My custom Problems

A. eleven, the perfect denominator

1 second, 256 megabytes

This is very easy problem. you are given an integer **N**. You have to ensure the divisibility of **N** by **11**.

Input
Each test contains multiple test cases. The first line contains the number of test cases t $(1 \leq t \leq 10^3)$

Each test case contains x digit single integer N. $(2 \leq x \leq 4301)$

Output
For each test case, Print "**YES**" if N is divisible by **11**. otherwise "**NO**".

N.B: Output is case insensitive.

input
5 11 15 22 111 4301

output
YES NO YES NO YES

B. Maruf and the speedy supergirl

1 second, 256 megabytes

Maruf has met an extraordinary girl named "Koitam Na". She is well-Known for her super speed. She is also braver, but in secret. she loves horror movies. On this leisurely Sunday, she decides to watch a horror movie called **"Plane to Busan"**, which lasts **(M =** 10^4**) seconds**. Utilizing her ability to speed things up, she watches the movie at **1.25x** speed. Now the question is: after N seconds of real-time watching, how many seconds of the movie will she have completed?

For Example: If the super girl watches for **100** real-time seconds at **1.25x** speed, she would complete **125** seconds of the movie (since 100 seconds * 1.25 = 125 seconds).

Input
The first line contains a single integer t $(1 \leq t \leq 10^4)$ — the number of test cases.

Each test case contains a numbers N $(1 \leq N \leq 10^4)$ — seconds of real-time watching.

Output
Print an integer: how many seconds of the movie will she have completed?

input
5 2 5 10 20 1000

output
2.5 6.25 12.5 25 1250

C. Again 94

1 second, 256 megabytes

Maruf, a student from the CSE department at Nazrul University, has been selected to participate in the upcoming intra-university football tournament. As a passionate competitive programmer, Maruf has chosen **94** as his jersey number, which holds special significance to him. However, the department head has set a challenge for him before approving the number 94 on his jersey. The challenge is, "Maruf is given a range of integers $[L, R]$. He must determine how many numbers in this range are divisible by 94. If Maruf can solve this problem, the department head will allow him to wear the number 94 on his jersey." Help Maruf by writing a program that counts the numbers divisible by **94** within the given range $[L, R]$.

Input
The first line contains a single integer $T(1 \leq T \leq 10^4)$ —the number of test cases. Then the test cases follow.

- The first and only line of each test case contains two space-separated integers L, R $(1 \leq L \leq R \leq 10^9)$ — the parameters mentioned in the statement.

Output
For each test case, output on a new line the counts the numbers divisible by **94** within the given range $[L, R]$

input
5 1 10 1 94 1 95 95 187 5 200

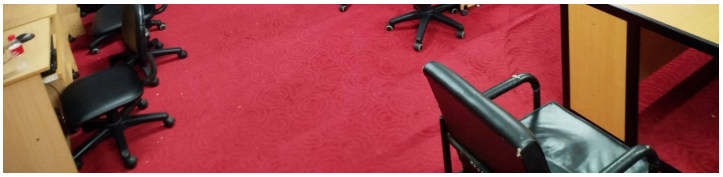
output
0 1 1 0 2

D. The PC warriors

1 second, 256 megabytes

CSE-16 batch of JKKNIU consists of **47** students, but the Software Lab-II on the second floor only has **35 PCs** available. After **Saiful Sir** finishes his Math class on the third floor, the next class is C++, which will be held in Software Lab-II. All students want to secure a PC in the lab, but with only 35 PCs, not everyone will get one. Naturally, everyone hurries to the lab, and their walking speeds can be different.

Given the walking speeds of all 47 students, you need to determine which students won't be able to secure a PC. Assume all students start at the **same** position and move towards the lab based on their individual walking speeds.



Your task is to identify the students who cannot get a PC and print their names in **lexicographical** order.

Input

The input consists of 47 lines —The description of each student follows.

Each line contains two space separated string and integers S and N (S consist of uppercase Latin latter, $1 \leq N \leq 10^5$) — Name of the student, his/her walking speed at mm/s.

Output

Print the student names in **lexicographical** order under the line "Hoto Vagar Dol:", those who can't get a PC.

To get sample input & output, please browse the link and get input & output of that code's comment section. https://ideone.com/L5lf4P

E. Hamidul, The free kick master

1 second, 256 megabytes

Last week, we faced a tough defeat in the football match against the Philosophy Department. The game ended $0 - 0$, and the referee decided to go for free kicks to settle the score. Our three kickers—**Sorol Vai, Saif** and **Fahad Aziz**—stepped up, but the final result was $2 - 1$ in their favor, and we lost.

Hamidul was deeply saddened by the loss, especially because he didn't get the chance to kick during the free kick phase. Now, with renewed ambition, he's determined to prepare himself for the next **"Nazrul Cup."** In his resolve, he's gone to the moon to practice free kicks, vowing to return only once he's mastered the perfect, unstoppable shot.

Considering there's no gravity on the moon, the usual physical laws**(projection speed) don't apply there**. Now, imagine a goalpost standing X meters in front of Hamidul, with a height of Y meters. Hamidul attempts a free kick at an angle of θ degrees. The question is: Can he score the goal under these conditions? Hamidul doesn't kick the ball to the side, but he can kick it over the goal post.

Input

Each test contains multiple test cases. The first line contains the number of test cases $t(1 \leq t \leq 10^4)$. The description of the test cases follows.

The only line of each test case contains three integers X, Y and θ. $(1 \leq X, Y \leq 10^5, 0 \leq \theta \leq 60)$.

Output

For each test case, output **"YES"** if he can goal the ball. Otherwise **"NO"**. Output is case insensitive, So you can print answer using any letter format.

input
3 1 1 45 4 1 30 4 9 60

output
YES NO YES

F. Ruma and Rajshahi'r aam

1 second, 256 megabytes

Ruma lives in Rajshahi, a place renowned for its mangoes. After the vacation, her classmates in the CSE department requested that she bring back some of these famous mangoes. Ruma agreed and brought $\mathbf{N}$ mangoes for everyone.

In the department, there are $\mathbf{B}$ boys and $\mathbf{G}$ girls. Ruma's plan is to distribute $\mathbf{M}$ mangoes so that everyone (both boys and girls) receives an **equal** number, with $\mathbf{M}$ being as **large** as possible. After distributing these mangoes equally, any remaining mangoes will be given to the girls because she loves the girl squad.

The question is: How many mangoes will all the girls receive in total after the distribution?

Input

- The first line contains a single integer T $(1 \leq T \leq 10^4)$ — the number of test cases. Then the test cases follow.
- The first and only line of each test case contains three space-separated integers N, B and G — the parameters mentioned in the statement. $(B + G \leq N \leq 10^9, 1 \leq B, G \leq 10^8)$

Output

For each test case, output on a new line the number of mangoes will all the girls receive in total after the proper distribution.

input
4 20 4 5 25 1 1 10 5 5 1000 10 15

output
12 13 5 600

G. Sarkar's family and Eid vacation

1 second, 256 megabytes

Sarkar's family lives in Mymensingh. Tomorrow, the government will announce N days for Eid vacation. The family is planning to enjoy as many days as possible in an unvisited island state named Mashland.

Mashland has M islands, numbered from 1 to M, connected by exactly $(M-1)$ ziplines, making it possible to travel between any two islands using the ziplines. Islands with **exactly** one zipline have **exactly** one resort; the others have no resorts. Sarkar's family wants to spend each day at a new, unvisited resort.

How many days can they enjoy in Mashland?

Input

- The first line of each test case contains two space-separated integers N and M $(1 \leq N, M \leq 2.10^5)$ — the number of days of Eid vacation and the number of Islands, respectively.
- Next $(M-1)$ lines of each test case contains two space separated integer x, y —connection between Island x to Island y.

Output

Print an integer number — How many days can they enjoy in Mashland?

input
3 4 4 2 1 4 3 4
output
3

For the first test case: Island 1, 2, and 3 are having resorts. But Island 4 has no resort. So Sarkar's family can spend in Mashland maximum 3 days.

H. Topper Hridi and her high CG

1 second, 256 megabytes

Anitri Saha Hridi is the class topper in the CSE-16 Batch. She achieved a GPA of **3.93** in the first semester and **3.75** in the second semester. In the third semester, Asif Sir awarded her an additional **0.25** points for her outstanding narration in the documentary video **"A Comprehensive Exploration of the Bengal Delta"**. Maruf devised a function that predicts Hridi's GPA, which is denoted as,

$$f(x) = \pi + G\left(2^{G\left(\frac{1.68 \ + \ (x-1)(0.39)^{(x-1)}}{P_x \ mod \ (N-x+2)}\right)}\right)$$

Here,

- $\pi = 3.14$
- $G(i)$ function returns floating point of i. $(ie. G(94.11) = 0.11)$
- P_x is the $x'th$ prime number.
- mod refers modulo operation. $(ie. 11 \ \ mod \ \ 10 = 1)$

For Example: if $x = 1$ then,

- $(x-1) = 0$, $\therefore \ (x-1)(0.39)^{(x-1)} = 0$
- $P_1 = 2, \ N - x + 2 = 9.$ $\therefore P_x \ \ mod \ \ (N - x + 2) = 2$
- $\frac{1.68}{2} = 0.84$ $\therefore G(0.84) = 0.84$
- simplified function is: $f(1) = \pi + G\left(2^{0.84}\right) = 3.14 + G(1.79005) = 3.14 + 0.79 = 3.93$ (1st semester GPA)

Using this function, Maruf can guess Hridi's results for the upcoming semesters.

We know that there are a total of $N = 8$ semesters in the CSE department, Hridi will be happy if her GPA in the $x'th$ semester is greater than or equal to her average GPA. Will Hridi be happy? What could be her GPA in the $x'th$ semester? Maruf has entrusted his function to you. Now, you need to determine the answers to Hridi's questions.

Input

The only line contains a single integer x. $(1 \leq x \leq 8)$ — number of semester.

Output

Print a single line following the format below,

"Hridi is $(happy/unhappy)$ with her $x'th$ semester result. That is: $(GPA \ \ upto \ \ 2 \ \ floating \ \ point)$"

$x'th$ ={ 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th}

input
1
output
Hridi is Happy with her 1st semester result. That is: 3.93

input
2
output
Hridi is Unhappy with her 2nd semester result. That is: 3.75

Complete your calculation with more then two floating point to get better accuracy. Then print upto two floating point.

I. Maruf's loving 94(Easy Version)

0.5 seconds, 256 megabytes

Maruf loves number theory and string. "***94***" is his favorite number. He lives in a string kingdom. So there are many strings around him. Nowadays he is trying to find a sub-sequence of a string that makes his favorite number "***ninetyfour***". He needs your help. You have to ensure that the given string can form Maruf's favorite one or not?

For example: If Maruf gets the string "***nasierngfettyyfftoyuutryh***", then you can choose the bold characters to make Maruf's favorite sub-sequence.

"**n**asier**n**gf**e**t**t**y**y**f**f**t**o**yu**u**t**r**yh"

Input

The first line contains a single integer t $(1 \leq t \leq 100)$ — the number of test cases.

Each test case contain a string S consisting of lowercase Latin letters $(a....z).(1 \leq |S| \leq 10^5)$

Output

Print "**YES**" if there exist a valid sub-sequence. Otherwise "**NO**".

input
1 ninetyfour
output
YES

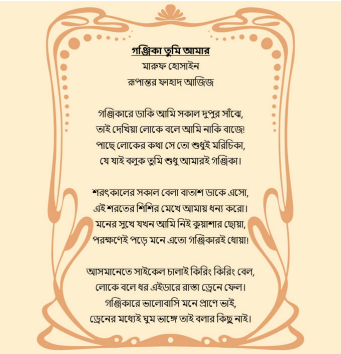
input
2 marufninetyvanish nasierngfettyyfftoyuutryh
output
NO YES

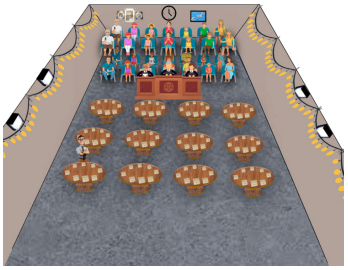
A sub-sequence is a string derived from the input string by deleting zero or more elements from the input string without changing the order of the remaining characters. Example: str=***abcd***. ***ad*** is a sub-sequence of str obtained by deleting ***b*** and ***c***.

J. Fahad and the Nobel prize

1 second, 256 megabytes

Fahad is a famous poet in Bengali literature. This year, he has applied for the Nobel Prize. Rabindranath Tagore won the Nobel Prize for "Gitanjali", which was translated from English literature. Inspired by this, Fahad has also translated an English poem by Maruf Hossain and named the poem "Gonjika Tomi Amar". I believe he deserves a Nobel Prize for his wonderful translation.





There are N candidates who have applied for the prize (including him). The chief of the The Nobel Prize awarding institutions will test the instant poetry talent of each candidate. To do this, they collect millions of words from all over the world. The judge arranges N round tables and decorated for the $i'th$ candidate with n_i words. The $j'th$ word of $i'th$ candidate has a value p_{ij}. Candidates cannot change the sequence of the words; they can choose some words (possibly zero or all) **consecutively**, such that their poem will be the most valued (initially their score is 0). The poem with **maximum** value will win. If several candidates have the same poetry value, the first candidate with the maximum value will be selected for the Nobel Prize. Will Fahad get the Nobel prize?

Input

- The first line of each test contains an integers $N\ (1 \leq N \leq 50)$ — Number of candidates.
- Next N lines contains space separated string and integer S_i, n_i $(S_i \in [a..z](ie.\ lowercase), 1 \leq |S_i| \leq 10, 1 \leq n_i \leq 10^4)$ — Name and number of words for $i'th$ candidate. Then next n_i space separated integer p_{ij} $(-10^9 \leq p_j \leq 10^9)$ — Value of $j'th$ word for $i'th$ candidate.

N.B: It is guaranteed that the names of the candidates are unique and consist of lowercase English letters.

Output

print "**YES**" if Fahad get the Noble prize. otherwise print "**NO**" followed by the name of the winner.

input
1 fahad 1 100
output
YES

input
4 koitori 2 10 7 fahad 6 -5 5 3 9 -10 5 maruf 3 1 -5 7 moynapakhi 5 -1 -2 -4 -5 0
output
NO koitori

For the second Example, The best poetry values of the candidates are,

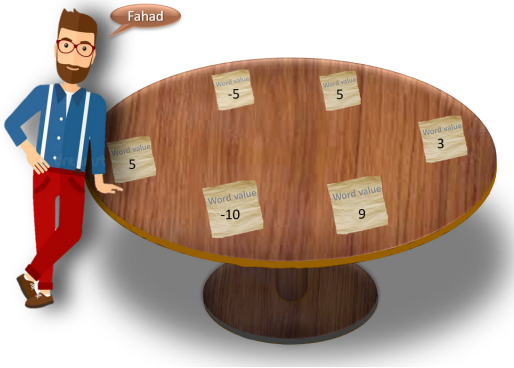
koitori: 17

fahad: 17

maruf: 8

moynapakhi: 0

The maximum poetry value is 17 and koitori did it first. So Fahad will not get the Nobel prize.



K. Maruf's loving 94(Hard Version)

2 seconds, 512 megabytes

N.B: The main task between the easy and hard version is different. So read the statement carefully.

Maruf loves number theory and string. "***94***" is his favorite number. He lives in a string kingdom. So there are many strings around him. He takes a string **S** and told you to choose an another string **K** (length of **K** is as minimum as possible). Now Maruf can do the following operation **once**.

- S := S + K

Maruf will be 94% happy if he can find a sub-sequence of **S** that makes his favorite sub-string "***ninetyfour***". Again He will be 100% happy if the total number of ways to find his loving sub-sequence is **not less than 11**. As a friend you have to help Maruf. You have to choose **K** as short as possible (i.e: you have to ensure at least 94% of Maruf's happiness). After the operation above, will Maruf be 100% happy? print the answer (YES or NO) followed by the minimum length of **K**.

More formally, You are given a string S. If S already contains "***ninetyfour***" as a subsequence at least **once**, then Maruf is 94% happy, and no additional characters need to be appended. In this case, the length of the string K that needs to be added is **|K| = 0**.

However, if "***ninetyfour***" is not a subsequence of S, you need to find the **shortest** possible string K such that appending K to S $(i.e., S + K)$ results in "***ninetyfour***" being a subsequence. Your goal is to determine the minimum length of K.

For example: If Maruf gets the string S = "***ninetyfoouur***", then you can choose K = ""(Empty string). There are total 4 Ways:

1. ***ninetyfo*ou*ur***
2. ***ninetyfo*ouu*r***
3. ***ninetyf*oou*ur***
4. ***ninetyf*oou*ur***

So the output is "NO 0".
Again If Maruf gets the string S = "***ninetyfooouuuu***", then you can choose K = "***r***". After Maruf's operation, S = "***ninetyfooouuuur***" There are total 12 ways to select "***ninetyfour***" So, The output will be "YES 1". (Here |**K**| = 1)

Input
The first line contains a single integer t $(1 \leq t \leq 100)$ — the number of test cases.

The only line of each case contains a string S. $(1 \leq |S| \leq 10^5)$

Output
For each test case, print "**YES**" if Maruf is 100% happy, otherwise print "**NO**" followed by the minimum length of K.

input
2 ninetyfoouur ninetyfooouuuu
output
NO 0 YES 1

input
3 ninety ninetyfive ninetyfour
output
NO 4 NO 3 NO 0

A sub-sequence is a string derived from the input string by deleting zero or more elements from the input string without changing the order of the remaining characters. Example: str=***abcd***. ***ad*** is a sub-sequence of str obtained by deleting ***b*** and ***c***.

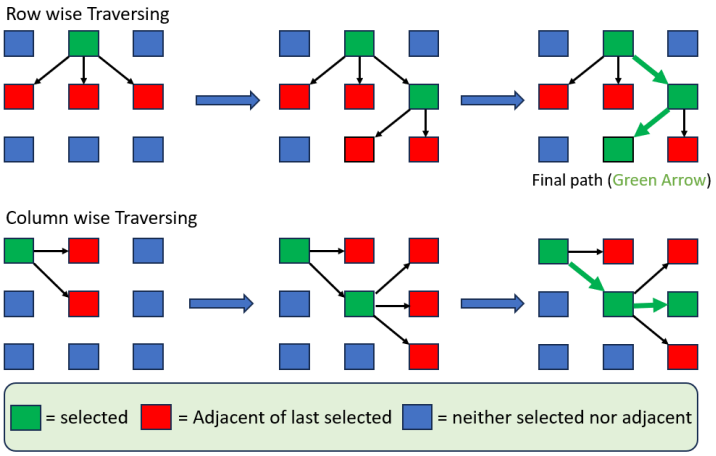
L. CSE_Gladiators

1 second, 256 megabytes

We are all familiar with the famous video game Clash of Clans, which many of my friends enjoy during their free time. Jahid Hasan Khan Ornob and Hossain Anjum Ratul have created a clan for us, consisting of N players. With the Clan War League approaching, leaders **H.A.R** and **KHaN** are organizing special war training sessions. They have designed a special square base with M X M defenses, each with an infinite attacking range. H.A.R and Khan, being very proactive, have tailored unique bases for each player.

Every player must destroy the entire base using only the Archer Queen, who starts with hitpoints H. She has a unique ability: upon launching, she can fire a **giant arrow**. If she fires the arrow row-wise, she can only destroy **one** defense **per** row but must maintain a row chain by targeting **adjacent defenses** (i.e., for row-wise attacks, $A_{(i+1)(j-1)}, A_{(i+1)j}, A_{(i+1)(j+1)}$ are adjacent to A_{ij}, and she can choose any one of them), as well as corresponding columns.

Additionally, the Archer Queen cannot choose both traversal methods simultaneously. If she selects row-wise traversal, she can destroy exactly M defenses (one defense per row). Alternatively, if she chooses column-wise traversal, she can destroy exactly M defenses (one defense per column). Finally the destroyed defenses must be adjacent to each other. For Clarification:



Then The sequence of events is as follows:

1. The giant arrow destroys the targeted defenses. (upon launching)
2. The remaining defenses damage the queen (i.e., H decreases by d; where d is the sum of all remaining defenses).
3. The queen targets and destroys a defense if her health is still above 0.

Continue **step 2** and **3** until either all defenses are destroyed or the queen's hitpoints drop to 0.

Will the $i'th$ player win the match if they use the Archer Queen optimally?

Input
The first line contains a single integer N $(1 \leq N \leq 50)$ — the number of players in the clan.

The first line of each player contains two numbers M and H $(1 \leq M \leq 10^2; 1 \leq H \leq 10^{12})$ — length of the squire base and initial hitpoints of Archer Queen.

The next M lines of each player contains M numbers A_{ij} $(1 \leq A_{ij} \leq 10^3)$ — The attacking power of each defense.

Output
For each player, Print "**YES**" if $i'th$ player can destroy the whole base. Otherwise print "**NO**".

N.B: Output is case insensitive.

input
2 2 11 4 5 5 6 3 100 5 1 10 2 17 5 11 15 6
output
NO YES

For the second player, the optimal game-play is as follows,