JavaScript Tutorial

JavaScript is THE scripting language of the Web.
JavaScript is used in millions of Web pages to add functionality, validate forms, detect browsers, and much more.

Start learning JavaScript now!

Examples in Each Chapter
This JavaScript tutorial contains more than 200 examples!
With our online editor, you can edit the JavaScript code, and click on a button to view the result.

Example
<html>
<body>
<script type="text/javascript">
document.write("This is my first JavaScript!");
</script>
</body>
</html>

Click on the "Try it Yourself" button to see how it works.

JavaScript Examples
Learn by 200 examples!
With our editor, you can edit the source code, and click on a test button to view the result.

- JavaScript Examples
- JavaScript Objects Examples
- JavaScript Browser Objects Examples
- JavaScript HTML DOM Examples

JavaScript Quiz Test
Test your JavaScript skills at W3Schools!
Start JavaScript Quiz!

JavaScript References
At W3Schools you will find a complete reference of all JavaScript objects, Browser objects, and the HTML DOM objects. Contains lot of examples!

- JavaScript Built-in objects
- Browser objects
- HTML DOM objects

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More than 5000 certificates already issued!

The HTML Certificate documents your knowledge of HTML, XHtml, and CSS.
The JavaScript Certificate documents your knowledge of JavaScript and HTML DOM.
The XML Certificate documents your knowledge of XML, XML DOM and XSLT.
The ASP Certificate documents your knowledge of ASP, SQL, and ADO.
The PHP Certificate documents your knowledge of PHP and SQL (MySQL).
JavaScript Introduction

JavaScript is the most popular scripting language on the internet, and works in all major browsers, such as Internet Explorer, Firefox, Chrome, Opera, and Safari.

What You Should Already Know

Before you continue you should have a basic understanding of the following:

- HTML / XHTML

If you want to study these subjects first, find the tutorials on our Home page.

What is JavaScript?

- JavaScript was designed to add interactivity to HTML pages
- JavaScript is a scripting language
- A scripting language is a lightweight programming language
- JavaScript is usually embedded directly into HTML pages
- JavaScript is an interpreted language (means that scripts execute without preliminary compilation)
- Everyone can use JavaScript without purchasing a license

Are Java and JavaScript the same?

NO!

Java and JavaScript are two completely different languages in both concept and design!

Java (developed by Sun Microsystems) is a powerful and much more complex programming language - in the same category as C and C++.

What can a JavaScript do?

- JavaScript gives HTML designers a programming tool - HTML authors are normally not programmers, but JavaScript is a scripting language with a very simple syntax! Almost anyone can put small "snippets" of code into their HTML pages
- JavaScript can put dynamic text into an HTML page - A JavaScript statement like this: `document.write("<h1>" + name + "</h1>")` can write a variable text into an HTML page
- JavaScript can react to events - A JavaScript can be set to execute when something happens, like when a page has finished loading or when a user clicks on an HTML element
- JavaScript can read and write HTML elements - A JavaScript can read and change the content of an HTML element
- JavaScript can be used to validate data - A JavaScript can be used to validate form data before it is submitted to a server. 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

The Real Name is ECMAScript

JavaScript's official name is ECMAScript.

ECMAScript is developed and maintained by the ECMA organization.

ECMA-262 is the official JavaScript standard.

The language was invented by Brendan Eich at Netscape (with Navigator 2.0), and has appeared in all Netscape and Microsoft browsers since 1996.

The development of ECMA-262 started in 1996, and the first edition of was adopted by the ECMA General Assembly in June 1997.

The standard was approved as an international ISO (ISO/IEC 16262) standard in 1998.

The development of the standard is still in progress.
The HTML `<script>` tag is used to insert a JavaScript into an HTML page.

### Put a JavaScript into an HTML page

The example below shows how to use JavaScript to write text on a web page:

**Example**

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

Try it yourself »

The example below shows how to add HTML tags to the JavaScript:

**Example**

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

Try it yourself »

### Example Explained

To insert a JavaScript into an HTML page, we use the `<script>` tag. Inside the `<script>` tag we use the `type` attribute to define the scripting language.

So, the `<script type="text/javascript">` and `</script>` tells where the JavaScript starts and ends:

```html
<html>
<body>
<script type="text/javascript">
    ...
</script>
</body>
</html>
```

The `document.write` command is a standard JavaScript command for writing output to a page. 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:

```html
<html>
<body>
<script type="text/javascript">
    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 write the entire line on the page. Try it yourself.

### How to Handle Simple Browsers

Browsers that do not support JavaScript, will display JavaScript as page content.

To prevent them from doing this, and as a part of the JavaScript standard, the HTML comment tag should be used to "hide" the JavaScript.

Just add an HTML comment tag <!-- before the first JavaScript statement, and a --> (end of comment) after the last JavaScript statement, like this:

```html
<html>
<body>
<script type="text/javascript">
    <!--
    document.write("Hello World!");
    -->
</script>
</body>
</html>
```
The two forward slashes at the end of comment line (//) is the JavaScript comment symbol. This prevents JavaScript from executing the --> tag.
JavaScript Where To

JavaScripts can be put in the body and in the head sections of an HTML page.

Where to Put the JavaScript

JavaScripts in a page will be executed immediately while the page loads into the browser. This is not always what we want. Sometimes we want to execute a script when a page loads, or at a later event, such as when a user clicks a button. When this is the case we put the script inside a function, you will learn about functions in a later chapter.

Scripts in <head>

Scripts to be executed when they are called, or when an event is triggered, are placed in functions.

Put your functions in the head section, this way they are all in one place, and they do not interfere with page content.

Example

```html
<html>
<head>
<script type="text/javascript">
function message()
{
    alert("This alert box was called with the onload event");
}
</script>
</head>
<body onload="message()">
</body>
</html>
```

Try it yourself »

Scripts in <body>

If you don't want your script to be placed inside a function, or if your script should write page content, it should be placed in the body section.

Example

```html
<html>
<head>
</head>
<body>
<script type="text/javascript">
document.write("This message is written by JavaScript");
</script>
</body>
</html>
```

Try it yourself »

Scripts in <head> and <body>

You can place an unlimited number of scripts in your document, so you can have scripts in both the body and the head section.

Example

```html
<html>
<head>
<script type="text/javascript">
function message()
{
    alert("This alert box was called with the onload event");
}
</script>
</head>
<body onload="message()">
<script type="text/javascript">
document.write("This message is written by JavaScript");
</script>
</body>
</html>
```

Try it yourself »
Using an External JavaScript

If you want to run the same JavaScript on several pages, without having to write the same script on every page, you can write a JavaScript in an external file.

Save the external JavaScript file with a .js file extension.

**Note:** The external script cannot contain the `<script></script>` tags!

To use the external script, point to the .js file in the "src" attribute of the `<script>` tag:

**Example**

```html
<html>
<head>
<script type="text/javascript" src="abc.js"></script>
</head>
<body>
</body>
</html>
```

**Note:** Remember to place the script exactly where you normally would write the script!
JavaScript Statements

JavaScript is a sequence of statements to be executed by the browser.

JavaScript is Case Sensitive

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

JavaScript Statements

A JavaScript statement is a command to a 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");
```

It is normal to add a semicolon at the end of each executable statement. Most people think this is a good programming practice, and most often you will see this in JavaScript examples on the web.

The semicolon is optional (according to the JavaScript standard), and the browser is supposed to interpret the end of the line as the end of the statement. Because of this you will often see examples without the semicolon at the end.

**Note:** Using semicolons makes it possible to write multiple statements on one line.

JavaScript Code

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

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

This example will write a heading and two paragraphs to a web page:

```html
Example
<script type="text/javascript">
  document.write("<h1>This is a heading</h1>\n  document.write("<p>This is a paragraph.</p>\n  document.write("<p>This is another paragraph.</p>\n</script>
```

Try it yourself »

JavaScript Blocks

JavaScript statements can be grouped together in blocks.

Blocks start with a left curly bracket {, and ends with a right curly bracket }.

The purpose of a block is to make the sequence of statements execute together.

This example will write a heading and two paragraphs to a web page:

```html
Example
<script type="text/javascript">
  {
    document.write("<h1>This is a heading</h1>\n    document.write("<p>This is a paragraph.</p>\n    document.write("<p>This is another paragraph.</p>\n  };
</script>
```

Try it yourself »

The example above is not very useful. It just demonstrates the use of a block. Normally a block is used to group statements together in a function or in a condition (where a group of statements should be executed if a condition is met).

You will learn more about functions and conditions in later chapters.
JavaScript Comments

JavaScript comments can be used to make the code more readable.

JavaScript Comments

Comments can be added to explain the JavaScript, or to make the code more readable.

Single line comments start with //</code>

The following example uses single line comments to explain the code:

Example

```javascript
// Write a heading
document.write("<h1>This is a heading</h1>");

// Write two paragraphs:
document.write("<p>This is a paragraph.</p>");
document.write("<p>This is another paragraph.</p>");
</script>
```

Try it yourself »

JavaScript Multi-Line Comments

Multi line comments start with /* and end with */.

The following example uses a multi line comment to explain the code:

Example

```javascript
/*
The code below will write
one heading and two paragraphs
*/
document.write("<h1>This is a heading</h1>");
document.write("<p>This is a paragraph.</p>");
document.write("<p>This is another paragraph.</p>");
</script>
```

Try it yourself »

Using Comments to Prevent Execution

In the following example the comment is used to prevent the execution of a single code line (can be suitable for debugging):

Example

```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>");
*/
</script>
```

Try it yourself »

In the following example the comment is used to prevent the execution of a code block (can be suitable for debugging):

Example

```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>");
*/
</script>
```

Try it yourself »

Using Comments at the End of a Line

In the following example the comment is placed at the end of a code line:
Example

```javascript
<script type="text/javascript">
document.write("Hello"); // Write "Hello"
document.write(" Dolly!"); // Write " Dolly!"
</script>
```

Try it yourself »
Variables are "containers" for storing information.

Do You Remember Algebra From School?

Do you remember algebra from school? x=5, y=6, z=x+y

Do you remember that a letter (like x) could be used to hold a value (like 5), and that you could use the information above to calculate the value of z to be 11?

These letters are called variables, and variables can be used to hold values (x=5) or expressions (z=x+y).

JavaScript Variables

As with algebra, JavaScript variables are used to hold values or expressions.

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

Rules for JavaScript variable names:

- Variable names are case sensitive (y and Y are two different variables)
- Variable names must begin with a letter or the underscore character

Note: Because JavaScript is case-sensitive, variable names are case-sensitive.

Example

A variable's value can change during the execution of a script. You can refer to a variable by its name to display or change its value.

Declaring (Creating) JavaScript Variables

Creating variables in JavaScript is most often referred to as "declaring" variables.

You can declare JavaScript variables with the var statement:

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

After the declaration shown above, the variables are empty (they have no values yet).

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

```javascript
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.

Assigning Values to Undeclared JavaScript Variables

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

These statements:

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

have the same effect as:

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

Redeclaring JavaScript Variables

If you redefine a JavaScript variable, it will not lose its original value.

These statements:

```javascript
var x=5;
var x;
```

After the execution of the statements above, the variable x will still have the value of 5. The value of x is not reset (or cleared) when you redefine it.

JavaScript Arithmetic

As with algebra, you can do arithmetic operations with JavaScript variables:
$y = x - 5;$
$z = y + 5;$

You will learn more about the operators that can be used in the next chapter of this tutorial.
= is used to assign values.
+ is used to add values.

The assignment operator = is used to assign values to JavaScript variables.
The arithmetic operator + is used to add values together.

```javascript
y=5;
z=2;
x=y+z;
```

The value of x, after the execution of the statements above is 7.

### JavaScript Arithmetic Operators

Arithmetic operators are used to perform arithmetic between variables and/or values.

Given that `y==5`, the table below explains the arithmetic operators:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
<th>Example</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>Addition</td>
<td>x=y+2</td>
<td>x=7</td>
</tr>
<tr>
<td>-</td>
<td>Subtraction</td>
<td>x=y-2</td>
<td>x=3</td>
</tr>
<tr>
<td>*</td>
<td>Multiplication</td>
<td>x=y*2</td>
<td>x=10</td>
</tr>
<tr>
<td>/</td>
<td>Division</td>
<td>x=y/2</td>
<td>x=2.5</td>
</tr>
<tr>
<td>%</td>
<td>Modulus (division remainder)</td>
<td>x=y%2</td>
<td>x=1</td>
</tr>
<tr>
<td>++</td>
<td>Increment</td>
<td>x=++y</td>
<td>x=6</td>
</tr>
<tr>
<td>--</td>
<td>Decrement</td>
<td>x=--y</td>
<td>x=4</td>
</tr>
</tbody>
</table>

### JavaScript Assignment Operators

Assignment operators are used to assign values to JavaScript variables.

Given that `x==10` and `y==5`, the table below explains the assignment operators:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Example</th>
<th>Same As</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>=</td>
<td>x=y</td>
<td>x=x</td>
<td>x=5</td>
</tr>
<tr>
<td>+=</td>
<td>x+=y</td>
<td>x=x+y</td>
<td>x=15</td>
</tr>
<tr>
<td>-=</td>
<td>x-=y</td>
<td>x=x-y</td>
<td>x=5</td>
</tr>
<tr>
<td>*=</td>
<td>x*=y</td>
<td>x=x*y</td>
<td>x=50</td>
</tr>
<tr>
<td>/=</td>
<td>x/=y</td>
<td>x=x/y</td>
<td>x=2</td>
</tr>
<tr>
<td>%=</td>
<td>x%=y</td>
<td>x=x%y</td>
<td>x=0</td>
</tr>
</tbody>
</table>

### The + Operator Used on Strings

The + operator can also be used to add string variables or text values together.

To add two or more string variables together, use the + operator.

```javascript
txt1="What a very";
txt2="nice day";
txt3=txt1+txt2;
```

After the execution of the statements above, the variable txt3 contains "What a very nice day".

To add a space between the two strings, insert a space into one of the strings:

```javascript
txt1="What a very ";
txt2="nice day";
txt3=txt1+txt2;
```

or insert a space into the expression:

```javascript
txt1="What a very ";
txt2="nice day";
txt3=txt1+" "+txt2;
```

After the execution of the statements above, the variable txt3 contains:

"What a very nice day"

### Adding Strings and Numbers

The rule is: **If you add a number and a string, the result will be a string!**
Example

```javascript
x=5+5;
document.write(x);

x=5+"5";
document.write(x);

x=5+"5";
document.write(x);

x="5"+5;
document.write(x);

```

Try it yourself »
Comparison and Logical Operators

Comparison Operators

Comparison operators are used in logical statements to determine equality or difference between variables or values.

Given that \( x=5 \), the table below explains the comparison operators:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>==</td>
<td>is equal to</td>
<td>( x==8 ) is false</td>
</tr>
<tr>
<td>===</td>
<td>is exactly equal to (value and type)</td>
<td>( x===5 ) is true ( x===&quot;5&quot; ) is false</td>
</tr>
<tr>
<td>!=</td>
<td>is not equal</td>
<td>( x!=8 ) is true</td>
</tr>
<tr>
<td>&gt;</td>
<td>is greater than</td>
<td>( x&gt;8 ) is false</td>
</tr>
<tr>
<td>&lt;</td>
<td>is less than</td>
<td>( x&lt;8 ) is true</td>
</tr>
<tr>
<td>&gt;=</td>
<td>is greater than or equal to</td>
<td>( x&gt;=8 ) is false</td>
</tr>
<tr>
<td>&lt;=</td>
<td>is less than or equal to</td>
<td>( x&lt;=8 ) is true</td>
</tr>
</tbody>
</table>

How Can it be Used

Comparison operators can be used in conditional statements to compare values and take action depending on the result:

```
if (age<18) document.write("Too young");
```

You will learn more about the use of conditional statements in the next chapter of this tutorial.

Logical Operators

Logical operators are used to determine the logic between variables or values.

Given that \( x=6 \) and \( y=3 \), the table below explains the logical operators:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;&amp;</td>
<td>and</td>
<td>( x&lt;10 ) &amp;&amp; ( y&gt;1 ) is true</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>!</td>
<td>not</td>
<td>!( x==y ) is true</td>
</tr>
</tbody>
</table>

Conditional Operator

JavaScript also contains a conditional operator that assigns a value to a variable based on some condition.

Syntax

```
variableName=(condition)?value1:value2
```

Example

```
greeting=(visitor=="PRES")?"Dear President ":"Dear ";
```

If the variable `visitor` has the value of "PRES", then the variable `greeting` will be assigned the value "Dear President " else it will be assigned "Dear".
Conditional statements are used to perform different actions based on different conditions.

Conditional Statements

Very often when you write code, you want to perform different actions for different decisions. You can use conditional statements in your code to do this.

In JavaScript we have the following conditional statements:

- **if statement** - use this statement to execute some code only if a specified condition is true
- **if...else statement** - use this statement 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 to select one of many blocks of code to be executed
- **switch statement** - use this statement to select one of many blocks of code to be executed

If Statement

Use the if statement to execute some code only if a specified condition is true.

Syntax

```javascript
if (condition) {
  code to be executed if condition is true
}
```

Note that if is written in lowercase letters. Using uppercase letters (IF) will generate a JavaScript error!

Example

```javascript
<script type="text/javascript">
  //Write a "Good morning" greeting if the time is less than 10
  var d=new Date();
  var time=d.getHours();
  if (time<10)
  {
    document.write("<b>Good morning</b>" );
  }
</script>
```

Notice that there is no ..else.. in this syntax. You tell the browser to execute some code only if the specified condition is true.

If...else Statement

Use the if...else statement to execute some code if a condition is true and another code if the condition is not true.

Syntax

```javascript
if (condition) {
  code to be executed if condition is true
} else {
  code to be executed if condition is not true
}
```

Example

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

```
If...else if...else Statement

Use the if...else if...else statement to select one of several blocks of code to be executed.

Syntax

```javascript
if (condition1)
{  
  code to be executed if condition1 is true
}
else if (condition2)
{  
  code to be executed if condition2 is true
}
else
{  
  code to be executed if condition1 and condition2 are not true
}
```

Example

```javascript
<script type="text/javascript">
var d = new Date();  
var time = d.getHours();
if (time<10)
{  
  document.write("<b>Good morning</b>");
}
else if (time>10 && time<16)
{  
  document.write("<b>Good day</b>");
}
else
{  
  document.write("<b>Hello World!</b>");

</script>
```

More Examples

This example demonstrates a link, when you click on the link it will take you to W3Schools.com OR to RefnesData.no. There is a 50% chance for each of them.
Conditional statements are used to perform different actions based on different conditions.

The JavaScript Switch Statement

Use the switch statement to select one of many blocks of code to be executed.

Syntax

```
switch(n)
{
  case 1:
    execute code block 1
    break;
  case 2:
    execute code block 2
    break;
  default:
    code to be executed if n is different from case 1 and 2
}
```

This is how it works: First we have a single expression `n` (most often a variable), that is evaluated once. The value of the expression is then compared with the values for each case in the structure. If there is a match, the block of code associated with that case is executed. Use `break` to prevent the code from running into the next case automatically.

Example

```
<script type="text/javascript">
//You will receive a different greeting based
//on what day it is. Note that Sunday=0,
//Monday=1, Tuesday=2, etc.
var d=new Date();
theDay=d.getDay();
switch (theDay)
{
  case 5:
    document.write("Finally Friday");
    break;
  case 6:
    document.write("Super Saturday");
    break;
  case 0:
    document.write("Sleepy Sunday");
    break;
  default:
    document.write("I'm looking forward to this weekend!");
}
</script>
```
JavaScript Popup Boxes

JavaScript has three kind of popup boxes: Alert box, Confirm box, and Prompt box.

Alert Box

An alert box is often used if you want to make sure information comes through to the user. When an alert box pops up, the user will have to click "OK" to proceed.

Syntax

```
alert("sometext");
```

Example

```
<html>
<head>
<script type="text/javascript">
function show_alert()
{
    alert("I am an alert box!");
}
</script>
</head>
<body>
<input type="button" onclick="show_alert()" value="Show alert box" />
</body>
</html>
```

Confirm Box

A confirm box is often used if you want the user to verify or accept something. When a confirm box pops up, the user will have to click either "OK" or "Cancel" to proceed. If the user clicks "OK", the box returns true. If the user clicks "Cancel", the box returns false.

Syntax

```
confirm("sometext");
```

Example

```
<html>
<head>
<script type="text/javascript">
function show_confirm()
{
    var r=confirm("Press a button");
    if (r===true)
    {
        alert("You pressed OK!");
    }
    else
    {
        alert("You pressed Cancel!");
    }
}
</script>
</head>
<body>
<input type="button" onclick="show_confirm()" value="Show confirm box" />
</body>
</html>
```

Prompt Box

A prompt box is often used if you want the user to input a value before entering a page. When a prompt box pops up, the user will have to click either "OK" or "Cancel" to proceed after entering an input value.
If the user clicks "OK" the box returns the input value. If the user clicks "Cancel" the box returns null.

**Syntax**

```javascript
prompt("sometext","defaultvalue");
```

**Example**

```html
<html>
<head>
<script type="text/javascript">
function show_prompt()
{
 var name=prompt("Please enter your name","Harry Potter");
 if (name!=null && name!=""
 |
 document.write("Hello " + name + "! How are you today?");
}
</script>
</head>
<body>
<input type="button" onclick="show_prompt()" value="Show prompt box" />
</body>
</html>
```

Try it yourself »

More Examples

Alert box with line breaks
JavaScript Functions

A function will be executed by an event or by a call to the function.

JavaScript Functions

To keep the browser from executing a script when the page loads, you can put your script into a function.

A function contains code that will be executed by an event or by a call to the function.

You may call a function from anywhere within a page (or even from other pages if the function is embedded in an external .js file).

Functions can be defined both in the <head> and in the <body> section of a document. However, to assure that a function is read/thrown by the browser before it is called, it could be wise to put functions in the <head> section.

How to Define a Function

Syntax

```javascript
function functionname(var1,var2,...,varX)
{
    some code
}
```

The parameters var1, var2, etc. are variables or values passed into the function. The { and the } defines the start and end of the function.

**Note:** A function with no parameters must include the parentheses () after the function name.

**Note:** Do not forget about the importance of capitals in JavaScript! The word function must be written in lowercase letters, otherwise a JavaScript error occurs! Also note that you must call a function with the exact same capitals as in the function name.

JavaScript Function Example

```html
<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>
```

If the line: alert("Hello world!!") in the example above had not been put within a function, it would have been executed as soon as the line was loaded. Now, the script is not executed before a user hits the input button. The function displaymessage() will be executed if the input button is clicked.

You will learn more about JavaScript events in the JS Events chapter.

The return Statement

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.

The example below returns the product of two numbers (a and b):

```html
<html>
<head>
<script type="text/javascript">
function product(a,b)
{
    return a*b;
}
</script>
</head>
<body>
</body>
```
The Lifetime of JavaScript Variables

If you declare a variable within a function, the variable can only be accessed within that function. When you exit the function, the variable is destroyed. These variables are called local variables. You can have local variables with the same name in different functions, because each is recognized only by the function in which it is declared.

If you declare a variable outside a function, all the functions on your page can access it. The lifetime of these variables starts when they are declared, and ends when the page is closed.

More Examples

Function with a parameter
How to pass a variable to a function, and use the variable in the function.

Function that returns a value
How to let a function return a value.
Loops execute a block of code a specified number of times, or while a specified condition is true.

**JavaScript Loops**

Often when you write code, you want the same block of code to run over and over again in a row. Instead of adding several almost equal lines in a script we can use loops to perform a task like this. In JavaScript, there are two different kind of loops:

- **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 for Loop

The for loop is used when you know in advance how many times the script should run.

**Syntax**

```javascript
for (var=startvalue;var<=endvalue;var=var+increment)
{
  code to be executed
}
```

**Example**

The example below defines a loop that starts with i=0. The loop will continue to run as long as i is less than, or equal to 5. i will increase by 1 each time the loop runs.

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

**Try it yourself »**

The while loop will be explained in the next chapter.

### More Examples

**Looping through HTML headings**

Loop through the six different HTML headings.
Loops execute a block of code a specified number of times, or while a specified condition is true.

### The while Loop

The while loop loops through a block of code while a specified condition is true.

#### Syntax

```javascript
while (var<=endvalue) {
    code to be executed
}
```

**Note:** The `<=` could be any comparing statement.

#### Example

The example below defines a loop that starts with `i=0`. The loop will continue to run as long as `i` is less than, or equal to 5. `i` will increase by 1 each time the loop runs:

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

Try it yourself »

### The do...while Loop

The do...while loop is a variant of the while loop. This loop will execute the block of code ONCE, and then it will repeat the loop as long as the specified condition is true.

#### Syntax

```javascript
do {
    code to be executed
} while (var<=endvalue);
```

#### Example

The example below uses a do...while loop. The do...while loop will always be executed at least once, even if the condition is false, because the statements are executed before the condition is tested:

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

Try it yourself »
The break Statement

The break statement will break the loop and continue executing the code that follows after the loop (if any).

Example

```html
<html>
<body>
<script type="text/javascript">
var i=0;
for (i=0;i<=10;i++)
{
  if (i==3)
  {
    break;
  }
  document.write("The number is " + i);
  document.write("<br />")
}
</script>
</body>
</html>
```

Try it yourself »

The continue Statement

The continue statement will break the current loop and continue with the next value.

Example

```html
<html>
<body>
<script type="text/javascript">
var i=0;
for (i=0;i<=10;i++)
{
  if (i==3)
  {
    continue;
  }
  document.write("The number is " + i);
  document.write("<br />");
}
</script>
</body>
</html>
```

Try it yourself »
JavaScript For...In Statement

The for...in statement loops through the elements of an array or through the properties of an object.

Syntax

```javascript
for (variable in object) {
    code to be executed
}
```

**Note:** The code in the body of the for...in loop is executed once for each element/property.

**Note:** The variable argument can be a named variable, an array element, or a property of an object.

Example

Use the for...in statement to loop through an array:

```html
<html>
<body>
<script type="text/javascript">
var x;
var mycars = new Array();
mycars[0] = "Saab";
mycars[1] = "Volvo";
mycars[2] = "BMW";
for (x in mycars) {
    document.write(mycars[x] + "<br />");
}
</script>
</body>
</html>
```

Try it yourself »
Events

Events are actions that can be detected by JavaScript.

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!

For a complete reference of the events recognized by JavaScript, go to our complete JavaScript reference.

onLoad and onUnload

The onLoad and onUnload events are triggered when the user enters or leaves the page.

The onLoad event is often used to check the visitor’s browser type and browser version, and load the proper version of the web page based on the information.

Both the onLoad and onUnload events are also often used to deal with cookies that should be set when a user enters or leaves a page. For example, you could have a popup asking for the user’s name upon his first arrival to your page. The name is then stored in a cookie. Next time the visitor arrives at your page, you could have another popup saying something like: "Welcome John Doe!".

onFocus, onBlur and onChange

The onFocus, onBlur and onChange events are often used in combination with validation of form fields.

Below is an example of how to use the onChange event. The checkEmail() function will be called whenever the user changes the content of the field:

```html
<input type="text" size="30" id="email" onchange="checkEmail()" />
```

onSubmit

The onSubmit event is used to validate ALL form fields before submitting it.

Below is an example of how to use the onSubmit event. The checkForm() function will be called when the user clicks the submit button in the form. If the field values are not accepted, the submit should be cancelled. The function checkForm() returns either true or false. If it returns true the form will be submitted, otherwise the submit will be cancelled:

```html
<form method="post" action="xxx.htm" onsubmit="return checkForm()" />
```

onMouseOver and onMouseOut

onMouseOver and onMouseOut are often used to create "animated" buttons.

Below is an example of an onMouseOver event. An alert box appears when an onMouseOver event is detected:

```html
<a href="http://www.w3schools.com" onmouseover="alert('An onMouseOver event');return false">img src="w3s.gif" alt="W3Schools" /></a>
```
JavaScript Try...Catch Statement

The try...catch statement allows you to test a block of code for errors.

JavaScript - Catching Errors

When browsing Web pages on the internet, we all have seen a JavaScript alert box telling us there is a runtime error and asking “Do you wish to debug?”. Error message like this may be useful for developers but not for users. When users see errors, they often leave the Web page.

This chapter will teach you how to catch and handle JavaScript error messages, so you don’t lose your audience.

The try...catch Statement

The try...catch statement allows you to test a block of code for errors. The try block contains the code to be run, and the catch block contains the code to be executed if an error occurs.

Syntax

```
try
{
//Run some code here
}
catch(err)
{
//Handle errors here
}
```

Note that try...catch is written in lowercase letters. Using uppercase letters will generate a JavaScript error!

Examples

The example below is supposed to alert “Welcome guest!” when the button is clicked. However, there’s a typo in the message() function. alert() is misspelled as adddlert(). A JavaScript error occurs. The catch block catches the error and executes a custom code to handle it. The code displays a custom error message informing the user what happened:

```
<html>
<head>
<script type="text/javascript">
var txt=""
function message()
{
try
{
    adddlert("Welcome guest!");
}
catch(err)
{
    txt="There was an error on this page.\n\nError description: " + err.description + "\n\nClick OK to continue.\n"
    alert(txt);
}
</script>
</head>
<body>
<input type="button" value="View message" onclick="message()" />
</body>
</html>
```

Try it yourself »

The next example uses a confirm box to display a custom message telling users they can click OK to continue viewing the page or click Cancel to go to the homepage. If the confirm method returns false, the user clicked Cancel, and the code redirects the user. If the confirm method returns true, the code does nothing:

```
<html>
<head>
<script type="text/javascript">
var txt=""
function message() {
try
{ 
    adddlert("Welcome guest!");
}
```

Try it yourself »
The throw Statement

The throw statement can be used together with the try...catch statement, to create an exception for the error. Learn about the throw statement in the next chapter.
The throw statement allows you to create an exception.

**The Throw Statement**

The throw statement allows you to create an exception. If you use this statement together with the try...catch statement, you can control program flow and generate accurate error messages.

**Syntax**

```javascript
throw(exception)
```

The exception can be a string, integer, Boolean or an object.

Note that throw is written in lowercase letters. Using uppercase letters will generate a JavaScript error!

**Example**

The example below determines the value of a variable called x. If the value of x is higher than 10, lower than 0, or not a number, we are going to throw an error. The error is then caught by the catch argument and the proper error message is displayed:

```html
<html>
<body>
<script type="text/javascript">
var x=prompt("Enter a number between 0 and 10: ","");
try {
 if(x>10) {
     throw "Err1";
 }
 else if(x<0) {
     throw "Err2";
 }
 else if(isNaN(x)) {
     throw "Err3";
 }
}
catch(er) {
 if(er="Err1") {
     alert("Error! The value is too high");
 }
 if(er="Err2") {
     alert("Error! The value is too low");
 }
 if(er="Err3") {
     alert("Error! The value is not a number");
 }
}
</script>
</body>
</html>
```

**Try it yourself »**
In JavaScript you can add special characters to a text string by using the backslash sign.

### Insert Special Characters

The backslash (\) is used to insert apostrophes, new lines, quotes, and other special characters into a text string.

Look at the following JavaScript code:

```javascript
var txt="We are the so-called "Vikings" from the north."
document.write(txt);
```

In JavaScript, a string is started and stopped with either single or double quotes. This means that the string above will be chopped to: We are the so-called.

To solve this problem, you must place a backslash (\) before each double quote in "Viking". This turns each double quote into a string literal:

```javascript
var txt="We are the so-called \"Vikings\" from the north."
document.write(txt);
```

JavaScript will now output the proper text string: We are the so-called "Vikings" from the north.

Here is another example:

```javascript
document.write ("You & I are singing!");
```

The example above will produce the following output:

You & I are singing!

The table below lists other special characters that can be added to a text string with the backslash sign:

<table>
<thead>
<tr>
<th>Code</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;</td>
<td>double quote</td>
</tr>
<tr>
<td>'</td>
<td>single quote</td>
</tr>
<tr>
<td>&amp;</td>
<td>ampersand</td>
</tr>
<tr>
<td>&quot;</td>
<td>backslash</td>
</tr>
<tr>
<td>\n</td>
<td>new line</td>
</tr>
<tr>
<td>\t</td>
<td>carriage return</td>
</tr>
<tr>
<td>\r</td>
<td>tab</td>
</tr>
<tr>
<td>\b</td>
<td>backspace</td>
</tr>
<tr>
<td>\f</td>
<td>form feed</td>
</tr>
</tbody>
</table>
Some other important things to know when scripting with JavaScript.

### JavaScript is Case Sensitive

A function named "myfunction" is not the same as "myFunction" and a variable named "myVar" is not the same as "myvar".

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

### White Space

JavaScript ignores extra spaces. You can add white space to your script to make it more readable.

The following lines are equivalent:

```javascript
name="Hege";
name = "Hege";
```

### Break up a Code Line

You can break up a code line within a text string with a backslash. The example below will be displayed properly:

```javascript
document.write("Hello \\
World!");
```

However, you cannot break up a code line like this:

```javascript
document.write \\
("Hello World!");
```
JavaScript Objects Introduction

JavaScript is an Object Oriented Programming (OOP) language. An OOP language allows you to define your own objects and make your own variable types.

Object Oriented Programming

JavaScript is an Object Oriented Programming (OOP) language. An OOP language allows you to define your own objects and make your own variable types.

However, creating your own objects will be explained later, in the Advanced JavaScript section. We will start by looking at the built-in JavaScript objects, and how they are used. The next pages will explain each built-in JavaScript object in detail.

Note that an object is just a special kind of data. An object has properties and methods.

Properties

Properties are the values associated with an object.

In the following example we are using the length property of the String object to return the number of characters in a string:

```html
<script type="text/javascript">
var txt="Hello World!";
document.write(txt.length);
</script>
```

The output of the code above will be:

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Methods

Methods are the actions that can be performed on objects.

In the following example we are using the toUpperCase() method of the String object to display a text in uppercase letters:

```html
<script type="text/javascript">
var str="Hello world!";
document.write(str.toUpperCase());
</script>
```

The output of the code above will be:

HELLO WORLD!
Number Object

The Number object is an object wrapper for primitive numeric values.

Number objects are created with new Number().

Syntax

```javascript
var num = new Number(value);
```

**Note:** If the value parameter cannot be converted into a number, it returns NaN (Not-a-Number).

Number Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>constructor</code></td>
<td>Returns the function that created the Number object's prototype</td>
</tr>
<tr>
<td><code>MAX_VALUE</code></td>
<td>Returns the largest number possible in JavaScript</td>
</tr>
<tr>
<td><code>MIN_VALUE</code></td>
<td>Returns the smallest number possible in JavaScript</td>
</tr>
<tr>
<td><code>NEGATIVE_INFINITY</code></td>
<td>Represents negative infinity (returned on overflow)</td>
</tr>
<tr>
<td><code>POSITIVE_INFINITY</code></td>
<td>Represents infinity (returned on overflow)</td>
</tr>
<tr>
<td><code>prototype</code></td>
<td>Allows you to add properties and methods to an object</td>
</tr>
</tbody>
</table>

Number Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>toExponential(x)</code></td>
<td>Converts a number into an exponential notation</td>
</tr>
<tr>
<td><code>toFixed(x)</code></td>
<td>Formats a number with x numbers of digits after the decimal point</td>
</tr>
<tr>
<td><code>toPrecision(x)</code></td>
<td>Formats a number to x length</td>
</tr>
<tr>
<td><code>toString()</code></td>
<td>Converts a Number object to a string</td>
</tr>
<tr>
<td><code>valueOf()</code></td>
<td>Returns the primitive value of a Number object</td>
</tr>
</tbody>
</table>
The JavaScript global properties and functions can be used with all the built-in JavaScript objects.

### JavaScript Global Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>Infinity</code></td>
<td>A numeric value that represents positive/negative infinity</td>
</tr>
<tr>
<td><code>NaN</code></td>
<td>&quot;Not-a-Number&quot; value</td>
</tr>
<tr>
<td><code>undefined</code></td>
<td>Indicates that a variable has not been assigned a value</td>
</tr>
</tbody>
</table>

### JavaScript Global Functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>decodeURI()</code></td>
<td>Decodes a URI</td>
</tr>
<tr>
<td><code>decodeURIComponent()</code></td>
<td>Decodes a URI component</td>
</tr>
<tr>
<td><code>encodeURI()</code></td>
<td>Encodes a URI</td>
</tr>
<tr>
<td><code>encodeURIComponent()</code></td>
<td>Encodes a URI component</td>
</tr>
<tr>
<td><code>escape()</code></td>
<td>Encodes a string</td>
</tr>
<tr>
<td><code>eval()</code></td>
<td>Evaluates a string and executes it as if it was script code</td>
</tr>
<tr>
<td><code>isFinite()</code></td>
<td>Determines whether a value is a finite, legal number</td>
</tr>
<tr>
<td><code>isNaN()</code></td>
<td>Determines whether a value is an illegal number</td>
</tr>
<tr>
<td><code>Number()</code></td>
<td>Converts an object’s value to a number</td>
</tr>
<tr>
<td><code>parseFloat()</code></td>
<td>Parses a string and returns a floating point number</td>
</tr>
<tr>
<td><code>parseInt()</code></td>
<td>Parses a string and returns an integer</td>
</tr>
<tr>
<td><code>String()</code></td>
<td>Converts an object’s value to a string</td>
</tr>
<tr>
<td><code>unescape()</code></td>
<td>Decodes an encoded string</td>
</tr>
</tbody>
</table>
JavaScript String Object

The String object is used to manipulate a stored piece of text.

Try it Yourself - Examples

Return the length of a string
How to return the length of a string.

Style strings
How to style strings.

The toLowerCase() and toUpperCase() methods
How to convert a string to lowercase or uppercase letters.

The match() method
How to search for a specified value within a string.

Replace characters in a string - replace()
How to replace a specified value with another value in a string.

The indexOf() method
How to return the position of the first found occurrence of a specified value in a string.

Complete String Object Reference

For a complete reference of all the properties and methods that can be used with the String object, go to our complete String object reference.

The reference contains a brief description and examples of use for each property and method!

String object

The String object is used to manipulate a stored piece of text.

Examples of use:

The following example uses the length property of the String object to find the length of a string:

```javascript
var txt="Hello world!";
document.write(txt.length);
```

The code above will result in the following output:

12

The following example uses the toUpperCase() method of the String object to convert a string to uppercase letters:

```javascript
var txt="Hello world!";
document.write(txt.toUpperCase());
```

The code above will result in the following output:

HELLO WORLD!
String Object

The String object is used to manipulate a stored piece of text. String objects are created with new String().

Syntax

```javascript
var txt = new String(string);
or more simply:
var txt = string;
```

For a tutorial about the String object, read our JavaScript String Object tutorial.

String Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>constructor</td>
<td>Returns the function that created the String object's prototype</td>
</tr>
<tr>
<td>length</td>
<td>Returns the length of a string</td>
</tr>
<tr>
<td>prototype</td>
<td>Allows you to add properties and methods to an object</td>
</tr>
</tbody>
</table>

String Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>charAt()</td>
<td>Returns the character at the specified index</td>
</tr>
<tr>
<td>charCodeAt()</td>
<td>Returns the Unicode of the character at the specified index</td>
</tr>
<tr>
<td>concat()</td>
<td>Joins two or more strings, and returns a copy of the joined strings</td>
</tr>
<tr>
<td>fromCharCode()</td>
<td>Converts Unicode values to characters</td>
</tr>
<tr>
<td>indexOf()</td>
<td>Returns the position of the first found occurrence of a specified value in a string</td>
</tr>
<tr>
<td>lastIndexOf()</td>
<td>Returns the position of the last found occurrence of a specified value in a string</td>
</tr>
<tr>
<td>match()</td>
<td>Searches for a match between a regular expression and a string, and returns the matches</td>
</tr>
<tr>
<td>replace()</td>
<td>Searches for a match between a substring (or regular expression) and a string, and replaces the matched substring with a new substring</td>
</tr>
<tr>
<td>search()</td>
<td>Searches for a match between a regular expression and a string, and returns the position of the match</td>
</tr>
<tr>
<td>slice()</td>
<td>Extracts a part of a string and returns a new string</td>
</tr>
<tr>
<td>split()</td>
<td>Splits a string into an array of substrings</td>
</tr>
<tr>
<td>substr()</td>
<td>Extracts the characters from a string, beginning at a specified start position, and through the specified number of character</td>
</tr>
<tr>
<td>substring()</td>
<td>Extracts the characters from a string, between two specified indices</td>
</tr>
<tr>
<td>toLowerCase()</td>
<td>Converts a string to lowercase letters</td>
</tr>
<tr>
<td>toUpperCase()</td>
<td>Converts a string to uppercase letters</td>
</tr>
<tr>
<td>valueOf()</td>
<td>Returns the primitive value of a String object</td>
</tr>
</tbody>
</table>

String HTML Wrapper Methods

The HTML wrapper methods return the string wrapped inside the appropriate HTML tag.

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>anchor()</td>
<td>Creates an anchor</td>
</tr>
<tr>
<td>big()</td>
<td>Displays a string using a big font</td>
</tr>
<tr>
<td>blink()</td>
<td>Displays a blinking string</td>
</tr>
<tr>
<td>bold()</td>
<td>Displays a string in bold</td>
</tr>
<tr>
<td>fixed()</td>
<td>Displays a string using a fixed-pitch font</td>
</tr>
<tr>
<td>fontcolor()</td>
<td>Displays a string using a specified color</td>
</tr>
<tr>
<td>fontsize()</td>
<td>Displays a string using a specified size</td>
</tr>
<tr>
<td>italics()</td>
<td>Displays a string in italic</td>
</tr>
<tr>
<td>link()</td>
<td>Displays a string as a hyperlink</td>
</tr>
<tr>
<td>small()</td>
<td>Displays a string using a small font</td>
</tr>
<tr>
<td>strike()</td>
<td>Displays a string with a strikethrough</td>
</tr>
<tr>
<td>sub()</td>
<td>Displays a string as subscript text</td>
</tr>
<tr>
<td>sup()</td>
<td>Displays a string as superscript text</td>
</tr>
</tbody>
</table>
JavaScript Date Object

The Date object is used to work with dates and times.

### Try it Yourself - Examples

- **Return today's date and time**
  - How to use the Date() method to get today's date.
  - `getTime()`
    - Use `getTime()` to calculate the years since 1970.
  - `setFullYear()`
    - How to use `setFullYear()` to set a specific date.
  - `toUTCHString()`
    - How to use `toUTCHString()` to convert today's date (according to UTC) to a string.
  - `getDay()`
    - Use `getDay()` and an array to write a weekday, and not just a number.
  - **Display a clock**
    - How to display a clock on your web page.

### Complete Date Object Reference

For a complete reference of all the properties and methods that can be used with the Date object, go to our complete Date object reference.

The reference contains a brief description and examples of use for each property and method!

### Create a Date Object

The Date object is used to work with dates and times.

Date objects are created with the Date() constructor.

There are four ways of instantiating a date:

- `new Date()` // current date and time
- `new Date(milliseconds)` //milliseconds since 1970/01/01
- `new Date(dateString)`
- `new Date(year, month, day, hours, minutes, seconds, milliseconds)`

Most parameters above are optional. Not specifying, causes 0 to be passed in.

Once a Date object is created, a number of methods allow you to operate on it. Most methods allow you to get and set the year, month, day, hour, minute, second, and milliseconds of the object, using either local time or UTC (universal, or GMT) time.

All dates are calculated in milliseconds from 01 January, 1970 00:00:00 Universal Time (UTC) with a day containing 86,400,000 milliseconds.

Some examples of instantiating a date:

```javascript
var today = new Date();
d1 = new Date("October 13, 1975 11:13:00");
d2 = new Date(79,5,24);
d3 = new Date(79,5,24,11,33,0);
```

### Set Dates

We can easily manipulate the date by using the methods available for the Date object.

In the example below we set a Date object to a specific date (14th January 2010):

```javascript
var myDate=new Date();
myDate.setFullYear(2010,0,14);
```

And in the following example we set a Date object to be 5 days into the future:

```javascript
var myDate=new Date();
myDate.setDate(myDate.getDate()+5);
```

**Note:** If adding five days to a date shifts the month or year, the changes are handled automatically by the Date object itself!

### Compare Two Dates

The Date object is also used to compare two dates.

The following example compares today's date with the 14th January 2010:
```javascript
var myDate=new Date();
myDate.setFullYear(2010,0,14);
var today = new Date();

if (myDate>today)
{
    alert("Today is before 14th January 2010");
}
else
{
    alert("Today is after 14th January 2010");
}
```
**JavaScript Date Object**

**Date Object**

The Date object is used to work with dates and times.

Date objects are created with `new Date()`.

There are four ways of instantiating a date:

```javascript
var d = new Date();
var d = new Date(milliseconds);
var d = new Date(dateString);
var d = new Date(year, month, day, hours, minutes, seconds, milliseconds);
```

For a tutorial about date and times, read our [JavaScript Date Object tutorial](#).

**Date Object Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>constructor</code></td>
<td>Returns the function that created the Date object's prototype</td>
</tr>
<tr>
<td><code>prototype</code></td>
<td>Allows you to add properties and methods to an object</td>
</tr>
</tbody>
</table>

**Date Object Methods**

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>getDate()</code></td>
<td>Returns the day of the month (from 1-31)</td>
</tr>
<tr>
<td><code>getDay()</code></td>
<td>Returns the day of the week (from 0-6)</td>
</tr>
<tr>
<td><code>getFullYear()</code></td>
<td>Returns the year (four digits)</td>
</tr>
<tr>
<td><code>getHours()</code></td>
<td>Returns the hour (from 0-23)</td>
</tr>
<tr>
<td><code>getMilliseconds()</code></td>
<td>Returns the milliseconds (from 0-999)</td>
</tr>
<tr>
<td><code>getMinutes()</code></td>
<td>Returns the minutes (from 0-59)</td>
</tr>
<tr>
<td><code>getMonth()</code></td>
<td>Returns the month (from 0-11)</td>
</tr>
<tr>
<td><code>getSeconds()</code></td>
<td>Returns the seconds (from 0-59)</td>
</tr>
<tr>
<td><code>getTime()</code></td>
<td>Returns the number of milliseconds since midnight Jan 1, 1970</td>
</tr>
<tr>
<td><code>getTimezoneOffset()</code></td>
<td>Returns the time difference between GMT and local time, in minutes</td>
</tr>
<tr>
<td><code>getUTCDate()</code></td>
<td>Returns the day of the month, according to universal time (from 1-31)</td>
</tr>
<tr>
<td><code>getUTCDay()</code></td>
<td>Returns the day of the week, according to universal time (from 0-6)</td>
</tr>
<tr>
<td><code>getUTCFullYear()</code></td>
<td>Returns the year, according to universal time (four digits)</td>
</tr>
<tr>
<td><code>getUTCHours()</code></td>
<td>Returns the hour, according to universal time (from 0-23)</td>
</tr>
<tr>
<td><code>getUTCMilliseconds()</code></td>
<td>Returns the milliseconds, according to universal time (from 0-999)</td>
</tr>
<tr>
<td><code>getUTCMinutes()</code></td>
<td>Returns the minutes, according to universal time (from 0-59)</td>
</tr>
<tr>
<td><code>getUTCMonth()</code></td>
<td>Returns the month, according to universal time (from 0-11)</td>
</tr>
<tr>
<td><code>getUTCSeconds()</code></td>
<td>Returns the seconds, according to universal time (from 0-59)</td>
</tr>
<tr>
<td><code>getYear()</code></td>
<td>Returns the year (four digits)</td>
</tr>
<tr>
<td><code>parse()</code></td>
<td>Parses a date string and returns the number of milliseconds since midnight January 1, 1970</td>
</tr>
<tr>
<td><code>setDate()</code></td>
<td>Sets the day of the month (from 1-31)</td>
</tr>
<tr>
<td><code>setFullYear()</code></td>
<td>Sets the year (four digits)</td>
</tr>
<tr>
<td><code>setHours()</code></td>
<td>Sets the hour (from 0-23)</td>
</tr>
<tr>
<td><code>setMilliseconds()</code></td>
<td>Sets the milliseconds (from 0-999)</td>
</tr>
<tr>
<td><code>setMinutes()</code></td>
<td>Set the minutes (from 0-59)</td>
</tr>
<tr>
<td><code>setMonth()</code></td>
<td>Sets the month (from 0-11)</td>
</tr>
<tr>
<td><code>setSeconds()</code></td>
<td>Sets the seconds (from 0-59)</td>
</tr>
<tr>
<td><code>setTime()</code></td>
<td>Sets a date and time by adding or subtracting a specified number of milliseconds to/from midnight January 1, 1970</td>
</tr>
<tr>
<td><code>setUTCDate()</code></td>
<td>Sets the day of the month, according to universal time (from 1-31)</td>
</tr>
<tr>
<td><code>setUTCFullYear()</code></td>
<td>Sets the year, according to universal time (four digits)</td>
</tr>
<tr>
<td><code>setUTCHours()</code></td>
<td>Sets the hour, according to universal time (from 0-23)</td>
</tr>
<tr>
<td><code>setUTCMinutes()</code></td>
<td>Sets the minutes, according to universal time (from 0-59)</td>
</tr>
<tr>
<td><code>setUTCMonth()</code></td>
<td>Sets the month, according to universal time (from 0-11)</td>
</tr>
<tr>
<td><code>setUTCSeconds()</code></td>
<td>Sets the seconds, according to universal time (from 0-59)</td>
</tr>
<tr>
<td><code>setYear()</code></td>
<td>Sets the year (four digits)</td>
</tr>
<tr>
<td><code>toDateString()</code></td>
<td>Converts the date portion of a Date object into a readable string</td>
</tr>
<tr>
<td><code>toGMTString()</code></td>
<td>Deprecated. Use the <code>toUTCString()</code> method instead</td>
</tr>
<tr>
<td><code>toLocaleDateString()</code></td>
<td>Returns the date portion of a Date object as a string, using locale conventions</td>
</tr>
<tr>
<td><code>toLocaleTimeString()</code></td>
<td>Returns the time portion of a Date object as a string, using locale conventions</td>
</tr>
<tr>
<td>Method</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>toLocaleString()</td>
<td>Converts a Date object to a string, using locale conventions</td>
</tr>
<tr>
<td>toString()</td>
<td>Converts a Date object to a string</td>
</tr>
<tr>
<td>toTimeString()</td>
<td>Converts the time portion of a Date object to a string</td>
</tr>
<tr>
<td>toUTCString()</td>
<td>Converts a Date object to a string, according to universal time</td>
</tr>
<tr>
<td>UTC()</td>
<td>Returns the number of milliseconds in a date string since midnight of January 1, 1970, according to universal time</td>
</tr>
<tr>
<td>valueOf()</td>
<td>Returns the primitive value of a Date object</td>
</tr>
</tbody>
</table>
The Array object is used to store multiple values in a single variable.

### Try it Yourself - Examples

**Create an array**
Create an array, assign values to it, and write the values to the output.

**For...In Statement**
How to use a for...in statement to loop through the elements of an array.

(You can find more examples at the bottom of this page)

### Complete Array Object Reference

For a complete reference of all the properties and methods that can be used with the Array object, go to our complete Array object reference.

The reference contains a brief description and examples of use for each property and method!

### What is an Array?

An array is a special variable, which can hold more than one value, at a time.

If you have a list of items (a list of car names, for example), storing the cars in single variables could look like this:

```javascript
cars1="Saab";
cars2="Volvo";
cars3="BMW";
```

However, what if you want to loop through the cars and find a specific one? And what if you had not 3 cars, but 300?

The best solution here is to use an array!

An array can hold all your variable values under a single name. And you can access the values by referring to the array name.

Each element in the array has its own ID so that it can be easily accessed.

### Create an Array

An array can be defined in three ways.

The following code creates an Array object called myCars:

1:

```javascript
var myCars=new Array(); // regular array (add an optional integer argument to control array's size)
myCars[0]="Saab";
myCars[1]="Volvo";
myCars[2]="BMW";
```

2:

```javascript
var myCars=new Array("Saab","Volvo","BMW"); // condensed array
```

3:

```javascript
var myCars=["Saab","Volvo","BMW"]; // literal array
```

**Note:** If you specify numbers or true/false values inside the array then the variable type will be Number or Boolean, instead of String.

### Access an Array

You can refer to a particular element in an array by referring to the name of the array and the index number. The index number starts at 0.

The following code line:

```javascript
document.write(myCars[0]);
```

will result in the following output:

`Saab`
Modify Values in an Array

To modify a value in an existing array, just add a new value to the array with a specified index number:

```javascript
myCars[0] = 'Opel';
```

Now, the following code line:

```javascript
document.write(myCars[0]);
```

will result in the following output:

```
Opel
```

More Examples

- Join two arrays - `concat()`
- Join three arrays - `concat()`
- Join all elements of an array into a string - `join()`
- Remove the last element of an array - `pop()`
- Add new elements to the end of an array - `push()`
- Reverse the order of the elements in an array - `reverse()`
- Remove the first element of an array - `shift()`
- Select elements from an array - `slice()`
- Sort an array (alphabetically and ascending) - `sort()`
- Sort numbers (numerically and ascending) - `sort()`
- Sort numbers (numerically and descending) - `sort()`
- Add an element to position 2 in an array - `splice()`
- Convert an array to a string - `toString()`
- Add new elements to the beginning of an array - `unshift()`
Array Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>constructor</td>
<td>Returns the function that created the Array object's prototype</td>
</tr>
<tr>
<td>length</td>
<td>Sets or returns the number of elements in an array</td>
</tr>
<tr>
<td>prototype</td>
<td>Allows you to add properties and methods to an object</td>
</tr>
</tbody>
</table>

Array Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>concat()</td>
<td>Joins two or more arrays, and returns a copy of the joined arrays</td>
</tr>
<tr>
<td>join()</td>
<td>Joins all elements of an array into a string</td>
</tr>
<tr>
<td>pop()</td>
<td>Removes the last element of an array, and returns that element</td>
</tr>
<tr>
<td>push()</td>
<td>Adds new elements to the end of an array, and returns the new length</td>
</tr>
<tr>
<td>reverse()</td>
<td>Reverses the order of the elements in an array</td>
</tr>
<tr>
<td>shift()</td>
<td>Removes the first element of an array, and returns that element</td>
</tr>
<tr>
<td>slice()</td>
<td>Selects a part of an array, and returns the new array</td>
</tr>
<tr>
<td>sort()</td>
<td>Sorts the elements of an array</td>
</tr>
<tr>
<td>splice()</td>
<td>Adds/Removes elements from an array</td>
</tr>
<tr>
<td>toString()</td>
<td>Converts an array to a string, and returns the result</td>
</tr>
<tr>
<td>unshift()</td>
<td>Adds new elements to the beginning of an array, and returns the new length</td>
</tr>
<tr>
<td>valueOf()</td>
<td>Returns the primitive value of an array</td>
</tr>
</tbody>
</table>

« Previous Next Reference »
The Boolean object is used to convert a non-Boolean value to a Boolean value (true or false).

### Try it Yourself - Examples

**Check Boolean value**

Check if a Boolean object is true or false.

### Complete Boolean Object Reference

For a complete reference of all the properties and methods that can be used with the Boolean object, go to our [complete Boolean object reference](#). The reference contains a brief description and examples of use for each property and method!

### Create a Boolean Object

The Boolean object represents two values: "true" or "false".

The following code creates a Boolean object called myBoolean:

```javascript
var myBoolean=new Boolean();
```

**Note:** If the Boolean object has no initial value or if it is 0, -0, null, "", false, undefined, or NaN, the object is set to false. Otherwise it is true (even with the string "false")

All the following lines of code create Boolean objects with an initial value of false:

```javascript
var myBoolean=new Boolean();
var myBoolean=new Boolean(0);
var myBoolean=new Boolean(null);
var myBoolean=new Boolean("");
var myBoolean=new Boolean(false);
var myBoolean=new Boolean(NaN);
```

And all the following lines of code create Boolean objects with an initial value of true:

```javascript
var myBoolean=new Boolean(true);
var myBoolean=new Boolean("true");
var myBoolean=new Boolean("false");
var myBoolean=new Boolean("Richard");
```
Boolean Object

The Boolean object is used to convert a non-Boolean value to a Boolean value (true or false).

For a tutorial about the Boolean object, read our JavaScript Boolean Object tutorial.

### Boolean Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>constructor</td>
<td>Returns the function that created the Boolean object's prototype</td>
</tr>
<tr>
<td>prototype</td>
<td>Allows you to add properties and methods to an object</td>
</tr>
</tbody>
</table>

### Boolean Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>toString()</td>
<td>Converts a Boolean value to a string, and returns the result</td>
</tr>
<tr>
<td>valueOf()</td>
<td>Returns the primitive value of a Boolean object</td>
</tr>
</tbody>
</table>
The Math object allows you to perform mathematical tasks.

Try it Yourself - Examples

**round()**
How to use round().

**random()**
How to use random() to return a random number between 0 and 1.

**max()**
How to use max() to return the number with the highest value of two specified numbers.

**min()**
How to use min() to return the number with the lowest value of two specified numbers.

Complete Math Object Reference

For a complete reference of all the properties and methods that can be used with the Math object, go to our complete Math object reference.

The reference contains a brief description and examples of use for each property and method!

Math Object

The Math object allows you to perform mathematical tasks.

The Math object includes several mathematical constants and methods.

**Syntax for using properties/methods of Math:**

```javascript
var pi_value=Math.PI;
var sqrt_value=Math.sqrt(16);
```

**Note:** Math is not a constructor. All properties and methods of Math can be called by using Math as an object without creating it.

Mathematical Constants

JavaScript provides eight mathematical constants that can be accessed from the Math object. These are: E, PI, square root of 2, square root of 1/2, natural log of 2, natural log of 10, base-2 log of E, and base-10 log of E.

You may reference these constants from your JavaScript like this:

```javascript
Math.E
Math.PI
Math.SQRT2
Math.SQRT1_2
Math.LN2
Math.LN10
Math.LOG2E
Math.LOG10E
```

Mathematical Methods

In addition to the mathematical constants that can be accessed from the Math object there are also several methods available.

The following example uses the `round()` method of the Math object to round a number to the nearest integer:

```javascript
document.write(Math.round(4.7));
```

The code above will result in the following output:

5

The following example uses the `random()` method of the Math object to return a random number between 0 and 1:

```javascript
document.write(Math.random());
```

The code above can result in the following output:

0.719836678443205

The following example uses the `floor()` and `random()` methods of the Math object to return a random number between 0 and 10:
The code above can result in the following output:

7
JavaScript Math Object

Math Object

The Math object allows you to perform mathematical tasks.

Math is not a constructor. All properties/methods of Math can be called by using Math as an object, without creating it.

Syntax

```javascript
var x = Math.PI; // Returns PI
var y = Math.sqrt(16); // Returns the square root of 16
```

For a tutorial about the Math object, read our JavaScript Math Object tutorial.

Math Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>Returns Euler's number (approx. 2.718)</td>
</tr>
<tr>
<td>LN2</td>
<td>Returns the natural logarithm of 2 (approx. 0.693)</td>
</tr>
<tr>
<td>LN10</td>
<td>Returns the natural logarithm of 10 (approx. 2.302)</td>
</tr>
<tr>
<td>LOG2E</td>
<td>Returns the base-2 logarithm of E (approx. 1.442)</td>
</tr>
<tr>
<td>LOG10E</td>
<td>Returns the base-10 logarithm of E (approx. 0.434)</td>
</tr>
<tr>
<td>PI</td>
<td>Returns PI (approx. 3.14159)</td>
</tr>
<tr>
<td>SQRT1_2</td>
<td>Returns the square root of 1/2 (approx. 0.707)</td>
</tr>
<tr>
<td>SQRT2</td>
<td>Returns the square root of 2 (approx. 1.414)</td>
</tr>
</tbody>
</table>

Math Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>abs(x)</td>
<td>Returns the absolute value of x</td>
</tr>
<tr>
<td>acos(x)</td>
<td>Returns the arccosine of x, in radians</td>
</tr>
<tr>
<td>asin(x)</td>
<td>Returns the arcsine of x, in radians</td>
</tr>
<tr>
<td>atan(x)</td>
<td>Returns the arctangent of x as a numeric value between -PI/2 and PI/2 radians</td>
</tr>
<tr>
<td>atan2(y,x)</td>
<td>Returns the arctangent of the quotient of its arguments</td>
</tr>
<tr>
<td>ceil(x)</td>
<td>Returns x, rounded upwards to the nearest integer</td>
</tr>
<tr>
<td>cos(x)</td>
<td>Returns the cosine of x (x is in radians)</td>
</tr>
<tr>
<td>exp(x)</td>
<td>Returns the value of Ex</td>
</tr>
<tr>
<td>floor(x)</td>
<td>Returns x, rounded downwards to the nearest integer</td>
</tr>
<tr>
<td>log(x)</td>
<td>Returns the natural logarithm (base E) of x</td>
</tr>
<tr>
<td>max(x,y,z,...,n)</td>
<td>Returns the number with the highest value</td>
</tr>
<tr>
<td>min(x,y,z,...,n)</td>
<td>Returns the number with the lowest value</td>
</tr>
<tr>
<td>pow(x,y)</td>
<td>Returns the value of x to the power of y</td>
</tr>
<tr>
<td>random()</td>
<td>Returns a random number between 0 and 1</td>
</tr>
<tr>
<td>round(x)</td>
<td>Rounds x to the nearest integer</td>
</tr>
<tr>
<td>sin(x)</td>
<td>Returns the sine of x (x is in radians)</td>
</tr>
<tr>
<td>sqrt(x)</td>
<td>Returns the square root of x</td>
</tr>
<tr>
<td>tan(x)</td>
<td>Returns the tangent of an angle</td>
</tr>
</tbody>
</table>
JavaScript RegExp Object

RegExp, is short for regular expression.

Complete RegExp Object Reference

For a complete reference of all the properties and methods that can be used with the RegExp object, go to our complete RegExp object reference.

The reference contains a brief description and examples of use for each property and method!

What is RegExp?

A regular expression is an object that describes a pattern of characters.

When you search in a text, you can use a pattern to describe what you are searching for.

A simple pattern can be one single character.

A more complicated pattern can consist of more characters, and can be used for parsing, format checking, substitution and more.

Regular expressions are used to perform powerful pattern-matching and "search-and-replace" functions on text.

Syntax

var txt=new RegExp(pattern,modifiers);

or more simply:

var txt=/pattern/modifiers;

pattern specifies the pattern of an expression

modifiers specify if a search should be global, case-sensitive, etc.

RegExp Modifiers

Modifiers are used to perform case-insensitive and global searches.

The i modifier is used to perform case-insensitive matching.

The g modifier is used to perform a global match (find all matches rather than stopping after the first match).

Example 1

Do a case-insensitive search for "w3schools" in a string:

var str="Visit W3Schools";
var patt1=/w3schools/i;

The marked text below shows where the expression gets a match:

Visit W3Schools

Try it yourself »

Example 2

Do a global search for "is":

var str="Is this all there is?";
var patt1=/is/g;

The marked text below shows where the expression gets a match:

Is this all there is?

Try it yourself »

Example 3

Do a global, case-insensitive search for "is":

var str="Is this all there is?";
var patt1=/is/gi;

The marked text below shows where the expression gets a match:

Is this all there is?
test()

The `test()` method searches a string for a specified value, and returns true or false, depending on the result.

The following example searches a string for the character "e":

<table>
<thead>
<tr>
<th>Example</th>
</tr>
</thead>
</table>
| var patt1=new RegExp("e");
document.write(patt1.test("The best things in life are free")); |

Since there is an "e" in the string, the output of the code above will be:

```
true
```

exec()

The `exec()` method searches a string for a specified value, and returns the text of the found value. If no match is found, it returns null.

The following example searches a string for the character "e":

<table>
<thead>
<tr>
<th>Example 1</th>
</tr>
</thead>
</table>
| var patt1=new RegExp("e");
document.write(patt1.exec("The best things in life are free")); |

Since there is an "e" in the string, the output of the code above will be:

```
e
```
RegExp Object

A regular expression is an object that describes a pattern of characters. Regular expressions are used to perform pattern-matching and "search-and-replace" functions on text.

Syntax

```javascript
var txt=new RegExp(pattern,modifiers);
or more simply:
var txt=/pattern/modifiers;
```

- pattern specifies the pattern of an expression
- modifiers specify if a search should be global, case-sensitive, etc.

For a tutorial about the RegExp object, read our JavaScript RegExp Object tutorial.

Modifiers

Modifiers are used to perform case-insensitive and global searches:

<table>
<thead>
<tr>
<th>Modifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>Perform case-insensitive matching</td>
</tr>
<tr>
<td>g</td>
<td>Perform a global match (find all matches rather than stopping after the first match)</td>
</tr>
<tr>
<td>m</td>
<td>Perform multiline matching</td>
</tr>
</tbody>
</table>

Brackets

Brackets are used to find a range of characters:

<table>
<thead>
<tr>
<th>Expression</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[abc]</td>
<td>Find any character between the brackets</td>
</tr>
<tr>
<td>[^abc]</td>
<td>Find any character not between the brackets</td>
</tr>
<tr>
<td>[0-9]</td>
<td>Find any digit from 0 to 9</td>
</tr>
<tr>
<td>[a-z]</td>
<td>Find any character from lowercase a to lowercase z</td>
</tr>
<tr>
<td>[A-Z]</td>
<td>Find any character from uppercase A to uppercase Z</td>
</tr>
<tr>
<td>[a-z]</td>
<td>Find any character from lowercase a to uppercase Z</td>
</tr>
<tr>
<td>[adgk]</td>
<td>Find any character in the given set</td>
</tr>
<tr>
<td>[^adgk]</td>
<td>Find any character outside the given set</td>
</tr>
<tr>
<td>[red</td>
<td>blue</td>
</tr>
</tbody>
</table>

Metacharacters

Metacharacters are characters with a special meaning:

<table>
<thead>
<tr>
<th>Metacharacter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>.</td>
<td>Find a single character, except newline or line terminator</td>
</tr>
<tr>
<td>w</td>
<td>Find a word character</td>
</tr>
<tr>
<td>W</td>
<td>Find a non-word character</td>
</tr>
<tr>
<td>d</td>
<td>Find a digit</td>
</tr>
<tr>
<td>D</td>
<td>Find a non-digit character</td>
</tr>
<tr>
<td>s</td>
<td>Find a whitespace character</td>
</tr>
<tr>
<td>S</td>
<td>Find a non-whitespace character</td>
</tr>
<tr>
<td>b</td>
<td>Find a match at the beginning/end of a word</td>
</tr>
<tr>
<td>B</td>
<td>Find a match not at the beginning/end of a word</td>
</tr>
<tr>
<td>\0</td>
<td>Find a NUL character</td>
</tr>
<tr>
<td>\n</td>
<td>Find a new line character</td>
</tr>
<tr>
<td>\f</td>
<td>Find a form feed character</td>
</tr>
<tr>
<td>\r</td>
<td>Find a carriage return character</td>
</tr>
<tr>
<td>\t</td>
<td>Find a tab character</td>
</tr>
<tr>
<td>\v</td>
<td>Find a vertical tab character</td>
</tr>
<tr>
<td>\x</td>
<td>Find the character specified by an octal number xxx</td>
</tr>
<tr>
<td>\xix</td>
<td>Find the character specified by a hexadecimal number dd</td>
</tr>
<tr>
<td>\uxxxxxx</td>
<td>Find the Unicode character specified by a hexadecimal number xxxx</td>
</tr>
</tbody>
</table>

Quantifiers
<table>
<thead>
<tr>
<th>Pattern</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>Matches any string that contains at least one n</td>
</tr>
<tr>
<td>*</td>
<td>Matches any string that contains zero or more occurrences of n</td>
</tr>
<tr>
<td>?</td>
<td>Matches any string that contains zero or one occurrences of n</td>
</tr>
<tr>
<td>(X)}</td>
<td>Matches any string that contains a sequence of X n's</td>
</tr>
<tr>
<td>(X-Y)}</td>
<td>Matches any string that contains a sequence of X or Y n's</td>
</tr>
<tr>
<td>(X,}}</td>
<td>Matches any string that contains a sequence of at least X n's</td>
</tr>
<tr>
<td>$</td>
<td>Matches any string with n at the end of it</td>
</tr>
<tr>
<td>^</td>
<td>Matches any string with n at the beginning of it</td>
</tr>
<tr>
<td>?=n</td>
<td>Matches any string that is followed by a specific string n</td>
</tr>
<tr>
<td>!?=n</td>
<td>Matches any string that is not followed by a specific string n</td>
</tr>
</tbody>
</table>

**RegExp Object Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>global</td>
<td>Specifies if the &quot;g&quot; modifier is set</td>
</tr>
<tr>
<td>ignoreCase</td>
<td>Specifies if the &quot;i&quot; modifier is set</td>
</tr>
<tr>
<td>lastIndex</td>
<td>The index at which to start the next match</td>
</tr>
<tr>
<td>multiline</td>
<td>Specifies if the &quot;m&quot; modifier is set</td>
</tr>
<tr>
<td>source</td>
<td>The text of the RegExp pattern</td>
</tr>
</tbody>
</table>

**RegExp Object Methods**

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>compile()</td>
<td>Compiles a regular expression</td>
</tr>
<tr>
<td>exec()</td>
<td>Tests for a match in a string. Returns the first match</td>
</tr>
<tr>
<td>test()</td>
<td>Tests for a match in a string. Returns true or false</td>
</tr>
</tbody>
</table>
The Navigator object contains information about the visitor's browser.

Browser Detection

Almost everything in this tutorial works on all JavaScript-enabled browsers. However, there are some things that just don't work on certain browsers - especially on older browsers.

Sometimes it can be useful to detect the visitor's browser, and then serve the appropriate information.

The best way to do this is to make your web pages smart enough to look one way to some browsers and another way to other browsers.

The Navigator object contains information about the visitor's browser name, version, and more.

Note: There is no public standard that applies to the navigator object, but all major browsers support it.

The Navigator Object

The Navigator object contains all information about the visitor's browser:

```javascript
<html>
<body>
<script type="text/javascript">
    document.write("Browser CodeName: " + navigator.appCodeName);
    document.write("<br /><br />" + navigator.appName);
    document.write("<br /><br />" + navigator.appVersion);
    document.write("<br /><br />" + navigator.cookieEnabled);
    document.write("<br /><br />" + navigator.platform);
    document.write("<br /><br />" + navigator.userAgent);
</script>
</body>
</html>
```

Try it yourself »
A cookie is often used to identify a user.

What is a Cookie?

A cookie is a variable that is stored on the visitor's computer. Each time the same computer requests a page with a browser, it will send the cookie too. With JavaScript, you can both create and retrieve cookie values.

Examples of cookies:

- Name cookie - The first time a visitor arrives to your web page, he or she must fill in her/his name. The name is then stored in a cookie. Next time the visitor arrives at your page, he or she could get a welcome message like "Welcome John Doe!" The name is retrieved from the stored cookie.
- Password cookie - The first time a visitor arrives to your web page, he or she must fill in a password. The password is then stored in a cookie. Next time the visitor arrives at your page, the password is retrieved from the cookie.
- Date cookie - The first time a visitor arrives to your web page, the current date is stored in a cookie. Next time the visitor arrives at your page, he or she could get a message like "Your last visit was on Tuesday August 11, 2005!" The date is retrieved from the stored cookie.

Create and Store a Cookie

In this example we will create a cookie that stores the name of a visitor. The first time a visitor arrives to the web page, he or she will be asked to fill in her/his name. The name is then stored in a cookie. The next time the visitor arrives at the same page, he or she will get welcome message.

First, we create a function that stores the name of the visitor in a cookie variable:

```javascript
function setCookie(c_name,value,expiredays)
{
    var exdate=new Date();
exdate.setDate(exdate.getDate()+expiredays);
document.cookie=c_name+ "="+ escape(value)+
((expiredays==null) ? "" : ";expires="+exdate.toUTCString());
}
```

The parameters of the function above hold the name of the cookie, the value of the cookie, and the number of days until the cookie expires.

Then, we create another function that checks if the cookie has been set:

```javascript
function getCookie(c_name)
{
    if (document.cookie.length>0)
    {
        c_start=document.cookie.indexOf(c_name + "=");
        if (c_start!=-1)
        {
            c_start=c_start + c_name.length+1;
c_end=document.cookie.indexOf(";",c_start);
            if (c_end==-1) c_end=document.cookie.length;
            return unescape(document.cookie.substring(c_start,c_end));
        }
        return "";
    }
}
```

The function above first checks if a cookie is stored at all in the document.cookie object. If the document.cookie object holds some cookies, then it checks to see if our specific cookie is stored. If our cookie is found, then it returns the value, if not - it returns an empty string.

In the function above we first convert the number of days to a valid date, then we add the number of days until the cookie should expire. After that we store the cookie name, cookie value and the expiration date in the document.cookie object.

Then, we create another function that checks if the cookie has been set:

```javascript
function checkCookie()
{
    username=getCookie('username');
    if (username!=null && username!=""
    {
        alert('Welcome again '+username+'!');
    }
else
{
    username=prompt('Please enter your name:',""
    if (username!=null && username!=""
    {
        setCookie('username',username,365);
    }
}
```

All together now:
Example

```html
<html>
<head>
<script type="text/javascript">
function getCookie(c_name)
{
 if (document.cookie.length>0)
 {
   c_start=document.cookie.indexOf(c_name + "=");
   if (c_start!=-1)
   {
     c_start=c_start + c_name.length+1;
     c_end=document.cookie.indexOf(";",c_start);
     if (c_end==-1) c_end=document.cookie.length;
     return unescape(document.cookie.substring(c_start,c_end));
   }
   return "";
 }

function setCookie(c_name,value,expiredays)
{
 var exdate=new Date();
exdate.setDate(exdate.getDate()+expiredays);
document.cookie=c_name+ "="+escape(value)+
((expiredays==null) ? "" : "; expires="+exdate.toUTCString()});
}

function checkCookie()
{
 username=getCookie('username');
 if (username==null || username=="")
   {
     alert('Welcome again '+username+'!');
   }
 else
   {
     username=prompt('Please enter your name:','"');
     if (username==null || username=="")
     {
       setCookie('username',username,365);
     }
   }
 }
</script>
</head>
<body onload="checkCookie()">
</body>
</html>
```

Try it yourself »

The example above runs the checkCookie() function when the page loads.
JavaScript Form Validation

JavaScript can be used to validate data in HTML forms before sending off the content to a server.

Form data that typically are checked by a JavaScript could be:

- has the user left required fields empty?
- has the user entered a valid e-mail address?
- has the user entered a valid date?
- has the user entered text in a numeric field?

Required Fields

The function below checks if a required field has been left empty. If the required field is blank, an alert box alerts a message and the function returns false. If a value is entered, the function returns true (means that data is OK):

```javascript
function validate_required(field, alerttxt)
{
    with (field)
    {
        if (value==null||value=="")
        {
            alert(alerttxt);return false;
        }
        else
        {
            return true;
        }
    }
}
```

The entire script, with the HTML form could look something like this:

```html
<html>
<head>
<script type="text/javascript">
    function validate_required(field,alerttxt)
    {
        with (field)
        {
            if (value==null||value=="")
            {
                alert(alerttxt);return false;
            }
            else
            {
                return true;
            }
        }
    }

    function validate_form(thisform)
    {
        with (thisform)
        {
            if (validate_required(email,"Email must be filled out!")==false)
            {
                email.focus();return false;
            }
        }
    }
</script>
</head>
<body>
<form action="submit.htm" onsubmit="return validate_form(this)"
method="post">
Email: <input type="text" name="email" size="30">
<input type="submit" value="Submit">
</form>
</body>
</html>
```

E-mail Validation

The function below checks if the content has the general syntax of an email.

This means that the input data must contain at least an @ sign and a dot (.). Also, the @ must not be the first character of the email address, and the last dot must at least be one character after the @ sign:

```javascript
function validate_email(field,alerttxt)
{
    with (field)
    {
        apos=value.indexOf("@");
    }
}
```
The entire script, with the HTML form could look something like this:

```html
<html>
<head>
<script type="text/javascript">
function validate_email(field,alerttxt) {
  with (field) {
    apos=value.indexOf("@");
    dotpos=value.lastIndexOf(".");
    if (apos<1||dotpos-apos<2) {
      alert(alerttxt);return false;
    }
    else {return true;}
  }
}

function validate_form(thisform) {
  with (thisform) {
    if (validate_email(email,"Not a valid e-mail address!")==false) {
      email.focus();return false;
    }
  }
}
</script>
</head>

<body>
<form action="submit.htm" onsubmit="return validate_form(this);"
method="post">
  Email: <input type="text" name="email" size="30">
  <input type="submit" value="Submit">
</form>
</body>
</html>
```
JavaScript Animation

With JavaScript we can create animated images.

JavaScript Animation

It is possible to use JavaScript to create animated images.

The trick is to let a JavaScript change between different images on different events.

In the following example we will add an image that should act as a link button on a web page. We will then add an onMouseOver event and an onMouseOut event that will run two JavaScript functions that will change between the images.

The HTML Code

The HTML code looks like this:

```html
<a href="http://www.w3schools.com" target="_blank">
  <img border="0" alt="Visit W3Schools!" src="b_pink.gif" id="b1"
       onmouseover="mouseOver()"
       onmouseout="mouseOut()"
  /></a>
```

Note that we have given the image an id, to make it possible for a JavaScript to address it later.

The onMouseOver event tells the browser that once a mouse is rolled over the image, the browser should execute a function that will replace the image with another image.

The onMouseOut event tells the browser that once a mouse is rolled away from the image, another JavaScript function should be executed. This function will insert the original image again.

The JavaScript Code

The changing between the images is done with the following JavaScript:

```javascript
<script type="text/javascript">
  function mouseOver()
  {
    document.getElementById("b1").src = "b_blue.gif";
  }
  function mouseOut()
  {
    document.getElementById("b1").src = "b_pink.gif";
  }
</script>
```

The function mouseOver() causes the image to shift to "b_blue.gif".

The function mouseOut() causes the image to shift to "b_pink.gif".

The Entire Code

```
<html>
<head>
  <script type="text/javascript">
    function mouseOver()
    {
      document.getElementById("b1").src = "b_blue.gif";
    }
    function mouseOut()
    {
      document.getElementById("b1").src = "b_pink.gif";
    }
  </script>
</head>

<body>
  <a href="http://www.w3schools.com" target="_blank">
    <img border="0" alt="Visit W3Schools!" src="b_pink.gif" id="b1"
         onmouseover="mouseOver()"
         onmouseout="mouseOut()" />
  </a>
</body>
</html>
```
JavaScript Image Maps

An image-map is an image with clickable regions.

HTML Image Maps

From our HTML tutorial we have learned that an image-map is an image with clickable regions. Normally, each region has an associated hyperlink. Clicking on one of the regions takes you to the associated link. Look at our simple HTML image-map.

Adding some JavaScript

We can add events (that can call a JavaScript) to the <area> tags inside the image map. The <area> tag supports the onClick, onDblClick, onMouseDown, onMouseUp, onMouseOver, onMouseMove, onMouseOut, onKeyPress, onKeyDown, onKeyUp, onFocus, and onBlur events.

Here's the HTML image-map example, with some JavaScript added:

```html
<html>
<head>
<script type="text/javascript">
function writeText(txt)
{
    document.getElementById("desc").innerHTML=txt;
}
</script>
</head>
<body>
<img src="planets.gif" width="145" height="126"
alt="Planets" usemap="#planetmap" />

<map name="planetmap">
    <area shape="rect" coords="0,0,82,126"
        onMouseOver="writeText('The Sun and the gas giant planets like Jupiter are by far the largest objects in our Solar System.')"
        href="sun.htm" target="_blank" alt="Sun" />

    <area shape="circle" coords="90,58,3"
        onMouseOver="writeText('The planet Mercury is very difficult to study from the Earth because it is always so close to the Sun.')"
        href="mercur.htm" target="_blank" alt="Mercury" />

    <area shape="circle" coords="124,58,8"
        onMouseOver="writeText('Until the 1960s, Venus was often considered a twin sister to the Earth because Venus is the nearest planet to us, and because the two planets seem to share many characteristics.')"
        href="venus.htm" target="_blank" alt="Venus" />
</map>

<p id="desc"></p>
</body>
</html>

Try it yourself »
JavaScript Timing Events

JavaScript can be executed in time-intervals. This is called timing events.

JavaScript Timing Events

With JavaScript, it is possible to execute some code after a specified time-interval. This is called timing events.

It’s very easy to time events in JavaScript. The two key methods that are used are:

- `setTimeout()` - executes a code some time in the future
- `clearTimeout()` - cancels the `setTimeout()`

**Note:** The `setTimeout()` and `clearTimeout()` are both methods of the HTML DOM Window object.

The `setTimeout()` Method

**Syntax**

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

The `setTimeout()` method returns a value - In the statement above, the value is stored in a variable called `t`. If you want to cancel this `setTimeout()`, you can refer to it using the variable name.

The first parameter of `setTimeout()` is a string that contains a JavaScript statement. This statement could be a statement like `alert('5 seconds!')` or a call to a function, like `alertMsg()`.

The second parameter indicates how many milliseconds from now you want to execute the first parameter.

**Note:** There are 1000 milliseconds in one second.

**Example**

When the button is clicked in the example below, an alert box will be displayed after 5 seconds.

```html
<html>
<head>
<script type="text/javascript">
function timedMsg()
{
 var t=setTimeout("alert('5 seconds!')",5000);
}
</script>
</head>
<body>
<form>
<input type="button" value="Display timed alertbox!" onClick="timedMsg()" />
</form>
</body>
</html>
```

Try it yourself »

Example - Infinite Loop

To get a timer to work in an infinite loop, we must write a function that calls itself.

In the example below, when a button is clicked, the input field will start to count (for ever), starting at 0.

Notice that we also have a function that checks if the timer is already running, to avoid creating additional timers, if the button is pressed more than once:

```html
<html>
<head>
<script type="text/javascript">
var c=0;
var t;
var timer_is_on=0;
function timedCount()
{
 document.getElementById('txt').value=c;
}
</script>
</head>
<body>
<form>
<input type="text" id="txt" value="0"
</form>
</body>
</html>
```
c=c+1;
t=setTimeout("timedCount()",1000);
}

function doTimer()
{
if (!timer_is_on)
{
timer_is_on=1;
timedCount();
}
}
</script>
</head>
<body>
<form>
<input type="button" value="Start count!" onClick="doTimer()">
<input type="text" id="txt" />
</form>
</body>
</html>

Try it yourself »

The clearTimeout() Method

Syntax

clearTimeout(setTimeout_variable)

Example

The example below is the same as the "Infinite Loop" example above. The only difference is that we have now added a "Stop Count!" button that stops the timer:

Example

<html>
<head>
<script type="text/javascript">
var c=0;
var t;
var timer_is_on=0;

function timedCount()
{
document.getElementById('txt').value=c;
c=c+1;
t=setTimeout("timedCount()",1000);
}

function doTimer()
{
if (!timer_is_on)
{
timer_is_on=1;
timedCount();
}
}

function stopCount()
{
clearTimeout(t);
timer_is_on=0;
}
</script>
</head>
<body>
<form>
<input type="button" value="Start count!" onClick="doTimer()">
<input type="text" id="txt">
<input type="button" value="Stop count!" onClick="stopCount()">
</form>
</body>
</html>

Try it yourself »
Objects are useful to organize information.

### JavaScript Create Your Own Objects

Try it Yourself - Examples

- Create a direct instance of an object
- Create a template for an object

### JavaScript Objects

Earlier in this tutorial we have seen that JavaScript has several built-in objects, like String, Date, Array, and more. In addition to these built-in objects, you can also create your own.

An object is just a special kind of data, with a collection of properties and methods.

#### Properties

The syntax for accessing a property of an object is:

```
objName.propName
```

You can add properties to an object by simply giving it a value. Assume that the personObj already exists - you can give it properties named firstname, lastname, age, and eyecolor as follows:

```
personObj.firstname="John";
personObj.lastname="Doe";
personObj.age=30;
personObj.eyecolor="blue";
```

The code above will generate the following output:

```
John
```

#### Methods

An object can also contain methods.

You can call a method with the following syntax:

```
objName.methodName()
```

**Note:** Parameters required for the method can be passed between the parentheses.

To call a method called sleep() for the personObj:

```
personObj.sleep();
```

### Creating Your Own Objects

There are different ways to create a new object:

1. **Create a direct instance of an object**

   The following code creates an instance of an object and adds four properties to it:

   ```javascript
   personObj=new Object();
personObj.firstname="John";
personObj.lastname="Doe";
personObj.age=30;
personObj.eyecolor="blue";
   ```

   Adding a method to the personObj is also simple. The following code adds a method called eat() to the personObj:

   ```javascript
   personObj.eat=eat;
   ```

2. **Create a template of an object**

   The template defines the structure of an object:
function person(firstname, lastname, age, eyecolor)
{
    this.firstname = firstname;
    this.lastname = lastname;
    this.age = age;
    this.eyecolor = eyecolor;
}

Notice that the template is just a function. Inside the function you need to assign things to
this.propertyName. The reason for all the "this" stuff is that you're going to have more than one
person at a time (which person you're dealing with must be clear). That's what "this" is: the
instance of the object at hand.

Once you have the template, you can create new instances of the object, like this:

myFather = new person("John", "Doe", 50, "blue");
myMother = new person("Sally", "Rally", 48, "green");

You can also add some methods to the person object. This is also done inside the template:

function person(firstname, lastname, age, eyecolor)
{
    this.firstname = firstname;
    this.lastname = lastname;
    this.age = age;
    this.eyecolor = eyecolor;
    this.newlastname = newlastname;
}

Note that methods are just functions attached to objects. Then we will have to write the
newlastname() function:

function newlastname(new_lastname)
{
    this.lastname = new_lastname;
}

The newlastname() function defines the person's new last name and assigns that to the person.
JavaScript knows which person you're talking about by using "this.". So, now you can write:
myMother.newlastname("Doe").
The **Window Object**

The window object represents an open window in a browser.

If a document contain frames (<frame> or <iframe> tags), the browser creates one window object for the HTML document, and one additional window object for each frame.

**Note:** There is no public standard that applies to the Window object, but all major browsers support it.

### Window Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>closed</code></td>
<td>Returns a Boolean value indicating whether a window has been closed or not</td>
</tr>
<tr>
<td><code>defaultStatus</code></td>
<td>Sets or returns the default text in the statusbar of a window</td>
</tr>
<tr>
<td><code>document</code></td>
<td>Returns the Document object for the window <em>(See Document object)</em></td>
</tr>
<tr>
<td><code>frames</code></td>
<td>Returns an array of all the frames (including iframes) in the current window</td>
</tr>
<tr>
<td><code>history</code></td>
<td>Returns the History object for the window <em>(See History object)</em></td>
</tr>
<tr>
<td><code>innerHeight</code></td>
<td>Sets or returns the the inner height of a window's content area</td>
</tr>
<tr>
<td><code>innerWidth</code></td>
<td>Sets or returns the the inner width of a window's content area</td>
</tr>
<tr>
<td><code>length</code></td>
<td>Returns the number of frames (including iframes) in a window</td>
</tr>
<tr>
<td><code>location</code></td>
<td>Returns the Location object for the window <em>(See Location object)</em></td>
</tr>
<tr>
<td><code>name</code></td>
<td>Sets or returns the name of a window</td>
</tr>
<tr>
<td><code>navigator</code></td>
<td>Returns the Navigator object for the window <em>(See Navigator object)</em></td>
</tr>
<tr>
<td><code>opener</code></td>
<td>Returns a reference to the window that created the window</td>
</tr>
<tr>
<td><code>outerHeight</code></td>
<td>Sets or returns the outer height of a window, including toolbars/scrollbars</td>
</tr>
<tr>
<td><code>outerWidth</code></td>
<td>Sets or returns the outer width of a window, including toolbars/scrollbars</td>
</tr>
<tr>
<td><code>pageXOffset</code></td>
<td>Returns the pixels the current document has been scrolled (horizontally) from the upper left corner of the window</td>
</tr>
<tr>
<td><code>pageYOffset</code></td>
<td>Returns the pixels the current document has been scrolled (vertically) from the upper left corner of the window</td>
</tr>
<tr>
<td><code>parent</code></td>
<td>Returns the parent window of the current window</td>
</tr>
<tr>
<td><code>screen</code></td>
<td>Returns the Screen object for the window <em>(See Screen object)</em></td>
</tr>
<tr>
<td><code>screenLeft</code></td>
<td>Returns the x coordinate of the window relative to the screen</td>
</tr>
<tr>
<td><code>screenTop</code></td>
<td>Returns the y coordinate of the window relative to the screen</td>
</tr>
<tr>
<td><code>screenX</code></td>
<td>Returns the x coordinate of the window relative to the screen</td>
</tr>
<tr>
<td><code>screenY</code></td>
<td>Returns the y coordinate of the window relative to the screen</td>
</tr>
<tr>
<td><code>self</code></td>
<td>Returns the current window</td>
</tr>
<tr>
<td><code>status</code></td>
<td>Sets the text in the statusbar of a window</td>
</tr>
<tr>
<td><code>top</code></td>
<td>Returns the topmost browser window</td>
</tr>
</tbody>
</table>

### Window Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>alert()</code></td>
<td>Displays an alert box with a message and an OK button</td>
</tr>
<tr>
<td><code>blur()</code></td>
<td>Removes focus from the current window</td>
</tr>
<tr>
<td><code>clearInterval()</code></td>
<td>Clears a timer set with setInterval()</td>
</tr>
<tr>
<td><code>clearTimeout()</code></td>
<td>Clears a timer set with setTimeout()</td>
</tr>
<tr>
<td><code>close()</code></td>
<td>Closes the current window</td>
</tr>
<tr>
<td><code>confirm()</code></td>
<td>Displays a dialog box with a message and an OK and a Cancel button</td>
</tr>
<tr>
<td><code>createPopup()</code></td>
<td>Creates a pop-up window</td>
</tr>
<tr>
<td><code>focus()</code></td>
<td>Sets focus to the current window</td>
</tr>
<tr>
<td><code>moveBy()</code></td>
<td>Moves a window relative to its current position</td>
</tr>
<tr>
<td><code>moveTo()</code></td>
<td>Moves a window to the specified position</td>
</tr>
<tr>
<td><code>print()</code></td>
<td>Opens a new browser window</td>
</tr>
<tr>
<td><code>prompt()</code></td>
<td>Prints the content of the current window</td>
</tr>
<tr>
<td><code>resizeBy()</code></td>
<td>Displays a dialog box that prompts the visitor for input</td>
</tr>
<tr>
<td><code>resizeTo()</code></td>
<td>Resizes the window by the specified pixels</td>
</tr>
<tr>
<td><code>scroll()</code></td>
<td>Resizes the window to the specified width and height</td>
</tr>
<tr>
<td><code>scrollBy()</code></td>
<td>Scrolls the content by the specified number of pixels</td>
</tr>
<tr>
<td><code>scrollTo()</code></td>
<td>Scrolls the content to the specified coordinates</td>
</tr>
<tr>
<td><code>setInterval()</code></td>
<td>Calls a function or evaluates an expression at specified intervals (in milliseconds)</td>
</tr>
<tr>
<td><code>setTimeout()</code></td>
<td>Calls a function or evaluates an expression after a specified number of milliseconds</td>
</tr>
</tbody>
</table>
The Navigator Object

Navigator Object

The navigator object contains information about the browser.

**Note:** There is no public standard that applies to the navigator object, but all major browsers support it.

### Navigator Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>appCodeName</td>
<td>Returns the code name of the browser</td>
</tr>
<tr>
<td>appName</td>
<td>Returns the name of the browser</td>
</tr>
<tr>
<td>appVersion</td>
<td>Returns the version information of the browser</td>
</tr>
<tr>
<td>cookieEnabled</td>
<td>Determines whether cookies are enabled in the browser</td>
</tr>
<tr>
<td>platform</td>
<td>Returns for which platform the browser is compiled</td>
</tr>
<tr>
<td>userAgent</td>
<td>Returns the user-agent header sent by the browser to the server</td>
</tr>
</tbody>
</table>

### Navigator Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>javaEnabled()</td>
<td>Specifies whether or not the browser has Java enabled</td>
</tr>
<tr>
<td>taintEnabled()</td>
<td>Specifies whether or not the browser has data tainting enabled</td>
</tr>
</tbody>
</table>
The **Screen** Object

The screen object contains information about the visitor’s screen.

**Note:** There is no public standard that applies to the screen object, but all major browsers support it.

### Screen Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>availHeight</code></td>
<td>Returns the height of the screen (excluding the Windows Taskbar)</td>
</tr>
<tr>
<td><code>availWidth</code></td>
<td>Returns the width of the screen (excluding the Windows Taskbar)</td>
</tr>
<tr>
<td><code>colorDepth</code></td>
<td>Returns the bit depth of the color palette for displaying images</td>
</tr>
<tr>
<td><code>height</code></td>
<td>Returns the total height of the screen</td>
</tr>
<tr>
<td><code>pixelDepth</code></td>
<td>Returns the color resolution (in bits per pixel) of the screen</td>
</tr>
<tr>
<td><code>width</code></td>
<td>Returns the total width of the screen</td>
</tr>
</tbody>
</table>
The **History Object**

**History Object**

The history object contains the URLs visited by the user (within a browser window).

The history object is part of the window object and is accessed through the window.history property.

**Note:** There is no public standard that applies to the history object, but all major browsers support it.

### History Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>length</code></td>
<td>Returns the number of URLs in the history list</td>
</tr>
</tbody>
</table>

### History Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>back()</code></td>
<td>Loads the previous URL in the history list</td>
</tr>
<tr>
<td><code>forward()</code></td>
<td>Loads the next URL in the history list</td>
</tr>
<tr>
<td><code>go()</code></td>
<td>Loads a specific URL from the history list</td>
</tr>
</tbody>
</table>
**The Location Object**

The location object contains information about the current URL.

The location object is part of the window object and is accessed through the window.location property.

**Note:** There is no public standard that applies to the location object, but all major browsers support it.

### Location Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>hash</td>
<td>Returns the anchor portion of a URL</td>
</tr>
<tr>
<td>host</td>
<td>Returns the hostname and port of a URL</td>
</tr>
<tr>
<td>hostname</td>
<td>Returns the hostname of a URL</td>
</tr>
<tr>
<td>href</td>
<td>Returns the entire URL</td>
</tr>
<tr>
<td>pathname</td>
<td>Returns the path name of a URL</td>
</tr>
<tr>
<td>port</td>
<td>Returns the port number the server uses for a URL</td>
</tr>
<tr>
<td>protocol</td>
<td>Returns the protocol of a URL</td>
</tr>
<tr>
<td>search</td>
<td>Returns the query portion of a URL</td>
</tr>
</tbody>
</table>

### Location Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>assign()</td>
<td>Loads a new document</td>
</tr>
<tr>
<td>reload()</td>
<td>Reloads the current document</td>
</tr>
<tr>
<td>replace()</td>
<td>Replaces the current document with a new one</td>
</tr>
</tbody>
</table>
Document Object

Each HTML document loaded into a browser window becomes a Document object.

The Document object provides access to all HTML elements in a page, from within a script.

Tip: The Document object is also part of the Window object, and can be accessed through the `window.document` property.

Document Object Collections

**W3C**: W3C Standard.

<table>
<thead>
<tr>
<th>Collection</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>anchors[]</td>
<td>Returns an array of all the anchors in the document</td>
<td>Yes</td>
</tr>
<tr>
<td>forms[]</td>
<td>Returns an array of all the forms in the document</td>
<td>Yes</td>
</tr>
<tr>
<td>images[]</td>
<td>Returns an array of all the images in the document</td>
<td>Yes</td>
</tr>
<tr>
<td>links[]</td>
<td>Returns an array of all the links in the document</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Document Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>cookie</td>
<td>Returns all name/value pairs of cookies in the document</td>
<td>Yes</td>
</tr>
<tr>
<td>documentMode</td>
<td>Returns the mode used by the browser to render the document</td>
<td>No</td>
</tr>
<tr>
<td>domain</td>
<td>Returns the domain name of the server that loaded the document</td>
<td>Yes</td>
</tr>
<tr>
<td>lastModified</td>
<td>Returns the date and time the document was last modified</td>
<td>No</td>
</tr>
<tr>
<td>readyState</td>
<td>Returns the (loading) status of the document</td>
<td>No</td>
</tr>
<tr>
<td>referrer</td>
<td>Returns the URL of the document that loaded the current document</td>
<td>Yes</td>
</tr>
<tr>
<td>title</td>
<td>Sets or returns the title of the document</td>
<td>Yes</td>
</tr>
<tr>
<td>URL</td>
<td>Returns the full URL of the document</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Document Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>close()</td>
<td>Closes the output stream previously opened with <code>document.open()</code></td>
<td>Yes</td>
</tr>
<tr>
<td>getElementById()</td>
<td>Accesses the first element with the specified id</td>
<td>Yes</td>
</tr>
<tr>
<td>getElementsByName()</td>
<td>Accesses all elements with a specified name</td>
<td>Yes</td>
</tr>
<tr>
<td>getElementsByTagName()</td>
<td>Accesses all elements with a specified tagname</td>
<td>Yes</td>
</tr>
<tr>
<td>open()</td>
<td>Opens an output stream to collect the output from <code>document.write()</code> or <code>document.writeln()</code></td>
<td>Yes</td>
</tr>
<tr>
<td>write()</td>
<td>Writes HTML expressions or JavaScript code to a document</td>
<td>Yes</td>
</tr>
<tr>
<td>writeln()</td>
<td>Same as <code>write()</code>, but adds a newline character after each statement</td>
<td>Yes</td>
</tr>
</tbody>
</table>
**Event Object**

The event object gives you information about an event that has occurred.

The Event object represents the state of an event, such as the element in which the event occurred, the state of the keyboard keys, the location of the mouse, and the state of the mouse buttons.

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

**Event Handlers**

New to HTML 4.0 was the ability to let HTML events trigger actions in the browser, like starting a JavaScript when a user clicks on an HTML element. Below is a list of the attributes that can be inserted into HTML tags to define event actions.


<table>
<thead>
<tr>
<th>Attribute</th>
<th>The event occurs when...</th>
<th>IE</th>
<th>F</th>
<th>O</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>onblur</td>
<td>An element loses focus</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>onchange</td>
<td>The content of a field changes</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>onclick</td>
<td>Mouse clicks an object</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>ondblclick</td>
<td>Mouse double-clicks an object</td>
<td>4</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>onerror</td>
<td>An error occurs when loading a document or an image</td>
<td>4</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>onfocus</td>
<td>An element gets focus</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>onkeydown</td>
<td>A keyboard key is pressed</td>
<td>3</td>
<td>1</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>onkeypress</td>
<td>A keyboard key is pressed or held down</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>onkeyup</td>
<td>A keyboard key is released</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>onmousedown</td>
<td>A mouse button is pressed</td>
<td>4</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>onmousemove</td>
<td>The mouse is moved</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>onmouseout</td>
<td>The mouse is moved off an element</td>
<td>4</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>onmouseover</td>
<td>The mouse is moved over an element</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>onmouseup</td>
<td>A mouse button is released</td>
<td>4</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>onresize</td>
<td>A window or frame is resized</td>
<td>4</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>onselect</td>
<td>Text is selected</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>onunload</td>
<td>The user exits the page</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Mouse / Keyboard Attributes**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>IE</th>
<th>F</th>
<th>O</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>altKey</td>
<td>Returns whether or not the &quot;ALT&quot; key was pressed when an event was triggered</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>button</td>
<td>Returns which mouse button was clicked when an event was triggered</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>clientX</td>
<td>Returns the horizontal coordinate of the mouse pointer when an event was triggered</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>clientY</td>
<td>Returns the vertical coordinate of the mouse pointer when an event was triggered</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>ctrlKey</td>
<td>Returns whether or not the &quot;CTRL&quot; key was pressed when an event was triggered</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>metaKey</td>
<td>Returns whether or not the &quot;meta&quot; key was pressed when an event was triggered</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>relatedTarget</td>
<td>Returns the element related to the element that triggered the event</td>
<td>No</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>screenX</td>
<td>Returns the horizontal coordinate of the mouse pointer when an event was triggered</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>screenY</td>
<td>Returns the vertical coordinate of the mouse pointer when an event was triggered</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>shiftKey</td>
<td>Returns whether or not the &quot;SHIFT&quot; key was pressed when an event was triggered</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Other Event Attributes**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>IE</th>
<th>F</th>
<th>O</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>bubbles</td>
<td>Returns a Boolean value that indicates whether or not an event is a bubbling event</td>
<td>No</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>cancelable</td>
<td>Returns a Boolean value that indicates whether or not an event can have its default action prevented</td>
<td>No</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>currentTarget</td>
<td>Returns the element whose event listeners triggered the event</td>
<td>No</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>eventPhase</td>
<td>Returns which phase of the event flow is currently being evaluated</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>target</td>
<td>Returns the element that triggered the event</td>
<td>No</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>timeStamp</td>
<td>Returns the time stamp, in milliseconds, from the epoch (system start or event trigger)</td>
<td>No</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
<tr>
<td>type</td>
<td>Returns the name of the event</td>
<td>6</td>
<td>1</td>
<td>9</td>
<td>Yes</td>
</tr>
</tbody>
</table>
# HTML Element Object

The collections, properties, methods, and events below can be used on all HTML elements.

## HTML Element Object Collections

**W3C:** W3C Standard.

<table>
<thead>
<tr>
<th>Collection</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>attributes[]</td>
<td>Returns an array of the attributes of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>childNodes[]</td>
<td>Returns an array of child nodes for an element</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## HTML Element Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>accessKey</td>
<td>Sets or returns an accesskey for an element</td>
<td>Yes</td>
</tr>
<tr>
<td>className</td>
<td>Sets or returns the class attribute of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>clientHeight</td>
<td>Returns the viewable height of the content on a page (not including borders, margins, or scrollbars)</td>
<td>Yes</td>
</tr>
<tr>
<td>clientWidth</td>
<td>Returns the viewable width of the content on a page (not including borders, margins, or scrollbars)</td>
<td>Yes</td>
</tr>
<tr>
<td>dir</td>
<td>Sets or returns the text direction of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>disabled</td>
<td>Sets or returns the disabled attribute of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>firstChild</td>
<td>Returns the first child of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>height</td>
<td>Sets or returns the height attribute of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>id</td>
<td>Sets or returns the id of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>innerHTML</td>
<td>Sets or returns the HTML contents (+text) of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>lang</td>
<td>Sets or returns the language code for an element</td>
<td>Yes</td>
</tr>
<tr>
<td>lastChild</td>
<td>Returns the last child of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>length</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>nextSibling</td>
<td>Returns the element immediately following an element</td>
<td>Yes</td>
</tr>
<tr>
<td>nodeName</td>
<td>Returns the tagname of an element (in uppercase)</td>
<td>Yes</td>
</tr>
<tr>
<td>nodeType</td>
<td>Returns the type of the element</td>
<td>Yes</td>
</tr>
<tr>
<td>nodeValue</td>
<td>Returns the value of the element</td>
<td>Yes</td>
</tr>
<tr>
<td>offsetHeight</td>
<td>Returns the height of an element, including borders and padding if any, but not margins</td>
<td>No</td>
</tr>
<tr>
<td>offsetLeft</td>
<td>Returns the horizontal offset position of the current element relative to its offset container</td>
<td>Yes</td>
</tr>
<tr>
<td>offsetParent</td>
<td>Returns the offset container of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>offsetTop</td>
<td>Returns the vertical offset position of the current element relative to its offset container</td>
<td>Yes</td>
</tr>
<tr>
<td>offsetWidth</td>
<td>Returns the width of an element, including borders and padding if any, but not margins</td>
<td>No</td>
</tr>
<tr>
<td>ownerDocument</td>
<td>Returns the root element (document object) for an element</td>
<td>Yes</td>
</tr>
<tr>
<td>parentNode</td>
<td>Returns the parent node of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>previousSibling</td>
<td>Returns the element immediately before an element</td>
<td>Yes</td>
</tr>
<tr>
<td>scrollHeight</td>
<td>Returns the entire height of an element (including areas hidden with scrollbars)</td>
<td>Yes</td>
</tr>
<tr>
<td>scrollTop</td>
<td>Returns the distance between the actual top edge of an element and its top edge currently in view</td>
<td>Yes</td>
</tr>
<tr>
<td>scrollWidth</td>
<td>Returns the entire width of an element (including areas hidden with scrollbars)</td>
<td>Yes</td>
</tr>
<tr>
<td>style</td>
<td>Sets or returns the style attribute of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>tabIndex</td>
<td>Sets or returns the tab order of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>tagName</td>
<td>Returns the tagname of an element as a string (in uppercase)</td>
<td>Yes</td>
</tr>
<tr>
<td>title</td>
<td>Sets or returns the title attribute of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>width</td>
<td>Sets or returns the width attribute of an element</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## HTML Element Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>appendChild()</td>
<td>Adds a new child element to the end of the list of children of the element</td>
<td>Yes</td>
</tr>
<tr>
<td>blur()</td>
<td>Removes focus from an element</td>
<td>Yes</td>
</tr>
<tr>
<td>click()</td>
<td>Executes a click on an element</td>
<td>Yes</td>
</tr>
<tr>
<td>cloneNode()</td>
<td>Clones an element</td>
<td>Yes</td>
</tr>
<tr>
<td>focus()</td>
<td>Gives focus to an element</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### HTMLElement Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>getAttribute()</code></td>
<td>Returns the value of an attribute</td>
<td>Yes</td>
</tr>
<tr>
<td><code>getElementsByTagName()</code></td>
<td>Accesses all elements with a specified tagname</td>
<td>Yes</td>
</tr>
<tr>
<td><code>hasChildNodes()</code></td>
<td>Returns whether an element has any child elements</td>
<td>Yes</td>
</tr>
<tr>
<td><code>insertBefore()</code></td>
<td>Inserts a new child element before an existing child element</td>
<td>Yes</td>
</tr>
<tr>
<td><code>item()</code></td>
<td>Returns an element based on its index within the document tree</td>
<td>Yes</td>
</tr>
<tr>
<td><code>normalize()</code></td>
<td>Puts all text nodes underneath this element (including attributes) into a &quot;normal&quot; form where only structure (e.g., elements, comments, processing instructions, CDATA sections, and entity references) separates Text nodes, i.e., there are neither adjacent Text nodes nor empty Text nodes</td>
<td>Yes</td>
</tr>
<tr>
<td><code>removeAttribute()</code></td>
<td>Removes a specified attribute from an element</td>
<td>Yes</td>
</tr>
<tr>
<td><code>removeChild()</code></td>
<td>Removes a child element</td>
<td>Yes</td>
</tr>
<tr>
<td><code>replaceChild()</code></td>
<td>Replace a child element</td>
<td>Yes</td>
</tr>
<tr>
<td><code>setAttribute()</code></td>
<td>Adds a new attribute to an element</td>
<td>Yes</td>
</tr>
<tr>
<td><code>toString()</code></td>
<td>Converts an element to a string</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### HTMLElement Object Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>onblur</td>
<td>When an element loses focus</td>
<td>Yes</td>
</tr>
<tr>
<td>onclick</td>
<td>When a mouseclick on an element</td>
<td>Yes</td>
</tr>
<tr>
<td>ondblclick</td>
<td>When a mouse-doubleclick on an element</td>
<td>Yes</td>
</tr>
<tr>
<td>onfocus</td>
<td>When an element gets focus</td>
<td>Yes</td>
</tr>
<tr>
<td>onkeydown</td>
<td>When a keyboard key is pressed</td>
<td>Yes</td>
</tr>
<tr>
<td>onkeypress</td>
<td>When a keyboard key is pressed or held down</td>
<td>Yes</td>
</tr>
<tr>
<td>onkeyup</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>onmousedown</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>onmousemove</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>onmouseout</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>onmouseover</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>onmouseup</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>onresize</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

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HTML DOM Anchor Object

Anchor Object

The Anchor object represents an HTML hyperlink.

For each `<a>` tag in an HTML document, an Anchor object is created.

An anchor allows you to create a link to another document (with the `href` attribute), or to a different point in the same document (with the `name` attribute).

You can access an anchor by using `getElementById()`, or by searching through the `anchors[]` array of the Document object.

Anchor Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>charset</code></td>
<td>Sets or returns the value of the <code>charset</code> attribute of a link</td>
<td>Yes</td>
</tr>
<tr>
<td><code>href</code></td>
<td>Sets or returns the value of the <code>href</code> attribute of a link</td>
<td>Yes</td>
</tr>
<tr>
<td><code>hreflang</code></td>
<td>Sets or returns the value of the <code>hreflang</code> attribute of a link</td>
<td>Yes</td>
</tr>
<tr>
<td><code>name</code></td>
<td>Sets or returns the value of the <code>name</code> attribute of a link</td>
<td>Yes</td>
</tr>
<tr>
<td><code>rel</code></td>
<td>Sets or returns the value of the <code>rel</code> attribute of a link</td>
<td>Yes</td>
</tr>
<tr>
<td><code>rev</code></td>
<td>Sets or returns the value of the <code>rev</code> attribute of a link</td>
<td>Yes</td>
</tr>
<tr>
<td><code>target</code></td>
<td>Sets or returns the value of the <code>target</code> attribute of a link</td>
<td>Yes</td>
</tr>
<tr>
<td><code>type</code></td>
<td>Sets or returns the value of the <code>type</code> attribute of a link</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Anchor object also supports the standard properties, methods, and events.
**HTML DOM Area Object**

**Area Object**

The Area object represents an area inside an HTML image-map (an image-map is an image with clickable areas).

For each `<area>` tag in an HTML document, an Area object is created.

**Area Object Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>alt</code></td>
<td>Sets or returns the value of the <code>alt</code> attribute of an area</td>
<td>Yes</td>
</tr>
<tr>
<td><code>coords</code></td>
<td>Sets or returns the value of the <code>coords</code> attribute of an area</td>
<td>Yes</td>
</tr>
<tr>
<td><code>hash</code></td>
<td>Sets or returns the anchor part of the <code>href</code> attribute value</td>
<td>Yes</td>
</tr>
<tr>
<td><code>host</code></td>
<td>Sets or returns the hostname:port part of the <code>href</code> attribute value</td>
<td>Yes</td>
</tr>
<tr>
<td><code>hostname</code></td>
<td>Sets or returns the hostname part of the <code>href</code> attribute value</td>
<td>Yes</td>
</tr>
<tr>
<td><code>href</code></td>
<td>Sets or returns the value of the <code>href</code> attribute of an area</td>
<td>Yes</td>
</tr>
<tr>
<td><code>noHref</code></td>
<td>Sets or returns the value of the <code>nohref</code> attribute of an area</td>
<td>Yes</td>
</tr>
<tr>
<td><code>pathname</code></td>
<td>Sets or returns the pathname part of the <code>href</code> attribute value</td>
<td>Yes</td>
</tr>
<tr>
<td><code>port</code></td>
<td>Sets or returns the port part of the <code>href</code> attribute value</td>
<td>Yes</td>
</tr>
<tr>
<td><code>protocol</code></td>
<td>Sets or returns the protocol part of the <code>href</code> attribute value</td>
<td>Yes</td>
</tr>
<tr>
<td><code>search</code></td>
<td>Sets or returns the querystring part of the <code>href</code> attribute value</td>
<td>Yes</td>
</tr>
<tr>
<td><code>shape</code></td>
<td>Sets or returns the value of the <code>shape</code> attribute of an area</td>
<td>Yes</td>
</tr>
<tr>
<td><code>target</code></td>
<td>Sets or returns the value of the <code>target</code> attribute of an area</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Standard Properties, Methods, and Events**

The Area object also supports the [standard properties, methods, and events](#).
Base Object

The Base object represents an HTML base element.
The base element is used to specify a default address or a default target for all links on a page.
For each <base> tag in an HTML document, a Base object is created.

Base Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>href</td>
<td>Sets or returns the value of the href attribute in a base element</td>
<td>Yes</td>
</tr>
<tr>
<td>target</td>
<td>Sets or returns the value of the target attribute in a base element</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Base object also supports the standard properties, methods, and events.
Body Object

The Body object represents the HTML body element.

The body element defines a document's body.

The body element contains all the contents of an HTML document, such as text, hyperlinks, images, tables, lists, etc.

Body Object Properties

**W3C**: W3C Standard.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>aLink</td>
<td>Sets or returns the value of the alink attribute of the body element</td>
<td>Yes</td>
</tr>
<tr>
<td>background</td>
<td>Sets or returns the value of the background attribute of the body element</td>
<td>Yes</td>
</tr>
<tr>
<td>bgColor</td>
<td>Sets or returns the value of the bgcolor attribute of the body element</td>
<td>Yes</td>
</tr>
<tr>
<td>link</td>
<td>Sets or returns the value of the link attribute of the body element</td>
<td>Yes</td>
</tr>
<tr>
<td>text</td>
<td>Sets or returns the value of the text attribute of the body element</td>
<td>Yes</td>
</tr>
<tr>
<td>vLink</td>
<td>Sets or returns the value of the vlink attribute of the body element</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Body Object Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>onload</td>
<td>Script to be run immediately after a page is loaded</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Body object also supports the standard properties, methods, and events.
HTML DOM Button Object

Button Object

The Button object represents a push button.

For each `<button>` tag in an HTML document, a Button object is created.

Inside an HTML button element you can put content, like text or images. This is the difference between this element and buttons created with the input element.

**Button Object Properties**

**W3C:** W3C Standard.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>form</td>
<td>Returns a reference to the form that contains a button</td>
<td>Yes</td>
</tr>
<tr>
<td>name</td>
<td>Sets or returns the value of the name attribute of a button</td>
<td>Yes</td>
</tr>
<tr>
<td>type</td>
<td>Sets or returns the type of a button</td>
<td>Yes</td>
</tr>
<tr>
<td>value</td>
<td>Sets or returns the value of the value attribute of a button</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Standard Properties, Methods, and Events**

The Button object also supports the standard properties, methods, and events.

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Form Object

The Form object represents an HTML form. For each `<form>` tag in an HTML document, a Form object is created.

Forms are used to collect user input, and contain input elements like text fields, checkboxes, radio-buttons, submit buttons and more. A form can also contain select menus, textarea, fieldset, legend, and label elements.

Forms are used to pass data to a server.

Form Object Collections

**W3C:** W3C Standard.

<table>
<thead>
<tr>
<th>Collection</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>elements[]</td>
<td>Returns an array of all elements in a form</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Form Object Properties

**Property** | **Description**                                    | **W3C** |
-------------|--------------------------------------------------|---------|
| acceptCharset | Sets or returns the value of the accept-charset attribute in a form | Yes    |
| action       | Sets or returns the value of the action attribute in a form | Yes    |
| enctype      | Sets or returns the value of the enctype attribute in a form | Yes    |
| length       | Returns the number of elements in a form         | Yes    |
| method       | Sets or returns the value of the method attribute in a form | Yes |
| name         | Sets or returns the value of the name attribute in a form | Yes |
| target       | Sets or returns the value of the target attribute in a form | Yes |

Form Object Methods

**Method** | **Description** | **W3C** |
-----------|-----------------|---------|
| reset()   | Resets a form   | Yes     |
| submit()  | Submits a form  | Yes     |

Form Object Events

**Event** | **The event occurs when...** | **W3C** |
----------|------------------------------|---------|
| onreset   | The reset button is clicked  | Yes     |
| onsubmit  | The submit button is clicked | Yes     |

Standard Properties, Methods, and Events

The Form object also supports the [standard properties, methods, and events](#).
HTML DOM Frame and IFrame Objects

Frame Object

The Frame object represents an HTML frame.

The `<frame>` tag defines one particular window (frame) within a frameset. For each `<frame>` tag in an HTML document, a Frame object is created.

IFrame Object

The IFrame object represents an HTML inline frame.

The `<iframe>` tag defines an inline frame that contains another document. For each `<iframe>` tag in an HTML document, an IFrame object is created.

Frame/IFrame Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>align</code></td>
<td>Sets or returns the value of the align attribute in an iframe</td>
<td>Yes</td>
</tr>
<tr>
<td><code>contentDocument</code></td>
<td>Returns the document object generated by a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td><code>contentWindow</code></td>
<td>Returns the window object generated by a frame/iframe</td>
<td>No</td>
</tr>
<tr>
<td><code>frameBorder</code></td>
<td>Sets or returns the value of the frameborder attribute in a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td><code>height</code></td>
<td>Sets or returns the value of the height attribute in an iframe</td>
<td>Yes</td>
</tr>
<tr>
<td><code>longDesc</code></td>
<td>Sets or returns the value of the longdesc attribute in a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td><code>marginHeight</code></td>
<td>Sets or returns the value of the marginheight attribute in a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td><code>marginWidth</code></td>
<td>Sets or returns the value of the marginwidth attribute in a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td><code>name</code></td>
<td>Sets or returns the value of the name attribute in a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td><code>noResize</code></td>
<td>Sets or returns the value of the noresize attribute in a frame</td>
<td>Yes</td>
</tr>
<tr>
<td><code>scrolling</code></td>
<td>Sets or returns the value of the scrolling attribute in a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td><code>src</code></td>
<td>Sets or returns the value of the src attribute in a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td><code>width</code></td>
<td>Sets or returns the value of the width attribute in an iframe</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Frame/IFrame Object Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>onload</code></td>
<td>Script to be run immediately after a frame/iframe is loaded</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Frame and IFrame objects also support the standard properties, methods, and events.
HTML DOM Frame and IFrame Objects

Frame Object

The Frame object represents an HTML frame.

The <frame> tag defines one particular window (frame) within a frameset.

For each <frame> tag in an HTML document, a Frame object is created.

IFrame Object

The IFrame object represents an HTML inline frame.

The <iframe> tag defines an inline frame that contains another document.

For each <iframe> tag in an HTML document, an IFrame object is created.

Frame/IFrame Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>align</td>
<td>Sets or returns the value of the align attribute in an iframe</td>
<td>Yes</td>
</tr>
<tr>
<td>contentDocument</td>
<td>Returns the document object generated by a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td>contentWindow</td>
<td>Returns the window object generated by a frame/iframe</td>
<td>No</td>
</tr>
<tr>
<td>frameborder</td>
<td>Sets or returns the value of the frameborder attribute in a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td>height</td>
<td>Sets or returns the value of the height attribute in an iframe</td>
<td>Yes</td>
</tr>
<tr>
<td>longDesc</td>
<td>Sets or returns the value of the longdesc attribute in a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td>marginHeight</td>
<td>Sets or returns the value of the marginheight attribute in a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td>marginWidth</td>
<td>Sets or returns the value of the marginwidth attribute in a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td>name</td>
<td>Sets or returns the value of the name attribute in a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td>noResize</td>
<td>Sets or returns the value of the noresize attribute in a frame</td>
<td>Yes</td>
</tr>
<tr>
<td>scrolling</td>
<td>Sets or returns the value of the scrolling attribute in a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td>src</td>
<td>Sets or returns the value of the src attribute in a frame/iframe</td>
<td>Yes</td>
</tr>
<tr>
<td>width</td>
<td>Sets or returns the value of the width attribute in an iframe</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Frame/IFrame Object Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>onload</td>
<td>Script to be run immediately after a frame/iframe is loaded</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Frame and IFrame objects also support the standard properties, methods, and events.
Frameset Object

The Frameset object represents an HTML frameset.

The HTML frameset element holds two or more frame elements. Each frame element holds a separate document.

The HTML frameset element states only how many columns or rows there will be in the frameset.

Frameset Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>cols</td>
<td>Sets or returns the value of the cols attribute in a frameset</td>
<td>Yes</td>
</tr>
<tr>
<td>rows</td>
<td>Sets or returns the value of the rows attribute in a frameset</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Frameset Object Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>onload</td>
<td>Script to be run immediately after a page is loaded</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Frameset object also supports the standard properties, methods, and events.
HTML DOM Image Object

Image Object

The Image object represents an embedded image.

For each `<img>` tag in an HTML document, an Image object is created.

Notice that images are not technically inserted into an HTML page, images are linked to HTML pages. The `<img>` tag creates a holding space for the referenced image.

Image Object Properties

**W3C:** W3C Standard.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>align</td>
<td>Sets or returns the value of the align attribute of an image</td>
<td>Yes</td>
</tr>
<tr>
<td>alt</td>
<td>Sets or returns the value of the alt attribute of an image</td>
<td>Yes</td>
</tr>
<tr>
<td>border</td>
<td>Sets or returns the value of the border attribute of an image</td>
<td>Yes</td>
</tr>
<tr>
<td>complete</td>
<td>Returns whether or not the browser is finished loading an image</td>
<td>No</td>
</tr>
<tr>
<td>height</td>
<td>Sets or returns the value of the height attribute of an image</td>
<td>Yes</td>
</tr>
<tr>
<td>hspace</td>
<td>Sets or returns the value of the hspace attribute of an image</td>
<td>Yes</td>
</tr>
<tr>
<td>longDesc</td>
<td>Sets or returns the value of the longdesc attribute of an image</td>
<td>Yes</td>
</tr>
<tr>
<td>lowsrc</td>
<td>Sets or returns a URL to a low-resolution version of an image</td>
<td>No</td>
</tr>
<tr>
<td>name</td>
<td>Sets or returns the name of an image</td>
<td>Yes</td>
</tr>
<tr>
<td>src</td>
<td>Sets or returns the value of the src attribute of an image</td>
<td>Yes</td>
</tr>
<tr>
<td>useMap</td>
<td>Sets or returns the value of the usemap attribute of an image</td>
<td>Yes</td>
</tr>
<tr>
<td>vspace</td>
<td>Sets or returns the value of the vspace attribute of an image</td>
<td>Yes</td>
</tr>
<tr>
<td>width</td>
<td>Sets or returns the value of the width attribute of an image</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Image Object Events

<table>
<thead>
<tr>
<th>Event</th>
<th>The event occurs when...</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>onabort</td>
<td>Loading of an image is interrupted</td>
<td>Yes</td>
</tr>
<tr>
<td>onerror</td>
<td>An error occurs when loading an image</td>
<td>Yes</td>
</tr>
<tr>
<td>onload</td>
<td>An image is finished loading</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Image object also supports the standard properties, methods, and events.
**Button Object**

The `<input type="button">` object represents a clickable button in an HTML form. The button type is most often used to activate a JavaScript when a user clicks on the button. For each instance of an `<input type="button">` tag in an HTML form, a Button object is created. You can access a button object by searching through the elements[] array of a form, or by using document.getElementById().

**Button Object Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>form</td>
<td>Returns a reference to the form that contains the input button</td>
<td>Yes</td>
</tr>
<tr>
<td>name</td>
<td>Sets or returns the value of the name attribute of an input button</td>
<td>Yes</td>
</tr>
<tr>
<td>type</td>
<td>Returns the type of form element the button is</td>
<td>Yes</td>
</tr>
<tr>
<td>value</td>
<td>Sets or returns the value of the value attribute of a button</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Standard Properties, Methods, and Events**

The Button object also supports the [standard properties, methods, and events](https://www.w3.org/TR/2010/REC-DOM-Level-1-20100806/level1.html#Element-Object).

**<input type="button"> Object**

**Previous**  

**Next Reference**
HTML DOM Checkbox Object

Checkbox Object

The Checkbox object represents a checkbox in an HTML form.

Checkboxes let a user select one or more options of a limited number of choices.

For each `<input type="checkbox">` tag in an HTML form, a Checkbox object is created.

You can access a checkbox object by searching through the elements[] array of a form, or by using `document.getElementById()`.

Checkbox Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>checked</code></td>
<td>Sets or returns whether or not a checkbox should be checked</td>
<td>Yes</td>
</tr>
<tr>
<td><code>defaultChecked</code></td>
<td>Returns the default value of the checked attribute</td>
<td>Yes</td>
</tr>
<tr>
<td><code>form</code></td>
<td>Returns a reference to the form that contains the checkbox</td>
<td>Yes</td>
</tr>
<tr>
<td><code>name</code></td>
<td>Sets or returns the name of a checkbox</td>
<td>Yes</td>
</tr>
<tr>
<td><code>type</code></td>
<td>Returns the type of form element a checkbox is</td>
<td>Yes</td>
</tr>
<tr>
<td><code>value</code></td>
<td>Sets or returns the value of the value attribute of a checkbox</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Checkbox object also supports the [standard properties, methods, and events](#).
**HTML DOM FileUpload Object**

**FileUpload Object**

For each `<input type="file">` tag in an HTML form, a FileUpload object is created.

You can access a FileUpload object by searching through the elements[] array of the form, or by using `document.getElementById()`.

---

**FileUpload Object Properties**

**W3C: W3C Standard.**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>accept</td>
<td>Sets or returns a comma-separated list of MIME types that indicates the MIME type of the file transfer</td>
<td>Yes</td>
</tr>
<tr>
<td>defaultValue</td>
<td>Sets or returns the initial value of the FileUpload object</td>
<td>Yes</td>
</tr>
<tr>
<td>form</td>
<td>Returns a reference to the form that contains the FileUpload object</td>
<td>Yes</td>
</tr>
<tr>
<td>name</td>
<td>Sets or returns the name of the FileUpload object</td>
<td>Yes</td>
</tr>
<tr>
<td>type</td>
<td>Returns the type of the form element. For a FileUpload object it will be &quot;file&quot;</td>
<td>Yes</td>
</tr>
<tr>
<td>value</td>
<td>Returns the file name of the FileUpload object after the text is set by user input</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Standard Properties, Methods, and Events**

The FileUpload object also supports the [standard properties, methods, and events](#).
## HTML DOM Hidden Object

### Hidden Object

The Hidden object represents a hidden input field in an HTML form.

For each `<input type="hidden">` tag in an HTML form, a Hidden object is created.

You can access a hidden input field by searching through the `elements[]` array of the form, or by using `document.getElementById()`.

### Hidden Object Properties

**W3C:** W3C Standard.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>alt</code></td>
<td>Sets or returns an alternate text to display if a browser does not support hidden fields</td>
<td>Yes</td>
</tr>
<tr>
<td><code>form</code></td>
<td>Returns a reference to the form that contains the hidden field</td>
<td>Yes</td>
</tr>
<tr>
<td><code>name</code></td>
<td>Sets or returns the name of a hidden field</td>
<td>Yes</td>
</tr>
<tr>
<td><code>type</code></td>
<td>Returns the type of form element a hidden input field is</td>
<td>Yes</td>
</tr>
<tr>
<td><code>value</code></td>
<td>Sets or returns the value of the value attribute of the hidden field</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Standard Properties, Methods, and Events

The Hidden object also supports the [standard properties, methods, and events](#).
HTML DOM Password Object

The Password object represents a password field in an HTML form.

For each `<input type="password">` tag in an HTML form, a Password object is created.

You can access a password field by searching through the elements[] array of the form, or by using `document.getElementById()`.

**Password Object Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>alt</code></td>
<td>Sets or returns an alternate text to display if a browser does not support password fields</td>
<td>Yes</td>
</tr>
<tr>
<td><code>defaultValue</code></td>
<td>Sets or returns the default value of a password field</td>
<td>Yes</td>
</tr>
<tr>
<td><code>disabled</code></td>
<td>Sets or returns whether or not a password field should be disabled</td>
<td>Yes</td>
</tr>
<tr>
<td><code>form</code></td>
<td>Returns a reference to the form that contains the password field</td>
<td>Yes</td>
</tr>
<tr>
<td><code>maxLength</code></td>
<td>Sets or returns the maximum number of characters in a password field</td>
<td>Yes</td>
</tr>
<tr>
<td><code>name</code></td>
<td>Sets or returns the name of a password field</td>
<td>Yes</td>
</tr>
<tr>
<td><code>readOnly</code></td>
<td>Sets or returns whether or not a password field should be read-only</td>
<td>Yes</td>
</tr>
<tr>
<td><code>size</code></td>
<td>Sets or returns the size of a password field</td>
<td>Yes</td>
</tr>
<tr>
<td><code>type</code></td>
<td>Returns the type of form element a password field is</td>
<td>Yes</td>
</tr>
<tr>
<td><code>value</code></td>
<td>Sets or returns the value of the value attribute of the password field</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Password Object Methods**

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>select()</code></td>
<td>Selects the text in a password field</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Standard Properties, Methods, and Events**

The Password object also supports the standard properties, methods, and events.
Radio Object

The Radio object represents a radio button in an HTML form.

For each `<input type="radio">` tag in an HTML form, a Radio object is created.

You can access a radio object by searching through the elements[] array of the form, or by using `document.getElementById()`.

### Radio Object Properties

**W3C:** W3C Standard.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>alt</td>
<td>Sets or returns an alternate text to display if a browser does not support radio buttons</td>
<td>Yes</td>
</tr>
<tr>
<td>checked</td>
<td>Sets or returns the state of a radio button</td>
<td>Yes</td>
</tr>
<tr>
<td>defaultChecked</td>
<td>Returns the default state of a radio button</td>
<td>Yes</td>
</tr>
<tr>
<td>disabled</td>
<td>Sets or returns whether or not a radio button should be disabled</td>
<td>Yes</td>
</tr>
<tr>
<td>form</td>
<td>Returns a reference to the form that contains the radio button</td>
<td>Yes</td>
</tr>
<tr>
<td>name</td>
<td>Sets or returns the name of a radio button</td>
<td>Yes</td>
</tr>
<tr>
<td>type</td>
<td>Returns the type of form element a radio button is</td>
<td>Yes</td>
</tr>
<tr>
<td>value</td>
<td>Sets or returns the value of the value attribute of the radio button</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Standard Properties, Methods, and Events

The Radio object also supports the [standard properties, methods, and events](#).
HTML DOM Reset Object

Reset Object

The Reset object represents a reset button in an HTML form.

For each `<input type="reset">` tag in an HTML form, a Reset object is created.

You can access a reset button by searching through the elements[] array of the form, or by using `document.getElementById()`.

Reset Object Properties

**W3C**: W3C Standard.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>alt</code></td>
<td>Sets or returns an alternate text to display if a browser does not support reset buttons</td>
<td>Yes</td>
</tr>
<tr>
<td><code>disabled</code></td>
<td>Sets or returns whether or not a reset button should be disabled</td>
<td>Yes</td>
</tr>
<tr>
<td><code>form</code></td>
<td>Returns a reference to the form that contains the reset button</td>
<td>Yes</td>
</tr>
<tr>
<td><code>name</code></td>
<td>Sets or returns the name of a reset button</td>
<td>Yes</td>
</tr>
<tr>
<td><code>type</code></td>
<td>Returns the type of form element a reset button is</td>
<td>Yes</td>
</tr>
<tr>
<td><code>value</code></td>
<td>Sets or returns the text that is displayed on a reset button</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Reset object also supports the [standard properties, methods, and events](https://www.w3.org/TR/html401/interact/forms.html#form-elements).

« Previous  Next Reference »
Submit Object

The Submit object represents a submit button in an HTML form. For each `<input type="submit">` tag in an HTML form, a Submit object is created.

Example: Form validation

You can access a submit button by searching through the elements[] array of the form, or by using `document.getElementById()`.

Submit Object Properties

**W3C:** W3C Standard.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>alt</code></td>
<td>Sets or returns an alternate text to display if a browser does not support submit buttons</td>
<td>Yes</td>
</tr>
<tr>
<td><code>disabled</code></td>
<td>Sets or returns whether or not a submit button should be disabled</td>
<td>Yes</td>
</tr>
<tr>
<td><code>form</code></td>
<td>Returns a reference to the form that contains the submit button</td>
<td>Yes</td>
</tr>
<tr>
<td><code>name</code></td>
<td>Sets or returns the name of a submit button</td>
<td>Yes</td>
</tr>
<tr>
<td><code>type</code></td>
<td>Returns the type of form element a submit button is</td>
<td>Yes</td>
</tr>
<tr>
<td><code>value</code></td>
<td>Sets or returns the text that is displayed on a submit button</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Submit object also supports the standard properties, methods, and events.
Text Object

The Text object represents a text-input field in an HTML form.

For each `<input type="text">` tag in an HTML form, a Text object is created.

You can access a text-input field by searching through the elements[] array of the form, or by using document.getElementById().

Text Object Properties

**W3C: W3C Standard.**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>alt</td>
<td>Sets or returns an alternate text to display if a browser does not support text fields</td>
<td>Yes</td>
</tr>
<tr>
<td>defaultValue</td>
<td>Sets or returns the default value of a text field</td>
<td>Yes</td>
</tr>
<tr>
<td>disabled</td>
<td>Sets or returns whether or not a text field should be disabled</td>
<td>Yes</td>
</tr>
<tr>
<td>form</td>
<td>Returns a reference to the form that contains the text field</td>
<td>Yes</td>
</tr>
<tr>
<td>maxLength</td>
<td>Sets or returns the maximum number of characters in a text field</td>
<td>Yes</td>
</tr>
<tr>
<td>name</td>
<td>Sets or returns the name of a text field</td>
<td>Yes</td>
</tr>
<tr>
<td>readOnly</td>
<td>Sets or returns whether or not a text field should be read-only</td>
<td>Yes</td>
</tr>
<tr>
<td>size</td>
<td>Sets or returns the size of a text field</td>
<td>Yes</td>
</tr>
<tr>
<td>type</td>
<td>Returns the type of form element a text field is</td>
<td>Yes</td>
</tr>
<tr>
<td>value</td>
<td>Sets or returns the value of the value attribute of a text field</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Text Object Methods

**W3C: W3C Standard.**

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>select()</td>
<td>Selects the content of a text field</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Text object also supports the [standard properties, methods, and events](#).
HTML DOM Link Object

Link Object

The Link object represents an HTML link element.

A link element defines the relationship between two linked documents.

The link element is defined in the head section of an HTML document.

Link Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>charset</td>
<td>Sets or returns the character encoding of the target URL</td>
<td>Yes</td>
</tr>
<tr>
<td>disabled</td>
<td>Sets or returns whether or not the target URL should be disabled</td>
<td>Yes</td>
</tr>
<tr>
<td>href</td>
<td>Sets or returns the URL of a linked resource</td>
<td>Yes</td>
</tr>
<tr>
<td>hreflang</td>
<td>Sets or returns the base language of the target URL</td>
<td>Yes</td>
</tr>
<tr>
<td>media</td>
<td>Sets or returns on what device the document will be displayed</td>
<td>Yes</td>
</tr>
<tr>
<td>name</td>
<td>Sets or returns the name of a &lt;link&gt; element</td>
<td>Yes</td>
</tr>
<tr>
<td>rel</td>
<td>Sets or returns the relationship between the current document and the target URL</td>
<td>Yes</td>
</tr>
<tr>
<td>rev</td>
<td>Sets or returns the relationship between the target URL and the current document</td>
<td>Yes</td>
</tr>
<tr>
<td>type</td>
<td>Sets or returns the MIME type of the target URL</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Link object also supports the standard properties, methods, and events.
HTML DOM Meta Object

Meta Object

The Meta object represents an HTML meta element.

Metadata is information about data.

The <meta> tag provides metadata about the HTML document. Metadata will not be displayed on the page, but will be machine parsable.

Meta elements are typically used to specify page description, keywords, author of the document, last modified, and other metadata.

The <meta> tag always goes inside the head element.

Meta Object Properties

W3C: W3C Standard.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>content</td>
<td>Sets or returns the value of the content attribute of a &lt;meta&gt; element</td>
<td>Yes</td>
</tr>
<tr>
<td>httpEquiv</td>
<td>Connects the content attribute to an HTTP header</td>
<td>Yes</td>
</tr>
<tr>
<td>name</td>
<td>Connects the content attribute to a name</td>
<td>Yes</td>
</tr>
<tr>
<td>scheme</td>
<td>Sets or returns the format to be used to interpret the value of the content attribute</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Meta object also supports the standard properties, methods, and events.

< Previous Next Reference >
Object Object

The Object object represents an HTML object element.

The `<object>` tag is used to include objects such as images, audio, videos, Java applets, ActiveX, PDF, and Flash into a webpage.

Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>align</td>
<td>Sets or returns the alignment of the object according to the surrounding text</td>
<td>Yes</td>
</tr>
<tr>
<td>archive</td>
<td>Sets or returns a string that can be used to implement your own archive functionality for the object</td>
<td>Yes</td>
</tr>
<tr>
<td>border</td>
<td>Sets or returns the border around the object</td>
<td>Yes</td>
</tr>
<tr>
<td>code</td>
<td>Sets or returns the URL of the file that contains the compiled Java class</td>
<td>Yes</td>
</tr>
<tr>
<td>codeBase</td>
<td>Sets or returns the URL of the component</td>
<td>Yes</td>
</tr>
<tr>
<td>codeType</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>data</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>declare</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>form</td>
<td>Returns a reference to the object's parent form</td>
<td>Yes</td>
</tr>
<tr>
<td>height</td>
<td>Sets or returns the height of the object</td>
<td>Yes</td>
</tr>
<tr>
<td>hspace</td>
<td>Sets or returns the horizontal margin of the object</td>
<td>Yes</td>
</tr>
<tr>
<td>name</td>
<td>Sets or returns the name of the object</td>
<td>Yes</td>
</tr>
<tr>
<td>standby</td>
<td>Sets or returns a message when loading the object</td>
<td>Yes</td>
</tr>
<tr>
<td>type</td>
<td>Sets or returns the content type for data downloaded via the data attribute</td>
<td>Yes</td>
</tr>
<tr>
<td>useMap</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>vspace</td>
<td>Sets or returns the vertical margin of the object</td>
<td>Yes</td>
</tr>
<tr>
<td>width</td>
<td>Sets or returns the width of the object</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Object object also supports the standard properties, methods, and events.
Option Object

The Option object represents an option in a dropdown list in an HTML form.

For each `<option>` tag in an HTML form, an Option object is created.

You can access an Option object by searching through the elements[] array of the form, or by using `document.getElementById()`.

Option Object Properties

**W3C: W3C Standard.**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>defaultSelected</code></td>
<td>Returns the default value of the selected attribute</td>
<td>Yes</td>
</tr>
<tr>
<td><code>disabled</code></td>
<td>Sets or returns whether or not an option should be disabled</td>
<td>Yes</td>
</tr>
<tr>
<td><code>form</code></td>
<td>Returns a reference to the form that contains an option</td>
<td>Yes</td>
</tr>
<tr>
<td><code>index</code></td>
<td>Returns the index position of an option in a dropdown list</td>
<td>Yes</td>
</tr>
<tr>
<td><code>label</code></td>
<td>Sets or returns a label for an option (only for option-groups)</td>
<td>Yes</td>
</tr>
<tr>
<td><code>selected</code></td>
<td>Sets or returns the value of the selected attribute</td>
<td>Yes</td>
</tr>
<tr>
<td><code>text</code></td>
<td>Sets or returns the text value of an option</td>
<td>Yes</td>
</tr>
<tr>
<td><code>value</code></td>
<td>Sets or returns the value to be sent to the server</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Option object also supports the [standard properties, methods, and events](#).

« Previous Next Reference »
Select Object

The Select object represents a dropdown list in an HTML form.

For each `<select>` tag in an HTML form, a Select object is created.

You can access a Select object by searching through the elements[] array of the form, or by using `document.getElementById()`.

Select Object Collections

W3C: W3C Standard.

<table>
<thead>
<tr>
<th>Collection</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>options[]</td>
<td>Returns an array of all the options in a dropdown list</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Select Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>disabled</td>
<td>Sets or returns whether or not a dropdown list should be disabled</td>
<td>Yes</td>
</tr>
<tr>
<td>form</td>
<td>Returns a reference to the form that contains the dropdown list</td>
<td>Yes</td>
</tr>
<tr>
<td>length</td>
<td>Returns the number of options in a dropdown list</td>
<td>Yes</td>
</tr>
<tr>
<td>multiple</td>
<td>Sets or returns whether or not multiple items can be selected</td>
<td>Yes</td>
</tr>
<tr>
<td>name</td>
<td>Sets or returns the name of a dropdown list</td>
<td>Yes</td>
</tr>
<tr>
<td>selectedIndex</td>
<td>Sets or returns the index of the selected option in a dropdown list</td>
<td>Yes</td>
</tr>
<tr>
<td>size</td>
<td>Sets or returns the number of visible rows in a dropdown list</td>
<td>Yes</td>
</tr>
<tr>
<td>type</td>
<td>Returns the type of form element a dropdown list is</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Select Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>add()</td>
<td>Adds an option to a dropdown list</td>
<td>Yes</td>
</tr>
<tr>
<td>remove()</td>
<td>Removes an option from a dropdown list</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The Select object also supports the standard properties, methods, and events.
HTML DOM Style Object

Style object

The Style object represents an individual style statement.

The Style object can be accessed from the document or from the elements to which that style is applied.

Syntax for using the Style object properties:

```javascript
document.getElementById("id").style.property="value"
```

The Style object property categories:

- Background
- Border and Margin
- Layout
- List
- Misc
- Positioning
- Printing
- Table
- Text
- Printing

Background properties

W3C: W3C Standard.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>background</td>
<td>Sets all background properties in one</td>
<td>Yes</td>
</tr>
<tr>
<td>backgroundAttachment</td>
<td>Sets whether a background-image is fixed or scrolls with the page</td>
<td>Yes</td>
</tr>
<tr>
<td>backgroundColor</td>
<td>Sets the background-color of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>backgroundImage</td>
<td>Sets the background-image of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>backgroundPosition</td>
<td>Sets the starting position of a background-image</td>
<td>Yes</td>
</tr>
<tr>
<td>backgroundPositionX</td>
<td>Sets the x-coordinates of the backgroundPosition property</td>
<td>No</td>
</tr>
<tr>
<td>backgroundPositionY</td>
<td>Sets the y-coordinates of the backgroundPosition property</td>
<td>No</td>
</tr>
<tr>
<td>backgroundRepeat</td>
<td>Sets if/how a background-image will be repeated</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Border and Margin properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>border</td>
<td>Sets all properties for the four borders in one</td>
<td>Yes</td>
</tr>
<tr>
<td>borderBottom</td>
<td>Sets all properties for the bottom border in one</td>
<td>Yes</td>
</tr>
<tr>
<td>borderBottomColor</td>
<td>Sets the color of the bottom border</td>
<td>Yes</td>
</tr>
<tr>
<td>borderBottomStyle</td>
<td>Sets the style of the bottom border</td>
<td>Yes</td>
</tr>
<tr>
<td>borderBottomWidth</td>
<td>Sets the width of the bottom border</td>
<td>Yes</td>
</tr>
<tr>
<td>borderColor</td>
<td>Sets the color of all four borders (can have up to four colors)</td>
<td>Yes</td>
</tr>
<tr>
<td>borderLeft</td>
<td>Sets all properties for the left border in one</td>
<td>Yes</td>
</tr>
<tr>
<td>borderLeftColor</td>
<td>Sets the color of the left border</td>
<td>Yes</td>
</tr>
<tr>
<td>borderLeftStyle</td>
<td>Sets the style of the left border</td>
<td>Yes</td>
</tr>
<tr>
<td>borderLeftWidth</td>
<td>Sets the width of the left border</td>
<td>Yes</td>
</tr>
<tr>
<td>borderRight</td>
<td>Sets all properties for the right border in one</td>
<td>Yes</td>
</tr>
<tr>
<td>borderRightColor</td>
<td>Sets the color of the right border</td>
<td>Yes</td>
</tr>
<tr>
<td>borderRightStyle</td>
<td>Sets the style of the right border</td>
<td>Yes</td>
</tr>
<tr>
<td>borderRightWidth</td>
<td>Sets the width of the right border</td>
<td>Yes</td>
</tr>
<tr>
<td>borderStyle</td>
<td>Sets the style of all four borders (can have up to four styles)</td>
<td>Yes</td>
</tr>
<tr>
<td>borderTop</td>
<td>Sets all properties for the top border in one</td>
<td>Yes</td>
</tr>
<tr>
<td>borderTopColor</td>
<td>Sets the color of the top border</td>
<td>Yes</td>
</tr>
<tr>
<td>borderTopStyle</td>
<td>Sets the style of the top border</td>
<td>Yes</td>
</tr>
<tr>
<td>borderTopWidth</td>
<td>Sets the width of the top border</td>
<td>Yes</td>
</tr>
<tr>
<td>borderRadius</td>
<td>Sets the width of all four borders (can have up to four widths)</td>
<td>Yes</td>
</tr>
<tr>
<td>margin</td>
<td>Sets the margins of an element (can have up to four values)</td>
<td>Yes</td>
</tr>
<tr>
<td>marginBottom</td>
<td>Sets the bottom margin of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>marginLeft</td>
<td>Sets the left margin of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>marginRight</td>
<td>Sets the right margin of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>marginTop</td>
<td>Sets the top margin of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>outline</td>
<td>Sets all outline properties in one</td>
<td>Yes</td>
</tr>
<tr>
<td>outlineColor</td>
<td>Sets the color of the outline around an element</td>
<td>Yes</td>
</tr>
<tr>
<td>outlineStyle</td>
<td>Sets the style of the outline around an element</td>
<td>Yes</td>
</tr>
<tr>
<td>outlineWidth</td>
<td>Sets the width of the outline around an element</td>
<td>Yes</td>
</tr>
<tr>
<td>Property</td>
<td>Description</td>
<td>W3C</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>padding</td>
<td>Sets the padding of an element (can have up to four values)</td>
<td>Yes</td>
</tr>
<tr>
<td>paddingBottom</td>
<td>Sets the bottom padding of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>paddingLeft</td>
<td>Sets the left padding of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>paddingRight</td>
<td>Sets the right padding of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>paddingTop</td>
<td>Sets the top padding of an element</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Layout properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>clear</td>
<td>Sets on which sides of an element other floating elements are not allowed</td>
<td>Yes</td>
</tr>
<tr>
<td>clip</td>
<td>Sets the shape of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>content</td>
<td>Sets meta-information</td>
<td>Yes</td>
</tr>
<tr>
<td>counterIncrement</td>
<td>Sets a list of counter names, followed by an integer. The integer indicates how much the counter is incremented for every occurrence of the element. The default is 1</td>
<td>Yes</td>
</tr>
<tr>
<td>counterReset</td>
<td>Sets a list of counter names, followed by an integer. The integer gives the value that the counter is set to on each occurrence of the element. The default is 0</td>
<td>Yes</td>
</tr>
<tr>
<td>cssFloat</td>
<td>Sets where an image or a text will appear (float) in another element</td>
<td>Yes</td>
</tr>
<tr>
<td>cursor</td>
<td>Sets the type of cursor to be displayed</td>
<td>Yes</td>
</tr>
<tr>
<td>direction</td>
<td>Sets the text direction of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>display</td>
<td>Sets how an element will be displayed</td>
<td>Yes</td>
</tr>
<tr>
<td>height</td>
<td>Sets the height of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>markerOffset</td>
<td>Sets the distance between the nearest border edges of a marker box and its principal box</td>
<td>Yes</td>
</tr>
<tr>
<td>marks</td>
<td>Sets whether cross marks or crop marks should be rendered just outside the page box edge</td>
<td>Yes</td>
</tr>
<tr>
<td>maxWidth</td>
<td>Sets the maximum width of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>maxHeight</td>
<td>Sets the maximum height of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>minHeight</td>
<td>Sets the minimum height of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>minWidth</td>
<td>Sets the minimum width of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>overflow</td>
<td>Specifies what to do with content that does not fit in an element box</td>
<td>Yes</td>
</tr>
<tr>
<td>verticalAlign</td>
<td>Sets the vertical alignment of content in an element</td>
<td>Yes</td>
</tr>
<tr>
<td>visibility</td>
<td>Sets whether or not an element should be visible</td>
<td>Yes</td>
</tr>
<tr>
<td>width</td>
<td>Sets the width of an element</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**List properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>listStyle</td>
<td>Sets all the properties for a list in one</td>
<td>Yes</td>
</tr>
<tr>
<td>listStyleImage</td>
<td>Sets an image as the list-item marker</td>
<td>Yes</td>
</tr>
<tr>
<td>listStylePosition</td>
<td>Positions the list-item marker</td>
<td>Yes</td>
</tr>
<tr>
<td>listStyleType</td>
<td>Sets the list-item marker type</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Misc properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>cssText</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Positioning properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>bottom</td>
<td>Sets how far the bottom edge of an element is above/below the bottom edge of the parent element</td>
<td>Yes</td>
</tr>
<tr>
<td>left</td>
<td>Sets how far the left edge of an element is to the right/left of the left edge of the parent element</td>
<td>Yes</td>
</tr>
<tr>
<td>position</td>
<td>Places an element in a static, relative, absolute or fixed position</td>
<td>Yes</td>
</tr>
<tr>
<td>right</td>
<td>Sets how far the right edge of an element is to the left/right of the right edge of the parent element</td>
<td>Yes</td>
</tr>
<tr>
<td>top</td>
<td>Sets how far the top edge of an element is above/below the top edge of the parent element</td>
<td>Yes</td>
</tr>
<tr>
<td>zIndex</td>
<td>Sets the stack order of an element</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Printing properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>orphans</td>
<td>Sets the minimum number of lines for a paragraph that must be left at the bottom of a page</td>
<td>Yes</td>
</tr>
<tr>
<td>page</td>
<td>Sets a page type to use when displaying an element</td>
<td>Yes</td>
</tr>
<tr>
<td>pageBreakAfter</td>
<td>Sets the page-breaking behavior after an element</td>
<td>Yes</td>
</tr>
<tr>
<td>pageBreakBefore</td>
<td>Sets the page-breaking behavior before an element</td>
<td>Yes</td>
</tr>
<tr>
<td>Property</td>
<td>Description</td>
<td>W3C</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>pageBreakInside</td>
<td>Sets the page-breaking behavior inside an element</td>
<td>Yes</td>
</tr>
<tr>
<td>size</td>
<td>Sets the orientation and size of a page</td>
<td>Yes</td>
</tr>
<tr>
<td>widows</td>
<td>Sets the minimum number of lines for a paragraph that must be left at the top of a page</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Table properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>borderCollapse</td>
<td>Sets whether the table border are collapsed into a single border or detached as in standard HTML</td>
<td>Yes</td>
</tr>
<tr>
<td>borderSpacing</td>
<td>Sets the distance that separates cell borders</td>
<td>Yes</td>
</tr>
<tr>
<td>captionSide</td>
<td>Sets the position of the table caption</td>
<td>Yes</td>
</tr>
<tr>
<td>emptyCells</td>
<td>Sets whether or not to show empty cells in a table</td>
<td>Yes</td>
</tr>
<tr>
<td>tableLayout</td>
<td>Sets the algorithm used to display the table cells, rows, and columns</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Text properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>Sets the color of the text</td>
<td>Yes</td>
</tr>
<tr>
<td>font</td>
<td>Sets all font properties in one</td>
<td>Yes</td>
</tr>
<tr>
<td>fontFamily</td>
<td>Sets the font of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>fontSize</td>
<td>Sets the font-size of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>fontSizeAdjust</td>
<td>Sets/adjusts the size of a text</td>
<td>Yes</td>
</tr>
<tr>
<td>fontStretch</td>
<td>Sets how to condense or stretch a font</td>
<td>Yes</td>
</tr>
<tr>
<td>fontStyle</td>
<td>Sets the font-style of an element</td>
<td>Yes</td>
</tr>
<tr>
<td>fontVariant</td>
<td>Displays text in a small-caps font</td>
<td>Yes</td>
</tr>
<tr>
<td>fontWeight</td>
<td>Sets the boldness of the font</td>
<td>Yes</td>
</tr>
<tr>
<td>letterSpacing</td>
<td>Sets the space between characters</td>
<td>Yes</td>
</tr>
<tr>
<td>lineHeight</td>
<td>Sets the distance between lines</td>
<td>Yes</td>
</tr>
<tr>
<td>quotes</td>
<td>Sets which quotation marks to use in a text</td>
<td>Yes</td>
</tr>
<tr>
<td>textAlign</td>
<td>Aligns the text</td>
<td>Yes</td>
</tr>
<tr>
<td>textDecoration</td>
<td>Sets the decoration of a text</td>
<td>Yes</td>
</tr>
<tr>
<td>textIndent</td>
<td>Indents the first line of text</td>
<td>Yes</td>
</tr>
<tr>
<td>textShadow</td>
<td>Sets the shadow effect of a text</td>
<td>Yes</td>
</tr>
<tr>
<td>textTransform</td>
<td>Sets capitalization effect on a text</td>
<td>Yes</td>
</tr>
<tr>
<td>unicodeBidi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>whiteSpace</td>
<td>Sets how to handle line-breaks and white-space in a text</td>
<td>Yes</td>
</tr>
<tr>
<td>wordSpacing</td>
<td>Sets the space between words in a text</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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HTML DOM Table Object

Table Object
The Table object represents an HTML table.
For each `<table>` tag in an HTML document, a Table object is created.

Table Object Collections
W3C: W3C Standard.

<table>
<thead>
<tr>
<th>Collection</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>cells[]</td>
<td>Returns an array containing each cell in a table</td>
<td>No</td>
</tr>
<tr>
<td>rows[]</td>
<td>Returns an array containing each row in a table</td>
<td>Yes</td>
</tr>
<tr>
<td>tBodies[]</td>
<td>Returns an array containing each tbody in a table</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>border</td>
<td>Sets or returns the width of the table border</td>
<td>Yes</td>
</tr>
<tr>
<td>caption</td>
<td>Sets or returns the caption of a table</td>
<td>Yes</td>
</tr>
<tr>
<td>cellPadding</td>
<td>Sets or returns the amount of space between the cell border and cell content</td>
<td>Yes</td>
</tr>
<tr>
<td>cellSpacing</td>
<td>Sets or returns the amount of space between the cells in a table</td>
<td>Yes</td>
</tr>
<tr>
<td>frame</td>
<td>Sets or returns the outer-borders of a table</td>
<td>Yes</td>
</tr>
<tr>
<td>rules</td>
<td>Sets or returns the inner-borders of a table</td>
<td>Yes</td>
</tr>
<tr>
<td>summary</td>
<td>Sets or returns a description of a table</td>
<td>Yes</td>
</tr>
<tr>
<td>tFoot</td>
<td>Returns the Tfoot object of a table</td>
<td>Yes</td>
</tr>
<tr>
<td>tHead</td>
<td>Returns the THead object of a table</td>
<td>Yes</td>
</tr>
<tr>
<td>width</td>
<td>Sets or returns the width of a table</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>createCaption()</td>
<td>Creates a caption element for a table</td>
<td>Yes</td>
</tr>
<tr>
<td>createTFoot()</td>
<td>Creates an empty tFoot element in a table</td>
<td>Yes</td>
</tr>
<tr>
<td>createTHead()</td>
<td>Creates an empty tHead element in a table</td>
<td>Yes</td>
</tr>
<tr>
<td>deleteCaption()</td>
<td>Deletes the caption element and its content from a table</td>
<td>Yes</td>
</tr>
<tr>
<td>deleteRow()</td>
<td>Deletes a row from a table</td>
<td>Yes</td>
</tr>
<tr>
<td>deleteTFoot()</td>
<td>Deletes the tFoot element and its content from a table</td>
<td>Yes</td>
</tr>
<tr>
<td>deleteTHead()</td>
<td>Deletes the tHead element and its content from a table</td>
<td>Yes</td>
</tr>
<tr>
<td>insertRow()</td>
<td>Inserts a new row in a table</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events
The Table object also supports the standard properties, methods, and events.
TableCell Object

The TableCell object represents an HTML table cell.

For each <td> tag in an HTML document, a TableCell object is created.

TableCell Object Properties

**W3C**: W3C Standard.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>abbr</td>
<td>Sets or returns an abbreviated version of the content in a table cell</td>
</tr>
<tr>
<td>align</td>
<td>Sets or returns the horizontal alignment of data within a table cell</td>
</tr>
<tr>
<td>axis</td>
<td>Sets or returns a comma-delimited list of related table cells</td>
</tr>
<tr>
<td>cellIndex</td>
<td>Returns the position of a cell in the cells collection of a row</td>
</tr>
<tr>
<td>ch</td>
<td>Sets or returns the alignment character for a table cell</td>
</tr>
<tr>
<td>chOff</td>
<td>Sets or returns the offset of alignment character for a table cell</td>
</tr>
<tr>
<td>colSpan</td>
<td>Sets or returns the number of columns a table cell should span</td>
</tr>
<tr>
<td>headers</td>
<td>Sets or returns a list of space-separated header-cell ids</td>
</tr>
<tr>
<td>rowSpan</td>
<td>Sets or returns the number of rows a table cell should span</td>
</tr>
<tr>
<td>scope</td>
<td>Sets or returns if this cell provides header information</td>
</tr>
<tr>
<td>vAlign</td>
<td>Sets or returns the vertical alignment of data within a table cell</td>
</tr>
<tr>
<td>width</td>
<td>Sets or returns the width of a table cell</td>
</tr>
</tbody>
</table>

Standard Properties, Methods, and Events

The TableCell object also supports the standard properties, methods, and events.
**HTML DOM TableRow Object**

**TableRow Object**

The TableRow object represents an HTML table row.

For each `<tr>` tag in an HTML document, a TableRow object is created.

**TableRow Object Collections**

<table>
<thead>
<tr>
<th>Collection</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>cells[]</td>
<td>Returns an array containing each cell in the table row</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**TableRow Object Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>align</td>
<td>Sets or returns the horizontal alignment of data within a table row</td>
<td>Yes</td>
</tr>
<tr>
<td>ch</td>
<td>Sets or returns the alignment character for cells in a table row</td>
<td>Yes</td>
</tr>
<tr>
<td>chOff</td>
<td>Sets or returns the offset of alignment character for the cells in a table row</td>
<td>Yes</td>
</tr>
<tr>
<td>rowIndex</td>
<td>Returns the position of a row in the table's rows collection</td>
<td>Yes</td>
</tr>
<tr>
<td>sectionRowIndex</td>
<td>Returns the position of a row in the tBody, tHead, or tFoot rows collection</td>
<td>Yes</td>
</tr>
<tr>
<td>vAlign</td>
<td>Sets or returns the vertically alignment of data within a table row</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**TableRow Object Methods**

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>deleteCell()</td>
<td>Deletes a cell in a table row</td>
<td>Yes</td>
</tr>
<tr>
<td>insertCell()</td>
<td>Inserts a cell in a table row</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Standard Properties, Methods, and Events**

The TableRow object also supports the [standard properties, methods, and events](#).

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Textarea Object

The Textarea object represents a text-area in an HTML form.

For each `<textarea>` tag in an HTML form, a Textarea object is created.

You can access a Textarea object by indexing the elements array (by number or name) of the form or by using `getElementById()`.

### Textarea Object Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>cols</td>
<td>Sets or returns the width of a textarea</td>
<td>Yes</td>
</tr>
<tr>
<td>defaultValue</td>
<td>Sets or returns the default text in a textarea</td>
<td>Yes</td>
</tr>
<tr>
<td>disabled</td>
<td>Sets or returns whether or not a textarea should be disabled</td>
<td>Yes</td>
</tr>
<tr>
<td>form</td>
<td>Returns a reference to the form that contains the textarea</td>
<td>Yes</td>
</tr>
<tr>
<td>name</td>
<td>Sets or returns the name of a textarea</td>
<td>Yes</td>
</tr>
<tr>
<td>readOnly</td>
<td>Sets or returns whether or not a textarea should be read-only</td>
<td>Yes</td>
</tr>
<tr>
<td>rows</td>
<td>Sets or returns the height of a textarea</td>
<td>Yes</td>
</tr>
<tr>
<td>type</td>
<td>Returns the type of the form element</td>
<td>Yes</td>
</tr>
<tr>
<td>value</td>
<td>Sets or returns the text in a textarea</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Textarea Object Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>W3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>select()</td>
<td>Selects the text in a textarea</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Standard Properties, Methods, and Events

The Textarea object also supports the [standard properties, methods, and events](#).

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