Fundamentals of Physical Computing

Instructor: Rob Faludi

Plan for Today

- Lab Review

- Prototype Presentations

- Serial

- Group Assignment

- Readings & Assignments

Lab Review

Revisions

Serial Communications

Serial vs. Parallel
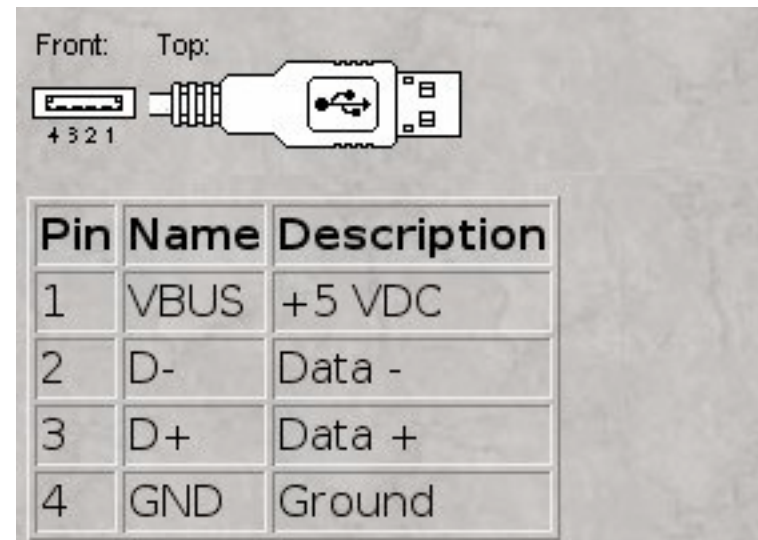
- How does each work?

- Which needs less wires?

- USB is a new version of the same old thing: Universal Serial Bus

USB

- In and out, one byte at a time

- host controller required

Pin	Name	Description
1	VBUS	+5 VDC
2	D-	Data -
3	D+	Data +
4	GND	Ground

Why Serial?

- Common language

- GPS, microcontroller, computer, printer, cell phone, accelerometer, LCD, text-to-speech

Bytes

- How many bits?

- Largest number in a byte?

- Transmitting numbers

- Transmitting large numbers

- What else can a byte represent?

ASCII

- remember it's a code

- sending letters

- sending numbers

One Question Quiz

- what is this: 10

Programming with Serial

Arduino Serial Library

- Serial.begin(speed)

- Serial.available()

- Serial.read()

- Serial.flush()

- Serial.print(data)

Processing Serial Library

- **Serial.list()**
  Serial.available()
  Serial.read()
  Serial.readChar()
  Serial.readBytes()
  Serial.readBytesUntil()
  Serial.readString()
  Serial.readStringUntil()
  Serial.buffer()
  Serial.bufferUntil()
  Serial.write()
  Serial.clear()
  Serial.stop()

- ***serialEvent()***

Ports in Processing

```
Stable Library
=====================================
Native lib Version = RXTX-2.1-7
Java lib Version   = RXTX-2.1-7
[0] "/dev/tty.usbserial-A4001ufz"
[1] "/dev/cu.usbserial-A4001ufz"
[2] "/dev/tty.Bluetooth-Modem"
[3] "/dev/cu.Bluetooth-Modem"
[4] "/dev/tty.Bluetooth-PDA-Sync"
[5] "/dev/cu.Bluetooth-PDA-Sync"
164
164
164
164
164
```

Final Projects

New Groups!

Grpmxr beta

Which group of students?

[Class of 2011 ⬍]

How many groups?

[5 ⬍]

How should the groups be named?

[Numerically ⬍]

(Mix)

Readings and Assignments

- Readings

  - Physical Computing, chapter 7

- Assignment

  - Serial Lab

  - The best way to have a good idea is to have a <u>lot</u> of ideas, so put that into practice by preparing six different project ideas to present to the class. You'll enlist their help to choose one.

  - *Get your labwork and documentation posted!*