JavaScript-1

Credits: Several publicly available Sources

SYNTAX

JavaScript Syntax

- The JavaScript syntax is similar to C# and Java
  - Operators (+, *, =, !=, &&, ++, …)
  - Variables (typeless)
  - Conditional statements (`if`, `else`)
  - Loops (`for`, `while`)
  - Arrays (`my_array[]`) and associative arrays (`my_array['abc']`)
  - Functions (can return value)
  - Function variables (like the C# delegates)

Data Types

- JavaScript data types:
  - Numbers (integer, floating-point)
  - Boolean (true / false)
- String type – string of characters

```
var myName = "You can use both single or double
quotes for strings";
```

- Arrays

```
var my_array = [1, 5.3, "aaa"];
```

- Associative arrays (hash tables)

```
var my_hash = {a:2, b:3, c:"text"};
```

Everything is Object

- Every variable can be considered as object
  - For example strings and arrays have member functions:

```
var test = "some string";
alert(test[7]); // shows letter 'r'
alert(test.charAt(5)); // shows letter 's'
alert("test".charAt(1)); //shows letter 'e'
alert("test".substring(1,3)); //shows 'es'
```

```
var arr = [1,3,4];
alert (arr.length); // shows 3
arr.push(7); // appends 7 to end of array
alert (arr[3]); // shows 7
```

String Operations

- The + operator joins strings

```
string1 = "fat ";
string2 = "cats";
alert(string1 + string2);  // fat cats
```

- What is "9" + 9?

```
alert("9" + 9);  // 99
```

- Converting string to number:

```
alert(parseInt("9") + 9);  // 18
```

Arrays Operations and Properties

- Declaring new empty array:

```
var arr = new Array();
```

- Declaring an array holding few elements:

```
var arr = [1, 2, 3, 4, 5];
```

- Appending an element / getting the last element:

```
arr.push(3);
var element = arr.pop();
```

- Reading the number of elements (array length):

```
arr.length;
```

Sum of Numbers – Example

sum-of-numbers.html

```
<html>

<head>
  <title>JavaScript Demo</title>
  <script type="text/javascript">
    function calcSum() {
      value1 =
        parseInt(document.mainForm.textBox1.value);
      value2 =
        parseInt(document.mainForm.textBox2.value);
      sum = value1 + value2;
      document.mainForm.textBoxSum.value = sum;
    }
  </script>
</head>
```

Switch Statement

- The `switch` statement works like in C# / Java:

```
switch (variable) {
  case 1:
    // do something
    break;
  case 'a':
    // do something else
    break;
  case 3.14:
    // another code
    break;
  default:
    // something completely different
}
```

Loops

- Like in C# / Java / C++
  - for loop
  - while loop
  - do … while loop

```
var counter;
for (counter=0; counter<4; counter++) {
  alert(counter);
}
while (counter < 5) {
  alert(++counter);
}
```

Functions

```
function average(a, b, c)
{
    var total;
    total = a+b+c;
    return total/3;
}
```

Parameters come in here.

Declaring variables is optional. Type is never declared.

Value returned here.

Function Arguments and Return Value

- Functions are not required to return a value
- When calling function it is not obligatory to specify all of its arguments
  - The function has access to all the arguments passed via `arguments` array

```
function sum() {
  var sum = 0;
  for (var i = 0; i < arguments.length; i ++)
    sum += parseInt(arguments[i]);
  return sum;
}
alert(sum(1, 2, 4));
```

Standard Popup Boxes

- Alert box with text and [OK] button
  - Just a message shown in a dialog box:

```
alert("Some text here");
```

- Confirmation box
  - Contains text, [OK] button and [Cancel] button:

```
confirm("Are you sure?");
```

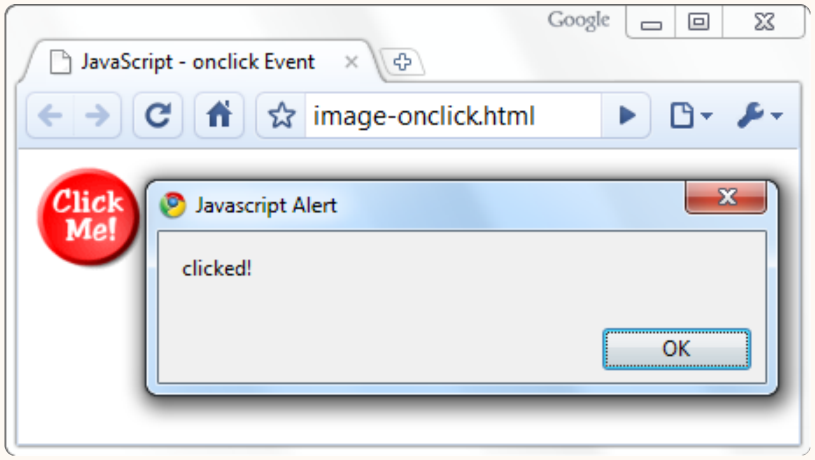
- Prompt box
  - Contains text, input field with default value:

```
prompt ("enter amount", 10);
```

Calling a JavaScript Function from Event Handler – Example

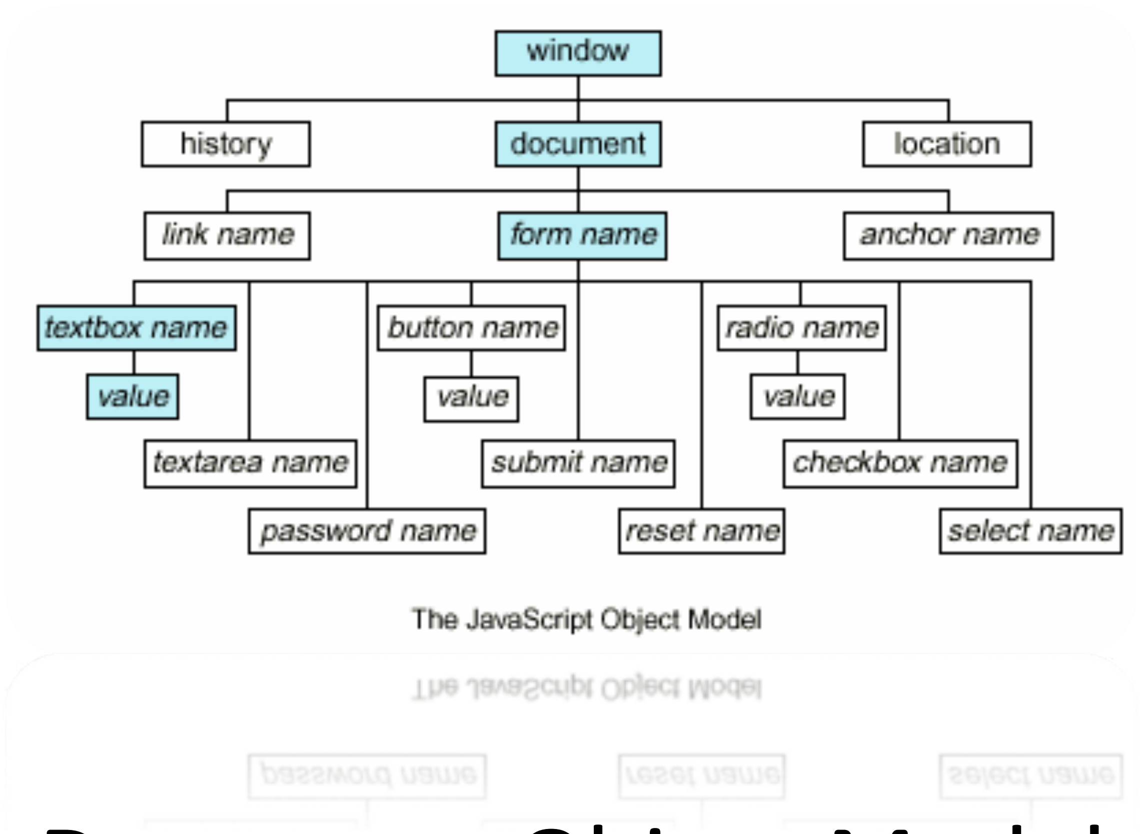
```
<html>
<head>
<script type="text/javascript">
  function test (message) {
    alert(message);
  }
</script>
</head>

<body>
  <img src="logo.gif"
    onclick="test('clicked!')" />
</body>
</html>
```



clicked!

END



Document Object Model (DOM)

Document Object Model (DOM)

- Every HTML element is accessible via the JavaScript DOM API
- Most DOM objects can be manipulated by the programmer
- The event model lets a document to react when the user does something on the page
- Advantages
  - Create interactive pages
  - Updates the objects of a page without reloading it

Accessing Elements

- Access elements via their ID attribute

```
var elem = document.getElementById("some_id")
```

- Via the name attribute

```
var arr = document.getElementsByName("some_name")
```

- Via tag name

```
var imgTags = el.getElementsByTagName("img")
```

  – Returns array of descendant `<img>` elements of the element "`el`"