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Final Project Write-Up

When brainstorming ideas of datasets we wanted to use one thing we both wanted was a dataset that had practical applications as a graph. We used the airport data graph as inspiration and decided to use covid cases in the United States. With states as vertices and edges weighted by cases we felt like we could accomplish some cool tasks with our graph structure. We decided to specifically use covid cases per 100000 people in each state as the metric of how safe a state is because it most accurately reflects how safe a state is. As such we decided to implement the landmark path algorithm. A user can enter what their departing and destination states are as well as inputting a third state they want to visit along the way. This algorithm, we feel, provides a great example of how graphs can be extremely useful in our everyday lives.

With these ideas in mind we went to work and have designed a simple program that prompts the user for the latest cases and gives them the option to perform a BFS traversal of the United States starting from a specified state, print all the states their neighbors and case rate between them, as well as finding the safest route from one state to another while hitting a third state along the way.

Again, we were struck by the utility of graph structures and see huge potential in the project we have right now. If we created a nice graphical output with the states as vertices and edges as case rate between two states and added a nicer UI then we feel like this could be a simple yet effective tool people can use in these unprecedented times.

Ultimately we thoroughly enjoyed working on this project while trying to not only meet the goals we set for ourselves at the beginning but surpass them. And in the end we learned to appreciate the amazing ability of data structures.