**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