Instructions:

- Plagiarism is defined as "taking and using the thoughts, writings, and inventions of another person as one's own". IBA has a no-compromise policy on Plagiarism – in case, plagiarism is proved student will be given an **F grade**.
- Your assignment should represent your own effort this will be checked in viva. However, you are not expected to work alone. It is fine to discuss the exercises and try to find solutions together, but each student shall write down and submit his/her solutions separately. It is a good academic standard to acknowledge collaborators, so if you worked together with other students, please list their names.
- Electronic Submission on LMS is compulsory.
- Assignment will be graded on the basis of **timely submission on LMS** and **individual viva**.
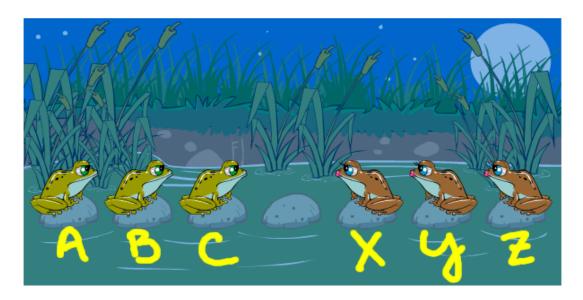
1. Consider the graph below.

   a. Find a path from Arad to Bucharest using each of the following uninformed searches:
      i. Depth-first search (DFS),
      ii. Breadth-first search (BFS),
      iii. Iterative deepening search (IDS)

2. In this question you have to formulate the "jumping frog" puzzle as a search problem. (There are a number of flash implementations online if you want to play with it.)

In general, two sets of frogs are trying to get to the opposite ends of a single row of lily pads. Each frog can jump forward either one or two spaces but cannot jump onto an occupied pad. Frogs cannot jump backward or turn around.

The start state is ABC-XYZ
The goal state is XYZ-ABC

a. Create the graph or solution space for the frog-jumping problem, but you can make two simplifications as below:
    i. Just use two frogs, so the start state is AB-XY and the goal is XY-AB
    ii. There are always two ways to reach the goal: one starts with a frog (A or B) moving right and the other with a frog (X or Y) moving left. So, ignore the solutions starting with X or Y in this way you can cut the search space in half.

b. Apply Breadth-first search to find a goal state and print the sequence of moves and states to reach the goal state.
c. Apply Depth-first search to find a goal state and print the sequence of moves and states to reach the goal state.
d. Apply Iterative deepening search to find a goal state and print the sequence of moves and states to reach the goal state.

****************   Best of Luck   ***************