(1) You are given a binary string of size N of form : "000…...1111". Find the index (0-based) of the last 0 in the string in **O(logN) time complexity**.
It is guaranteed that there is at least one 0 in the string.

Sample Input   **Sample Output**
000011   3

(2) Can you find the square root of a non-negative integer X (< 100) till 6 decimal places ?

Sample Input   **Sample Output**
10   3.162278

4   2.000000

(3) You are given an array of integers of size N. The elements may be very large (<= 10^9). Then you are given Q queries. For each query, you are given an integer X. You have to print the number of elements in the array which are smaller than X.

The time complexity of your solution must be O((N+Q)logN)

Sample Input   **Sample Output**
5
3 3 2 4 1
3
4   4
3   2
1   0

Explanation:
N = 5
Array, A = [3, 3, 2, 4, 1]
Q = 3
1st Query:
        X = 4, The elements smaller than X : [3, 3, 2, 1], Count = 4
2nd Query:
        X = 3, The elements smaller than X : [2, 1], Count = 2
3rd Query:
        X = 1, No elements are smaller X. Count = 0

(4) Find any real solution for x (4 decimal places) of the equation,
$$x^3 + x^2 + x = C$$
Where, C (3 < C < 1000) is given.

Sample Input	Sample Output
10	1.7374
100	4.2644

Explanation:

For sample-1 :

$$x^3 + x^2 + x = 10$$

One real solution for this equation is = 1.7374

For sample-2 :

$$x^3 + x^2 + x = 100$$

One real solution for this equation is = 4.2644