(2) catching the stat of LED in serial monitor

```
void setup ()
{
  // put your setup code here, to run once
  pinMode (LED_BUILTIN, OUTPUT);
  serial.begin (9600);
}
void loop()
{
  digital write (LED_BUILTIN, HIGH);
```

```
Serial.println(digitalRead(LED_BUILTIN));
delay(1000);
digitalWrite(LED_BUILTIN, LOW);
Serial.println(digitalRead(LED_BUILTIN));
delay(1000);
}
```

③

//Reading 0 & 1 from Serial Monitor & passing it to LED to blink if it is 1 & off if it is 0 & any other than 0 & 1 print invalid choice.

```
int ch;
void setup()
{
  Serial.begin(9600);
}
void loop()
{
  Serial.println("Enter your D. to off the LED");
  Serial.println("1. to on the LED");
  Serial.println("Enter your choice");
  ch = Serial.read()
  if (Serial.available() > 0)
  {
    int ch=0;
    ch = Serial.parseInt();
    Serial.println(ch);
```

```
if(ch==2)
{  digitalWrite(LED_BUILTIN, LOW);
}
else
{
  digitalWrite(LED_BUILTIN, HIGH);
}
}
}
```

// Reading ~~from~~ 'on' & 'OFF' from serial Monitor
if 'on' => glow LED
if 'OFF' => OFF LED.
any other input => invalid choice.

// glow 3 LED's together by connecting to Bread Board.

// glow 3 LED's on By one ~~by com~~ using breadBoard.

// when 1 is typed = glow 1st LED
when 2 is pressed = glow 2nd LED
when 3 is pressed = glow 3rd LED

④ Reading 'on' & 'OFF' from serial Monitor
if 'on' => glow LED
if 'OFF' => OFF LED
any other input => invalid choice.

Code

```
void setup()
{
```

```
pinMode (LED_BUILTIN, OUTPUT);
Serial.begin (9600);
}
void loop()
{
    String stat;
    State = Serial.readString();
    if (stat == "on")
    {
        digitalWrite (LED_BUILTIN, HIGH);
        Serial.println ("on");
    }
    else if (stat == "of")
    {
        digitalWrite(LED BUILTIN, LOW);
        Serial.println("off");
    }
}
```

⑤ glow 3 LED's together by connecting to breadboards.

```
void setup()
{
    pinMode (LED_BUILTIN, OUTPUT);
}
void loop()
{
    digital write (LED_BUILTIN, HIGH);
    delay(1000);
    digital write (LED_BUILTIN, LOW);
```

```
delay (1000);
}
```

(6) glow 3 LED's on by one using bread board.

```
void setup ()
{ pin Mode (13, OUTPUT);
  pin Mode (12, OUTPUT);
  pin Mode (11, OUTPUT);
}
void loop()
{
    digital write (13, HIGH);
    delay (1000);
    digital write (13, LOW);
    delay (1000);
    digital write (12, HIGH);
    delay (1000);
    digital write (12, LOW);
    delay (1000);
    digital write (11, HIGH);
    delay (1000);
    digital write (11, LOW);
    delay (1000);
}
```

(7) when 1 is typed = glow first LED
when 2 is typed = glow 2nd LED
when 3 is typed = glow 3rd LED
when 0 is typed = ~~glow~~ OFF all LEDs.

} Same code can be used for RGB LED

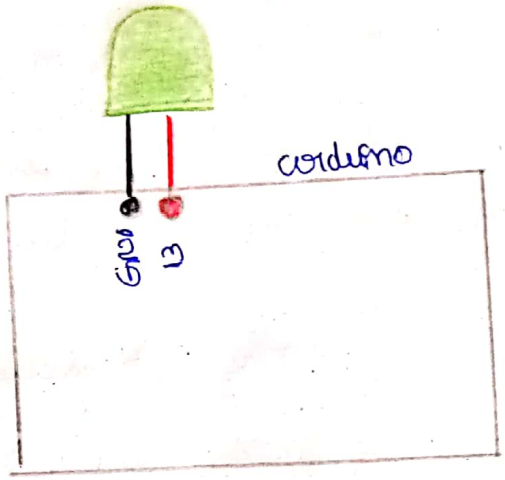
```
void setup()
{
    pinMode(13, OUTPUT);
    pinMode(12, OUTPUT);
    pinMode(8, OUTPUT);
    Serial.begin(9600);
    Serial.println("0.OFF");
    Serial.println("1.RED");
    Serial.println("2.Green");
    Serial.println("3.Blue");
}

void loop()
{
  while(Serial.available() > 0)
  {
    int data = Serial.parseInt();
    Serial.println(data);

    if(data == 0)
    {
      digitalWrite(13,LOW);
      digitalWrite(12,LOW);
      digitalWrite(8,LOW);
    }
    else if(data == 1)
    {
      digitalWrite(13,HIGH);
    }
    else if(data == 2)
    {
      digitalWrite(12,HIGH);
    }
```

```
else if (data == 3)
{
    digitalWrite(8, HIGH);
}
}
```

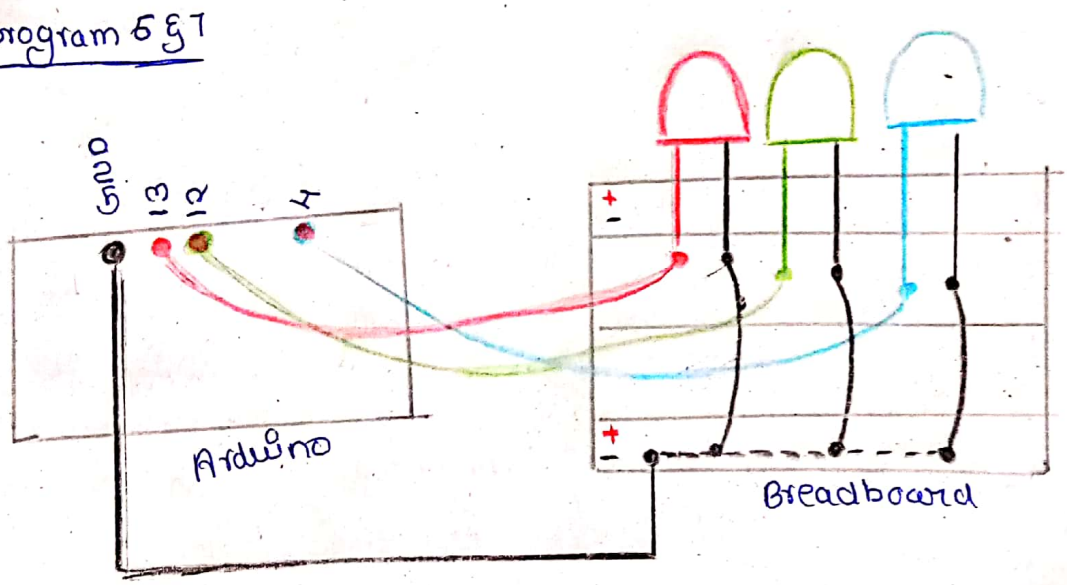
LED (Light Emitting diode)

NOTE:- There are 7 programs & the fritzing diagram for 7 programs are given below.

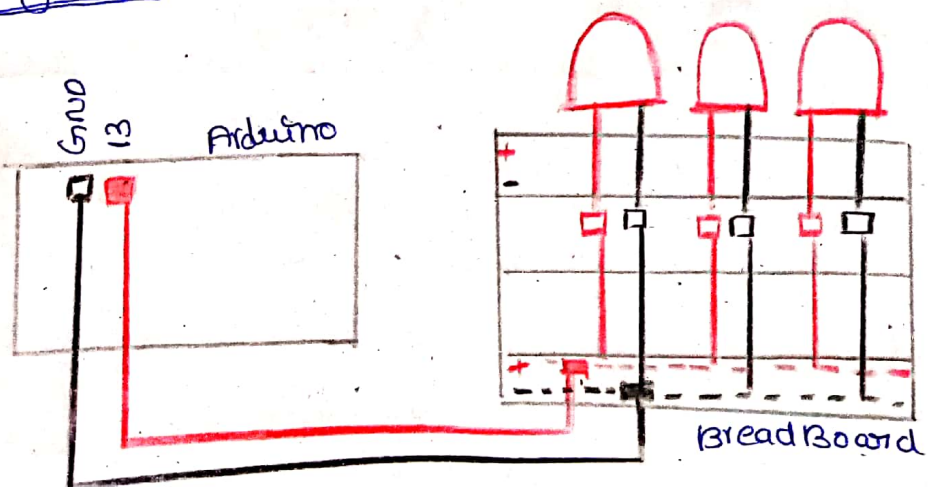
program 1, 2, 3, 4



program 6 & 7



program 5



LED

* LED (LIGHT EMITTING DIODE) is a semiconductor device which can emit light when an electric current passes through it.

applications of LED

① TV Backlighting

* A TV's Backlight is the major power consuming source.
* uses of LED's can give an efficient power reduction
* using LED's will be cost effective
* using LED's directly behind the display provides better contrast.

② Smartphone backlighting

* With the use of LED, the backlight design of the smartphone can be thinner and be made within a low cost.
* The price of LED may vary according to the smartphone display.
* Due to the lower output voltage, they ensure longer Battery life.

③ LED displays

* LED displays are common nowadays, they are used outdoors like storage signs, billboards, road signs, etc.
* In sign boards which has multiple languages conveying signals, the use of more LEDs will be beneficial in terms of

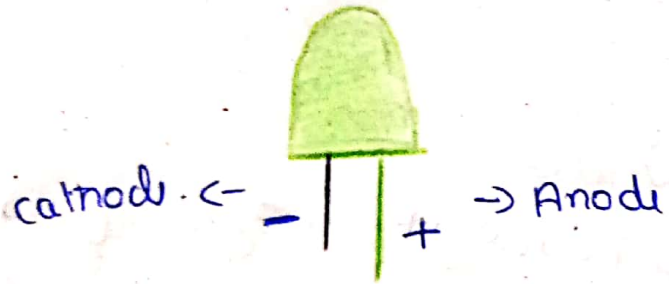
less power consumption.

④ Automotive lighting

* Uses of LEDs in the automotive industry is growing.
* With LED's energy is saved & there is clearer visibility
* LED lighting can improve the safety of pedestrians & driver as it enhances the visibility when it is ON, OFF and dimmed in any part of the journey.

~~⑤ Dimming of lights~~

LED PINOUT DIAGRAM



* The 2 PIN LED has 2 PIN
* cathode (-) :- which has to be connected to ground of arduino
* Anode (+) :- which has to be connected to any of the digital PIN of Arduino