Fibonacci GCD

HackerRank

Fibonacci numbers have the following form:

$$F_1 = 1$$
$$F_2 = 1$$
$$F_3 = 2$$
$$\vdots$$
$$F_n = F_{n-2} + F_{n-1}$$

We have an array $a_1, a_2, \ldots, a_N$ which contains N elements.

We want to find $\gcd(F_{a_1}, F_{a_2}, F_{a_3}, \cdots, F_{a_N})$.

Input Format

The first line contains N, where N denotes size of the array.
Each of the next N lines contains a number: the i^{th} line contains a_i.

Output Format

Print a single integer — the remainder of the division of the resulting number by $10^9 + 7$.

Constraints

$1 \leq N \leq 2 \times 10^5$
$1 \leq a_i \leq 10^{12}$

Sample Input 1

```
3
2
3
5
```

Sample Output 1

```
1
```

Explanation 1

$F_2 = 1$
$F_3 = 2$
$F_5 = 5$
$\gcd(1, 2, 5) = 1$

Sample Input 2

```
2
3
6
```

Sample Output 2

```
2
```

Explanation 2

$F_3 = 2$
$F_6 = 8$
$\gcd(2, 8) = 2$