Final Project Write-Up

For this project, I answered the following questions: What is the usual distance between pairs of vertices in my graph and are the distances different for this versus another graph. The two graphs I used were edges and vertices from Facebook and edges and vertices from Enron emails. I used two graphs so that I can compare their distances.

I'm not sure if this is the correct output but when I run the code on both graphs, I get a similar result that there are no paths found between the nodes. This can most likely mean that the nodes are not connected or there's no distance between them.

The main algorithm that I implemented was the Dijkstra algorithm. This algorithm is used to find the shortest paths between nodes in a weighted graph. Once I found all the shortest distances, I calculated the average distance by dividing the total distance by the number of pairs.

As far as contributions, I used ChatGPT to help me with debugging for lines 28-30 and line 62 in both facebook.rs and enron.rs. Before editing lines 28-30, I had the error "thread main panicked at Ungraph::add_node out of bounds". ChatGPT recommended that I allocate extra nodes so that there won't be a risk of going out of bounds, which is why I inputted the for loop there. Before editing line 62, I got the error that there was a mismatch of the types since the output was expected to be a HashMap but instead was an enum Option<_>. ChatGPT recommended that I be specific with the type that I wanted the output to be, which is why I typed "let distances: Option<HashMap<NodeIndex, i32>>" so that there was no confusion with the expected output.