Question 1: A simple encryption system uses a shift process to hide a message. The value of the shift can be

in the range 1 to 26. For example a shift of 7 means that A=U, B=V, C=W, etc. i.e.

Text: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Code: U V W X Y Z A B C D E F G H I J K L M N O P Q R S T

First an extra space is added to the end of the string. To make things a little more difficult,

spaces within the original text are replaced with QQ before the text is encrypted. Double Q (QQ)

was selected because no English words ends or contains QQ.

Additionally the coded message is printed in blocks of six characters separated by spaces. The

last block might not contain six characters.

Write a program that takes the coded text (less than 100 characters), the shift value and prints

the decoded original text. Your program must reject any non-valid value for shift and display an

error message "INVALID SHIFT VALUE". Assume all characters are upper case.

Test your program for the following data and some data that you have coded, using

the rules given above:

SAMPLE DATA :

Input Coded Text : "UHINBY LKKQCH HYLKK"   Shift: 7

Output Decoded Text: ANOTHER WINNER

Input Coded Text : "RUIJGG EVGGBK SAGG"   Shift: 11

Output Decoded Text: BEST OF LUCK

Input Coded Text : "DKSMMW NAMMUK QMM"   Shift: 29

Output: INVALID SHIFT VALUE.

Question 2: A triangular number is formed by the addition of consecutive integers starting with 1. For example,

1 + 2 = 3

1 + 2 + 3 = 6

1 + 2 + 3 + 4 = 10

1 + 2 + 3 + 4 + 5 = 15

Thus, 3, 6, 10, 15, are triangular numbers.

Write a program in Java to display all the triangular numbers from 3 to n, taking the value of n as an input.