# Serial (UART)

Shawn Swatek

# UART

Universal
Asynchronous
Recieve/
Transmit

# Uses

Microcontroller debugging

User interface

Robot control

Data logging

# Pros

Easy to use with computers

Simple to program

Doesn’t require shared clocks

Only uses two wires

Compatible with many things

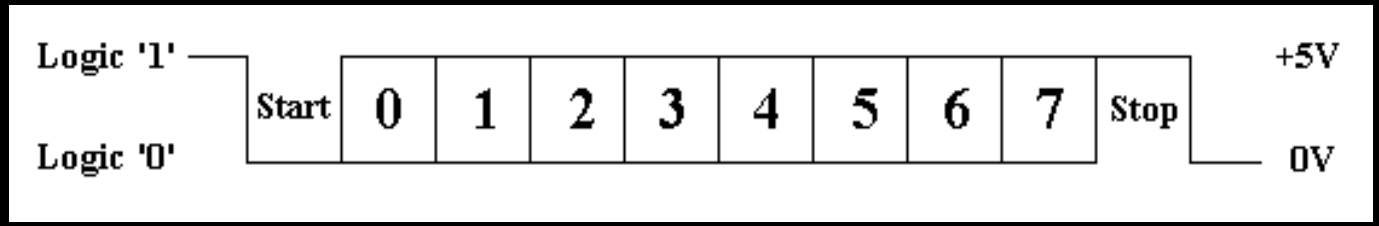
# Cons

Slow

Requires specific clocks

No built in data integrity check

# Waveform



# How to use

```
void setup(){
    Serial.begin(9600); //sets things up
}
void loop(){
    int data = Serial.read(); //gets one character
        //or return -1 for nothing
}
```

# Useful C Structure

```
switch(data){
    case ‘0’: // do things for when you get ‘0’
        Serial.println(“You typed a ‘0’”);
        break;
    default:
        // no cases were used
}
```

# Challenge

Make a program so that when you type in ‘1’ it turns on the onboard LED (pin 13) and when you press 0 it turns off the LED. Then, set up a button like before and have the Arduino print something when the button is pressed. When/if that’s done, attach more LEDs and control them with the serial connection and have a command that returns the state.

# Spoiler

http://pastebin.com/WVA9bv56