

Problem A

Jolly Jumpers

Time limit: 2 sec.

Problem Description

A sequence of $n > 0$ integers is called a jolly jumper if the absolute values of the difference between successive elements take on exactly all the values between 1 and $n-1$.

For instance, 1 4 2 3 is a jolly jumper, because the absolute differences are 3, 2, and 1 respectively. The definition implies that any sequence of a single integer is a jolly jumper. You are to write a program to determine whether or not each of a number of sequences is a jolly jumper.

Input Format

The input consists of M cases. The first line of the input contains only one positive integer M indicating the number of test cases.

Each line of input contains an integer $n \leq 3000$ followed by n integers representing the sequence.

All the numbers are 32-bits integers.

Output Format

For each line of input, generate a line of output saying "Jolly" or "Not jolly".

Example

Sample Input	Sample Output
3	Jolly
4 1 4 2 3	Not jolly
5 1 4 2 -1 6	Jolly
3 5 7 6	

Problem B

Binary search for a root

Time limit: 2 sec

Problem Description

對一個連續函數 $f(x)$ ，若 $f(r)=0$ ，則 r 是 f 的根。對於 $a < b$ ，若 $f(a)*f(b) < 0$ ，則在 (a,b) 區間內必有一根，此為勘根定理。我們可以用二分法來找到一個近似根。本題假設 f 是一個多項式次數不超過 P 。在程式實作上，限撰寫一個函數來計算 f 的值

Double $f(\text{int } p, \text{double } x, \text{double } c[])$; 其中 c 是傳入函數的係數。

給定 $a < b$ ，且 $f(a)*f(b) < 0$ ，我們求其平均值 $x=(a+b)/2$ ，計算 $f(x)$ 的值，如果 $f(a)*f(x) < 0$ 則把區間縮小為 (a,x) ；如果 $f(x)*f(b) < 0$ 則把區間縮小為 (x,b) 。如此繼續下去直到達到要求的精準位數。在浮點數的計算中，我們不可以 $= 0$ 來判別，因此本題假設在絕對數值 < 0.000001 時，當作 0。

Input Format

第一行是測資筆數 T 。每筆測資三行：第一行是一個整數 P 代表多項式的次數， $P \leq 6$ 。第二行有 $P+1$ 個浮點數分別是由高而低的係數，第三行兩個浮點數 a 與 b 。

Output Format

每筆測資輸出介於 a 與 b 之間的根，四捨五入到小數點以下第 5 位。

Example

Sample Input	Sample Output
2	1.00000
1	1.41421
1.0 -1.0	
-1 2	
2	
1 0 -2	
0 2	

Problem C

Fibonacci Number % P

Time limit: 2 sec

Problem Description

費氏數列是數學上相當著名的數列，其特徵是每一項數字皆為前兩項之和，數學定義如下

- $F_0 = 0$
- $F_1 = 1$
- $F_n = F_{n-1} + F_{n-2} \ (n \geq 2)$

本題要找出費氏數列第 N 項除以特定正整數 P 的餘數

Input Format

有多筆測資，每筆測資會有兩個正整數 N 和 P ，兩數之間以空白隔開， $n \leq 1000$ ， $p \leq 1000$
當 $N=P=0$ 時結束程式，不需處理這一筆測資。

Output Format

每筆測資以一行輸出費氏數列第 N 項除以 P 的餘數

Example

Sample Input	Sample Output
7 6	1
10 13	3
0 0	

Problem D

Adding Reversed Numbers

Time limit: 2 sec

Problem Description

ACM needs to calculate with reversed numbers. Your task is to add two reversed numbers and output their reversed sum. Of course, the result is not unique because any particular number is a reversed form of several numbers (e.g. 21 could be 12, 120 or 1200 before reversing). Thus we must assume that no zeros were lost by reversing (e.g. assume that the original number was 12). **For example, the first line of input numbers are 24 and 1. After reversing the two numbers, they become 42 and 1. Add the reversed numbers, and we get 43. Finally, you output the reversed sum 34.**

Input Format

The input consists of N cases. The first line of the input contains only positive integer N. Then follow the cases. Each case consists of exactly one line with two positive integers separated by space. These are the reversed numbers you are to add. Numbers will be at most 200 characters long.

Output Format

For each case, print exactly one line containing only one integer - the reversed sum of two reversed numbers. Omit any leading zeros in the output.

Example

Sample Input	Sample Output
3	34
24 1	1998
4358 754	1
305 794	

Problem E

Big Secret Difference

Time limit: 1 sec.

Problem Description

將一個十進位正整數的奇數位數的和稱為 A ，偶數位數的和稱為 B ，則 A 與 B 的絕對差值 $|A - B|$ 稱為這個正整數的秘密差。

例如：263541 的奇數位數的和 $A = 6 + 5 + 1 = 12$ ，偶數位數的和 $B = 2 + 3 + 4 = 9$ ，所以 263541 的秘密差是 $|12 - 9| = 3$ 。

給定一個十進位正整數 X ，請找出 X 的秘密差。

Input Format

輸入包含多筆測資，每筆測資一行含有一個十進位表示法的正整數 X ，之後是一個換行字元。檔案結束表示測資結束。 X 是不超過 1000 位數的非負整數。

Output Format

每筆測資一行輸出 X 的秘密差 Y (以十進位表示法輸出)，以換行字元結尾。

Example

Sample Input	Sample Output
263541	3
131	1

※263541 的 $A = 6 + 5 + 1 = 12$ ， $B = 2 + 3 + 4 = 9$ ， $|A - B| = |12 - 9| = 3$ 。

※131 的 $A = 1 + 1 = 2$ ， $B = 3$ ， $|A - B| = |2 - 3| = 1$ 。