Weekly Report: Week-2

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Domain: IoT and Embedded System

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Project Title: Automatic Door Opening and Closing System using PIR Sensor & Arduino

I. Aim

To develop an automatic door system that uses a PIR sensor and Arduino to detect motion and open/close a door automatically.

II. Components and Devices Used

- - Arduino Uno
- - PIR Sensor
- - Servo Motor
- - Breadboard and Jumper Wires
- - Power Supply

III. Working Principle

The system is designed to detect human motion using a PIR sensor. When motion is detected within the sensor's range, it sends a signal to the Arduino. The Arduino processes this signal and activates the servo motor to open the door. After a few seconds delay (as programmed), the servo motor rotates back to its original position, closing the door. This project demonstrates a basic automated door control mechanism useful in home automation.

IV. Achievements

- - Successfully assembled all components on a breadboard.
- - Uploaded working code to Arduino that controls the servo motor via PIR sensor signal.
- - Tested the project for motion detection and door operation.

V. Challenges Faced

- - Initial calibration delay with PIR sensor.
- - Servo motor jittering during idle state.
- - Limited range of motion detection and slight false triggers.

VI. Lessons Learned

- - Gained hands-on experience with PIR sensors and servo motor integration.
- - Learned how to debug sensor input and adjust delays in Arduino code.
- - Understood the importance of component arrangement in embedded circuits.