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1  #include <SPI.h>
2  #include <MFRC522.h>
3  #include <LiquidCrystal.h>
4
5  // Pin definitions
6  #define RST_PIN 9
7  #define SS_PIN 10
8  #define BUZZER_PIN 8
9
10 // Create instances
11 MFRC522 mfrc522(SS_PIN, RST_PIN); // Create MFRC522 instance.
12 LiquidCrystal lcd(7, 6, 5, 4, 3, 2); // Create LCD instance.
13
14 // Predefined RFID tag UIDs (example)
15 byte knownUIDs[][4] = {
16     {0x12, 0x34, 0x56, 0x78},
17     {0xAB, 0xCD, 0xEF, 0x90}
18 };
19 const int knownUIDCount = sizeof(knownUIDs) / sizeof(knownUIDs[0]);
20
21 // Function to compare UIDs
22 bool compareUID(byte* uid, byte knownUID[]) {
23     for (int i = 0; i < 4; i++) {
24         if (uid[i] != knownUID[i]) {
25             return false;
26         }
27     }
28     return true;
29 }
30
31 void setup() {
32     // Initialize serial communication
33     Serial.begin(9600);
34     SPI.begin();
35     mfrc522.PCD_Init();
36

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37 // Initialize LCD
38 lcd.begin(16, 2);
39 lcd.print("RFID Attendance");
40
41 // Initialize Buzzer
42 pinMode(BUZZER_PIN, OUTPUT);
43 digitalWrite(BUZZER_PIN, LOW);
44 }
45
46 void loop() {
47 // Look for new RFID cards
48 if (!mfrc522.PICC_IsNewCardPresent()) {
49     return;
50 }
51 if (!mfrc522.PICC_ReadCardSerial()) {
52     return;
53 }
54
55 // Print UID
56 Serial.print("UID tag: ");
57 String content = "";
58 byte* uid = mfrc522.uid.uidByte;
59 for (byte i = 0; i < mfrc522.uid.size; i++) {
60     Serial.print(uid[i] < 0x10 ? " 0" : " ");
61     Serial.print(uid[i], HEX);
62     content.concat(String(uid[i] < 0x10 ? " 0" : " "));
63     content.concat(String(uid[i], HEX));
64 }
65 Serial.println();
66
67 // Compare with known UIDs
68 bool knownUID = false;
69 for (int i = 0; i < knownUIDCount; i++) {
70     if (compareUID(uid, knownUIDs[i])) {
71         knownUID = true;
72         break;
73     }
74 }
75
76 // Display result on LCD and buzz
77 lcd.clear();
78 if (knownUID) {
79     lcd.print("Access Granted");
80     digitalWrite(BUZZER_PIN, HIGH);
81     delay(200);
82     digitalWrite(BUZZER_PIN, LOW);
83 } else {
84     lcd.print("Access Denied");
85 }
86
87 // Halt PICC
88 mfrc522.PICC_HaltA();
89 }

```