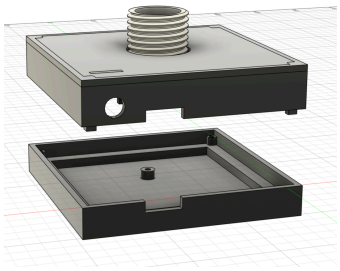
The Orb

What it is

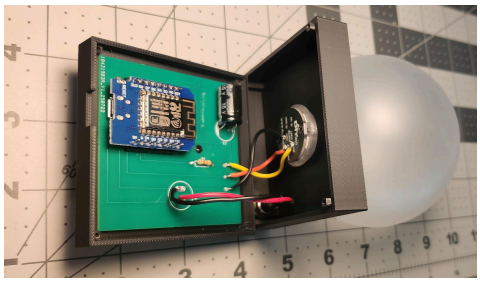
The Orb is an innocuous looking frosted sphere that conveys whether a certain financial index, commodity, stock or even crypto is up or down at the moment with color and conveys how drastic the change is by pulsing the light.

Photos

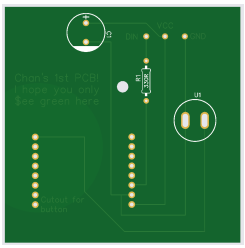
Enclosure Design



Finished Build



Wiring



Wiring is extremely simple, as all components are connected to the custom PCB designed for this project (shown at right)

- Solder all components to the PCB
- Screw PCB into bottom of enclosure base, ensuring USB port faces USB hole in enclosure
- Mount the switch into the cradle on top of enclosure base
- Screw LED ring into base of threaded piece, and push through the top hole
- Screw glass globe onto threaded piece sticking out from top
- Secure top and bottom pieces of base together with screws

Code

- Open Arduino IDE, then connect ESP8266 to computer
- Select 'LOLIN(WEMOS) D1 R2 & mini' for board
- Upload the code found in the 'InfoOrb.ino' file in the project documents here
- Go through configuration steps, keeping an eye on serial monitor for any unexpected issues

Lessons Learned

- Using 'ESP_DoubleResetDetector' made captive portal reuse easy without access to the board.
- Pulse animations look far smoother when brightness modulation is sinusoidal.
- A resistor + capacitor drastically improves LED stability and reduces flicker.

More details at https://github.com/ChandlerEx/Projects