Oh No Noise

Amp singing notes that you're not playing? Got a cricket in your cabinet? Too much noise on your signal?

Here are some things to try when your circuit is too noisy!

Bypass caps

TODO: actually try this before writing any more...

Try this: on the output of an oscillator before it connects to your amp, connect a capacitor (TODO: value?) to GND.

It sounds much quieter! Why?

The oscillator is like a sputtering faucet, undulating between full blast of water and none at all — this is the high-and-low of a square wave. Imagine trying to take a drink from it with a straw. Doable if thirsty but not ideal, because you'd only be getting water half the time.

The newly added capacitor is like a cup. Drink from that with a straw and get a nice, steady drink.

Okay, so we've made an oscillator quieter, but we're trying to do the opposite: we want to *remove* unintended sounds from our mix.

In our analogy, water is voltage. The voltage being outputted by our oscillator is coming from the breadboard's power rails, causing

- Decoupling caps (aka bypass) by the power pins of an IC can help to remove noise caused by sudden fluctuations in its power usage. In digital systems, this is the most common usage for caps. They're placed in parallel to a signal path to filter out AC and leave DC.
- 386 .1uF bypass cap on 7 to GND
- Shorter wires
- More ground connections/references
- Different power supply
- Different amp
- LM386
    - Bypass cap (still .1uF) from pin 7 to GND

- If you're boosting the gain w/ a cap across pins 1 and 8, try removing it and relying only on the volume pot being high to make your circuit loud
- Try connecting the GND leg of the volume pot to pin 2. TODO: explain well. Pin 2 is a GND reference for the input on pin 3. If pin 2's GND is far away from the
- Lastly, ditch the 386 entirely and use an external amp
- filter (TODO: datasheet)

Embrace it

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by Tommy for Dogbotic's "DIY Synthesizers for the Electronically Unacquainted" workshop

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