Problem E. Eureka

Input file:	*standard input*
Output file:	*standard output*
Time limit:	5 seconds
Memory limit:	64 mebibytes

Professor Zhang draws n points on the plane which are conveniently labeled by $1, 2, \ldots, n$. The i-th point is at (x_i, y_i). Professor Zhang wants to know the number of *best sets*. As the value could be very large, print it modulo $10^9 + 7$.

A set P (P contains the labels of the points) is called a *best set* if and only if there is at least one *best pair* in P. Two numbers u and v ($u, v \in P, u \neq v$) are called a *best pair* if for every $w \in P$, $f(u, v) \geq g(u, v, w)$, where $f(u, v) = \sqrt{(x_u - x_v)^2 + (y_u - y_v)^2}$ and $g(u, v, w) = \frac{f(u,v)+f(v,w)+f(w,u)}{2}$.

Input

There are multiple test cases. The first line of input contains an integer T indicating the number of test cases. For each test case:

The first line contains an integer n ($1 \leq n \leq 1000$): the number of points.

Each of the following n lines contains two integers x_i and y_i ($-10^9 \leq x_i, y_i \leq 10^9$): coordinates of the i-th point.

There are no more than 250 test cases, and the sum of n in all the test cases is at most 40 000.

Output

For each test case, output a single integer: the number of *best sets* modulo $10^9 + 7$.

Example

standard input	standard output
3 3 1 1 1 1 1 1 3 0 0 0 1 1 0 1 0 0	4 3 0