Lab 13

First start Zookeeper and then start Kafka (as described in lab 12)

Somewhere on the interstate are 2 cameras installed. The distance between camera1 and camera2 is ½ mile. On this interstate the maximum speed is 70 miles/hour.

Both cameras make a picture of every car that passes, and the cameras have build-in image recognition software that detects and extracts the license plate. The cameras create the following record for every car that passes the camera:
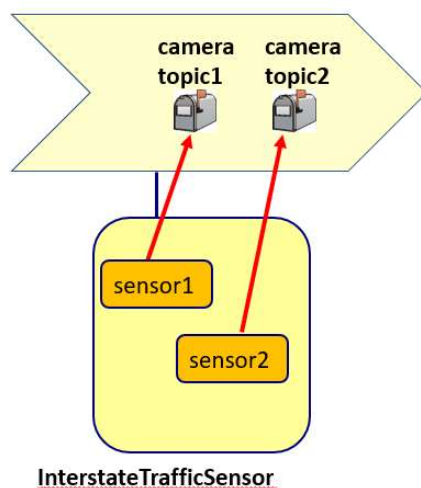
```java
public class SensorRecord {
      public String licencePlate;
      public int minute;
      public int second;
      public int cameraId;
```

The cameras are connected to a kafka messaging system.

Camera1 publishes its SensorRecords into the topic **cameratopic1**
Camera2 publishes its SensorRecords into the topic **cameratopic2**

Given is the project **InterstateTrafficSensor** that simulates both cameras. If you run it, it will publish many SensorRecords into kafka.
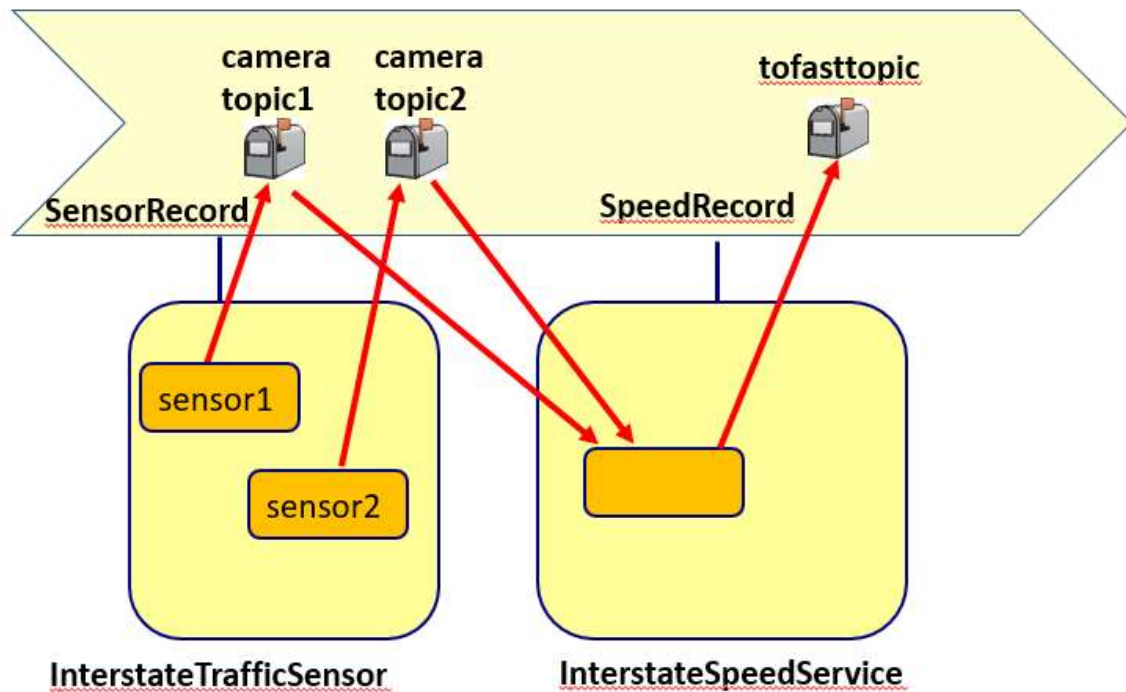

Our first job is to calculate the speed of every car.
(speed in miles per hour = 0.5 / time in seconds *3600). The code to calculate the speed is provided.
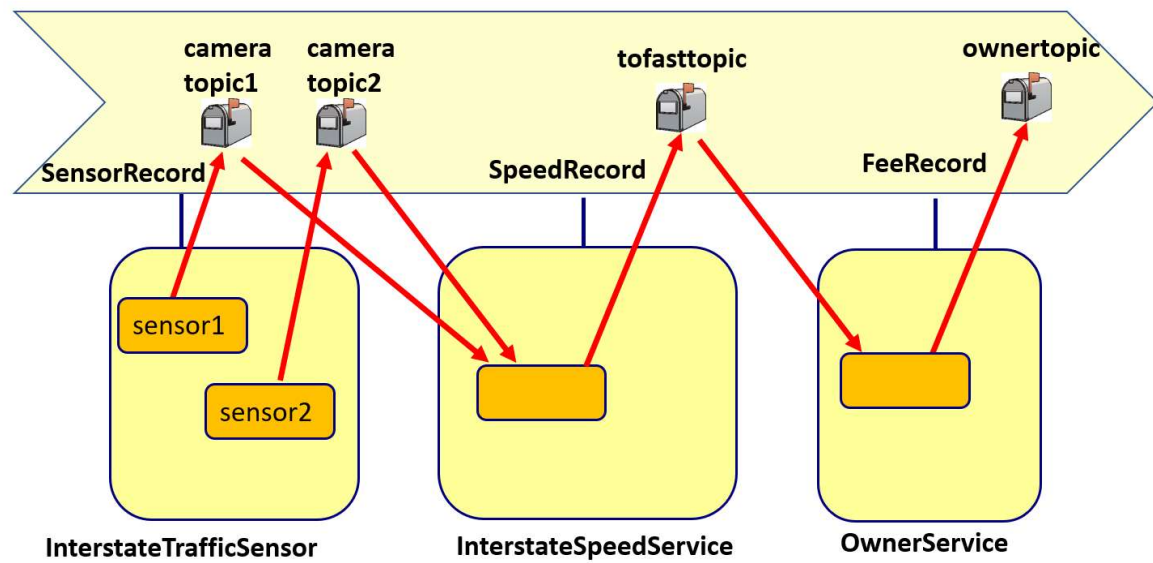
Then we only need to handle the cars that drive more than 72 miles/hour. Because our detection systems are not 100% accurate, we allow a maximum speed of 72 miles/hour.

a. Write a SpeedService that writes to the console all license plates and their corresponding speed

Once we know which cars drive more than 72 miles/hour, we need to know the owner information that is registered with the particular license plate.

b. Write an OwnerService that writes to the console the owners info of all cars that drive more than 72 m/h all

If we know the owner information, then we have to calculate the fee that this owner has to pay. The formula is as follows:

72 – 77 miles/hour = $ 25
77 - 82 miles/hour = $ 45
82 – 90 miles/hour = $ 80
> 90 miles/hour = $ 125

    c.   Write a FeeCalculatorService that writes to the console the following information of all cars that drive too fast: license plate, owner info, speed, amount of the fee