ITCS 6114 – Algorithms and Data Structures
Programming Project – 3

The project is due before midnight on Sunday, December 2. It should be submitted on canvas.

Instructions:

- You can use any Programming language to solve the questions,
- Your submission should include entire source code of all the problems
- Submit a single zip file on canvas, do not submit answers separately.
- All the inputs should be taken from console.
- Your submission must include all your source code and a READ ME file. Your read me file should have a brief description about techniques and data structures you used in your program, your read me file must also include information about how to execute/run your program.

Question 1:

Write a program that has 7 operations, your program should run until exit operation is selected. The 7 operations are

1. Create a Directed Graph using the inputs taken from console.
2. Perform DFS Traversal on the Graph.
3. Perform BFS Traversal on the Graph.
4. Find Shortest Path from Source to all vertices using Dijkstra's shortest path Algorithm.
5. Detect if there is a Cycle in the graph.
6. Check if the graph is Bipartite or not.
7. Check if Graph is a tree or not.