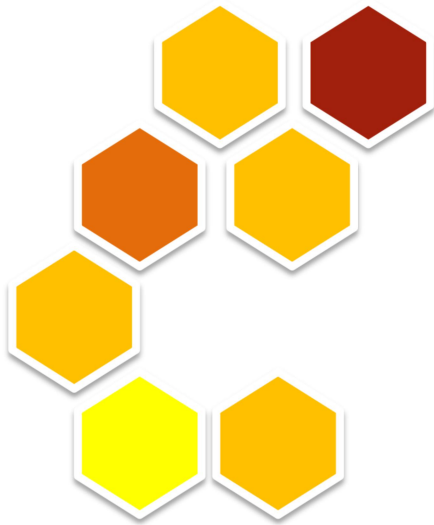


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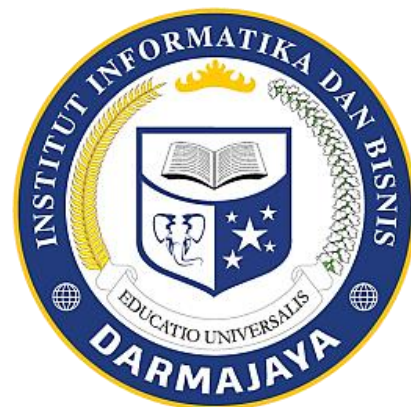


# Modul

# PEMROGRAMAN

Kode Matakuliah: SKO20411

C For Arduino



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**PROGRAM STUDI SISTEM KOMPUTER  
FAKULTAS ILMU KOMPUTER  
INSTITUT INFORMATIKA DAN BISNIS DARMAJAYA**

2022

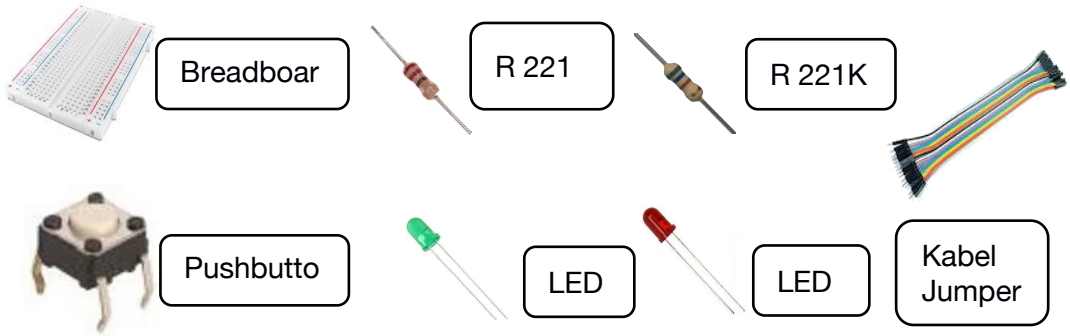
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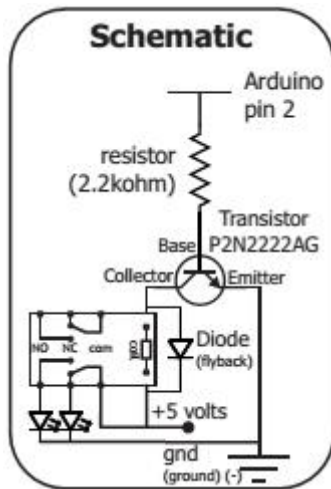
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## Bitwise Operations in C Arduino

### KOMPONEN

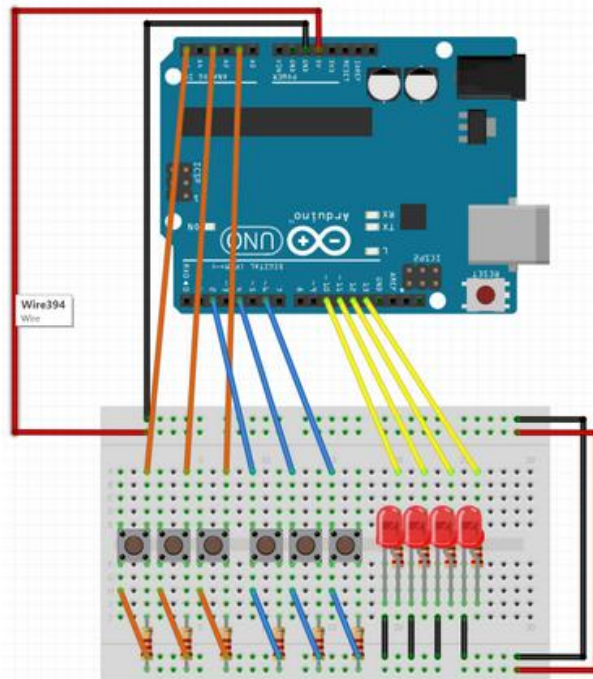


### SKEMA



### PERAKITAN

Hubungkan beberapa LED Ke Arduino pada pin papan breadboard dan pin ground seperti pada gambar.



## KODE PROGRAM

```
int A4pin=A5; //Set all pins as global variables
int A2pin=A3;
int A1pin=A1;

int B4pin=2;
int B2pin=4;
int B1pin=6;

int out8=10;
int out4=11;
int out2=12;
int out1=13;

void setup() {
  Serial.begin(9600); //turn on serial port
  pinMode(A4pin,INPUT); //set all input pins to input
  pinMode(A2pin,INPUT);
  pinMode(A1pin,INPUT);

  pinMode(B4pin,INPUT);
  pinMode(B2pin,INPUT);
  pinMode(B1pin,INPUT);

  pinMode(out8,OUTPUT); //set all output pins to output
  pinMode(out4,OUTPUT);
  pinMode(out2,OUTPUT);
  pinMode(out1,OUTPUT);
}
void loop() {
  int A4val=0; //Set all read values as local variables
  int A2val=0;
  int A1val=0;

  int B4val=0;
  int B2val=0;
  int B1val=0;

  int Aval; //Set A and B values as local variables
  int Bval;

  int outval; //Set output value as local variable

  A4val = digitalRead(A4pin); //Set the variable of input to read value
  A2val = digitalRead(A2pin);
  A1val = digitalRead(A1pin);

  B4val = digitalRead(B4pin);
```

```

B2val = digitalRead(B2pin);
B1val = digitalRead(B1pin);

int A4valcal = A4val; //setting variables for inverting
int A2valcal = A2val;
int A1valcal = A1val;

int B4valcal = B4val;
int B2valcal = B2val;
int B1valcal = B1val;

if (A4val==0){ //inverting signal
  A4valcal = 1;
}

if (A4val==1){
  A4valcal = 0;
}

if (A2val==0){
  A2valcal = 1;
}

if (A2val==1){
  A2valcal = 0;
}

if (A1val==0){
  A1valcal = 1;
}

if (A1val==1){
  A1valcal = 0;
}

if (B4val==0){
  B4valcal = 1;
}

if (B4val==1){
  B4valcal = 0;
}

if (B2val==0){
  B2valcal = 1;
}

if (B2val==1){
  B2valcal = 0;
}

```

```

if (B1val==0){
  B1valcal = 1;
}

if (B1val==1){
  B1valcal = 0;
}

A4val = A4valcal; //setting A and B value to inverted value
A2val = A2valcal;
A1val = A1valcal;

B4val = B4valcal;
B2val = B2valcal;
B1val = B1valcal;

Serial.print("A = "); //printing binary values of A and B
Serial.print(A4val);
Serial.print(A2val);
Serial.println(A1val);

Serial.print("B = ");
Serial.print(B4val);
Serial.print(B2val);
Serial.println(B1val);

Aval=(A4val*4)+(A2val*2)+(A1val*1); //Changing binary value to decimal
value
Bval=(B4val*4)+(B2val*2)+(B1val*1);

outval=Aval+Bval; //calculate total value

Serial.println("total = "); //printing total value in serial port to check
Serial.println(outval);
Serial.println("");

digitalWrite(out8,LOW); //reseting output LEDs
digitalWrite(out4,LOW);
digitalWrite(out2,LOW);
digitalWrite(out1,LOW);

if (outval>=8) { //converting from decimal to binary then output
  digitalWrite(out8,HIGH);
  outval=outval-8;
}

if (outval>=4) {
  digitalWrite(out4,HIGH);
  outval=outval-4;
}

```

```
if (outval>=2) {  
    digitalWrite(out2,HIGH);  
    outval=outval-2;  
}
```

```
if (outval>=1) {  
    digitalWrite(out1,HIGH);  
    outval=outval-1;  
}  
}
```

---

## **LATIHAN**

Lakukan memprogram nyala LED menggunakan fungsi BITWISE dalam bahasa C for Arduino.

LAPORAN HASIL PERCOBAAN: