

Lab 06

JavaScript Basics

Objective:

To familiarize the students with Java Script.

Activity Outcomes:

After this lab the students should be able to understand

- Java Script basics
- validate the form using Java Script.

Instructor Note:

As pre-lab activity, read Chapter 8 from the textbook “Web Programming with HTML5, CSS, and JavaScript Pap/Psc John Dean, Year 2018

1) Useful Concepts

JavaScript is used in millions of Web pages to improve the design, validate forms, detect browsers, create cookies, and much more. JavaScript is the most popular scripting language on the internet, and works in all major browsers, such as Internet Explorer, Mozilla, Firefox, Netscape, Opera.

How to Put a JavaScript Into an HTML Page?

JavaScript can be embedded into HTML two ways

Inter script: <script>, </script> tags are used to start and end a javascript block

External script: JavaScript is written in a seprate file and included in the HTML file using src attribute of the <script>. Example

```
<script src="myscripts.js"> </script>
```

Variables in JavaScript:

JavaScript provides numbers, string, boolean, and null variable types. JavaScript is a loosely typed language. var keyword is used to declare a variable. We can declare a variable in JavaScript as

```
var name='Asad';
```

Operats in JavaScript:

- Assignment Operator: =
- Arithmetic Operators: +, -, *, /, %, ++, --
- Logical Operators: &&, ||, !
- Comparison Operators: ==, ===, !=, !==, <, >, <=, >=

Input/output in JavaScript:

- write(); is used to write on browser
- document.write(“hello world”)
- document.write(a)
- prompt(); is used to take input from users
- var num = prompt(“Please Enter a Number”, 0)
- alert(): used to show an alert box

Defining a function :

```
function functionName([parameters])  
{  
[statements]  
}
```

Conditional statements:

If statement if (condition) statement

or

if(condition)

{ statements } If-else statement if(condition)

{statement} else

{statements}

Loops in JavaScript:

For loop

for(var i=1; i==10; i==)

{

Document.write(“hello world”)

}

While loop

While(condition)

{

}

Do-while loop

do

{

}

while(condition)

2) Solved Lab Activities

<i>Sr. No</i>	<i>Time Allocated</i>	<i>Complexity</i>	<i>CLO-Mapping</i>
<i>Activity 1</i>	<i>10 Minutes</i>	<i>Medium</i>	<i>CLO-4</i>
<i>Activity 2</i>	<i>10 Minutes</i>	<i>Medium</i>	<i>CLO-4</i>
<i>Activity 3</i>	<i>10 Minutes</i>	<i>Medium</i>	<i>CLO-4</i>
<i>Activity 4</i>	<i>10 Minutes</i>	<i>Medium</i>	<i>CLO-4</i>
<i>Activity 5</i>	<i>10 Minutes</i>	<i>Medium</i>	<i>CLO-4</i>

Activity 1:

Use JS to take input from user to enter a number and display the entered number by clicking on a button “Tryit”.

Solution:

```
<!DOCTYPE html>
<html>
<body>

<h3>A demonstration of how to access a Number field</h3>

<input type="number" id="myNumber" value="2">

<p>Click the button to get the number of the number field.</p>

<button onclick="myFunction()">Try it</button>

<p id="demo"></p>

<script>
function myFunction() {
    var x = document.getElementById("myNumber").value;
    document.getElementById("demo").innerHTML = x;
}
</script>

</body>
</html>
```

Output:

<pre> <!DOCTYPE html> <html> <body> <h3>A demonstration of how to access a Number field</h3> <input type="number" id="myNumber" value="2"> <p>Click the button to get the number of the number field.</p> <button onclick="myFunction()">Try it</button> <p id="demo"></p> <script> function myFunction() { var x = document.getElementById("myNumber").value; document.getElementById("demo").innerHTML = x; } </script> </body> </html> </pre>	<p>A demonstration of how to access a Number field</p> <div>2</div> <p>Click the button to get the number of the number field.</p> <div>Try it</div> <div>2</div>
---	--

Activity 2:

Use JS to get the placeholder text of the search field by Clicking the button Try it

Input/output and variables:

```

<!DOCTYPE html>
<html>
<body>

<h3>A demonstration of how to access a Search field</h3>

<input type="search" id="mySearch" placeholder="Search for something..">

<p>Click the button to get the placeholder text of the search field.</p>

<button onclick="myFunction()">Try it</button>

<p id="demo"></p>

<script>
function myFunction() {
    var x = document.getElementById("mySearch").placeholder;
    document.getElementById("demo").innerHTML = x;
}
</script>

</body>
</html>

```

Output:



Activity 3:

*Use JS to write extra large or extra small numbers in exponent or scientific notation.
e.g $123e5 = 12300000$ or $123e-5 = 0.00123$*

Input/output and variables:

```
<!DOCTYPE html>
<html>
<body>

<h2>JavaScript Numbers</h2>

<p>Extra large or extra small numbers can be written with scientific
(exponent) notation:</p>

<p id="demo"></p>

<script>
let x = 123e5;
let y = 123e-5;
document.getElementById("demo").innerHTML = x + "<br>" + y;
</script>

</body>

</html>
```

Output:

```

<!DOCTYPE html>
<html>
<body>

<h2>JavaScript Numbers</h2>

<p>Extra large or extra small numbers can be written with scientific (exponent) notation:</p>

<p id="demo"></p>

<script>
let x = 123e5;
let y = 123e-5;
document.getElementById("demo").innerHTML = x + "<br>" + y;
</script>

</body>
</html>

```

JavaScript Numbers

Extra large or extra small numbers can be written with scientific (exponent) notation:

12300000
0.00123

Activity 4:

Use JS Date Function to display the date and time on HTML document.

Input/output and variables:

```

<!DOCTYPE html>
<html lang="en-US">

<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-
scale=1">
  <title>Today's Date</title>
</head>

<body>

  <script>
    let d = new Date();
    document.body.innerHTML = "<h1>Today's date is " + d + "</h1>"
  </script>

</body>

</html>

```

Output:

Today's date is Wed Apr 27 2022 23:14:35 GMT+0500 (Pakistan Standard Time)

Activity 5:

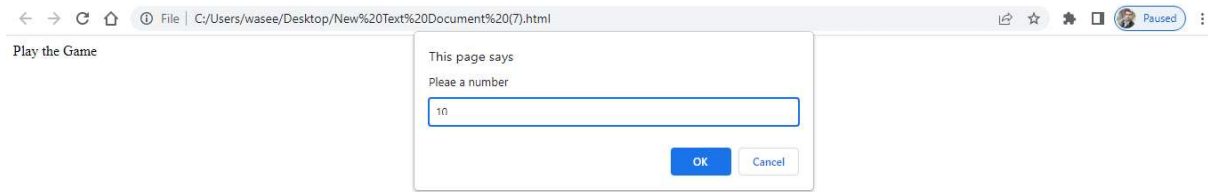
Use JS Input/output, variables, Functions, Conditional statements to create a game. Get a random number using Math.random function in the JS. In the game it asks user to enter a number. If the entered number matches the randomly generated number it generates an alert you won else it displays the actual number.

Solution:

```
<html>
<head>

<title>Using If condition</title>
<script language="javascript">
function playGame()
{
var res=Math.round(Math.random()*10)
var num=prompt("Pleae a number",0)
if(num==res)
document.write("You Won")
else
document.write("Your loss, correct Answer is",res)
}
</script>
</head>
<body>
<p onClick="playGame()">Play the Game</p>
</body>
</html>
```

Output:



3) Graded Lab Tasks

Note: The instructor can design graded lab activities according to the level of difficult and complexity of the solved lab activities. The lab tasks assigned by the instructor should be evaluated in the same lab.

Lab Task 1-3

- *Write the javascript code which asks the users to enter a number or zero to end taking the input. When user enters a 0 the program displays the sum.*
- *Write a javascript function which displays a question in prompt box and gets its answer. If the answer is correct then shows a success message otherwise displays a error message.*
- *Write javascript code which asks users to enter a number, a message and displays that message for the number of times as entered by the user.*

Lab Task 4:

- *Write a JS code to validate the signup form in Lab 3.*