

- Project Contributors, and their individual contributions (if working in pairs).
 - Aurora Hodar (I worked alone)
- Group Challenges (if applicable) - Discuss any major problem your group encountered while implementing the project. This can also include challenges you encountered with your group.
 - N/A, I worked alone
- Individual Reflection- Describe your individual contributions to the project and briefly describe any challenges you (not your group) faced in this project.
 - I struggled a good bit to figure out the readFromSTDIN block. It has been a while since I used cin and I had to search through c++ documentation a bit to remind myself of how to use it
 - I also struggled a bit to understand how to use unions—the documentation felt very confusing and didn't give a nice simple explanation, it felt like I needed to already know what they were to understand the documentation. I eventually figured it out after looking closer at the overall structure of the header file and realizing that it was dividing relevant attributes for either DFS or BFS.
 - I was thrown for a loop for a few minutes while testing my DFS and BFS implementations because I accidentally messed up the searches. While traversing the inner vectors I set it such that I was looking at the index of inner vectors rather than the value stored at that index, which only works on the outer vector for these graphs. In the end though I was pretty happy that I caught the issue only a few minutes after noticing it, as I definitely would have expected to spend a while figuring out why my values seemed so random.
- Known Issues- If there are any known issues with your code, mention those here. For each issue, try to best explain what may be causing the issue and what would be a potential solution; by thinking through the cause of the issue, you may find a way to fix it :)
- Additional Information- Any additional information you find relevant; keep it brief.
- Further Considerations:
 1. **What was the hardest part of doing this project?**
 - a. It has been a long time since we've read input and I was struggling to make it work. The code in the instructions to make the readFromSTDIN just didn't seem to work on my machine and I only got it to work by first initializing another graph and then using operator= to make it work.
 2. **What was the easiest part of doing this project?**
 - a. Most of the functions were stuff we've done before, just slightly adjusted, and even the BFS and DFS were originally algorithms in the textbook. Project5-Huffman Codes also came from the textbook, but having actually studied DFS and BFS so that we understand them implicitly makes a huge difference.
 3. **What is something that you learned about graphs in this project?**
 - a. I think I have a better understanding of how to read from adjacency lists now. This is something we did a lot of in class but it feels easier after writing code for it.

- 4. Did you learn anything new about C++ in this project?**
- a. I was unfamiliar with unions but they're very useful to avoid repeating code. In this project, separate objects for BFS and DFS would both require an attribute for 'parent' and 'visited' and keeping track of entirely separate structs.
- 5. How would you modify your implementation to work for weighted graphs? Would you modify your BFS and DFS implementations? DO NOT PROVIDE CODE.**
- a. I think the easiest way would just to make the inner vectors not store integers, and instead store pairs of integers where the first member of the pair is the same as my current implementation (indicating an adjacent vertex) and the second member of the pair stores the weight.
 - b. Neither BFS nor DFS implementations should need significant changes—the main requirement would just be changing how values are accessed so that it gets the first member of the pair rather than just the standalone integer stored in the adjacency list.