Number Sequence - POJ 1019

https://vjudge.net/problem/poj-1019

A single positive integer i is given. Write a program to find the digit located in the position i in the sequence of number groups S1S2...Sk. Each group Sk consists of a sequence of positive integer numbers ranging from 1 to k, written one after another.
For example, the first 80 digits of the sequence are as follows:
11212312341234512345612345671234567812345678912345678910123456789101112345678910

Input

The first line of the input file contains a single integer t (1 ≤ t ≤ 10), the number of test cases, followed by one line for each test case. The line for a test case contains the single integer i (1 ≤ i ≤ 2147483647)

Output

There should be one output line per test case containing the digit located in the position i.

Sample Input

```
2
8
3
```

Sample Output

```
2
2
```