

1. Intro

Software development at Lincoln Laboratory in Group 104 typically involves working with large amounts of data via established library API's. This short exercise, which ideally won't take more than a couple hours, will assess your familiarity with RESTful web services and the data supplied by them.

2. Problem Context

Imagine you're stuck at a particular location in the Greater Boston Area and need to leave the area as soon as possible using either an MBTA train, bus, or ferry. The mode of transportation does not matter nor does the destination; you just need to be somewhere else!

3. Solution Approach

The MBTA provides a set of RESTful web services to developers that expose a number of pieces of information including transportation stops, routes, and real-time status on all available vehicles. Using these services it's possible to write a small program that, given a latitude and longitude as input, will indicate which outgoing trip from the closest MBTA stop will be leaving soonest.

The MBTA has a developer portal here: <http://realtime.mbtta.com/Portal/Home/Documents>

The most important document is the PDF describing the REST API, titled [MBTA-realtime API v2 Documentation](#). In this document you should be familiar with at least Section 3 and Section 4 as they outline the data output formats and the available REST services.

Note that you do not need to register or acquire an API key. The developer key provided by the MBTA (and used throughout their documentation examples) is adequate for this exercise. In developing your solution, please be mindful of your use of the MBTA services; their documentation indicates that you cannot execute the same command more than once in a 10-second window.

For this exercise, please complete your solution in Java.

4. Solution Assessment

Your solution will be tested by providing your program with a latitude and longitude pair in decimal degrees (e.g. 42.349, -71.082). The output should contain key information such as the time until the vehicle arrives and the ID and/or name of the outgoing trip.

The assessment of your solution will not be restricted to correctness; code structure, commenting, and naming conventions will also be evaluated. Please clearly annotate/attribute any code you do not write yourself.

5. Solution Deliverables

Please supply a ZIP file with your solution enclosed that includes the source code and a readme file on how to build and/or execute your program. If desired, you may provide your solution as a Maven project.