SCHOOL OF INFORMATION TECHNOLOGY

MAE FAH LUANG UNIVERSITY

1501704 SENSORS AND SENSOR NETWORKS

Practical Midterm-Exam Examples

Instruction:

a) There are 2 problems (10 points).

b) When you finish each problem, you have to ask Ajarn/TA to check your work/results.

- The score will be given according to the conditions specified in each problem.
- If you are not satisfied with the current result, you can ask for redoing.
- If you are done with a problem, Ajarn/TA will write down the score and sign the name.

c) No score will be given to the problem <u>without</u> an Ajarn/TA signature.

d) Open book exam.

e) Bring your own computer.

f) If you are late, the score will be decreased to <u>50%</u>.

g) If you are absent with <u>necessary reasons</u>, a make-up exam will be given with a <u>new set</u> of problems and the total score will be decreased to <u>50%</u>.

h) The time duration for the exam is <u>1.20 hr</u>.

1. Circuit connection:
   - Set up two NodeMCUs as a client/server network. One NodeMCU will work as a server/access point and the other NodeMCU will work as a client.
   - These NodeMCUs are called as "Node1" and "Node2".
   - Connect a potentiometer to Node1.
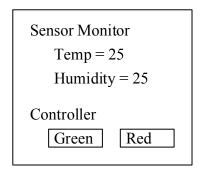   - Connect an LED to Node2.

   Problems:
   - Show the value of the potentiometer on the Serial Monitor. (1 Point)
   - If the potentiometer is more than 500, the LED on Node2 is on. (2 Points)
   - If the potentiometer is less than 500, the LED on Node2 is off. (2 Points)

   Score: _____

   Ajarn/TA's Signature: _____

2. Circuit connection:
   - Set up a NodeMCU as a "web server" and an "access point".
   - Connect a DHT11 (temperature/humidity sensor) to the NodeMCU.
   - Connect a green LED and a red LED to the NodeMCU.

   Web interface: Create the following web interface.

   ```
   Sensor Monitor
       Temp = 25
       Humidity = 25

   Controller
     [ Green ]   [ Red ]
   ```

   Problems:
   - Show the temperature value on the web interface. (1 Point)
   - Show the humidity value on the web interface. (1 Point)
   - Click the "Green" button on the web interface to "turn on/off" the green LED. (1.5 Points)
   - Click the "Red" button on the web interface to "turn on/off" the red LED. (1.5 Points)

   Score: _____

   Ajarn/TA's Signature: _____