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Contest Code:SNCKQL21
Problem Code:MINDIFF1

Read problem statements in Mandarin Chinese, Russian, and Vietnamese as well.

You're given a simple undirected graph GG with NN vertices and MM edges. You have to assign, to each vertex ii, a number CiCi such that 1≤Ci≤N1≤Ci≤N and ∀i≠j,Ci≠Cj∀i≠j,Ci≠Cj.

For any such assignment, we define DiDi to be the number of neighbours jj of ii such that Cj<CiCj<Ci.

You want to minimise maxi∈{1..N}Di−mini∈{1..N}Dimaxi∈{1..N}Di−mini∈{1..N}Di.

Output the minimum possible value of this expression for a valid assignment as described above, and also print the corresponding assignment.

Note:

- The given graph need not be connected.
- If there are multiple possible assignments, output anyone.
- Since the input is large, prefer using fast input-output methods.

Input Format

- First line will contain TT, number of testcases. Then the testcases follow.
- The first line of each test case contains two integers N,MN,M - the number of vertices and edges in the graph respectively.
- The next MM lines each contain two integers - X,YX,Y, denoting that there exists an edge between vertex XX and vertex YY.

Output Format

The output of each test case consists of two lines:

- The first line contains the minimum possible value of the expression described above.
- The second line contains NN space separated integers - the ithith of which is CiCi in the corresponding assignment.

Constraints

- 1≤T≤10001≤T≤1000
- 1≤N,M≤3·1051≤N,M≤3·105
- 1≤X≠Y≤N1≤X≠Y≤N
- The sum of NN across test cases does not exceed 3·1053·105.
- The sum of MM across test cases does not exceed 3·1053·105.

Sample Input 1

```
3
5 7
1 2
1 3
1 4
2 3
2 4
2 5
3 5
5 4
1 2
2 3
3 4
4 5
3 3
1 2
2 3
1 3
```

Sample Output 1

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

Explanation

Test Case 11: The following assignment is optimal:

- C1=1C1=1
- C2=2C2=2
- C3=3C3=3
- C4=4C4=4
- C5=5C5=5

We can see that 33 has two neighbours with smaller values - 11 and 22. Vertex 55 is also its neighbour, but has a larger value. Therefore, D3=2D3=2.

Similarly, we can calculate:

- D1=0D1=0
- D2=1D2=1
- D3=2D3=2
- D4=2D4=2
- D5=2D5=2

Therefore, maxi∈{1..N}Di−mini∈{1..N}Dimaxi∈{1..N}Di−mini∈{1..N}Di = 2−02−0 = 22.

Test Case 22: The following assignment is optimal:

- C1=5C1=5
- C2=3C2=3
- C3=1C3=1
- C4=2C4=2
- C5=4C5=4

The values of DD are:

- D1=1D1=1
- D2=1D2=1
- D3=0D3=0
- D4=1D4=1
- D5=1D5=1

Therefore, maxi∈{1..N}Di−mini∈{1..N}Dimaxi∈{1..N}Di−mini∈{1..N}Di = 1−01−0 = 11.

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Custom Input

Custom Input