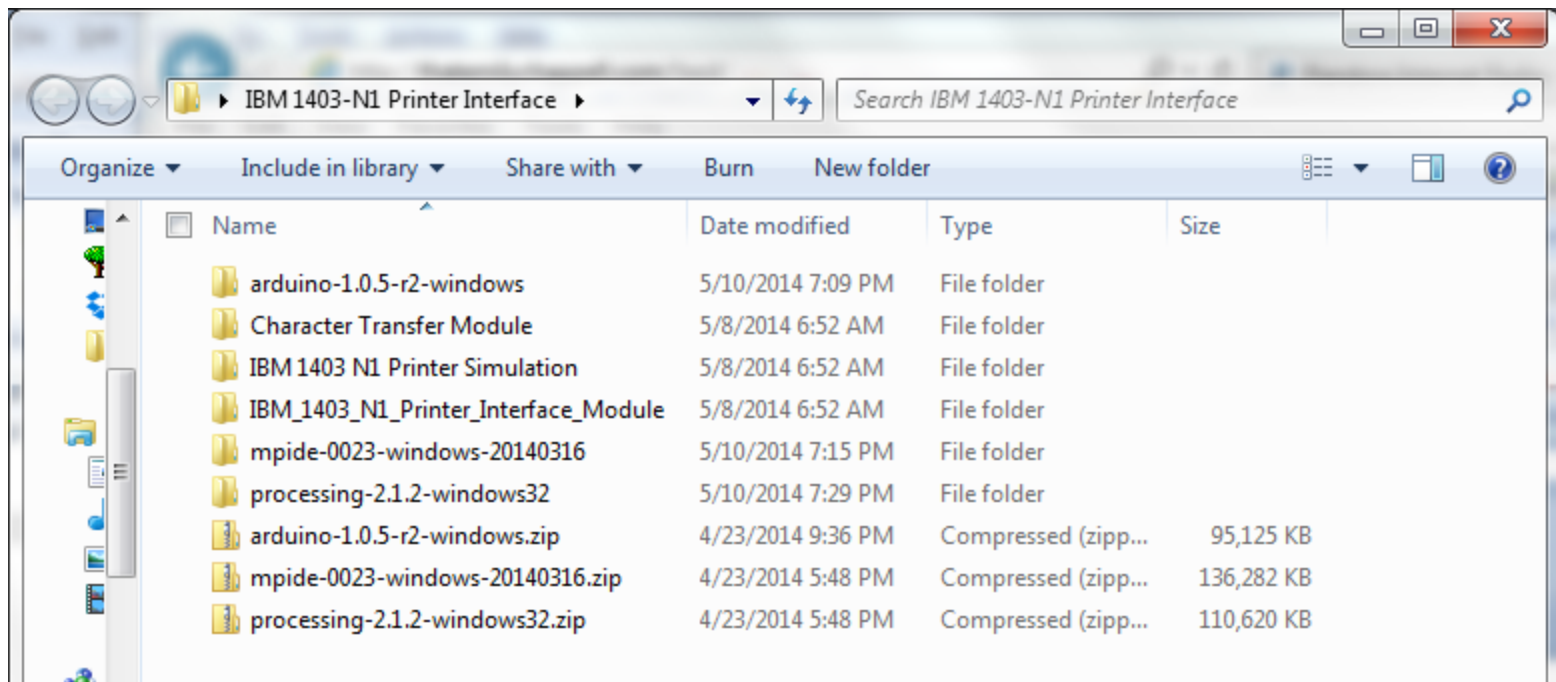


User Guide
for the
1403-N1 Printer Controller

Files

- The files needed to setup and run the project are in the directory “IBM 1403-N1 Printer Interface”
- Put this directory on the desktop as otherwise the file names may be too long when extracting the zip files
- The directory has the following sub-directories after extraction of zip files:



Loading Device Drivers

- The device drivers for the Arduino and chipKit must be installed
- Installation may require multiple attempts
- (Need screen shots from Peter)

IDEs

MPIDE:

<http://chipkit.net/started/install-chipkit-software/install-mpide-windows/>

Instructions given right under the heading "Windows Installation"

Processing:

<https://www.processing.org/download/?processing>

Download the version depending on your Operating System.

Arduino board:

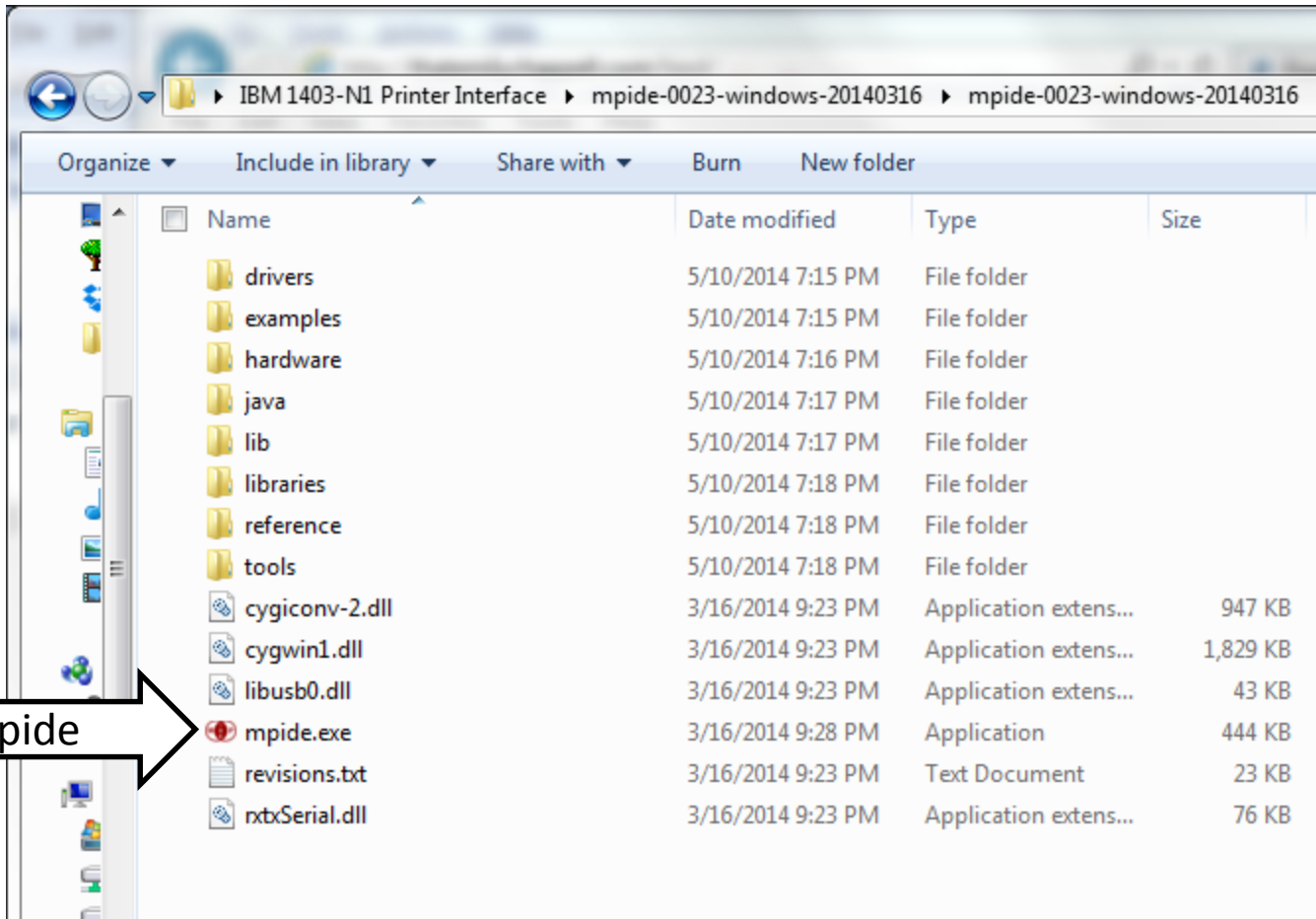
<http://arduino.cc/en/Main/arduinoBoardUno>

There isn't a pdf file for the information regarding the Arduino board, just a web page (link above) that contains the information.

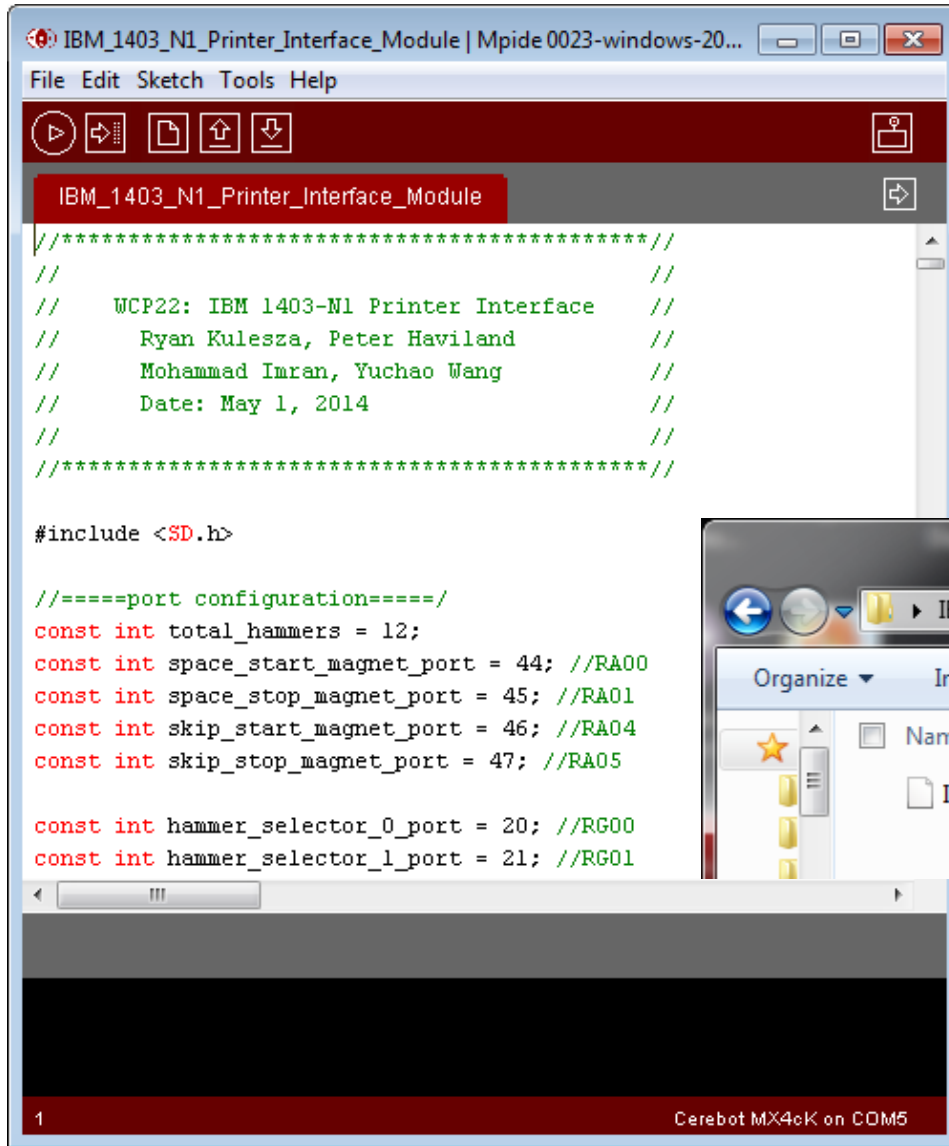
ChipKit Pro (Microcontroller) Reference Manual:

http://www.digilentinc.com/Data/Products/CHIPKIT-PRO-MX4/ChipKIT_Pro_%20MX4_RevC_1.pdf

Starting chipKit IDE



Running chipKit IDE



```
IBM_1403_N1_Printer_Interface_Module | Mptide0023-windows-20...
File Edit Sketch Tools Help

IBM_1403_N1_Printer_Interface_Module

//*****//
//                                     //
//   WCP22: IBM 1403-N1 Printer Interface   //
//   Ryan Kulesza, Peter Haviland         //
//   Mohammad Imran, Yuchao Wang         //
//   Date: May 1, 2014                   //
//                                     //
//*****//

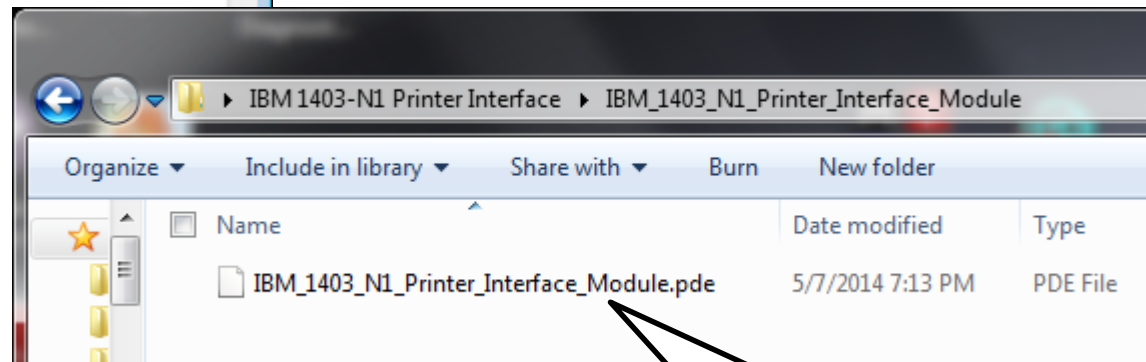
#include <SD.h>

//====port configuration====/
const int total_hammers = 12;
const int space_start_magnet_port = 44; //RA00
const int space_stop_magnet_port = 45; //RA01
const int skip_start_magnet_port = 46; //RA04
const int skip_stop_magnet_port = 47; //RA05

const int hammer_selector_0_port = 20; //RG00
const int hammer_selector_1_port = 21; //RG01

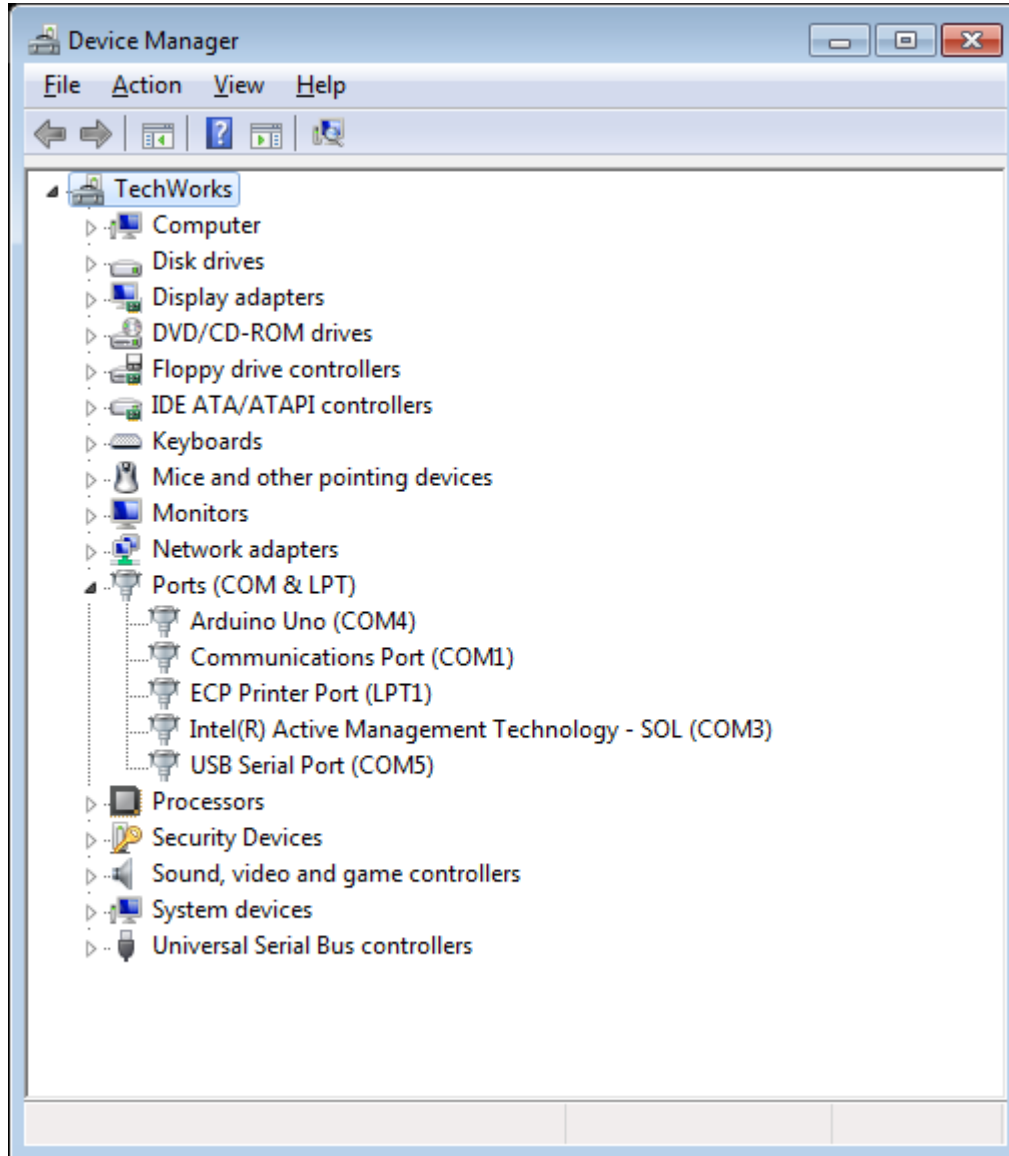
1 Cerebot MX4cK on COM5
```

- To load and start the operational SW to the chipKit click the Upload Button.
- If mods are made to the SW click the Verify Button then the Upload Button



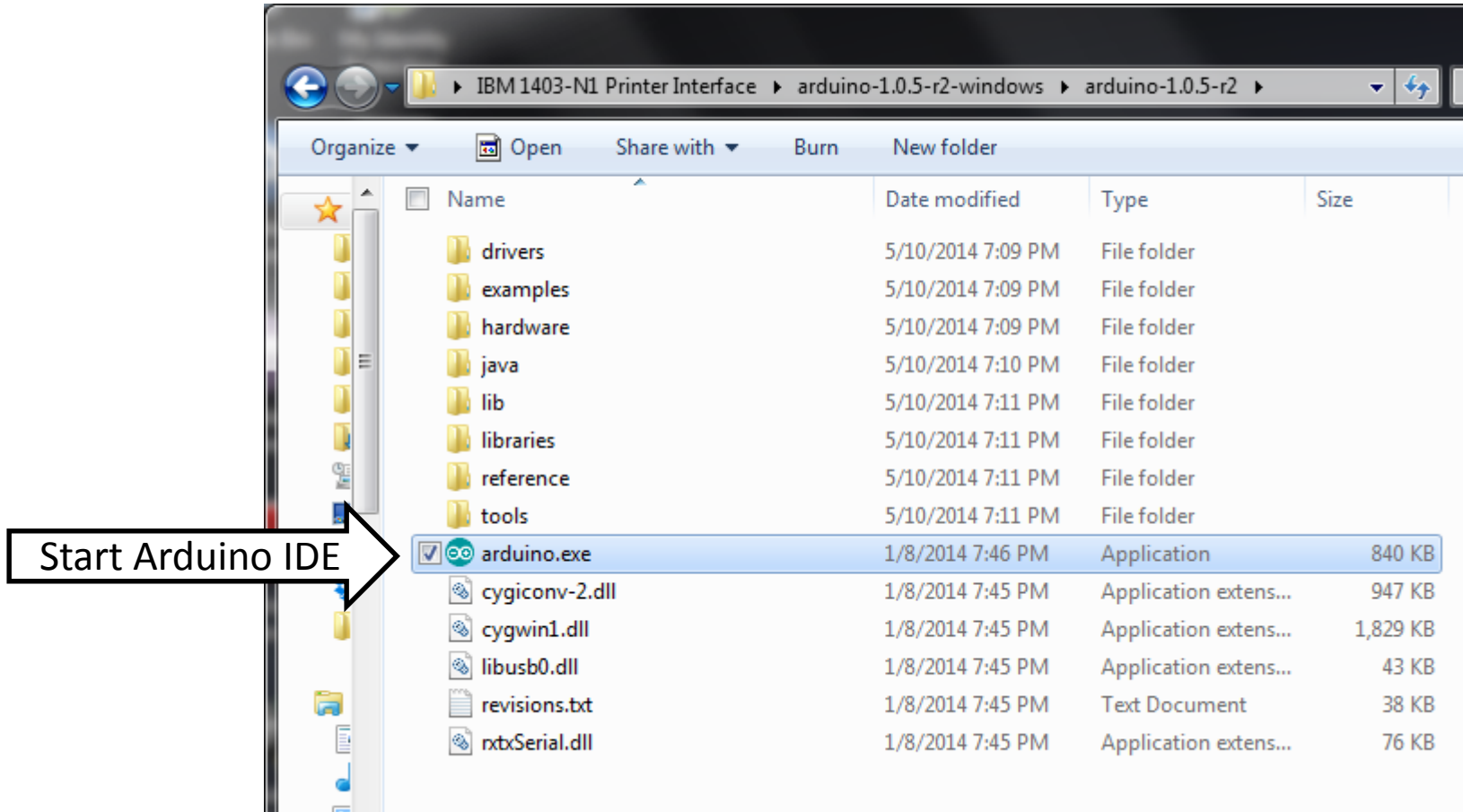
Source file is here

chipKit Configuration Info

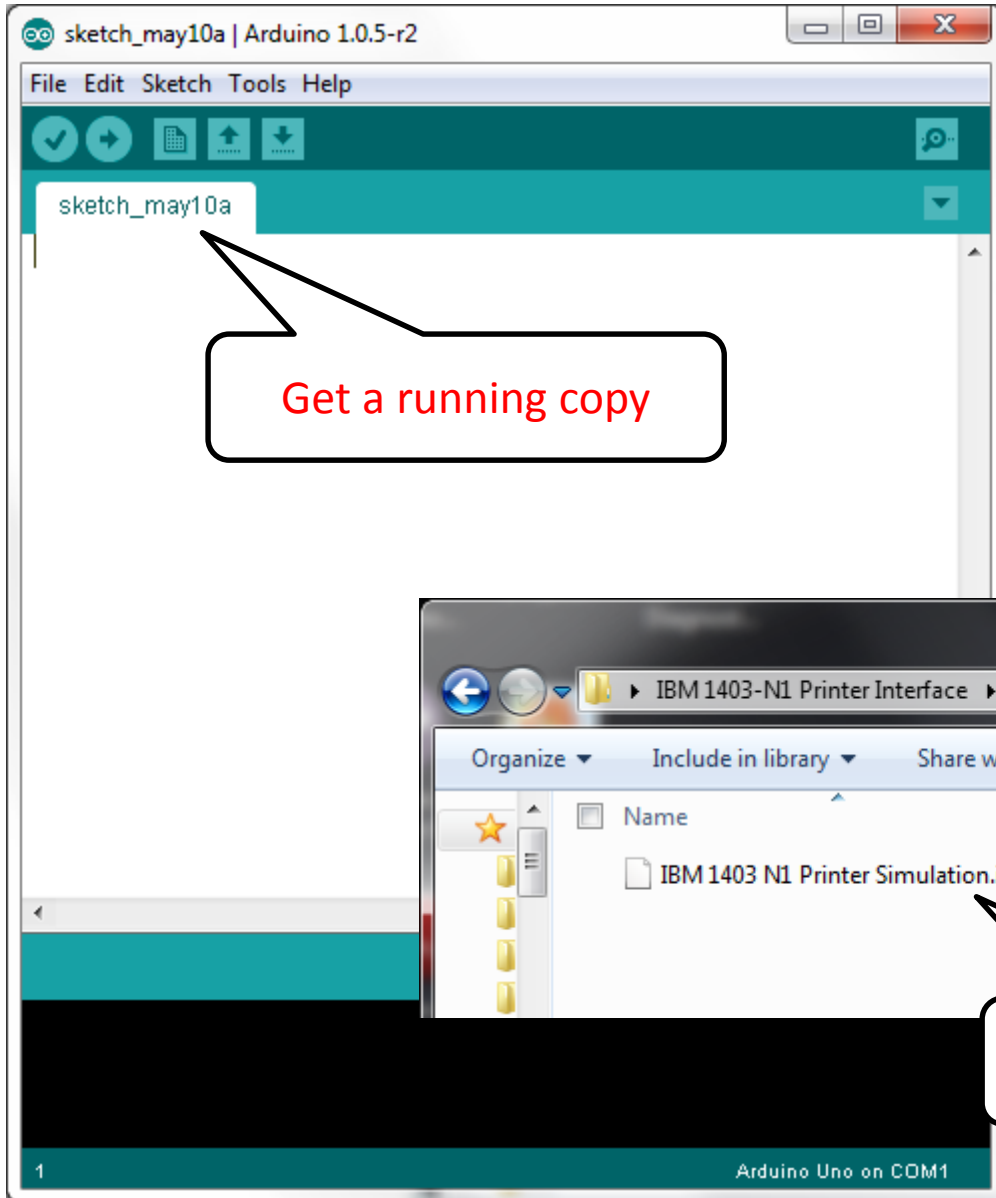


- Verify correct com port for USB Serial Port. COM5 is the one used at TechWorks

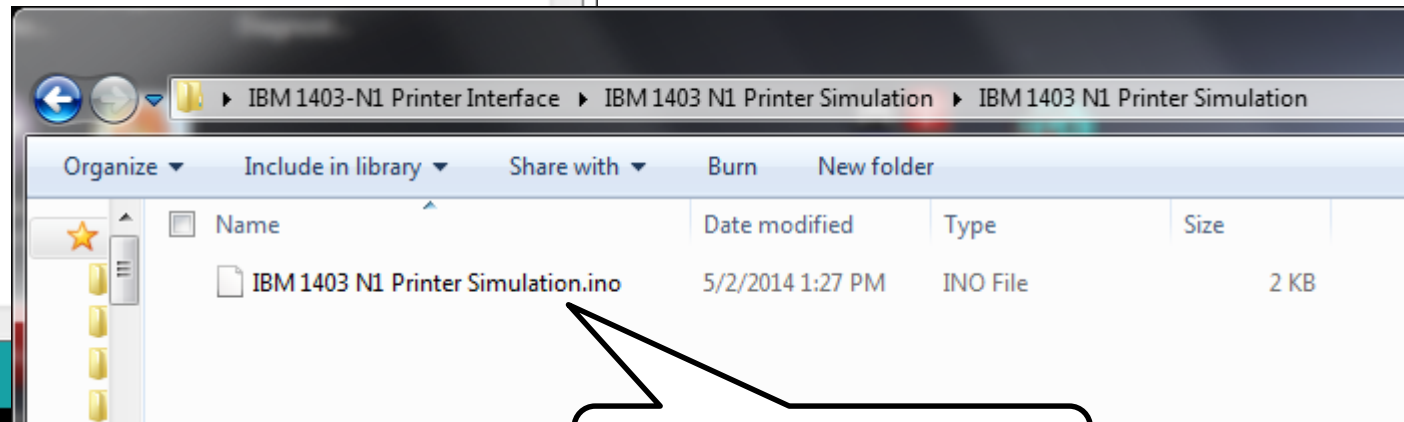
Starting Arduino IDE



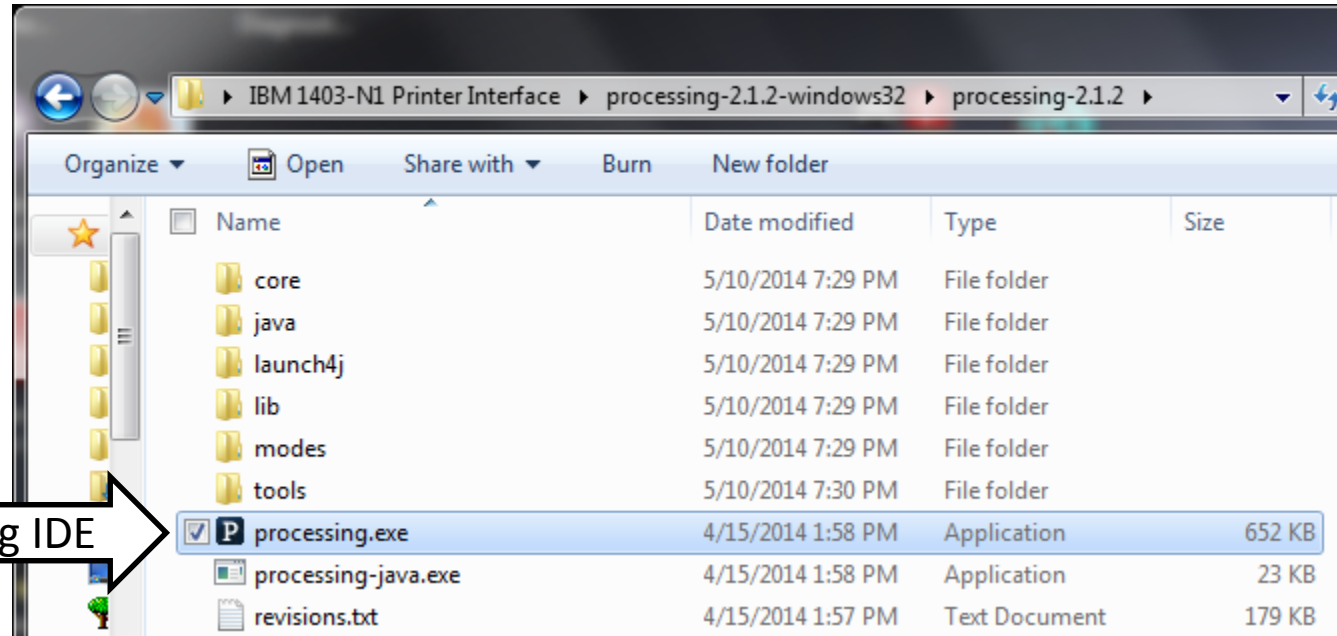
Running Arduino IDE



- To load and start the operational SW to the chipKit click the Upload Button.
- If mods are made to the SW click the Verify Button then the Upload Button

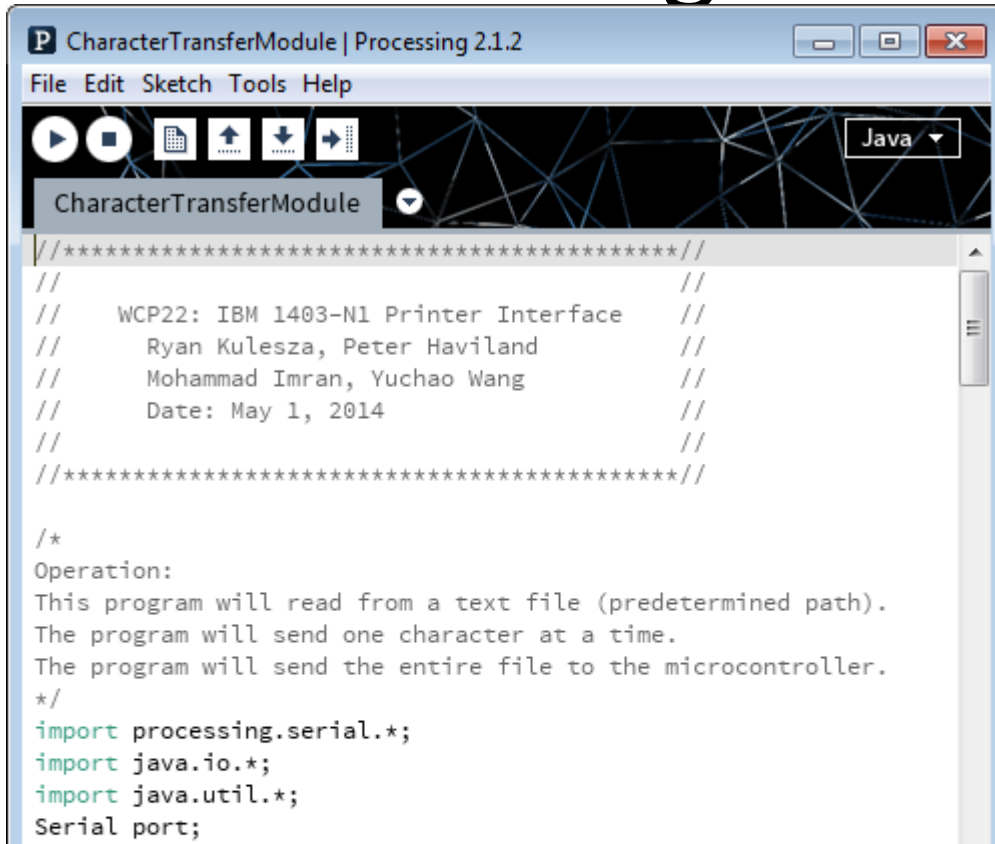


Starting Processing IDE



This runs on the Client PC and handles the transfer of text to the chipKit for printing

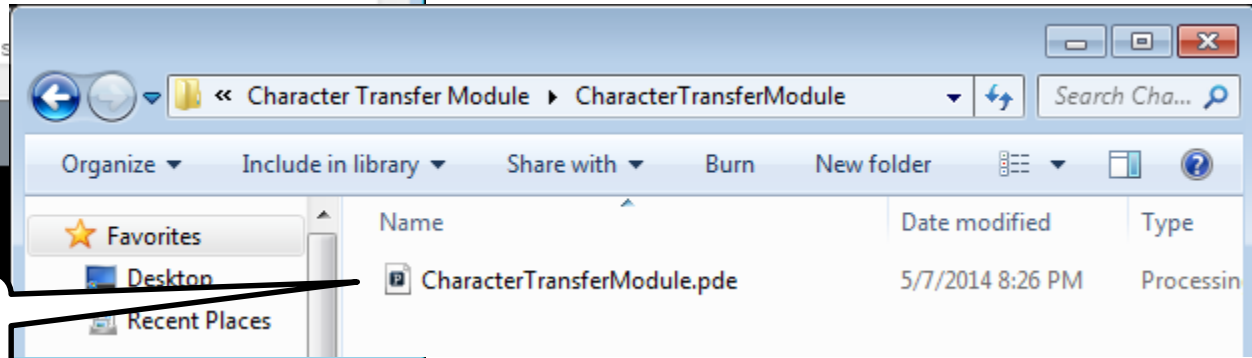
Running Processing IDE



The screenshot shows the Processing IDE window titled "CharacterTransferModule | Processing 2.1.2". The menu bar includes "File", "Edit", "Sketch", "Tools", and "Help". The toolbar contains icons for running, stopping, opening, saving, and undo. The main text area displays the source code for "CharacterTransferModule.pde".

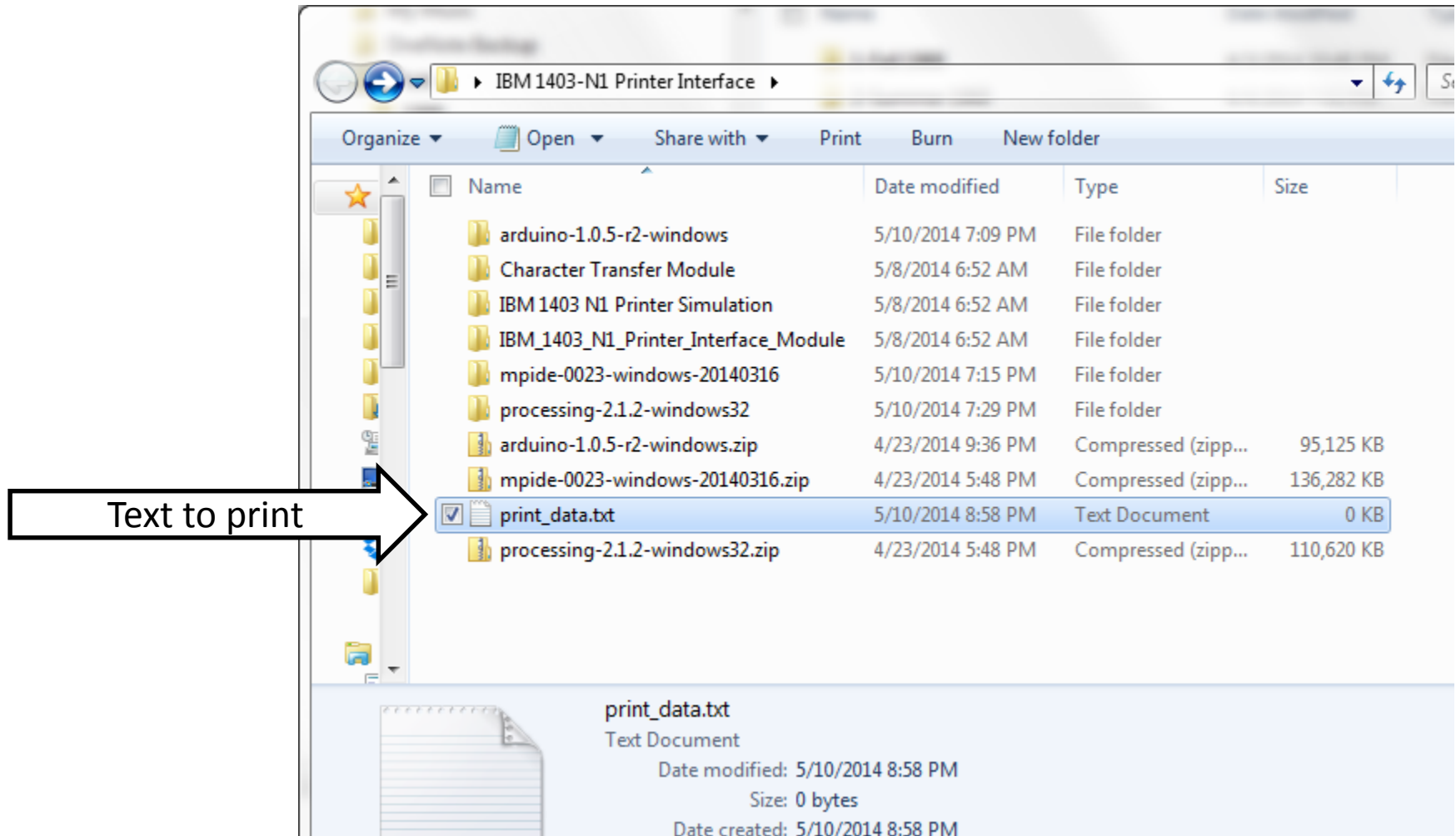
```
//*****//  
//  
//   WCP22: IBM 1403-N1 Printer Interface   //  
//   Ryan Kulesza, Peter Haviland         //  
//   Mohammad Imran, Yuchao Wang         //  
//   Date: May 1, 2014                   //  
//*****//  
  
/*  
Operation:  
This program will read from a text file (predetermined path).  
The program will send one character at a time.  
The program will send the entire file to the microcontroller.  
*/  
import processing.serial.*;  
import java.io.*;  
import java.util.*;  
Serial port;  

```



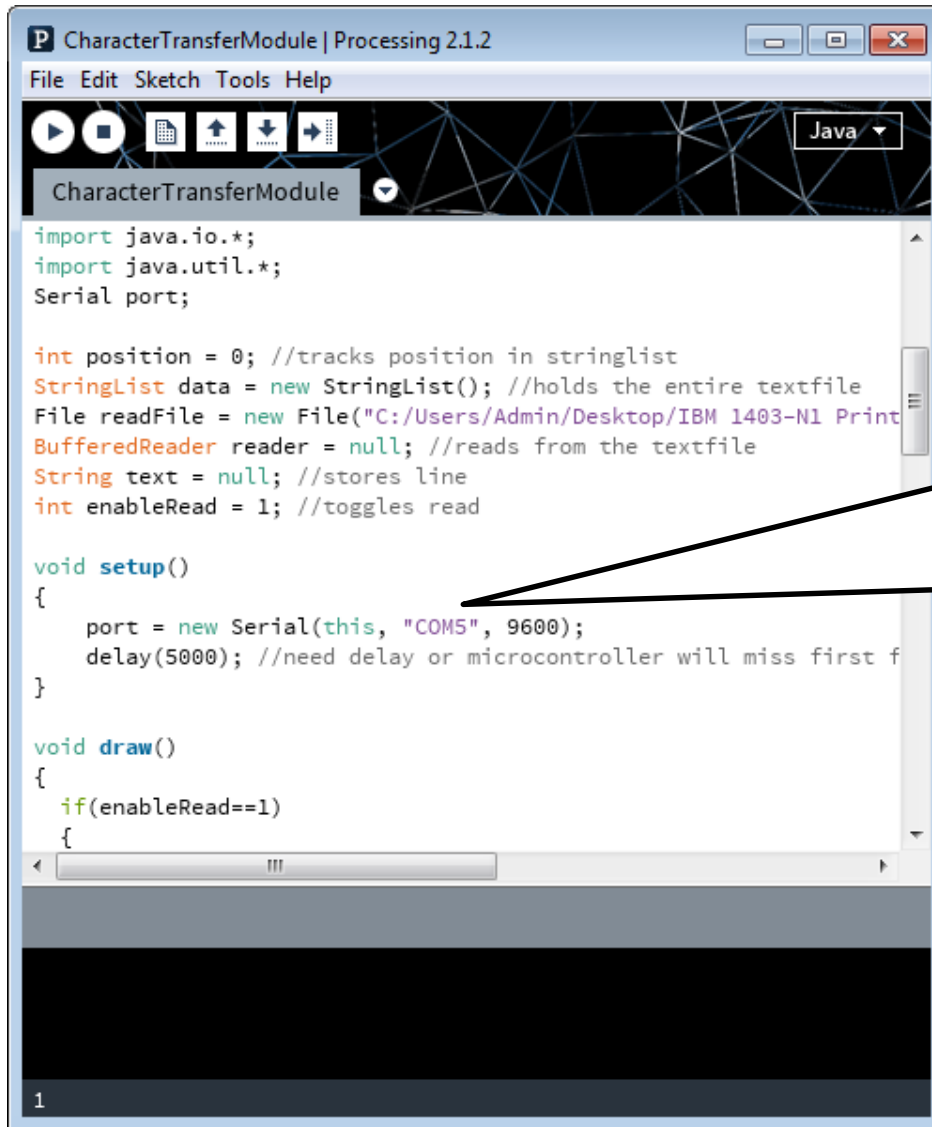
Source file is here

Text File To Print



Print_data file contains text to print.
Each line limited to 12 characters

Processing IDE Configuration Info



```
CharacterTransferModule | Processing 2.1.2
File Edit Sketch Tools Help
Java
CharacterTransferModule
import java.io.*;
import java.util.*;
Serial port;

int position = 0; //tracks position in stringlist
StringList data = new StringList(); //holds the entire textfile
File readFile = new File("C:/Users/Admin/Desktop/IBM 1403-N1 Print
BufferedReader reader = null; //reads from the textfile
String text = null; //stores line
int enableRead = 1; //toggles read

void setup()
{
    port = new Serial(this, "COM5", 9600);
    delay(5000); //need delay or microcontroller will miss first f
}

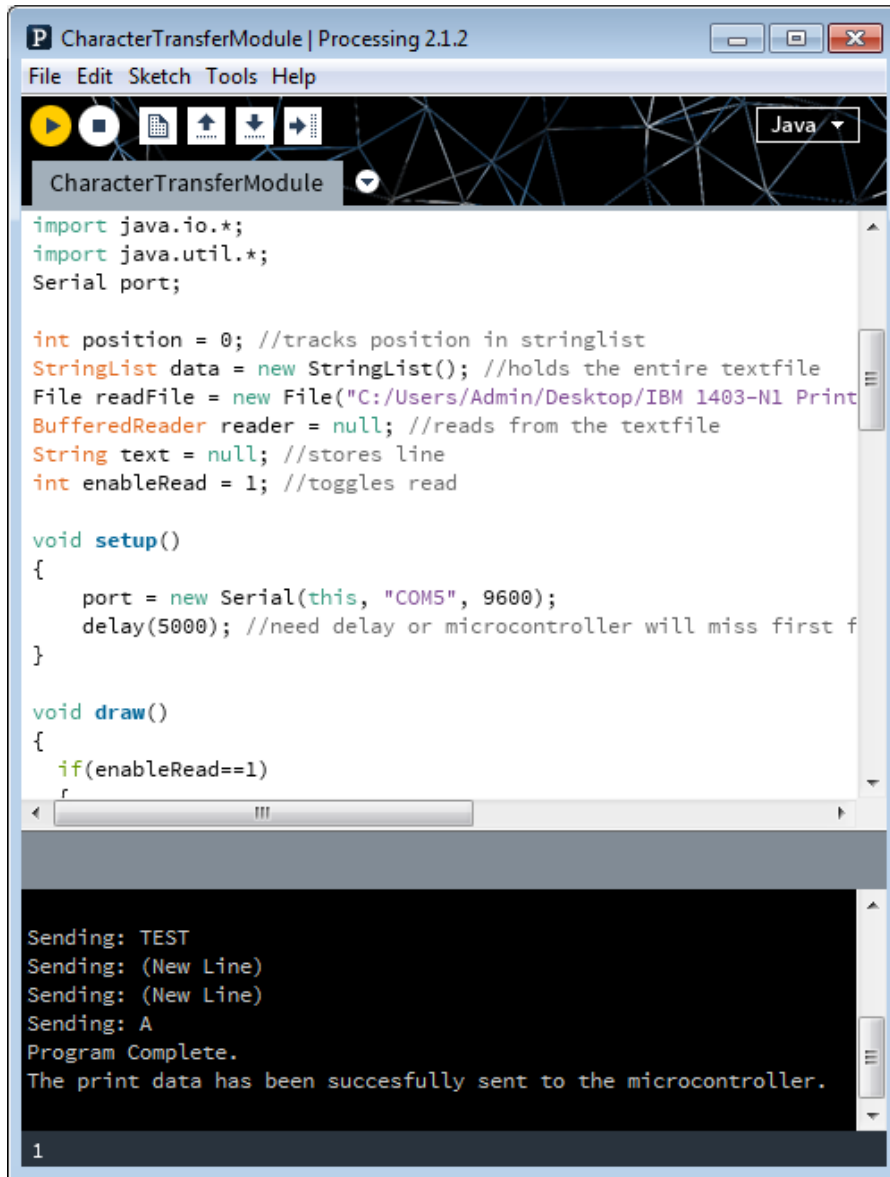
void draw()
{
    if(enableRead==1)
    {

```

Verify that the com port here (COM5) is the same as what is in the chipKit IDE.

If happy press run button.

Execution of Processing IDE



```
CharacterTransferModule | Processing 2.1.2
File Edit Sketch Tools Help
CharacterTransferModule
import java.io.*;
import java.util.*;
Serial port;

int position = 0; //tracks position in stringlist
StringList data = new StringList(); //holds the entire textfile
File readFile = new File("C:/Users/Admin/Desktop/IBM 1403-N1 Print
BufferedReader reader = null; //reads from the textfile
String text = null; //stores line
int enableRead = 1; //toggles read

void setup()
{
    port = new Serial(this, "COM5", 9600);
    delay(5000); //need delay or microcontroller will miss first f
}

void draw()
{
    if(enableRead==1)
    {
        Sending: TEST
        Sending: (New Line)
        Sending: (New Line)
        Sending: A
        Program Complete.
        The print data has been succesfully sent to the microcontroller.
    }
}
```

- Press “Run” button to start execution
- A small window will pop up after 5 seconds. Just close it.
- After execution the SD card will have debug data.

Text at bottom of page shows everything is OK.

Sniff Test

- Identify test points
- Identify indications that things are going well/poorly