

COMP 3004 Team Project
Developing and Testing a MCT Device Simulator

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1 Use Cases

Use Case 1: Run Program

Primary Actor: User

Scope: DENAS Simulator

Level: User Goal

Prerequisite: Navigated to 'Programs' Menu

1. User selects a program using the arrow keys and the select button
2. User initiates program using the Skin Touch button
3. User updates power level using left and right arrow buttons

Use Case 2: Run Frequency

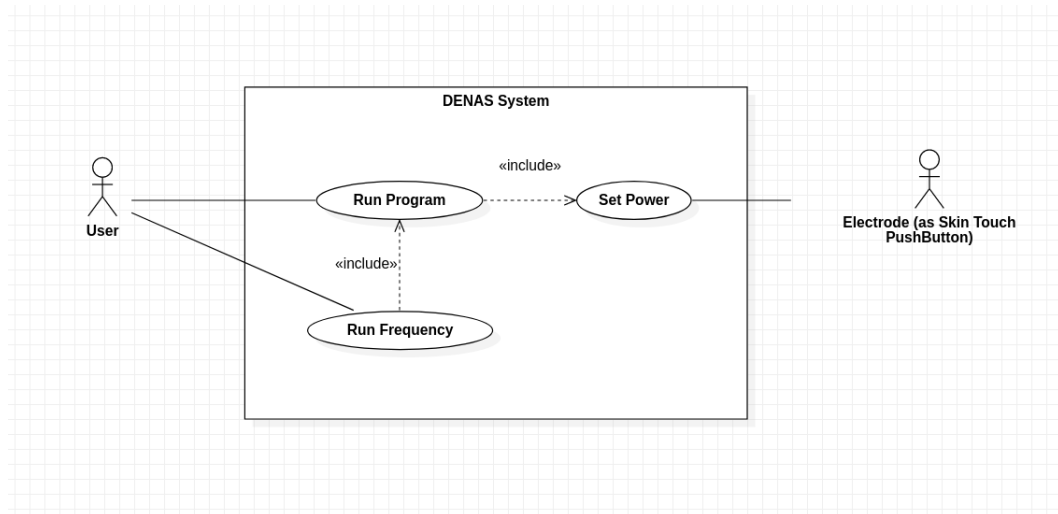
Primary Actor: User

Scope: DENAS Simulator

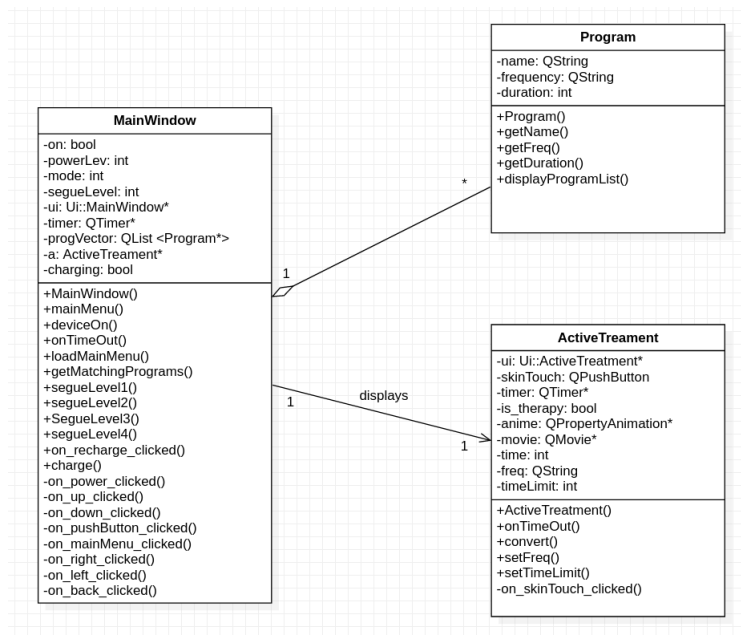
Level: User Goal

Prerequisite: Navigated to 'Frequency' Menu

1. User selects a program using the arrow keys and the select button
2. User initiates program using the Skin Touch button
3. User updates power level using left and right arrow buttons



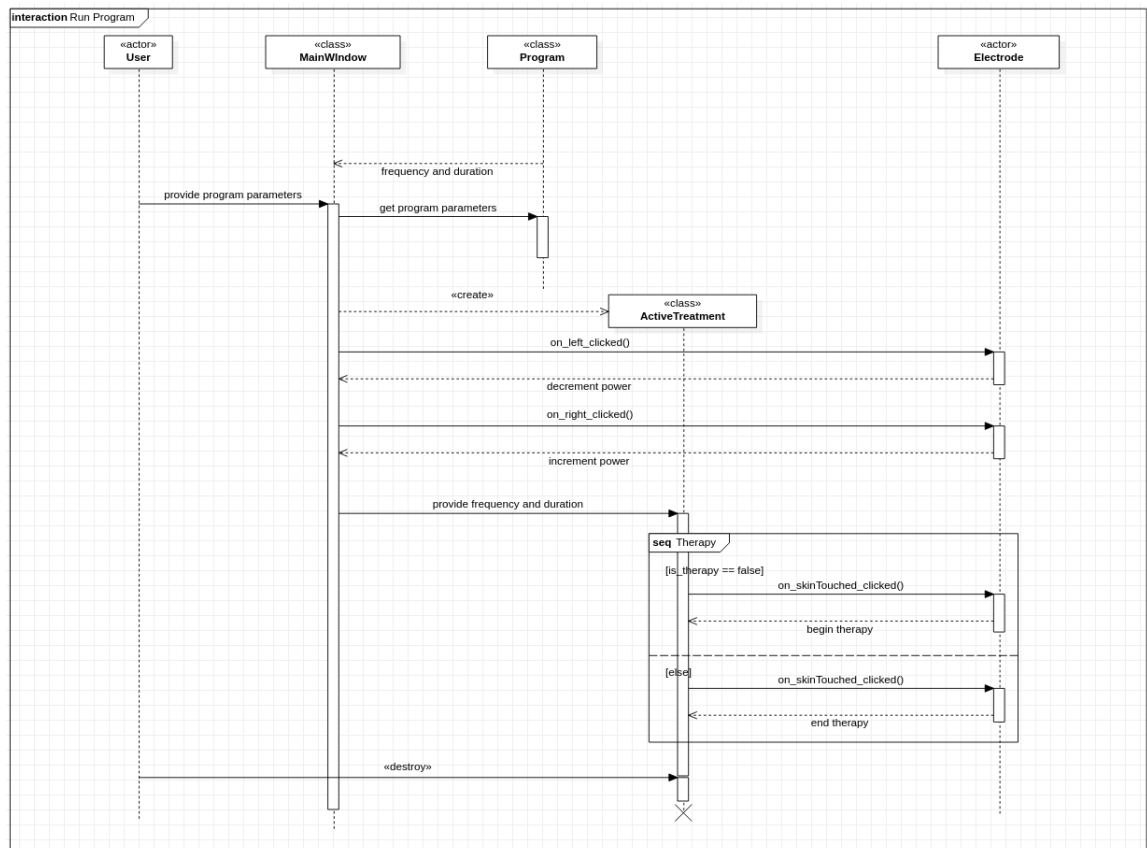
2 Class Diagram



Our implementation involves three classes. **MainWindow** implements menus using the arrow buttons, creates an **ActiveTreatment**, and sends requests to a

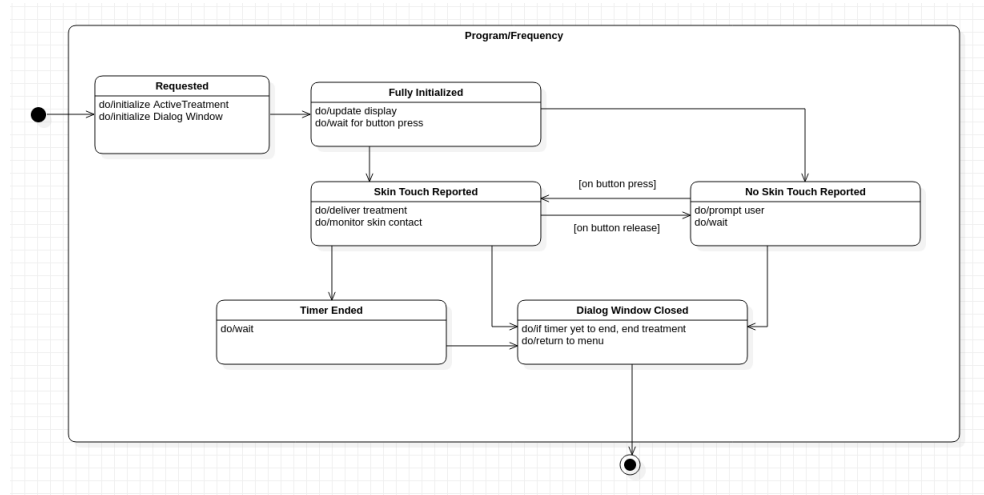
Program for its parameters. The ActiveTreatment class is the intermediary between the simulated electrode and the user.

3 Sequence Diagram



This sequence diagram models the order of operations everytime a user requests a specific program. The MainWindow stores multiple programs and, upon a request, retrieves program from paramters and uses these to initiate an ActiveTreatment. This active treatment is then responsible for interacting with the electrode and, depending on whether or not electric current is currently being delivered, starts and stops the active treatment.

4 State Diagram



Because of the simplicity of the guards that determine the transitions between states within the system, a state diagram was chosen to model operations between classes. Everytime a treatment is requested, an `ActiveTreatment` is initialized and a Dialog window is opened. This window monitors button pushes to determine when electric therapy is and isn't delivered. When the dialog is closed, the program ends and the active class is destroyed.