IoT Security and Privacy

Raspberry Pi Controlling Sensors

Instructions:

1. Note: Blue text points to a web link. Ctrl + Click to follow link.
2. Answers to all questions must be put into **ONE** document. That is, every time, each student can only submit one report document, answering all questions of this assignment.
3. Students must put answers following each question in this assignment. The instructor will not grade a report with only answers in it and the student gets zero for such an assignment. An assignment report must include original questions.
4. Students MUST submit the finished assignment in either Microsoft Word or pdf format to Blackboard. The doc must be submitted as ONE standalone file and cannot be tarred or zipped into a container.

Review questions

1. A Raspberry Pi is a credit card sized PC. (Yes/No)

2. A Breadboard can be used to connect electric component leads and wires. (Yes/No)

3. GPIO is the physical interface between a Pi and the outside world. (Yes/No)

4. All pins on a Pi are GPIO pings. (Yes/No)

5. Output from a GPIO is 3.3V and can be used as a power source to turn on an LED. (Yes/No)

6. It is ok to unknowingly plug wires and power sources onto a Pi. (Yes/No)

7. The input mode of a GPIO pin has high impedance. (Yes/No)

Lab 1 (Requires instructional support)

In this lab, students are required to use at least one sensor on raspberry pi. Please refer to [1] for use of raspberry pi and [2][3] for various sensor manuals.

Requirements:
1. Introduce what the sensor(s) does. (1 point)

2. Include a photo of raspberry pi with the connected sensor. Explain how the sensor is connected to GPIO pins or the board of raspberry pi. Any accessories such as cameras are considered as sensors. (1 point)

3. Include the results of your experiments controlling or communicating the sensor, for example, using screen shots. (4 points)

4. Include the code for controlling or communicating the sensor below. (4 points)

References
    [1] Chao Gao, Use of Raspberry Pi, 2016
    [2] SainSmart 37 in 1 Sensor Module Kit for Arduino UNO R3 Mega2560 Mega328 Nano Raspberry Pi, 2016.
    [3] 37 in 1 Sensor Module Kit, 2018