Bob's Lights

Time Limit: 1.0s **Memory Limit:** 512M

Bob has N lights, numbered from 1 to N. Each light can turn to four different colors: red, green, blue, and yellow. Initially, all lights are red.

There are M operations. For the i-th operation, Bob will pick up a number x_i. He will toggle all lights whose index is the multiple of x_i. When Bob toggling a light, the light's color will change from red to green, green to blue, blue to yellow, and yellow to red.

For the given M operations, there are 2^M subset of operations. Bob will randomly choose a subset, and then conduct all operations in the subset. Bob wants to find out the expected number of red lights after he conducts all the operations in the subset. Can you write a program to help him? Since the answer may be huge, output the answer mod 998244353.

Input Specification:

The first line of input contains two integers N and M ($1 \leq N \leq 10^9$, $1 \leq M \leq 20$), the number of lights and the number of operations, respectively.

The second line of input contains N integers, x_i ($1 \leq x_i \leq 10^9$), the number Bob picks up in the i-th operation.

Output Specification:

Output one integer, the expected number of red lights mod 998244353..

Constraints

Subtask	Points	Additional constraints
1	10	$M = 1$
2	20	$N \leq 10^4$, $M \leq 5$
3	70	No additional constraints.

Sample Input 1:

```
1 4
1 1 1 1
```

Sample Output 1:

```
873463809
```

Sample Input 2:

```
3 2
2 1
```

Sample Output 2:

```
748683266
```