

# Kings and their kingdom names

There are  $N$  kings standing in a row and they are going to name their kingdoms. Their kingdoms are numbered from 1 to  $N$  and kingdoms are named in increasing order of their numbers. The name of the first kingdom (kingdom1) is "A" and the name of the second kingdom (kingdom2) is "B", then to obtain the name of the third kingdom, the king of the third kingdom wrote the name of kingdom2 two times and then added the name of kingdom1 before it. The other kings liked this approach, so they too started naming their kingdoms by repeating the name of the kingdom named just before them (let's say  $x$ ) twice and then took the name of the kingdom which is named before the name of kingdom  $x$  and then added that name before the name that is written twice.

You have to find the  $K$ th character in the name of the  $N$ th kingdom. If the name of the  $N$ th kingdom doesn't have at least  $K$  characters then print "-1".

## Input Format

The first line contains a single integer  $N$ .

The second line contains a string representing the name of the first kingdom  $A$ .

The third line contains a string representing the name of the second kingdom  $B$ .

The fourth line contains a single integer representing the value of  $K$ .

## Constraints

$$3 \leq N \leq 40$$

$$1 \leq \text{length}(A) \leq 5$$

$$1 \leq \text{length}(B) \leq 5$$

$$1 \leq K \leq 10^{18}$$

## Output Format

A single line containing a character representing the answer.

## Sample Input 0

```
4
AB
C
7
```

## Sample Output 0

```
B
```

## Explanation 0

The name of the fourth kingdom will be CABCCABCC and the seventh character will be B.