Practising if and switch

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

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1 Mastering `switch` statement

Copy-and-paste the following code in a `Main` method:

```
Console.WriteLine("Please, enter the day of the week.");
string string_day = Console.ReadLine();
int num_day;
switch (string_day) {
    case ("Monday"):
        num_day = 1;
        break;
    case ("Tuesday"):
        num_day = 2;
        break;
    case ("Wednesday"):
        num_day = 3;
        break;
    case ("Thursday"):
        num_day = 4;
        break;
    case ("Friday"):
        num_day = 5;
        break;
    case ("Saturday"):
        num_day = 6;
        break;
```

```
    case ("Sunday"):
        num_day = 7;
        break;
    default:
        num_day = -1; // This is an error code.
        break;
}
Console.WriteLine("The number corresponding to " + string_day + " is " + num_day + ".");
```

Now, do the following:

1. Test the program with various values and make sure it behaves as expected.
2. Comment the `default:` case along with the two lines below it, and compile your program. Why is the compiler complaining?
3. Restore the code to its original state.
4. Change the code so that "monday" would make the value 1 being assigned to `num_day`.
5. Change the code so that the days of the week would start on Sunday[1], i.e., "Sunday" trigger the value 1 to being assigned to `num_day`, "Monday" trigger the value 2 to being assigned to `num_day`, etc.
6. Finally, change the last message if the code is in error: use an `if` statement to display a different message if the user input did not matched one of the literals in your `switch` statement.

2 Practicing `if` and `switch`

This exercise will ask you to write a rather abstract program that performs simple manipulations on a few variables. The main goal is to have you practise "transforming" `if` statements into `switch` statements, and reciprocally. This will help you in memorizing both, and in chosing the most convenient to perform certain task.

Create a new project and do the following in `Main`.

1. Declare and initialize following variables:
    - a `string` variable named `day`
    - an `int` variable named `myVar`
    - a `char` variable named `initial`, and
    - a `bool` variable named `flag`
2. Set and change the value of these variables to make good tests as you progress through this problem.
3. You can also display them on the screen to help you in making sure that your statements behave as they are supposed to.

2.1 From `switch` to `if-else`

1. Write a `switch` statement that sets `flag` to `true` if the value of `day` is `"Mon"`, `"Tue"`, `"Wed"`, `"Thu"` or `"Fri"`, and to `false` otherwise.
2. Rewrite the previous statement as an `if-else` statement.

2.2 From `if-else` to `switch`

1. Write a `if-else` statement that doubles the value of `myVar` if `myVar` is: `3`, `5` or `7`.
2. Can you rewrite the previous statement as a `switch` statement? If so, do it. If not, explain why not.

[1] https://en.wikipedia.org/wiki/Names_of_the_days_of_the_week#Days_numbered_from_Sunday

2.3 Deciding Between Condition Types

1. Write a statement that doubles the value of `myVar` and sets `initial` to `'M'` if `day` is equal to `"Sat"`. What is the appropriate kind of statement to do this?
2. Write a statement that displays "Hello" on the screen if the value of `initial` is `'E'` or `'e'`, "Bonjour" if the value of `initial` is `'F'` or `'f'`, "Guten Tag" if the value of `inital` is `'D'` or `'d'`. What is the appropriate kind of statement to do this?

2.4 Complex Conditions

1. Write a statement that doubles the value of `myVar` if `day` is `"Sun"`, triples the value of `myVar` if `day` is not `"Sun"` and `initial` is `'a'`, and sets `myVar` to `0` otherwise.
2. Write a statement that sets `myVar` to `0` if `initial` is an upper-case letter, and to `1` otherwise. You will need to understand how to use the `IsUpper` method, and the documentation[2] can help you with that.

3 Pushing Further (Optional)

3.1 Conditional Operator

Here we introduced a conditional operator, which can be used to replace `if-else` statements in particular cases (assignment, call, increment, decrement, and new object expressions). Its structure is:

```
condition ? first_expression : second_expression;
```

You can read more about it in the documentation[3].

If you have time, practice using the conditional operator by adding these statements to your program:

1. Write a statement that sets `myVar` to `0` if `initial` is an upper-case letter, and to `1` otherwise. You already wrote an `if` statement that accomplishes this in the previous exercise, so you just need to rewrite it using the conditional operator.
2. Write a statement that sets `initial` to `'B'` if `myVar` is greater than 500 and to `'S'` if `myVar` is less than or equal to 500.
3. Write a statement that doubles the value of `myVar` if `day` is `"Sat"` or `"Sun"` and adds 1 to the value of `myVar` otherwise.

[2] https://docs.microsoft.com/en-us/dotnet/api/system.char.isupper?view=net-5.0
[3] https://docs.microsoft.com/en-us/dotnet/csharp/language-reference/operators/conditional-operator