

CIS 1.5 Fall 2009 Lab III.1

Start to get in the habit of writing down what code you need to write for each program before you start to type. Doing the design of the program first becomes more and more important as the programs you write get more complex.

1. A first function

Write a program with a `main` in which the user is asked to enter an integer, and this number is then printed out.

Add a function `addMe` to your program. This function should take an integer as its argument, add 10 to that number, and return the result.

Modify your program so that the number that the user enters has 10 added to it using `addMe` and then the result is printed out.

Test your program to make sure that it works.

2. Also subtract

Now add a function `subtractMe` that takes an integer as its argument, takes 10 from the value of that integer, and then returns the result.

Modify your program so that the number that the user enters is first has 10 added to it using `addMe` and then 10 subtracted from it using `subtractMe` and then the result is printed out.

Test your program to make sure that it works.

3. Convert a character

Now add a function `CharToNum` that takes a character as its argument, converts that character to an integer, and then returns the result.

Modify your program so that it asks the user to enter a character, uses `CharToNum` to convert it into an integer, and then prints the integer out.

Test to make sure that it works.

HINT: remember that we used the cast operation `(int)` to convert a character into an integer.

4. Convert an integer

Now add a function `NumToChar` that takes an integer as its argument, converts that integer to a character, and then returns the result.

Modify your program so that it asks the user to enter a character, uses `CharToNum` to convert it into an integer, uses `NumToChar` to convert it into a character, and then prints the character out.

Test to make sure that it works.

HINT: remember that we used the cast operation `(char)` to convert an integer into a character.

5. Encrypting

Using the functions you just wrote, write a new program that:

1. Has the user enter their three initials, each one as a character.
2. Converts each initial to an integer using `CharToNum`.
3. Uses `addMe` to add 10 to each integer the program gets from `CharToNum`.
4. Uses `NumToChar` to turn each integer it gets from `addMe` back into a character.
5. Outputs the three characters.

What you get is a simple form of encryption — the initials are changed into new characters and the identity of the user who entered the initials is hidden.

6. Decrypting?

Given the functions you already have, it is possible to turn the encrypted initials back into the original letters. Write a program that does this.