Shaman 1 : Test 1.0 : record_on_button

Introduction

The microphone is one of the most essential components of the Shaman 1. The program “record_on_button” tests the microphone by recording a 30 second audio clip at the press of a button, storing the .wav audio file on the sd card. During recording the Teensy 4.1 will flash its red LED to signal when the device is recording.

Prerequisites

To run “record_on_button”, ensure that you have:

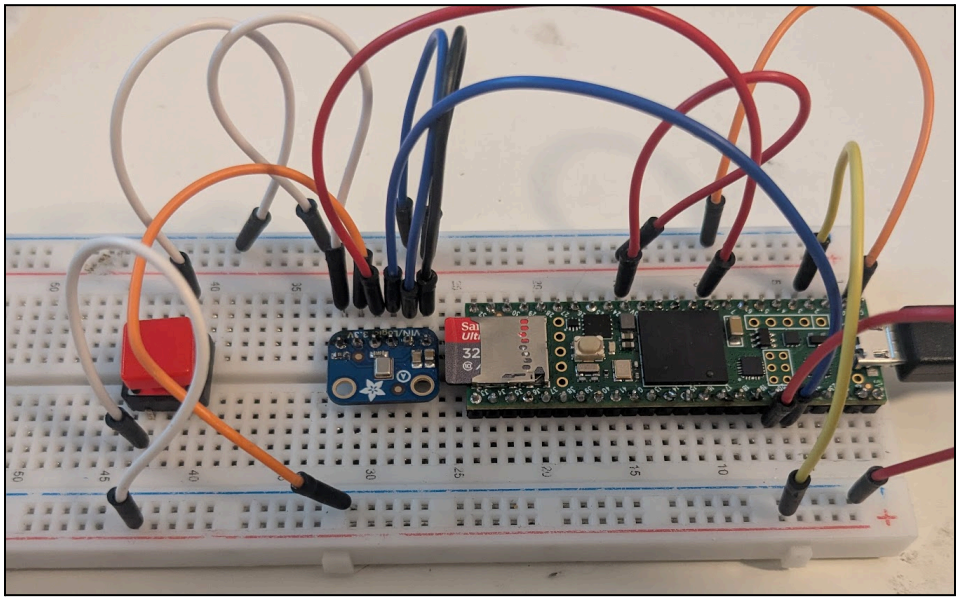
- Micropython is successfully flashed onto the Teensy 4.1, follow Teensy 4.1 Firmware Setup Guide Instructions for more details
- breadboard and variety of jumper cables
- powered USB hub (may be optional depending on your computer’s usb ports, was necessary for my setup)
- microSDHC card (other formats **will not work**)
- Adafruit I2S MEMS Microphone
- push button

Wiring

Follow this table for wiring, in addition ensure microSD card in firmly inserted in the built in Teensy port:

Component	Pin Name	Connects To (Teensy 4.1 Pin)
Microphone	3V	3.3V
	GND	GND
	BCLK	D21
	LRCL	D20
	DOUT	D8
	SEL	GND
Push Button	One side (example: upper left)	D2
	Other side (example: lower right)	GND

Photo of my setup:



Running Program

Download “tests_1.0_code” from the google drive, extract files and open the folder in VS code.

I can not guarantee that my code will work on your setup. However, I created a series of tests that check each individual component, greatly increasing the chance of successful implementation or at the very least help locate the problem. Run the programs in this order, do not proceed to the next program without ensuring that the previous one works. Reach out if you have any issues.

1. button_test.py: ensures the button is connected to your teensy
2. button_led_flash_test: ensures the LED is working
3. I2s_mic_button_test: tests microphone, to see if successful view the peak values outputted when quiet vs loud. The loud values should be greater (18000 vs 3000)
4. sd_write_test: ensures sd card is connected at the Teensy can read and write to it

To run a program, insert this command into terminal:

mpremote connect <your COM #> run <program name>

After those successful tests you can run record_on_button! After running, view output to see the filename of the audio file. Note it and then run this to view it on your computer:

- By running: mpremote connect COM9 cp :/sd/<filename> <destination_path>
- Or inserting microsd card into your computer