Seven Lakes Kickoff 2017

Welcome to the Sassdom.

Table of Contents

Do not write to file. Always print to standard output.

Enjoy your stay in the Sassdom!

#1. Zebras are cool

Input: none

Problem Description:
Ms. Carmouche is a person who, among other things, loves zebras and the color pink. She has decided that she loves zebras so much that she wants to write a program that prints out a zebra. Help Ms. Carmouche by creating a program that outputs the ASCII art zebra shown below.

Input Description:
There is no input.

Output Description:
Print out a picture of Ms. Carmouche's favorite zebra.

Sample Input:
There is no input.

Sample Output:

```
. . . . \ \ / ) , . . . . . . . . . . . .
. . . ,' @ /,. . . . . . . . . . .
. . (_) - . / /, . . . . . . . . . .
. . . . . / \ _/ |__ . . - -, . ,*.
. . . . ( \___/ \ \ \ / ) ) '.
. . . . . \____/ / (_ //. . .
. . . . . . \\_ ,'--'\_ (. . . .
. . . . . .) _)_/ .)_/ .)_) . . .
. . . . . (_ (_.' (_.' (_.' . . .
```

#2. SaveSassdom

Input: sassdom.in

Problem Description:
Ms. Carmouche, the Queen of Sass, lives in the Sassy Grassfields where she has constructed her Sassdom. Her Sassdom is composed of multiple rectangular plots of land (that may or may not overlap), and she has the power to sass the swarms of rebellious teenagers who frolic within the Sassdom. But the teens keep trying to escape her area of sassy influence, so she has decided to place boas around the perimeter of her Sassdom. This perimeter includes the internal perimeter if the rectangles that compose her Sassdom are placed in such a way that they enclose an area that they do not cover. Additionally, the Sassdom may be in multiple disconnected pieces in which case the perimeter of each piece must be counted. Ms. Carmouche does not know the total length of boas that she needs in order to enclose the citizens in her Sassdom. Help Ms. Carmouche find the perimeter of her Sassdom so she can trap the disrespectful teens and throw shade at them.

Input Description:
The first line contains an integer, the number of data sets. Each data set begins with the integer n ($1 <= n <= 1000$), the number of rectangles drawn. The next n lines contain four integers each, x1, y1, x2, and y2, specifying the coordinates of the top left and bottom right corners of each rectangle (all rectangles are axially aligned). All coordinates are in the range $-10^8...10^8$.

Output Description:
For each data set, output the total perimeter of all the rectangles that compose the Sassdom.

Sample Input:
```
2
2
0 5 4 1
2 4 6 2
1
2 6 4 0
```

Sample Output:
```
20
16
```

#3. Carmoji

Input: carmoji.in

Problem Description:
After confiscating phones and reading her students' text messages, Ms. Carmouche noticed that nearly all of her students messages to each other are 100% factual and devoid of emotion. Upon seeing this utter lack of human expression she became inspired to create a mobile app that resolves this problem. She has added a feature to the app that replaces the following keywords with their corresponding emoticons, or vice versa.

```
:D  = laugh
:)  = smile
:{) = disguise
:]  = awkward
O.o = shock
```

Input Description:
The first line contains an integer *n* representing the number of data sets to follow. The next *n* lines will each contain a combination of words and/or emoticons.

Output Description:
Print out each line with all emoticons replaced by words and vice versa.

Sample Input:
```
3
You are awkward. You make me :D
I am O.oed by this new information.
What is this? A clever :{)???
```

Sample Output:
```
You are :]. You make me laugh
I am shocked by this new information.
What is this? A clever disguise???
```

#4. Boa-no!

Input: boa.in

Problem Description:
Ms. Carmouche's students just bought her a new pink feather boa, her favorite accessory, as a back to school gift. Little did she know, her students misunderstood that she was referring to a feather boa SCARF, not a feather boa constrictor. Needless to say, Ms. Carmouche was not happy.

Ms. Carmouche needs to navigate out of the building before getting cut off by the snake. She can only move horizontally or vertically. Determine the shortest path – if any – to escape from her classroom to the main exit.

Input Description:
The first line contains an integer, the number of data sets. The first line of each test case contains the number of rows then columns for each grid. The following characters represent items of the grid: 'C' is Ms. Carmouche, '.' represent pathways, '#' represent walls, and 'E' is the exit.

Output Description:
Print out on a single line how many steps it will take to escape. If no escape is possible, print "Squish.".

Sample Input and Sample Output are on the next page.

Sample Input:
```
2
5 5
C..#.
...#.
#....
#...#
..#.E
4 5
C####
##...
.....
....E
```

Sample Output:
```
8
Squish.
```

#5. Clothes

Input: clothes.in

Problem Description:
Ms. Carmouche has a lot of clothes. Enough, in fact, to go an entire school year without repeating an outfit. But her closet has become disorganized – a disaster caused by the sheer number of ensembles and accessories she possesses. Help Ms. Carmouche sort her closet by the type, color, and store from where she got it.

Input Description:
The first line contains an integer *n* representing the number of data sets to follow. The next line will have an integer *c*, the number of clothing items. The following *c* lines contain a description of each clothing article with its *name*, *type*, *color*, and the *store* she bought it from, in that order.

Output Description:
Sort the clothes alphabetically giving *type* the priority, followed by *color*, and finally *store*, listing the name of each item on its own line.

Sample Input:
```
1
5
JustACardigan Cardigan Dandelion Kohls
FavoriteTee T-shirt Turquoise OldNavy
FancyCardigan Cardigan Wisteria Ross
UniqueHeels Shoes Periwinkle Kohls
FashionableScarf Scarf Fuchsia CharlotteRusse
```

Sample Output:
```
JustACardigan
FancyCardigan
FashionableScarf
UniqueHeels
FavoriteTee
```

#6. Cruz the Cautious Cleaner

Input: cruz.in

Problem Description:
Ms. Carmouche was strolling through the halls of Seven Lakes when, suddenly, she slips on a banana peel, hits the floor, and gets her shoe stuck in the ceiling tile. It is a special shoe, and will, in event of an emergency, permanently bond itself to whatever it is stuck in. Mike Cruz, the head janitor of Seven Lakes, has the power to get a ladder and recover the shoe. However, he is really busy cleaning up the mess of pizza, soda, candy bars, problem sets, smashed monitors, broken key caps, broken souls, etc. left by last year's computer science contest. Mr. Cruz is faced with the difficult dilemma of cleaning up the mess or helping recover Ms. Carmouche's shoe. Mike's first duty is to clean the floors of Seven Lakes so he has to take care of the mess first; however, if he can finish cleaning in time, he can save the shoe of Ms. Carmouche. You will be given a matrix (n x m) representing the floor, an integer j, the number of seconds it takes to clean one dirty tile, and an integer k, the number of seconds before the shoe becomes permanently attached to the ceiling.

Input Description:
The first line contains an integer, the number of test cases. The first line of each test case will contain integers n, m, j, and k. The next n lines will contain the matrix of the floor. The following symbols represent the contents of the floor: clean tiles are denoted by a period (.), dirty tiles are denoted by a hash (#), and Carmouche's body is denoted by the letter C.

Output Description:
Output "YES" without quotes if Mike is able to save Carmouche in time.
Otherwise, output "NO" without quotes.

Sample input and output are on the next page

Sample Input:
```
2
5 6 1 20
....##
#...C#
###..#
##...#
######
2 3 5 15
#.#
#C#
```

Sample Output:
```
YES
NO
```

#7. Tedious

Input: tedious.in

Problem Description:
Ms. Carmouche loves teaching high school students but unfortunately some students in her class are extremely rowdy and are always talking in class. For instance, one young man by the name of Thor talked all the way through one of Ms. Carmouche's lectures until finally he jumped up on a desk and started shouting, "I hate zebras! I hate pink feather boas!" In addition to giving Thor detention, Carmouche decided that his behavior warranted an especially cruel punishment: a homework assignment worth three test grades, consisting of 1000 problems involving plugging in numbers into the following formula.

$$y = \frac{2x(a + b)^3(b - 3cd + ab - 23)}{c^3 d^4 x^2}$$

Help Thor finish this assignment by creating a program that can find the value of y when given all necessary information.

Input Description:
The first line contains an integer, the number of data sets. Each data set contains a single line with the integers a, b, c, d, and x, in that order.

Output Description:
Print out the value of y as a decimal rounded to the nearest thousandth.

Sample Input:
```
1
42 39 12 30 45
```

Sample Output:
```
0.010
```

#8. Figs

Input: figs.in

Problem Description:
Ms. Carmouche has her own farm where she keeps all of her exotic zebras. Every week, she chooses a few zebras that behave especially well and buys them some delicious figs. In the stable, she gives each good zebra a bucket where she will place the figs. Note that each bucket must hold the same amount of figs so no zebras get upset. After distributing the figs into the buckets, Ms. Carmouche will have a few left over. Because she only has a vague idea of how many zebras will be good each week, she is considering a few possible scenarios of good zebras and leftover figs. Because high-quality figs are expensive, she wants your help to write a program to determine the smallest number of figs that will satisfy all the possible scenarios.

Input Description:
The first line contains the number of test cases. The first line of each test case has an integer n, the number of scenarios. The following n lines contain the details of each scenario: the number of good zebras followed by the number of figs left over after distributing the figs.

Output Description:
For each test case output the smallest number of figs that satisfies each possible configuration.

Sample Input:
```
2
3
10 3
7 3
2 1
2
9 2
6 2
```

Sample Output:
```
73
20
```

#9. Failing

Input: failing.in

Problem Description:
Ms. Carmouche is a great teacher who teaches a bunch of classes like Mobile App Development, Computer Science, and Geometry. Unfortunately, even though she is a great teacher, some of her students are failing her class! She wants you to write a program that can help her quickly identify which students are failing. She has a list of all her students and their grade in each of her classes. A grade less than 70 is considered failing.

Input Description:
The first line contains an integer, the number of data sets. The first line of each data set has an integer n the number of students. The following n lines contain the first and last name of the student and then their grade in her class.

Output Description:
For each test case print the first and last name of the students that are failing in the order that they appeared.

Sample Input:
```
5
Thor Rydahl 67
Thomas Pratt 82
Morgan Hill 99
Felipe Obregon 42
Peter Cui 102
```

Sample Output:
```
Thor Rydahl
Felipe Obregon
```

#10. Lyrics

Input: lyrics.in

Problem Description:
Ms. Carmouche has always dreamed of playing the drums in her own rock band so she recruited her two good friends Mr. McGee and Stroud. Mr. McGee will be playing guitar and Stroud will, of course, be singing. Unfortunately, Stroud is really bad at singing and learning the lyrics to songs. He often forgets words, mixes them up with other words, and sometimes adds extra words. Luckily, Ms. Carmouche has acquired a device that allows her to modify Stroud's memory. This device can access his memory of the lyrics and perform three operations: it can 1) Erase a word 2) Add a word 3) Replace a word. Because this device has a limited amount of uses, Ms. Carmouche wants to know the minimum number of operations she can use to change Stroud's memory of the lyrics to the correct lyrics.

Input Description:
The first line has an integer, the number of test cases. For each data set you will be given an integer *m* denoting the number of lines of lyrics. The next *m* lines will contain the correct the correct lyrics and an additional *m* lines contain Stroud's interpretation of the lyrics. Note that the number of words in a data set's incorrect lyrics will always be less than 20.

Output Description:
For each test case, output the minimum number of operations that must be made to correct Stroud's lyrics.

Sample Input:
```
1
3
I wanna roll with the gangstas
But so far they all think I'm too
White and nerdy
I wanna dance with gangstas
So far they think I'm
Nerdy and white
```

Sample Output:
```
8
```

#11. Harold and the Red Lambo

Input: harold.in

Problem Description:
Ms. Carmouche was on her way home from school when the one and only Harold McGee and his sidekick, Paul Stroud, pull up next to her in their hot-hunking-revvin-red lamborghini. Fed up with the the other computer science teachers leaving her out of their fun, Ms. Carmouche comes up with an ingenious plan. She decides to push her swoosh car and crush the lush lamborghini. BUT FIRST, you must calculate how long it will take for Ms. Carmouche to catch back up to the Harold and Stroud wombo combo.

Input Description:
The first line will contain an integer representing the number of test cases. The first line of each test case will have two integers separated by a space representing Ms. Carmouche's speed and the Harold's speed (respectively) in miles per hour. The second line of each test case will contain a positive integer value representing the distance between the two cars in feet.

Note: There are 5280 feet in a mile.

Output Description:
Print out the time it will take (in seconds) for Ms. Carmouche to catch up to the Harold as a decimal rounded to the nearest hundredth. If the swoosh car can't catch the lush lambo, output "Oh No!" without quotes.

Sample Input:
```
2
15 12
88
10 42
99
```

Sample Output:
```
20.00
Oh No!
```

#12. Drum Role Call

Input: drum.in

Problem Description:
After attempting to start a rock band with her friends McGee and Stroud (It didn't work out because *somebody* couldn't learn their part…), Ms. Carmouche wants to start a new rock band, this time with some more qualified people. But she can't decide who she wants on the other instruments: guitar, bass, triangle, and singer. She has a list of friends who can play a variety of the instruments and she wants the sum of all possible combinations she can have that fill all 4 instrument parts.

Input Description:
The first line has an integer *n* representing the number of data sets to follow. The next line has an integer *f,* the number of friends ($f \geq 4$). Each friend has a separate line with a name and a combination of instruments he or she can play (guitar, bass, triangle, and/or singer).

Output Description:
The number of combinations where all 4 positions are filled by a friend.

Sample Input:
```
1
4
Geraldine singer bass
Persimmon triangle bass guitar
Mongo singer triangle guitar
Jerry singer triangle
```

Sample Output:
```
4
```