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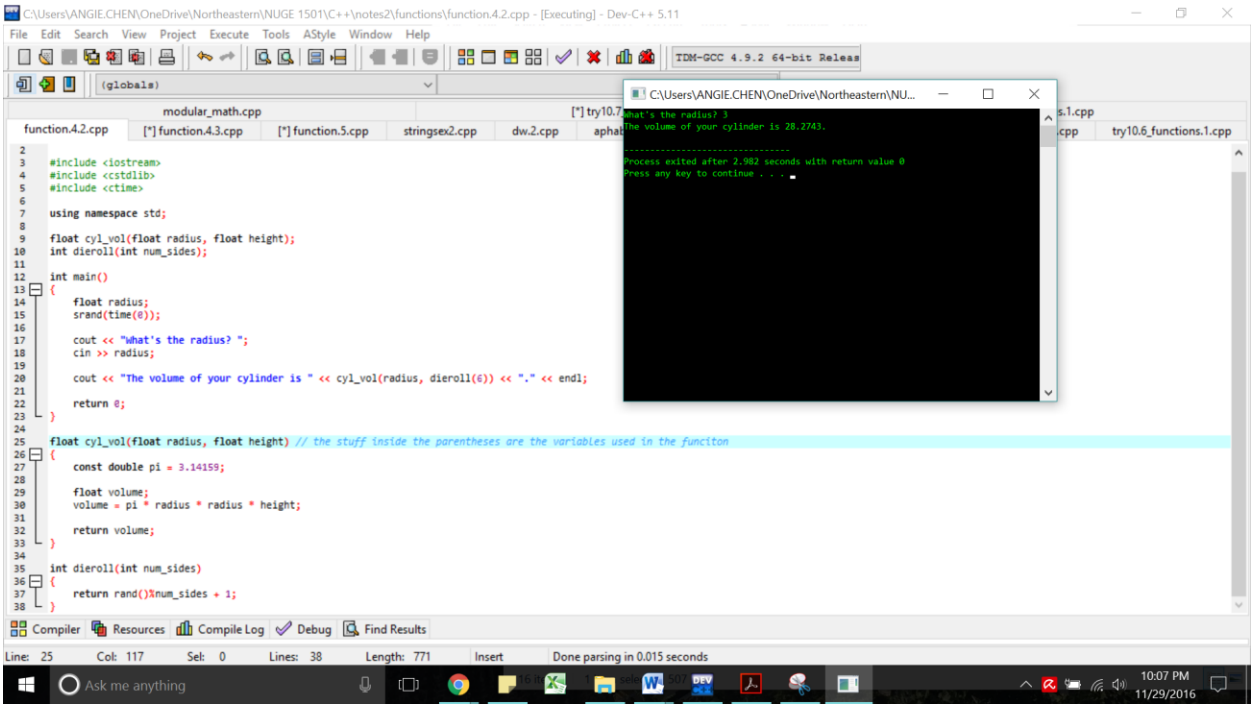
Assignment 10 Report: Secret

The importance of the protection of privacy has increased as the digital age of social media came into fruition. Encryption, a method to disguise information so that only people who know how to read it can understand. Computer programming like C++ has given people a platform to be able to encode text simply and ensure the exclusivity of knowledge.

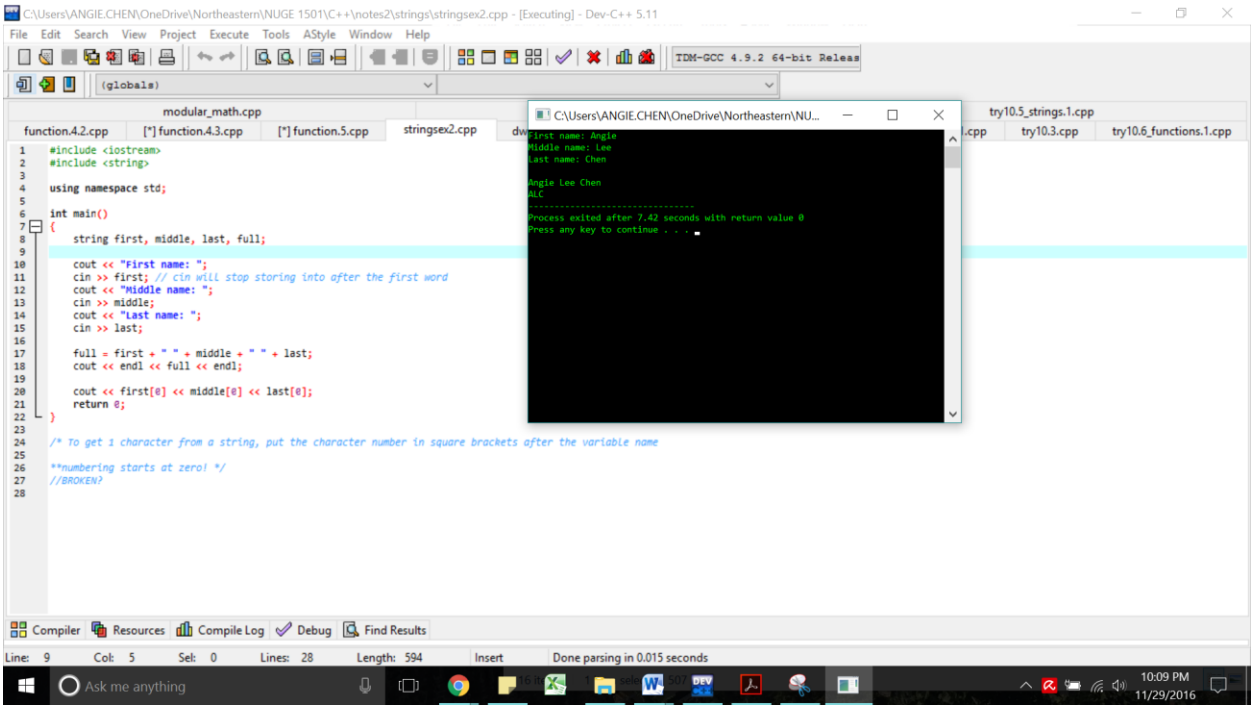
This project runs a program that can encrypt or decrypt a piece of text entered upon specification. To organize my logic, I wrote a series of pseudocode displayed below before proceeding in prototyping in code.

```
/*  ask the user for a number input, which will act as the en/decryption SHIFT_CODE
        use that input as a seed number for en/decryption later
        srand(SHIFT_CODE)
    ask the user for a string of text to be en/decrypted
        convert the string of text to "num_let" (0-25)
            shift the "num_let" to "num_let2" and then convert it back to ASCII
                num_let2 = (num_let + rand()) % 26
                if(num_let2 < 0)
                {
                    num_let2 += 26;
                }

                num_let2 += 65
    cout << num_let2 << endl; ** DONT OUTPUT YET**
    //output at the very very end: because it will vary based on if the user wants to en/decrypt

    **must add a decryption line

    at the beginning, ask the user: encrypt or decrypt?
    if(encrypt = TRUE)
    {
        run encryption code block, as read from above
    }
    else
        run the same encryption code block, but subtract the random number shift
            num_let2 = (num_let - rand()) % 26
            if(num_let2 < 0)

            etc...

*/


/*

en/decryptions must be separate functions
```

Upon further speculation, the pseudocode was not complete, since it did not truly specify the separate functions that were to store the encryption and decryption procedures. However, the series of prototyping below show parts of the working parts of the functions.



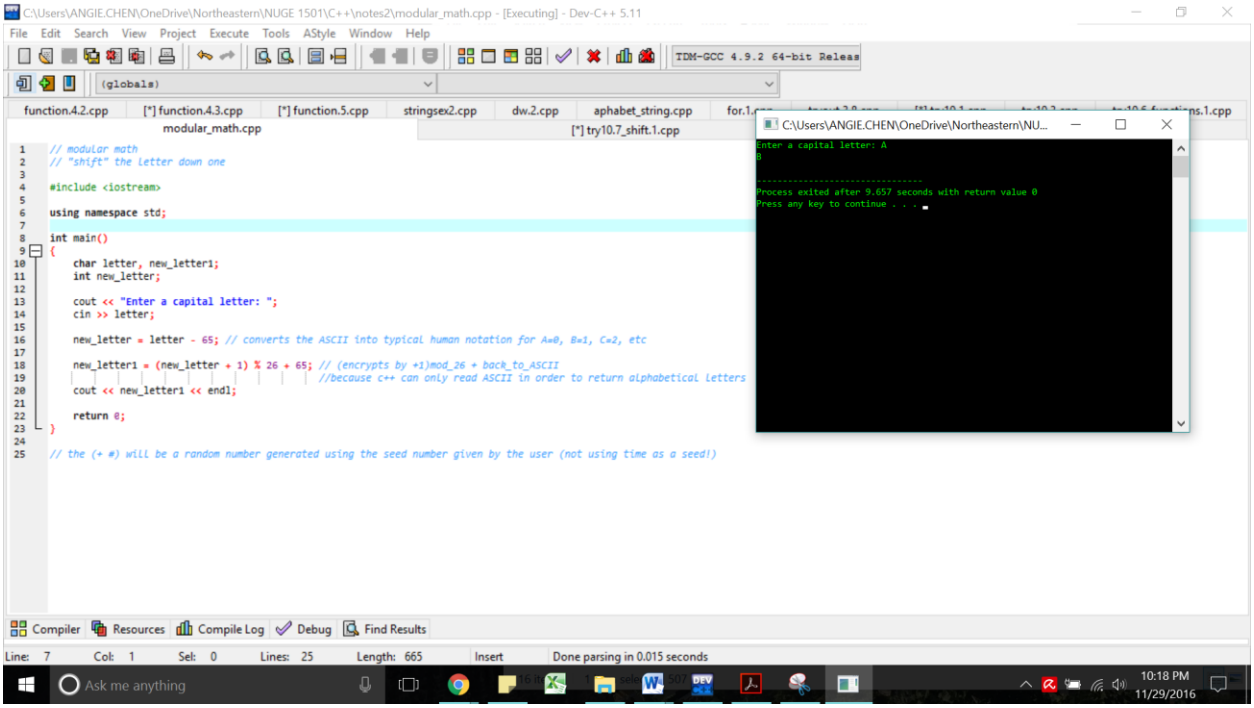
The above screenshot shows the workings of “cyl_vol”, a function that calculates the volume of a cylinder upon the input of an integer for the radius. This is an example of how I modeled my en/decryption functions.



The strings library gives the user the ability to enter and store multiple characters of a text into a variable. These strings of characters are then used for encryption or decryption based on the shift

code the user then enters into the console. Based on what the user specified the function (encryption or decryption), the program will use the shift code to shift each letter of the inputted text up or down the alphabet.

This method of encryption or decryption uses modular math and the ASCII values of C++. Capital letters inputted into the C++ console are interpreted as certain ASCII values that are first translated to 1-26, the order of the alphabet, shifted via the shift code input, then translated back into the respective ASCII value and reinterpreted through C++. Some shifted values may end up being greater 26 or less than 1, so in order to maintain the proper alphabet while en/decrypting, modular math, displayed in the figure below, is used.



Appendix

```
#include <iostream>

#include <cstdlib>

#include <ctime>

#include <string>
```

```
using namespace std;

string encrypt(string text, int shift);
string decrypt(string text, int shift);

	int main()
	{
		char enter;
		string text;
		int shift;

		cout << "Enter text in capital letters: "; // "THISISASECRET" has 13 letters
		cin >> text;

		cout << "Enter shift code: ";
		cin >> shift;
		srand(shift);

		do
		{
			cout << "Enter (E) for encryption, (D) for decryption: ";
			cin >> enter;

			if(enter == 'E')
```

```
                    // { cout << encrypt() << endl;          } PUT the encrypt function
here: encrypt(


                    // cout << encrypt

                if(enter == 'D')

                    // { cout << decrypt() << endl;          } PUT the decrypt function
here


                    // cout << decrypt

            }

            while(enter != 'E' && enter != 'D');


    return 0;

    }


string encrypt(string text, int shift) // the stuff inside the parentheses are the variables used in this
function

{

    string encrypted; // send the text letter by letter into the en/decryption




    return encrypted;

}


string decrypt(string text, int shift)
```

```
{
        string decrypted;




        return decrypted;
}
```