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## Induced subgraphs

P12120\_en

Novè Concurs de Programació de la UPC - Final (2011-09-21)

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Given an undirected graph  $G = (V, E)$ , any  $S \subseteq V$  induces a subgraph  $G[S] = (S, E')$ , where  $E'$  contains all edges in  $E$  that join two vertices in  $S$ . Let  $d(S)$  denote the minimum degree of the vertices in  $G[S]$ .

You are given a graph  $G$  and a size  $s$ . Which is the maximum degree  $d$  for which there exists some  $S$  with at least  $s$  vertices and such that  $d(S) \geq d$ ?

### Input

Input consists of several cases, each with the number of vertices  $n$ , the number of edges  $m$ , and  $m$  pairs  $x y$  (with  $x \neq y$ ), one for each edge of the graph, followed by  $s$ . The vertices are numbered from 0 to  $n - 1$ . Assume  $1 \leq n \leq 10^3$ ,  $0 \leq m \leq n(n - 1)/2$ , that there are no repeated edges, and  $1 \leq s \leq n$ .

### Output

For every case, print the required answer.

#### Sample input

```
6 6
0 1 1 2 2 0 0 3 1 4 2 5
3
6 6
0 1 1 2 2 0 0 3 1 4 2 5
4
2 1
1 0
2
2 0
2
3 2
0 1 0 2
2
```

#### Sample output

```
2
1
1
0
1
```

### Problem information

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