**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**(**''**);

}

………………………………………………………………………………………………………………………………………………………

1. **Slice an Array:**

**function** **sliceArray**(arr, start, end) {

**return** arr.**slice**(start, end);

}

………………………………………………………………………………………………………………………………………………………

1. **Split a String into Words:**

**function** **splitString**(str) {

str = str.**trim**().**replace**(**/[^a-z\s]/ig**, **''**);

**return** str.**split**(**/\s+/**);

}

………………………………………………………………………………………………………………………………………………………

1. **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**);

}

……………………………………………………………………………………………………………………………………………………

1. **Check if a String is a Valid Email Address:**

**function** **isValidEmail**(email) {

**var** regex = **/^[^\s@]+@[^\s@]+\.[^\s@]+$/**;

**return** regex.**test**(email);

}

……………………………………………………………………………………………………………………………………………………

1. **Replace All Occurrences of a Substring in a String:**

**function** **replaceAll**(str, substr, replacement) {

**return** str.**replace**(**new** **RegExp**(substr, **'g'**), replacement);

}

…………………………………………………………………………………………………………………………………………………….

1. **Find the Second Smallest Value in an Array:**

**function** **findSecondSmallest**(arr) {

**return** arr.**sort**()[**1**];

}

……………………………………………………………………………………………………………………………………………………

1. **Find the Difference Between Two Arrays:**

**function** **arrayDifference**(arr1, arr2) {

**return** arr1.**filter**(**function**(element) {

**return** arr2.**indexOf**(element) === -**1**;

});

}

………………………………………………………………………………………………………………………………………………………

1. **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;

}

………………………………………………………………………………………………………………………………………………………

1. **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**(**''**);

}