IEEE

Student Branch at UCSB

PCB Christmas Ornament (Lesson 4)

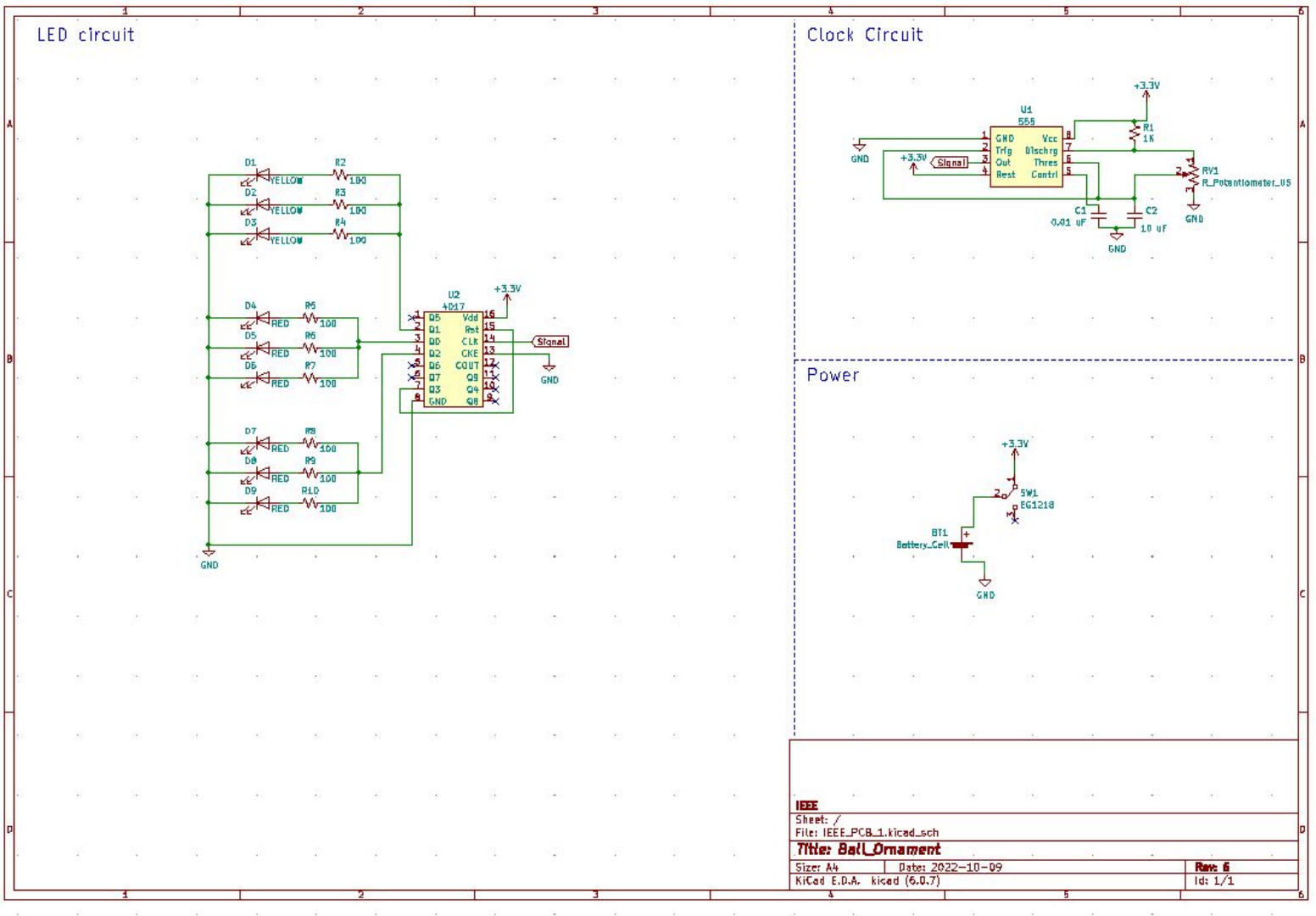
Kogan Sam and Matthew Tom

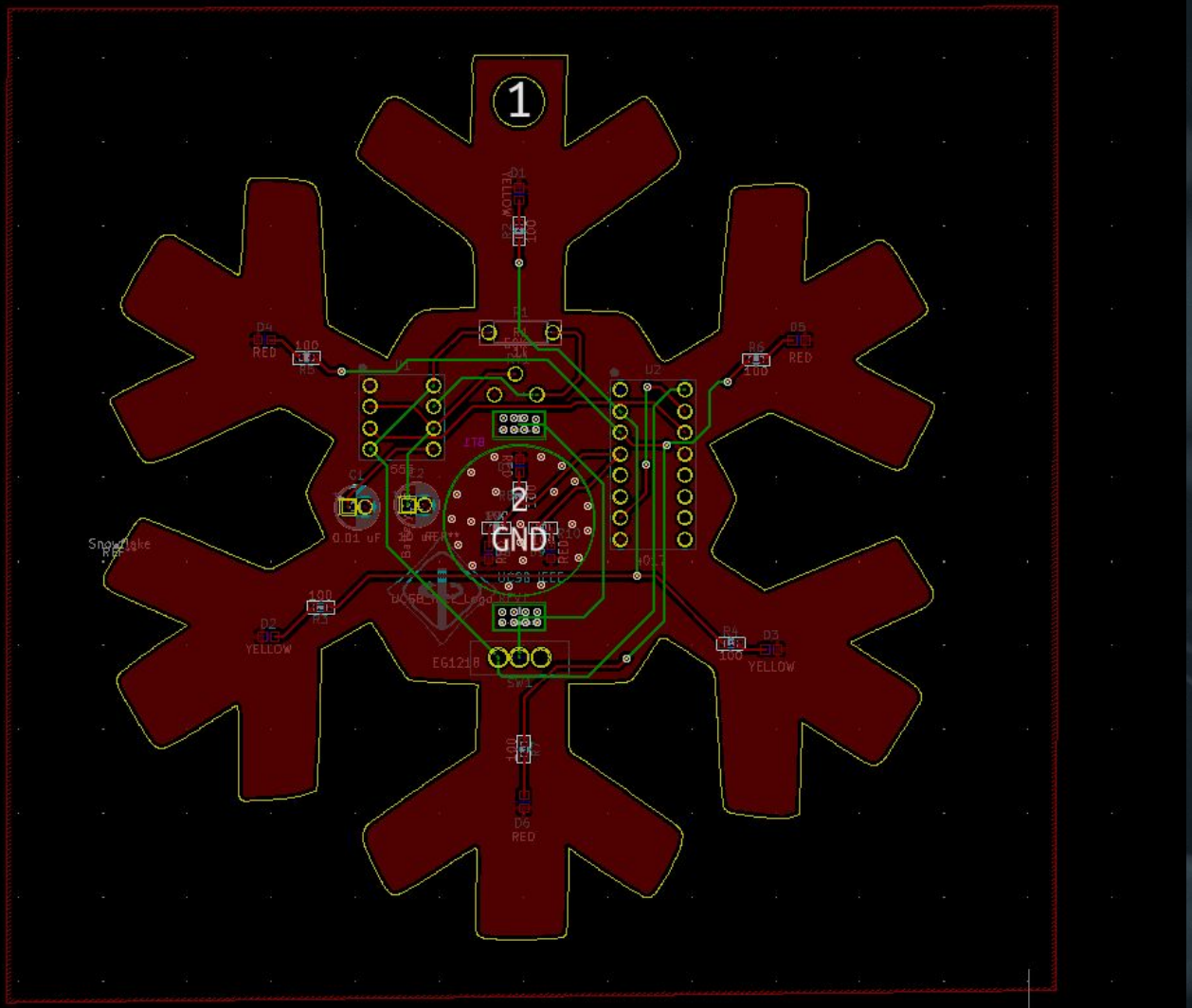
Today

- Continuing KICAD and features walkthrough
  - PCB Layout
    - Placing traces and components
    - Via usage
    - Fill zones
    - Board outlines
    - Importing images as silkscreen
  - Ordering PCB boards from a manufacturer (JLCPCB)

List of parts and respective datasheets

- 5mm 20mA LED - https://www.digikey.com/en/products/detail/creeled-inc/C503B-BAS-CY0C0461/1922943
  - Datasheet should be the same for different colors (from same manufacturer and model)
- SMD 5mA LEDs - https://www.digikey.com/en/products/detail/inolux/IN-S63AT5UW/7604931
- 100 Ohm Resistors - https://www.digikey.com/en/products/detail/yageo/AC0603FR-10100RL/14286596
- 4017 IC - https://www.digikey.com/en/products/detail/texas-instruments/CD4017BE/67253
- 555 IC - https://www.digikey.com/en/products/detail/texas-instruments/SE555P/380221
- 1k Ohm Resistor - https://www.digikey.com/en/products/detail/yageo/CFR50SJT-52-1K/9099728
- 5k Ohm Potentiometer - https://www.digikey.com/en/products/detail/nidec-copal-electronics/CT6EP502/738314
- 0.1 uF Capacitor - https://www.digikey.com/en/products/detail/w%C3%BCrth-elektronik/860010672001/5726900
- 10 uF Capacitor - https://www.digikey.com/en/products/detail/w%C3%BCrth-elektronik/860010372001/5726842
- Switch - https://www.digikey.com/en/products/detail/e-switch/EG1218/101726?s=N4IgTCBcDaIKIHECMBOADAZhAXQL5A
- Battery Holder - https://www.digikey.com/en/products/detail/linx-technologies-inc/BAT-HLD-001-TR/4876924
- 8 pin IC socket - https://www.digikey.com/en/products/detail/cnc-tech/243-08-1-03/3441568
- 16 pin IC socket - https://www.digikey.com/en/products/detail/cnc-tech/243-16-1-03/3441570


LED circuit
D1
YELLOW
R2
100
D2
YELLOW
R3
100
D3
YELLOW
R4
100
D4
RED
R5
100
D5
RED
R6
100
D6
RED
R7
100
D7
RED
R8
100
D8
RED
R9
100
D9
RED
R10
100
U2
4017
Q5
Q1
Q0
Q2
Q6
Q7
Q3
GND
Vdd
Rst
Clk
CKE
COUT
Q9
Q4
Q8
+3.3V
Signal
GND
Clock Circuit
U1
555
GND
Trig
Out
Rest
Vcc
Discrg
Thres
Contrl
+3.3V
Signal
R1
1K
RV1
R_Potentiometer_US
C1
0.01 uF
C2
10 uF
GND
Power
+3.3V
SW1
EG1218
BT1
Battery_Cell
GND
IEEE
Sheet: /
File: IEEE_PCB_1.kicad_sch
Title: Ball_Ornament
Size: A4
Date: 2022-10-09
Rev: 6
KiCad E.D.A. kicad (6.0.7)
Id: 1/1


1
2
GND

Credits/Other Resources

Official KiCAD resources: https://www.kicad.org/help/learning-resources/

Snap EDA: https://www.snapeda.com/

Generating Gerbers: https://jlcpcb.com/help/article/362-how-to-generate-gerber-and-drill-files-in-kicad-7

Github: https://github.com/02ks/IEEE_pcb_project