Module 2-3

SETTING UP THE ARDUINO IDE: Arduino Program Structure
Basic Arduino Program

```plaintext
setup():
  Configuring, initialization

loop():
  Main program
```
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
}
Serial Cable

Battery

PIR (pin 3)

Sensor 0 (pin A0)

Sensor 1 (pin A1)

I2c (pin 20, 21)

Built-in LED (pin 13)

Reset

3.3V, 5V LED Toggle

Power switch

Aux LED 0 (pin 4)

Aux LED 1 (pin 27)

Button 0 (pin 6)

Button 1 (pin 7)

Button 0 (pin 6)

Battery

PIR (pin 3)
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