

Name: Jake Taylor 1011474594

Name: Hensene Geremew 101130848

Device Use Cases

The device is switched on (UC1)

Primary Actors: The device user and the device's battery

Precondition: The device is off

Main Success Scenario:

1. The user presses the on/off button.
2. The device turns on.
3. The screen displays the menu and the battery level.

Postcondition: The device is on and is displaying the menu and the battery level.

Extensions:

2a. the device fails to turn on.

2a1. The user must charge the device before attempting to turn it on again. The use case ends.

The user starts a new session (UC2)

Primary Actors: The device user

Precondition: The device user has placed the ear pulse sensor on the center of their ear lobe. The device is on and is currently displaying the menu and battery level.

Main Success Scenario:

1. The user uses the up and/or down arrow buttons to navigate to the "Start New Session" menu entry.
2. The user presses the selector once at the "Start New Session" menu entry.
3. The screen no longer displays the menu.
4. The screen displays the session view in place of the menu.
 - a. The screen displays the HRV graph, which will plot heart rate against time.
 - b. The screen displays the current coherence score, which is initially 0.
 - c. The screen displays the session length, which is 0 initially.
 - d. The screen displays the achievement score, which is initially 0.
 - e. The screen displays a ball on the left side of the screen that will be used as the breath pacer.
 - f. The screen displays the battery level.

5. The user presses the selector again to start the session.

Postcondition: The device has opened a new session.

The user is in a new session (UC3)

Primary Actor: The device user

Precondition: The device is turned on and the new session has been selected by the user

Main Success Scenario:

1. The ear pulse sensor begins sending pulse data to the device.
2. A symbol appears on the screen to indicate that the device is receiving an active pulse reading.
3. The HRV graph begins plotting the pulse data as the user's heart rate over time.
4. The ball begins moving to the right side of the screen.
5. The user begins breathing in.
6. Every second, the session length is updated.
7. Every 5 seconds, the device computes an updated coherence score from the most current 64 seconds of pulse data received from the ear pulse sensor and displays it on screen.
8. A light on the device is coloured red, blue or green depending on the coherence score computed in step 12 i.e. if the coherence level is "Low", "Medium" or "High".
9. The coherence score computed in step 12 is added to the achievement score and the updated achievement score is displayed on screen.
10. The ball reaches the right side of the screen.
11. The user begins breathing out.
12. The ball returns to the left side of the screen.
13. Repeat steps 1-12 until the postcondition occurs. The battery level decreases as we repeat these steps.

Postcondition: The user presses the selector button.

Variations:

- 7a. If a new coherence level is reached ("Low", "Medium" or "High"), a beep goes off.
- 8a. The classification of the coherence score as a coherence level ("Low", "Medium" or "High") is determined by the coherence score as well as the challenge level chosen in settings.
- 12a. The period of the motion of the ball is determined by the breath pacer value chosen in settings. The default value is 10 seconds.

The user ends a session (UC4)

Primary Actors: The device user

Precondition: The device the user is using is currently running a session

Main Success Scenario:

1. The user presses the selector button or the menu button to end the session.
2. The screen displays a summary view in place of the session view.
 - a. The screen displays the challenge level.
 - b. The screen displays percentage of time in different coherence levels ("Low", "Medium" and "High")
 - c. The screen displays the average coherence score.
 - d. The screen displays the length of the session.
 - e. The screen displays the final achievement score for the session.
 - f. The screen displays the entire HRV graph.
3. The user presses the menu button to return to the menu view.

Postcondition: The user is returned to the menu and the session data has been saved.

Variations:

- 3a. The user presses the back button, returning them to the session view.

The user changes the challenge level (UC5)

Primary Actors: The device user

Precondition: The device the user is using is currently displaying the menu view.

Main Success Scenario:

1. The user uses the up and/or down arrow buttons to navigate to the "Settings" menu entry.
2. The user presses the selector button on the "Settings" menu entry.
3. The screen displays a settings view in place of the menu view.
 - a. The screen displays a "Challenge Level" slider, which can be set to any integer in the range [1,4].
 - b. The screen displays a "Breath Pacer Speed" slider, which can be set to any integer in the range [1, 30].
4. The user uses the up and/or down arrow buttons to navigate to the "Challenge Level" slider.
5. The user presses the selector button.
6. The user uses the left and/or right arrow buttons to select the desired challenge level.

Post Condition: The user has chosen the desired challenge level.

The user changes the period of motion of the breath pacer (UC6)

Primary Actors: The device user

Precondition: The device the user is using is currently displaying the menu view.

Main Success Scenario:

1. The user uses the up and/or down arrow buttons to navigate to the “Settings” menu entry.
2. The user presses the selector button on the “Settings” menu entry.
3. The screen displays a settings view in place of the menu view.
 - a. The screen displays a “Challenge Level” slider, which can be set to any integer in the range [1,4].
 - b. The screen displays a “Breath Pacer” slider, which can be set to any integer in the range [1, 30].
4. The user uses the up and/or down arrow buttons to navigate to the “Breath Pacer Speed” slider.
5. The user presses the selector button.
6. The user uses the left and/or right arrow buttons to select the desired breath pacer period of motion.

Post Condition: The user has chosen the desired value for the breath pacer period of motion.

The user manages the saved sessions (UC7)

Primary Actors: The device user

Precondition: The user’s device is currently displaying the menu view.

Main Success Scenario:

1. The user presses the up and/or down arrow buttons to navigate to the “History” menu entry.
2. The user presses the selector button.
3. The user then can choose the options “Review Session History” or “Clear Session History” to view or delete the history of the sessions
4. The session history screen displays a history view in place of the menu view.
 - a. The screen displays a column of tabs for every session the device has saved. The tabs are titled with the date they were recorded.
 - b. The tab has a delete icon beside the date.
 - c. Above the top tab, the screen displays a button to delete all of the logs and return the device to the initial install condition.
5. The user uses the up and/or down arrow buttons to navigate to the tab for a session they wish to view.
6. The user presses the selector button.

7. The screen displays the summary view corresponding to the chosen session.

Postcondition: The user was successfully able to view and/or remove any of the session data on the device.

Variations:

3a. The user chooses the “Clear Session History” by using the up/down button in the History menu screen, the clear session will give two options of “Yes” or “No” to confirm with the user.

3a1. The user chooses the “Yes” button to confirm that the user wants to delete history.

3a2. The user presses the selector button.

3a3. The tab for the session history is removed from the column of tabs.

3a4. The use case ends.

The device is switched off (UC8)

Primary Actors: The device user and the device battery.

Preconditions: The device is switched on and the screen is displaying one of its many views.

Main Success Scenario:

1. The user presses the on/off button.
2. The device turns off.
3. The screen is no longer displaying anything.

Post Condition: The device is switched off and the screen is not displaying any view.

Variations:

1a. The battery level reaches 0.

