

Problem J. Walk

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 512 megabytes

There is currently a grid of $n \times m$. You have to walk start at $(1, k_1)$ ($\forall 1 \leq k_1 \leq m$), end at (n, k_2) ($\forall 1 \leq k_2 \leq m$). For every possible path, there will be a value V . The initial value of V is $f[k_1]$ when you start at $(1, k_1)$. When you reach (x, y) , the value will become $V \times f[y]$. When you are located at (x, y) , you can walk to $(x+1, P)$ ($P \leq y + S(S(S(y)))$)

Where $S(x) = \lfloor \log_2(\max(1, x)) \rfloor$

Calculate the sum of the value of all the ways module 998244353.

Two ways A, B think different if $\exists (x, y)$, A passes (x, y) but B not.

Input

The first line contains two integers n, m

The second line contains m integers $f_1, f_2, \dots, f_m$

$1 \leq n, m \leq 10^5, 0 \leq f_i \leq 10^9$

Output

print one integer — the answer to the problem.

Example

standard input	standard output
5 4 1 2 3 4	7770