

Fibonacci brain

Ravi is a student who loves Fibonacci numbers. He used to think of Fibonacci numbers all the time. Suddenly he asked his friend Rama whether he can find Nth Fibonacci number. Rama said 'No'. Ravi started laughing. Ravi then asked Rama whether he can at least find the last digit of Nth Fibonacci number. Thinking for a while, Rama said 'Yes'. Help Rama finding the last digit of Nth Fibonacci number. Note : The series starts from 0 (0, 1, 1, 2, 3, ...)

Input

First line consists of an integer t ($t \leq 1000$) denoting the number of test cases that follow.

The following t lines consist of an integer N ($1 \leq N \leq 10^{15}$).

Output

Output t lines consisting of the last digit of Nth Fibonacci number.

Example

Input:

3
1
2
5

Output:

0
1
3