

Exercise paper#2

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1 Exercise 1

Alex is 22. He really loves travelling. He is sensitive to the cold. Different countries in the world use different scales to measure temperature. He is always in trouble when travelling from a country with Celsius degree to a country which has Fahrenheit as official temperature measurement scale. Write the following functions to help Alex during his journeys around the world.

- celsiusToFahrenheit -> converts a temperature in Celsius to a temperature in Fahrenheit
- fahrenheitToCelsius -> converts a temperature in Fahrenheit to a temperature in Celsius
- kelvinToCelsius -> converts a temperature in Kelvin to a temperature in Celsius
- celsiusToKelvin -> converts a temperature in Celsius to a temperature in Kelvin

Example:

```
double temperatureCelsius = 20.5;
double temperatureFahrenheit = celsiusToFahrenheit(temperatureCelsius);
cout<<"TEMP: <temperatureFahrenheit<<endl;    //TEMP: 401
```

2 Exercise 2

Catholics follow ten commandments. Whenever you violate one of the latter you have to say a given amount of Hail Maries in order to be absolved. Don Mario is a very famous priest and he needs your help. Your task is to write a function "mario" that given an integer from 1 to 10, to indicate a violated commandment, return the number of Hail Maries which are recommended in order to be absolved. The pastoral council have written some formal specifications as follows:

- If the input number is not in the interval [1,10], the function prints an error message and returns -1
- If you have violated commandment 1 you have to say 50 Hail Maries; if you have violated commandment 2 you have to say 49 Hail Maries and so on for the other commandments.

Example:

```
cout<<"If you have violated commandment 3 you have to say "<mario(3)<" Hail Maries."<<endl;
```

OUTPUT: "If you have violated commandment 3 you have to say 48 Hail Maries."

3 Exercise 3

When you learn a new language it is crucial to be able to introduce yourself. Perhaps, this is true also in the context of programming languages. In this exercise you are going to experiment a way to learn introducing yourself in C++ language. Write three functions:

- Function A which prints in console "Ciao"
- Function B which prints in console "Mi chiamo"
- Function C which prints in console "Giulia"

At this point, your aim is to write a function named `miPresento` which calls functions A, B and C in the proper order to allow you presenting yourself. In other words when you invoke function `miPresento` the expected output is:

"Ciao mi chiamo Giulia"

4 Exercise 4

In the first paper of exercises (Exercise paper #1 - exercise number 3) we have met Elisa, a clever girl who enjoys playing with her smartphone. Elisa has updated her favourite mobile videogame. This time a word of a given length appears on the screen and the player (in this case our friend Elisa) has to write the corresponding "palindrome version" of the input word. Look at the following examples to understand better:

=> [GAME] on the smartphone appears the following message: "4 - CIAO"

The first number is the length of the subsequent string.

In this case Elisa has to write:

=> [Elisa] OAIC

You have been asked to write a function to help Elisa playing with this new videogame. The following is the desired signature of the function you have to implement:

```
void displayPalindrome(int N, char word[MAX_LENGTH]);
```

where:

- N is the length of the input word;
- word is the input word;
- MAX_LENGTH is the maximum value of N which is allowed. You can set MAX_LENGTH as you prefer (for example `#define MAX_LENGTH 100`).

Consider that it should be a good idea to print an error message if the input N is larger than MAX_LENGTH.

Examples:

```
char parola[MAX_LENGTH]={'c','i','a','o'};
displayPalindrome(4, parola);    //OUTPUT = oaic
```

```
char parola[MAX_LENGTH]={'t','n','f','o','r','m','a','t','i','c','a'};
displayPalindrome(11, parola);   //OUTPUT = ACITAMROFNI
```