

# System Application Testing

4/28/23

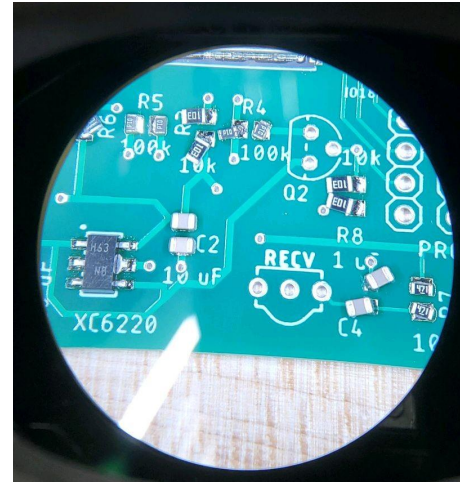
# Progress Since SIT

- Board and parts ordered (not constructed)
- 3D enclosure designed and printed
- Website finished
- Memory bugs causing runtime errors fixed
- Documentation nearly complete

# Board and Parts Order

Parts list is on following slide.

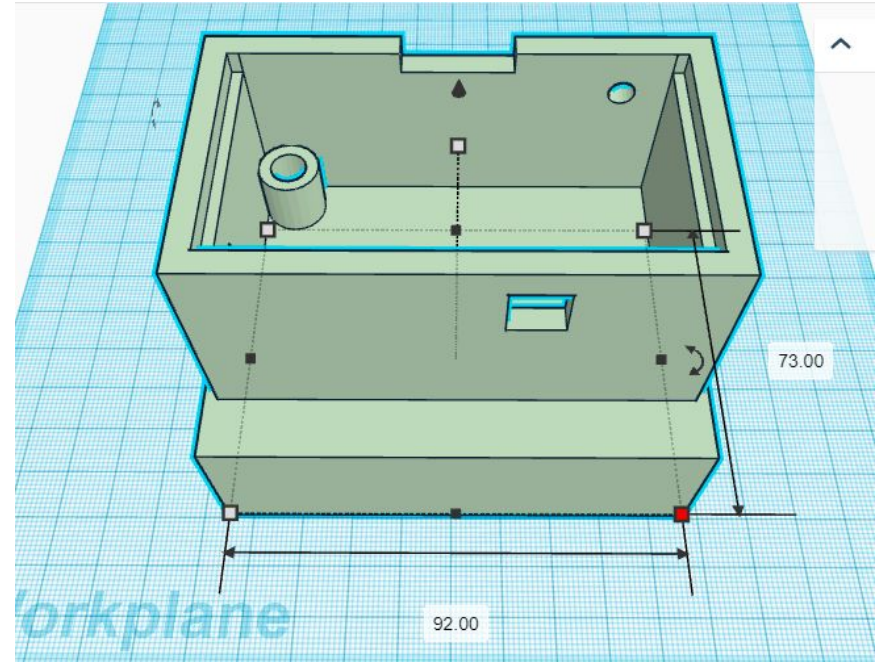
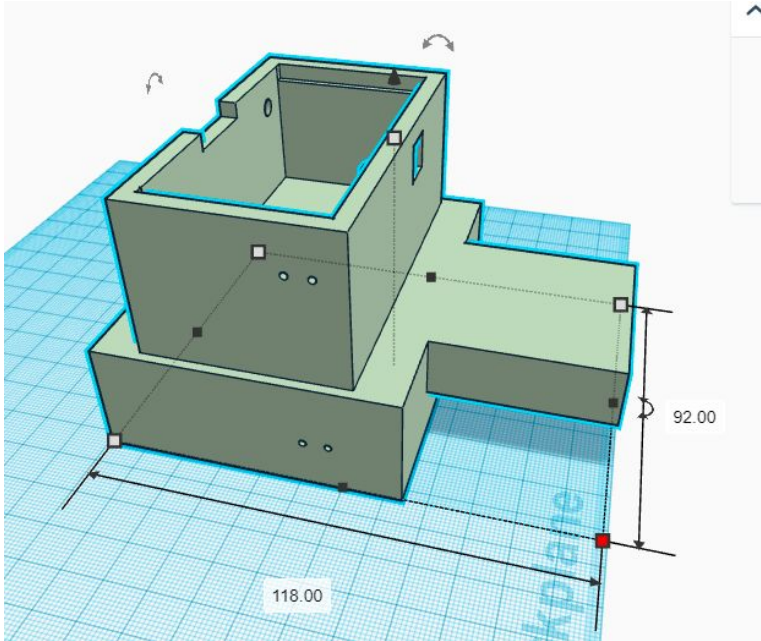
- Board fab still necessary
  - Delayed due to late parts shipment & ordering - logistical/timing blunder
  - 4/27 fabrication failed - see image
- Testing board can demonstrate functionality in the meantime
  - Project code has made commendable progress
  - Prototype setup is complete

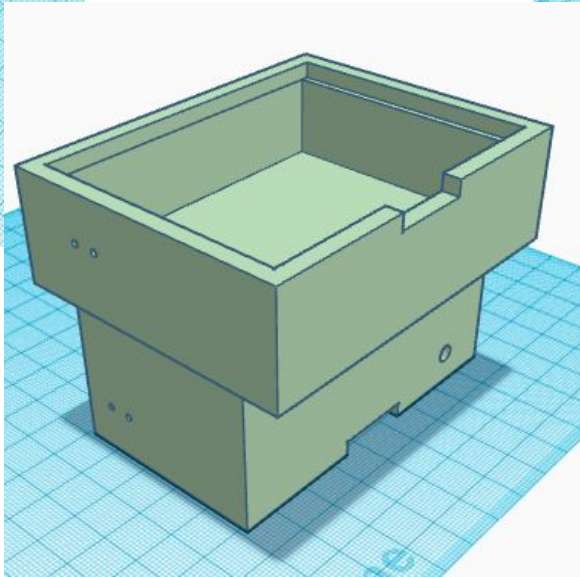
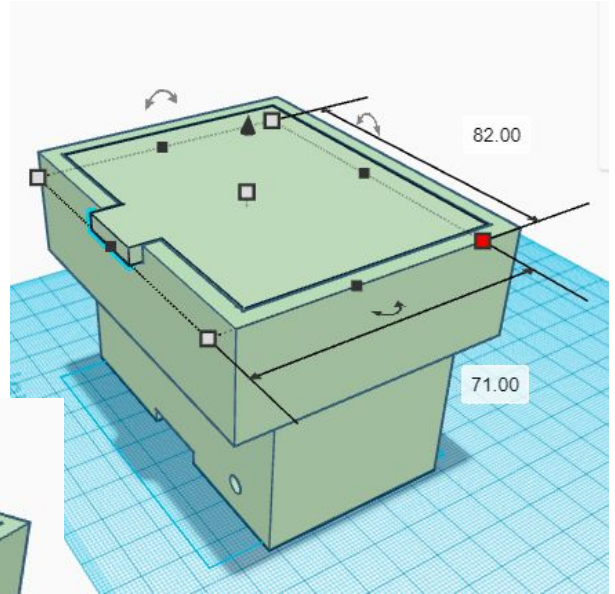
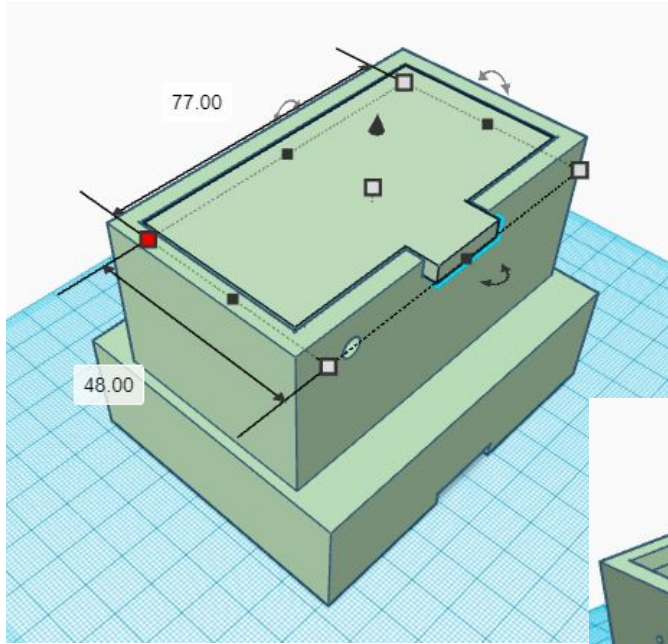


Name	Q	Description	Package	Status
ESP32-C3	1	Microprocessor	MODULE_ESP32-C3-W ROOM-02-H4	Prof. Given
XC6220	1	Voltage Regulator	XC6220SOT89-5	Obtained
USB-MINI-B	1	USB-C connector	USB-MINI-FCI10033527	Obtained
SWITCH-PB4X4	2	Push button	PBSMT4X4M	Not needed
PINHD-1X4	1	4x1 Pin Header	1X04N	Not needed
PINHD-1X10	2	1X10 Pin Header	1X10	Not needed
2N3819	2	N-Type Transistor	TO92	Obtained
TSHG6210	1	IRED	T-1 $\frac{3}{4}$	Obtained
TSOP38238	1	Receiver	TSOP382	Obtained
1-1825059-2	1	Switch	SWSO6_325X138P100	Obtained
LampVPath - 3AA	1	AA Battery Holder	N/A	Obtained

# 3D Print

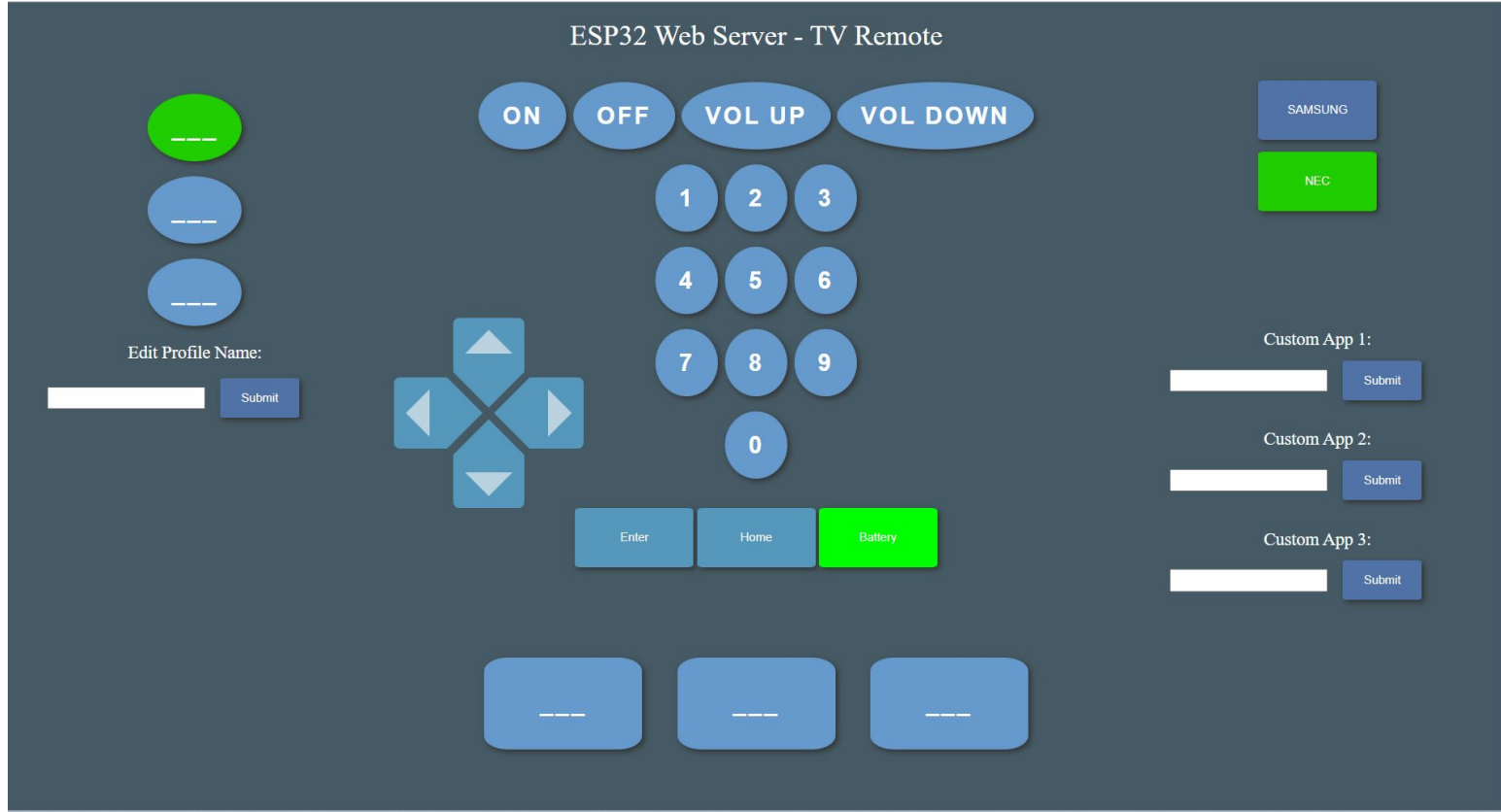
- w/out tab: 92 x 73 x 67 mm
- w/ tab: 92 x 118 x 67 mm
  - For attachment to TV





- Press fit lids
- 3 AA batteries held in larger compartment
- PCB held in smaller compartment with holes for IRED and transmitter

# Finished Website



# New Features

- Arrow keys
- Enter button
- Battery readout indicator
- Fixed the custom button implementation
- Added the NEC protocol
- Changed HTML to look better



# Memory Bug

- HTML is just a big string
- In our current implementation, we generate it using string concatenation
- When this is done within a function, it generates a MASSIVE stack
- This is unproblematic for computers but becomes an issue with the Arduino framework for microprocessor because there is limited stack memory.
- During runtime, we would essentially get stack overflow errors and I had no idea why for a very long time.
- Eventually, we moved most of the string content to program memory, and only concatenated strings that were dependent on user input, thus fixing the problem.

# Documentation

- Nick has created and updated our website to date.
- Final document is nearly complete, current page range is 60
- Figures for final poster are completed.