3/20/2021

CS303 Object Oriented and Functional Programming in JavaScript

Assignment

W1D1 Review of Functions and Arrays

Complete the following tasks from The JavaScript Language book. Implement the following in VSCode, and push to your GitHub repository. Put all of this in your labW1D1 folder. This will be the folder in the repository according to the instructions I give you for the course.

Try to complete the answers before looking at the solutions.

JavaScript Fundamentals > Functions

- Is “else” required?
  - no implementation needed, just an answer
  - why is the first variant better programming style?
- Rewrite the function using '?' or '||’
- Function min(a, b)
- Function pow(x,n)

JavaScript Fundamentals > Arrow functions, the basics

- **Rewrite with arrow functions**

Data types > Arrays

- **Is array copied?**
- **Array operations.**
- **Calling in an array context**
- **Sum input numbers**
- **A maximal subarray**

Use the Mocha test file, functionAndArrayTests.js, to test your implementations of the following functions. You will find the file in the labW1D1 folder of your 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], [2, 1, 2], [3, 1, 3]];
const correctAnswers = [3, 1, 2];
scoreExams(studentAnswers, correctAnswers)); --> [2, 2, 2]
```