

## Arduino programming language

$$500 \cancel{\text{ms}} = 0.5 \text{ s}$$

```
for (int i=1; i<=3; i= i+1)  
{  
    digitalWrite(3, HIGH HIGH);  
    delay(300);  
    digitalWrite(3, LOW);  
    delay(300);  
}
```

PinMode() → Configures the specified Pin to behave either as an input or an output.

digitalWrite() → writes a ~~High or~~

HIGH or a LOW value to a digital pin. If the pin has been configured as an OUTPUT with PinMode(), its voltage will be set to the 5V for HIGH & 0V for LOW

If the pin is configured as an INPUT digitalWrite() will enable (HIGH) or disable (LOW) the internal pullup on the input pin. It is recommended to set the PinMode() to INPUT\_PULLUP to enable the internal pull-up resistor.

digitalWrite(pin, value)

Arduino pin no → HIGH or LOW  
DigitalRead() → Reads the value from a specified digital pin, either @ High HIGH or LOW

digitalRead(pin)

pin → the number of the digital pin you want to read (int)

analogRead() → Reads the value from the specified analog pin

~~analogPin~~ analogRead(pin)

pin → the name of the analog input pin to read from (A0 to A5 on most boards)

It Returns the analog reading on the pin. Although it is limited to the resolution of the analog to digital converter (0 - 1023 for 10 bits) Data types int  
or  $\frac{5V}{1023}$   
analogWrite() →

writes an analog value (PWM wave) to a pin. Can be used to light a LED at varying brightness or drive a motor at various speeds. After a call to analogWrite(), the pin

will generate a steady rectangular wave of the specified duty cycle until the next call to analogWrite()  
(or a call to digitalRead() or digitalWrite() on the same pin)

analogWrite(pin, value)

pin → the arduino pin to write to  
Allowed data type: int

value → the duty cycle between 0 (always off) and 255 (always on)  
data type: int

Serial

used for communication between the Arduino board and a computer or other devices.

UNO → serial pins  
0(RX), 1(TX)

Pin → Input → Read  
Pin → Output → Write

## Variable types

# int → 0, 1, 2, -1, -2, ...

floats → 0.7, 0.8, -1.2

Strings → "hello world"

char → 'H', 'D', 'A'

# serial.begin(9600)

↑ speed ↓ data communicate

$$\# \text{ voltage} = \left(\frac{5}{1023}\right) \times \text{sensor value}$$

analogRead → 0 - 1023

analogWrite → 0 - 255

voltage

$$\# \text{ write value} = \left(\frac{255}{1023}\right) \times \text{read value}$$

## Wire library

This library allows to communicate with I<sub>2</sub>C/TWI devices.

## bool

A bool holds one of two values "true" or "false" (Each bool occupies one byte of memory)

bool var = val;

\* Variable name

the value to assign to that variable.

## lcd.begin()

Initializes the interface to the LCD screen, specifies the dimensions (width and height) of the display.

lcd.begin (cols, rows)

number of columns

number of rows display has.

columns that the display has

const int

byte

A byte stores an 8 bit unsigned number from 0 to 255

byte var = val