Thoughtworks Code Test

Pick one of the following problems. If you have any questions about the code as it relates to your interview process, please contact your recruiter.

*** Bonus points given for clean, object-oriented code, quick-turnaround, awesome user interface design, using technologies you've never used before and/or taking creative freedoms with the assignment.**

What we are expecting from you:

1. A zip file containing a project that can be run.
2. Any special instructions required for getting the project to run (simpler is better)
3. A short write-up of anything you learned along the way (not more than 1 page).

As a general rule, we expect a submission returned within 3 days of the assignment being delivered.

PROBLEM ONE

BACKGROUND:
A remote, tropical island has a railroad that services a number of towns. Because of the rough terrain, all of the railroad tracks are one-way only. That is, a route from Lakua to Hailea does not imply that there is a route from Hailea to Lakua. In fact, even if both of these routes exist, they are often not necessarily the same distance or cost.

The purpose of this problem is to help the railroad provide its customers with information about the r outes. In particular, you will compute the distance along a certain route, the number of different rout es between two towns, and the shortest route between two towns.

Input:
The input is a CSV snippet (below). The first column is the source town, the second column in the destination town and the last is the distance for that route.

Frolia,Hailea,9
Hailea,Hanalei,5

Thoughtworks Code Test

Hanalei,Maeulia,6

Hauauai,Lainea,8

Kaleola,Maeulia,7

Lainea,Hailea,5

Lakua,Hauauai,3

Maeulia,Hailea,12

Paukaa,Hauauai,6

Poipu,Paukaa,9

Hailea,Waimea,4

Waimea,Lakua,9

Lakua,Poipu,7

Waimea,Kaleola,4

Maeulia,Paukaa,14

Hailea,Lainea,8

Mission Objectives

1. Using d3.js, visualize the graph of cities and the routes between them.

hint: https://github.com/mbostock/d3/wiki/Force-Layout

Stretch Objective #1 * not required

1. Highlight the shortest route from Frolia to Poipu.

Stretch Objective #2 * not required

1. When clicking on a node on the graph, highlight that node.
2. Only allow the last 2 nodes that were clicked on to be highlighted. (for example, if Kaleola, Hailea and Lakua are clicked in order, then Hailea and Lakua should be highlighted)
3. When 2 nodes on the graph are highlighted, also highlight the shortest route between these 2 nodes on the graph and display the distance prominently.

Thoughtworks Code Test

PROBLEM TWO

BACKGROUND:
As a counter-intelligence agency, we have found the locations of 150 double-agent spies. The problem is, we need a way to visualize them on a map. Your mission (if you are willing to accept it) is to visualize this data on a map for each of the double-agents.

Use Grails or Spring Boot (any version) to build an interface to visualize the attached dataset. Each of the 150 points
has been geocoded and is in the continental United States. Use Leaflet to draw the map.

http://leafletjs.com/
https://grails.org/
http://projects.spring.io/spring-boot/

Other than that -
- feel free to use any CSS or JavaScript frameworks, Grails plugins or other things to help you. The only things set in stone are Spring Boot / Grails and LeafletJS.

The basic structure of the CSV file is:

name, latitude, longitude, age, gender

(Age & gender are used for the stretch goals and aren't required for the core-assignment)

Mission Objectives
1. Use LeafletJS to display a map of the points supplied in the file.
2. Using LeafletJS, find a way to differentiate Male vs Female double-agents.

Stretch Objective #1 * not required
1. Give the ability to filter out double-agents from the map given a maximum age. For example, only show me double-agents who are younger than 50 years old. This "maximum age" filter should be easily set via the user interface.

Thoughtworks Code Test

Stretch Objective #2 * not required

1. Give an interactive “Search bar” that would highlight (on the map) any agents whose name matches the content of a search bar.