

Finock Project Vision

Introduction

The IoT project of fingerprint door unlock system with Arduino Uno and Solenoid 12V lock is a cutting-edge technology that combines the power of biometrics and automation to provide secure access control. The project involves the use of an Arduino Uno microcontroller board, a fingerprint sensor module, and a solenoid lock to create a system that can recognize authorized users and grant them access to a door.

The system is designed to be easy to use, reliable, and cost-effective. It eliminates the need for traditional keys or access cards, which can be easily lost, stolen, or duplicated. Instead, it uses biometric data to verify the identity of the user and grant access only to authorized individuals.

Functional Requirements

- The fingerprint door unlock system must be able to perform the following functions:

- (1) capture and store fingerprints of authorized users
- (2) compare captured fingerprints with stored data to verify the identity of the user
- (3) activate the solenoid lock to unlock the door when the user is authorized, and
- (4) log all access attempts for security purposes.
- (5) remotely unlocked the door via android app through internet

- To achieve these functions, the system requires the following components:

- (1) an Arduino Uno microcontroller board
- (2) a fingerprint sensor module
- (3) a solenoid lock
- (4) a power supply unit

(5) a display module to show status messages.

Product Backlog

The product backlog for the fingerprint door unlock system includes the following tasks:

- (1) design and assemble the hardware components
- (2) program the Arduino Uno microcontroller board to interface with the fingerprint sensor and solenoid lock
- (3) develop a user interface for the system
- (4) test the system for functionality and reliability
- (5) document the system design and operation.

The product backlog will be managed using agile development methodologies, with sprints of two weeks each.

Workflow Diagram

The workflow diagram for the fingerprint door unlock system illustrates the sequence of events that occur when a user attempts to gain access to the door.

First, the user places their finger on the fingerprint sensor module, which captures an image of their fingerprint. The image is then compared with stored data to verify the user's identity. If the user is authorized, the solenoid lock is activated, and the door unlocks. A log of the access attempt is recorded for security purposes.

The workflow diagram also enables you to unlock your **door remotely** as the component is connected to internet **via Internet Module**.

Key Specifications:

- Primary user controls the other users only.
- Primary user watch the logs.
- Primary user sets the working hours for this device.

Budget:

1	An Arduino Uno	600/-
2	A solenoid lock with a relay	760/-
3	A fingerprint sensor R307	1600/-
4	A power supply	200/-
5	Dumper wires	250/-
6	A Wi-Fi Module	300/-