Shashank and List

Shashank is a newbie to mathematics, and he is very excited after knowing that a given l of cardinality N has (2^N - 1) non-empty sublist. He writes down all the non-empty sublists for a given set A. For each sublist, he calculates sublist_sum, which is the sum of elements and denotes them by S_1, S_2, S_3, ... , $S_{(2^N-1)}$.

He then defines a special_sum, P.

$P = 2^{S_1} + 2^{S_2} + 2^{S_3} .... + 2^{S_{(2^N-1)}}$ and reports P % (10^9 + 7).

Input Format
The first line contains an integer N, i.e., the size of list A.
The next line will contain N integers, each representing an element of list A.

Output Format
Print special_sum, P *modulo* (10^9 + 7).

Constraints
$1 \leq N \leq 10^5$
$0 \leq a_i \leq 10^{10}$, where $i \in [1 .. N]$

Sample Input

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3
1 1 2
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Sample Output

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44
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Explanation

For given list, sublist and calculations are given below
1. {1} and $2^1 = 2$
2. {1} and $2^1 = 2$
3. {2} and $2^2 = 4$
4. {1,1} and $2^2 = 4$
5. {1,2} and $2^3 = 8$
6. {1,2} and $2^3 = 8$
7. {1,1,2} and $2^4 = 16$
So total sum will be 44.