CSCI 2073 – Fall 2023 – Programming Assignment 3

Your task is to write a Java class called **MyMaps** that processes an input text file containing directions for getting from one place to another. Although there are a number of ways to solve the problem, you are required to use a **StackInt** object and a **Queue** object to store the data. Include the following methods:

- `MyMaps(String filename)`: a constructor to initialize the needed data structures and read directions from the file passed as parameter. The file will contain several lines. Each line from the file contains text of the form:

  ```
  <number of miles> <direction (2 chars)> <street name>
  ```

  For example, the file might contain:

  ```
  2 NO Elm St
  1 WE Route 66
  4.5 SO Green River Ave
  3 WE Hill St
  ```

  The program is to ignore bogus directions. Specifically, if a file contains two consecutive lines traveling in the same direction, the second line should be ignored.

- `String getDirections()`: returns a string containing directions in the order specified in the file. For the sample input above, the output would be:

  ```
  Turn North and travel 2.0 mile(s) North on Elm St
  Turn West and travel 1.0 mile(s) on Route 66
  Turn South and travel 4.5 mile(s) on Green River Ave
  Turn West and travel 3.0 mile(s) on Hill St
  ```

- `String returnTrip()`: returns a string containing directions from the destination to the source. Note that the cardinal directions must be reversed. For the sample above, the output is:

  ```
  Turn East and travel 3.0 mile(s) on Hill St
  Turn North and travel 4.5 mile(s) on Green River Ave
  Turn East and travel 1.0 mile(s) on Route 66
  Turn South and travel 2.0 mile(s) on Elm St
  ```

- `double travelTime()`: returns the estimated travel time in minutes, at the rate of 1.5 minutes per mile, plus an extra 30 seconds per left turn.

- `double returnTripTime()`: same as previous method, using directions from destination to source.

Your class should be stored in a file named *MyMaps.java* and should be tested using the *MapsTest.java* class and text file(s) provided by the instructor. In addition, use the StackInt.java and LinkedStack.java files provided. Any stack must be declared as follows:

```
StackInt<Type> myStack = new LinkedStack<>();
```

When finished, submit MyMaps.java (and any other source files you developed) to codePost.io for testing. Do not submit MapsTest.java, StackInt.java, LinkedStack.java, nor any .class files to Mimir. As always, comments for your class and its methods should follow Javadoc guidelines.