ECE 212: Sprint Review, Retrospective & Planning report for Team 15

Sprint 3

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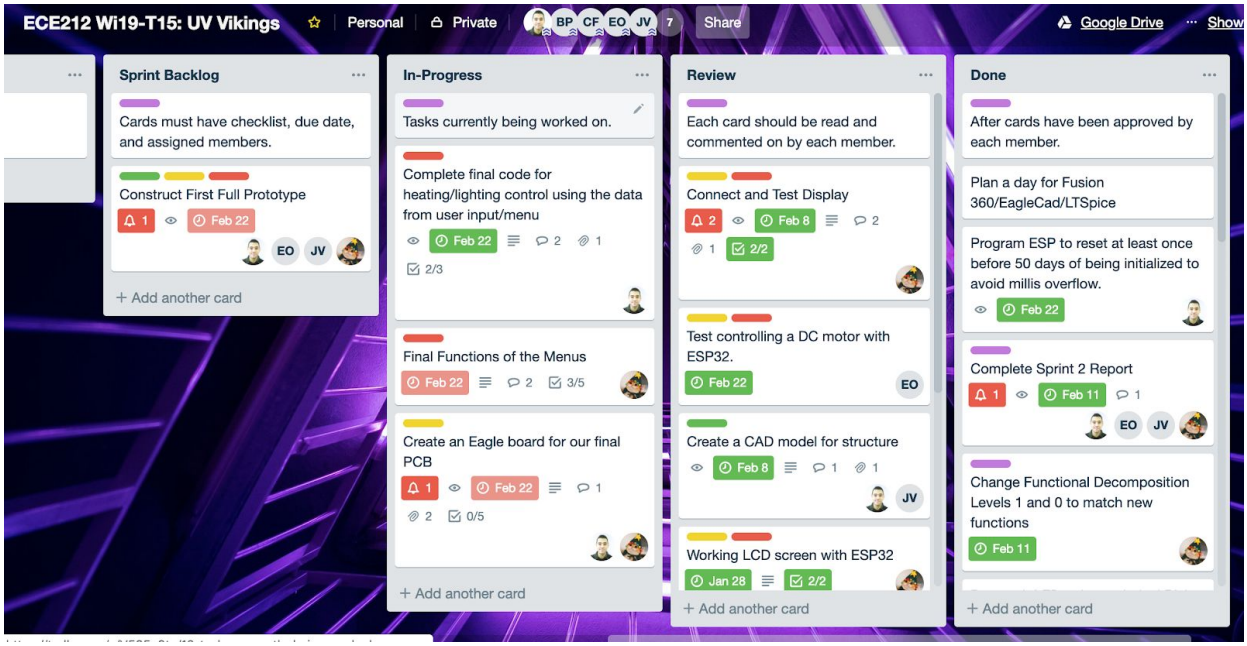
I. Sprint Review

The overall goal was to have a fully functioning prototype made from cardboard, that includes all major requirements, so that we can present to Chris Clark at the EPL and ask for funding for black acrylic.

Sprint Backlog Status

Sprint Backlog items DONE (bulleted list)	• *Deadman Switch* • *A cardboard structure prototype*

Sprint Backlog items NOT DONE	Reason for NOT DONE	Keep in backlog (Y/N); why?
Construct first full prototype	Waiting on fully functional code.	Yes - it is crucial to the completion of the product.
Create an Eagle PCB	Waiting on testing circuit with fully functional code.	Yes - we will attempt to create a PCB if we have enough time.
Complete final code	Waiting on correct output flags from menu and presets.	Yes - it is crucial to the completion of the product
Saving Presets	Need a full understanding of the EEPROM/Flash read/write functions on ESP32.	Yes, it is a feature requested by the stake-holder.



Full Product Backlog Pruning

Almost all of the items in the product backlog are currently being implemented as they stand. The only one we have yet to start is the ability to send data to an Adafruit server for data logging. This is a less crucial feature that is not necessary for the function of the curing chamber but will be something we believe can be added easily, or left out if needed.

We will not delete any features from the overall backlog at this time unless it comes down to the wire and we cannot deliver on particular features, such as data logging.

Technical and other difficulties

The item that is currently causing the most technical difficulties is getting the menu to output trigger flags at the correct times. The menu was developed by one member of the team, and the rest of the functions were developed by another member. Finding time to work together to get our code functioning together has been a challenge because both members are very busy with other obligations. Communication and prioritization of particular tasks is becoming an issue. We eventually met once over the weekend and resolved some of the problems that were blocking us, but we need to meet again sometime soon to get things working so we can move onto the next phase of the project.

Chuck: In this sprint, I learned a lot of techniques to accomplish timing by using comparisons between the internal clock instead of using delay functions or loops. The ESP32 can essentially only run one process at a time, so we had to be careful with our code to ensure that things can run quickly and not interfere with the rest of the processes in our code. This meant using comparators like modulo and integer division to accomplish things like initiating a reset of the ESP32 once every 25 days, to avoid millis() overflow.

Matt: In this sprint, I learned how to manipulate global variables in the ESP32 with the menu-option selection routines. I also delved deeper into making the menus more complex and more functional with the rest of the ESP32 program. I also learned to include variable heading fields to the menus so that I could change menu headings with general menu navigation. I didn't use any specific example to model the menu after, so I have been freely experimenting with new menu display and navigation mechanisms to achieve a more cohesive menu.

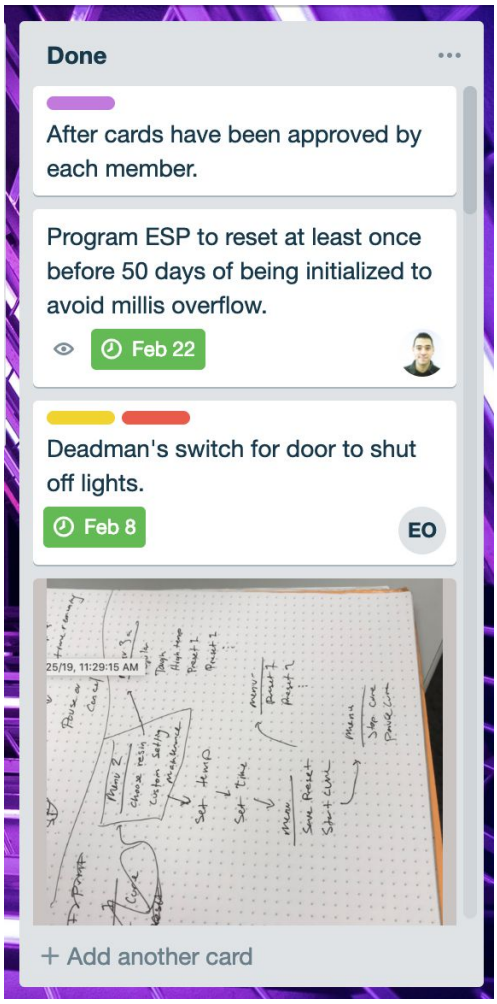
Jesse: For this sprint, I had my first introduction to Eagle CAD. We plan on using Eagle to design what will become our completed project PCB. There is still a ton I don't know about this program, but it's interesting to learn the functions and design capabilities that are available to students.

Edgar: For this sprint, a new skilled that I learned was working with DC motors and using the L293D H bridge chip to function with the ESP 32. There is still more to learn on how run it at a lower speed with different function since the ESP32 doesn't have a analogwrite function, a work around is needed to be able to slow down the motor.

II. Sprint Retrospective

We did our sprint planning by creating cards on Trello of the tasks needing completion for this sprint. Trello was our primary planning tool. We also kept in communication using a group text chat. Overall, communication went well in the group, but we had issues with finding time to work together. We are getting into the stage where we need to take the individual components we all developed and get them working together as a system, and that

always presents problems that ordinarily can only be solved with face-to-face productive meetings. Our work and class schedules are all wildly varied, and we don't have any times where we can meet together as a whole group except during the class-time, and that time is usually taken up by stand-up meetings, check-ins, completion of management tasks, and thus we don't have a lot of group work time.



Things that went well

- We all made almost every class
- Our standup meetings are productive

Things that could be improved

- We need more time as a group outside of class but schedules don't work out.

Suggested improvements

- We could break cards that are too large into smaller tasks.
- Be more involved on Trello.

Trello

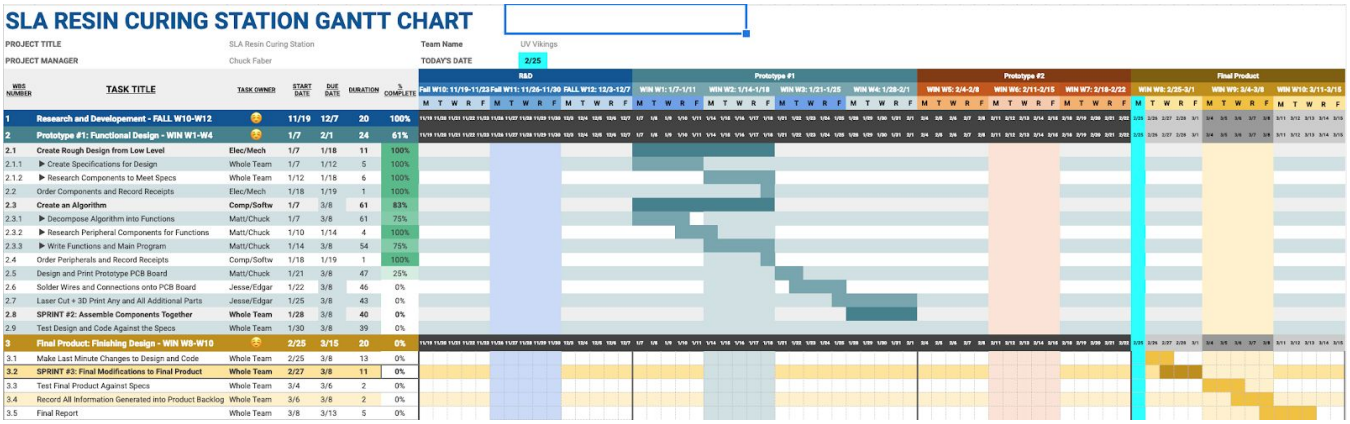
We will ensure that checklists are used for all task cards. We will also try to break cards up into more meaningful smaller chunks, because some cards were too all-encompassing.

Overall, we would give ourselves a score of **3.0 / 5.0** for how well this sprint went.

III. Next Sprint Planning

Overall project plan

Our goal by the end of this sprint is to have a completed functioning UV Curing chamber made with acrylic, that includes all major requirements.



The major changes made to the Gantt chart were simply updating deadlines to match our current progress.

Requirements

Requirements:

R1) One power supply shall power the entire product.
R2) Product shall provide 360 degrees of part illumination at the appropriate wavelength.
R3) Chamber shall be kept at optimal curing temperature for the duration of the curing process.
R4) Product shall safe to use.
R5) Product shall fit printed objects of the maximum size from the Form 2 SLA printers.
R6) Product should operate reliably for at least 1 year.

Features:

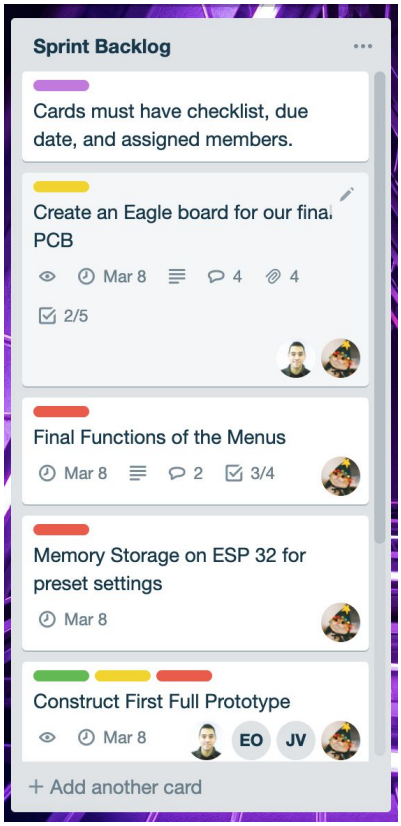
F1) Product should be simple and easy to use.
F2) Temperature and time settings should be able to be customized for advanced users.
F4) Product should be attractive and fit on a desktop.

Functional decomposition

There are no changes to the L0 and L1 charts.

Sprint details

Our goal this sprint is to create and test a fully functional UV Curing Chamber created from acrylic, with all major requirements.



- Complete and Finalize UV Curing Chamber Code
- Design Cut-Out Files for Curing Chamber
- Design EAGLE PCB board for curing chamber circuit
- Construct PCB
- Cut and Construct Acrylic Case
- Construct Final Product and Test

The highest priority at the moment is to finalize the UV curing chamber code, which will be headed by Matt and Chuck. This will be followed by testing the code with the circuit. The next highest priority is to design and cut the PCB board for the curing chamber circuit and test it with the full light array. The third highest priority will be designing the cut-out files for the acrylic chamber and constructing it. This will be headed by Jesse and Edgar. The final product construction must be carried out by all members.

We need to test the code with the circuit that we have currently designed to see if it functions as intended. After which we need to develop the PCB and test that to see if it continues to function as intended. Finally after creating the entire product, we will test the chamber with a 3D SLA print.

Our team T15, met with our Scrum Master *Shahad* on 02/22/19. We discussed Sprint Planning. All team members have read this report and agree that it accurately describes our discussion.