Stuff for Tracey – documentation for research on the VS1053 codec line-level IO

RaspberryPi

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| Links | General code for any microcontroller to use the VS1053 to recording and playback, written in C, [here](http://www.vlsi.fi/en/support/software/microcontrollersoftware.ht) – stopped pursuing because Arduino was showing more progress, so change of plans: have everything work on Arduino, then port it to the pi. |
| Resources | My github has the recording capabilities for a USB input mic and documentation written up upon previous request, [here](https://github.com/tracypham1/SW_roverlink). |

Arduino

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| Links | No code provided, but describes how to write the VLSI ADMixer plugin to the SD card to decode the audio input and eventually decode and playback, [here](http://www.vsdsp-forum.com/phpbb/viewtopic.php?t=1903). |
|  | To see a forum on using the codec as a music player and voice amplifier, [here](http://www.vsdsp-forum.com/phpbb/viewtopic.php?t=1388). |
|  | For other VLSI solutions plugins for different encoding formats and techniques for manipulating the audio data with individual documents on implementation, [here.](http://www.vlsi.fi/en/support/software/vs10xxplugins.html) |
|  | A project that uses the MAX4466 Electret Mic to record 9 hours activated with a button press, [here](https://www.instructables.com/id/Make-Your-Own-Spy-Bug-Arduino-Voice-Recorder/). |
|  | Specific VS1053 audio input/output, addresses, modes, and registers, [here](https://github.com/CalPlug/VLSI_VS1053B_AudioProcessor_Examples/blob/master/Samples%20and%20Documentation/vs1053audio.pdf). |
| Attachments |  |
|  | “ |
| Still Working | Have played with adafruit blinka and circuit python bundles, seems like a dead end so far. |

Files (more details in sketches)

sineTest – checks pins are connected properly by sending a tone to LOUT/ROUT without SD card

Adafruit\_VS1053.h/.cpp - contains the edited libraries my .ino files ran because I changed some data member from private to protected for testing sineTest, but the one from the internet, [here](https://github.com/adafruit/Adafruit_VS1053_Library), should work fine with other sketches.

Pin Connections

(VS1053 -> ARDUINO)

XDCS -> D8

SDCS -> D4

CS -> D10

RST -> D9

SCLK -> D13

MOSI -> D12

MISO -> D11

GND -> GND

VCC -> 5V

DREQ -> D3

(MAX4466 -> VS1053)

VCC -> 5V

GND -> AGND

OUT -> LINE2

Other people with mic connection issues, [here](https://forums.adafruit.com/viewtopic.php?f=19&t=49143).

(VS1053 -> HEADPHONE SOCKET)

AGND -> MIDDLE PIN

LOUT/ROUT -> OUTER PINS

To Do

-use recorgOgg to upload ADMIXER plug in (plugins found here) to encode in mp3 wav format (?)

-this strat forum to use this setup as a real-time mic amplifier

Notes

MAX 4466 [datasheet](https://cdn-shop.adafruit.com/datasheets/MAX4465-MAX4469.pdf) says to bypass the power supply with a 0.1µF capacitor to ground

As of 07/11/19

1. Customizing the libraries (SD and Adafruit\_CS1053) as I go
2. Everything in the admixer-plugin-record.ino because eventually will have that plugin decode input as its encoding it.

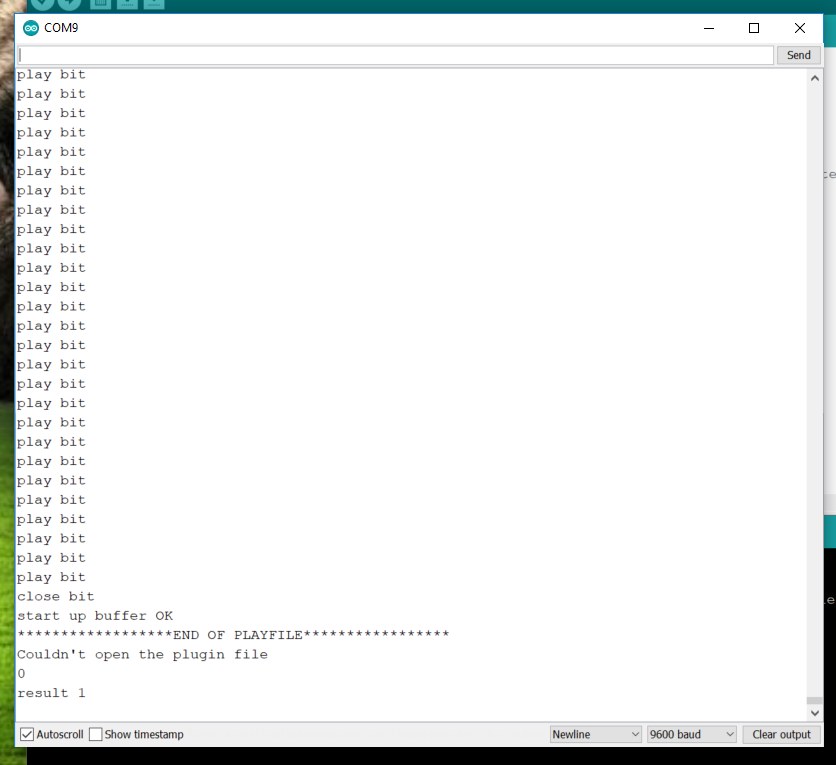
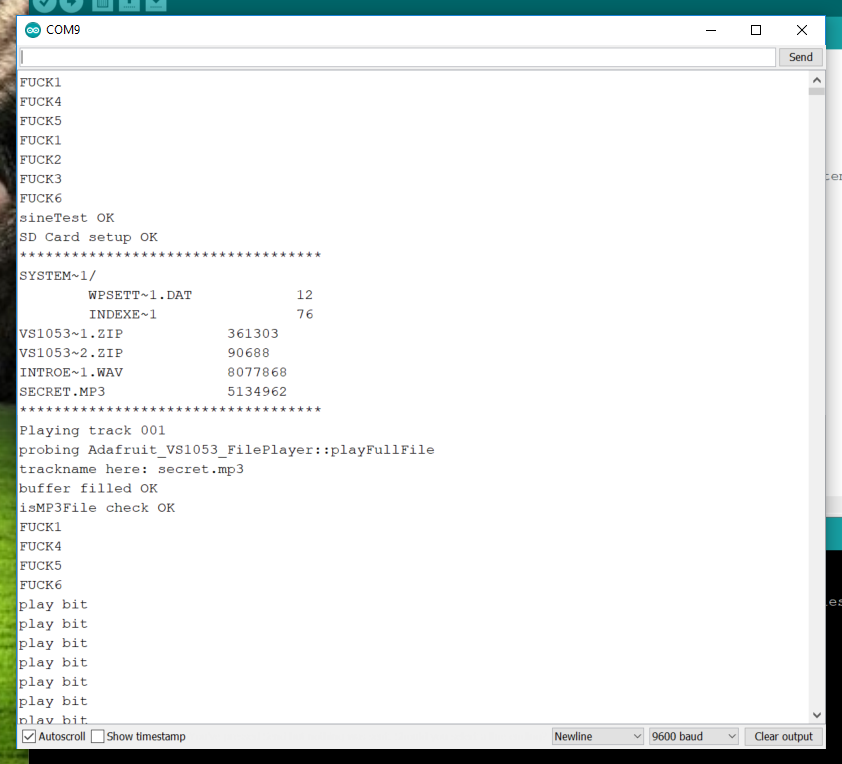
Done:

* Adafruit\_VS1053\_FilePlayer object, musicPlayer is flawless
* The sketch has a sinTest at the beginning to make sure communication with pins is working
* The SD card is readable and prints the directory to prove it

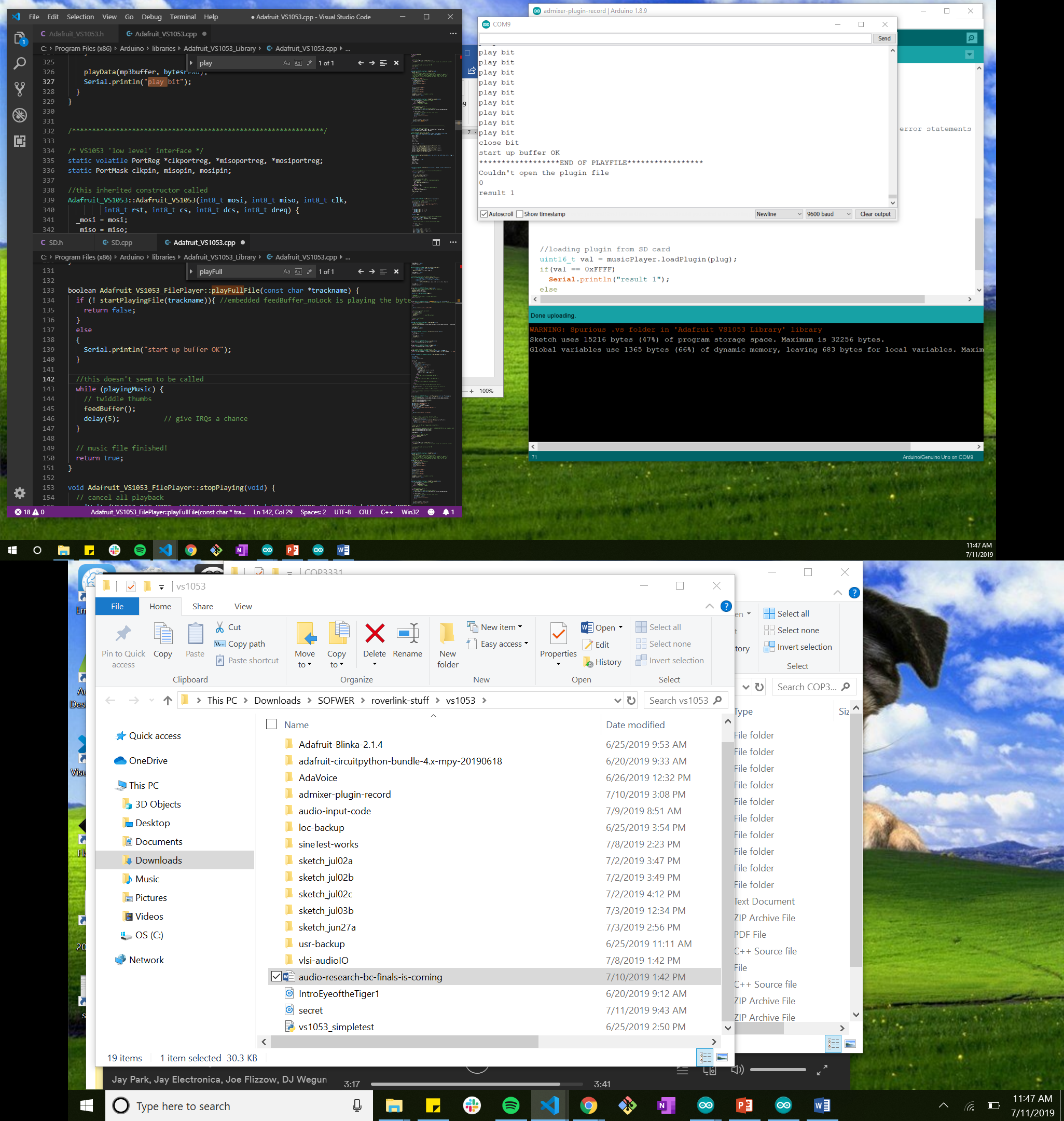
In progress (aka my current headache):

* Play an MP3 file on the SD card code (Adafruit\_VS1053\_Library > examples > simple\_player.ino)
  + playFullFile()
    - calls startPlayingFile()
  + startPlayingFile()
    - track is identified
    - verified to be a MP3 file
    - calls feedBuffer()
  + feedBuffer()
    - does stuff with interrupts
    - changes control flag boolean, feedBufferLock
    - calls feedBuffer\_noLock()
  + feedBuffer\_noLock()
    - calls playData()
  + playData()
    - reads single value mp3buffer and writes to the register, which should play it, but doesn’t…

For this output:



This is what the playFullFile() looks like:



To see each function and call and what not, it can be found in mt edited “Adafruit\_VS1053” files

To Do:

* Activate and use plugin to stream audio in real time, in thru MIC out through LOUT/ROUT

Done/Doing:

Read from the SD card successfully with “read-from-SD”

1. Run read-from-SD
2. Used VLC player to double check