

9/1/2021

## CS305 Object Oriented and Functional Programming in JavaScript

### Assignment

#### W1D4 Arrays

Complete the following tasks from The JavaScript Language book. Try to complete the answers before looking at the solutions.

#### Data types > Arrays

- [Is array copied?](#)
- [Array operations.](#)
- [Calling in an array context](#)
- [Sum input numbers](#)

Use the Mocha test file, `d14arrays/arrayTests.js`, to test your implementations of the following functions. Copy the file from [this GitHub location](#) to your own GitHub Pages website for the course. Be sure to use JSdoc to document the parameters and returns for each function according to our class coding standards.

1. Define a function `maxOfThree()` that takes three numbers as arguments and returns the largest of them.
2. Define a function `sum()` and a function `multiply()` that sums and multiplies (respectively) all the numbers in an array of numbers. For example, `sum([1,2,3,4])` should return 10, and `multiply([1,2,3,4])` should return 24.
3. Write a function `findLongestWord()` that takes an array of words and returns the length of the longest one.
4. Reverse an Array

Arrays have a `reverse` method that changes the array by inverting the order in which its elements appear. For this exercise, write two functions, `reverseArray` and `reverseArrayInPlace`. The first, `reverseArray`, takes an array as argument and produces a *new* array that has the same elements in the inverse order. The second, `reverseArrayInPlace`, does what the `reverse` method does: it *modifies* the array given as argument by reversing its elements. **Neither may use the standard `reverse` method.**

```
console.log(reverseArray(["A", "B", "C"]));  
// → ["C", "B", "A"];  
let arrayValue = [1, 2, 3, 4, 5];  
reverseArrayInPlace(arrayValue);  
console.log(arrayValue);  
// → [5, 4, 3, 2, 1]
```

5. Write a function, `scoreExams`, that takes an array of arrays of student answers and an array of the correct answers. It should compare each student's answers against the correct answers and return an array holding the scores of each student. The score for each student is a count of the number of correct answers (i.e., matches with the key of correct answers). For example

```
const studentAnswers = [[1, 1, 2,4], [2, 1, 2,2], [3, 1, 3,4]];
const correctAnswers = [3, 1, 2,4];
scoreExams(studentAnswers, correctAnswers)); --> [3,2,3]
```

6. Write a function that takes two integers as inputs and returns a 2-dimensional array containing sequential numbers across each row as follows:

```
console.log("expect [ [1, 2, 3], [4, 5, 6], [7, 8, 9]] : ", generateArray(3,3));
console.log("expect [ [1, 2, 3], [4, 5, 6]]: ", generateArray(2,3));
console.log("expect [ [1], [2]]: ", generateArray(2, 1));
```