Fractals

What is a fractal? According to wikipedia: A fractal is a mathematical set that exhibits a repeating pattern displayed at every scale.

We are interested in developing a solution and create some fractals! This time we are interested on creating the ”H” fractal. The process to create it is as follows:

• At scale 1, you have the ”H-H” string

• At scale 2, you will copy the strings into four corners, each copy separated by a single space (row and column-wise)

• You must connect the vertical copies with the pipe character or ’|’ and the horizontal copies with a dash character ’-’ between the pipes that connect the vertical copies (see the samples as clarification)

• At scale 3 and further, you will repeat the step done on scale 2. Thus generating the fractal

Input

You will receive a single integer N denoting the scale of the H fractal we want to generate.

Output

You must output the generated H fractal as described above, in addition, the generated fractal MUST NOT have trailing spaces, this means that, after the last non-whitespace character of each row is printed, there must be nothing else but a newline written as output.

Example

Input 1:
1

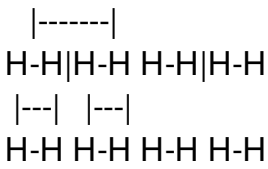
Output 1:
H-H

Input 2:
2

Output 2:
```
H-H H-H
 |---|
H-H H-H
```

Input 3:
3

Output 3:
```
H-H H-H H-H H-H
 |---|   |---|
H-H|H-H H-H|H-H
```



Constraints

- $1 \leq N \leq 10$