

PSH: A Joke is in the Cards

In the game HearthJoke, players must assemble a deck of cards. Each card has three different ratings of Punniness, Wit, and Humor. In order to win, a player must find a set of cards, whose sum for these three attributes is the ideal.

Input Format

Input begins with an integer T , $1 \leq T \leq 20$, representing the number of test cases. The first line of each test case contains three space-separated integers: l_p , l_w , and l_h , which represent the ideal amounts for the three attributes. Note that $1 \leq l_p, l_w, l_h \leq 1000$. The next line contains an integer n , $1 \leq n \leq 20$, which represents the number of cards for that test case. The following n lines contain three space-separated integers describing a card: p , w , and h , representing the Punniness, Wit, and Humor, respectively for the card. Note that for all cards, $1 \leq p, w, h \leq 1000$.

Output Format

For each test case, output a single line with the word `guffaw` if it is possible to assemble a deck with exactly the ideal amounts of the attributes, and `groan`, otherwise.

Sample Input

```
2
10 20 30
3
6 13 1
4 8 29
4 7 29
10 20 30
3
6 13 29
4 8 1
5 7 29
```

Sample Output

```
guffaw
groan
```

Explanation

We will represent Punniness, Wit, and Humor as a three-tuple.

In the first test case, choosing the first card (6, 13, 1) and the third card (4, 7, 29) yields the ideals of (10, 20, 30).

In the second test case, no combinations of cards will yield the ideals.