Problem E. Decimal Expansion

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	256 mebibytes

Consider the following constant:

$$\varphi = \frac{9}{10} \cdot \frac{99}{100} \cdot \frac{999}{1000} \cdot \frac{9999}{10000} \cdot \ldots$$

You have to find the n-th digit after the decimal separator in the decimal representation of φ.

Input

The first line of input contains a single integer t ($1 \le t \le 10^5$) which is the number of test cases.

The next line contains t integers n ($1 \le n \le 10^{18}$), one for each test case.

Output

For each test case, output a single digit which is the answer to that test case. Separate consecutive answers by single spaces.

Example

standard input	standard output
15 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	8 9 0 0 1 0 0 9 9 9 9 8 9 9 9

Note

The constant evaluates as $\varphi = 0.890010099998999\ldots$