Heart Rate Variability Device Use Cases

Use Case: Turn Device on (UC1)

Primary Actor: User (interacting with the device)

Precondition: The device is off

Main Success Scenario:

1) Power button is pushed by the user.

2) Device turns on.

3) Display turns on.

Postcondition:

1) Device is turned on and stays on the main menu until the user interacts.

Extensions:

2a) Device doesn't turn on.

- Device doesn't turn on because it is out of battery, user charges the device's battery.

- If the device doesn't turn after charging the battery, user should contact customer support from the place he bought the device.

Use Case: Turn Device off (UC2)

Primary Actor: User (interacting with the device).

Precondition: The device is on

Main Success Scenario:

1) Power button is pushed by the user.

2) Device display shuts off.

3) Device powers off.

Post Condition:

1) Device has been turned off and does not consume battery.

Use Case: User selects a breath level (UC3)

Primary Actor: User (interacting with the device)

Precondition: Settings is selected in the main menu, breath intervals also selected in the settings menu.

Main Success Scenario:

1) User presses the down key to select the breath level.

2) Repeat step 1 until the user selects the desired breath interval.

Post Condition:

1) Device breath interval has been set to user's selected level.

Extensions:

1a) User presses the up key.

- The breath interval decreases, until reaching the top of the menu.

2a) User selects their respective interval.

2a)1) They select 5 seconds between breaths.

2a)2) They select 10 seconds between breaths.

2a)3) They select 15 seconds between breaths.

2a)4) They select 20 seconds between breaths.

2a)5) They select 25 seconds between breaths.

2a)6) They select 30 seconds between breaths.

Use Case: HR Sensor Electrode is illuminated with an active pulse (UC4)

Primary Actor: User (interacting with the device)

Precondition: User has device turned on

Main Success Scenario:

1) Place HR sensor electrode on skin

2) Light illuminates on active pulse reading.

Extensions:

1a) Light does not illuminate on active reading.

- Contact customer support as the device may be faulty.

Use Case: Starting a session on the device (UC5)

Primary Actor: User (interacting with the device)

Precondition: The device is on

Main Success Scenario:

1) User presses the start session option from main menu/

2) User presses the “Yes” option to start session.

3) Session starts

Post Condition:

1) Session is ended by the user and the data is stored.

Extensions:

3)a) Breath Pacer light illuminates sequentially in the breath interval chosen by the user.

Use Case: Stopping a session on the device (UC6)

Primary Actor: User (interacting with the device)

Precondition: Session is already in progress.

Main Success Scenario:

1) User presses the back button.

2) Session stops, which also stops the recording.

3) Data is stored in history for the session.

Post Condition:

1) The data is stored on the device.

Use Case: LED changes colors (UC7)

Primary Actor: User (interacting with the device)

Precondition: The device in touch with skin and session is in progress.

Main Success Scenario:

1) User gets an active pulse reading on the device.

2) Depending on the difficulty and coherence score, the respective LED lights up every 5 seconds.

Post Condition:

1) Once the session ends, the LED shuts off.

Extensions:

2a) LED changes color to green

- If level 1 and difficulty is medium, and coherence score is between 0.5 and 0.9, blue LED illuminates. If difficulty is easy and coherence score is lesser than 0.4, red LED illuminates. If difficulty is hard and coherence score is higher than 0.9, the green LED illuminates.

- If level 2 and difficulty is medium, and coherence score is between 0.6 and 2.1, blue LED illuminates. If difficulty is easy and coherence score is lesser than 0.6, red LED illuminates. If difficulty is hard and coherence score is higher than 2.1, the green LED illuminates.

- If level 3 and difficulty is medium, and coherence score is between 1.8 and 4.0, blue LED illuminates. If difficulty is easy and coherence score is lesser than 1.8, red LED illuminates. If difficulty is hard and coherence score is higher than 4.0, the green LED illuminates.

- If level 4 and difficulty is medium, and coherence score is between 4.0 and 6.0, blue LED illuminates. If difficulty is easy and coherence score is lesser than 4.0, red LED illuminates. If difficulty is hard and coherence score is higher than 6.0, the green LED illuminates.

Use Case: Viewing the history of all recorded sessions. (UC8)

Primary Actor: User (interacting with the device)

Precondition: Device is “ON” and on the main menu

Main Success Scenario:

1) User navigates and selects the History menu by pressing the “OK” button.

2) User selects the View menu by clicking on the “OK” button.

3) Device displays all saved sessions to the user.

Post Condition:

1) All saved therapies are displayed.

Extensions:

2a) There are no recorded sessions.

- Device displays nothing.

Use Case: Clearing saved sessions. (UC9)

Primary Actor: User (interacting with the device)

Precondition: Device is turned “ON” and on the main menu.

Main Success Scenario:

1) User navigates and selects the History menu by pressing the “OK” button.

2) User selects the Clear menu by clicking on the “OK” button.

3) User selects “Yes” by pressing the “OK” button.

3) Device deletes all saved sessions.

Post Condition:

1) All saved sessions are deleted.

Extensions:

3a) User selects “NO” by pressing the “OK” button.

- User returns to the history menu.

Use Case: Testing for Heart Rhythm. (UC10)

Primary Actor: User (interacting with the device)

Precondition: Device is turned “ON” and is in contact with skin.

Main Success Scenario:

1) User starts the session.

2) LED light color, coherence score and achievement score starts and keeps on updating every 5 seconds.

3) Graph reading is plotted every second on the Heart Rate / Time graph.

5) User stops the session.

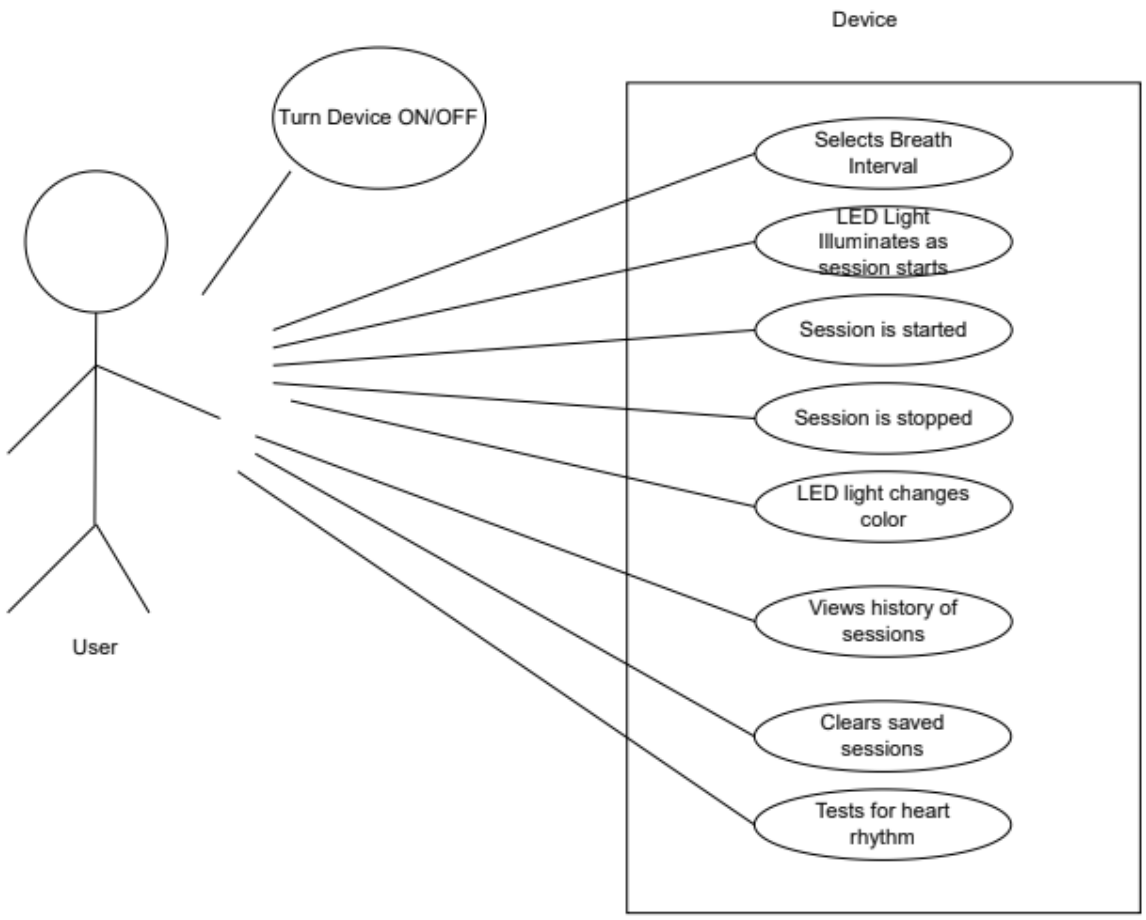
6) Graph generated can either be Coherent or incoherent depending on user’s heart rate

7) Session data is stored in History.

Extensions:

5a) User involuntarily stops the session by losing contact with the skin.

- Result of the session is stored in History and the user is moved to the history menu.


Device
Turn Device ON/OFF
Selects Breath Interval
LED Light Illuminates as session starts
Session is started
Session is stopped
LED light changes color
Views history of sessions
Clears saved sessions
Tests for heart rhythm
User