3 Pipeline Parallelograms

Coastal Gaslink, a gas company, is planning out their latest Liquified Natural Gas Pipeline and needs to verify the validity of the plans. The scientists back at the lab have noticed a drop in pressure around some sections of the project in their simulations, which they suspect is a square formed in the network. Because of their lousy recordkeeping and haphazard nature, the numbers have been smudged and cannot be read normally. You are given a set of range-based transformations, where each inclusive range $[a, b]$ maps linearly to another inclusive range $[c, d]$ (e.g., `1 7 8 14` maps `1 → 8, 2 → 9, ..., 7 → 14`). Negative values follow the same mapping behavior. After applying all transformations, determine whether any subset of the resulting points forms a square.

3.1 Input

- The input begins with an integer T, the number of transformations.
- The next T lines each contain four integers a, b, c, and d, representing a mapping from the inclusive range $[a, b]$ to the inclusive range $[c, d]$. This is followed by a blank line.
- The next line contains an integer N (the number of vertices), followed by $2N$ integers representing the x and y coordinates of the N vertices.

3.2 Output

Output is a single line containing the original (unmapped) coordinates of all unique points that form squares, in the same format as the input. If no squares, output `No Squares Found`

3.3 Sample Input/Output

Sample Input	Sample Output
3 1 7 8 14 20 26 1 7 101 150 49 99 4 0 2 0 -2 2 0 -2 0	0 2 0 -2 2 0 -2 0

3.4 Input Visualization