**FUNCTIONS**

For controlling the Arduino board and performing computations.

**Digital I/O**

digitalRead()

[Digital I/O]

Description

Reads the value from a specified digital pin, either HIGH or LOW.

Syntax

digitalRead(pin)

Parameters

pin: the number of the digital pin you want to read

Returns

HIGH or LOW

Example Code

Sets pin 13 to the same value as pin 7, declared as an input.

int ledPin = 13; // LED connected to digital pin 13

int inPin = 7; // pushbutton connected to digital pin 7

int val = 0; // variable to store the read value

void setup()

{

pinMode(ledPin, OUTPUT); // sets the digital pin 13 as output

pinMode(inPin, INPUT); // sets the digital pin 7 as input

}

void loop()

{

val = digitalRead(inPin); // read the input pin

digitalWrite(ledPin, val); // sets the LED to the button's value

}

Notes and Warnings

If the pin isn’t connected to anything, digitalRead() can return either HIGH or LOW (and this can change randomly).

The analog input pins can be used as digital pins, referred to as A0, A1, etc.

digitalWrite()

pinMode()

**Analog I/O**

analogRead()

analogReference()

analogWrite()

**Zero, Due & MKR Family**

analogReadResolution()

analogWriteResolution()

**Advanced I/O**

noTone()

pulseIn()

pulseInLong()

shiftIn()

shiftOut()

tone()

**Time**

delay()

delayMicroseconds()

micros()

millis()

**Math**

abs()

constrain()

map()

max()

min()

pow()

sq()

sqrt()

**Trigonometry**

cos()

sin()

tan()

**Characters**

isAlpha()

isAlphaNumeric()

isAscii()

isControl()

isDigit()

isGraph()

isHexadecimalDigit()

isLowerCase()

isPrintable()

isPunct()

isSpace()

isUpperCase()

isWhitespace()

**Random Numbers**

random()

randomSeed()

**Bits and Bytes**

bit()

bitClear()

bitRead()

bitSet()

bitWrite()

highByte()

lowByte()

**External Interrupts**

attachInterrupt()

detachInterrupt()

**Interrupts**

interrupts()

noInterrupts()

**Communication**

Serial

Stream

USB

Keyboard

Mouse

**VARIABLES**

**Arduino data types and constants.**

**Constants**

Floating Point Constants

Integer Constants

HIGH | LOW

INPUT | OUTPUT | INPUT\_PULLUP

LED\_BUILTIN

true | false

**Conversion**

(unsigned int)

(unsigned long)

byte()

char()

float()

int()

long()

word()

**Data Types**

String()

array

bool

boolean

byte

char

double

float

int

long

short

size\_t

string

unsigned char

unsigned int

unsigned long

void

word

**Variable Scope & Qualifiers**

const

scope

static

volatile

Utilities

**PROGMEM**

sizeof()

**STRUCTURE**

**The elements of Arduino (C++) code.**

**Sketch**

loop()

setup()

**Control Structure**

break

continue

do...while

else

for

goto

if

return

switch...case

while

**Further Syntax**

#define (define)

#include (include)

/\* \*/ (block comment)

// (single line comment)

; (semicolon)

{} (curly braces)

**Arithmetic Operators**

% (remainder)

\* (multiplication)

+ (addition)

- (subtraction)

/ (division)

= (assignment operator)

**Comparison Operators**

!= (not equal to)

< (less than)

<= (less than or equal to)

== (equal to)

> (greater than)

>= (greater than or equal to)

**Boolean Operators**

! (logical not)

&& (logical and)

|| (logical or)

**Pointer Access Operators**

& (reference operator)

\* (dereference operator)

**Bitwise Operators**

& (bitwise and)

<< (bitshift left)

>> (bitshift right)

^ (bitwise xor)

| (bitwise or)

~ (bitwise not)

**Compound Operators**

%= (compound remainder)

&= (compound bitwise and)

\*= (compound multiplication)

++ (increment)

+= (compound addition)

-- (decrement)

-= (compound subtraction)

/= (compound division)

^= (compound bitwise xor)

|= (compound bitwise or)