INSTITUTE OF ENGINEERING AND TECHNOLOGY, DAVV, INDORE

Computer Engineering Department

Session 2023-24

Serverside Programming Lab Assingnment (6CERL4)

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ROLL NO. : 21C6145

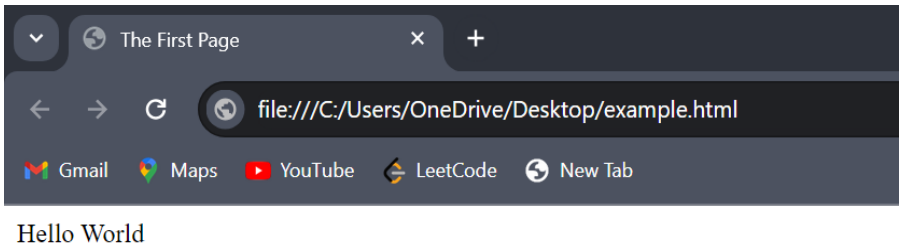
SERVERSIDE PROGRAMMING ASSINGNMENT

ASSINGNMENT 1

Question 1. Basic HTML Document An element called HTML surrounds the whole document. This element contains two sub-elements, HEAD and BODY. These elements are required to form any HTML document.3

```
<html>
 <head>
  <title>The First Page</title>
 </head>
 <body>
  Hello World
 </body>
</html>
```

Output:



Question 2. Create a static webpage using table tags of HTML

```
<html>
<head>
  <title>Document</title>
</head>
<body>
  <h2>2. Create a static webpage using table tags of HTML</h2>
  <br>
```

```
<table border="4" style=" ">
  <thead>
    <tr>
      <th><b>UNIT NO.</b></th>
      <th rowspan="2"><b>UNIT TITLE</b></th>
      <th><b>TEACHING HOURS</b></th>
      <td colspan="4"><b>DISTRIBUTION OF THEORY MARKS</b></td>
    </tr>
  </thead>
  <tbody>
    <tr>
      <td></td>
      <td></td>
      <td></td>
      <td colspan="1">R level</td>
      <td colspan="1">A level</td>
      <td colspan="1">U level</td>
      <td colspan="1">Total marks</td>
    </tr>
    <tr>
      <td>I</td>
      <td>Introduction To Internet Technology</td>
      <td>2</td>
      <td>4</td>
      <td>4</td>
      <td>0</td>
      <td>8</td>
    </tr>
    <tr>
      <td>II</td>
      <td>Basic of HTML & CSS</td>
      <td>6</td>
```

```
    <td>0</td>
    <td>2</td>
    <td>6</td>
    <td>8</td>
  </tr>
<tr>
    <td>III</td>
    <td>Active Server Page 3.0</td>
    <td>6</td>
    <td>4</td>
    <td>8</td>
    <td>0</td>
    <td>12</td>
  </tr>
<tr>
    <td>IV</td>
    <td>Server Side Coding with VBScript & XML</td>
    <td>8</td>
    <td>2</td>
    <td>4</td>
    <td>8</td>
    <td>14</td>
</tr>
<tr>
    <td>V</td>
    <td>ASP Objects & components</td>
    <td>10</td>
    <td>4</td>
    <td>4</td>
    <td>6</td>
    <td>14</td>
  </tr>
```

```
        <tr>
          <td>VI</td>
          <td>Accessing DataBase with ASP & ADO</td>
          <td>10</td>
          <td>4</td>
          <td>4</td>
          <td>6</td>
          <td>14</td>
        </tr>
        <tr>
          <td></td>
          <td><b>TOTAL</b></td>
          <td><b>42</b></td>
          <td><b>18</b></td>
          <td><b>26</b></td>
          <td><b>26</b></td>
          <td><b>70</b></td>
        </tr>
      </tbody>
    </table><br>
</body>
</html>
```

Question 3. Create a static web page which defines all text formatting tags of HTML in tabular format

Output:

```
<html>
  <H3>3. Create a static web page which defines all text formatting tags of HTML in tabular format
    Output.</H3>
  <table border="4">
    <thead>
      <th>HTML TAGS</th>
      <th><B>OUTPUTS</B></th>
```

```
</thead>
<tbody>
  <tr>
    <td>normal text</td>
    <td>
      <p>hello world</p>
    </td>
  </tr>
  <tr>
    <td>font & its attributes </td>
    <td>
      <h3 style="color: rgb(23, 15, 245);">hello world</h3>
    </td>
  </tr>
  <tr>
    <td>
      BOLD
    </td>
    <td><b>BOLD</b></td>
  </tr>
  <tr>
    <td>
   ITALIC            </td>
    <td><I>ITALIC</I></td>
  </tr>
  <tr>
    <td>
      UNDERLINE
    </td>
    <td><U>UNDERLINE</U></td>
  </tr>
  <tr>
```

```
    <td>
      EMPHA SIS
    </td>
    <td><em>EMPHA SIS</em></td>
</tr>
<tr>
<tr>
    <td>STORNG</td>
    <td><strong>STRONG</strong></td>
</tr>
<tr>
    <td>TELETYPE</td>
    <td>
      <teletype>teletype</teletype>
    </td>
</tr>
<tr>
    <td>CITEtd>
   <td><cite>Citation</cite></td>
</tr>
<tr>
    <td>STRIKEtd>
    <td><strike>strike through text</strike></td>
</tr>
<tr>
    <td>BIG</td>
    <td><big>BIG</big></td>
</tr>
<tr>
    <td>SMALL</td>
    <td><small>SMALL</small></td>
</tr>
```

```
        <tr>
          <td>SUB</td>
          <td>a<sub>b</sub></td>
        </tr>
        <tr>
          <td>SUP</td>
          <td>a<sup>b</sup></td>
        </tr>
      </tbody>
   </table>
</body>
</html>
```

Question 4.Create webpage using list tags of HTML

```
<!DOCTYPE html>
<head>
      <title>LIST TAGS</title>
</head>
<body>
   <H3>4. Create webpage using list tags of HTML</H3><BR>
      <P><B>HTML List:Ordered,Unorder & Defination list</B></P><br>
      <hr> <br>
      <p>Following is the proposd student activites  list:</p>
      <ol>
         <li>Develop programs related with unit wise topics in computer laboratory.</li>
         <li>Develop any module of to be useful in real life application.</li>
         <li>Multimedia presentation of module developed by students.</li>
      </ol>
      <hr>
      <P><B>List of Software/Learning Websites.</B></P><br>
      <ul>
         <li>ASP Tutorial-W3Schools</li>
```

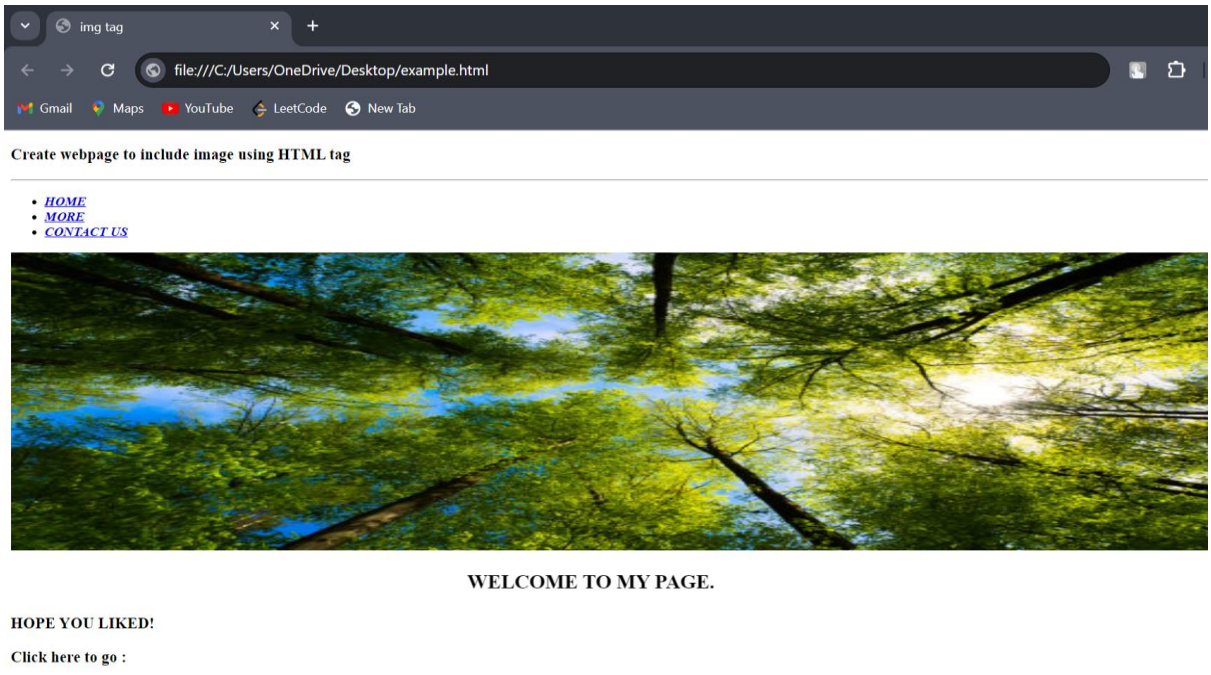
```
        <a href="www.w3schools.com/asp">www.w3schools.com/asp</a>
        <li>CSS Tutorial</li>
        <a href="www.csstutorial.net">www.csstutorial.net</a>
        <li>HTML Tutorial-W3Schools</li>
        <a href="www.w3schools.com/html">www.w3schools.com/html</a>
        <li>Classic ASP Tutorial</li>
        <a href="www.webwiz.co.uk-knowledgebase">www.webwiz.co.uk-knowledgebase</a>
        <li>VBScript Tutorial</li>
        <a
href="www.tutorialspoint.com/vbscript/index/htm">www.tutorialspoint.com/vbscript/index/htm</a
>
        <li>ADO Tutorial-W3Schools</li>
        <a href="www.w3schools.com/ADO/default.asp">www.w3schools.com/ADO/default.asp</a>
        <hr>
    </ul>
    <p>HTML</p>
    <li>Hypertext Markup Language</li>
    <p>XML</p>
    <li>eXtensible markup language</li>
</body>
</html>
```

Question 5.Create webpage to include image using HTML tag

Question 6.Modify your page so that the picture that is on your page will also serve as a link that leads to another page.

```
<!DOCTYPE html>
<head>
    <title>img tag</title>
</head>
<body>
  <h3> Create webpage to include image using HTML tag</h3>
  <hr>
```

```
  <span>
    <ul>
      <li><B><I><a href="#">HOME</a></I></B></li>
      <li><B><I><a href="#">MORE</a></I></B></li>
      <li><B><I><a href="#">CONTACT US</a></I></B></li>
    </ul>
  </span>
  <img src="nature3.jpg" alt="NATURE" width="100%" height="360px">
  <h2><marquee behavior="" direction="10s">WELCOME TO MY PAGE.</marquee></h2>
  <h3>HOPE YOU LIKED!</h3>
  <h3>Click here to go :</h3>
  <a href="https://www.geeksforgeeks.org/"><img src="gfglogo.jpg" alt="" width="15%"></a><br>
  <a href="https://www.google.co.in/"><img src="google.png" alt="GOOGLE.COM"
width="8%"></a><br>
      <a href="https://unsplash.com/s/photos/animal"><img src="tiger.jpg" alt="" width="20%"></a>

</body>
</html>
```



Question 7. Create employee registration webpage using HTML form objects.

```
<!DOCTYPE html>
<head>
```

```
  <title>registration form</title>
</head>
<body>
   <h3>7. Create employee registration webpage using HTML form objects
   </h3>
   <hr>
   <h1 style="color: tomato; text-align: center; " ><strong>Employee Registration
Form</strong></h2>
   <form action="">
    <input type="radio" id="Mr" name="salutation">
    <label for="Mr">Mr.</label>
    <input type="radio" id="Mrs" name="salutation">
    <label for="Mrs">Mrs.</label>
    <input type="radio" id="Ms" name="salutation">
    <label for="Ms">Ms.</label><br><br>
    <label for="fname">First Name:<input type="text" placeholder="First Name"
id="fname"></label><br><br>
    <label for="lname">Last Name:<input type="text" placeholder="Last Name"
id="lname"></label><br><br>
    <label for="mail1">Mail Address1:<input type="email" id="mail1"></label><br><br>
    <label for="mail2">MAil Address2:<input type="email" id="mail2"></label><br><br>
    <label for="city">City:<input type="text"></label><br><br>
    <label for="state">State:</label>
   <select name="state" id="state">
      <option value="Madhya Pradesh">Madhya Pradesh</option>
      <option value="Uttar Pradesh">Uttar Pradesh</option>
      <option value="Gujarat">Gujarat</option>
      <option value="Delhi">Delhi</option>
      <option value="Maharashtra">Maharashtra</option>
   </select><br><br>
   <label for="zip">Zip: <input type="text" id="zip"></label><br><br>
   <label for="uploadphoto">Upload Photo:<input type="file" name=""
id="uploadphoto"></label><br><br>
   <label for="email">E-Mail:<input type="email"></label><br><br>
```

```
    <label for="phone">Mobile:<input type="tel"></label><br><br>
    <label for="lang">Language Known:</label><br>
    <label for="Gujarat"><input type="checkbox" id="Gujarat"  name="lang">Gujarati</label><br>
    <label for="Hindi"><input type="checkbox" id="Hindi" name="lang">Hindi</label><br>
    <label for="English"><input type="checkbox" id="English" name="lang">English</label><br>
    <label for="Marathi"><input type="checkbox" id="Marathi" name="lang">Marathi</label><br>
   <label for="addinfo">Additional Information:</label><br>
   <textarea name="" id="addinfo" cols="30" rows="10"></textarea><br>
   <input type="submit"><input type="reset">
</form>
</body>
</html>
```

Question 8. Design a website for a College. There should be at least 15 web-pages present in the website.

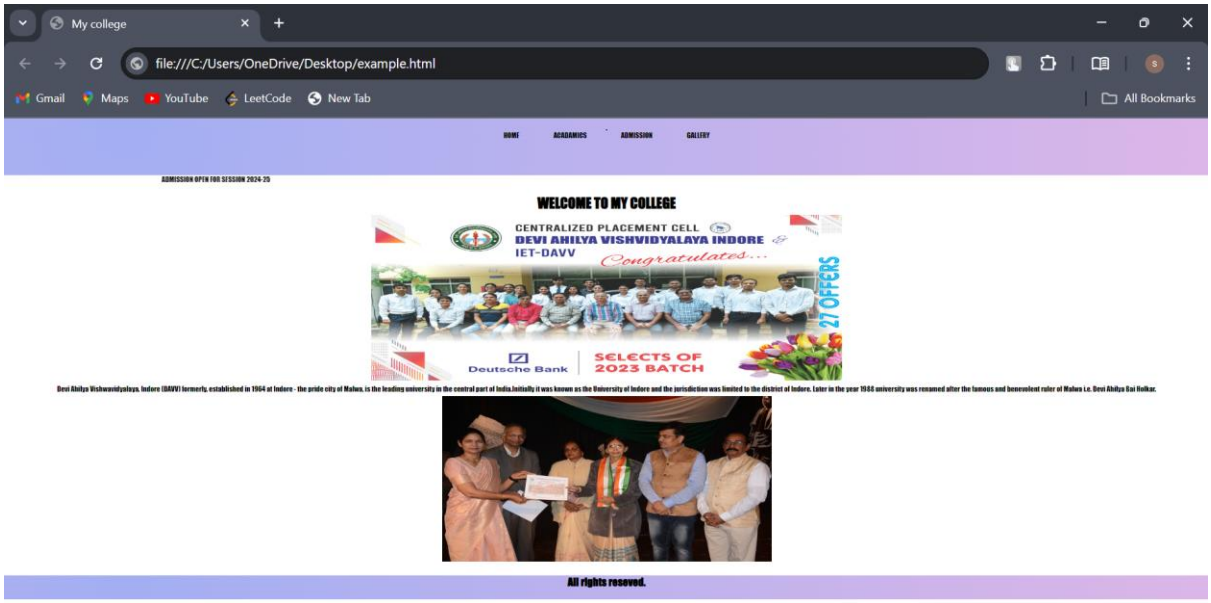
1.index page:

```
<!DOCTYPE html>
<head>
    <style>
        *{font-family: Impact, Haettenschweiler, 'Arial Narrow Bold', sans-serif;
            padding: 0;
            margin: 0;
        }
        .nav{
            /* margin:0; */
            height: 100px;
            color: aliceblue;
            background-image: radial-gradient( circle farthest-corner at 10% 20%,  rgba(163,175,243,1) 0%, rgba(220,182,232,1) 100.2% );
            padding: 10px 10px;
        text-align: center;

        }
```

```
#logo{border: 1px solid black;
    border-radius: 100px;

}
a{ text-decoration: none;
  color:black;
  pointer-events: all;

}
li{text-decoration: none;
    display:inline;
    padding: 35px;
}
body{

    font-size:15px ;
    font-family: Arial, Helvetica, sans-serif;



}
main{margin: 5px 0px;

    /* height: 500px; */
    text-align: center;
    padding: 15px;

}
footer{
   height: 50px;
    background-image: radial-gradient( circle farthest-corner at 10% 20%,  rgba(163,175,243,1) 0%, rgba(220,182,232,1) 100.2% );
}
```

```
    </style>
    <link rel="stylesheet" href="style.css">
    <title>My college</title>
</head>
<body>
  <header>
    <div class="nav">
       <a href="index.html "><img  id="logo" src="ietlogo.png" alt="" width="75px"></a>
       <ul class="nav1">

          <li><a href="index.html">HOME</a></li>
          <li><a href="acadamics.html">ACADAMICS</a></li>
          <li><a href="admission.html">ADMISSION</a></li>
          <li><a href="gallery.html">GALLERY</a></li>
       </ul>

    </div>
      <marquee behavior="" direction="">ADMISSION OPEN FOR SESSION 2024-25</marquee>
  </header>
  <main><h1>WELCOME TO MY COLLEGE</h1>
    <div class="clgpic" style="margin: 7px;">
       <img src="clg2.jpg" alt="" width="1000px" height="350px">
    </div>
<p>Devi Ahilya Vishwavidyalaya, Indore (DAVV) formerly, established in 1964 at Indore - the pride city of Malwa, is the leading university in the central part of India.Initially it was known as the University of Indore and the jurisdiction was limited to the district of Indore.

 Later in the year 1988 university was renamed after the famous and benevolent ruler of Malwa i.e. Devi Ahilya Bai Holkar.</p>
<div class="clgpic2">
    <img src="clg.jpg" alt="" width="700px" height="350px" style="margin: 7px ;">
</div>
</main>
  <footer style="text-align: center;">
<h2><p>All rights reseved.</p></h2>
```

```
  </footer>


</body>
</html>
```

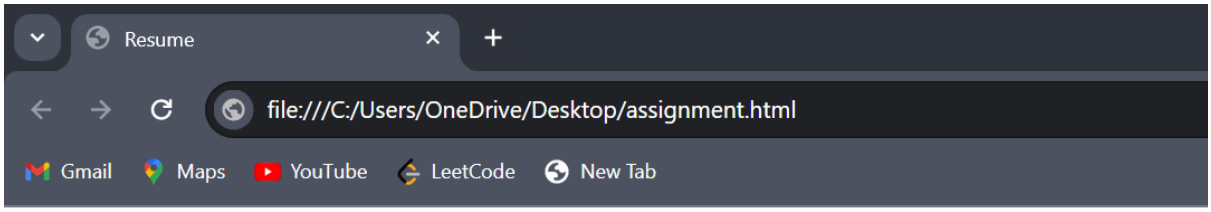


Question 10. Create your personal web page (details in your resume)

```
<!DOCTYPE html>
<html lang="en">
<head>
 <style></style>
   <title>Resume</title>
</head>
<body>
   <div class="main">
      <div class="">
         <h1>Prince Dwivedi</h1><br>
          <p>Contact email:<a href="#">princedwivedi@gmail.com</a></p><br>
          <p>PHONE NO:<a href="#">9909980434</a></p><br>
```

```
</div>
<div class="intro">
  <table>
    <tr>
      <td>
        <img src="images.png" alt="my image" width="150px" height=""></td>
    <td>My name is Prince Dwivedi,I am Persuing B.E. From Institute of Engineering and Technology,  DAVV</td>
    </tr>
  </table><br>
</div >
<div class="education">
  <h2>Education:</h2><br>
  <ul>
   <li>PERSUING B.E. FROM IETDAVV INDORE IN COMPUTER SCIENCE.</li>
   <li>PASSED HIGHER SECONDARY FROM S.S.A.G SCHOOL,INDORE IN 2020.</li>
   <li>PASSED SECONDARY EXAMINATION FROM HOLY CROSS SCHOOL,INDORE IN 2018.</li>
  </ul>
</div>
<div class="workexp">
  <h2>Work Expirence:</h2><br>
</div>
<div class="skills">
  <h2>Skills:</h2>
  <ul>
    <li>learning C++</li>
    <li>learning JAVA</li>
    <li>learning HTML</li>
    <li>learning CSS</li>
    <li>learning JAVASCRIPT</li>
    <li>learning SQL</li>
    <li></li>
```

```
        </ul>
<br>
    </div>
    <div class="">
        <h2>Acheivements:</h2><br>
        <ul>
            <li>Scored 93% in senior secondary level</li>
            <li></li>
            <li></li>
        </ul>
</div>
    <section classs="">
        <h2>Projects:</h2><br>
        <ul>
            <li><a href="htmlpro2.html">webstore</a></li>
            <li><a href="form2.html">forms</a></li>
            <li><a href="Table.html">table</a></li>
            <li><a href="htmlpro3.html">media</a></li>
            <li><a href="projectrecip.html">Recipie site</a></li>
        </ul><br>
    </section>
   <section class="faq">
  </body>
</html>
```



Prince Dwivedi

Contact email:princedwivedi@gmail.com

PHONE NO:9909980434

My name is Prince Dwivedi,I am Persuing B.E. From Institute of Engineering and Technology, DAVV

Education:

- PERSUING B.E. FROM IETDAVV INDORE IN COMPUTER SCIENCE.
- PASSED HIGHER SECONDARY FROM S.S.A.G SCHOOL,INDORE IN 2020.
- PASSED SECONDARY EXAMINATION FROM HOLY CROSS SCHOOL,INDORE IN 2018.

Work Expirence:

Skills:

- learning C++
- learning JAVA
- learning HTML
- learning CSS
- learning JAVASCRIPT
- learning SQL

Acheivements:

- Scored 93% in senior secondary level

Projects:

- webstore
- forms
- table
- media
- Recipie site

Question 11. Create a following web page

```
<!DOCTYPE html>
<head>
    <title>MODEL TEST PAPER</title>
</head>
<body>
  <H2 style="text-align: center;"><U>MODEL QUESTION PAPER FOR SUMMATIVE TEST-II</U></H2>
```

```
<H2 style="text-align: center;"><U>MATHEMATICS</U></H2>
<H2 style="text-align: center;"><U>CLASS-VII</U></H2>
<h4>Maximum marks: 20</h4>
<p><b>General instructions.</b></p>
<ol>
 <li>All questions are compulsary.</li>
<li>7 questions are divided into two sections</li>
<li>Section A consists of 4 questions.</li>
<li>Section B consists of 4 questions.</li>
</ol>
<H3 style="text-align: center;"><U>SECTION A</U></H3>
<OL><br>
   <li><p>What will be the product of
(a<sup>2</sup>)x(2a<sup>22</sup>)x(4a<sup>26</sup>)</p></li>
   <ol type="a">
      <li>8a<sup>46</sup></li>
      <li>8a<sup>48</sup></li>
      <li>6a<sup>50</sup></li>
      <li>8a<sup>50</sup></li>
   </ol>
   <br>
   <li><p>Water is oxidised to oxygen by</p></li>
   <ol type="a">
      <li>H<sub>2</sub>O<sub>2</sub></li>
      <li>KMnO<sub>4</sub></li>
      <li>ClO<sub>2</sub></li>
      <li>Flourine</li>
   </ol>
  </ol>
</body>
</html>
```

Assignment – 2

Write a JavaScript program to find all the index positions of a given word within a given string

```
1. function findAllIndexesOfWord(sentence, word) {
2.     let indexes = [];
3.     let index = sentence.indexOf(word);
4.
5.     while (index !== -1) {
6.         indexes.push(index);
7.         index = sentence.indexOf(word, index + 1);
8.     }
9.
10.         return indexes;
11.     }
12.
13.     const sentence = "Lorem, ipsum dolor sit amet
   consectetur adipisicing elit. Molestias aut,  Lorem
   suscipit eaque?";
14.     const word = "Lorem";
15.
16.     const indexes = findAllIndexesOfWord(sentence,
   word);
17.     console.log(`Indexes of "${word}" in the sentence:
   ${indexes}`);
18.
O/P: Indexes of "Lorem" in the sentence: 0,74
```

2. Write a JavaScript program to find the first index of a given element in an array using the linear search algorithm.

```
function indexOF(arr,element){
    for(let x=0;x<arr.length;x++){
        if(arr[x]==element){return x;}
    }
}

const index=indexOF([1,3,5,6,5,4,3,5,9],3);
console.log(`index of the given element is ${index}`);
```

```
O/P:index of the given element is 2
```

3. Write a JavaScript program to sort a list of elements using Quick sort

```
function quickSort(arr) {
    if (arr.length <= 1) {
        return arr;
    }

    const pivot = arr[Math.floor(arr.length / 2)];
    const left = [];
    const right = [];

    for (let i = 0; i < arr.length; i++) {
        if (i === Math.floor(arr.length / 2)) {
            continue;
        }
        if (arr[i] < pivot) {
            left.push(arr[i]);
        } else {
            right.push(arr[i]);
        }
    }

    return [...quickSort(left), pivot, ...quickSort(right)];
}

const arr= [5, 3, 7, 2, 9, 1, 6, 4, 8];
const sortedArray = quickSort(arr);
console.log("Sorted array:", sortedArray);
O/P: Sorted array: [1, 2, 3, 4, 5,6, 7, 8, 9]
```

4. Write a JavaScript program to sort a list of elements using Merge sort.

```
function mergeSort(arr) {
    if (arr.length <= 1) {
        return arr;
    }

    const mid = Math.floor(arr.length / 2);
```

```
    const left = arr.slice(0, mid);
    const right = arr.slice(mid);

    return merge(mergeSort(left), mergeSort(right));
}

function merge(left, right) {
    let result = [];
    let leftIndex = 0;
    let rightIndex = 0;

    while (leftIndex < left.length && rightIndex <
right.length) {
        if (left[leftIndex] < right[rightIndex]) {
            result.push(left[leftIndex]);
            leftIndex++;
        } else {
            result.push(right[rightIndex]);
            rightIndex++;
        }
    }

    return
result.concat(left.slice(leftIndex)).concat(right.slice(righ
tIndex));
}

// Example usage:
const unsortedArray = [5, 3, 7, 2, 9, 1, 6, 4, 8];
const sortedArray = mergeSort(unsortedArray);
console.log("Sorted array using Merge Sort:", sortedArray);
O/P: Sorted array: [1, 2, 3, 4, 5,6, 7, 8, 9]
```

5. Write a JavaScript program to sort a list of elements using Heap sort.

```
function heapSort(arr) {
    buildMaxHeap(arr);

    for (let i = arr.length - 1; i > 0; i--) {
```

```
        swap(arr, 0, i);
        heapify(arr, 0, i);
    }

    return arr;
}

function buildMaxHeap(arr) {
    const mid = Math.floor(arr.length / 2);
    for (let i = mid; i >= 0; i--) {
        heapify(arr, i, arr.length);
    }
}

function heapify(arr, i, max) {
    let largest = i;
    const left = 2 * i + 1;
    const right = 2 * i + 2;

    if (left < max && arr[left] > arr[largest]) {
        largest = left;
    }

    if (right < max && arr[right] > arr[largest]) {
        largest = right;
    }

    if (largest !== i) {
        swap(arr, i, largest);
        heapify(arr, largest, max);
    }
}

function swap(arr, i, j) {
    const temp = arr[i];
    arr[i] = arr[j];
    arr[j] = temp;
}
```

```
const unsortedArray = [5, 3, 7, 2, 9, 1, 6, 4, 8];
const sortedArray = heapSort(unsortedArray);
console.log("Sorted array using Heap Sort:", sortedArray);
O/P: Sorted array: [1, 2, 3, 4, 5,6, 7, 8, 9]
```

6. Write a JavaScript program to sort a list of elements using Insertion sort.

```
function insertionSort(arr) {
    for (let i = 1; i < arr.length; i++) {
        let current = arr[i];
        let j = i - 1;

        while (j >= 0 && arr[j] > current) {
            arr[j + 1] = arr[j];
            j--;
        }

        arr[j + 1] = current;
    }

    return arr;
}

const unsortedArray = [5, 3, 7, 2, 9, 1, 6, 4, 8];
const sortedArray = insertionSort(unsortedArray);
console.log("Sorted array :", sortedArray);
O/P: Sorted array: [1, 2, 3, 4, 5,6, 7, 8, 9]
```

7. Write a JavaScript program to sort a list of elements using Bubble sort.

```
function bubbleSort(arr) {
    const len = arr.length;
    let swapped;

    do {
        swapped = false;
        for (let i = 0; i < len - 1; i++) {
            if (arr[i] > arr[i + 1]) {
                const temp = arr[i];
```

```
                arr[i] = arr[i + 1];
                arr[i + 1] = temp;
                swapped = true;
            }
        }
    } while (swapped);

    return arr;
}
const unsortedArray = [5, 3, 7, 2, 9, 1, 6, 4, 8];
const sortedArray = bubbleSort(unsortedArray);
console.log("Sorted array using Bubble Sort:", sortedArray);
O/P: Sorted array: [1, 2, 3, 4, 5,6, 7, 8, 9]
```

8. Write a JavaScript program to sort the characters in a string alphabetically.

```
function sortStringAlphabetically(str) {
    return str.split('').sort().join('');
}


const inputString = "hello world";
const sortedString = sortStringAlphabetically(inputString);
console.log("Sorted characters in the string:",
sortedString);
O/P: Sorted characters in the string:  dehlllloorw
```

9. Write a JavaScript program to check if a numeric array is sorted or not.

```
function isArraySorted(arr) {
    for (let i = 1; i < arr.length; i++) {
        if (arr[i] < arr[i - 1]) {
            return false;
        }
    }
    return true;
}

const sortedArray = [1, 2, 3, 4, 5];
```

```
console.log(`${sortedArray ? "array is sorted": "array is
not sorted"}`);
O/P: array is sorted
```

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

```
function isNull(value) {
    return value === null;
}
const value1 = null;
const value2 = 42;
console.log("Is value1 null?", isNull(value1));
console.log("Is value2 null?", isNull(value2));
O/P: Is value1 null? true
    Is value2 null? false
```

11. Write a JavaScript function to validate whether a given value is a number or not.

```
function isNumber(value) {
    return typeof(value) === 'number' && !isNaN(value);
}
const value1 = 42;
const value2 = "hello";
console.log("Is value1 a number?", isNumber(value1));
console.log("Is value2 a number?", isNumber(value2));
O/P: Is value1 a number? true
    Is value2 a number? false
```

12. Write a JavaScript function to validate whether a given value is RegExp or not.

```
function isRegExp(value) {
    return value instanceof RegExp;
}
const value1 = /test/;
const value2 = "hello";
console.log("Is value1 a RegExp?", isRegExp(value1));
console.log("Is value2 a RegExp?", isRegExp(value2));
O/P: Is value1 a RegExp? true
     Is value2 a RegExp? false
```

13. Write a JavaScript program to delete the rollno property from the following object. Also print the object before or after deleting the property. Sample object: var student = { name : "David Rayy", sclass : "VI", rollno : 12 };

```
var student = {
    name: "David Rayy",
    sclass: "VI",
    rollno: 12
};
console.log("Before deleting rollno property:", student);
delete student.rollno;
console.log("After deleting rollno property:", student);
O/P: Before deleting rollno property: { name: 'David Rayy',
sclass: 'VI', rollno: 12 }

After deleting rollno property: { name: 'David Rayy',
sclass: 'VI' }
```

14. Write a JavaScript program to display the reading status (i.e. display book name, author name and reading status) of the following books. var library = [{ author: 'Bill Gates', title: 'The Road Ahead', readingStatus: true }, { author: 'Steve Jobs', title: 'Walter Isaacson', readingStatus: true }, { author: 'Suzanne Collins', title: 'Mockingjay: The Final Book of The Hunger Games', readingStatus: false }];

```
var library = [
    {
        author: 'Bill Gates',
        title: 'The Road Ahead',
        readingStatus: true
    },
    {
        author: 'Steve Jobs',
        title: 'Walter Isaacson',
        readingStatus: true
    },
    {
        author: 'Suzanne Collins',
        title: 'Mockingjay: The Final Book of The Hunger
Games',
        readingStatus: false
```

```
    }
];
library.forEach(book => {
    console.log(`"${book.title}" by ${book.author} - Reading
status: ${book.readingStatus ? 'Read' : 'Not read'}`);
});
O/P: "The Road Ahead" by Bill Gates - Reading status: Read
"Walter Isaacson" by Steve Jobs - Reading status: Read
"Mockingjay: The Final Book of The Hunger Games" by Suzanne
Collins - Reading status: Not read
```

15. Write a JavaScript program to create a clock. Note: The output will come every second. Expected Console Output : "14:37:42" "14:37:43" "14:37:44" "14:37:45" "14:37:46" "14:37:47"

```
function updateClock() {
    const now = new Date();
    console.log(`${(now.getHours()).toFixed(0)}:${now.getMin
utes()}:${now.getSeconds()}`);
}
setInterval(updateClock, 1000);
O/P:
 17:10:11
17:10:12
17:10:13
17:10:14
17:10:15
17:10:17
```

16. Write a JavaScript function to parse an URL.

```
const urlString = "https://www.google.com/index";
const url = new URL(urlString);
const hostname = url.hostname;
const pathname = url.pathname;
console.log(`Hostname: ${hostname}`);
console.log(`Pathname: ${pathname}`);
O/P: Hostname: www.google.com
```

```
Pathname: /index
```

17. Write a JavaScript function to split a string and convert it into an array of words.

```
function splitStringIntoWords(str) {
    return str.split(" ").filter(word => word !== '');
}
const sentence = "Splitting the sentence.";
console.log(splitStringIntoWords(sentence));
O/P: [ 'Splitting', 'the', 'sentence.' ]
```

18. Write a JavaScript function that takes a string with both lowercase and upper case letters as a parameter. It converts upper case letters to lower case, and lower case letters to upper case.

```
function convertCase(str) {
    return str.replace(/[a-z]/ig, function(match) {
        return match === match.toLowerCase() ?
match.toUpperCase() : match.toLowerCase();
    });
}
const upperCase= "uppercase";
const lowerCase="LOWERCASE";
console.log("Converted string:", convertCase(upperCase));
console.log("Converted string:", convertCase(lowerCase));
O/P:
Converted string: UPPERCASE
Converted string: lowercase
```

19. Write a JavaScript function that returns the number of minutes in hours and minutes. Input : console.log(timeConvert(200)); Output : "200 minutes = 3 hour(s) and 20 minute(s)."

```
function timeConvert(minutes) {
    const hours = Math.floor(minutes / 60);
    const remainingMinutes = minutes % 60;
    return `${minutes} minutes = ${hours} hour(s) and
${remainingMinutes} minute(s).`;
}
console.log(timeConvert(200));
O/P: 200 minutes = 3 hour(s) and 20 minute(s).
```

20. Write a JavaScript program to implement a stack that checks if a given element is present or not in the stack.

```
. class Stack {
    constructor() {
        this.items = [];
    }

    push(element) {
        this.items.push(element);
    }

    pop() {
        if (this.isEmpty()) {
            return "Underflow";
        }
        return this.items.pop();
    }

    peek() {
        return this.items[this.items.length - 1];
    }
isEmpty() {
        return this.items.length === 0;
    }
   contains(element) {
        return this.items.includes(element);
    }
}
const stack = new Stack();
stack.push(1);
stack.push(2);
stack.push(3);
console.log("Is 2 present in the stack?",
stack.contains(2));
console.log("Is 4 present in the stack?",
stack.contains(4));
O/P: Is 2 present in the stack? true
```

```
Is 4 present in the stack? false
```

21. Write a JavaScript program to check whether a single linked list is empty or not. Return true otherwise false.

```
class Node {
    constructor(data) {
        this.data = data;
        this.next = null;
    }
}
class LinkedList {
    constructor() {
        this.head = null;
    }

    isEmpty() {
        return this.head === null;
    }
}

const list = new LinkedList();
console.log("Is the list empty?", list.isEmpty());
O/P: Is the list empty? true
```

22. Write a JavaScript program to create a class called 'Rectangle' with properties for width and height. Include two methods to calculate rectangle area and perimeter. Create an instance of the 'Rectangle' class and calculate its area and perimeter.

```
class Rectangle {
    constructor(width, height) {
        this.width = width;
        this.height = height;
    }
    area() {
        return this.width * this.height;
    }
   perimeter() {
        return 2 * (this.width + this.height);
```

```
    }
}
const rectangle = new Rectangle(5, 3);
console.log("Area:", rectangle.area());
console.log("Perimeter:", rectangle.perimeter());
O/P: Area: 15
Perimeter: 16
```

23. Write a JavaScript program to create a slideshow that changes the displayed image when a next or previous button is clicked.

```
<script>
let slideIndex = 1;
showSlides(slideIndex);

function plusSlides(n) {
    showSlides(slideIndex += n);
}

function showSlides(n) {
    let i;
    const slides =
document.getElementsByClassName("mySlides");
    if (n > slides.length) { slideIndex = 1 }
    if (n < 1) { slideIndex = slides.length }
    for (i = 0; i < slides.length; i++) {
        slides[i].style.display = "none";
    }
    slides[slideIndex - 1].style.display = "block";
}
</script>
O/P:
```

24. Write a JavaScript program that uses a try-catch block to catch and handle a 'SyntaxError' when parsing an invalid JSON string.

```
const jsonString = '{"name": "John", "age": 30, "city": "New
York"';
```

```
try {
    const jsonData = JSON.parse(jsonString);
    console.log("Parsed JSON data:", jsonData);
} catch (error) {
    if (error instanceof SyntaxError) {
        console.error("Invalid JSON:", error.message);
    } else {
        throw error;
    }
}
O/P: Invalid JSON: Unexpected end of JSON input
```

25. Write a JavaScript program to redirect to a specified URL.

```
function redirectTo(url) {
    window.location.href = url;
}
redirectTo("https://www.google.com");
```