Programming Exercises - PRO1 - Session 15

Exercise 15.01

Write an application that creates an integer array using an initialization list, to initialize it to some values of your choice. Then use a loop to double the value of each element. Finally use another loop to print out all the elements.

Example: if the array contains {1, 2, 3, 4, 5} the program changes the values to {2, 4, 6, 8, 10} and prints them out.

Exercise 15.02

Write an application that creates an integer array (sourceArray) using an initialization list, to initialize it to some values of your choice. Then create a new array (destinationArray) and in a loop copy all elements from sourceArray to destinationArray. Then use a loop to print out the (hopefully identical) contents of the two arrays.

Exercise 15.03

Write an application that creates an integer array (sourceArray) using an initialization list, to initialize it to some values of your choice. Then create a new array (destinationArray) with a size of twice the length as sourceArray and in a loop copy all elements from sourceArray to the first half of destinationArray. The remaining elements in destinationArray should be 0.

Example: sourceArray: {2, 3, 4, 5} so destinationArray should be: {2, 3, 4, 5, 0, 0, 0, 0}.

Exercise 15.04

Write a program that reads 5 integers from keyboard and stores them in an array. Then use a loop to calculate the average value of the integers, and after the loop print out the result.

Exercise 15.05

Write a program that:

a) Reads 4 integers from keyboard and stores them into an array (array1).
b) Reads 4 more integers from keyboard and stores them into another array (array2).
c) Uses a loop to check if the two arrays are identical, i.e. all elements at the same position in the two arrays must be the same.

Example1: array1={1, 2, 3, 4} and array2{1, 2, 4, 5} are NOT identical.
Example2: array1={10, 20, 30, 40} and array2{10, 20, 30, 40} are identical.

Exercise 15.06

Write a program that:

a) Reads 4 integers from keyboard and stores them into an array (array1).
b) Reads 4 more integers from keyboard and stores them into another array (array2).
c) Creates a new array with the same length (sumArray).
d) Uses a loop to store the sum of each element pair in the two arrays in sumArray.

Example1: array1={1, 2, 3, 4} and array2{1, 2, 4, 5} makes sumArray={2, 4, 7, 9}

Exercise 15.07

In a 9-hole Golf tournament, a player had the following number of hits 3, 5, 1, 3, 3, 2, 4, 2, 3.
Create a class with a main method in which you:

a) Create an int array initialized to contain the 9 values shown above
b) Use a loop to calculate the total number of hits for the 9 holes and the number of Hole-in-One's, i.e. the number of elements being equal to 1. (The loop should not rely on 9 as being the length of the array, but made more general so that it could be changed later on)
c) After running the loop print out the following:
    1. The total number of hits
    2. The average hits per hole (the average value of the 9 elements)
    3. The number of Hole-in-Ones

Exercise 15.08

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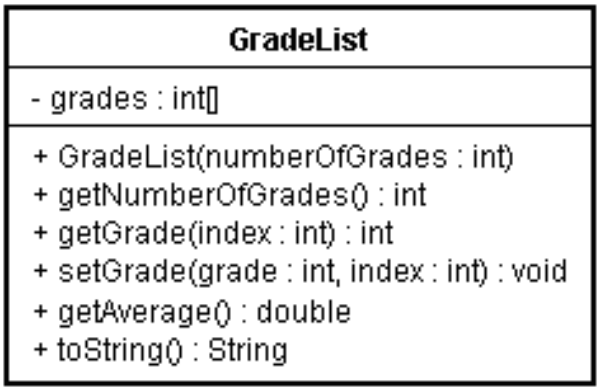
Exercise 15.09

Implement the class `GradeList` shown in the class diagram below. The class represents a student's list of (Danish) grades. Then implement a test program that creates a `GradeList` object, and tests its functionality. As it should be a list of Danish grades, then only use some of the following values when testing: -3, 0, 2, 4, 7, 10, or 12



Afterwards add an equals method, `public boolean equals(Object obj)`, that returns `true` if `obj` is a `GradeList`-object with identical values stored at all `grades` positions (use a loop). Otherwise the method should return `false`.