First Arrays Manipulations

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1 First Array Manipulation

1.1 Warm-up

Write a program that implements the following steps:

1. declares an array `myArray` of `int` of size 5,

   Question What values are stored in this array after declaring it?

2. initializes `myArray` with the values 1, 2, 3, 4 and 5,

   Question There are a few different ways you can declare and initialize array of size 5 holding values 1, 2, 3, 4 and 5. Can you think of two different ways of doing this?

3. displays the content of `myArray` on the screen.

1.2 Going wrong

Now, let us write *incorrect* statements.

Add the following statement to the program you created in the warm-up part, and observe how C# reacts, that is, try to compile and execute the program after adding this line:

```
myArray = { 1, 2 ,3, 4, 5};
```

Remove the previous line. Then add this statement in its place:

```
Console.WriteLine(myArray[5]);
```

try to compile and execute the program.

Then, remove the previous line, and now add this:

```
myArray[5] = 12;
```

try to compile and execute the program again.

Remove the previous line. Add this line and execute the program:

```
Console.WriteLine(myArray);
```

Now answer the following questions.

1. One of these statements is not "incorrect" in the sense that it won't prevent your program from executing, but it is not doing what you would have expected: which one?
2. Can you read and understand the error messages you obtained for the others?

2 Second Array Manipulation

Write a program that

1. declares an array `myArray` of `int` of size 10,
2. initializes `myArray` with the values 1, 2, 3, ..., 9 and 10,
3. displays the content of `myArray`.
4. sums the values stored in `myArray` and displays the result.
5. computes the product of the values stored in `myArray` and displays the result.

3 Exploring arrays

For this part, create a new array:

- declare a `char` array of length 6, name it `letters`
- initialize the first 4 indices of `letters` with the following values: `'a'`, `'b'`, `'c'`, `'d'`
- initialize index 5 of `letters` with the value `'f'`

Now, write the following statements:

1. Write a statement to display the last `char` value in `letters` (should display `f`).
2. Write a statement to display the value stored at index 4. What is that value? Why?
3. Write a statement to display the characters in the *first half* of the array (`'a'`, `'b'`, `'c'` but no others).

Execute your program to ensure you are seeing the expected output before proceeding.

Next, update the part of the program where `letters` is declared and change the length of `letters` to 8. Do not modify any other parts of the program. Then execute the program again.

Answer the following questions:

1. What is the last `char` of the `letters` array now, after changing its length?
2. Does your program still output *the last* `char` value in `letters` array?
3. When displaying the first half of the array, does your program still display *the first half*? (After changing the length, the first half contains the values `'a'`, `'b'`, `'c'`, `'d'`)
4. If you did not get the last value or the first half you expected, can you think of a way to perform these array operations in a way that can accommodate arrays of different lengths?