

DIU Take Off Programming Contest, Summer 2017

Problemset

A. Welcome!!!

Competitive programming is a mind sport usually held over the internet or a local network, involving participants trying to program according to provided specification. Solving a problem is very much fun. Daffodil International University has a [Competitive Programming and Problem Solving Community](#). The community organizes classes to train students those who are interested in problem solving. As a first lesson, the community gives a task to students to write a program which will print “Let’s take off right now!”. Assume that you are also a student and you have to solve it. For this you just have to write the following code exactly and just submit.

```
int main()
{
    printf("Let's take off right now!\n");
    return 0;
}
```

Input

There is no input in this problem. Only write the code exactly and submit.

Output

Let’s take off right now!

Sample Input

/* There is no input for this problem */

Sample Output

Let's take off right now!

Notes: Be careful of "new line" at the end of output and spaces between words!

B. Blue Division

It's 2024 now. **Daffodil International University** is well known for producing the best programmers of Bangladesh. On a statistical analysis, it's found that in Bangladesh's job market about 20-30% employees are from Daffodil International University. It's because of the training programs which were initiated in 2016 by **Syed Akhter Hossain** and **Mohammad Mahmudur Rahman**.

They knew that there's no way to reduce the job crisis of CSE students without developing their programming skills. So, they categorized the students into 3 divisions.

1. Green Division
2. Blue Division
3. Red Division

These divisions are designed to push a student from Beginner to a World Class Programmer. Only those who have determination, hard working attitude and perseverance can make it to the World Class Level, we call them "Red Division Programmer". But no matter what, you'll get a huge benefit even if you can stay in the Blue Division. But before that, you need to pass the Green Division. It's not that hard. **You just need to solve minimum 150 programming problems in the suggested Online Judges to pass Green Division.** Then you can count yourself as a **Blue Division Member** and join the training classes.

Now, as you are an alumni of DIU and a former Red Division Programmer, the newbies keep knocking you asking **if his solve count is enough to join Blue Division**. Write a simple program that scans a programmer's solve count **X** and prints **"Welcome to Blue Division"** (without quotes) if he has **150 or more** solve count. If he has **less than 150** solves print **"Good things take time"** (without quotes).

Input

You'll be given only one integer **X** where **X** will be less than 10000.

Output

Print a one line message according to the problem.

Sample Input

116

232

Sample Output

Good things take time

Welcome to Blue Division

Notes: Be careful of **"new line"** at the end of output and **spaces between words!**

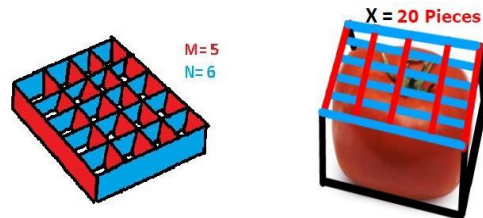
Problem setter: Mahmud Sajjad Abeer

C. Hoto Doridro Vampire

The stories you've heard about the **Ancient Vampires** were all wrong. Let me tell you the real story.

Vampires didn't like the human blood that much. What they liked at that time is **Tomato Juice** extracted from "Pure Red Juicy Rectangular Tomatoes". It's a special kind of Tomato only for Vampires.

But there was a **Hoto Doridro** vampire who couldn't afford more than one Tomato per month. He used to slice that tomato into several pieces so that he could drink the juice for several days. He used each slice to extract Tomato Juice that he drunk at midnight. Rest of the days he had to starve. To slice that Rectangular Tomato into pieces, he used a Rectangular Slicer which had M horizontal and N vertical steel blades as shown in the picture. The tomatoes he bought were exactly $M \times N$ size from the top view. The slicer could cut that Tomato into X pieces.



Now, can you tell the value of X according to the **Hoto Doridro** vampire's story?

Input

There will be only one line of input containing two integers M and N . Where $2 \leq M, N \leq 10000$.

Output

Print an integer X , where X is the number of pieces the slicer could make. Check the sample input output for better clarification.

Sample Input

5 6

8 11

Sample Output

20

70

Notes: Sample 1 is explained on the given picture. Be careful of "new line" at the end of output!

Problem setter: Mahmud Sajjad Abeer

D. Imlas and his sedlief

There is a boy **C. Imlas** who is completely fed up with his life. He thinks he's going to stay single forever. So, what he does to make himself happy is very interesting. Everyday he gets in a Restaurant at night. There are **N** tables in that restaurant.

On each table, there's a random number of people. If the number is odd(meaning that there's at least one person who's single) he gets happy and if the number of people in that table is even(meaning that there's no single person in that table) he feels depressed again. Such a painful story!!!

Nevermind. You'll be given **N** integers containing **the number of people in each table**. What you have to do is, **print the number of tables that contain an odd number of people and the number of tables that contain an even number of people**.

Input

The first line will be an integer **N** ($1 \leq N \leq 100$) which denotes **the number of tables** in that restaurant. Next line contains **N** space separated integers **ranging from 1 to 100** denoting **the number of people in that table**.

Output

Print a line with two integer **"O E"**(Without quotes). **O** is the **number of tables with an odd number of people** and **E** is the **number of tables with an even number of people**. Check out the notes for clarification.

Sample Input

5
2 3 6 8 1

3
1 2 3

Sample Output

2 3

2 1

Explanation of the given sample: On the first sample, there were 5 (N) tables. 2 tables which had an odd number of people(3 and 1) and 3 tables which had an even number of people(2, 6 and 8). So the answer is 2 and 3.

On the second sample, there were 3 tables. On the 1st and 3rd table there were odd number of people and the 2nd table had even number of people. So, the answer is 2 and 1.

Notes: Be careful about output format, spaces and newlines.

Problem setter: Muhaiminul Islam Jim

E. Life is beautiful

Life is never easy for anyone. Ups and downs are part of life. Without downs, the ups would mean nothing.

Let's consider two consecutive state of your life a and b respectively. If the value of b is strictly greater than a , then b can be called as an up state. Similarly, if b is strictly less than a , then b can be called as a down state of life.

In a **Regular Human life**, a down state comes immediately after an up state and an up state comes immediately after a down state.

A life is called a **Beautiful life** if the sum of the value of all the ups and downs are **ZERO**.

You will be given 10 consecutive states of a human life. If this life defines a **Beautiful and Regular Human life** then print **"Yes"** and **"No"** (without quotes) if not.

Input

On the first line, there will be an integer T ($1 \leq T \leq 100$) the number of test cases. For each test case there will be one line containing 10 integers ($a_1 a_2 \dots a_{10}$), where each a will be between -50 to 50 (inclusive).

Assumptions: The first state of a life a_1 is always **Zero** (birthday) and the second state of a life a_2 is always **an integer greater than Zero** (childhood).

Output

You have to output T lines containing **"Case X: Y"** (Without quotes) where X is the case number and Y will contain a message **"Yes"** or **"No"** (without quotes) according to X^{th} test case. See the sample for clarification.

Sample Input

```
2
0 1 -1 1 -1 1 -2 1 -1 1
0 5 3 18 2 0 -5 8 4 49
```

Sample Output

```
Case 1: Yes
Case 2: No
```

Notes: Be careful about the **output format** and **spaces**.

Problem setter: Mahmud Sajjad Abeer

Dataset: Sajal Jayanto

F. Noradhom's fish fest

Mr. Matha Mota Rogchota Noradhom is arranging a fish fest for the students of **Daffodil International University** this year on Dhanmondi 27 RiverBank. It's a huge arrangement. He invited N students to join the "**Noradhom's Fish Fest**". But there's a problem, he managed N fishes to serve but he had only one frying pan in which he can fry K fishes at a time. This is a total mess, but he has no more money to buy some extra frying pans as they are very expensive here. He has no idea what to do now to serve all the fishes taking shortest time possible so that the fest ends well with happy faces. Suddenly his well-wisher **Mr. Solution Achhe Habibi** came up with a very powerful idea to help Mr. Noradhom. Daffodil is arranging "**DIU Take Off Programming Contest**" on **11th August, 2017**. He suggested Mr. Noradhom to talk to the organizer as he knew that the programmers can solve any problem using their majestic problem solving skill. So, Mr. Noradhom offered the contest organizer that if any of the problem solvers can solve this problem he'll give a special treat to him and the organizer.

Today is that contest and you are the best problem solver in DIU. So, you have to solve this problem for Mr. Noradhom. He has N fishes. His only frying pan can fit up to K fish. Another assumption is that each side of each fish has to be fried for F minutes. As a reminder, fish is usually fried on **two sides**. Now, count the minimum time Mr. Noradhom needs to fry all the fish he has.

Input

The first line of the input will be an integer T . After that, T lines will be given. On each of those lines, there will be 3 integers N , K , F separated by spaces.

Here, $1 \leq T \leq 10^4$, $1 \leq N \leq 10^{12}$, $1 \leq K \leq 10^{12}$, $1 \leq F \leq 10^6$.

Output

You have to output T lines. Each line should contain an output "**Case X: Y**" where X is the line number starting from 1 and Y is the shortest time to fry both sides of all the fishes.

Sample Input

Sample Input:

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

Sample Output

Sample Output:

```
Case 1: 3
Case 2: 4
```

Problem setter: Mahmud Sajjad Abeer

Alternate writer: Rajdip Saha, Muhaiminul Islam Jim

G. Satire

This problem is so easy that the problem setter didn't even want to waste his time on writing a good statement. Given N and M , just find out the largest number which can divide $N!$ ($N \times N-1 \times N-2 \times \dots \times 1$) and is a power of M . Too easy? I know. And as because such an easy problem was selected for a programming contest, the setter felt so happy that he'll give treat to any contestant who'll solve this problem in this contest although he's known as a renowned kipta.

Notes: In computer science, a pointer is a programming language object, whose value refers to (or "points to") another value stored elsewhere in the computer memory using its memory address. A pointer references a location in memory, and obtaining the value stored at that location is known as dereferencing the pointer. As an analogy, a page number in a book's index could be considered a pointer to the corresponding page; dereferencing such a pointer would be done by flipping to the page with the given page number and reading the text found on the indexed page. And you know what? You've just wasted about five precious minutes of your contest time. Happy Coding! (Wikipedia)

Input

Input starts with an integer T ($T \leq 25$), denoting the number of test cases.

Each case starts with a line containing two integer N ($1 \leq N \leq 10^6$) and M ($1 \leq M \leq N$).

Output

For each test case, print the required number in a single line. As the number can be too large, just print the number MOD $10^7+7(10000007)$. See sample output for clarification.

Sample Input

1
5 2

Sample Output

8

Problem setter: Muhaiminul Islam Jim
Solution Writer: Mahmud Sajjad Abeer
Alternate Writer: Rajdip Saha

H. Rescue Harry Potter

In Wizardland, Harry Potter along with his friends has got stuck in a magical Island. They have tried all the possible ways to get themselves out but nothing worked. At the evening a Wizard appeared to help them but on one condition. Wizard wants to know the number of words he uses in his magical spells to transform his spell stronger but he is not good at counting so he tries to utilize the situation. The Wizard tells them he will help them to escape the island if they can count the words for him. Being the spell too big, it was impossible to count the words correctly and as you are the only programmer in Harry Potter's FACEBOOK friend list, he seeks your help. You are going to help him by counting the words in the Wizard's magical spell. A "word" is defined as a consecutive sequence of letters (upper and/or lower case). Be careful about the spooky words in the spell.

Input

The input starts with a single line containing T ($1 \leq T \leq 500$) denoting the number of test cases. Each test case will have a line of Spell containing multiple words (at least one). The length of the string will not exceed 50000. In the input file ' ' (space) will be replaced by '_' (underscore). Read sample input output carefully.

Output

For each test case print a single line containing "Case X:" (without quotes) where X is the test case number (starting from 1) followed by a space then the number of words in the X^{th} spell.

Sample Input

```
3
Albus_Dumbledore_Forceful_Spell.
I_did!_I_did!_I_did_taw_a_9putty_tat.
Shsssssssh..._I_am_hunting_wabbits.
```

Sample Output

```
Case 1: 4
Case 2: 10
Case 3: 5
```

Problem Setter: Azharul Islam Tazib

Dataset: Rajdip Saha