MONK AND ISLANDS

**\*Problem:**

The monk visited the land of the Islands. There are a total of N islands numbered from 1 to N . Several pairs of islands are connected by two-way bridges run on water. Đat hates going over these bridges because they require a lot of effort. He is stands on Island No. 1 and wants to go to Island No. Find the minimum number of bridges that he will must go through, if he takes the optimal path. Assume that there is always a path from vertex 1 to n.

* **Input:** The first line contains T . Number of test tests . The first line of each test set contains two integers N , M. Each of the M lines contains two integers X and Y , indicating that there is a bridge between Island X and Island Y.
* **Output:** Print the answer for each test case in a new line.

Example:

|  |  |
| --- | --- |
| **INPUT**  2  3 2  1 2  2 3  4 4  1 2  2 3  3 4  4 2 | **OUTPUT**  2  2 |

**\*Analysis:**

We use BFS algorithm because here the requirement is to find the shortest path between 1 to N but if using Dijktra, it is too complicated and here if using Dijktra, we have to assign weight to each edge is 1, and if using BFS we won't need.

+We use array d[i] to store the number of vertices from vertex 1 to node I with d[1]=1, so the final output will be d[n]-1, we have -1 because the number of edges is equal to the number of vertices minus 1.

+ In the BFS function, we will use the linear search algorithm to find out when we have found the vertex N and vice versa it will help us go to other vertices if we have not found the vertex adjacent to the vertex N.





**\*Algorithms used:**

+Dijktra

+Linear Search