Squad Game

Time limit: *2000 ms*
Memory limit: *1 GB*

Three groups of players are standing on a field to play a Squad game. Each group has exactly N players, and there are $3N$ players in total. The Squad game is played in teams. Each team has exactly 3 players -- one from each group. Every team controls the triangular area formed by the three points at which the three team members are standing. Players may share their standing points, and a team is allowed to control an area of zero.

The Squad game would become the most interesting when the sum of areas controlled by all the N teams is minimized. How should the players form their teams to make the game most interesting?

Standard input

The first line contains an integer N. This is followed by $3N$ lines that each have the X and Y coordinates of one player. The first N lines are for players from the first group, the next N lines are for players from the second group, and the last N lines are for players from the third group.

Standard output

Write N triplets to the output file, one triplet per line. Each triplet has three 1-based indices a, b, c between 1 and N to describe a team consisting of player a from the first group, player b from the second group, and player c from the third group. Every player must be assigned to a team.

Constraints and notes

- All coordinates are integers between 0 and 10^6.
- The score per test is $\frac{SmallestArea}{YourArea}$, where $SmallestArea$ is the smallest area among all competition submissions, and $YourArea$ is your response on that test case.
- All tests are worth the same number of points, and their total value is normalized to 100 points.
- Scores are independent between your submissions. That means that if you have a submission that scores better on test case 1, and another that scores better on test case 2, these will **not** be merged, and only your best overall submission will be considered.
- Unlike for other tasks, the time limit is the same for all programming languages.
- For 8.33% of the test files $1 \leq N \leq 7$
- For 33.33% of the test files $1 \leq N \leq 300$
- For all the test files $1 \leq N \leq 100\,000$

Input	Output	Explanation
4 6 2 8 8 3 5 1 2 8 6 7 5 3 6 6 4 2 2 2 1 0 3 2 2	1 4 1 2 1 2 3 3 3 4 2 4	In the figure below, players in the first group are marked in blue, the second group in red and the third group in black: