Question 1 [5pt]

Modify assignment 2 such that, in the console mode, **at the end of the simulation** it prints for each tick a list with information on the state of each nonempty queue as follows: each element of this list is a pair that includes the incoming road identifier and the number of vehicles in the corresponding queue. **Note that empty queues should not be included in the list, and ticks with all queues empty should not be included at all in the report.**

For example, if we execute the simulator for 300 ticks it should print the following **at the end of the simulation**:

```
Done!
105: [(r4,1) ]
125: [(r3,1) ]
164: [(r1,1) ]
165: [(r2,1) ]
166: [(r1,1) , (r2,1) ]
167: [(r1,2) ]
168: [(r1,2) ]
169: [(r1,2) ]
170: [(r1,1) ]
279: [(r4,1) ]
```

You can see, for example, that at tick 166 the queues of roads **r1** and **r2** had 1 vehicle each, and that at tick 169 the queue of road **r1** had 2 vehicles.

You can add new classes, but you are not allowed to modify any class except for the `Main` class. In addition, If your Junction class does not have getters for the list of queues and the list of incoming roads, you can add ones. A solution that does not respect this requirement will be given 0 points.

Question 2 [5pt]

Add a table to the GUI of assignment 2 that shows the average speed of each vehicle. The table has only two columns, "*vehicle's identifier*" and "*average speed*", and there is a row for each vehicle. The table and should be placed below the other 3 tables (see below).

The average speed of a vehicle at tick **n** is the sum of its speeds in all ticks (from tick 1 to tick **n**) divided by **n**. For example, suppose we have two vehicles **v1** and **v2**, and that we have executed the simulation 3 ticks. If the speeds of **v1** at these 3 ticks are 60, 20, and 90, and the speeds of **v1** at these 3 ticks are 100, 50, and 40, then:

- At tick 1, the average speed of **v1** is 60 and that of **v2** is 100.
- At tick 2, the average speed of **v1** is (60+20)/2=40 and that of **v2** is (100+50)/2=75.
- At tick 3, the average speed of **v1** is (60+20+90)/3=56 and that of **v2** is (100+50+40)/3=63.

Note that we have truncated the decimals, but you can include them if you like.
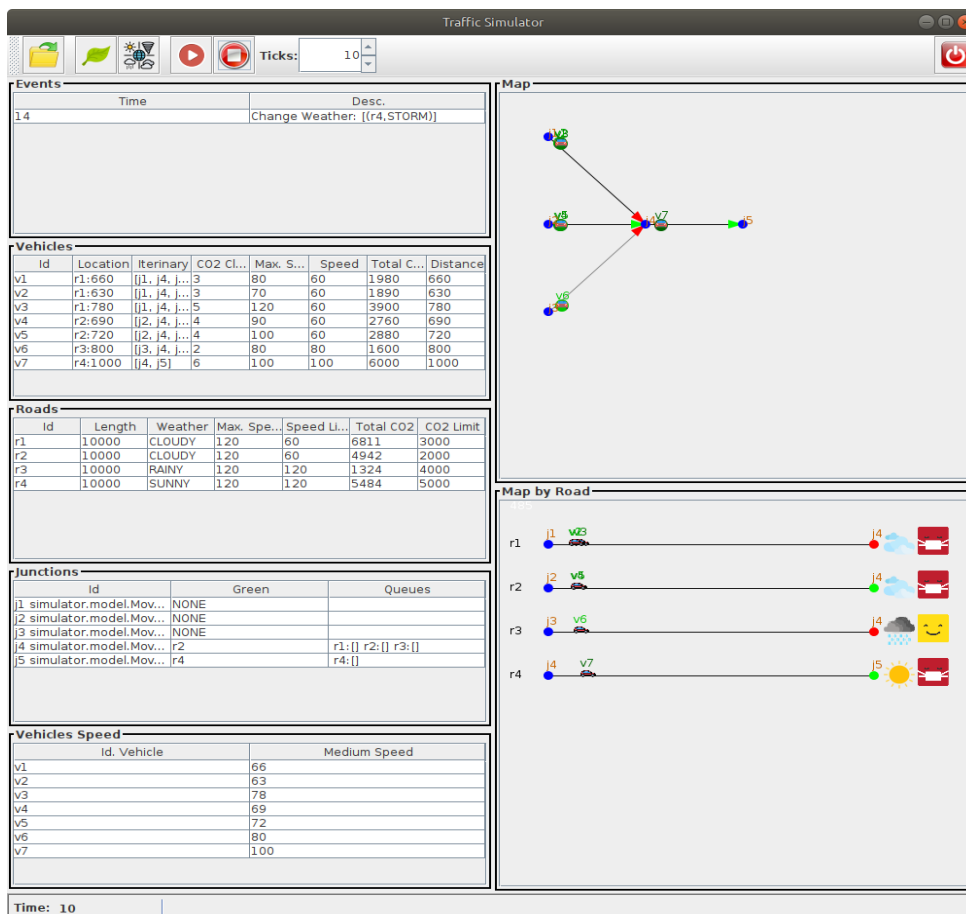
You can add new classes, but you are not allowed to modify any class except for the `MainWindow`, i.e., the class where you add the different components, etc. A solution that does not respect this requirement will be given `0` points.