Homework 1: Writing Component

Using Dijkstra's Shortest Paths to Route Packets in a Network Overlay

VERSION 1.0

DUE DATE: Friday February 22nd, 2019 @ 5:00 pm

Please answer the questions below briefly.

Q1. What was the biggest challenge that you encountered in this assignment?
Note: The challenges should relate to design decisions and algorithmic choices and not so much to do with unfamiliarity with programming elements such as sockets, etc.
[300-350 words]

Q2. If you had an opportunity to redesign your implementation, how would you go about doing this and why?
[300-350 words]

Q3. Consider the case where the link weights of the overlay are constantly changing and you are routing UDP packets. How would you make sure that your routing reflects the current state of the links *i.e.* by taking alternate routes to destinations. Your response does not need to account for restrictions that were specified for the programming component.
[300-350 words]

Q4. Did you really need a routing plan per-message? Please explain. Contrast the efficiency of using a routing plan per-message if the weights are changing constantly, and the routes continually updated?
[300-400 words]

Q5. Let's say you built a Minimum Spanning Tree (MST) connecting the nodes within the overlay. The link weights were based on a metric that accounted for the throughput of the links and the typical loss rates for UDP packets. Contrast the efficiency of the dissemination scheme where you are constrained to using the MST versus the scheme that entails using Dijkstra's shortest path.
[300-400 words]

1 Grading

Homework 1 accounts for 15 points towards your final course grade. This written component accounts for 20% of the points set aside for HW1 i.e. this assignment accounts for 3% of your cumulative course grade. This assignment is graded on a 15 point scale with each question accounting for 3 points.

Grades reported on Canvas will be based on the cumulative contribution to the final grade.

2 What to Submit

You should submit a PDF document. Please use the following naming convention: Firstname-Lastname-HW1-WC.pdf.

The folder set aside for this assignment's submission using checkin is **HW1-WC**