CSCI 230 -- Lab 9

Graph Representations

Due:_____

Feel free to discuss and help each other out but does not imply that you can give away your code or your answers! Make sure to read all instructions before attempting this lab. You can work with a lab partner and submit one lab package for your group.

You must use an appropriate provided template from Canvas or my website (zeus.mtsac.edu/~tvo) and output "Author: Your Name(s)" for all your programs. If you are modifying an existing program, use "Modified by: Your Name(s)".

Lab question 1: Outline an approach to represent an undirected graph using Edge List Structure. Try it out with a simple undirected graph with about 4 vertices and a few edges.

Lab question 2: Discuss advantages of Adjacency List over Edge List Structure for an undirected graph.

Set up your own code to represent an undirected graph using Adjacency List or Adjacency Matrix (use string for vertex and int for edge); keep it as simple as possible with using too many classes. Try the test case below first and then create a simple graph with 4 vertices and 6 edges and print it. You might want to start with a simple Adjacency Matrix that stores only 0 or 1. Output your graph in this format:

```
Vertex A
 2 adjacencies:(C, 200)  (B, 100)
Vertex B
 1 adjacencies:(A, 100)
Vertex C
 1 adjacencies:(A, 200)
```

For C++, you can start with my AdjacencyMapGraph class to use a list instead of map to create AdjacencyListGraph class (Adjacency List option). Files available: Graph.h, AdjacencyListGraph.h, and testGraph.cpp.

For Java, you can modify AdjacencyMapGraph to use a list instead of map to create AdjacencyListGraph class (Adjacency List option). Files to use: AdjacencyListGraph.java and GraphExample.java.

There is no code for Adjacency Matrix, but it should be straight forward with a matrix that stores only 0 or 1.

Extra Credit: Set up code to represent an undirected graph using the second approach (either Adjacency List or Adjacency Matrix that is not done for regular assignment)

Online Submission: Submit one PDF file via Canvas includes status, answers to lab questions, output and source code for all required programs.