CS323 HW5:
Visualizing Airline Distances using Prim's Algorithm

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THIS CODE IS MY OWN WORK. I COLLABORATED WITH DAVID PRINA ON THIS ASSIGNMENT. I REFERENCED THE TEXT AND WIKIPEDIA'S ARTICLES ON MINIMUM SPANNING TREES AND DISJOINT SETS. TYLER ANGERT.

1 Introduction

This homework explores Prim's and Kruskal's algorithms for calculating Minimum Spanning Trees (MSTs) for a given input graph consisting of 5 different airports in the United States: ATL (Atlanta, GA),SFO (San Francisco, CA), ASQ (Austin, TX), SEA (Seattle, WA), JFK (New York, NY). First, we will investigate the fully connected graph before the travel network has been optimized. Then, using Prim's algorithm, we will investigate the minimized graph and the total cost of travel proportional to the distance.

2 Airports Visualization

2.1 Initial Graph

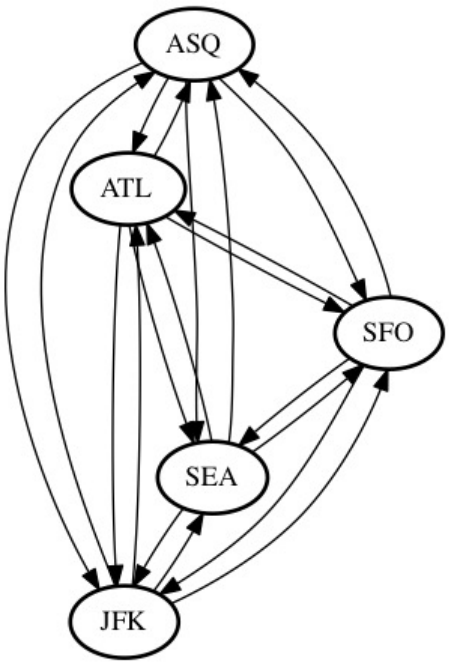

Figure 1: Original graph weight (starting point ATL): 15786.19 miles

2.2 Minimized Graph using Prim's Algorithm

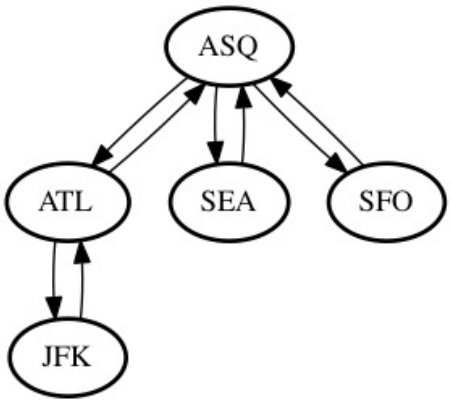

Figure 2: Minimized graph weight (starting point ATL): 3526.62 miles

3 Conclusion

These algorithms work. They have very useful applications for travel and cost optimization.