UVa Online Judge

1242 Necklace

A necklace in an undirected graph is a sequence of cycles $C_1, C_2, \ldots, C_k$ $(k \geq 1)$, satisfying the conditions below:

1. Any two cycles have no edges in common.
2. There is exactly one common vertex between two adjacent cycles C_i and C_{i+1} $(1 \leq i < k)$
3. Any two non-adjacent cycles are vertex disjoint, i.e. no vertices in common.

Note that any vertex appears in a cycle at most once.

A necklace between two vertices S and T is a necklace $C_1, C_2, \ldots, C_k$ such that S belongs to C_1 and T belongs to C_k.

Given an undirected graph and two vertices S and T, you need find whether a necklace between S and T exists.

Input

The input consists of multiple test cases. Each test case starts with a line containing two integers N $(2 \leq N \leq 10,000)$ and M $(1 \leq M \leq 100,000)$, which are the number of vertices and the number of edges in the undirected graph, respectively.

Each of the following M lines contains two integers A and B $(1 \leq A \neq B \leq N)$, which indicates an undirected edge between vertices A and B. Vertices are numbered from 1 to N.

The last line of each test case contains two integers S and T $(1 \leq S \neq T \leq N)$.

The last test case is followed by a line containing two zeros.

Output

For each test case, print a line containing the test case number (beginning with 1) followed by '`YES`', if the required necklace exists, otherwise '`NO`'.

Sample Input

```
3 3
1 2
2 3
3 1
1 3
4 5
1 2
2 3
1 3
3 4
3 4
1 4
4 5
1 2
1 2
```

```
2 3
3 4
3 4
1 4
0 0
```

Sample Output

```
Case 1: YES
Case 2: YES
Case 3: NO
```