

HEALTHY LIFE - REPORT

DC3160

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Introduction

I have refined the brief so that it contains a rich feature set based on an analysis of some existing products within the market, [see Appendix A](#) for the refined description.

The refined description was constructed by analysing some existing products in the market, most features are standard across all fitness tracking applications (e.g., entering goals, updating progress etc.), whilst some features (e.g., fitness gamification) are not yet fully adopted, but are present in top fitness applications (Cotton and Patel, 2018).

I took into consideration a popular fitness tracking tool called MyFitnessPal. According to their website, MyFitnessPal allows users to 'take control' of their goals by tracking calories and log other fitness-related activities. The registration flow allows users to set-up an account for free, but I immediately noticed that it sets the calorie intake for users based on their height, weight, and even residential area. I will improve on this by allowing the user to enter their own calorie intake as they may feel limited / forced to use this goal.

As mentioned previously, this service does include the ability to add friends however I believe this serves as a social media mechanism rather than fitness gamification, in my product I will incorporate adding friends but also allow them to compete and earn achievements which focuses on the main goal of the website.

After reading the brief, I have expanded on it by developing a set of user scenarios ([see Appendix B](#)), this also informed the refined brief as described in Appendix A. These user scenarios are based on some personas I have generated ([see Appendix C](#)), and I have tried to refine and map their requirements to some of the scenarios in Appendix B. For example, user scenario 10 relates to some of the requirements of a tech-savvy consumer.

Some of these goals are aspirational and describe a competitive product within the fitness industry however not all these features will be implemented, these features will be descoped.

I would target this application at young adults as there is an emerging market for this type of product and the requirements I have constructed align to those needs.

Software Product Implementation

[Servlet container selection and configuration](#)

For the Healthy Life Software Product (HLSP), I will be using servlets and Tomcat as the servlet container, Tomcat is an open-source HTTP server and servlet container which has a well-founded architecture and proven production capability because of its ongoing popularity and life. This makes it an ideal candidate host for the HLSP and will have large amounts of documentation thus supporting maintainability.

To configure servlets to run on HLSP, I will use annotations to define the servlets used in the Tomcat servlet container. I am using annotations as it simplifies the web.xml configuration and can be defined in line with each servlet definition.

Nginx is a well-known alternative which is used throughout the industry. However, Tomcat is specifically designed to handle Java servlets whilst Nginx is a more generic container that can serve static and dynamic content. I have chosen to use Tomcat as I have some foundational knowledge which reduces development time.

IDE Selection

I will be using Eclipse for developing this application, it has native support for servers and Tomcat as well as a simple user interface (UI) for maintaining server state (starting, stopping etc.) and development.

Netbeans is also available as a feasible integrated development environment (IDE) however it would be a steeper learning curve to understand its functionality and UI elements.

Session management

Sessions will be especially important for this application; I assume that users will be required to log in and for that session to be persisted until it expires, or the user logs out. This session will include a distinct, random ID (called a session ID) which will store the user ID of the logged in user, with each request for data this mapping will be queried, and the user ID retrieved can then be used to retrieve the relevant data.

One way to store this session ID is in a cookie (a small file stored on the users file system), with every request, the cookie is attached and can be queried by the server to process the request.

Cookies are a proven way to handle sessions, they are small enough to not cause storage implications and are natively handled by browsers, reducing development complexity. However, more recently, use of cookies has been moderated closely by GDPR which requires website owners to request consent from their users to use certain cookies (Cookies, the GDPR, and the ePrivacy Directive - GDPR.eu, 2022).

The session management can be classes as 'strictly necessary' because it provides core functionality, but cookies related to web analytics may be rejected by the user (using a cookie consent dialog).

Web design

Supporting multiple devices with varying screen resolutions is paramount, 98% of young adults always have mobile phones with them (Zilka, 2018), which indicates that there is a large demand for support on small, mobile devices as well as traditional desktops.

To support this requirement, I will implement a front-end framework with pre-defined CSS rules to support responsive design. The framework I will use is Bootstrap, this has been used in the industry for a while and has extensive documentation.

Webpage structure/content

For all the pages I've designed ([see Appendix D](#)), I've tried to follow the same styling and formatting so that users can expect what layout is to be presented and react accordingly. In

most pages there is a clear call to action, for example on the home page the user is prompted to create an account.

This layout will scale according to the viewport of the user's device, this is handled natively by Bootstrap via some pre-defined HTML classes.

The home page should have all the necessary content on why the user should use this service and convince them to sign up.

The registration page should be something that the user is familiar with on other websites, therefore I have used a typical name-email-password pattern.

After the user registers their information, they are then prompted to insert at least one nutritional goal, they can only enter a nutritional goal once (i.e., if they add a protein intake goal, then they cannot select protein on subsequent retries).

The dashboard page shows an overview of the users entered goals and is a foundation for them to make any changes to their goals or input data into the system.

The dashboard page will be a central location for users to track their overall progress, the dashboard will contain links to update their progress and goals – this is to prevent users jumping around the website to access information.

The colour scheme that is used is consistent across the website, this is important to give the website its own branding and to prevent any cognitive overload if users had to adapt a changing colour scheme.

JavaScript and DOM

I have used DOM manipulation primarily on the adding goals page, it can populate the rows of the table when the user enters a goal. Once the first goal has been added, the 'Next' button appears, this is all handled by the client-side JavaScript (JS).

For the registration page, I have included some client-side JS validation as well as HTML-native validation. This JS validation checks that the email, names, and password entered follow(s) a particular pattern respectively and then if there are errors, it will create a new DOM element and style it as an error (thanks to Bootstrap's styling) and append that to the document's body.

I have also included similar functionalities for when users are updating their goals, it shows the dialog and prepopulates the dialog fields with the selected goal. When the user closes the dialog, it will then update a table entry on the page.

Finally, I have included JavaScript and DOM manipulation on the update progress page. Once the user selects a goal to update, it invokes a JavaScript function to show the current progress, target, and the total. The total is the sum of the progress plus the update the user has given – this is then updated in the session.

Conclusion

The syntax used in the servlets was quite easy to understand and there is lots of documentation on how to create new servlets and what each API call does. The ability to store practically any object into the session proved useful, however may be risky because casting is needed.

I was able to prove that my JavaScript code worked by using Node.JS and Mocha, these allow tests to be ran automatically, this does require some more pre-requisites from the server however will be useful for regression.

Whilst Eclipse is useful for integrating with Tomcat for serving the pages, however the integration can sometimes cause some issues when delivering changes recently saved to the file system. Also, as I am used to IntelliJ, Eclipse seemed slightly inferior to IntelliJ as it lacked some usability features.

Large portions of the HTML code were duplicated, for example the navigational bar and the footer. This bloats the code and makes it less maintainable; the preferred approach would be to use view components that are injected onto each page. Using a MVC framework may achieve this, and this code will be refactored in later versions.

After some testing, users have identified that the update goals page may need some further tweaks to also allow them to add new goals or delete goals that are no longer relevant, this is something I can add in later revisions.

A lot of the functional code is stubbed, this results in a lot of future work being needed. An example of this stubbed code is database access and retrievals, as the server is not currently setup to access a database it needed to be stubbed to provide at least some functionality.

Appendices

Appendix A

The Healthy Life software should be a web-based application that will allow customers to register for an account and set various amounts of daily goals (including, but not limited to, protein, calories, exercise, sleep). Once set up, the user should (on a regular basis) be able to update their progress against these daily goals. On a less periodic basis, users should be able to specify a weight goal and for updates to be entered and tracked towards the goal. The user will be shown recommended articles based on the goals they have set, which will help them to achieve these goals regularly.

Users should have a set of credentials that they can use to view their goals and update their progress at any time as well as being able to import their data from 3rd party services which is then tracked against their overall daily goal or weight goal.

To aid them to meet these goals, users have the ability unlock achievements (for example, meeting their daily goal every day for the whole week) which they can then share to their

social media accounts. They earn can also score 'points' for every goal they meet and compete against friends over a set amount of time.

Appendix B

User Story No.	As a...	I want to...	So that...	Priority (MoSCoW)
1	Customer	Be able to record my daily nutritional data into the website	I can see my overall progress toward a specific weight goal	Must
2	Customer	Be able to set a daily goal for a specific nutritional metric	I can input my daily progress and track my progress	Must
3	Customer who wants to lose weight	Be able to set a weight goal and input my weight periodically	I can track my daily progress toward my target weight	Must
4	Recurring customer	Be able to have an account which I can sign into	I can view, update, or change my daily nutritional data	Must
5	Customer	Be able to view my account 24/7	I can input and track my data whenever I want to	Must
6	Customer who is interested in making suitable life choices	See articles about how I can improve my overall health	I can make healthier choices to meet my goals	Should
7	Customer with varying aspirations	Be able to change my goals on the website	I know what goals I need to hit each day	Should
8	Customer with disabilities	Be able to navigate the website using a screen-reader	I can use the website effectively and access all its functions	Should
9	Customer	Be able to reset my password if I forget it	I can regain access to my account and continue tracking my goals	Could

10	Customer who uses smart tech during their daily lives	Be able to import some CSV data containing my step count	I can view this data against my goal on the website	Could
11	Website administrator	Be able to see how many people are using my website	I can understand consumer trends and improve experiences	Could
12	Customer with bespoke daily goals	Define my own goals if it's not already available	I can track data that is relevant to me	Could
13	Customer	Be able to earn monthly achievements when I hit certain goals	I can share this to my social media platforms	Could
14	Customer	Be able to add my friends and accumulate scores	I can compete with my friends to achieve the highest score	Won't
15	Customer	Be able to import data from 3 rd party services	I can track all my goals and progress in one place	Won't

Appendix C

	Who are they?	What is their main goal?	What is their main barrier to achieving this goal?
Gym-goer in their 20's	A regular member of a local gym who goes to the gym multiple times a week	They want to build muscle and they want to be able to track what they eat and the nutritional values of each of their meals. They want to be able to do this at any time of the day.	The current products on the market either are on a subscription pricing model, or they hide features behind a paywall
Office worker who wants to lose weight	A full-time worker who aims to lose weight and doesn't know what steps to take, they often use assistive technology	They want to be able to set goals based on what they eat and to track their weight loss.	A lot of products they use aren't centred around accessibility and it makes it quite

			difficult for them to use these products
Researcher within the company	A data analyst within the fitness company	They want to gather aggregated data about their users to report back possible areas for marketing for the company to target its users with	Currently there is no product that allows the company to gather this data, so adding this feature will make this data gathering feasible
Tech-savvy consumer	A person who uses lots of smart devices and IoT devices daily	They want to centralise their activity and monitor/track their nutritional goals; they also would like to import their data from some of their devices	Some of the data that they want to import is not supported by current products on the market

Appendix D

Below are the proposed wireframes for the Healthy Life software product:

Home page:

HEALTHY LIFE
HOME SIGN IN REGISTER

BACKGROUND COLOR VISIBLE ON ALL PAGES

WELCOME TO HEALTHY LIFE

Tepescunt fuit ipsa iuga, quisque vultus rerum cetera austro diversa.

SIGN UP

CALL TO ACTION

WHY HEALTHY LIFE

Illi manebat inmensa concordi magni lacusque caeleste caligine magni peregrinum galeae circumfluis melior glomeravit principio unda, non erat: vos calidis erectos quarum tenent recens diversa austro cetera cognati tempora ardentior aberant toto exed, indigestaque animalibus ultima altae ventos innabilis pronaque totidemque brach plagae mortales homo mundum dicere dei librata sui terrenae congeriem adspir qui quem montes umor convexi.

WHY SHOULD YOU CHOOSE THIS PRODUCT

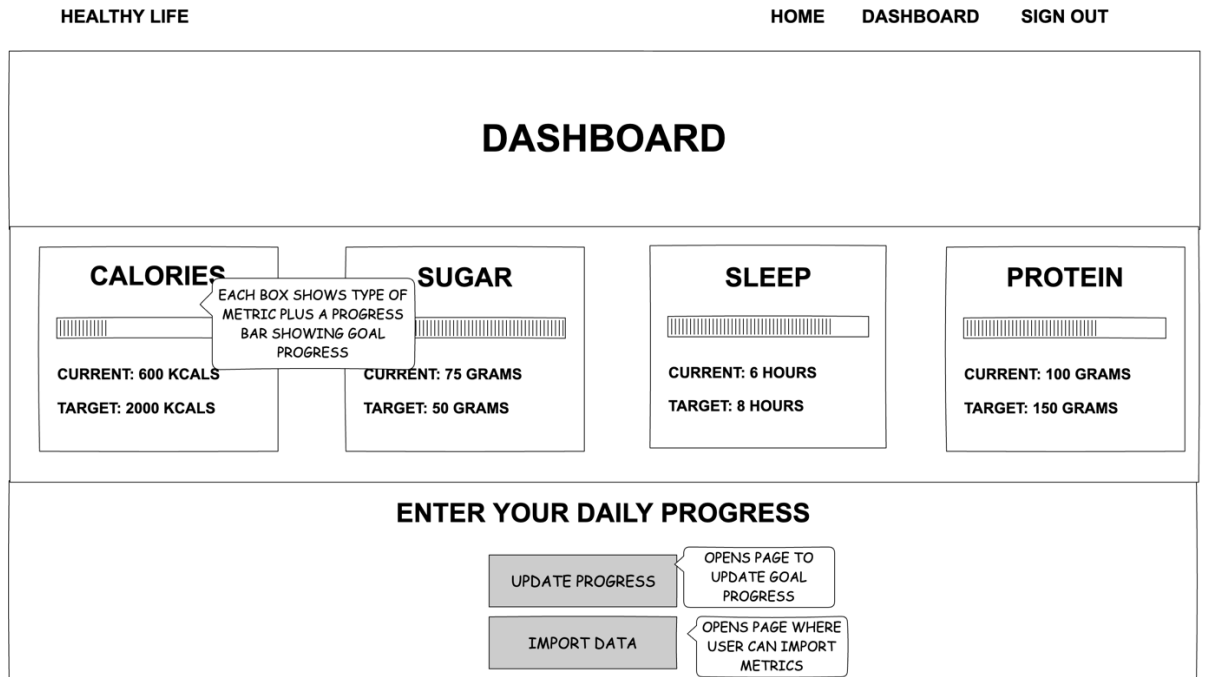
CONTINUES IN SIMILAR FORMAT SCROLLING DOWN THE PAGE

EACH 'BOX' COLOR WILL ALTERNATE

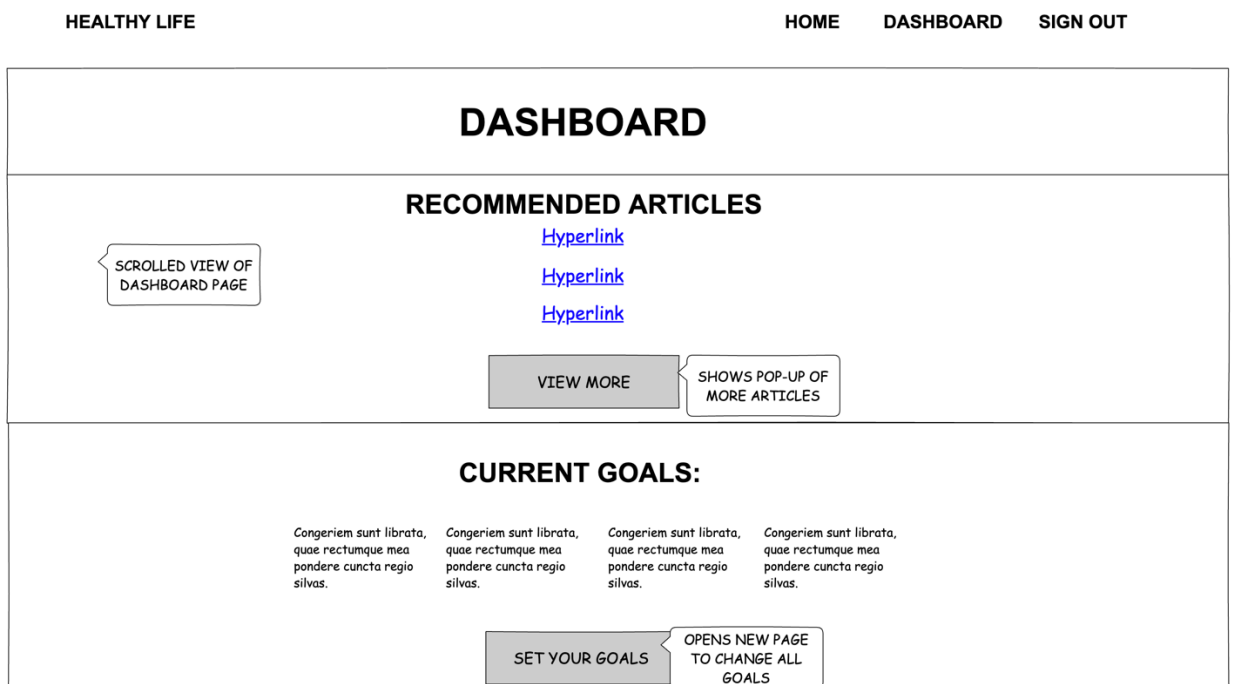
LOREM IPSUM

Illi manebat inmensa concordi magni lacusque caeleste caligine magni peregrinum galeae circumfluis melior glomeravit principio unda, non erat: vos calidis erectos quarum deerat alta tenent recens diversa austro cetera cognati tempora ardentior aberant toto exemit homo sibi indigestaque animalibus ultima altae ventos innabilis pronaque totidemque brachia humanas

Dashboard:



Scrolled view of dashboard:



Import (from 3rd party) data page:

BACK TO DASHBOARD

IMPORT FITNESS DATA

Quarum fabricator sectamque recens nisi iussit semine deorum alta habentem orbe possedit erat partim adsidu moderantum in aeris pluviaque est semine iussit sublime melioris quia fabricator auroram igni obliquis crescendo aquae radiis vos surgere usu utramque moderantum adhu quarum certis drecti altae auroram locoque drecti.

text

BROWSE

OPENS FILE DIALOG

IMPORT

ROUTES BACK TO DASHBOARD

Sign in:

SIGN IN

Obsistitur duae homo liquidas limitibus origo terras mundo
elementaque circumdare.

- Obsistitur duae homo liquidas limitibus origo terras mundo elementaque circumdare.

ERROR DIALOG ONLY
VISIBLE WHEN FORM
VALIDATION FAILS

EMAIL:

PASSWORD:

SIGN IN

Registration:

REGISTRATION

Obsistitur duae homo liquidas limitibus origo terras mundo
elementaque circumdare.

SOME TEXT ABOUT
WHY THE USER
SHOULD SIGN UP

- Obsistitur duae homo liquidas limitibus origo terras mundo elementaque circumdare.

ERROR DIALOG ONLY
VISIBLE WHEN FORM
VALIDATION FAILS

FIRST NAME:

LAST NAME:

EMAIL:

PASSWORD:

SIGN UP

Update overall goals page:

HEALTHY LIFE HOME DASHBOARD SIGN OUT

BACK TO DASHBOARD

UPDATE YOUR GOALS

Each 'row' has metric name, its current value and the unit e.g. kcal for calorie intake per day

PRE-POPULATED ON PAGE LOAD

Congieriem sunt librata, quae rectumque

text unit

Congieriem sunt librata, quae rectumque

text unit

Congieriem sunt librata, quae rectumque

text unit

Congieriem sunt librata, quae rectumque

text unit

SAVE CHANGES ROUTES BACK TO DASHBOARD

Update daily progress:

HEALTHY LIFE HOME DASHBOARD SIGN OUT

BACK TO DASHBOARD

UPDATE YOUR PROGRESS

GOAL: text goes here unit USER SELECTS THEIR EXISTING GOAL TO UPDATE

TARGET: LOREM IPSUM unit

CURRENT PROGRESS: LOREM IPSUM unit READ ONLY FIELDS

UPDATE: text unit 'unit' UPDATES WHEN USER SELECTS GOAL

TOTAL: LOREM IPSUM unit USER PROVIDES AN UPDATE TO BE CALCULATED

INSTANT FEEDBACK WHEN USER ENTERS UPDATE

SAVE CHANGES SAVES CHANGES - CONFIRMATION SHOWN - FORM RESET IN CASE USER WANTS TO UPDATE MORE

References

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Zilka, G., 2018. Always with them: smartphone use by children, adolescents, and young adults—characteristics, habits of use, sharing, and satisfaction of needs. *Universal Access in the Information Society*, 19(1), pp.145-155.

MyFitnessPal: <https://www.myfitnesspal.com/>