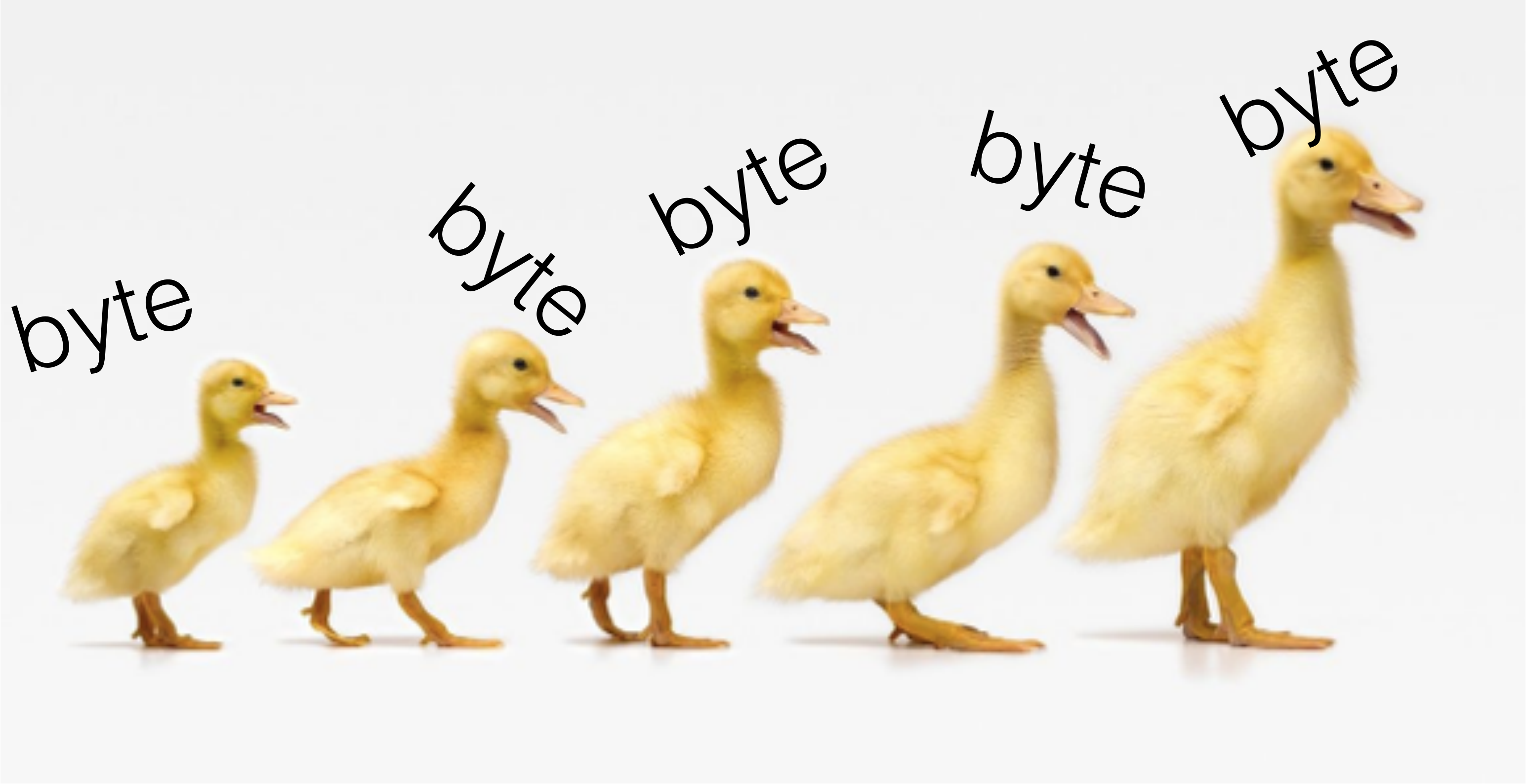
Serial communication

SFPC : Electronics

Serial communication

Sending values one byte at a a time.

This can either be one-directional, or follow a handshake process to transmit data both ways.



Arduino -> Processing

```
Serial.write(value);
```

Writes a (non-ASCII) byte to the serial port

Arduino -> Processing

```
Serial myPort;
```

Defines a Serial object in Processing

```
myPort = new Serial(this, PORTNAME, 9600);
```

Set up the Serial object on the matching port and baud

Arduino -> Processing

```
if ( myPort.available() > 0)
  {
   int val = myPort.read();
  }
```

Read the incoming value if available,
and save to a local variable.

Processing -> Arduino

Processing -> Arduino

```
myPort.write(value);
```

Writes ‘value’ to the serial port

Processing -> Arduino

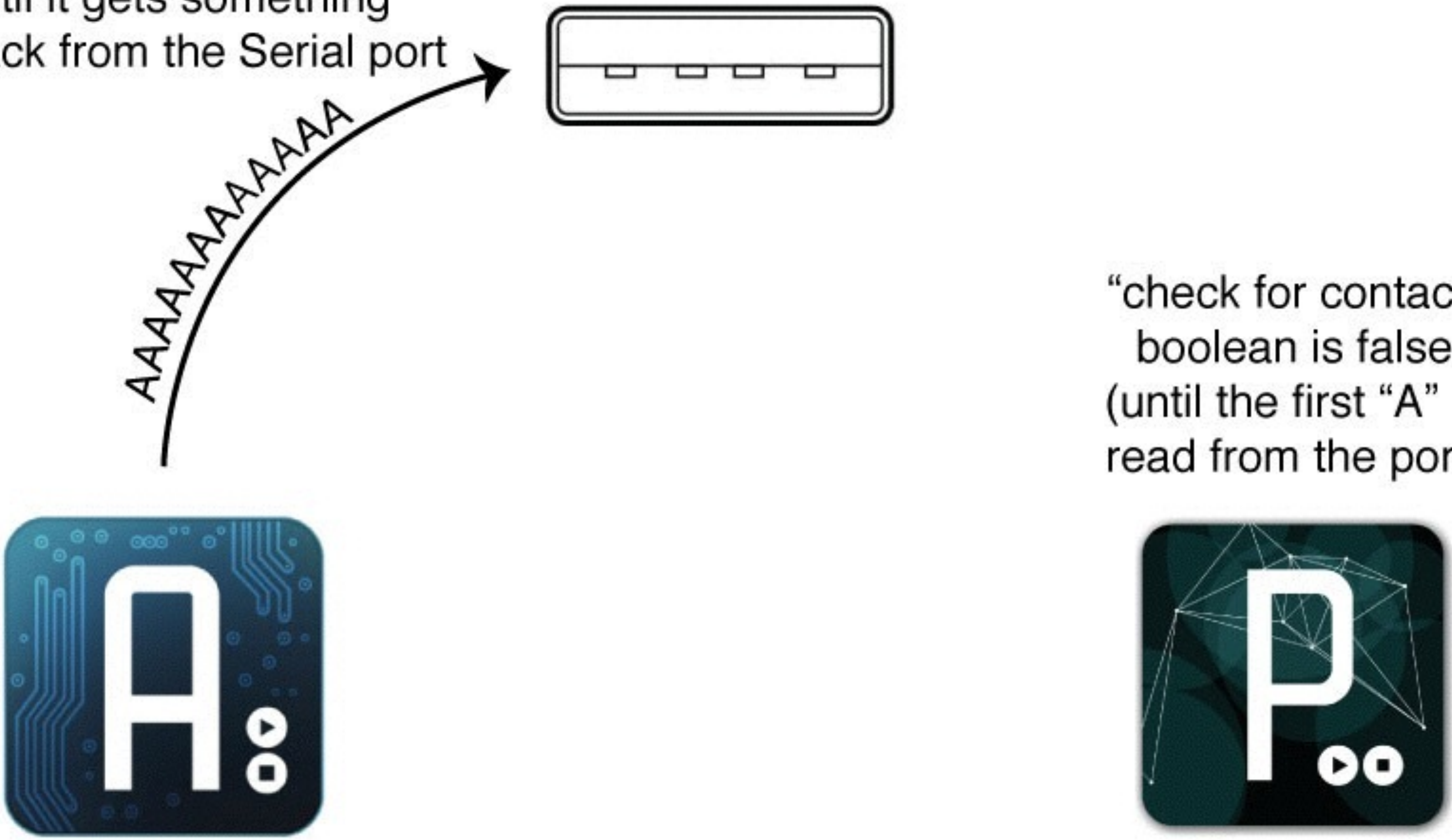
```
if (Serial.available()) {
    val = Serial.read();
}
```

Reads the available serial data and stores it to a variable in Arduino

Handshake

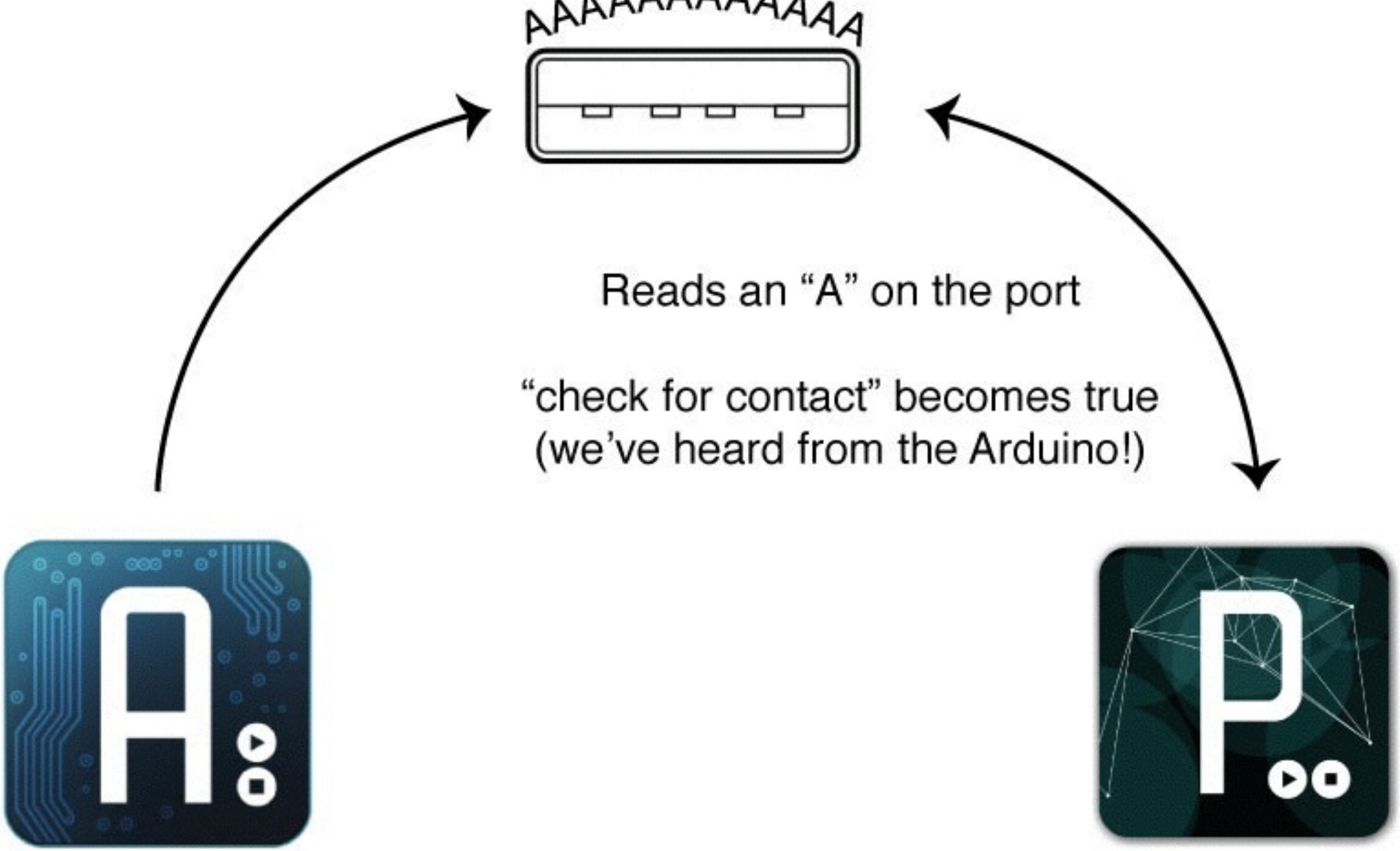
STEP 1

sends a character ('A')
until it gets something
back from the Serial port



"check for contact"
boolean is false
(until the first "A" is
read from the port)

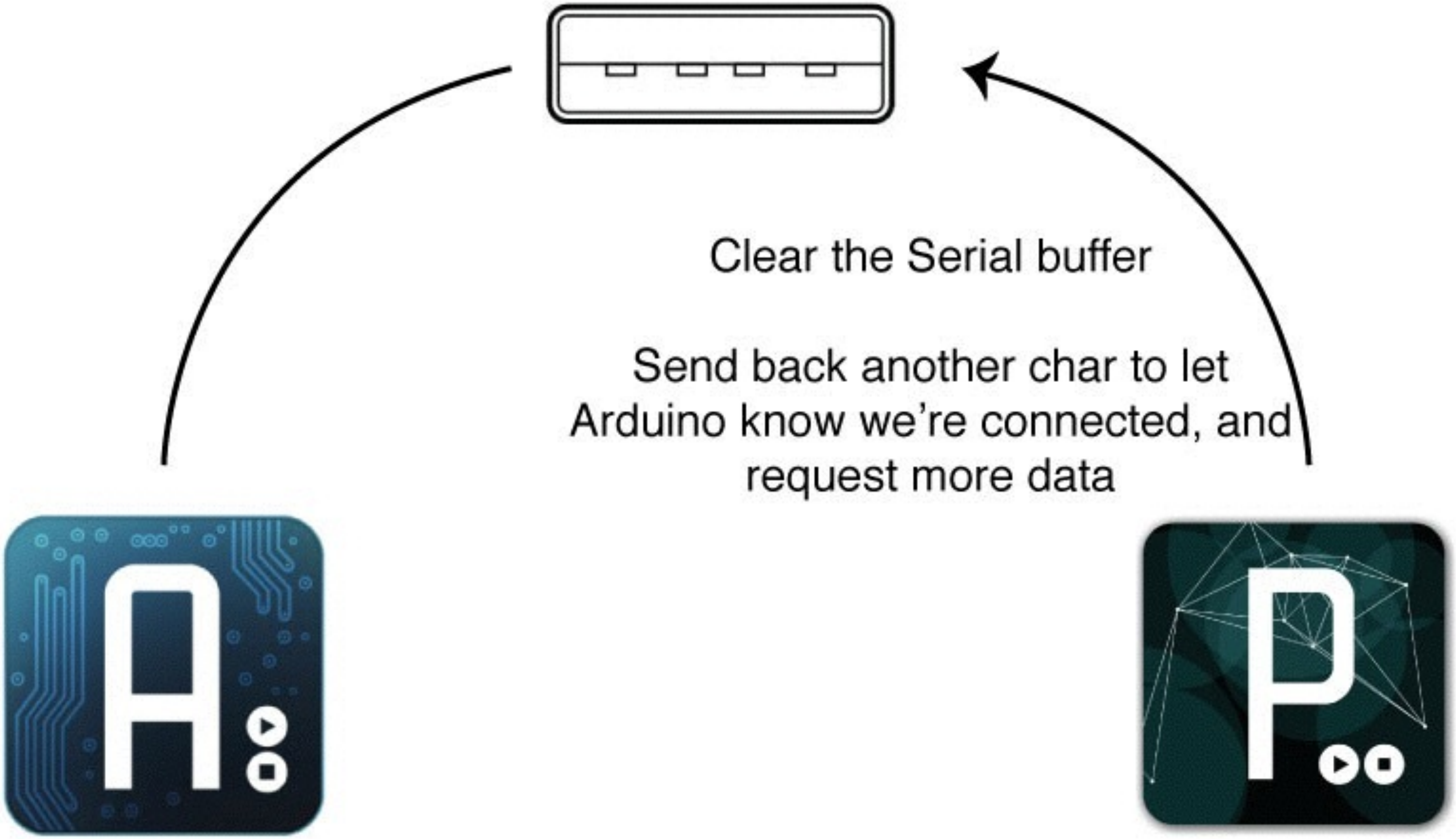
STEP 2



Reads an “A” on the port

“check for contact” becomes true
(we’ve heard from the Arduino!)

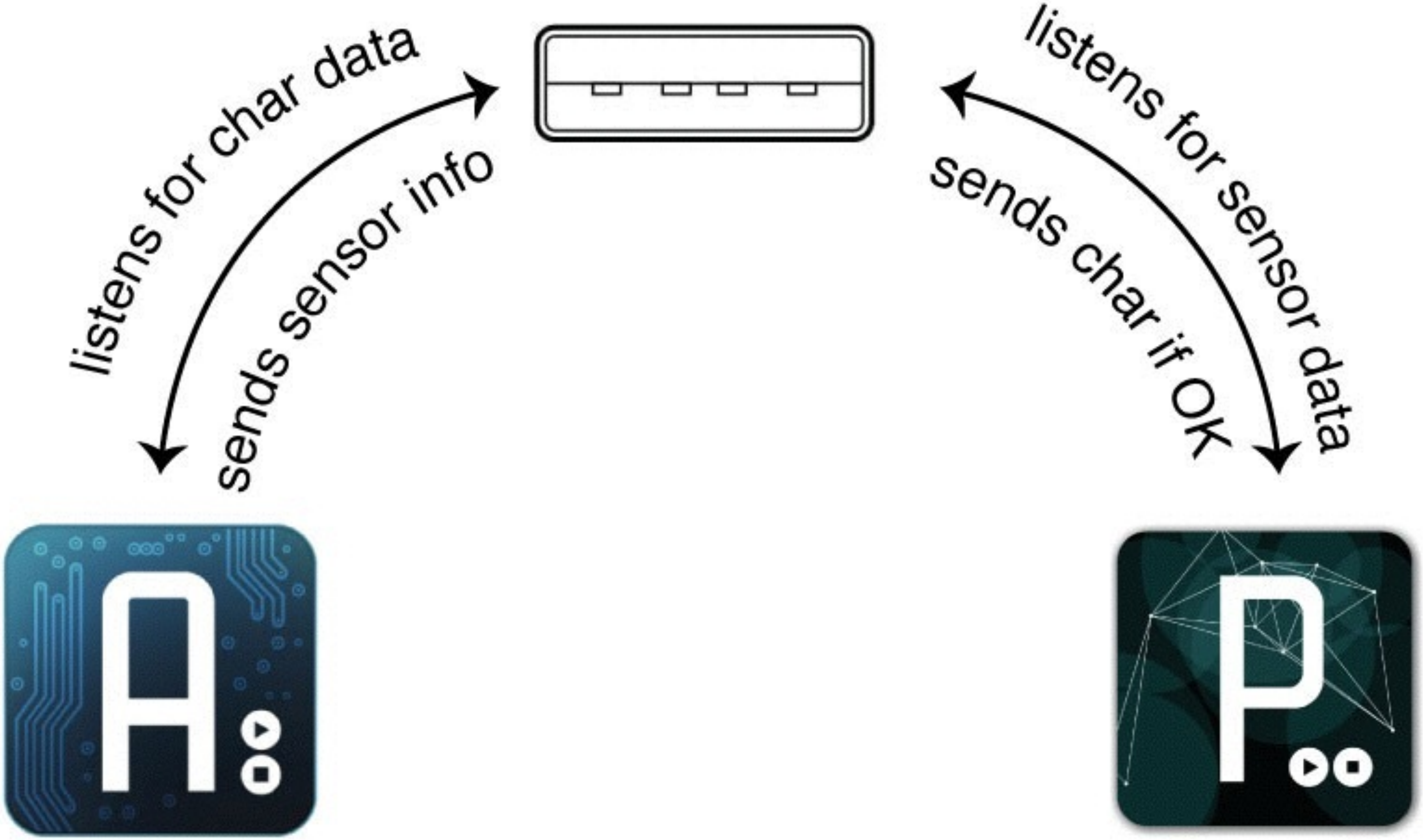
STEP 3



Clear the Serial buffer

Send back another char to let Arduino know we’re connected, and request more data

STEP 4



listens for char data

sends sensor info

listens for sensor data

sends char if OK

Byte wrapping

Bytes can only represent 256 values — if sending a single byte at a time, we need to convert sensor values into this range or they will go out of bounds and wrap around.

Handling multiple sensors

Send a sequence of bytes from Arduino
and read it as an array in Processing

Handling multiple sensors

```
int [] sensorVals = new int [3];
```

setup()

```
   sensorVals[index] = inByte;
    index++;

    if(index > 2){
    index = 0;
      mySensorVal = sensorVals[2];
   }
   myPort.write('A');
```

serialEvent()

Create a sketch visualizing sensor data in Processing