Software Engineering
Frédérique Laforest

INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES LYON

Air quality management

Project

This project should be done in teams of 2 or 3 persons. Please, announce your team composition to the teacher during the first session.

A government agency has to follow air quality. A lot of sensors are spread on the territory, and each sensor provides data at a regular frequency. All data are stored on a central database in a set of csv files.
A file store all measures. In this file, each measure corresponds to one line, under the following format: `Timestamp;SensorID;AttributeID;Value;`

The set of sensors is described in another file, having one sensor per line, under the following format:

`SensorID;Latitude:Longitude;Description;`

The different types of measures are in a third file:

`AttributeID,Unit;Description;`

This agency requires a software application to follow the sensors state and to get aggregate information. Aggregate information will help deciders to take decisions to enhance air quality. For example, on a given territory, get the mean air quality at a given time, or on a given timespan.
It is also required to identify sensors with similar behaviors, i.e., having similar values for all the measures. Finding the values that characterise air quality at a given place is also a need.

You have to design and develop this system. In particular, you must provide:

- A detailed specification of the system
- The design of the system under the form of a set of UML diagrams, associated with textual explanations/details
- The tests suite that guaranties the final quality of the system

The development language is at your choice among C++, Python, Java.
Pay attention to have the means to provide a stand-alone executable application at the end, as well as your testing environment.

You should follow an agile iterative method.

Final delivery on Moodle by dec. 20th.