CODEFORCES β
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acmASCIS Contest#2

A. Unfair Division

time limit per test: 2 seconds
memory limit per test: 64 megabytes
input: standard input
output: standard output

For years, Albert has picked on his sisters Betty and Carla, and now he is about to pay the price. The siblings' parents–firm believers in the "I cut, you choose" method of division–have died and have left instructions in their will about how their assets are to be divided. The assets have been written down in a single long list. Albert has been given scissors and must carefully cut between two entries to divide the list into two non-empty sublists. Betty will then be given the scissors and will do the same to one of the sublists, leaving a total of three sublists. Carla will then choose one of the sublists and will receive all the assests in that sublist. Next, Betty will choose between the two remaining sublists and will receive those assets. Finally, Albert will receive the assets on the last remaining sublist.

Naturally, each person wants to maximize their own share, but, because of certain regrettable childhood incidents, Betty and Carla will each try to punish Albert, as long as they can do so at no cost to themselves. For example, if Betty has two options that will both net her 1000 dollars, then she will always choose the option that will give Carla more money and Albert less money. On the other hand, if Betty has two options that will give her different amounts of money, then she will always choose the option that will give herself the most money.

As Albert raises the scissors to make the first cut, he wonders how much he is going to end up with. Given N assets, representing the values of the assets in the list, in the same order as the list, calculate the total value of Albert's share, assuming that all parties have full knowledge of each other's strategies and make their decisions optimally.

Input
Each case consists of N (3 <= N <= 50) the number of assets, and on the next line N positive numbers not greater than 1000, representing the values of the assets in the list.

Output
Print the total value of Albert's share.

Sample test(s)

input
4 50 90 10 100
output
50

input
3 5 5 5
output
5

input
9 1 1 1 1 1 1 1 1 1
output
2

input
9 1 2 3 4 5 6 7 8 9
output
10

B. There Is No Spoon

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

Neo, The chosen one has just found the key maker, he's now implied to wait for him to make the key to the matrix's source code door. While he waits with Morpheus, Naomi and Trinity, he decided to entertain them using a glass of water. Being the chosen one, Neo can bend the atoms of the matrix to his pleasure. He can make geometric shapes out of the atoms of water. Making either a right triangle, a square or a rectangle. Neo began boasting about his powers, so Morpheus told him that he can make the same move.. with code and asterisks instead of water atoms and superpowers. Can you help Morpheus beat Neo in his challenge?

Input

The input consists of several test cases, each to be tested separately. The first line of input is char C, denoting the geometric shape that Morpheus wants to draw with asterisks. C will be either "R" for rectangle, "T" for right triangle or "S" for square.

The next line contains two integers A and B (1 ≤ A , B ≤ 50). Denoting the Width and Height of the shape.

In case of Rectangle, you're to take the largest number as the width and the smallest as the height.

In case of right triangle, you're to draw an isosceles triangle (a right triangle with a height equal to base) using the largest number of A and B. with the right angel to the bottom left as it shows in the sample input.

Output

Print the desired shape drawn with asterisks.

Sample test(s)

input
S 15 15

output
*************** *************** *************** *************** *************** *************** *************** *************** *************** *************** *************** *************** *************** *************** *************** ***************

input
R

```
10 5
```

output

```
**********
**********
**********
**********
**********
```

input

```
T
7 9
```

output

```
*
**
***
****
*****
******
*******
********
*********
```

C. Curious George!

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

On new year's eve, George was sitting alone in the jungle. It was only 10 minutes to midnight. George was curious about how many minutes have passed since the beginning of time. Being a monkey, he don't know how to program, so he asked you to help him find out.

George knows that all years have 365 days, so he won't take leap years into his consideration. He also don't believe there was life before the first year.

Input
The input consists of one number Y (1 ≤ Y ≤ 100000) representing the year George is asking you about.

Output
Print the number of minutes from the beginning of time to the end of this year.

Sample test(s)

input
9
output
4730400

D. Loading Trucks

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

Peter has a truck which can't hold more than N kilograms.

Every day Peter has to transport a specific number of boxes, but the summation of their weights can’t be more than N kilograms. Can you help Peter find the maximum number of boxes his truck can hold?

Input

There are multiple test cases. The first line of input contains a single integer T denoting the number of test cases (1 ≤ T ≤ 1000).

For each test case there are two integers: the weight that the truck can hold N (0 ≤ N ≤ 10000) and the number of boxes M (0 ≤ M ≤ 100). The next line contains M numbers, which is the weight of each box.

Output

For each test case, print one line that contains the maximum number of boxes that the truck can hold and the summation of their weights.

Sample test(s)

input
2 90 6 80 30 8 10 40 2 100 6 70 10 30 20 40 40
output
5 90 4 100

E. Randomization

time limit per test: 0.25 seconds
memory limit per test: 4 megabytes
input: standard input
output: standard output

"Egypt is beautiful!" that's what an Egyptian man said when he returned to Egypt after 40 years of immigration. For his bad luck, he hasn't tried the Egyptian invention called "The Micro-bus" yet. He went to Ramses-Square and found something strange, some people gathered at a door of a vehicle, he didn't even know that it's the vehicle he should ride. The thing that bothered him is that men sat in the micro-bus next to women. So, he decided to organize the micro-bus so that no man is sitting next to a woman. The micro-bus has 10 chairs as shown in the figure.

Input

You're given a sequence of 10 characters, representing the people riding the micro-bus. The i^{th} character is either 'M' for a man or 'F' for a woman, where (1 ≤ i ≤ 10).

Output

Print "YES" if the micro-bus can be organized so that no man is sitting next to a woman, or "NO" if it can't be organized.

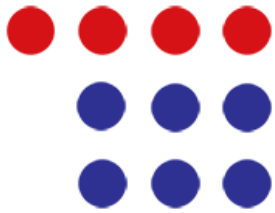
Sample test(s)

input
MFMFMMFMFM
output
YES

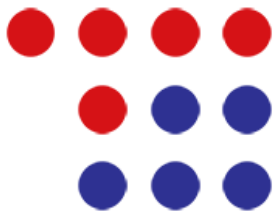
input
MFMFMFFMFM
output
NO

Note

- In the first sample test, women can sit together without having a man sitting next to them. - as red circles shows -



- In the second sample test, women can't sit together without having a man sitting next to them. - as red circles shows -



F. Pink is for Men ;)

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

It's time for ECPC'14! All the teams are excited to participate in the national contest this year, it's just fabulous! It's known that each year, all participants wear black shirts, but this year, the organizers decided to change the system. They decided that any team containing a girl wears green shirts, and the rest of the teams wear pink shirts. But there was an exception to the previous rule, after each five teams having the same shirt color, the next team must have an opposite color, and that's the only case when a team containing a girl wears a pink shirt or a team with all boys wears a green shirt.

Input

The first line consists of one integer N (1 ≤ N ≤ 1000) denoting the number of teams. Then N lines follow, The I-th line (1 ≤ I ≤ N) is the description of the I-th team, the description consists of three characters, each character is either a 'B' or a 'G'. 'B' denotes boys and 'G' denotes girls.

Output

In the first line print two numbers: the number of used shirts for pink and green respectively. Then print N lines, on the I-th line print "Green" or "Pink" denoting the color that the I-th team will wear according to the rules of the organizers of ECPC '14.

Sample test(s)

input
3 B B B B G B G G G
output
3 6 Pink Green Green

input
12 G G G G G G B G G G G G B B G B B B B B B B B B B B B B B B B B B B B B
output
18 18 Green Green Green Green Green Pink Pink Pink Pink Pink Pink Green

Note

- When the exception is applied to a team, it's not counted from the teams wearing this color in the exception rule (the five teams rule), but it's added to the final count of teams wearing this color.

G. Shafiq and The Microbus

time limit per test: 0.25 seconds
memory limit per test: 4 megabytes
input: standard input
output: standard output

Shafiq decided NOT to go to the college by taxi because of the disputation about the fare with the driver, so he does't have any solutions but the "Microbus".

You know the Egyptian microbus, it is fast, but Shafiq is a little bit heavy - not a little bit exactly - and this contradicts with the microbus' concept. The microbus must be as light as possible.

Ohh .. I forgot to tell you that not only is Shafiq heavy, but he also has to sit on two chairs ALONE! Because of Shafiq's laziness, he reached the station late and the microbus was full of people, but he was ready to ride instead of two persons in the microbus and pay as much as they are paying.

And for his good luck, the driver of the microbus has some time to calculate the weight of the people in the microbus to make it as light - and fast - as he can before the trip to the college.

The driver needs your help to choose from two choices:

- Keep the people in the microbus and GO!

- Replace the nearest two persons to the door and their weight is more than Shafiq's weight with Shafiq.

Input

You'll be given 12 integers, the i^{th} integer, N_i ($1 \le N_i \le 500$) - represents the weight of the i^{th} person in the microbus in kilograms starting from the nearest chair to the door of the microbus.

The second line consists of an integer X ($1 \le X \le 1000$) - represents the weight of Shafiq.

Output

Print a, b ($1 \le a < b \le 12$) - the nearest two persons to the door of the microbus that can be replaced by Shafiq. If there is no solution print "NULL" instead.

Sample test(s)

input
60 40 35 37 41 42 43 45 50 51 52 53 110
output
1 10

input
30 35 37 39 40 42 43 45 46 48 49 50 100
output
NULL

Note

- The driver doesn't want to waste his time, so if the sum of the weights of a and b equals Shafiq's weight, the driver won't replace a and b with Shafiq.

H. Ink on Paper

time limit per test: 0.25 seconds
memory limit per test: 25 megabytes
input: standard input
output: standard output

Nada, as being a dedicated student, she likes her notebooks decorated. She considers a page decorated if it is not written with the same color of ink. She only uses three colors of ink and for each color of ink she has definite number of pens. She also has infinite number of pages. She needs to find the maximum number of pages that can be decorated if a page takes three pens to be written.

Input

You are given three integers a, b and c ($0 \le a, b, c \le 10^8$) — the number of pens for each color of ink.

Output

Print a single integer that represents the maximum number of pages that can be decorated in the required manner.

Sample test(s)

input
5 4 3
output
4

input
1 1 1
output
1

Note

In the first sample you can decorate the pages using the given pens with the following sets: "abb", "bcc", "caa", "aab", where "a", "b" and "c" represent the three different colors of ink.

I. Smoking Sam

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

Sam works at a machines factory. Sam is also a smoker, so it was a shock for him when he knew about the no smoking policy that the factory he works at has.

Sam knew that keeping his job is more important than smoking, so he decided to quit smoking. But the process of quitting is harder than he thought, so eventually he feels the need to smoke. The factory's ceiling has both cameras and fire alarms, each camera covers a square of side length 2C + 1 centered around the camera. Similarly, each fire alarm covers a square of side length 2F + 1 centered around the fire alarm.

There's one more thing, when more than one camera covers a certain area, their signals get mixed and they don't record any actions that happen in this area.

Now Sam wants to know where he can smoke and where he can't, can you help him with this?

Input

The first line of input consists of two integers: N and M, the dimensions of the factory, (1 ≤ N,M ≤ 100). The second line consists of two integers: C - the range of each camera - and F - the range of each fire alarm - (1 ≤ C,F ≤ Min(N,M)).

Then comes N lines, each containing M characters, either 'c' representing a camera, 'f' representing a fire alarm or '.' representing an empty square.

Output

In the first line output an integer representing the number of places that Sam can smoke in. Then output N lines, each line contains M characters, the I-th character is either the character '*' if Sam can smoke hear, the character 'c' if he can't because it's covered by a camera, the character 'f' if he can't because it's covered by a fire alarm, or the character 'b' if it's covered by both a camera and a fire alarm.

Sample test(s)

input
5 5 1 1 ....c.. ....
output
16 ***** *ccc* *ccc* *ccc* *****

input
5 6 1 1 ...... .c..f. ....f.c. ......
output
2 cccfff cccfff cbbbbb *ffbcc *ffbcc

J. Help Azzam!

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

Azzam is somehow stupid, he hardly thinks, so his friends decided to teach him how to think. Azzam says that he loves maths, so he asked his friend Jimmy to give him some problem to solve, Jimmy agreed in order to help him think. So, Jimmy gave him half the side length of a square (L) and the radius of a circle (R), and asked him to determine if the square can fit inside the circle or not. Apparently Azzam knows nothing about math, so he asked you to write him a program to solve this task for him, and you don't want him to be embarrassed in front of his friends, do you?

Input

The input consists of two numbers L and R ($1 \le L,R \le 10^{12}$) which denote half the side length of the square and the radius of the circle respectively.

Output

If the square can fit inside the circle print "YES", otherwise print "NO" without the quotes.

Sample test(s)

input
2 2
output
NO

input
1.5 6
output
YES

Note

- Pi = 3.14.

- The user can enter float numbers.