Seven Lakes Kickoff Classic:

In space, no one can hear you scream.

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Jeremy Fuels Spaceships

Problem Statement

Jeremy is currently a space station employee. His job is to fuel a spaceship. The space station has multiple fuel canisters of different fuel amounts. Jeremy gathers an unknown number of cans and starts fueling the spaceship, but he doesn't know when the spaceship's tank is full. Write a program to find out how many fuel canisters Jeremy actually needed to fill the spaceship's tank when given the spaceship's fuel capacity and the sequence of fuel canisters Jeremy used to fuel the spaceship.

Input Format

The first number is how much fuel the spaceship requires. The following numbers are fuel amounts of fuel canisters in the order Jeremy used them.

Constraints

The fuel capacity can be any integer value greater than 0, and each of the fuel installments can be any integer value greater than 0. Jeremy will use more than one fuel canister. Jeremy will always use enough cans to fuel the spaceship.

Output Format

Write out "The ship was fueled n times. The ship has been fueled!" where n represents the number of times the ship was fueled.

Sample Input 0

```
49 10 21 33 254
```

Sample Output 0

```
The ship was fueled 3 times. The ship has been fueled!
```

Sample Input 1

```
20 1 2 3 4 5 6 7 8 9 10
```

Sample Output 1

```
The ship was fueled 6 times. The ship has been fueled!
```

Introverted

Problem Statement

Jennifer has been forced to go to a large party in space she did not want to attend. She wants to stay away from the other alien guests and reach the door of the spaceship to escape to safety. Find the number of steps she must take in order to leave, from her current position (does not include starting step).

Note: Jennifer must have 1 tile (including diagonals) in between herself and all other alien guests at all times.

Input Format

For each test case, there will be two integers, h and w, provided, separately denoting the height and width of the blueprint of the party facility.

Following this will be the blueprint of the party facility.

"D" represents the door of the facility.

"P" represents another person, who is to be avoided.

"J" represents the starting location of Jennifer.

"@" represents a wall / impassable character.

Constraints

h < 100; w < 100

Output Format

Print out the number of steps it takes Jennifer to make it to the exit.

Sample Input

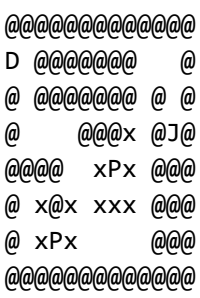
```
8 13
@@@@@@@@@@@@@
D @@@@@@@   @
@ @@@@@@@ @ @
@    @@@  @J@
@@@@   P  @@@
@  @      @@@
@  P     @@@
@@@@@@@@@@@@@
```

Sample Output

```
23 steps to escape!
```

Explanation

The following blueprint of the facility demonstrates the steps which are too close to people and cannot be traversed on. It takes 23 steps for Juan to make it to the exit.



Meet in Module 2187 by the Holodeck

Problem Statement

Working in space is sure tough, but Clay and his friends finally got a day off. With their time, they plan to meet up in one module of the space station as their busy schedule only allowed them to talk over communications. Their space station contains N modules and M pathways of different lengths. Given everyone's starting locations, output the module numbers, one per line, in sorted order, that minimizes the collective walking distance for everyone. All modules are connected to each other.

Input Format

For each test case: Line 1: An integer M, denoting the number of modules, and integer C, denoting the number of walkways, and an integer F, denoting the number of people. For the next C lines, three integers will denote the 2 modules that the walkway connects and the length L of the walkway, respectively. For the next F lines, an integer will denote each starting location (An integer between 1 and M)

Constraints

(1<=M<=1000) (1<=C<=(M)(M-1)/2) (2<=F<=M) (1<=L<=300)

Output Format

The locations in the form of one integer per line, in sorted order, indicating every ideal meeting location.

Sample Input 0

```
5 4 5
1 5 7
3 5 5
2 5 4
4 5 3
1
2
3
4
5
```

Sample Output 0

```
5
```

Sample Input 1

```
2 1 2
1 2 2
1
2
```

Sample Output 1

```
1
2
```

Time is an Illusion, Lunch Time Doubly So

Problem Statement

In Angel's mysterious galaxy, time does not move at the same pace as normal time on Earth; rather, it moves X times faster. Given a time interval in this galaxy and the conversion rate between the two time speeds, check how long it is on Earth in seconds, rounded to the nearest hundredths.

The time intervals will be in chronological order. If the second time is earlier than the first one, assume that the second time is from the next day.

Input Format

Each test case contains an integer X denoting the conversion rate (in the ratio of galaxy time to earth time), followed by two times of the galaxy written in 24-hour "XX:XX" format, separated by a space.

Output Format

Print out the number of Earth seconds, rounded to two decimal points.

Sample Input 0

```
7 10:11 23:09
```

Sample Output 0

```
6668.57 seconds.
```

Sample Input 1

```
7 07:43 16:28
```

Sample Output 1

```
6668.57 seconds.
```

Spacedock

Problem Statement

Lakshita needs to park her spaceship in a space port. There are N docking spots on the station. There are currently M people docking their ship each in a unique port. Lakshita does not want to hit anyone's ship while she is parking hers. As such, she would like to park away from anyone else in the space port. Find the average distance Lakshita is from everyone if she parks such that she has the furthest average distance from every other ship. The distance between the two dock spots is defined as the absolute value of the difference between the dock numbers.

Input Format

The first line of input will contain two numbers, N and M. The next M lines will contain the stall number Pi (a positive integer) of a person who has already docked their ship. It is guaranteed that each of the M lines will be distinct.

Constraints

$2 \leq N \leq 105$

$1 \leq M \leq N-1$

$1 \leq Pi \leq N$

Output Format

The output should contain one floating-point number.

Sample Input

```
10 3
1
2
9
```

Sample Output

```
3
```

Explanation

In the sample case, there are 3 people who've already docked their ship at positions 1, 2, and 8. If Lakshita picks the dock at position 5, she is 3 docks away from the person at dock 2 and 4 docks away from the person at dock 9. Thus, her minimum distance from any other occupied dock is 3. Note, she could have also picked dock 6, which would have yielded the same result.

Text Jumble

Problem Statement

Tony has a big crush on someone. Obviously, he wants to ask his crush out to a date soon, but there's a problem: his spaceboard is messed up. Sometimes when he types a character, aliens will intercept his transmission and insert random semicolons. All intergalactic texts are required to end in only one semicolon. Given lines of his texts, remove the extra semicolons!

Input Format

Each of Tony's texts will be on a separate line.

Constraints

It is guaranteed that each text will have at least one character that is not a semi-colon and each text will end with a semicolon. There will also be at least one text in the input.

Output Format

The filtered texts, one per line.

Sample Input 0

```
people call me tony but you can call me anytime;
```

Sample Output 0

```
people call me tony but you can call me anytime;
```

Sample Input 1

```
you; know; what; my; shirt; is; made; of?; dating; material;
```

Sample Output 1

```
you know what my shirt is made of? dating material;
```

Sample Input 2

```
;hi, my name is microsoft.; can i crash at your place tonight?;
```

Sample Output 2

```
hi, my name is microsoft. can i crash at your place tonight?;
```

Lost In Time, Lost in Space

Problem Statement

Angelica was attending a space party in the International Space Station when all of a sudden the ISS fell into a wormhole. After exiting the wormhole, communications from Earth tell them Angelica and her crew have traveled into the future. Luckily, Angelica brought their wind up clock that allows them to travel back in time. Angelica, who is very bad at math, needs help calculating the number of turns that needs to be applied to the watch in order to send the crew and the ISS back to the original time and date.

Input Format

The input line will be consisted of the warping time(hh:mm:ss), the future time(hh:mm:ss), the warping date(dd/mm/yyyy), a future date(dd/mm/yyyy), and a string containing how much time is set back for every turn(either seconds, minutes, hours, days, months, or years).

Constraints

Each line after the 1st line will contain 5 strings separated by a space. The time will always be in 24-hour format. Years in this problem are always 365 days. The amount of seconds and minutes will always be less than 60. The number of hours is also always less than 24 hours.

Output Format

For each test case, you will output the number of turns that need to be applied to the watch in order to send Angelica back to the proper time and date.

Sample Input 0

```
00:00:00 12:00:00 01/01/2020 07/01/2020 3Day
```

Sample Output 0

```
2.17 turns
```

Sample Input 1

```
01:34:12 5:12:10 21/06/2020 27/06/2020 1Second
```

Sample Output 1

```
531478.00 turns
```

Sample Input 2

```
12:05:16 24:00:00 12/12/2013 12/12/2014 0.5Year
```

Sample Output 2

```
2.00 turns
```

Communication Conundrum

Problem Statement

Charles' spaceship has a terrible communication system. It sometimes likes to jumble up the messages that come through, preventing Charles' from socializing with his fellow space friends. Decipher Charles' messages.

To decipher a message, shift each letter of the message backwards by the corresponding letter in the name of the sender. Each letter in the alphabet corresponds to a number 0 - 25 (a - z respectively). Ignore spaces and all non alphabetic characters. Shifts wrap around, so z (25) shifted by c (2) would be b (1).

The sender's name wraps around to fit the length of the message, but every time the name wraps around, the first letter of the previous wrap-around moves to the end.

Ex. The name "Bob" would wrap around like "BobobBbBoBob..."

Ex. If the name is "Bob", and you're deciphering "Ismzp, Xpsze!"

I s m z p , X p s z e !

B o b o b B b B o B

H e l l o , W o r l d !

Input Format

The first line will be an integer that represents the number of people who's messages will be deciphered. Each person will have a name, followed by an integer representing the number of messages, followed by the messages. Each person is separated by a blank line.

Output Format

Print out the deciphered messages, separating each person's messages by a blank line.

Sample Input

```
2
Joanna
2
Mc ybh wong fove zrmng?
Ust'f teh sbze bpnpe sivpe jttrr bdape bqhbbu!

Antonio
1
Lrm'g ctol lczm Aigspzofg.
```

Sample Output

```
Do you want some memes?
Let's get some space juice after space school!

Let's play some Minecraft.
```

Weight Watchers of the Galaxy Vol. 2

Problem Statement

John has N space meals in a week, consisting of either a slice of Mars cake or Jupiter celery sticks. John wants to maintain his health so he can impress his significant other. He requires himself to have at least K celery sticks between any two meals of cake. Help John count the number of combinations of meals he can have satisfying the conditions. Two combinations are different if they have a different type of meal at some position in the sequence of meals.

Input Format

Two integers N and K

Constraints

N <= 10^5

K <= 10^5

Output Format

A single integer representing the number of possible combinations modulo 5000011.

Sample Input

4 2

Sample Output

6

Can We Talk?

Problem Statement

Ebot is monitoring a spaceship drive thru radioing spaceships around him, but he does not want to radio the chattiest spaceships. Through surveillance he can find out how chatty a person in line is. A person is considered to be extremely chatty if they are strictly more chatty than every person behind them in line. What is the number of extremely chatty people Ebot must not radio?

Input Format

The first line of input is n, where n represents the number of people in the line. The second line of contains n numbers where the ith number represents the chatty value, c, associated with the ith person.

Constraints

3 <= n <= 2*10^5

1 <= c <= 10^9

Output Format

Print out a single integer representing the number of people in line Ebot has to avoid.

Sample Input 0

```
3
3 2 1
```

Sample Output 0

```
3
```

Sample Input 1

```
5
9 12 7 4 3
```

Sample Output 1

```
4
```

Translation Trouble

Problem Statement

As the leader of a new extraterrestrial colony, Alex often has to communicate to aliens. Based on previous interactions, the team has assembled a dictionary with a limited number of words that they have verified to be part of the alien language. They have also found that the aliens don't use spaces, rather, they combine each word back to back. Given that Alex only uses the words in the dictionary and a message to replicate, output the best possible message of the same length and the number of character differences between it and the intended message. If Alex cannot create a message of the same length, output -1.

Input Format

For each test case Line 1: An integer C, denoting the number of elements in the dictionary The next C lines will contain one element of the dictionary, all lowercase Strings with no spaces of length D. The next line will be a string of length L which is the message Alex is trying to replicate.

Constraints

(1<=C<=1000) (1<=L<=1000) (1<=D<=100)

Output Format

For each test case, print the number of character differences between the best possible string and the intended message on one line and the best possible string on the next line. If there is no best possible string, print out only -1.

Sample Input 0

```
6
talk
dto
we
hellw
nee
need
helloweneedtotalk
```

Sample Output 0

```
1
hellwweneedtotalk
```

Sample Input 1

```
4
where
ships
place
light
whereisthelocation
```

Sample Output 1

```
-1
```

Moon

Problem Statement

Joanna has been living on a remote moon her entire life, and she would like to become more outgoing. That means jumping right into the center of the space station party that's coming up soon!

Find where Joanna should stand so that she is at the lowest average distance from all the other people at the party. She can not be in the same location as another person. If there are multiple solutions, output them all.

The top left point is (0, 0)

Input Format

The first line contains an integer with the number of parties. Each of the parties contains an integer describing the room size of the party in units (The room is a square). The next line contains an integer representing the total number of people at the party, followed by the X and Y coordinates of their location.

Constraints

3 <= room size <= 100

1 <= number of people <= 10

Output Format

Output the coordinate(s) where Joanna can stand. Seperate each party by a blank line. Print out the points in order from least to greatest y value. If y values are the same, print out from least to greatest x value.

Sample Input

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

Sample Output

```
3 2

3 3
5 3
```

Ernesto Speeds through Space

Problem Statement

Ernesto is on the first mission to Proxima Centauri (the closest star to us other than the sun). After flying past Neptune, he loses contact with Mission Control in Houston. He needs to calculate his speed so he knows when to slow down because he is moving too fast. There is only one problem. His computer has a bug which causes the time intervals and positions to be ordered randomly on one line. He knows the positions and time intervals are correlated by the function: $f(x) = ab^x + log_d c + x$ where f(x) is the position and is the time interval. Find the speeds Ernesto is traveling at for each time interval and output these values.

Input Format

The time intervals and positions will be inputted as a one line string. The first 4 numbers in the input are the doubles a, b, c, d which are in the regression in the constraints.

Constraints

The time intervals are only Integers and the positions are only Doubles.

The domain of the time intervals are [1, x] where 5 <= x <= 200

The position f(x) and the time interval x are correlated where: $f(x) = ab^x + log_d c + x$

Output Format

The output should be a one line string consisting of the time interval and speeds listed in order from least to greatest. These values should be separated by a colon.

The speeds should be given in scientific notation(%E) with 3 significant digits, and the time intervals should be given as integers.

For example the structure of the sample outputs would be:

```
timeInterval1 : speed1 timeInterval2 : speed2 timeInterval3 : speed3 ...
timeInterval(n) : speed(n)
```

Sample Input

```
0.23 2.1 9.0 10.0 4 1 5 6.08E+00 3 1.53E+01 9.43E+00 2.44E+00 3.97E+00 2
```

Sample Output

```
1 : 1.36E+00 2 : 1.75E+00 3 : 2.58E+00 4 : 4.32E+00 5 : 7.97E+00
```

Pigs In Spaaaace!

Problem Statement

The country of Stroudonia has launched their first interstellar spaceship called Glorious Leader, named after their head of state, Glorious Leader Stroud. The spaceship's first mission is to cross the galaxy to find the legendary planet Magrathea which Glorious Leader had read about in a book. The legend of this planet is that it can build other planets, and Glorious Leader would like to have a customized planet. During the trip, the crew of Glorious Leader will have the best space movies of all time at their disposal to inspire them to discover Magrathea, including Glorious Leader's favorite movie of all time: Pigs In Space. However, the movies must be watched in a specific order, such as the way of Stroudonia. The movies, however, are not in the proper order at the current time and must be sorted by the Stroudonian custom. The Stroudonian custom of sorting is that all movies are sorted alphabetically, but not in the traditional sense of reading the title from left to right, but from reading the title right to left. Glorious Leader is a Little-endian after all. Write a program that will take a list of movies and print those movies in the Stroudonian sorting custom.

Input Format

The input will consist of an integer value representing the number of movies in the collection followed by that particular number of movie titles, each on its own line.

Constraints

N >= 2, where N is the number of movies.
The sorting will be based on the ASCII table.
There will be punctuation, digits, and capitalization in the titles.

Output Format

The output will print all N movies, each on its own line, in the order of the Stroudonian sorting custom.

Sample Input

```
4
Return of the Jedi
Pigs In Space
Ice Pirates
The Empire Strikes Back
```

Sample Output

```
Pigs In Space
Return of the Jedi
The Empire Strikes Back
Ice Pirates
```

Planet Pricing

Problem Statement

Henry, a space realtor, wants to know the cost of living in different planets throughout the universe. He calculates the cost of living by income of a person and their expenses. The person's expenses can be calculated by the price of their house, the houses distance from other houses and the houses distance from the spaceport. Remember that everybody on the planet needs to pay a tax of 7.211%. Henry wants to have the cost of living printed out for him.

Input Format

1.A string corresponding to the person's job

2.A double corresponding to the pricing of the house.

3.A map showing the position of the house.

Constraints

The income of the person is the sum of the ASCII values of the job multiplied by 100000000

$f(r, d(s), d(h)) = r(d(h) + \log(d(s))^{(-2)}$

Where f(x) is the person's expenses d(h) is the mean distance from every home and d(s) is the distance from the spaceport and r is the price of the house.

In the map @ denotes the houses, S denotes the spaceport, and & denotes the person house. N indicates nothing The maps are 20 by 20 characters. Each character measures a unit on the map.

Output Format

Output format

Sample Input

```
Space Ship Technetition
50
NN@NN@@NNNNNNNNN@N@N
@@NN@N@NNNN@@NN@@@@N
N@NNN@NNNN@NNNN@@N@N
@@@N@@@N@NNNNNNN@@@@
NN@NNNNN@@N@NNN@@@NN
NN@@N@NN@NNNN@NNNNN@
N@@@NNN@NN@@NN@@NNN@
@@@NN@NNN@NN@@NN@@NN
N@N@N@N@N@NN@N@@NNNN
NNN@N@N@NNN@N@@N@@NN
@@N@N@N@N@@NNN@N@@@@
NNN@N@@N@@NNNNN@@N@@
@NN@@N@N@NNNNN@@@N@@
@NNNNNN@NN@N@NSNNNN@
@NN@@@H@@NN@N@@@@NNN
@@NNN@@@N@@@@NN@@@@N
N@@NNNNNNNNN@N@@N@@@
NNN@@@@@@@NNNNN@N@N@
N@N@N@N@N@N@N@@@N@@N
N@N@@@N@NNNNNN@N@N@@
```

Sample Output

```
2.22E+12
```

War of the Words

Problem Statement

The glorious leader of the orion legions have encountered their rivals: the legion of scopious. They declare a verbal war between each other and ask you to serve as scorekeeper. Each legion will alternate, saying 6 lines to the other. The orion legion will start the verbal war. The score for the legions can be found by adding up the ASCII values of their lines and multiplying this by the position score, which is the sum of the 1st, 2nd, 3rd, 3rd to last, 2nd to last, and last indexes of semicolons in their lines.

Input Format

12 lines starting with the dialogue of the orion legion. Each alternate line belongs to the respective legions.

Output Format

The name of the legion that won either Orion or Scorpius. A number representing the difference in the scores.

Sample Input

```
pew;; pew;; pew;;
la;ze;e;er be;aa;a;ms
;ion ca;;nno;n g;o bo;om
st;;ormt;oop;er inv;asi;on
s;um;mo;n sta;rfl;e;et
;dar;th va;;der ;sho;ws up
s;cary; al;;ien ar;my;
deat;h s;;ta;r ge;;t;tin;g ;;b;;uilt;
light;sa;be;r fi;gh;ting;
death star po;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;wering up
runnnn ;;;;;;;;aw;;;;;;;;;;;;;wwaay
death star;;;;;;;;;;;;;
d;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;estroys;;;;;;;;;
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;; everything
```

Sample Output

```
Scorpius won by 4217801
```

It's A Trap!

Problem Statement

Martha wants to travel around the galaxy while avoiding alien traps. She has a list of addresses represented by five numerical digits. If the address is divisible by 3 and 5, it is an alien trap, otherwise the address is safe. Help Martha determine if her addresses are safe to travel to.

Input Format

A single integer representing the address.

Constraints

The address will be 5-digits.

Output Format

Output "IT'S A TRAP!" if the address is unsafe, otherwise print "Safe".

Sample Input

```
15000
```

Sample Output

```
IT'S A TRAP!
```

Asteroid Clearance

Problem Statement

Jordan is piloting her star cruiser between two planetary systems. Unfortunately, she is stuck in an asteroid field and needs to clear all the asteroids before moving on. Thankfully, she has recently installed a brand-new asteroid vaporizer on her cruiser. The asteroids are lined up in front of her ship and vary in sizes. In total, there are N asteroids where the ith asteroid has a radius of si kilometers. Unfortunately, Jordan's vaporizer has limited ammunition. In total, she has M shots left. Each shot will be fired with an impact damage of X. An impact damage of X will destroy the next set of consecutive asteroids whose radii sum up to $\leq$ X. However, the larger X is, the more power Jordan will have to consume. As she would like to conserve as much power as possible, please help Jordan determine the minimum value of X needed to destroy all the asteroids (all shots will be fired with impact damage of X).

Input Format

The first line of input contains N and M. The next N lines of input contain the size si of the ith th asteroid.

Constraints

$1 \leq N \leq 700$,

$1 \leq M \leq N$,

$1 \leq si \leq 100$,

Output Format

The output should consist of one number, the minimum value of X.

Sample Input

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

Sample Output

```
9
```