ISAM 5430 C# TEST 1 2018S

For each problem, create a project using the Console Application template. Do not use any built-in function other than the Console methods. Do not use arrays or strings. These problems only require integers and control statements (iteration and selection statements).

A. Warmup

Create an application that prompts for four integers or create a method with four integer parameters. We will calculate the sum of all the non-negative values that we need to add to each of the four input numbers so that the resulting numbers will appear in increasing order. The app or the method will then output the calculated sum.

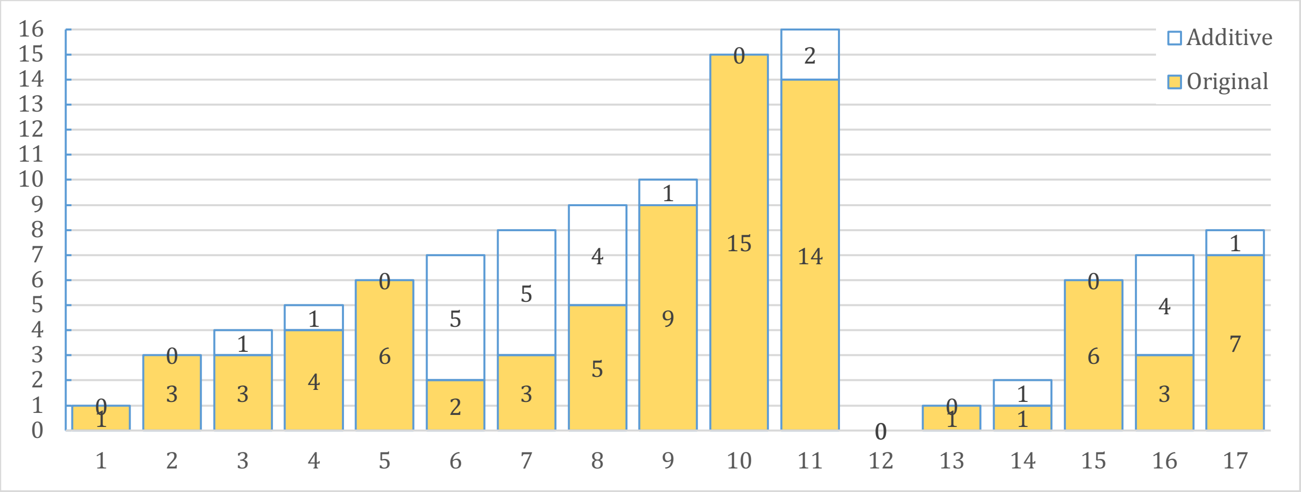
For example, if our four numbers are 3, 3, 8, and 2, our desired numbers will be 3, 4, 8, and 9 because we want our numbers to appear in increasing order but not too large. Thus, to reach this goal (3, 4, 8, 9), we will need to add a 1 to our second number (3) and a 7 to our last number (9) in our input numbers (3, 3, 8, 2). Hence, the output sum is 1 + 7 = 8. Problem B will allow more than four numbers.

B. Loop

Create a console application that lets us enter a bunch of non-negative integers until we have entered a negative number. We want to alter these numbers so that they will appear in increasing order, in which the current number will be larger than the previous number—see chart. To reach this goal, we will need to add a non-negative value to every number we have entered. That is, if the current number entered is smaller than the previous number, we will add a value to the current number so that the current number is just slightly larger than the previous number. Moreover, if the current number entered is the same as the previous number, we will add a one to the current number so that it will become slightly larger than the previous number but not the same. In addition, if the current number entered is 0, then the current number and the subsequent numbers will restart from zero. In essence, this app will calculate the sum of all these values added to the original numbers such that our projected numbers will appear in increasing order.

In the following example, we have inputted 1, 3, 3, 4, 6, 2, 3, 5, 9, 15, 14, 0, 1, 1, 6, 3, and 7. We must reach our goal such that our numbers will appear in increasing order but not too large: 1, 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 0, 1, 2, 6, 7, and 8. To reach this goal, we must add some values to our original numbers. All the hollow bars above the yellow bars represent the values that are added to the original value (yellow bars), making these numbers to appear in increasing order. The application will display the sum of all these additive values. In other words, the app will calculate the sum as

$$0 + 0 + 1 + 1 + 0 + 5 + 5 + 4 + 1 + 0 + 2 + 0 + 0 + 1 + 0 + 4 + 1 = 25.$$


□ Additive
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