



There shold farm

Team Members

Name	ID	Work
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Project Idea & Summary

The Smart Farm IoT Project aims to modernize agriculture by automating monitoring and control tasks. Using ESP32, sensors, and actuators, the system

- ➔ manages farm gates, detects worker presence, and monitors light levels. Cloud integration via HiveMQ and Supabase ensures real-time communication

- ➔ and secure data storage.
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Hardware Components

- ➔ Servo Motor
- ➔ LDR Sensor
- ➔ IR Sensor
- ➔ ESP32
- ➔ LEDs
- ➔ LCD Display
- ➔ Buzzer
- ➔ Push Button

- Servo → Pin 14 | LDR → Pin 34 | IR Sensor → Pin 32 - Buzzer → Pin 12 | Red LED → Pin 26 |
Green LED → Pin 27 - Button → Pin 25 | LCD → I2C

protocol

Cloud & Database

- HiveMQ Cloud (MQTT) for real-time communication - Supabase (PostgreSQL) for storing data
(workers, login info, IR readings) - ESPSupabase Library

simplifies data operations - Arduino IDE for ESP32 coding - FlutterFlow for mobile app
development

Table

Purpose

Workers

Stores worker names & IDs

Login

Stores login/authentication info

IR Sensor

Stores IR values & timestamps

System Logic & Functionality

- LDR detects darkness → LEDs indicate status - Button press toggles servo (open/close) - MQTT messages control servo & buzzer - LCD shows

messages - IR sensor sends values to Supabase every 5s

Outputs & Results

- Real-time servo control and feedback - Worker entry detection stored in Supabase - Tested on Wokwi simulation & ESP32 hardware

FlutterFlow App Features

- Remote servo control - View worker data - Real-time monitoring of IR sensor values - Simple and intuitive UI

Future Work

- Add soil moisture & temperature sensors - Automated irrigation system - Advanced analytics dashboard - RFID/Face recognition for worker access -



Scaling for larger farms with multiple ESP32s

Conclusion

The Smart Farm IoT Project integrates sensors, actuators, cloud, and mobile applications to enhance agricultural efficiency, security, and scalability. It

demonstrates how IoT can transform farming into a smarter, automated system.