Smart Door Lock System Using ESP32

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Abstract: *In terms of house security, the door is crucial. To keep the residence secure, the owner will keep the door locked at all times. However, owing to a rush when leaving the house, the house owner may forget to lock the door, or they may be unsure if they have closed the door or not. In this paper, we have presented a smart Wi-Fi Door Lock using the ESP32 CAM and the Blynk App. In this simple working model, when a person hits the doorbell, the owner receives a notification on his/her phone with a photo of that person. The owner can also unlock the door from a mobile phone after checking the photo. The proposed Door Security System application Door Lock with ESP32 and Internet of Things (IoT) technology to monitor the status of the door, manage the door, and increase security in a home. Blynk is a communication protocol that connects a smartphone to a door lock system and is used to increase the security of a home. Door plays an important role in home security. To secure the house, the occupants of the house will always have the door locked. However, sometimes the house occupants forget to lock the door due to hurry when leaving the house, or they may doubt whether they have locked the door or not. We propose an application called Door Security System which is based on Android using Internet of Things (IoT) technology to monitor the status of the door, controlling the door and increasing security in a house. MQTT cloud is utilized as the communication protocol between smartphone and door lock system. PIR sensor is implemented in the door lock to detect the movement near the door, while touch sensor is installed on the door handle to recognize the human hand. Should the door is opened by force, the alarm will ring and send notification to alert the house occupant on the existence of intruder in the house.*

**Keywords:** ESP32 Wroom, Smart Home ,WiFi.

I. INTRODUCTION

A door is one of the first defense features to maintain the physical security of the house. If the door of the house can be opened easily, a thief can easily enter and steal the contents of the house. At first, a door only incorporates a physical key to lock or unlock the door but then, with the advancement of technology, a more modern door has been innovated, namely the digital door that can lock or unlock doors without requiring a physical key. However, the digital door can also be broken or damaged when the house is empty, and the occupants of the house will only find out when arriving at home. To always maintain the security of the house, the house occupants will always have the door locked either when going out from home, or when resting in the house. However, sometimes the house occupants

forget to lock the door due to hurry when leaving the house, or they may doubt whether they have locked the door or not. This is one factor that can be a threat to home security.

Internet of Things (IOT) is a structure in which objects and people are provided with exclusive identity and the ability to relocate data over a network without requiring two-way handshaking between human-to-human i.e. source to destination or human-to-computer interaction IOT utilizes the ability of sensors such as passive infrared sensors (PIR) to detect a movement, a magnetic sensor that can be used to detect whether a door is open or closed, and an internal touch sensor to detect whether the sensor is being touched or not. IOT also utilizes the capabilities of tools such as micro controllers that can control other devices, MOSFET, is a transistor which can be in the form of an automatic switch, an electric strike digital door lock that can lock or unlock without requiring a physical key, an alarm that can ring or stop ringing according to the input received, LED lights that can turn on or off.

Message Queue Telemetry Transport (MQTT) protocol is widely used for network communication protocol in IoT. It enables a publish/subscribe mechanism. Areceiver device can connect one time to the server to subscribe for a specific topic. Then,

whenever there is a message generated for a specific topic, the message will be sent to the receiver. In comparison, when using HTTP, a device (client) which would like to receive a message, needs to request periodically to a server whether there is a a message or not. The security of a house can be improved by paying attention to the security level of a door. Research will be carried out to improve the security of home doors by implementing IoT technology that can monitor the status of the house door, and lock and unlock the door remotely via a smartphone through encrypted MQTT cloud. The door will also sound an alarm and send a notification to the house occupants smartphone via MQTT cloud should the door is forced open. IOT is the inter-networking of physical devices, vehicles, buildings and other items embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data. The traditional fields of embedded system, wireless sensor networks, control system, automation systems are together interconnected to form the IOT. That means the internet of things builds over the revolutionary success of mobile and internet network.

Modern systems have been deployed to provide security in this location. The Face Detection System (FDRS) is a technology that recognizes body features by using mathematical factors inherent in human appearance. This technology is easy to use and secure. The Internet of Things (IOT) is a popular technology that allows you to track and control harmful devices in your house. Identifying a person to enter and exit the house is an important aspect of a home security system.

Biometrics is a type of analysis that is specific to human comprehension. Facial recognition is one of the most widely used forms of facial recognition technologies, with finger skills. one is called certification and the and the is called valid. Understanding the face mains telling structure of whose, or perhaps it is, the image of the face.

II. CIRCUIT DIAGRAM
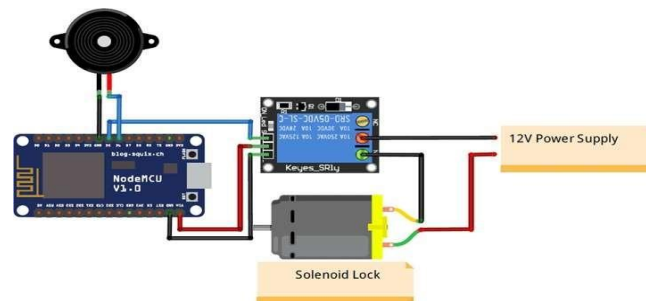
III. WORKING

This circuit is very simple. the input voltage is 12V DC. I have used a 5V regulators to feed 5V to the ESP32 module. connections for this IoT Smart Door Lock are very simple as we are only connecting a solenoid lock, relay module, and a buzzer with NodeMCU ESP8266. The input pin of the relay is connected to the D5 pin of NodeMCU while VCC and Ground pins are connected to Vin and GND pin of NodeMCU. The positive pin of the buzzer is connected to the D6 pin of NodeMCU, and the GND pin is connected to the GND of NodeMCU. I have used a TIP122 NPN transistor to control the 12V electronic lock from the GPIO12 pin and the push button is connected with the GPIO13.

V. RESULT
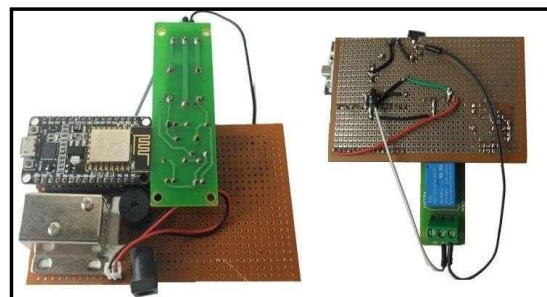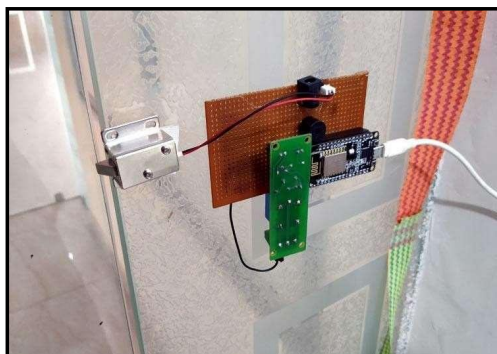
VI. CONCLUSION

The lock was designed to improve user convenience by allowing him to check the image of a valid visitor and opener close the door lock remotely. Another efficient system the function is that when a valid user approach, he can switch the button on art will. Now the owner doesn't have to worry about losing the key, getting locked out, or having hands full with groceries, because the Smart Lock system has it covered. The proposed system can be commercialized into a use full product, such as a secure security system with enhanced convenience, especially when
compared to existing digital door lock systems.

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