

Use Cases

Use Case 1: Creating, Updating and Deleting User Profiles

Primary Actor: User of the RaDoTech Device

Stakeholders: User of the RaDoTech Device: Wants to use the device to manage their user profiles for the RaDoTech Device

RaDoTech: Wants to make sure that their product works correctly and satisfies their customers

Precondition: The user has the app downloaded.

Success Guarantee: The user is able to use the app to create, update and delete user profiles.

Main Success Scenario:

1. The user presses the “create profile” button on the app
2. The user fills in the information for the profile
3. The user can click on the profile tab in the RaDoTech app to delete or modify their profiles

Extensions:

- 1a. The user already has 5 profiles
 - 1a1. The user receives a message preventing the creation

Use Case 2: Measure electrical output from various points on the body

Primary Actor: User of the RaDoTech Device

Stakeholders: User of the RaDoTech Device: Wants to use the device to get an accurate measurement of the electrical output from various points on the body

RaDoTech: Wants to make sure that their product works correctly and satisfies their customers

Precondition: The RaDoTech Device is charged and functioning. The user has the app downloaded and has a profile on the app.

Success Guarantee: The device is able to measure the electrical output from various points on the body and send the information to the user's profile on the app

Main Success Scenario:

1. The user takes off any metal jewelry and accessories
2. The user chooses a profile
3. The user sprays water on the areas that will be scanned to get the skin moisturized
4. The user pairs the RaDoTech device with the app
5. The user presses the “measure now” button on the app
6. The user presses the device against each of the areas shown on the app
7. The user pulls the device away from their skin immediately after the device beeps to get the most accurate reading

Extensions:

- 3a. The spray bottle has run out of water
 - 3a1. The user can refill the bottle with ordinary tap water
- 4a. The RaDoTech device is unable to pair with the app

- 4a1. The user can try reinstalling the app
- 4a2. The user can check if the bluetooth is connected on the RaDoTech app
- 4a3. The user can contact customer support about their problem
- 6a. The user presses the device against the wrong area
 - 6a1. The user can try again again to get the right area
- 7a. The user doesn't get a correct reading
 - 7a1. The user can try again on the area to get the correct reading

Use Case 3: Provide insight into the functional health of the user

Primary Actor: User of the RaDoTech Device

Stakeholders: User of the RaDoTech Device: Wants to use the device and the app to get useful and insightful information on their functional health

RaDoTech: Wants to make sure that their product works correctly and satisfies their customers with accurate and insightful information

Precondition: The user has the app downloaded and has a profile on the app. The user has done a measurement with the device

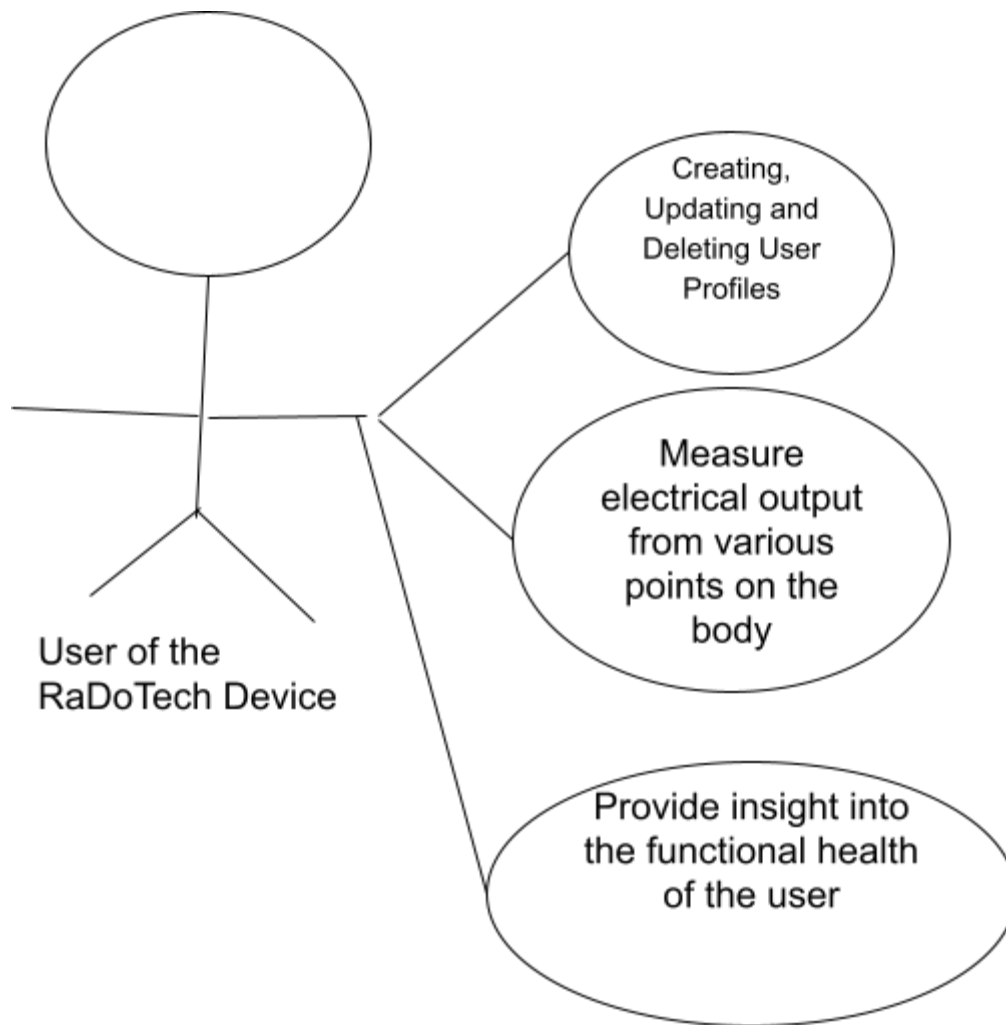
Success Guarantee: The user is able to see all the information from the measurement on the app

Main Success Scenario:

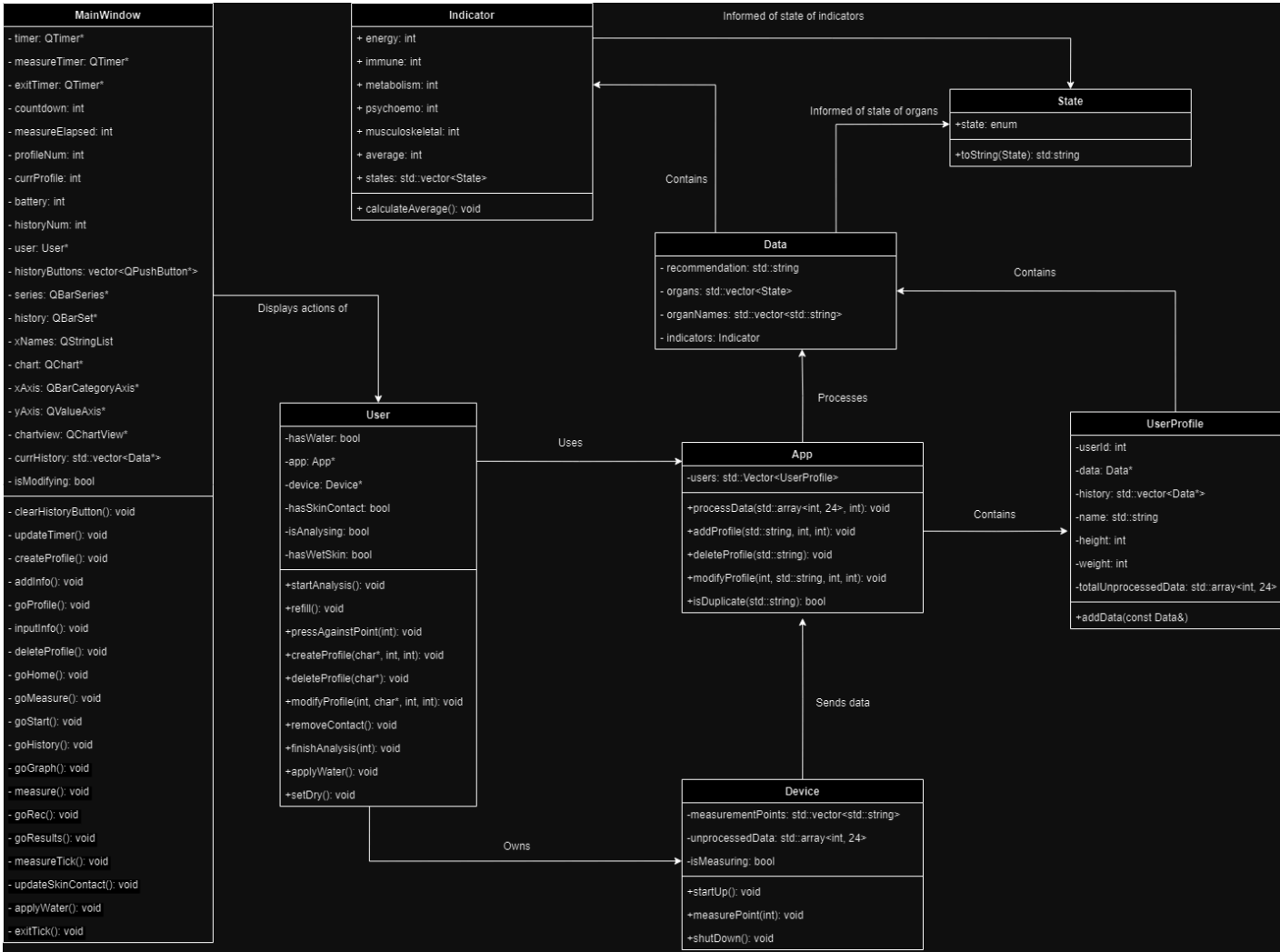
1. The user goes to the history section of the app and selects a measurement
2. The user can see the overall body shot which shows if the organs are above normal, normal or below normal
3. The user can click through the chat to see what it means at the organ level
4. The user can click on the indicator tab to get more in depth information with practical and actionable tips such as a snapshot of how the systems are functioning
5. The user can click into the boxes in the indicator tabs to learn more about what each part means
6. The user can click on the recommendation screen to get some recommendation and key insights on the snapshot

Extensions:

- 1a. The user doesn't have any measurements in their history
 - 1a1. The user can perform a measurement to have it be added in the history



UML Class Diagram

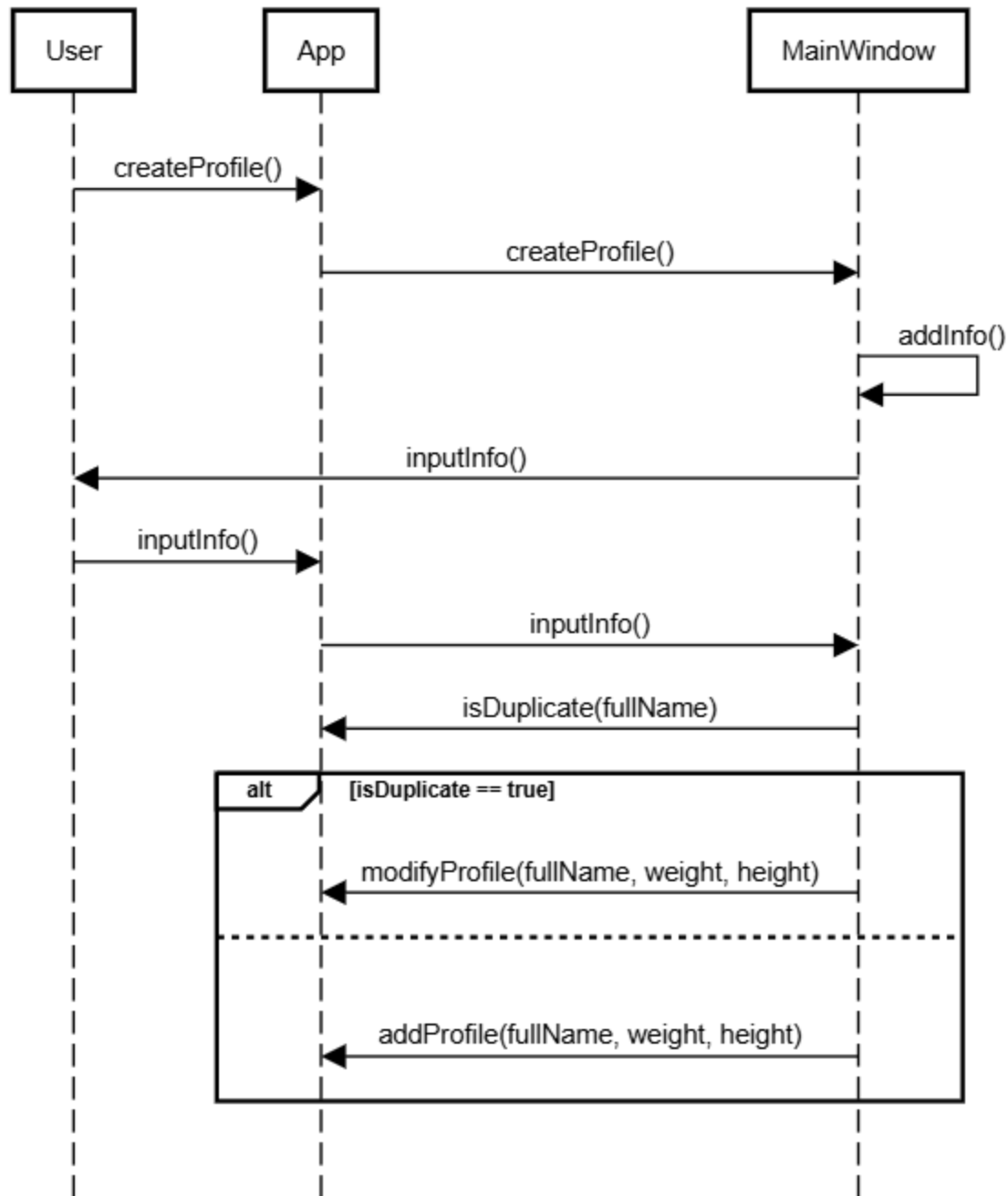


UML Sequence Diagrams

Success Scenario 1: Creating a User Profile

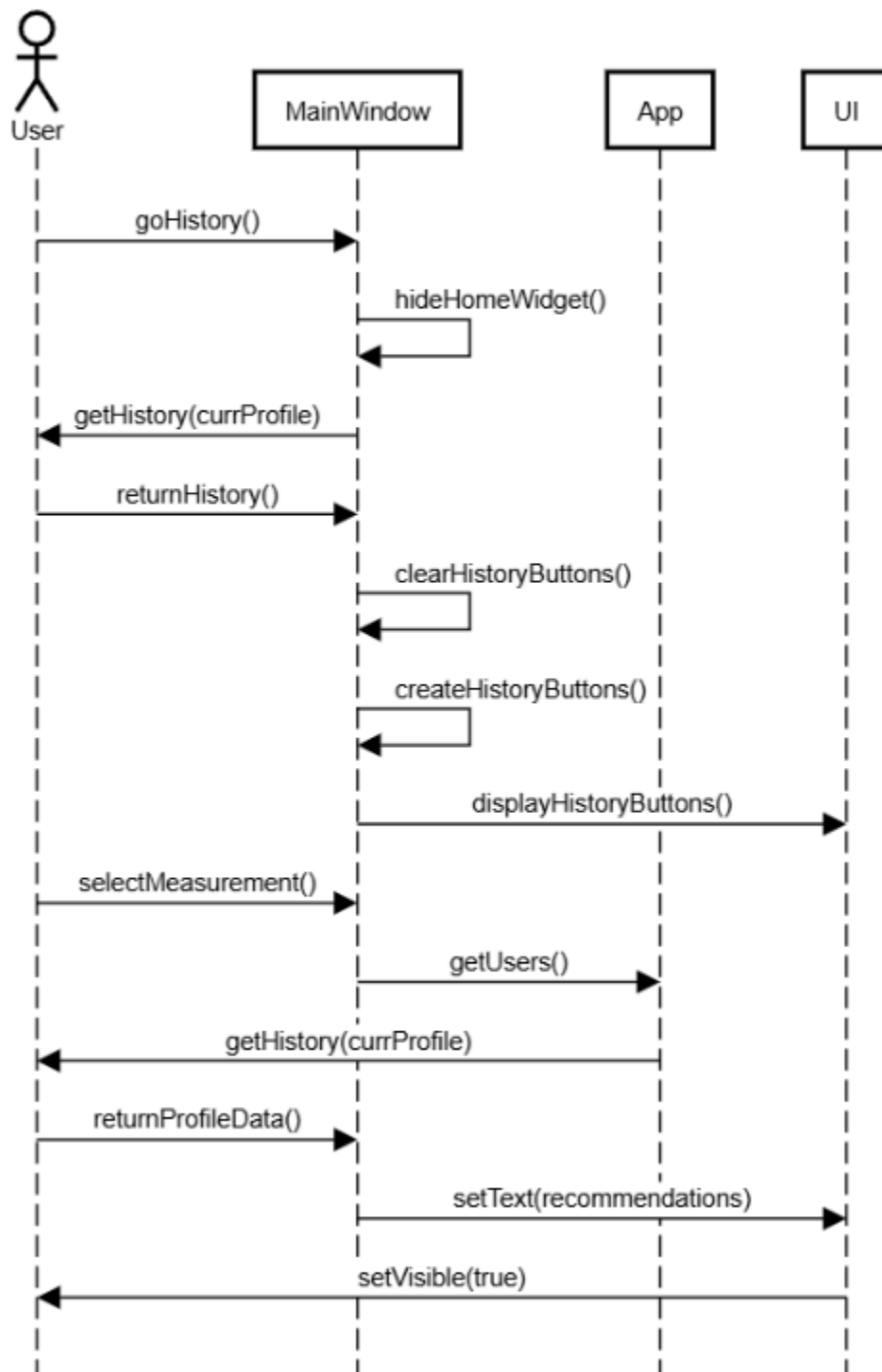
This scenario involves the user successfully creating a new profile in the app.

Success Scenario 1 : Create User Profile



Success Scenario 2: View Recommendations

This scenario ensures that the user can navigate the app to view recommendations based on their health data and see them displayed on the UI.

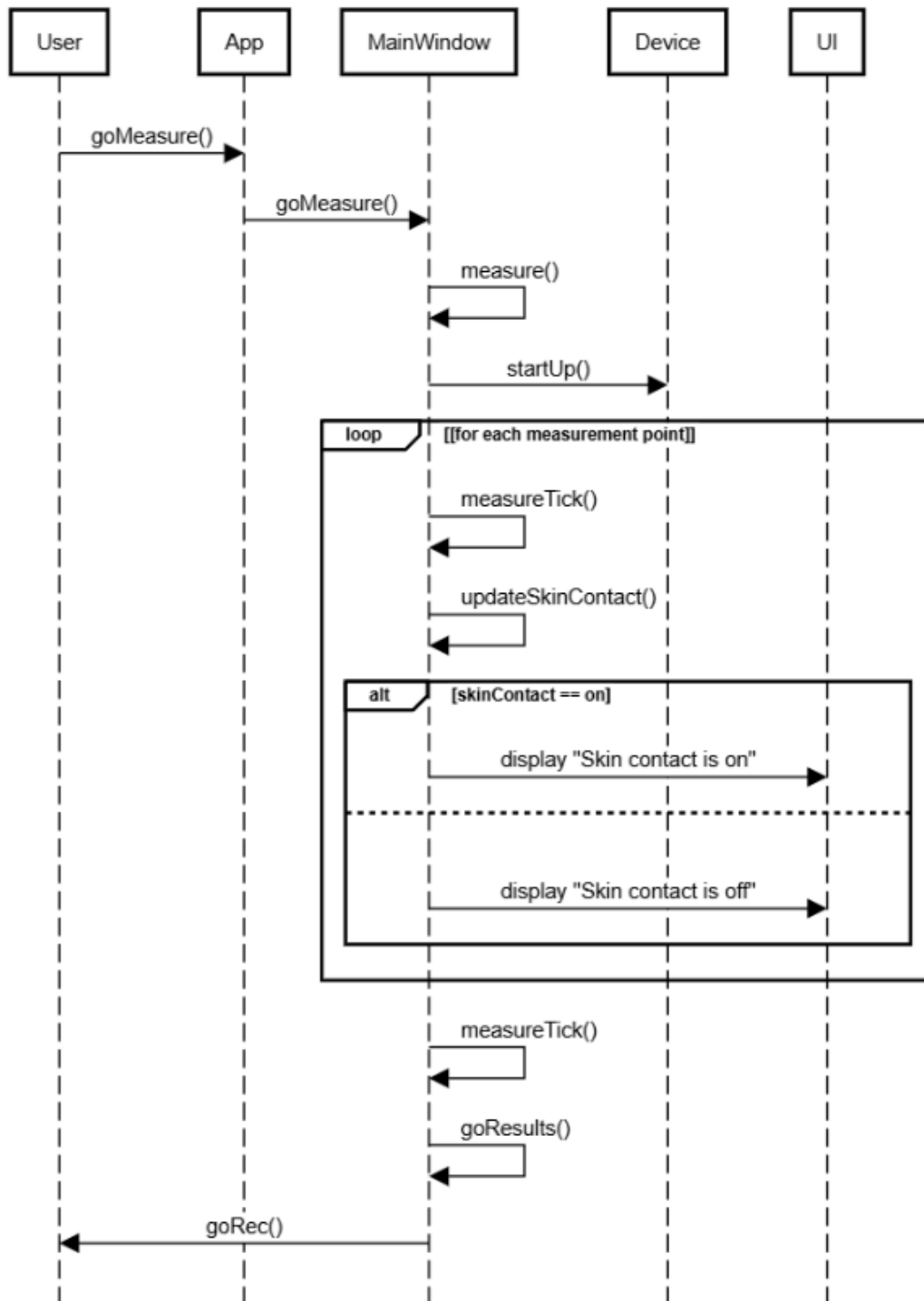


Safety Scenario 1: Ensure Proper Skin Contact (On or Off)

This scenario ensures the device has proper skin contact throughout the measurement and

updates the status accordingly.

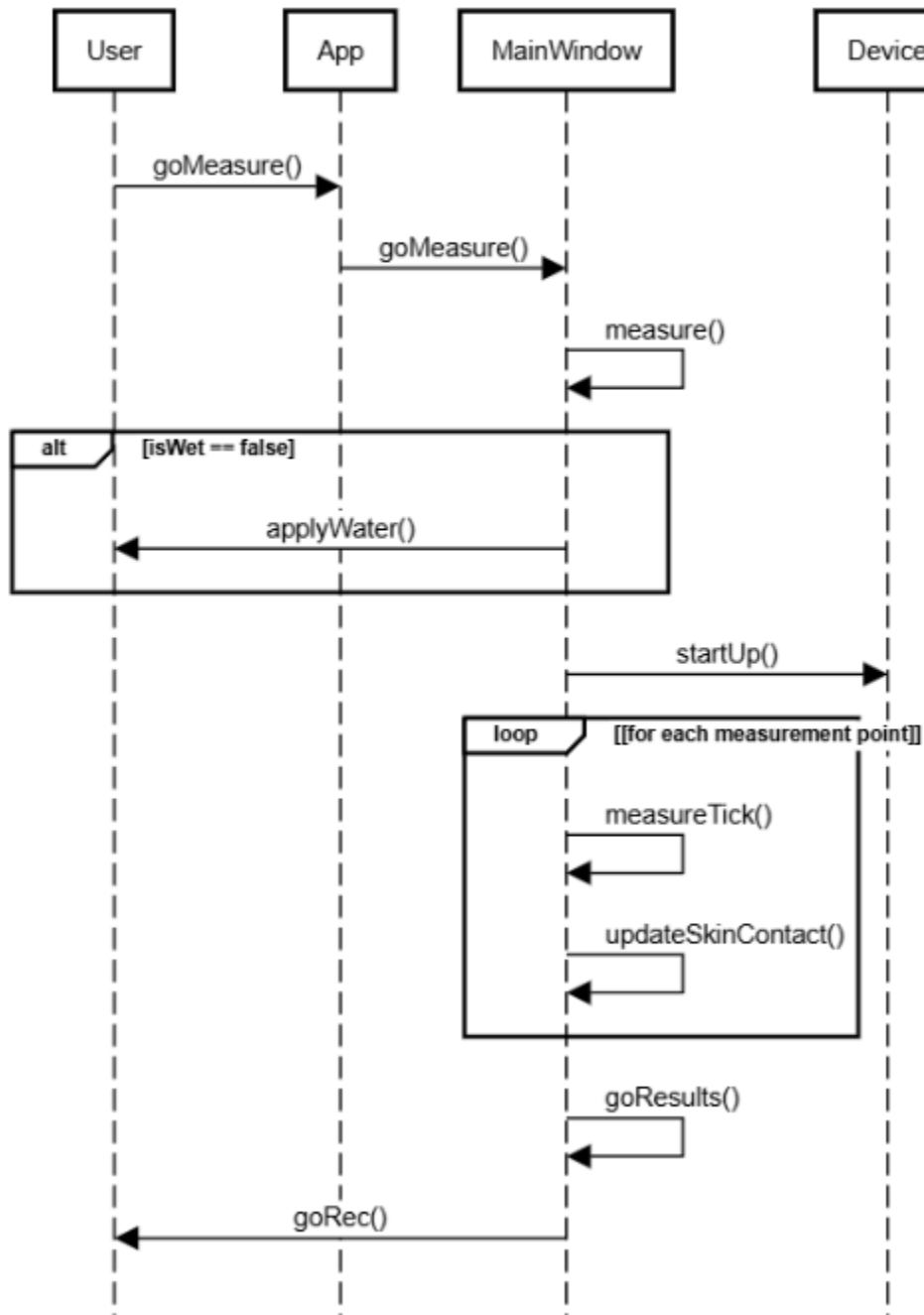
Safety Scenario 1: Ensure Proper Skin Contact (On or Off)



Safety Scenario 2: Check if Skin is Wet

This scenario ensures that the user applies water to the skin before measuring to avoid inaccurate readings.

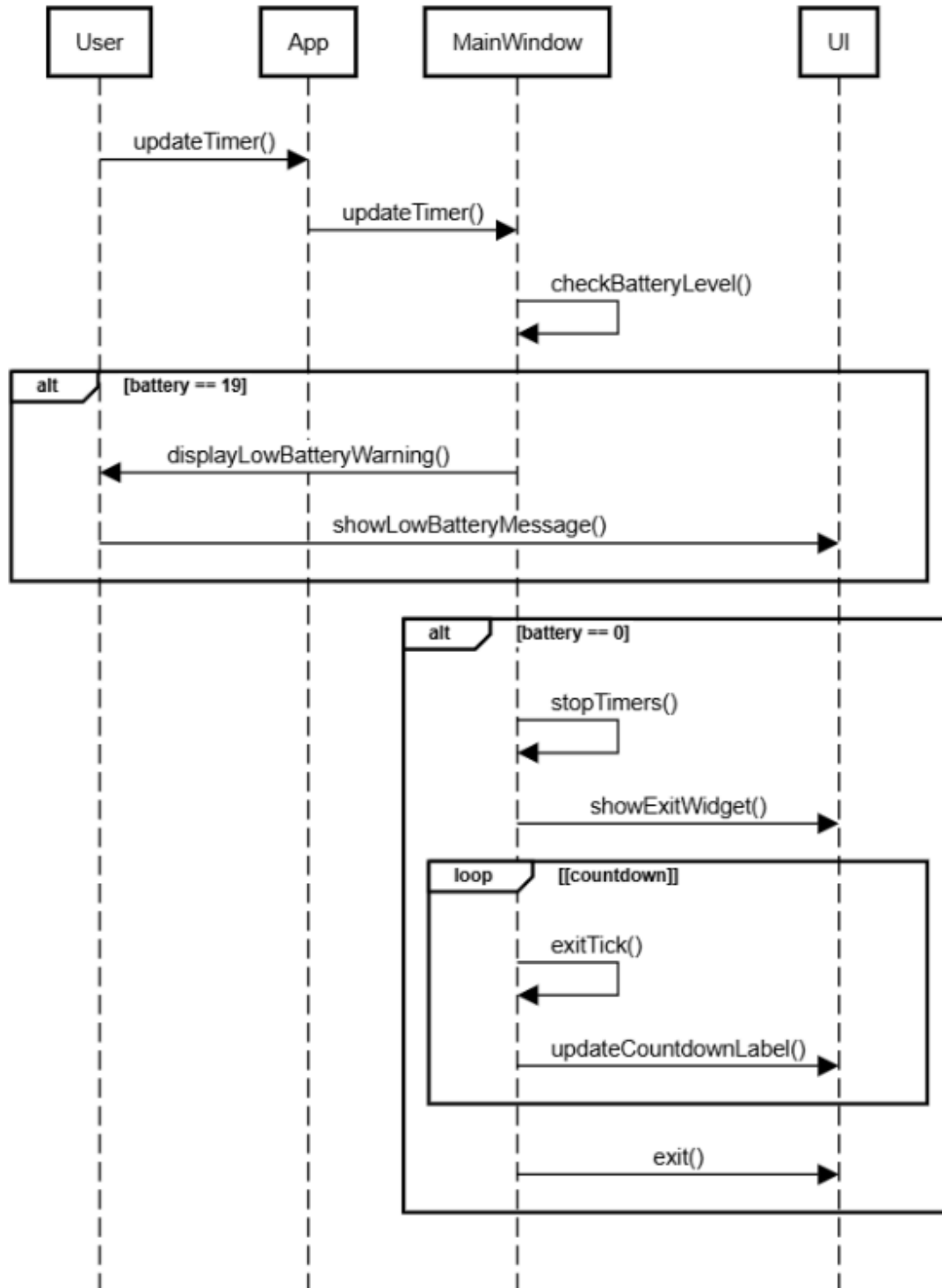
Safety Scenario 2: Check if Skin is Wet



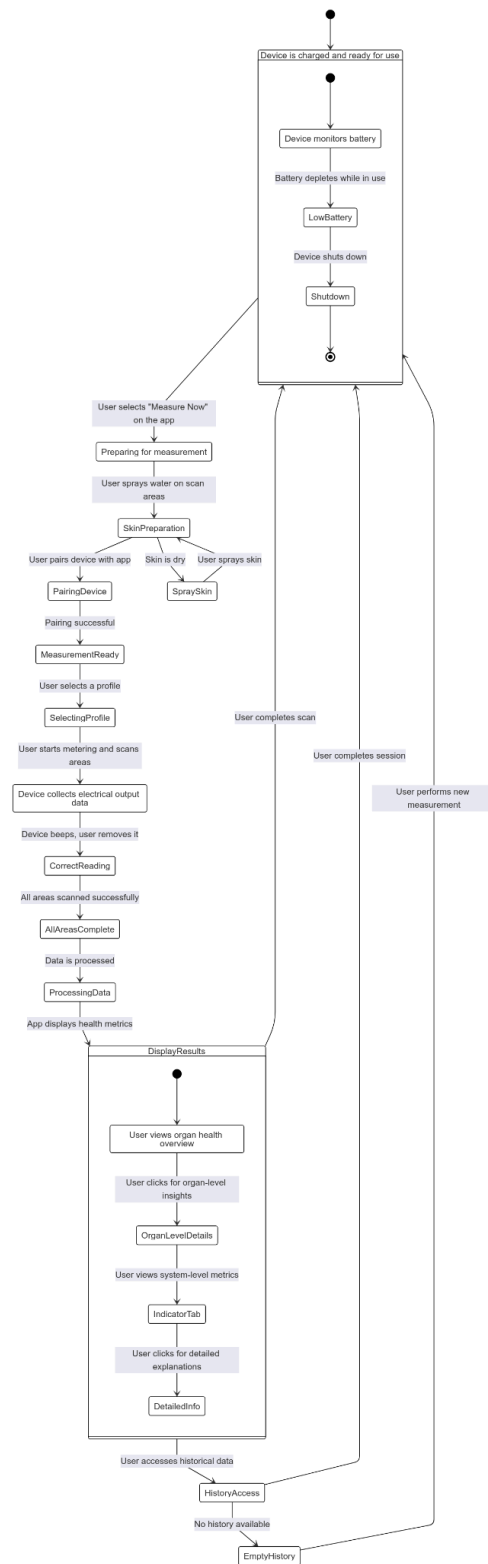
Safety Scenario 3: Handle Low Battery

This scenario ensures that the application handles low battery warnings and initiates a graceful shutdown to prevent data loss and ensure user safety.

Safety Scenario 3: Handle Low Battery



UML State Machine Diagram



Requirements Traceability Matrix

ID	Requirement	Related Use Case	Fulfilled by	Tested-by	Implemented by
1	User wants to create a profile	Creating, Updating and Deleting User Profiles(UC1)	mainwindow, userProfile, user	Run the simulation, then try to create a profile	createProfile function in User class and addProfile function in App class
2	User wants to update their profile	Creating, Updating and Deleting User Profiles(UC1)	mainwindow, userProfile, user	Run the simulation, create a profile, then try to update the profile	modifyProfile function in User class and changeProfile function in App class
3	User wants to delete their profile	Creating, Updating and Deleting User Profiles(UC1)	mainwindow, userProfile, user	Run the simulation, create a profile, then try to delete the profile	deleteProfile function in User class and removeProfile function in App class
4	Application can hold up to 5 profiles	N/A	mainwindow, user	Run the simulation, then try creating 6 profiles	currProfile integer from the mainwindow class
5	User can input health data	Creating, Updating and Deleting User Profiles(UC1)	mainwindow, user, userProfile	Select measure now, select a profile, then start scanning	createProfile function in User class
6	Device can only scan on wet skin	Measure electrical output from various points on the body(UC2)	mainwindow, user	Select measure now, then try scanning with dry skin, then wet skin	measure function in mainWindow, isWet in user,

7	Measurement only continues after device goes on and off skin	Measure electrical output from various points on the body(UC2)	mainwindow, user	Select measure now, then start scanning	goMeasure in mainwindow, getSkinContact function in user
8	Device finishes collecting data after all body parts have been visited	Measure electrical output from various points on the body(UC2)	mainwindow	Select measure now, start scanning and follow until the end	measurePoint function in Device class
9	Application neatly processes and displays health metrics	Provide insight into the functional health of the user(UC3)	mainwindow, app	Select measure now, start and finish scanning, then view results	processData in App class
10	Application rates user based on health metric score	Provide insight into the functional health of the user(UC3)	mainwindow, indicator, user, userprofile, data	Select measure now, start and finish scanning, then view results	processData in App class
11	Application displays a specialist's recommendation	Provide insight into the functional health of the user(UC3)	mainwindow, user, app, userprofile, data	Select measure now, start and finish scanning, view results, then go to the specialists recommendation tab	processData in App class
12	User can save data	N/A	app, userprofile	Select measure now, start and finish scanning, then save	finishAnalysis in user class and processData in app class
13	User can	Provide insight	mainwindow,	Run the	historyWidget in

	review historical data	into the functional health of the user(UC3)	user, app, userprofile	simulation, go to profile, go to view history	mainwindow, history vector
13	Device shows battery charge	N/A	mainwindow	Run the simulation, check battery percentage	Battery_label from the mainwindow.ui
14	Device battery depletes while in use	N/A	mainwindow	Run the simulation, complete scanning, check battery percentage	Battery_label from the mainwindow.ui, and battery integer from the mainwindow class
15	Device shuts down gracefully when out of power	N/A	mainwindow	Keep running simulation until battery reaches 0	updateTimer, and exitTick function from the mainwindow class