"Ubi materia, ibi geometria."
Johannes Kepler

A famous archeologist has uncovered the palace of an ancient king. The palace had a beautiful garden, where the king had 13 trees planted in a very special pattern. The legend says that the king's gardener, Martin, planted the trees at the vertices of a square grid. Each cell of the grid was a one-by-one meter square, and the distance between any pair of trees was always an integer number of meters! What is even more unbelievable is that no 3 trees were ever on a straight line. Your task is to reconstruct what the garden might have looked like.

Input

There is no input for this problem.

Output

Output the Cartesian coordinates of the 13 trees, one pair per line. No 3 trees may lie on the same line, and the distance between any pair of trees must be an integer. All the coordinates must be non-negative and at most 1000000000 (one billion).

Sample Input

Sample Output

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0 0
0 3
4 0
...
```