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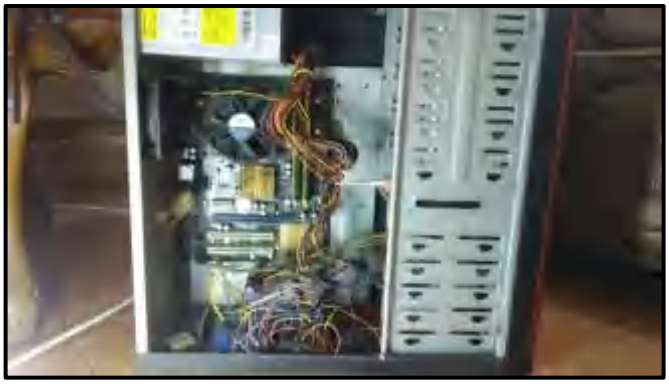
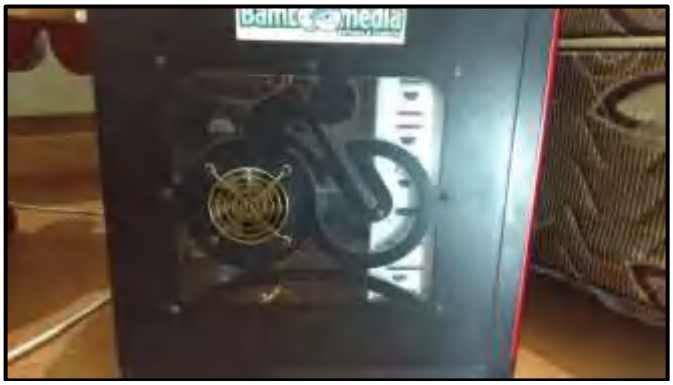
Lampiran 1 Dokumentasi alat



Tampak samping kanan (dalam)

Tampak atas (dalam)

Tampak mifi, baterai dan modul *step-up*



Tampak kanan (luar)

Lampiran 2 Listing program

```
#define BLYNK_TEMPLATE_ID "TMPL6N4TzDJx7"
#define BLYNK_TEMPLATE_NAME "Tugas Akhir"
#define BLYNK_AUTH_TOKEN "xsnvFRqa7WYCiGHbHM_Vasi9CueaRAI2"
#define BLYNK_PRINT Serial
#include <SoftwareSerial.h>
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>
#include <ESP8266HTTPClient.h>
#include <WiFiClient.h>
#include <TinyGPS++.h>

static const int RXPin = 4, TXPin = 5;
static const uint32_t GPSBaud = 9600;
const int vibrationSensor = 2;
int vibrationSensorState = 0;
const int relaysensor = 12;
const int relaybuzzer = 13;
const int relaymifi = 14;
const int buzzer = 16;

TinyGPSPlus gps;
WidgetMap myMap(V0);

int VibrateCount = 0;
const int maxVibrateCount = 18;

SoftwareSerial mym(RXPin, TXPin);

ude, longitude;
Latitude = 0.0;
Longitude = 0.0;
```

```
bool alertSent = false;

char auth[] = "xsnvFRqa7WYCiGHbHM_Vasi9CueaRAI2";
char ssid[] = "Redmi";
char pass[] = "rtyuiop1234";

BlynkTimer timer;

String url;

WiFiClient client;

unsigned int move_index = 1;
unsigned long lastMoveTime = 0;
const unsigned long moveTimeout = 60000;
unsigned long lastVibrateTime = 0;
const unsigned long vibrateInterval = 600000;
unsigned long before Relay = 0;
const unsigned long interval Relay = 3600000;
unsigned long beforeGps = 0;
const unsigned long intervalGps = 1000;

bool Relay Status = true;

void setup()
{
  Serial.begin(115200);
  pinMode(vibrationSensor, INPUT);
  pinMode(buzzer, OUTPUT);
          rite(relaysensor, LOW);
          rite(relaybuzzer, HIGH);
          gin(GPSBaud);
```

```
  Blynk.begin(auth, ssid, pass);
  timer.setInterval(5000L, checkGPS);
}

void checkGPS()
{
  if (gps.charsProcessed() < 10)
  {
    Serial.println(F("No GPS detected: check wiring."));
  }
}

void postData()
{
  int httpCode;
  HTTPClient http;
  http.begin(client, url);
  int httpResponCode = http.GET();
  httpCode = http.POST(url);
  Serial.println(httpResponCode);
  http.end();
}

void kirim_wa(String pesan)
{
  url = "http://api.callmebot.com/whatsapp.php?phone=6282189126424&text=" +
urlencode(pesan) + "&apikey=5249381";
  postData();
}
```

```
String urlencode(String str)
{
  String encodedString = "";
  char c;
  for (int i = 0; i < str.length(); i++)
  {
    c = str.charAt(i);
    if (c == ' ')
    {
      encodedString += "+";
    }
    else if (isalnum(c))
    {
      encodedString += c;
    }
  }
  Serial.println(encodedString);
  return encodedString;
}

void mifi_charge()
{
  unsigned long now*Relay* = millis();
  if (now*Relay* - before*Relay* > interval*Relay*)
  {
    *Relay*Status = !*Relay*Status;
    if (*Relay*Status)
    {
      digitalWrite(*relay*mifi, HIGH);
                .println("Mi-Fi Charging...");
```

```
    else
    {
      digitalWrite(relaymifi, LOW);
      Serial.println("Mi-Fi Uncharge.");
    }
    beforeRelay = nowRelay;
  }
}

void gpsInfo(){
  unsigned long nowGps = millis();
  if (nowGps - beforeGps > intervalGps)
  {
    if (gps.location.isValid())
    {
      latitude = gps.location.lat();
      longitude = gps.location.lng();

      Serial.print("LAT:  ");
      Serial.println(latitude, 6);
      Serial.print("LONG: ");
      Serial.println(longitude, 6);

      Blynk.virtualWrite(V1, String(latitude, 6));
      Blynk.virtualWrite(V2, String(longitude, 6));
      myMap.location(move_index, latitude, longitude, "GPS_Location");

      float distance = calculateDistance(prevLatitude, prevLongitude, latitude,
longitude);
      stance >= 60.0 && !alertSent)

      n_wa("CPU Komputer Anda dalam Bahaya Pencurian");
```

```
      alertSent = true;
    }

    if (distance < 60.0 && alertSent)
    {
      alertSent = false;
    }

    prevLatitude = latitude;
    prevLongitude = longitude;

    lastMoveTime = nowGps;
  }
 }

 if (nowGps - lastMoveTime > moveTimeout && !alertSent)
 {
  Serial.println("Perangkat berhenti bergerak.");
 }

 beforeGps = nowGps;
 Serial.println();
}

float calculateDistance(float lat1, float lon1, float lat2, float lon2)
{
 float R = 6371000.0;
 float dLat = radians(lat2 - lat1);
 float dLon = radians(lon2 - lon1);
    : sin(dLat / 2.0) * sin(dLat / 2.0) + cos(radians(lat1)) * cos(radians(lat2))
    n / 2.0) * sin(dLon / 2.0);
    : 2.0 * atan2(sqrt(a), sqrt(1.0 - a));
```

```
  float distance = R * c;

  return distance;
}

void vibrate_cond(){
  unsigned long nowVibrate = millis();
  if (vibrationSensorState == HIGH) {
    delay(100);
    if (vibrationSensorState == HIGH) {
        VibrateCount++;
        Serial.print("Getaran: ");
        Serial.println(VibrateCount);
        lastVibrateTime = nowVibrate;
    }
  }

  if (nowVibrate - lastVibrateTime > vibrateInterval) {
    if (VibrateCount >= maxVibrateCount) {
        kirim_wa("CPU Komputer Anda dalam Bahaya Pencurian");
    }
    VibrateCount = 0;
    lastVibrateTime = nowVibrate;
  }

  if (nowVibrate - lastVibrateTime > 60000) {
    VibrateCount = 0;
    lastVibrateTime = nowVibrate;
  }
```

```
void loop()
{
  while (mym.available() > 0)
  {
    if (gps.encode(mym.read()))
      gpsInfo();
  }

  Blynk.run();
  timer.run();

  vibrate_cond();

  tone(buzzer, 6000, 250);

  mifi_charge();
}
```

Lampiran 3 Biaya

No	Nama Barang	Jumlah	Satuan	Harga	Total
1	NodeMCU ESP8266	1	Pcs	Rp31.300,-	Rp31.300,-
2	GPS Ublox Neo-6MV2	1	Pcs	Rp44.900,-	Rp44.900,-
3	Sensor Getar SW-420	1	Pcs	Rp6.000,-	Rp6.000,-
4	*Relay* 4-Channel	1	Pcs	Rp19.900,-	Rp19.900,-
5	*Buzzer* SFM-27	1	Pcs	Rp5.700,-	Rp5.700,-
6	Mifi Orion Bolt 4G	1	Pcs	Rp175.000,-	Rp175.000,-
7	Baterai Li-Ion 18650	2	Pcs	Rp15.000,-	Rp30.000,-
8	Holder 2 Baterai	1	Pcs	Rp20.000,-	Rp20.000,-
9	Modul TP4056	1	Pcs	Rp3.000,-	Rp3.000,-
10	*Step-up* MT3608	1	Pcs	Rp5.900,-	Rp5.900,-
11	PCB 5x7 cm	1	Pcs	Rp1.300,-	Rp1.300,-
12	Solder Listrik	1	Pcs	Rp18.950,-	Rp18.950,-
13	Timah Solder 1 m	2	Pcs	Rp7.500,-	Rp15.000,-
14	Breadboard	2	Pcs	Rp9.700,-	Rp19.400,-
15	Kabel Jumper Male to Female	20	Pcs	Rp50,-	Rp10.000,-
16	Kabel Jumper Male to Male	10	Pcs	Rp50,-	Rp5.000,-
17	Langganan *Blynk*	1	Bulan	Rp109.890,-	Rp109.890,-
18	Kartu SIM Pascabayar	1	Bulan	Rp80.000,-	Rp80.000,-
Total Biaya Keseluruhan					Rp601.240,-