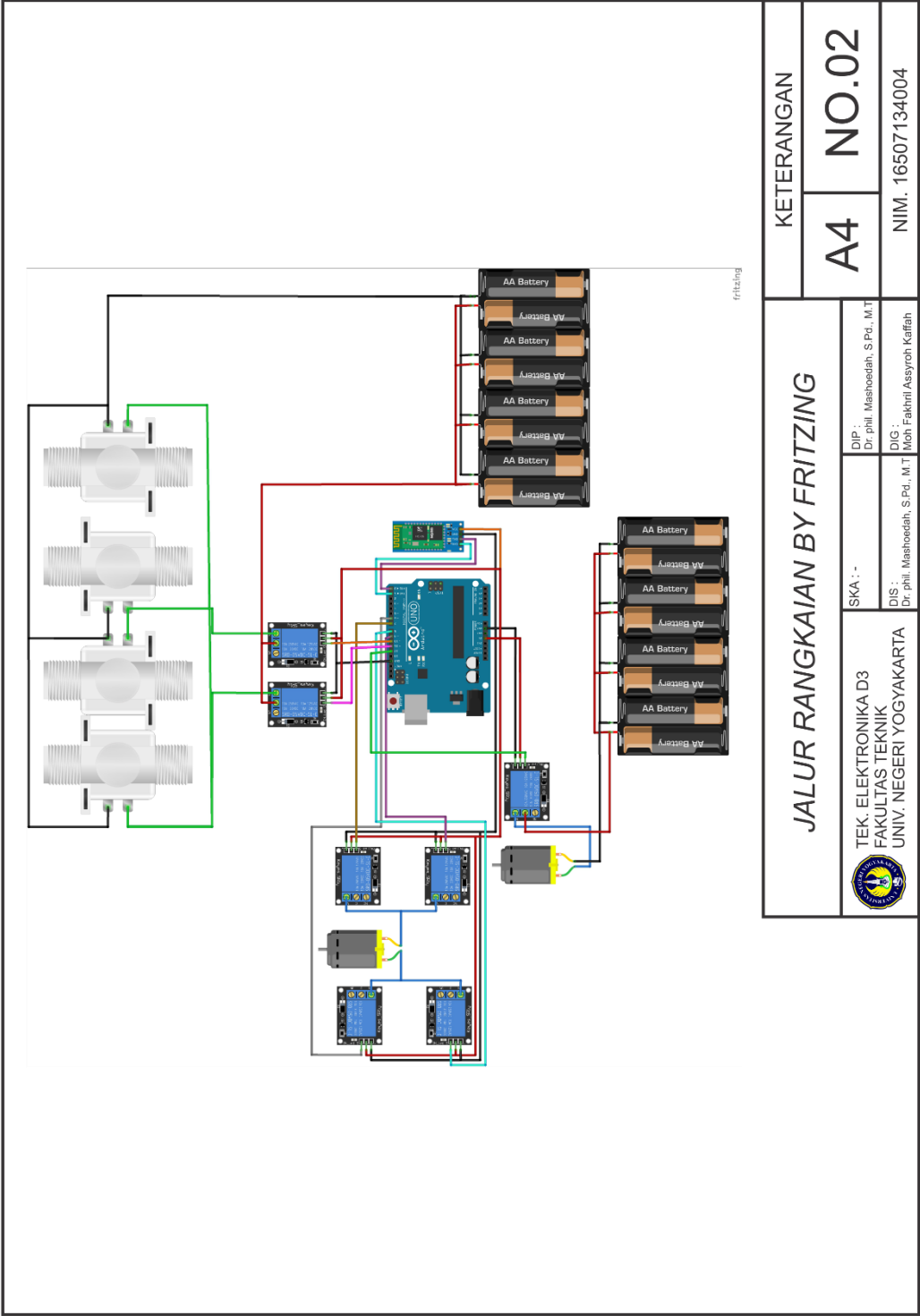


SKEMATIK RANGKAIAN		KETERANGAN
TEK. ELEKTRONIKA D3 FAKULTAS TEKNIK UNIV. NEGERI YOGYAKARTA		NO.01
SKA :-	DIP : Dr. Phil Mashoodah, S.Pd., M.T.	NIM. 16507134004
	DIS : Moh Fakrill Asyroh Karifah	

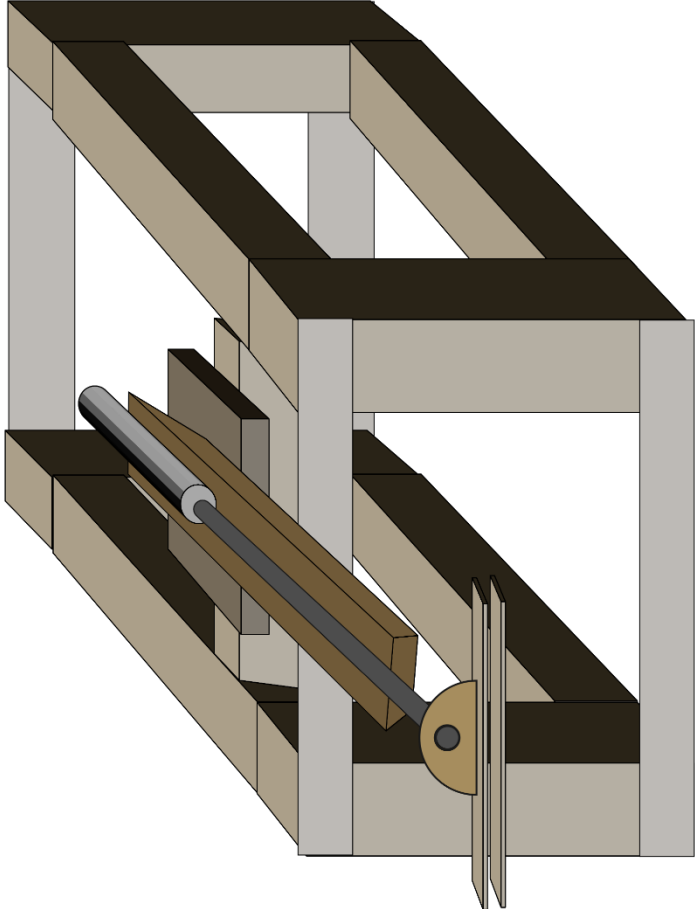
Lampiran 2. Jalur Rangkaian by Fritzing



KETERANGAN	
A4	NO.02
NIM. 16507134004	

JALUR RANGKAIAN BY FRITZING	
SKA : -	DIP : Dr. phil. Mashoedah, S.Pd., M.T
TEK. ELEKTRONIKA D3 FAKULTAS TEKNIK UNIV. NEGERI YOGYAKARTA	DIG : Moh Fakhri Assyroh Kaffah

Lampiran 3. Desain Kerangka Alat



DESAIN KERANGKA ALAT		KETERANGAN	
 TEK. ELEKTRONIKA D3 FAKULTAS TEKNIK UNIV. NEGERI YOGYAKARTA	SKA : -	A4	NO.03
	DIP : Dr. phil. Mashoedah, S Pd., M.T	NIM. 16507134004	
DIS : Dr. phil. Mashoedah, S Pd., M.T		DIG : Moh. Fahrul Assyrah Kaffah	

Lampiran 4. Tampilan Alat

		TAMPILAN ALAT		KETERANGAN		
				A4	NO.04	
		TEK. ELEKTRONIKA D3 FAKULTAS TEKNIK UNIV. NEGERI YOGYAKARTA		SKA : - DIS : Dr. phil. Mashoodah, S.Pd., M.T.	DIP : Dr. phil. Mashoodah, S.Pd., M.T.	NIM. 16507134004
				DIG : Moh. Fakhri Assyroh Kaffah		

Lampiran 5. Program

```
int a=6;
int b=7;
int c=8;
int d=9;
int e=10;
int f=11;
int g=12;
int h=13;
char data;

void setup() {
  Serial.begin(9600);
  pinMode(a, OUTPUT);
  pinMode(b, OUTPUT);
  pinMode(c, OUTPUT);
  pinMode(d, OUTPUT);
  pinMode(e, OUTPUT);
  pinMode(f, OUTPUT);
  pinMode(g, OUTPUT);
  pinMode(h, OUTPUT);

  digitalWrite(6,1);
  digitalWrite(7,1);
  digitalWrite(8,1);
  digitalWrite(9,1);
  digitalWrite(10,1);
  digitalWrite(11,1);
  digitalWrite(13,1);
}

void loop()
{

  if (Serial.available() > 0)
  {
    data = Serial.read();
    Serial.print(data);
    Serial.print("\n");
    if (data == 'A')
    {
      digitalWrite(a,HIGH);
```

```
digitalWrite(d,HIGH);
}
if (data == 'B')
{
digitalWrite(b,HIGH);
digitalWrite(c,HIGH);
}
else if (data == 'E')
{
digitalWrite(e,HIGH);
}
else if (data == 'F')
{
digitalWrite(f,HIGH);
}
else if (data == 'H')
{
digitalWrite(h,HIGH);
}
else if (data == '1')
{
digitalWrite(a,LOW);
digitalWrite(d,LOW);
}
else if (data == '2')
{
digitalWrite(b,LOW);
digitalWrite(c,LOW);
}
else if (data == '5')
{
digitalWrite(e,LOW);
}
else if (data == '6')
{
digitalWrite(f,LOW);
}
else if (data == '8')
{
digitalWrite(h,LOW);
}
```

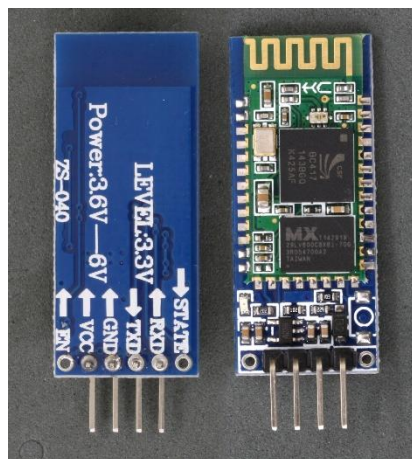
$\}$ $\}$

Lampiran 6. Daftar harga komponen yang digunakan

No	Nama Komponen	Jumlah	Harga
1.	Arduino uno	1	Rp.60.000
2.	Modul relay 8 channel	1	Rp.62.000
3.	Solenoid	4	Rp.260.000
4.	Motor dc	2	Rp.200.000
5.	Pipa paralon	secukupnya	Rp.20.000
6.	Kayu balok	3 x 5 x 1000 cm	Rp.20.000
7.	Jasa cetak <i>gripper</i>	1	Rp.100.000
Total			Rp.722.000

Lampiran 7. Data sheet modul bluetooth HC-06

- Wireless transceiver
 - Sensitivity (Bit error rate) can reach -80dBm.
 - The change range of output's power: -4 - +6dBm.
- Function description (perfect Bluetooth solution)
 - Has an EDR module; and the change range of modulation depth: 2Mbps - 3Mbps.
 - Has a build-in 2.4GHz antenna; user needn't test antenna.
 - Has the external 8Mbit FLASH
 - Can work at the low voltage (3.1V~4.2V). The current in pairing is in the range of 30~40mA. The current in communication is 8mA.
 - Standard HCI Port (UART or USB)
 - USB Protocol: Full Speed USB1.1, Compliant With 2.0
 - This module can be used in the SMD.
 - It's made through RoHS process.
 - The board PIN is half hole size.
 - Has a 2.4GHz digital wireless transceiver.
 - Bases at CSR BC04 Bluetooth technology.
 - Has the function of adaptive frequency hopping.
 - Small (27mm×13mm×2mm)
 - Peripherals circuit is simple.
 - It's at the Bluetooth class 2 power level.
 - Storage temperature range: -40 °C - 85°C , work temperature range: -25 °C - +75°C
 - Any wave inter Interference: 2.4MHz, the power of emitting: 3 dBm.
 - Bit error rate: 0. Only the signal decays at the transmission link, bit error may be produced. For example, when RS232 or TTL is being processed, some signals may decay.



Lampiran 8. *Data sheet* solenoid



Model No.	AQT12SL
Thread Size	1/2"BSP inlet and 12mm outlet
Material	Plastic and Brass
Working Temp	0~100℃
Working Pressure	400 millimeter water column
Voltage	DC12V,DC24V,AC220V
Voltage Range	15%
Style	Opened Valve
Working Environment	Water, Gas and Oil
Lifespan	More than 200,000 times
Certification	CQC/CE

Lampiran 9. Data sheet modul relay

Specifications

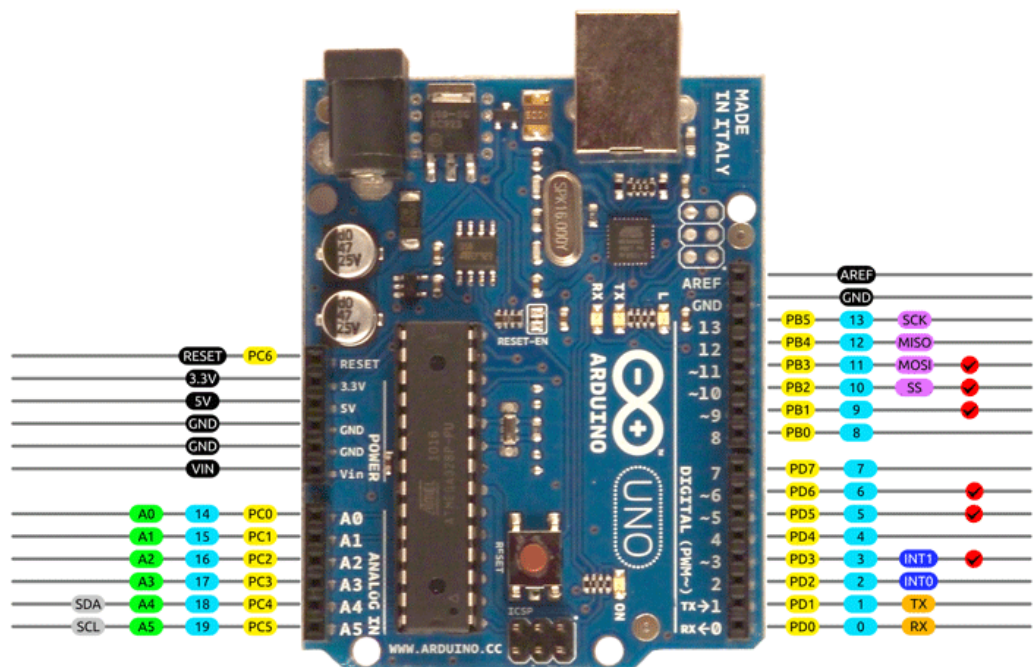
- On-board EL817 photoelectric coupler with photoelectric isolating anti-interference ability strong
- On-board 5V, 10A / 250VAC, 10A / 30VDC relays
- Relay long life can absorb 100000 times in a row
- Module can be directly and MCU I/O link, with the output signal indicator
- Module with diode current protection, short response time
- PCB Size: 45.8mm x 32.4mm

Pin Configuration



1. **VCC:** 5V DC
2. **COM:** 5V DC
3. **IN1:** high/low output
4. **IN2:** high/low output
5. **GND:** ground

Lampiran 10. Data sheet Arduino uno



AVR DIGITAL ANALOG POWER SERIAL SPI I2C PWM INTERRUPT

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Photo by Arduino.cc

Lampiran 11. *Data sheet* motor dc

DC motor 6/9V

Item	Specification	Reference
Rated Voltage	6V DC	
No load speed	12000±15%/rpm	
No load current	≤280mA	
Operating voltage	1.5-6.5V DC	
Starting Torque	≥250g.cm(according to ourself developed blade)	
starting current	≤5A	
Insulation Resistance	above 10Ω between the case and the terminal	DV 100V
Rotation Direction	CW:[+]terminal connected to the positive power supply,[-]terminal connected to nagative power,clockwise is deemed by the direction of the output shaft	
shaft gap	0.05-0.35mm	