

LAMPIRAN

Lampiran. 1 Program Master Kontrol

```
#include <RF24.h>
#include <RF24Network.h>
#include <SPI.h>
#include <WiFi.h>
#include <WiFiClientSecure.h>
#include <UniversalTelegramBot.h>

// Replace with your network credentials
//const char* ssid = "vivo1901";
//const char* password = "3ldeember";
const char* ssid = "Realmil0S";
const char* password = "3ldeember";

#define BOTtoken
"7141630931:AAE9vSEnuCHSZCXnOlgPhduuWXa3khJdwSg"
//Token MuhSaid
#define CHAT_ID "1068023350"

WiFiClientSecure client;
UniversalTelegramBot myBot(BOTtoken, client);

// Checks for new messages every 1 second.
int botRequestDelay = 1000;
unsigned long lastTimeBotRan;

RF24 radio(4,5); // nRF24L01 (CE,CSN)
RF24Network network(radio); // Include the radio in
the network
const uint16_t this_node = 01; // Address of our node
in Octal format
const uint16_t nodeSlave[4] = {011, 021, 031, 041};

byte data[1], DS[4]={1,1,1,1};
byte KL[4]={0,0,0,0}, KValue;
String sL[4], sAll;

unsigned long LRT[] = {0,0,0,0}; //lastReceiveTime
unsigned long CT = 0; //currentTime
unsigned long LT = 10000; //Limit Time Receiving

void setup() {
  Serial.begin(9600);
```

```

nRF_setup();
Wifi_setup();
}

void loop() {
    network.update();
    terimaDariSlave();
    kirimKeSlave();
    verifikasi();

    if(millis() > lastTimeBotRan + botRequestDelay) {
        int jumlahPesan =
myBot.getUpdates(myBot.last_message_received + 1);
        while (jumlahPesan) {
            Serial.println("Pesan direspon");
            responPesan(jumlahPesan);
            jumlahPesan =
myBot.getUpdates(myBot.last_message_received + 1);
        }
        lastTimeBotRan = millis();
    }
}

void nRF_setup() {
    SPI.begin();
    radio.begin();
    network.begin(90, this_node); //(channel, node
address)
    radio.setDataRate(RF24_2MBPS);
}

void Wifi_setup () {
    WiFi.mode(WIFI_STA); // Connect to Wi-Fi
    WiFi.begin(ssid, password);
    client.setCACert(TELEGRAM_CERTIFICATE_ROOT);

    while (WiFi.status() != WL_CONNECTED) {
        Serial.println("Connecting to WiFi..");
        delay(1000);
    }
    Serial.println(WiFi.localIP()); //Print ESP32
Local IP Address
}

void responPesan(int jumlahPesan) {
    Serial.print("Jumlah Pesan direspon = ");
    Serial.println(jumlahPesan);
}

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    for(int i = 0; i < jumlahPesan; i++) {
        String chat_id =
String(myBot.messages[i].chat_id);
        if (chat_id != CHAT_ID){
            myBot.sendMessage(chat_id, "Unauthorized user",
"");
            continue;
        }
        // Print the received message
        String text = myBot.messages[i].text;
        Serial.println(text);
        String from_name = myBot.messages[i].from_name;

        if (text == "/start") {
            String welcome = "Welcome, " + from_name +
".\n";
            welcome += "Gunakan commands berikut: \n";
            welcome += "On1 untuk Led1 ON \n";
            welcome += "Off1 untuk Led1 OFF \n";
            welcome += "OnS untuk Semua Led ON \n";
            welcome += "OffS untuk Semua Led OFF \n";
            welcome += "Cek untuk Cek semua Led Status \n";
            myBot.sendMessage(chat_id, welcome, "");
        }
        else if(text == "Cek"){
            myBot.sendMessage(chat_id, sAll, "");
delay(200); }
        else if(text=="On1") {
            KL[0]=1;
            myBot.sendMessage(chat_id, "L1 ON ");
delay(200);
        }
        else if(text=="Off1") {
            KL[0]=0;
            myBot.sendMessage(chat_id, "L1 OFF");
delay(200);
        }
        else if(text=="On2") {
            KL[1]=1;
            myBot.sendMessage(chat_id, "L2 ON ");
delay(200);
        }
        else if(text=="Off2") {
            KL[1]=0;
            myBot.sendMessage(chat_id, "L2 OFF");
delay(200);
    }
}

```

```

    }
    else if(text=="On3") {
        KL[2]=1;
        myBot.sendMessage(chat_id, "L3 ON ");
delay(200);
    }
    else if(text=="Off3") {
        KL[2]=0;
        myBot.sendMessage(chat_id, "L3 OFF");
delay(200);
    }
    else if(text=="On4") {
        KL[3]=1;
        myBot.sendMessage(chat_id, "L4 ON ");
delay(200);
    }
    else if(text=="Off4") {
        KL[3]=0;
        myBot.sendMessage(chat_id, "L4
OFF"); delay(200);
    }

    else if(text=="OnS") {
        KL[3]=1; KL[2]=1; KL[1]=1; KL[0]=1;
        myBot.sendMessage(chat_id, "Semua Lampu ON");
delay(200);
    }
    else if(text=="OffS") {
        KL[3]=0; KL[2]=0; KL[1]=0; KL[0]=0;
        myBot.sendMessage(chat_id, "Semua Lampu OFF");
delay(200);
    }
    else {
        myBot.sendMessage(chat_id, "Perintah Salah, Coba
lagi !"); delay(200);
    }
}
KValue = KL[3]*8+ KL[2]*4 + KL[1]*2 + KL[0];
}

void kirimKeSlave() {
    //===== Sending data =====
    for (byte i=0; i<4; i++) {
        RF24NetworkHeader alamat(nodeSlave[i]); //set
alamat
        network.write(alamat, &KValue, sizeof(KValue));
    }
    //kirim

```

```

        delay(100);
    }
}

void terimaDariSlave() { //===== Receiving =====
    while( network.available() ) { // Is there any
incoming data?
        RF24NetworkHeader header;
        network.read(header, &data, sizeof(data)); //
Read the incoming data

        switch(header.from_node) {
            case 011: {DS[0] = data[0]; LRT[0] =
millis(); break;}
            case 021: {DS[1] = data[0]; LRT[1] =
millis(); break;}
            case 031: {DS[2] = data[0]; LRT[2] =
millis(); break;}
            case 041: {DS[3] = data[0]; LRT[3] =
millis(); break;}
        }
    }
}

void verifikasi(){
    CT = millis();

    for(byte i=0; i<4; i++) {
        if(CT-LRT[i]>LT) {
            sL[i]="L"+String(i+1)+ " DCn \r\n";
        }
        else if(DS[i]==1) {
            sL[i]="L"+String(i+1)+ " OFF \r\n";
        }
        else if(DS[i]==0) {
            sL[i]="L"+String(i+1)+ " ON \r\n";
        }
    }
    sAll=sL[0]+sL[1]+sL[2]+sL[3];
}

```

Lampiran. 2 Program Lampu 1

```

#include <RF24.h>
#include <RF24Network.h>
#include <SPI.h>
RF24 radio(9, 10); // nRF24L01 (CE,CSN)
RF24Network network(radio); // Include the radio in
the network

#define LAMPU 3
#define NYALA LOW
#define PADAM HIGH

const uint16_t this_node = 011; // Address of this
node in Octal format
const uint16_t node01 = 01;
int data[2]; // number of sensors
int dataMasuk, dataIn;

unsigned long LRT = 0; //lastReceiveTime
unsigned long CT = 0; //currentTime
unsigned long LT = 10000; //limitTime

void setup() {
  Serial.begin(9600);
  SPI.begin();
  radio.begin();
  network.begin(90, this_node); //(channel, node
address)
  radio.setDataRate(RF24_2MBPS);
  pinMode(LAMPU, OUTPUT); //relay lampu
}

void loop() {
  network.update();
  terima();
  kirim();
  delay(1000);
}

void terima() {
  while ( network.available() ) { // Is there any
incoming data?
    RF24NetworkHeader header;
    //Read the incoming data:
    network.read(header, &dataMasuk,
sizeof(dataMasuk));
    if(header.from_node==01) {dataIn=dataMasuk; LRT =

```

```

millis(); }
}

CT = millis(); if (CT-LRT>LT) dataIn=0;
if ((dataIn & 1)==1) digitalWrite(LAMPU, NYALA);
else digitalWrite(LAMPU, PADAM);
}

void kirim(){
  data[0]=digitalRead(LAMPU);
  RF24NetworkHeader alamat(node01);
  bool ok = network.write(alamat, &data,
sizeof(data));
}

```

Lampiran. 3 Program Lampu 2

```

#include <RF24.h>
#include <RF24Network.h>
#include <SPI.h>
RF24 radio(9, 10); // nRF24L01 (CE,CSN)
RF24Network network(radio); // Include the radio in
the network

#define LAMPU 3
#define NYALA LOW
#define PADAM HIGH

const uint16_t this_node = 021; // Address of this
node in Octal format
const uint16_t node01 = 01;
int data[1]; // number of sensors
int dataMasuk, dataIn;

unsigned long LRT = 0; //lastReceiveTime
unsigned long CT = 0; //currentTime
unsigned long LT = 10000; //limitTime

void setup() {
  Serial.begin(9600);
  SPI.begin();
  radio.begin();
  network.begin(90, this_node); //(channel, node
address)
  radio.setDataRate(RF24_2MBPS);
  pinMode(LAMPU, OUTPUT); //relay lampu

```

```

}

void loop() {
    network.update();
    terima();
    kirim();
    delay(1000);
}

void terima() {
    while ( network.available() ) { // Is there any
incoming data?
        RF24NetworkHeader header;
        //Read the incoming data:
        network.read(header, &dataMasuk,
sizeof(dataMasuk));
        if(header.from_node==01) { dataIn=dataMasuk; LRT =
millis(); }
    }

    CT = millis(); if(CT-LRT>LT) dataIn=0;
    if ((dataIn & 2)==2) digitalWrite(LAMPU, NYALA);
    else digitalWrite(LAMPU, PADAM);
}

void kirim(){
    data[0]=digitalRead(LAMPU);
    RF24NetworkHeader alamat(node01);
    bool ok = network.write(alamat, &data,
sizeof(data));
}

```

Lampiran. 4 Program Lampu 3

```

#include <RF24.h>
#include <RF24Network.h>
#include <SPI.h>
RF24 radio(9, 10); // nRF24L01 (CE,CSN)
RF24Network network(radio); // Include the radio in
the network

#define LAMPU 3
#define NYALA LOW
#define PADAM HIGH

const uint16_t this_node = 031; // Address of this
node in Octal format

```

```

const uint16_t node01 = 01;
int data[1]; // number of sensors
int dataMasuk, dataIn;

unsigned long LRT = 0; //lastReceiveTime
unsigned long CT = 0; //currentTime
unsigned long LT = 10000; //limitTime

void setup() {
    Serial.begin(9600);
    SPI.begin();
    radio.begin();
    network.begin(90, this_node); //(channel, node
address)
    radio.setDataRate(RF24_2MBPS);
    pinMode(LAMPU, OUTPUT); //relay lampu
}

void loop() {
    network.update();
    terima();
    kirim();
    delay(1000);
}

void terima() {
    while ( network.available() ) { // Is there any
incoming data?
        RF24NetworkHeader header;
        //Read the incoming data:
        network.read(header, &dataMasuk,
sizeof(dataMasuk));
        if (header.from_node==01) { dataIn=dataMasuk; LRT =
millis(); }
    }

    CT = millis(); if (CT-LRT>LT) dataIn=0;
    if ((dataIn & 4)==4) digitalWrite(LAMPU, NYALA);
    else digitalWrite(LAMPU, PADAM);
}

void kirim(){
    data[0]=digitalRead(LAMPU);
    RF24NetworkHeader alamat(node01);
    bool ok = network.write(alamat, &data,
sizeof(data));
}

```

Lampiran. 5 Program Lampu 4

```

#include <RF24.h>
#include <RF24Network.h>
#include <SPI.h>
RF24 radio(9, 10); // nRF24L01 (CE,CSN)
RF24Network network(radio); // Include the radio in
the network

#define LAMPU 3
#define NYALA LOW
#define PADAM HIGH

const uint16_t this_node = 041; // Address of this
node in Octal format
const uint16_t node01 = 01;
int data[2]; // number of sensors
int dataMasuk, dataIn;

unsigned long LRT = 0; //lastReceiveTime
unsigned long CT = 0; //currentTime
unsigned long LT = 10000; //limitTime

void setup() {
  Serial.begin(9600);
  SPI.begin();
  radio.begin();
  network.begin(90, this_node); //(channel, node
address)
  radio.setDataRate(RF24_2MBPS);
  pinMode(LAMPU, OUTPUT); //relay lampu
}

void loop() {
  network.update();
  terima();
  kirim();
  delay(1000);
}

void terima() {
  while ( network.available() ) { // Is there any
incoming data?
    RF24NetworkHeader header;
    //Read the incoming data:
    network.read(header, &dataMasuk,
sizeof(dataMasuk));
    if(header.from_node==01) { dataIn=dataMasuk; LRT =

```

```

millis(); }
}

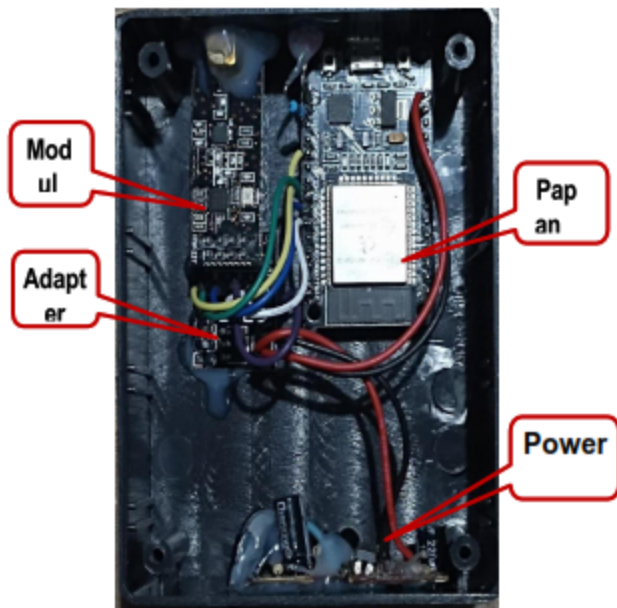
CT = millis(); if(CT-LRT>LT) dataIn=0;
if ((dataIn & 8)==8) digitalWrite(LAMPU, NYALA);
else digitalWrite(LAMPU, PADAM);
}

void kirim(){
  data[0]=digitalRead(LAMPU);
  RF24NetworkHeader alamat(node01);
  bool ok = network.write(alamat, &data,
sizeof(data));
}

```

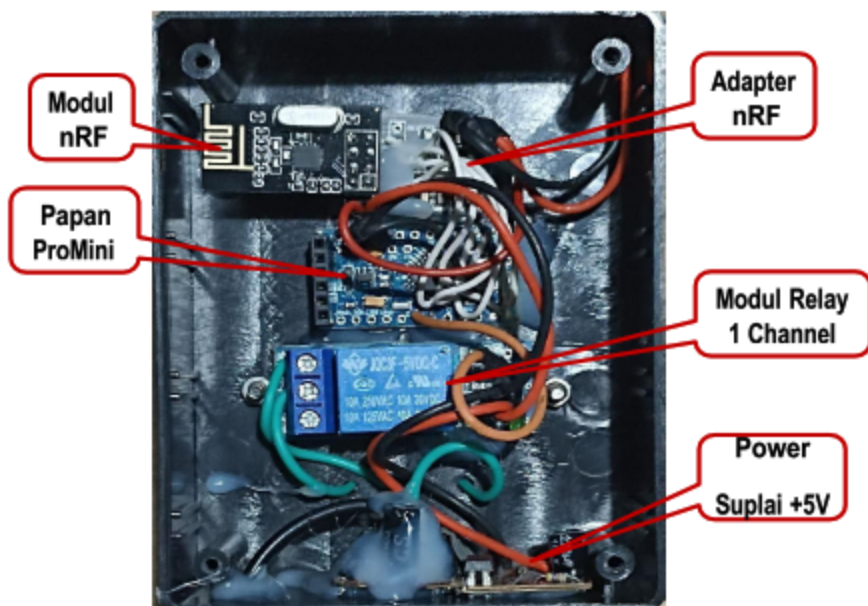
Lampiran. 6 Gambar Master Dan Tata Letak Modul Di Dalamnya



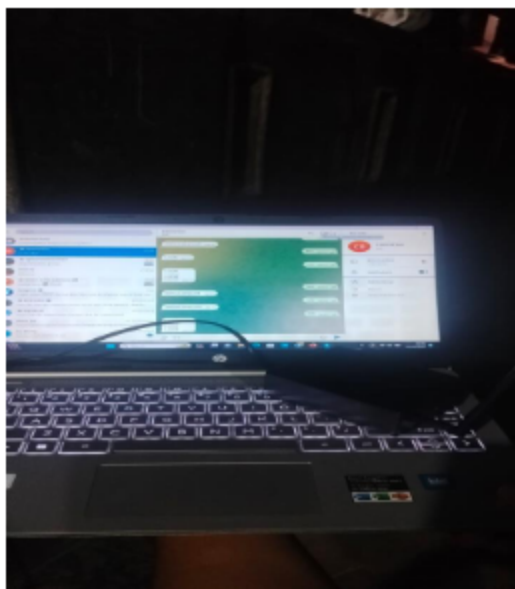


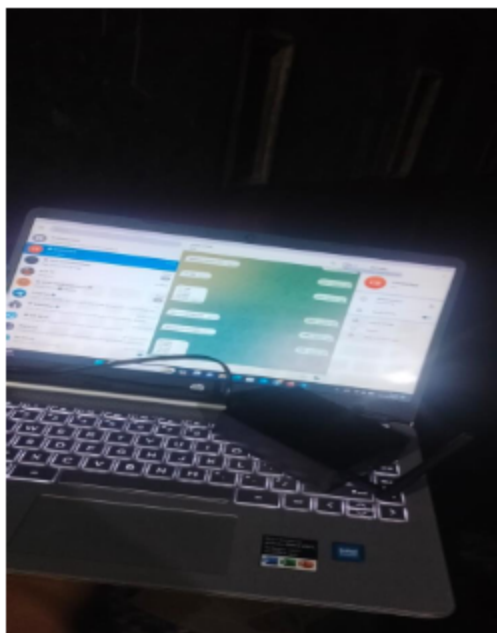
Lampiran. 7 Gambar Slave Dan Tata Letak Modul Di Dalamnya

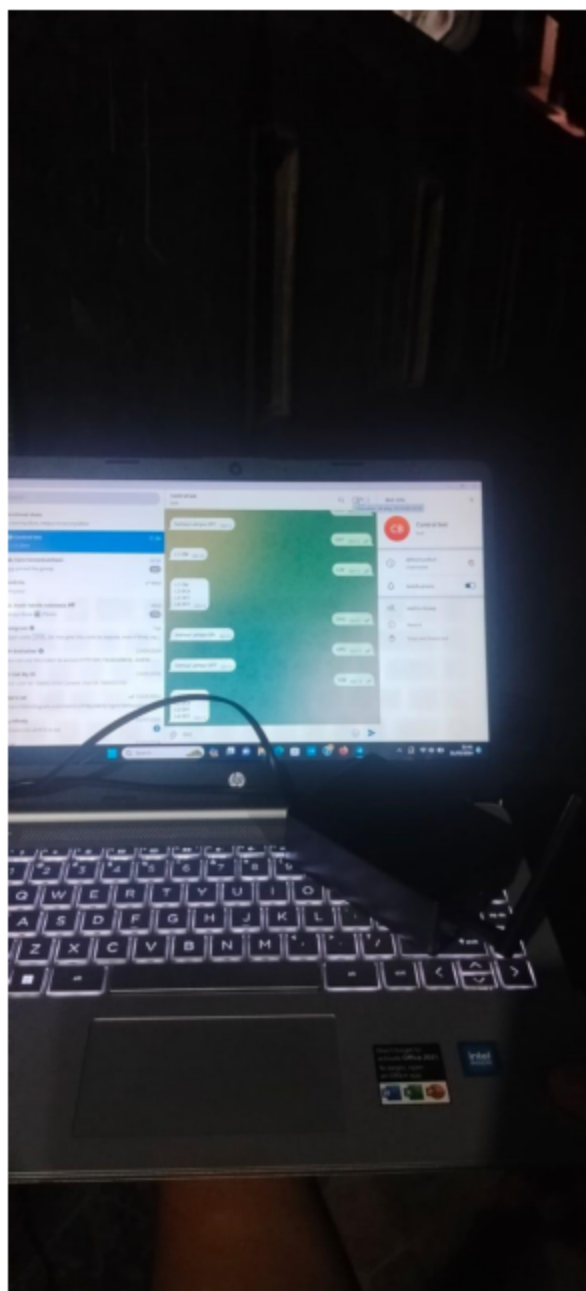




Lampiran. 8 Pengujian Dan Pengambilan Data









KARTU MONITORING BIMBINGAN

MAHASISWA PROGRAM STUDI TEKNIK ELEKTRO

FAKULTAS TEKNIK

UNIVERSITAS MUHAMMADIYAH PAREPARE

PROPOSAL

Mahasiswa : Muh. Said	Pembimbing I : Ir. A. Abd. Jabbar, MT.
NIM : 217180051	Pembimbing II : Muhammad Zainal ST., MT.
Judul Skripsi : Sistem Kendali On/Off Multipoint berbasis Telegram	

ARAHAN PEMBIMBING I	HARI/TGL & PARAF PEMBIMBING	ARAHAN PEMBIMBING II	HARI/TGL & PARAF PEMBIMBING
Konsultasi 1		Konsultasi 1	
Konsultasi 2		Konsultasi 2	
Konsultasi 3		Konsultasi 3 Hcc. Jansar 10/10/2021	
Konsultasi 4		Konsultasi 4	
Konsultasi 5 ok. proposal 9/9/24.		Konsultasi 5	

Lanjut ke halaman sebelah...

Perhatian :

1. Mahasiswa wajib konsultasi minimal 5 kali
2. Kartu ini wajib ditanda-tangani oleh mahasiswa setiap konsultasi dan oleh Pembimbing
3. Kartu ini wajib dilampirkan pada laporan skripsi dan menjadi salah satu persyaratan untuk ikut seminar proposal/jalan skripsi
4. Kartu ini dicetak di atas kertas karton A4 berwarna merah muda dan dicetak terbalik

Lanjutan ...

ARAHAN PEMBIMBING I	HARI/TGL & PARAF PEMBIMBING	ARAHAN PEMBIMBING II	HARI/TGL & PARAF PEMBIMBING
Konsultasi 6		Konsultasi 6	
Konsultasi 7		Konsultasi 7	
Konsultasi 8		Konsultasi 8	
Konsultasi 9		Konsultasi 9	
Konsultasi 10		Konsultasi 10	

Parepare, 12/3/2024



Mahasiswa
Muh. Said
NIM. 217180051

Perhatian :

1. Mahasiswa wajib konsultasi minimal 5 kali
2. Kartu ini wajib dibawa oleh mahasiswa setiap konsultasi dan diisi oleh Pembimbing
3. Kartu ini wajib ditempelkan pada laporan skripsi dan menjadi salah satu persyaratan untuk ikut seminar proposal/jalan skripsi
4. Kartu ini dicetak di atas kertas karton A4 berwarna merah muda dan dicetak timbul baik



KARTU MONITORING BIMBINGAN
MAHASISWA PROGRAM STUDI TEKNIK ELEKTRO
FAKULTAS TEKNIK
UNIVERSITAS MUHAMMADIYAH PAREPARE

SKRIPSI

Mahasiswa : Muh. Said	Pembimbing I : Ir. A. Abd. Jabbar, MT.
NIM : 217180051	Pembimbing II : Muhammad Zainal ST., MT.
Judul Skripsi : Sistem Kendal On/Off Multipoint berbasis Telegram	

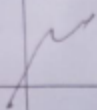
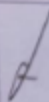
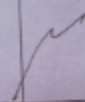
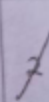
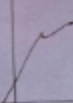
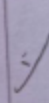
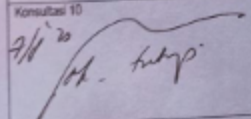
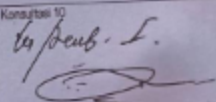
ARAHAN PEMBIMBING I	HARI/TGL & PARAF PEMBIMBING	ARAHAN PEMBIMBING II	HARI/TGL & PARAF PEMBIMBING
Konsultasi 1		Konsultasi 1 Referensi Bab 2 Brg. Persebaran & Jarak	
Konsultasi 2		Konsultasi 2 Ditulis dari skripsi beberapa bab sebelumnya	
Konsultasi 3 berbantu bab 2 dan 3		Konsultasi 3 Apa koreksi per bab 40 koreksi dengan kiri & kanan	
Konsultasi 4 Terdapat dua penyusunan		Konsultasi 4 Ditulis dengan bab sifatnya dengan bab yang ada di bab 2 & 3 jika tidak ada bab 2 & 3	
Konsultasi 5 di konsultasi 3/23		Konsultasi 5 Acc. Linnar Har 24/6.2024	

Lanjut ke halaman sebelah...

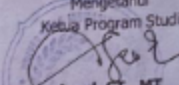
Perhatian :

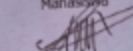
1. Mahasiswa wajib konsultasi minimal 5 kali
2. Kartu ini wajib diisi oleh mahasiswa setiap konsultasi dan dikuatkan Pembimbing
3. Kartu ini wajib ditempelkan pada laporan skripsi dan menjadi salah satu persyaratan untuk ikut seminar proposal/skripsi
4. Kartu ini dicetak di atas kertas karton A4 berwarna merah muda dan dicetak 2x1000

Lanjutan...

ARAHAN PEMBIMBING I	HARITOL & PARAF PEMBIMBING	ARAHAN PEMBIMBING II	HARITOL & PARAF PEMBIMBING
Konsultasi 6		Konsultasi 6	
Konsultasi 7		Konsultasi 7	
Konsultasi 8		Konsultasi 8	
Konsultasi 9		Konsultasi 9	
Konsultasi 10 2/11/20 		Konsultasi 10 	

Parepare, 9 Juli 2024.

Mengetahui
Ketua Program Studi

Asrul, ST., MT.
NBM. 986 836

Mahasiswa

Muhi. Said
NIM. 217180051

Perhatian :

1. Mahasiswa wajib konsultasi minimal 5 kali
2. Kartu ini wajib dibawa oleh mahasiswa di setiap konsultasi dan diisi oleh Pembimbing
3. Kartu ini wajib diampirkan pada laporan skripsi dan menjadi salah satu persyaratan untuk ikut seminar proposal/ujian skripsi
4. Kartu ini diletakkan di atas kertas karton A4 berwarna merah muda dan dicetak timbul belah