Quantified Student: Watch

Project analysis document



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# Introduction

Quantified Student (QS for short) Watch is a component of the Quantified Student system. The project is intended on the one hand to collect physical data from a student using smartwatches and on the other hand to provide performance insights to a student, generated from that collected data.

# Requirements

The requirements are prioritized using the MoSCoW method:

• Must have: These requirements must be returned, without these requirements, the product cannot be used.

• Should have: These requirements are highly desirable, but the product can be used without them.

• Could have: These requirements will not be addressed in this project but may be addressed in the future.

• Will not/would not have: These demands will not be processed.

## User stories

The user stories and acceptance criteria are described according to the following template:

• User Story: “As a <role>, I want <feature>, so I <value>.”

• Acceptance criteria: “Given <input situation>, when <event>, then <outcome>.”

| *#* | *Priority* | *Description* |
| --- | --- | --- |
| US-01 | Must | As a user, I want to connect the smart band to my phone so that I can read the collected data and change the settings for the smart band.   * AC-1.1 **Given,** I am a user **and** I have navigated to my connected devices **and** I have granted permission to use Bluetooth **and** I have Bluetooth enabled, **when** I click to add a device, **then** the application will show me a list of Bluetooth devices in the nearby area to connect to. * AC-1.2 **Given,** I am a user **and** I have navigated to my connected devices **and** I have granted permission to use Bluetooth **and** I have Bluetooth disabled, **when** I click to add a device, **then** the application will ask me to enable Bluetooth. * AC-1.3 **Given,** I am a user **and** I have navigated to my connected devices **and** I have not been granted permission to use Bluetooth **when** I click to add a device, **then** the application will request permission to use Bluetooth. |
| US-02 | Should | As a user, I want to see the historical data that has been collected from my smart band, so I can get a summary of my past performance.   * AC-2.1 **Given,** I am a user **and** I have selected a registered smartwatch **and** data is available **when** I navigate to my performance, **then** I will see my performance in easy to understand graphs. AC-2.1 **Given,** I am a user **and** I have selected a registered smartwatch **and** data is not available **when** I navigate to my performance, **then** I will see a message telling me there is no data available. |
| US-03 | Should | As a user, I want to see a piece of detailed information from a particular sensor or data group.   * AC-3.1 **Given,** I am a user **and** I have selected a registered smartwatch **and** data is available **when** I request a detailed view of a particular sensor or dataset, **then** I will see a detailed view of what the sensor has registered or the dataset contains. |
| US-04 | Should | As a user, I want to delete all my collected data from the app and possible connected services/databases.   * AC-4.1 **Given,** I am a user **and** I have a QS account connected to the app **when** I navigate to my data **then** I can delete all my data |
| US-05 | Should | As a user, I want to filter my performance data based on a time frame, so I can see what my performance was at a specific time.   * AC-5.1 **Given**, I am a user **and** I have a smart band connected **and** select a smart band **when** I will see a performance timeline with the most important data points. |
| US-06 | Should | As a user, I want to be able to sign out from the app.   * AC-6.1 **Given,** I am a user **and** I have connected a QS account **when** I click on sign out **then** my account will be signed out of the app **and** all the remaining data will be sent to the API **and** all data related to my account or my personal data will be deleted from the app |
| US-07 | Should | As a user, I want to be able to disconnect a smart band from the app.   * AC-7.1 **Given**, I am a user **and** I have a smart band connected to the app **then** I can disconnect the smart band from the app **then** all the remaining data will be sent to the API **and** all data related to the smart band will be deleted from the app |

## Non-functional

| *#* | *Description* |
| --- | --- |
| NFR-01 | The request-response time should be under 200 milliseconds. |
| NFR-02 | The requests should be secured by SSL (HTTPS). |
| NFR-03 | The app can support different types of smart bands. |
| NFR-04 | The app can support different types of protocols. |
| NFR-05 | The API can support different data types for different watches. |

# Definition of done

* *DOD-01:* Pass all tests according to the items of the acceptance criteria.
* *DOD-02:* Code produced (completed all 'todo' items in the code).

# Acceptance tests

| **User story** | **US-01** |
| --- | --- |
| *Test case* | TC-01 |
| *Description* | * **Given,** I am a user **and** I have navigated to my connected devices **and** I have granted permission to use Bluetooth **and** I have Bluetooth enabled, **when** I click to add a device, **then** the application will show me a list of Bluetooth devices in the nearby area to connect to. |
| *Pre-conditions* | * The app is installed * The device has Bluetooth functionality |
| *Test steps* | 1. Start the app 2. Turn on Bluetooth 3. Click on add device 4. Give permissions to the app to use Bluetooth |
| *Expected result* | * The app will show me a list of smart bands that are nearby and support by the app |
| *Test case* | TC-02 |
| *Description* | * **Given,** I am a user **and** I have navigated to my connected devices **and** I have granted permission to use Bluetooth **and** I have Bluetooth disabled, **when** I click to add a device, **then** the application will ask me to enable Bluetooth. |
| *Pre-conditions* | * The app is installed * The device has Bluetooth functionality * The Bluetooth is turned off |
| *Test steps* | 1. Start the app 2. Click on add device |
| *Expected result* | * The app will prompt me to turn Bluetooth on |
| *Test case* | TC-03 |
| *Description* | * **Given,** I am a user **and** I have navigated to my connected devices **and** I have not been granted permission to use Bluetooth **when** I click to add a device, **then** the application will request permission to use Bluetooth. |
| *Pre-conditions* | * The app is installed * The device has Bluetooth functionality * The Bluetooth is turned off |
| *Test steps* | 1. Start the app 2. Click on add device |
| *Expected result* | * The app will ask me for permission to use Bluetooth |

| **User story** | **US-02** |
| --- | --- |
| *Test case* | TC-04 |
| *Description* | * **Given,** I am a user **and** I have selected a registered smartwatch **and** data is available **when** I navigate to my performance, **then** I will see my performance in easy to understand graphs. |
| *Pre-conditions* | * A smart band is connected to the app. * The watch has been connected long enough to collect sufficient data. |
| *Test steps* | 1. Go to a connected watch 2. Go to the performance dashboard. |
| *Expected result* | * The app will show collected data in easy to understand graphs |
| *Test case* | TC-05 |
| *Description* | * **Given,** I am a user **and** I have selected a registered smartwatch **and** data is not available **when** I navigate to my performance, **then** I will see a message telling me there is no data available. |
| *Pre-conditions* | * A smart band is connected to the app |
| *Test steps* | 1. Go to a connected watch 2. Go to the performance dashboard. |
| *Expected result* | * The app will prompt me that there is no sufficient data is collected |

| **User story** | **US-03** |
| --- | --- |
| *Test case* | TC-06 |
| *Description* | * **Given,** I am a user **and** I have selected a registered smartwatch **and** data is available **when** I request a detailed view of a particular sensor or dataset, **then** I will see a detailed view of what the sensor has registered or the dataset contains. |
| *Pre-conditions* | * A smart band is connected * Sufficient data is collected |
| *Test steps* | 1. Navigate to a detailed view |
| *Expected result* | * A detailed view of a sensor or dataset |

| **User story** | **US-04** |
| --- | --- |
| *Test case* | TC-07 |
| *Description* | * **Given,** I am a user **and** I have a QS account connected to the app **when** I navigate to my data **then** I can delete all my data. |
| *Pre-conditions* | * QS account is logged in * Data is collected |
| *Test steps* | 1. Navigate to my data |
| *Expected result* | * The data can be deleted |

| **User story** | **US-05** |
| --- | --- |
| *Test case* | TC-08 |
| *Description* | * **Given**, I am a user **and** I have a smart band connected **and** select a smart band **when** I will see a performance timeline with the most important data points. |
| *Pre-conditions* | * A smart band is connected * Sufficient data is collected |
| *Test steps* | 1. Select a smart band |
| *Expected result* | * A performance timeline will be shown |

| **User story** | **US-06** |
| --- | --- |
| *Test case* | TC-09 |
| *Description* | * **Given,** I am a user **and** I have connected a QS account **when** I click on sign out **then** my account will be signed out of the app **and** all the remaining data will be sent to the API **and** all data related to my account or my personal data will be deleted from the app |
| *Pre-conditions* | * A smart band is connected * Sufficient data is collected * QS account is logged in |
| *Test steps* | 1. Navigate to account 2. Sign out account |
| *Expected result* | * All remaining data will be sent to the API and all local data related to the account will be deleted from the app. |

| **User story** | **US-07** |
| --- | --- |
| *Test case* | TC-10 |
| *Description* | * **Given**, I am a user **and** I have a smart band connected to the app **then** I can disconnect the smart band from the app **then** all the remaining data will be sent to the API **and** all data related to the smart band will be deleted from the app |
| *Pre-conditions* | * A smart band is connected * Sufficient data is collected |
| *Test steps* | 1. Navigate to smart band settings 2. Disconnect smart band |
| *Expected result* | * All remaining data will be sent to the API and all local data related to the smart band will be deleted from the app. |

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# Conclusion

Based on this documentation and the associated knowledge acquisition, the next step will be the realization of the software system based on the criteria laid down in this document.

Furthermore, the system is being tested by the participants of the QS: Watch project. If any adjustments need to be made, it will be relatively straightforward to make changes due to the extensive documentation and planning process carried out by the team of students in charge of this document.