1) Object-Oriented Analysis:

The OO design diagram below shows High-level perspective. The figure shows the analysis phase as follows:

- Device class is the main category of the application; it is responsible for initializing the graphical user interface and displaying the user interaction menu to select the functions provided by the device. In addition, it can also enable users to understand task progress and device hardware status (such as battery power), and send notification sounds as needed.
- Electrode class uses a set of inputs that describe the treatment mode, and then output micro-current waveforms. These inputs include a Boolean value that is used to determine whether the electrode is on the patient's skin and the power level and frequency of the treatment. The electrode (or at least its software representation) will use some mathematical functions to convert the input into a waveform output.
- The display class that is part of the device user interface can have brightness and color attributes. Some methods will be needed to update the menu display and set these display properties.
- Program class is a pre-defined combination of signal frequency and time interval for the patient's nerves. It contains electrode objects that are responsible for detecting the patient's nerves and sending signals. This class is responsible for displaying treatment instructions to the operator user to obtain the best treatment effect.
- The patient class is the main participant here. Some user operations do not have a corresponding "button" on the device itself, so it can be handled by user.
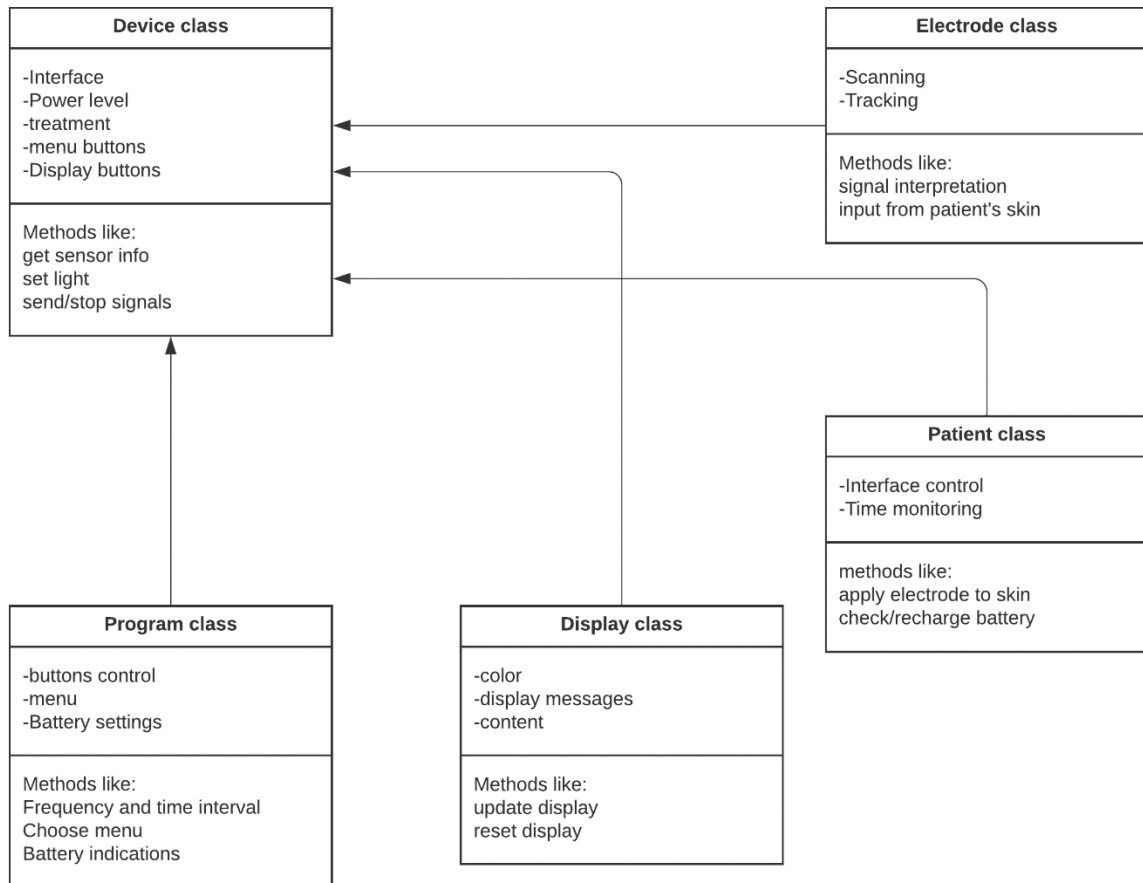
A) UML Diagram(Initial model)

Device class

-Interface
-Power level
-treatment
-menu buttons
-Display buttons

Methods like:
get sensor info
set light
send/stop signals

Electrode class

-Scanning
-Tracking

Methods like:
signal interpretation
input from patient's skin

Patient class

-Interface control
-Time monitoring

methods like:
apply electrode to skin
check/recharge battery

Program class

-buttons control
-menu
-Battery settings

Methods like:
Frequency and time interval
Choose menu
Battery indications

Display class

-color
-display messages
-content

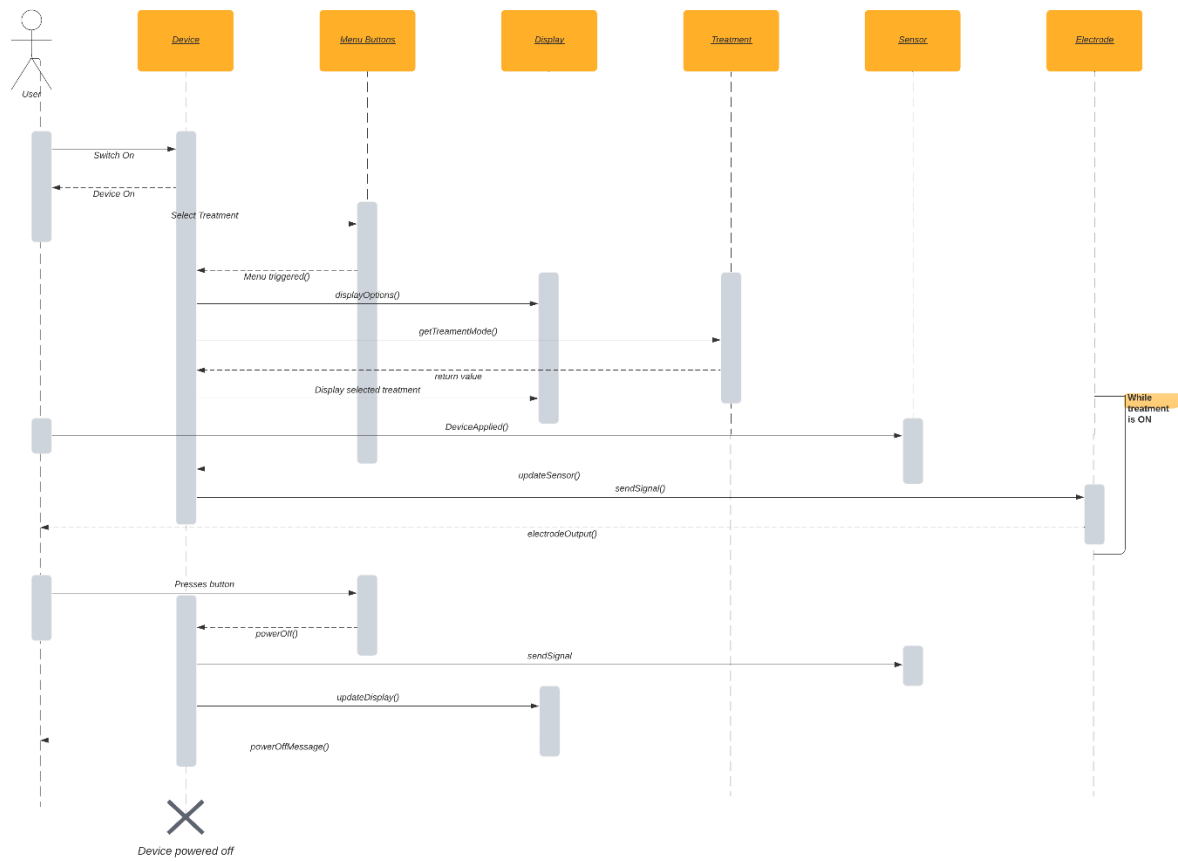Methods like:
update display
reset display

Figure 1:UML Class Diagram

B) Sequence Diagram

Figure 2: Sequence Diagram