Experiment 1: DC Motor Control with Motion Sensor through ESP32

- **Components:**
  - 2x ESP32
  - Motion Sensor
  - DC Motor
  - L298N Motor Driver
- **Description:**
  Control a DC motor using two ESP32s and a motion sensor. One ESP32 acts as the motion detector (sensor hub), while the other ESP32 controls the motor based on motion detection signals received via Wi-Fi.

Experiment 2: Fan Control with DHT22 Sensor and OLED Display

- **Components:**
  - Arduino
  - DHT22 Sensor
  - OLED Display
  - Relay
- **Description:**
  This project controls a DC motor (e.g., a fan) using an Arduino and a DHT22 sensor to monitor temperature and humidity. Real-time data is displayed on an OLED screen, and a relay module activates or deactivates the fan based on a predefined temperature threshold.

Experiment 3: Door Lock Control with RFID

- **Components:**
  - Arduino
  - RFID Module
  - Solenoid Door Lock
  - LCD Display
  - Relay
- **Description:**
  Implement a secure door lock system using an RFID module and Arduino. The system unlocks the solenoid door lock upon detecting a valid RFID tag and displays messages on an LCD. The relay module controls the solenoid lock.

Experiment 4: Water Level Measurement with Ultrasonic Sensor

- **Components:**
  - Arduino
  - Ultrasonic Sensor
  - OLED Display
  - Buzzer
- **Description:**
  Measure water levels in a tank using an ultrasonic sensor. Display the level on an OLED display and activate a buzzer if the water level exceeds a predefined threshold.

Experiment 5: Servo Motor Control with ESP32 and Joystick

- **Components:**
  - ESP32
  - Joystick
  - Servo Motor
- **Description:**
  Control a servo motor's position using an ESP32 and a joystick. The joystick sends analog signals corresponding to its position, and the ESP32 adjusts the servo motor's angle in response.

Experiment 6: ESP32-CAM Live Stream with Mobile DC Motor Control

- **Components:**
  - ESP32-CAM
  - ESP32-CAM Programmer
  - DC Motor
  - Motor Driver
- **Description:**
  Stream live video from an ESP32-CAM to a mobile device and control a DC motor using a web app interface. The ESP32-CAM manages video streaming and motor control through its Wi-Fi capabilities.

Experiment 7: Smart Irrigation System

- **Components:**
  - Arduino
  - Soil Moisture Sensor
  - OLED Display
  - Water Pump
  - Relay
- **Description:**
  Automate irrigation using an Arduino-based system. The soil moisture sensor monitors soil moisture levels, activating a water pump through a relay when needed. An OLED display shows real-time moisture levels and system status.

Experiment 8: RGB LED Control with Bluetooth Module

- **Components:**
  - Arduino Uno
  - Bluetooth Module (HC-05 or HC-06)
  - RGB LED
- **Description:**
  Control an RGB LED with an Arduino Uno and a Bluetooth module via a mobile app. The app sends commands to change the RGB LED's color, and the Arduino processes these commands accordingly.

Experiment 9: Smoke and Gas Detection

- **Components:**
  - Arduino
  - MQ135 Gas Sensor
  - LCD Display
- **Description:**
  Detect smoke and gases using an MQ135 sensor and Arduino. Display real-time gas levels on an LCD. The system can be extended with additional alarms or actions upon detecting hazardous levels.

Experiment 10: Servo Motor Control by Keypad

- **Components:**
  - Arduino Uno
  - 4x4 Keypad
  - OLED Display
  - Servo Motor
- **Description:**
  Control a servo motor using a 4x4 keypad. Enter the desired angle (0–180 degrees), and the Arduino moves the servo motor to the specified angle. The entered angle is displayed in real-time on an OLED screen.