Assignment 1

Team number: 44

Team members

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Introduction

Author(s): Osman & Marco

At the start of the pandemic, people were staying at home more than ever before. Constantly being at home has led to many people rediscovering their desire to spend more time outside. We aim to provide an intuitive tool to facilitate people in reaching their full potential when it comes to working out and sporting by creating a sports tracking software, *AerobixTracker*.

One of the main functionalities of *AerobixTracker* is serving as a central place for people to view the history of all their favourite sporting activities, such as walking, running, roller skating, cycling. The software will visualise the various routes the user has taken on a map. When a user selects one of the routes, the app will provide valuable details and metrics. These metrics will include but are not limited to the start and finish time of the route, distance travelled, average speed, the estimated number of calories burned. As a user, by seeing the history of your routes, it will be straightforward to track your progress and improvement over time.

Another main functionality of *AerobixTracker* is keeping track of past sports activities and inspiring users to get out of the house more often and go work out. It suggests different workout options with charts describing their potential benefits. When active, the app will track the users' overall activity and a map overview sequentially, providing an overview of their progress. Users will also set specific time slots in which the app reminds them of their workout, giving them a statistical measurement of their improvement as an incentive to continue with their routine.

By making a simple and enjoyable experience, we want our app to motivate people to change their lives for the better or go back to the healthier routines they used to have before the pandemic started.

Examples of existing systems:
Strava, although being dedicated to tracking user activity related to cycling and running, Strava represents a good instance of an existing software (mobile app) that is comparable to the application we will be developing. The additional features it provides could be an inspiration to future extension of our application.

Adidas Running is also an example of the similar application. One of the interesting features of this application is enabling the user to set their personal goals, and track their progress in achieving them. This, as well, could be one of the extensible features, included in future iterations of development of the application.

Key aspects of the system:

- The input to the system is provided in the GPX exchange format, representing user activity. The next step is selecting (or creating) the type of activity that corresponds to provided input, after which the data is parsed, and metrics are computed and displayed on the GUI of the app.
- Users will be able to customise their layout to adjust the app to their preference. This will mean users can have an extensive overview of several metrics and others can get a short summary only including a few.

Features

Functional features

Author(s): Osman & Marco

The goal of the product is that it has to appeal to a wide variety of people. Therefore, an important functionality is that the platform has to support GPX data for different sports, and that the user can indicate the type of sport. Furthermore, the product will show information about the input data in a concise way, by visualising the points on a map and computing the relevant metrics. Furthermore, as a means to provide some form of progress tracker for the user, if the user provides multiple input-GPX files, the product will be able to visualise those routes on the map as well.

ID	Short name	Description	Champion
F1	Visualise route	Based on a GPX input file provided by the user, visualise the waypoints on a map.	Daniel Volpin
F2	Assign activity type	The user will select the activity type of the route that is being visualised i.e. running, cycling, etc. (first provide a guess for which route it is?)	Marco
F3	Display user activity metrics	After selecting the type of activity performed by the user, the app should compute relevant metrics calculations, and display them to the user.	Daniel Verner
F4	Summary of user activity in PDF form	The system should provide a printable form of the computed metrics, along with visualised routes and additional information.	Osman
F5	Historic overview of routes	If the user provides multiple GPX files, the product will give the option to view all these activities on the map (with the provided metrics as well)	Daniel Volpin
F6	Visualise speed on a graph	Provide the user with a more complete overview of the speed throughout the route by visually plotting it on a graph.	Marco

Quality requirements

Author(s): Daniel & Daniel

By enforcing quality standards, we hope to ensure a long-lasting, widely adopted program. We intend to make our application as accessible and extensible as possible to as many end users as possible by including accessibility and extensibility features when developing the software. We hope that as a result, we will be able to better ensure the longevity of this application in the face of changes that may occur in both the application's features and the world for which it is designed.

ID	Short name	Quality attribute	Description
QR1	Extensible activities	Maintainability	The application supports the addition of new sport activities.
QR2	Rapid computations	Performance	Computation durations under one second when tracking users' performance and calorie output.
QR3	Power efficiency	Sustainability	Caching of computed routes to remove redundant calculations.
QR4	Customization of application layout	Accessibility	Users can modify the app's colour scheme to grayscale and change the button layout and size to improve usability for disabled people.

Java libraries

Author(s): Osman & Daniel Volpin.

JavaFX
"JavaFX is an open source, next generation client application platform for desktop, mobile and embedded systems built on Java." It will be used to create the user interface for our GPX Manager. We chose it because it is simple to use and has a lot of functionality. When it came to research, most people found JavaFX to be superior to its competitors.

GMapsFX
"A pure JavaFX API which allows you to add Google Maps to your JavaFX application without the need to interact with the underlying Google Maps JavaScript API." The goal is to visually display the location provided by the GPX file on the map. GMapsFX has a simple API that allows for the simple translation of input data to the visually displayed location of movement.

JPX
"JPX is a Java library for creating, reading and writing GPS data in GPX format." This library is necessary to be able to easily read the user input files and process the data. This way, we can extract the useful information from the file and display it to the user.

Apache PDFBox
"Toolbox for creating and manipulating PDF files." The user should be able to extract computed data from the application, as mentioned in one of the features. We will use Apache PDFBox to provide a PDF file containing a summary of the computed metrics.

Time logs

Member	Activity	Week number	Hours
Everyone	Discuss general plans	1	1
Osman	Define functional features	1	1
Marco	Write product vision	1	1
Daniel Verner	Write product vision	1	1
Daniel Volpin	Investigate usage of JavaFX	1	1
Osman	Define functional requirements	1	0.5
Marco	Define functional requirements	1	0.5
Daniel Volpin	Define Quality requirements	1	0.5
Daniel Verner	Define Quality requirements	1	0.5
Marco	Finalizing functional features	1	0.5
Daniel Verner	Finalizing quality features	1	1
Daniel Volpin	Incorporating JavaFX / debugging	1	1
Marco	Incorporating JavaFX / debugging	0.5	0.5
Osman	Finalizing Java Libraries	1	1