

BAB V

HASIL DAN PEMBAHASAN

5.1 Listing Program MFRC522.h

```
////////////////////////////////////  
//°-ÊýÔ-ĐÍ  
////////////////////////////////////  
  
char PcdReset(void);  
  
void PcdAntennaOn(void);  
void PcdAntennaOff(void);  
  
char PcdRequest(unsigned char req_code,unsigned char *pTagType);  
char PcdAnticoll(unsigned char *pSnr);  
char PcdSelect(unsigned char *pSnr);  
char PcdAuthState(unsigned char auth_mode,unsigned char addr,unsigned  
char *pKey,unsigned char *pSnr);  
char PcdRead(unsigned char addr,unsigned char *pData);  
char PcdWrite(unsigned char addr,unsigned char *pData);  
  
char PcdValue(unsigned char dd_mode,unsigned char addr,unsigned char  
*pValue);  
  
char PcdBakValue(unsigned char sourceaddr, unsigned char goaladdr);  
  
char PcdHalt(void);  
  
char PcdComMF522(unsigned char Command,  
                unsigned char *pInData,  
                unsigned char InLenByte,
```

```

        unsigned char *pOutData,
        unsigned int *pOutLenBit);

void CalculateCRC(unsigned char *pIndata,unsigned char len,unsigned
char *pOutData);

void WriteRawRC(unsigned char Address,unsigned char value);

unsigned char ReadRawRC(unsigned char Address);

void SetBitMask(unsigned char reg,unsigned char mask);

void ClearBitMask(unsigned char reg,unsigned char mask);

```

```

////////////////////////////////////
//MF522ÄüÁî×Ö
////////////////////////////////////
#define PCD_IDLE          0x00          //È;Ïûµ±Ç°ÄüÁî
#define PCD_AUTHENT      0x0E          //ÑéÖªÄÛÔ¿
#define PCD_RECEIVE      0x08          //½ÓÊÛÊÿ¼Ý
#define PCD_TRANSMIT     0x04          //·çËÏÿ¼Ý
#define PCD_TRANSCEIVE   0x0C          //·çËÏ²ç½ÓÊÛÊÿ¼Ý
#define PCD_RESETPHASE   0x0F          //,Î»
#define PCD_CALCCRC     0x03          //CRC¼ÆËã

////////////////////////////////////
//Mifare_One;Æ¬ÄüÁî×Ö
////////////////////////////////////
#define PICC_REQIDL      0x26          //Ñ°ÏÏßÇøÄÛÎ½øÈèÐÝÃß×Î¬

```

```

#define PICC_REQALL      0x52      //Ñ°ñİßÇøÄÜÈ«²¿¿
#define PICC_ANTICOLL1   0x93      //·À³à×²
#define PICC_ANTICOLL2   0x95      //·À³à×²
#define PICC_AUTHENT1A   0x60      //ÑéÖøAÃÜÔ¿
#define PICC_AUTHENT1B   0x61      //ÑéÖøBÃÜÔ¿
#define PICC_READ        0x30      //¶Á¿é
#define PICC_WRITE       0xA0      //Ð´¿é
#define PICC_DECREMENT   0xC0      //¿Û¿î
#define PICC_INCREMENT   0xC1      //³äÖµ
#define PICC_RESTORE     0xC2      //µ÷¿éÊý³⁄Ýµ¹⁄²»³àÇø
#define PICC_TRANSFER    0xB0      //±£´æ»³àÇøÖÐÊý³⁄Ý
#define PICC_HALT        0x50      //ÐÝÃß
////////////////////////////////////////////////////////////////
//MF522 FIFO³µ¶È¶°Òà
////////////////////////////////////////////////////////////////
#define DEF_FIFO_LENGTH  64        //FIFO size=64byte

////////////////////////////////////////////////////////////////

//MF522¼Ä´æÆ÷¶°Òà
////////////////////////////////////////////////////////////////

// PAGE 0

#define   RFU00           0x00

#define   CommandReg     0x01

```

```
#define ComIEnReg    0x02
#define DivIEnReg    0x03
#define ComIrqReg    0x04
#define DivIrqReg    0x05
#define ErrorReg     0x06
#define Status1Reg   0x07
#define Status2Reg   0x08
#define FIFODataReg  0x09
#define FIFOLevelReg 0x0A
#define WaterLevelReg 0x0B
#define ControlReg   0x0C
#define BitFramingReg 0x0D
#define CollReg      0x0E
#define RFU0F        0x0F
// PAGE 1
#define RFU10        0x10
#define ModeReg      0x11
#define TxModeReg    0x12
#define RxModeReg    0x13
#define TxControlReg 0x14
#define TxAutoReg    0x15
#define TxSelReg     0x16
#define RxSelReg     0x17
#define RxThresholdReg 0x18
```

```
#define DemodReg      0x19
#define RFU1A        0x1A
#define RFU1B        0x1B
#define MifareReg    0x1C
#define RFU1D        0x1D
#define RFU1E        0x1E
#define SerialSpeedReg 0x1F

// PAGE 2

#define RFU20        0x20
#define CRCResultRegM 0x21
#define CRCResultRegL 0x22
#define RFU23        0x23
#define ModWidthReg  0x24
#define RFU25        0x25
#define RFCfgReg     0x26
#define GsNReg       0x27
#define CWGsCfgReg   0x28
#define ModGsCfgReg  0x29
#define TModeReg     0x2A
#define TPrescalerReg 0x2B
#define TReloadRegH  0x2C
#define TReloadRegL  0x2D
#define TCounterValueRegH 0x2E
#define TCounterValueRegL 0x2F
```

```
// PAGE 3
```

```
#define RFU30          0x30
#define TestSel1Reg    0x31
#define TestSel2Reg    0x32
#define TestPinEnReg   0x33
#define TestPinValueReg 0x34
#define TestBusReg     0x35
#define AutoTestReg    0x36
#define VersionReg     0x37
#define AnalogTestReg  0x38
#define TestDAC1Reg    0x39
#define TestDAC2Reg    0x3A
#define TestADCReg     0x3B
#define RFU3C          0x3C
#define RFU3D          0x3D
#define RFU3E          0x3E
#define RFU3F          0x3F
```

```
////////////////////////////////////
```

```
//°ÍMF522ÍÑ¶Ê±·μ»ØμÄ´íló´úÂë
```

```
////////////////////////////////////
```

```
#define MI_OK          0
#define MI_NOTAGERR    (-1)
#define MI_ERR         (-2)
```

5.2 Listing Program

```

#include <MFRC522.h>

//Get library from https://github.com/ljos/MFRC522

#include <SPI.h>

/*

Pins   SPI    UNO

1 (NSS) SAD (SS) 10

2     SCK    13

3     MOSI   11

4     MISO   12

5     IRQ    *

6     GND    GND

7     RST    8

8     +3.3V (VCC) 3V3

* Not needed

1 on ICPS header

*/

#define SAD 10

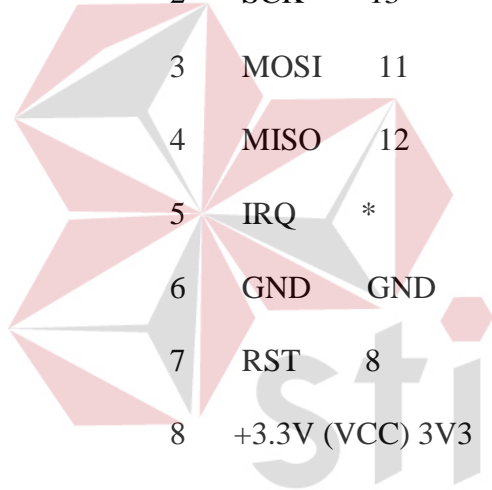
#define RST 8

MFRC522 nfc(SAD, RST);

#define ledPinOpen 2

#define ledPinClosed 3

```



INSTITUT BISNIS
& INFORMATIKA
stikom
SURABAYA

```
#define in      9

void setup() {

  pinMode(ledPinOpen , OUTPUT);

  pinMode(ledPinClosed, OUTPUT);

  pinMode(in,INPUT);

  pinMode(4,OUTPUT);

  pinMode(5,OUTPUT);

  pinMode(6,OUTPUT);

  pinMode(7,OUTPUT);

  SPI.begin();

  Serial.begin(115200);

  Serial.println("Looking for MFRC522.");

  nfc.begin();

  byte version = nfc.getFirmwareVersion();

  if (! version) {

    Serial.print("Didn't find MFRC522 board.");

    while(1); //halt

  }

  Serial.print("Found chip MFRC522 ");

  Serial.print("Firmware ver. 0x");

  Serial.print(version, HEX);
```



```

Serial.println(".");
}

#define AUTHORIZED_COUNT 2 /*jumlah kartu yg di auten*/
byte Authorized[AUTHORIZED_COUNT][6] = {

    {0xB1, 0x1, 0x4C, 0xB5, 0xFF, 0xFF, } /*code kartu*/
    ,{0xD4, 0xFE, 0x46, 0xCD, 0xFF, 0xFF, }
};

void printSerial(byte *serial);
boolean isSame(byte *key, byte *serial);
boolean isAuthorized(byte *serial);
void loop() {
    byte status;

    byte data[MAX_LEN];

    byte serial[5];

    boolean Opening = false;

    digitalWrite(ledPinOpen, Opening);

    digitalWrite(ledPinClosed, !Opening);

    status = nfc.requestTag(MF1_REQIDL, data);

    if (status == MI_OK) {

```

```
status = nfc.antiCollision(data);

memcpy(serial, data, 5);

if(isAuthorized(serial)) //if the tag ID known
{
    Serial.println("Authenticated");

    Opening = true;

    digitalWrite(4,HIGH);
    delay(10000);
    digitalWrite(4,LOW);
}
else
{
    printSerial(serial);

    Serial.println("is NOT authenticated");

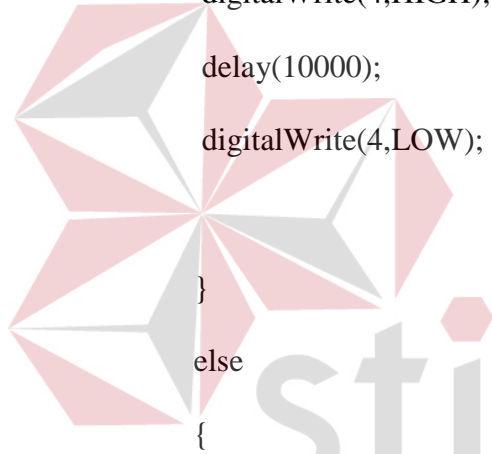
    Opening = false;
}

nfc.haltTag();

digitalWrite(ledPinOpen, Opening);

digitalWrite(ledPinClosed, !Opening);

delay(1000);
```



INSTITUT BISNIS
& INFORMATIKA
stikom
SURABAYA

```
}//if (status == MI_OK)
```

```
delay(500);
```

```
int kondisi=digitalRead(in);
```

```
if(kondisi==LOW){ //if open from inside
```

```
    digitalWrite(4,HIGH);
```

```
    delay(1000);
```

```
    digitalWrite(4,LOW);
```

```
    delay(1000);
```

```
}//if(in==LOW)
```

```
//void loop()
```

```
boolean isSame(byte *key, byte *serial)
```

```
{
```

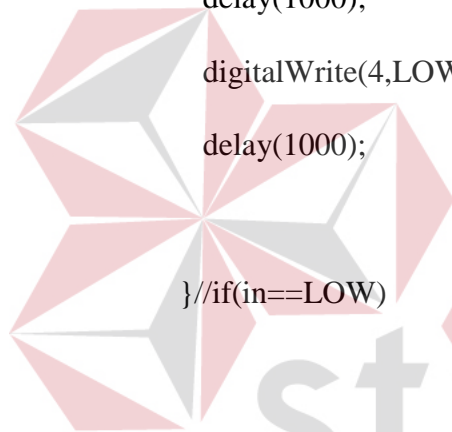
```
    for (int i = 0; i < 4; i++) {
```

```
        if (key[i] != serial[i])
```

```
        {
```

```
            return false;
```

```
        }
```



INSTITUT BISNIS
& INFORMATIKA
stikom
SURABAYA

```
}
```

```
return true;
```

```
}
```

```
boolean isAuthorized(byte *serial)
```

```
{
```

```
    for(int i = 0; i<AUTHORIZED_COUNT; i++)
```

```
    {
```

```
        if(isSame(serial, Authorized[i]))
```

```
            return true;
```

```
    }
```

```
    return false;
```

```
}
```

```
void printSerial(byte *serial)
```

```
{
```

```
    Serial.print("Serial:");
```

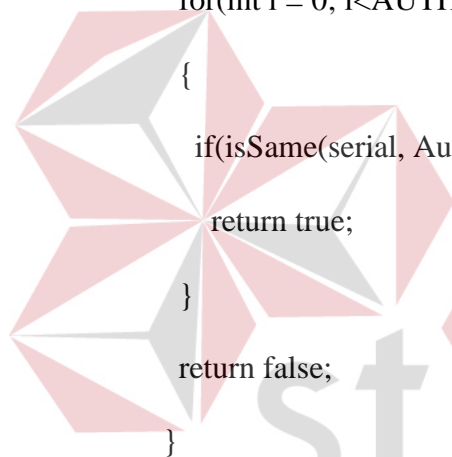
```
    for (int i = 0; i < 4; i++) {
```

```
        Serial.print(serial[i], HEX);
```

```
        Serial.print(" ");
```

```
    }
```

```
}
```



INSTITUT BISNIS
& INFORMATIKA
stikom
SURABAYA

