Problem E. Word Game

Time limit 1000 ms
Mem limit 262144 kB

Three guys play a game: first, each person writes down n distinct words of length 3. Then, they total up the number of points as follows:

- if a word was written by one person — that person gets 3 points,
- if a word was written by two people — each of the two gets 1 point,
- if a word was written by all — nobody gets any points.

In the end, how many points does each player have?

Input

The input consists of multiple test cases. The first line contains an integer t ($1 \leq t \leq 100$) — the number of test cases. The description of the test cases follows.

The first line of each test case contains an integer n ($1 \leq n \leq 1000$) — the number of words written by each person.

The following three lines each contain n **distinct** strings — the words written by each person. Each string consists of 3 lowercase English characters.

Output

For each test case, output three space-separated integers — the number of points each of the three guys earned. You should output the answers in the same order as the input; the i-th integer should be the number of points earned by the i-th guy.

Examples

Input	Output
3 1 abc def abc 3 orz for qaq qaq orz for cod for ces 5 iat roc hem ica lly bac ter iol ogi sts bac roc lly iol iat	1 3 1 2 2 6 9 11 5

Note

In the first test case:

- The word `abc` was written by the first and third guys — they each get 1 point.
- The word `def` was written by the second guy only — he gets 3 points.