MIKROKONTROLER

Pertemuan-2

AGENDA

Arduino LED Built-In (Practice)

Arduino External LED with Resistor (Practice)

Summary

getready.io

ARDUINO LED BUILT-IN

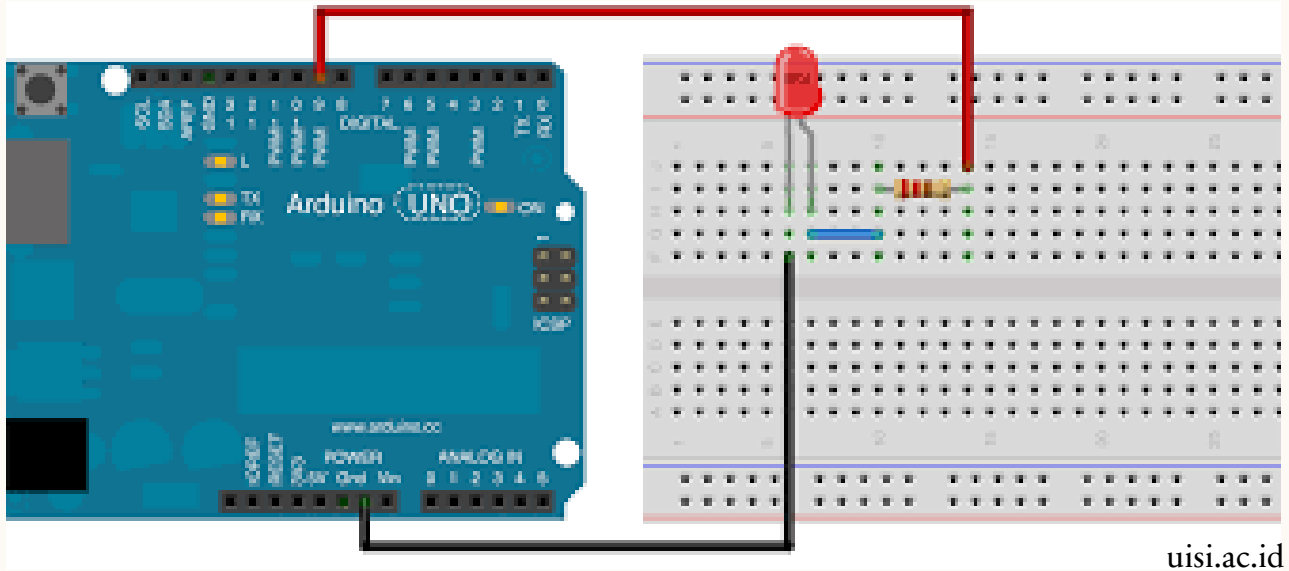
1. Open Arduino IDE then click **File > Examples > 01. Basics > Blink**
2. Define the code inside
3. Plug the USB to Arduino and Computer to upload the program

ARDUINO EXTERNAL LED WITH RESISTOR

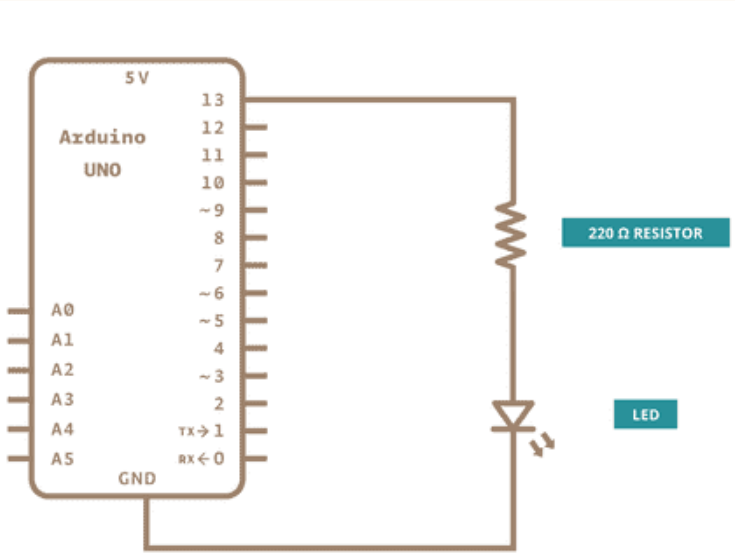
Practice

TOOLS AND MATERIALS

- Arduino + Uploader Cable
- LED
- Resistor 220 Ohm
- Breadboard
- Jumper

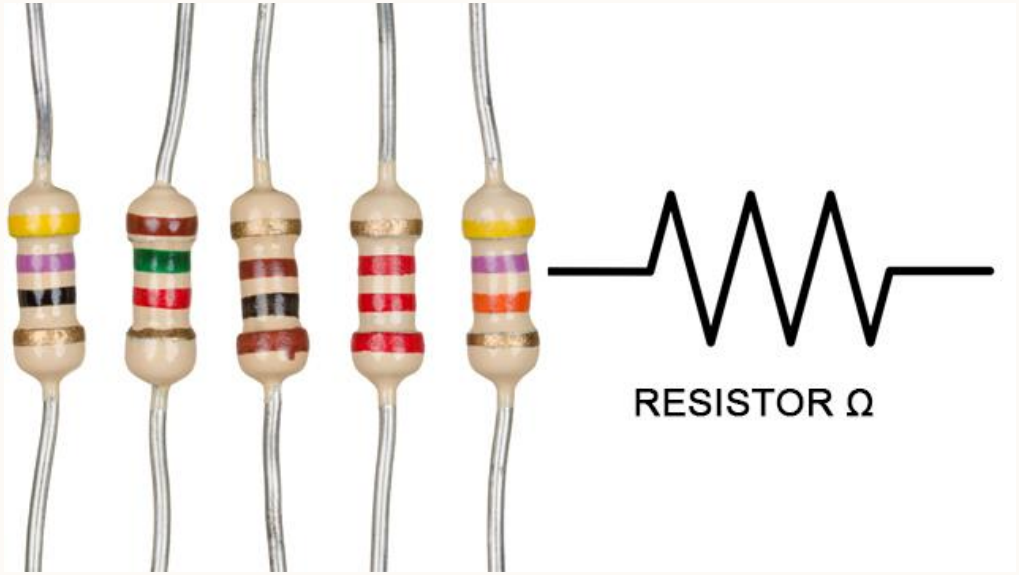


uisi.ac.id



arduino.cc

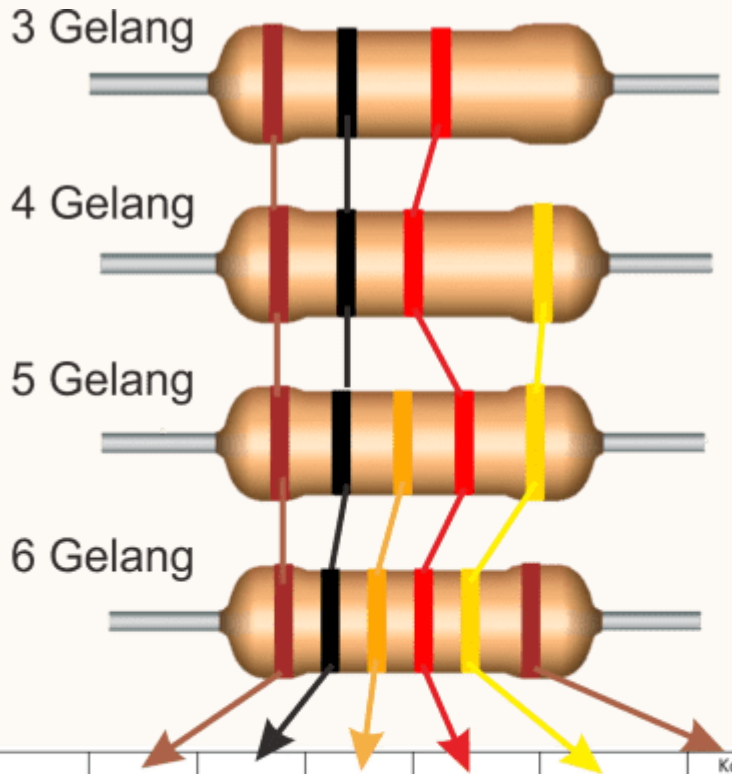
RESISTOR



gesaintech.com

Resistor adalah komponen Elektronika Pasif yang memiliki nilai resistansi atau hambatan tertentu yang berfungsi untuk membatasi dan mengatur arus listrik dalam suatu rangkaian Elektronika.

the default tolerance is taken to be at 20%.
https://www.seeedstudio.com/blog/2019/04/23/resistor-color-codes-and-chart-for-3-4-5-and-6-band-resistors/



WARNA	Gelang 1	Gelang 2	Gelang 3	Pengali (Ω)	Toleransi		Koefisien Temperatur (ppm/°C)
HITAM	0	0	0	1			
COKLAT	1	1	1	10^1	±1%	(F)	100
MERAH	2	2	2	10^2	±2%	(G)	50
JINGGA	3	3	3	10^3	±3%		15
KUNING	4	4	4	10^4	±4%		25
HIJAU	5	5	5	10^5	±0,5%	(D)	
BIRU	6	6	6	10^6	±0,25%	(C)	10
UNGU	7	7	7	10^7	±0,1%	(B)	5
ABU-ABU	8	8	8	10^8	±0,05%	(A)	
PUTIH	9	9	9	10^9			
EMAS				0,1	±5%	(J)	
PERAK				0,01	±10%	(K)	

HOW TO READ RESISTANCE ?

Semakin kecil toleransi resistor tersebut, semakin bagus, karena semakin presisi.

EXAMPLE

Nilai resistansi = … Ohm … Toleransi

Gelang ke-1 berwarna merah =

Gelang ke-2 berwarna jingga/orange =

Gelang ke-3 berwarna kuning =

Gelang ke-4 berwarna hitam =

Gelang ke-5 berwarna perak =

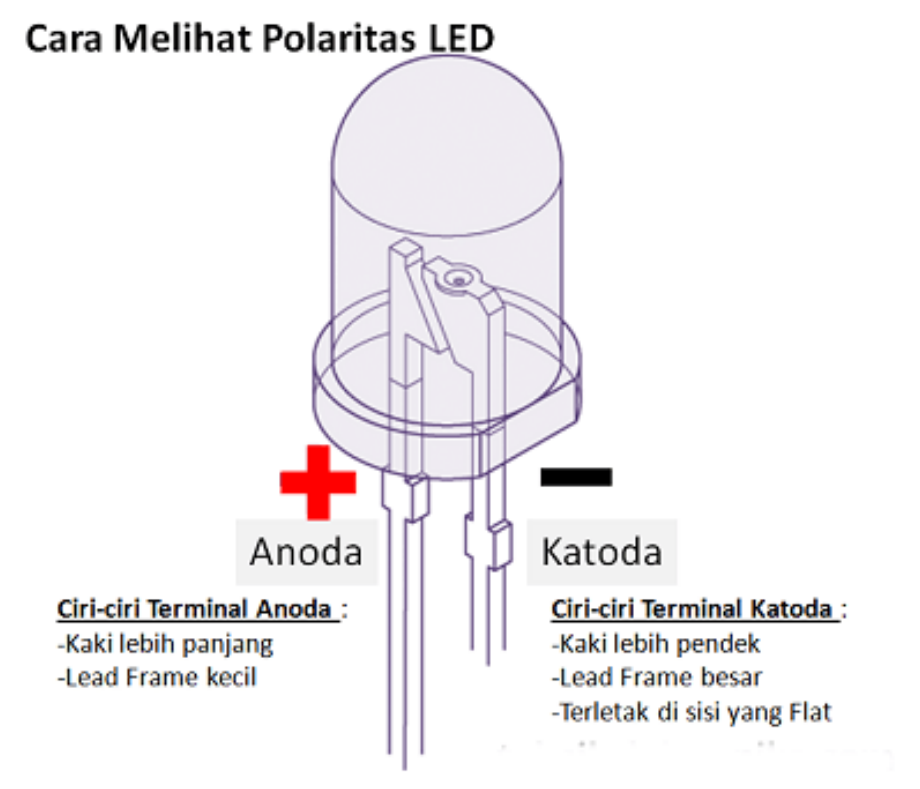
EXAMPLE

Nilai resistansi = … Ohm … Toleransi

- Nilai toleransi resistor = 234 ohm x 10% = 23,4 ohm
- Nilai batas maksimum resistor = 234 + 23,4 = 257,4 ohm
- Nilai batas minimum resistor = 234 – 23,4 = 210,6 ohm

Resistor dapat dikatakan masih baik apabila memiliki nilai hambatan lebih besar sama dengan 210,6 ohm dan lebih kecil sama dengan 257,4 ohm (210,6 ohm < nilai R < 257,4 ohm)

LED (LIGHT EMITTING DIODE)



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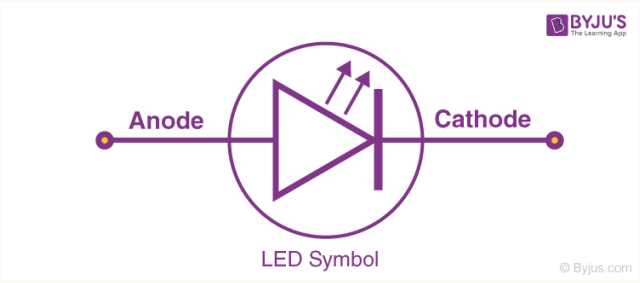
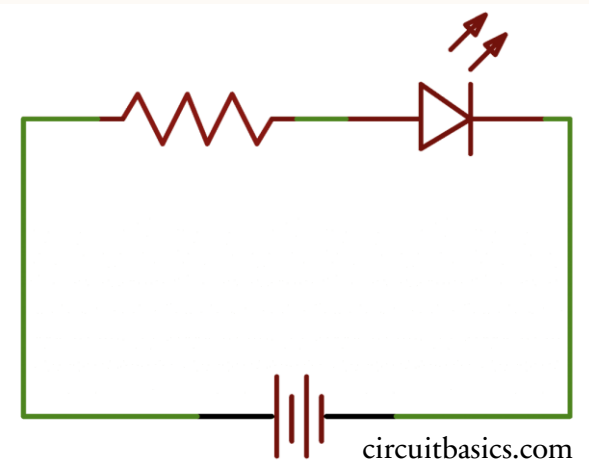
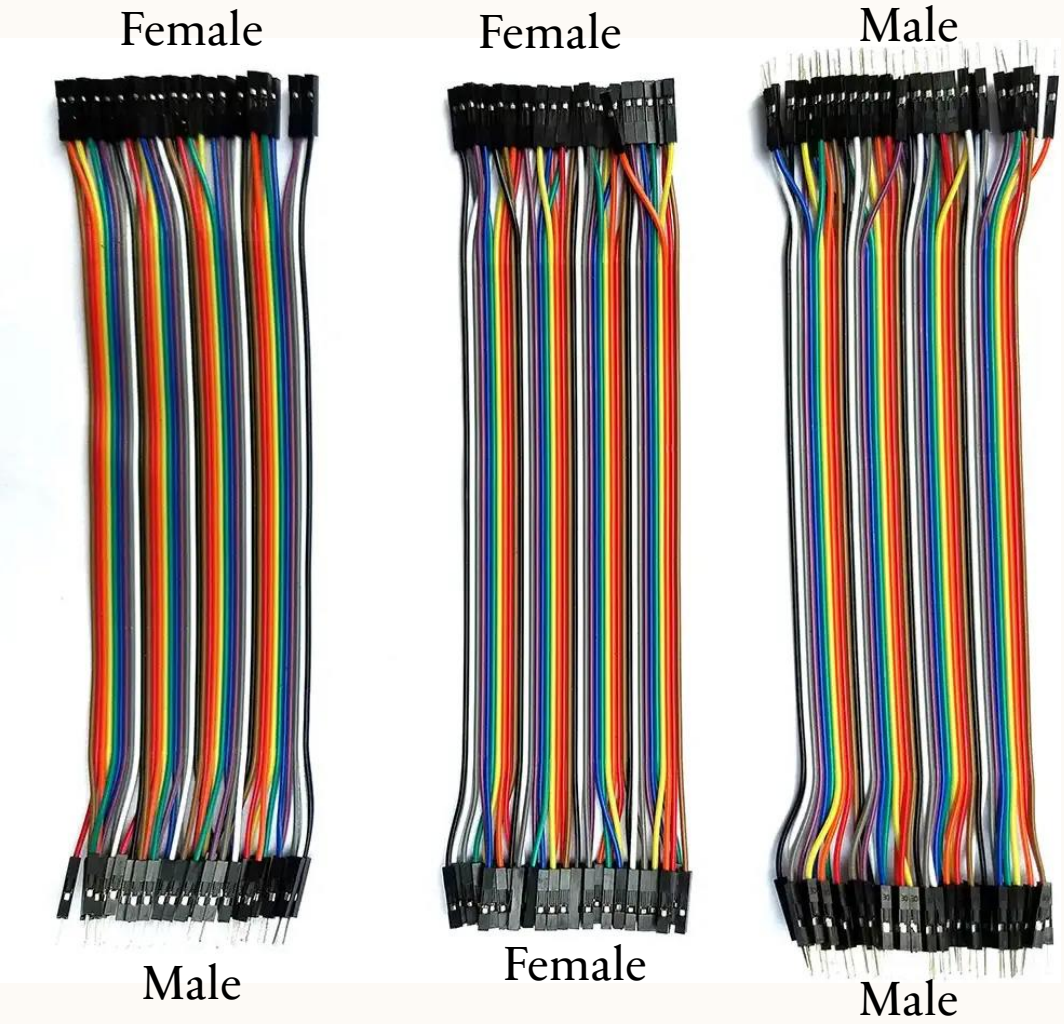
anakteknik.co.id





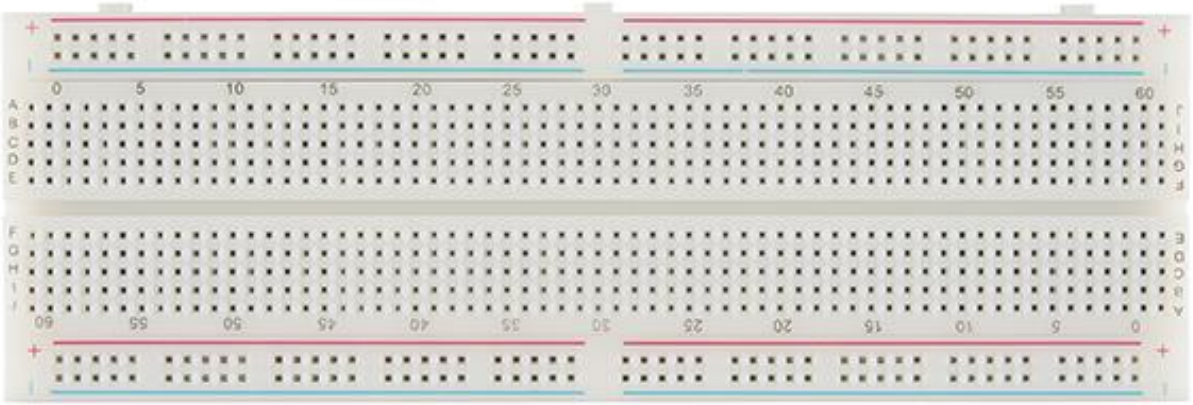
circuitbasics.com

JUMPER

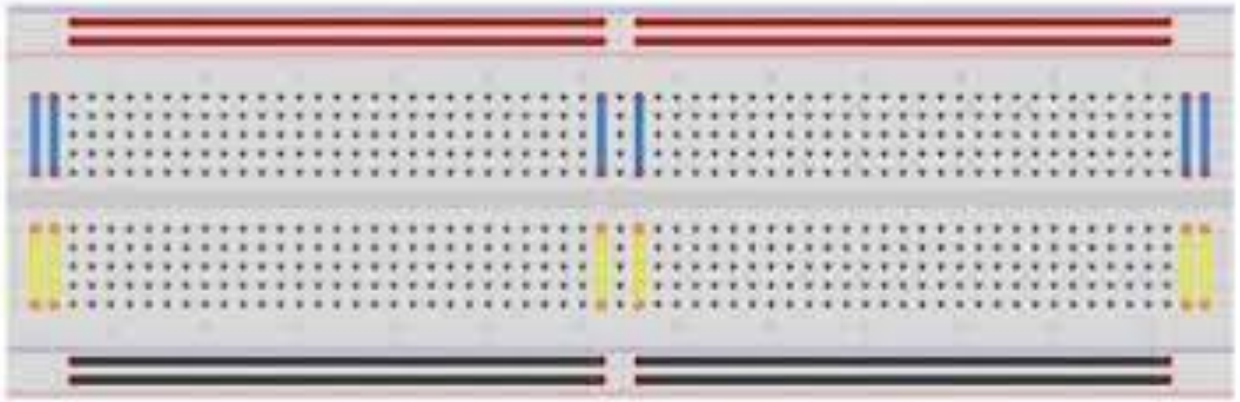


Picture : Amazon.com

BREADBOARD



learn.sparkfun.com



Gambar 3. Peta jalur pada *project board*

http://pintar.jatengprov.go.id/

ARDUINO PROGRAM LED

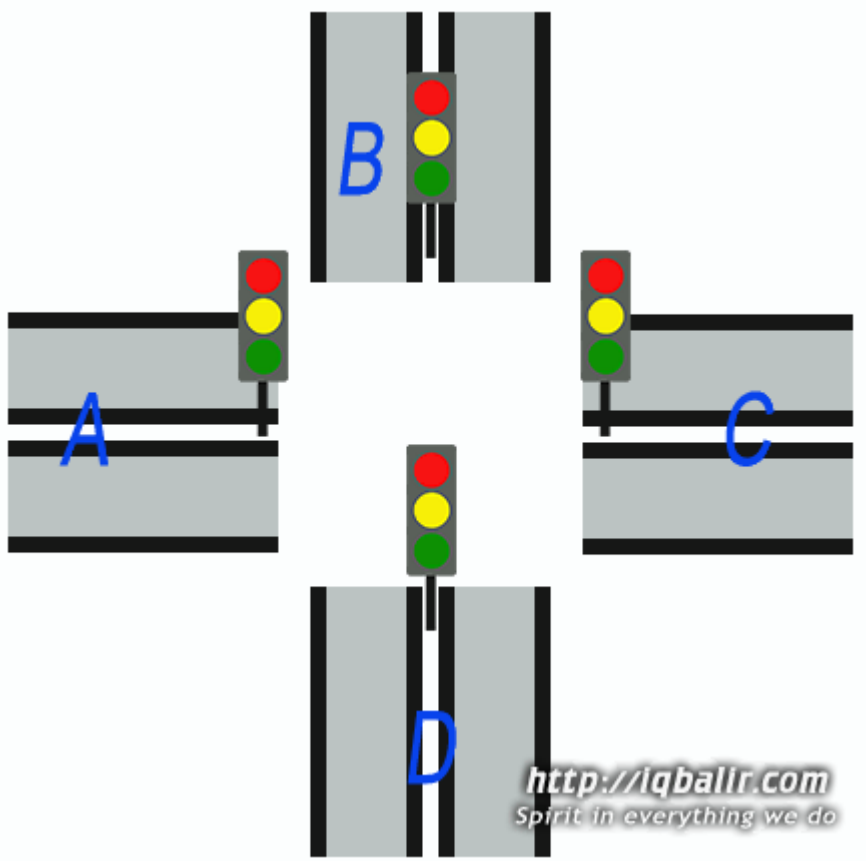
```
//int led = 10;
//#define led 10
const int led = 10;
void setup() {
  pinMode(led, OUTPUT);
}

void loop() {
  digitalWrite(led, 1);     // turn the LED on (HIGH is the voltage level)
  delay(1000);              // wait for a second
  digitalWrite(led, 0);     // turn the LED off by making the voltage LOW
  delay(1000);              // wait for a second
}
```

SUMMARY

- Learn how to upload program in Arduino
- Learn how to program LED Built-In and External LED
- Learn how to use LED, Resistor, Jumper, Breadboard, etc
- Learn how to identify resistance value

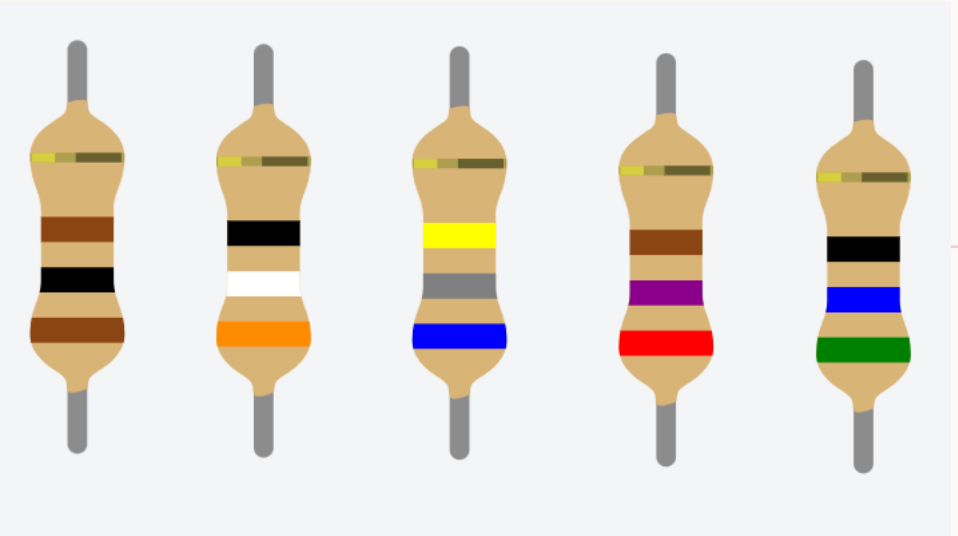
GROUP PRACTICE

1. Membuat program dan rangkaian lampu lalu lintas seperti gambar berikut pada tinkercad.com
2. Kumpulkan dalam bentuk dokumen (.docx) yang berisi :
   - Screenshot fullscreen rangkaian
   - Program
   - Link tinkercad



GROUP PRACTICE

1. Mencari nilai :
   - Resistansi
   - Toleransi
   - Nilai batas maksimum resistor
   - Nilai batas minimum resistor
   - Kesimpulan
2. Kerjakan soal diatas seperti slide 8-9
3. Gabungkan hasil jawaban ini dengan jawaban sebelumnya di dokumen (.docx)



TERIMAKASIH

Semoga ilmunya bermanfaat!