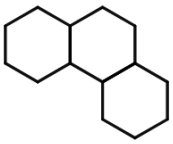
Hexagon Puzzle

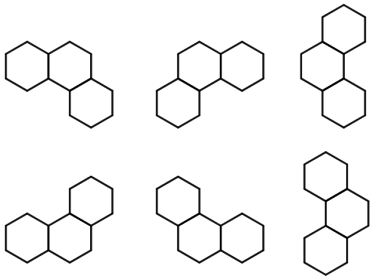
Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	1024 megabytes

Kotoha loves to solve puzzles. This year, her friends Saki and Yui gave her a special puzzle as her birthday gift: A hexagon puzzle and many colorful V-shaped pieces. The puzzle contains n rows of regular hexagons, where the i-th row contains exactly i regular hexagons. For every $i > 1$, the j-th regular hexagon in the i-th row shares an edge with the j-th regular hexagon and the $(j-1)$-th regular hexagon in the previous row, if they exist. Below are examples of the puzzle for $n = 1, 2, 3, 4$ respectively:

A V-shaped piece occupies 3 hexagons, as shown below. The color of each piece can be one of the 26 colors, represented by `ABC...XYZ`:



The piece can be rotated by a multiple of 60 degrees. More specifically, there are 6 possible rotations for a V-shaped piece, as shown below:



Now Kotoha wants to maximize the number of V-shaped pieces she used, while satisfying the following conditions:

- Each V-shaped piece she used must be placed inside the puzzle and occupies exactly 3 hexagons.
- No two V-shaped pieces occupy the same hexagon.
- No two adjacent V-shaped pieces share the same color. Two V-shaped pieces are considered as adjacent if the two pieces share at least one common edge.

Can you help her find the maximum number of V-shaped pieces and a way to place that?

Input

The input only contains one line with one integer n ($1 \leq n \leq 1024$), indicating the size of the puzzle.

Output

Output n lines. The i-th line contains $n+i-1$ characters. Let $s_{i,j}$ be the j-th character in the i-th line. Your output must satisfy the following format:

- If $j \leq n-i$, $s_{i,j}$ is a space (ASCII code 32).
- If $j-(n-i)$ is an even integer, $s_{i,j}$ is a space.
- If the $(\frac{j-(n-i)+1}{2})$-th hexagon in i-th row is not covered by any V-shaped pieces, $s_{i,j}$ is a dot (ASCII code 46).
- Otherwise, $s_{i,j}$ is used to represent the color of the V-shaped piece that covers the $(\frac{j-(n-i)+1}{2})$-th hexagon in the i-th row, which will be one of the uppercase English letters.

Your output will be considered correct if all the following conditions are satisfied:

- It satisfies all the format described above.
- All the pieces you placed are V-shaped.
- No two adjacent V-shaped pieces have the same color.
- The number of pieces you placed is maximum.

Please DO NOT output extra spaces at the end of each line, or your solution might be considered incorrect.

Examples

standard input	standard output
2	` .` `. .`

3	`  W`
	` W .`
	`. W .`

4	`   .`
	`  . R`
	` . B R`
	`B B R .`