



Problem E

Fibonacci Sum

Depicted below is the Fibonacci sequence:

1, 1, 2, 3, 5, 8, 13, 21, 34, ...

As you can see, each value from 2 on is the sum of the previous two values. Any positive integer can be written as a sum of values taken from the Fibonacci sequence. These values need not be distinct. Calculate the smallest number of such values that sum to n .

Input

The first line of the input gives an integer T , which is the number of test cases. Each test case contains an integer between 1 and 1,000,000,000 inclusive.

Output

For each test case, output contains a single integer denoting the smallest number of such values that sum to n .

Sample Input	Sample output
9	2
10	3
100	2
1000	6
10000	9
100000	5
1000000	9
10000000	13
100000000	14
1000000000	