JavaScript’s is a language everybody loves to hate” /Tim johnson
Why use JavaScript?

- HTML is static and doesn’t change
- HTML can’t make repeats and use variables
- A programming language would complement HTML
- JavaScript is a script language that can be written in HTML
History

- Appeared in 1995
- Designed by Brendan Eich
- Developed by Netscape
- Mocha, LiveScript, JavaScript

Brendan Eich
ECMAScript

- JavaScript, ActionScript, JScript, QtScript, DMDScript, InScript
- Standard (Appeared 1997)
-Compromose between Netscape and Microsoft

"ECMAScript was always an unwanted trade name that sounds like a skin disease." / Brendan Eich
JavaScript and Java

- Not closely related!
- C-like syntax and object-oriented and widely used in client-side web applications
- Java has static typing; JavaScript's typing is dynamic (meaning a variable can hold an object of any type and cannot be restricted)
Easy example:

- `<script type="text/javascript">
- document.write('Hello class!');
- </script>`

The example in a browser
The basics...

- Case sensitive unlike html
- Statement is executed by the browser with a ;
- JavaScript blocks { }
- Comment // or /* and */
- variable is declared: var x;
- Create Arrays var myCars=new Array();
- Create Boolean var myBoolean = new Boolean();
...The basics

- For - loops through a block of code a specified number of times
- While - loops through a block of code while a specified condition is true
- The return Statement is used to specify the value that is returned from the function.
- So, functions that are going to return a value must use the return statement.
- JavaScripts is used to be "built it" and "manipulate" HTML
- How do i reach elements in HTML "document" refer to the HTML-code on the side
- Example: document.bgcolor=white
If statement

- if statement - use this statement if you want to execute some code only if a specified condition is true
- if...else statement - use this statement if you want to execute some code if the condition is true and another code if the condition is false
- if...else if....else statement - use this statement if you want to select one of many blocks of code.
Location

- head section (will ensure the script is loaded before anyone uses it)
- body section (loads when it loads the content of the page)
- External .js file. <script type="text/javascript" src="xxx.js"></script>
Start the JavaScript

- Starts when an event calls it
- When the side loads
- The user do something
- Mouse - Click or movement (OnMouseOver)
- Element is changed
- Time (setTimeout, setInterval)
Object Oriented Programming

- Excellent to write object oriented web applications
- Re-use and encapsulate code
- Objects have properties and methods

```javascript
<!--
person = new Object()
person.name = "Usain Bolt"
person.nationality = "Jamaica"

person.run = function() {
    this.state = "running"
    this.speed = "4ms^-1"}
//-->
</script>
```
Use it in the e-commerce project

- JavaScript can put dynamic text into an HTML page
- JavaScript can react to events
- JavaScript can read and write HTML elements
- JavaScript can be used to detect the visitor's browser
- JavaScript can be used to create cookies
Uses outside web pages

- ActionScript, the programming language used in Adobe Flash
- Apple's Dashboard Widgets, Microsoft's Gadgets, Yahoo! Widgets, Google Desktop Gadgets
- The Mozilla platform (GUI)
- In Java and C
- Adobe acrobat PDF
- And many more...
JavaScript Libraries

- Pre-written Scripts
- Prototype, script.aculo.us, jQuery, Ext, Dojo Toolkit
- Copycenter or copyleft
- Critics
Debugging

- Very important in large scripts (implementation differences between the various browsers)
- Internet explorer - Microsoft visual Studio, Microsoft script debugger
- Mozilla firefox - firebug plug-in
- Safari - Webkit’s Web inspector
Security

- JavaScript provide the potential for scriptwriters to deliver dangerous scripts to run on a client computer on the web
- Protection 1: Scripts run in a sandbox in which they can only perform web-related actions
- Protection 2: Scripts from one web site do not have access to information such as usernames, passwords, or cookies sent to another site
Cross-site Hacks

- Cross-site scripting (a dangerous script in a webpage that can access secret information)
- Cross-site request forgery (a script that takes the user's identity by taking the user's cookies)
- "JavaScript hijacking" a <script> tag on the attacker's site that returns private information
Other security issues

- Client-server applications, whether they involve JavaScript or not, must recognize that untrusted clients may be under the control of attackers.
- Buffer overflow and use of Plug-ins (Flash, ActiveX, etc).
Sandbox implementation errors

- Web browsers are capable of running JavaScript outside of the sandbox
- Create or delete files
- JavaScript stored on a computer's hard drive (Trojan horses)
Read more

- http://www.webteacher.com/javatour/
- http://homepagentlworld.com/kayseycarvey/
- http://www.geocities.com/SiliconValley/