

TRAVELING TECHIE

Every day tech lifeguards respond to FRESHDESK requests around campus. These lifeguards want to optimize their efforts use by choosing efficient routes to travel the campus. Your task is to help them find an optimal path as they help out teachers and students.

A tech lifeguard will provide your group with a list of six locations that he might visit on a typical day. You will create a weighted graph representing the locations and travel times among them. You will use the techniques we discussed in class to analyze the graph.

You will be asked to present your findings to a panel of judges as well as in a written report.

Due Date:

Point Value: 60 points

Report

Data: Create a weighted graph on six vertices. Each vertex will represent one location on the tech lifeguard's route. The weight of each edge is a measure of how far apart any two locations are. It is up to you to determine how to measure from one tech location to the next: time, distance, etc.

Calculations:

1. Use both the nearest-neighbor and sorted edges algorithms to find Hamiltonian circuits.
2. Calculate the minimum-cost Hamiltonian circuit. You must justify how you know you cannot find a lower-cost circuit. You may attach your work at the end.

Questions:

1. How did you measure from one location to the next? Why did you chose this method?
2. Imagine that you are planning delivery routes for UPS drivers instead of for techies. How would you assign weights to the edges of your graph? Distance? Time? Another factor? A combination of factors?
3. What algorithm was easiest to implement? Why?
4. How did you make sure that you found the optimal route? (possibly already answered)

Presentation

You must give a three minute presentation to a panel of judges describing your findings. Your presentation should have a visual representation of your graph and display the different circuits you found.