DHA SUFFA UNIVERSITY
Department of Computer Science

CS-1201L
Introduction to Information and Communication Technology
Fall 2019

LAB 05 – Introduction to JavaScript

OBJECTIVE(S)

- Learn about what JavaScript can do
- Learn about JavaScript Popup boxes
- Learn about basic Form Validation
- Learn about JavaScript Events

Introduction to JavaScript

JavaScript is one of the 3 languages all web developers must learn:

1. **HTML** to define the content of web pages
2. **CSS** to specify the layout of web pages
3. **JavaScript** to program the behavior of web pages

JavaScript is a dynamic computer programming language. It is lightweight and most commonly used as a part of web pages, whose implementations allow client-side script to interact with the user and make dynamic pages. It is an interpreted programming language.

Advantages of JavaScript

- **Less server interaction** - You can validate user input before sending the page off to the server. This saves server traffic, which means less load on your server.
- **Immediate feedback to the visitors –** Visitors do not have to wait for a page reload to see if they have forgotten to enter something.
- **Increased interactivity –** You can create interfaces that react when the user hovers over them with a mouse or activates them via the keyboard.
- **Richer interfaces –** You can use JavaScript to include such items as drag-and-drop components and sliders to give a Rich Interface to your site visitors.

Syntax

JavaScript can be implemented using JavaScript statements that are placed within the <script> and </script> HTML tags in a web page.

You can place the <script> tags, containing your JavaScript, anywhere within your web page, but it is normally recommended that you should keep it within the <head> tags.

A simple syntax of JavaScript is as follows.

- <script> JavaScript code </script>

The script tag takes two important attributes:

Attribute	Description
Language	This attribute specifies what scripting language you are using. Typically, its value will be javascript.
Type	This attribute indicates the scripting language in use and its value should be set to "text/javascript".

JavaScript in External File

The script tag provides a mechanism to allow you to store JavaScript in an external file and then include it into your HTML files.

- <head>
  <script type = "text/javascript" src = "filename.js" ></script>
  </head>

To use JavaScript from an external file source, you need to write all your JavaScript source code in a simple text file with the extension ".js" and then include that file as shown above.

What can JavaScript do?

JavaScript can change HTML content

- Content before
  <button type="button" onclick='document.getElementById("i1").innerHTML =
  "Content after"'>
  Click Me!
  </button>

The innerHTML property sets or returns the HTML content (inner HTML) of an element.

JavaScript can change HTML attributes

- ```
  <script>
  function light(onn) {
  var picture;
  if (onn == 0) {
  picture = "star.png"
  }
  else {
  picture = "star2.png"
  }
  document.getElementById('myImage').src = picture;
  }
  </script>
  <img id="myImage" src="star.png" width="100" height="180">

  <button type="button" onclick="light(0)">default</button>
  <button type="button" onclick="light(1)">change</button>

  ```

JavaScript can hide HTML elements

- ```
  <p id="demo"> Content </p>
  <button type="button" onclick="document.getElementById('demo').style.
  display='none'">Click Me!</button>
  ```

JavaScript can change CSS style

- ```
   Paragraph 
  <button type="button" onclick="document.getElementById('demo').style.
  fontSize='35px'">Click Me!</button>
  ```

Example Code

```
<head>
<script>
function myFunction() {
document.getElementById("demo").style.fontSize = "25px";
```
```

```
document.getElementById("demo").style.color = "red";
document.getElementById("demo").style.backgroundColor = "yellow";   }
</script>
</head>
<body>
<h1>My First JavaScript</h1>
<p id="demo">JavaScript can change the style of an HTML element.</p>
<button type="button" onclick="myFunction()">Click Me!</button>
</body>
```

JavaScript Popup Boxes

JavaScript has three kind of popup boxes: Alert box, Confirm box, and Prompt box.

Alert Box

An alert box is often used if you want to make sure information comes through to the user. When an alert box pops up, the user will have to click "OK" to proceed.

Syntax

- window.alert("sometext");

Confirm Box

A confirm box is often used if you want the user to verify or accept something. When a confirm box pops up, the user will have to click either "OK" or "Cancel" to proceed. If the user clicks "OK", the box returns true. If the user clicks "Cancel", the box returns false.

Syntax

- window.confirm("sometext");

Prompt Box

A prompt box is often used if you want the user to input a value before entering a page.

Syntax

- window.prompt("sometext");

These methods can be written without the window prefix.

Example Code (i)

```
<body>
<p>Click the button to display an alert box.</p>
<button onclick="myFunction()">Try it</button>
<script>
function myFunction() {
alert("Alert!");
}
</script>
</body>
```

Example Code (ii)

```
<body>
<p>Click the button to display a confirm box.</p>
<button onclick="myFunction()">Try it</button>
<script>
function myFunction() {
confirm("Press a button!");
}
</script>
</body>
```

Example Code (iii)

```
<body>
<p>Click the button to demonstrate the example</p>
<button onclick="myFunction()">Try it</button>
<p id="demo"></p>
<script>
function myFunction() {
var person = window.prompt("Please enter your name");
if (person != null) {
document.getElementById("demo").innerHTML =
"Hello " + person;
}
}
</script>
</body>
```

Basic Form Validation

It is important to validate the form submitted by the user because it can have inappropriate values. So, validation is must to authenticate user. JavaScript provides facility to validate the form on the client-side so data processing will be faster on the server-side.

Example code (i)

```
<head>
<script type="text/javascript">
function validateform(){
var name=document.myform.n1.value;
var pass=document.myform.p1.value;
if (name==""){
  alert("Name can't be blank");
  return false;
}else if(pass.length<6){
  alert("Password must be at least 6 characters long.");
  return false;
  }  }
</script>
</head>
<body>
<form name="myform" method="post" onsubmit="validateform()" >
Name: <input type="text" name="n1"><br/>
 Password: <input type="password" name="p1"><br/>
<input type="submit" value="register">
</form>
</body>
```

Example code (ii)

```
<html>
<head>
<script type="text/javascript">
function matchpass(){
var firstpassword=document.f1.password1.value;
var secondpassword=document.f1.password2.value;
```

```
if(firstpassword==secondpassword){
return true;
}
else{
alert("password must be same!");
return false;
}  }
</script>
</head>
<body>
<form name="f1" onsubmit="matchpass()">
Password:<input type="password" name="password1" /><br/>
Re-enter Password:<input type="password" name="password2"/><br/>
<input type="submit">
</form>
</body>
</html>
```

Example code (iii)

```
<html>
<body>
<script type="text/javascript">
function validate(){
var name=document.f1.name.value;
var passwordlength=document.f1.password.value.length;
var status=false;

if(name==""){
document.getElementById("namelocation").innerHTML=" <img src='cross.png' width=10px
height=10px/> Please enter your name";
status=false;
}else{
document.getElementById("namelocation").innerHTML=" <img src='tick.png' width=10px
height=10px/>";
status=true;
}
```

```
if(passwordlength<6){
document.getElementById("passwordlocation").innerHTML=  " <img src='cross.png'
width=10px height=10px/> Password must be greater than 6";
status=false;
}else{
document.getElementById("passwordlocation").innerHTML=" <img src='tick.png' width=10px
height=10px/>";
}

return status;
}
</script>
<form name="f1" onsubmit="validate()">
<table>
<tr><td>Name:</td><td><input type="text" name="name"/>
<span id="namelocation" style="color:red"></span></td></tr>
<tr><td>Password:</td><td><input type="password" name="password"/>
<span id="passwordlocation" style="color:red"></span></td></tr>
<tr><td colspan="2"><input type="submit" value="register"/>  </td></tr>
</table>
</form>
</body>
</html>
```

JavaScript Events

Sample code

```
<html>
<head>
<script type = "text/javascript">
function sayHello() {
alert("Hello World")  }
</script>
</head>
<body>
<input type = "button" onclick = "sayHello()" value = "Say Hello" />
</body>
</html>
```

HTML 5 Standard Events

Some of the standard HTML5 events are listed here.

Attribute	Description
onclick	Triggers on a mouse click
ondblclick	Triggers on a mouse double-click
ondrag	Triggers when an element is dragged
ondrop	Triggers when dragged element is being dropped
onfocus	Triggers when the window gets focus
onkeydown	Triggers when a key is pressed
onkeypress	Triggers when a key is pressed and released
onkeyup	Triggers when a key is released
onmousedown	Triggers when a mouse button is pressed
onmousemove	Triggers when the mouse pointer moves
onmouseout	Triggers when the mouse pointer moves out of an element
onmouseover	Triggers when the mouse pointer moves over an element
onmouseup	Triggers when a mouse button is released
onmousewheel	Triggers when the mouse wheel is being rotated
onresize	Triggers when the window is resized
onscroll	Triggers when an element's scrollbar is being scrolled
onsubmit	Triggers when a form is submitted

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LAB ASSIGNMENT

1. Create a webpage that contains the following Form controls.

   (i) A single line input control for accepting a number input.
   (ii) Two buttons labeled as “Square” and “Cube”.

   If the user clicks Square button then it should print the Square of the input number and if the user clicks Cube button then it should print the Cube of the input number.

2. Create a webpage of your choice and use atleast five of the HTML Events in different ways.

3. Create a webpage that contains some text written in a paragraph and a select box. The select box should contain values such as “Salmon”, “Springgreen”, “Rosybrown” and “Teal”. If a user selects any of the Color’s name from the select box then the background color of the paragraph should change to that color.

4. Create a webpage that contains the following Form controls.

   (i) Two single line input controls for accepting number inputs.
   (ii) Five radio buttons labeled as “Sum”, “Difference”, “Product”, “Quotient” and “Clear”.
   (iii) A button labeled as “Calculate”.

   If the user selects Sum’s radio button and clicks Calculate button then it should print the Sum of the two input numbers. Calculate difference, product and quotient in same manner. The clear button should clear the contents of the textbox.

SUBMISSION GUIDELINES

- Take a screenshot of each task.
- Place all the screenshots in a single word file labeled with Roll No and Lab No. e.g. **‘cs191xxx_Lab01’.**
- Convert the file into PDF.
- Place all the related files along with the PDF file in a folder labeled with Roll No and Lab No. e.g. ‘cs192xxx_Lab01’.
- Submit the folder at LMS
- **-100%** policies for plagiarism.