APPENDIX

1. ARDUINO PROGRAMMING

1.1 FOR ULTRASONIC

```
void setup() {
pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output
pinMode(echoPin, INPUT); // Sets the echoPin as an Input
Serial.begin(9600); // Starts the serial communication
}

void loop() {
// Clears the trigPin
digitalWrite(trigPin, LOW);
delayMicroseconds(2);

// Sets the trigPin on HIGH state for 10 micro seconds
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);

// Reads the echoPin, returns the sound wave travel time in microseconds
duration = pulseIn(echoPin, HIGH);

// Calculating the distance
distance= duration*0.034/2;

// Prints the distance on the Serial Monitor
Serial.print("Distance: ");
Serial.println(distance);
}
```

1.2 FOR LED

```
int redPin= 7;
int greenPin = 6;
int bluePin = 5;

void setup() {
pinMode(redPin, OUTPUT);
pinMode(greenPin, OUTPUT);
pinMode(bluePin, OUTPUT);
}

void loop() {
```

```
  setColor(255, 0, 0); // Red Color
  delay(1000);
  setColor(0, 255, 0); // Green Color
  delay(1000);
  setColor(0, 0, 255); // Blue Color
  delay(1000);
  setColor(255, 255, 255); // White Color
  delay(1000);
  setColor(170, 0, 255); // Purple Color
  delay(1000);
  }

  void setColor(int redValue, int greenValue, int blueValue) {
  analogWrite(redPin, redValue);
  analogWrite(greenPin, greenValue);
  analogWrite(bluePin, blueValue);
  }
```

1.3 FOR LDR

```
#define LDRpin A0 // pin where we connected the LDR and the resistor

int LDRValue = 0;     // result of reading the analog pin

void setup() {
  Serial.begin(9600); // sets serial port for communication
}

void loop() {
  LDRValue = analogRead(LDRpin); // read the value from the LDR
  Serial.println(LDRValue);      // print the value to the serial port
  delay(100);                    // wait a little
}
```

FOR EM-18 MODULE READER

```
int count = 0;
void setup()
{
        Serial.begin(9600);
}
void loop()
{
        WHILE(Serial.available())
```

```
// read the oldest byte in the serial buffer:
   incomingByte = Serial1.read();
Serial.print(incomingByte);
  }
//statements
```

2. RASPBERRY PI PROGRAMMING

```
import serial                                                    #import serial module


def read_rfid ():
   ser = serial.Serial ("/dev/ttyAMA0")                             #Open named port
   ser.baudrate = 9600                                              #Set baud rate to
9600
   data = ser.read(12)                                              #Read 12 characters
from serial port to data
   ser.close ()                                                     #Close port
   return data                                                      #Return data


id = read_rfid ()                                                #Function call
print id                                                         #Print RFID
```