A. Kode Program Gerbang RFID Reader Pendeteksi Mobil Bebas Lampu Merah yang lewat. (Pada Arduino 1)

```
/*
 * Typical pin layout used:
 * -----------------------------------------------------------------------------------------
 *             MFRC522      Arduino       Arduino   Arduino    Arduino
Arduino
 *             Reader/PCD   Uno           Mega      Nano v3    Leonardo/Micro    Pro
Micro
 * Signal      Pin          Pin           Pin       Pin        Pin               Pin
 * -----------------------------------------------------------------------------------------
 * RST/Reset   RST          9             5         D9         RESET/ICSP-5      RST
 * SPI SS      SDA(SS)      10            53        D10        10                10
 * SPI MOSI    MOSI         11 / ICSP-4   51        D11        ICSP-4            16
 * SPI MISO    MISO         12 / ICSP-1   50        D12        ICSP-1            14
 * SPI SCK     SCK          13 / ICSP-3   52        D13        ICSP-3            15
 */

#include <SPI.h>
#include <MFRC522.h>
#include <TimerOne.h>
#define RST_PIN         9
#define SS_PIN          10
MFRC522 mfrc522(SS_PIN, RST_PIN);

MFRC522::MIFARE_Key key;

String temp="";
String sample1="15b7bc43";
String sample2="96ca8aab";
String sample3="521cbaef";
String sample4="9245b9ef";

unsigned int wait[4];

int led=7;

void setup() {
   Serial.begin(9600);
   SPI.begin();
   mfrc522.PCD_Init();
   Serial.println("Menunggu Kendaraan BLL Lewat");
   Serial.println();
   pinMode(led,OUTPUT);
```

```
   digitalWrite(led,LOW);
   Timer1.initialize(100000);           // set a timer of length 100000
microseconds (or 0.1 sec - or 10Hz => the led will blink 5 times, 5 cycles of on-
and-off, per second)
   Timer1.attachInterrupt( timerIsr );   // attach the service routine here
}

void loop() {
   if ( ! mfrc522.PICC_IsNewCardPresent())
      return;
   if ( ! mfrc522.PICC_ReadCardSerial())
      return;
   dump_byte_array(mfrc522.uid.uidByte, mfrc522.uid.size);
   Serial.println();
   Serial.print("Message : ");

   if(temp.indexOf(sample1)>-1)
   {
    wait[0]=0;
    Serial.println(temp);
    Serial.println("Mobil Pemadam Kebakaran Dari Jalan Veteran");
    digitalWrite(led,HIGH);
   }
   else if(temp.indexOf(sample2)>-1)
   {
    wait[1]=0;
    Serial.println(temp);
    Serial.println("Mobil Ambulans Dari Jalan Veteran");
    digitalWrite(led,HIGH);
   }
   else if(temp.indexOf(sample3)>-1)
   {
    wait[2]=0;
    Serial.println(temp);
    Serial.println("Mobil Ambulans Dari Jalan Veteran");
    digitalWrite(led,HIGH);
   }
   else if(temp.indexOf(sample4)>-1)
   {
    wait[3]=0;
    Serial.println(temp);
    Serial.println("Mobil Pemadam Kebakaran Dari Jalan Veteran");
    digitalWrite(led,HIGH);
   }
   else  {
```

```
      Serial.println(temp);
      Serial.println("RFID Tidak Terdeteksi");
      digitalWrite(led,LOW);
    }
    mfrc522.PICC_HaltA();
    mfrc522.PCD_StopCrypto1();
}

void dump_byte_array(byte *buffer, byte bufferSize) {
    temp="";
    for (byte i = 0; i < bufferSize; i++) {
        temp += String(buffer[i] < 0x10 ? "0" : "");
        temp += String(buffer[i], HEX);
    }
}

void timerIsr()
{
  if(wait[0]<50)    //5second
  {
    wait[0]++;
  }
  else if(wait[1]<50)    //5second
  {
    wait[1]++;
  }
  else if(wait[2]<50)    //5second
  {
    wait[2]++;
  }
  else if(wait[3]<50)    //5second
  {
    wait[3]++;
  }
  else
  {
    digitalWrite(led,LOW);
  }
}
```

B. Kode Program Rangkaian Lampu Lalu Lintas. (Pada Arduino 2)

```
const int D12 = 1;
const int D11 = 3;
const int D10 = 4;
const int D9 = 5;
const int D8 = 6;
const int D7 = 7;
const int D6 = 8;
const int D5 = 9;
const int D4 = 10;
const int D3 = 11;
const int D2 = 12;
const int D1 = 13;

void setup() {
pinMode(D12,OUTPUT);
pinMode(D11,OUTPUT);
pinMode(D10,OUTPUT);
pinMode(D9,OUTPUT);
pinMode(D8,OUTPUT);
pinMode(D7,OUTPUT);
pinMode(D6,OUTPUT);
pinMode(D5,OUTPUT);
pinMode(D4,OUTPUT);
pinMode(D3,OUTPUT);
pinMode(D2,OUTPUT);
pinMode(D1,OUTPUT);
attachInterrupt(0, rutinInterupsi0, RISING);
}

void loop() {
//2
//JALAN4
digitalWrite(D10,HIGH);
digitalWrite(D11,LOW);
digitalWrite(D12,LOW);
//JALAN2
digitalWrite(D4,LOW);
digitalWrite(D5,LOW);
digitalWrite(D6,HIGH);
//JALAN3
digitalWrite(D7,HIGH);
digitalWrite(D8,LOW);
digitalWrite(D9,LOW);
```

```
//JALAN1
digitalWrite(D1,HIGH);
digitalWrite(D2,LOW);
digitalWrite(D3,LOW);
delay(5000);

//JALAN4
digitalWrite(D10,HIGH);
digitalWrite(D11,LOW);
digitalWrite(D12,LOW);
//JALAN2
digitalWrite(D4,LOW);
digitalWrite(D5,HIGH);
digitalWrite(D6,HIGH);
//JALAN3
digitalWrite(D7,LOW);
digitalWrite(D8,HIGH);
digitalWrite(D9,LOW);
//JALAN1
digitalWrite(D1,HIGH);
digitalWrite(D2,LOW);
digitalWrite(D3,LOW);
delay(2000);

//3
//JALAN4
digitalWrite(D10,HIGH);
digitalWrite(D11,LOW);
digitalWrite(D12,LOW);
//JALAN2
digitalWrite(D4,HIGH);
digitalWrite(D5,LOW);
digitalWrite(D6,LOW);
//JALAN3
digitalWrite(D7,LOW);
digitalWrite(D8,LOW);
digitalWrite(D9,HIGH);
//JALAN1
digitalWrite(D1,HIGH);
digitalWrite(D2,LOW);
digitalWrite(D3,LOW);
delay(10000);

//JALAN4
digitalWrite(D10,HIGH);
```

```
digitalWrite(D11,LOW);
digitalWrite(D12,LOW);
//JALAN2
digitalWrite(D4,HIGH);
digitalWrite(D5,LOW);
digitalWrite(D6,LOW);
//JALAN3
digitalWrite(D7,LOW);
digitalWrite(D8,HIGH);
digitalWrite(D9,HIGH);
//JALAN1
digitalWrite(D1,LOW);
digitalWrite(D2,HIGH);
digitalWrite(D3,LOW);
delay(5000);

//4
//JALAN4
digitalWrite(D10,HIGH);
digitalWrite(D11,LOW);
digitalWrite(D12,LOW);
//JALAN2
digitalWrite(D4,HIGH);
digitalWrite(D5,LOW);
digitalWrite(D6,LOW);
//JALAN3
digitalWrite(D7,HIGH);
digitalWrite(D8,LOW);
digitalWrite(D9,LOW);
//JALAN1
digitalWrite(D1,LOW);
digitalWrite(D2,LOW);
digitalWrite(D3,HIGH);
delay(5000);

//JALAN4
digitalWrite(D10,LOW);
digitalWrite(D11,HIGH);
digitalWrite(D12,LOW);
//JALAN2
digitalWrite(D4,HIGH);
digitalWrite(D5,LOW);
digitalWrite(D6,LOW);
//JALAN3
digitalWrite(D7,HIGH);
```

```
digitalWrite(D8,LOW);
digitalWrite(D9,LOW);
//JALAN1
digitalWrite(D1,LOW);
digitalWrite(D2,HIGH);
digitalWrite(D3,HIGH);
delay(2000);

//1
//JALAN4
digitalWrite(D10,LOW);
digitalWrite(D11,LOW);
digitalWrite(D12,HIGH);
//JALAN2
digitalWrite(D4,HIGH);
digitalWrite(D5,LOW);
digitalWrite(D6,LOW);
//JALAN3
digitalWrite(D7,HIGH);
digitalWrite(D8,LOW);
digitalWrite(D9,LOW);
//JALAN1
digitalWrite(D1,HIGH);
digitalWrite(D2,LOW);
digitalWrite(D3,LOW);
delay(5000);

//JALAN4
digitalWrite(D10,LOW);
digitalWrite(D11,HIGH);
digitalWrite(D12,HIGH);
//JALAN2
digitalWrite(D4,LOW);
digitalWrite(D5,HIGH);
digitalWrite(D6,LOW);
//JALAN3
digitalWrite(D7,HIGH);
digitalWrite(D8,LOW);
digitalWrite(D9,LOW);
//JALAN1
digitalWrite(D1,HIGH);
digitalWrite(D2,LOW);
digitalWrite(D3,LOW);
delay(2000);
}
```

```
void rutinInterupsi0(){
//JALAN4
digitalWrite(D10,HIGH);
digitalWrite(D11,LOW);
digitalWrite(D12,LOW);
//JALAN2
digitalWrite(D4,HIGH);
digitalWrite(D5,LOW);
digitalWrite(D6,LOW);
//JALAN3
digitalWrite(D7,LOW);
digitalWrite(D8,HIGH);
digitalWrite(D9,HIGH);
//JALAN1
digitalWrite(D1,LOW);
digitalWrite(D2,HIGH);
digitalWrite(D3,LOW);
delay(5000);

//4
//JALAN4
digitalWrite(D10,HIGH);
digitalWrite(D11,LOW);
digitalWrite(D12,LOW);
//JALAN2
digitalWrite(D4,HIGH);
digitalWrite(D5,LOW);
digitalWrite(D6,LOW);
//JALAN3
digitalWrite(D7,HIGH);
digitalWrite(D8,LOW);
digitalWrite(D9,LOW);
//JALAN1
digitalWrite(D1,LOW);
digitalWrite(D2,LOW);
digitalWrite(D3,HIGH);
delay(5000);

//JALAN4
digitalWrite(D10,LOW);
digitalWrite(D11,HIGH);
digitalWrite(D12,LOW);
//JALAN2
digitalWrite(D4,HIGH);
digitalWrite(D5,LOW);
```

```
digitalWrite(D6,LOW);
//JALAN3
digitalWrite(D7,HIGH);
digitalWrite(D8,LOW);
digitalWrite(D9,LOW);
//JALAN1
digitalWrite(D1,LOW);
digitalWrite(D2,HIGH);
digitalWrite(D3,HIGH);
delay(2000);

//1
//JALAN4
digitalWrite(D10,LOW);
digitalWrite(D11,LOW);
digitalWrite(D12,HIGH);
//JALAN2
digitalWrite(D4,HIGH);
digitalWrite(D5,LOW);
digitalWrite(D6,LOW);
//JALAN3
digitalWrite(D7,HIGH);
digitalWrite(D8,LOW);
digitalWrite(D9,LOW);
//JALAN1
digitalWrite(D1,HIGH);
digitalWrite(D2,LOW);
digitalWrite(D3,LOW);
delay(5000);


//JALAN4
digitalWrite(D10,LOW);
digitalWrite(D11,HIGH);
digitalWrite(D12,HIGH);
//JALAN2
digitalWrite(D4,LOW);
digitalWrite(D5,HIGH);
digitalWrite(D6,LOW);
//JALAN3
digitalWrite(D7,HIGH);
digitalWrite(D8,LOW);
digitalWrite(D9,LOW);
//JALAN1
digitalWrite(D1,HIGH);
```

```
digitalWrite(D2,LOW);
digitalWrite(D3,LOW);
delay(2000);

//2
//JALAN4
digitalWrite(D10,HIGH);
digitalWrite(D11,LOW);
digitalWrite(D12,LOW);
//JALAN2
digitalWrite(D4,LOW);
digitalWrite(D5,LOW);
digitalWrite(D6,HIGH);
//JALAN3
digitalWrite(D7,HIGH);
digitalWrite(D8,LOW);
digitalWrite(D9,LOW);
//JALAN1
digitalWrite(D1,HIGH);
digitalWrite(D2,LOW);
digitalWrite(D3,LOW);
delay(5000);

//JALAN4
digitalWrite(D10,HIGH);
digitalWrite(D11,LOW);
digitalWrite(D12,LOW);
//JALAN2
digitalWrite(D4,LOW);
digitalWrite(D5,HIGH);
digitalWrite(D6,HIGH);
//JALAN3
digitalWrite(D7,LOW);
digitalWrite(D8,HIGH);
digitalWrite(D9,LOW);
//JALAN1
digitalWrite(D1,HIGH);
digitalWrite(D2,LOW);
digitalWrite(D3,LOW);
delay(2000);

//3
//JALAN4
digitalWrite(D10,HIGH);
digitalWrite(D11,LOW);
```

```
digitalWrite(D12,LOW);
//JALAN2
digitalWrite(D4,HIGH);
digitalWrite(D5,LOW);
digitalWrite(D6,LOW);
//JALAN3
digitalWrite(D7,LOW);
digitalWrite(D8,LOW);
digitalWrite(D9,HIGH);
//JALAN1
digitalWrite(D1,HIGH);
digitalWrite(D2,LOW);
digitalWrite(D3,LOW);
delay(10000);

//JALAN4
digitalWrite(D10,HIGH);
digitalWrite(D11,LOW);
digitalWrite(D12,LOW);
//JALAN2
digitalWrite(D4,HIGH);
digitalWrite(D5,LOW);
digitalWrite(D6,LOW);
//JALAN3
digitalWrite(D7,LOW);
digitalWrite(D8,HIGH);
digitalWrite(D9,HIGH);
//JALAN1
digitalWrite(D1,LOW);
digitalWrite(D2,HIGH);
digitalWrite(D3,LOW);
delay(5000);
}
```