REFERENCE

ARDUINO SKETCH STRUCTURE

```
//variables
void setup {
        //code that is called once
        //declare inputs/outputs with pinMode(...)
}
void loop {
        //code that is repeated indefinitely
}
```

ARDUINO READ/WRITE FUNCTIONS

WRITING

digitalWrite(pinNum, HIGH/LOW)

analogWrite(pinNum, value)

- value is a number between 0-255
- only use digital pins with a ~

READING

digitalRead(pinNum)

- returns HIGH or LOW

analogRead(pinNum)

- returns a number 0-1023
- only use analog input pins

ARDUINO REFERENCE

Structure

setup()

loop()

Control Structures

if

if…else

for

return

Further Syntax

; (semicolon)

{} (curly braces)

// (single line comment)

/* */ (multi-line comment)

#define

#include

Arithmetic Operators

= (assignment operator)

+ (addition)

- (subtraction)

* (multiplication)

/ (division)

Variables

Constants

HIGH | LOW

INPUT | OUTPUT |

Data Types

void

boolean

char

byte

int

long

float

double

String - object

array

Functions

Digital I/O

pinMode()

digitalWrite()

digitalRead()

Analog I/O

analogRead()

analogWrite() - *PWM*

Time

millis()

micros()

delay()

Communication

Serial.println()

Stream

% (modulo)

Comparison Operators

== (equal to)

!= (not equal
to)

< (less than)

> (greater than)

<= (less than or
equal to)

>= (greater
than or equal
to)

Boolean Operators

&& (and)

|| (or)

! (not)

Compound Operators

++ (increment)

-- (decrement)

+= (compound
addition)

-= (compound
subtraction)

*= (compound
multiplication)

/= (compound
division)

USEFUL NEOPIXEL FUNCTIONS

strip.**begin**()

-   all once in the setup

strip.**show**()

-   call everytime you want to refresh LEDs after pin colors have been set

strip.**setPixelColor**(pinNumber, redValue, greenValue, blueValue)

-   color values are 0 to 255

strip.**setBrightness**(brightnessValue)

-   brightness is between 0 (off) and 255 (brightest)

NEOPIXEL SKETCH EXAMPLE

edit code in yellow

```
#include <Adafruit_NeoPixel.h>
#define PIN 2
Adafruit_NeoPixel strip = Adafruit_NeoPixel(5, PIN, NEO_GRB + NEO_KHZ800);

void setup() {
  strip.begin();
  strip.show();
}

void loop() {
  //functions go here
  strip.setPixelColor(0, 255, 0, 0);
  strip.setBrightness(150);
  strip.show();
}
```