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Problem Set #4	Date: 08/30/2011

1 A+B

Description

You are given two positive integers, A and B. Output the sum of the two numbers.

Input Format

Two numbers A and B are given. You can assume that they range between 1 and 10^{60}, inclusive.

Output Format

Output $A + B$.

Sample Input

```
12345678901234567890123456789012345678901234567890123456789
10000000000000000000000000000000000000000000000000000000000
```

Sample Output

```
22345678901234567890123456789012345678901234567890123456789
```

2 XOR

Description

You are given two binary strings of the same length. Output the XOR of the two. The XOR operation of two strings is defined as performing the XOR operation at every position. For instance, (010) XOR (110) would be (100).

Input Format

Two binary strings of the same length are given. The length of both strings is between 1 and 60, inclusive.

Output Format

Output the XOR of the two given strings.

Sample Input 1

```
000110
101100
```

Sample Output 1

```
101010
```

Sample Input 2

```
101010
000110
```

Sample Output 2

```
101100
```

3 Mode

Description

You are given an array of integers, and you are to find the mode in the array. Since there may be multiple numbers that appear most frequently, you must output both the smallest and largest mode. If the mode is unique, these numbers should be equal.

Input Format

You are given the size of the array, n, between 1 and 100. Then, n numbers are given, which range between $-2,000,000,000$ and $2,000,000,000$.

Output Format

Output the smallest mode followed by the largest mode, separated by one white space.

Sample Input 1

```
5
1 2 1 2 3
```

Sample Output 1

```
1 2
```

Sample Input 2

```
6
1 2 -3 1 2 -3
```

Sample Output 2

```
-3 2
```