ECE-411 Homework 5

Practicum Team 11

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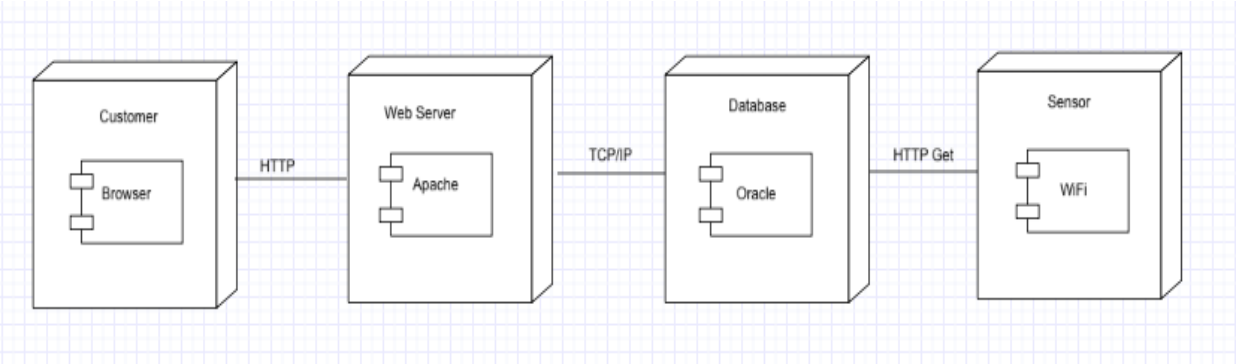
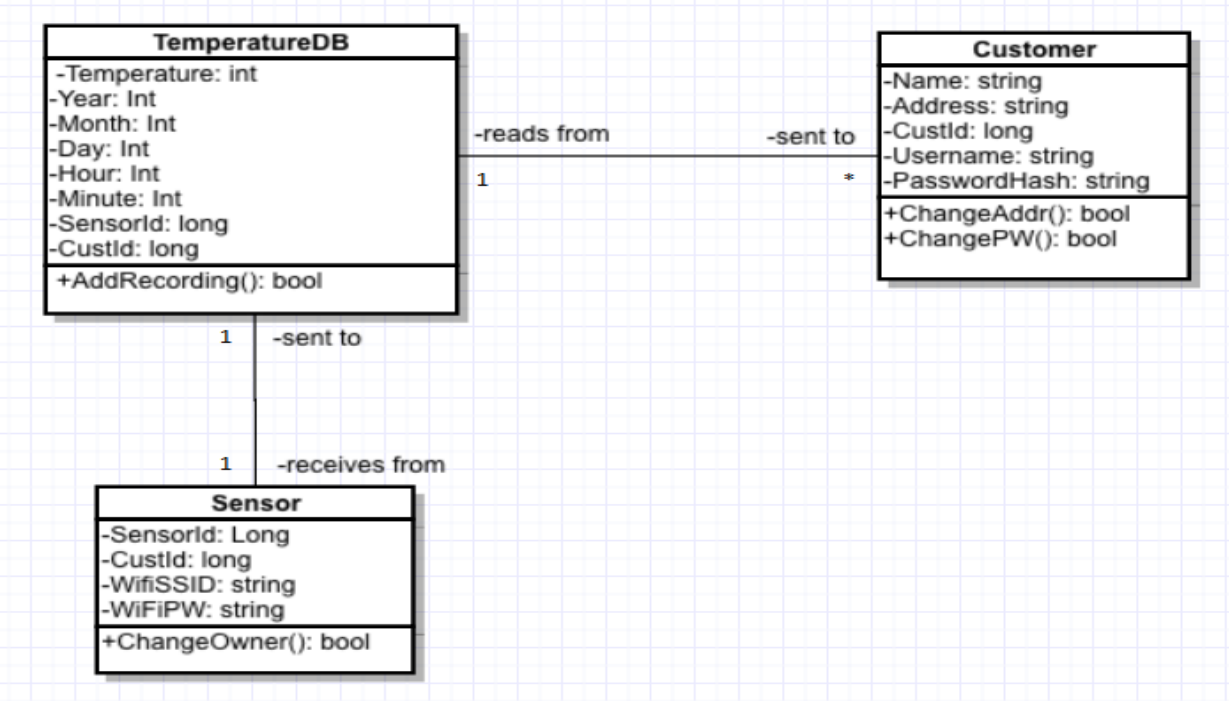
UML Physical View:



Simple physical system overview. Customer will not interact with the sensor directly, but pull data from a website in a browser.

UML Class Diagram:

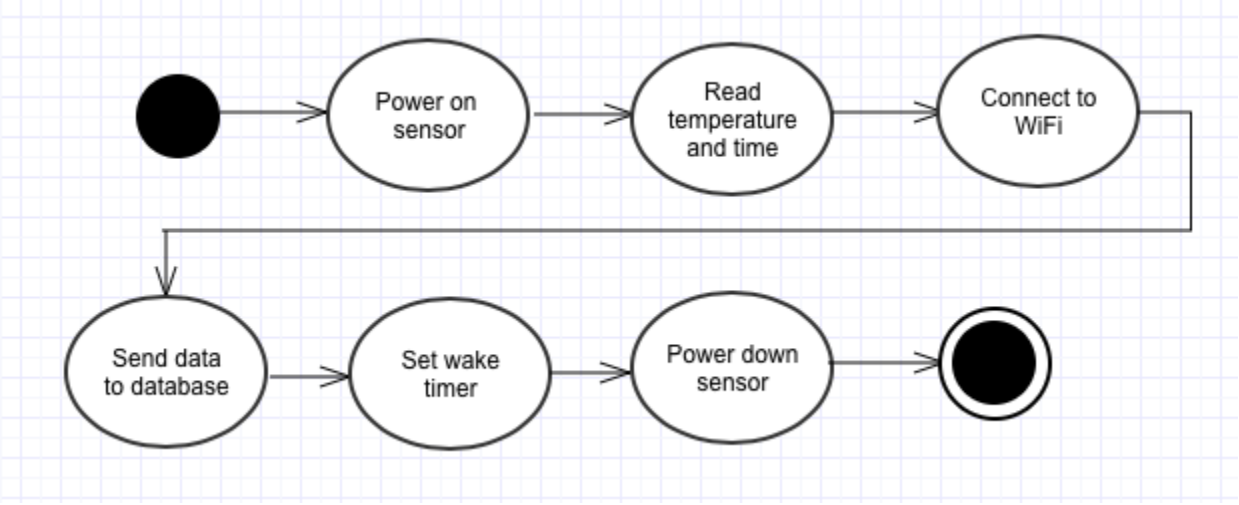


Decisions: CustId is included in each sensor and TemperatureDB entry to indicate the owner of the sensor and/or data. Sensor entry can be created when a sensor is manufactured and when other data are filled in during registration. WiFi information is to be stored with the sensor data to aid in adding new sensors or replacing a broken sensor. All time information is stored as separate values to simplify SQL sort and search actions.

Use Case:

Use-Case	Adding a Vaccine Temperature Sensor
Actors	Customer, Database, WebServer, Sensor
Description	This use-case occurs when a customer registers a vaccine temperature sensor. For new customers, the WebServer has them create an account, stores that information in the database, then adds their CustomerID to a sensor entry. If they are an existing customer, they are asked to verify their information then their CustomerID is added to a sensor entry. They are also asked if they would like to use the WiFi information from any of their previously registered devices.
Stimulus	Sensor registration via the WebServer
Response	Verify that sensor is connected to WiFi and can communicate with the Database

Activity View of sensor wake up and transmit:



A wake timer is used to collect data at intervals of time instead of the sensor being woken by an outside system in order to reduce quiescent current (save power). If WiFi or the database cannot be contacted, that data its stored locally and sent with the next transmission.

HTTP GET string specification:

Upon waking, the sensor will send data to the database using a HTTP GET url in the form:

GET
/AddRecording.cgi?Temperature=value1&Year=value2&Month=value3&Day=value3&Hour=value4&Minute=value5&SensorId=value6

The server should be able to record all sent data into a database entry and use the SensorId to find the CustomerId that owns that sensor, then add that into the TemperatureDB entry.