Sri Lanka Institute of Information Technology

Software Engineering Specialization

Distributed Systems (SE3020)

Programming Assignment 1

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IT15111166
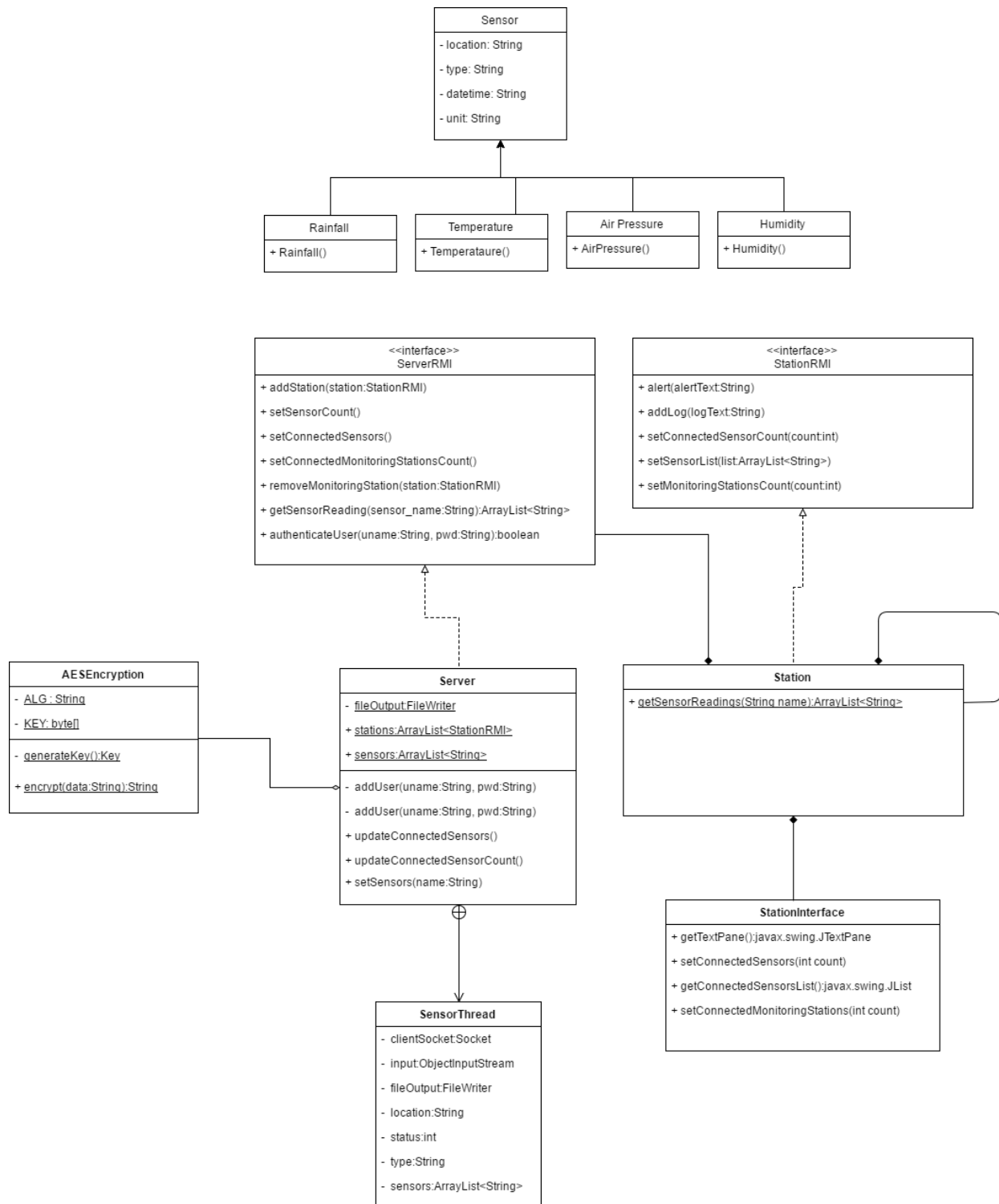
Sensor

- location: String
- type: String
- datetime: String
- unit: String

Rainfall

+ Rainfall()

Temperature

+ Temperataure()

Air Pressure

+ AirPressure()

Humidity

+ Humidity()

<<interface>>
ServerRMI

+ addStation(station:StationRMI)

+ setSensorCount()

+ setConnectedSensors()

+ setConnectedMonitoringStationsCount()

+ removeMonitoringStation(station:StationRMI)

+ getSensorReading(sensor_name:String):ArrayList<String>

+ authenticateUser(uname:String, pwd:String):boolean

<<interface>>
StationRMI

+ alert(alertText:String)

+ addLog(logText:String)

+ setConnectedSensorCount(count:int)

+ setSensorList(list:ArrayList<String>)

+ setMonitoringStationsCount(count:int)

AESEncryption

- ALG : String
- KEY: byte[]

- generateKey():Key

+ encrypt(data:String):String

Server

- fileOutput:FileWriter

+ stations:ArrayList<StationRMI>

+ sensors:ArrayList<String>

- addUser(uname:String, pwd:String)

- addUser(uname:String, pwd:String)

+ updateConnectedSensors()

+ updateConnectedSensorCount()

+ setSensors(name:String)

Station

+ getSensorReadings(String name):ArrayList<String>

StationInterface

+ getTextPane():javax.swing.JTextPane

+ setConnectedSensors(int count)

+ getConnectedSensorsList():javax.swing.JList

+ setConnectedMonitoringStations(int count)

SensorThread

- clientSocket:Socket
- input:ObjectInputStream
- fileOutput:FileWriter
- location:String
- status:int
- type:String
- sensors:ArrayList<String>
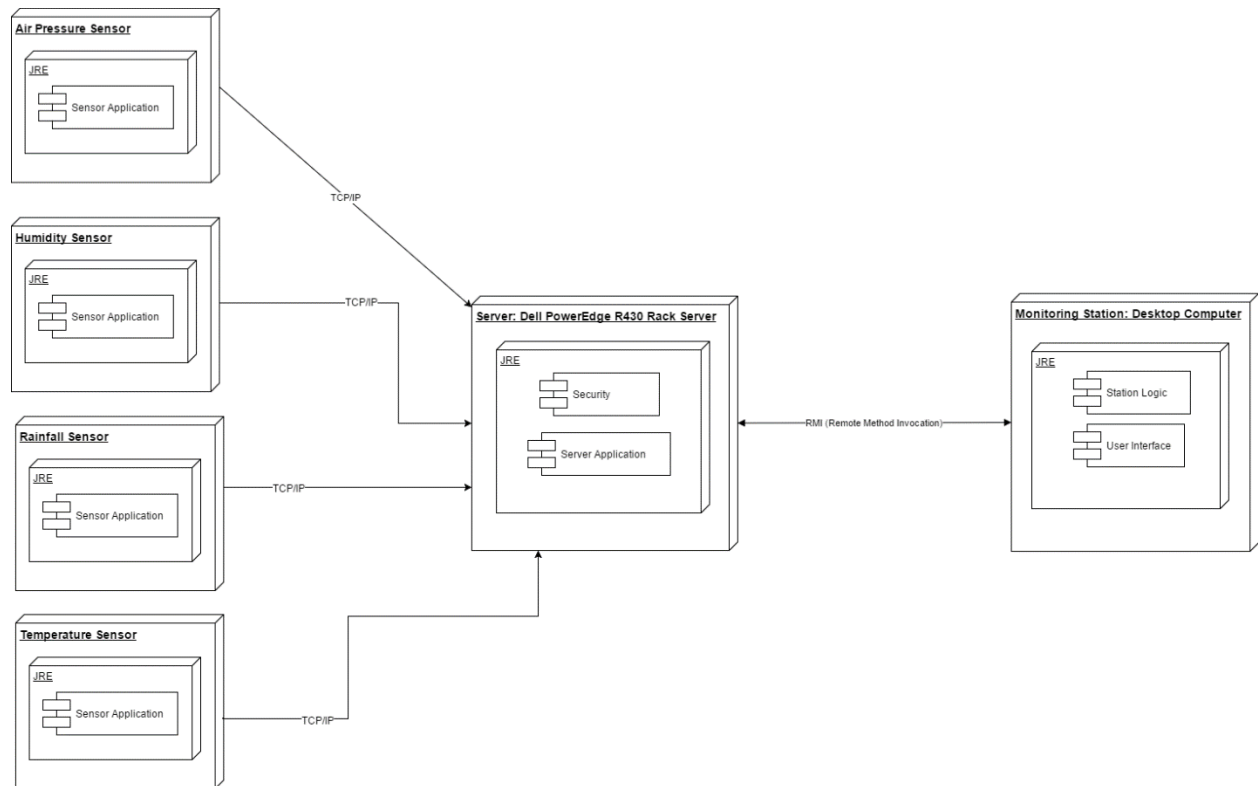
Figure 1: Class Diagram

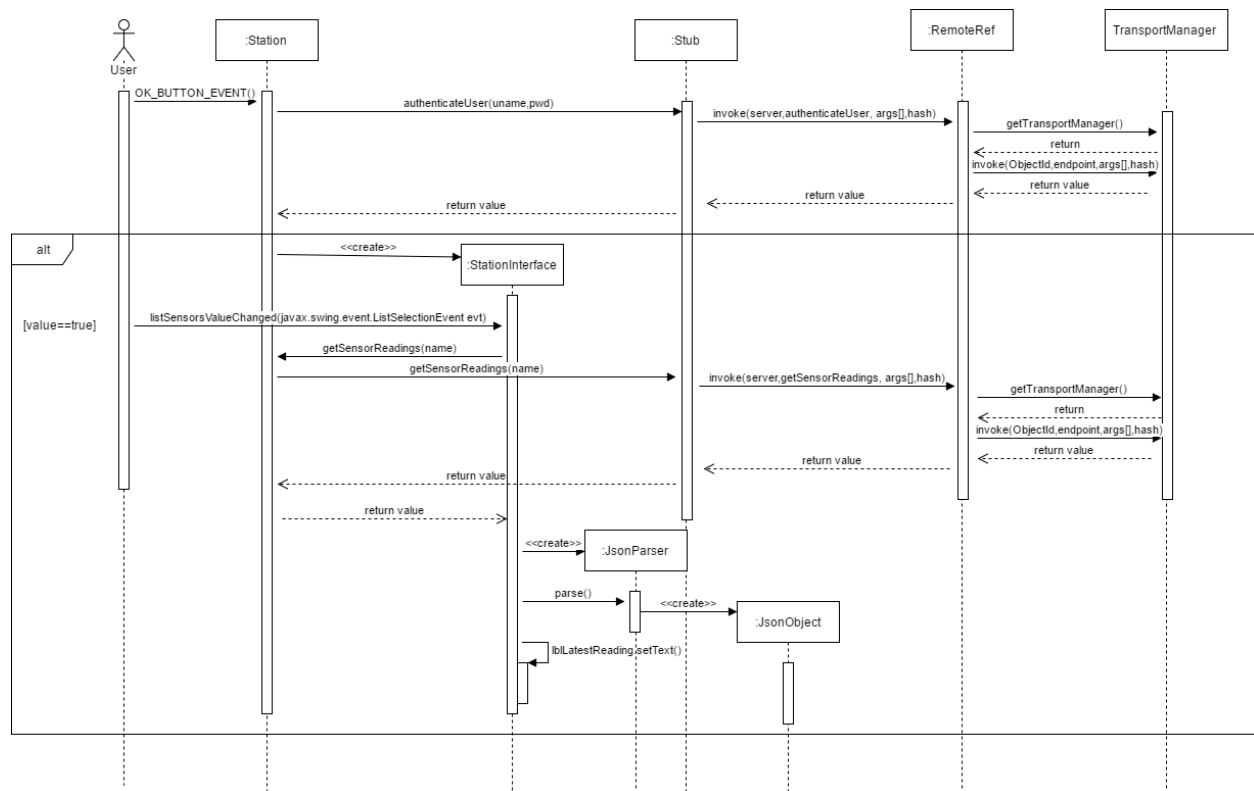*Figure 2: Deployment Diagram*

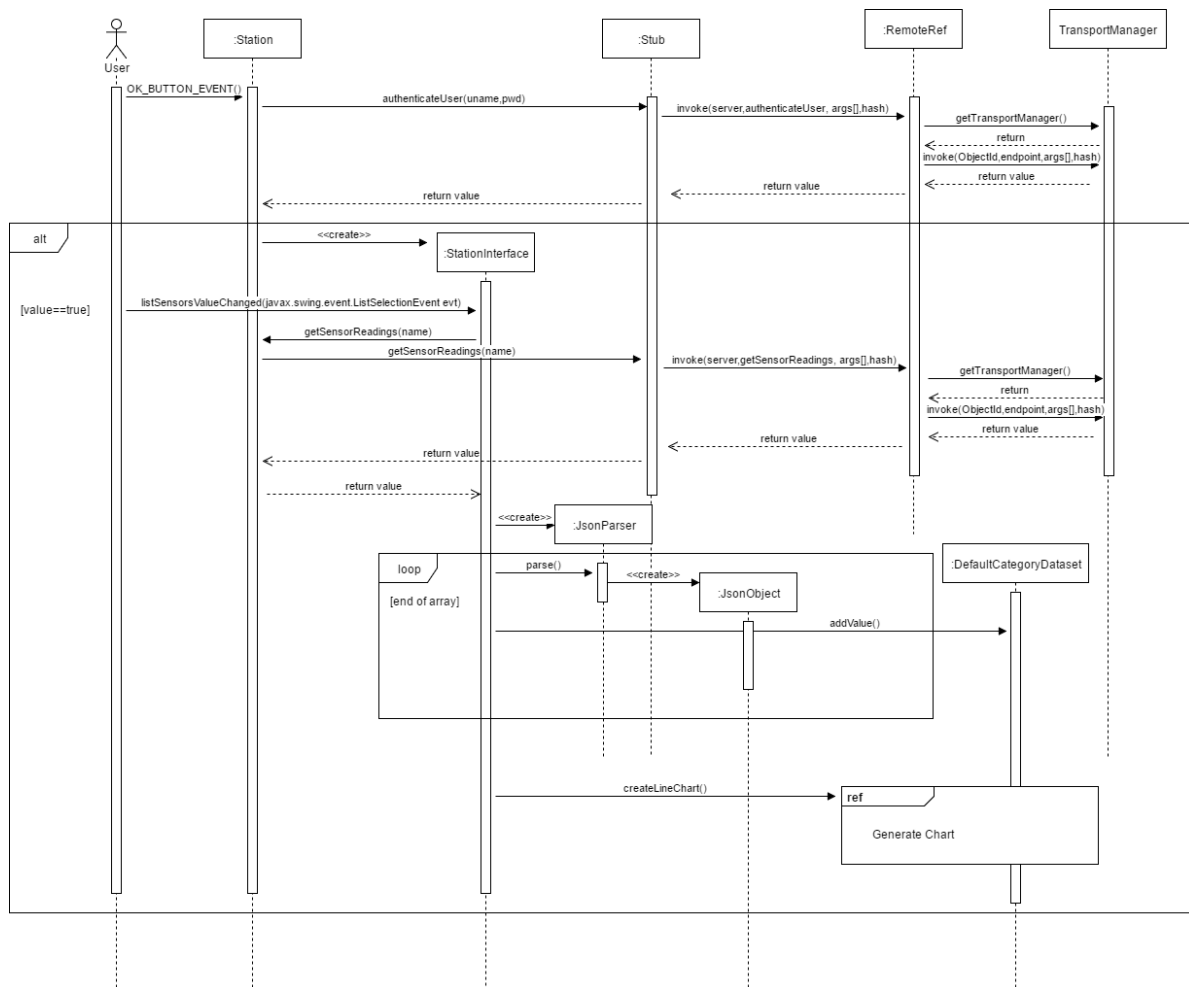*Figure 3: Sequence Diagram - Get Latest Sensor Reading*

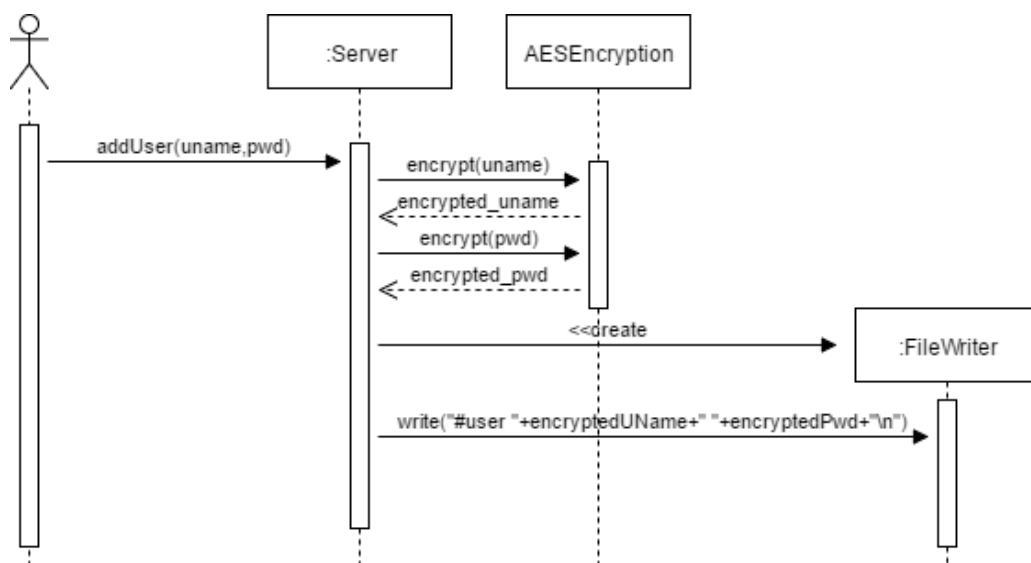*Figure 4: Sequence Diagram - Get Sensor Readings and Display them in a graph*

Figure 5: Add New User (Server-side)

Assumptions:

- Weather sensors from various locations are connected to a single server.
- User management is handled in the server side. **
  - Adding new users (Monitoring stations)
  - Removing existing users (Monitoring stations)

**Please refer to the Users' Guide attached.