

## Exercise 166: Recursive Decimal to Binary

(34 Lines)

In Exercise 78 you wrote a program that used a loop to convert a decimal number to its binary representation. In this exercise you will perform the same task using recursion.

Write a recursive function that converts a non-negative decimal number to binary. Treat 0 and 1 as base cases which return a string containing the appropriate digit. For all other positive integers,  $n$ , you should compute the next digit using the remainder operator and then make a recursive call to compute the digits of  $n // 2$ . Finally, you should concatenate the result of the recursive call (which will be a string) and the next digit (which you will need to convert to a string) and return this string as the result of the function.

Write a main program that uses your recursive function to convert a non-negative integer entered by the user from decimal to binary. Your program should display an appropriate error message if the user enters a negative value.