1. Present your current project timeline and what goals you plan to achieve by the end of the quarter. The week before the poster is due:

- The initial application complete and working with the DW1000 modules
- Full PCB layout, excluding circuit simulations

Before the end of the quarter:

- Store application assuming that we know the battery lifetime of each module, excluding smart algorithm to schedule charging
- Load firmware onto microcontrollers with programmers. These MCUs will be placed in a socket on the PCB after fabrication.
- Finish simulations of PCB, order parts for PCB, and place orders for PCB manufacturing and part assembly.

2. What is your current progress on the project?

- Most of the mobile application's GUI is complete
- Database with tables for inventory, stores, items, and nodes
- Initial parts list and specification for PCB
- Can acquire tag positions for DW1000 modules

3. Have you encountered any challenges so far? How has it affected your timeline?

- Effectively communicating with our teammates; delayed our timeline by 1 week due to miscommunication and unclear requirements from different team members
- Difficulty communicating with the database on a remote server; delayed by 2 weeks due to debugging
- Difficulties formulating a reasonable hardware specification and selecting proper parts; has not affected timeline yet
- Technical challenges in building a GUI; did not affect timeline

4. Do you foresee any challenges that your team may see in the future? How do you plan to overcome them?

- Learning how to use the Decawave's firmware (will overcome by purchasing the microcontrollers and programmers ahead of time to give us plenty of time to test before receiving finished PCBs)
- Optimal algorithm for scheduling module recharging (will overcome by getting the mobile applications and other software done first and then experimenting with possible algorithms; start off with naive algorithm in which only the modules with 10 lowest battery lives are charged that day)

- Determining what simulations to run on the PCB schematic/layout (consider a few test suites, such as SPICE schematic or electromagnetic tests to check logic levels and power supply/temperature variations; design the boards so that they are easily testable, such as including specific test points to probe voltages along the circuit's signal chain; quickly prototype the first board and test the design to determine exact issues before future prototypes)
- Managing the logistics of ordering and assembling parts (be sure to place orders before end of quarter to leave plenty of time for parts to be delivered; design PCB using a modular floorplan approach so that parts can be easily swapped if vendors run out of stock shortly before ordering; ensure test suite is automated so that we can quickly re-simulate the boards with new parts)
- Software bringup and board testing after manufacturing (again, design for testability with specific test points along the signal chain so that we can easily isolate board faults; maybe consider adding industry standard debugging interface, like JTAG, to ensure easy board testing; possibly add redundant components or wires to withstand manufacturing defects)