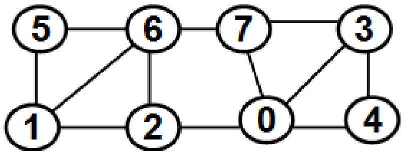
CSC 323 Algorithm Design and Analysis, Fall 2017, Instructor: Dr. Natarajan Meghanathan
Project 8: Breadth First Search Algorithm Due: Nov. 30 @ 11.30 AM

In this project, you will learn how to use the Vector and TreeMap classes of the Java util (Collections) package for programming with graphs. The focus of this project will be on the Breadth First Search (BFS) graph traversal algorithm. You will extend the code for Breadth First Search (posted in Canvas) to determine the following on a graph:

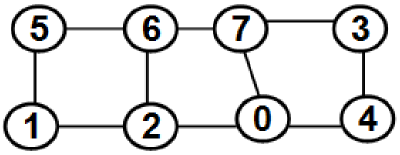
(1) Classification of the edges as tree edges and cross edges
(2) The level number (distance) for each node with reference to a starting node
(3) Whether the graph is connected or not.
(4) Whether the graph is a bipartite graph or not. If the graph is bipartite, print out the two partitions.

Run the extended BFS code on the graph assigned to you and determine each of the above.

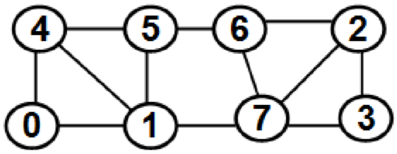
Graphs assigned to each student (the starting node is 0 for all students)



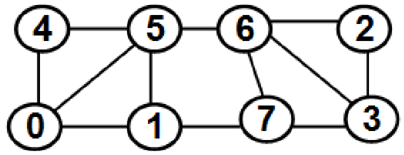
Armon Clark



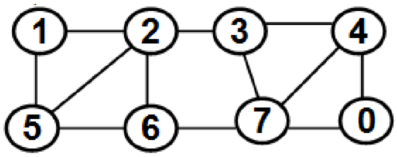
Daniel Epps



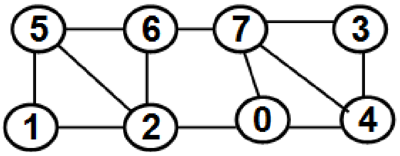
Allee Gammons



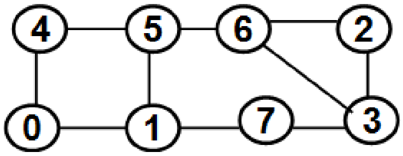
Menlik Getachew



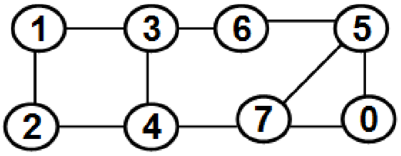
Taylor Hasty



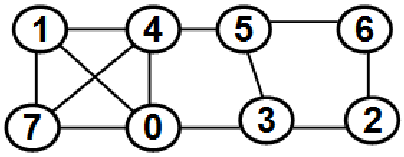
Derrick Jackson



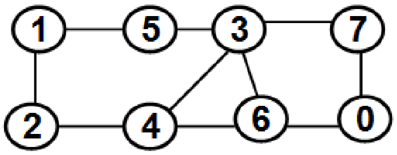
Devario Lewis



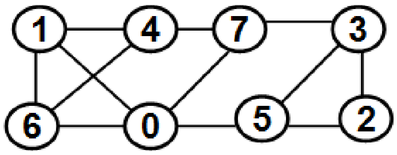
Jai-Michael McMillian



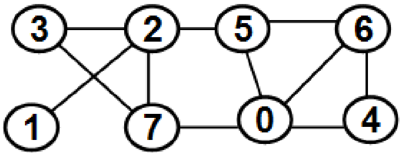
Nahu Merawi



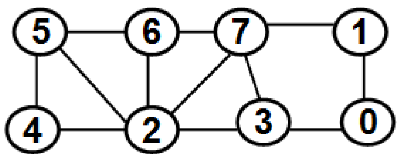
Taj Nelson



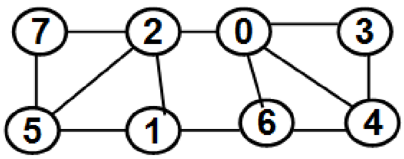
Patricia Perry



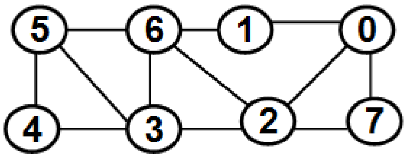
Daniel Powell



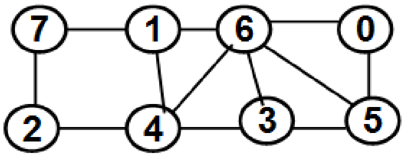
Aiyanna Price



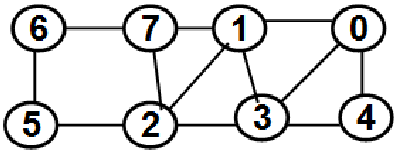
Allaysia Roberts



Dreshon Sanders



Miracle Williams



Michael Wilson

Videos to look at (in the following order; the accompanying code is provided in Canvas, all as a zip file):
Vector Example
https://youtu.be/5xx6EgLott4

TreeMap Example 1
https://youtu.be/n2VKIrVkZUU

TreeMap Example 2
https://youtu.be/n2VKIrVkZUU

BFS Code
https://youtu.be/qGTP8DMzGsM

<u>Submission (through Canvas):</u>
Submit the following in a single word document:
- Complete code (including the code snippets for the extension) as well as the screenshots of the outputs resulting from the execution on the graph assigned to you.
- Workout items (1) through (4) for the graph assigned to you and include as a report.