CS111 Homework 6

Name your program `hw6.cpp`. Program must be able to compile or you will NOT get any point for the assignment.

Due: Monday May 14, 2018 by 11:59 PM

Write one single complete C++ program to do all two sections below:

Use the following main function to test for both part A and part B:

```cpp
int main () {
    cout << "Part A:\n";
    //srand(time(0)); //Commented out for testing purpose
    int x[5][5] = {};
    fill2DArray(x, 5, 5);
    print2DArray(x, 5, 5);
    cout << "Largest column sum = " << largestColSum (x, 5, 5) << endl;
    cout << endl;

    cout << "Part B:\n";
    string word1, word2;
    for (int i = 1; i <= 3; i++) {
        cout << "Test Run #" << i << endl;
        cout << "Please enter two words: ";
        cin >> word1 >> word2;
        cout << word1 << " " << word2 << endl; //needed for my test script
        cout << "Words in uppercase: " << toUpperCase(word1) << " " << toUpperCase(word2) << endl;
        cout << "Words in lowercase: " << toLowerCase(word1) << " " << toLowerCase(word2) << endl;
        if (equals(word1, word2))
            cout << "Both strings are equal." << endl;
        else
            cout << "The input strings are different." << endl;
    }
    return 0;
}
```
Part A: (from prac3.pdf)
Write 3 functions:

a) Function `fill2DArray` will fill each element in a 2D array with a random number between -25 to 25 (inclusive). It takes in 3 inputs and returns nothing back to the calling function.

b) Function `print2DArray` will print out the elements in the 2D array. The 2D array, row size and column size will be passed in as inputs with no return value back to the caller.

c) A function called `largestColSum` that calculates and returns the largest possible sum of entries of any column in a 2-dimensional array. It has 3 input parameters.

You should see the following output using the main program provided above:

```
Part A:
-15  24 -16   9   7
 12  12  23  20  -6
-20   6  -5  -6   4
 -3  20   5  15   6
 10 -17  11  14 -11
Largest column sum = 52
```
Part B:
Write 3 functions:
  • **toUpperCase** converts all the characters in the given String to upper case.
  Note: Do not use toupper or tolower functions. Use character arithmetic learned from Dr. Ryba’ lecture.
  For example:
  http://venus.cs.qc.edu/~ctse/111/cs111/codes/charArith.cpp
  • **toLowerCase** converts all the characters in the given String to lower case.
  • **equals** determines if both string are the same.

Program asks user to input two strings in main ().
Then, it will display them in uppercase and lowercase values.
Finally, it will check and see if both strings are equal.

**Sample I/O #1**
Please enter two words: hello hello
Words in uppercase: HELLO HELLO
Words in lowercase: hello hello
Both strings are equal.

**Sample I/O #2**
Please enter two words: Hello[] hello[
Words in uppercase: HELLO[] HELLO[
Words in lowercase: hello[] hello[
The input strings are different.

**Sample I/O #3**
Please enter two words: 333 333
Words in uppercase: 333 333
Words in lowercase: 333 333
Both strings are equal.