Problem L: Mold

Time limit: 2.5s; Memory limit: 256 MB

A mold or mould is one of the structures certain fungi can form. The dust-like, colored appearance of molds is due to the formation of spores containing fungal secondary metabolites. Only from a single individual, mold can be cloned and grow very quickly. The study of them interests many scientists.

Bob is a scientist, he is especially the range of their growth. Therefore, on the first day Bob planted a mold individual at a coordinate x_1, y_1. On the second day, he discovered that 2 new individuals had appeared at coordinates x_2, y_2 and x_3, y_3. On the j-th day the mold will add j individuals . And by the n-th day he had a total of $n \times (n + 1)/2$ individuals with coordinates from x_1, y_1 to $x_{n\times(n+1)/2}, y_{n\times(n+1)/2}$. Bob defines the growth range of the mold individuals as defined by the circle with the smallest radius covering all the mold individuals at a given date.

Since Bob is very busy, he wants you to keep a record of the growth range of all the days that Bob did the research.

Input

The first line contains a natural number, n ($1 \leq n \leq 500$).

Next $n \times (n + 1)/2$ lines: each line contains 2 real numbers x_i, y_i ($0 \leq x_i, y_i \leq 10^4$). Each of them has at most 14 decimal digits in the input.

Output

Print out n lines, each j-th line contains 3 real numbes x_j, y_j, r_j representing the center and radius of the growing range at day j. The answer is accepted if the absolute error or relative error does not exceed 10^{-6}.

Sample

Input	Output
3	1.0 1.0 0.0
1.0 1.0	1.5 1.5 0.7071067812
2.0 2.0	2.0 1.0 1.0
2.0 1.0	
3.0 1.0	
2.0 0.0	
2.0 0.5	