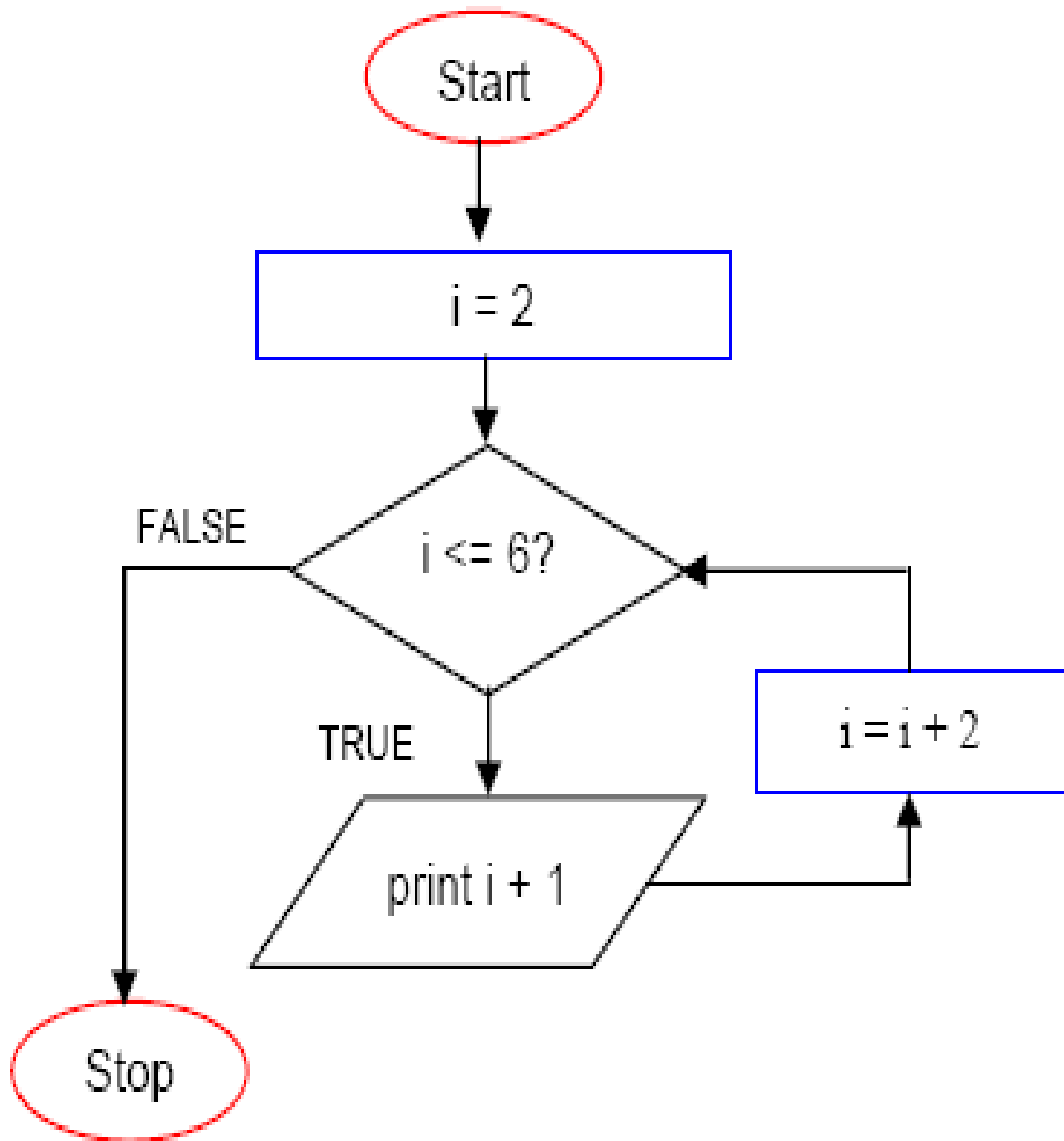




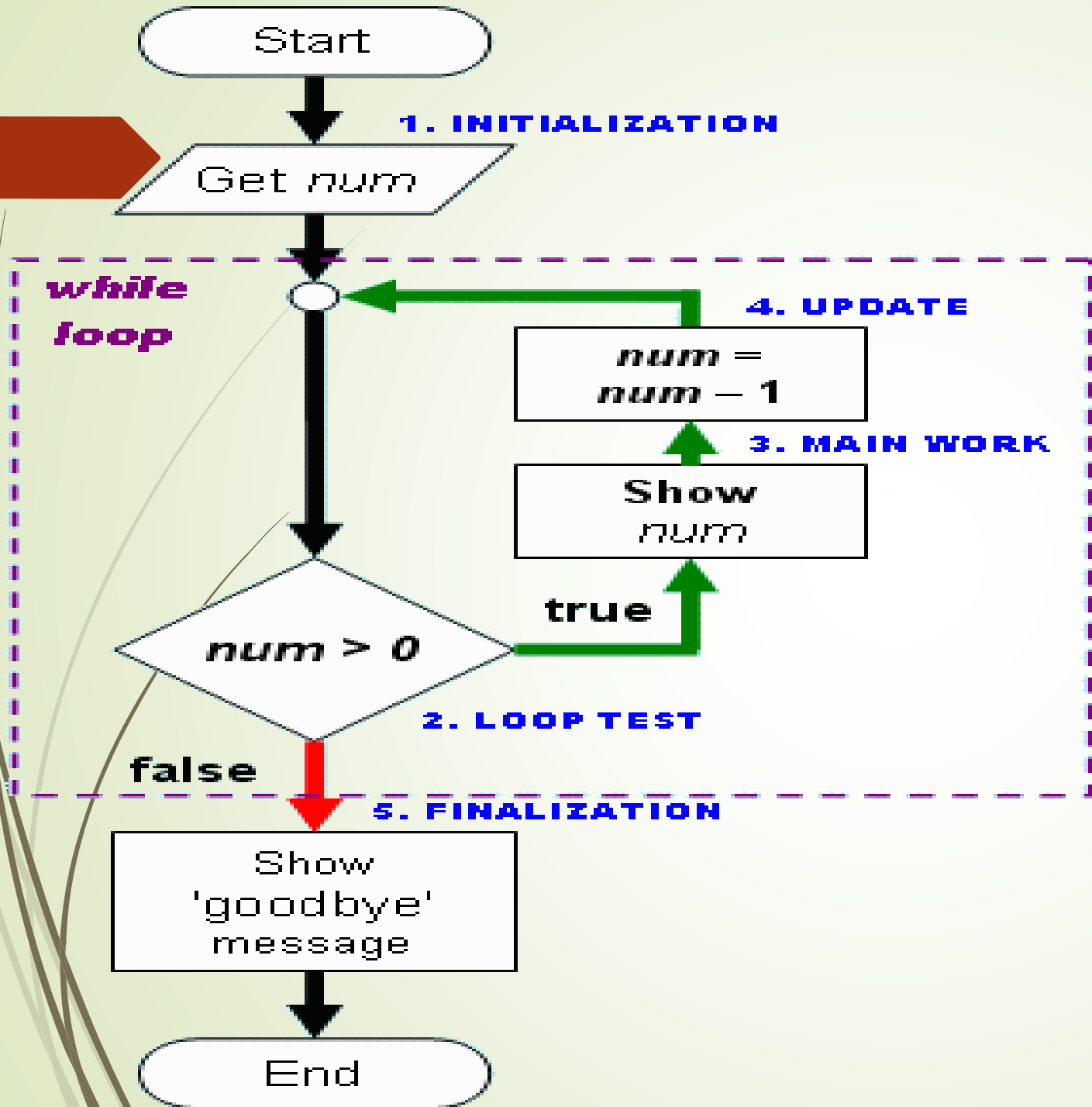
LOOPING

- **FOR**
- **WHILE**
- **DO WHILE**

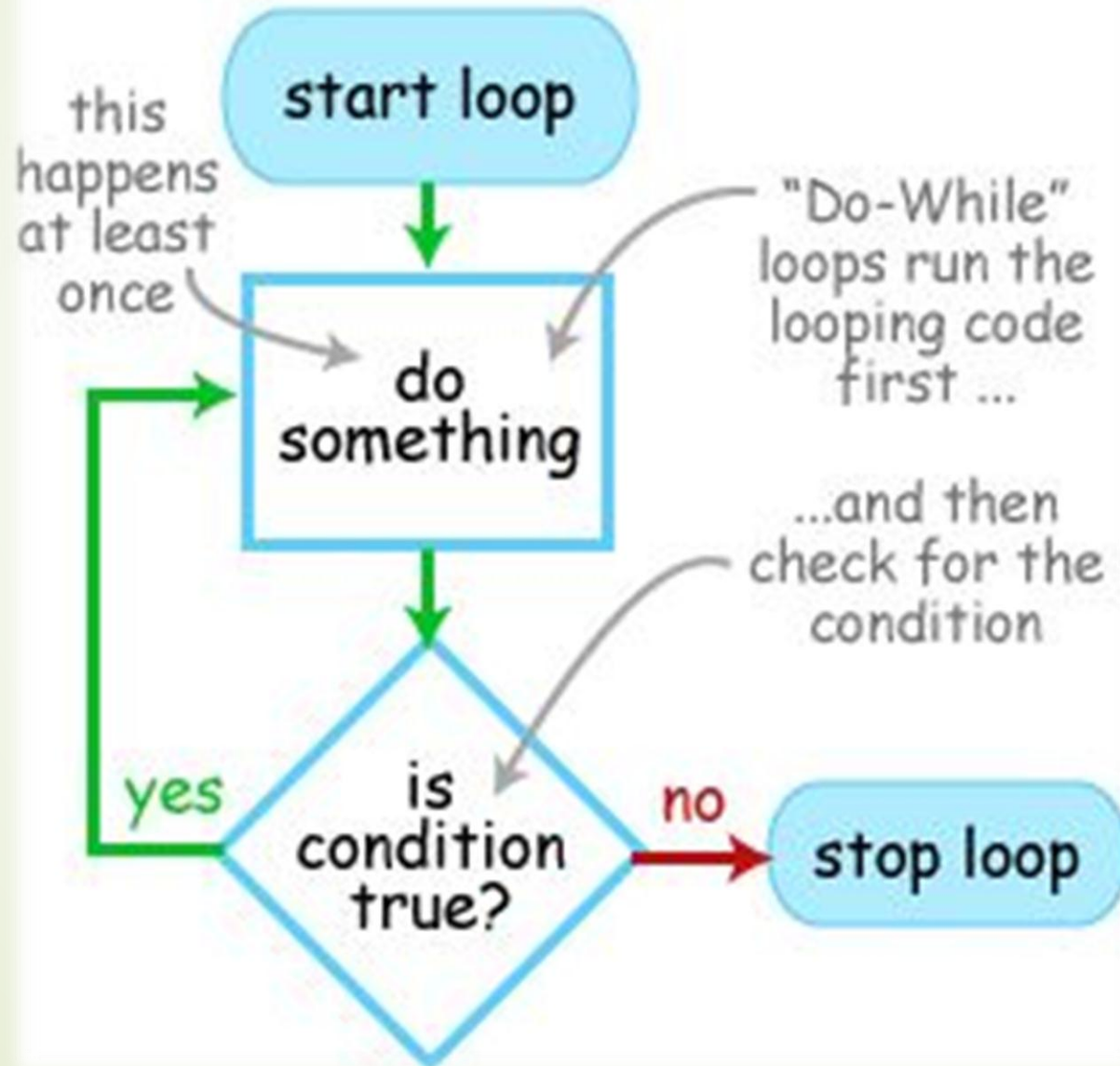
FOR LOOP



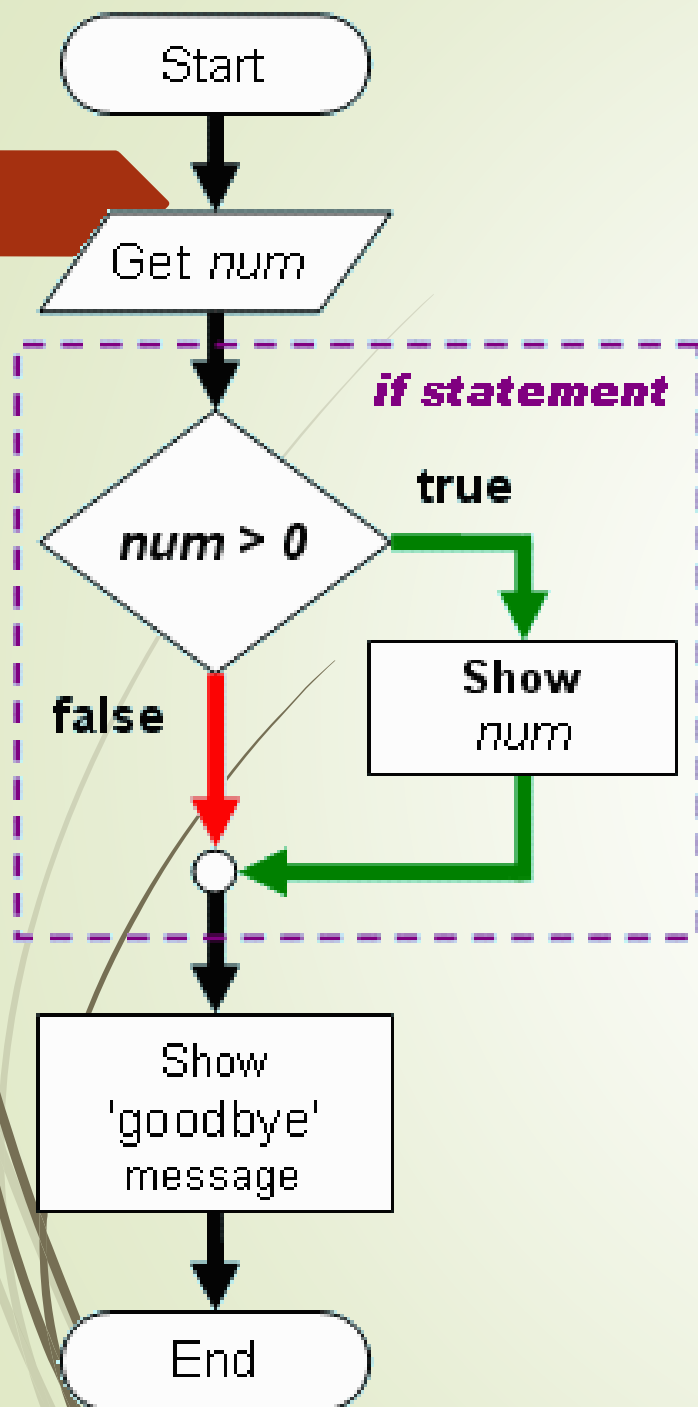
WHILE LOOP



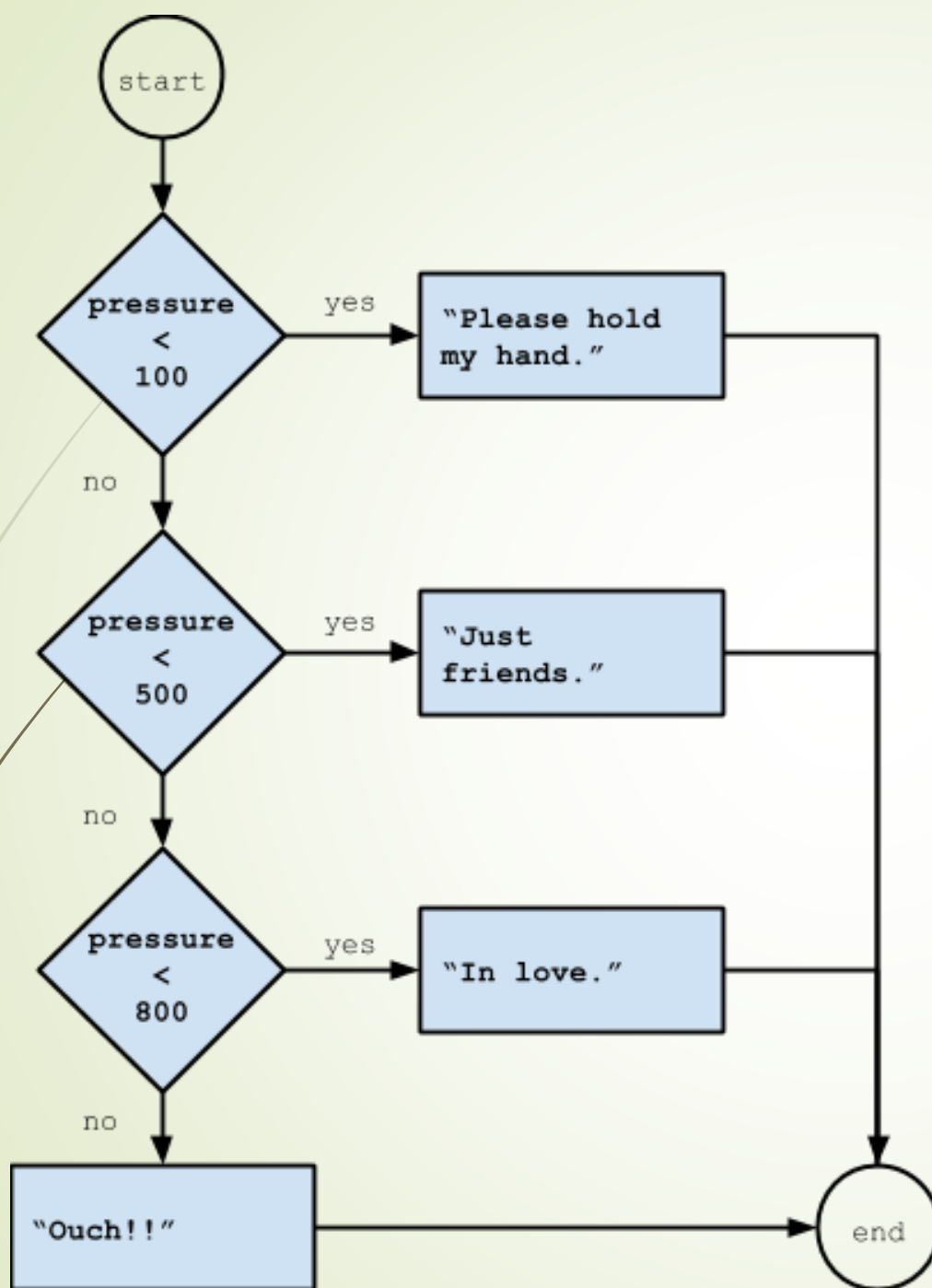
Do-While Loop



DO WHILE
LOOP



IF STATEMENT



NESTED IF ELSE

DIFFERENT TYPES OF LOOP

Loop Type	Description
While loop	Repeats a statement or group of statements while a given condition is true. It tests the condition before executing the loop body.
For loop	Execute a sequence of statements multiple times and abbreviates the code that manages the loop variable.
Do.....While loop	Like a while statement, except that it tests the condition at the end of the loop body
Nested loop	You can use one or more loop inside any another while, for or do..while loop.

How to write code in Arduino?

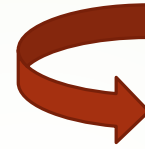
- Arduino only use #C computer language
- Some application may use Matlab as language
- Arduino also can built in GUI
- But , the basic language in Arduino we will explore in #C only

AGREE?

I'm Programmer

1

DOWNLOAD the Arduino IDE
<https://www.arduino.cc/en/Main/Software>



Choose Windows zip for non-admin
install

2

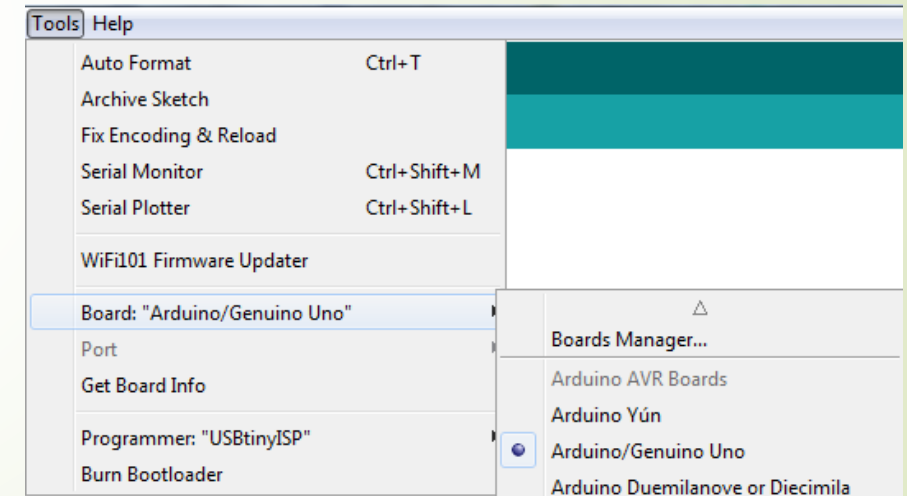
Extract the File and open icon 

3

Ensure your software connect to real board and
port(check connection)



Select Tool → your Arduino
Select Port → your Port



PORT and BOARD will appear when the
connection to power supply is success



I'm Programmer

4

There are several example in the software, you can practice.



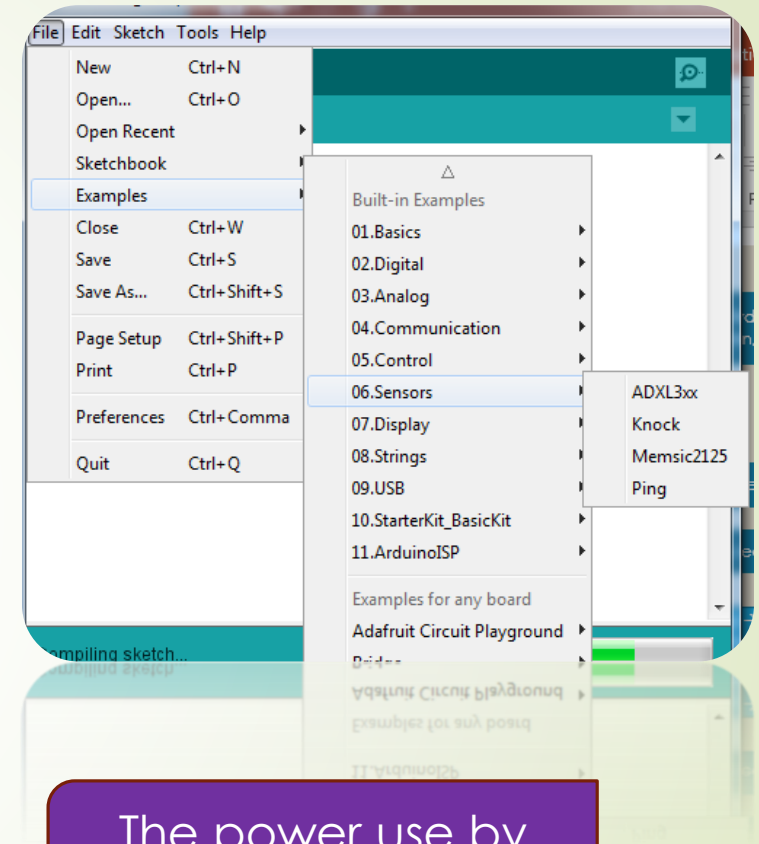
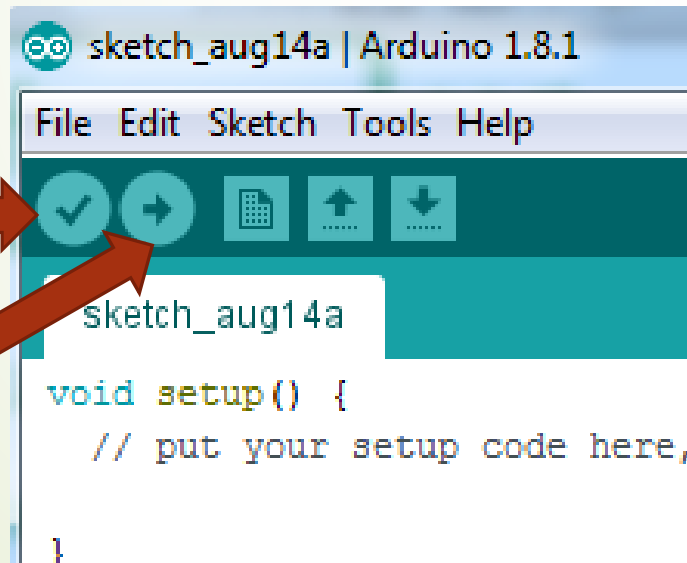
Select File → Choose example
→ Choose Basic
→ Choose Blink

5

Built and Compile button

Built Button

Compile Button



The power use by Arduino is 5V



I'm Programmer



When you have done UPLOAD coding to Arduino it will appear "Done Uploading"

Now, lets try by your own.

- Select Example → Choose Blink
- Compile/Upload Coding
- Make sure step 3 and 5 is complete
- You can look the result at your arduino LED or Serial Monitor

```
// the loop function runs over and over again forever
void loop() {
  digitalWrite(LED_BUILTIN, HIGH); // turn the LED on (HIGH is the
  delay(1000); // wait for a second
  digitalWrite(LED_BUILTIN, LOW); // turn the LED off by making
  delay(1000); // wait for a second
}
```

Done uploading.

Sketch uses 928 bytes (2%) of program storage space. Maximum is 32,256
Global variables use 0 bytes (0%) of dynamic memory, leaving 2,032 bytes



To check the result of Serial.print

I'm Programmer

If you open new sketch of Arduino you will find two main function

```
void setup() {  
  // put your setup code here, to run once:  
  
}  
  
void loop() {  
  // put your main code here, to run repeatedly:  
  
}
```



1.CREATE DECLARATION

What's type of declaration?

int

float

double

To hold piece of data

IDENTIFY MAIN FUNCTION

LET'S DIY THE CODING

```
int pin1=13; //13 is the pin number on board
```

```
void setup() { //first main loop
```

```
  Serial.begin(9600); // setup serial
```

```
}
```

```
void loop() { //second main loop
```

```
}
```

PRECAUTION!!
Always remember to put the serial
setup

IDENTIFYING THE PINMODE

LET'S DIY THE CODING

```
int pin1=13; //13 is the pin number on board
```

```
void setup() { //first main loop  
  pinMode(13, OUTPUT);  
  Serial.begin(9600); // setup serial  
}
```

```
void loop() { //second main loop  
  digitalWrite(13, HIGH); // what will the pin on board do  
  delay(500); //delay the time taken  
  digitalWrite(13, LOW);  
  delay(500);  
}
```

pinMode is how we tell the Arduino what should happen at that pin number
(_,OUTPUT) → The component will produce “output action”
(_,INPUT) → The component will show the resistance value show in SERIAL MONITOR

What is “digitalWrite” AND “delay”

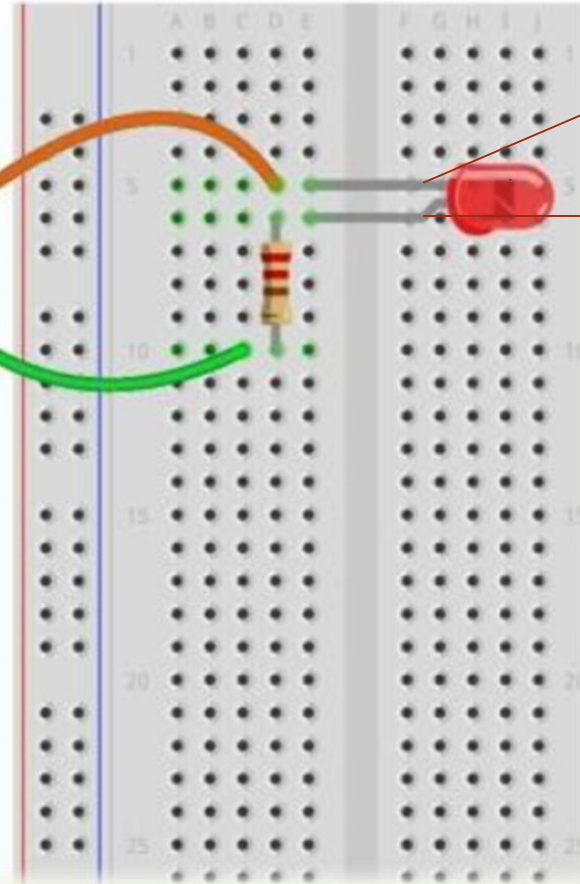
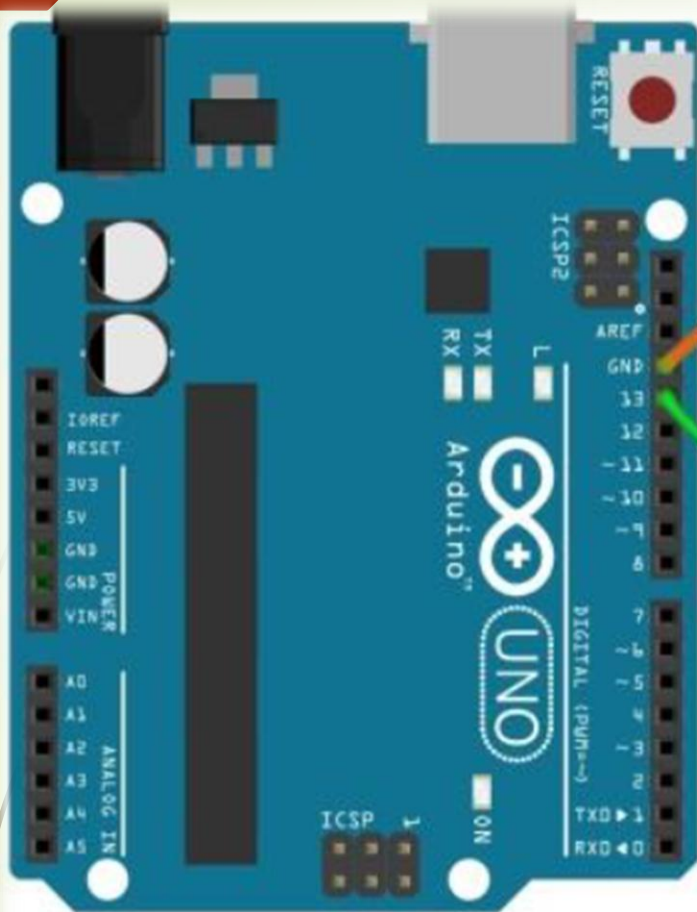
```
int pin1=13; //13 is the pin number on board
```

```
void setup() { //first main loop  
  pinMode(13, OUTPUT); //declaration pin and their functionality  
  Serial.begin(9600); // setup serial  
}
```

```
void loop() { //second main loop  
  digitalWrite(13, HIGH);  
  delay(500);  
  digitalWrite(13, LOW);  
  delay(500);  
}
```

“digitalWrite” allow the voltage/action taken
“delay” is the time taken to the action take place.
1000 mili seconds = 1second

LET'S DIY THE CODING



CATHODE (-)

ANODE (+)

ADD MORE LED AND
PROGRAMMING

What is “digitalRead”?

LET'S DIY THE CODING

```
void setup() {  
  pinMode(8,INPUT);  
  Serial.begin(9600);  
}
```

```
void loop() {  
  if (digitalRead(PUSHBTN) == HIGH)  
  {  
  }  
  else  
  {  
  }  
}
```

“digitalRead” read the sensor input

LET'S DIY THE CODING

ADD MORE LED,PUSH
BUTTON AND
PROGRAMMING

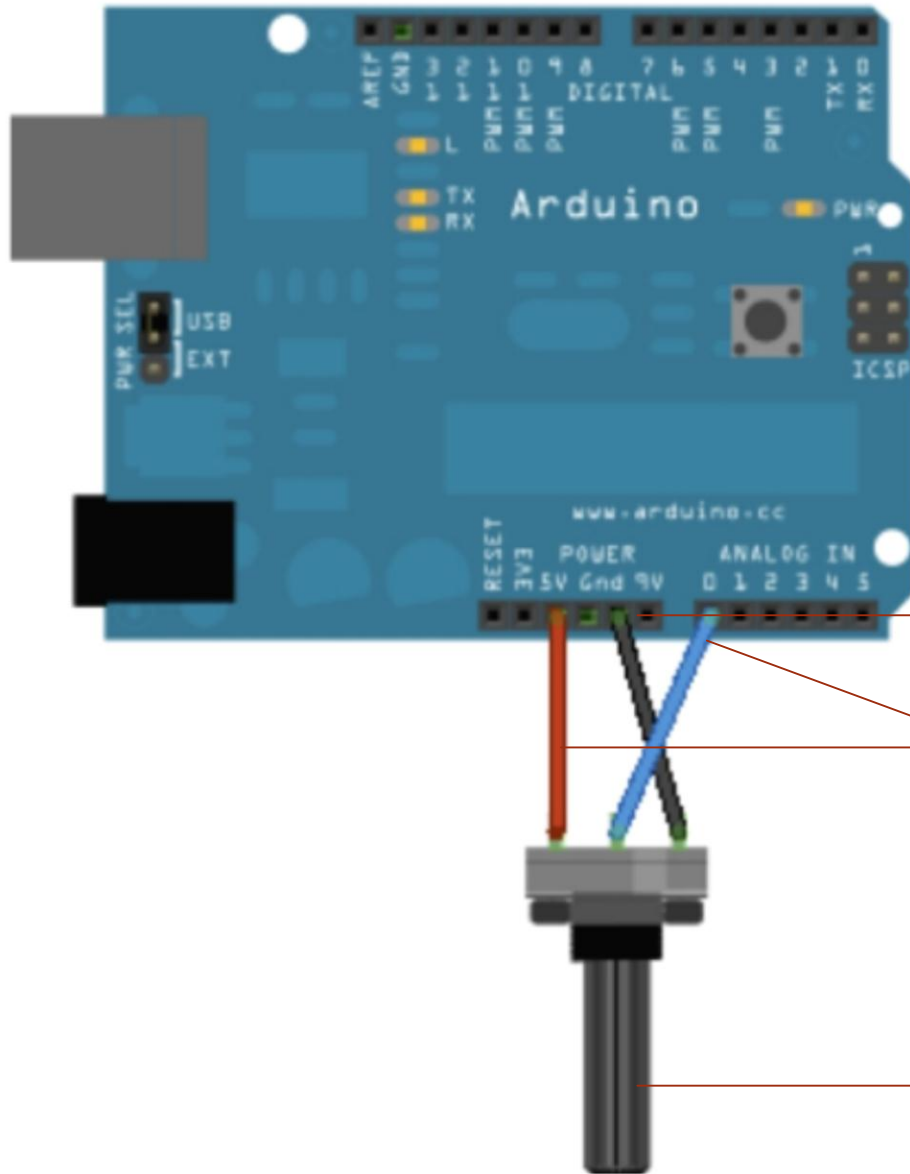
LET'S DIY THE CODING

WHAT IS “analogRead”?

```
void setup() {  
  // put your setup code here, to run once:  
  Serial.begin(9600);  
}  
  
void loop() {  
  // put your main code here, to run repeatedly:  
  int sensorValue= analogRead(A0);  
  Serial.println(sensorValue);  
  delay(500);  
}
```

“analogRead” akan membaca bacaan resistance yang terhasil daripada sensor
“Serial.println” akan print kan nilai sensor di serial monitor

LET'S DIY THE CODING



Ground pin

5v pin

Analog A0 PIN

PotentialMeter

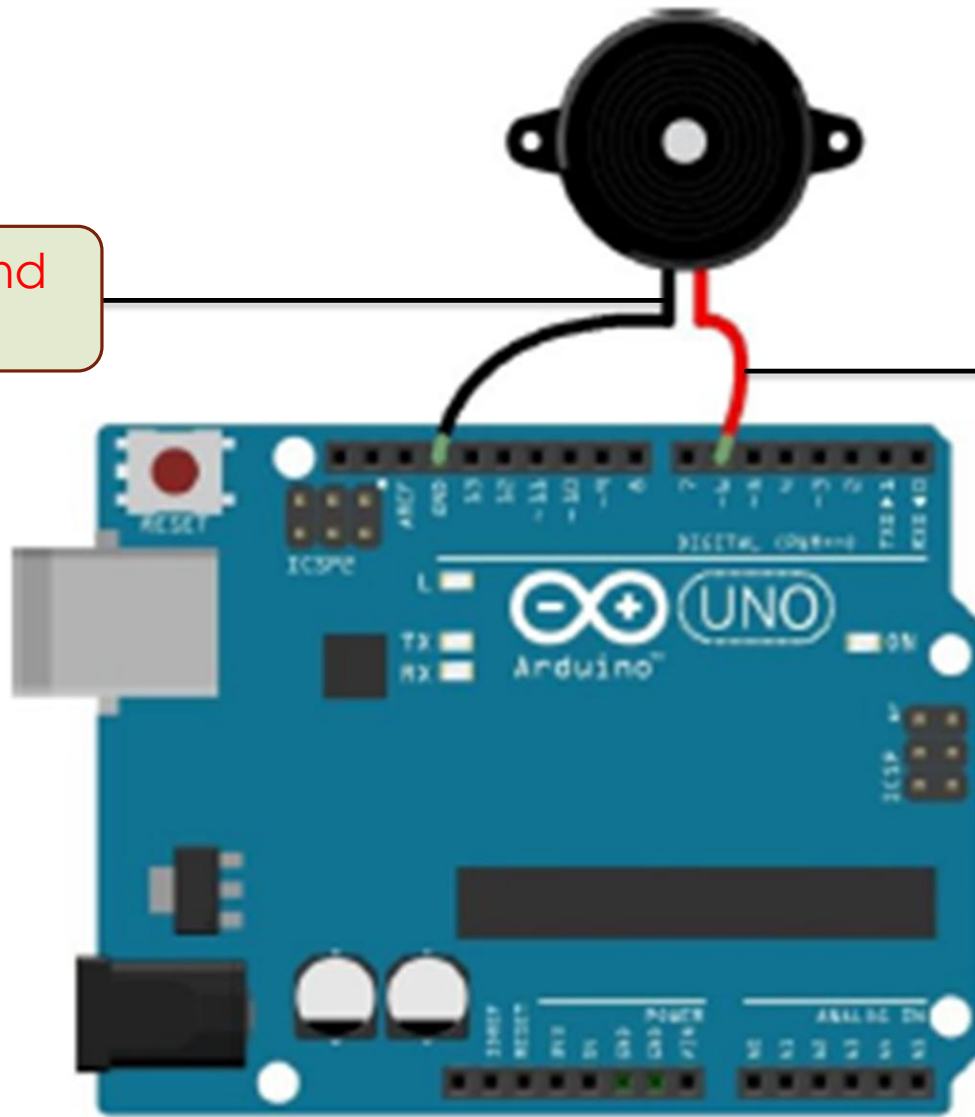
LET'S DIY THE CODING

LETS DO SOME TUTORIAL TO BE MORE
UNDERSTAND



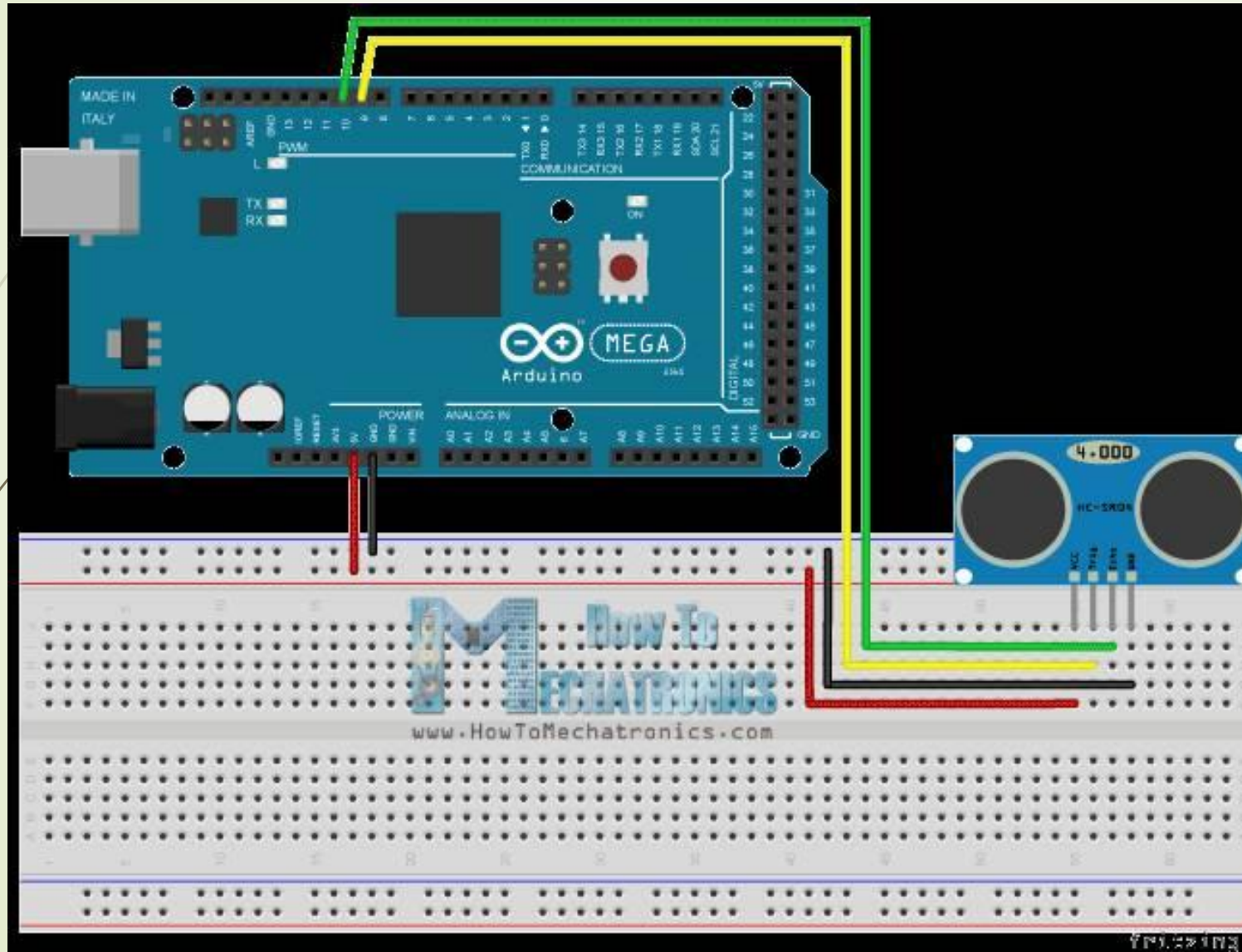
BUZZER

buzzer can only connected to pin 3, 5, 6, 19 and 11 and set as output. You can notice that beside these pin with ~ sign.



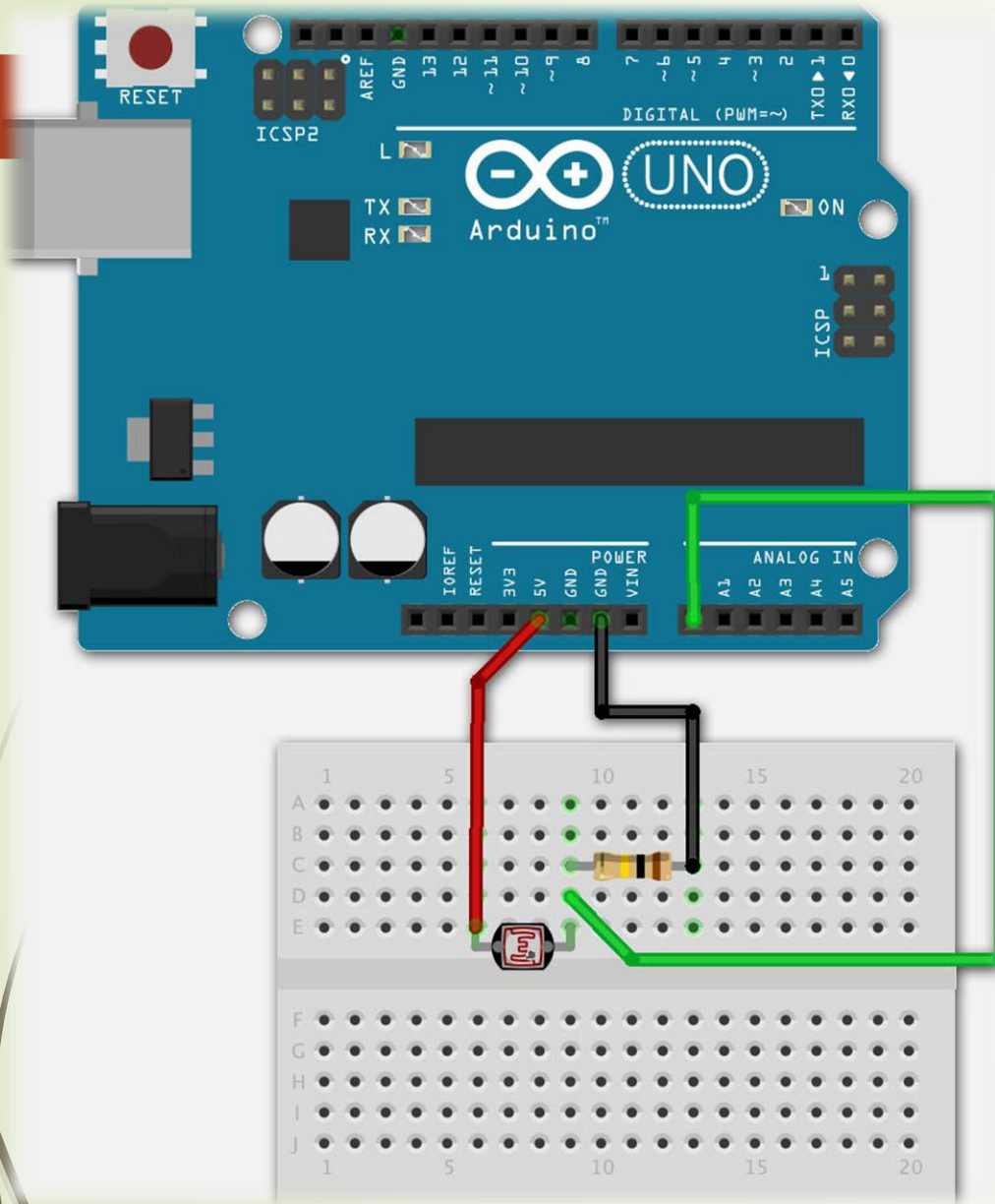
If use the small buzzer , the ground will be Cathode (-) and the Anode (+) will attach to the pin on board


ULTRASONIC SENSOR



VCC = PIN 5V
TRIG = PIN ~9
Echc= PIN 10
Gnd = PIN
GROUND

Light Dependent Resistor





“ILMU YANG TIDAK
DIAMALKAN DAN
DIKONGSI,
IBARAT AIR BERTAKUNG,
SEMAKIN LAMA SEMAKIN
MEMBUSUK”