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| QE #2 (4hrs) 10Dec18  From <http://brettbeauregard.com/blog/2011/04/improving-the-beginner%E2%80%99s-pid-reset-windup/>  Reading documentation for PID library sections:   1. Sample time – the sample time will be set by the library in order to give smoother responses 2. Derivative kick – makes approximation using #1 IOT significantly reduce derivative spikes from instantons changes in input 3. On-the-fly tuning changes – computes in a discrete way in order to allow the tuning parameters to be changed without throwing off the response. 4. Reset windup mitigation – Arduino PWM takes inputs from 0-255…each term is limited to that range. 5. On/off (auto/manual) – PID control is either auto or off 6. Initialization – turning the PID control back on from manual…adds a method of saving last know state (Off|on) 7. Controller direction – set whether forward (^out=>^in) or reverse (opposite of forward)…ours is **forward**   Proportional on measurement – looks at the input for Kp and eliminates overshoot (prop on err requires –err to adjust => overshoot)  **Outcome(s):** Found a PID controller library online that is made for the Arduino. |
| QE #3 (1hr) 10Dec18  Began code for Arduino:  **Outcome(s):** Have the beginning code for the Arduino. |
| QE #4 (1hrs) 11Dec18  From <https://www.arduino.cc/en/Reference/SD> (unless otherwise stated)  Reading documentation on SD library (SD = Secure Digital memory card)   1. Built on from “sdfatlib” created by William Greiman. 2. Supports FAT16 and FAT32 (File Allocation Table)    1. FAT16 can make partitions up to 4 GB ([Source](https://searchwindowsserver.techtarget.com/answer/Whats-the-difference-between-FAT32-FAT16-and-NTFS) same for a-d)    2. FAT32 can handle larger partitions and longer file names.    3. Neither offer built-in file security.    4. Neither offer good error recovery.    5. However, due to simplicity almost all systems can use FAT ([Source](http://forum.arduino.cc/index.php?topic=205949.0)) 3. Uses short 8.3 names for files    1. File names passed to the function can include paths separated by “/”    2. Version 1.0 supports opening multiple files. 4. Communication uses [SPI](https://www.arduino.cc/en/Reference/SPI) (Serial Peripheral Interface)    1. SPI on pins 50|51|52 for mega    2. SS (Slave Select) on pin 53 for mega (or specified using SD.begin() )       1. SS needs to be specified as pin or as output for function to work   **Outcome(s):** Have more information about working with SD cards with Arduino. Need more, though. |
| QE #5 (1hrs) 11Dec18  From <https://learn.adafruit.com/adafruit-micro-sd-breakout-board-card-tutorial/arduino-library> (unless otherwise stated)  Reading on the implementation of SD library from Adafruit   1. File>Examples>SD in the Arduino IDE will get different examples of the functions of the library    1. CardInfo – reads info ABOUT THE CARD, can tell if the card is supported.    2. DataLogger – log data from three analog sensors ([Source](https://www.arduino.cc/en/Reference/SD) , same for a-f)    3. DumpFile – Read file    4. Files – Create and destroy a file    5. Listfiles – Prints out the files in a directory on a SD card    6. ReadWrite – Read/write data to/from 2. Once card is connected and sketch uploaded, run and open serial window    1. Check that “Volume type is FAT16” and the card size are correct    2. The library has prewritten comments about card insertion status    3. **Must “close()” each file when done to ensure permanence!**    4. Can open specific files to save into 3. Leaving a file open will take up RAM 4. [Other useful functions](https://learn.adafruit.com/adafruit-micro-sd-breakout-board-card-tutorial/arduino-library-docs)    1. “seek()” will move the r/w pointer to a new location => maybe use a UWP app to set seek(0)…it’s not deleting anything, just saying start from the beginning (i.e. write over the old)…could cause confusion if the old data set isn’t completely written over, though.   **Outcome(s):** Have information to begin working with and SD breakout board with Arduino. |
| QE #6 (1hrs) 12Dec18  From <https://www.arduino.cc/en/Reference/SPI>  Reading on SPI library from Arduino   1. Serial Peripheral Interface    1. For short distances 2. Lines    1. MISO – Master In Slave Out – Slave line for sending to Master    2. MOSI –Master line for sending to peripherals    3. SCK – Serial Clock – Clock pulse for synchronization    4. SS – Slave Select – Used to (dis)enable each device ( 1 == EN) 3. Notes:    1. Arduino will automatically use the best rate (equal or less than what you set in SPISettings)    2. Can choose between MSB (Most Significant Bit) or LSB (least Sig. Bit) shifting…(second parameter in SPISettings)    4. SPI.beignTransaction(SPISettings(14000000, MSBFIRST, SPI\_MODE0))… SPI.endTransaction()       1. Stops all other SPI transactions until end       2. Could use begin, SS=0…SPI.transfer() (as much as needed)…SS=1, end…   **Outcome(s):** Have information to begin dealing with SPI with Arduino. |
| QE #7 (1hrs) 12Dec18  From <https://en.wikipedia.org/wiki/8.3_filename> (the link Arduino listed to read)  Reading on 8.3-formatted character arrays   1. Used in old DOS and Windows (and for legacy compatibility) 2. Limited to FAT file system (with microprocessors) 3. Limited to 8 characters (not including any directory specifier) 4. Can *optionally* add a file name extension ‘.’ And then up to 3 characters (rest is ignored) 5. 8.3 is case-insensitive, but modern systems are not (so use case-sensitive to be compatible) 6. See website for directory table laws   <https://www.arduino.cc/en/Reference/SDCardNotes> Arduino’s notes about SD cards  **Outcome(s):** Have better understanding of the compatibility and limitations of the 8.3-formatted characters with Arduino. |
| QE #8 (1.5hrs) 12Dec18  From Microsoft Visual Studio’s Youtube channel (<https://www.youtube.com/watch?v=JvvbBj4s9kw>)  Video on how to create UWP app in Visual Studio 2017   1. Can run on anything that runs Windows 10 (or newer) 2. No emulator for Xbox or IOT (can test natively for the rest) 3. API – Application Program Interface…still have them (where it make sense)    1. E.g. “XboxLive Storage” isn’t really applicable to your desktop) 4. Application structure     2. Applications Class – Main       1. Entry point - what’s launched       2. Lifecycle management – when is it in use, when is it in the “background” for the user       3. App-wide resources – global stuffs (styles, etc.)       4. Unhandled exceptions - last road block to crashing    3. Window – “User-viewable window”       1. Minimize/close buttons go       2. Hosts frame (frame isn’t *required*, but is “very” common.)    4. Page – implements user interfacing (UI) and “app specific’ behavior       1. Two files: .xaml (UI definition) and .xaml.cs (associated code-behind file => behavior)    5. Manifest – app “metadata” for use by Store and Windows [XML]       1. Identity, visual assets (tile), capabilities (what we need), declarations. 5. Demo    1. **Created UWP basic project and will use this as the basis for creating the UWP app we need.**    2. ***I get to create the tile that will go on the start menu! That is very exciting.***    3. <https://docs.microsoft.com/en-us/windows/uwp/design/style/color> (how to choose theme of window)   **Outcome(s):** Training for creating a UWP. Have a better understanding of the process. |
| QE #9 (2.0 hrs) 13Jan19  Adapted from FireCGun on Instructables.com (<https://www.instructables.com/id/Arduino-4-digit-7-segment-display/>)    \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_    **Outcome(s):** Have beginning code for displaying on the 7-segment LED display. |
| QE #10 (1.0 hrs) 15Jan19  Topic: Team meeting for me and Ian to argue about the battery choice. |
| QE #11 (2.0 hrs) 15Jan19  Topic: Created guidelines and standards for codes intended to be included in the final software package. (I’m primary on code.)    **Outcome(s):** Have a detailed/referenced guidelines and standards for the software to written. |
| QE #12 (1.50 hrs) 22Jan19  Topic: Team meeting with Dr. Guo. (0800)   * MEs   + Current situation: SNAFU   + Ball nut and screw ~$1.3k (not what quoted last semester from C. Hamilton)   + Why choose those parts? E. Zeller said some. Dr. Guo is saying they should be standard (McMaster co.)   + Communication with NASA: “what information are you looking for?” Information about old device “don’t worry about them (also government shutdown)…just take the specifications given before and make them happen”   + I’m not sure why he thinks repeating what was already told us will be helpful….I’m tired.   + They don’t know how to control the motor…and they are arguing with DG over needing another gear box.   + DG told them to pull up a picture of NASA’s old design and he told them where he thought gears were (they were hidden).   + Dr. Guo literally forgot to show us the image of the gearbox, and told us it was our fault because we “didn’t talk to [him].”   + “Something is totally wrong.” Dr. Guo …’just scale it up’   + TAKING OUT THE ENCODER ON NASA’s DESIGN…wtf   EEs   * + “You can still do the electronic/control part, right?” T. Cao: “Yea”   + “What I want: show the force against the motion of the motor.”   + He wants curve, and NASA wants just the max number.     - I warned him about outputs of code: i.e. outputting a .txt file. (NO, Time: 0911)   + Batteries     - He still insists on home depot…so now I have to go back and check through everything…     - Warned him about cost, lack of specs, and longevity of battery system(YES, Time: 0911) * Misc.   + Dr. Guo is really just arguing with the MEs…free QE I guess.   + He’s not looking at the calculations, he’s just saying everything is wrong.   + I asked for regular feedback because now we are behind everybody else (Time: 0917)   + “If you have issues, don’t wait until the next week meeting because we are behind.” Dr. Guo     - We are behind because of him, so…   **Outcome(s):** Only EEs do Dr. Guo’s design. MEs still need to finish redesigning. |
| QE #13 (2.00 hrs) 23Jan19  Topic: “study” of power tool battery packs and ‘Dr. Guo’s ideas.’   1. Battery Packs    1. Power Requirements       1. Need about 14VDC and 5ADC       2. Time is not specified, but close to an hour (given modeling in parts sheet)       3. What can be found in packs          1. [Ryobi 18 V ONE+](https://www.homedepot.com/p/Ryobi-18-Volt-ONE-Lithium-Ion-6-0-Ah-LITHIUM-HP-High-Capacity-Battery-2-Pack-P164/305571990)…18V, 6Ah, “[There are 10 Samsung 25r cells inside wired in 5S2P](https://www.amazon.com/2Packs-Replacement-Battery-Lithium-Cordless/dp/B0753CKXJH)” (5A for knockoffs) [$119]          2. [M18 18V](https://www.homedepot.com/p/Milwaukee-M18-18-Volt-Lithium-Ion-High-Output-Battery-Pack-12-0Ah-48-11-1812/305058854)…18V, 12Ah…no specifications could be found. [$199]          3. [Ryobi 18V ONE+](https://www.homedepot.com/p/Ryobi-18-Volt-ONE-Lithium-Ion-LITHIUM-HP-9-0-Ah-High-Capacity-Battery-2-Pack-P168/304740785) 18V, 9 Ah, no specifications could be found. [$249]          4. [Ryobi 18V ONE+ Stater](https://www.homedepot.com/p/Ryobi-18-Volt-ONE-Lithium-Ion-4-0Ah-Starter-Kit-with-Battery-and-Charger-P1865/303834687) 18V, 4 Ah, no specifications could be found. [$119]          5. [Dewalt 20V MAX](https://www.homedepot.com/p/DEWALT-20-Volt-MAX-Lithium-Ion-Compact-Battery-Pack-3-0Ah-2-Pack-DCB230-2/301901056) 20V, 3 Ah, no specifications could be found. [$99 for 1]          6. [Makita 18V LXT](https://www.homedepot.com/p/Makita-18-Volt-LXT-Lithium-Ion-High-Capacity-Battery-Pack-3-0Ah-with-Fuel-Gauge-2-Pack-BL1830B-2/300350754) 18V, 3 Ah, no specifications could be found. [$99 for 1]          7. [RIGID 18V](https://www.homedepot.com/p/RIDGID-18-Volt-Lithium-Ion-4-0Ah-Battery-Pack-2-Pack-AC840087P/205999648) 18V, 4 Ah, no specifications could be found. [$139]       4. Typical corded drills can draw [4-8 A](https://electronics.stackexchange.com/questions/401969/how-many-amps-does-a-18v-cordless-drill-draw) [when in](https://endless-sphere.com/forums/viewtopic.php?t=49814) use. Some people hooked up a wattmeter and found that some drills pulled in the range of 4-8 A.    2. Array Requirements       1. Couldn’t tell you…with no specifications there is no way other than testing each battery pack to design an array to fit the project needs. Also, the device is being redesigned, so you’d have to wait until the MEs get the new motors, etc. picked out before you could really be sure. Unless, you don’t care about money and can afford to over shoot the requirements (or perhaps under shoot). If you use corded drills as an example, it would take 2 *at least* batteries capable of constant discharge of *at* least 3 A to ensure that the minimum requirements were met.    3. Array Costs       1. Still couldn’t tell you. It could be the price of one of the medium to larger batteries or several of the smaller ones, the actual drills, and modifications.    4. Longevity       1. As far as replacement, using one of these batteries would be useful because they are readily available. However, what happens when the company decides that they are done with those batteries? The customer would have to either redesign or make shop-modifications. In the EE world, we have to learn how to lock people out of our products because they will do stupid things or make incorrect changes (or just never tell anyone). While, we cannot lock the customer out of the battery pack we can give them no invitation to mess with it.   **Outcome(s):** Have a detailed “study” of battery systems. |
| QE #14 (1.50 hrs) 23Jan19  Topic: Formal argument on battery design (deliverable on “study” done in QE#13)  **G. Barton’s Design**  This design is comprised of 16 [18650](https://batterybro.com/) (button top) cells that are arranged to be in a 4S4P array in order to provide 14.8 VDC, a constant current rating of 6 A (12 A at the absolute maximum), and an array capacity of 12 Ah. This design was created with these ideas in mind:   1. The parts that drew the most power (i.e. motor) were not picked until about a week and a half until the design was due. There was very little time to design anything.    1. This design is modular and scalable. The voltage and current can be adjusted in increments of 3.7 V and 1.5 A, respectively.    2. 18650 Li-Ion cells are popular and are becoming more so. This indicates that there is a strong probability of the cells remaining in the market for the long term (i.e. the 50-60 years that NASA has used the current model).    3. The batteries are not manufacturer dependent. They are just 18650 Li-Ion cells and they can be found all over the place. The standard cell dimensions are also a boon.    4. Specifications can be found for the cells. Meaning that there is no guessing in design if the battery array can provide what is needed. This is not a common discovery in all too many commercial products. 2. As any design there are certain detractors:    1. There are 16 individual cells. It will be a bit of a hassle to change/charge all of them. There isn’t an argument from me; *however*, there being a hassle does not necessarily constitute enough reasoning to redesign the system.   **Dr. Guo’s Idea**  Dr. Guo did not like the design describe above (my design). Dr. Guo cited that, “Batteries need reconsider. Current selection is bad” (that was the whole email). Of course this left much to be desired in the way of feedback. After asking what that was supposed to mean Dr. Guo responded with, “[something about ordering] …For battery pack, please check home depot tool section. I don’t like those AA sized batteries.” Here are the results of this “feedback” so far:   1. Dylan and Ian argue that Dr. Guo has a valid point. Neither of them has found a viable substitute, nor checked the viability of The Home Depot power tool battery packs. 2. When asked about how a power tool pack would be attached there was only the solution to cut a power tool’s handle off. 3. When asked if a technician would/could/should be trusted with replacing these parts with other Frankenstein’s-monster-parts, they acted as if I had said a great insult. If technicians could do the same work as engineers, why would engineers be needed? See this [section](#Longevity13) (Longevity) above to explain more on the EE perspective of this. 4. A “study” was done to determine if The Home Depot, or equivalent, power tools would be sufficient to power the device being designed. The result of this study can be seen above, but is a hesitant ‘no.’ I say hesitant only because there are *probably* some batteries that could do it, but due to commercial products either being secretive or thinking that customers will not need to know specifics, there are few provided. Also, it would take not only multiple drills and batteries, but also using a finish good, and a proprietary one at that. The producers of the individual cells accept that their product is along a semi-finished good for other products. Whereas, the power tool manufactures are selling directly to consumers, i.e. it’s a finished good. Most suppliers of finished goods do not allow their products to be used for any other reason/purpose than what the supplier intended. 5. The [manuals](https://manuals.ttigroupna.com/system/files/9376/original/P2108_1081_107267001_003_679_trilingual_04.pdf?2019) also state,    1. “Do not use a battery pack or appliance that is damaged or modified. Damaged or modified batteries may exhibit unpredictable behavior resulting in fire, explosion or risk of injury.”    2. “Do not modify or attempt to repair the appliance or the battery pack except as indicated in the instructions for use and care.”   **Outcome:** The original design from last semester is viable, and the only argument against it was the number of parts. However, there has yet to be a valid alternative that is within the project budget. |
| QE #15 (1.00 hrs) 24Jan19  Topic: Call with Ryobi customer service to ask about permission to use their product.  **Question**: Would we [the team] be allowed to use a Ryobi battery, and maybe a modified power tool, in our project that was paid for by and industry sponsor?  **Answer**: Would need to ask supervisor. She took my information and said that someone would get back to me.  **Outcome**: No clear answer on legal repercussions. |
| QE #16 (2.00 hrs) 25Jan19  Topic: Arduino MAIN (Display).  Found a library by [Dean Reading](https://www.arduinolibraries.info/libraries/sev-seg) that deals with the display in a much more elegant and robust manner.    **Outcome(s):** Have beginning code for the display. |
| QE #17 (1.00 hrs) 28Jan19  Topic: To-do list   1. Code    1. Display    2. SD Breakout    3. Load Cell    4. Buttons (function/LEDs)    5. Error Codes    6. Warning Codes    7. Calculations (to display max force, if any)    8. Maybe UWP app    9. Safety Stops 2. Battery System    1. Still arguing, eventually need to order something (idc) 3. Reports    1. BTB and Notebook Scans (6Feb19)    2. Testing plan (17Feb19) [21Feb19 11:18-11:26]    3. Written Testing and Validation Plan Interim Report (11Mar19)    4. Design Status Memorandum (11Mar19)    5. Poster Review Session (11Apl19)    6. Final Poster Due (18Apl19)    7. Final Presentation Due (21Apl19) [25Apl19 0900-1000]    8. “The Long One” (26Apl19 1700-1930)   **Outcome(s):** Have a detailed list of items that need to be completed. |
| QE #18 (1.50 hrs) 29Jan19  Topic: Safety Course (for “Electrical Engineers”)  (see loose leaf paper)  **Outcome(s):** Have more safety training. |
| QE #19 (1.00 hrs) 29Jan19  Topic: Arduino MAIN (Buttons).  **Outcome(s):** Have beginning code for buttons. |
| QE #20 (1.50 hrs) 29Jan19  Topic: Arduino MAIN (SD logger).    **Outcome(s):** Have beginning code for SD breakout. |
| QE #21 (2.00 hrs) 31Jan19  Topic: Meeting with David Giurintano:  Dr. Guo contacted Capt. David about being stressed   1. Wants to be sure that project is just NASA now.    1. MEs: no more work.    2. EEs: Maybe, need to re-asses and may add scope. (TBA) 2. Scalzo is bullshitting that he helped. 3. Dr. Guo thought we were working isolated and deliverables would not be met    1. Scalzo wants use working instead of meeting…only meet about coupling systems    2. CD wants to re-assign a team leader (they are concerned that there isn’t a single POC)    3. Scalzo wants a representative in the tests (lol I’m not going)    4. Gonthier: Why restricted to DG lab? Because we need a heavy duty frame..    5. JS: maybe need to do lower-engineering that needs to be done…TC: speed control    6. JS: doesn’t like DrG being so deep into our project… DrG needs not to be telling us anything, but advice.       1. Then DG can come see the tests.       2. JS: said tell DrG no on changing design…bull shit because of my emails that I have…       3. Everybody is so two-faced…lying about being down with my design.       4. **Now JS is on my side…if he had only read my emails the first time.**       5. JS wants CD to tell DG to change…CD thinks we aren’t answering DG…       6. DG: DG can make suggestions, not micro-managing…       7. JS to CD: Showed my Final Argument for Batteries to CD…Project not getting done in not our fault          1. Maybe you do whats wong just because asked…JS saying Im not making sense          2. JS: Why does it matter if there are legal repercussions          3. DG: DrG needs to know that students don’t have to follow sponsor’s advice          4. CD will go back and talk to DrG          5. Apparently, the linear actuator is only $35…so budget isn’t an issue.          6. JS: doesn’t really care about our project actually working (cares about process)          7. DG: give alternatives on how to fix project if it doesn’t work.          8. DG: asses alt. and make the call on what to do          9. IA: thinks we should go with last semester design (now he says that)          10. CD: if a sponsor has anxiety, need to get to root and handle it…              1. Sponsors need to be convened…DrG didn’t like the Final Pres issue with batteries              2. We are responsible for coddling sponsor into signing off on the project          11. JS: Students can’t tell DrG those things, without the backing of a sponsor          12. Now JS and CD are arguing about how to communicate with sponsor.          13. CD: if there is more confusion: team meet with him and discuss it…maybe a lack of quality          14. AI:              1. CD talks to DrG about bounds (then meeting with team)              2. Battery decision needs to be made (by 1630 1Feb19)              3. DG: maybe meet more as a team    7. After action/**Outcomes**       1. So, now everybody is changing their stories to seem more in-line with what sounds good.       2. Dylan is confused about what we are doing…as they are changing the design.          1. Dylan want more meeting because he wants help       3. The TA came in and she is going to be more hands on…she is going to give feedback and wants meetings          1. TA is changing how to do QEs (See [email](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\%5b2019%20Spring%20ME%204202%20_%20EE%204820%5d%20About%20Notebook%20Submission%20EMAIL.eml)) |
| QE #22 (1.00 hrs) 31Jan19 (Living)  Topic: Documenting all communications concerning the team and its problems this semester. I do QEs electronically, so you will only be able to see the descriptions in my notebook. Contact me for any links you’d like to see as the emails are saved on my computer.   1. Concerning the battery selection    1. From Caleb       1. Concerning going forward after the Fall semester. ([Link](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\RE_%20Team%2014%20Senior%20Design%20-%20Update_%20Winter%20plans,%20budget,%20and%20ordering%20(from%20Caleb).eml))    2. From me       1. Concerning Dr. Guo’s “feedback” to Scalzo. ([Link](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\Emails\FW_%20Senior%20Design%20Team#14 NASA Thermal Testing Device, I am having serious issue with my team_faculty.eml))       2. Concerning the battery “study” done for Dr. Guo. ([Link](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\Emails\EE4820%20Senior%20Design%20Team#14 Battery Viability Study and Results (from Garrett).eml))    3. From Emily       1. Concerning testing the linear actuator. ([Link](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\Emails\Testing%20Linear%20Actuator%20(from%20Emily).eml))       2. Concerning team meetings. ([Link](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\Emails\RE_%20Team%2014%20meetings%20(from%20Emily).eml))       3. Concerning team meetings and new testing plan. ([Link](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\Emails\RE_%20New%20Testing%20Plan%20and%20Meeting%20times%20(from%20Emily).eml))       4. Concerning fee for ME lab. ([Link](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\Emails\fee%20for%20ME%20lab%20(from%20Emily).PNG))       5. Asking NASA for more information of the current device. ([Link](../../Admin/Emails/RE_%20LSU%20Design%20Team%20for%20Plug%20Pull%20Tester%20(from%20Emily).eml))    4. From Dr. Guo       1. Concerning response to my battery “study” (only to team). ([Link](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\Emails\Senior%20Design%20Team#14 NASA Thermal Testing Device (from Guo).eml))       2. Concerning parts that were ordered being ready for pick up. ([Link](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\Emails\Re_%20Team%2014%20-Parts%20(from%20Guo).eml))       3. Concerning images of the NASA device. ([Link 1](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\Emails\FW_%20NASA%20photos%201%20(from%20Guo).eml)) ([Link 2](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\Emails\FW_%20NASA%20photo%202%20(from%20Guo).eml)) ([Link 3](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\Emails\FW_%20NASA%20photo%203%20(from%20Guo).eml))    5. From Dylan       1. Concerning the scope of the project. ([Link](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\Emails\Clear%20up%20tabletop%20responsibility%20(from%20Dylan).eml))       2. Concerning the battery conversation last semester. ([Link](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\Emails\Fw_%20Team%2014%20-%20Handheld%20Order%20Forms%20(from%20Dylan).eml))    6. From David Giurintano       1. Concerning the meeting on 31Jan19 and 1Feb19. ([Link](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Admin\Emails\RE_%20Quick%20meeting%20(from%20Capt%20Dave).eml))   **Outcome(s):** Have a clear list of emails and now they can be found in the future (won’t get lost). |
| QE #23 (1.00 hrs) 1Feb19  Topic: Meeting with Dr. Guo and CD (CD->DrG->Batteries)   1. CD    1. Emily is TL    2. Meet at least once a week (IOT coordinate)    3. GB is the “enforcer” (idk what this is supposed to mean)    4. CD: ONLY DOING THE NASA PROJECT (10:37)    5. Solve battery solution (CD told DrG something)       1. People don’t read things that you send (DrN doesn’t read anything)       2. “Talk to them in person.”    6. Battery       1. Re-explained what I’ve said 10 times before.       2. DrG said it’s our fault in communication       3. Idk why he is saying these things…he just says *things*.       4. DrG wants EE to do both designs.       5. No UWP, just do what I fell is best. (Use Arduino IDE)       6. New features that he didn’t say before…(hold force at certain speed)       7. DrG: Focus on NASA and still won’t say anything about the batteries…Table top second (if time)    7. CD: Told Dylan that he has weights…DrG said it was our fault in communication    8. TC is still looking into encoder b/c they changed the design.    9. DrG says we were complaining about micromanaging when he was just trying to help.    10. TC: problem with the case? EZ: no DrG: NASA’s design had one load bearing section.    11. GB: DrG recognized that it was his fault that we are behind because of his mandated re-design.    12. Nothing came of this… 2. After Action/ **Outcome(s):**    1. Team is working on:       1. MEs: Only NASA       2. EEs: NASA primary and DrG’s secondary    2. New features that DrG added to the design for him       1. He wants to be able to force and how/when force is applied.       2. No UWP app (he doesn’t know anything, so I will make the call)    3. DrG said that he will order the parts if we send him the request.    4. Waiting on MEs to finish tests in order to resize the battery pack.       1. MEs should be finished testing next weeks. |
| QE #24 (1.50 hrs) 2Feb19  Topic: Setting up testing circuit.   1. Setup for common cathode arrays ([link](file:///C:\Users\mebar_000\Desktop\2018-2019\SPRG%2019\EE%204820%20Senoir%20Design%202\Code\EE4820_Main_v0\LED_Display_DataSheet.pdf) to data sheet) ([link](https://www.youtube.com/watch?v=FQTKFeW_hng) to online) 2. Setting up buttons, LEDs, and potentiometer. (“[The Arduino Project Book](https://bastiaanvanhengel.files.wordpress.com/2016/06/arduino_projects_book.pdf)” Projects: 02, 02, and 05)) 3. Setup purpose:    1. Test Display       1. Test basic functionality.       2. Test displaying a certain value.    2. Test Buttons       1. Test buttons are read.       2. Test buttons’ functionality.    3. Test LEDs (for buttons)       1. Test functionality.    4. Test Loading       1. The potentiometer will simulate a scalable input of force/load.       2. This simulation will test functionality related to finding the max force. 4. Next Steps    1. To add the SD breakout to the current setup in order to test memory functionality.    2. Add motor control related code/items in order to test motor control functionality.    3. Make explicit testing plan for a presentation. 5. Pin out  |  |  | | --- | --- | | * 1. Display      1. A = 6      2. B = 8      3. C = 3      4. D = 4      5. E = xxx      6. F = 7      7. G = 2      8. DP = 5      9. D1 = 9      10. D2 = 10      11. D3 = 11      12. D4 = 12 | * 1. Buttons      1. Button 1 = 24      2. Button 2 = 25      3. LED 1 = 22      4. LED 2 = 23   2. Potentiometer      1. Output = A0 |   **Outcome(s):** Have testing circuit almost ready for full simulated functional testing. |
| QE #25 (0.50 hrs) 2Feb19  Topic: Explicit testing plan relating to the testing circuit.   1. Display    1. Run the code written with a hard-coded value in order to:    2. Test LED functionality.    3. Setup validation. 2. Buttons    1. Run code written with a hard-coded process in order to:       1. Confirm that buttons are read.       2. Confirm that the correct LEDs are lit up.       3. Setup validation. 3. LEDs    1. Tested with the buttons’ test process. 4. Loading    1. Only a process simulation (functional will come at higher level). 5. SD breakout    1. Set up once current setup has been validated in order to isolate subsystems.    2. Test that files can be written to and read from.    3. Test that files on the SD card can be read from a PC. 6. Future Tests    1. Buttons       1. Flips appropriate variable to indicate to RunTest       2. Flips appropriate variable to indicate to DownHook    2. Full process run through.   **Outcome(s):** Have testing plan ready for full simulated functional testing and presentation. |
| QE #26 (0.50 hrs) 4Feb19  Topic: Cataloging Arduino’s SD examples descriptions from the code file.   1. CardInfo    1. This example shows how use the utility libraries on which the SD library is based in order to get info about your SD card.    2. Very useful for testing a card when not sure whether the card is working or not. 2. DataLogger    1. How to log data from three analog sensors to an SD card using the SD library.    2. Demonstrates adding a delineation character. 3. DumpFile    1. How to read from the SD card using the SD library and send it over the serial port.    2. May need to use to read data from SD card for calculations. 4. Files    1. How to create and destroy an SD card file.    2. The creation portion will be needed.    3. Destroying can be done on the computer terminal. 5. Listfiles    1. This example shows how print out the files in a directory on a SD card.    2. Probably not needed for this project. 6. ReadWrite    1. This example shows how to read and write data to and from an SD card file.    2. This will probably be needed in conjunction with DumpFile.   **Outcome(s):** I have locations, descriptions, and comments for codes/functions that will need to be referenced later once fine tuning begins. |
| QE #27 (1.50 hrs) 5Feb19  Topic: Mandatory EE safety course. |
| QE #28 (1.00 hrs) Feb19  Topic: BTB #1 (6Feb19).  ([Link to BTB](file:///C:\Users\mebar_000\AppData\Roaming\Microsoft\Reports\BTB\EE4820-BTB-6Feb19.docx)) [Link to QEs 29-43] |