DIU Take-Off Programming Contest Fall 2022 Slot B

Daffodil International University

https://toph.co/c/diu-take-off-fall-2022-slot-b

Toph

Schedule

The contest will run for **3h0m0s**.

Authors

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Rules

This contest is formatted as per the official rules of ICPC Regional Programming Contests.

You can use C++11 GCC 5.3, C++11 GCC 7.4, C++14 GCC 5.3, C++14 GCC 8.3, C++17 GCC 9.2, C++20 GCC 12.1, C11 GCC 12.1, and C11 GCC 9.2 in this contest.

Be fair, be honest. Plagiarism will result in disqualification. Judges' decisions will be final.

Notes

There are 8 challenges in this contest.

Please make sure this booklet contains all of the pages.

If you find any discrepencies between the printed copy and the problem statements in Toph Arena, please rely on the later.

A. Wise Decision

The programming Contest is a challenging and fun opportunity for students to improve their programming skills. The event encourages the development of creative problem-solving and communication skills as students work with their teammates to generate solutions to programming problems.

After finishing Higher Secondary Education you and your friend Happy got admitted to CPU(Contest Programming University). There your friend got very motivated hearing the stories of the alumnus of CPU who are in successful positions in life. The one thing common between them is they were all Competitive programmers. Your friend wants to be like them.

One day he heard there will be an Intra University contest at your university. This is a very big chance for your friend to start his competitive programming career. But He learns that it is a team contest you being his only friend who is a very good problem solver. He approached you and motivated you to participate with him. You and your friend Happy Decided to participate in your upcoming Intra-University contest. Now in the first problem your team has a problem where you guys have to print a quote **"You can not solve a problem until you are asking the right question**"(**without quotation**). The good news is you solved the problem but the bad news is your teammate discouraged you not to submit the problem. But you are confident with your solution. Here is your solution code.

```
#include<stdio.h>
int main(){
    printf("You can not solve a problem until you are asking the
right question.\n");
}
```

Now run the code and decide if you should submit it or not. If you submit the code all the contest judges are waiting to see will your code pass their test.

Input

No Input.

Output

Read the statement carefully. Don't forget to print a newline('\n') at the end of the quote.

B. Upps_Accepted

Who is a competitive programmer. He is a regular contestant in Top_Coder. Top_Coder is an online competitive programming platform, where programmers can find various problems for all categories. Today there was a contest called Try_Your_Best and this contest is organized by Top_Coder Online Judge. Today's Contest Who did very well. **His Current Contest rating is 1535**. He used a tool which is a prediction tool that can predict his rating before his contest final result. Who is very lazy to check his final rating. Now can you help him to predict the final rating of Who before the final result of the contest?

Input

The first line of each test case contains a single integer **N** $(-10^7 \leq N \leq 10^7)$ the predicted rating for Who.

Output

You have to print the final rating of Who. **Be careful about the newline('\n') at the end**

Samples

Input	Output
125	1660

Input	Output
256	1791

Read Problem Very Carefully

C. Happiness

Nobody can deny that most of us love candy. But addiction in it brings us to the dentist.

Two friends **Andy** and **Enan** have to play a game which is given by their teacher. The teacher gave them different numbers of candies to teach them counting. The teacher told them to count the number of candies each one got.

They counted. After counting **the one getting the most candies** becomes happy.

Given Andy's candy count, **A,** and Enan’s candy count, **B**, you have to tell who became happy.

Input

The first line contains two integers **A** and **B**, denoting the number of candies Andy and Enan got respectively.

$$\mathbf{1 \leq A, B \leq 10^5 \text{ and } A \neq B}$$

Output

You have to output “Andy is Happy.” when **A is greater than B**. Otherwise “Enan is Happy.” without the quotations. Check out the samples for more clarification.

Samples

Input	Output
7 2	Andy is Happy.

Input	Output
4 6	Enan is Happy.

Be careful about the newline(‘\n’) at the end.

D. Apocalypse

After a long time, finally a sunny day has risen on this dark clouded earth. World isn't the same as before, it has changed for the worse. A pandemic broke out and wiped out almost 90% of the population because no one managed to find a Cure. But all hopes are not lost yet, because the great minds from $ACM(AdvancedCosmosMartyrs)$ managed to build a time machine! One of the chosen ones, called "James Cole" and one of his co-workers are the candidates for travel time and change this awful future. The time traveling machine works in a complicated manner, there will be given years $A$and B**.**

1. If $A > 12$ Year and $B\ is\ even$ Year then they will jump to $A - B$ Years
2. If $A > 12$ Years and $B\ is\ an\ odd$ Year then they will jump to $A + B$ Years
3. If $A \leq 12$ Year and $B\ is\ even$ Year then they will jump to $A + B$ Years
4. If $A \leq 12$ Year and $Bis\ an\ odd$ Year then they will jump to $A - B$ Years

Input

Each test case contains Two integers A, B.
$1 \leq B < A \leq 10^5$

Output

You have to print the Year they will land. Don't forget to print a newline('\n') at the end of every test case.

Samples

Input	Output
100000 24	99976

Input	Output
2 1	1

E. The Toppers

BheraMara University organized a contest called **Ac_Hobe programing contest**. This contest is mainly for 1st year students. This contest is mandatory for all students because the students can know what programming is. The contest organizer wants to make that contest for students more interesting, so they decided to take two rounds of this contest. The first one is the Preliminary Contest and the second one is the Main contest. The **Top 300 contestants** in the Preliminary round can participate in the Main Round. The organizer of the contest gives you an array that contains the **rank of different contestants** in the preliminary round and asks you to count the number of contestants who are eligible for the main round.

Input

The first line will be a single integer **N** $(1 \leq N \leq 1000)$ indicating the length of the array.

The second line contains **N integers** $a_1, a_2, \ldots..a_n (1 \leq a_1 \leq 1000)$— the elements of the array **a** which are **the rankings** of the contestants in the preliminary round.

Output

You have to output in one line, the number of total contestants, who can participate in the main round of the **Ac_Hobe** programing contest. Check out the samples for clarification.

Samples

Input	Output
4 1 2 3 4	4

Input	Output
5 100 200 300 400 500	3
Here the first three contestants rank is in the top 300, so they can take participate in the main round.	

F. Try To Learn

Habu and Babu are best friends. Recently Habu decided to go abroad for higher studies.

That's why recently Habu took admission in Khub_Bhalo_English_Shikhai Coaching Center. Recently, Habu has improved his English skill better than before. Habu and Babu have some good habits. Practicing in Spoken English is one of them. But Nowadays Habu finds many wrong spellings whenever Babu Speaks. **Suppose we choose a word "listen" which is pronounced correctly by silencing 't' in that word. Sometimes it may not only be one character but 2-3 or more characters are not pronounced**. One Day Habu and Babu are sitting on a tea stall and suddenly Habu say's, hey Babu! Recently I found some mistakes on your Spellings. Babu replied, tell me those mistakes, I want to correct them.

Now your task is to take a word from Habu and take some letters that will not be pronounced in this word and help Babu pronounce that word without those characters.

Note: It is guaranteed that pronounced string will not be an empty string.

Input

The first line will be a single integer T indicating the number of test cases.

The first line of each test case contains two integers n and m - the length of the string s and the number of characters which will not be pronounced in that string.

The second line contains the string s.

The third line contains m space separated lowercase alphabets.

$(\mathbf{1 \leq T \leq 10^2})$

$(\mathbf{1 \leq N \leq 10^4})$

$(\mathbf{1 \leq M \leq 26})$

Output

You have to output T lines in format **"Case X: Y"(without quotes)** where X is the number of test cases starting from 1 and Y is the result of the test case which is the correct pronunciation of the string. Check out the samples for clarification.

Samples

Input	Output
1 6 2 okfine f e	Case 1: okin

G. Shapes Are All Around

Prova is a school girl.She perceives shapes all around her. Wherever she went she saw shapes like rectangles, circles, triangles etc

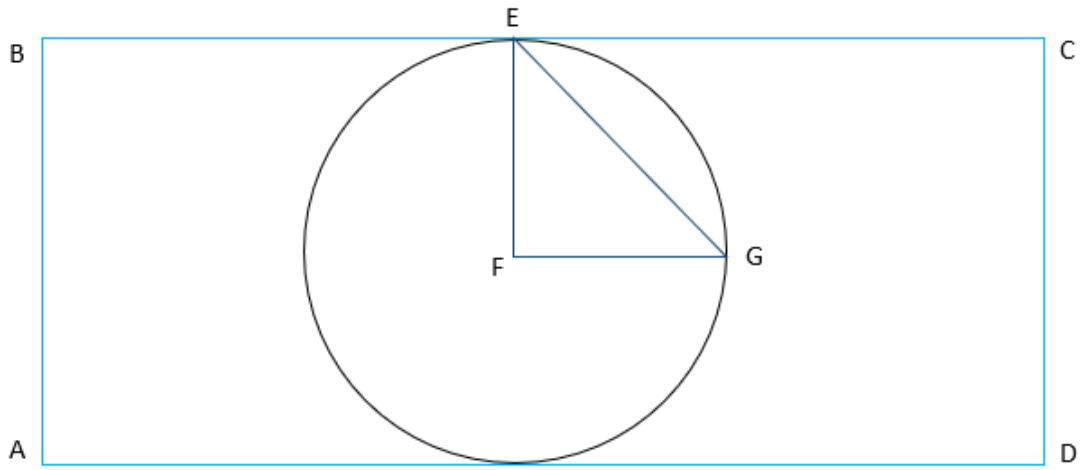
As Prova loves shapes. One night she has a dream and realizes that there is some relationship between rectangle, circle and triangle. Being a problem solver she can't believe it without proof. So she drew about it by the following operations.

1. Draw a rectangle **ABCD**.

2. Inside the rectangle she draws the biggest circle with center **F**.

3.Inside the circle She draws the biggest right-angle triangle **ΔEFG**. Where **F** is the center of the circle and angle **∠F** is the right-angle.

Here is a sample picture of given description. This can not be the perfect example for all cases.



You are given the coordinate of **A** and **C.** Where **AC** is the Diagonal of Rectangle.Calculate the size of **EG.**

Input

Each test contains multiple test cases. The first line contains a single integer **t (1≤t≤** 10^4**)** — the number of test cases. For each next t lines contains 4 integers $x1, y1, x2, y2$ .the coordinate of **A & C.**

Where **(x1,y1)** belongs to **A** and **(x2,y2)** belongs to **C**. Where **1≤(x1,y1,x2,y2)≤**10^4&& **X1!=X2 && Y1!=Y2.**

Output

You Have to give output for each independent query with 10 digits after decimal with newline **('\n')** at the end .

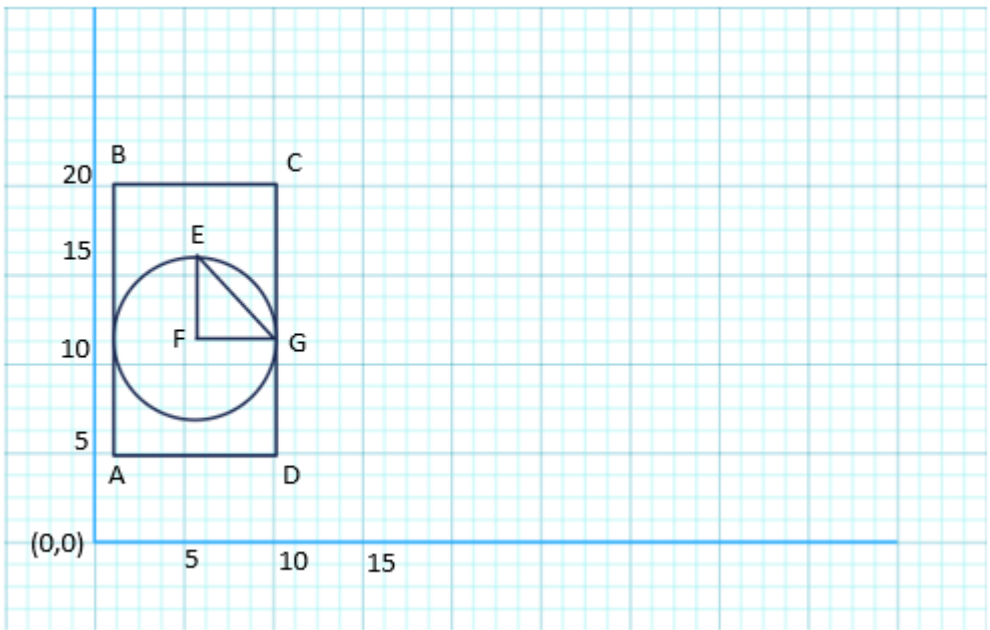
Your answer is considered correct if its absolute or relative error doesn't exceed10^{-6}

Samples

Input	Output
4 1 5 3 7 4 100 10 20 100 100 1 5 1 2 9 9	1.4142135624 4.2426406871 67.1751442127 4.9497474683

Input	Output
2 1 1 100 169 1 5 10 20	70.0035713375 6.3639610307

In the second test case of second sample we have (x1,y1)(1,5) and (x2,y2)(10,20).
The shapes will look like the picture below



H. Count the Triplet

Bob is a high school student. Today his class teacher taught them about prime numbers and gave him a task to solve.

The task is, the class teacher gave an array **a** with different types of positive integers and Bob has to select a triplet which is a set of three numbers **(a[i], a[j]** and **a[k])** from the array where $(1 \leq i < j < k \leq N)$ so that the three values of the triplet are prime numbers.

Now the teacher asked how many triplets Bob can select from the array so that the following condition can hold.

Note: Prime numbers are natural numbers that are divisible by only 1 and the number itself. Some of the prime numbers include 2, 3, 5, 7, 11, 13, etc. Here 1 is not considered as a prime number.

Input

The first line contains one integer **T** $(\mathbf{1 \leq T \leq 10})$the number of test cases.

The first line of each test case contains one integer N $(3 \leq N \leq 5 * 10^3)$ - the length of the array.

The second line of each test case contains **N** integers $\mathbf{a_1, a_2, ..., a_n}$ $(1 \leq a_1 \ldots a_n \leq 10^9)$ — the elements of the array a.

Output

You have to output **T** lines in format **"Case X: Y "(without quotes)** where **X** is the number of test cases starting from **1** and **Y** is the result of the test case, the total number of prime triplets. Bob can take from the array.Check out the samples for clarification.

Samples

Input	Output
1 4 4 2 3 5	Case 1: 1

Input	Output
2 4 2 3 5 7 5 1001 11 2 8 11	Case 1: 4 Case 2: 1