Operations on Arrays

https://csci-1301.github.io/about#authors

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1 Operations on numeric arrays

Start by creating a new C# solution.

After creating the solution, in `Main` method, declare and initialize an int array called `numbers`.

Initialize the array so that it holds the following values, in the same order:

```
4, 2, 6, 1, 7, 5, 3, 4, 2, 2, 8, 6, 3, 11, 7, 2, 9, 3, 1, 9, 7
```

1.1 Displaying values

After declaring and initializing this array, write statements to:

1. Display every array value left to right
2. Display every value at even indices (skip odd indices)
3. Display all values that are greater than 5

1.2 Counting values

Next, write statements that provide answers to following questions:

1. Count the sum of all `numbers` then display the result. (The expected value is 102)
2. Count how many times value 7 occurs in `numbers`, then display that value. Check that your program outputs the correct answer, which you can determine by visually observing the array contents.

1.3 Finding values

Lastly, implement the following statements:

1. Find the *index* of first 7, then display the index. If the value does not exist, display -1 to indicate it was not found. Check that your solution is correct by comparing your result to array contents.
2. Find the maximum value in `numbers`. Check that statement you implement obtains the expected value.

1.4 Evaluate your solution

After implementing all methods above, and assuming you have obtained the expected values, *ideally* your solution should still work even if the values stored in `numbers` array change, or if the array length changes.

To test your solution, go back to the beginning of the program where you declared `letters` array, then change the initialization so that the new array values are:

```
55, 92, 12, 90, 37, 18, 6, 20, 80, 18, 46, 19, 65, 68, 18
```

Check that you obtain expected values:

- the new sum should be 644
- since 7 does not occur in the array anymore,
  - count should be 0
  - first index of 7 should be -1
- maximum value is now 92

2 Working with two arrays

For this part of lab, lets create two `char` arrays, with following values:

```
char[] chars1 = {'K', 's', 'Q', 'U', 'i', 'N', 'K', 'N', 'h', 't', 'u'};
char[] chars2 = {'?', 'E', 'U', 'a', 'j', 'X', 'L', 'G', '@', 'L', 'l', 'C', 'w', 'J',
 ↪  'U' };
```

Next, write statements that answer the following questions:

1. Does value `w` occur in both arrays (true/false)?
2. What is the first value (searching left -> right) that occurs in both arrays?

After completing these two problems, make sure the program answers these questions correctly. The expected results are:

- Does `w` occur in both arrays -> **`false`**
- first value that occurs in both arrays -> `U`

Again, evaluate your work by changing the array initialization to:

```
char[] chars1 = {'s', 'p', 'd', 'P', 'y', 'D', 'w', '?'};
char[] chars2 = {'V', 'D', 'l', 'P', 'w', 'O', 'y', 'k', 'D', 'Z' };
```

Run the program again. Ideally, after changing array values, the program should not crash and should still produce correct results, which should now be:

- Does `w` occur in both arrays -> **`true`**
- first value that occurs in both arrays -> `P`