7 Lexicographic Permutations

A permutation is an ordered arrangement of objects. For example, 3124 is one possible permutation of the digits 1, 2, 3, and 4. If all of the permutations are listed numerically or alphabetically, we call it lexicographic order. The lexicographic permutations of 0, 1 and 2 are:

$$012, 021, 102, 120, 201, 210$$

What is the nth lexicographic permutation of the digits 1, 2, 3, 4, and 5? Your program should take a single line as input (n) and return that lexicographic permutation. Each input number should be followed by a newline character. Sample input and output from 3 program runs are as follows.

Note: The ↵ symbol in the examples below represents a newline character.

Example Input 1

```
1↵
```

Example Output 1

```
12345↵
```

Example Input 2

```
2↵
```

Example Output 2

```
12354↵
```

Example Input 3

```
100↵
```

Example Output 3

```
51342↵
```