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E541-1

程式能力檢定題庫

(CPE 版)

分級 1

11988 Broken Keyboard (a.k.a. Beiju Text)

分級：1 **分類：模擬**

You're typing a long text with a broken keyboard. Well it's not so badly broken. The only problem with the keyboard is that sometimes the "home" key or the "end" key gets automatically pressed (internally).

You're not aware of this issue, since you're focusing on the text and did not even turn on the monitor! After you finished typing, you can see a text on the screen (if you turn on the monitor).

In Chinese, we can call it Beiju. Your task is to find the Beiju text.

你用了一個壞掉的鍵盤來打一長串的字，好吧它是沒有那麼的嚴重破損，該鍵盤唯一的問題是會自動按下”Home”鍵與"End"鍵。

直到打完整個內容以前，你專注於打字，都沒有發現到這個問題，甚至忘記打開螢幕！當然如果你有開是看得到文字的。

在中國，我們可以稱它為 Beiju(杯具)。你的任務就是找出這 Beiju text。

Input

There are several test cases. Each test case is a single line containing at least one and at most 100,000 letters, underscores and two special characters ` [ ' and `] '. ` [ ' means the "Home" key is pressed internally, and `] ' means the "End" key is pressed internally. The input is terminated by end-of-le (EOF).

輸入有多組測試資料，每組一列，其長度介於 1 ~ 100,000 之間，包含小寫的字母及兩個符號 '[' 與 ']'，'['表示被自動按下的 Home 鍵；']'表示 End 鍵。輸入資料以 EOF 表示結束。

Output

For each case, print the Beiju text on the screen.

對於每筆測資，請你輸出該字串在螢幕上顯示的內容。

Sample Input

This_is_a_[Beiju]_text
[[]][][]Happy_Birthday_to_Tsinghua_University

Sample Output

BeijuThis_is_a__text
Happy_Birthday_to_Tsinghua_University

11479 Is this the easiest problem?

分級：1 **分類：模擬**

A triangle is a geometric shape with three positive sides. However, any given three sides won't necessarily form a triangle. The three sides must form a closed region. Triangles are categorized depending on the values of the sides of a valid triangle. In this problem you are required to determine the type of a triangle.

三角形是一種有三個正邊的幾何形狀。但是並非任意三個邊都可以形成一個三角形，這三個邊必需構成一個封閉區域。三角形可以其邊長來分類，本題便是要你判定三角形的種類。

Input

The first line of input will contain a positive integer T < 20, where T denotes the number of test cases. Each of the next T lines will contain three 32 bit signed integer.

輸入的第一行有一個正整數 T < 20，表示有 T 筆測試資料。接下來的 T 行每行有三個 32 位元的有號整數。

Output

For each case of input there will be one line of output. It will be formatted as:
Case x : triangle type.

Where x denotes the case number being processed and triangle type is the type of the triangle. triangle type will be one of the following, depending on the values of the three sides:

- Invalid - The three sides can’t form a triangle
- Equilateral - All three sides of valid triangle are equal
- Isosceles - Exactly two of the sides of a valid triangle are equal.
- Scalene - No pair of sides are equal in a valid triangle.

對於每筆測資請輸出一行，其格式為：Case x: triangle type。

其中 x 表示測資編號，triangle type 為三角形的種類。依三邊長的值，triangle type 是以下的一種：

- Invalid - 這三邊無法形成一個三角形

- Equilateral - 三邊均等長
- Isosceles - 恰有兩邊等長
- Scalene - 三邊均不等長

Sample Input

```
4
1 2 5
1 1 1
4 4 2
3 4 5
```

Sample Output

```
Case 1: Invalid
Case 2: Equilateral
Case 3: Isosceles
Case 4: Scalene
```

12372 Packing for Holiday

分級：1 **分類：模擬**

Mr. Bean used to have a lot of problems packing his suitcase for holiday. So he is very careful for this coming holiday. He is more serious this time because he is going to meet his fiancée and he is also keeping frequent communication with you as a programmer friend to have suggestions. He gets confused when he buys a gift box for his fiancée because he can't decide whether it will fit in his suitcase or not. Sometimes a box doesn't fit in his suitcase in one orientation and after rotating the box to a different orientation it fits in the suitcase. This type of behavior makes him puzzled.

So to make things much simpler he bought another suitcase having same length, width and height, which is 20inches. This measurement is taken from inside of the box. So a box which has length, width and height of 20 inches will just fit in this suitcase. He also decided to buy only rectangular shaped boxes and keep a measuring tape in his pocket. Whenever he chooses one gift box, which must be rectangular shaped, he quickly measures the length, width and height of the box. But still he can't decide whether it will fit in his suitcase or not. Now he needs your help. Please write a program for him which calculates whether a rectangular box fits in his suitcase or not provided the length, width and height of the box. Note that, sides of the box must be parallel to the sides of the suitcase.

憨豆先生曾經因為假期，而有很多收拾行李的問題，所以他很謹慎地對這即將到來的假日，尤其是這次他要去見他的未婚妻，而他一直都跟你這位程式設計師有著頻繁的聯繫以便你給他一些建議。他現在很困惑，因為當他為他的未婚妻買了禮物盒，他不能確定他的行李箱是否裝得下它。而讓他十分不解的是，有時箱子裝不下他的行李箱，但將它旋轉到不同的方向卻又裝得下。

因此，為了使事情變得簡單，他買了有相同的長度，寬度和高度的另一個 20 英寸行李箱。它的測量方法是從內部來測的，因此，一個有 20 英寸的長度、寬度和高度的箱子，將剛好適合這個行李箱。不過，他還是決定只買矩形的盒子和攜帶捲尺在他的口袋裡，所以每當他選擇一個長方形的禮品盒，他便能夠迅速測量盒子的長度，寬度和高度。可是他仍然不能決定它是否裝得下他的手提箱。現在，他需要你的幫助來寫一個程式，設置箱子的長度，寬度和高度，計算其是否適合他的手提箱。需要注意的是，盒子的每一面都要與手提箱的每一面平行。

Input

Input starts with an integer T (T ≤ 100), which indicates the number of test cases.

Each of the next T line contains three integers L, W and H (1 ≤ L, W, H ≤ 50) denoting the length, width and height of a rectangular shaped box.

輸入開始有一整數 T(T ≤ 100)，表示測資筆數。

每行測資皆有三整數 L、W 和 H (1 ≤ L, W, H ≤ 50)，分別表示長方形盒子的長寬高。

Output

For each test case, output a single line. If the box fits in the suitcase in any orientation having the sides of the box is parallel to the sides of the suitcase, this line will be "Case #: good", otherwise it will be "Case #: bad". In your output # will be replaced by the case number.

Please see the sample input and sample output for exact format.

對於每筆測資，需結果輸出於單行。如果盒子以任一方向(每一面平行與行李箱的面)裝得進去行李箱的話，輸出將是"Case #: good"，反之則為"Case #: bad"。在你的輸出中，#會取代成測資編號。

Sample Input

```
2
20 20 20
1 2 21
```

Sample Output

```
Case 1: good
Case 2: bad
```

11942 Lumberjack Sequencing

分級：1 **分類：排列**

Another tale of lumberjacks? Let see ...

The lumberjacks are rude, bearded workers, while foremen tend to be bossy and simpleminded. The foremen like to harass the lumberjacks by making them line up in groups of ten, ordered by the length of their beards. The lumberjacks, being of different physical heights, vary their arrangements to confuse the foremen. Therefore, the foremen must actually measure the beards in centimeters to see if everyone is lined up in order.

Your task is to write a program to assist the foremen in determining whether or not the lumberjacks are lined up properly, either from shortest to longest beard or from longest to shortest.

另一個伐木工人的故事？讓我們來看看...

伐木工是粗魯、留著邋遢鬍的一群工人，其中工頭往往是專橫又頭腦簡單的。有一個工頭很喜歡找伐木工們的麻煩，下令要伐木工們以十個一組按照他們的鬍子長短依序排成一列，而伐木工們常會改變他們位置以混淆工頭，因此，工頭必須實際測量鬍鬚的長度，來看看大家是否排列整齊。

你的任務是寫一個程式，判斷伐木工是否有以由長到短，或是由短到長的順序排成一列。

Input

The input starts with line containing a single integer N, 0 < N < 20, which is the number of groups to process. Following this are N lines, each containing ten distinct positive integers less than 100.

輸入第一列有一個整數 N(0 < N < 20)表示測試資料的組數，接下來有 N 列，每列有 10 個相異的正整數(< 100)。

Output

There is a title line, then one line per set of beard lengths. See the sample output for capitalization and punctuation.

有一標題列，後面接著一行表示鬍子長度有無照順序排列。詳細格式（大小寫、標點符號）請見範例輸出。

Sample Input

3
13 25 39 40 55 62 68 77 88 95
88 62 77 20 40 10 99 56 45 36
91 78 61 59 54 49 43 33 26 18

Sample Output

Lumberjacks:
Ordered
Unordered
Ordered

11000 Bee

分級：1 **分類：模擬**

In Africa there is a very special species of bee. Every year, the female bees of such species give birth to one male bee, while the male bees give birth to one male bee and one female bee, and then they die!

Now scientists have accidentally found one "magical female bee" of such special species to the effect that she is immortal, but still able to give birth once a year as all the other female bees. The scientists would like to know how many bees there will be after N years. Please write a program that helps them find the number of male bees and the total number of all bees after N years.

在非洲有一種非常特別的蜜蜂。每一年母蜂會生一隻公蜂，而公蜂會生一隻公蜂和一隻母蜂，然後死去。

現在，科學家在偶然中發現了一隻這種品種的母蜂，而且這是一隻「神奇」的母蜂，因為她永遠都不會死，而且每年都可以像其他正常的母蜂一樣生一隻公蜂。科學家想要知道，在 N 年後會有多少隻蜜蜂。請寫一個程式幫他們算出在 N 年後公蜂的數目以及所有蜜蜂的數目。

Input

Each line of input contains an integer N (≥ 0). Input ends with a case where N = -1 (This case should NOT be processed.)

每組測試資料一列，有 1 個正整數 N（N ≥ 0）。當 N = -1 時代表輸入結束（且不須執行）。

Output

Each line of output should have two numbers, the first one being the number of male bees after N years, and the second one being the total number of bees after N years. (The two numbers will not exceed 2^32.)

每組測試資料輸出兩整數於一列，第一個數字為 N 年後公蜂的數目，第二個數字為 N 年後所有蜜蜂的數目。（這 2 個數都不會超過 2^32。）

Sample Input

1
3
-1

Sample Output

1 2
4 7

11917　Do Your Own Homework!

分級：1　　**分類：查詢**

These days Soha is so busy that he doesn't have time to do his own homework. But this is not a big problem since he has got many friends who are willing to help. One if his friend's name is Sparrow. Whenever Soha is assigned any homework, he turns to Sparrow for her help.

Sparrow has given a list of subjects that she is comfortable with along with the number of days it will take her to complete an assignment for each subject. Soha has got only D days to complete his next assignment. However, the professor of this subject is a little flexible and allows late submissions up to 5 days. That means he will not accept any submission that is after D + 5 days from now. Will Sparrow be able to do it for Soha this time?

最近 Soha 實在是太忙，忙到沒時間寫作業，不過這不是個大問題，還好他有很多朋友來幫他，Sparrow 就是其中一位肯幫忙他寫。

Sparrow 會列出她幫得上忙的科目，及每個科目作業預計完成的天數。Soha 只有 D 日可以完成他的作業，但還好他的教授允許遲交 5 天，也就是說，作業最晚可以在 D+5 天內交出去即可。不過這時間 Sparrow 都可以幫忙到嗎？

Input

First line of input is a positive integer T (T ≤ 100) that determines the number of test cases. Each case starts with a line containing an integer N that represents the number of subjects Sparrow is comfortable with. Each of the next N lines contain the name of a subject followed by the number of days it will take Sparrow to complete an assignment of that subject. All these subject names will be distinct. The next line contains an integer D. The meaning of D is described above. The following line contains the name of the subject whose homework is due. All the subjects' names consist of lowercase letters and the length of each is at least 1 and at most 20. All the integer inputs are positive in the range [1,100].

輸入的第一列有一個正整數 T 表示測試資料的組數(T < 100)，每組測試資料的第

一列為整數 N，表示接下來有 N 個 Sparrow 願意幫忙的科目，每筆科目資料包含科目名稱與完成所需的天數，所有科目不會出現相同的名稱。接下來會有一個整數 D 表示 Soha 只有 D 日可以完成他的作業，再接下來的一列表示他需要繳交的作業科目名稱。所有科目名稱皆為小寫字串且長度為 1~20 個字元，所有整數皆介於[1,100]的範圍。

Output

For each case, first output the case number first starting from 1. If Sparrow doesn't take more than D days to completely the assignment, output `Yesss'; if she takes more than D days but not more than D + 5, output `Late'; if she takes more than D + 5 days or if she isn't comfortable with the subject, output `Do your own homework!'. Quotes are for clarify only and don't need to be part of the output. Look at the samples for more details. Be careful about the spelling.

對於每筆資料，第一行請輸出其編號（從 1 開始）。接下來如果 Sparrow 完成時間不超過 D 日，輸出"Yesss"；時間超過 D 日但不超過 D+5 日，輸出"Late"，但若完成時間超過 D+5 日或她不想幫忙做此作業，請輸出"Do your own homework!"，如下列測試資料所示。輸出資料須明確不用有其他部分，仔細參考範例，請更小心的來輸出。

Sample Input

```
3
3
compiler 4
cplusplus 1
java 8
5
compiler
2
algorithm 3
math 9
4
math
2
java 8
ai 3
6
calculus
```

Sample Output

```
Case 1: Yesss
```

Case 2: Late

Case 3: Do your own homework!

11586 Train Tracks

分級：1 **分類：排列**

Andy loves his set of wooden trains and rail- road tracks. Each day, Daddy has to build a new track for him. The tracks he likes best form a simple loop with no branches or dead ends, so he can run his trains around and around for hours until it is time for the big crash that destroys the whole construction.

So here is the question: Given a set of track pieces, can you form a simple loop with them, while using up all the pieces?

Each piece of track is described by the connectors at both ends. A standard piece has one "male" and one "female" connector. But there are also track pieces with two male or two female connectors, as shown picture below.

To fit together, each male connector must be connected to a female connector. Unlike real wooden tracks, our pieces are assumed to be flexible, so their length or shape is not an issue here. However, you may not connect the two ends of the same piece together.

Some wooden pieces

Andy 很喜歡木製的火車與軌道，而每一天他爸爸都會組合一個新的軌道給他。Andy 最喜歡這個軌道沒有死路的設計，也就是說這個軌道是環狀，可以讓車子永無止境的跑下去，直到毀壞。

所以這裡有一個問題，給你一些軌道片段，你是否可以用全部給你的軌道片段拼成一個環形軌道。

每一個標準片段的軌道有兩端，為"male"跟 "female"，但是也有一些的兩端都是"male"或 "female"，如下圖所示。

每兩塊連結方式一定要一端是 male 另一端是 female，不能是兩個相同 male 或是 female 連接。這不是真實的木製軌道，所以每一個軌道片段不考慮其長度或形狀。

Input

Input begins with the number of test cases. Each following line contains one test case. Each test case consists of a list of between 1 and 50 (inclusive) train track pieces. A piece is described by two code letters: ` M ' for male or ` F ' for female connector. Pieces are separated by space characters.

輸入第一行說明有幾組測試資料，接下來每一行都代表一組的測試資料，包含 1~50(含)個軌道片段，一片的兩端以 M 跟 F 來表示，M = male, F = female，每個軌道以空白隔開。

Output

For each test case, output a line containing either ` LOOP ' or ` NOLOOP ' to indicate whether or not all the pieces can be joined into a single loop.

對於每個測試資料，印出一行說明是否可以拼成一個環，若可以請輸出 "LOOP" 不行則輸出 "NO LOOP"。

Sample Input

```
4
MFMF
FMFFMFMM
MMFF
MFMFMFMFFF
```

Sample Output

```
LOOP
LOOP
LOOP
NOLOOP
```

12439 February 29

分級：1 **分類：數學計算**

It is 2012, and it's a leap year. So there is a "February 29" in this year, which is called leap day. Interesting thing is the infant who will born in this February 29, will get his/her birthday again in 2016, which is another leap year. So February 29 only exists in leap years. Does leap year comes in every 4 years? Years that are divisible by 4 are leap years, but years that are divisible by 100 are not leap years, unless they are divisible by 400 in which case they are leap years.

In this problem, you will be given two different date. You have to find the number of leap days in between them.

今年 2012 年，也是閏年，所以說今年就有「二月 29 日」，而這天也稱為「閏日」。有趣的是，今年二月 29 日出生的嬰兒要等到下一個閏年，也就是 2016 年才過生日。閏年是每 4 年一次嗎？能被 4 整除的年份雖說是閏年，但是若被 100 整除的年份卻不是閏年，除非它又可以被 400 整除，它才是閏年。

在本題中會給你兩個不同的日期，你要找出它們兩者之間有幾個「閏日」。

Input

The first line of input will contain T (≤ 500) denoting the number of cases.

Each of the test cases will have two lines. First line represents the first date and second line represents the second date. Note that, the second date will not represent a date which arrives earlier than the first date. The dates will be in this format —'month day, year'. See sample input for exact format. You are guaranteed that dates will be valid and the year will be in between 2 ∗ 10^3 to 2 ∗ 10^9. For your convenience, the month list and the number of days per months are given below. You can assume that all the given dates will be a valid date.

第一行有一個 T (≤ 500) 表示測資筆數。

每筆測資皆有兩行。第一行為第一個日期，第二行則為第二個。注意，第二個日期決不會比第一個早。而日期格式為 - 「month day, year」。詳細情形請參見範例輸出。保證所有日期均為正確日期，而年份則介於 2 * 10^3 和 2 * 10^9 之間。為了方便，月份名稱及每個月的天數詳細如下所示。

Output

For each case, print the case number and the number of leap days in between two given dates (inclusive).

Note:

The names of the months are {“January”, “February”, “March”, “April”, “May”, “June”, “July”,“August”, “September”, “October”, “November” and “December”}. And the numbers of days for the months are {31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30 and 31} respectively in a non-leap year. In a leap year, number of days for February is 29 days; others are same as shown in previous line.

對於每筆測資，印出測資編號及兩個日期之間 (含) 有幾個「閏日」。

筆記：

每月的英文名稱為“January”、“February”，“March”、“April”、“May”、“June”、“July”、“August”、“September”、“October”、“November”與“December”。非閏年的各月天數依序為 31、28、 31、30、31、30、31、31、30、31、30、31 天，而在閏年，除了二月有 29 天，其他月皆與非閏年相同。

Sample Input

4
January 12, 2012
March 19, 2012
August 12, 2899
August 12, 2901
August 12, 2000
August 12, 2005
February 29, 2004
February 29, 2012

Sample Output

Case 1: 1
Case 2: 0
Case 3: 1
Case 4: 3

11824 A Minimum Land Price

分級：1 **分類：排列**

Manager of ACM-ICPC Thailand Contest Council is planning to buy lands in Phuket to build the office building for national programming skill camp and programming contest that will be held on Phuket regularly in the future. The land price in Phuket is becoming more expensive in every year. The price increases in the exponential growth curves by a factor of year. If the land i whose initial cost is L i bought in t years from now, its price will be 2×(Li)^t. All land prices are different. ACM-ICPC can buy only one land per year. You have to help the manager to buy the lands at lowest price within the budget of 5,000,000 million baht.

For example, if we want to buy 3 lands with costs 7, 2 and 10 in 3 consecutive years, the total price will be calculated as follow:

(2 x 7) + (2 x 2^2) + (2 x 10^3) = 2022 million baht

ACM -ICPC 主辦單位想在泰國普吉島買地蓋大樓，不過普吉島的地價連年不斷攀升，每年以指數遞增。假如第 i 塊地一開始的地價為 Li，則 t 年後會漲到 2x(Li)^t，每塊地的地價不會都一樣。ACM-ICPC 每年只能買一塊地，你必須幫助主辦單位以最便宜的價格買到所有土地，預算上限為 5,000,000 百萬泰銖。

例如，我們想買 3 塊地，一開始的價格分別是 7, 2, 10 百萬泰銖，則買價可能會是：

(2 x 7) + (2 x 2^2) + (2 x 10^3) = 2022 百萬泰銖

Input

First line of the input contains an integer T (1 ≤ T ≤ 10), the number of test cases. Each test case contains integer Li which is the cost of land in million baht. There are less than 40 lands in each test case. The line contains `0' (zero) indicates the end of each test case.

輸入的第一列有一個表示測試資料組數的整數 T (1 ≤ T ≤ 10)，接下來會有多個整數 Li 表示土地的價格(單位:百萬泰銖)，每組測試資料最多有 40 筆土地價格，並以 0 表示每組測試資料的結束。

Output

For each test case, print out the minimum price for purchasing all lands. If the total

price exceeds the budget (5,000,000 millions baht), print out `Too expensive'.

對於每組測資，輸出購買全部土地的最低價格，若總價超過預算 5,000,000 百萬泰銖，請輸出"Too expensive"。

Sample Input

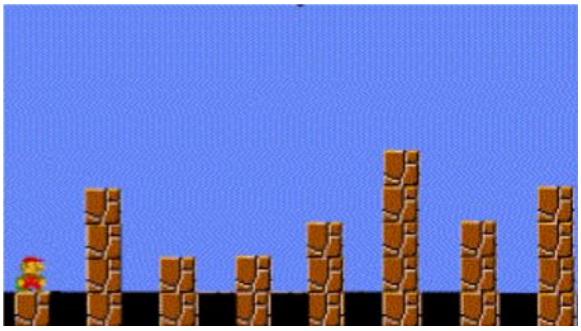
```
3
7
2
10
0
20
29
31
0
42
41
40
37
20
0
```

Sample Output

```
134
17744
Too expensive
```

11764 Jumping Mario

分級：1 分類：排列



Mario is in the final castle. He now needs to jump over few walls and then enter the Koopa's Chamber where he has to defeat the monster in order to save the princess. For this problem, we are only concerned with the “jumping over the wall" part. You will be given the heights of N walls from left to right. Mario is currently standing on the first wall. He has to jump to the adjacent walls one after another until he reaches the last one. That means, he will make (N - 1) jumps. A high jump is one where Mario has to jump to a taller wall, and similarly, a low jump is one where Mario has to jump to a shorter wall. Can you find out the total number of high jumps and low jumps Mario has to make?

瑪莉歐(Mario)在最後的城堡。他現在需要跳過一些牆壁，然後進入庫巴(Koopa)的房間，因為他要打敗怪物，以拯救公主。而對於這個問題，我們先關注“翻過牆”的一部分。給予你N個牆壁(由左至右)的高度。瑪莉歐目前站在第一個牆壁。他必須跳到相鄰的牆壁直到最後一個。這意味著，他將跳躍 N - 1 次。”a high jump” 代表瑪莉歐跳到一個較高的牆。相反，”a low jump”代表瑪莉歐跳到一個較矮的牆。你能找出 a high jump 和 a low jump 的總數嗎？

Input

The first line of input is an integer T (T < 30) that indicates the number of test cases. Each case starts with an integer N (0 < N < 50) that determines the number of walls. The next line gives the height of the N walls from left to right. Each height is a positive integer not exceeding 10.

第一行輸入的是一個整數 T（T < 30），表示接下來有 T 筆測資。每筆測資開始於一個正整數 N（N < 50），表示牆壁的數目。下一行依序為 N 個牆壁的高度(由左至右)。每一個高度是不超過 10 的正整數。

Output

For each case, output the case number followed by 2 integers, total high jumps and total low jumps, respectively. Look at the sample for exact format.

對每筆測資，先輸出這是第幾筆測資，再接著兩整數代表 high jumps 和 low jumps 的總數。格式請參考範例測資。

Sample Input

```
3
8
1 4 2 2 3 5 3 4
1
9
5
1 2 3 4 5
```

Sample Output

```
Case 1: 4 2
Case 2: 0 0
Case 3: 4 0
```

11608 No Problem

分級：1 分類：數學計算

Programming contests are being arranged so frequently these days. While this might be a good news for the contestants, the scenario is completely opposite for the problemsetters. So far, the problemsetters somehow managed to produce some sorts of a set & say "No problem!". But it is doubtful how long will it be possible if the trend of arranging contests in a short notice continues.

You are given the number of problems created in every month of a year and number of problems required in each month. If N problems are required in a month & there are not enough problems at that time, all contests of that month is canceled. Write a program to determine if there are enough problems for the contests. Please keep in mind that, if a problem is created in month X, it can only be used in month X + 1 & the later months.

最近程式競賽非常頻繁。這對參賽者來說是件好事，但對出題者來說卻是件壞事。目前出題者尚能維持一個題庫並說：「沒有問題！」，不過讓人懷疑繼續這樣下去不知還能維持多久。

給你一年中每個月所出的題目數量及各月所需要的題目數量。如果某個月需要 N 個題目，而當時的題庫數量不足，那麼該月的所有比賽均取消。請寫個程式來判斷是否有足夠的題目來辦比賽。記住，如果某個題目是在 X 月出的，該題目必須在 X+1 月或其後的月份才能使用。

Input

The first line of every test case has an integer S ($0 \le S \le 100$). Number of problems that is ready at the beginning of the year. The 2-nd line has 12 space separated integers, denoting the number of problems created in each of the 12 months of that year. The months are in the same order as they appear in a year. The 3-rd line has another 12 space separated integers, the number of problems required to use in contests in those 12 months (With the same order as above). These integers will be between 0 & 20 (inclusive). The end of input will be denoted by a negative integer.

每筆測資的第一行有一個整數 S ($0 \le S \le 100$)，表示年初已準備的庫存題目數量。第二行有 12 個以空白隔開的整數，依序表示一到十二月每個月所出的題目數量。第三行也有 12 個以空白隔開的整數，依序表示每個月比賽所需要的題目數量。

這些整數會介於 0 到 20 之間 (含)。負數代表輸入的結束。

Output

For each test case, print a line of the form, `Case X :', where X is the case number. Then print 12 lines. If there are enough problems to meet the requirements in month i ($1 \le i \le 12$), print `No problem! :D' in the i -th line, otherwise print ` No problem. :('

每筆測資先輸出格式為 "Case X:"於第一行，其中 X 代表測資編號。接著印出 12 行，如果 i 月($1 \le i \le 12$) 有足夠的題目，則在第 i 行印出 "No problem! :D" (沒有問題)，否則印出 "No problem. :(" (沒有題目)。

Sample Input

```
5
3 0 3 5 8 2 1 0 3 5 6 9
0 0 10 2 6 4 1 0 1 1 2 2
-1
```

Sample Output

```
Case 1:
No problem! :D
No problem! :D
No problem. :(
No problem! :D
No problem! :D
No problem! :D
No problem! :D
No problem! :D
No problem! :D
No problem! :D
No problem! :D
No problem! :D
```

11727 Cost Cutting

分級：1 **分類：排列**

Company XYZ have been badly hit by recession and is taking a lot of cost cutting measures. Some of these measures include giving up office space, going open source, reducing incentives, cutting on luxuries and issuing pink slips.

They have got three (3) employees working in the accounts department and are going to lay-off two (2) of them. After a series of meetings, they have decided to dislodge the person who gets the most salary and the one who gets the least. This is usually the general trend during crisis like this.

You will be given the salaries of these 3 employees working in the accounts department. You have to find out the salary of the person who survives.

XYZ 公司由於面臨經濟不景氣正規劃降低營運成本，其中措施包括減少辦公空間，並開源節流，所以他們決定要裁員！

他們決定裁掉會計部三位員工中的其中兩位，並在一系列的會議中，決定把最高薪與最低薪的那兩位裁掉，而這真的是大勢所驅之。

給定會計部三位員工的薪資，你必須找出誰是唯一留下來的人。

Input

The first line of input is an integer T (T< 20) that indicates the number of test cases. Each case consists of a line with 3 distinct positive integers. These 3 integers represent the salaries of the three employees. All these integers will be in the range [1000, 10000].

第一列有一個整數 T(T < 20)表示測試資料的組數。每組資料有三個不同的正整數，分別表示三位員工的薪資，所有資都在[1000, 10000]的範圍。

Output

For each case, output the case number followed by the salary of the person who survives.

請輸出每組資料該位留下來的員工的薪資。

Sample Input

3
1000 2000 3000
3000 2500 1500
1500 1200 1800

Sample Output

Case 1: 2000
Case 2: 2500
Case 3: 1500

11677 Alarm Clock

分級：1 分類：數學計算

Daniela is a nurse in a large hospital, which causes her working shifts to constantly change. To make it worse, she has deep sleep, and a difficult time to wake up using alarm clocks.

Recently she got a digital clock as a gift, with several different options of alarm sounds, and she has hope that it might help solve her problem. But, lately, she's been very tired and wanted to enjoy every single moment of rest. So she carries her new clock to every place she goes, and whenever she has some spare time, she tries to sleep, setting her alarm clock to the time when she needs to wake up. But, with so much anxiety to sleep, she ends up with some difficulty to fall asleep and enjoy some rest.

A problem that has been tormenting her is to know how many minutes of sleep she would have if she felt asleep immediately and woken up when the alarm clock ringed. But she is not very good with numbers, and asked you for help to write a program that, given the current time and the alarm time, find out the number of minutes she could sleep.

Daniela 在一家大醫院當護士，導致工作時間常變來變去。更糟的是她睡得很沉，鬧鐘很難叫得醒她。

最近她收到了一個有多種鬧鈴聲的數位時鐘，希望它可以解決她的問題。由於近來較為疲累，她希望善用休息時間。她隨身帶著這個鬧鐘，只要有休息時間，她就設好該醒來的時間並試著入睡。不過當她越焦急地想睡著，她越是睡不著。

有個問題一直苦惱著她，就是想知道如果她可以立刻睡著，在鬧鐘響以前她可以有幾分鐘的睡眠。但是她的算術不好，所以請你寫一個程式，根據現在的時間及鬧鈴的時間算出她可以睡幾分鐘。

Input

The input contains several test cases. Each test case is described in one line, containing four integers H1 , M1 , H2 and M2 , with H1 : M1 representing the current hour and minute, and H2 : M2 representing the time (hour and minute) when the alarm clock is set to ring ($0 \le H1 \le 23$, $0 \le M1 \le 59$, $0 \le H2 \le 23$, $0 \le M2 \le 59$).

The end of the input is indicated by a line containing only four zeros, separated by blank spaces.

輸入含有多筆測資，每筆測資一行，含有四個整數 H1、M1、H2 及 M2，H1:M1 代表現在的時與分，H2:M2 則代表鬧鈴所設的時間 (時與分)，(0 ≤ H1 ≤ 23, 0 ≤ M1 ≤ 59, 0 ≤ H2 ≤ 23, 0 ≤ M2 ≤ 59)。

最後一行含有四個以空格分開的 0，代表輸入的結束。

Output

For each test case, your program must print one line, containing a single integer, indicating the number of minutes Daniela has to sleep.

對於每筆測資，你的程式要印出一整數表示 Daniela 可以睡的分鐘數，須單獨輸出於一行。

Sample Input

```
1 5 3 5
23 59 0 34
21 33 21 10
0 0 0 0
```

Sample Output

```
120
35
1417
```

11636 Hello World!

分級：1 分類：數學計算

When you first made the computer to print the sentence "Hello World!", you felt so happy, not knowing how complex and interesting the world of programming and algorithm will turn out to be. Then you did not know anything about loops, so to print 7 lines of "Hello World!", you just had to copy and paste some lines. If you were intelligent enough, you could make a code that prints "Hello World!" 7 times, using just 3 paste commands. Note that we are not interested about the number of copy commands required. A simple program that prints "Hello World!" is shown in Figure 1. By copying the single print statement and pasting it we get a program that prints two "Hello World!" lines. Then copying these two print statements and pasting them, we get a program that prints four "Hello World!" lines. Then copying three of these four statements and pasting them we can get a program that prints seven "Hello World!" lines (Figure 4). So three pastes commands are needed in total and Of course you are not allowed to delete any line after pasting. Given the number of "Hello World!" lines you need to print, you will have to find out the minimum number of pastes required to make that program from the origin program shown in Figure 1.

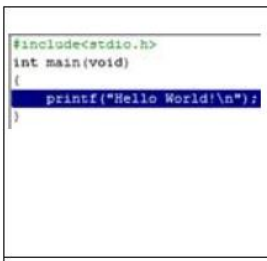


Figure 1

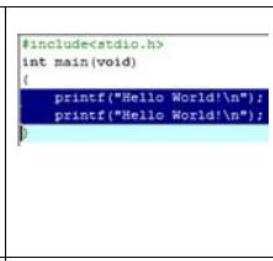


Figure 2

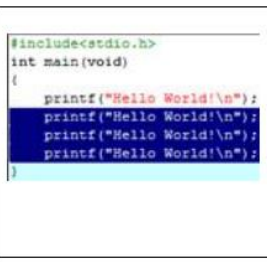


Figure3

Figure 4

當你剛學程式印出「Hello World!」時，你是很高興的，因為你還不曉得以後還會碰到多難多複雜的程式和演算法。假設你還不知道迴圈，如果要印出 7 行的「Hello World!」，你只能複製、然後貼上。但你夠聰明的話，你就會知道輸出 7 行的「Hello World!」只要複製貼上 3 次就夠了。如圖 1 所示，當我們複製 1 行「Hello World!」然後貼上你可以得到 2 行「Hello World!」，當你複製這 2 行然後再次貼上可以得到 4 行，最後再複製 3 行貼上就可以得到上述輸出 7 行的答案（圖 4）。所以複製貼上 3 次就是我們想要的答案。給你一個數字表示須要有多少行的「Hello World!」，請你找出最少要對原始的「Hello World!」複製貼上幾次才能達到需求的數量。

Input

The input file can contain up to 2000 lines of inputs. Each line contains an integer N (0 < N < 10001) that denotes the number of “Hello World!" lines are required to be printed. Input is terminated by a line containing a negative integer.

每組測資為一行，最多可能有 2000 筆，每行包括一個正整數 N（0 < N < 10001）代表要印出的「Hello World!」數量。當 N 為負數時代表輸入結束。

Output

For each line of input except the last one, produce one line of output of the form `Case X : Y' where X is the serial of output and Y denotes the minimum number of paste commands required to make a program that prints N lines of "Hello World!".

對於每行測資請輸出一行，格式為「Case X: Y」，其中 X 代表第幾筆測資，Y 代表「Hello World!」最少要複製貼上的次數。

Sample Input

2
10
-1

Sample Output

Case 1: 1
Case 2: 4

分級 2

11388 GCD LCM

分級：2 分類：數學計算

The GCD of two positive integers is the largest integer that divides both the integers without any remainder. The LCM of two positive integers is the smallest positive integer that is divisible by both the integers. A positive integer can be the GCD of many pairs of numbers. Similarly, it can be the LCM of many pairs of numbers. In this problem, you will be given two positive integers. You have to output a pair of numbers whose GCD is the first number and LCM is the second number.

最大公因數(GCD)是兩個正整數的最大相同除數；最小公倍數(LCM)是可以除以兩個正整數的最小整數。一個正整數可以有很多對的 GCD 與 LCM。在這題中會給你 a, b 的最大公因數(GCD)與最小公倍數(LCM)，請你求出 a, b 為何。

Input

The first line of input will consist of a positive integer T (T ≤ 100). T denotes the number of cases. Each of the next T lines will contain two positive integer, G and L.

輸入第一列包含一正整數 T (T ≤ 100)，代表有多少的測資。每筆測資為一行皆有 2 個整數 G 和 L (G, L ≤ 2^31)。

Output

For each case of input, there will be one line of output. It will contain two positive integers a and b, a ≤ b, which has a GCD of G and LCM of L. In case there is more than one pair satisfying the condition, output the pair for which a is minimized. In case there is no such pair, output `-1'.

每組測試資料輸出一列，請印出兩個正整數 a 與 b (a ≤ b)，且 a, b 的最大公因數 G，最小公倍數 L。由於可能會有許多可能的解，所以請輸出 a 為最小的那組，如果無解則輸出`-1'。

Sample Input

2
1 2
3 4

Sample Output

1 2
-1

11879 Multiple of 17

分級：2　　分類：大數運算

Theorem: If you drop the last digit d of an integer n (n ≥ 10), subtract 5d from the remaining integer, then the difference is a multiple of 17 if and only if n is a multiple of 17.

For example, 34 is a multiple of 17, because 3-20=-17 is a multiple of 17; 201 is not a multiple of 17, because 20-5=15 is not a multiple of 17.

Given a positive integer n, your task is to determine whether it is a multiple of 17.

定理：若你移除一個整數 n (n ≥ 10)的最後一個位數 d，其值再減去 5d 之後，又為 17 的倍數，則若且為若 n 亦為 17 的倍數。

例如：34 為 17 的倍數，因為 3-20 =17 為 17 的倍數；201 非 17 的倍數，因為 20-5=15 非 17 的倍數。

給定一正整數 n，請你判斷 n 是否為 17 的倍數。

Input

There will be at most 10 test cases, each containing a single line with an integer n (1 ≤ n ≤ 10^100). The input terminates with n = 0, which should not be processed.

輸入最多有十組測試資料，每組皆有一列含一整數 n (1 ≤ n ≤ 10^100)，當 n = 0 表示資料結束。

Output

For each case, print 1 if the corresponding integer is a multiple of 17, print 0 otherwise.

對於每筆測資，若為 17 的倍數請輸出 1，否則請輸出 0。

Sample Input

```
34
201
2098765413
```

171717171717171717171717171717171717171717171718
0

Sample Output

1
0
1
0

11991 Easy Problem from Rujia Liu?

分級：2 分類：數學計算

Though Rujia Liu usually sets hard problems for contests (for example, regional contests like Xi'an 2006, Beijing 2007 and Wuhan 2009, or UVa OJ contests like Rujia Liu's Presents 1 and 2), he occasionally sets easy problem (for example, `the Coco-Cola Store' in UVa OJ), to encourage more people to solve his problems :D

Given an array, your task is to find the k-th occurrence (from left to right) of an integer v. To make the problem more difficult (and interesting!), you'll have to answer m such queries.

雖然 Rujia Liu 通常給比賽設計較困難的題目（例如 2006 年西安地區、2007 年北京和 2009 年的武漢，或是 UVa OJ 的比賽中的`Rujia Liu 的禮物 1 和 2'），他偶爾也會設計簡單的題目（例如 UVa OJ 裡的`the Coco-Cola Store'），以鼓勵更多的人來解決他的問題 :D

給定一個陣列，你必需找出某一特定的整數 v 在此中重複出現第 k 次時的序號(指在此陣列中的序號，以 1 開始)，為了讓題目更困難（和更有趣！），你需要以查詢方式回答答案 m。

Input

There are several test cases. The first line of each test case contains two integers n, m ($1 \le n; m \le 100,000$), the number of elements in the array, and the number of queries. The next line contains n positive integers not larger than 1,000,000. Each of the following m lines contains two integer k and v ($1 \le k \le n$, $1 \le v \le 1000000$). The input is terminated by end-of-file (EOF).

輸入會有許多組測試資料，每組資料的第一列有兩個整數 n, m ($1 \le n, m \le 100,000$)，n 表示有多少元素在陣列中，再接下行就有 n 個小於 1,000,000 的正整數。接著有 m 行皆有一組 k 和 v 值($1 \le k \le n, 1 \le v \le 1,000,000$)，請依題目回答，輸入以 EOF 為結束。

Output

For each query, print the 1-based location of the occurrence. If there is no such element, output ` 0 ' instead.

對於每筆問題，請以 1 為第一個位置輸出要求的序號，如果不存在請輸出 0。

Sample Input

8 4
1 3 2 2 4 3 2 1
1 3
2 4
3 2
4 2

Sample Output

2
0
7
0

11953 Battleships

分級：2 **分類：模擬**

Battleships game is a pen and paper game that was invented by Clifford Von Wickler in the early 1900s. In this game each player uses two N x N grids. One to arrange his ships and record the shots of the opponent. On the other grid the player records his own shots. Ships in battleship game can vary in size from 1 x 1 to 1 x N/ 2 and can be placed both vertically and horizontally. When all of the ship's cells have been hit, the ship is considered sunk, otherwise it is still "alive". Beside this, there can be more than one ship of each size, however none of two ships can overlap or touch.

In this problem you will be given the placement of ships on the player's grid. You will have to calculate the number of ships that the player still owns.

「戰艦遊戲」為 Clifford Von Wickler 於二十世紀初發明的紙上遊戲，遊戲中每位玩家分別有兩張 N × N 的方格，來安排我方戰艦的位置與紀錄被敵方炮擊的位置。在戰艦遊戲中，船的大小為 1 × 1 到 1 × N/2，且可垂直或水平放置。當戰艦的每一位置都被炮擊則該戰艦就沈沒了，反之為"存活"。除了這點，我方可能會有多艘大小不一的戰艦，但不會有任兩艘戰艦重疊或相互接觸。

在本題中，你會得到安置戰艦位置的方格資訊，請你計算還有幾艘戰艦存活在戰場上。

Input

There is a number of tests T (T ≤ 100) on the first line. Each test case contains a positive number N (N ≤ 100) — grid size. Next N lines contain N characters each, describing the playing grid. Character ` . ' stands for an empty cell, ` x ' for a cell containing a ship or its part and ` @ ' for already hit part of a ship.

輸入資料的第一列有一個整數 T(T ≤ 100)表示測試資料的筆數，每組資料有一個正整數 N(N ≤ 100)表示方格的大小，接下來有 N 列每列有 N 個字元，描述玩家的方格資訊，字元"."表示空格，"x"表示戰艦的一部分，"@"表示戰艦被炮擊的部位。

Output

For each test case output a single line ' Case T : N '. Where T is the test case number (starting from 1) and N is the number of still "alive" ships.

每組資料請輸出格式"Case T: N"於單行。T 表示測試資料編號(由 1 開始)，N 表示還存活在戰場上的戰艦數目。

Sample Input

2
4
x...
..x.
@.@.
....
2
..
x.

Sample Output

Case 1: 2
Case 2: 1

11898 Killer Problem

分級：2 **分類：排序**

You are given an array of N integers and Q queries. Each query is a closed interval [L, R]. You should find the minimum absolute difference between all pairs in that interval.

給你一陣列含 N 個整數和 Q 個查詢，每個查詢皆為一封閉區間[L, R]。你須在該區間的每個值中，找出一最小絕對差值。

Input

First line contains an integer T (T ≤ 10). T sets follow. Each set begins with an integer N (N ≤ 200000). In the next line there are N integers Ai (1 ≤ Ai ≤ 10^4), the number in the i-th cell of the array. Next line will contain Q (Q ≤ 10^4). Q lines follow, each containing two integers Li, Ri (1 ≤ Li, Ri ≤ N, Li < Ri) describing the beginning and ending of i-th range. Total number of queries will be less than 15000.

輸入第一行包含一整數 T (T ≤ 10) 指測試資料的組數，測資開始設有一整數 N (N ≤ 200000)表示下一行中，有 N 個整數在陣列 Ai (1 ≤ Ai ≤ 10^4)裡。再來有一整數 Q (Q ≤ 10^4)表示接下來的 Q 行各有兩整數 Li 和 Ri(1 ≤ Li, Ri ≤ N, Li < Ri)，說明 i 值的範圍。全部查詢的值不超過 15000。

Output

For the i-th query of each test output the minimum | Aj – Ak | for Li ≤ j, k ≤ Ri (j ≠ k) a single Line.

對於每個範圍的查詢，須輸出| Aj – Ak |的最小值（Li ≤ j, k ≤ Ri；j ≠ k）於單行。

Sample Input

```
1
10
1 2 4 7 11 10 8 5 1 10000
4
1 10
1 2
3 5
8 10
```

Sample Output

0

1

3

4

495 Fibonacci Freeze

分級：2　　分類：大數運算

The Fibonacci numbers (0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, ...) are defined by the recurrence:

F0 = 0
F1 = 1
Fi = Fi-1 + Fi-2 for all i ≥ 2

Write a program to calculate the Fibonacci Numbers.

Fibonacci 數列(0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55,...)的定義是：

F0 = 0
F1 = 1
Fi = Fi-1 + Fi-2　for all i ≥ 2

請寫一支程式計算某一項 Fibonacci 數。

Input

The input to your program would be a sequence of numbers smaller or equal than 5000, each on a separate line, specifying which Fibonacci number to calculate.

每組測試資料一列，各有一個整數 n(0 ≤ n ≤ 5000)，代表要求的第幾個 Fabonacci 數。

Output

Your program should output the Fibonacci number for each input value, one per line.

你的程式應對每組測試資料請輸出第 n 個 Fibonacci 數，一個輸出佔一行。

Sample Input

5
7
11
200

Sample Output

The Fibonacci number for 5 is 5

The Fibonacci number for 7 is 13

The Fibonacci number for 11 is 89

The Fibonacci number for 200 is 280571172992510140037611932413038677189525

10394 Twin Primes

分級：2 **分類：質數、因數與倍數**

Twin primes are pairs of primes of the form (p, p + 2). The term "twin prime" was coined by Paul Stckel (1892-1919). The first few twin primes are (3, 5), (5, 7), (11, 13), (17, 19), (29, 31), (41, 43). In this problem you are asked to find out the S-th twin prime pair where S is an integer that will be given in the input.

孿生質數（Twin Prime）指的是，若 p 為質數，且 p+2 也是質數，則我們說(p,p+2)是一對 twin prime。這個定理是 Paul Stckel(1892-1919)杜撰的，一開始的 twin primes 是 (3,5), (5,7), (11,13), (17,19), (29,31), (41,43)。這個問題會給定一 S 值，請你找出第 S 對 twin prime。

Input

The input will contain less than 10001 lines of input. Each line contains an integers S ($1 \leq S \leq 100000$), which is the serial number of a twin prime pair. Input file is terminated by end of file.

輸入最多含有 10001 列的測資，每列有 1 個整數 S（$1 \leq S \leq 100000$）代表要找出的第 S 對 twin prime。輸入以 EOF 結束。

Output

For each line of input you will have to produce one line of output which contains the S-th twin prime pair. The pair is printed in the form (p1,<space> p2). Here <space> means the space character (ASCII 32). You can safely assume that the primes in the 100000-th twin prime pair are less than 20000000.

對於每組測試資料，須輸出第 S 對 twin prime 於單行，格式為 (p1,<spece>p2) ，其中<space>代表空白字元(ASCII 32)。你可以放心的假設在第 100000 對 twin prime 中的質數比 20000000 小。

Sample Input

```
1
2
3
4
```

Sample Output

(3, 5)
(5, 7)
(11, 13)
(17, 19)

11850 Alaska

分級：2 分類：排序

The Alaska Highway runs 1422 miles from Dawson Creek, British Columbia to Delta Junction, Alaska. Brenda would like to be the first person to drive her new electric car the length of the highway. Her car can travel up to 200 miles once charged at a special charging station. There is a charging station in Dawson Creek, where she begins her journey, and also several charging stations along the way. Can Brenda drive her car from Dawson City to Delta Juntion and back?

阿拉斯加高速公路由 Dawson Creek 到 Delta Junction 全長共 1422 英哩，Brenda 想成為首位開電動車行駛整條阿拉斯加高速公路的人，她的電動車再專門的充電站充一次電可以跑 200 英哩，而充電站除了在她的起點 Dawson Creek 有之外，沿著公路能充電的地方只有幾家。究竟 Brenda 是否能開著她的電動車成功往返阿拉斯加高速公路呢？

Input

The input contains several scenario. Each scenario begins with a line containing n, a positive number indicating the number of charging stations. n lines follow, each giving the location of a filling station on the highway, including the one in Dawson City. The location is an integer between 0 and 1422, inclusive, indicating the distance in miles from Dawson Creek. No two filling stations are at the same location. A line containing `0' follows the last scenario.

輸入有多組測試資料，每組資料的第一列有一個正整數 n，表示充電站的總數，接下來的 n 列表示充電站所在公路的位置，且一定包含起點 Dawson Creek 的充電站，數值表示距離起點的距離，大小介於 0~1422，不會有兩個充電站的位置一樣。當 n = 0 表示測試資料結束。

Output

For each scenario, output a line containing `POSSIBLE' if Brenda can make the trip. Otherwise, output a line containing the word `IMPOSSIBLE'.

每筆測資輸出一列。假如 Brenda 能成功完成她的旅程請輸出"POSSIBLE"，否則請輸出"IMPOSSIBLE"。

Sample Input

2
0
900
8
1400
1200
1000
800
600
400
200
0
0

Sample Output

IMPOSSIBLE
POSSIBLE

11847 Cut the Silver Bar

分級：2 分類：數學計算

A creditor wants a daily payment during n days from a poor miner in debt. Since the miner can't pay his daily obligation, he has negotiated with the creditor an alternative way, convenient for both parties, to pay his debt: the miner will give an equivalent of a 1μ (= 0.001 mm) long piece of a silver bar as a guarantee towards the debt. The silver bar owned by the poor miner is initially nμ units long.

By the end of n days the miner would not have any more silver to give and the creditor would have received an amount of silver equivalent to that of the silver bar initially owned by the miner. By then, the miner expected to have enough money to pay the debt at the next day so that he would have back all his silver.

With this negotiation in mind, the miner has realized that it was not necessary to cut exactly 1μ silver piece from the bar every day. For instance, at the third day he could give the creditor a 3μ silver piece, taking back the equivalent of a 2μ silver piece which the creditor should already have.

Since cutting the bar was rather laborious and time consuming, the miner wanted to minimize the number of cuts he needed to perform on his silver bar in order to make the daily silver deposits during the n days. Could you help him?

一位債主想要一個貧窮的礦工在 n 天內以一天為單位償還一些債務，但是窮礦工沒有能力負擔這個每日的債務，因此礦工與債主協商出一個對雙方都方便的作法：礦工每天會付出 1 單位(0.001mm)長的銀條作為償還債務的抵押。礦工一開始會擁有 n 個單位長的銀條。

到了第 n 天時礦工將會付出他所有的銀條給債主，這時礦工預期他已經有足夠的錢可以把他的所有銀條給贖回來。

根據這個協商條件，礦工發現他不需要將他的銀條每天都切出 1 個單位來。舉例來說，到了第三天他可以交給債主一個 3 單位的銀條，然後拿回之前付給債主的 2 單位銀條。

由於切割這些銀條既費時又費力，因此礦工希望能將切割的次數最小化且能滿足上述的條件，你能幫助他嗎？

Input

Input consists of several cases, each one defined by a line containing a positive integer number n (representing the length in micros of the silver bar and the number of days of the amortization period). You may assume that 0 < n < 20000.

The end of the input is recognized by a line with 0.

輸入包含多組測試資料，每組測試資料包含一個正整數 n，代表礦工一開始的銀條長度以及要攤銷債務的天數。你可以假設 0 < n < 20000。

輸入為 0 時代表輸入結束。

Output

For each given case, output one line with a single number: the minimum number of cuts in which to cut a silver bar of length n to guarantee the debt during n days.

對每一組測試資料輸出一個數值，代表在 n 天內礦工最少要對長度 n 單位的銀條切割多少次。

Sample Input

```
1
5
3
0
```

Sample Output

```
0
2
1
```

11742 Social Constraints

分級：2 分類：排列

Socializing can be a very complicated thing among teenagers. For example, finding a good seating arrangement in a movie theater can be a difficult task. Here is a list of constraints that could potentially apply to two individuals A and B in this situation:

- if A and B are dating, then they must sit beside each other
- if A and B are fighting, then they cannot sit beside each other
- if A and B have just broke up, then they must sit at opposite ends of the row

Teenage politics is a complicated thing meaning the constraints can get even more complicated than those listed above. However, we restrict this problem to a particular form of constraint that simply specifies a lower or upper bound on the number of seats separating two specific individuals.

The group arrives after everyone else watching the show has been seated. By some stroke of luck, there are exactly as many open seats as there are teenagers and all of these seats appear consecutively in the front row. How many possible seating arrangements satisfy the constraints?

青少年間的人際關係非常複雜，例如看電影買票的座位安排是可以成為困難的任務，這裡將可能會發生在 A 與 B 間的情況列成一張清單：

- 如果 A 與 B 在交往，那一定越靠近越好。
- 如果 A 與 B 正在吵架，那互相坐越遠越好。
- 如果 A 與 B 剛分手，那一定是分開坐兩端的座位。

青少年的世界一定比上面所列的更加複雜，所以我們簡化這個問題，只考慮誰跟誰一定要距離幾個座位，或是一定要少於幾個座位。

節目開始其他群眾紛紛入座，連續與前排位置可能會被占走，而若運氣好些有剩下位置，那麼請問在這一排座位中，讓每個人都有座位可以做，符合此條件的情況會有幾種？

Input

Each test case begins with two integers n and m with $0 < n \leq 8$ and $0 \leq m \leq 20$ where n is the size of the group. For simplicity, assume the teenagers are numbered from 0 to

n - 1. Then of m lines follow, each describing a constraint, where a line consists of three integers a, b, c satisfying 0 ≤ a < b < n and 0 < | c | < n. If c is positive then teenagers a and b must sit at most c seats apart. If c is negative, then a and b must sit at least –c seats apart. The end of input is signaled by a line consisting of n = m = 0.

每組測資開始有 N（0 < N ≤ 8）和M（0 ≤ M ≤ 20）兩整數，其中 N 代表有 N 個青少年，而為了簡單起見，編號給定分別是 0 ~ n-1。接下來有 M 行，每一行中有 a ,b ,c （0 ≤ a < b < n and 0 < | c | < n）。如果 C 是正整數， A 跟 B 必須坐相離不可超過 C ；若如果 C 是負數，則 A 跟 B 必須相離- C 以上。輸入測資以 n = m = 0 為結束。

Output

The output for each test case is a single line containing the number of possible seating arrangements for the group that satisfy all of the social constraints.

對於每個測資輸出一行，表示他們符合所有條件的有幾種可能性。

Sample Input

```
3 1
0 1 -2
3 0
0 0
```

Sample Output

```
2
6
```

11849 CD

分級：2 **分類：排序**

Jack and Jill have decided to sell some of their Compact Discs, while they still have some value. They have decided to sell one of each of the CD titles that they both own. How many CDs can Jack and Jill sell?

Neither Jack nor Jill owns more than one copy of each CD.

傑克與吉兒兩人想要賣出他們的 CD 光碟，他們決定賣出他們兩人皆擁有的 CD 光碟其中的一張，本題要請問他們兩人共想賣多少光碟？

傑克與吉兒擁有不只一份的相同 CD。

Input

The input consists of a sequence of test cases. The first line of each test case contains two non-negative integers N and M, each at most one million, specifying the number of CDs owned by Jack and by Jill, respectively. This line is followed by N lines listing the catalog numbers of the CDs owned by Jack in increasing order, and M more lines listing the catalog numbers of the CDs owned by Jill in increasing order. Each catalog number is a positive integer no greater than one billion. The input is terminated by a line containing two zeros. This last line is not a test case and should not be processed.

輸入有多組測試資料，每組的第一列有兩個非負整數 N 與 M，其最大值為 1,000,000，各表示他們兩個人擁有的 CD 光碟總數，接下來會有 N 列，每列為一個整數，這 N 個整數為一組遞增序列，表示傑克所擁有的 CD 光碟名稱(編號)。再接下來會有 M 列，每列為一個整數，這 M 個整數亦為遞增序列，表示吉兒擁有的 CD 光碟。表示編號的整數值不會大於 1,000,000,000。當 N, M 皆為零表示測試資料結束。

Output

For each test case, output a line containing one integer, the number of CDs that Jack and Jill both own.

每組測試資料請輸出一列，表示兩人想賣 CD 光碟的總數量。

Sample Input

```
3 3
1
2
3
1
2
4
0 0
```

Sample Output

```
2
```

12405 Scarecrow

分級：2 **分類：模擬**

Taso owns a very long field. He plans to grow different types of crops in the upcoming growing season. The area, however, is full of crows and Taso fears that they might feed on most of the crops. For this reason, he has decided to place some scarecrows at different locations of the field.

The field can be modeled as a 1×N grid. Some parts of the field are infertile and that means you cannot grow any crops on them. A scarecrow, when placed on a spot, covers the cell to its immediate left and right along with the cell it is on.

Given the description of the field, what is the minimum number of scarecrows that needs to be placed so that all the useful section of the field is covered? Useful section refers to cells where crops can be grown.

Taso 有一塊非常長的條狀田地。他計劃在下一季種植不同的作物。但是這個地區有很多烏鴉，Taso 怕他們會吃掉大部分的作物。因此他決定在田地的不同位置放置稻草人。

田地可以用 1 x N 的格子模擬。有些部分是不毛之地無法種植作物。一個稻草人除了所在的格子外也保護其左側及右側緊鄰的格子。

已知田地的描述，要保護所有可用田地最少需要幾個稻草人？可用地意指作物可生長之地。

Input

Input starts with an integer T (≤ 100), denoting the number of test cases.

Each case starts with a line containing an integer N (0 < N < 100). The next line contains N characters that describe the field. A dot (.) indicates a crop-growing spot and a hash (#) indicates an infertile region.

輸入開始有一整數 T (≤ 100)，表示測資筆數。

每筆測資第一行有一整數 N (0 < N < 100)，下一行便有 N 個字元以描述田地。點 (.) 表示良田，井號 (#) 表示不毛之地。

Output

For each case, output the case number first followed by the number of scarecrows that need to be placed.

對於每筆測資，先輸出測資編號，再輸出需放置的稻草人數量。

Sample Input

```
3
3
.#.
11
...##....##
2
##
```

Sample Output

```
Case 1: 1
Case 2: 3
Case 3: 0
```

12503 Robot Instructions

分級：2　　分類：模擬

You have a robot standing on the origin of x axis. The robot will be given some instructions. Your task is to predict its position after executing all the instructions.

- LEFT: move one unit left (decrease p by 1, where p is the position of the robot before moving)
- RIGHT: move one unit right (increase p by 1)
- SAME AS i: perform the same action as in the i-th instruction. It is guaranteed that i is a positive integer not greater than the number of instructions before this.

你有一台機器人站在 X 軸的原點上，該機器人將被賦予一些的指令。你的任務是所有指令執行完後，預測它的位置。

- LEFT：向左移動一個單位（指機器人的位置 p 比移動前的位置減少 1 個單位）
- RIGHT：向右移動一個單位（位置 p 增加 1 個單位）
- SAME AS i：執行與第 i 個指令相同的動作。i 為正整數，且不大於在此之前的指令數量。

Input

The first line contains the number of test cases T ($T \le 100$). Each test case begins with an integer n ($1 \le n \le 100$), the number of instructions. Each of the following n lines contains an instruction.

第一行包含數字 T（$T \le 100$），指測試用例的數量。每筆測試資料的開始有一個整數 n（$1 \le N \le 100$），表示指令的數量，說明以下 n 行皆包含著一個指令。

Output

For each test case, print the final position of the robot. Note that after processing each test case, the robot should be reset to the origin.

對於每筆的測試資料，皆須印出機器人的最終位置。需要注意的是處理每筆資料後，機器人會重新回到原點。

Sample Input

2
3
LEFT
RIGHT
SAME AS 2
5
LEFT
SAME AS 1
SAME AS 2
SAME AS 1
SAME AS 4

Sample Output

1
-5

分級 3

846 Steps

分級：3　　分類：模擬

One steps through integer points of the straight line. The length of a step must be nonnegative and can be by one bigger than, equal to, or by one smaller than the length of the previous step.
What is the minimum number of steps in order to get from x to y? The length of the first and the last step must be 1.

一個人沿著一數線前進。他每次走的長度（整數）必須是正的，而且比上一步走的長度多 1，一樣，或少 1。
請問這個人若要從 x 走到 y，最少需要走幾步？須注意第一步及最後一步的長度一定是 1。

Input

Input consists of a line containing n, the number of test cases. For each test case, a line follows with two integers: 0 ≤ x ≤ y < 2^31.

輸入的第一列有一個正整數代表以下有幾組測試資料。每組測試資料一列，含有 2 個整數 x 與 y（0 ≤ x ≤ y < 2^31）。

Output

For each test case, print a line giving the minimum number of steps to get from x to y.

每組測試資料輸出一列，最少需要走幾步才能從 x 走到 y。

Sample Input

```
3
45 48
45 49
45 50
```

Sample Output

```
3
3
4
```

11579 Triangle Trouble

分級：3 分類：幾何

There is trouble at the triangle factory. The triangle assembler has gone down, so all that has been produced for the day is a bunch of triangle sides. To make the best of this situation, it has been decided to create the triangle with the largest possible area from the available sides, and sell it as a limited edition triangle.

You have been hired to write a program that will determine the area of the limited edition triangle.

今天三角形工廠發生了一個很大的麻煩。三角形生產器速度下降，導致現在只產生出一些三角形的邊來，為了對這個情形有最佳解決方案，決定利用這些邊來創造出最大的三角形，並出售它作為限量的三角形。

因此雇用你來寫一個程式來幫助他們尋找這三角形。

Input

Input begins with the number of test cases on its own line. Each test case begins with a positive integer N ($3 \le N \le 10{,}000$), followed by N positive real numbers si representing the lengths of the available triangle sides ($0 < si \le 100{,}000$). A single test case may be spread out over several consecutive lines of the input.

輸入的第一行有一數字表示測資筆數，而每筆測資開始有一正整數 N ($3 \le N \le 10{,}000$)代表接下來有 N 個實數 Si 代表可以使用的三角形長度 ($0 < si \le 100{,}000$)，一組測試資料可能被分成好幾行。

Output

For each test case, output a line containing the largest possible area of a triangle built using three of the given sides (as a real number rounded to 2 decimal places). If it is not possible to construct any triangles then output "0.00" (quotes for clarity).

每筆測資輸出一行，印出給予的邊長所能為出的最大三角形面積(四捨五入到小數點第二位)。如果找不到請印出"0.00"

Sample Input

```
2
```

4 3.0 4.0 5.0 100.0
3 1.0 2.0 4.0

Sample Output

6.00
0.00

11730 Number Transformation

分級：3 分類：排列

You are given an integer number S. You can transform any integer number A to another integer number B by adding x to A. This x is an integer number which is a prime factor of A (Please note that 1 and A are not being considered as a factor of A). Now, your task is to find the minimum number of transformations required to transform S to another integer number T.

你可以將整數 A 加上一個數 x 後轉換成 B。而 x 是 A 的質因數（請注意，1 和 A 不被算在 A 的因數中）。現在給你兩整數 S 和 T，你的任務是算出最少需要轉換幾次才能把 S 轉換成 T 。

Input

For each test case, there will be a line with two integers, S ($1 \le S \le 100$) & T ($1 \le T \le 1000$), as described above. The last test case will be followed by a line with two 0's denoting end of input. This case should not be processed.

每組測試資料為一列，如上面所說，會給你 2 個整數 S（$1 \le S \le 100$）和 T（$1 \le T \le 1000$）。而當 S=0 T=0 時代表輸入結束，且不必執行。

Output

For every test case except the last one, print a line of the form `Case X : Y' where X is the serial number of output (starting from 1). Y is the minimum number of transformations required to transform S to T. If it is not possible to make T from S with the given rules, Y shall be `-1'.

Explanation of case 1:
You can make 12 from 6 in 2 steps in this way: 6 → 9 → 12.

對每組測試資料（不包含最後一組）輸出於一列，規定格式為`Case X : Y'。X 表示是第幾組的測資（從 1 開始），Y 代表著 S 轉換到 T 的最小次數。若是無法轉換成功，請輸出 -1

事件一說明：
若 S = 6, T = 12，則由 S 轉成 T 的最少步驟為：6 -> 9 ->12，共 2 次轉換。

Sample Input

6 12
6 13
0 0

Sample Output

Case 1: 2
Case 2: -1