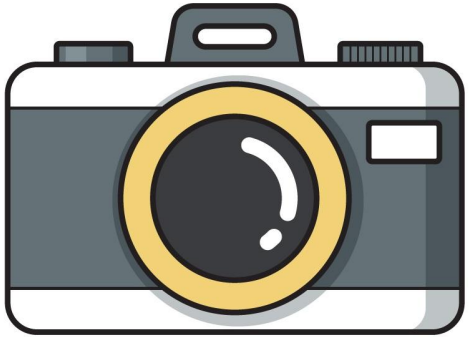
EEC136 Digital Camera

Week 2 Project Update

Waylon, Cassandra, Viktor, Alina, Angel



Overview

1. Received most parts for prototyping. Order from DigiKey delayed.
2. Set up GitHub repository.
3. Placed order for Programming Board.
4. Began building prototype board and testing photodiodes.

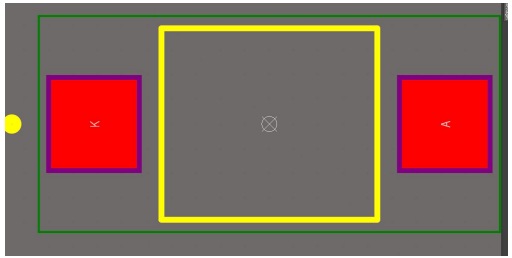
Waylon

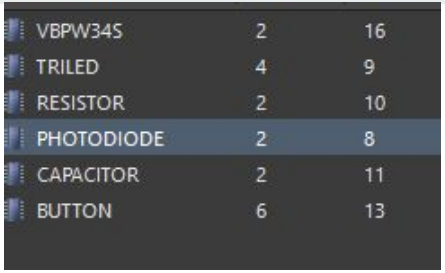
- Received parts for prototyping.
- Working through issues with DigiKey order. (Calling customer service ☹)
- Began testing with photodiodes.
  - Can measure voltage from 0v to 0.5v depending on light intensity.
- Assisted Angel with programming board design.
  - Placed order for programming board.

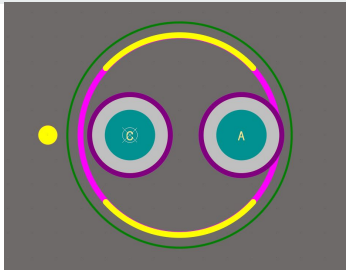
Next Week

- Hardware - Receive and assemble programming board.
- Hardware - Verify programming board operation.
- Hardware - Assist in assembling the breadboard prototype.

Alina





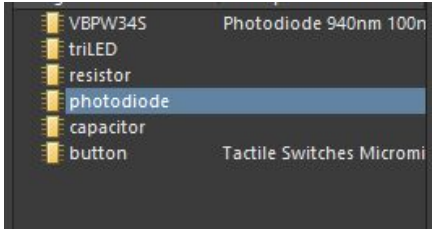


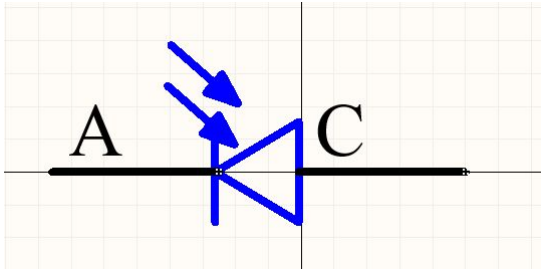
This week:

- Worked on the pcb and schematic library, made components (Some screenshots/not all of what I did this week)
- Researched the best way to do a layout for the components, taking into consideration whether to use amplifier or not

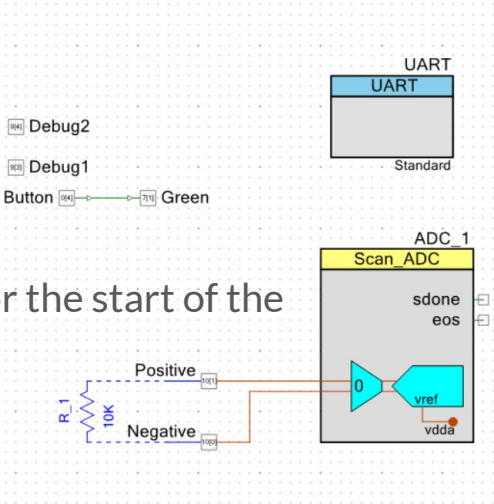
Next week:

- Finish the library for the project, and work on PCB layout after testing the prototype with the group, to understand what exactly needs to go on the pcb design





Viktor



This week:

- Management - Open a Github repository for the project in preparation for the start of the prototype code. https://github.com/vdmulato/DigitalCamera.git
- Firmware - Started implementation of ADC with Psoc environment.

Plans for next week:

- Firmware - Finish the implementation of the code of ADC in addition to multiplexing. The goal of this prototype is to be able to read and array of photodiodes.
- Hardware - Work on prototype breadboard.

Angel

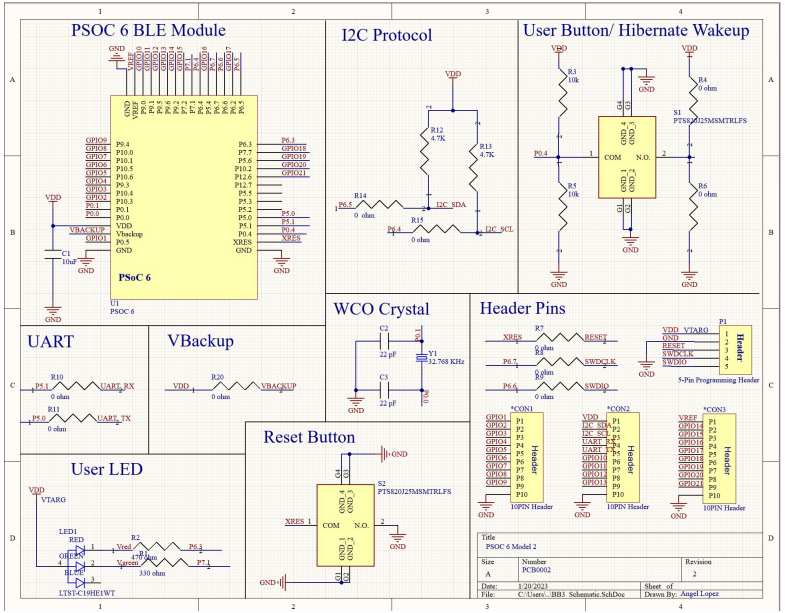
This week:

- PCB Design - Created the whole new PCB design to fix minor errors and adjust GPIO/button functionalities. New PCB was sent to manufacture.

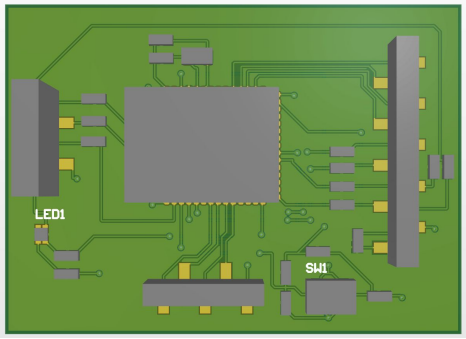
Plans for next week:

- PCB Design - Work on new components library for the actual PCB sensor.
- Hardware - Work on prototype breadboard.

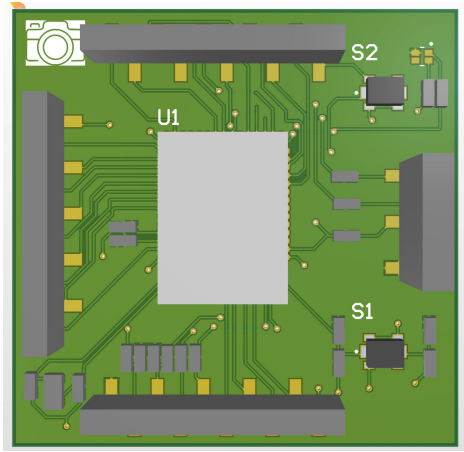
New Schematic Layout



OLD PSOC 6 PCB



NEW PSOC 6 PCB



Cassandra

This week:

- Firmware/Design - Continued research on how photodiode circuit works to better plan logic for the code
- Firmware - Started planning code structure

```
Loop continuously:
        Wait for button press (activation signal)
        Loop on row variable:
                Select row for readout
                Read all I/O columns
                Hold data in variable/memory (append to array?)
                Repeat until all rows are read
        end loop

        Reset all pixels
end loop (will not be reached?)
```

Plans for next week:

- Firmware - Work out the details of how to control the pixels with code (which signals to activate and when)
- Hardware - Work on prototype breadboard

GANTT CHART

PROJECT TITLE	Digital Camera	COMPANY NAME	EEC136B
PROJECT MANAGER	Waylon	DATE	1/13/23

WBS NUMBER	TASK TITLE	TASK OWNER	START DATE	DUE DATE	DURATION	PCT OF TASK COMPLETE	PHASE ONE														
							WEEK 1 - Jan 9-13					WEEK 2 - Jan 16-20					WEEK 3 - Jan 23-27				
							M	T	W	R	F	M	T	W	R	F	M	T	W	R	F
1	Project Conception																				
1.1	Concept Design	Casandra	1/9/23	1/27/23	18	75%															
1.1.1	Bill of Materials	Vic/Way	12/1/22	1/13/23	42	100%															
2	Circuit Design																				
2.1	PSOC Programming Board	Angel	1/9/23	1/27/23	18	90%															
2.2	Photo Diode Board	Alina	1/13/23	2/10/23	27	50%															
2.3	OLED Display Board	Alina	1/13/23	2/10/23	27	0%															
3	Software/Coding																				
3.1	Reading charge on pixels	Cassandra	1/21/22	2/18/22	27	0%															
3.2	Processing Data	Cassandra	1/21/22	2/18/22	27	0%															
3.3	Saving Files	Angel	2/4/22	2/25/22	21	0%															
3.4	Displaying Files	Angel	2/4/22	2/25/22	21	0%															
4	PCB Assembly																				
4.1	Parts Order Placed	Waylon	1/13/23	2/3/23	20	75%															
4.2	PCB Boards Order Placed	Angel	1/13/23	2/3/23	20	25%															
4.3	Soldering	Waylon	2/11/22	2/18/22	7	0%															
4.4	Continuity Testing	Waylon	2/25/22	3/4/22	9	0%															
5	Enclosure Design																				
5.1	3D Model	Victor	1/14/22	2/11/22	27	5%															
5.2	3D Print	Victor	1/28	2/11/22	13	5%															
5.3	Assembly		2/11/22	2/18/22	7	0%															
5.4																					

[Gantt Chart Google Slides Link]

Bill of Materials Page 1 of 2

Item	Part No.	QTY	Cost	Received
Photodiode (final board)	VBPW34S	100	$54.00	
Photodiode (breadboard)	1540051EA3590	10	$7.29	X
MOSFET (n-type)	SQ1922AEEH-T1_GE3	200	$60.20	X
Button	In lab	5	$5.25	
Header Pins	In lab	10	$4.95	
PSOC	In lab	2	TBD	
Crystal Oscillator	In lab	1	TBD	
Battery	LIPO Battery (3.7V)	1	$10.95	
OLED Display	LCD-13003	2	$35.76	
Tri-LED	In lab	5	TBD	
Multiplexer	BOB-13906	2	$5.90	

Bill of Materials Page 2 of 2

Item	Part No.	QTY	Cost
10KΩ	TBD	4	TBD
0Ω Resistor	TBD	10	TBD
1KΩ Resistor	TBD	2	TBD
10uF Capacitor	TBD	1	TBD
22pF Capacitor	TBD	2	TBD
4.7KΩ Resistor	TBD	2	TBD
330Ω Resistor	TBD	1	TBD
470Ω	TBD	1	TBD