جامعة تعز
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قسم تقنية المعلومات
مستوى /ثالث

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JavaScript Challenges (strings, arrays, and date/time)

1. Check for Anagrams: Write a function that takes two strings as input and returns true if the two strings are anagrams (meaning they contain the same letters in a different order).

2. Slice an Array: Write a function that takes an array and two indices as input and returns a new array that contains the elements between the two indices.

3. Split a String into Words: Write a function that takes a string as input and returns an array of the words in that string.

4. Calculate the Age Based on a Date of Birth: Write a function that takes a date of birth as input and returns the age of the person as of today.

5. Check if a String is a Valid Email Address: Write a function that takes a string as input and returns true if the string is a valid email address.

6. Replace All Occurrences of a Substring in a String: Write a function that takes a string, a substring, and a replacement string as input, and returns the same string with all occurrences of the substring replaced with the replacement string.

7. Find the Second Smallest Value in an Array: Write a function that takes an array of numbers as input and returns the second smallest value in that array.

8. Find the Difference Between Two Arrays: Write a function that takes two arrays as input and returns an array that contains the elements that are in the first array but not in the second array.

9. Format a Time Duration: Write a function that takes a time duration (in seconds) as input and returns a formatted string in the format of "X hours, Y minutes, Z seconds".

10. Convert a String to CamelCase: Write a function that takes a string as input and returns the same string in CamelCase (meaning each word is capitalized except for the first word).

Answer :

1) Check for Anagrams

```
<body>
    <label >Enter string 1:</label>
    <input type="text" id="string1" name="string1"><br><br>

    <label >Enter string 2:</label>
    <input type="text" id="string2" name="string2"><br><br>

    <button onclick="check()">Check string</button><br><br>

    <p id="result"></p>

    <script>
        function check() {
            let string1 = document.getElementById("string1").value;
            let string2 = document.getElementById("string2").value;

            if (checkAnagram(string1, string2)) {
                document.getElementById("result").innerHTML = "The two strings are anagrams.";
            } else {
                document.getElementById("result").innerHTML = "The two strings are not anagrams.";
            }
        }

        function checkAnagram(str1, str2) {
            // remove any non-alphabetic characters and convert to lowercase
            str1 = str1.replace(/[^a-zA-Z]/g, '').toLowerCase();
            str2 = str2.replace(/[^a-zA-Z]/g, '').toLowerCase();

            // check if the two strings have the same length
            if (str1.length !== str2.length) {
                return false;
            }

            // sort the characters of the two strings and compare them
            return str1.split('').sort().join('') === str2.split('').sort().join('');
        }
    </script>
</body>
```

2. Slice an Array:

```
<head>
    <title>Slice an Array</title>
</head>

<body>
    <h1>Slice an Array</h1>

    <p>Original Array: [1, 2, 3, 4, 5]</p>

    <p>Result: <span id="result"></span></p>

    <script>
        function sliceArray(arr, startIndex, endIndex) {
            return arr.slice(startIndex, endIndex + 1);
        }

        let arr = [1, 2, 3, 4, 5];
        let result = sliceArray(arr, 1, 3);

        document.getElementById("result").innerHTML = result;
    </script>
```

3. Split a String into Words

```
<!DOCTYPE html>
<html>

<head>
    <title>Split a String into Words</title>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <script>
        function splitStringIntoWords(str) {
            return str.split(" ");
        }

        function splitString() {
            let inputString = document.getElementById("inputString").value;
            let wordsArray = splitStringIntoWords(inputString);
            document.getElementById("outputWords").innerHTML = wordsArray.join(", ");
        }
    </script>
</head>

<body>
    <h2>Split a String into Words</h2>
    <p>Enter a string:</p>
    <input type="text" id="inputString" placeholder="Type your string here...">
    <button onclick="splitString()">Split</button>
    <p>The words in the string are:</p>
    <p id="outputWords"></p>
</body>

</html>
```

4. Calculate the Age Based on a Date of Birth:

```
<!DOCTYPE html>
<html>

<head>
    <meta charset="utf-8">
    <title>Calculate Age</title>
</head>

<body>
    <h1>Calculate Age</h1>
    <label for="dob">Enter your date of birth:</label>
    <input type="date" id="dob">
    <button onclick="calculateAge()">Calculate</button>
    <div id="result"></div>

    <script>
        function calculateAge() {
            // Get today's date
            let today = new Date();

            // Get the date of birth from the input field
            let dob = new Date(document.getElementById("dob").value);

            // Calculate the age based on the difference between today and the date of birth
            let age = today.getFullYear() - dob.getFullYear();

            // If the birthday hasn't happened yet this year, subtract one from the age
            let month = today.getMonth() - dob.getMonth();
            if (month < 0 || (month === 0 && today.getDate() < dob.getDate())) {
                age--;
            }

            // Display the age on the page
            document.getElementById("result").innerHTML = "Your age is " + age;
        }
    </script>
</body>
```

5. Check if a String is a Valid Email Address:

```
<head>
    <title>Validate Email Address</title>
</head>

<body>
    <label for="email">Enter Email Address:</label>
    <input type="text" id="email" name="email">
    <button onclick="validateEmail()">Submit</button>
    <p id="result"></p>

    <script>
        function validateEmail() {
            const email = document.getElementById("email").value;
            const regex = /\S+@\S+\.\S+/;

            if (regex.test(email)) {
                document.getElementById("result").innerHTML = "Valid Email Address";
            } else {
                document.getElementById("result").innerHTML = "Invalid Email Address";
            }
        }
    </script>
</body>
```

6. Replace All Occurrences of a Substring in a String:

```html
<!DOCTYPE html>
<html>
  <head>
    <meta charset="UTF-8">
    <title>Replace Substring Example</title>
  </head>
  <body>
    <script>
      function replaceSubstring(string, substring, replacement) {
        return string.split(substring).join(replacement);
      }

      // Example usage
      let originalString = "This is a test string";
      let newString = replaceSubstring(originalString, "test", "replacement");

      console.log(originalString); // Output: "This is a test string"
      console.log(newString); // Output: "This is a replacement string"
    </script>
  </body>
</html>
```

7. Find the Second Smallest Value in an Array:

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

<head>
    <meta charset="UTF-8">
    <title>Second Smallest Value in an Array</title>
</head>

<body>
    <h1>Second Smallest Value in an Array</h1>

    <script>
        function secondSmallest(numbers) {
            numbers.sort(function (a, b) {
                return a - b;
            });

            return numbers[1];
        }

        var myArray = [4, 7, 2, 1, 5];
        var secondSmallestValue = secondSmallest(myArray);

        document.write("The second smallest value in the array is: " + secondSmallestValue);
    </script>
</body>
```

8. Find the Difference Between Two Arrays:

```
<head>
    <title>Find Difference Between Two Arrays</title>
</head>

<body>
    <h1>Find Difference Between Two Arrays</h1>
    <script>
        function findDifference(arr1, arr2) {
            // Create an empty array to store the difference
            var diff = [];


            // Loop through the first array
            for (var i = 0; i < arr1.length; i++) {
                // Check if the current element is not in the second array
                if (arr2.indexOf(arr1[i]) === -1) {
                    // Add the current element to the difference array
                    diff.push(arr1[i]);
                }
            }

            // Return the difference array
            return diff;
        }

        // Example usage
        var array1 = [1, 2, 3, 4, 5];
        var array2 = [3, 5, 7, 9];
        var difference = findDifference(array1, array2);
        console.log(difference); // [1, 2, 4]

        // Display the result on the web page
        document.write("<p>The difference between [" + array1 + "] and [" + array2 + "] is: [" + difference + "]</p>");
    </script>
```

9. Format a Time Duration:

```
<!DOCTYPE html>
<html>

<head>
    <title>Time Duration Formatter</title>
</head>

<body>
    <h1>Time Duration Formatter</h1>
    <p>Enter time duration in seconds:</p>
    <input type="number" id="duration">
    <button onclick="formatDuration()">Format</button>
    <p id="result"></p>

    <script>
        function formatDuration() {
            // Get input value
            const duration = document.getElementById('duration').value;

            // Call the function to format duration
            const formattedDuration = formatTimeDuration(duration);

            // Display the formatted duration in the result paragraph
            document.getElementById('result').innerHTML = formattedDuration;
        }

        function formatTimeDuration(duration) {
            // Function code here
        }
    </script>
</body>

</html>
```

10. Convert a String to CamelCase:

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

<head>
    <title>Convert String to CamelCase</title>
    <script>
        function toCamelCase(str) {
            let words = str.split(/[_-]/);
            let capitalizedWords = words.map(function (word, index) {
                if (index === 0) {
                    return word;
                }
                return word.charAt(0).toUpperCase() + word.slice(1);
            });
            return capitalizedWords.join("");
        }

        function convert() {
            let input = document.getElementById("input").value;
            let output = toCamelCase(input);
            document.getElementById("output").innerHTML = output;
        }
    </script>
</head>

<body>
    <h1>Convert String to CamelCase</h1>
    <label for="input">Enter a string:</label>
    <input type="text" id="input">
    <button onclick="convert()">Convert</button>
    <br>
    <label for="output">Output:</label>
    <span id="output"></span>
</body>
```