

Problem A. Aladeen or Aladeen!

Input file: standard input
Output file: standard output
Time limit: 1 second
Memory limit: 64 megabytes

Everybody should know worlds greatest dictator General Aladeen. He rules over the land of Wadiya. He is very sensitive when it comes to language, he doesn't want to have any words that discriminate among things, that is why positive is called Aladeen and also negetive is called Aladeen.

So, if you ever go to a Hospital in Wadiya and test for HIV and then ask the doctor about the result, his answer will be "You are HIV Aladeen", clear as mud.

The Aladeen Dictionary contains list of all the words that have been replaced with "Aladeen". You will be given two list of words, the first one is the dictionary and the other is a list of random words.

Your task is to fix the list of random words according to the Aladeen Dictionary, meaning you should replace all those word from the random list of words which are mentioned in the Aladeen Dictionary.

It is a very aladeen problem.

Input

The first input is an integer n ($1 \leq n \leq 300$), which denotes the number of words in Aladeen Dictionary. The following n line contains a single word.

Next input is another integer m ($1 \leq m \leq 1000$), which denotes the number of words in the list of random words. The following m line contains a single word.

Length of a word does not exceed 100 and words are case sensitive.

Output

For each word in the list of random words, print the word itself if its not in the Aladeen Dictionary, but if its in the dictionary then print "Aladeen" without the qoutes. One word per line.

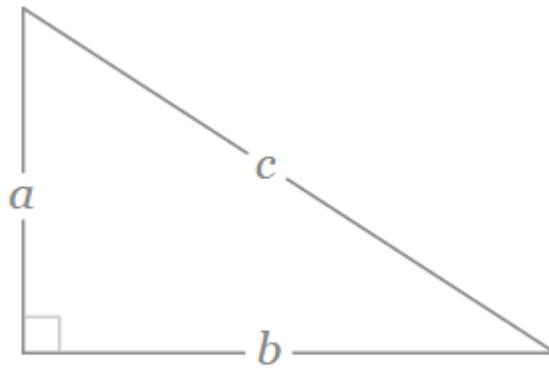
Examples

| standard input | standard output |
|--------------------------------------------|------------------------------------------|
| 2 Positive Negetive | Aladeen Wadiya Aladeen |
| 3 Positive Wadiya Negetive | |
| 3 Easy Hard Impossible | Aladeen Aladeen Aladeen Aladeen |
| 4 Aladeen Impossible Easy Hard | |

Problem B. Math Task

Input file: standard input
Output file: standard output
Time limit: 2 seconds
Memory limit: 64 megabytes

Talal is a computer science student in IIUM. He is enrolled in math class, today he learned about Right Triangle. A right triangle is triangle with an angle of 90 degrees $\pi/2$ radians. The sides a , b , and c of such a triangle satisfy the Pythagorean theorem: $a^2 + b^2 = c^2$.



Talal's teacher distributed a task to calculate the area for right triangle and compute hypotenuse c .

- The area of right triangle can be found using the following formula: $area = (a * b)/2$
- The hypotenuse c can be found using the following formula: $c = \sqrt{a^2 + b^2}$.

Input

The first line contains an integer T which represent the number of test cases. The next T lines consist of two integers a and b representing the height and base of the right triangle.

Output

Output the area and the hypotenuse of the right triangle. Note that you have to print the area and hypotenuse with two decimal points.

Example

| standard input | standard output |
|----------------|-----------------|
| 3 | 21.00,9.22 |
| 6 7 | 3.00,3.61 |
| 2 3 | 517.50,50.54 |
| 45 23 | |

Problem C. Keep me healthy buddy!

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 256 megabytes

Saif has been trying to balance his daily lifestyle through his diet. Currently, his diet is the worst it could ever be. On some days, he devours food until he can neither walk nor breathe and on other days, he doesn't eat anything to the point he collapses. In order to assist this poor boy in his dietary challenge, we need your help to create a program where he can input the food that he consumes throughout the day. By the end of the day, the program should let him know as to whether he has received the essential calories, whether he has overeaten or whether he hasn't eaten enough. In the case that he overeat, the program should inform him by removing the foods without which he would have a perfect day.

Input

The input consists of several test cases. First line of input is an integer N , ($1 \leq N \leq 10$) which is number of days. Next lines consists of two integers Min and Max ($0 \leq Min, Max \leq 4000$) which are minimum and maximum calories he has to take per day. Following line gives you number of foods he consumes that day ($1 \leq m \leq 20$). The case follows by m lines of foods name (names are only one word) and their calories ($0 \leq x_i \leq 4000$).

Output

There are three possible outputs. If he just perfectly that day and consumed exactly between required limit just print "Perfect day! Good job." If he eats less than minimum calories required print "Good day but not enough. Eat at least x more calories." and x difference of minimum calories required and how much he consumed already. Finally if he overeats print "Slow down dude! You should not eat: x y z " and x , y , z are those foods the moment he takes them he would exceed his limit and after warning we assume he didn't take it and calculate for rest of foods in the list.

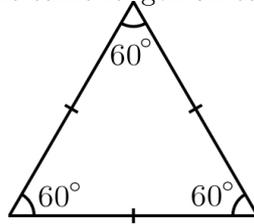
Example

| standard input | standard output |
|----------------|---------------------------------------|
| 3 | Day 1: Perfect day! Good job. |
| 1000 1200 | Day 2: Slow down dude! You should not |
| 7 | eat: Pasta Pie |
| Burger 500 | Day 3: Good day but not enough. Eat |
| Cornflakes 200 | at least 60 more calories. |
| Milk 150 | |
| Salad 50 | |
| Apple 60 | |
| BoiledEgg 80 | |
| Orange 70 | |
| 6 | |
| Pizza 700 | |
| Pasta 600 | |
| Cake 300 | |
| Apple 70 | |
| Banana 100 | |
| Pie 300 | |
| 7 | |
| Milk 150 | |
| Pancake 200 | |
| Rice 200 | |
| Chicken 200 | |
| Salad 50 | |
| Orange 70 | |
| Apple 70 | |

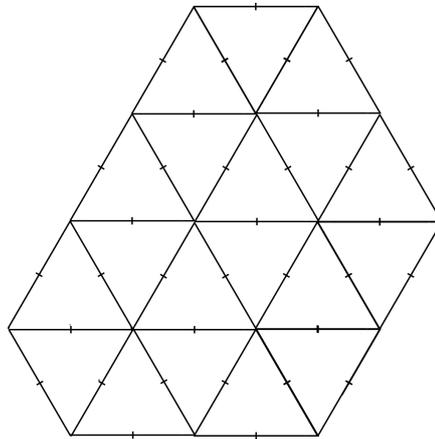
Problem D. Triangleable Hexagon

Input file: standard input
Output file: standard output
Time limit: 2 seconds
Memory limit: 64 megabytes

An equilateral triangle is a triangle with the same length on each side.



A hexagon can be formed with several equilateral triangles of the same size.



Such hexagon would have an inner angle of 120 degree on each of its vertices. However, not all hexagon can be made in such a way. You are given 6 integer which is the length of the 6 side of a hexagon. Determine if a hexagon with such side can be constructed from equilateral triangles of same size.

Input

You are given 6 integers ($1 \leq a_0, a_1, a_2, a_3, a_4, a_5 \leq 10^3$). The sides are given in order, that means side $(i + 1) \% 6$ is next to side i .

Output

If the hexagon can be constructed from unit hexagons, print “Triangleable Hexagon”. If not, “Ugly Hexagon”.

Examples

| standard input | standard output |
|----------------|----------------------|
| 2 2 2 1 3 1 | Triangleable Hexagon |
| 2 2 2 2 3 1 | Ugly Hexagon |

Note

The first sample input represent the hexagon in the figure. As you can see, it can be constructed from multiple equilateral triangles.

Problem E. Product Sets

Input file: standard input
Output file: standard output
Time limit: 2 seconds
Memory limit: 64 megabytes

Talal has n distinct array of integers. He wants to divide them into 3 sets with the following criteria:

1. The product of all numbers in the first set is strictly less than zero.
2. The product of all numbers in the second set is strictly greater than zero.
3. The product of all numbers in the third set is equal to zero.

Please Help Talal divide the array!

Input

The first line contains an integer n ($3 \leq n \leq 100$). The second line contains n -spaced integers — $a_1, a_2, a_3, \dots, a_n$ ($10^3 \leq a_i \leq 10^3$)

Output

The output consist of 3 lines

The first line contains an integer ($n_1 > 0$) The number of elements in the first set, and then print n_1 numbers -- the elements that got the first set

The second line contains an integer ($n_2 > 0$) The number of elements in the second set, and then print n_2 numbers -- the elements that got the second set

The third line contains an integer ($n_3 > 0$) The number of elements in the third set, and then print n_3 numbers -- the elements that got the third set

The printed sets must meet the above conditions. It is guaranteed that the solutions exists. If there are several solutions, you can print any of them.

Example

| standard input | standard output |
|----------------|-----------------|
| 3 | 1 -1 |
| -1 2 0 | 1 2 |
| | 1 0 |