İzmir University of Economics
2019-2020 Spring
SE311 Project

Smart City Application
Project #3
DEADLINE: 22 May 2020 18:00 PM (No late submissions)

You are living in a Smart city in which there are sensors installed everywhere. There are 4 types of sensors: pollution, temperature, congestion, noise. The city is a collection of neighborhoods "mahalle". A neighborhood contains streets. And streets contain apartments and poles. Sensors are installed on apartments and poles. As a citizen you subscribe to these sensors and you get a message back when certain event happens. You get notified when temperature falls below 0 degrees, pollution AQI value is above 100, noise level is above 85dB and car speed is below 10 km/hr. The city has one city-wide Data Monitoring Division that periodically queries the status of all the sensors by sending a status query to them and determines the number of malfunctioning sensors. The engineers also send a request to the sensor to reset themselves.

- Use at least 5 design patterns to solve this problem.
- You will not write a real-world application. You will simulate various functions of it.
- We may have not covered some of the patterns that you will be using in your project. So, either you can wait for the lecture or you can proactively study the pattern and use it.
- The whole design must be a coherent one. Do not just simply copy and paste things from your lecture examples. Adapt the examples. Use them as an inspiration or skeleton.
- If you encounter any vagueness in the project description, and you cannot reach me feel free to make any assumption you want, provided that you state them very clearly. Be careful. Do not make unrealistic, farfetched assumptions. Do not add new functionality to make things unnecessarily complex.
- Please be creative. Choose meaningful names for your methods and classes.
- You will be graded proportional to the elegance of the solution.
- KEEP IT SIMPLE.

Project Submission Guidelines

ACADEMIC INTEGRITY

This is a team project. All team projects must be completed by the members of the team without the aid of non-team members. If a team member does not contribute to the implementation and the project report, his/her name should not appear on the work submitted for evaluation. Plagiarism, copying, cheating, outsourcing the project to another person or organization for pay or without pay are considered as actions of academic dishonesty. Failure to maintain academic honesty may result in disciplinary action according to the Izmir University of Economics' disciplinary bylaw for students of institutions of higher education (https://www.ieu.edu.tr/en/bylaws/type/read/id/13).

You will be providing

a) a report that contains
   i. a detailed account (in writing) of your thought process i.e. what made you to choose a pattern, participant mappings etc.
   ii. UML diagram of the solution for the scenarios. You must use a software
   iii. An explanation in English of what each class does. Explanation is also needed for key methods in the classes.
b) a Java implementation.

1. Members of the group are all expected to know all aspects of the solution intimately. I may schedule a conference meeting with a group member and ask questions.
2. I must receive running programs. So, include a screen dump of your program.
3. **I will be paying attention to good programming style, i.e. indentation, comments, meaningful variable names etc.**
4. Send a zipped file DO NOT use jar as it may get flagged as malicious software and be rejected.
5. Format of the submitted file:
   <lastname1-lastname2-lastname3>PROJECT<number>.zip
   (Example: gunes-terim-vural-PROJECT1.zip)
6. Do not send project meta files. Your zip file must contain only java files. Please do not send the jdk/jre or IDE related jar files in the zip. ONLY YOUR source files.
   No such file likes Project*2(1).java, PROJETC1.txt, PROJECT.java, main.java*, *jre.jar* etc.
7. Please limit the number of Java files. The number of Java files should not exceed the number of patterns used.
8. You must send the project as an attachment. If you want to explain your code, do it in the source code as comments. Do not write anything in the body of the e-mail (Not even "Merhaba Hocam")
9. Write the names and last names of the group members on the first page of the source code listing in comments.
   // ŞENOL GÜNEŞ
   // FATİH TERİM
   // YILMAZ VURAL
   // Player Performance Monitoring System
10. Make the Subject: **SE311 2020 PROJECT<Project-Number> (i.e. SE311 2020 PROJECT1)**

11. IMPORTANT: Submit only once. Do not send two versions of the Project.
12. Save your project both on your hard disk and in your outbox folder.