MIDI Synthesizer Project

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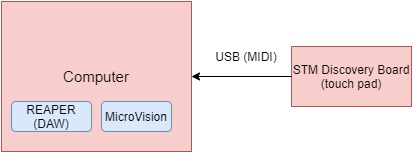
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Purpose: To successfully integrate the STM32F0 Discovery board into a touch-controlled music synthesizer with lights and sounds.

# Functionality:

You can now turn your STM32F0 Discovery board into a fully functional synthesizer! The MIDI Synthesizer has three keys that allow the user to play various notes on a computer using the STM32F0 Discovery board. Any DAW program, for example we used Reaper, can then convert those notes into fun sounds. Anything can be played from normal piano notes, to radical DJ beats. This is all with the added functionality of cool lights, to keep track of which key you are playing, as well as a background LED that acts as a metronome to keep you on beat.



## Set Up Instructions:

1. Download the GIT Repository and set up the STM project “Attempt 2” from the following link

<https://github.com/jen10web/MIDIsynthesizer>

1. DO NOT use the folder labeled MIDI Synthesizer. Use the Folder named Attempt 2 to set up the STM project. We were not able to rename it.
2. Connect the wires of the UART to the STM board. The black wire goes to ground, the receiver wire connects to PC4, and the transmit wire connects to PC5.
3. Build and Flash the project onto your STM board.
4. Check that the touch keys on the bottom of your board light up separate LEDS.
5. Download Python 3.x and install the libraries rtmidi2, and pyserial
6. Download and run LoopMidi to create a virtual MIDI input port
7. Run a midi synthesizer or DAW and set the virtual MIDI port to be the input for any instrument
8. Run the file stm32toMIDI.py with python while the board is connected to the computer
9. Pressing locations on the touch sensor should play notes in the music software

## Trouble Shooting:

1. If there are no lights from pressing the keys consult the following document to check your touch keys. You should be able to google the document, and download the following pdf.
   1. dm00445657-getting-started-with-touch-sensing-control-on-stm32-microcontrollers-stmicroelectronics
2. If there is no serial data coming from the STM use PuTty or a similar program with a baud rate of 115200 to confirm that your UART is wired correctly and sending serial data out.
3. If the python program is not working, make sure you downloaded the mentioned libraries.
4. If MIDI is not working, assure that the virtual MIDI port is correctly configured with the DAW software.