

# Union-Find

**Problem ID:** unionfind  
**CPU Time limit:** 1 second  
**Memory limit:** 1024 MB  
**Difficulty:** 5.2

## Input

The first line of input consists of two integers  $N$  and  $Q$ , where  $1 \leq N \leq 1\,000\,000$  is the number of elements in the base set and  $0 \leq Q \leq 1\,000\,000$  is the number of operations. Then follow  $Q$  lines, one per operation. There are two types of operations:

- “=  $a$   $b$ ” indicate that the sets containing  $a$  and  $b$  are joined
- “?  $a$   $b$ ” is a query asking whether  $a$  and  $b$  belong to the same set

In both cases,  $a$  and  $b$  are distinct integers between 0 and  $N - 1$ .

## Output

For each query output a line containing “yes” if  $a$  and  $b$  are in the same set, and “no” otherwise.

### Sample Input 1

```
10 4
? 1 3
= 1 8
= 3 8
? 1 3
```

### Sample Output 1

```
no
yes
```

### Sample Input 2

```
4 5
? 0 0
= 0 1
= 1 2
= 0 2
? 0 3
```

### Sample Output 2

```
yes
no
```

**Author:** Per Austrin  
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