Problem A

Valid Date

Time limit: 1 sec.

Problem Description

判斷輸入的日期是否是**西元 2000 年以後**的**合法**日期。

Input Format

第一行是測資筆數 T。每筆測資一行，輸入格式為 year/month/day，其中年月日皆為整數。

Output Format

每筆測資輸出一行，如果是合法日期輸出 Yes，否則輸出 No。

Example

Sample Input	Sample Output
4	No
1999/2/28	Yes
2000/1/31	No
2002/13/1	Yes
2000/2/29	

Problem B

3n+1

Time limit: 2 sec

Problem Description

Consider the following algorithm:

```
1.              input n

2.              print n

3.              if n = 1 then STOP

4.                          if n is odd then  n ⟵ 3n + 1

5.                          else  n ⟵ n/2

6.              GOTO 2
```

Given the input 22, the following sequence of numbers will be printed 22 11 34 17 52 26 13 40 20 10 5 16 8 4 2 1

It is conjectured that the algorithm above will terminate (when a 1 is printed) for any integral input value. Despite the simplicity of the algorithm, it is unknown whether this conjecture is true. It has been verified, however, for all integers n such that $0 < n < 1,000,000$ (and, in fact, for many more numbers than this.)

Given an input n, it is possible to determine the number of numbers printed (including the 1). For a given n this is called the cycle-length of n. In the example above, the cycle length of 22 is 16.

For any two numbers i and j you are to determine the maximum cycle length over all numbers between i and j.

Input Format

The input will consist of a series of pairs of integers i and j, one pair of integers per line. All integers will be less than 1,000,000 and greater than 0.

You should process all pairs of integers and for each pair determine the maximum cycle length over all integers between and including i and j.

You can assume that no operation overflows a 32-bit integer. Program should stop at i=0 and j=0.

Output Format

For each pair of input integers i and j you should output i, j, and the maximum cycle length for integers between and including i and j. These three numbers should be separated by at least one space with all three numbers on one line and with one line of output for each line of input. The integers i and j must appear in the output in the same order in which they appeared in the input and should be followed by the maximum cycle length (on the same line).

Example

Sample Input	Sample Output
1 10	1 10 20
100 200	100 200 125
201 210	201 210 89
900 1000	900 1000 174
0 0	

Problem C
Multiple but not CM

Time limit: 2 sec

Problem Description

本題要在一群正整數之中找出滿足以下條件的數字並由小到大排序後輸出，數字篩選條件如下

● 該數字是 p 或 q 的倍數，但不同時是 p 與 q 的倍數。

Input Format

有多筆測資，測資數目不定，讀到 EOF(End Of File)為止
每筆測資有兩行，第一行有三個正整數 p、q、n，數字之間以空格隔開；第二行有 n 個正整數，數字之間以空格隔開，n ≤ 50。本題中出現的所有數字皆不大於 50000。

Output Format

每筆測資以一行輸出答案，數字由小排到大，數字之間以空白隔開，你可以假設每筆測資至少有一個數字滿足要求。

Example

Sample Input	Sample Output
7 4 6 56 8 14 15 21 6 3 8 5 7 32 6 24 1	8 14 21 6 32

Problem D

Max Negative and Min Positive

Time limit: 2 sec

Problem Description

在一群整數中找最大負整數與最小正整數。

Input Format

一開始會有一個正整數 T，代表接下來有 T 筆測資。

每筆測資分為兩行，第一行會有一個正整數 N，代表該筆測資有 N 個數字，第二行為 N 個正整數，數字之間以空格隔開，所有數字皆為 32-bit 整數。

Output Format

每筆測資輸出兩行答案，第一行為最大負整數，如果沒有負整數，此行輸出 No；第二行為最小正整數，如果沒有正整數，此行輸出 No。每組答案之間以空行隔開。

Example

Sample Input	Sample Output
3	-3
4	1
-3 1 9 -6	
5	-1
-2 -9 -17 -1 -32	No
4	
3 8 17 5	No
	3

Problem E

Digits Small

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 不超過 9 位數。

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。