```
// Techatronic.com
#include <SPI.h>
#include <MFRC522.h>
#include <Wire.h>
#include <RTClib.h>  // RTC library
#include <LiquidCrystal_I2C.h>

LiquidCrystal_I2C lcd(0x27, 16, 2);
RTC_DS3231 rtc;  // Create RTC instance

#define SS_PIN 10
#define RST_PIN 9
#define LED_G 7  // Green LED pin
#define LED_R 6  // Red LED pin
#define BUZZER 5 // Buzzer pin

MFRC522 mfrc522(SS_PIN, RST_PIN);  // Create MFRC522 instance

void setup() {
  Serial.begin(9600);
  SPI.begin();
  mfrc522.PCD_Init();

  lcd.init();
  lcd.backlight();
  pinMode(LED_G, OUTPUT);
  pinMode(LED_R, OUTPUT);
  pinMode(BUZZER, OUTPUT);
  noTone(BUZZER);

  // Initialize RTC
  if (!rtc.begin()) {
    lcd.print("RTC NOT FOUND");
    while (1);
  }

  if (rtc.lostPower()) {
    rtc.adjust(DateTime(F(__DATE__), F(__TIME__)));  // Set RTC to compile time if power lost
  }
}

void loop() {
  if (!mfrc522.PICC_IsNewCardPresent()) {
    lcd.setCursor(0, 0);
    lcd.print("SHOW YOUR");
    lcd.setCursor(1, 1);
    lcd.print("ID CARD");
    return;
  } else {
    lcd.clear();
  }

  if (!mfrc522.PICC_ReadCardSerial()) {
    return;
  }

  // Display UID
  Serial.print("UID tag :");
  String content = "";
  for (byte i = 0; i < mfrc522.uid.size; i++) {
    Serial.print(mfrc522.uid.uidByte[i] < 0x10 ? " 0" : " ");
    Serial.print(mfrc522.uid.uidByte[i], HEX);
    content.concat(String(mfrc522.uid.uidByte[i] < 0x10 ? " 0" : " "));
    content.concat(String(mfrc522.uid.uidByte[i], HEX));
  }
  Serial.println();
  content.toUpperCase();

  DateTime now = rtc.now();  // Get current time
```

```
    lcd.setCursor(0, 0);
    lcd.print(now.hour(), DEC);
    lcd.print(":");
    lcd.print(now.minute(), DEC);

    lcd.setCursor(7, 0);
    lcd.print(now.day(), DEC);
    lcd.print("/");
    lcd.print(now.month(), DEC);
    lcd.print("/");
    lcd.print(now.year() % 100);  // Display last two digits of the year

    Serial.print(now.day(), DEC);
    Serial.print("/");
    Serial.print(now.month(), DEC);
    Serial.print("/");
    Serial.println(now.year() % 100);

    lcd.setCursor(0, 1);
    if (content.substring(1) == "03 46 67 92") {
      lcd.print("20213034 PRESENT");
      logAccess("20213034", now);
      grantAccess();
    } else if (content.substring(1) == "83 88 66 29") {
      lcd.print("20213057 PRESENT");
      logAccess("20213057", now);
      grantAccess();
    } else if (content.substring(1) == "91 69 3E 43") {
      lcd.print("STUDENT 03");
      logAccess("STUDENT 03", now);
      grantAccess();
    } else {
      lcd.print("UNAUTHORIZED ID");
      denyAccess();
    }
  }

  void logAccess(const char* student, DateTime time) {
    Serial.print(student);
    Serial.print(" scanned at ");
    Serial.print(time.hour(), DEC);
    Serial.print(":");
    Serial.print(time.minute(), DEC);
    Serial.print(":");
    Serial.print(time.second(), DEC);
    Serial.print(" on ");
    Serial.print(time.day(), DEC);
    Serial.print("/");
    Serial.print(time.month(), DEC);
    Serial.print("/");
    Serial.println(time.year() % 100);
  }

  void grantAccess() {
    digitalWrite(LED_G, HIGH);
    tone(BUZZER, 500);
    delay(300);
    noTone(BUZZER);
    delay(3000);
    digitalWrite(LED_G, LOW);
    lcd.clear();
  }

  void denyAccess() {
    digitalWrite(LED_R, HIGH);
    tone(BUZZER, 300);
    delay(2000);
    digitalWrite(LED_R, LOW);
```

```
    noTone(BUZZER);
    lcd.clear();
  }
```