COMP3004B Team 41 Final Project

Team Members:
Alexander Ampah, Student#:101169097
Daniil Pakhomov, Student#:101049124
Liam Lowndes, Student#:

Main Use case:

Earclips on, dampened, button is pressed until the green button lights up. The lights on bar graph light up to indicate batter, select length of session by pressing power again, 20,55, or user choice.

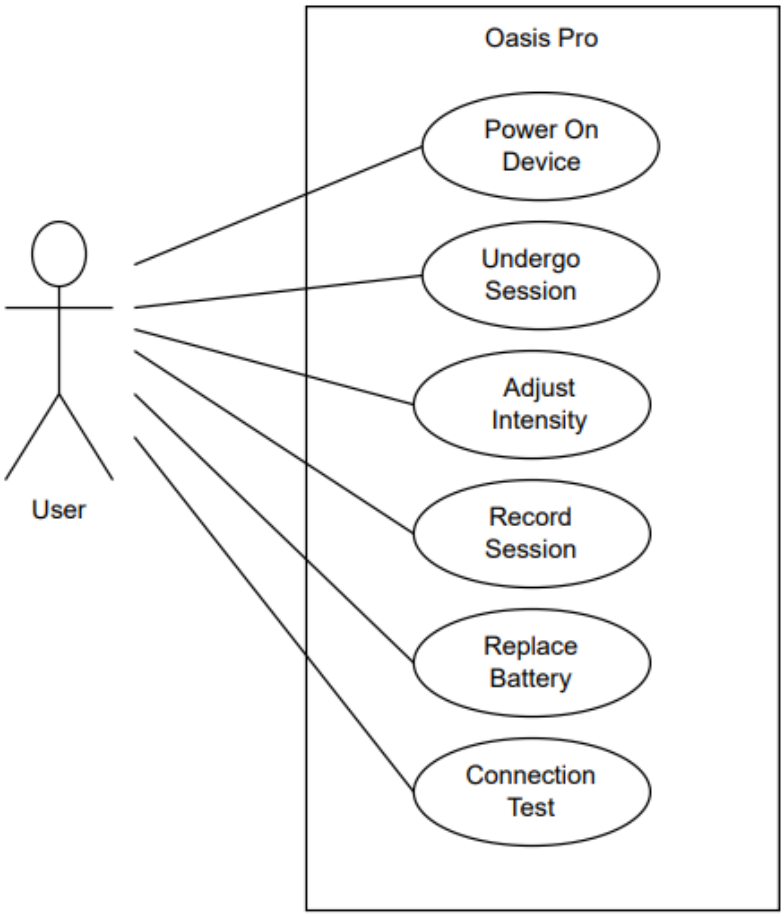
Use Case 1: Regular OASIS Operation Primary Actor: Oasis pro User Level: User goal
Precondition: OASIS Pro functions correctly
Minimal guarantee: The user can select and undergo any treatment they choose to with the option to record their session
Success guarantee: The battery does not die and the process of setting up a session is followed properly, the session is not interrupted.
Main success scenario: The user powers on the OASIS, there is ample battery, they choose a session, and whether to record it, and then they complete the session
1. The user turns on the OASIS Pro
2. The OASIS prompts them with a view of battery display, and then the user selects a session length
3. The user undergoes the session, with connection test preceding it.
4.The user adjusts intensity during the session
5. The user can choose to do something else if they wish at the end.

Extensions:
1a. The OASIS Pro was already on:
1a1. The OASIS Pro can be switched back on after the shutdown sequence
2a. The battery is low but not critical:
2a1. Prompt is issued to replace the battery but not forced. Regular operation can be performed.
2b. Battery level is critical:
2b1. Battery must be replaced immediately
2c. The user choose to record session
2c1. The session information is recorded such as type, intensity, time.
3a. The battery goes from low to critical during the session itself
3a1. The session is over and the battery must be replaced
3b. The session is interrupted by a power button press to soft off the session.
3b1. The session will start the soft off process amd graph will scroll from 8 to 1 to confirm the Process
3c.The session is interrupted with a power off signal of 1 second

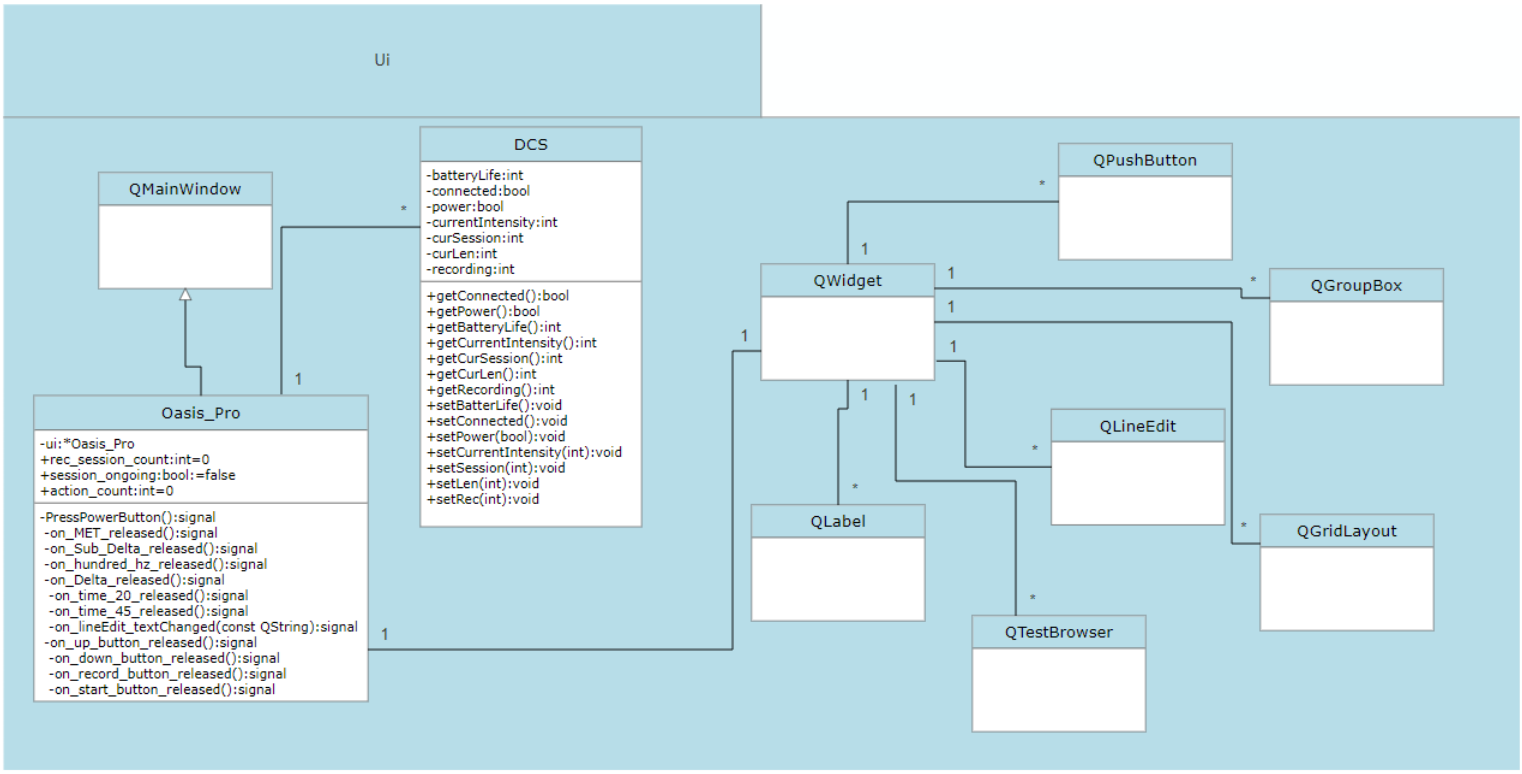
3c1. The unit shuts off and interrupts the session
3d. Connection test is reading no connection
3d1. The connection must be improved, then attempt a session again.
3e. The connection test is reading okay connection
3e1. Turn up the intensity to feel the intended effect
4a. The intensity is too high
4a1. The power should be switched off to end the session preemptively
5a. The battery enters a critical state while the user is preparing to attempt an action
5a1. The battery needs to be replaced immediately

Use Case 2: Using Connection Test Primary Actor: Oasis pro User Level: User goal
Precondition: OASIS Pro functions correctly and has sufficient battery
Minimal guarantee: The user finished the connection test successfully and gets an accurate result
Success guarantee: The battery does not die and the unit works correctly
Main success scenario: The user powers on the OASIS, there is ample battery, they choose to do a connection test, it completes and gives them a reading
1. The OASIS Pro is on and waiting for input from user
2. The user selects to do a connection test
3. The connection test begins
4. Results are displayed
Extensions:
1a. Battery level turns critical:
1a1. Battery must be replaced immediately
3a. Soft off is initiated:
3a1. The system commences soft off and shuts down accordingly.
3b.The battery dies mid session:
3b1. The battery must be replaced before system can be turned on again

Use Case Diagram:



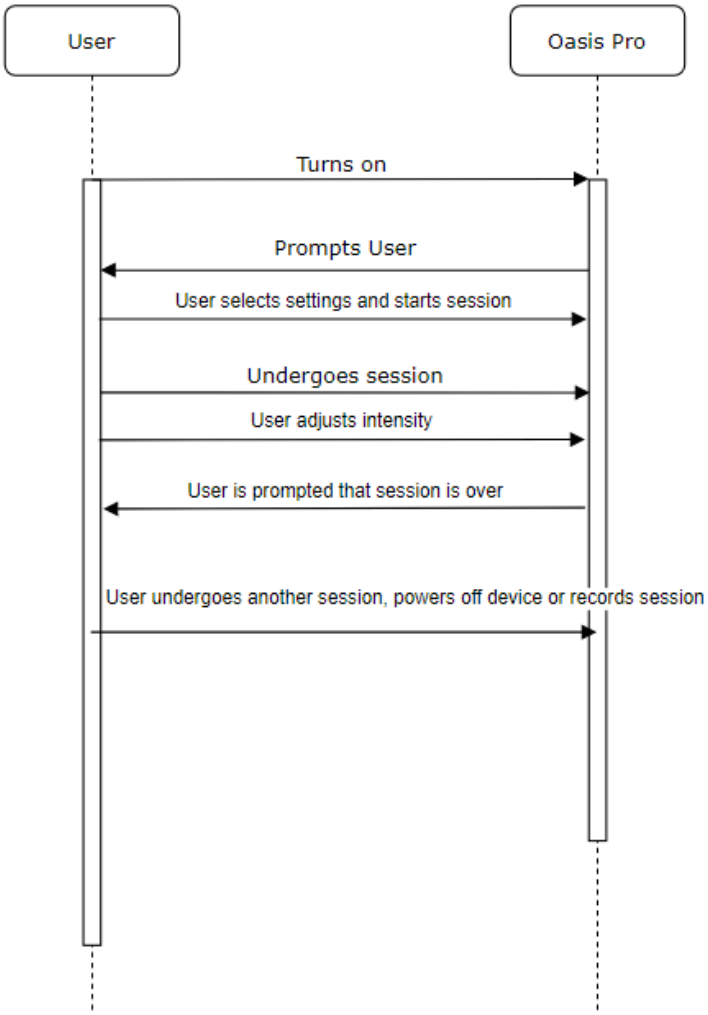
UML Class Diagram:



Description: The Oasis_Pro uses the QMainWindow class, and has a 1 to many relationship with dcs since a single instance of our oasis could technically instantiate more than one DCS. It has a one to one relationship with QWidget since QWidget will support however many instances of Q objects we need in a 1..* relationship between QWidget and objects such as QPushButton, QGroupBox, etc..

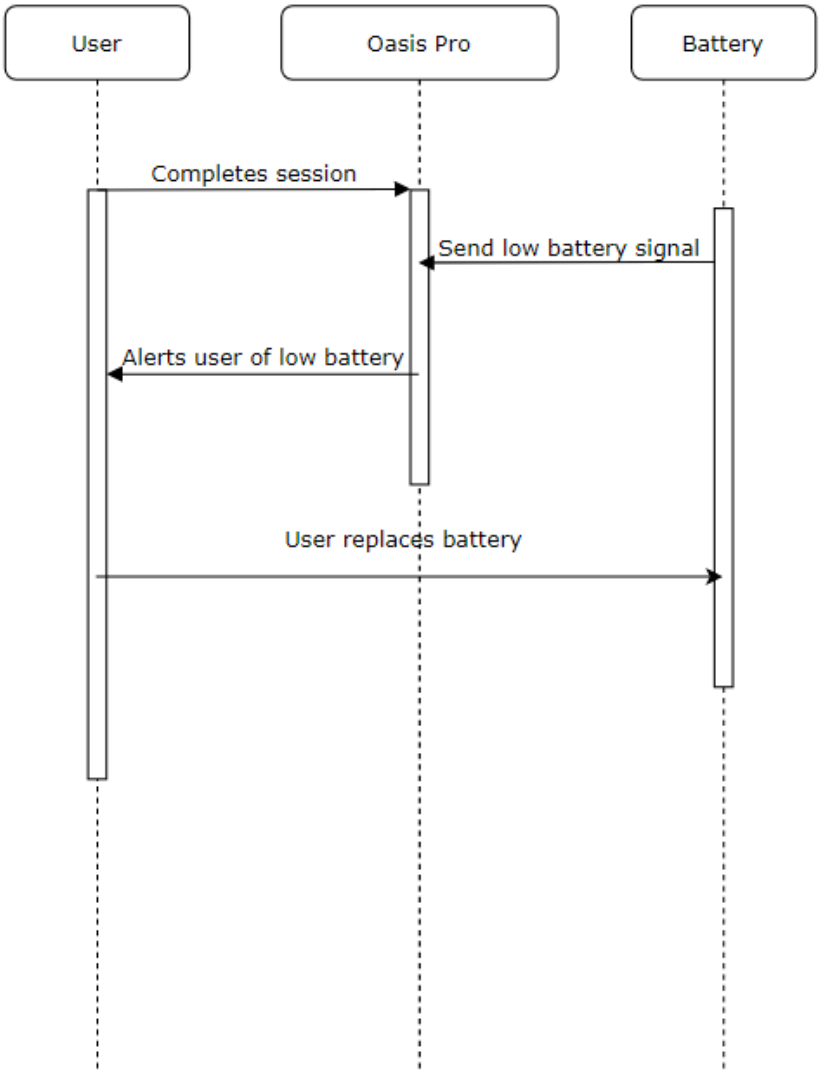
Sequence Diagrams:

Undergoing session:



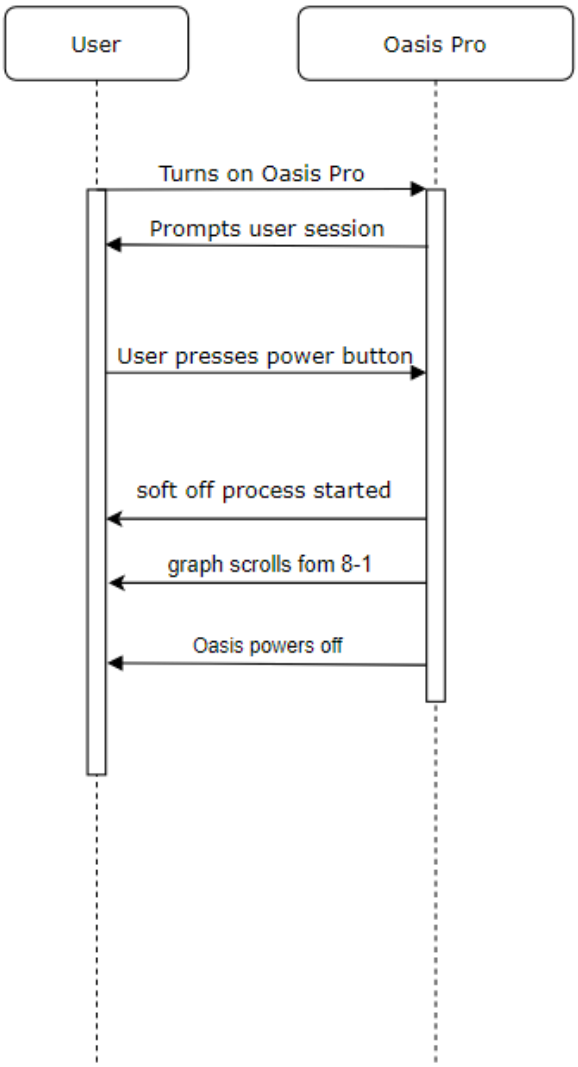
This diagram illustrates the main use case/Use Case 1 with the user turning the device on, selecting the settings and undergoing the therapy session.

Replacing battery:



This diagram illustrates part 2 of Use Case 1 when the battery is critical, the user will be prompted to replace it and can replace it by pressing the Replace Battery button.

Soft off:



This diagram illustrates part 3 of Use Case 1 when the power button has been pressed during a session, the device will display the soft off function and turn off.

Traceability Matrix:

ID	Requirement	Related Use case	Fulfilled By	Description
1	Turn on/Turn off	Use Case 1	Oasis pro	The device turns on when the power button is pressed and turns off when the power button is pressed.
2	Battery Level	Use Case 1	Oasis pro, GUI	Battery level and battery low warnings as per “Battery Level” section on p5 of the manual. Battery depletion as a function of length of therapy, intensity, and connection to skin.
3	Selecting a session	Use Case 1	Oasis pro, GUI	The user is able to select 3 time groups (20min, 45min and user designated) and 4 session types per group.
4	Connection Test	Use Case 2	Oasis pro	The Oasis Pro checks for a connection and prompts the user if there is a bad connection.
5	Adjusting Intensity	Use Case 1	Oasis pro, GUI	The user is able to adjust the intensity during the session with the up and down buttons.
6	Recording session	Use Case 1	Oasis pro	The user is able to record the session and add it to the history of treatment.
7	The lights on the graph	Use Case 1	Oasis pro, GUI	The lights on the graph light up during the connection test and the soft off process. They turn off when the session has ended or the device turns off.
8	Replace battery button	Use Case 1	GUI	The replace battery button returns the device's battery to 100%.
9	Soft Off Function	Use Case 2	Oasis Pro,GUI	Begins the soft off operation during the session in question and shuts down the device with the appropriate procedure