PROJECT NAME: Ultra Security System using ESP32 and Blynk

PROJECT DESCRIPTION:

This is an IoT-based smart security system developed using the ESP32 microcontroller. The system uses an ultrasonic sensor for password input, a servo motor for door locking mechanism, and a buzzer for alert system. The project is also connected with the Blynk mobile application to update and monitor the password remotely.

HARDWARE COMPONENTS:

1. ESP32 Microcontroller
2. Ultrasonic Sensor (HC-SR04)
3. Servo Motor
4. Buzzer
5. WiFi (Built-in ESP32)
6. Smartphone with Blynk App

FEATURES:

- Distance based password system using ultrasonic sensor
- Servo motor is used for door lock control
- Buzzer gives sound alert for success or failure
- Password is stored permanently using ESP32 Preferences memory
- Password can be updated through Blynk mobile application
- Works with internet using IoT technology

BLYNK VIRTUAL PINS:

V0 = Digit 1

V1 = Digit 2

V2 = Digit 3

V3 = Digit 4

V4 = Save password button

V5 = Display entered password

WORKING PRINCIPLE:

User enters password by moving hand in front of ultrasonic sensor.

The system converts distance into numbers.

After full password entry, the system verifies it.

If password is correct, servo motor opens door.

If wrong, buzzer rings multiple times.

PROGRAMMING LANGUAGE:

Embedded C++ using Arduino IDE

APPLICATION:

This project is applicable in home security, office door lock system,

smart access control system and labs.

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SECURITY NOTE:

WiFi password and Blynk authentication token are removed for safety.

User must insert own credentials before running the program.