IOT Home Automation

IOT or internet of things is an upcoming technology that allows us to control hardware devices through the internet. Here we propose to use IOT to control home appliances, thus automating modern homes through the internet. This system uses loads to demonstrate as house lighting, a fan and more. Our user-friendly interface allows a user to easily control these home appliances through the internet.

**Minimum requirements [25 marks]: you must put all things in a simple model/maquette.**

1. Smart door with keypad: open and close a door with a specific password, if user try 3 wrong passwords send an alert to homeowner [5 marks].

2. Apply motion detection [5 marks] if there are motion then apply step 3 and step 4.

3. Make sure that`s no light turns them on if there are light turn them off [5 marks].

4. Measure the temperature, depending on it turn Fan on or off and control speed [5 marks].

5. Mobile/Web app to control all the above steps [5 marks].

Any innovation or creativity will be regarded and graded as bonus.

**Components Needed:**

1. **ESP32 Development Board:** Main microcontroller for handling IoT functionalities.
2. **Servo Motor:** To simulate the opening and closing of a door.
3. **Keypad:** For password input to control the smart door.
4. **PIR Motion Sensor:** To detect motion.
5. **Light Sensor:** To measure ambient light.
6. **Temperature Sensor (e.g., DHT11 or DHT22):** To measure temperature.
7. **Relay Module:** To control the fan and lights.
8. **LEDs:** To simulate lights and fan status.
9. **Mobile/Web App:** To control the system remotely.