A hand in the game oftarot Tarot is a card game played in France. It is played with a 78-card deck, composed with 21 trump cards (named one, two, ..., twenty-one), a special card (named the fool) and four suits (spades, hearts, diamonds, clubs). Each suit has fourteen cards: ten pip cards (ace, two, ..., ten), and four face cards: jack, knight, queen and king.

Three cards have a special status. They are called the oudlers and are the fool, the 1 of trumps and the 21 of trumps.

The game is composed of a bidding phase, followed by a main phase. The bidding phase consists in choosing one of the players as the "taker". In the main phase, the players play tricks and try to win as many cards as possible. The outcome of a game is determined by the number of points won by the taker, which is the sum of the values of the cards won by the taker. The value that the taker needs to achieve depends on the number of oudlers he has won throughout the game:

- 3 oudlers: 36 points,
- 2 oudlers: 41 points,
- 1 oudlers: 51 points,
- no oudlers: 56 points,

The value of each card is as follows:

- kings and oudlers: $4\frac{1}{2}$ points,
- queens: $3\frac{1}{2}$ points,
- knights: $2\frac{1}{2}$ points,
- jacks: $1\frac{1}{2}$ points,
- all other cards: $\frac{1}{2}$ point.

For instance, imagine that, at the end of the game, the taker has won the following four cards: ace of spades, eight of diamonds, fool and twenty-one of trumps. Two of these cards are oudlers, so the number of points that the taker needs to score to win is 41. However the sum of the points earned is only 10, and the taker has lost, since the total is 31 points short of the required total.

You have to write a program that, given the list of cards won by the taker, indicates if the taker has won her bid, and the number of points she has in excess, or lost and the number of missing points.

Input

The first line of input gives the number of cases, T ($1 \leq T \leq 100$). T test cases follow. Each one contains an *even* integer M ($0 \leq M \leq 78$), representing the number of cards won by the taker. Then M lines follow each with a string representing a card (see sample input).

Output

For each test case, output the score. The score of the n-th game starts with the header '`Hand #`n', on a line of its own, followed by the result (see sample output for the exact syntax), also one a line of its own. The scores are separated by blank lines

Sample Input

```
2
4
ace of spades
eight of diamonds
fool
twenty-one of trumps
42
ace of diamonds
ace of hearts
eight of clubs
eight of diamonds
eight of spades
eight of trumps
eleven of trumps
five of clubs
five of diamonds
four of clubs
four of spades
four of trumps
fourteen of trumps
jack of clubs
jack of hearts
jack of spades
king of clubs
king of hearts
knight of clubs
knight of diamonds
knight of hearts
nine of diamonds
nineteen of trumps
one of trumps
queen of clubs
queen of diamonds
queen of spades
seven of spades
seven of trumps
six of clubs
six of hearts
six of trumps
sixteen of trumps
ten of clubs
ten of diamonds
three of clubs
three of diamonds
three of hearts
three of spades
three of trumps
two of diamonds
two of spades
```

Sample Output

```
Hand #1
Game lost by 31 point(s).

Hand #2
Game won by 0 point(s).
```