

IT350 Web and Internet Programming

SlideSet #10: JavaScript Arrays and Objects

(from Chapters 10/11 of the text)

Everything you ever wanted to know about arrays...

```
function initializeArrays()
{
    var n1 = new Array( 5 ); // allocate 5-element Array
    var n2 = new Array(); // allocate empty Array

    for ( var i = 0; i < n1.length; ++i )
        n1[i] = i;

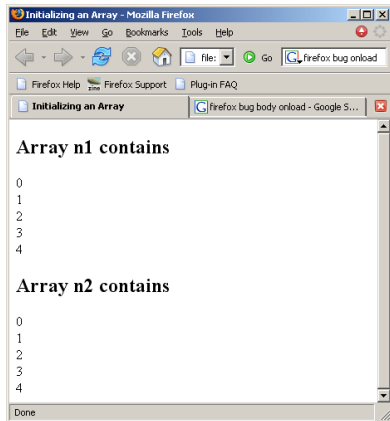
    for ( i = 0; i < 5; ++i )
        n2[i] = i;

    outputArray( "Array n1 contains", n1 );
    outputArray( "Array n2 contains", n2 );
}

function outputArray( header, theArray )
{
    document.writeln( "<h2>" + header + "</h2> <p>" );
    for ( var ii in theArray ) {
        document.write(theArray[ii] + "<br/>" );
    }
    document.writeln( "</p>" );
}

initializeArrays();
```

...but were afraid to ask.



Scope – Revisited

```
function mystery( x, y )
{
  for ( var ii = 0; ii < x.length; ++ii )
    x[ii] = x[ii] * y;

  y = 7;

  document.writeln("<br/> x: ",x);
  document.writeln("<br/> y: ",y);
}

var myArray = [3, 4, 5];
var factor = 2;

document.writeln ("<br/> myArray: ", myArray);
mystery(myArray, factor);

document.writeln ("<br/> myArray: ", myArray);
document.writeln ("<br/> factor : ", factor);
```

Arguments are passed _____,
so original argument values in caller are _____
BUT array/object arguments are a “reference”, so contents may be _____

Exercise #1

- a.) Write a function “sumArray” as follows:
 - Input: an array
 - Output: the sum of that array
- b.) Write test code to create an array and call “sumArray” on it.

Exercise #2 – What’s the output?

```
function printme( z ) {  
    document.writeln("<br> z is ",z);  
}  
  
var array1 = [17, 21, 42];  
var array2 = [14, 19];  
var x = 1;  
  
printme (array1);  
printme (array2[1]);  
printme (x);  
  
array1[x] = 57;  
printme (array1);
```

Exercise #3 – What's the output?
(Hint: assume JavaScript ignores any errors it finds)

```
function changeMe1( z ) {
  z[0] = 75;
}
function changeMe2( a, b ) {
  a = b;
}
var array1 = [17, 21, 42];
var array2 = [14, 19];
var array3 = [7, 8, 9];
var x = 63;
changeMe1 (array1);
document.writeln("<br/> array1: ", array1);
changeMe1 (x);
document.writeln("<br/> x: ", x);

array1 = array2;
document.writeln("<br/> array1: ", array1);

changeMe2 (array1, array3);
document.writeln("<br/> array1: ", array1);
```

Exercise #4

- Write a function perfect(N) that returns an array of size N containing the first N perfect squares. So perfect(4) would return [0, 1, 4, 9].

Exercise #5

Write a function dotProduct(x, y) that takes two arrays of size n and returns the sum:

$$x[0]*y[0] + x[1]*y[1] + \dots + x[n-1]*y[n-1]$$

Functions as Arguments

```
function start()
{
    var a = [ 10, 1, 9, 2, 8, 3, 7, 4, 6, 5 ];

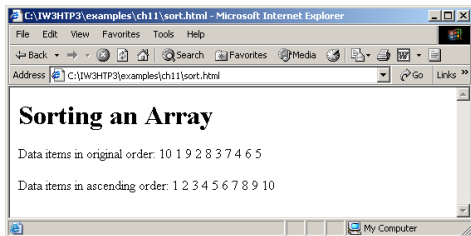
    document.writeln( "<h1>Sorting an Array</h1>" );
    document.writeln( "Data items in original order: ", a );

    // sort the array using the order provided by function
    a.sort( compareIntegers );

    document.writeln( "Data items in ascending order: ", a );
}

// comparison function for use with sort
//returns <0 if value1 < value2
//      0 if value1 == value2
//      >0 if value1 > value2
function compareIntegers( value1, value2 )
{
    return parseInt( value1 ) - parseInt( value2 );
}
```

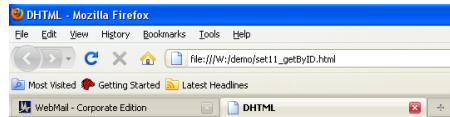
Sorting Output



document Object

Method or property	Description
<code>getElementById(id)</code>	Returns the DOM node representing the XHTML element whose <code>id</code> attribute matches <code>id</code> .
<code>write(string)</code>	Writes the string to the XHTML document as XHTML code.
<code>writeln(string)</code>	Writes the string to the XHTML document as XHTML code and adds a newline character at the end.
<code>cookie</code>	A string containing the values of all the cookies stored on the user's computer for the current document. See Section 11.9, Using Cookies.
<code>lastModified</code>	The date and time that this document was last modified.

How can we use getElementById?



Testing assigning values at runtime

How can we use getElementById?

```
<!DOCTYPE html>
<html>
<head>
  <meta charsey = "utf-8">
  <title>DHTML</title>
  <script type = "text/javascript">
    function changeInput(){
      var myEl = document.getElementById("ammount");
      myEl.value = 10;
    }
  </script>
</head>
<body>
  <form action="" >

    <h1> Testing assigning values at runtime</h1>
    <input type = "text" name = "amount" id = "ammount" /> <br />
    <input type = "button" value = "Make it 10!" onclick = "changeInput()" />

  </form>
</body>
</html>
```

window Object

Method or property	Description
<code>open(url, name, options)</code>	Creates a new window with the URL of the window set to <i>url</i> , the name set to <i>name</i> to refer to it in the script, and the visible features set by the string passed in as <i>option</i> .
<code>prompt(prompt, default)</code>	Displays a dialog box asking the user for input. The text of the dialog is <i>prompt</i> , and the default value is set to <i>default</i> .
<code>close()</code>	Closes the current window and deletes its object from memory.
<code>focus()</code>	This method gives focus to the window (i.e., puts the window in the foreground, on top of any other open browser windows).
<code>blur()</code>	This method takes focus away from the window (i.e., puts the window in the background).
<code>window.document</code>	This property contains the <code>document</code> object representing the document currently inside the window.
<code>window.closed</code>	This property contains a boolean value that is set to true if the window is closed, and false if it is not.
<code>window.opener</code>	This property contains the <code>window</code> object of the window that opened the current window, if such a window exists.