Homework 4

Array operations

The supplied `MyArrays` class is a library of functions that operate on arrays of `int` values. Read the class documentation, and complete the following tasks:

1. (10 points) Implement the `isInIncreasingOrder` function. Tip: When you implement a function that is designed to return a value, it is advised to use the `return` statement whenever it is natural to do so. In other words, it is perfectly ok that a function will have more than one `return` statement, i.e. more than one exit points.

2. (10 points) Implement the `concat` function.

3. (14 points) Implement the `hasDuplicates` function. Tips: (1) Use nested `for`, and plan your indexes carefully. (2) Once again, feel free to use as many `return` statements as necessary.

String operations

The supplied `MyString` class includes the skeletal definition and test script of a single function, named `parseInt`. The function's single parameter is a string consisting of digit characters only, like "`7236`". The function computes and returns the corresponding `int` value, in this case `7236`.

4. (17 points) Implement the `parsInt` function. Tips: (1) Consult the ASCII table, focusing on the codes of the ten digit characters. (2) Build the `int` value gradually, from the left digit to the right digit. (3) Start by writing pseudo-code that performs this operation in a loop.

When you'll be done, you'll understand how Java's `Integer.parsInt` function works.

Matrix operations

5. (7 points) Implement the `add` function. Tip: We've implemented this operation in lecture 5-1.

6. (10 points) Implement the `unit` function.

7. (18 points) Implement the `mult` function. Tip: Use a nested `for`, with three levels.

8. (14 points) Implement the `transpose` function.

Submission

Before submitting your work for grading, make sure that your code is written according to our Java Coding Style Guidelines. In addition to the 3 code files, create a PDF document that lists the code of the programs that you wrote, with the indentation. You may want to experiment with several "paste special" options, for transferring the code from your code editor to your word processing software. Whatever you do, the printed code must be well indented, and easy to read a review. Use the font `Consolas`, or Arial, size 12. The name of this file should be `HW5Code.pdf`.

Submit the following four files: `MyArrays.java`, `MyString.java`, `MatrixOps.java`, `HW4Code.pdf`. Compress the six files into a file named `HW4.zip`, and upload the single zip file using Moodle.

Submission deadline: November 14, 2021, 23:55.

Get feedback: To get feedback (without grading) about your programs before submitting them, use GETFEED, anytime, as many times as you want.