Metro

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

A metro map is considered beautiful if it can be drawn by following these steps:

- At least three distinct straight lines must be drawn, all intersecting at a single point referred to as the **central station**. This intersection divides each line into two distinct rays.
- Each ray must contain a finite, non-zero number of stations, and the count of stations can vary from ray to ray.
- Identify the ray that has the smallest number of stations among all rays.
- From the identified ray, select at least one station that is distinct from the central station.
- A ring is defined as a set of stations selected from each ray that are equidistant (in terms of the number of stations) from the central station. For instance, if the ring includes the fifth station from the central station on one ray, it must also include the fifth station from the central station on each of the remaining rays. The stations in the ring are then connected in a clockwise manner.
- It is permissible to place additional stations on the rings, though this is not mandatory.

Help determine whether the metro map is beautiful, that is, whether it can be obtained using the algorithm described above.

Input

The first line contains two integers n and m ($1 \le n \le 10^5$, $1 \le m \le 2 \cdot 10^5$) — the number of stations and the number of metro segments connecting the stations, respectively.

In the next m lines, the segments are defined using two integers a_i and b_i ($1 \le a_i, b_i \le n$) — the numbers of the stations connected by the segment.

It is guaranteed that there are no duplicate segments and no segments connecting a station to itself.

Output

If the metro map is beautiful, print "Yes" without quotes. Otherwise, print "No" without quotes.

Examples

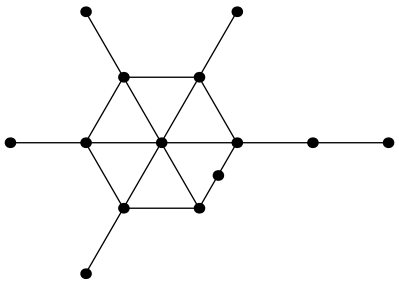
standard input	standard output
14 19 1 2 7 6 7 12 8 1 8 7 9 14 10 3 10 9 11 4 11 10 12 5 12 11 13 7 13 8 13 9 13 10 13 11 13 12 14 8	Yes
7 6 1 4 2 4 4 3 5 4 6 4 7 4	No
6 10 2 1 2 6 3 1 3 2 4 1 4 3 5 1 5 4 6 1 6 5	No

standard input	standard output
8 13 2 1 3 1 3 2 4 1 4 3 5 1 5 4 6 1 6 5 7 2 7 6 8 1 8 7	No
13 24 1 2 1 3 2 3 2 7 4 1 4 3 5 3 5 4 6 3 6 5 7 3 7 6 8 2 9 1 9 8 10 4 10 8 11 5 11 12 12 6 12 10 13 7 13 9 13 11	No

standard input	standard output
26 36 2 1 2 7 3 1 3 2 4 1 4 3 5 1 5 4 6 1 6 5 7 1 7 6 8 2 9 3 10 4 11 5 12 6 14 13 14 19 15 13 15 14 16 13 16 15 17 13 17 16 18 13 18 17 18 19 19 13 20 14 21 15 22 16 23 17 24 18 25 19 26 7	No

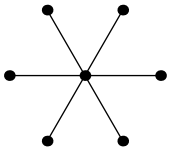
Note

1. In the first example, the metro map looks as follows:



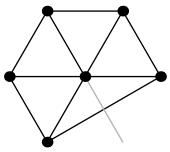
   It is beautiful.

2. In the second example, the metro map looks as follows:



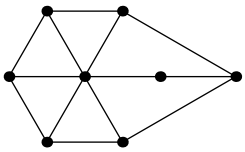
   It is not beautiful because there are no rings.

3. In the third example, the metro map looks as follows:



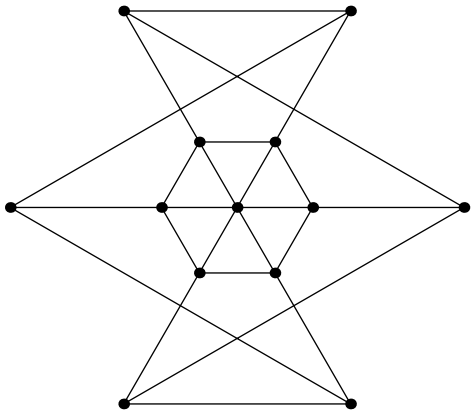
   It is not beautiful because there is a ring that does not pass through all rays.

4. In the fourth example, the metro map looks as follows:



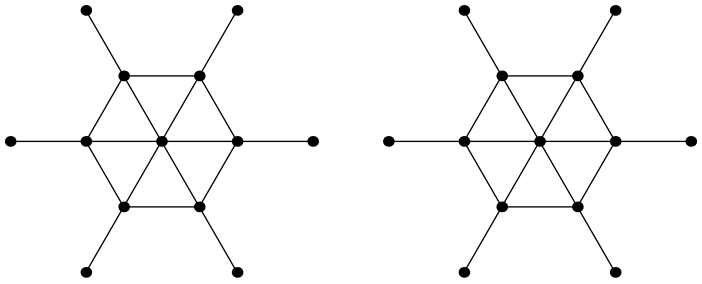
   It is not beautiful because the number of stations from the central station to the ring is different.

5. In the fifth example, the metro map looks as follows:



It is not beautiful because the second ring intersects the rays in a different order than the first ring.

6. In the sixth example, the metro map looks as follows:



It is not beautiful because there are pairs of stations between which there is no path.