CSE221
Lab Final
Fall 2023

Submission Guidelines:

1. You can code either in Python, CPP, or Java.
2. Submit only one file in the format 2023_Fall_Final_XXXXXXXX.py (or .java or .cpp) where the X's are replaced by your ID number.
3. Add an explanation of 3-4 lines as a comment at the end of your code.
4. For each problem, take input from files called "inputX.txt" and output at "outputX.txt", where X is the sample I/O number.

Problem:

You are given an undirected unweighted graph consisting of V vertices and E edges. You are also given a vertex S. For each vertex you need to find the shortest path from S to that vertex, or -1 if there is no path at all.

Input:

The first line contains three integers V (0 < V < 1000), E (0 < E < 1000000) and S (0 <= S < V). Each of the next E lines contain two integers X (0 <= X < V), Y (0 <= Y < X) denoting that there is an edge between the two vertices X and Y.

Output:

For each vertex (0 to V-1) you need to print the vertices in the shortest path separated by spaces in a line, or -1 if applicable.

Sample Input/Output:

Sample Input 1	Sample Output 1
9 7 0 1 0	0 0 1

2 1 3 1 3 2 4 3 7 6 8 6	0 1 2 0 1 3 0 1 3 4 -1 -1 -1 -1
Sample Input 2	**Sample Output 2**
8 9 1 1 0 2 1 3 1 3 2 4 3 5 4 6 4 7 5 7 6	1 0 1 1 2 1 3 1 3 4 1 3 4 5 1 3 4 6 1 3 4 5 7