Objective:

- The objective of this lab is to get a grip on Repetition Structure.

You are not allowed to use math library without permission of T.A

Challenge-A: Next Date **(0)**

Write a program which takes date (year, month, day) from user and displays on console the next date.
Note: A leap year is either divisible by 4 yet not by 100, or it is divisible by 400.
Input Validation: If user enters wrong/invalid date then you must report user about it.
Leap Year ☺:

Following years are not leap years:
1700, 1800, 1900, 2100, 2200, 2300, 2500, 2600
It is because they are evenly divisible by 100 but not by 400.

Challenge-B: Chocolate Factory **(0)**

Consider the following scenario:
Charlie once visited chocolate factory to buy some chocolates. Chocolate cost Rs. 3 each and he had only Rs. 45. He was disappointed. He wanted more. But when he reached the factory he was amazed. There was a scheme on that special day. If you return 3 wrappers of the chocolate you will get one chocolate for free. So how many chocolates can he buy?
Solution:

Charlie has Rs. 45 and each chocolate cost Rs. 3. So he buys only 15. But there is a scheme. He will return 15 wrappers and get 5 chocolates free. Then he will return 3 out of 5 and get one free. And he will again use one wrapper with the remaining 2 to get one more. So 15+5+1+1 = 22.

Your Task:

Write a program, which ask user about the amount of rupees he has and cost per chocolate. In return your program will output the maximum amount of chocolates that can be bought considering the special offer discussed in above scenario.

Challenge-C: Bee **(0)**

In Africa there is a very special species of bee. Every year, the female bees of such species give birth to one male bee, while the male bees give birth to one male bee and one female bee, and then they die! Now scientists have accidentally found one "magical female bee" of such special species to the effect that she is immortal, but still able to give birth once a year as all the other female bees. The scientists would like to know how many bees there will be after N years. Please write a program that helps them find the number of male bees and the total number of all bees after N years.
For Example:

For N=1, output will be: male bees=1, Total bees=2
For N=3, output will be: male bees=4, Total bees=7

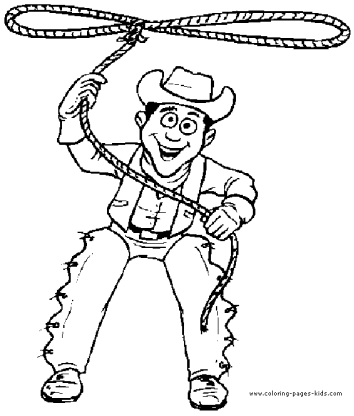
Challenge-D: x^y **(0)**

Given a positive integer N, find if it can be expressed as X^Y where Y > 1 and X > 0. X and Y both are integers.
Examples:

Input: n = 8
Output: true
8 can be expressed as 2^3

Input: n = 49
Output: true
49 can be expressed as 7^2

Input: n = 48
Output: false
48 can't be expressed as x^y



```
while ( ! success )
{
    try();
}
```

A little more persistence, a little more effort, and what seemed hopeless failure may turn to glorious success.

[... Elbert Hubbard ...]