1st Individual project – Programming 2017-18

Your code should be sent via email to **gkchris.network@gmail.com** by 07/01/2018 (24:00).

Project 1

a) C++ program to check whether a number is palindrome or not
(Palindrome number is a number which when reversed is equal to the original number. For example: 121, 12321, 1001 etc.)

<u>Example</u>

Input

```
Input any number: 121
```

Output

```
121 is palindrome
```

b) C++ program to check whether a number is perfect or not
(Perfect number is a positive integer which is equal to the sum of its proper positive divisors.
For example: 6 is the first perfect number
Proper divisors of 6 are 1, 2, 3.
Sum of its proper divisors = 1 + 2 + 3 = 6.
Hence 6 is a perfect number.)

<u>Example</u>

Input

```
Input any number: 6
```

Output

```
6 is PERFECT NUMBER
```

Project 2

a) C++ program to find HCF (GCD) of two numbers
(HCF (Highest Common Factor) is the greatest number that divides exactly two or more numbers. HCF is also known as GCD (Greatest Common Divisor) or GCF (Greatest Common Factor).

<u>Example</u>

Input

```
Input first number: 12
Input second number: 30
```

Output

```
HCF of 12 and 30: 6
```

b) C++ program to find LCM of two numbers
(LCM is a smallest positive integer that exactly divides two or more numbers. For Example LCM (12,30)=60)

<u>Example</u>

Input

```
Input number1: 12
Input number2: 30
```

Output

```
LCM = 60
```

Project 3

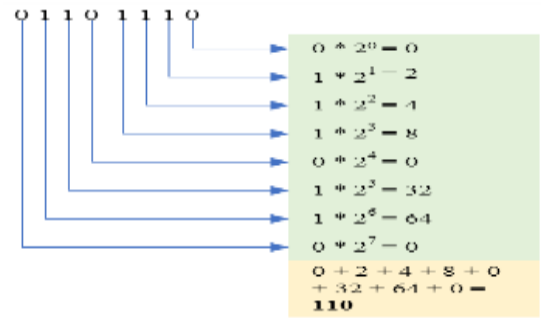## a) C++ program to convert Binary to Decimal number system

Example

Input

```
Input number: 0011
```

Output

```
Decimal: 3
```


b) C++ program to convert Decimal to Binary

Example

Input

```
Input decimal number: 112
```

Output

```
Binary number: 0111000
```

Project 4

a) C++ program to print hollow diamond star pattern

Example

Input

```
Input N: 5
```

Output

```
**********
****    ****
***      ***
**        **
*          *
*          *
**        **
***      ***
****    ****
**********
```

b) C++ program to print the given number pattern

Example

Input

```
Input N: 5
```

Output

```
12345
21234
32123
43212
54321
```

Happy Christmas! 🎅