Problem K
GCDDCG

You are playing the Greatest Common Divisor Deck-Building Card Game (GCDDCG). There are N cards (numbered from 1 to N). Card i has the value of A_i, which is an integer between 1 and N (inclusive).

The game consists of N rounds (numbered from 1 to N). Within each round, you need to build two **non-empty** decks, deck 1 and deck 2. A card cannot be inside both decks, and it is allowed to not use all N cards. In round i, the greatest common divisor (GCD) of the card values in each deck must equal i.

Your *creativity point* during round i is the product of i and the number of ways to build two valid decks. Two ways are considered different if one of the decks contains different cards.

Find the sum of creativity points across all N rounds. Since the sum can be very large, calculate the sum modulo $998\,244\,353$.

Input

The first line consists of an integer N ($2 \leq N \leq 200\,000$).

The second line consists of N integers A_i ($1 \leq A_i \leq N$).

Output

Output a single integer representing the sum of creativity points across all N rounds modulo $998\,244\,353$.

Sample Input #1

```
3
3 3 3
```

Sample Output #1

```
36
```

Explanation for the sample input/output #1

The creativity point during each of rounds 1 and 2 is 0.

During round 3, there are 12 ways to build both decks. Denote B and C as the set of card numbers within deck 1 and deck 2, respectively. The 12 ways to build both decks are:

- $B = \{1\}, C = \{2\}$;
- $B = \{1\}, C = \{3\}$;
- $B = \{1\}, C = \{2, 3\}$;
- $B = \{2\}, C = \{1\}$;

- $B = \{2\}, C = \{3\}$;
- $B = \{2\}, C = \{1, 3\}$;
- $B = \{3\}, C = \{1\}$;
- $B = \{3\}, C = \{2\}$;
- $B = \{3\}, C = \{1, 2\}$;
- $B = \{1, 2\}, C = \{3\}$;
- $B = \{2, 3\}, C = \{1\}$; and
- $B = \{1, 3\}, C = \{2\}$.

Sample Input #2

```
4
2 2 4 4
```

Sample Output #2

```
44
```

Explanation for the sample input/output #2

For rounds 1, 2, 3 and 4, there are 0, 18, 0, and 2 ways to build both decks, respectively.

Sample Input #3

```
9
4 2 6 9 7 7 7 3 3
```

Sample Output #3

```
10858
```