

Homework: JavaScript Loops, Arrays, Strings

This document defines the homework assignments from the ["JavaScript Basics" Course @ Software University](#). Please submit as homework a single **zip / rar / 7z** archive holding the solutions (source code) of all below described problems.

Number Checker

Write a JavaScript function **printNumbers(n)** that accepts as parameter **integer n**. The function finds **all integer numbers** from 1 to n that are **not divisible by 4 or by 5**. Write a JS program **numberChecker.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
20	1, 2, 3, 6, 7, 9, 11, 13, 14, 17, 18, 19
-5	no
13	1, 2, 3, 6, 7, 9, 11, 13

Find Min and Max Number

Write a JavaScript function **findMinAndMax(value)** that accepts as parameter **an array of numbers**. The function finds the **minimum** and the **maximum** number. Write a JS program **minMaxNumbers.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
[1, 2, 1, 15, 20, 5, 7, 31]	Min -> 1 Max -> 31
[2, 2, 2, 2, 2]	Min -> 2 Max -> 2
[500, 1, -23, 0, -300, 28, 35, 12]	Min -> -300 Max -> 500

Properties

Write a JavaScript function **displayProperties(value)** that displays all the properties of the "document" object in alphabetical order. Write a JS program **docProperties.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Output
activeElement

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alinkColor
all
...
xmlVersion
```

Note: The output above is a sample and may be different in your browser.

Create Array

Write a JavaScript function **createArray(value)** that **allocates array** of 20 integers and initializes each element by its **index multiplied by 5**. Write JS program **arrayBuilder.js** that invokes your and prints the output at the console.

Compare Chars

Write a JavaScript function **compareChars(value)** that **compares two arrays of chars** lexicographically (letter by letter). Write JS program **charComparer.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
['1', 'f', '1', 's', 'g', 'j', 'f', 'u', 's', 'q'] ['1', 'f', '1', 's', 'g', 'j', 'f', 'u', 's', 'q']	Equal
['3', '5', 'g', 'd'] ['5', '3', 'g', 'd']	Not Equal
['q', 'g', 'q', 'h', 'a', 'k', 'u', '8', '}', 'q', '.', 'h', ' ', ';'] ['6', 'f', 'w', 'q', ':', '"', 'd', '}', ']', 's', 'r']	Not Equal

Maximal Sequence

Write a JavaScript function **findMaxSequence(value)** that finds the **maximal sequence of equal elements** in an array and returns the **result as an array**. If there is more than one sequence with the same maximal length, print the **rightmost** one. Write JS program **sequenceFinder.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
[2, 1, 1, 2, 3, 3, 2, 2, 2, 1]	[2, 2, 2]
['happy']	[happy]

[2, 'qwe', 'qwe', 3, 3, '3']	[3, 3]
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Maximal Increasing Sequence

Write a JavaScript function **findMaxSequence(value)** that finds the **maximal increasing sequence** in an array of numbers and returns the **result as an array**. If there is no increasing sequence the function **returns 'no'**.

Write JS program **maxSequenceFinder.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
[3, 2, 3, 4, 2, 2, 4]	[2, 3, 4]
[3, 5, 4, 6, 1, 2, 3, 6, 10, 32]	[1, 2, 3, 6, 10, 32]
[3, 2, 1]	no

Sort Array

Sorting an array means to arrange its elements in increasing order. Write a JavaScript function **sortArray(value)** to **sort an array**. Use the "**selection sort**" algorithm: find the smallest element, move it at the first position, find the smallest from the rest, move it at the second position, etc. Write JS program **arraySorter.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
[5, 4, 3, 2, 1]	1, 2, 3, 4, 5
[12, 12, 50, 2, 6, 22, 51, 712, 6, 3, 3]	2, 3, 3, 6, 6, 12, 12, 22, 50, 51, 712

Most Frequent Number

Write a JavaScript function **findMostFreqNum(value)** that finds the **most frequent number** in an array. If multiple numbers appear the same maximal number of times, print the **leftmost** of them. Write JS program **numberFinder.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
[4, 1, 1, 4, 2, 3, 4, 4, 1, 2, 4, 9, 3]	4 (5 times)
[2, 1, 1, 5, 7, 1, 2, 5, 7, 3, 87, 2, 12, 634, 123, 51, 1]	1 (4 times)
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]	1 (1 times)

Reverse String

Write a JavaScript function **reverseString(value)** that **reverses string and returns it**. Write JS program **stringReverser.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
'sample'	elpmas
'softUni'	inUtfos
'java script'	tpircs avaj

Check the Brackets

Write a JavaScript function **checkBrackets(value)** to **check if in a given expression the brackets are put correctly**. Write JS program **bracketsChecker.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
'((a + b) / 5 - d)'	correct
') (a + b))'	incorrect
'(b * (c + d *2 / (2 + (12 - c / (a + 3))))'	incorrect

Substring Count

Write a JavaScript function **countSubstringOccur(value)** that accepts as parameter an array of 2 elements **arr [keyword, text]**. The function finds how many times a substring is contained in a given text (perform case insensitive search). Write JS program **substringSearch.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
['in', 'We are living in a yellow submarine. We don't have anything else. Inside the submarine is very tight. So we are drinking all the day. We will move out of it in 5 days.']	9
['your', 'No one heard a single word you said. They should have seen it in your eyes. 2	2

What was going around your head.']	
['but', 'But you were living in another world tryin' to get your message through.']	1

Replace the White-Spaces

Write a JavaScript function **replaceSpaces(value)** that replaces the **white-space characters** in a text with ** **. Write JS program **spaceReplacer.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
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'But you were living in another world tryin' to get your message through'	Butyouwerelivinginanotherworldtryin'togetyourmessagethrough
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Palindromes

Write a JavaScript function **findPalindromes(value)** that extracts from a given text **all palindromes**, e.g. "ABBA", "lamal", "exe". Write JS program **palindromesExtract.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
'There is a man, his name was Bob.'	a, bob

Most Frequent Word

Write a JavaScript function **findMostFreqWord(value)** that **finds the most frequent word** in a text and prints it, as well as **how many times it appears** in format "**word -> count**". Consider any non-letter character as a word separator. Ignore the character casing. If several words have the same maximal frequency, print all of them in alphabetical order. Write JS program **frequentWord.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
'in the middle of the night'	the -> 2 times
'Welcome to SoftUni. Welcome to Java. Welcome everyone.'	welcome -> 3 times
'Hello my friend, hello my darling. Come on, come here. Welcome, welcome darling.'	come -> 2 times darling -> 2 times

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hello -> 2 times
my -> 2 times
welcome -> 2 times
```

Cards Frequencies

Write a JavaScript function **findCardFrequency(value)** that that accepts the following parameters: array of several cards (face + suit), separated by a space. The function calculates and prints at the console the frequency of each card face in format "**card_face -> frequency**". The frequency is calculated by the formula **appearances / N** and is expressed in percentages with exactly 2 digits after the decimal point. The card faces with their frequency should be printed in the order of the card face's first appearance in the input. The same card can appear multiple times in the input, but its face should be listed only once in the output. Write JS program **cardFrequencies.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
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'8♥ 2♣ 4♦ 10♦ J♥ A♠ K♦ 10♥ K♠ K♦'	8 -> 10.00% 2 -> 10.00% 4 -> 10.00% 10 -> 20.00% J -> 10.00% A -> 10.00% K -> 30.00%
'J♥ 2♣ 2♦ 2♥ 2♦ 2♠ 2♦ J♥ 2♠'	J -> 22.22% 2 -> 77.78%
'10♣ 10♥'	10 -> 100.00%

Problems for Champions

The next few problems are not mandatory. Implement them to challenge your skills.

* Extract Element Content

Write a JavaScript function **extractContent(value)** that extracts the **text content from given HTML fragment** (given as string). The function should return anything that is in a tag, **without the tags**. Write JS program **contentExtractor.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
'<p>Hello</p>W3C'	HelloW3C

Hint: Create an element and use its **innerHTML** and **innerText** properties.

*Replace <a> Tag

Write a JavaScript function **replaceATag(value)** that replaces in a HTML document given as string **all the tags ...** with corresponding **tags [URL=...].../URL]**. Write JS program **aTagReplacer.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
' SoftUni	 [URL href= http://softuni.bg]SoftUni[/URL]

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**Text Modifier

Write a JavaScript function **fixCasing(value)** that accepts a text as a parameter. The function must **change the text in all regions** as follows:

- <uppercase>text</uppercase> to uppercase
- <lowcase>text</lowcase> to lowercase
- <mixcase>text</mixcase> to mixed casing (randomly)

Write JS program **caseFixer.js** that invokes your function with the sample input data below and prints the output at the console. Examples:

Input	Output
'We are <mixcase>living</mixcase> in a <uppercase>yellow submarine</uppercase>. We <mixcase>don't</mixcase> have <lowcase>anything</lowcase> else.'	We are LiViNg in a YELLOW SUBMARINE. We dOn'T have anything else.'

	anything else.
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