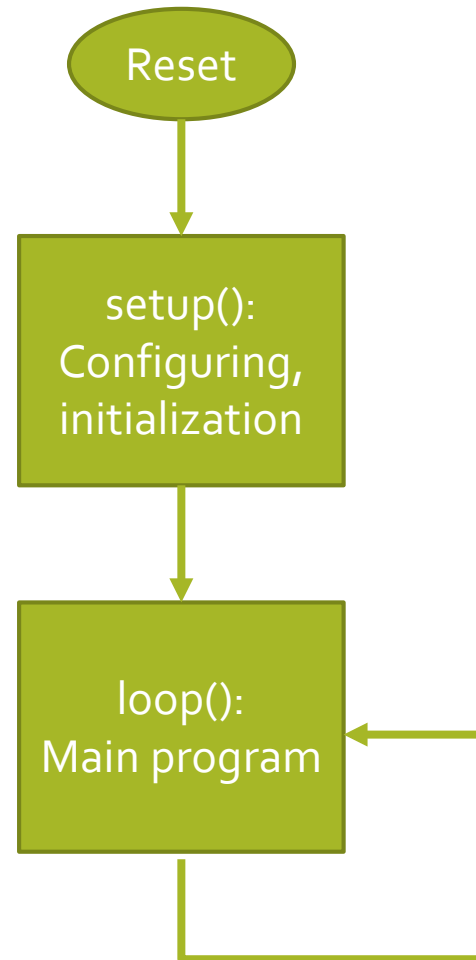
An Arduino Uno board is shown in a white plastic enclosure. It is connected to a breadboard containing a black integrated circuit (likely a motor driver) and several resistors. A black battery pack is connected to the breadboard. A white USB cable is plugged into the board's USB port. A blue potentiometer is also visible on the breadboard. The background is a dark grey gradient with green bars at the top and bottom.

# Module 2-3

## SETTING UP THE ARDUINO IDE: Arduino Program Structure

# Basic Arduino Program





Apple Campus  
One Infinite Loop

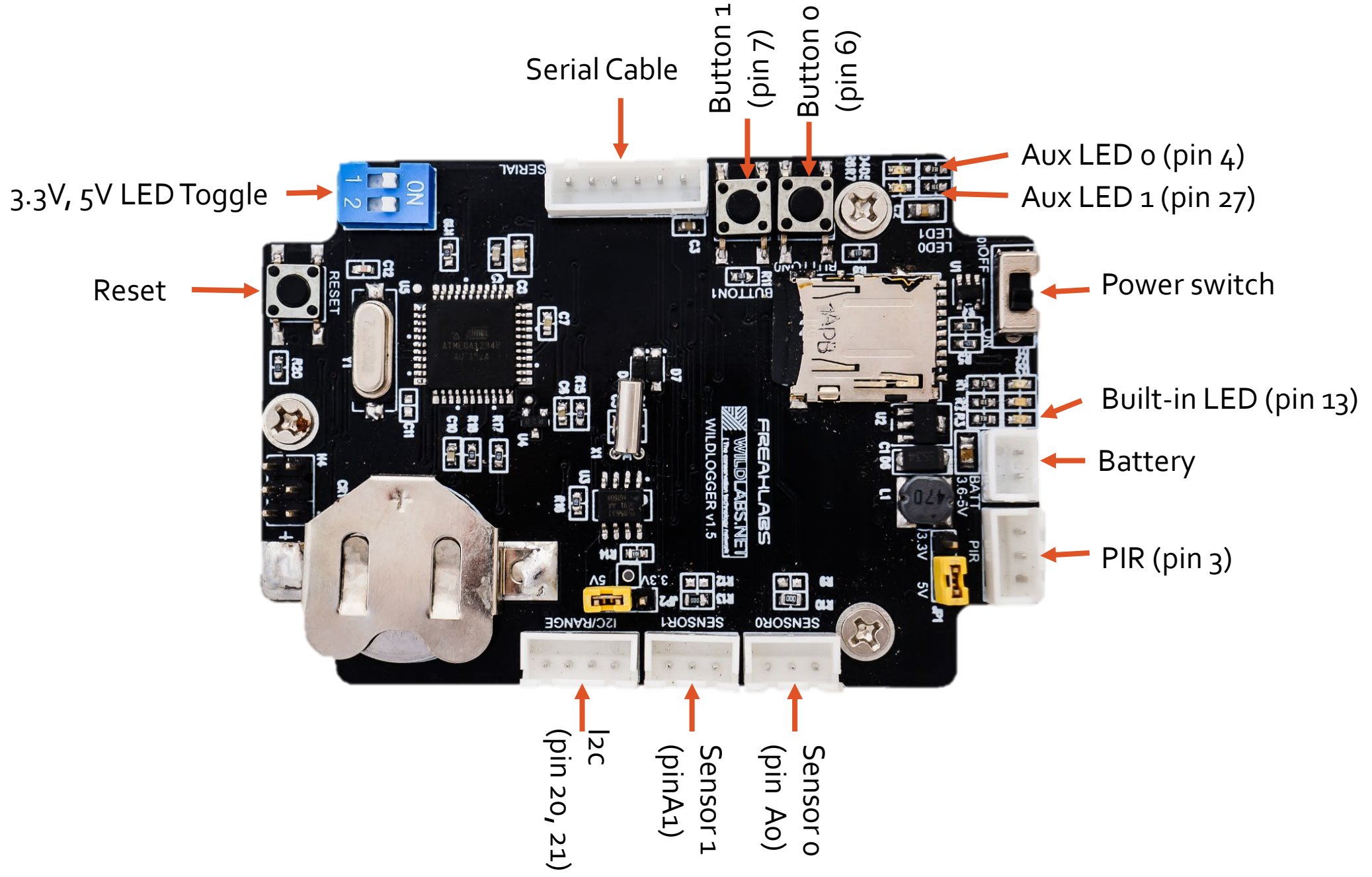


# A Basic Arduino Program (or Sketch)

- Consists of two functions
  - **setup()**: This gets executed one time at the beginning of the sketch
  - **loop()**: This gets executed infinitely
- Setup
  - Initialize variables
  - Initialize libraries and objects
  - Set system to a known state
- Loop
  - Meat of the application happens here
  - Continues to run infinitely

```
void setup()
{
    pinMode(13, OUTPUT);           // configure as output
    digitalWrite(13, LOW);        // turn it off
}

void loop()
{
    digitalWrite(13, HIGH);       // turn it on
    delay(1000);                  // delay for one second
    digitalWrite(13, LOW);       // turn it off
    delay(1000);                  // delay for one second
}
```



# Programming Syntax

- Arduino is programmed in C++
- There is no Arduino language
- There are standard build-in functions
- You only need to understand a subset of C++ to get a lot of useful things done

# Programming Syntax

- We will be using the following for this course:
  - variable data types (signed and unsigned): int, float, char
  - loops: for, while
  - comparison: equality (==), inequality (!=), less than (<), greater than (>)
  - conditional: if, else
- We'll also be using these
  - Object instantiation, ie: Sensor sens()
  - Macros: #include, #define



# More Resources on Programming

- Good links to check out
  - <http://learn.olympiacircuits.com/programming.html>
  - <https://www.tutorialspoint.com/arduino/index.htm>
  - <https://www.arduino.cc/reference/en/>



**COMING UP**  
**Module 2-4**  
**Writing Our First Programs**