UVa Online Judge

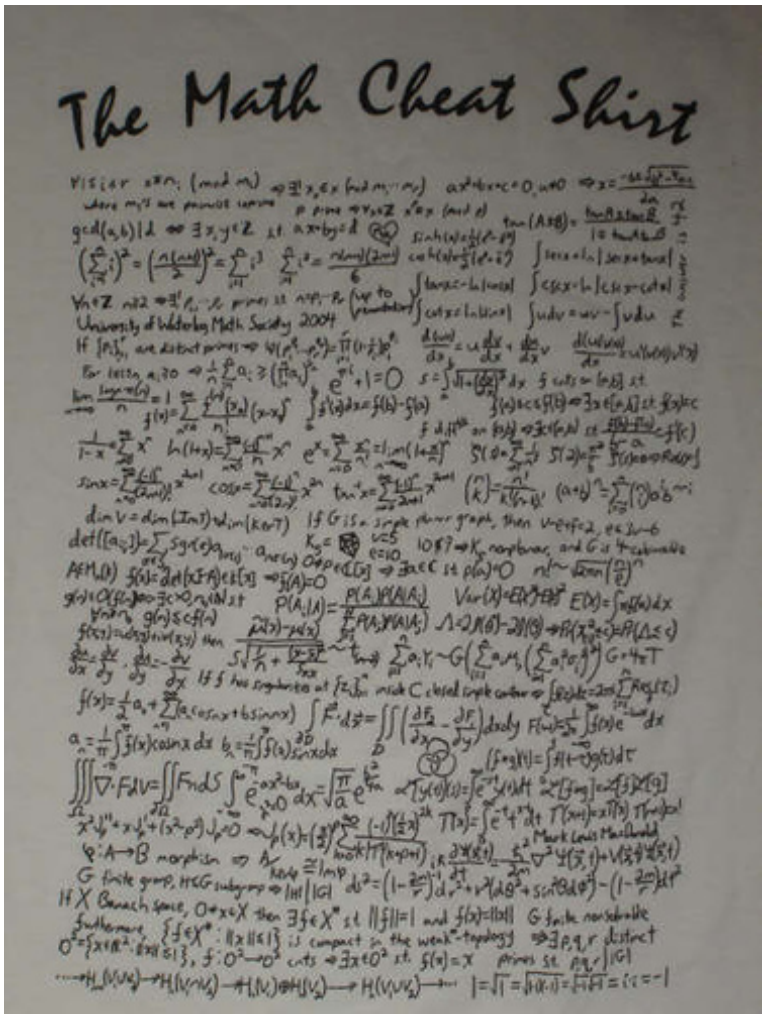
11703 sqrt log sin

An evil professor has just assigned you the following problem.

A sequence is defined by the following recurrence:

$$\begin{aligned} x_0 &= 1 \\ x_i &= x_{\lfloor i-\sqrt{i} \rfloor} + x_{\lfloor \ln(i) \rfloor} + x_{\lfloor i \sin^2(i) \rfloor} \end{aligned}$$

Determine $x_{1000000}$.



Input

Input consists of a number of lines, each containing one integer, a value of i, no less than zero and no greater than one million. Input is followed by a single line containing the integer '-1'. This last line is not a value of i and should not be processed.

Output

For each value of i in the input (but not the final '-1'), output the corresponding value of x_i *modulo* 1000000.

Sample Input

```
0
-1
```

Sample Output

```
1
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