**Longest Call**

You are stranded and  have only  K rupees on your mobile. Write a program to find  the duration of the longest call (in minutes rounded down to the nearest integer) you can make?  
Phone usage rate may be described as follows:

* Call cost for the first minute is  x rupees,
* Each minute from the 2nd up to 10th (inclusive) costs y rupees
* Each minute after 10th minute costs z rupees.

**Input Format :**  
First input is an integer that denotes the value of x  
Second input is an integer that denotes the value of y  
Third input is an integer that denotes the value of z  
Fourth input is an  integer that denotes the value of K  
  
**Output Format:**  
Output is an integer that corresponds to the maximum call duration.  
  
**Sample Input 1:**  
3  
1  
2  
20  
**Sample Output 1:**  
14  
  
**Explanation:**  
  
For x = 3, y = 1, z = 2 and K = 20,  
the output should be  
  
    The first minute costs 3 rupees , which leaves you with 20 - 3 = 17 rupees;  
    The total cost from minute 2 to 10 is 1 \* 9 = 9, so you can talk 9 more minutes and still have 17 - 9 = 8 rupees;  
    Each minute from the 11th minute costs 2 rupees, which means that you can talk 8 / 2 = 4 more minutes.  
  
Thus, the longest call you can make is 1 + 9 + 4 = 14 minutes long.  
  
**Sample input 2:**  
2  
2  
1  
2  
**Sample output 2:**  
1

**Treasure chest**

You're a video game character . You found two items in a treasure chest! The first item weighs weight1 and is worth value1, and the second item weighs weight2 and is worth value2. Write a program to calculate the total maximum value of the items you can take with you, assuming that your max weight capacity is maxW and you can't come back for the items later.  
  
**Note:** There are only two items. If possible, you can bring both the items also.  
  
  
**Input Format :**  
First input is an integer that denotes value1.  
Second input is an integer that denotes weight1.  
Third input is an integer that denotes value2.  
Fourth input is an integer that denotes weight2.  
Fifth input is an integer that denotes the value of Maximum weight that you can carry, maxW.  
  
**Output Format :**  
Output is an integer that denotes the total treasure value. If no items can be carried, then display 0.  
  
**Sample Input 1:**  
10  
5  
6  
4  
8  
**Sample Output 1:**  
10  
  
**Explanation:**  
The weight of first item is 5, and its value is 10.  
The weight of second item is 4, and its value is 6.  
The maximum weight you can carry is 8 , So you can carry either of the two (4 or 5) .So you choose the one with higher value with value10.  
  
**Sample Input 2:**  
10  
5  
6  
4  
9  
**Sample Output 2:**  
16  
  
**Explanation:**  
The weight of first item is 5, and its value is 10.  
The weight of second item is 4, and its value is 6.  
The maximum weight you can carry is 9 , So you can carry both the items .The net value is 16.

**Find the Most Valuable diamond**

Ram lost the most valuable diamond in a pile of other diamonds and normal crystals. Even numbers represent diamonds and odd numbers represent crystals. The numbers are nothing but the market value of the diamonds and the crystals.  
Help Ram to find his diamond, by writing a program to print the index of his diamond.  If his diamond is not found, then print -1.  
  
**Assume:** All numbers are unique.  
  
**Input Format :**  
First input is an integer that denotes the size of the array - N.  
Second line consists of N space separated integers that denote the array values.  
  
**Output format**  
Output is an integer that denotes the Index value of Ram's diamond. If his diamond is not found, then print -1.  
**Note:** The index value starts from 0.  
  
**Sample Input 1:**  
7  
4 3 6 5 8 2 4  
**Sample Output 1:**  
4  
  
**Explanation**  
There are 5 diamonds with market value - 4, 6, 8, 2, 4  
There are 2 crystals with market value - 3, 5  
The diamond with highest value is the one with value 8 and its index is 4 in the original array.  
  
**Sample Input 2:**  
4  
7 3 19 11  
  
**Explanation:**  
There is no diamond in the pile, so  -1.  
  
**Sample Output 2:**  
-1

**Maximum sum submatrix**

Meyyappan has just started learning 2d arrays, he wishes to split the matrix into sub matrices and perform operations . With a matrix of size row x column , he wants to find the sub matrix  of size n x m with largest sum.   
  
Given a rectangular matrix of integers, and integers, n and m, we are looking for the submatrix of size n × m that has the maximal sum among all submatrices of the given size.  
  
**Input Format:**  
First input is an integer that denotes the row size-x  
Second input is an integer that denotes the column size-y  
Next x lines with each line containing y space separated array values  
Next input is an integer that denotes the row size of the required sub matrix-n  
Last input is an integer that denotes the column size of the required sub matrix-m  
  
**Constraints:**  
Minimum length of row and column is 1.  
Maximum length of row and column is 10.  
  
**Output Format:**  
Output is an integer that denotes the Max Submatrix sum.  
  
**Sample Input 1:**  
3  
4  
1 2 1 3  
1 1 1 1  
2 2 2 2  
3  
2  
**Sample Output 1:**  
10  
  
**Sample Input 2:**  
2  
3  
1 2 -1  
-4 -8 3  
2  
2  
**Sample Output 2:**  
-4

**Tree height**

In the day time a Tree grows by x meters, and in the night time it's height decreases by y meters.  
Initially, tree is Z meters tall.  
Write a program to find the number of days needed to reach a certain height.  
  
**Input Format :**  
First input is an integer that denotes current height - Z  
Second input is an integer that denotes the x value.  
Third input is an integer that denotes the y value.  
Fourth input is an integer that denotes the required Height .  
  
**Output Format :**  
Output is an integer that denoted the Number of days needed to reach the specified height.  
  
**Note :**If the tree will never reach the height then print -1.  
  
**Sample Input 1:**  
10  
4  
1  
20  
**Sample Input 1:**  
3  
  
**Expalantion:**  
Initially the tree height is 10 metres.  
Each day it grows by 4 metres.  
Each night the height shrinks by 1 metre.  
The required height of the tree is 20.  
  
First Day = 10+4 = 14  
First Night = 14-1 =13  
Second Day = 13+4 = 17  
Second Night = 17-1 =16  
Third Day = 16+4 = 20  
  
It takes 3 days.  
  
**Sample Input 2:**  
20  
4  
8  
25  
**Sample Input 2:**  
-1

**IsPangram**

Your brother is given an English assignment to write down pangrams , and he wants you to crosscheck his work. But you're lazy and smart So you develop a program to validate your brother's work.  
Given a String write a program to check whether it is a Pangram.  
**Note :**A pangram is a word or a sentence that has all the alphabets in it.  
  
**Input Format :**  
Input is a  String that denotes your brother's work.  
  
**Output Format :**  
If the input string is a pangram  
Print "YES" in First line  
Display the letter(s) with highest frequency. In case of multiple letters, display the letters in sorted order(all LOWERCASE) in Second Line.  
If the input string is not a pangram  
Print "NO", display the letters that are not present in sorted order (all LOWERCASE) in Second Line.  
Do a case-insensitive comparison.  
  
**Constraints:**  
Minimum length of the string - 1  
Maximum length of the string -150  
  
**Sample Input 1:**  
The quick brown fox jumps over the lazy dog  
**Sample Output 1:**  
YES  
o  
  
**Sample Input 2:**  
This is not a difficult problem , Think different.  
**Sample Output 2:**  
NO  
g j q v w x y z