**Happy and Sets**

Attempted by: **1485**

/

Accuracy: **46%**

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Maximum Points: **20**

/

25 Votes

/

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Combinatorics, Combinatorics basics, Mathematics

**PROBLEM**

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Once Happy was playing with his friends during his maths class. Seeing this, his teacher asked him to solve a problem. The teacher gave him a set of ***n*** positive integers and asked him to tell the sum of the product of elements of all the possible subsets.

For e.g. Say, the teacher gave him a set {*2*, *3*, *5*}. The possible subsets of this set are {*2*}, {*3*}, {*5*}, {*2*, *3*}, {*2*, *5*}, {*3*, *5*} and {*2*, *3*, *5*}. So Happy should report the answer as the sum of *2*, *3*, *5*, *6* (*2* \* *3*), 10 (*2* \* *5*), 15 (*3* \* *5*) and 30 (*2* \* *3* \* *5*) i.e., 71 to the teacher.

As the output of the problem can be large, so the teacher asked happy to report the answer **modulo**109**+*7* (**1000000007**)**.

**INPUT:**

The first line of input contains an integer **n** denoting the number of elements in the set and the next line consists of **n** space separated integers. The ith integer is denoted by **a\_i**.

**OUTPUT:**

Print the answer **modulo**109**+*7* (**1000000007**)**.

***Constraints:***

*1* ≤ **n** ≤ 105  
*0* ≤ **a\_i** ≤ 107

**SAMPLE INPUT**

3

2 3 5

**SAMPLE OUTPUT**

71

**Explanation**

For sample input, the set consists of 3 integers 2, 3 and 5. The possible subsets of this set are {2}, {3}, {5}, {2, 3}, {2, 5}, {3, 5} and {2, 3, 5}. The product of elements of the subsets are 2, 3, 5, 6, 10, 15 and 30. The sum of these products is 71. So the answer is 71%(10^9+7) = 71.

**Time Limit:**1.0 sec(s) for each input file.

**Memory Limit:**256 MB

**Source Limit:**1024 KB

#include<bits/stdc++.h>

#define pp pop\_back

#define pb push\_back

#define int long long int

#define INF 1e18

#define vec vector<int>

#define pii pair<int,int>

#define REP(i,a,b) for(i=a;i<b;i++)

using namespace std;

int32\_t main()

{

ios\_base::sync\_with\_stdio(false);

cin.tie(NULL);

cout.tie(NULL);

int t=1;

//cin>>t;

while(t--)

{

int n,mod=1e9+7;

cin>>n;

int a[n],i;

for(i=0;i<n;i++)

cin>>a[i];

int ans=1;

for(i=0;i<n;i++)

ans=((ans%mod)\*((a[i]+1)%mod))%mod;

cout<<(ans-1+mod)%mod;

}

}