A water problem

Time Limit: 5000/2500 MS (Java/Others) Memory Limit: 65536/65536 K (Java/Others)
Total Submission(s): 3684 Accepted Submission(s): 1287

Problem Description

Two planets named Haha and Xixi in the universe and they were created with the universe beginning.

There is 73 days in Xixi a year and 137 days in Haha a year.

Now you know the days N after Big Bang, you need to answer whether it is the first day in a year about the two planets.

Input

There are several test cases(about 5 huge test cases).

For each test, we have a line with an only integer $N(0 \leq N)$, the length of N is up to 10000000.

Output

For the i-th test case, output Case #i: , then output "YES" or "NO" for the answer.

Sample Input

```
10001
0
333
```

Sample Output

```
Case #1: YES
Case #2: YES
Case #3: NO
```

Author

UESTC

Source

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Recommend

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Zhu and 772002

Time Limit: 2000/1000 MS (Java/Others) Memory Limit: 65536/65536 K (Java/Others)
Total Submission(s): 2330 Accepted Submission(s): 846

Problem Description

Zhu and 772002 are both good at math. One day, Zhu wants to test the ability of 772002, so he asks 772002 to solve a math problem.

But 772002 has a appointment with his girl friend. So 772002 gives this problem to you.

There are n numbers $a_1, a_2, \ldots, a_n$. The value of the prime factors of each number does not exceed 2000, you can choose at least one number and multiply them, then you can get a number b.

How many different ways of choices can make b is a perfect square number. The answer maybe too large, so you should output the answer modulo by 1000000007.

Input

First line is a positive integer T , represents there are T test cases.

For each test case:

First line includes a number $n(1 \le n \le 300)$, next line there are n numbers $a_1, a_2, \ldots, a_n, (1 \le a_i \le 10^{18})$.

Output

For the i-th test case , first output Case #i: in a single line.

Then output the answer of i-th test case modulo by 1000000007.

Sample Input

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

Sample Output

```
Case #1:
3
Case #2:
3
```

Author

UESTC

Source

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Magic boy Bi Luo with his excited tree

Time Limit: 8000/4000 MS (Java/Others) Memory Limit: 131072/131072 K (Java/Others)
Total Submission(s): 1512 Accepted Submission(s): 458

Problem Description

Bi Luo is a magic boy, he also has a migic tree, the tree has N nodes , in each node , there is a treasure, it's value is $V[i]$, and for each edge, there is a cost $C[i]$, which means every time you pass the edge i , you need to pay $C[i]$.

You may attention that every $V[i]$ can be taken only once, but for some $C[i]$, you may cost severial times.

Now, Bi Luo define $ans[i]$ as the most value can Bi Luo gets if Bi Luo starts at node i.

Bi Luo is also an excited boy, now he wants to know every $ans[i]$, can you help him?

Input

First line is a positive integer $T(T \leq 10^4)$, represents there are T test cases.

Four each test：

The first line contain an integer $N(N \leq 10^5)$.

The next line contains N integers $V[i]$, which means the treasure's value of node $i(1 \leq V[i] \leq 10^4)$.

For the next $N-1$ lines, each contains three integers u, v, c , which means node u and node v are connected by an edge, it's cost is $c(1 \leq c \leq 10^4)$.

You can assume that the sum of N will not exceed 10^6.

Output

For the i-th test case , first output Case #i: in a single line , then output N lines , for the i-th line , output $ans[i]$ in a single line.

Sample Input

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

Sample Output

```
Case #1:
15
10
14
9
15
```

Author

UESTC

欢

Danganronpa

Time Limit: 2000/1000 MS (Java/Others) Memory Limit: 65536/65536 K (Java/Others)
Total Submission(s): 1161 Accepted Submission(s): 770

Problem Description

Chisa Yukizome works as a teacher in the school. She prepares many gifts, which consist of n kinds with $a[i]$ quantities of each kind, for her students and wants to hold a class meeting. Because of the busy work, she gives her gifts to the monitor, Chiaki Nanami. Due to the strange design of the school, the students' desks are in a row. Chiaki Nanami wants to arrange gifts like this:

1. Each table will be prepared for a mysterious gift and an ordinary gift.

2. In order to reflect the Chisa Yukizome's generosity, the kinds of the ordinary gift on the adjacent table must be different.

3. There are no limits for the mysterious gift.

4. The gift must be placed continuously.

She wants to know how many students can get gifts in accordance with her idea at most (Suppose the number of students are infinite). As the most important people of her, you are easy to solve it, aren't you?

Input

The first line of input contains an integer $T(T \leq 10)$ indicating the number of test cases.

Each case contains one integer n. The next line contains n $(1 \leq n \leq 10)$ numbers: $a_1, a_2, \ldots, a_n, (1 \leq a_i \leq 100000)$.

Output

For each test case, output one line containing “Case #x: y” (without quotes) , where x is the test case number (starting from 1) and y is the answer of Chiaki Nanami's question.

Sample Input

```
1
2
3 2
```

Sample Output

```
Case #1: 2
```

Author

UESTC

Source

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wange2014

Rubik's Cube

Time Limit: 20000/10000 MS (Java/Others) Memory Limit: 65536/65536 K (Java/Others)
Total Submission(s): 60 Accepted Submission(s): 31

Problem Description

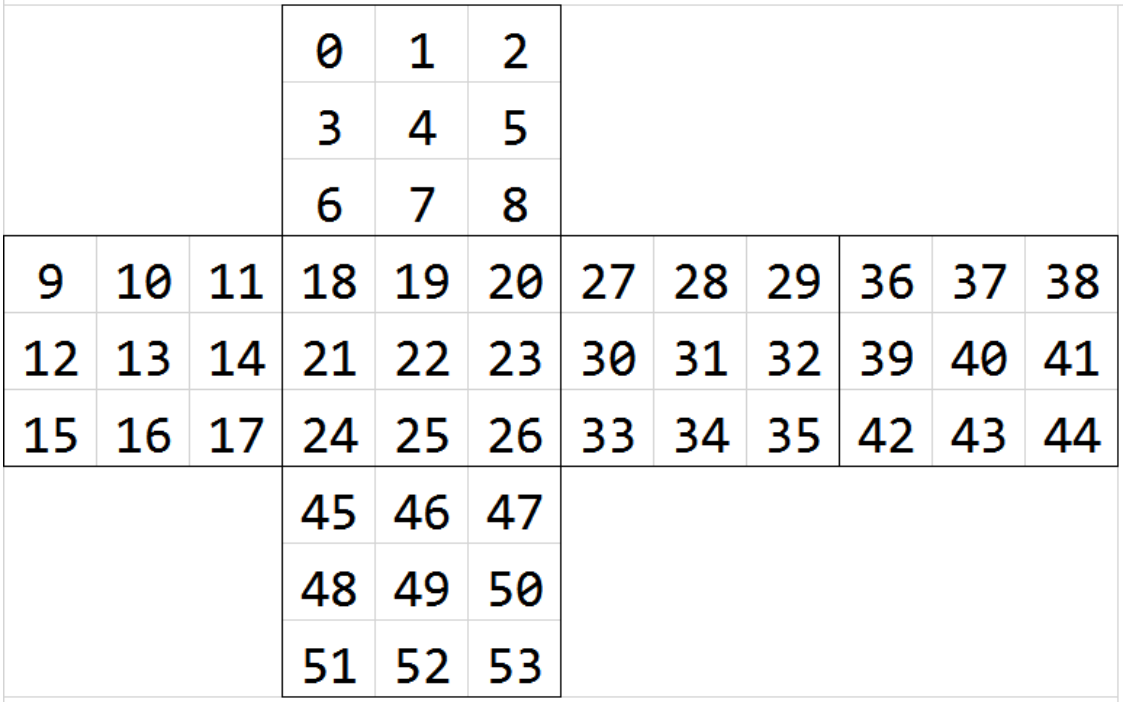
As we all know, Zhu is the wisest man. When Liao was ninety-nine years old, the Zhu appeared to him and said, "I am God Almighty; walk before me and be blameless.

I will confirm my covenant between me and you and will greatly increase your wisdom." At that time, Liao has a problem:

Liao has a Rubik's Cube and the surfaces of it are drawn as black or white. He can rotate it as the rules of the Rubik's Cube. Liao asked Zhu:"how many states the Rubik's Cube can reach?"

Zhu is omniscient and omnipotent, but he did not tell the answer. Can you tell the poor man the answer? Remember two states are regarded as the same one if you change views and find the two states is the same one.

For those of you unfamiliar with the puzzle, a Rubik's Cube, comes in the form of a cube where each face is divided into three rows and three columns (nine "squares". Any of the six faces of the cube may be rotated either clockwise or counterclockwise, which also rotates the three nearest squares on each adjoining face onto a new face, respectively.



Input

Intput contains multiple test cases.

The first line is an integer $1 \leq T \leq 10$, the number of test cases.

Each case begins with an integer n, indicating the number of the squares of blacks.

The next line contains n integers $a_1, a_2, .., a_n$, representing squares indexed as $a_1, a_2, .., a_n$ are black respectively. All a_i are defferent. The indexes of squares are showed in the pictures. $(0 \leq n \leq 5, 0 \leq a_i \leq 53)$.

Output

For each test case,output a single line "Case #x: y", where x is the case number, starting from 1. And y is the answer.

Sample Input

```
3
2
0 47
2
24 53
2
36 46
```

Sample Output

```
Case #1: 15
Case #2: 15
Case #3: 24
```

Author

UESTC

Source

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Statistic | Submit | Discuss | Note

Robots

Time Limit: 2000/1000 MS (Java/Others) Memory Limit: 65536/65536 K (Java/Others)
Total Submission(s): 89 Accepted Submission(s): 19

Problem Description

QXJ has N robots on the plane, the i-th is at (x_i, y_i), numbereded 1 to N. Every robot is painted by one kind of color, numbered 1 to M.

Each robots can move K times. In one move,a robot at (x, y) can move to $(x-1, y), (x, y+1), (x+1, y), (x, y-1)$.

After exactly K moves, she wants robots with same color to gather at the same postion and the robot on the i-th color gather at different postion with robots on (i-1)-th or (i+1)-th color.

Now she wants to know how many ways of moving these robots following to rules above.

Two ways are different if one of final postions of certain robot is different or there is at least one robot whose moving path is different.

Input

The first line is the number of test cases $T(T \leq 10)$.

The first line of each case contains three integer $N(1 \leq N \leq 200), M(1 \leq M \leq 20), K(1 \leq K \leq 500)$, indicating the number of robots ,the number of color and the number of steps robots can move.

The second line,contains M integer m_i, indicating the number of robots with the i-th color.

The robots numbered $[1, m1]$ are on the 1st color.The robots numbered $[m1+1, m1+m2]$ are one the 2nd color, ans so on.

The next N line,each contains two integers x_i, y_i, indicating the postion of i-th robots..

$(0 \leq |x_i, y_i| \leq 250)$.

Output

For each test case, output a single line "Case #x: y", where x is the case number, starting from 1. And y is the answer(module 10^9+7).

Sample Input

```
2
3 3 1
1 1 1
1 0
0 1
1 2
4 2 2
2 2
0 1
0 3
0 2
0 4
```

Sample Output

```
Case #1: 49
Case #2: 256
```

Mountain

Time Limit: 3000/1500 MS (Java/Others) Memory Limit: 65536/65536 K (Java/Others)
Total Submission(s): 381 Accepted Submission(s): 108

Problem Description

Zhu found a map which is a $N * M$ rectangular grid.Each cell has a height and there are no two cells which have the same height. But this map is too old to get the clear information,so Zhu only knows cells which are valleys.

A cell is called valley only if its height is less than the heights of all its adjacent cells.If two cells share a side or a corner they are called adjacent.And one cell will have eight adjacent cells at most.

Now give you N strings,and each string will contain M characters.Each character will be '.' or uppercase 'X'.The j-th character of the i-th string is 'X' if the j-th cell of the i-th row in the mountain map is a valley, and '.' otherwise.Zhu wants you to calculate the number of distinct mountain maps that match these strings.

To make this problem easier,Zhu defines that the heights are integers between 1 and $N * M$.Please output the result modulo 772002.

Input

The input consists of multiple test cases.

Each test case begins with a line containing two non-negative integers N and M. Then N lines follow, each contains a string which contains M characters.
$(1 \leq N \leq 5, 1 \leq M \leq 5)$.

Output

For each test case, output a single line "Case #x: y", where x is the case number, starting from 1. And y is the answer after module 772002.

Sample Input

```
2 4
.X..
...X
4 2
X.
..
..
X.
1 2
XX
```

Sample Output

```
Case #1: 2100
Case #2: 2520
Case #3: 0
```

Author

UESTC

Source

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Special Tetrahedron

Time Limit: 4000/2000 MS (Java/Others) Memory Limit: 65536/65536 K (Java/Others)
Total Submission(s): 881 Accepted Submission(s): 366

Problem Description

Given n points which are in three-dimensional space(without repetition).

Please find out how many distinct Special Tetrahedron among them. A tetrahedron is called Special Tetrahedron if it has two following characters.

1. At least four edges have the same length.

2. If it has exactly four edges of the same length, the other two edges are not adjacent.

Input

Intput contains multiple test cases.

The first line is an integer $T, 1 \leq T \leq 20$, the number of test cases.

Each case begins with an integer $n (n \leq 200)$, indicating the number of the points.

The next n lines contains three integers $x_i, y_i, z_i, (-2000 \leq x_i, y_i, z_i \leq 2000)$, representing the coordinates of the ith point.

Output

For each test case,output a line which contains"Case #x: y",x represents the xth test(starting from one),y is the number of Special Tetrahedron.

Sample Input

```
2
4
0 0 0
0 1 1
1 0 1
1 1 0
9
0 0 0
0 0 2
1 1 1
-1 -1 1
1 -1 1
-1 1 1
1 1 0
1 0 1
0 1 1
```

Sample Output

```
Case #1: 1
Case #2: 6
```

Author

UESTC

欢迎杭

This world need more Zhu

Time Limit: 12000/6000 MS (Java/Others) Memory Limit: 65536/65536 K (Java/Others)
Total Submission(s): 687 Accepted Submission(s): 150

Problem Description

As we all know, Zhu is the most powerful man. He has the infinite power to protest the world. We need more men like Zhu!

In Duoladuo, this place is like a tree. There are n vertices and $n-1$ edges. And the root is 1. Each vertex can reached by any other vertices. Each vertex has a people with value A_i named Zhu's believer.

Liao is a curious baby, he has m questions to ask Zhu. But now Zhu is busy, he wants you to help him answer Liao's questions.

Liao's question will be like "u v k".

That means Liao want to know the answer from following code:

```
ans = 0; cnt = 0;
for x in the shortest path from u to v {
  cnt++;
  if(cnt mod k == 0) ans = max(ans,a[x]);
}
print(ans).
```

Please read the hints for more details.

Input

In the first line contains a single positive integer T, indicating number of test case.

In the second line there are two numbers n, m. n is the size of Duoladuo, m is the number of Liao's questions.

The next line contains n integers $A_1, A_2, \ldots A_n$, means the value of ith vertex.

In the next $n-1$ line contains tow numbers u, v. It means there is an edge between vertex u and vertex v.

The next m lines will be the Liao's question:

u v k

$1 \le T \le 10, 1 \le n \le 100000, 1 \le m \le 100000, 1 \le u, v \le n, 1 \le k,\ A_i \le 1000000000$.

Output

For each case, output Case #i: (i is the number of the test case, from 1 to T).

Then, you need to output the answer for every Liao's questions.

Sample Input

```
1
5 5
1 2 4 1 2
1 2
2 3
```

```
3 4
4 5
1 1 1
1 3 2
1 3 100
1 5 2
1 3 1
```

Sample Output

```
Case #1:
1
2
0
2
4
```

Hint

In query 1,there are only one vertex in the path,so the answer is 1.

In query 2,there are three vertices in the path.But only the vertex 2 mod 2 equals to 0.

In query 3,there are three vertices in the path.But no vertices mod 100 equal to 0.

In query 4,there are five vertices in the path.There are two vertices mod 2 equal to 0.So the answer is max(a[2],a[4]) = 2.

In query 5,there are three vertices in the path.And all the vertices mod 1 equal to 0. So the answer is a[3] = 4.

Author

UESTC

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wange2014

欢迎

Alice and Bob

Time Limit: 10000/5000 MS (Java/Others) Memory Limit: 131072/131072 K (Java/Others)
Total Submission(s): 260 Accepted Submission(s): 39

Problem Description

As you know, Alice and Bob always play game together, and today they get a tree.

The tree consists of n vertices, and vertex 1 is the root of this tree.

There is a number $w[i]$ written on the ith vectex. Alice and Bob want to play a game on a subtree of this tree. (Note that there are only n subtrees, since the tree is rooted.)

Firstly Alice will choose a vertex in this subtree, and Bob must to choose a different vertex in this subtree. (So, Bob knows which vertex Alice chosen.)

At last they will get a result number equals the XOR sum of the number written on the two vertices which they chosen.

But the problem is that Alice wants the result number to be as maximal as possible while Bob wants the result number to be as minimal as possible, and of course they are clever enough.

Now we are interested in the result number, can you tell us?

Input

In the first line there is an integer T, indicating the number of test cases.

For each test case:

The first line includes an integer n.

The second line includes n integers $w[i]$, indicating the number written on the ith vertex.

For the next $n-1$ lines, each line includes two integers u and v, which means an edge in the tree.

The next line includes an integer m, which means the number of our queries.

The next m lines, each line includes an integer u, indicating Alice and Bob play game on the subtree rooted on the vertex u, and we want to know the result number.

$1 \leq n, m \leq 100000, 0 \leq w[i] \leq 100000$.

Output

For each test case:

Output “Case #k:”(without quotes) one line first, where k means the case number count from 1.

Then output m lines, each line must include the answer of the corresponding query. If Alice and Bob can’t choose two different vertices, output -1 instead.

Sample Input

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

Sample Output

```
Case #1:
2
1
-1
```

Author

UESTC

Source

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Recommend

wange2014

Lweb and String

Time Limit: 2000/1000 MS (Java/Others) Memory Limit: 65536/65536 K (Java/Others)
Total Submission(s): 1497 Accepted Submission(s): 752

Problem Description

Lweb has a string S.

Oneday, he decided to transform this string to a new sequence.

You need help him determine this transformation to get a sequence which has the longest LIS(Strictly Increasing).

You need transform every letter in this string to a new number.

A is the set of letters of S, B is the set of natural numbers.

Every injection $f : A \to B$ can be treat as an legal transformation.

For example, a String “aabc”, $A = \{a, b, c\}$, and you can transform it to “1 1 2 3”, and the LIS of the new sequence is 3.

Now help Lweb, find the longest LIS which you can obtain from S.

LIS: Longest Increasing Subsequence. (https://en.wikipedia.org/wiki/Longest_increasing_subsequence)

Input

The first line of the input contains the only integer $T, (1 \le T \le 20)$.

Then T lines follow, the i-th line contains a string S only containing the lowercase letters, the length of S will not exceed 10^5.

Output

For each test case, output a single line "Case #x: y", where x is the case number, starting from 1. And y is the answer.

Sample Input

```
2
aabcc
acdeaa
```

Sample Output

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

Author

UESTC

Source

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