9. Using JavaScript Arrays

Arrays

- JavaScript array objects can collect data values of either the same types or different types
- An array index begins with zero
- Types of arrays
  - one-dimensional array
  - multi-dimensional array
- Array properties
  - length -- the size of an array
- Array methods
  - concat(value1, value2,...) -- Concatenation
  - join(separator) -- Form a string from other array elements
  - pop() -- Remove and return the last array element
  - push(value,..) -- Add elements to an array
  - reverse() -- Reverse the elements of an array
  - shift() -- Shift array element down
  - slice(start, end) -- Return a specified portion of an array
  - sort() -- Sort the elements of an array
  - splice(start, deleteCount, value,..) -- Insert, remove, or replace array elements
  - toString() -- Convert an array to a string
  - unshift(value,..) -- Insert elements at the beginning of an array
- Array Manipulation
  - Creating arrays
  - Reading and writing array elements
  - Adding new elements to an array

The Array Object

Constructor

new Array ( )

new Array (size)

new Array (element0, element1, .., elementN)

Properties

length

It contains the size of the array

Methods

concat(value, ..)

Concatenate arrays

join(separator)

Making or forming a string

Example:

```
var n = [4, 5, 6];
 n_sring = n.join();  // "4, 5, 6"
```

pop()

Remove and return the last element of an array

push(value, …)

Append elements to an array

reverse()

Reverse the elements of an array

Example:

```
var n = [4, 5, 6];
 n.reverse();          // n = [6, 5, 4];
```

shift()

Shift array elements down

slice(start, end)

Return a portion of an array

sort(oderfunction)

Sort the elements of an array

splice(start, deleteCount, value)

Insert, remove, or replace array elements

toString()

Covert an array to a string

unshift(value,..)

Insert elements at the beginning of an rray

Creating Arrays

```
// 1. Create an empty array with no elements
//
var obj_array = new Array();
obj_array[0] = 10.2;            // Assign array elements
obj_array[1] = "HTML";
obj_array[2] = false;

// 2. Create an array with explicit elements
var obj_array = [10.2, "HTML", false];
```

```
// 3. Create an array with a specific length
var obj_array = new Array(3);
```

Other Array Examples

Arrays for Special Events and Day:

```
var paymentCalender = new Array();
paymentCalender [1] = "Class Begin Jan. 8";
paymentCalender [2] = "Late Registration and Drop/Add: Jan. 8-12";
paymentCalender [3] = "Weekend Class Begin Jan. 12";
paymentCalender [4] = "Last Day for Full Refund: Jan. 12";
paymentCalender [5] = "Payment Deadline: Jan. 12";

acamedicCalender = new Array();
acamedicCalender [1] = "Class Begin Jan. 8";
academicCalender [2] = "Martin Luther King Jr. Holiday: Jan. 15";
academicCalender [3] = "Spring Break Begins: March 5-11";
academicCalender [4] = "Last Day to Withdraw: March 16";
academicCalender [5] = "Last Day of Classes and Final Exams: April 30-May 6";
academicCalender [6] = "Commencement: May 9";

var primes = [ 2, 3, 5, 7, 11];

var matrix = [ [ 1, 2, 3],
               [ 4, 5, 6],
               [ 7, 8, 9]];

var baseAddress = 1024;
var tableAddress = [baseAddress, baseAddress+1, baseAddress+2];
```

Days and Months:

```
// var dayOfWeek = new Array (7)

dayOfWeek = new Array("Sunday", "Monday", "Tuesday", "Wednesday",
"Thursday", "Friday", "Saturday")
for(day = 0; day < 7; day++)
 {
    document.writeln(dayOfWeek[day]);
 }

// var monthOfYear = new Array (13)
monthOfYear = new Array(" ", "January", "February", "March", "April",
"May", "June", "July", "August", "September", "October", "November",
"December")
```

Home Appliance Applications:

```
WattRatingHouseAppliance = new Array ("AirConditioner", "DishWasher",
"WashingMachine", "ClothDryer", "WaterHeater",
"Heater","FurnanceMotor", "OilBurnerMotor', "MicrowaveOven", "Range",
"Refrigerator", "Toaster", "Coffemaker");

WattRatingHouseApp_Watts = new Array (860, 1200, 500, 4800, 4500, 1400,
320, 230, 1200, 12,200, 1800, 1200, 900);

BGroundColors = new Array("red", "white", "blue");

ImageArray = new Array ("images/bulbon.gif", "images/bulboff.gif");
```

Example 9-1: This JavaScript program use an image array to store graphics file for use in displaying the light bulb On-Off control.

```
<html>
<!-- bulbonoff_sequence.html
     Turn light bulb on/off in sequence.
     * VARIABLES:
     bulbImages .. Light Bulb Image Array object
     imgCounter .. Counter variable
     thisBulb   .. Indexer for extract type of light bulb
     document.changeBulb  .. Operator object for changing

-->
<head>
<title> Light Bulb Image Rollover Example</title>
<script language= javascript type="text/javascript">
<!-- Hide script from old browsers

      bulbImages = new
Array("imagesfolder/bulboff.gif","imagesfolder/bulbon.gif");
      thisBulb = 0;
      imgCounter = bulbImages.length;

      function sequence() {
            if (document.images) {
                  thisBulb++
                  if (thisBulb == imgCounter) {
                        thisBulb = 0
                  }
                  document.changeBulb.src=bulbImages[thisBulb]
                  setTimeout("sequence()", 3 * 1000)
            }
      }
  // End hiding
 -->
</script>
</head>
<body onload="sequence()">
<img src="imagesholder/bulboff.gif" width=150 height=250
name="changebulb"> </a>
</body>
</html>
```


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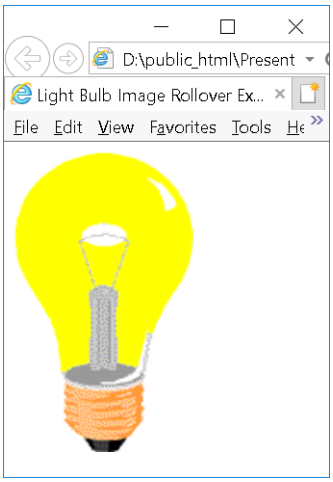
Light Bulb Image Rollove...
File Edit View Favorites Too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