CS 280
Fall 2021
Recitation Assignment 6
October 20, 2020

Due Date: Sunday, October 24, 2021, 23:59
Total Points: 4

Write a C++ function that performs decimal to binary conversion. The algorithm for this conversion is to repeatedly divide the decimal number by 2, until it is 0. Each division produces a remainder of 0 or 1, which becomes a digit in the binary number. For example, if we want the binary representation of decimal 13, we would find it with the following series of divisions:

13/2 = 6 remainder 1
6/2 = 3 remainder 0
3/2 = 1 remainder 1
1/2 = 0 remainder 1

Thus, the binary representation of 13 (decimal) is 1101. The only problem with this algorithm is that the first division generates the low-order binary digit, the next division generates the second-order digit, and so on, until the last division produces the high order digit. Thus, if we output the digits as they are generated, they will be in reverse order. You should use recursion to reverse the order of output.

Implement a recursive C++ function that performs the conversion from decimal to binary that has the following header definition:

```
string DecToBin(int num);
```

Vocareum Automatic Grading

- Implement the *DecToBin()* function in a file, called "DecToBin.cpp" and upload it to Vocareum.
- You can implement any driver program for testing your implementation. However, a driver program is provided on Vocareum for testing the implementation, called "prog.cpp". The "prog.cpp" will be propagated to your work directory. The program asks the user to enter a decimal number from the keyboard, and it displays the binary value as a string returned by calling the *DecToBin()* function.
- The testing is based on the correct results returned by the call to your recursive function `DecToBin()`, and the satisfaction of using recursive approach for the solution of the problem, rather than an iterative one.
- "prog.cpp" is available with the other assignment material on Canvas.

Submission Guidelines

- Please upload your implementation of the function to Vocareum as a "DecToBin.cpp" or any other file name you choose. The file should include the implementation of the function `DecToBin()`.

- **Submissions after the due date are accepted with a fixed penalty of 25%. No submission is accepted after Tuesday 11:59 pm, October 26, 2021.**

Grading Table

Item		Points
Function Implementation	**`DecToBin()`**	3
	Compiles Successfully	1
Total		4