

Javascript

Objectives:

- ❑ You will learn how to write simple JavaScript with
 - Variables
 - JavaScript built-in function
 - User defined function
 - Event handler

JavaScript is a cross-platform, object-oriented scripting language. It is a small and lightweight language. Inside a host environment (for example, a web browser), JavaScript can be connected to the objects of its environment to provide programmatic control over them. JavaScript contains a standard library of objects and a core set of language elements such as operators, control structures, and statements. Core JavaScript can be extended for a variety of purposes by supplementing it with additional objects; for example:

- *Client-side JavaScript* extends the core language by supplying objects to control a browser and its Document Object Model (DOM). For example, client-side extensions allow an application to place elements on an HTML form and respond to user events such as mouse clicks, form input, and page navigation.
- *Server-side JavaScript* extends the core language by supplying objects relevant to running JavaScript on a server. For example, server-side extensions allow an application to communicate with a database, provide continuity of information from one invocation to another of the application, or perform file manipulations on a server.
- Practice through this site : <https://jsfiddle.net/>

Local variables vs Global variables

```
<html>

<head>

<title>JavaScript - using variables</title>

<script type="text/javascript">
var food="ice-cream";
</script>
</head>
<body>
<script type="text/javascript">
    var food = "Durian";
    document.write("I like "+food);
</script>
</body>
</html>
```

What is the output when you view the web page through browser?

Ice cream or durian ?

Using function

```
<html>

<head>

<title>JavaScript - using function</title>

<script type="text/javascript">

function add(){

    var num1=1;

    var num2=2;

    alert(num1+num2);

}

</script>

</head>

<body>

<script type="text/javascript">

    add();

</script>

</body>

</html>
```

What do you get when you view the web page through browser

Some alert boxes ?

Modify the code to the following:

```
<html>
<head>
<title>JavaScript - using function</title>
<script type="text/javascript">

function add(num1, num2){

    result=num1+num2;
    return result;

}
</script>
</head>
<body>

<script type="text/javascript">
ans=add(2,3);
document.write("2 + 3 =" +ans+"<br/>");
ans=add(4,5);
document.write("4 + 5 =" +ans);
</script>
</body>
</html>
```

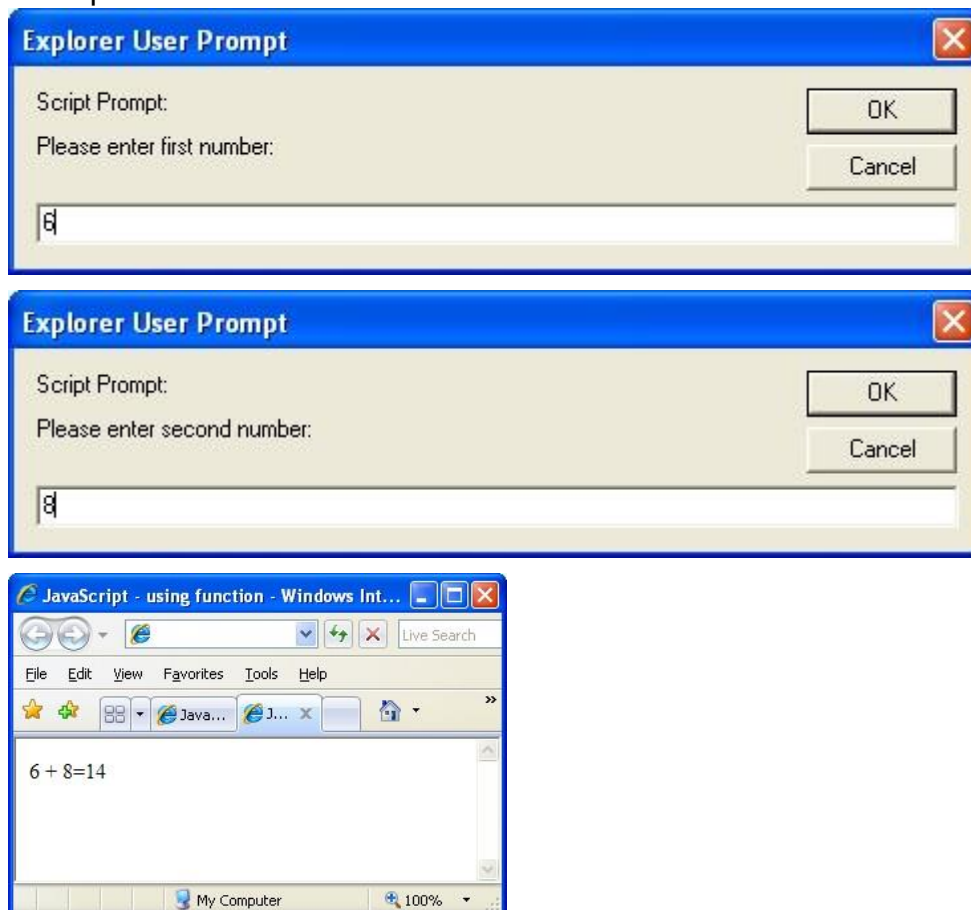
What do you get when you view the web page through browser

Values printed on the browser ?

User Input

1. The numbers to be added in the above example are hardcoded as 2 and 3 or 4 and 5. Write a web page which
 - a. use prompt box to prompt user for 2 numbers
 - b. Call the function **add** to add any 2 numbers and display the result

Example:



Hints: If you do not get the correct answer for the sum, you might have forgotten the following that we mentioned in the lecture.

JavaScript is loosely typed. By default, user inputs will be treated as string. Adding 2 strings means concatenate the strings, e.g. "12"+"23" will form a string "1223". To treat "12" as a number twelve, we need to make use of a built-in function **parseInt**.

Example:

`parseInt("12")+parseInt("23")` will give you the result 35.

Recommended code

```
<html>

<head>

<title>JavaScript - using function</title>

<script type="text/javascript">

function add(num1, num2){

    result=parseInt(num1)+parseInt(num2);

    return result;

}

</script>

</head>

<body>

<script type="text/javascript">

    var n1=prompt("Please enter first number:",0);

    var n2=prompt("Please enter second number:",0);

    ans=add(n1,n2);

    document.write(n1+" + "+n2+"="+ans);

</script>

</body>

</html>
```

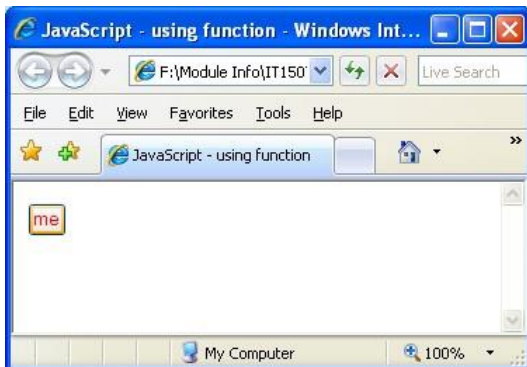
Event Handler

The following web page should display an alert box to indicate how many times the button me is clicked but it doesn't. You are required to fix the problem.



```
<html>
<head>
<title>JavaScript - using function</title>
<script type="text/javascript">
var count=0;
function countClick(){
    count=count+1;
    alert("You clicked me "+count+" times!");
}
</script>
</head>
<body>
<input type="button" value="me" />
</body>
</html>
```

In the code below, when the mouse hover over the button, the button will change to red. When mouse out, the button will return back to normal (black).



```
<html>

<head>

<title>JavaScript - using function</title>

<script type="text/javascript">

var count=0;

function countClick(){

    count=count+1;

    alert("You clicked me "+count+" times!");

}

</script>

</head>

<body>

<input type="button" value="me" onclick="countClick();"
onmouseover="this.style.color='red';" onmouseout="this.style.color='black';"/>

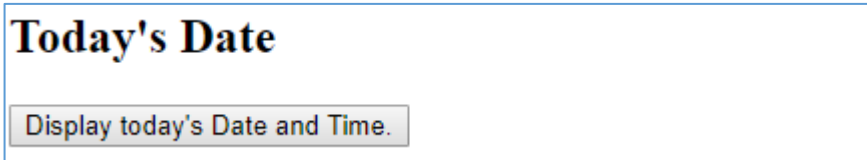
</body>

</html>
```

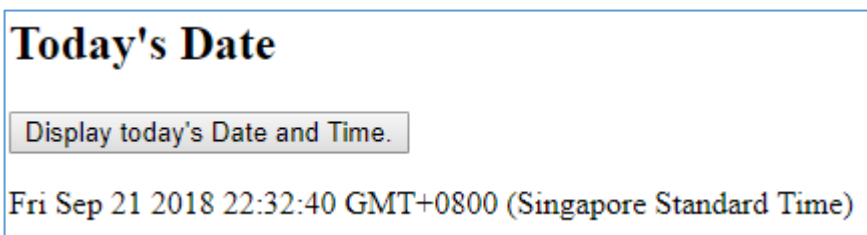

Additional Practice

1. Add appropriate JAVASCRIPT/HTML codes into the HTML page to produce similar screen shown below.

Before clicking



After clicking



```
<!DOCTYPE html>

<html>

<body>

<h2>Today's Date</h2>

<button type="button"
onclick="document.getElementById('demo').innerHTML = Date()">
Display today's Date and Time.</button>

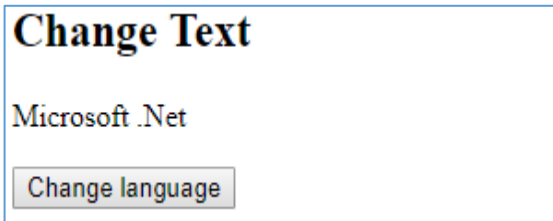
<p></p>

</body>

</html>
```

2. Add appropriate JAVASCRIPT/HTML codes into the HTML page to produce similar screen shown below.

Before clicking on 'Change language'



After clicking on 'Change language'



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

<h2>Change Text</h2>

<p>Microsoft .Net</p>

<button type="button" onclick='document.getElementById("demo").innerHTML =
"Node.js"'>Change language</button>

</body>
</html>
```

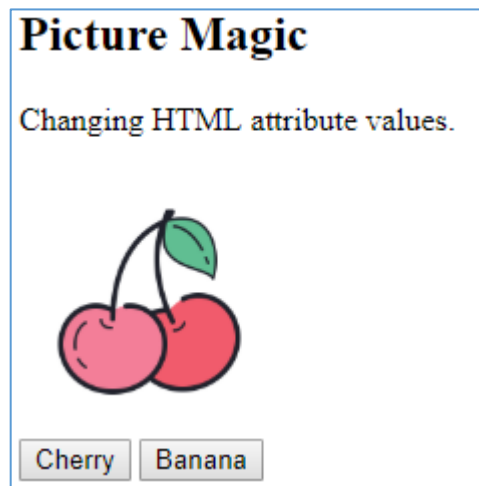
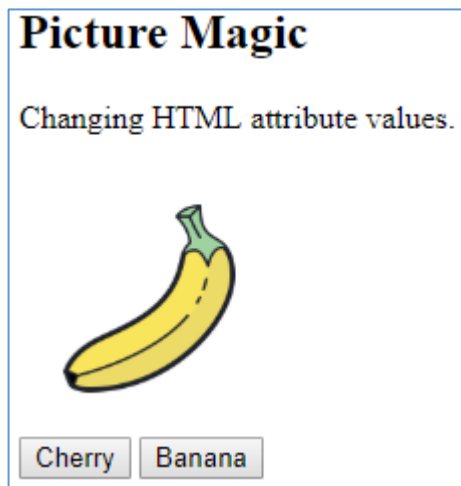
3. Add appropriate JAVASCRIPT/HTML codes into the HTML page to produce similar screen shown below.

Default picture should be Banana.

Clicking on the button will display the appropriate fruit.

Cherry Pic - <https://png.icons8.com/plasticine/1600/cherry.png>

Banana Pic - <https://png.icons8.com/plasticine/1600/banana.png>



```
<!DOCTYPE html>

<html>

<body>


<h2>Picture Magic</h2>
<p>Changing HTML attribute values.</p>





<BR/>

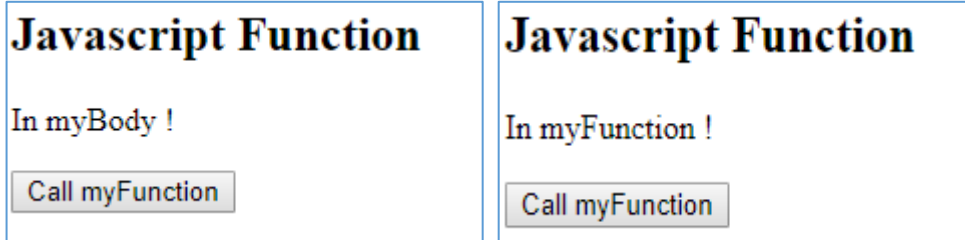

<button
onclick="document.getElementById('').src='https://png.icons8.com/plasticine/1600/cherry.png'">Cherry</button>


<button
onclick="document.getElementById('').src='https://png.icons8.com/plasticine/1600/banana.png'">Banana</button>


</body>
</html>
```

4. Add appropriate JAVASCRIPT/HTML codes into the HTML page to produce similar screen shown below.

After clicking on the "Call myFunction" button.



```
<!DOCTYPE html>
<html>
<head>
<script>
myFunction() {
    document.getElementById("myBody").innerHTML = "In myFunction !";
}
</script>
</head>

<body>

<h2>Javascript Function</h2>
<p>In myBody !</p>
<button type="button" onclick="">Call myFunction</button>

</body>
</html>
```

5. What is the output of the HTML/JAVASCRIPT codes?

```
<!DOCTYPE html>

<html>

<body>

<h2>JavaScript Scope</h2>

<p>Student Name</p>

<p id="demo1"></p>
<p id="demo2"></p>

<script>
myFunction();

function myFunction() {
    var studName = "Jayson";
    document.getElementById("demo1").innerHTML =
    studName + " of type " + typeof studName;
}

document.getElementById("demo2").innerHTML = studName + " is here.";
</script>

</body>
</html>
```

Propose changes to the codes to correct the issue.

6. What is the output of the HTML/JAVASCRIPT codes?

```
<!DOCTYPE html>

<html>

<body>


<h2>Test Page</h2>
<p>It will be erased by document.write</p>


Some messages .....<br/>


<button type="button" onclick="document.write('Testing')">Try it</button>


</body>
</html>
```

Sol for additional practice

1. Add appropriate JAVASCRIPT codes into the HTML page to produce similar screen shown below.

```
<!DOCTYPE html>

<html>

<body>

<h2>Today's Date</h2>

<button type="button"
onclick="document.getElementById('demo').innerHTML = Date()">
Display today's Date and Time.</button>

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

</body>

</html>
```


2. Add appropriate JAVASCRIPT codes into the HTML page to produce similar screen shown below.

```
<!DOCTYPE html>

<html>

<body>

<h2>Change Text</h2>

<p id="demo">Microsft .Net</p>

<button type="button" onclick='document.getElementById("demo").innerHTML =
"Node.js"'>Change language</button>

</body>

</html>
```

3. Add appropriate JAVASCRIPT codes into the HTML page to produce similar screen shown below.

```
<!DOCTYPE html>

<html>

<body>

<h2>Picture Magic</h2>

<p>Changing HTML attribute values.</p>



<BR/>

<button
onclick="document.getElementById('myImage').src='https://png.icons8.com/plasticine/
1600/cherry.png'">Cherry</button>

<button
onclick="document.getElementById('myImage').src='https://png.icons8.com/plasticine/
1600/banana.png'">Banana</button>

</body>

</html>
```

4. Add appropriate JAVASCRIPT codes into the HTML page to produce similar screen shown below.

```
<!DOCTYPE html>

<html>

<head>

<script>
function myFunction() {
    document.getElementById("myBody").innerHTML = "In myFunction !";
}
</script>
</head>

<body>

<h2>Javascript Function</h2>
<p id="myBody">In myBody !</p>
<button type="button" onclick="myFunction()">Call myFunction</button>

</body>
</html>
```

5. What is the output of the HTML/JAVASCRIPT codes?

JavaScript Scope

Student Name

Jayson of type string

A variable declared outside a function, becomes **GLOBAL**.

A global variable has **global scope**: All scripts and functions on a web page can access it.

Propose changes to the codes to correct the issue.

```
<!DOCTYPE html>
<html>
<body>
<h2>JavaScript Scope</h2>
<p>Student Name</p>
<p id="demo1"></p>
<p id="demo2"></p>
<script>
myFunction();
var studName = "Jayson";
function myFunction() {

    document.getElementById("demo1").innerHTML =
    studName + " of type " + typeof studName;
}
document.getElementById("demo2").innerHTML = studName + " is here.";
</script>
</body>
</html>
```

6. What is the output of the HTML/JAVASCRIPT codes?

Output “testing”

Using document.write() after an HTML document is loaded, will **delete all existing HTML.**