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TIM FAKULTAS TEKNIK. (2018). BUKU PEDOMAN TUGAS AKHIR.

Surabaya : FAKULTAS TEKNIK UNIVERSITAS PGRI ADI BUANA SURABAYA.

LISTING PROGRAM

PROGRAM

```
#include <Wire.h>

#include <LiquidCrystal_I2C.h>

#include <EEPROM.h>


// Set the LCD address to 0x27 for a 16 chars and 2 line display

LiquidCrystal_I2C lcd(0x27, 16, 2);


#define BUTTON_BLUE   8

#define BUTTON_ORANGE 9

#define BUTTON_WHITE  10


#define BUZZER  11


#define UGN3503 A0


//int zeroGaussAdcValue = 474;

int zeroGaussAdcValue = 512;

float alertGaussThreshold = 5.0;


void setup()

{

  Serial.begin(9600);

  Serial.println("Hello, world!");
```

```
zeroGaussAdcValue = EEPROMReadInt(0);
Serial.print("init zeroGaussAdcValue: "); Serial.println(zeroGaussAdcValue);
if (zeroGaussAdcValue < 400 || zeroGaussAdcValue > 600) {
  zeroGaussAdcValue = 512;
}

pinMode(BUTTON_BLUE,    INPUT_PULLUP);
pinMode(BUTTON_ORANGE,  INPUT_PULLUP);
pinMode(BUTTON_WHITE,   INPUT_PULLUP);

        // initialize the LCD
        lcd.begin();
        // Turn on the blacklight and print a message.
        lcd.backlight();
lcd.setCursor(0, 0);
lcd.print("Unipa SBY     ");
lcd.setCursor(0, 1);
lcd.print("Gesang  ");
delay(1500);

lcd.clear();
lcd.setCursor(0, 0);
lcd.print("Alert Threshold     ");
lcd.setCursor(0, 1);
lcd.print("Init: "); lcd.print(alertGaussThreshold); lcd.print(" G        ");
```

```
  pinMode(BUZZER, OUTPUT);
  digitalWrite(BUZZER, HIGH);
  delay(100);
  digitalWrite(BUZZER, LOW);

  delay(1000);
}

#define UPDATE_INTERVAL 500L
long latestUpdate = 0;
int isAlert = 0;

void loop()
{
  if (millis() - latestUpdate > UPDATE_INTERVAL) {
    int adcValue = analogRead(UGN3503);
    float gauss = abs(adcValue - zeroGaussAdcValue) / 3.76;
    Serial.print("ADC: "); Serial.println(adcValue);
    Serial.print("zeroGaussAdcValue: "); Serial.println(zeroGaussAdcValue);
    Serial.print("Gauss: "); Serial.println(gauss);
    latestUpdate = millis();

    if (gauss >= alertGaussThreshold) {
      isAlert = 1;
    }
```

```
  if (isAlert == 1) {
    lcd.setCursor(0, 0);
    lcd.print("Warning!!!        ");

    digitalWrite(BUZZER, HIGH);
    delay(100);
    digitalWrite(BUZZER, LOW);
  } else {
    lcd.setCursor(0, 0);
    lcd.print("Flux Density       ");
  }
  lcd.setCursor(0, 1);
  lcd.print(gauss); lcd.print(" G   ");
  lcd.setCursor(9, 1);
  if (0.1 <= gauss && gauss <= 0.53) {
    lcd.print("LOW     ");
  } else if (0.54 < gauss && gauss <= 0.80) {
    lcd.print("MEDIUM  ");
  } else if (0.81 < gauss) {
    lcd.print("HIGH     ");
  }
//    lcd.print("in Gauss: "); lcd.print(gauss); lcd.print(" G  ");
 }

        if (digitalRead(BUTTON_BLUE) == LOW) {
  while (digitalRead(BUTTON_BLUE) == LOW) {}
```

```
digitalWrite(BUZZER, HIGH);
delay(100);
digitalWrite(BUZZER, LOW);
Serial.println("Blue!");

lcd.setCursor(15, 0);
lcd.print("!");

while (digitalRead(BUTTON_BLUE) == HIGH) {}
digitalWrite(BUZZER, HIGH);
delay(100);
digitalWrite(BUZZER, LOW);
while (digitalRead(BUTTON_BLUE) == LOW) {}
//
        } else if (digitalRead(BUTTON_ORANGE) == LOW) {
while (digitalRead(BUTTON_ORANGE) == LOW) {}
digitalWrite(BUZZER, HIGH);
delay(100);
digitalWrite(BUZZER, LOW);
Serial.println("Orange!");

if (isAlert == 1) {
  digitalWrite(BUZZER, HIGH);
  delay(80);
  digitalWrite(BUZZER, LOW);
  delay(80);
```

```
    digitalWrite(BUZZER, HIGH);
    delay(80);
    digitalWrite(BUZZER, LOW);
    delay(80);
    digitalWrite(BUZZER, HIGH);
    delay(80);
    digitalWrite(BUZZER, LOW);
    isAlert = 0;
  } else {
    int adcValue = analogRead(UGN3503);
    float gauss = abs(adcValue - zeroGaussAdcValue) / 3.76;
    alertGaussThreshold = gauss;

    lcd.setCursor(0, 0);
    lcd.print("Alert Threshold     ");
    lcd.setCursor(0, 1);
    lcd.print("Set: "); lcd.print(alertGaussThreshold); lcd.print(" G        ");
    delay(1500);
  }
  //
} else if (digitalRead(BUTTON_WHITE) == LOW) {
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print("Calbrating...   ");
  while (digitalRead(BUTTON_WHITE) == LOW) {}
```

```
    digitalWrite(BUZZER, HIGH);
    delay(100);
    digitalWrite(BUZZER, LOW);
    Serial.println("White!");

    int adcValue = analogRead(UGN3503);
    zeroGaussAdcValue = adcValue;
    EEPROMWriteInt(0, zeroGaussAdcValue);
    zeroGaussAdcValue = EEPROMReadInt(0);
    Serial.print("init zeroGaussAdcValue: "); Serial.println(zeroGaussAdcValue);
    alertGaussThreshold = 10.0;

    delay(700);
    lcd.setCursor(0, 1);
    lcd.print("Done! ");
    delay(700);
  }
}

void EEPROMWriteInt(int address, int value)
{
  byte two = (value & 0xFF);
  byte one = ((value >> 8) & 0xFF);

  EEPROM.update(address, two);
  EEPROM.update(address + 1, one);
```

```
}

int EEPROMReadInt(int address)
{
  long two = EEPROM.read(address);
  long one = EEPROM.read(address + 1);

  return ((two << 0) & 0xFFFFFF) + ((one << 8) & 0xFFFFFFFF);
}
```


Fluid Density
LOW


Fluid Density
LOW

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FORM REVISI TUGAS AKHIR

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Judul Tugas Akhir : RANCANGAN EXPLOSIVE DETECTOR UNTUK MENGETAHUI KEBERADAAN BAHAN PELEDAK DENGAN MEMBANDINGKAN BESAR NILAI MEDAN MAGNET MENGGUNAKAN ARDUINO DI AREA BANDARA JUANDA

Ujian Tanggal :

No Bab.	Tanggal	Materi Konsultasi	Keterangan Catatan	Tanda Tangan Penguji
I		KLASIFIKASI UNSUR BAHAN MAGNETIK	Acc	
II		BERI CONTOH BAHAN MAGNET	Acc	
III		TABEL PERIODIK DIJELASKAN	Acc	
IV		MEMPERBAIKI SARAN	Acc	
V		TAMBAHKAN SARAN DAN KESIMPULAN	Acc	

Disetujui Dosen Penguji
Pada Tanggal,.....

Penguji I, (_____)

Penguji II, (_____)

1. a. Penyelesaian Revisi paling lambat 2 minggu dari pelaksanaan Ujian Tugas Akhir.
   b. Pengetikan, penjilidan, penandatangani Tugas Akhir dan mengumpulkan Tugas Akhir paling lambat 2 minggu dari revisi.
2. Apabila sampai batas waktu tersebut (point 1,a dan b) mahasiswa belum menyelesaikan revisi dan tanda tangan, maka **Ujian dinyatakan Gugur**.
3. a. Foto copy Form Revisi diserahkan ke Program Studi.
   b. Tugas Akhir yang sudah direvisi diserahkan ke Fakultas tiga eksemplar untuk dijilid.