Practicing if and switch

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

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# Mastering the 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 out 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 get assigned to num\_day.
5. Change the code so that [the days of the week start on Sunday](https://en.wikipedia.org/wiki/Names_of_the_days_of_the_week#Days_numbered_from_Sunday), i.e., “Sunday” causes the value 1 to get assigned to num\_day, “Monday” causes the value 2 to be assigned to num\_day, etc.
6. Finally, change the last message to tell the user if the code encountered an error: use an if statement to display a different message if the user input did not match one of the literals in your switch statement.

# 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 practice “transforming” if statements into switch statements, and reciprocally. This will help you in memorizing both, and in understanding how to choose the most convenient to perform certain tasks.

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.

## 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.

## 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.

## 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 initial is 'D' or 'd'. What is the appropriate kind of statement to do this?

## 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](https://docs.microsoft.com/en-us/dotnet/api/system.char.isupper?view=net-5.0) can help you with that.

# Pushing Further (Optional)

## Conditional Operator

In class 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](https://docs.microsoft.com/en-us/dotnet/csharp/language-reference/operators/conditional-operator).

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.