1 a.Write a JavaScript function that accepts a string as a parameter and counts the number of

vowels within the string.

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

        // program to count the number of vowels in a string

function countVowel(str) {

// find the count of vowels

var count=0

var vowels='AEIOUaeiou';

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

{

    if(vowels.indexOf(str[i])!==-1)

    {

        count=count+1;

    }

}

return count

}

// take input

const string = prompt('Enter a string: ');

const result = countVowel(string);

document.write(result);

    </script>

</body>

</html>

Write a JavaScript program to count the number of words in a string.

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

        function countword(str)

        {

            var arr=str.split(" ")

            return arr.filter(word=>word!=" ").length

        }

        var string=prompt(" enter the string")

        document.write(countword(string))

    </script>

</body>

</html>

**2. a.** Write a JavaScript function to get the number of occurrences of each letter in a specified string.

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

        function countoccurance(str)

        {

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

            {

                count=0;

                for(j=0;j<str.length;j++)

                {

                    if(str[i]==str[j] && i>j)

                    {

                        break

                    }

                    if(str[i]==str[j])

                    {

                        count++

                    }

                }

                if(count>0)

                document.write("letter: "+str[i]+" count: "+ count+"<br>")

            }

        }

        var string=prompt(" enter the word")

        countoccurance(string)

    </script>

</body>

</html>

b. Write a JavaScript function that accepts a string as a parameter and find the longest word within the string

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

       function longestword(str)

       {

         var largest=""

         var str=str.split(" ")

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

         {

            if(str[i].length>largest.length)

            {

                largest=str[i]

            }

         }

         return largest

       }

        var string =prompt(" enter the string")

        document.write(longestword(string))

    </script>

</body>

</html>

**3.** Write a JavaScript code to handle multiple callback functions using JavaScript promises (use promiseobject.then (onfulfilled,onrejected)).

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

      let val=new Promise( function(resolve,reject)

      {

        resolve("promise is resolved <br>")

      })

      val.then(function successvalue(result)

      {

        document.write(result)

      }).then(function successvalue()

      {

        document.write(" hai <br>")

      }).then(function successvalue()

      {

        document.write(" hello")

      })

    </script>

</body>

</html>

**4.** a. Write a JavaScript program to store values into a set, and to retrieve value from the set, to iterate over the set.

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

        var temp

        s=new Set()

        var l=prompt(" enter the number of elements in the set")

        for(let i=0;i<l;i++)

        {

            temp=prompt(" enter the "+(i+1)+"element")

            s.add(temp)

        }

        s.forEach(  function element(value) {

          document.write(value+"<br>")

        });

    </script>

</body>

</html>

b. Write a JavaScript program to store values into a map, and to retrieve value from the map using key, to iterate over the map.

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

       m=new Map()

       l=prompt(" enter the number of key value pair ")

       for(i=0;i<l;i++)

       {

        temp=prompt(" enter the value for "+(i+1) +"key ")

        m.set(i,temp)

       }

       m.forEach(element=(key,value) => {

        document.write("key:"+key+" value: "+value+"<br>")

       });

    </script>

</body>

</html>

**5.** a**. Write a JavaScript code that returns a passed string with letters in alphabetical order. Use addEventListener() method**.

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <input type="string" id="s1" />

    <button id="btn">click me</button>

    <script>

        document.getElementById("btn").addEventListener("click", fun);

        function fun(){

            let x=document.getElementById("s1").value;

        let str=[]

        for(let i=0;i<x.length;i++)

        str.push(x[i])

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

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

                if(str[i]>str[j]){

                    let temp=str[i];

                    str[i]=str[j];

                    str[j]=temp;

                }

            }

        }

        let r=""

        for(let i=0;i<str.length;i++)r+=str[i];

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

    }

    </script>

    <p id="demo"></p>

</body>

</html>

b. Write Javascript code using functions to convert the text entered in textbox to lowercase if it's in uppercase, and vice versa on a button click.

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <input type="string" id="s1"/>

    <button id="btn">click me </button>

    <script>

        document.getElementById("btn").addEventListener("click",fun)

        function fun() {

        var x=document.getElementById("s1").value

        let str=" "

        for(let i=0;i<x.length;i++)

        {

            if(x.charCodeAt(i)>=65 && x.charCodeAt(i)<=90)

            {

                str=str+x[i].toLowerCase();

            }

            else{

                str=str+x[i].toUpperCase()

            }

        }

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

    }

    </script>

    <p id="demo"></p>

</body>

</html>

**6. a. Apply JavaScript Arrow function to reverse a given Number. Given Number = 12243; Expected**

*Output:* 34221

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

        function reversal(n)

        {

            n=parseInt(n)

            let rev=0

            while(n!=0)

            {

                let p=n%10

                rev=(rev\*10)+p

                n=parseInt(n/10)

            }

            return(rev)

        }

        var n=prompt(" enter the number to find reversal")

        document.write(reversal(n))

    </script>

</body>

</html>

b. Write Javascript arrow function to find factorial of a number.

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

     factorial=(n)=>

     {

        if(n==0)

        {

            return 1;

        }

        else{

        let fact=1

        for(let i=1;i<=n;i++)

        {

          fact=fact\*i

        }

        return fact

    }

     }

    n=prompt(" enter the number to find factorial")

    document.write(factorial(n))

    </script>

</body>

</html>

**7.** Write a JavaScript code to perform Jump Search for a given key and report success or failure. Prompt the user to enter the key and a list of numbers.

<!DOCTYPE html>

    <html lang="en">

    <head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

    </head>

    <body>

    <script>

        function jumpsearch( arr,x,n)

        {

            let step=Math.sqrt(n)

            let prev=0

            while(arr[Math.min(step,n)-1]<x)

            {

                prev=step

                step=step+Math.sqrt(n)

                if(prev>=n)

                {

                    return -1

                }

            }

            while(arr[prev]<x)

            {

               prev++

               if(prev==Math.min(n,step))

               {

                return -1

               }

            }

            if(arr[prev]==x)

               {

                return prev

               }

               return -1

        }

        var l=prompt("enter the number of elements")

        var arr=[]

        for(let i=0;i<l;i++)

        {

            arr[i]=parseInt(prompt(" enter the "+(i+1)+" element"))

        }

        arr.sort()

        var x=parseInt(prompt(" enter the ele to be searched"))

        let res=jumpsearch(arr,x,l)

        if(res !=-1)

        {

            document.write("success")

        }

        else{

            document.write("Failure")

        }

    </script>

    </body>

    </html>

**8.** Write JavaScript code to encrypt the text using Caesar Cipher technique. Display the encrypted text. Prompt the user for input and the shift pattern.

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

        function encrypt(str,s)

        {

            var res=" "

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

            {

               let ch=str[i]

               if(ch==ch.toUpperCase())

               {

                let sub=String.fromCharCode((ch.charCodeAt(0)+s-65)%26+65)

                res=res+sub

               }

              else

               {

                let sub=String.fromCharCode((ch.charCodeAt(0)+s-97)%26+97);

                res=res+sub

               }

            }

            return res

        }

        string=prompt(" enter the string")

        s=parseInt(prompt(" enter the shift"))

        document.write(encrypt(string,s))

    </script>

</body>

</html>

**9. Write a JavaScript function.**

a. To capitalize the first letter of each word in a string.

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

        function firstlcap(str)

        {

            str=str.split(" ")

            for(i=0;i<str.length;i++)

            {

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

            }

            return str.join(" ")

        }

        var str=prompt(" enter the string")

        document.write(firstlcap(str))

    </script>

</body>

</html>

b. To split a string and convert it into an array of words.

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

        function wordarry(str)

        {

            arr=str.split(" ")

            return arr

        }

        var str=prompt(" enter the string")

        document.write(wordarry(str))

    </script>

</body>

</html>

**10.** a. Write a JavaScript program to list the properties of a JavaScript object.

Sample object:

var student = {

name : "C V Raman",

Dept : "ISE",

id : 058 };

Sample Output: C V Raman ISE, 056

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

        var obj=new Object()

        obj={

            name:"C V Raman",

            dept:"ise",

            id:100

        }

        document.write(Object.values(obj))

    </script>

</body>

</html>

Write javascript code given a string, to reverse each word in the sentence.

(Ex: Welcome to this Javascript Guide! should become emocleW ot siht tpircsavaJ !ediuG)

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

        function revwords(str1)

        {

           str=str.split(" ")

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

          {

            let  temp=" "

            for(let j=str[i].length-1;j>=0;j--)

            {

                temp=temp+str[i][j]

            }

            str[i]=temp

          }

          return str.join(" ")

        }

        let  str=prompt(" enter the string")

         document.write(revwords(str))

        //revwords(str)

    </script>

</body>

</html>

**1.** Show how map is different from object to store key value pairs with coding examples and prove Maps perform better than objects in most of the scenarios involving addition and removal of keys.

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

   <script>

    n=prompt("enter the number of elements")

    a=[n]

    for(i=0;i<n;i++)

    {

     a[i]=prompt(" enter the  "+(i+1)+"element")

    }

    m=new Map()

    obj=new Object()

     for(i=0;i<n;i++)

     {

        m.set(i,a[i])

        obj[i]=a[i]

     }

     console.log(m)

     console.time('m')

     let res1=m.has(2)

     console.log(res1)

     console.timeEnd('m')

     console.log(obj)

     console.time("obj")

     let res2=obj.hasOwnProperty(2)

     console.log(res2)

     console.timeEnd("obj")

   </script>

</body>

</html>

2. Show how a set is different from an array to store the value with a coding example and prove Sets perform better than Arrays in most of the scenarios involving searching values present in it.

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

        let n=prompt(" enter the number of elements")

        list=[n]

        s=new Set()

        arr=[]

        for(let i=0;i<n;i++)

        {

            list[i]=prompt(" enter the "+(i+1)+" element")

        }

        for(let i=0;i<n;i++)

        {

            s.add(list[i])

            arr.push(list[i])

        }

        console.time("array")

        console.log(arr)

        res1=arr.indexOf(3)

        console.timeEnd("array")

        console.time("set")

        console.log(s)

        res2=s.has(3)

        console.timeEnd("set")

    </script>

</body>

</html>

**3.** Write a Javascript program to Implement arithmetic operations using Javascript promise and DOM APIs. Display result for each operation synchronously using await () method. (Give delay in each promise object using settimeout() method).

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

       const test1=(n1,n2)=>new Promise( (resolve,reject)=>

       {

         setTimeout(function (){

            resolve(" the sum of numbers is:  "+(n1+n2)+"<br>")

        },400)

       })

       const test2 =(n1,n2)=>new Promise((resolve,reject)=>

       {

        setTimeout(function(){

            resolve(" the subtraction of two numbers is "+(n1-n2)+"<br>")

        },400)

       })

       const test3=(n1,n2)=>new Promise((resolve,reject)=>

       {

        setTimeout(function()

        {

            resolve(" multiplication of two numbers is "+(n1\*n2)+"<br>")

        },400)

       })

       const test4=(n1,n2)=>new Promise((resolve,reject)=>

       {

        setTimeout(function()

        {

            resolve(" division of two numbers is "+(n1/n2))

        },400)

       })

        n1=parseInt(prompt(" enter the first number"))

        n2=parseInt(prompt(" enter the second number "))

        test1(n1,n2).then( (val)=>

        {

             document.write(val)

        })

        test2(n1,n2).then((val)=>

        {

          document.write(val)

        })

        test3(n1,n2).then((val)=>

        {

            document.write(val)

        })

        test4(n1,n2).then((val)=>

        {

            document.write(val)

        })

    </script>

</body>

</html>

**4.** Write a Javascript program where user passes the location and a function is called which returns a promise, if the location passed is Paris Below is the output expected:

"Let's take a trip to Paris"

If the location is other than Paris, show the error message "Invalid Location"

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

        test=(loc)=>new Promise((resolve,reject)=>

        {

            if(loc=="paris"||"PARIS")

            {

                resolve(" lets take a trip to paris")

            }

            else{

                reject("invalid location")

            }

        })

        let loc=prompt(" enter the location")

        test(loc).then((val)=>

        {

            document.write(val)

        }).catch((val)=>

        {

            document.write(val)

        })

    </script>

</body>

</html>

**5. Write a JavaScript program to book a hotel only after booking a flight.**

[Hint: To achieve this, the promise returned from the bookHotel function is resolved only after resolving the promise from bookFlight function.

If the promise gets rejected from bookflight then it won't execute the second function.]

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

       let flight=(s1)=>new Promise((resolve,reject)=>

       {

        if(s1=="book-flight")

        {

            resolve("flight booked successfully")

        }

        else

        {

            reject("cant book flight ")

        }

       }

       )

       let hotel=(s2)=>new Promise((resolve,reject)=>

       {

        if(s2=="book-hotel")

        {

            resolve("hotel booked successfully")

        }

        else{

            reject("cant book hotel")

        }

       })

      let  s1=prompt("enter if you want to book-flight or book-hotel")

       flight(s1).then(

        (val)=>

       {

        alert(val);

        s2 =prompt(" enter book-hotel if u want to book hotel")

       hotel(s2).then((val)=>

       {

        alert(val)

       }).catch((val)=>

       {

        alert(val)

       })

       }

       ).catch((val)=>

       {

        alert(val)

       })

    </script>

</body>

</html>

**6.** Write an arrow function that will take one parameter weight in Kg. This arrow function will convert Kg to Lbs. Formula is kg\*2.2

● If LBS is > 150, then the function should return "obese"

● If LBS is between 100 to 150, the function should return "you are ok"

● If LBS is < 100, then the function should return "underweight"

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    <title>Document</title>

</head>

<body>

    <script>

        res=(w)=>

        {

            let lbs=parseInt(2.2\*w)

            if(lbs>150)

            {

                return("obese")

            }

            else if(lbs>=100 && lbs<=150)

            {

                return(" you are ok")

            }

            else

            {

                return(" underweight")

            }

        }

        w=prompt(" enter the weight")

        document.write(res(w))

    </script>

</body>

</html>

**7.** In the Martian land faraway, a new virus has evolved and is attacking the individuals at a fast pace. The scientists have figured out the virus composition, V. The big task is to identify the people who are infected. The sample of N people is taken to check if they are POSITIVE or NEGATIVE. A report is generated which provides the current blood composition B of the person.

POSITIVE or NEGATIVE?

If the blood composition of the person is a subsequence of the virus composition V, then the person is identified as POSITIVE otherwise NEGATIVE.

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    <title>Document</title>

</head>

<body>

    <script>

        let v=prompt(" enter the virus composition")

        let b=prompt(" enter the blood composition")

        let i=0,j=0,count=0

        while(i<=v.length && j<=b.length)

        {

            if(b[j]==v[i])

            {

              i++

              j++

              count++

            }

            else

            i++

        }

        if(count==b.length)

        {

            document.write("POSITIVE")

        }

        else{

            document.write("NEGATIVE")

        }

    </script>

</body>

</html>

**8.** Write a Javascript code to validate the email id using regular expressions. email is a string consisting of 3 parts: username, @ symbol and domain. The first part of an email address is the username. @ Symbol fits in between the username and the domain of your email address. The domain consists of two parts: the mail server and the top-level domain. The mail server is the server hosting the email account ("Gmail"). The top-level domain is the extension, such as .com, .net or .info.

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    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <script>

   function validateEmail(email\_id) {

    const pattern = /^\w+([\.-]?\w+)\*@\w+([\.-]?\w+)\*(\.\w{2,4})+$/;

    if (pattern.test(email\_id)) {

        document.write('The email address is valid');

    }

    else {

        document.write('The email address is not valid');

    }

}

let email=prompt(" enter email to checK")

validateEmail(email)

    </script>

</body>

</html>

**9.** Write a JavaScript program using Client-side web APIs to Get the latitude and longitude of the user's position.

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta http-equiv="X-UA-Compatible" content="IE=edge">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Document</title>

</head>

<body>

    <p>

        Your location is <span id="latitude">0.00</span>

        latitude by <span id="longitude">0.00 </span> longitude.

        </p>

        <button id="get-location">

        Get My Location

        </button>

        <script>

        let button = document.getElementById("get-location");

        let latText = document.getElementById("latitude");

        let longText = document.getElementById("longitude");

        button.addEventListener("click", function() {

        navigator.geolocation.getCurrentPosition(function(position) {

        let lat = position.coords.latitude;

        let long = position.coords.longitude;

        latText.innerText = lat.toFixed(2);

        longText.innerText = long.toFixed(2);

        });

        });

        </script>

</body>

</html>

10. Write a JavaScript program to count the number of visitors to keep track of how often a website is accessed and display the number of visitors at the bottom of the homepage.

<html>

<head>

<title>Website Counter</title>

<script defer src="index.js"></script>

<link rel="stylesheet" href="styles.css" />

</head>

<body>

<div>Website visit count:</div>

<div class="website-counter"></div>

<button id="reset">Reset</button>

<script>

var counterContainer = document.querySelector(".website-counter");

var resetButton = document.querySelector("#reset");

var visitCount = localStorage.getItem("page\_view");

// Check if page\_view entry is present

if (visitCount) {

visitCount = Number(visitCount) + 1;

localStorage.setItem("page\_view", visitCount);

} else {

visitCount = 1;

localStorage.setItem("page\_view", 1);

}

counterContainer.innerHTML = visitCount;

// Adding onClick event listener

resetButton.addEventListener("click", () => {

visitCount = 1;

localStorage.setItem("page\_view", 1);

counterContainer.innerHTML = visitCount;

});

</script>

</body>

</html>