**IoT Security and Privacy**

**Assignment 4 – Secure ESP32 OTA through HTTPS**

**(10 points)**

### Instructions

**Please read the instructions carefully. Those students who fail to follow the instructions may get a zero score for this assignment.**

1. This is a team assignment. Each team can have at most **two** students while the assignment can be completed by one student. Each group member MUST submit the assignment report even if it is the same. Students who do not submit the report get zero for the assignment.
2. Answer each question following the original question. Do NOT delete the original question.
3. Answers to all questions must be put into **ONE** document.
4. 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.
5. 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.
6. All required files or docs must be submitted in one submission. Note: Blackboard allows unlimited number of submissions of one assignment by students and the instructor counts only the last one.
7. Refer to [Print screen](http://en.wikipedia.org/wiki/Print_screen) on how to take a screenshot.
8. Underlined blue text points to a web link. Ctrl + Click to follow link.

**Questions**

Students are asked to repeat the work in the tutorial [Secure ESP32 OTA through HTTPS](https://github.com/PBearson/Get-Started-With-ESP32-OTA).

1. Ensure your Ubuntu VM uses the bridged adapter. Include below a screenshot of the networking setting of your Ubuntu VM. (1 point)
2. What is the IP address of your Ubuntu VM? (1 point)
3. Please read the section of *Start the Web Server*.
   1. Include below a screenshot or photo of the contents of /home/iot/server with created CA certificate and key. (1 point)
   2. Include below a screenshot or photo of the command running the web server. (1 point)
4. Please read the section of *Prepare the OTA Firmware Image*. Only *Unversioned App* is required.
   1. Include below a screenshot of *hello-world.bin* in the *build* folder. (1 point)
   2. Include below a screenshot of photo of the contents of /home/iot/server with *hello-world.bin*. (1 point)
5. Please read the section of *Run the simple\_ota\_example Project*.
   1. Provide a screenshot or photo of *ca\_cert.pem* in the folder of *server\_certs*. (1 point)
   2. Provide a screenshot or photo of serial monitor after the firmware upgrading operation. (2 points)
6. Please discuss the OTA used in this assignment. Is the OTA secure? (1 point)