Testing Round #15 (Unrated)

A. Digits Sequence (Easy Edition)

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Let's write all the positive integer numbers one after another from 1 without any delimiters (i.e. as a single string). It will be the infinite sequence starting with 123456789101112131415161718192021222324252627282930313233343536...

Your task is to print the k-th digit of this sequence.

Input
The first and only line contains integer k ($1 \le k \le 10000$) — the position to process (1-based index).

Output
Print the k-th digit of the resulting infinite sequence.

Examples

input
7
output
7

input
21
output
5

B. Digits Sequence (Hard Edition)

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Let's write all the positive integer numbers one after another from 1 without any delimiters (i.e. as a single string). It will be the infinite sequence starting with 123456789101112131415161718192021222324252627282930313233343536...

Your task is to print the k-th digit of this sequence.

Input
The first and only line contains integer k ($1 \le k \le 10^{12}$) — the position to process (1-based index).

Output
Print the k-th digit of the resulting infinite sequence.

Examples

input
7
output
7

input
21
output
5