Introduction to JavaScript

Web Development Fundamentals - JavaScript

POWERING POTENTIAL
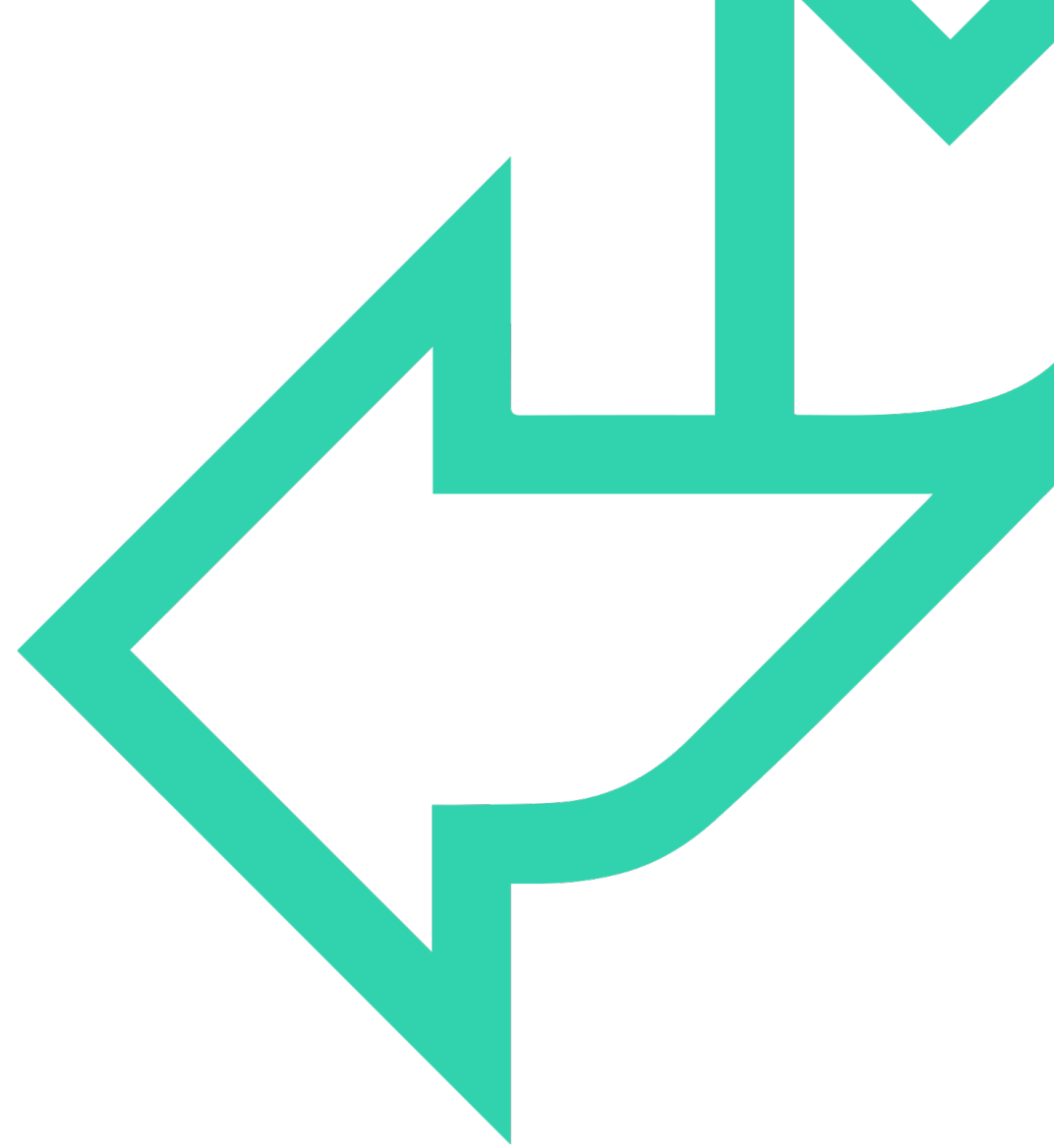
INTRODUCTION

A very brief history

What is JavaScript?

How to place script in a web page

• Embedding

• Linking

• <noscript>

Visual Studio

Chrome Developer tools

A very brief history

- JavaScript has been with us since 1995
- Originally designed for client based form validation

- Three separate versions in IE, Netscape, and ScriptEase

- Put forward to the ECMA as a proposed standard in 1997 as v1.1
- Ratified in 1998 as ECMAScript

- Implemented in browsers with various degrees of success ever since

Implementation is made up of three parts
- The Core (ECMAScript)

- The DOM (Document Object Model)

- The BOM (Browser Object Model)

ECMAScript5

All browsers should adhere to the ECMAScript standard

• They do not (the Netscape IE browser wars were messy!)

• ECMAScript standard 3 was mostly implemented

• ECMAScript 4 was not

• ECMAScript 5 was and is widely implemented

ECMAScript 6 was renamed to ECMAScript 2015 to reflect the new annual release schedule of the standard

ECMAScript 2015 (ES2015) was the first revision of the standard in 6 years and so included many new features to the language

ES2016 and beyond have been incremental additions to the language

JS

What can JavaScript do?

- JavaScript is a scripting language

- JavaScript gives front-end developers a programming tool

- JavaScript can react to events created by the page itself (page loaded) or the user (click)

- It can read and change the content of HTML elements, create new content, remove and hide elements

- It can be used to validate form input

- Can provide access to HTML 5 APIs such as indexedDB, geolocation, canvas, and more
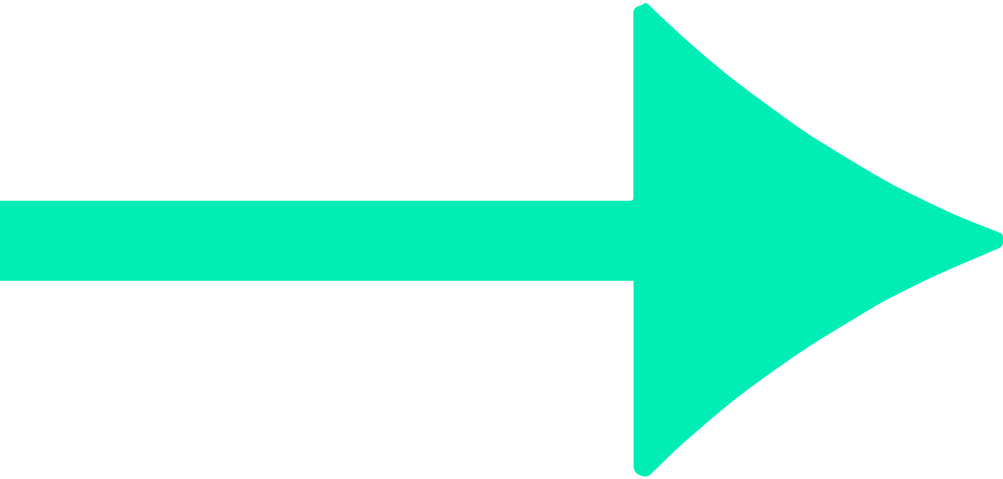
What can JavaScript do? (continued)

- Can be used to create cookies

- Can asynchronously request data from a server

- JavaScript is also widely used as a server-side language, via NodeJS

- JavaScript can be used to create desktop applications via tools, such as Electron

- JavaScript can be used to create native mobile applications via tools, such as React Native
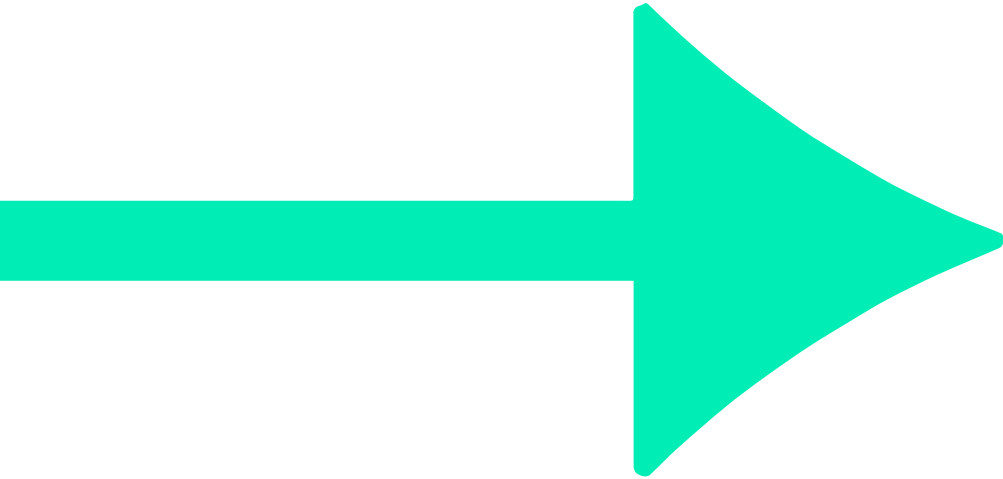
Some key Javascript concepts:
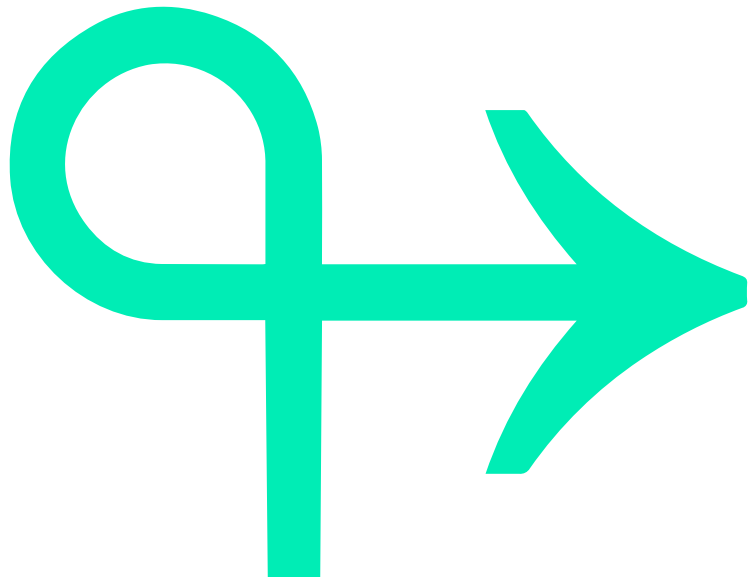
- JavaScript is a loosely-typed, dynamic programming language

- Variables are not given a static type

- They can change their type

- Understanding and maintaining type matters

- JavaScript is a case sensitive programming language

- Everything in JavaScript is case sensitive

- There is a best practice approach as we will discover

- Code termination is optional

- JavaScript uses a semi colon to terminate a line of code

- While technically this is optional, it causes serious headaches

Adding script to HTML – embedding

You can place JavaScript on a page inline

- The closing tag is mandatory

The script can be placed in either the head or body section

- It is executed as soon as the browser renders the script block
- Best practice often places it just before the closing body tag

```
<script>
        // … script goes here …
</script>
```

Adding script to HTML – linking

You can also place JavaScript in a separate file and link to it

- Useful as the script is going to be used on multiple pages

- Requires an additional request to the server

- The requested file is cached by the browser

- Preferred approach to working with script

```
<script src="../myScript.js"></script>
```

The <noscript> element

Client-side scripting may not be available

The <noscript> element will only render its content if:

- The browser does not understand <script>
- The client has disabled script

```
<noscript>
        If you see this, you do not have JavaScript enabled.
</noscript>
```

Comments

Commenting code is an essential part of programming

Single line comment

```
index = 3; // From here to the end of the line is a comment and ignored
```

Multi-line comment

```
/*
Everything inside these delimiters is treated as
a comment and ignored by the interpreter
*/
```

Walkthrough – using Visual Studio Code

- Visual Studio Code is a free, open-source enhanced text editor and it was built using JavaScript!
- Not to be confused with Visual Studio (a paid-for, full IDE designed specifically for .NET development)
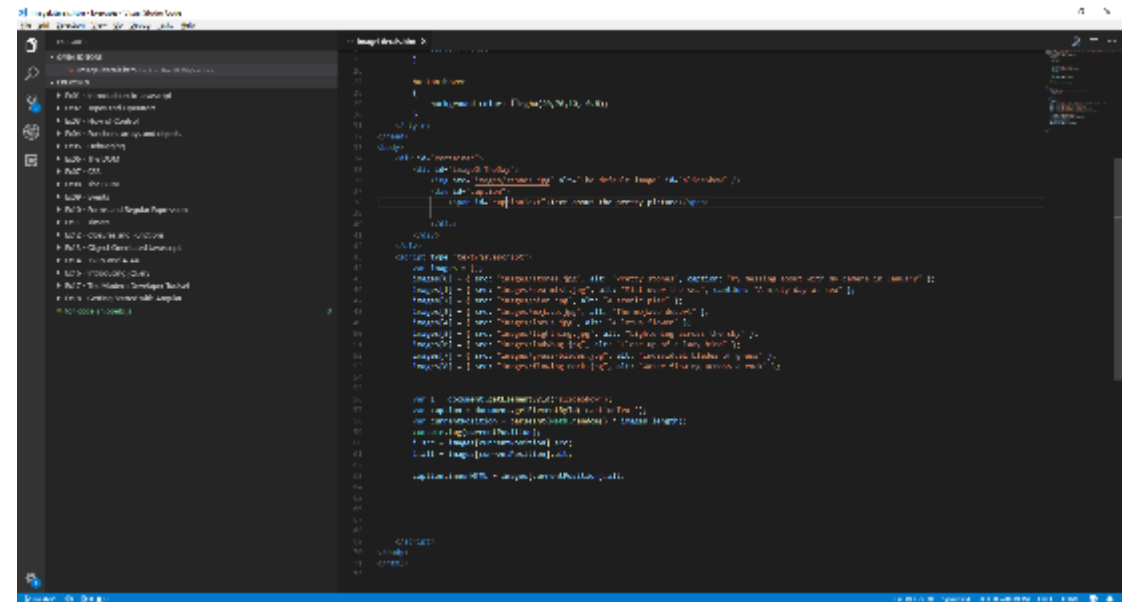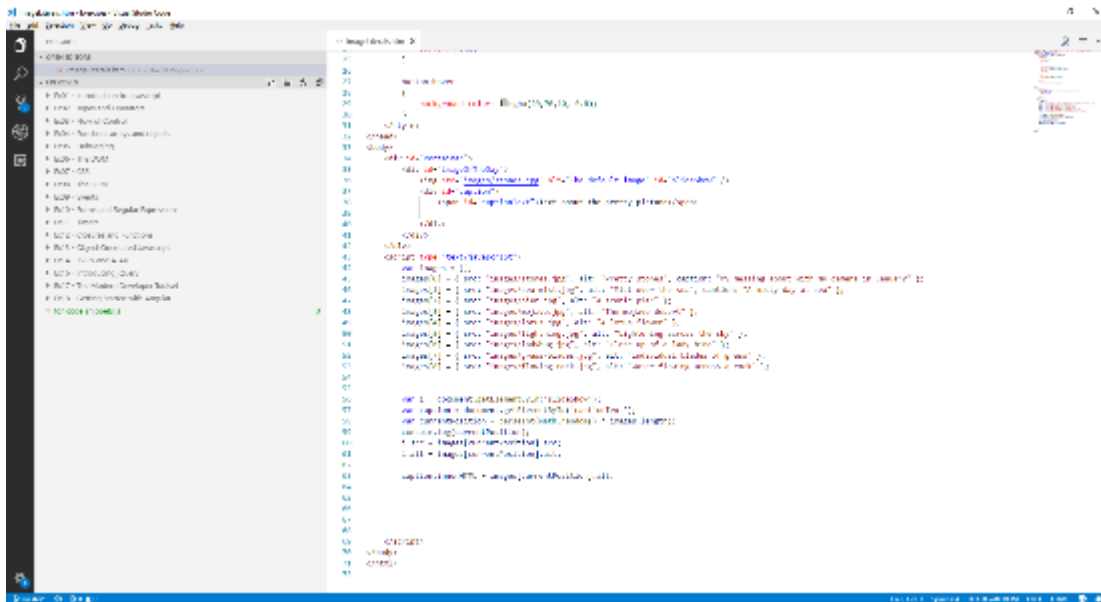
Walkthrough – Chrome development tools

- Most browsers have development and debugging tools
- Incredibly useful for testing and management
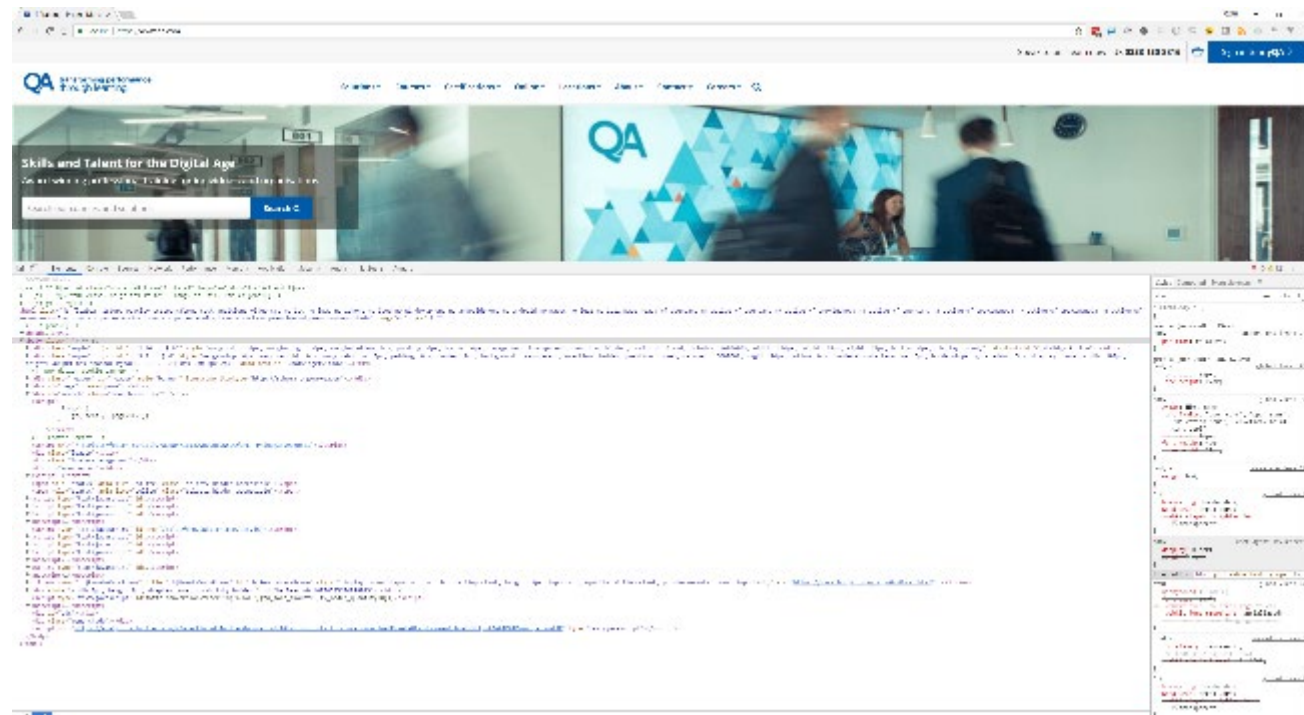
Review

What is JavaScript?
- A scripting language

What is JavaScript for?
- Building client-side, server-side, desktop and mobile applications

How do we use JavaScript?
- Linked or embedded