BARSicle

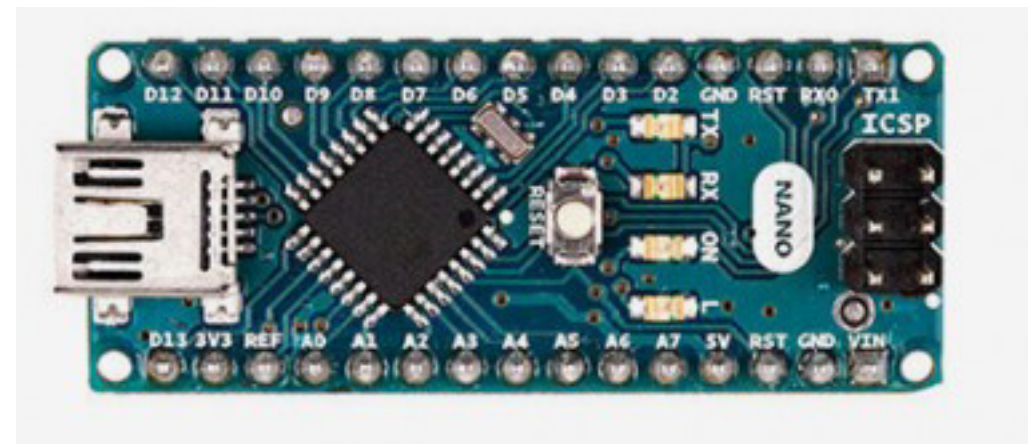## 2. Arduino
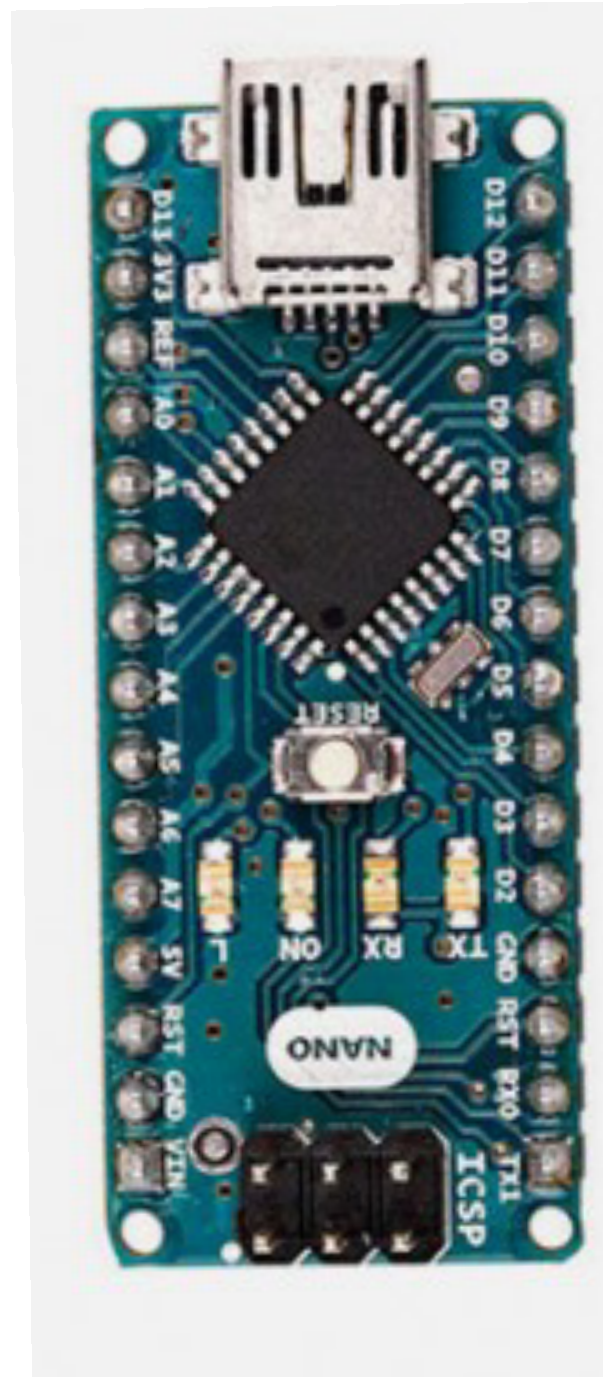## The Nano

This is an Arduino Nano

- A small 16MHz microcomputer

  - USB 5V/20mA

  - Can be powered on 12V

  - 2kB RAM, 32kB Flash

  - 22 I/O, 8 analog, 6 PWM

- USB-A to USB-Mini cable

Connections

TAKE A GOOD LOOK

D13/LED
3V3 OUT
ADC REF IN

Digital / Analog
A0-A3

Digital / Analog
A4-A5 I2C
Digital / Analog
A6-A7

+5 OUT
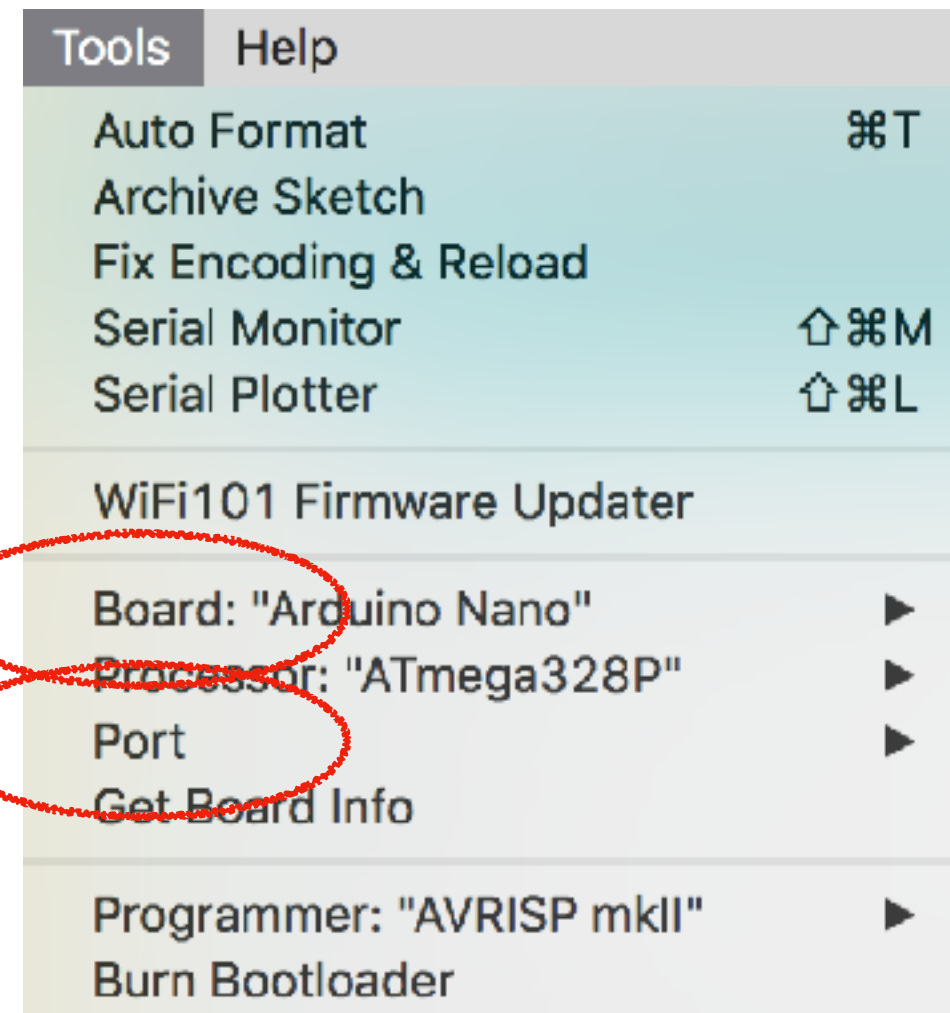**GND**
VIN

D2 - D12

GND
RESET
RXD
TXD

Nano, connect

- Plug into Breadboard

- Plug in USB PC <-> Nano cable

- *Tools > Board > Nano*

- *Tools > Port > COMx*

Tools   Help

Auto Format	⌘T
Archive Sketch	
Fix Encoding & Reload	
Serial Monitor	⇧⌘M
Serial Plotter	⇧⌘L
WiFi101 Firmware Updater	
Board: "Arduino Nano"	▶
Processor: "ATmega328P"	▶
Port	▶
Get Board Info	
Programmer: "AVRISP mkII"	▶
Burn Bootloader	

Test Nano

- *File > Sketchbook > My_Blink*

- Read the comments

- Compile to check code

- Upload code

- Red LED will blink


```
My_BLINK
 1 // BLINK
 2
 3 void setup() {
 4   pinMode(13, OUTPUT);        // set pin 13 as an output
 5 }
 6
 7 void loop() {
 8   digitalWrite(13, LOW);      // pin 13 LOW
 9   delay(1000);                // wait 1 sec
10   digitalWrite(13, HIGH);     // set pin 13 HIGH
11   delay(1000);                // wait 1 sec
12
13 }
```

Your turn

- Try your new sketch to flash the LED
  2 x 100ms, then 1 x 1sec

- Use a "`flash()`" function

- *Solution is in Documents > Arduino > My_BLINK_1*

```
My_BLINK_1
 1 // BLINK 1
 2
 3 #define LED 13
 4 void setup() {
 5   pinMode(LED, OUTPUT);      // set pin 13 as an output
 6 }
 7 |
 8 void loop() {
 9   flash(100);
10   flash(100);
11
12   flash(1000);
13 }
14
15 void flash(int t) {
16   digitalWrite(13, LOW);     // pin 13 LOW
17   delay(t);                  // wait t (ms)
18   digitalWrite(13, HIGH);    // set pin 13 HIGH
19   delay(t);                  // wait t (ms)
20 }
21
```

Voltmeter anyone?

- The Nano has 8 analog inputs

- Check the value of your +5V output (mine was 4.62V). this is ADC reference

- *File > Sketchbook > My_VOLTS*

```
My_VOLTS
1 // VOLTS
2 // measure +5V output, mine was 4.62
3 float volts;                              // ADC voltage read
4
5 void setup() {
6   Serial.begin(9600);                     // start serial comms
7 }
8
9 void loop() {
10   volts = analogRead(A0) * 4.62 / 1023;  // read ADC -> volts, "+5V" ref
11   Serial.println(volts);                 // display on Monitor
12   delay(100);
13 }
```

- Open the Monitor

- Check the baud rate 9600

- Connect **3V3** to **ADC REF IN** Measure the 3V3 output (mine is 3.21V)

That's it for learning IDE & Nano