Knight jumps   **P98620_en**

Given a board with three columns and n rows, find a way for a chess knight to visit exactly $3n - 2$ cells, starting at any cell, and never repeating any cell nor going outside the board.

Input

Input consists of several cases, each with an n between 3 and 10^5.

Output

Print one line for each case, with any solution. Columns are labelled with 'a', 'b' and 'c' in this order, while rows are numbered from 1 to n. Follow strictly the format of the sample output.

Sample input 1

```
5
3
```

Sample output 1

```
c5->a4->c3->b1->a3->c4->a5->b3->c1->a2->b4->c2->a1
a1->c2->a3->b1->c3->a2->c1
```

Problem information

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