

A Laboratory Manual for

Client Side Scripting

Language

(22519)

Semester –V

(CO)



Maharashtra State Board of Technical Education, Mumbai.

Practical No 1: Write simple JavaScript with HTML for arithmetic expression evaluation and message printing.

Relevant Program Outcomes (POs)

- **Basic Knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problem.
- **Discipline Knowledge:** Apply computer programming knowledge to solve the computer group related problems.
- **Experiments and practices:** Plan to perform experiments and practices to use the result to solve the computer group related problems.
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What is JavaScript?

- It is designed to add interactivity to HTML pages
- It is a scripting language (a lightweight programming language)
- It is an interpreted language (it executes without preliminary compilation)
- Usually embedded directly into HTML pages
- And, Java and JavaScript are different

What can a JavaScript Do?

- JavaScript gives HTML designers a programming tool:
 - simple syntax
- JavaScript can put dynamic text into an HTML page
- JavaScript can react to events
- JavaScript can read and write HTML elements
- JavaScript can be used to validate data
- JavaScript can be used to detect the visitor's browser

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- JavaScript can be used to create cookies
 - Store and retrieve information on the visitor's computer

JavaScript How To

- The HTML <script> tag is used to insert a JavaScript into an HTML page

```
<script type="text/javascript">  
document.write("Hello World!")  
</script>
```

- Ending statements with a semicolon?

- Optional; required when you want to put multiple statements on a single line

JavaScript can be inserted within the head, the body, or use external JavaScript file

How to handle older browsers?

```
<script type="text/javascript">  
<!--  
document.write("Hello World!")  
// -->  
</script>
```

JavaScript can "display" data in different ways:

- Writing into an HTML element, using innerHTML.
- To access an HTML element, JavaScript can use the document.getElementById(id) method. The id attribute defines the HTML element. The innerHTML property defines the HTML content.
 - Writing into the HTML output using document.write().
 - Writing into an alert box, using window.alert().
 - Writing into the browser console, using console.log().

JavaScript Variables

- In a programming language, variables are used to store data values.
- JavaScript uses the var keyword to declare variables.
- An equal sign is used to assign values to variables.

JavaScript Arithmetic Operators

- Arithmetic operators are used to perform arithmetic on numbers:

Operator	Description
+	Addition
-	Subtraction
*	Multiplication
/	Division
%	Modulus (Remainder)
++	Increment
--	Decrement

1. Simple Java Script Program

```
<html>  
<script language="JavaScript">
```

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```
document.write("Hello World!");
alert("Hello World!");
</script>
</html>
```

2. Perform Multiplication of Two Numbers

```
<html>
<script language="JavaScript">
varans = 0;
varfirstnum = 0;
varseconndnum = 0;
firstnum = prompt("Enter the first number",0);
secondnum = prompt("Enter the second number",0);
ans = firstnum * secondnum;
document.write(ans);
</script>
</html>
```

Conclusion:

In this practical, we learn, Arithmatic operators & Basic of javascript.

Questions:

1. Which company developed JavaScript?
2. What are JavaScript Data Types?
3. How to declare variable in Javascript?
4. What are arithmetical operators?

1] Which Company developed Javascript?
Ans - Netscape Communications Corporation developed Javascript.

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2] What are the Javascript Data types?

→ The Five basic types of data are

- 1) String
- 2) Numbers
- 3) booleans
- 4) undefined
- 5) null

3] How to declare variable in javascript?

→ In javascript the variables are declared with var keyword.

4] What are arithematical operators?

- 1) Addition +
- 2) Subtraction -
- 3) Multiplication ×
- 4) Division ÷
- 5) Modulus %

Marks Obtained			Dated Signed of teacher
Process Related(35)	Product Related(15)	Total(50)	

* Write simple JavaScript with HTML for arithmetic expression evaluation & message printing

```
<!DOCTYPE html>
<html>
<head>
</head>
<body>
<h1> Javascript Arithmetic Operators </h1>
<script>
var a = 6 , b = 3 ;
var addition , subtraction , multiplication
Division , Modulus ;
addition = a+b ;
subtraction = a-b ;
division = a/b ;
Modulus = a%b ;
multiplication = a*b ;
document.write ("Addition = " + addition + "<br>");
document.write ("Subtraction = " + subtraction + "<br>");
document.write ("Multiplication = " + multiplication + "<br>");
document.write ("Division = " + division + "<br>");
document.write ("Modulus = " + Modulus + "<br>");

</script>
</body>
</html>
```



Practical No2:-Develop JavaScript to use decision making and looping statements

Relevant Program Outcomes (POs)

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Conditional Statements:

1. The if Statement

Use the if statement to specify a block of JavaScript code to be executed if a condition is true.

Syntax
if (*condition*) {
 // block of code to be executed if the condition is true
}

2. The else Statement

Use the else statement to specify a block of code to be executed if the condition is false.

Syntax
if (*condition*) {
 // block of code to be executed if the condition is true
} else {
 // block of code to be executed if the condition is false
}

3. The else if Statement

Use the else if statement to specify a new condition if the first condition is false.

Syntax

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```
if (condition1) {  
    // block of code to be executed if condition1 is true  
} else if (condition2) {  
    // block of code to be executed if the condition1 is false and condition2 is true  
} else {  
    // block of code to be executed if the condition1 is false and condition2 is false  
}
```

4. The Switch Statement

Use the switch statement to select one of many code blocks to be executed.

Syntax

```
switch(expression) {  
case x:  
    // code block  
break;
```

```
case y:  
    // code block  
break;  
default:  
    // code block  
}
```

JavaScript Loops

1. for loop

Loops are handy, if you want to run the same code over and over again, each time with a different value.

Syntax:-

```
for (initialization condition; testing condition; increment/decrement)  
{  
statement(s)  
}  
Or for objects  
for (variableName in Object)  
{  
statement(s)  
}
```

2. do while:

do while loop is similar to while loop with only difference that it checks for condition after executing the statements, and therefore is an example of Exit Control Loop.

Syntax:

```
do  
{  
statements..  
}while (condition);
```

3. While loop

A while loop is a control flow statement that allows code to be executed repeatedly based on a given Boolean condition. The while loop can be thought of as a repeating if statement.

Syntax :

```
while (boolean condition)  
{  
loop statements...  
}
```

Programs:

1. for loop

```
</script>

4. while loop

<script type = "text/javascript">
// JavaScript program to illustrate while loop

varx = 1;

// Exit when x becomes greater than 4
while(x <= 4)
{
    document.write("Value of x:" + x + "<br />");

    // increment the value of x for
    // next iteration
    x++;
}

</script>

5. if...else

<script type = "text/javascript">
// JavaScript program to illustrate If-else statement

vari = 10;

if(i < 15)
    document.write("10 is less than 15");
else
    document.write("I am Not in if");

</script>

6.switch case

<script type = "text/javascript">
// JavaScript program to illustrate switch-case

vari = 9;

switch(i)
{
    case0:
```

```
document.write("i is zero.");
break;
case1:
document.write("i is one.");
break;
case2:
document.write("i is two.");
break;
default:
document.write("i is greater than 2.");
}
</script>
```

Conclusion:

In this practical we learn to use decision making and looping statement in javascript

Questions

1. Is JavaScript case sensitive? Give an example?
2. What Boolean operators can be used in JavaScript?

Q) Is Javascript case sensitive? Give Example?

→ Javascript is a case sensitive language. Key words, variables, function names and any other identifier must be typed with consistent capitalization of letters.

Ex. if we write 'WHILE'.

2] What Boolean operators can be used in javascript.

→ There are three operators : AND, OR & NOT are used in javascript.

Marks Obtained			Dated Signed of teacher
Process Related(35)	Product Related(15)	Total(50)	

Develop Javascript to use decision making & looping statements

i)

```
<!DOCTYPE html>
<html>
<head>
<body>
<script type = "text/javascript">

    var number = 10;
    for (number % 2 == 0)
    {
        document.write (number + " The number is
            even. <br>");
    }
    else if
        document.write (number + " The number
            is odd. <br>");
    }

</script>
</body>
</html>
```

* switch statement

2) <html>

<body>

<script type = "text / Javascript">

var grade = 'A' ;

switch (grade) {

case 'A' : document.write (" Best
");

break ;

case 'B' : document.write (" better
");

break ;

case 'C' : document.write (" good
");

break ;

case 'D' : document.write (" Not good
");

);

break ;

case 'F' : document.write (" Failed
");

break ;

default : document.write (" unknown
grade
");

}

</script>

</body>

</html>

Practical No-3. Develop JavaScript to implements Array functionalities

Relevant Program Outcomes (POs)

- **Basic Knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problem.
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What is an Array?

An array is a special variable, which can hold more than one value at a time.

Creating an Array

Using an array literal is the easiest way to create a JavaScript Array.

Syntax:

```
var array_name = [item1, item2, ...];
```

JavaScript Array directly (new keyword)

The syntax of creating array directly is given below:

```
var arrayname=new Array();
```

Here, new keyword is used to create instance of array.

Eg :-1

```
<html>
<body>
<script>
var i;
var emp = new Array();
emp[0] = "Arun";
emp[1] = "Varun";
emp[2] = "John";
```

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```
for (i=0;i<emp.length;i++){
document.write(emp[i] + "<br>");
}
</script>
</body>
</html>
```

2.

```
<html>
<body>
<script>
varemp=["Sonoo","Vimal","Ratan"];
for (i=0;i<emp.length;i++){
document.write(emp[i] + "<br/>");
}
```

```
</script>
</body>
</html>
```

JavaScript Array Methods

- find() It returns the value of the first element in the given array that satisfies the specified condition.
- findIndex() It returns the index value of the first element in the given array that satisfies the specified condition.
- indexOf() It searches the specified element in the given array and returns the index of the first match.
- lastIndexOf() It searches the specified element in the given array and returns the index of the last match.
- pop() It removes and returns the last element of an array.
- push() It adds one or more elements to the end of an array.
- reverse() It reverses the elements of given array.
- shift() It removes and returns the first element of an array.
- sort() It returns the element of the given array in a sorted order.

Conclusion:

In this practical we learn to define array and apply array methods on it.

Questions:

1. Write a JavaScript to define array elements and find the length of array.
2. Write a JavaScript for sorting array elements.
3. Write a JavaScript to reserve elements of an integer array.

Q] Write a JavaScript to define array elements & find length of array.



< html >

< body >

< script >

```

var fruits = ["Banana", "Orange", "Apple",
              "Mango"];
document.getElementById("demo").innerHTML =
fruits.length;
</script>
</body>
</html>

```

2] → <html>

```

<body>
<script>
function func () {
var arr = ["Hi", "I", "AM", "Here"];
document.write(arr);
document.write("<br>");
document.write("sorted array" +
arr.sort());
}
func();
</script>
</body>
</html>

```

Marks Obtained			Dated Signed of teacher
Process Related(35)	Product Related(15)	Total(50)	

Practical No-4. Develop javascript to implement functions

Relevant Program Outcomes (POs)

- **Basic Knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problem.
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Function

JavaScript functions are used to perform operations. We can call JavaScript function many times to reuse the code.

Advantage of JavaScript function

There are mainly two advantages of JavaScript functions.

1. **Code reusability:** We can call a function several times so it save coding.
2. **Less coding:** It makes our program compact. We don't need to write many lines of code each time to perform a common task.

JavaScript Function Syntax

```
function function_Name([arg1, arg2, ...argN])  
{  
//code to be executed  
}
```

JavaScript Functions can have 0 or more arguments.

Example

```
<html>  
<body>  
<script>  
functionmsg()  
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```

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```
{  
alert("hello! this is message");  
}  
</script>  
<input type="button" onclick="msg()" value="call function"/>  
</body>  
</html>
```

JavaScript Function Arguments

We can call function by passing arguments. Let's see the example of function that has one argument.

```
<html>  
<body>  
<script>  
function getcube(number)  
{  
alert(number*number*number);  
}
```

```
</script>
<form>
<input type="button" value="click" onclick="getcube(4)"/>
</form>
</body>
</html>
```

Function with Return Value

We can call function that returns a value and use it in our program. Let's see the example of function that returns value.

```
<html>
<body>
<script>
function getInfo(){
return "hello javatpoint! How r u?"; }
</script>
<script>
document.write(getInfo());
</script>
</body>
</html>
```

JavaScript Function Object

In JavaScript, the purpose of Function constructor is to create a new Function object. It executes the code globally. However, if we call the constructor directly, a function is created dynamically but in an unsecured way.

Syntax

`new Function ([arg1[, arg2[,...,argn]],] functionBody)`

Parameter-`arg1, arg2, ..., argn` - It represents the argument used by function.

`functionBody` - It represents the function definition.

```
<!DOCTYPE html>
<html>
<body>
<script>
var add=new Function("num1","num2","return num1+num2");

document.writeln(add(2,5));
</script>
</body>
</html>
```

CONCLUSION:

In this practical we learn to implement function in javascript.

Questions:

1. Write a JavaScript to define use of Constructor.
2. Explain the scope of variable with the help of program.
3. How to call a function from another function? Explain with example.

1]

Ans :-

```

<script>
    Function Id (First ,last ,age)
    {
        this . Firstname = First ;
        this . lastname = last ;
        this . age = age ;
    }

    var list = new Id ("yash")
    var list = new Id ("Sneha",
                      "chaudhary" , 17);

    document . write ("My name is " +
                     list . firstname + " " + list .
                     lastname);

</script>

```

Marks Obtained			Dated Signed of teacher
Process Related(35)	Product Related(15)	Total(50)	

Practical No-5. Develop javascript to implement Strings.

Relevant Program Outcomes (POs)

- **Basic Knowledge:** Apply knowledge of basic mathematics, sciences and basic engineering to solve the computer group related problem.
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JavaScript String

The JavaScript string is an object that represents a sequence of characters.

There are 2 ways to create string in JavaScript

1. By string literal
2. By string object (using new keyword)

1) By string literal

The string literal is created using double quotes. The syntax of creating string using string literal is given below:

```
var stringname="string value";
```

Example:

```
<!DOCTYPE html>
<html>
<body>
<script>
varstr="This is string literal";
document.write(str);
</script>
</body>
</html>
```

2) By string object (using new keyword)

The syntax of creating string object using new keyword is given below:

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```
var stringname=new String("string literal");  
Here, new keyword is used to create instance of string.
```

Example

```
<!DOCTYPE html>  
<html>  
<body>  
<script>  
var stringname=new String("hello javascript string");  
document.write(stringname);  
</script>  
</body>  
</html>
```

JavaScript String Methods

charAt()	It provides the char value present at the specified index.
charCodeAt()	It provides the Unicode value of a character present at the specified index.
concat()	It provides a combination of two or more strings.
indexOf()	It provides the position of a char value present in the given string.

- lastIndexOf() It provides the position of a char value present in the given string by searching a character from the last position.
- search() It searches a specified regular expression in a given string and returns its position if a match occurs.
- match() It searches a specified regular expression in a given string and returns that regular expression if a match occurs.
- replace() It replaces a given string with the specified replacement.
- substr() It is used to fetch the part of the given string on the basis of the specified starting position and length.
- substring() It is used to fetch the part of the given string on the basis of the specified index.
- toLowerCase() It converts the given string into lowercase letter.
- toUpperCase() It converts the given string into uppercase letter.
- toString() It provides a string representing the particular object.
- valueOf() It provides the primitive value of string object.

Example

```
<!DOCTYPE html>
<html>
<body>
<script>
varstr="javascript";
document.write(str.charAt(2));
var s1="javascript ";
var s2="concat example";
var s3=s1.concat(s2);
document.write(s3);
var s1="javascript from javatpointindexof";
var n=s1.indexOf("from");
document.write(n);
var s1="javascript from javatpointindexof";
var n=s1.lastIndexOf("java");
document.write(n);
var s1="JavaScript toLowerCase Example";
var s2=s1.toLowerCase();
document.write(s2);
var s1="JavaScript toUpperCase Example";
var s2=s1.toUpperCase();
document.write(s2);
</script>
</body>
</html>
```

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CONCLUSION:

In this practical we learn to implement string & use all methods of string.

Questions:

1. What are Strings? Explain in details.
2. Write a JavaScript to retrieve a position of desired word from the string.
3. Write a JavaScript program to convert a string to number.

1]

Ans :-

1] A string is a collection of characters which is always enclosed with a single ("") or double quotes ("").

2] A javascript string stores a series of characters like 'c'.

3] String indexing start from '0'

4] It is used to store single characters and stores array of characters.

Marks Obtained			Dated Signed of teacher
Process Related(35)	Product Related(15)	Total(50)	

2]

Ans :-

< html >

< body >

< script >

var str = " Hi I am sneha";

var n = str.indexOf('am');

document.write("Position of 'am'" + n);

</script >

</body >

</ html >

3]

Ans :-

< html >

< body >

< script >

var a = "100" ;

var b = parseInt(a);

document.write (" Integer : + b);

document

</script >

</body >

</html >