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CS 302 – 1001

December 10, 2019

Traveling Salesman Problem Program Output

Section 1. Traveling Salesman Problem Exercise

Consider 5 cities of interest, namely a) Reno, b) San Francisco, c) Salt Lake City, d) Seattle, and e) Las Vegas. Use information on the road network and derive the miles from one city to the other. Assume a fixed metric of Miles Per Gallon = 40 and derive the cost of each transition in terms of miles.

- Create a graph with each of its vertices corresponding to one of these cities and its edges being weighted by the associated miles for each trip. Note that if (and only if) to go from city A to B you must go through C then you must add one edge from A to C and one edge from C to B and there is no need to add an edge directly from A to B.
- Solve the Traveling Salesman Problem such that traveling salesman starts from Reno, visits all cities in the above list and returns to list. Solve this problem in the brutal force-way, i.e. by identifying all possible paths.

Terminal View:

```
//////////////////////////////////////
/////  Traveling Salesman Problem /////
//////////////////////////////////////


//////////////////////////////////////
/////  All Possible Paths for TSP /////
//////////////////////////////////////

Total Cost for Path 1: 2750

Total Cost for Path 2: 2791

Total Cost for Path 3: 3509

Total Cost for Path 4: 3380

Total Cost for Path 5: 3194

Total Cost for Path 6: 2750

Total Cost for Path 7: 3783

Total Cost for Path 8: 3509

Total Cost for Path 9: 3065

Total Cost for Path 10: 3194

Total Cost for Path 11: 3783

Total Cost for Path 12: 3824

Total Cost for Path 13: 3065

Total Cost for Path 14: 2791

Total Cost for Path 15: 3824

Total Cost for Path 16: 3380


////////////////////////////////////////////
/////  Minimum Path(s) from TSP Algorithm /////
////////////////////////////////////////////

Minimum Path from TSP Algorithm: 2750

Minimum Path from TSP Algorithm is Path 1: 2750

Minimum Path from TSP Algorithm is Path 6: 2750


////////////////////////////////////////////
/////  Leading Route(s) from TSP Algorithm /////
////////////////////////////////////////////

Path 1 Route: Reno -> San Francisco -> Seattle -> Salt Lake -> Las Vegas -> Reno

Path 6 Route: Reno -> Las Vegas -> Salt Lake -> Seattle -> San Francisco -> Reno
```

Copy/Paste Terminal Text:

```
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/////  Traveling Salesman Problem /////
/////////////////////////////////////


/////////////////////////////////////////
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Minimum Path from TSP Algorithm is Path 6: 2750


//////////////////////////////////////////////
/////  Leading Route(s) from TSP Algorithm /////
//////////////////////////////////////////////

Path 1 Route: Reno -> San Francisco -> Seattle -> Salt Lake -> Las
Vegas -> Reno

Path 6 Route: Reno -> Las Vegas -> Salt Lake -> Seattle -> San
Francisco -> Reno
```