**Coding Problems**   
**Language:**Any programming language of your choice  
**Duration** : 2 hours

**Instructions**

* Solve any 3 from Problems [1], [2], [3] and [4].
* Problem [5] is for brownie points.
* When you complete 2 problems, please call the invigilator and get your code verified.
* You can use any IDE/compiler/language of your choice. Online compilers are also accepted. (Examples : [CodeChef](https://www.codechef.com/ide" \t "_blank), [Ideone](http://ideone.com/" \t "_blank) )
* Please save your work periodically. You will be required to upload your programs at the end of the test.

**[1] Problem Statement - DeltaX**

Output a list from 1 to 100, one per line, with the following exceptions:

* Numbers from this list divisible by 4 should print "Delta" instead of the number.
* Numbers from this list divisible by 7 should print "X" instead of the number.
* Numbers from this list divisible by both 4 and 7 should print "DeltaX" instead of the number.

**[2] Problem Statement - Ringa Ringa Roses**

There are bunch of kids (**n**) who are standing in a circle and reciting a rhyme (having **m** words). Each kid recites only a single word from the rhyme and then the next kid recites the next word. The kid who recites the last word has to leave the circle and then the next kid starts the rhyme again from beginning until another kid leaves the circle. Likewise, they continue till only 1 kid remains (the winner).

**Inputs**

The input consists of a single line containing two integers separated by space

* **n**: number of kids in circle playing the game
* **m**: the total number of words in the rhyme

**Output**

Number of rounds that will be played and which kid leaves the circle until we have a winner.

**Example:**

* Number of kids (**n**) = 6
* Rhyme : “**Twinkle twinkle little stars**”- Number of words in the rhyme (**m**) = 4.

**Input:**

6 4

**Output**

Round 1 - *1,2,3,***4***,5,6* (kid 4 has to leave the circle; kid 5 will start the rhyme)

Round 2 - *1*,**2***,3,5,6* (kid 2 has to leave the circle; kid 3 will start the rhyme)

Round 3 - **1***,3,5,6* (kid 1 has to leave the circle; kid 3 will start the rhyme)

Round 4 - **3***,5,6* (kid 3 has to leave the circle; kid 5 will start the rhyme)

Round 5 - *5,***6**(kid 6 has to leave the circle; kid 5 is the winner)

**[3] Problem Statement - Flower Arrangement**  
  
Shilpa is interested in only red and yellow roses. She is arranging flowers in some fashion to be presented at her friend's birthday. Her friend loves only red and yellow roses(but mostly red ones). The flowers can be arranged only in the following three ways:

1) Red

2) Red, Yellow

3) Red, Yellow, Yellow

This sequence may be repeated endlessly but if it goes somewhere wrong then she won't go to the party. As she is getting late for the party, Shilpa gives this job to her flower vendor giving all the instructions. However, the vendor is suffering from alzheimer disease and forgets all the arrangement and the required color of the roses (he just remembers that only roses were required). Due to lack of memory, vendor decides to create different sequences of roses so that Shilpa can choose the appropriate one. Since Shilpa is short of time, help her in making correct choice from the given sequence of roses.

**Inputs**

Input contains a sequence of characters representing color for the roses for example, 'Y' for yellow roses, 'R' for red roses, 'W' for white roses and so on...

**Output**

Print “YES” if the sequence is valid and “NO” if it is invalid.

|  |  |  |
| --- | --- | --- |
| Sample Output 1  > RYRR  YES | Sample Output 2  > YYRYWG  NO | Sample Output 2  > RRYRRY  YES |

**[4] Problem Statement - Count Palindromes**

Given a string S, count the number of non empty sub strings that are palindromes. A sub-string is any continuous sequence of characters in the string. A string is said to be palindrome, if the reverse of the string is same as itself. Two sub strings are different if they occur at different positions in S

**Inputs**

Input contains only a single line that contains string S.

**Output**

Print a single number, the number of sub-strings that are palindromes.

**Input:**

dskjkd

**Output**

7

**Hint**

The 7 sub strings which are palindromes are :  d, s, k, j, k, d, kjk.

**[5] Problem Statement - HTML Registration Form**

Create a HTML/XHTML user registration form with the following fields and validations

|  |  |
| --- | --- |
| Field | Validations |
| Name | Required |
| Email | Valid email address |
| Age | Integer, no spaces and >=18 and <100 |
| Password | Atleast 8 characters |

**About DeltaX**

DeltaX is a cloud-based digital media management platform for advertising agencies and advertisers to efficiently buy, track, attribute, optimize and report media across search, social media, display RTB, Mobile, Video and other media channels.

At DeltaX our goal is to bring together the brightest minds to tackle big engineering and business challenges.

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**When you have completed all the programs, please call us and we will authorize you.**

