Assignment #6 - Self Assessment

My main contributions to the project were building the generation algorithm and creating the backend server to deliver data to the app. Creating the algorithm was an iterative process. One part of the challenge was designing the question. If we are to generate a satisfactory pizza order for a group, what do we define as satisfactory? We found in many initial test cases that the algorithm was "too greedy". Meaning that if it had the ability to choose between generating many pizzas that accounted for many users but had few toppings, versus making pizzas that accounted for slightly less users but more toppings, the algorithm always chooses the former. This means the algorithm is missing out on topping volume, which would lead to dissatisfaction. This algorithm was served over a REST API which I developed in Python. The API handles organizing users into groups, logins, and generating pizza orders.

Throughout this project, I learned and improved my skills. I already had experience with algorithm design, but designing this algorithm pushed my skills to a new height. In the past, I hadn't had much experience with bipartite graph theory and matching/ranking algorithms. As well, problems I had worked with had usually been more compartmentalized and smaller in scale. As well, I implemented a REST API in Python for the first time. I had experience creating APIs in other languages like Java and JavaScript before, but this time I used a package called FastAPI in Python. I was largely able to succeed in all the aforementioned areas. I struggled at some points with the algorithm design, but through an iterative design process and working with our advisor, Badri, we were able to eventually come to a solution.

Our small group of myself and Jackson by the end of this year built a working app that can turn a group of people's pizza preferences into real orders, which can be used to order real pizza. Because of this milestone being reached, I would declare the project a success. Jackson and I had worked in groups in the past so we were familiar with each other's work styles and strengths already. In the past year, we were able to leverage our teamwork experience and further grow our collaboration skills. We stuck with what had worked in the past: Breaking down the work into smaller parts and assigning each part to the person who best fit the task.

I think our efforts on the project were about equal contribution. We both spent a large chunk of time together working on the algorithm; this ended up being the majority of the time spent on the project because of the complexity of the problem. Jackson and I individually worked on the frontend and backend respectively because these were in-line with out technical skillsets. Put together, our contribution feels about even. I want to not only give special recognition to Jackson for his great efforts, but also our advisor Badri, who without him we could not have created an algorithm that is as efficient or satisfactory.