Project Document - Group 4

Team Members:
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INTRODUCTION:
The primary aim of this project was to develop a React web application. We settled on a theme of wellbeing, with a platform that would be used to promote a wellbeing app and healthy living practices among individuals who led screen-centric lifestyles.

Our target audience includes (but is not limited to) remote-workers (professional, freelance and amateurs), gamers and social media enthusiasts. The wellbeing app aims to help users avoid the effects of eye strain, combat muscle fatigue/stiffness, and improve brain function through a number of different interactive features. The rest of the website will be focussed on advice for leading a healthy lifestyle and providing users with more information about the app including FAQs.

The objectives were to implement the following features in the website. While being wary of time constraints and lack of resources, we anticipated that all our desired features may not make the cut. To address this, we prioritised the main features and labelled time/resource permitting features as 'stretches' (indicated as [stretch] below).

- Welcome page:
    - Menu/sidebar linking to other pages on the site
    - Introductory text for the app
    - Separate button navigation to the Demo page and About page
- About page:
    - A tile arrangement, with each tile detailing a subject area and displaying a picture
    - Links from each tile to a separate article page [stretch]
- Demo page - featuring a carousel where the user can test out different app features:
    - Timer to remind user to look away from the screen
    - Feature to allow the user to select a calming background sound track (music accessed via an API)
    - Timer to remind user to take a break and suggest wrist stretches [stretch]
    - Timer to remind user to take a break and suggest neck stretches [stretch]
- FAQ page:
    - Text answers to common questions about the app
    - Text detailing who to contact in case of technical issues
- Backend:
    - Implementation of JS testing using a framework such as Jest
- Design & Styling:
    - A calming colour palette
    - Easy to read text and simplified views
    - Cohesive theme across all screens and features

**see "Specifications and Design" and "Implementation and Execution" sections below for incremental developments/updated features.*

BACKGROUND

As programmers, we were naturally compelled to seek a solution that could alleviate the strains associated with extended screen time and unnatural sedentary postures.

Supported by a range of studies, our personal experiences drove us to create an application aimed at addressing both the physical and psychological challenges inherent in computer-based work, especially in the context of remote and isolated environments. These studies include:

- Borhany, Ergonomics, 2018 - Highlighting Musculoskeletal Problems in Programmers
- Shatté, 2017 - Identifying the Risk of Eye Strain in Programmers
- Li, 2019 - Discussing Mental Health Issues in Remote Work
- Chen and Thayer, 2010 - Examining the Effect of Relaxing Music on Stress Response
- Dr. Jeffery Anshel, Visual Ergonomics in the Workplace, 1998 - Introducing the 20/20/20 Rule for Eye Rest
- Pressman, 2015 and Hall, 2016 - Connecting Motivational Quotes to Enhanced Task Performance, Mood, and Persistence

These insights powered the central component of our project, a dynamic carousel providing demonstrations of the different wellbeing features the app provides for the remote-worker.

SPECIFICATIONS AND DESIGN

Technical requirements

1. Web Platform: Developed using React for a dynamic and contemporary user experience.
2. Timer Functionality : User-adjustable work and break intervals with visual and sound notifications.
3. Embedded Links: Casting a fully functional Youtube player with exercise demonstrations within the application.
4. API Integration: website will integrate APIs for fetching and displaying: music, videos and quotes. It should be able to handle requests and responses securely.
   User will be able to use:
   a) Spotify API for browsing, playing, pausing, and skipping a selection of soothing music
   b) A Quote of the Day API that provides users with an inspirational daily quote which refreshes with page changes.
5. Subscription Model: Future capability for users to access premium content through paid subscriptions. Subscription cost displayed in multiple currencies based on user's region
6. Wellness Content: Browse diverse articles promoting exercises, healthy eating habits, and a holistic lifestyle.
7. Online Community:Future plans to connect users within the website's community for shared experiences.
8. Enhanced User Experience (UX): Focus on seamless and engaging user interactions.
9. Testing and Debugging: Comprehensive testing of overall functionality including UI, timer, music player, Spotify API, Quote of the Day API and embedded Youtube links.

10. Version Control: Git and GitHub for secure collaborative development, implementation of the project and code security .
11. Responsive Design: Adapted for various devices in future such as various screen sizes, laptops, tablets, and mobiles.

Non-technical requirements

1. User-Friendly Interface: Featuring a calming colour palette, consisting of light greens and blues for a soothing design. Intuitive navigation for website components and clear section descriptions.
2. Customisation: Timer and alarm settings adjustable to user preferences. Music feature enables choice of preferred tracks.
3. Accessibility: Adherence to accessibility standards for inclusive user experience.
4. Aesthetics - Consistent design guidelines for an engaging and visually appealing interface.
5. Support and Maintenance: Communication channels available for users to report issues and seek assistance.

UX Design

Implementing UX Design principles enabled us to identify our target users and their challenges clearly. This approach guided us in creating user-centric site navigation, elements, and features. Prototype wireframes can be found in the Appendix.

User Story:

As a professional working from home, I want to optimise my workspace, manage my screen time and reduce issues related to extended screen usage (eye strain, muscle/joint aches/pains, isolation) to maintain good health long term.

Problem Statement:

Ruth, a junior developer, requires an interactive app for tracking screen time and workspace setup to prevent getting immersed and neglecting breaks.

If / Then statement:

If Ruth registers for a customisable wellness app, she can easily cultivate healthy work habits while working from home.

Goal Statement:

Our wellness website and app empower remote workers to adopt healthy practices and enhance well-being subsequently reducing absenteeism and boosting productivity. We will measure the effectiveness of our application by monitoring the number of subscribers and app downloads.

Edge case users:

In the future, full screen reader compatibility and plugin support for full accessibility would be beneficial. Night mode and tinted filters for conditions such as dyslexia and photophobia, could be explored. Enhancements like a visual cue before activating features, such as the eye timer, might benefit those with auditory impairments.

Architecture
The website's navigation structure consists of three main components:

1.**Header**
Contains the website logo, navigation panel, location modal, and user account icon (for future development). The navigation panel links to all sections of the website which consist of a home page, WellnessApp page, Wellbeing page and Community page (see '*main section'* for their content).The Location modal allows the user to select their location so that the Premium content price will be displayed in an appropriate currency.

2. **Main Section**
Displays content based on user selection and includes:
- Home Page: Introduces the website's concept and mission with engaging visual and text elements including the logo. Buttons with call-to-action statements leading to other sections. The page is designed and optimised to catch the user's attention and encourage navigation/investigation.
-WellnessApp Page: Features a smooth carousel with options like Music Player, Spotify Player, YouTube Video, Timer, Quote of the Day, and future Premium content. Large navigation arrows enable easy browsing.
-Wellbeing Page: Offers a gallery of article previews, allowing users to access articles by clicking on images or headings (to be expanded).
-Community Page: Provides support and information, including FAQ, testimonials, social media links, contact info, and a sign-up link.

3. **Footer**
Visible and accessible from all pages, it includes information about the website creators.

To note:Header and footer components are visible and accessible from all pages and they constitute a constant part of the main page.

IMPLEMENTATION AND EXECUTION
Development approach and team member roles
In planning our development approach, we first established the individual strengths of the group and what each of us would like to improve or learn. Our individual strengths covered both programming skills and transferable skills from our work and hobbies. In establishing this, we were able to better guide the assignment of work, giving every member of the group an opportunity to participate and grow.

Next, we assessed the various components of the website requiring development and devised a strategy to divide the work into distinct sections. The project was segmented into three major sections, each allocated to a pair of team members. This choice was influenced by the separate code required for each section, mitigating potential merge conflicts and code interdependencies between teams. This approach enabled efficient and simultaneous progress on the project, minimising concerns of code obstruction, dependencies, and lone-working.

We sought to adhere to an Agile approach during the website development, resulting in several deviations from the initial plan. Adjustments to specific features arose due to

encountered obstacles, surplus resources in certain areas, and additional insights gained from our classes and personal efforts. The following table illustrates the intended and realised tasks accomplished by the three pairs assigned to each section:

Sections of work - planned and extra

Section	**Team Members**
Eye timer, shared state and tests	Ruth and Caroline
React carousel, Music player, Spotify API, Youtube video, Quotes API	Mariam and Roinee
Main website pages (React, HTML), navigation, styling (CSS), README	Aneta and Katharine

In addition to the practical coding aspects of the project, various other tasks demanded our attention. Again, we capitalised on the strengths of each team member while allocating these responsibilities:

Task	**Team Members**
Wireframes, logo creation, image selection and overall design, user testing strategy	Katharine
App name, website text, timer animation and sound effect selection	Ruth
Git oversight and PR reviews	Aneta and Caroline
Music, podcast and video selection and sourcing	Mariam and Roinee
Preparing team meeting summaries	Caroline and Aneta

Tools and Libraries

Tools

- Slack - for quick messages and updates
- Jira - for issue assignment and tracking
- GitHub - for code storage, version control and collaborative programming
- Figma - for working collaboratively on wireframes
- Zoom/Discord - for team meetings
- Google docs - for collaboratively working on project documentation
- VSCode/other IDE - for coding
- Prettier extension for IDE - for consistent code formatting
- React - as the frontend framework (JS, HTML)
- Node.js and npm package - for executing our web app
- Jest - JavaScript testing framework
- React Bootstrap and CSS for visual aspect and styling

Packages

- @fortawesome/fontawesome-svg-core@6.4.2
- @fortawesome/free-solid-svg-icons@6.4.2

- @fortawesome/react-fontawesome@0.2.0
- @testing-library/jest-dom@5.17.0
- @testing-library/react@13.4.0
- @testing-library/user-event@14.4.3
- bootstrap@5.3.1
- mdb-react-ui-kit@6.2.0
- react-bootstrap@2.8.0
- react-countdown-circle-timer@3.2.1
- react-dom@18.2.0
- react-responsive-carousel@3.2.23
- react-scripts@5.0.1
- react-test-renderer@18.2.0
- react@18.2.0
- web-vitals@2.1.4

Implementation Process (achievements, challenges and updates)

Aneta:

Challenges:

Included time pressure and how to distribute tasks among a group of unfamiliar peers, considering their skills and time availability.
Learning new skills (React) while simultaneously implementing them for the project.
Limited experience in website creation made estimating task durations difficult, impacting interdependencies.
Finding suitable time slots for collaborative work on smaller tasks proved challenging due to varying schedules.
HTML structure had to be refactored to align with styling requirements as everyone contributed to the pages.
Similar adjustments were needed for CSS as well, due to time pressure and task sequencing concerns.

Outcome:

Adapted project scope to align with achievable goals within the given timeframe.
Maintained open and clear communication through meetings, chats, and utilised Jira for task allocation and tracking.

Mariam:

Challenges:

Carousel creation involved experimenting with different types, leading to the need for path redirection and ensuring clean code.
Initial plans for integrating Spotify API posed limitations, prompting a switch to the Quotes API.
Quotes API integration required the development of a separate program for testing and debugging purposes.
Merge conflicts emerged when stashing commits and later applying them to new branches.

Outcome:

Collaborated with team members to mitigate potential Git errors.
Explored various APIs and decided on Quotes API alignment with the project's theme.

Researched the best react package to use for Carousel and found the react-responsive-carousel package.

Roinee:

Challenges:

Uncertainty arose regarding the music player's completion before the deadline for the Wellness App webpage.
Learning about React fonts and experimenting with CSS were necessary for successful music player integration and alignment.
CSS-related challenges included crafting music player icons and adjusting text sizing.
Deeper comprehension of JavaScript was required to ensure proper functionality of the music player.

Outcome:

Leveraged communication channels such as Slack and Discord for efficient troubleshooting.
Studied similar projects to gain insights into creating a functional music player.
Employed Jira to break down tasks into manageable sub-tasks, expediting completion.

Caroline & Ruth:

Challenges:

Customising an imported React component (react-countdown-circle-timer) for the eye timer feature posed initial challenges.
Encountered bug: Alarm sound erroneously played under specific conditions (played sound when run time field was empty or contained values beginning with 0) necessitating troubleshooting.

Outcome:

Explored existing component attributes to deepen understanding.
Addressed issues and revised code conditions for accurate alarm sound playback (alarm to sound when time 0 AND while the timer was in play mode).

Katherine:

Challenges:

Merge conflicts arose even with minor styling edits, highlighting the learning curve associated with file structure.
Apprehensions about broken links emerged due to the complexities of file structuring.

Outcome:

Continuously learned and adapted to nuances of file structure.
Mitigated merge conflicts and link concerns through collaborative problem-solving.

Each team member confronted distinct challenges during the implementation process, which were surmounted through research, experimenting, collaborative efforts, effective communication, and the willingness to adapt. These experiences underscore the significance of teamwork in overcoming obstacles and achieving a successful outcome despite the looming time pressure concerns and initial anxieties about team dynamic.

Agile development

Weekly sprints

We adhered to a weekly sprint structure using Jira. Each week, we held a planning session to review the previous week's progress and outline tasks for the upcoming sprint. Tasks were assigned based on individual schedules and optimal task sequencing to minimise Git conflicts. Tickets were linked to pull requests (PRs), and ticket IDs were used as branch name prefixes in Git. This approach ensured manageable PRs for review and merging.

Stand-ups & Team meetings

Although daily stand-ups were impractical due to our differing schedules, we conducted team meetings 2-3 times a week. These consisted of a sprint planning session and brief catch-ups to discuss progress and obstacles. Post-meeting summaries were shared on Slack to bring absent members up to speed, document decisions/actions assigned and served as a reindeer for outstanding tasks

Iterative approach

We embraced an iterative development strategy to promptly adapt to changes and enhance website functionality. This allowed us to swiftly identify obstacles and address them through additional assistance or alternative solutions. Although this led to some adjustments in functionality from the initial plan, it ensured steady progress. Our approach also accommodated unexpected capacity, leading to the incorporation of unplanned features. By using an iterative approach, we were able to ensure that we produced a wholesome, fully functioning application by the end of the project.

Code reviews

To prevent unchecked merges and issues, we established a protocol for all code submissions to GitHub. All code changes were required to be submitted as pull requests on GitHub. A minimum of one reviewer, not involved in the code, had to approve the changes before merging. Reviewing involved a visual inspection on GitHub followed by practical testing by pulling the changes locally and assessing functionality. Any necessary changes were documented in GitHub via ‘review comments’. Where merge conflicts arose, the requester and reviewer collaboratively resolved them.

TESTING AND EVALUATION OF THE WEBSITE AND APP

Test Strategy

The team employed both black box and white box testing methods. For white box testing (examining code structure and function), continuous testing occurred during development. In later stages, user testing (black box) validated intended project functionality once larger components were mostly integrated.

Testing Methods And Outcomes

Functional - White Box Testing

We have employed three types of functional code testing in this project:

Manual testing

This type of testing allows for a thorough assessment of software functionality through hands-on interaction to identify bugs and evaluate user experience. As features were built, team members performed functionality testing to ensure code worked and acceptance testing to verify features aligned with project objectives and provided a positive user

experience. As the project progressed, integration testing ensured the application and components developed by the sub-teams worked together. Utilising GitHub branching and local code checks by team members facilitated successful main code base updates.

Snapshot testing
This type of test compares the current state of your application to the established snapshots and expected behaviour. A snapshot test renders and captures a UI component, and then compares it to a reference file stored alongside the test. Snapshot testing therefore allows you to verify that nothing unexpected has changed when rendering the UI for a component since the last render. We employed snapshot testing for all pages and components in the application, except for the Wellness App carousel. This is because testing components from third party libraries is not recommended; the expectation is that these components are tried and tested already. While the carousel was not tested, each individual component displayed within the carousel was snapshot tested and verified against unexpected changes.

Unit testing
This type of test allows you to simulate user interactions in your application and check that a component behaves as expected. Unit testing was employed for the country selection modal, testing that it opens when the country button is clicked, displays the expected default value in its dropdown menu, and closes when the close button is clicked.

User Testing - Black Box Testing
We employed hallway testing, a method of gathering feedback from “random” testers rather than a specific audience. Testing covered four main categories; website appearance, site navigation, site functionality and overall user experience.

The aggregate data revealed overall positive feedback on the website appearance, with suggestions for increased visual impact through images and clearer messaging on the homepage. Navigation was smooth, except for dead links at the bottom of the homepage (fixed). Some users struggled to locate and interact with the carousel icons (fixed) and the app demo appeared out of context (fixed with an explanatory paragraph). Functionality was generally perceived to be excellent, though users desired alternative visuals for the eye timer's graphic, users would have preferred alternative visuals as standard or a customisable option. Overall testers universally found the website useful, enjoyable, and expressed intent to continue using it with the addition of more content, enhanced functionality, and personalisation options.

See footnotes for questionnaires.

SYSTEM LIMITATIONS
Despite undertaking an extensive program of testing there are limitations to what could be tested. The site cannot be tested for the unknown, that is, although it has been tested locally on different operating systems and web browsers, it has not been live hosted and there may be errors in functionality or unexpected appearance alterations resulting from, eg, from running on an untested web browser. Furthermore, errors may arise from untraceable factors such as expired software or deprecated packages within our code base, which are unlikely to be replaced/updated due to lack of maintenance moving forward. Finally, this project has been very time-pressured, as a result we have not had the time or resources to successfully

test for every possibility and there are tests and features that would have been implemented if time had allowed.

Overall the product met its stated outcomes in terms of user experience. All testers, both internal project team members and external testers have been able to successfully navigate the site and use the app features. This may be considered a successful test of the product's function and target.

CONCLUSION

In conclusion, our project aimed to create a website and wellbeing app that promotes a healthier lifestyle, especially for those spending extended periods in front of screens. Through an agile, iterative approach, we successfully developed a React-based platform that incorporates a dynamic timer, soothing music integration, and a selection of wellness information.

Our team worked collaboratively, leveraging individual strengths to overcome challenges and deliver a comprehensive solution.We harnessed various tools including Slack, Jira, GitHub, and Figma, to streamline our communication, planning, and development processes. Regular team meetings on Zoom and Discord facilitated continuous updates, addressing blockers and refining strategies.

Our testing and user feedback reinforced our achievements, highlighting the usability, functionality, and positive user experience of our product. By employing both black box and white box methodologies we were able to ensure a robust product and positive user experience of our creation.

While we've met our initial objectives, we also recognise opportunities for further expansion, such as desktop compatibility, linked articles and customisable timer reminders. The success of this project not only demonstrates the potential benefits of technology in promoting wellbeing but also underscores the effectiveness of teamwork in overcoming obstacles and realising a shared vision.

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APPENDIX

User Testing Questions:

(Thank you for taking part in this user survey)…

First impressions and overall appearance:

- What do you think this website is for? What information would you expect to find on this site?
- What is your general impression of this website? For example, what are your feelings about colours, layout and information, are they pleasant or could they be improved?

Navigation:

- How did you feel about finding things on this website? Was there anything confusing? Was there anything missing?
- Is there anything you would want to change?

Functionality:

- How did you find the experience of using the eye timer app? Was it straightforward to use or was there anything confusing?
- How did you find the experience of using the music app? Was it straightforward to use or was there anything confusing?

Overall experience:

- How do you rate your overall experience of using this website, positive or negative?
- Would you revisit the site or consider making use of the information and app in the future

(Thank you for taking the time to evaluate our website and app and helping us to improve our product!)

Test User 1:

First Impressions:

Good:

- Website info and content as expected from entering the site.
- Easy / pleasant to look at..

Improvements:

- Name is confusing to someone with a non tech background.
- Info on homepage was missed on first viewing, needs to be more prominent, eg, to fit into one screen without scrolling.
- Could benefit from more visual interest on pages, bit “bland”.

Navigation:

Good:

- The site is easy to navigate. All links work, all content as expected from navigation.

Improvements:

- There is no app description. What exactly is it?!
- The carousel is hard to use, nav icons need to be more prominent: bigger or a different colour.

Functionality:

Good:

- All good! Everything is straightforward to use and all works exactly as expected.

Improvements:

- On the eye timer, the eyes were remarked to be “Scary”. (Maybe a more stylised graphic or image?!)

Overall:

Good:

- It’s very good, easy to use and what was expected.
- Would use the website again and the app if she spent a lot of time on a computer.

Improvements:

- Disappointment there was no article on click on wellness page, but this is due to time constraint!

Test User 2:

First impressions and overall appearance:

Good:

- Expected site to be Health & Safety oriented on first impression.
- Colours are very pleasant.
- Text is easy to read and understand.

Improvements:

- Very white at the bottom of the page, not very punchy, although perhaps that's the idea.
- Expected the "Mission" statement to be green to match the other section.

Navigation:

Good:

- Top links work as expected.

Improvements:

- Expected the "Check it out" button (on Home page) to take me somewhere.
- Wellness App link is a bit confusing - no mention of an app on the home page. Perhaps it shouldn't be the second link at the top if it hasn't been introduced by the first link.
- Carousel controls were not obvious (required tech support from daughter!).

Functionality:

Good:

- Music player, Spotify, YouTube worked as expected, easy to use the controls.
- Tested out the "Set region" feature and it worked as expected.

Improvements:

- Didn't like the Eye timer eyes! But they did make me want to look away from the screen.

Overall experience:

Good:

- Overall positive experience.
- Would consider using in the future - the stretches would be good for anyone, not just those using a computer!

Test User 3:

First Impressions and Overall Appearance:

Good:

- Wellness content, maybe a website about spa or yoga.
- The colours are nice.
- Green and white is definitely calming me down.

Improvements:

- But a bit boring, could be a little bit more energetic, but that's just my impression.

Navigation:

Good:

- The navigation at the top was easy to use.

Improvements:

- The buttons at the bottom are not working
- It was not easy to find navigation on the WellnessApp page
- Improving the WellnessApp navigation would definitely help.

Functionality:

Good:

- It was super easy to use, I like that you can set different alarm sounds ;)
- Super easy to use the music app.

Improvements:

- Maybe it would be possible to also customise the eye image and the colours.

Overall experience:

Good:

- Overall positive experience.

- Would definitely use it in the future when it's improved, as it combines useful things in one place. Very much liked the articles section,I would definitely read some of them as the pictures looked interesting and eye-catching.

Improvements:

- It would be nice to have it as an app and accessible from the phone but I guess that would come later.
- I would like to add dark mode to the website ;)

Link for basic prototype of wireframes:

https://www.figma.com/proto/JwcuA3Gl0qgk1oZ3UllZha/Wellness-Website?type=design&node-id=11-45&t=goUoK942qCmicNEz-1&scaling=min-zoom&page-id=0%3A1&starting-point-node-id=1%3A2&mode=design