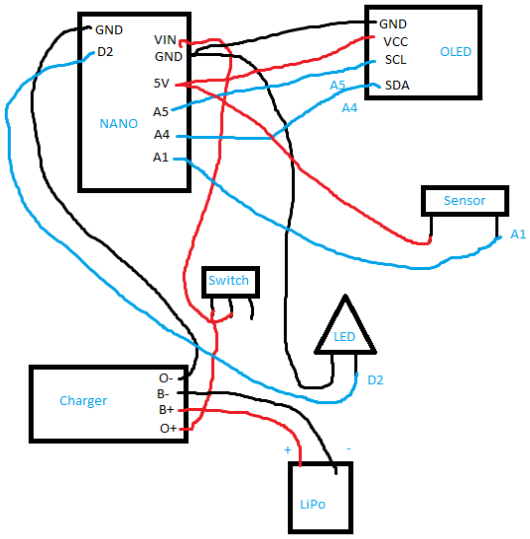
Saibamaze December 2022

Fortune Cube Instruction Guide

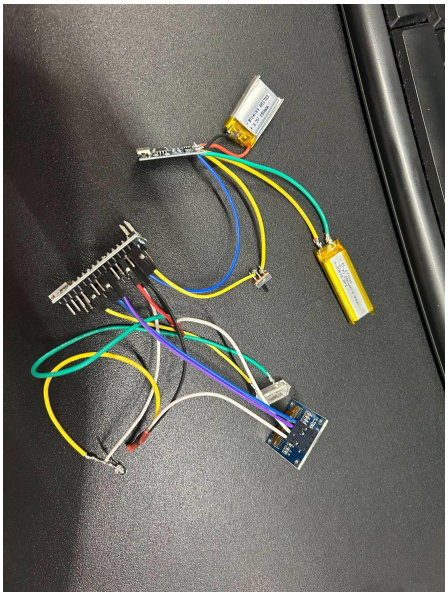
PARTS

1. Hot Glue/Super Glue
2. Arduino Nano
3. 3D Printer
4. Wiring
5. SSD1306 OLED Screen
6. 1 LED
7. 3.7v-5v LiPo battery
8. Vibration Switch
9. SS-12D00(1P2T) Toggle Switch
10. 5v Micro USB 1A 18650 TP4056 Charging Circuit

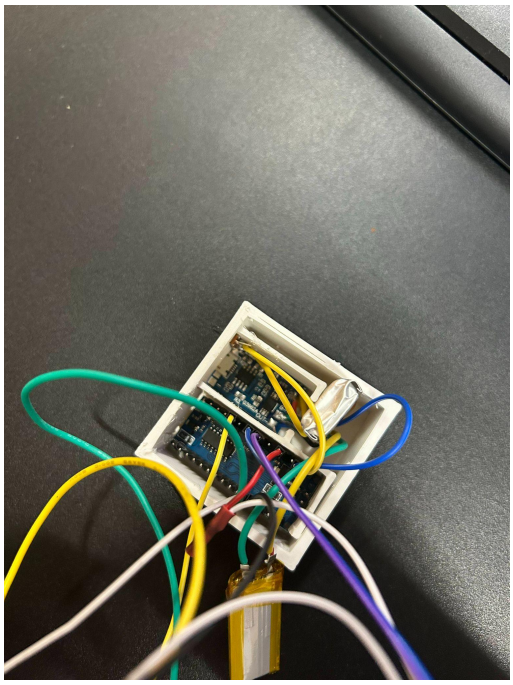
CIRCUIT



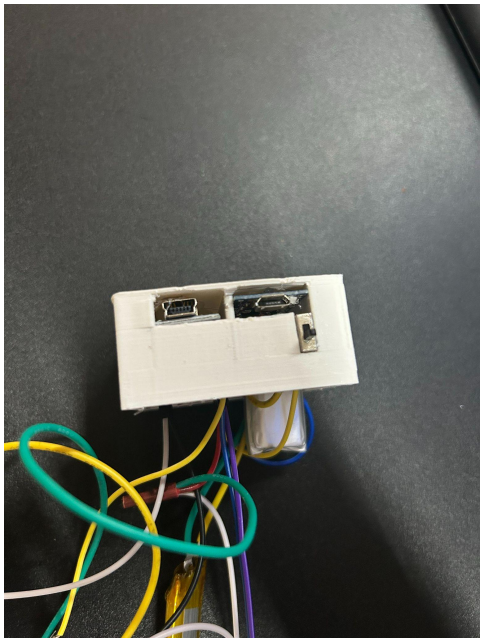
CONSTRUCTION



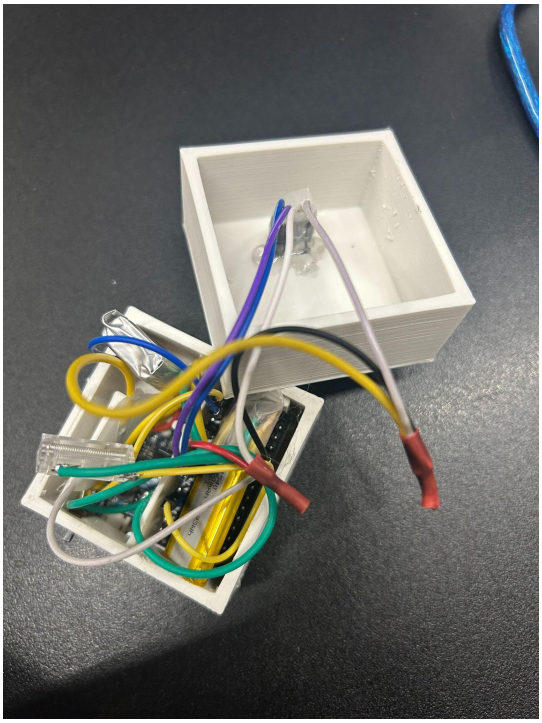
Put the circuit together. Remember to always use a breadboard first before soldering to ensure everything is working correctly. Note I am using two 3.7v lipo batteries in parallel. This is not good practice, but shouldn't cause much of an issue. Never attach batteries in series to a charging circuit.



The 3D printed enclosure allows for both the nano and the charging circuit to be housed tightly in the cube, with USB’s facing outward and accessible. I used hot glue to glue them down to the enclosure as well. I have the pins for the nano facing upwards. There is storage too for the battery to fit in.

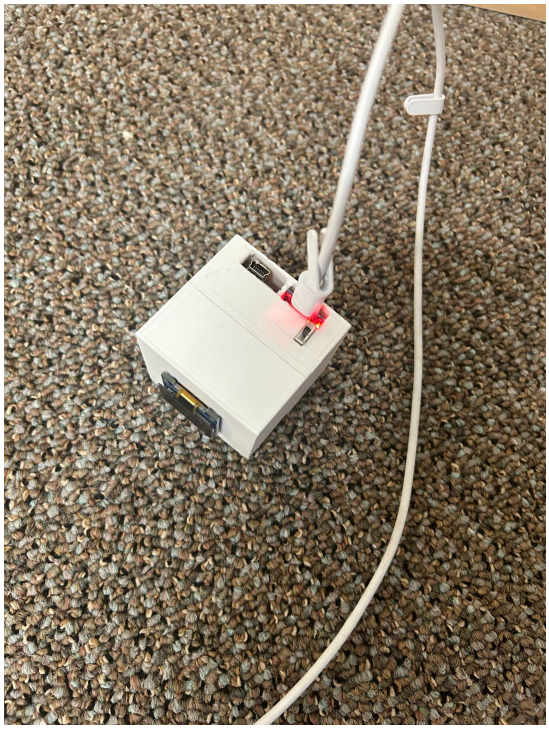


I then used super glue to carefully glue the switch into the little slot on the enclosure. If you have a bigger switch, you can dremel out the slot to accommodate it.



The next step is to feed the OLED wires through the slit on the top part of the housing, and hot glue it in place (the device will be shaken, so glue it well).

The last step is to use super glue to attach the top and bottom pieces of the enclosure together. You can use a rubber band to hold the cube together while it dries.



And there you go! It is all ready to go!

NOTES

1. The arduino nano only has so much memory available, and the OLED uses quite a large portion of it. Adding too many strings / char arrays can cause the screen to not work at all. You can try storing it in PROGMEM, but this didn't fix my issue when displaying to the screen. If you want to change the possible outcomes, do not have the possible strings be too long, and don't add any more to the list.
2. The vibration sensor works like a spring making contact with a wire. Therefore, a flick triggers the device more than a shake.
3. As a gag gift I made the device intentionally hard to trigger, and you have to shake it a lot before the message is displayed. This can be changed via the options in the code (numShakes)