NATIONAL INSTITUTE OF TECHNOLOGY GOA

CONTROL SYSTEMS PROJECT REPORT

FINGERPRINT ATTENDANCE AND PHONE SETTING CONTROLLER SYSTEM

MADE BY-

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TABLE OF CONTENTS

PROBLEM STATEMENT

1. Create a device which prevents the disruption caused by smartphones during lectures.
2. Create a device which saves the lecture time taken by manual attendance registering.

INTRODUCTION

The average time taken to manually take the attendance in a class of strength of 40-50 is 10-20 minutes which is approximately $1/5^{th}$ of the total allotted lecture time which poses a huge problem to the lecturer to cover the full syllabus on time.

After the arrival of the digital age, the mobile phone has become the integral part of every adult's life. But along with the increasing dependence of students on smart phones, the disruption occurring in classrooms due to these have also posed a huge problem. These disturbances affect the flow of the lecture as well as the decorum of the classroom.

THE SOLUTION

To solve these two issues, we have created the idea of the "fingerprint attendance system and phone setting controller system".

The fingerprint attendance system reduces the time taken by attendance registering to nearly zero and the phone setting controller system aspect of the project reduces the disruptions caused by smartphones during the lecture hours drastically and also increases the attention span of the students.

We have designed the project such that the students place their fingers on the fingerprint scanner attached to the device which identifies the unique fingerprint pattern and marks the attendance for the scheduled lecture.

The device also extracts the unique id attached to the students fingerprint in its database and sends a signal to the student's smartphone which limits the functionality of the smart phones owned by the students according to the settings set by the lecturer.

The idea of using the fingerprint to control the phone settings is better than using the GPS location of the phone because it limits the restrictions set on phones owned by students who are strictly inside the 4 walls of the classroom and doesn't affect the student who is sitting in the adjacent classroom. It also provides a higher degree of control to the professor as the restrictions can be put or lifted according to the professor's wish.
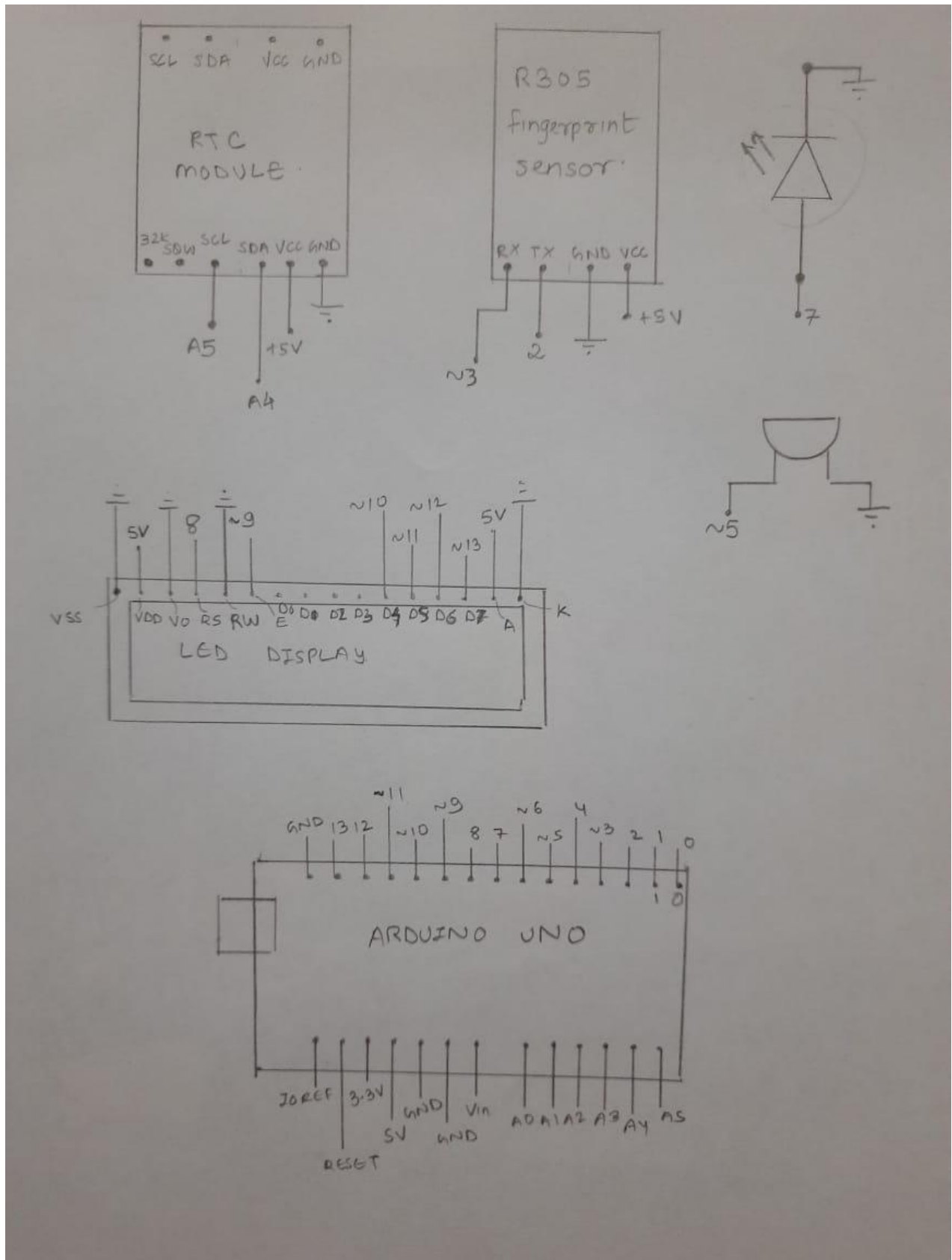
COMPONENTS REQUIRED

(Hardware)

- Arduino uno
- LCD display
- RTC module
- Fingerprint sensor
- Push button
- Switch
- 3V battery
- Wires
- Buzzer
- LED
- NodeMcu module (can be used in device management)

(Software)

- Arduino IDE software
- Adafruit fingerprint sensor Library
- DS3231 Library

CIRCUIT DIAGRAM

CODE

```
File  Edit  Sketch  Tools  Help

Arduino Uno

sketch_nov24a.ino

1    #include <Adafruit_GFX.h>
2    #include <Adafruit_GrayOLED.h>
3    #include <Adafruit_SPITFT.h>
4    #include <Adafruit_SPITFT_Macros.h>
5    #include <gfxfont.h>
6
7    #include <Wire.h>
8
9    #include "Adafruit_Fingerprint.h" //fingerprint library header file
10   #include<EEPROM.h> //command for storing data
11   #include<LiquidCrystal.h> //lcd header file
12   LiquidCrystal lcd(8,9,10,11,12,13);
13   #include <SoftwareSerial.h> //for tx/rx communication between arduino & r307 fingerprint sensor
14   SoftwareSerial fingerPrint(2, 3);
15
16   #include <RTClib.h> //library file for DS3231 RTC Module
17   RTC_DS3231 rtc;
18
19   uint8_t id;
20   Adafruit_Fingerprint finger = Adafruit_Fingerprint(&fingerPrint);
21
22   #define register_back 14
23   #define delete_ok 15
24   #define forward 16
25   #define reverse 17
26   #define match 5
27   #define indFinger 7
28   #define buzzer 5
```

```
dit  Sketch  Tools  Help

Arduino Uno

sketch_nov24a.ino

25   #define reverse 17
26   #define match 5
27   #define indFinger 7
28   #define buzzer 5
29
30   #define records 10 // 10 for 10 user
31
32   int user1,user2,user3,user4,user5,user6,user7,user8,user9,user10;
33
34   DateTime now;
35
36   void setup()
37   {
38   delay(1000);
39   lcd.begin(16,2);
40   Serial.begin(9600);
41   pinMode(register_back, INPUT_PULLUP);
42   pinMode(forward, INPUT_PULLUP);
43   pinMode(reverse, INPUT_PULLUP);
44   pinMode(delete_ok, INPUT_PULLUP);
45   pinMode(match, INPUT_PULLUP);
46   pinMode(buzzer, OUTPUT);
47   pinMode(indFinger, OUTPUT);
48   digitalWrite(buzzer, LOW);
49   if(digitalRead(register_back) == 0)
50   {
51   digitalWrite(buzzer, HIGH);
52   delay(500);
```

```
328  }
329
330  void Enroll()
331  {
332  int count=1;
333  lcd.clear();
334  lcd.print("Enter Finger ID:");
335
336  while(1)
337  {
338  lcd.setCursor(0,1);
339  lcd.print(count);
340  if(digitalRead(forward) == 0)
341  {
342  count++;
343  if(count>records)
344  count=1;
345  delay(500);
346  }
347
348  else if(digitalRead(reverse) == 0)
349  {
350  count--;
351  if(count<1)
352  count=records;
353  delay(500);
354  }
355  else if(digitalRead(delete_ok) == 0)
```

CIRCUIT BUILD
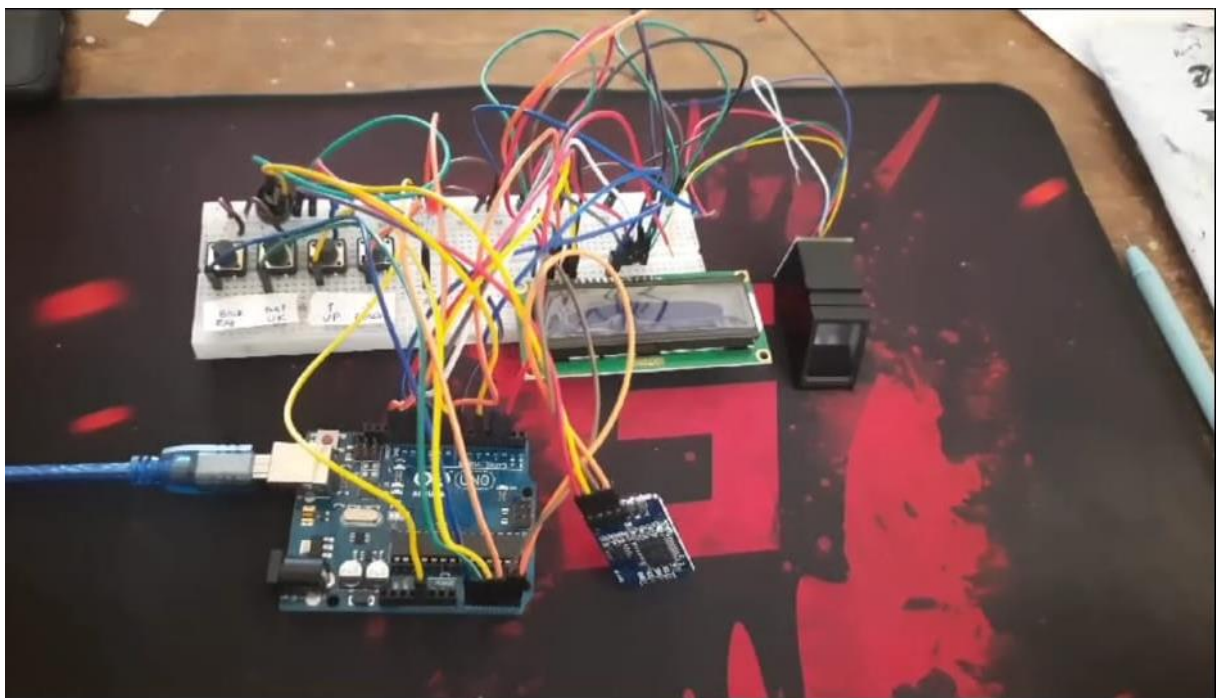
CONCLUSION

By undertaking this project, we learned the theoretical aspect of making an IoT based fingerprint attendance system using the Nodemcu module which sends signals the server which in turn sends appropriate signals to the mobile device associated with the fingerprint. The NodeMcu part of the project could not be implemented due to time and budget constraints.

We also learned in detail the both theoretical and practical aspects of making a fingerprint attendance system using Arduino Uno.