**Topic 1: JavaScript - Introduction**

**Assignment 1:**

Write JavaScript code to display current date & time.

<HTML>

<head>

<title>Display Current Date and Time</title>

</head>

<body>

<h2>Display Current Date and Time</h2>

<p id="Date\_dis"></p>

<script>

var dt = new Date();

document.getElementById("Date\_dis").innerHTML = dt;

</script>

</body>

<HTML>

**Topic 2: JavaScript WhereTo**

**Assignment 1:**

Create an external JS file called 'alert.js' which contains alert function with “Hello User “message. Include alert.js in your html head & body sections and observe the output.

<html>

<script>

window.alert("Hello User")

</script>

</html>

**Assignment 2:**

Create an external JS file called 'combinations.js' which contains a JavaScript function that generates all combinations of a string. Include 'combinations.js in body sections and display the output.

*Example string :* 'dog' *Expected Output :* d,do,dog,o,og,g

combination("dog");

function combination(str){

var strCombination;

var strCom = [];

var zTrip = 0;

for(var i = 0;i<str.length;i++)

{

var x = "";

x= str[i];

strCom[zTrip++] = x;

for(j = i+1; j <str.length;j++)

{

x += str[j];

strCom[zTrip++] = x;

}

}

var finalCombination = strCom.join(',');

document.getElementById('demo').innerHTML = finalCombination;

}

**Topic 3: JavaScript Output**

**Assignment 1:**

Write a JavaScript program where the program takes a random integer between 1 to 10, the user is then prompted to input a guess number. If the user input matches with guess number, the program will display a message "Good Work" otherwise display a message "Not matched".

function check() {

var x = Math.floor((Math.random() \* 10) + 1);

var i = document.getElementById('inputFiled').value;

if (i === x) {

return "Good Work";

}else {

return "Not matched";

}

}

**Assignment 2:**

Write a JavaScript program to capitalize the first letter of each word of a given string and display it on java script console along with browser

capital\_letter("Wipro");

function capital\_letter(str)

{

str = str.split(" ");

for (var i = 0, x = str.length; i < x; i++) {

str[i] = str[i][0].toUpperCase() + str[i].substr(1);

}

var finalStr = str.join(" ");

document.getElementById("demo").innerHTML = "Updated String: "+finalStr;

return finalStr;

}

console.log(capital\_letter("Wipro"));

**Topic 4: JavaScript Statements & Comments**

**Assignment 1:**

Write a JavaScript program to sort an array of all prime numbers between 1 and a given integer.

Add single & multi line comments wherever applicable**.** Sensitivity: Internal & Restricted

<script>

<!-- Function to return the prime numbers -->

<!-- to display function -->

function prime(num)

{

var j;

var flag=0;

for(j=2;j<num;j++)

{

if(num%j==0)

flag=1;

}

if(num==1)

return 0;

if(flag==1)

return 0;

if(flag==0)

return num;

}

<!-- Function to write the prime numbers to array -->

function display()

{

var i;

var arr = [];

for(i=1;i<dd.value;i++)

{

if(prime(i))

arr[arr.length] = " "+i+" ";

}

document.getElementById("demo").innerHTML = arr;

}

</script>

**Topic 5: JavaScript Variables & Data Types**

**Assignment 1:**

Write a Java Script program that should have two variables initialized with nos. You should add and display the sum only if they are numbers. If they are of any other type you should show a message "Sorry.... Only Nos will be added"

**Assignment 2:**

Write a JavaScript program to find the area of a triangle where lengths of the three of its sides are 5, 6, 7.

<script>

var side1 = 5;

var side2 = 6;

var side3 = 7;

var perimeter = (side1 + side2 + side3)/2;

var area = Math.sqrt(perimeter\*((perimeter-side1)\*(perimeter-side2)\*(perimeter-side3)));

document.getElementById("demo").innerHTML += area;

</script>

**Topic 6: JavaScript Operators**

**Assignment 1:**

Write a program that outputs all possibilities to put + or - or nothing between the numbers 1, 2, ...,9 (in this order) such that the result is always 100.

For example: 1 + 2 + 34 – 5 + 67 – 8 + 9 = 100

<script>

var numbers = [1,2,3,4,5,6,7,8,9];

var sum = 100;

var signs = ['+', '-', '&'];

var numbersInnerLength = numbers.length-1;

var cLength = Math.pow(signs.length, numbersInnerLength);

var combinations = [];

for (var i = 0; i < cLength; i++) {

var newArray = [];

for (var j = 0; j < numbers.length; j++) {

newArray[j\*2] = numbers[j];

}

combinations.push(newArray);

}

for (var k = 0; k < numbersInnerLength; k++) {

var periodLength = cLength / Math.pow(signs.length, k+1);

var signIndex = 0;

for (var i = 0; i < cLength; i+=periodLength) {

for (var j = 0; j < periodLength && i+j < cLength; j++) {

combinations[i+j][k\*2+1] = signs[signIndex];

}

signIndex = (signIndex+1)%signs.length;

}

}

for (var i = 0; i < combinations.length; i++) {

var combination = combinations[i];

var cstr = combination.join("").replace(/&/g, "");

if (eval(cstr) == sum) {

document.getElementById("demo").innerHTML += cstr;

document.getElementById("demo").innerHTML += "<br>";

}

}

</script>

**Topic 7: JavaScript Functions**

**Assignment 1:**

Write a JavaScript function that computes the list of the first 100 Fibonacci numbers. By definition, the first two numbers in the Fibonacci sequence are 0 and 1, and each subsequent number is the sum of the previous two. As an example, here are the first 10 Fibonnaci numbers: 0, 1, 1, 2, 3, 5, 8, 13, 21, and 34

<script>

var fibonacci\_series = function (n)

{

if (n===1)

{

return [0, 1];

}

else

{

var s = fibonacci\_series(n - 1);

s.push(s[s.length - 1] + s[s.length - 2]);

return s;

}

};

document.getElementById("demo").innerHTML += fibonacci\_series(100);

</script>

**Assignment 2:**

Write a JavaScript function that combines two lists by alternately taking elements. For example: given the two lists [a, b, c] and [1, 2, 3], the function should return [a, 1, b, 2, c, 3].

<script>

var newList = function()

{

let a = ['a','b','c'];

let b = [1, 2, 3];

let l = a.length+b.length;

let r = [];

let j=0,k=0;

for(let i=0; i<l;i++) {

if(i%2==0) {

r[i]=a[j++];

} else {

r[i]=b[k++];

}

}

console.log(r);

return r;

}

document.getElementById("demo").innerHTML +="[" + newList() + "]";

</script>

**Assignment 3:**

Write a JavaScript function to get the last 'n' elements of the array. If array has 6 elements and if user gives 4, it has to return last 4 elements. If user gives ‘n’ which is greater than the number of elements in the array, then it should return all elements.

var Elements = new Array(1,2,3,4,5,6,7,8);

function elements(){

var x = document.getElementById("x").value;

for(var i=Elements.length - x; i <=Elements.length-1; i++)

{

document.getElementById("result").innerHTML += Elements[i] + " ";

}

}

**Assignment 4:**

Write a JavaScript function to parse an URL and print the details like protocol, port, host, query parameters and route parameters if any.

<script>

document.getElementById("href").innerHTML =

"The full URL of this page is:<br>" + window.location.href;

</script>

**Topic 8: JavaScript Objects**

**Assignment 1:**

Create a JavaScript object stores a 'CD' details.

a. CD name

b. CD publisher

c. CD price

A function 'displayAllDetails()' -->should show the CD Name, CD publisher and Final Price (Final Price is calculated as final price+10% tax charges and 3% discount)

<script>

var CD = {};

function insertVal()

{

CD['Name'] = document.getElementById("cdN").value;

CD['Publisher'] = document.getElementById("cdP").value;

CD['Price'] = document.getElementById("cdPr").value;

if(isNaN(CD.Price))

{

alert("Please provide valid price!");

document.getElementById("display").style.display = "none";

return;

}

displayAllDetails();

}

function displayAllDetails()

{

document.getElementById("cdName").innerHTML += CD.Name;

document.getElementById("cdPub").innerHTML += CD.Publisher;

var price = parseInt(CD.Price);

price += ((price+10)/100);

price -= ((price+3)/100);

document.getElementById("cdPrice").innerHTML += price;

document.getElementById("display").style.display = "inline-block";

}

</script>

**Assignment 2:**

Write a JavaScript program to sort an array of JavaScript objects. Let the object contain many keys. Based on a specific key, the objects are to be sorted.

function sortProperties(obj)

{

var sortable=[];

for(var key in obj)

if(obj.hasOwnProperty(key))

sortable.push([key, obj[key]]);

sortable.sort(function(a, b)

{

var x=a[1].toLowerCase(),

y=b[1].toLowerCase();

return x<y ? -1 : x>y ? 1 : 0;

});

return sortable;

}

**Assignment 3:**

Prompt the user to enter two numbers. Add the numbers and alert the sum.

function promptToUser()

{

var a = Number(prompt("Enter first number"));

var b = Number(prompt("Enter second number"));

alert(a + b);

}

</script>

**Topic 9: JavaScript Scope:**

**Assignment 1:**

Write a JavaScript function to get the number of occurrences of a given letter in specified string. Take input string as global variable and letter as local variable in a function

<script>

var str = "";

Char\_Counts();

function Char\_Counts() {

Object.size = function(obj) {

var size = 0;

for(key in obj) {

if(obj.hasOwnProperty(key)) size++;

}

return size;

}

var str = 'hello world';

var letters = new Object;

for(x = 0, length = str.length; x < length; x++) {

var l = str.charAt(x)

letters[l] = (isNaN(letters[l]) ? 1 : letters[l] + 1);

}

for(key in letters) {

document.getElementById("demo").innerHTML += key + ' :: ' + letters[key];

document.getElementById("demo").innerHTML += "<br>";

}

}

</script>

**Assignment 2:**

Write a function for searching JavaScript arrays with a binary search. Define array as global variable and search element as local variable in a function

function array\_binarySearch(narray, delement) {

var mposition = Math.floor(narray.length / 2);

if (narray[mposition] === delement){

return mposition;

}

else if (narray.length === 1)

{

return null;

}

else if (narray[mposition] < delement) {

var arr = narray.slice(mposition + 1);

var res = array\_binarySearch(arr, delement);

if (res === null)

{

return null;

}

else {

return mposition + 1 + res;

}

}

else {

var arr1 = narray.slice(0, mposition);

return array\_binarySearch(arr1, delement);

}

}

var myArray = [1, 2, 3, 5, 6, 7, 10, 11, 14, 15, 17, 19, 20, 22, 23]; console.log(array\_binarySearch(myArray, 6));

**Topic 10: JavaScript Events**

**Assignment 1:**

Create a button called "Donate for a cause". Onclick of it, call a method that will prompt you to enter your donation amount and alerts it.

(If the donation is in decimals, it should be rounded off to the nearest integer).

<script>

function donate()

{

if(document.getElementById("donation").value != "Enter donation amout")

{

if(isNaN(document.getElementById("donation").value)){

document.getElementById("nan").innerHTML = "Wrong input: Please enter only Nunmber!";

document.getElementById("nan").style.display = "block";

}

else

{

document.getElementById("nan").style.display = "none";

var amnt = Math.round(document.getElementById("donation").value);

alert("Donation amount: " + amnt);

}

}

}

function donateCause()

{

document.getElementById("donation1").style.display = 'block';

document.getElementById("dc").style.display = 'none';

}

function cancel()

{

document.getElementById("dc").style.display = "block";

document.getElementById("donation1").style.display = "none";

document.getElementById("nan").style.display = "none";

}

</script>

**Topic 11 : JavaScript Conditions**

**Assignment 1:**

Write a JavaScript conditional statement to find the sign of product of three numbers. Display an alert box with the specified sign. *Sample numbers*: 10, -7, 0 *Output* : The sign is –

<script>

function clickMe(){

var x=10;

var y=-7;

var z=0;

if (x>0 && y>0 && z>0)

{

alert("The sign is +");

}

else if (x<0 && y<0 && z<0)

{

alert("The sign is +");

}

else if (x>0 && y<0 && z<0)

{

alert("The sign is +");

}

else if (x<0 && y>0 && z<0)

{

alert("The sign is +");

}

else

{

alert("The sign is -");

}

}

</script>

**Assignment 2:**

Write a JavaScript conditional statement to find the largest of five numbers and display the result on the screen. *Sample numbers*: -5, -2, -6, -8, -1 *Output* : -1

<script>

a=-5;

b=-2;

c=-6;

d= -8;

f=-1;

if (a>b && a>c && a>d && a>f)

{

document.getElementById("demo").innerHTML += a;

}

else if (b>a && b>c && b>d && b>f)

{

document.getElementById("demo").innerHTML += b;

}

else if (c>a && c>b && c>d && c>f)

{

document.getElementById("demo").innerHTML += c;

}

else if (d>a && d>c && d>b && d>f)

{

document.getElementById("demo").innerHTML += d;

}

else

{

document.getElementById("demo").innerHTML += f;

}

</script>

**Topic 12: JavaScript Loops**

**Assignment 1:**

Write a JavaScript program to store 10 employee names in an array. Print only the alternative names one below the other.

<script>

var emp = ["abc","def","ghi","jkl","mno","pqr","stu","vdx","yza","qwe"];

for(i=0;i<emp.length;i+=2)

{

document.getElementById("demo").innerHTML +=emp[i];

document.getElementById("demo").innerHTML +="<br>";

}

</script>

2.Write a JavaScript program to store 10 assessment marks in an array. Find the average marks and display

<script>

function avg(){

var num = [];

var i;

var res=0;

for (i = 1;i<=10;i++)

{

num[i-1] = document.getElementById(i).value;

}

for(i=0;i<10;i++)

{

res += parseInt(num[i]);

}

var resAvg = res/10;

document.getElementById("result").innerHTML += resAvg;

document.getElementById("result").style.display = "inline-block";

}

</script>

**Topic 13: JavaScript jumping statements**

**Assignment 1:**

Write a JavaScript program to construct the following pattern, using a nested for loop.

<script>

var x,y,chr="";

for(x=1; x <=6; x++)

{

for (y=1; y < x; y++)

{

chr=chr+("\*");

}

document.getElementById("demo").innerHTML +=chr;

document.getElementById("demo").innerHTML +="<br>";

chr='';

}

</script>

2. Write a JavaScript program to sum the multiples of 3 and 5 under 1000.

var sum = 0;

for (var x = 0; x < 1000; x++)

{

if (x % 3 === 0 || x % 5 === 0)

{

sum += x;

}

}

console.log(sum);

**Topic 14: JavaScript Errors**

**Assignment 1:**

Write a JavaScript function to validate whether a given value type is error or not.

<script>

function is\_Error(input) {

return input instanceof Error || toString.call(input) === '[object Error]';

}

document.getElementById("demo").innerHTML += is\_Error(new Error('foo'));

document.getElementById("demo1").innerHTML += is\_Error(100);

document.getElementById("demo2").innerHTML += is\_Error('foo');

console.log(is\_Error(new Error('foo')));

console.log(is\_Error(100));

console.log(is\_Error('foo'));

</script>