Assignment 1

Team Number: 22
Team Members

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Introduction

Author(s): Abhisaar Bhatnagar

BEAM™ is a desktop-based personalised, sporting application which allows its users to analyse their physical activity (ranging over many sports) all by simply uploading GPX format files at the click of a button. This application is inspired by the likes of Strava, MapMyRide, and GPXSee. The user chooses a sport, uploads a GPX file, and is met with unique metrics and graphs for each corresponding type of activity.

This application is designed with a user interface targeted for easy manoeuvrability and access by all of its users, mainly comprising of:

- **Active User:** A user who makes use of the app's basic functionality to track its basic metrics for the default sporting activities (i.e. running, walking).
- **Athlete:** A user who makes use of the app for advanced functionality to track basic and additional metrics of any sporting activity and set timely goals.
- **Coach/Trainer:** A user who makes use of the app for analysis of specific users to track all their metrics, goals, and graphs.

The main features **all users** can interact with comprise of:

- ***Basic Functionality***: Extract data from GPX files and output metrics visually and numerically
- ***Additional Functionality***: Account system, goal creation.

The **main modules** of the application consist of:

- ***GUI***: app window which allows input/output interactions
- ***Sports Data*****:** extracts the activity data and analyzes the metrics according to the assigned sport.
- ***Data Representation*****:** translates and formats sports data to graphic/visual representations
- ***User Accounts***: retrieves and stores user data (height, weight, age… etc) and allows access to user goals

The final application will be presented as an interactive fitness application based on the aforementioned main modules where the user interacts with the application and its respective functionalities. The way the application will operate is as illustrated:

- On the first ever app launch the user is prompted to input their personal data to be used in later metric calculations.
- The user interface will allow the user to navigate to the respective areas of the app they require i.e. GPX input, goal creation, goal visualisation.
- The application will display the corresponding accessed screen.
- The user can input a GPX file of their activity for which the application will parse, display and store all its data.
- Each GPX File input is taken as a separate activity which will then be saved and can be accessed for future references.

Features

Author(s): Martynas Rimkevičius, Baher Wahbi, Erik Vunš, Abhisaar Bhatnagar.

ID	Short name	Description	Champion
F1	GUI	Graphical User Interface to interact with all the features.	Baher
F2	Metrics	A list of all available metrics. For example: ● Elevation ● Power ● Distance	Martynas
F3	Developer Extensibility	A developer can expand the metric list and add newly required metrics. Upon adding a new sport the developer chooses	Martynas

		relevant metrics from the metrics list. Example: The addition of swimming as a sport would require new metrics “pace per 100m” and “stroke length” while also making use of existing metrics such as distance and calories burnt.	
F4	Map GPS Coordinates	Display coordinates that are in the GPX file on a Map environment.	Baher
F5	Charts	Display sports metrics change over time on a chart so that a user could see their performance during the activity.	Abhi
F6	Account System	Users are prompted to input their: ● Weight ● Height ● Gender ● Name ● Age This information will be used to calculate metrics which need user specific data such as calories burnt. This increases the usability of the app as each user does not have to input their information repeatedly with every gpx analyzation. The User object which is used to represent the account system will also hold the user’s goals.	Baher
F7	Goals	**BONUS** A system which allows the user to set sport and metric related goals, such as burn 20,000 calories. The user will be able to view their goal progression in the GUI. Goals will be stored locally in JSON to allow goals to outlive one single application session.	Erik

Quality requirements

Author(s): Martynas Rimkevičius, Baher Wahbi, Erik Vunš.

ID	Short name	Quality attribute	Description
QR1	Consistent Navigation	Usability	By moving through different screens the user will end up at the screen that is expected. For example, when going back, the screen will change to the prior one.
QR2	Extendable Sport List	Maintainability	It is easy to add new sports (with their respective metrics) to the architecture.
QR3	Comprehensible Data Representation	Usability	Data (text, map and graphs) is structured and outputted in a clean and understandable manner.
QR4	User Data Requirement	Availability	Unable to input or access GPX files without creating an account and filling user data.
QR5	User Data Validation	Reliability	User data is in a reasonable range, such as age: 16-110, weight: 30-200kg and height: 100-230cm.
QR6	User Data Safekeeping	Security	User data is encrypted with base64 encoding on input.
QR7	Compatible Metrics	Availability	Each sport will only compute their own respective metrics.

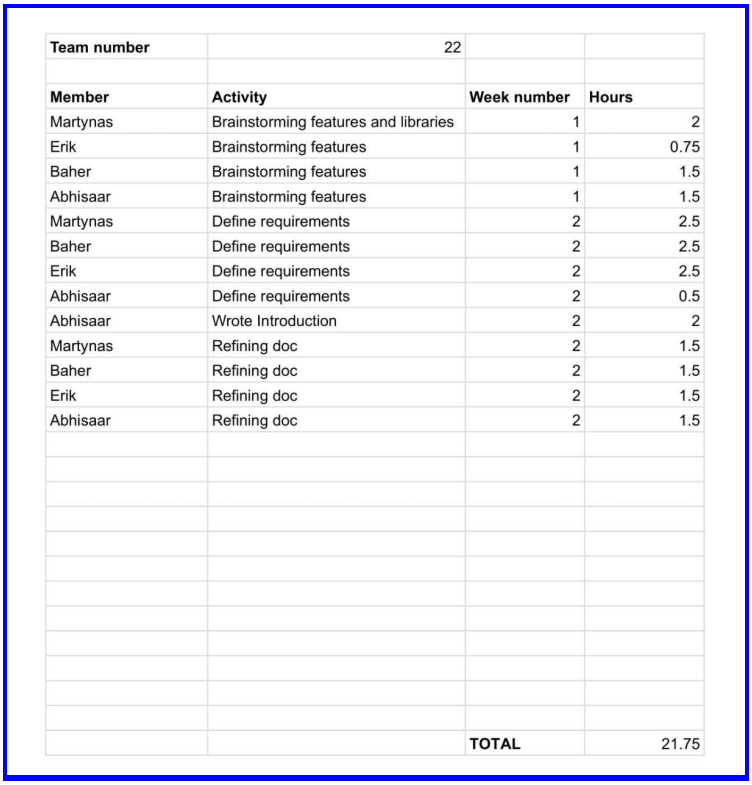
Java libraries

Author(s): Martynas Rimkevičius

JavaFX - used to create a GUI for the application.
GMapsFX - used to display Google Maps in the application without directly interacting with the Google Maps API.
SonarLint - used to ensure that all code adheres to the same style and practice.
jpx - used to extract data to a Java object and access metrics easily.
GSON - used to work with JSON files so that they could easily be read and converted to an object. This will be used to store user data so that the user does not need to fill the data each

time. Also, goals and goal progress will be saved in a file such that the application user could track them throughout several uses of the application.
Dex - used to draw graphs visualising activity data.

Time Logs



Team number	22		
Member	**Activity**	**Week number**	**Hours**
Martynas	Brainstorming features and libraries	1	2
Erik	Brainstorming features	1	0.75
Baher	Brainstorming features	1	1.5
Abhisaar	Brainstorming features	1	1.5
Martynas	Define requirements	2	2.5
Baher	Define requirements	2	2.5
Erik	Define requirements	2	2.5
Abhisaar	Define requirements	2	0.5
Abhisaar	Wrote Introduction	2	2
Martynas	Refining doc	2	1.5
Baher	Refining doc	2	1.5
Erik	Refining doc	2	1.5
Abhisaar	Refining doc	2	1.5
		TOTAL	21.75