>
9 This is paragraph
   <img src="ucl.png"> </img>
11
12 </body>
13 </html>
```



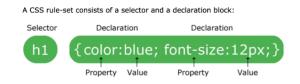


#### More styles





#### Cascading Style Sheets





## Internal CSS vs. External CSS

```
<!doctype html>
 <html>
 ▼<head>
    <title>JS</title>
  ▼<style>
      body {background-color:lightblue;}
      h2 {color:red ; text-align: center}
       background-color: black;
       color: white;
        margin: 20px;
        padding: 20px;
    </style>
  </head>
... ▼ <body> == $0
    <h2>This is a Heading</h2>
    This is paragraph 1.
    This is paragraph 2.
    This is paragraph 3.
    This is paragraph 4.
  </body>
 </html>
```



```
is.html × external.css
1 <!DOCTYPE html>
 2 <html>
 3 <head>
 4 <title>JS</title>
      <link rel="stylesheet" href="external.css">
 6 </head>
 7 <body>
     <h2>This is a Heading</h2>
    This is paragraph 1.
    This is paragraph 2.
    This is paragraph 3.
12
     This is paragraph 4.
13 </body>
14 </html>
```

# **Import CSS Libraries**

- Bootstrap live demo
  - https://getbootstrap.com/docs/4.0/examples/starter-template/

### Where Dose JS Fit In?

• HTML to define the content of web pages

- CSS to specify the layout of web pages
- **JS** to define the behaviour of web pages

### **JS Basics**

- Data types
  - Number, string, Boolean, object, Array ...
- Expression
- Conditions
  - If...else...; switch
- Loops
  - For, while

```
if (hour < 18) {
   greeting = "Good day";
} else {
   greeting = "Good evening";
}</pre>
```

```
while (i < 10) {
  text += "The number is " + i;
  i++;
}</pre>
```

## **JS Live Demo**



## Internal JS vs. External JS

```
name.html ×
 1 <!DOCTYPE html>
 2 <html>
 3 <head>
          function myFunction() {
           var name1 = document.getElementById("fore").value ;
           var name2 = document.getElementById("sur").value ;
           document.getElementById("demo").innerHTML = "Nice to meet you, " + name1.toUpperCase() + " " + name2.toUpperCase() + "!";
10
      </script>
11 </head>
12 <body>
      <h1>A Greeting Robot</h1>
       Type in your first name
       <input id="fore">
17
       Type in your last name
       <input id="sur">
19
       Nothing being told
21
      <button onclick="myFunction()">Click to show your full name
23 </body>
24 </html>
```

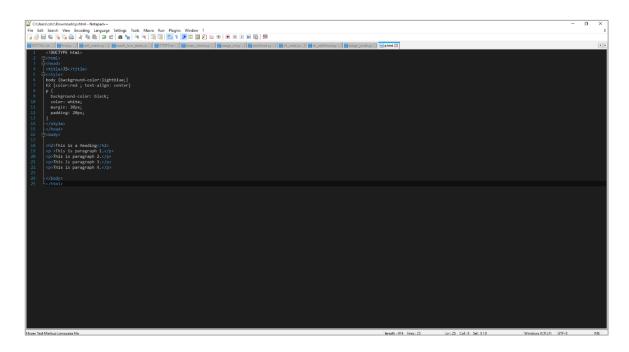
```
Greeting.html × external.js
1 <! DOCTYPE html>
2 <html>
3 <head>
      <script type="text/javascript" src="external.js"</pre>
       </script>
7 </head>
8 <body>
      <h1>A Greeting Robot</h1>
10
      Type in your first name
      <input id="fore">
11
12
13
      Type in your last name
14
      <input id="sur">
15
      Nothing being told
16
17
      <button onclick="myFunction()">Click to show your full name</button>
19 </body>
20 </html>
```

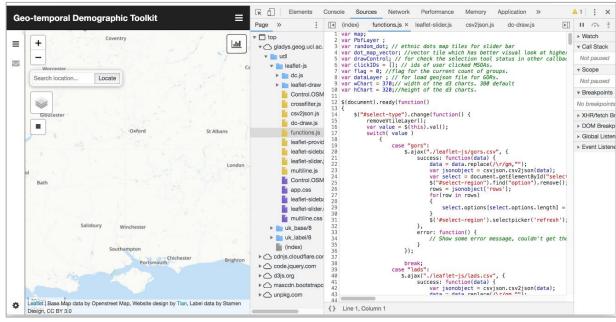
# **JS Advanced Topics**

- Data exchange with servers (Asynchronous)
  - AJAX, JSON
- jQuery
  - Access DOM; read/change element values
- Visualisations:
  - D3.js, leaflet.js, OpenLayers, Mapbox
- Node.js
  - JS can and do live outside HTML and browsers

## **JS IDE and Live Demo**

- Code editor: Notepad++ (Atom)
- Chrome Developer Console





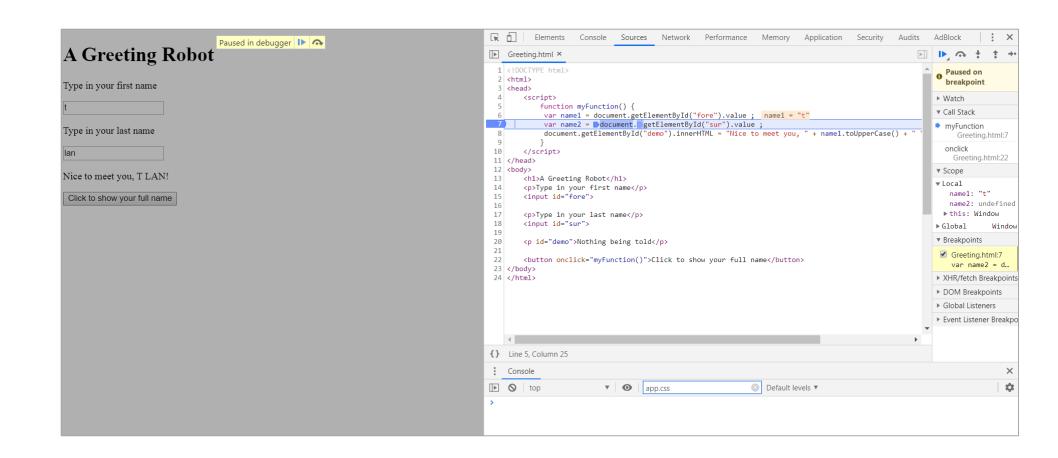
# Wrap-up

• HTML

· CSS

·JS

• IDE



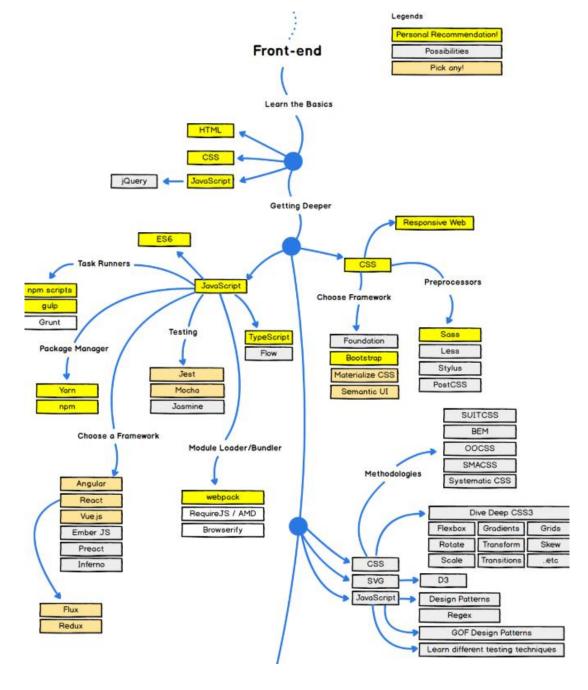
#### **Home work**

- Google demo quiz
  - <a href="https://googlechrome.github.io/devtools-samples/debug-js/get-started">https://googlechrome.github.io/devtools-samples/debug-js/get-started</a>

### **Useful Resources:**

- JS tutorials
  - W3C Schools: <a href="https://www.w3schools.com/js/default.asp">https://www.w3schools.com/js/default.asp</a>
- JS development with Google Chrome:
  - <a href="https://developers.google.com/web/tools/chrome-devtools/javascript">https://developers.google.com/web/tools/chrome-devtools/javascript</a>
- - https://github.com/sorrycc/awesome-javascript#readme
- NODE JS tutorial:
  - https://nodejs.dev/

- Road map
- Eco-systems



(Source: https://roadmap.sh)

# **Deploy Your Website**

#### 1. Install web servers

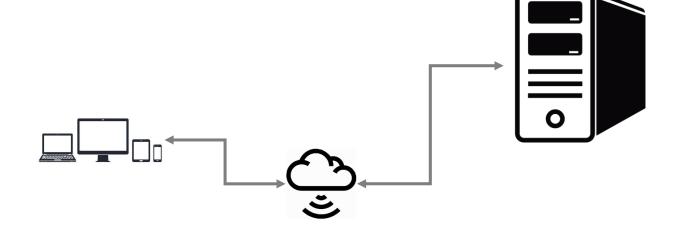
- Apache, IIS, Nginx
- https://www.maketecheasier.com/setup-local-web-server-all-platforms/

#### 2. Copy files into the specified document root

HTML and external dependencies (CSS, JS) if any

#### 3. Type in URL in the browser

- Remote server: address/myfile.html
- Your own machine: localhost/myfile.html



# **Questions?**

## **Home work**

- Answer to the quiz:
  - <a href="https://developers.google.com/web/tools/chrome-devtools/javascript">https://developers.google.com/web/tools/chrome-devtools/javascript</a>