CPE100 Computer Programming for Engineers

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Objective

This exercise will allow you to practice coding C language which is the most important computer language, in conditional and iterative statements. This exercise will focus on gaining basic knowledge of how "if-else" and "for loop" statement in C works for further coding.

Instructions

1) Write a program in C to convert a binary number into a decimal number without using array, function ,while loop and %b.

     Input : 1010101   Output : 85

     Input : 100011   Output : 35

2) Write a c program to check whether a given number is a perfect number or not.

     *** perfect number is a positive integer that is equal to the sum of its positive divisors, excluding the number itself.

     Input : 56   Output : 56 is not a perfect number

     *** The positive divisor : 1 2 4 7 8 14 28 , Sum is 64

     Input : 6   Output : 6 is a perfect number

     *** The positive divisor : 1 2 3 , Sum is 6

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3) Write a program in C to Check Whether a Number can be Express as Sum of Two Prime Numbers.

Input : 16

Output :

16 = 3 + 13

16 = 5 + 11

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Input : 40

Output :

40 = 3 + 37

40 = 11 + 29

40 = 17 + 23

4) Write a C program to input a number from user and find reverse of the given number.

Input : 12345   Output : 54321

Input : 121341   Output : 143121

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5) Write a program in C to display the first n terms of Fibonacci series.

   *** Fibonacci series , Fn = Fn-1 + Fn-2 , F1 = 1 and F2 = 1.

   For example, 1 1 2 3 5 8 13 21 34 55 89 ……

   Input : 5   Output : 1 1 2 3 5

   Input : 7   Output : 1 1 2 3 5 8 13

6) Write a program in C to check whether a number is a palindrome or not.

   *** Palindrome number, a word, phrase, or sequence that reads the same backward as forward, e.g., madam , nurses run , 10101.

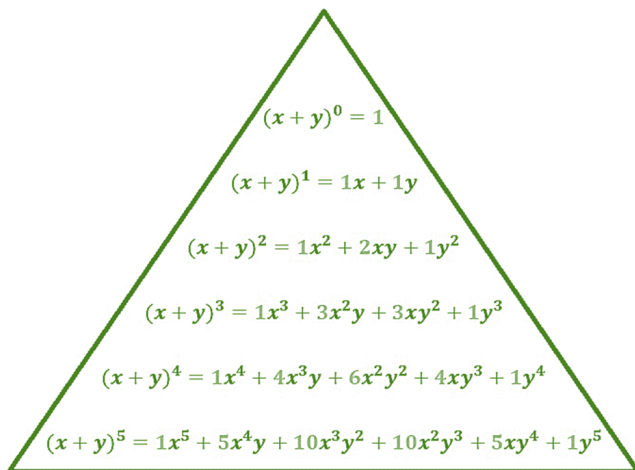   Input : 132   Output : 132 is not a palindrome number.

   Input : 12121   Output : 12121 is a palindrome number.

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7) P'tum need some thing much more cool than last pyramid.

Write a C program to display Pascal's triangle, by input number of floors.

   *** Pascal's Triangle is a method to know the binomial coefficients of terms of binomial expression $(x + y)^n$, it will show to co efficient number of the result binomial expression

$$(x + y)^0 = 1$$
$$(x + y)^1 = 1x + 1y$$
$$(x + y)^2 = 1x^2 + 2xy + 1y^2$$
$$(x + y)^3 = 1x^3 + 3x^2y + 3xy^2 + 1y^3$$
$$(x + y)^4 = 1x^4 + 4x^3y + 6x^2y^2 + 4xy^3 + 1y^4$$
$$(x + y)^5 = 1x^5 + 5x^4y + 10x^3y^2 + 10x^2y^3 + 5xy^4 + 1y^5$$

Input : 5

Output :

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        1
       1 1
      1 2 1
     1 3 3 1
    1 4 6 4 1
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