

Software Development Report
for
CSC 122: Programming II: Fall 2022
Graphs and coloring
by
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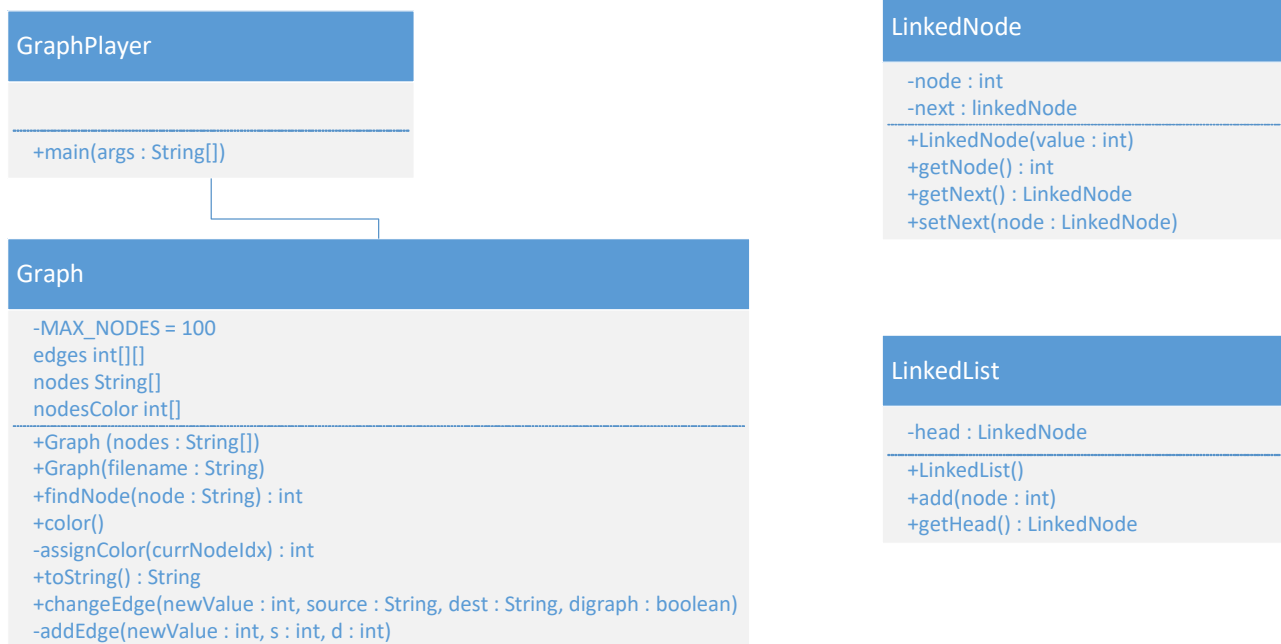
Problem Summary

This program must take the information of nodes and edges from a file and assign colors to the nodes. The maximum number of nodes is 100 and the graph has to be implemented by an adjacency list.

Implementation Requirements

- Graphs
- Graph coloring
- Adjacency list

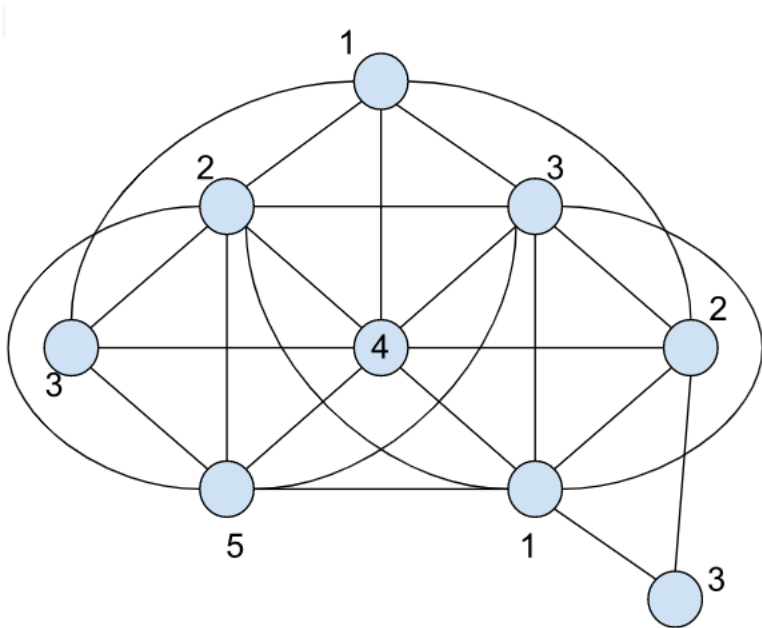
System Design



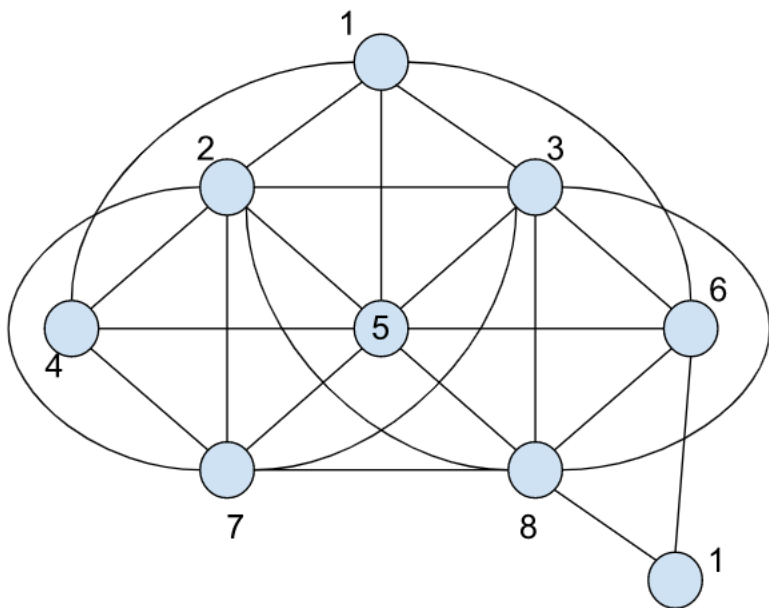
Only implemented GrapPlayer and Graph because I ran out of time and couldn't find a way to connect them all

Testing Plan

Optimal minimal coloring:



Suboptimal minimum coloring:



Case	Description	Input	Output
S1	Getting data from first file	Smallgraph	Graph colored is: node1 (color: 1) node2 (color: 2) node3 (color: 2)
S2	Getting data from second file	9x25 graph	Graph colored is: node1 (color: 1) node2 (color: 2) node3 (color: 2) node4 (color: 1) node5 (color: 1) node6 (color: 1) node7 (color: 1) node8 (color: 1)
S3	Create a graph with 9 nodes and 25 edges with an optimal minimal coloring	Figure1	Figure1
S4	Create a graph with 9 nodes and 25 edges with a suboptimal minimal coloring	Figure2	Figure2

Time Spent

The program and development report took me around 9 hours to develop

Outside resources used

- UML cheat sheet provided in Canvas
- Microsoft Visio to create the System Design
- Examples from lectures and the book

Security Report

- Positive: Program can run as many times as wanted until it's correct
- Negative: Can't get data from the file

Ethical Report

- I can't think of any ethical risk since it doesn't contain any sensitive information
- A positive application is the variety of graphs that can be used in the program

Future improvements

- Implement the adjacency list
- Better testing plan

Lessons learned

- How graphs work
- Coloring
- Trying to develop by myself with no help

Improvements of Work

none