INSTRUCTIONS

DESCRIPTION | SUBMISSIONS

Easy Problem

Ram went to the store to buy chocolates. In addition to the chocolate he likes, the chocolate box also contains other chocolates he doesn't like. He told the shopkeeper he would purchase the chocolate box if it contained more than half of the chocolates he liked.

Each chocolate price is one rupee. To make Ram purchase a chocolate box, the shopkeeper must remove the minimum number of chocolates that Ram dislikes.

Write a program to print the final cost of the chocolate box.

Input

The first line of input contains an integer `T`, representing the number of test cases.
The next `T` lines of input contain the string `B` and character `L` by space separated.

Where,

- The string `B` represents the chocolate box (each character represents a chocolate).
- The character `L` represents the chocolate that Ram likes.

Output

The output should be `T` lines containing an integer representing

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Medium Problem - 1

The building contains different rooms, some of them are dangerous and some of them are safe. There is one person standing outside each room, and the rooms are adjacent to each other.

Dangerous rooms are labelled with the letter `d`, and safe rooms are labelled with the letter `s`. Everyone wants to go into the safe room. For that, they need to take steps toward a safe room.

Consider one step to move to an adjacent room, and write a program for each person that prints the minimum steps required to reach the safe room.

Input

The first line of input contains an integer `T`, representing the number of test cases.
The next `T` lines of input contain string `R`, representing the rooms, each room labelled with `d` or `s` letters, based on the type of room.

Output

The output should be `T` lines containing space-separated integers representing minimum steps required to reach the safe room.

← PYTHON IDP TEST

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Explanation

For example, if the given test cases are 2,

Test case 1: R = sddsd

	s	d	d
Steps to safe room	0	1	1

- So the output is 0 1 1 0 1

Test case 2: R = sdddds

	s	d	d
Steps to safe room	0	1	2

- So the output is 0 1 2 2 1 0

Sample Input 1

```
2
sddsd
sdddds
```

Steps to safe room	0	1	2

- So the output is **0 1 2 2 1 0**

Sample Input 1

```
2
sddsd
sddddds
```

Sample Output 1

```
0 1 1 0 1
0 1 2 2 1 0
```

Sample Input 2

```
2
sddddds
dss
```

Sample Output 2

```
0 1 2 3 2 1 0
1 0 0
```

NXT WAVE

← PYTHON IDP TEST

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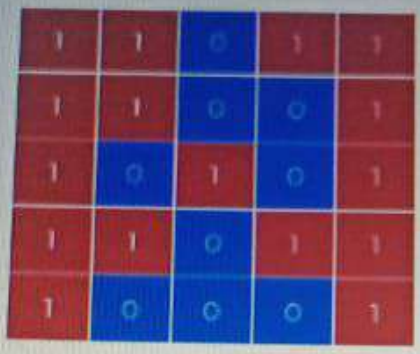
Hard Problem

There is a wall in Williams house. In order to make the wall look more appealing, William asked James to paint the blocks red and blue. You may assume that below is a picture of the wall after James painting has been completed.



In the above picture, the red color blocks are represented with 1 and the blue color blocks are represented with 0.

A connected area is a group of the same color blocks which are can be four way connected either horizontally or vertically (not diagonally).

For example, the below image contains four red colored connected areas.

wAVE_

← PYTHON IDP TEST

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For example, the below image contains four red colored connected areas.

After looking at the painting, William asked James for a largely connected area with red color on the wall.

James left with a small amount of paint that would cover only one red color block. James can repaint one blue color block with red color in order to connect with other red colored blocks.

Write a program to find the largest connected area with red color on the wall. To do that, you may change a maximum of one blue color (0) block to red color (1) block. After applying this operation, print the size of the largest red color area.

← PYTHON IDP TEST

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Note

A large area of red color on the wall is a group of 1's connected four-directionally (North, South, East, West).

Input

The first line of input contains an integer `N` representing the length of the wall `(N X N)` .
The next `N` lines contain space-separated integers of `0` and `1` representing the blue and red blocks on the wall.

Output

The output should be a single line containing an integer representing the largest red color area on the wall.

Explanation

For example, if the given integer is 5

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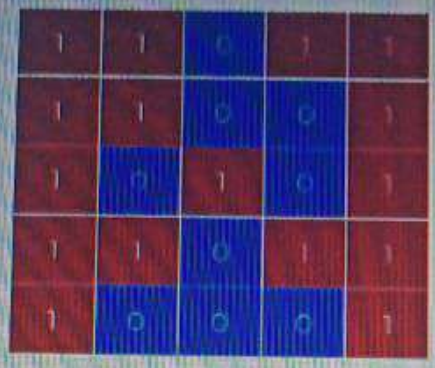
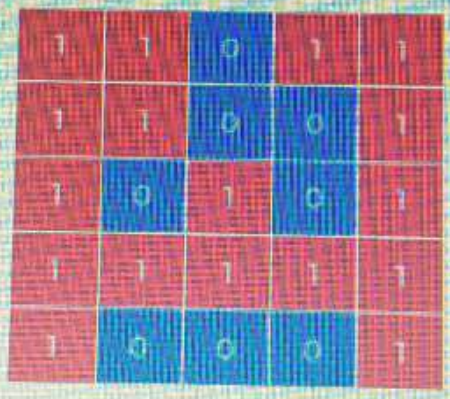
Explanation

For example, if the given integer is 5



When we replace a maximum of one blue color (0) block to red color (1) block and connect three 1s. we get largest red color area on the wall = 17



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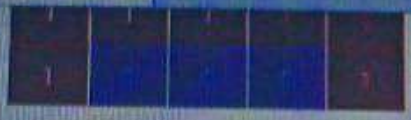

So the output is 17.

Sample Input 1

```
2
1 0
0 1
```

Sample Output 1

```
3
```

Sample Input 2

```
5
1 1 0 1 1
1 1 0 0 1
1 0 1 0 1
1 1 0 1 1
1 0 0 0 1
```

Sample Output 2

```
17
```

DESCRIPTION | SUBMISSIONS

Medium Problem - 2

Tina is a mathematics teacher. She gave multiple baskets of apples, with different prices on each basket to her students. She asked them to combine baskets and set a new price for the combined baskets by following the below process.

- In the given baskets, if the GCD of the prices of any two adjacent baskets is greater than 1, then combine the two baskets of apples into one basket.
- When two baskets are being combined, the price of the combined basket should be the LCM (Least Common Multiple) of those two baskets prices.
- Students must continue this process as long as the GCD of the prices of any two adjacent baskets is greater than one.

Write a program to solve the above problem and print the final basket prices.

Input

The first line of input contains an integer `T`, representing the number of test cases.

The next `T * 2` lines of input contain an integer `N` representing the number of baskets and the `N` number of space-separated integers representing the prices of each basket.

Output

Output

The output should be `T` lines containing space-separated integers representing final basket prices.

Explanation

For example, if the given test cases are 2,

Test case 1: `N = 6` , `prices = 12 4 2 3 6 7`

- `12, 4` are two adjacent basket prices whose GCD is greater than `1` , so combine the two baskets of apples into one basket and use their respective LCM as their basket price i.e `12` .
  As a result, there will be `5` new baskets, and their prices will be `12 2 3 6 7` .

- `12, 2` are two adjacent basket prices whose GCD is greater than `1` , so combine the two baskets of apples into one basket and use their respective LCM as their basket price i.e `12` .
  As a result, there will be `4` new baskets, and their prices will be `12 3 6 7` .

- `12, 3` are two adjacent basket prices whose GCD is greater than `1` , so combine the two baskets of apples into one basket and use their respective LCM as their basket price i.e `12` .
  As a result, there will be `3` new baskets, and their prices will be `12 6 7` .

- 12, 6 are two adjacent basket prices whose GCD is greater than 1, so combine the two baskets of apples into one basket and use their respective LCM as their basket price i.e 12. As a result, there will be 2 new baskets, and their prices will be 12 7.
- There are no two adjacent basket prices whose GCD is greater than 1.
- So the output is 12 7.

Test case 2: N = 7, prices = 2 2 1 1 3 3 3

- 2, 2 are two adjacent basket prices whose GCD is greater than 1, so combine the two baskets of apples into one basket and use their respective LCM as their basket price i.e 2. As a result, there will be 6 new baskets, and their prices will be 2 1 1 3 3 3.
- 3, 3 are two adjacent basket prices whose GCD is greater than 1, so combine the two baskets of apples into one basket and use their respective LCM as their basket price i.e 3. As a result, there will be 5 new baskets, and their prices will be 2 1 1 3 3.
- 3, 3 are two adjacent basket prices whose GCD is greater than 1, so combine the two baskets of apples into one basket and use their respective LCM as their basket price i.e 3. As a result, there will be 4 new baskets, and their prices will

- There are no two adjacent basket prices whose GCD is greater than 1 .
- So the output is 2 1 1 3.

Sample Input 1

```
2
6
12 4 2 3 6 7
7
2 2 1 1 3 3 3
```

Sample Output 1

```
12 7
2 1 1 3
```

Sample Input 2

```
2
4
5 6 7 8
4
1 2 3 4
```

Sample Output 2

```
5 6 7 8
1 2 3 4
```