

# Java script



*<script language=java script>*

*”JavaScript’s is a language everybody  
loves to hate” /Tim johnson*

# Why use JavaScript?

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- ❖ 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

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



Brendan Eich

# ECMAScript

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- ❖ JavaScript, ActionScript, JScript, QtScript, DMDScript, InScript
- ❖ Standard (Appared 1997)
- ❖ Compromose between Netscapte and Microsoft
  - ❖ "ECMAScript was always an unwanted trade name that sounds like a skin disease." / Bredan Eich

# JavaScript and Java

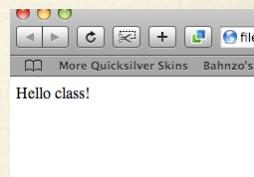
- ❖ Not closely related!
- ❖ C-like syntax and object-oriented and widely used in client-side web applications
- ❖ Java has static typing; JavaScript's typing is dynamic (meaning a variable can hold an object of any type and cannot be restricted)



Sun NetScape alliance

# Easy example

- ❖ 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

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- ❖ 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.

# Document

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- ❖ 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

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- ❖ 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

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- ❖ 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

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- ❖ 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

❖ 

```
<script language="javascript" type="text/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

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- ❖ 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

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- ❖ 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

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

# Debugging

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- ❖ 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 insepctor

# Security

- ❖ JavaScript provide the potential for scriptwriters to deliver dangerous scripts to run on a client computer on the web
- ❖ Protection1: Scripts run in a sandbox in which they can only perform web-related actions
- ❖ Protection2: Scripts from one web site do not have access to information such as usernames, passwords, or cookies sent to another site

## Cross-site Hacks

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- ❖ 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

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- ❖ 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://homepage.ntlworld.com/  
kayseycarvey/](http://homepage.ntlworld.com/kayseycarvey/)
- ❖ <http://www.geocities.com/SiliconValley/>