

Smart Intruder Prevention System

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INTRODUCTION

A smart intruder prevention system is a type of security system that uses sensors, cameras, and other devices to detect unauthorized entry into a building or other protected area. The system can then send an alert to the property owner or security personnel, who can take action to prevent or stop the intrusion. These are recommended due to their ability to provide a high level of security with minimal false alarms. The systems can be customized to meet the specific needs of the property, and they can be easily monitored and controlled remotely.

In this project, we designed a door lock with the help of Arduino Mega, TFT LCD, solenoid lock and Fingerprint sensor. The system offers users various methods of unlocking the door, such as using a password or fingerprint. The system will take a photo of any intruder who enters the wrong password and send it to the owner via Telegram. The idea is to develop a system that will notify us if an intruder tries to open the door, so we can leave our homes or buildings without any worry. This system will be more user-friendly than traditional key-based systems, as it will not require us to carry a physical key with us.

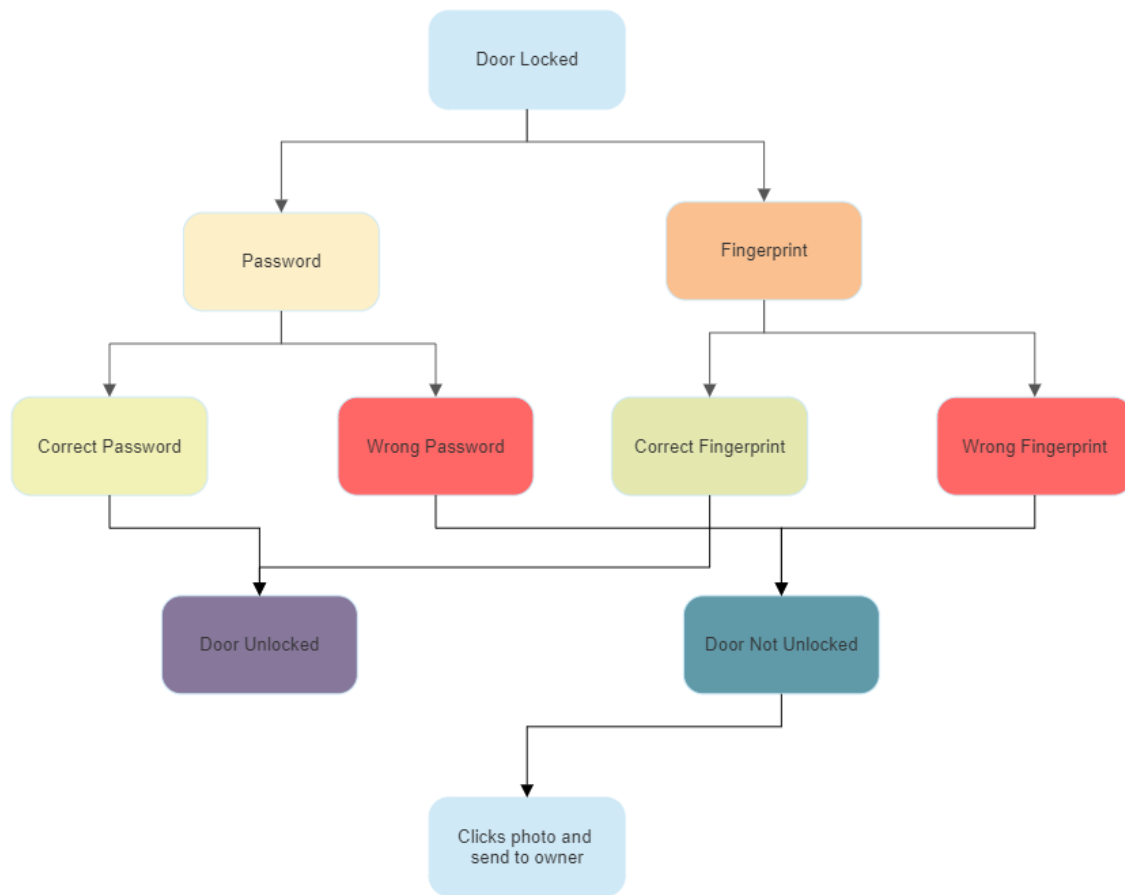
PRODUCT SPECIFICATIONS

- **Arduino Mega 2560:** It is used to store the code and basically perform all the logical calculations. It is connected to a LCD screen which in turn is connected to the relay, nodemcu, solenoid lock and power source.
- **Solenoid Lock:** The solenoid lock is a digital door lock that looks like a traditional door lock, but it is connected to an Arduino Mega board that can tell if the door is open or closed based on the passcode entered or fingerprint used.
- **Relay:** Relay is used to control the Solenoid lock which basically acts as a switch.
- **Power Source:** We used a power supply of 12V which supplies power to Arduino Mega, LCD screen, Fingerprint sensor, Solenoid lock.
- **Fingerprint Sensor:** The fingerprint sensor scans the user's fingerprint and stores it in its database. When the user tries to unlock the door using their fingerprint, the sensor compares the fingerprint to the one stored in its database. If the fingerprints match, the sensor will unlock the door.
- **NodeMCU(ESP32):** NodeMCU enables us to connect Arduino to the internet, so that we can control it from anywhere in the world using a mobile application.
- **LCD Screen:** The LCD screen displays the lock's current status and the number of available unlocking methods.

WORKING

The lock can be unlocked in three ways:

- 1) If the user enters the correct code, the lock will open. If the code is incorrect, the lock will display an error message and take a photo of the user, which will be sent to the owner.
- 2) If the user uses their fingerprint to unlock the door, the lock will open if the fingerprint is in the database. If the fingerprint is not in the database, the lock will display an error message and take a photo of the user, which will be sent to the owner.
- 3) After installing the respective app on your mobile, you can unlock the door by clicking a button in the app from any part of the world.



CONCLUSION

Technology is developing rapidly, and we should use it for good. We should adapt to the changes and use modern lock systems that are integrated with technology. These systems are more user-friendly and secure than traditional lock systems.

