CIS600 Internet of Things: Application Development
Spring 2025

Assignment 3

Due: 23:59pm on Wednesday, March 26, 2025
Total Marks: 7.5

ALL submissions should be via Blackboard. No hand delivery will be accepted. Late submissions will be graded out of 50%.

In this assignment, you are required to

a) [2.5 points] Build a cloud-based IoT system which collects data from a set of virtual sensors that are deployed to collect environmental information using the MQTT protocol.
b) [1 point] Display the latest sensor data values received from all the sensors of a specified environmental station.
c) [0.5 points] Display the sensor data values received during the last five hours from all environmental station of a specified sensor.

Virtual Sensors:

You may build a standalone computer program using a preferred programming language, to represent a virtual environment IoT station that periodically generates a set of random virtual sensor values for the following sensors:

1. Temperature (Range: -50 to 50 Celsius)
2. Humidity (Range: 0 to 100%)
3. Co_2 sensor (Range: 300ppm to 2000ppm

The virtual environmental Station:

Your virtual environmental station has to have a unique ID (identity) to publish the random sensor data values on an MQTT channel.

Cloud-based IoT Backend

The MQTT is controlled by the cloud-based backend. You may implement the cloud-based backend using one of the following technologies:

AWS IoT
ThingSpeak

What to Submit:

Submit a report with following information via Blackboard:

1. [0.5 point] Brief explanation of the steps that you have used in developing the IOT system
2. [1 point] Screen shots of your output
3. [1 point] Include the URL of a GitHub repository where you will push all your code and scripts that are needed to realize the assignment, along with a main README.md file.
4. [1 point] Write a reflection on a specific experience that you have had when completing this assignment (incorporate your personal thoughts and opinions).