Day 6 Requirements 4

Tuesday, July 18, 2023 10:39 PM

Goals:

- Look over software requirements
- Finalize RTM for software needs and requirements
- Aid in other sections of the requirements docs
- Continue preliminary code testing
  - If the sensor comes in, start writing DAQ code (see day 4)
  - Else, continue developing the BLE data transfer protocol and start designing the App interface
- Continue working on the schematics with Eunice (Note the modules do come upright, a problem we need to discuss).
  - Arduino RTC: https://lastminuteengineers.com/ds1307-rtc-arduino-tutorial/
  - Arduino nano micro SD: https://lastminuteengineers.com/arduino-micro-sd-card-module-tutorial/
  - Pulse sensor: https://lastminuteengineers.com/pulse-sensor-arduino-tutorial/
- Develop significance criteria for HRV readings
  - Relative or Absolute thresholds by default?

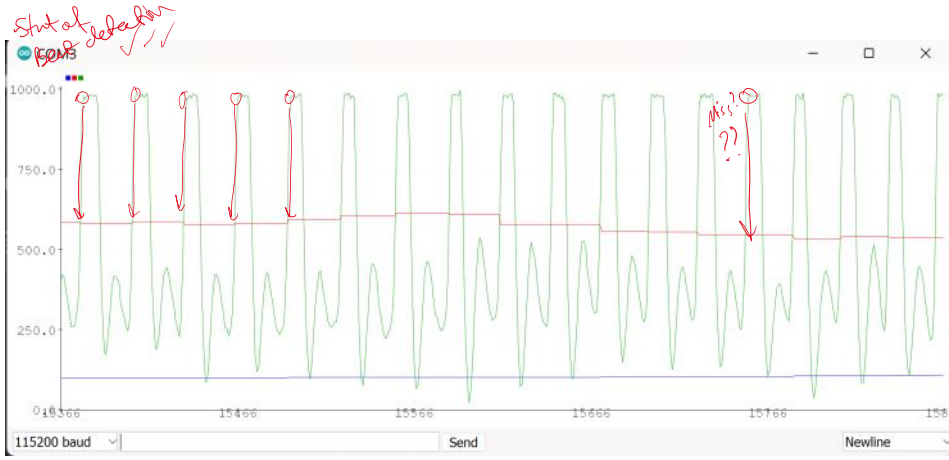
Accomplishments:

- Req. Doc draft finished
- Started work on the RTM
- Sensor and RTC module working! (Still waiting on the SD card module).

Preliminary code review looks promising
How do we balance DAQ with data writing and BLE transfer?

Action items:

- Finish up on the RTM
- Start creating the Arduino code for DAQ and integrate the BLE code as well.



Day 7: Meeting Minutes for Requirements Review

- We discussed the purpose section of the document, and it was suggested that the purpose was too vague. However, the example doc matched our format so it was decided that our purpose was correct
- Overall description was suggested to be too specific - 9V battery mention unnecessary? Reads kind of like customer needs
- Include ISO standard, but just say the pricing standard instead of making the reader look it up
- Not necessary to have different sizes5
- Width is measurement taken from wrist; sm, md, lg too vague so exact measurements; suggested to do measurements as "palm width" or "finger length"
- Failsafes? Will device shut off in water, etc (Such as water damage, elecutrion, etc…)
- If data stored on app, suggested need for cloud storage, which excludes it from local storage
- 3.1.1.3 circuitry, suggested it's too specific; "device has microcontroller with the ability to ___" rather than specific type. The specific type would be good for final product, more design than requirements
- Talk about the app output (more design than requirements, like "if its on this, then the device will respond with this", exactly how it will be later on)
- How to calculate is good, but suggested need to find a baseline
- 3.1.1.3.9, suggested specific attachment from casing to velcro on wrist
- Security is acceptable
- Notable dislike for the 1.1.1.1.1.1.1.1. Decimal system - possible remove and just do lines
- Display requirements suggested to be too specific, but Dan said too vague (3.1.2.1.3 is exactly what design is asking for); for requirements, just soft/muted colors, but Dan said no
- Suggested note for battery life, using X amount of power
- Suggested life of sensor as well?
- Phrasing on 3.2.1.1.4, try not to phrase as "at least" or "less than" etc
- Suggested range such as 3.2.1.1.4; we have an implicit window since its 5 minute windows and its 6 times per hour; suggested to state a range anyways
- Description says batteries are replaceable, casing is stated to open but is not stated that batteries can easily be accessed
- 3.1.1.3.1 " device shall meet this size and fit this amount of data" and then the design would be "nano every 33 etc" in design
    - Describing the why not the what, make sure to include reasoning
    - Work backwards, since we have a design in mind and what we want to use, go backwards as description-based for requirements
- Seems to be a lot of variability of how specific to be between Dr. Dan and TA :/
- Overall very comprehensive, great going further with design doc
- Good job staying away from negatives, way to go us
- Personal base lines (so we can tell the user what is going on)
    - How to calculate individualized baseline?
- Allergy assumption is OK, use of "not" is acceptable
- Suggested use of bullet points
- Question if user will need to take SD card, but transfer is over bluetooth; SD card was explained to store data while phone is not connected by bluetooth, deemed acceptable
- Glove size, +- is like 20% which is a large variation; suggested to narrow window of size
- Suggested specific app icons are too specific but Dr. Dan says otherwise so leave as is
- Suggested to strip back on device, not the specific brand and item but reasoning why we chose the item

- 3.3.1.2.3 perfect, stating what it is and what it will do - great requirement
- Explain the design hardware constraints, because it will explain why we choose certain devices
- PPG pulse sensor used, noted (I think this is more design?)
- Suggested time limit (for what?)
- Suggested rewording as “attached to wrist with velcro strap” rather than specific type
- Suggested upper bound for font size
- Suggested readability is nice, or saturation value instead of exact color number
- Suggested cable length (wire length)
- Finger attachment area
- Data security
- What is being data transferred?

Action Items:

Reword requirements with specific parts (i.e. microcontroller, velcro…) to improve clarification; work backwards to engineer requirements
Redo glove size measurements and range
Figure out how to individualize baselines
Create copy of RSD and edit/track suggestions on there

Action Item	**People**	**Assigned**	**Due**	**Completed**
Track/mark suggestions and edits in copy of RSD	Diego, Ariana	Jul 24, 2023	Jul 26, 2023	Jul 24, 2023
Reword requirements with specific parts in copy of RSD	Diego, Ariana	Jul 24, 2023	Jul 28, 2023	
Implement suggestions in copy of RSD	Diego, Ariana	Jul 24, 2023	Jul 28, 2023	
Redo glove size measurements and range and mark in copy of RSD	Eunice	Jul 24, 2023	Jul 25, 2023	
Figure out how to individualize baselines and mark in copy of RSD	Siem	Jul 24, 2023	Jul 27, 2023	
Create copy of RSD to track edits	Ariana	Jul 24, 2023	Jul 25, 2023	Jul 24, 2023

Day 8: Design

Monday, July 24, 2023 8:24 PM

Donkoro, do NOT forget to bring in the circuitry…

Goals:

- Work on revising the software elements of the requirements documents.
  - Personal baselines
  - More specific data transfer reqs.
- Begin working on the software elements of the design document.
- Test preliminary code for the SD card module. (See https://lastminuteengineers.com/arduino-micro-sd-card-module-tutorial/)