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Aerial Firefighting Navigation System

The data structures that were used for this project were graphs and priority queues. The graph was used to simulate the various locations of each fire, this was the best choice because they are the best to represent multiple locations with interconnecting edges. The priority queue was used to decide which fire was needed the most attention based on its severity. The severity was the calculated by weighting the amount of fuel in the area, the number of occupied structures, and the wind speed.

The work was divided as so, Arash was in charge of creating the graphs to represent the various locations in the city and Brandon was in charge of the priority queue that contained the fires. The program is run simply by compiling the program and running it via the command line. Once it is run, the simulate fire function will be called, and the user will be prompted for input. This input is where the pilot should be moved to to deal with a fire at that location, affecting the containment level. As time goes on the fires will begin to reorder themselves in the priority queue as more are contained and severity rises. The simulation will run until all the fires have been dealt with, and then the simulation will end.

To note there are still a few bugs that need to be resolved, and these tweaks will be made throughout the week until the demo on Thursday. The only problem as of now is matching the data type for a certain function call. Other than that the project has gone very smoothly and should be up and running by demo day. The challenges with the project were implementing the graph and pq together and using structs that could work for both data structures.