

Week 1

We committed our goals of the project to github. For our project, we decided on using a dataset based on Twitter. A user is defined by a number, and the data set provides us with a list of edges that connects one twitter user to another user. Since this was a graph modeling a social network, we thought it would be appropriate to use Breadth-First Search. Also, we decided on using a directed graph, and on this graph, we would try to calculate the betweenness-centrality of each node. Also, we wanted to implement a graph coloring algorithm on the graph. Finally, we wanted to draw the graph using a force directed graph algorithm. We have all submitted our contracts as well.

Week 2

Over break, we implemented a rough idea of our graph class using an adjacency list. Since it is an directed, unweighted graph, we simply used a hash map for our adjacency list, with no edge list. We also implemented a few basic graph functions that will allow the graph to work, such as adding and removing a user. Also, we modified our motives for the project. We have decided to focus less on trying to implement the force directed graph algorithm and the graph coloring algorithm, as they are very hard to implement. Instead, we will be trying to implement the Floyd-Warshall Algorithm and try to calculate the betweenness-centrality of each node, as the Floyd-Warshall Algorithm is used to calculate the betweenness-centrality. We also developed a function to parse the input text file.

Week 3

We implemented most of our goals into working code. We were originally going to do a dataset with over 80,000 nodes. However, when we executed the Floyd algorithm with that dataset, our program had reached a CPU time limit designated by EWS machines, so it was not able to complete. As a result, we had to switch to a smaller dataset with roughly 7000 nodes.

Performing our methods (BFS, Floyd-Warshall, and Betweenness-Centrality) on this new dataset takes about 10 minutes. Furthermore, we were able to develop test cases for each of the algorithms we implemented, and whether our Graph class works on small graphs. Instead of having graphical outputs, we are trying to output the results of our algorithms on the datasets into textfiles. The textfiles can be quite long. We are then writing our report and making a video explaining our code and what our program does.