

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

### **Web II Lab | SE & IT Dept. – Level 3**

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:

```
function isAnagram(str1, str2) {  
    str1 = str1.toLowerCase().replace(/[^a-z]/g, '');  
    str2 = str2.toLowerCase().replace(/[^a-z]/g, '');  
  
    return str1.split('').sort().join('') ===  
    str2.split('').sort().join('');  
}
```

---

### 2. Slice an Array:

```
function sliceArray(arr, start, end) {  
    return arr.slice(start, end);  
}
```

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### 3. Split a String into Words:

```
function splitString(str) {  
    str = str.trim().replace(/[^a-z\s]/ig, '');  
  
    return str.split(/\s+/);  
}
```

---

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

```
function calculateAge(dob) {  
    dob = new Date(dob);  
    var ageDiffMs = Date.now() - dob.getTime();  
    var ageDate = new Date(ageDiffMs);  
    return Math.abs(ageDate.getUTCFullYear() - 1970);  
}
```

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

```
function isValidEmail(email) {  
    var regex = /^[^\s@]+@[^\s@]+\.[^\s@]+$/;  
    return regex.test(email);  
}
```

---

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

```
function replaceAll(str, substr, replacement) {  
    return str.replace(new RegExp(substr, 'g'),  
        replacement);  
}
```

---

#### 7. Find the Second Smallest Value in an Array:

```
function findSecondSmallest(arr) {  
    return arr.sort()[1];  
}
```

---

## 8. Find the Difference Between Two Arrays:

```
function arrayDifference(arr1, arr2) {  
  return arr1.filter(function(element) {  
    return arr2.indexOf(element) === -1;  
  });  
}
```

---

## 9. Format a Time Duration:

```
function formatDuration(seconds) {  
  var hours = Math.floor(seconds / 3600);  
  seconds %= 3600;  
  var minutes = Math.floor(seconds / 60);  
  seconds %= 60;  
  
  var str = '';  
  if (hours > 0) {  
    str += hours + ' hours, ';  
  }  
  if (minutes > 0) {  
    str += minutes + ' minutes, ';  
  }  
  str += seconds + ' seconds';  
  return str;  
}
```

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## 10. Convert a String to CamelCase:

```
function toCamelCase(str) {  
    var words = str.split(/[s_ -]+/);  
    for (var i = 1; i < words.length; i++) {  
        words[i] = words[i].charAt(0).toUpperCase() +  
words[i].slice(1);  
    }  
    return words.join('');  
}
```