Problem E. Easy Chess

Time limit: 2 seconds

Elma is learning chess figures.

She learned that a rook can move either horizontally or vertically. To enhance her understanding of rook movement Elma's grandmother gave Elma an 8×8 chess board and asked her to find a way to move the rook from `a1` to `h8` making exactly n moves, so that all visited cells are different.

A visited cell is the initial cell `a1` and each cell on which the rook lands after a move.

Input

The input contains a single integer n ($2 \le n \le 63$) — the desired number of moves.

Output

Output a space-separated list of $n+1$ visited cells in the order they are visited by the rook. All cells must be different. The list should start with `a1` and end with `h8`. A solution always exists.

Example

standard input	standard output	Illustration
4	a1 f1 c1 c8 h8	