Department of Computer Science

CPS688 – Advanced Algorithms

Lab 1

General Instructions:

Due date: Week 5, two weeks from today's lab session.

Grading: Each student is required to demo the program during the lab session. Failure to show up will result in a grade of zero. No extensions.

Submission: Zip your code and submit it on D2L after your finish your demo.

Weight: 5% of your total grade.

Lab Instructions:

Use the Java language to implement a Graph using an adjacency list.

Provide implementations of the methods below:

- Add an edge between two vertices a and b. [`addEdge(a,b)`]
- Compute the degree of a vertex a. [`degreeVertex(a)`] //returns the number of neighbors for a given vertex a.
- Print the adjacent vertices of a vertex a. [`printAdjVertices(a)`]

Given an undirected graph, you are required to create its corresponding adjacency list using the Graph implementation above and print its vertices using Breadth First Search [`BFS`] and Depth First Search [`DFS`].

Input

Each test case consists of two integers **n** and **e**, representing the number of vertices and edges respectively. The next **e** lines represent the vertices that are connected by an edge.

Output

For each test case, print the graph using both BFS and DFS.

Sample Input	Sample Output (BFS)	Sample Output (DFS)
6 6 0 1 0 3 1 2 2 4 3 4 3 5	0 1 3 2 4 5	…