

*SchoolNova*

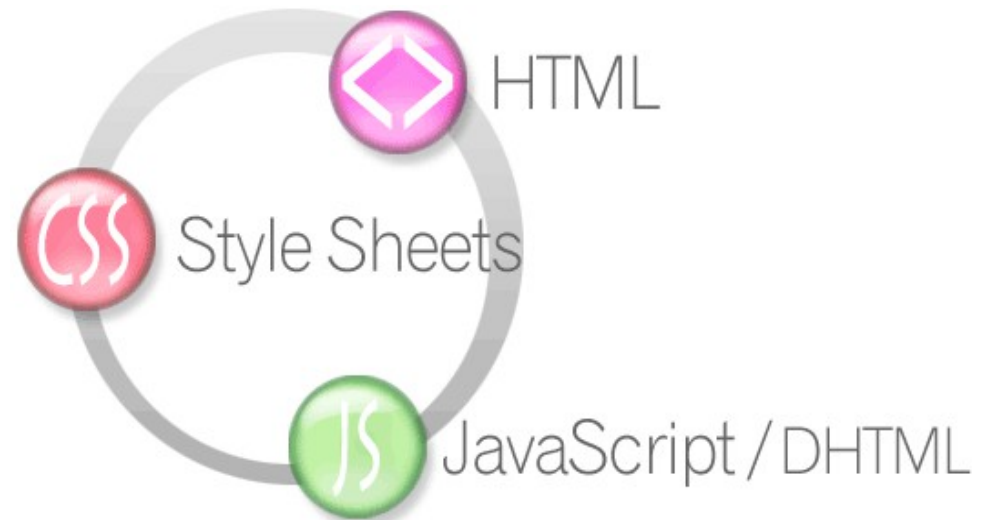


# IT101

JavaScript

# What is JavaScript?

- JavaScript is a programming language designed for Web pages.
- JavaScript runs in client software (browser). There is server-side JavaScript too, but it is not part of this curriculum.
- JavaScript is not related to Java.
- JavaScript, HTML and CSS work together to create dynamic web experience:
  - ◆ **HTML** marks the content up into different structural types, like paragraphs, blocks, lists, images, tables, forms, comments etc.
  - ◆ **CSS** tells the browser how each type of element should be displayed, which may vary for different media (like screen, print or handheld device)
  - ◆ **JavaScript** tells the browser how to change the web page in response to events that happen (like clicking on something, or validating form input).



<http://www.webdesignfromscratch.com/html-css/how-html-css-js-work-together/>

# JavaScript Example

## Suffolk Sales Tax Calculator

```
<html>
<head>
<title>Suffolk Sales Tax Calculator</title>
<style>
input {
  background-color: #FFFF00;
}
</style>
<script>
  var suffolkTax = 8.625; // as of November 2013
  function calculateTax() {
    var price = parseFloat(document.taxForm.itemPrice.value);
    var tax = price/100 * suffolkTax;
    document.taxForm.priceWithTax.value = (price + tax).toFixed(2);
  }
</script>
</head>
<body>
<h1>Suffolk Sales Tax Calculator</h1>
<form name="taxForm">
  Item price without tax:<br />
  <input type="text" name="itemPrice" /><br />
  <input type="button" value="calculate" onclick="calculateTax()" /><br />
  <input type="text" name="priceWithTax" />
</form>
</body>
</html>
```

Item price without tax:

The image shows a visual representation of the HTML code. It features a yellow background. At the top, the text 'Item price without tax:' is displayed. Below this is a text input field. To the right of the input field is a button labeled 'calculate'. Below the button is another text input field.

# JavaScript Syntax

- Unlike HTML, JavaScript is case sensitive.
- End each statement with a semicolon;
- **Functions**
  - ◆ Functions are named statements that perform tasks. Example: calculateTax()
  - ◆ JavaScript has built-in functions (e.g. parseFloat, toFixed), and you can write your own.
- **Variables and Values**
  - ◆ Variables contain values and use the equal sign to specify their value.
  - ◆ Variables are created by declaration using the var command with or without an initial value state.
  - ◆ There are six basic types of values: numbers (64 bit), strings, booleans, objects, functions and undefined values.
- **Expressions**
  - ◆ Expressions are commands that assign values to variables using the equal sign. Example:
    - ◆ var tax = price/100 \* suffolkTax;
- **Operators**
  - ◆ Arithmetic operators:
    - ◆ + (add) - (subtract)
    - ◆ \* (multiply) / (divide)
    - ◆ % (modulus or remainder)
    - ◆ ++ (increment) -- (decrement)
  - ◆ Comparisons operators:
    - ◆ == (equals)
    - ◆ != (does not equal)
  - ◆ Logical operators:
    - ◆ && (and),
    - ◆ || (or)
    - ◆ ! (not)
  - ◆ Assignment and String operators.
    - ◆ = (assignment)
    - ◆ + (string concatenation)

# Where is my JavaScript?

- JavaScripts can reside in a separate file, similar to CSS. The file should have the .js extension.  
Example:
  - ◆ `<script src="it101scripts.js"></script>`
  - ◆ This is the preferred method, as it allows reusing the JavaScript code across multiple pages.
  - ◆ Do not place the `<script></script>` tags (or any other HTML tags) in the .js files.
- JavaScript can be embedded in HTML documents -- in the `<head>`, in the `<body>`, or in both. The `<script></script>` tags tell the browser where JavaScript starts and ends.
- JavaScript can even be placed inside HTML tags, as a value of an attribute (event handler). Example:
  - ◆ `<input type="button" value='click me' onClick="alert('OUCH!')">`

# Homework

- Create an Grade Average calculator using the tax calculator example from the class.
- The Grade Average calculator should have at least three grade input fields: English, Math and Science, a button to calculate the grade average, and a field to show the average. See a sample mockup below.
- Create a “/scripts” folder and a separate JavaScript file, for example it101script.js. Place your JavaScript code inside that file (do not use the <script> tag in the JS file, the <script> tag is only for the HTML file). Reference the JavaScript file from your HTML page, e.g.: <script src=“scripts/it101scripts.js”></script>.
- Upload both HTML and JavaScript files to the server and make sure the Grade Average Calculator still works.

## Grade Average Calculator

English:  
90

Math:  
70

Science:  
85

Average:  
81.67