# IT251 Lab 3 Problems -- 22 Jan 2020

**Instructions: For each of the problems below, test your code on different input graphs. All your programs should have a O(V+E) runtime.**

**Problem 1: Breadth First Search**

Write a program to implement BFS on a undirected graph. Read in a graph from a file and a source vertex from the user. (You can use the code in 'graph-input.py' to read in a graph from a file.) Print the vertices in the order in which they are visited, along with their distance from the source vertex.

**Problem 2: Connected Components**

Write a program to compute the connected components of an undirected graph. Read in a graph from a file as in Problem 1. Print the vertices in each connected component of the graph.

**Problem 3: Bipartite check**

Write a program to check if an input undirected graph is bipartite or not. Read in the graph from a file as in Problem 1.