Problem C. Random Shuffle

Prof. Pang is selecting teams that advance to the world final contest. As the regionals are cancelled, he uses random shuffle to rank the teams. There are n teams in total. His code is as follows:

```
uint64_t x;//uint64_t represents 64-bit unsigned integer
int n;
uint64_t rand() {//this is a xor-shift random generator
    x ^= x << 13;
    x ^= x >> 7;
    x ^= x << 17;
    return x;
}
int main() {
    cin >> n;
    cin >> x;
    for (int i = 1; i <= n; i++) {//random shuffle [1, 2,..., n]
        a[i] = i;
        swap(a[i], a[rand() % i + 1]);
    }
    for (int i = 1; i <= n; i++) {//print the result
        cout << a[i] << (i == n ? '\n' : ' ');
    }
}
```

He compiled and ran his code and then entered n and some special nonnegative integer x. He printed the result on paper.

One day later, Prof. Pang forgot his choice for x. You are given the result of the code and the integer n. Please recover the number x that Prof. Pang had entered.

Input

The first line contains a single integer n ($50 \le n \le 100000$) – the number of teams.

The next line contains n integers – the result printed by Prof. Pang's code. It is guaranteed that the result is correct, i.e., there exists an integer x ($0 \le x \le 2^{64} - 1$) that leads to the result.

Output

Output the integer x ($0 \le x \le 2^{64} - 1$) Prof. Pang had entered. If there are multiple possible x's, print any one.

Example

standard input	standard output
50 36 22 24 21 27 50 28 14 25 34 18 43 47 13 30 7 10 48 20 16 29 9 8 15 3 31 12 38 19 49 37 1 46 32 4 44 11 35 6 33 26 5 45 17 39 40 2 23 42 41	16659580358178468547

Note

Note that the second line of the sample input is wrapped to fit in the width of page.