feedzai

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Feedzai Recruiting: Software Engineer in Test

Welcome to the Feedzai Challenge for Software Engineer in Test!

Requirements:
First let's go through the requirements and setup for your challenge.
Before let's go through the checklist, if anything is not ready, please notify the Feedzai resource that is working with you:

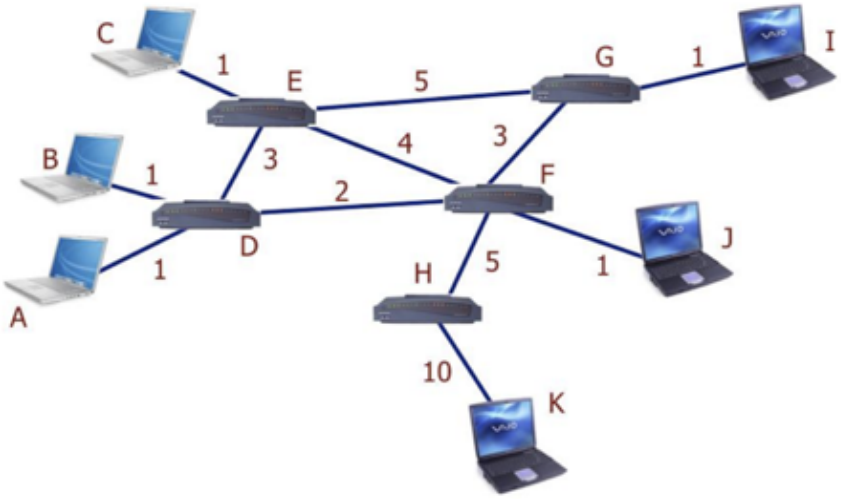
- A Java 8 development environment (JDK 1.8 installed with maven, and some IDE);
- Check that you have received a Zip Package with the network simulator project.

First of all read this document carefully to guarantee that you understand the software you will deal with.

The problem
You will analyze and extend a set of unit tests for a network simulator library.
The main functionalities of the library are:

- It allows you to model a small computer network.
- It allows simulating sending packages from a node to another.

Network Simulator
Consider a simple model of a computer network. A network consists of several network elements that can send packets among themselves. Between each network element there's latency (i.e., it takes time to send a packet from one node to another).
The next image shows an example network.



In this image you can see six computers (A, B, C, I, J, K) and five network routers (D, E, F, G, H). Between them you have the latencies (in ms).

The provided library enables you to construct such a network and send a data packet from any computer to any other computer. The following code illustrates the API usage.

```
// Create a network with a default latency of 1 ms between nodes
Network net = Network.createWithLatency(1);

// Interconnect network elements
net.connect("A", "D");       // Uses default network latency
net.connect("B", "D");
net.connect("C", "E");
net.connect("I", "G");
net.connect("J", "F");
net.connect("K", "H", 10);   // Connect K computer to H router with a 10ms
latency
net.connect("D", "E", 3);    // D to E has a 3ms latency
net.connect("D", "F", 2);    // D to F has a 2ms latency
net.connect("E", "F", 4);    // E to F has a 4ms latency
net.connect("E", "G", 5);    // E to G has a 5ms latency
net.connect("G", "F", 3);    // G to F has a 3ms latency
net.connect("F", "H", 5);    // F to H has a 5ms latency

// Simulate sending a packet from "C" to "J"
NetworkPath path = net.sendPacket("C", "J");

// Print out the network path and how much time it took to send the packet
System.out.println( path );
System.out.println( path.getTime() );
```

Packets are always routed in a way that it takes minimal time to go from one network element to another. For example, in the example above, sending a packet from "C" to "J" results in the path C->E->F->J in 6 ms.

Goals:
Our main goal is to perform some White-box testing. With this purpose, we will provide you with a piece of software that already contains some unit tests implemented.
At the end, we will want you to:

- Describe the problem you have to test
- Make sure each test is doing what it should and if not, fix it
- Adapt all tests to follow good programming practices
- (Optional) Try to find bugs or loopholes in this code base and fix them
- (Optional) Check code coverage and add more tests to achieve 100% coverage
- Provide some additional feedback on next steps for ensuring quality in this code base

Make sure to leave comments on all your changes and once you are done, send us back the updated Zip Package.

Good Luck!!