**Fingerprint Registration and Digital Slip**

**Explanation:**  
In this phase, each employee and voter’s fingerprint is enrolled using an AS608 sensor. The sensor captures the fingerprint twice to ensure accuracy and stores the template with a unique ID (e.g., 101 for Employee 1, 201 for Voter 1). Immediately after successful enrollment, the system simulates sending a digital slip message.

#include <Adafruit\_Fingerprint.h>

#include <SoftwareSerial.h>

// Use SoftwareSerial for fingerprint sensor connection on pins 2 (RX) and 3 (TX)

SoftwareSerial mySerial(2, 3);

Adafruit\_Fingerprint finger = Adafruit\_Fingerprint(&mySerial);

void setup() {

Serial.begin(9600);

while (!Serial); // Wait for Serial Monitor

finger.begin(57600);

if (finger.verifyPassword()) {

Serial.println("Fingerprint sensor found!");

} else {

Serial.println("Fingerprint sensor not found. Check connections.");

while (1);

}

Serial.println("=== Enrollment Mode ===");

Serial.println("Enter a unique ID for this fingerprint (e.g., 101 for Employee, 201 for Voter, etc.):");

}

void loop() {

if (Serial.available() > 0) {

int id = Serial.parseInt();

if (id == 0) return; // Skip if no valid integer

Serial.print("Enrolling fingerprint for ID: ");

Serial.println(id);

if (enrollFingerprint(id) == FINGERPRINT\_OK) {

simulateDigitalSlip();

}

Serial.println("Enrollment complete. Enter next unique ID if needed:");

}

}

uint8\_t enrollFingerprint(int id) {

int p = 0;

Serial.println("Place finger on sensor...");

while ((p = finger.getImage()) != FINGERPRINT\_OK) {

if (p == FINGERPRINT\_NOFINGER) continue;

Serial.println("Error capturing image. Try again.");

}

p = finger.image2Tz(1);

if (p != FINGERPRINT\_OK) {

Serial.println("Error converting image.");

return p;

}

Serial.println("Remove finger.");

delay(2000);

Serial.println("Place the same finger again...");

while ((p = finger.getImage()) != FINGERPRINT\_OK) {

if (p == FINGERPRINT\_NOFINGER) continue;

Serial.println("Error capturing image. Try again.");

}

p = finger.image2Tz(2);

if (p != FINGERPRINT\_OK) {

Serial.println("Error converting image.");

return p;

}

p = finger.createModel();

if (p == FINGERPRINT\_OK) {

Serial.println("Fingerprints matched!");

} else if (p == FINGERPRINT\_PACKETRECIEVEERR) {

Serial.println("Communication error.");

return p;

} else if (p == FINGERPRINT\_ENROLLMISMATCH) {

Serial.println("Fingerprints did not match.");

return p;

}

p = finger.storeModel(id);

if (p == FINGERPRINT\_OK) {

Serial.println("Fingerprint stored successfully!");

} else {

Serial.println("Error storing fingerprint.");

}

return p;

}

void simulateDigitalSlip() {

Serial.println("=== Digital Slip Simulation ===");

Serial.println("Select your preferred voting slot (For this prototype, all choose Slot 1).");

Serial.println("====================================");

delay(3000);

}