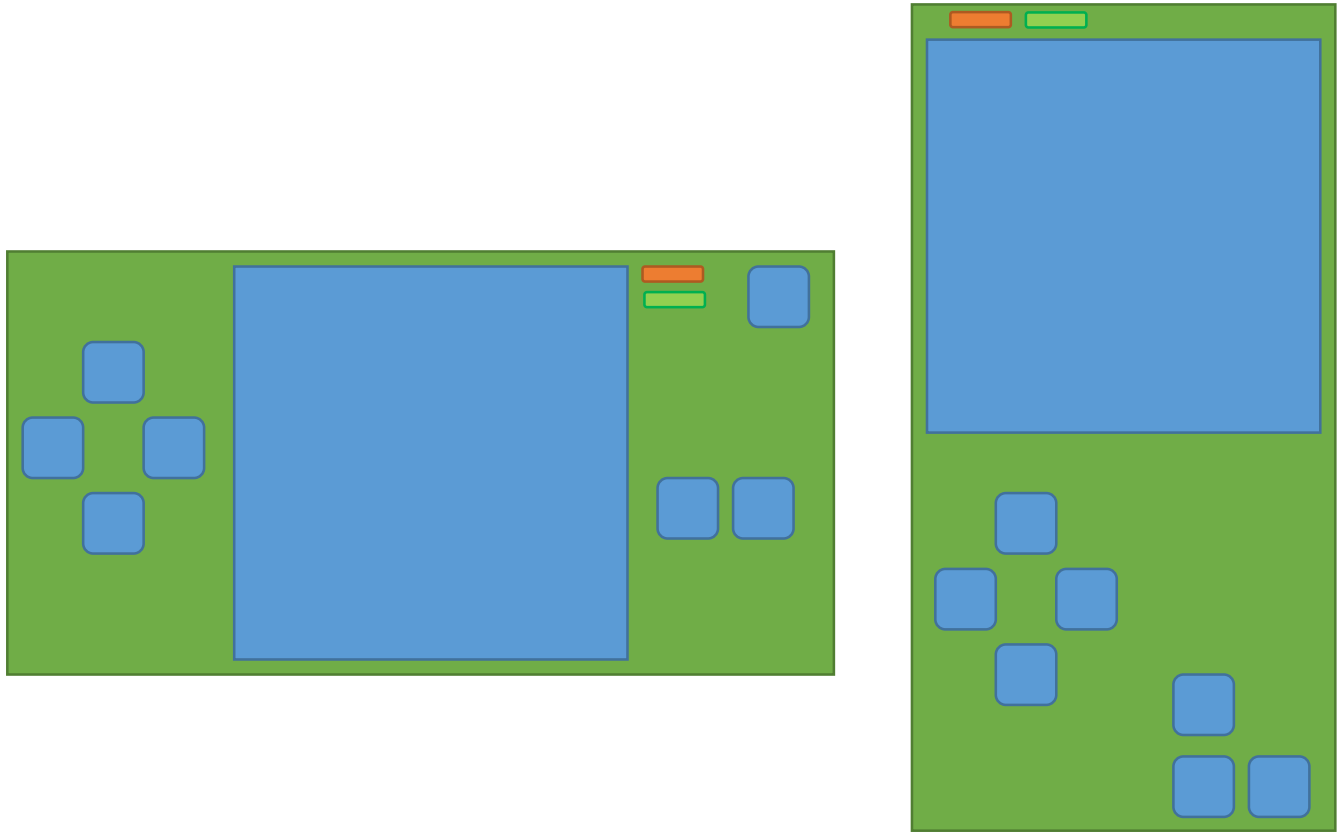


Building Game-Console

Sahil Khanna

Systematic, Stepwise approach

An engineer doesn’t work like a hobbyist

Verify – Validate – Move further

Don’t do anything without having any idea of how it’ll work.

You should know what to expect (at least).

Validate 3.3V

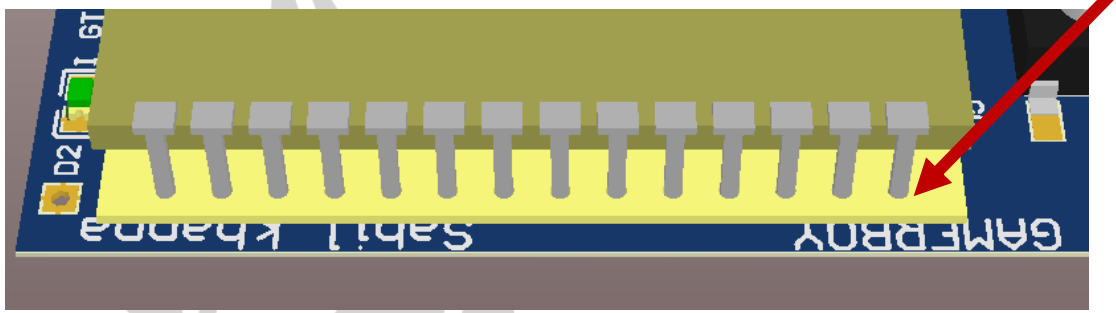
Solder your power part first i.e. boost regulator and D-flipflop + (power ON button)

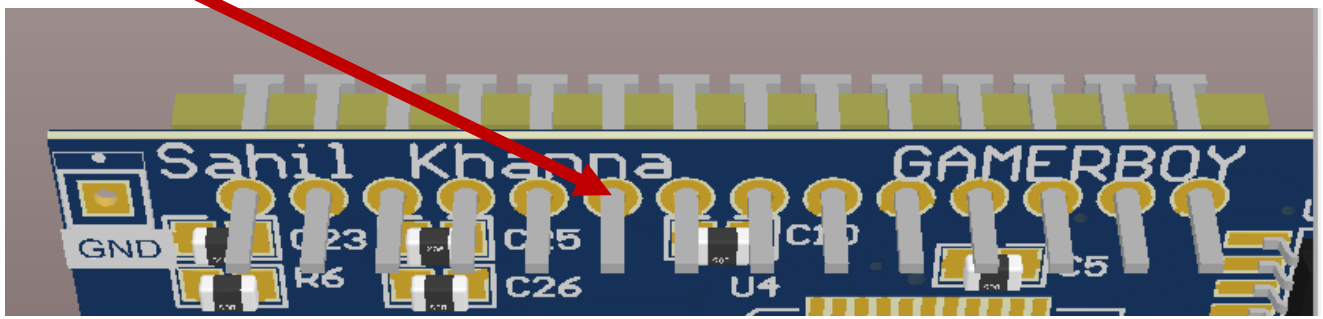
- Check whether you receive 3.3V as output, only then move forward.
- You can apply 1.5V via benchtop power supply(keep max current below 0.1A) or a AA battery
- If by pressing the button the output is not being generated then check whether the debouncing capacitor is doing its job properly or not. Use an oscilloscope to check the button input to flipflop. There shouldn’t be any spikes.

Further soldering

- If you have through hole components passing through each other then first try to put them together without soldering them. See and note down, in what order should you put these components on your PCB and what pins should you snip off first.
- Double check the placement of your microcontroller whether pin 1 is in the correct orientation.
- Both side of the LCD pins should be soldered for proper connection.

Should be soldered





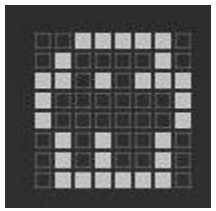
After soldering

- Best place to start is to blink the programmable led(low battery).
- The blinking time will be governed by the clock. Hence check whether you are getting proper clock at the crystal. Do this by using the Oscilloscope with alligator clip going to the GND pin on your PCB and the other at one of the pads of your crystal.
- Setup an initializing code which setups the whole functioning of the microcontroller i.e.
  - Defining input and output pins
  - Initializing SPI
- Again use verify – validate – move forward approach for software. Don’t try to jump in to the deep end of the pool. Have separate header files for each functions i.e. RAM, LCD, IOs, Game, LCD character library etc.

More things to come

- This guide will be updated as more issues arise. So if you are confused then send me an email and I'll add your query within this guide.
- I'll put some embedded related stuff at sahilkhanna.org/embedded
- This will include some of the previous and some future guides, Test code requests, a custom character LCD hex code generator tool "heCo" (webapp and windows app). Stay tuned.

heCo



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