

JavaScript Introduction

What is JavaScript?

- JavaScript was designed to **add interactivity to HTML pages**
- JavaScript is usually **embedded directly into HTML pages**
- JavaScript is an **interpreted** language (means that scripts execute without preliminary compilation)

What can a JavaScript Do?

- **JavaScript gives HTML designers a programming tool** - JavaScript is a scripting language with a very simple syntax.
- **JavaScript can put dynamic text into an HTML page** – You can use JavaScript to add html code into your html page, e.g., `document.write("<h1>" + name + "</h1>")`
- **JavaScript can react to events** – You can make JavaScripts that execute when something happens, like when a page has loaded or when a user clicks on something.
- **JavaScript can read and write HTML elements** - A JavaScript can read and change the content of HTML.
- **JavaScript can be used to validate data** - A JavaScript can be used to validate form data before it is submitted to a server (e.g., make sure you've typed in a 7-digit . This saves the server from extra processing
- **JavaScript can be used to detect the visitor's browser** - A JavaScript can be used to detect the visitor's browser, and - depending on the browser - load another page specifically designed for that browser
- **JavaScript can be used to create cookies** - A JavaScript can be used to store and retrieve information on the visitor's computer

How to Put a JavaScript Into an HTML Page

```
<!DOCTYPE html>
<html>
  <head>
    <title>JavaScript Guidelines</title>
  </head>
  <body>

    <script>
      document.write("Hello World!");
    </script>

  </body>
</html>
```

Note: If we had not entered the `<script>` tag, the browser would have treated the `document.write("Hello World!")` command as pure text, and just written the entire line on the page.

Example Explained

To insert a JavaScript into an HTML page, we use the **<script> tag**. So, the `<script >` and `</script>` tells the browser where the JavaScript starts and ends:

```
<html>
<body>
```

```
<script>
...
</script>
</body>
</html>
```

The word **document.write** is a standard JavaScript command for writing output to a page. **Document** is an object in JavaScript. There are a bunch of objects in JavaScript, like forms, windows, etc. Each object has functions (or actions) associated with it. The document object has a function called "write" that writes to the document.

By entering the document.write command between the <script> and </script> tags, the browser will recognize it as a JavaScript command and execute the code line. In this case the browser will write *Hello World!* to the page:

JavaScript is Case Sensitive

JavaScript is case sensitive - therefore watch your capitalization closely when you write JavaScript statements, create or call variables, objects and functions.

- document.write() IS NOT the same thing as
- Document.write() IS NOT the same thing as
- document.Write() IS NOT the same thing as
- Document.Write()

JavaScript Code

A JavaScript **statement is a command to the browser**. The purpose of the command is to **tell the browser what to do**.

This JavaScript statement tells the browser to write "Hello Dolly" to the web page:

```
document.write("Hello Dolly")
```

JavaScript code (or just JavaScript) **is a sequence of JavaScript statements**.

Each statement is **executed by the browser in the order** they are written.

Example

```
<script >
document.write("<h1>This is a header</h1>");
document.write("<p>This is a paragraph</p>");
document.write("<p>This is another paragraph</p>");
</script>
```

JavaScript Variables

Variables are "containers" for storing information.

A variable can have a short name, like x, or a more descriptive name, like carname.

Variables can be used to hold values (x=5 or carname = "volvo")

THE VALUE ON THE RIGHT SIDE GOES INTO THE VARIABLE NAME ON THE LEFT!!

Rules for JavaScript variable names:

- Variable names are **CASE SENSITIVE**

- (y and Y are two different variables)
- Variable names **MUST NOT** contain spaces
- Variable names must begin with a letter
- Variable names can only contain letters or numbers or _
 - No special characters!!
- Variable names can be anything except words that already belong to JavaScript (e.g., document, var, write, etc.)
- Variable names are **CASE SENSITIVE**

Example

```
<html>
  <head>
  </head>
<body>
  <script >

    var firstname;
    firstname="Fred";
    document.write(firstname + "<br />");

    firstname="Wilma";
    document.write(firstname + "<br />");

  </script>
</body>
</html>
```

Creating JavaScript Variables

Create variables with the **var statement**:

```
var x;
var carname;
```

The variables are empty (they have no values yet).

You can assign values to the variables when you create them:

```
var x=5;
var carname="Volvo";
```

After the execution of the statements above, the variable **x** will hold the value **5**, and **carname** will hold the value **Volvo**.

Note: When you assign a text value to a variable, use quotes around the value.

You can always change the value inside a variable:

```
x = 7
carname = "Mazda"
```

Before, **x** held **5**, now it holds **7**. **carname** held **"Volvo"**, now the value has been changed to **"Mazda"**

You can change the values again if you like.

Prompt Box

A prompt box is an easy way for you to ask user to enter info into your javascript.

When a prompt box pops up, the user types something into the box, then clicks either "OK" or "Cancel".

Syntax:

```
x = prompt("sometext", "defaultvalue");
```

where:

- x is a variable,
- sometext is the question you want to ask, and
- defaultvalue is the default answer

The best way to understand a prompt box is to try it, so in your web page do the following:

Example:

```
<html>
<head>
</head>
<body>
<script >
  var x = prompt("What state do you live in?", "Delaware")
  document.write("<p>You currently live in " + x + "</p>")
</script>
</body>
</html>
```

The prompt box deconstructed:

```
var x = prompt("What state do you live in?", "Delaware")
```

Start on right side of =

- Prompt creates a popup box in which the user can type in text.
- Within the first set of quotes is what shows up as the prompt's text
 - E.g., "What state do you live in?"
- In the second set of quotes is the default answer
 - "Delaware"
 - You don't have to include a default answer

Left side of =:

- a variable (an empty box) named x
- what is typed in by the user goes into the variable on the left side
- If the user doesn't type in anything, the default value ("Delaware") will end up in the variable x.

When the user types something into the prompt box, whatever they typed in is stored in the variable x

Example2:

```
<html>
<head>
</head>
<body>
<script >
    var num1 = prompt("Enter a number between 1 and 6","1")

    document.write("<h"+num1+"> A lovely header of some sort </h"+num1+">")
</script>
</body>
</html>
```

In this case, the variable num1 holds the number the user typed in. We then put that number into the string being written into the web page.

So if the user typed in 3, num1 will hold the value 3, and the line:

```
document.write("<h"+num1+"> A lovely header of some sort </h"+num1+">")
```

becomes:

```
document.write("<h3> A lovely header of some sort </h3>")
```

Example3:

```
<html>
<head>
</head>
<body>
<script >
    var num1 = prompt("Enter a number between 1 and 12","1")

    var promptstring = "What is " + num1 + " times 3?"
    var num2 = prompt(promptstring)
    document.write("<p> You think " + num1 + " times 3 is " + num2 + "</p>")
</script>
</body>
</html>
```

In this case, num1 holds the number that the user types in. Say the user typed in the number 5. Then the variable num1 will hold the value 5.

The string, "What is " + num1 + " times 3?"

Becomes "What is 5 times 3?"

So the variable promptstring holds, "What is 5 times 3?"

Now the line,

```
Var num2 = prompt(promptstring)
```

Becomes

```
Var num2 = prompt("What is 5 times 3?")
```

And whatever the user types in is what the variable num2 will hold. Say the user typed in 17. Then the variable num2 will hold 17.

So the line,

```
document.write("<p> You think " + num1 + " times 3 is " + num2 + "</p>")
```

becomes:

```
document.write("<p> You think 5 times 3 is 17</p>")
```