



Lecture 10

Java Scripting Arrays & Form Elements

Array Methods

Method	Description
<u>concat()</u>	Returns a new array comprised of this array joined with other array(s) and/or value(s).
<u>filter()</u>	Creates a new array with all of the elements of this array for which the provided filtering function returns true.
<u>indexOf()</u>	Returns the first (least) index of an element within the array equal to the specified value, or -1 if none is found.
<u>join()</u>	Joins all elements of an array into a string.
<u>lastIndexOf()</u>	Returns the last (greatest) index of an element within the array equal to the specified value, or -1 if none is found.
<u>pop()</u>	Removes the last element from an array and returns that element.
<u>push()</u>	Adds one or more elements to the end of an array and returns the new length of the array.

Array Methods (2)

Method	Description
<u>reverse()</u>	Reverses the order of the elements of an array -- the first becomes the last, and the last becomes the first.
<u>shift()</u>	Removes the first element from an array and returns that element.
<u>slice()</u>	Extracts a section of an array and returns a new array.
<u>sort()</u>	Sorts the elements of an array.
<u>splice()</u>	Adds and/or removes elements from an array.
<u>toString()</u>	Returns a string representing the array and its elements.
<u>unshift()</u>	Adds one or more elements to the front of an array and returns the new length of the array.

Example 1

- 1) `<script type="text/javascript">`
- 2) `var alpha = ["a", "b", "c"];`
- 3) `var numeric = [1, 2, 3];`
- 4) `var alphaNumeric = alpha.concat(numeric);`
- 5) `document.write("alphaNumeric : " +
alphaNumeric);`
- 6) `</script>`

OUTPUT:

alphaNumeric : a,b,c,1,2,3

Example 2

- `<script type="text/javascript">`
- `var arr = new Array("First","Second","Third");`
- `var str = arr.join();`
- `document.write("str : " + str);`
- `var str = arr.join(", ");`
- `document.write("
str : " + str);`
- `var str = arr.join(" + ");`
- `document.write("
str : " + str);`
- `</script>`

OUTPUT:

`str : First,Second,Third`

`str : First, Second, Third`

`str : First + Second + Third`

Example 3

- `<script type="text/javascript">`
- `var numbers = [1, 4, 9];`
- `var element = numbers.pop();`
- `document.write("element is : " + element);`
- `var element = numbers.pop();`
- `document.write("
element is : " + element);`
- `</script>`

OUTPUT:

element is : 9

element is : 4

Example 4

- `var numbers = new Array(1, 4, 9);`
- `var length = numbers.push(10);`
- `document.write("new numbers is : " + numbers);`
- `length = numbers.push(20);`
- `document.write("
new numbers is : " + numbers);`

OUTPUT:

`new numbers is : 1,4,9,10`

`new numbers is : 1,4,9,10,20`

Other Functions Syntax

• **reverse()** shows the array in reverse order.

⇒ **var arr = [0, 1, 2, 3].reverse();**

⇒ **document.write("Reversed array is : " + arr);**

• **shift()** method removes the first element from an array and returns that element.

⇒ **var element = [105, 1, 2, 3].shift();**

• **slice()** is method extracts a section of an array and returns a new array.

• Syntax: **array.slice(begin [,end]);**

⇒ **var arr = ["orange", "mango", "banana", "sugar", "tea"];**

⇒ **document.write("arr.slice(1, 2) : " + arr.slice(1, 2));**

⇒ **document.write("
arr.slice(1, 3) : " + arr.slice(1, 3));**

OUTPUT:

arr.slice(1, 2) : mango

arr.slice(1, 3) : mango,banana

Date & Time Functions

- **sort()** method sorts the elements of an array.
- **Syntax:** `array.sort(compareFunction);`
 - ➔ **compareFunction** : Specifies a function that defines the sort order.
 - ➔ If omitted, the array is sorted lexicographically.

Date & Time Functions

- ➔ `var dt = Date();`
- ➔ `document.write("Date and Time : " + dt);`
- `var dt = new Date("December 25, 1995 23:15:00");`
- `Document.write("getDay() : " + dt.getDay());`
- **Note:** See other date and time functions yourself.

Events in HTML

Event	Value	Description
onchange	script	Script runs when the element changes
onsubmit	script	Script runs when the form is submitted
onreset	script	Script runs when the form is reset
onselect	script	Script runs when the element is selected
onblur	script	Script runs when the element loses focus
onfocus	script	Script runs when the element gets focus
onkeydown	script	Script runs when key is pressed
onkeypress	script	Script runs when key is pressed and released
onkeyup	script	Script runs when key is released
onclick	script	Script runs when a mouse click
ondblclick	script	Script runs when a mouse double-click
onmousedown	script	Script runs when mouse button is pressed
onmousemove	script	Script runs when mouse pointer moves
onmouseout	script	Script runs when mouse pointer moves out of an element
onmouseover	script	Script runs when mouse pointer moves over an element
onmouseup	script	Script runs when mouse button is released

Assignment #1

- Create a calculator by Implement following functions in your script.

abs()	Returns the absolute value of a number.
acos()	Returns the arccosine (in radians) of a number.
asin()	Returns the arcsine (in radians) of a number.
atan()	Returns the arctangent (in radians) of a number.
atan2()	Returns the arctangent of the quotient of its arguments.
ceil()	Returns the smallest integer greater than or equal to a number.
cos()	Returns the cosine of a number.
exp()	Returns E^N , where N is the argument, and E is Euler's constant, the base of the natural logarithm.
floor()	Returns the largest integer less than or equal to a number.
log()	Returns the natural logarithm (base E) of a number.
max()	Returns the largest of zero or more numbers.
min()	Returns the smallest of zero or more numbers.
pow()	Returns base to the exponent power, that is, base exponent.
random()	Returns a pseudo-random number between 0 and 1.
round()	Returns the value of a number rounded to the nearest integer.
sin()	Returns the sine of a number.
sqrt()	Returns the square root of a number.
tan()	Returns the tangent of a number.

A white t-shirt is shown, pinned to a purple background with two white tape-like strips at the top corners. The t-shirt has a black and red graphic print. The text on the shirt reads: "Yes" in black, "I am a" in black, "WEB DESIGNER" in red, "No" in black, "I won't make you a" in black, "Website for" in black, and "FREE!" in red.

Yes
I am a
WEB DESIGNER
No
I won't make you a
Website for
FREE!

http://www.w3schools.com/jsref/event_onfocus.asp

Handling Data from HTML FORMS

Form Objects

RECAP SLIDE

- **name**

- ➔ The name of the form, as defined in the HTML `<form>` tag when the form is created, for example:

- **`<form name="myForm">`**

- ➔ This property can be accessed using JavaScript.

- For example, this paragraph is part of a form that contains the example buttons.
 - It is the third form in the document (the others contain the buttons for the Window and Document object examples). To obtain the name of this form, we could use the following code:
 - **`alert(document.forms[2].name);`**

REPEATED SLIDE

Form Objects

RECAP SLIDE

- **Method**

➡ The method property can be set either to POST or GET.

- `<form method="POST">`

➡ We can access method of form by :

- `alert(document.forms[2].method);`

- **Length**

➡ The number of elements (text-boxes, buttons, etc.) in the form. For example:

➡ `alert(document.forms[2].length);`

Form Method & Events

RECAP SLIDE

- **submit()**

➡ Submits the form data to the destination specified in the action attribute using the method specified in the method attribute.

- **onSubmit()**

➡ Message sent each time a form is submitted. Can be used to trigger actions (e.g., calling a function). Usually placed within the <form> tags, for example:

- **<form onSubmit="displayFarewell()">**

➡ Would cause the function displayFarewell() to execute automatically every time the form is submitted.

Text Boxes & Text Areas- Properties

RECAP SLIDE

- **Name**

➔ The name property of a text-box or other form element can be accessed using JavaScript in the manner shown under the section on document.length, above.

- `<input type=text name="textBox1">`

- **Value**

➔ Getting the value of written in text field.

- `alert(document.forms[2].textBox1.value);`

REPEATED SLIDE

Text Boxes & Text Areas- Events

RECAP SLIDE

onFocus()

➡ Event signal generated when a user clicks in a text-box or text-area.

- `<input type=text name="textBox2" onFocus="alertOnFocus()">`

onBlur()

➡ Event signal generated when a user **clicks outside a text-box** or text-area having previously clicked inside it.

- `<input type=text name="textBox3" onBlur="alertOnBlur()">`
-

REPEATED SLIDE

Buttons, Radio-buttons & Checkboxes-

RECAP SLIDE

Properties

- name

```
if (document.forms[2].checkbox1.checked == true)
```

```
{  
    alert("Checked");  
}
```

```
}  
else
```

- Value

```
{  
    alert("Not checked"); };
```

➔ We can change the value of the button, and hence its label,

- `document.forms[2].button1.value = "New value, new label";`

- Checked

➔ This property - which is used with radio-buttons and check-boxes but not standard buttons - indicates whether or not the button has been selected by the user.

Buttons, Radio-buttons & Checkboxes-

Methods & Events

RECAP SLIDE

- focus()-
 - Give the button focus (i.e., make it the default button that will be activated if the return key is pressed).
 - `document.forms[2].button2.focus();`
- blur()
 - Remove focus
- click()
 - Clicking on this button will have the same effect as clicking directly on the button labelled 'Hello'

Events

`OnClick()`

`onFocus()`

`onBlur()`

Select Object

RECAP SLIDE

- Selection-boxes behave in a very similar fashion to radio-buttons: they present several options, of which only one can be selected at a time.
- They also have a similar set of properties, methods and events.
- The principal difference from a programming perspective is that selection-boxes don't have a checked property.
- Instead, to find out which option has been selected, you must use the **SelectedIndex** property
- **selectedIndex**
 - Returns an integer indicating which of a group of options has been selected by the user.
 - `alert(document.forms[2].selectBox1.selectedIndex);`

Getting Values from **Input** fields

- `<html>`
- `<head>`
- `<script>`
- `function displayResult()`
- `{`
- `var x=document.getElementById("txt").value;`
- `alert(x);`
- `}`
- `</script>`
- `</head>`
- `<body>`

- `<form>`
- `<input type="button" onclick="displayResult()" id="b" value="submit">`
- `<input type="textfield" maxlength="30" id="txt">`
- `</form>`

- `</body>`
- `</html>`

Resetting Form values

- `<html>`
- `<head>`
- `<script>`
- `function formReset()`
- `{`
- `document.getElementById("frm1").reset();`
- `}`
- `</script>`
- `</head>`
- `<body>`
- `<p>Enter some text in the fields below, then press the "Reset form" button to reset the form.</p>`
- `<form id="frm1">`
- `First name: <input type="text" name="fname">
`
- `Last name: <input type="text" name="lname">

`
- `<input type="button" onclick="formReset()" value="Reset form">`
- `</form>`
- `</body>`
- `</html>`

Form Data Validation Logic

Validation generally performs two functions.

- **Basic Validation –**

- ➔ Form must be checked to make sure data was entered into each form field that required it.
- ➔ Need just loop through each field in the form and check for data.

- **Data Format Validation –**

- ➔ Secondly, the data that is entered must be checked for correct form and value.
- ➔ This would need to put more logic to test correctness of data.

- Script for data validation is kept in separate file. (as external js file)

Form Validation- Empty Fields

- **function validate()**
- **{**
- **if(document.myForm.Name.value == "")**
- **{**
- **alert("Please provide your name!");**
- **document.myForm.Name.focus() ;**
- **return false;**
- **}**

Form Validation- Incomplete Values

- **if(document.myForm.Zip.value == "" ||**
- **isNaN(document.myForm.Zip.value) ||**
- **document.myForm.Zip.value.length != 5)**
- **{**
- **alert("Please provide a zip in the format #####");**
- **document.myForm.Zip.focus() ;**
- **return false;**
- **}**

Validating Email Address

- Think LOGIC.....
- How an email address can be validated ?
- @.... ?
- .com... ?
- What else.. ?

Validating Data- Email address

- **function validateEmail()**
- **{**
-
- **var emailID = document.myForm.EMail.value;**
- **atpos = emailID.indexOf("@");**
- **dotpos = emailID.lastIndexOf(".");**
- **if (atpos < 1 || (dotpos - atpos < 2))**
- **{**
- **alert("Please enter correct email ID")**
- **document.myForm.EMail.focus() ;**
- **return false;**
- **}**
- **return(true);**
- **}**

NOTE

- You are expected to see the following links
:
- http://www.w3schools.com/jsref/dom_obj_event.asp
- HTML DOM Objects Reference
- <http://www.w3schools.com/jsref/default.asp>
- And check various examples and codes of java script for yourself.