

JavaScript

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What is JavaScript?

- JavaScript is NOT Java
- JavaScript was designed to add interactivity to HTML pages
- JavaScript is a scripting language
- JavaScript is usually embedded directly into HTML pages
- JavaScript is an interpreted language (means that scripts execute without preliminary compilation)
- JavaScript is free and opensource

What can a JavaScript do?

- JavaScript gives HTML designers a programming tool (very simple syntax)
- 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 validate data (validate form data)
- JavaScript can be used to detect the visitor's browser
- JavaScript can be used to create cookies

First JavaScript

```
<html>
<head>
</head>
<body>
  <script type="text/javascript">
    <!--
      document.write("<h1>Hello World!</h1>");
    //-->
  /script>
</body>
</html>
```

<!-- Note use of document object model -->

<!-- See [First JavaScript.html](#) -->

Body vs. Head

```
<html>
  <head>
    <script type="text/javascript">
      function message()
      {
        alert("This alert box called by onload event");
      }
    </script>
  </head>
  <body onload="message()">
    <script type="text/javascript">
      document.write("Message written by JavaScript");
    </script>
  </body>
</html>
<!-- See Head_vs_Body.html -->
```

General Syntax

- JavaScript statements 'should' end in a semicolon.
- Large blocks of javascript 'should' be put in { }
- Comments can be // or <*

```
<script type="text/javascript">
{
  document.write("<h1>This is a heading</h1>");
  document.write("<p>This is a paragraph.</p>");
  document.write("<p>This is another paragraph.</p>");
  // Single line comment
  /*
    Multi-line
    comment
  */
}
</script>
```

Declaring (Creating) Variables

You 'should' declare JavaScript variables with the var statement:

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

You can also assign values to the variables when you declare them:

```
var x=5;  
var carname="Volvo"; // Text requires quotes
```

If you assign values to variables that have not yet been declared, the variables will automatically be declared.

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

Math && Logic

Javascript supports the following operators

Mathematical:

+, -, *, /, %, ++, --

(Note: x=++

Logical:

&&, ||, !, <, >, etc...

```
var x=10;
```

```
var y=2;
```

```
var z=x/y;
```

Strings can be concatenated with the '+' sign.

```
var txt1="What a very";
```

```
var txt2="nice day";
```

```
var txt3=txt1+" "+txt2;
```

Note: If you add a number and a string, the result will be a string!

Selection (the 'if' statement)

```
<script type="text/javascript">  
  //If the time < 10, "Good morning" greeting.  
  //Otherwise you will get a "Good day" greeting.  
  
  var d = new Date();  
  var time = d.getHours();  
  
  if (time < 10){  
    document.write("Good morning!");  
  } else {  
    document.write("Good day!");  
  }  
</script>
```

Popup boxes

Three general kinds:

alert("sometext");

confirm("sometext");

```
var r=confirm("Press a button");
```

```
if (r==true)
```

```
{
```

```
document.write("You pressed OK!");
```

```
}
```

```
else
```

```
{
```

```
document.write("You pressed Cancel!");
```

```
}
```

```
}
```

prompt("sometext","defaultvalue");

<!-- See Basic_JavaScript_Stuff.html -->

Functions (Procedures)

```
<html>
  <head>
    <script type="text/javascript">
      function displaymessage()
      {
        alert("Hello World!");
      }
    </script>
  </head>
  <body>
    <form>
      <input type="button" value="Click
me!"          onclick="displaymessage()" />
    </form>
  </body>
</html>
```

Loops

```
<html>
  <body>
    <script type="text/javascript">
      var i=0;
      for (i=0;i<=5;i++)
      {
        document.write("The number is " + i);
        document.write("<br />");
      }
      while (i<=10)
      {
        document.write("The number is " + i);
        document.write("<br />");
        i++;
      }
    </script>
  </body>
</html>
```

Events

Every element on a web page has events .

Example: onClick event of a button

We define the events in the HTML tags.

Examples of events:

- * A mouse click
- * A web page or an image loading
- * Mousing over a hot spot on the web page
- * Selecting an input field in an HTML form
- * Submitting an HTML form
- * A keystroke

Note: Events are normally used in combination with functions, and the function will not be executed before the event occurs!

More Event Types

- onLoad and onUnload (for pages)
- onFocus, onBlur and onChange (form fields)
- onSubmit (forms, all form fields)
- onMouseOver and onMouseOut (buttons, text, images)

Example:

```
<a href="http://www.w3schools.com"
onmouseover="alert('An onMouseOver event');">
  
</a>
```

Animations

- It is possible to do simple (and complex) animations (and even games) in JavaScript.
- You can create vector images in JavaScript (you will need to download a special library).
- You can load and swap bitmap (or jpeg, gif, etc.) images natively.
- Timing the image swaps can be done using the built in setTimeout method:

`t=setTimeout("javascript statement",milliseconds);`

Examples:

SimpleAnimation1.html

SimpleAnimation2.html

SimpleAnimation3.html

Getting Help

W3C JavaScript Tutorial:

<http://www.w3schools.com/js/default.asp>

JavaScript Animations:

<http://www.schillmania.com/content/projects/javascript-animation-1/>

JavaScript Games:

<http://www.devx.com/webdev/10MinuteSolution/27134>