CSCI 1300 CS1: Starting Computing
Ashraf, Cox, Spring 2020
Homework 8
Due: Saturday, April 11, by 6 pm
(5 % bonus on the total score if submitted by 11:59 pm April 10)

Objectives

- Learn binary numbers and how to use recursive functions
- Develop some methods that will be useful in your future!

You can find **hw8 note: binary and recursion** on Moodle.

Submissions

- **Conceptual reviews(mcq)**. There are a few multiple-choice questions to check your conceptual understanding. Don't forget to complete them!
- **C++ files**. All files should be named as specified in each question, and they should compile and run on Cloud 9 to earn full points. TAs will be grading styles of your code and comments. Please see the style guide on Moodle and the summary note on Moodle. At the top of each file, write your name with the following format:

```
// CS1300 Spring 2020
// Author: Punith Sandhu
// Recitation: 123 - Favorite TA
// Homework 8 - Problem # …

/*
 * This function converts a temperature in fahrenheit to celsius
 * and prints the equivalence.
 * Parameters: fahrenheit - degrees fahrenheit
 * Return: equivalent temperature in celsius
*/

double fahrenheit_to_celsius(double fahrenheit){
      double celsius = (fahrenheit - 32) * (5/9.0);
      return celsius;
}
```

  For each question, create a program that calls the function in the main. Here is an example.

- **Code runner**. Your program will be graded by the code runner. You can modify your code and re-submit (press Check again as many times as you need to, up until the assignment due date.

Questions

Question 1(10pt): decimalToBinaryIterative
Write a function **decimalToBinaryIterative** that converts a decimal value to binary using a loop. This function takes a single parameter, a non-negative integer, and returns a string corresponding to the binary representation of the given value.

Function specifications:

- The function name: **decimalToBinaryIterative**
- The function parameter: An `integer` to be converted to binary
- Your function should return the binary representation of the given value as a `string`
- Your function should not print anything
- Your function should use a loop

Sample main (Be sure to test all methods!)	Expected outputs
`decimalToBinaryIterative(5)` `decimalToBinaryIterative(8)`	`101` `1000`

The file should be named as `iterative.cpp`. Don't forget to head over to the code runner on Moodle and paste your solution in the answer box! In the main, make sure to have test cases.

Question 2(10pt): decimalToBinaryRecursive
Write a function **decimalToBinaryRecursive** that converts a decimal value to binary using recursion. This function takes a single parameter, a non-negative integer, and returns a string corresponding to the binary representation of the given value.

Function specifications:

- The function name: **decimalToBinaryRecursive**
- The function parameter: An `integer` to be converted to binary
- Your function should return the binary representation of the given value as a `string`
- Your function should not print anything
- Your function should use recursion. Loops are not allowed.

Sample main (Be sure to test all methods!)	Expected outputs
`decimalToBinaryRecursive(5)` `decimalToBinaryRecursive(8)`	`101` `1000`

The file should be named as `recursive.cpp`. Don't forget to head over to the code runner on Moodle and paste your solution in the answer box! In the main, make sure to have test cases.

Homework 8 checklist

Here is a checklist for submitting the assignment:

1. Complete the **conceptual reviews(mcq)**
2. Complete the code **Homework 8 CodeRunner**
3. Submit one zip file to **Homework 8 zip file submission**. The zip file should be named, **hmwk9_lastname.zip**. It should have the following 2 files:
    - **iterative.cpp**
    - **recursive.cpp**

Homework 8 points summary

Criteria	**Pts**
Conceptual reviews (MCQ)	10
CodeRunner (problem 1 - 2)	60
C++ file submission (test cases. compiles and runs, style and comments)	30
Recitation attendance (Apr 6, Apr 7)*	-30
Total	100

* if your attendance is not recorded, you will lose points. Make sure your attendance is recorded on Moodle.