

IOT SMART DOOR LOCK SYSTEM

PRESENTED BY

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OBJECTIVE

The primary objective of an IoT Smart Door Lock System is to enhance security, convenience, and control over access to residential, commercial, and industrial spaces using advanced technology. It aims to replace traditional key-based locks with a smart, keyless, and remotely accessible solution that leverages IoT for improved efficiency and safety.

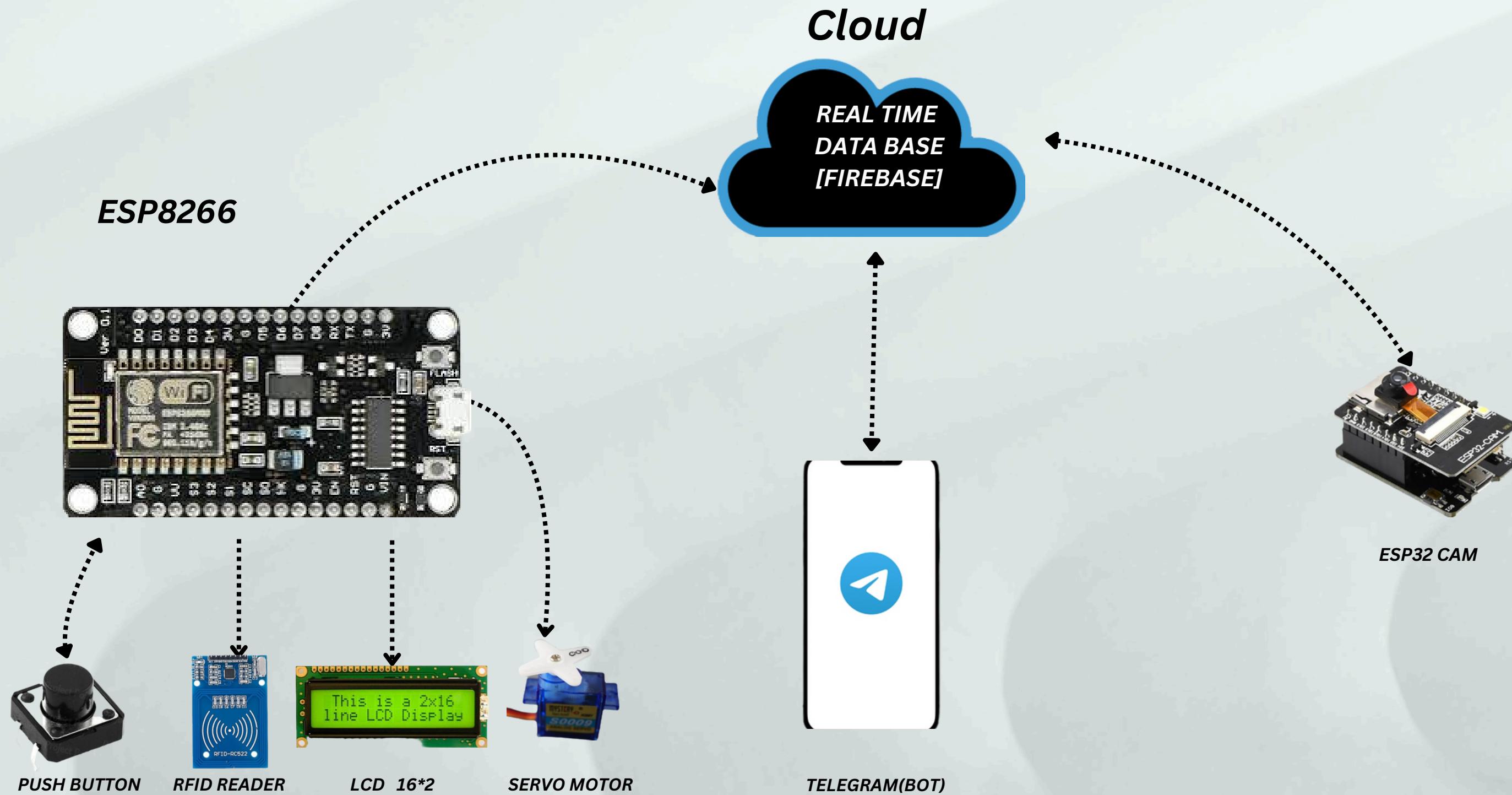
INTRODUCTION

This project is a smart door lock using ESP8266, RFID, and Telegram integration. The door can be locked or unlocked using an RFID tag or Telegram bot commands, with all actions synced via Firebase Realtime Database. An LCD displays the lock status, and an ESP32-CAM captures and sends photos to Telegram when the door is accessed or when the push-button doorbell is pressed—enabling remote monitoring and control.

COMPONENTS USED

- *NodeMCU ESP8266*
- *PUSH BUTTON*
- *RFID READER*
- *LCD 16*2*
- *SERVO MOTOR*
- *CLOUD*
- *TELEGRAM(BOT)*
- *ESP32 CAM*

BLOCK DIAGRAM



DESCRIPTION

RFID Access:

When an authorized RFID tag is scanned, the ESP8266 unlocks or locks the door using a servo motor.

Telegram Control:

Users can remotely control the lock by sending /lock or /unlock commands to a Telegram bot.

Real-Time Sync:

All status updates are synced through Firebase Realtime Database to ensure both methods stay updated.

LCD Display:

The current lock status (Locked/Unlocked) is shown on an LCD display.

Photo Capture (Access Event):

An ESP32-CAM captures a photo whenever the door is accessed (via RFID or Telegram) and sends it to Telegram.

Doorbell Feature:

Pressing a push button (acting as a doorbell) triggers the ESP32-CAM to take a photo, allowing the owner to decide remotely whether to unlock the door.

ADVANTAGES

Enhanced Security:

Only authorized RFID tags or verified Telegram commands can unlock the door.

Remote Access Control:

The lock can be controlled from anywhere via Telegram, offering convenience and flexibility.

Real-Time Synchronization:

Firebase ensures instant updates between manual (RFID) and remote (Telegram) operations.

Visual Verification:

The ESP32-CAM provides photo evidence of every access attempt, increasing security.

Status Monitoring:

LCD display shows live status of the lock, improving user awareness.

Visitor Notification:

Push-button doorbell captures a photo of the visitor, allowing remote decision-making.

REALTIME APPLICATION

1. *Smart Homes & Apartments* 
2. *Office & Corporate Buildings* 
3. *Hotels & Short-Term Rentals* 
4. *Hospitals & Healthcare Facilities* 
5. *Warehouses & Industrial Facilities* 
6. *Schools & Universities* 
7. *Banks & Financial Institutions* 

Thank you