



Introduction to the Arduino and physical computing

Class 3

With Josh Kopel

Arduino Serial Communication

- Serial communication via USB cable
- Standard RS-232 over USB (not full USB spec)
- Uses digital pins 0 & 1
- Lots of other serial protocols available
 - I2C
 - 2B
 - MIDI

Built in vs. software

- Built in
 - No additional libraries
 - Supported by the IDE serial monitor
 - Always uses pins 0 & 1
- In software
 - Can use any pins
 - Can talk to multiple devices
 - Needs the serial library loaded

Use for debugging or feedback

- `Serial.begin(speed)`
- `Serial.print(val, format)`
- `Serial.read()` returns one byte of data (sort of one char)
- `Serial.available()` returns 0 or # of bytes in the input buffer (up to 128)

Use for debugging or feedback

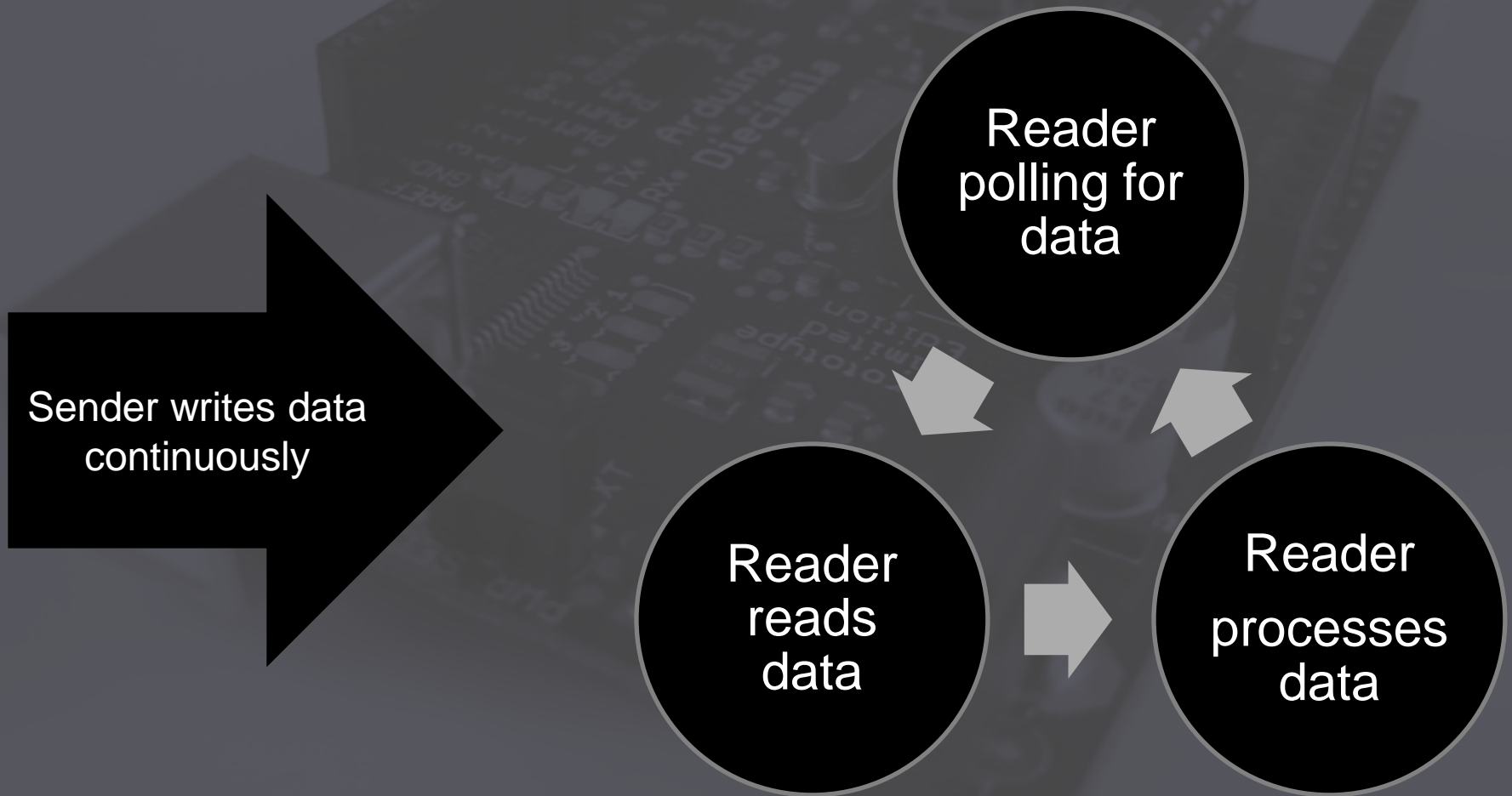
- Use `Serial.print(val, format)` and turn on the serial monitor in the IDE
- Send a message to indicate status
 - Default is ASCII value of `val`
 - DEC decimal value
 - HEX
 - BIN
- `Serial.println(val, format)` includes line feed

Other applications



- Processing
- Flash
- Max/Msp
- Pure Data (PD)
- .NET
- anything that can read/write the serial port

Simple communication



Simple code to fade an LED

```
Loop{  
  If(Serial.available()){  
    // read the incoming byte  
    incomingByte = Serial.read();  
    // write the value to an analog pin  
    analogWrite(ledPin, incomingByte);  
  }  
}
```



Sat, Jul 11

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Dorkbot-Sea PDSTWE

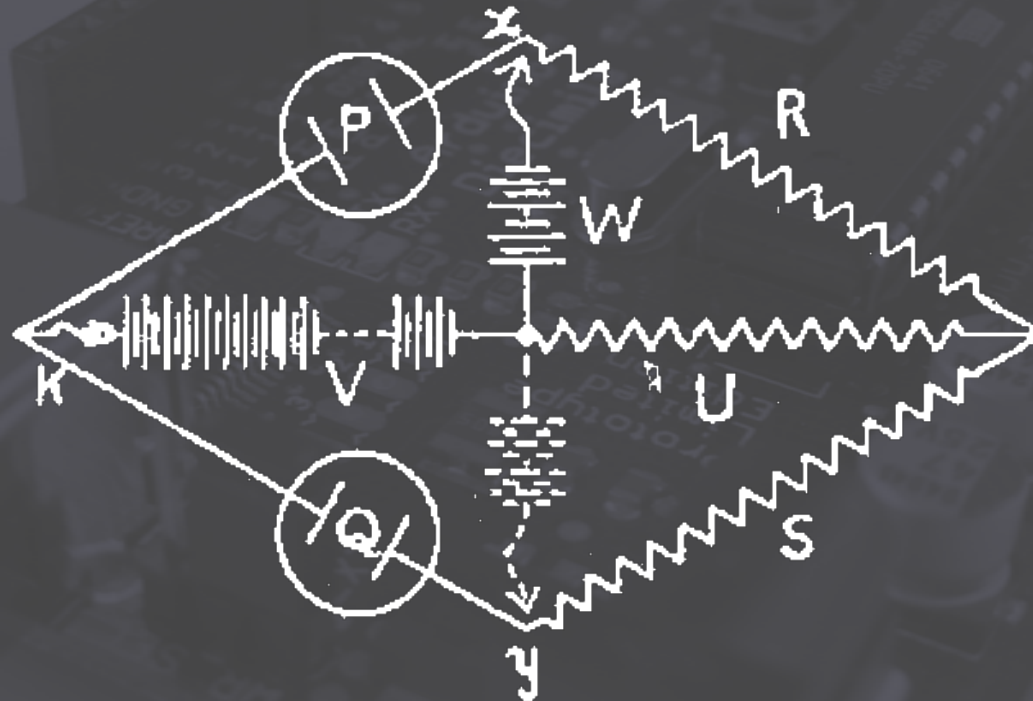


FIG. 7. Electrical Model illustrating a Mind having a Will but capable of only Two Ideas. See Analogies X., XI., XII., XIII.

<http://www.dorkbot.org/dorkbotsea/>
Meetings on the first Wed of each month

A blurred, grayscale image of an Arduino Uno R3 board. The board is the central focus, showing its various components like the microcontroller, USB port, and headers. The text "Play time!" is overlaid in a clean, white, sans-serif font in the middle of the image. The background is a dark, uniform gray, making the board and text stand out.

Play time!