DMOPC '15 Contest 3 P3 - Dimethylbenzene

Time limit: 1.0s **Memory limit:** 64M

Xyene really likes the organic compound xylene, also known as dimethylbenzene. He has received an organic molecule as a present, and would like to know if there exists a dimethylbenzene somewhere in it.

However, organic chemistry is a struggle for **Xyene**, so he'll settle for knowing whether or not his molecule contains **six** carbons atoms arranged in a ring, or **cycle**. There may be multiple cycles in **Xyene**'s present, but he's only interested in finding out if there is **at least one** that is six atoms long.

Xyene has numbered the carbon atoms in his present from $1 \ldots N$, and has given you M **distinct** pairs of the form (u, v), representing a bond between atoms u and v.

Does his present contain at least one cycle of length six?

Input Specification

The first line of input will contain two space-separated integers N $(2 \leq N \leq 20)$ and M $(1 \leq M \leq 20)$.
The next M lines will contain two integers u and v, defining a $u \longleftrightarrow v$ bond.

Output Specification

`YES` if the given molecule contains a cycle that is six carbon atoms long, `NO` otherwise.

Sample Input 1

```
6 6
1 2
2 3
3 4
4 5
5 6
6 1
```

Sample Output 1

```
YES
```

Explanation for Sample 1

This is a ring of six carbons: $1 \longleftrightarrow 2 \longleftrightarrow 3 \longleftrightarrow 4 \longleftrightarrow 5 \longleftrightarrow 6 \longleftrightarrow 1$.

Sample Input 2

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

Sample Output 2

```
NO
```

Explanation for Sample 2

Though this may be a cycle, it is only of length three.

Sample Input 3

```
2 1
1 2
```

Sample Output 3

```
NO
```

Explanation of Sample 3

This is not a cycle!

Sample Input 4

```
8 8
1 2
2 3
3 4
4 5
5 6
6 1
6 7
7 8
```

Sample Output 4

```
YES
```

Sample Input 5

```
8 9
1 2
2 3
3 4
4 5
5 6
6 1
6 7
7 8
8 1
```

Sample Output 5

```
YES
```