DIY IoT Hardware Project

Course: CS578 Internet of Things Total Marks: 15

Common Instruction:

1. Students are allowed to select any DIY IoT hardware project as per their wish. However, the project must satisfy the following requirements mentioned below for evaluating the IoT project.
2. You have to prepare a project report and 5-min demo video. The **file names of your report and video** should be same as your roll number. Example, *130101001.pdf and 130101001.mp4*. Once done, submit the report & video using the provided link on or before the submission deadline.
3. **Project report** must contain the following sections:
    a. Main objective
    b. Implemented Attributes
    c. Configuration Diagram
    d. Sample Outputs
    e. Codes
    f. User Manual, if any
4. **Ethics in Project**: You are expected to do the complete assignment/project by yourself. Cases of unfair means and copying others' solutions will not be tolerated, even if you make cosmetic changes to them. If we suspect that this or any other form of cheating has happened, we are compelled to award NEGATIVE marks (equal to the maximum marks for the assignment/project).

Evaluation Strategy:

1. All the **objectives/attributes/features** have been implemented [5*1=5]
    a. Sensor should **sense** the environment
    b. Actuator should **react** upon receiving any instruction/command
    c. Internet **connectivity** to access the Cloud
    d. Data **visualization** through LCD / MobileApp / Desktop Application / Cloud application
    e. Cloud application / In-home developed application to **control** the full system

2. All the required **hardware & software components** are present in the implementation [5*1=5]
    a. Sensor and Actuator
    b. Arduino / NodeMCU / any other **MCU**
    c. ESP8266 / ESP32 / Ethernet shield / any other **IoT networking device** (but not smartphone/laptop)
    d. Any **could application** for storing data, running data analysis, giving command to actuators, etc.
    e. Smartphone / PC / Laptop / Tablet will be used as **Router / Gateway** to connect with the Internet

3. **At least the following data flows** have been implemented. [3*1+2 = 5]
    a. Reading Sensor Data and Display in Computer console/LCD
    e.g. Sensors -> Arduino -> Arduino serial monitor / LCD
    b. Transmit the data to cloud storage using Internet and display it using cloud application
    e.g. Arduino -> Router/Gateways (e.g. Smartphone) -> Cloud -> Smartphone or Laptop using cloud application to display
    c. Command should come from the cloud application to act on any actuator
    e.g. Cloud application -> Router/Gateways -> NodeMCU -> Arduino -> Actuators
    d. Sending notification/alert to administrator/user's email or smartphone
    e.g. Cloud application -> Internet -> Smartphone / Email (to inform any message/information)