**Number Sequence**

|  |  |  |
| --- | --- | --- |
| **Time Limit:** 1000MS |  | **Memory Limit:** 10000K |
| **Total Submissions:** 34579 |  | **Accepted:** 9927 |

**Description**

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

**Source**

[Tehran 2002](http://poj.org/searchproblem?field=source&key=Tehran+2002), First Iran Nationwide Internet Programming Contest