Week 12 Assignment - Graphs

Submit Assignment

Due Wednesday by 11:59pm **Points** 10 **Submitting** a text entry box or a file upload

Incompatible Guests

- You are planning a get together with N guests. They are from two incompatible political parties. They won't tell you what political party they are from but they will tell you some of the guests that they won't sit with. Naturally, you will model this as a graph where each guest is a vertex numbered from 0 to N-1 and an edge (v, w) represents that v and w won't sit together. (It's symmetrical. Both v and w agree that they won't sit with each other). Your task is to write a method that determines whether or not you can satisfy their demands. If you can satisfy their demands, list the vertex numbers in each of the two groups of guests. Run your algorithm on the following graphs and submit the output. **tinyGB1.txt**. **tinyG.txt**

Topological Sort

1. Write a method called ***isTopologicalOrder*** that checks whether or not a given sequence of vertices *S* of a DAG *G* is a topological order of *G*. Run your algorithm on the following graph and two topological orders. **x.txt. [3, 6, 0, 5, 2, 1, 4], [4, 3, 6, 0, 5, 2, 1]**
2. Write a method called ***topologicalSort*** that does not rely on depth first search. You can solve this problem by identifying either the characteristics of the first (or last) vertices in the topological order, including them in your result and then removing them from consideration and repeating the previous steps. Run your algorithm on the following graph and submit the output. **x.txt**