Flow Control

There are n scenic spots in the scenic area, with entrance as 1 and exit as n. The roads between the scenic spots are directed edges, and the roads in the entire scenic area form a directed acyclic graph (DAG). In order to control the flow of each vertices in the scenic area, the manager hopes to assign a flow value w_i to each point, so that the sum of the flow on all paths from 1 to n is equal. Can you help him solve this problem?

Input

The first line contains a positive integer $T(1 \leq T \leq 10^4)$, denoting the number of test cases.

For each test cases:

The first line contains two integers $n, m(1 \leq n \leq 2 \cdot 10^5, 1 \leq m \leq 5 \cdot 10^5)$, the number of nodes and edges.

The next m lines contains two integers u, v, denoting there is an edge from u to v.

It is guaranteed that $\sum n \leq 2 \cdot 10^5, \sum m \leq 5 \cdot 10^5$.

It is guaranteed that the graph has no self-loops, no multiple edges, and no cycles. Besides, all vertices can be reached from 1 and can reach n.

Output

For each testcase, if there is no solution, then output No in a single line.

Otherwise, output Yes in the first line, then n positive integers $w_1, w_2, \cdots, w_n(1 \leq w_i \leq 10^9)$ on the second line.

If there are multiple solutions, you can print any of them.

Examples

Input

```
2
5 5
1 2
1 3
2 4
3 5
4 5
8 10
```

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

Output

```
Yes
1 1 2 1 3
No
```