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Algorithms Lab

Exercise – BFS

Compute the distances of all vertices from a given starting vertex using BFS.

Input The first line of the input contains the number $t \le 10$ of test cases. Each of the t test cases is described as follows.

- It starts with a line that contains three integers n m v, separated by a space, denoting the number of vertices, the number of edges, and the starting vertex, and such that $0 \le n \le 10^3$, $0 \le m \le \binom{n}{2}$, and $0 \le v \le n 1$.
- The following m lines each contain two integers a b, separated by a space, indicating that $\{a,b\}$ is an edge of the graph.

Output For each test case you should output one line containing the distance of the vertices from v, ordered by increasing labels. If a vertex cannot be reached, its distance is -1.

Points There is one group of test sets, worth 100 points in total.

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Sample Output

0 1 1 2 2 -1 -1 0 1