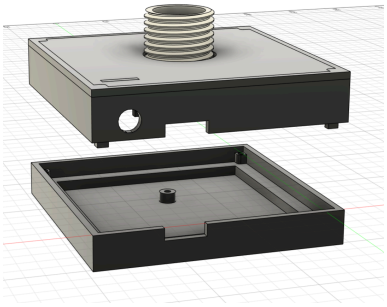
The Orb

Overview

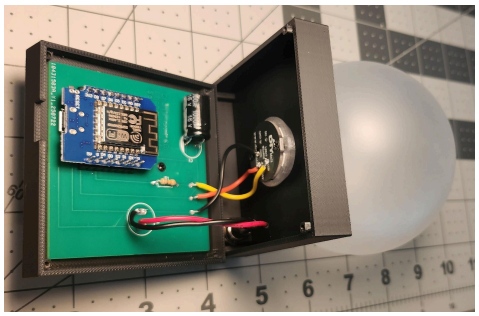
The Orb is a frosted-glass desktop indicator that uses color and pulsing light to show whether a selected stock, index, or crypto is up or down, and by how much. Measures 100 × 80 × 80 mm (110 g). Features a custom PCB (EasyEDA) and a fully parametric 3D-printed enclosure (Fusion 360).

Photos

Enclosure Design (Designed in Fusion 360)

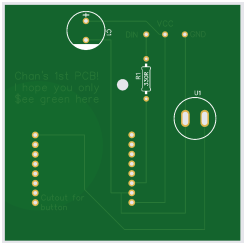


Finished Build



Wiring

- Solder all components to the custom PCB that I specifically designed for this project (shown at right)
- 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 'InfoOrb.ino' in the project files here
- Go through configuration steps, keeping an eye on serial monitor for any 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.

Full build log, code, and files: https://github.com/ChandlerEx/Projects