Homework 5
System Design and Modeling
Version 1.1

Thursday, November 17, 2016

By

Zaher Ayyach, Rabie Ayyach, Adam Motola,

Tuna Poanessa, Tsegaslase Mebrahtu

There was a case a few years back when it was found that a clinic had been storing vaccines at an improper temperature for a long time. This meant lots of people who go vaccines at that time probably got ineffective vaccines, which is a huge waste of money, time, and left some people unvaccinated who thought they had been vaccinated.

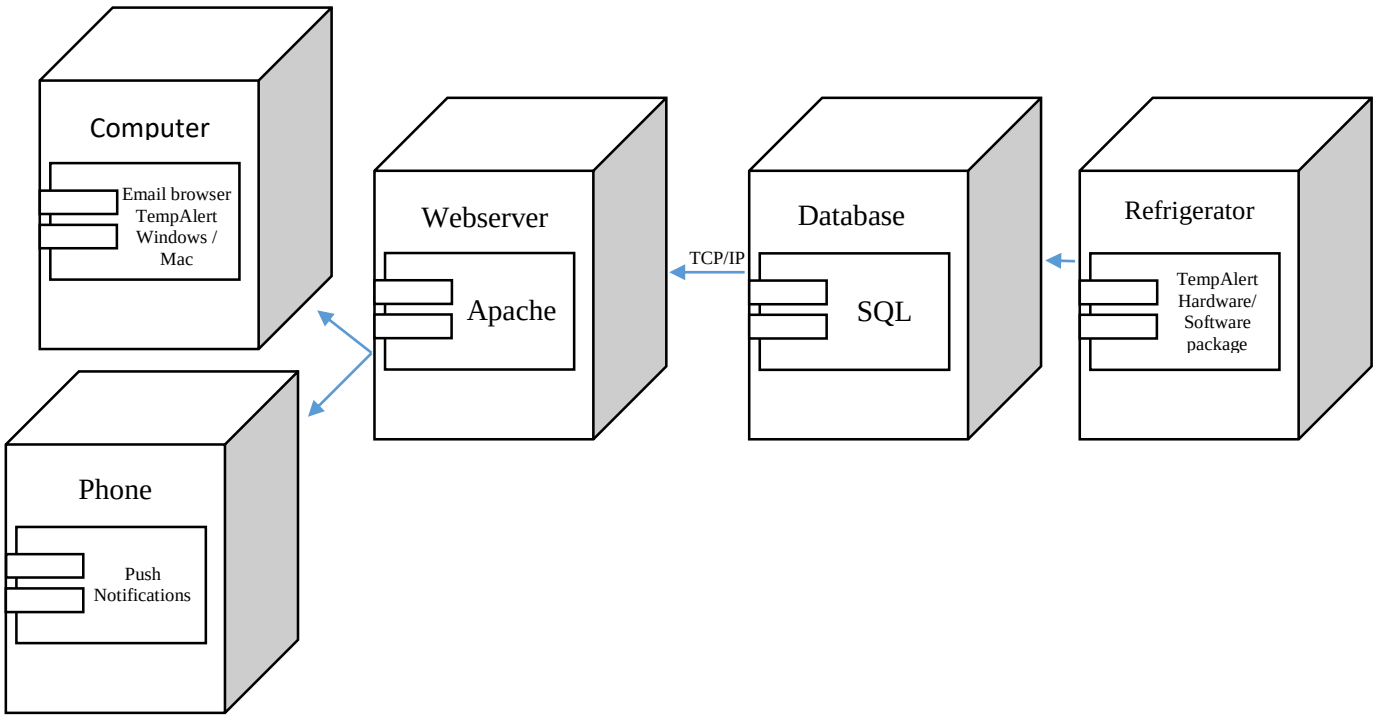
The idea was to create a sensor that would report to a database the temperature in the refrigerator and send warnings when the temperature was too high, thus solving the problem of vaccines going bad and not rely on people to check it constantly.

- *Draw a UML physical view of the entire system (temperature sensors, server, DB, users) with as much detail and specificity as you can.*

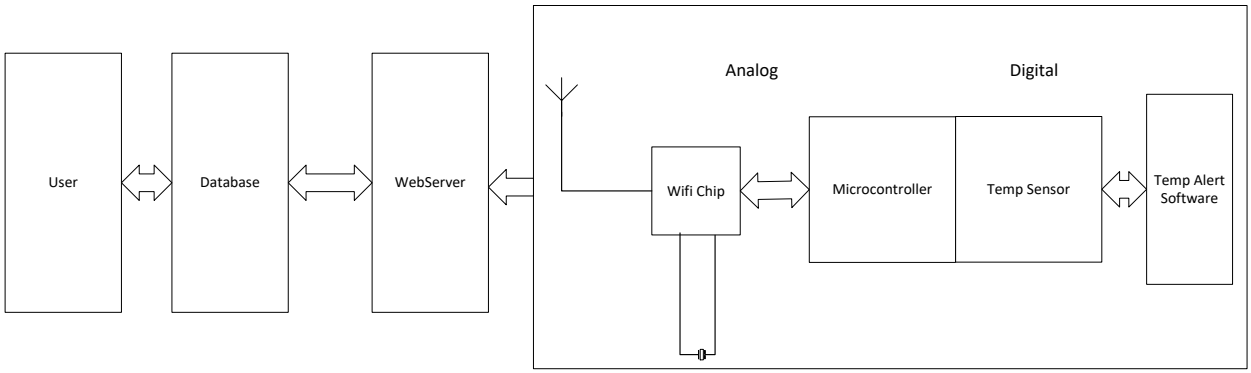
Assumptions:

- The user has a computer or phone connected to the internet. The phone used by the user has push notifications capabilities.
- Our software will be called TempAlert
- All communication between the devices is done over TCP/IP

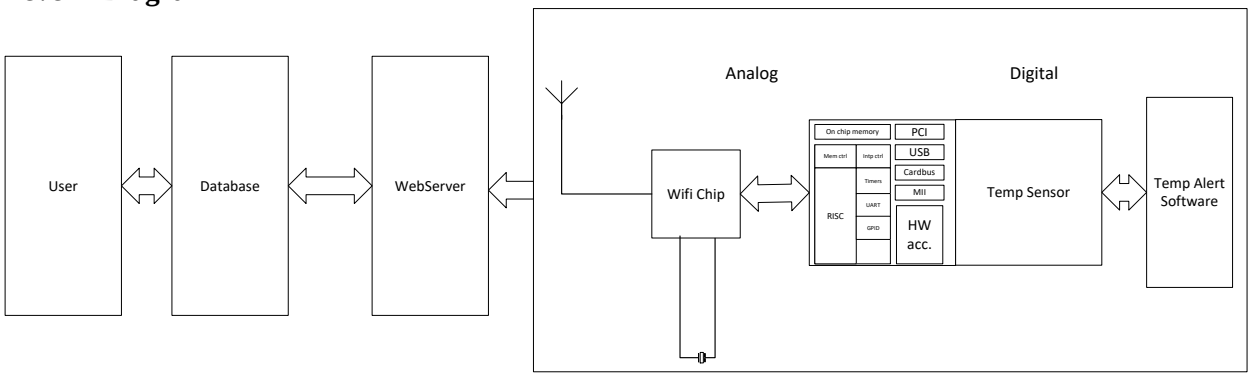
Component Diagram



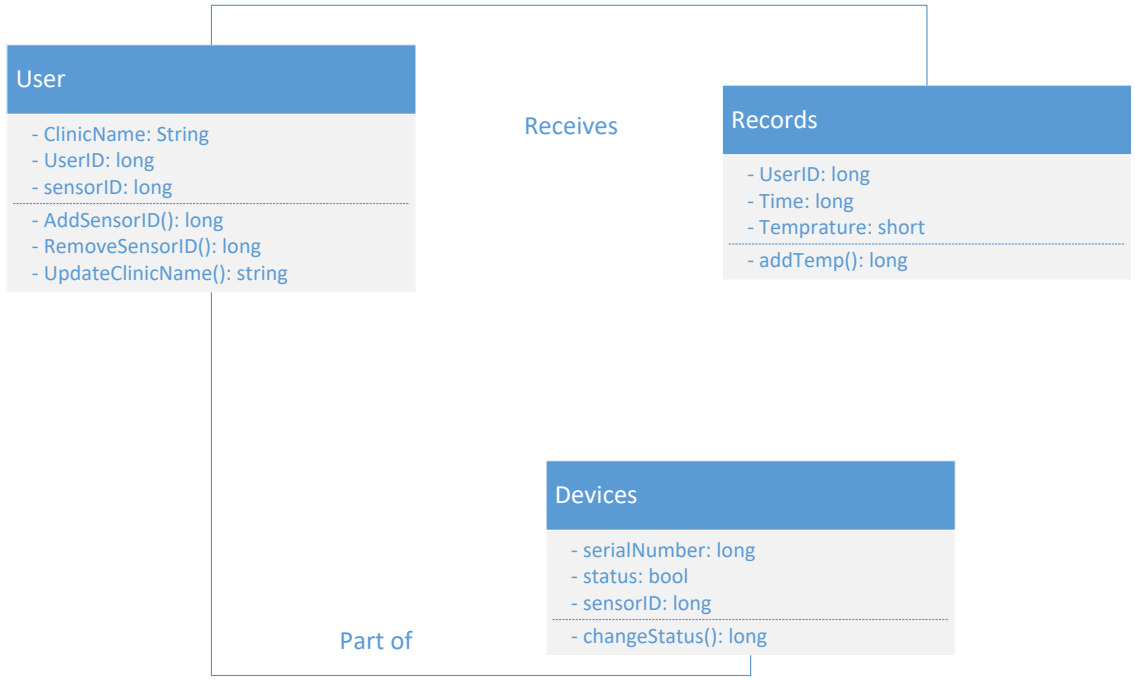
Level 0 diagram



Level 1 Diagram



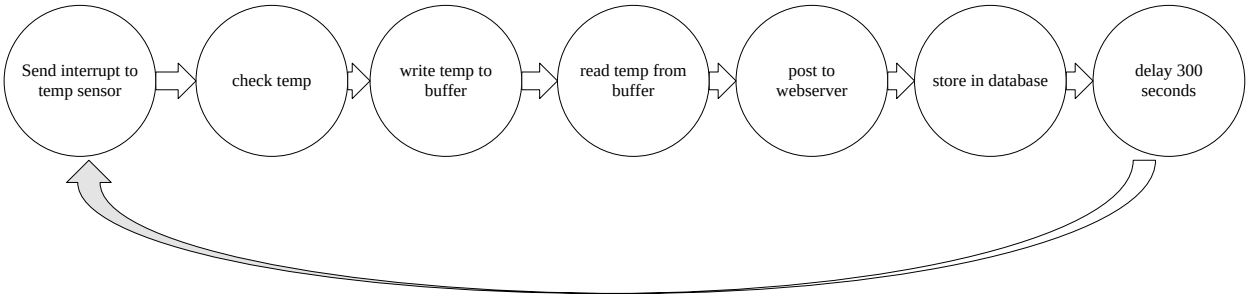
- *Write a UML class diagram to describe the data that resides on the server.*



- *Write a UML use case description for "Adding a Vaccine Temperature Sensor" to describe the action of adding a new temperature sensor. It should be detailed and comprehensive.*

Use-Case	Adding a Vaccine Temperature Sensor
Actors	Clinic, Database, and WebServer
Description	This use case occurs when a customer first installs or adds a new sensor. If it is a new customer the WebServer prompts them to make an account and their information in the database as a new entry. If they are an existing customer, they can upgrade their information.
Stimulus	Clinic tries to install new device
Response	Verify if the user exists and has the appropriate device. Check device status and add sensor information to the account.

- *Write a detailed UML activity or interaction view for the temperature sensor to periodically wake up, sense temperature and send to the database. Include any actions that need to take place on the server/database side.*



Write the specification for the HTTP GET string that will be used by the vaccine temperature monitor and the database to communicate temperature samples. Be brief but unambiguous. It should be clear enough that two individuals, one working on the server side (writing code to parse the string and put the appropriate values in the database), and another working on the temperature monitor code (responsible for the code to output the HTTP GET URL string), can do their work independently and have confidence that when integrated, their code will work together.

According to our understanding of the question, the temperature sensor will be sending information to the database. This cannot be done through HTTP GET instead POST has to be used.

Assuming the sensor is registered the following will happen:

Will be using JSON to send the data from the sensor to the WebServer. The Webserver will analyze the JSON POST and extract the data which will then be entered into the database.

Sample code of how JSON data will be when sent to the WebServer.

{

```
"data":{
        “Sensor”: “sensorID”,
        "temperature":"currentTemp"
        }
}
```

The JSON code above will be parsed on the WebServer and verify that the data is valid. If so the information will be posted to the database.