Programing Languages 2
Test 2 (T 12)

Name: _____   Neptun:_____

As I already did it by taking this course, I accept all rules and regulations written on the homepage of the course. Without signature this Exam can not be graded, and counted in to the final grade.

If the project has syntax errors 2 points are subtracted from the final score.

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signature

1. Create a **new** NetBeans Java **project**. The name of the project has to be your familyname (If you have more familynames you can choose). The name of the package has to be `testTwo`. The name of the main class is `Main`. (3p)

2. Create a **new class** named Road in the `testTwo` package. This class has the following attributes: `from`, `to` and `highway` (a boolean variable `true/false` for highways and ordinary roads). All these properties are private. (2p)

3. Create **getter and setter** methods for the above attributes. (1p)

4. **Add a constructor** that has 3 **String** parameters with which the user can set all three properties of the newly instantiated Road object. The third parameter that sets the highway property sets the highway value to true, if the value of it is "highway", else it sets the road not to be a highway. (3p)

5. Override the **equals method** of the Road class so that two roads are equal if all their properties are the same. (3p)

6. Add the following **interface** to your project (into the `testTwo` package): (1p)

```
package testTwo;
public interface Map {
    public void addRoad(Road r) throws SameRoadException;
    public void printAllRoads();
}
```

Implementations of this interface can contain Road objects. The number of the Roads is not known in advance. `SameRoadException` is **an Exception that you have to add** to the `testTwo` package. The exception is thrown if one tries to add a new Road with the same parameters as a previously added road. (1p)

7. **Implement the** above **interface** in your project. The name of the class that implements the interface is CountryMap and it is in the `testTwo` package. In the implementation make sure that (1p)
   - ✠ Roads can be contained by instances of the class (1p)
   - ✠ New roads can be added using the addRoad method (3p)
   - ✠ All roads can be printed out using the `printAllRoads` method. All roads are in different lines. One line looks like this:
     ```
      from to (highway)
     ```
     where highway is an optional text, so if we have a road from Debrecen to Budapest that is a highway, and another from Debrecen to Szeged that is not a highway the following will be printed out:
     ```
         Debrecen Budapest (highway)
         Debrecen Szeged
     ```
8. In the main method instantiate a **new CountryMap object.** Add a new Road to the CountryMap instance with these data: "`Debrecen, Eger, true`" (3p)
9. In the main method read data for a road and add a new road to the CountryMap with these data. (*It is advised to solve Ex. 10 before this exercise*) (3p)
10. Print out the CountryMap using the `printAllRoads` method. (1p)