Chef and calculation

Problem Code: **RESCALC**

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Every Friday Chef and his **N - 1** friends go for a party. At these parties, they play board games. This Friday, they are playing a game named "Boats! Boats! Boats!". In this game players have to transport cookies between Venice and Constantinople. Each player has a personal storage. The players are numbered from 1 to **N**, Chef is numbered 1. Rules for determining a winner are very difficult, therefore Chef asks you to write a program, which will determine who is a winner.

There are 6 types of cookies. For each cookie in the storage player gets 1 point. Also player gets additional points if he packs his cookies in some boxes as follows:

- A box containing 4 different types of cookies fetches 1 additional point.
- A box containing 5 different types of cookies fetches 2 additional points.
- A box containing 6 different types of cookies fetches 4 additional points.

Obviously a cookie can be put into a single box.

For each player, you know the number of cookies in his storage (denoted by **c[i]**), also the types of cookies in the storage given denoted by **type[i][j]**.

Your task is to determine the winner of this game. Output "tie" if there are two or more players with same maximum score, "chef" if only Chef has a maximum score, winner's index in all other cases.

Input

The first line of input contains a single integer **T** denoting the number of test cases. This will be followed by **T** test cases.

The first line of each test case contains an integer **N** denoting the number of players.

The second line of each test case contains an integer **c[i]** denoting the number of cookies in the i-th storage, followed by **c[i]** space-separated integers **type[i][j]** which denote the types of cookies in the i-th storage.

Output

For each test case, output a single line containing the answer as specified in the statement.

Constraints and Subtasks

Subtask #1 : (20 points)

- **1 ≤ T ≤ 10**
- **1 ≤ N ≤ 100**
- **1 ≤ c[i] ≤ 100**
- **1 ≤ type[i][j] ≤ 3**

Subtask #2 : (80 points)

- **1 ≤ T ≤ 10**
- **1 ≤ N ≤ 100**
- **1 ≤ c[i] ≤ 100**
- **1 ≤ type[i][j] ≤ 6**

Example

Input:

```
3
2
6 1 2 3 4 5 6
9 3 3 3 4 4 4 5 5 5
2
5 2 3 4 5 6
7 1 1 2 2 3 3 4
3
4 1 1 2 3
4 1 2 2 3
4 1 2 3 3
```

Output:

```
chef
2
tie
```

Explanation

Example case 1.

Chef has total 6 cookie, so he gets 6 points for that. Also, he can put all his cookies (as they are all distinct) in a bag of size 6. It will fetch him additional 4 points. So, Chef's total points will be 10.

The second player has 9 cookies, he gets 9 points for that. Other than this, he can't create a bag with either 4, 5 or 6 distinct cookies. So, his final score is 9.

10 > 9 - Chef wins.

Example case 2.

Chef has 5 + 2 (a bag with 5 different cookies) = 7.

The second player has 7 + 1(a bag with 4 different cookies) = 8.

7 < 8 - the second player wins.

Example case 3.

Every player has 4 cookies and can't create any bag of sweets. So, it's a tie.

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