Praneeth Mekapati pm14
Chidambara Anagani canaga2
Rahul Vasanth rvasant2
Alaa Shuaibi (ashuai6)

Project Contract CS225

Project Goals:

Rahul Vasanth (rvasant2), Chidambara Anagani (canaga2), Praneeth Mekapati (pm14), and Alaa Shuaibi (ashuai6) will work together to complete the final project for CS 225 in Fall 2020 taught by Prof. Evans. Our goal is to apply the conceptual knowledge we've learned to the OpenFlights dataset which links flights with airports from 2014. https://openflights.org/data.html

This will be a graph based project, and the group will implement at least one traversal covered in class and two algorithms, one of which is either complex or has not been covered in class. Theoretical project goals are as follows:

1. BFS (Breadth First Search) on our graph
    a. BFS will require the use of additional data structures.
2. Dijkstra's Shortest Path Algorithm
    a. This was covered in class
    b. This has real world relevance in mitigating fuel costs and travel time.
3. Landmark Path Algorithm
    a. This was not covered in class.
    b. This is particularly relevant because many times people will want to visit certain airports with attractions or specifically visit certain countries or regions on their route to their final destination.

This work will form the core of our Project Goals Document. If time permits and there is additional interest, members will implement additional traversals or algorithms of their choosing but it is important to note that this is not a project requirement, just a means for those interested in going above and beyond the Project Goals and to allow for some flexibility. If another algorithm is implemented, it can be substituted for the Landmark Path Algorithm or Dijkstra's Shortest Path algorithm. Similarly, please note that if the group decides to implement DFS it can be substituted in place of the BFS algorithm.

A weekly document containing a paragraph that summarizes the group's work and provides a status update will be committed via Git each week.

We will also be providing a final report, with figures, that provides a summary of what we have done, additional areas for future inquiry, and key insights we discover as we work on the project. This will be at least one page, perhaps more, not including and graphs or figures included. It will be in .md or .pdf format.

Test cases will be supplied for the algorithms as required, and the code will run on U of I's EWS. We will be writing our functional codebase entirely in C++ and be using only material in our group repository and publicly installed libraries on EWS. We will also include a README in .md or .pdf format with instructions on how to build and run our executable file.

Lastly, a presentation will be recorded (or presented live if opportunity permits) detailing our work, how we arrived and worked towards our project goals, and our results. It will be at least 10 minutes long.

Team Contract

Rahul Vasanth (rvasant2), Chidambara Anagani (canaga2), Praneeth Mekapati (pm14), and Alaa Shuaibi (ashuai6) will work together to complete the final project for CS 225 in Fall 2020 taught by Prof. Evans. Members are expected to attend team meetings, maintain regular communication, and collaborate together. Each member will contribute constructively to the final project.

Communication:

Scheduled Meetings:

All members are available on Saturdays at 6pm Central and we intend to meet weekly to discuss project goals, status updates, and to work together in a regularly scheduled setting. Rahul will host the meetings via Zoom and meetings are expected to run for about one to two hours, though a significant portion of the time will be spent independently working, reviewing, and committing code. Meeting duration will likely ramp up nearer to the final project deadline. Rahul will take meeting minutes and Praneeth will also take paper meeting minutes. This document is based on a meeting hosted by Rahul on November 14th and his minutes taken on this date; all members attended and contributed to the meeting and to the Project Goals and Team Contract.

Communication Between Meetings:

All members are expected to regularly check in on the Discord server set up by Alaa at least once a day. Most members are able to respond within 30 minutes. For quicker turnaround, a few members have also suggested using Telegram or iMessage for prompt responses. Praneeth has set up a Google Document for ease of collaboration with the English-heavy. Communication over Discord will be more fluid; not all members need to be present and two people can work together efficiently using the voice comms or chatroom.

Respect:

All members are expected to maintain an open, transparent, and welcoming environment. Given that meetings are held over Zoom, members will have a copy of the meeting minutes, and there are many opportunities to weigh in on Discord and perhaps iMessage as well. Members are encouraged to voice their opinions as this is a collaborative project; the project will go much better when everyone feels they are being heard and that their ideas are taken into account and incorporated into the project. While not all ideas can be included, it is essential to treat everyone with respect and discuss and take into account what has been shared. Members are expected to be fully focused during team meetings and not multitasking. A possible solution to ensure this is to require video participation.

Collaboration

Work Distribution

Members are expected to contribute constructively where their interests lie, but everyone will have to contribute in some way to the codebase, even if it is testing, improving readability, or commenting code for ease of use. If multiple members want to work on the same things, they can work together. If someone invests a lot of time trying to implement something but is unable to complete it, they should receive full credit, but it's essential that they communicate with the group ahead of time so that other members can help. It is essential that all members invest time each week and maintain strong communication with the team.

Rahul - Organizing future Zoom meetings on Saturdays at 6pm Central and taking weekly meeting minutes that will be shared promptly with team members. Putting together initial draft of Team Contract and Project Goals while ensuring everyone's views are taken into account based on the previous meeting and responses in Discord.

Interests and responsibilities wanted - I am extremely interested in working on whichever shortest path algorithm that we use, Dijskstra's algorithm if we're using a covered in class shortest path algorithm or Landmark Path if we are not using one covered in class. I also do not mind working with stacks and queues DFS or BFS respectively. I am strongly interested in helping organize the Final Presentation and report as well as the mid-project check-in meeting. Perhaps I can help with the weekly log if I end up taking minutes.

Chidambara - Responsibilities Wanted: Responsible for using a google doc to record the statuses of each week with the work of the project. I will organize emergency meetings outside of the regular meetings if need be depending on if someone needs help or there's a critical issue. I would like to organize the code for the project meaning that I will set up the basic idea of what each function should do like the labs and mps given in class (short summary).

Interests: I'm interested in any shortest path algorithm the team decides on as long as I can fully understand it and be able to explain it. I'm also, like Rahul, comfortable with stacks (DFS) and queues (BFS) and everything else we have worked on in class. I would like to partake in the final presentation preparation as well.

Praneeth - Working on recording notes for the discussions done through zoom and discord.

Interests and Responsibilities Wanted: I would like to decode and simply the algorithms for each function in order to clearly explain the steps taken in order to achieve a given goal for a given function. I would like to use any algorithm that would be self-explanatory and will be able to justify the main goal of this project. For the final part, I want to explain the steps for the functions in the code. I want to record a log each week of which functions I've completed and

understood so far to make sure each function justifies the steps taken in order to achieve the goal of the project.

Alaa - Interests: I personally am comfortable with everything I have learned in this course, hence, I am choosing to be very flexible when working on this project by implementing anything my team members are not implementing or are at least not focused on, whether it's a traversal, algorithm, or something else. I'm also willing to help implement and debug anything my teammates are struggling with to ensure everyone is successful with each of their goals.

Responsibilities Wanted: One responsibility I would like to take on is assisting team members with coding/testing/debugging by checking Discord often and replying to any concerns one might have quickly. I'm also interested in contributing to the overall design of our project as well as ensuring every component of our project works well together. To do this, I will keep track of everything our team is doing and also work with my teammates to decide what else we should implement into our project and how we can successfully incorporate it with the everything else we plan to work on. Finally, as the owner of the Discord server, I will need to be present on Discord often to check in on my team, send out reminders for important meetings/deadlines, and ensure Discord is utilized in the best way possible. Of course, my responsibilities will vary based off of the needs of our team overall, hence I'm willing to take on new roles whenever they become necessary.

Time Commitment

Members are expected to spend 5 - 10 hours a week working on this project outside of team meetings. If someone has an exam or upcoming project and is unable to work certain days, this is fine, but it must be communicated with the group. Members are expected to attend team meetings on Saturdays, unless there is a conflict in which case it should be communicated with the group before the meeting.

Members can discuss any conflicted times during any week in the group chat in Discord and there will be alternative ways to finish the work during the same week with a change in the number hours put for any person or try to find not a big amount but a appropriate amount of time during the consecutive week to finish what wasn't in the current week.

Conflict Resolution

If there are disagreements over the project, members might possibly vote on the route to take. Disagreements within two individuals could be mediated by other members of the group. Serious disagreements after repeated requests or interventions might be taken with course staff, but this is a matter of last resort. However, the best way to resolve the conflicts is to openly discuss either in the Discord group chat or through video call in Zoom or also Discord.