BIOMETRIC SMART HOUSE SYSTEM

INTRODUCTION TO EMBEDDED SYSTEM LAB

Group name: 3 Star
Present By:
2020000000146 – Sanjana Akther
2020000000137 – Khandoker Humayoun Kobir
2020000000034 – Md.Abul Hasnat KAllol

INTRODUCTION:

- a biometric smart house system using an Arduino board and a fingerprint sensor. The system aims to provide secure access control to the house through fingerprint recognition and incorporate occupancy detection for enhanced automation.

COMPONENTS: (Hardware based)

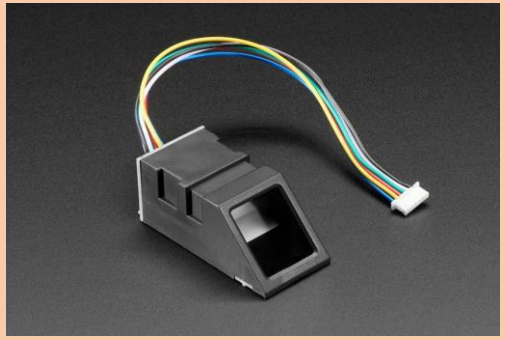
- **Fingerprint sensor:** Capture and store fingerprint data
- **Display:** Show relevant information
- **Servo motor:** Control the door mechanism
- **Motion sensor:** Detect presence in the house
- **LEDs:** Indicate occupancy status

COMPONENTS: (Hardware based)

Database: Store authorized fingerprint information and associated data

FRINGERPRINT ENTROLLMENT:

- Model:ZA620_M5
- 4 pin: vcc,ground,tx,rx
- Green light indicates waiting for input.



- Connected with Arduino
- Use the fingerprint sensor for image
- Store it in database

Fingerprint Verification

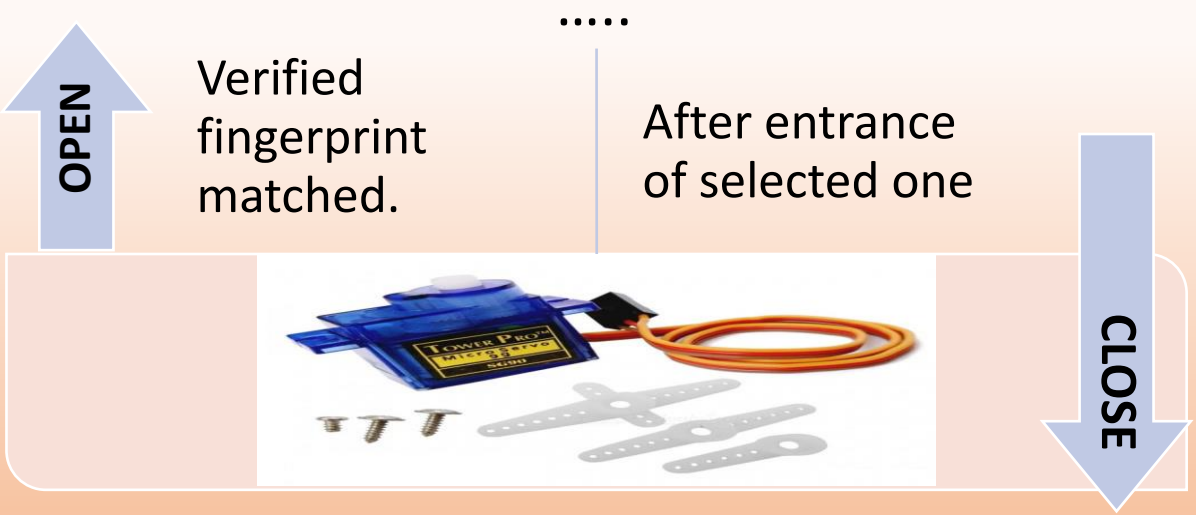
1.Check data

2.Capture image

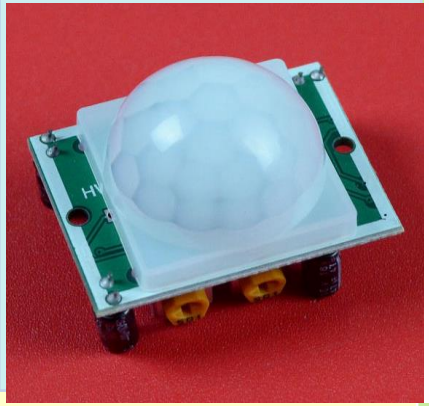
3.compare

4.Matched sample proceed

Door Control: (servo SG90)



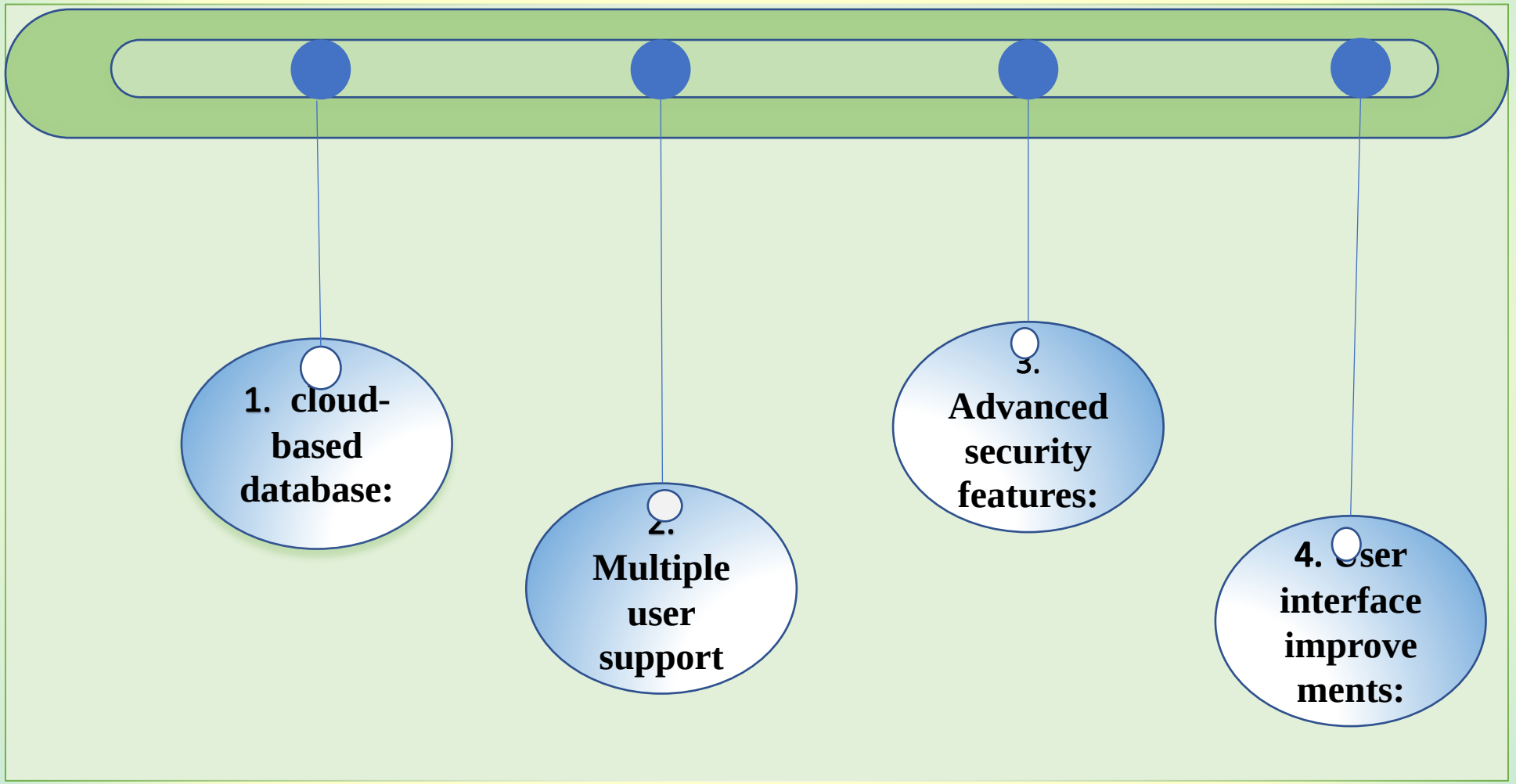
OCCUPANCY DETECTION:

PIR MOTION SENSOR	Green LED:	Red LED:
Detect the presence in the house	Illuminate green led ,if the house is occupied	Illuminates red light ,if the house is unoccupied
		

Security and Benefits:

- Security increased as biometric authentication.
- Unauthorized access prevented
- Real time monitoring and control

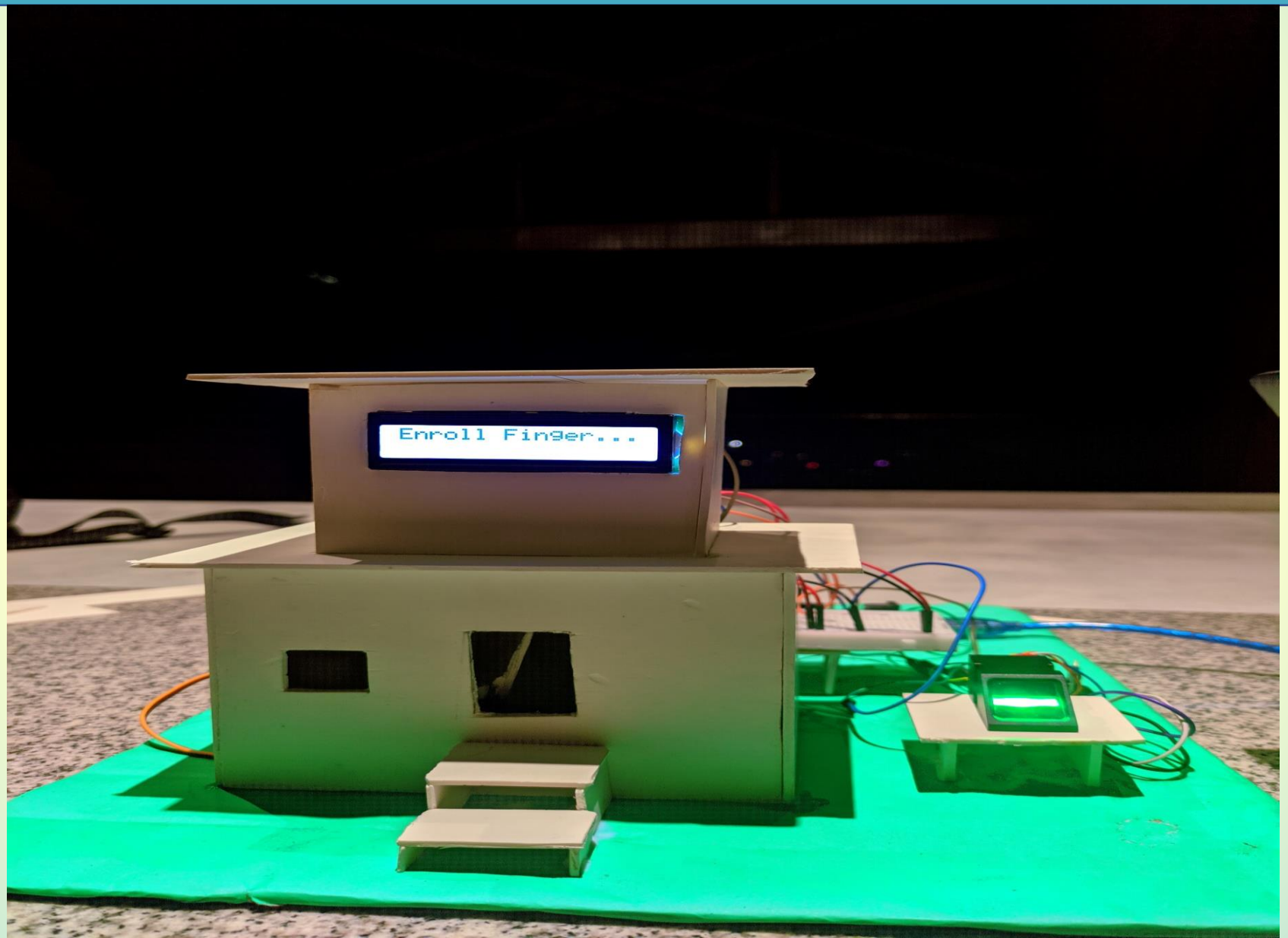
Future Work:


1. cloud-based database:
2. Multiple user support
3. Advanced security features:
4. User interface improve ments:

CONCLUSION:

The implementation allowed users to enroll their fingerprints and verify their identity to gain access to the house. The system accurately detected occupancy using the motion sensor and adjusted the behavior accordingly.

DIAGRAM:



THANK YOU ☺