Milestone 4

Snack And Track

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ABSTRACT

During the SS2024 academic semester, the Snack And Track app was developed and implemented as part of the Human-Computer Interaction course. It uniquely combines the functions of calorie counting, tracking kilometers walked, and water consumption. The gamification system, which includes collecting points and passing levels, is designed to encourage students to maintain a healthy lifestyle. This document provides data on the related applications that were developed and how their functional solutions were improved. In addition, the design and usability principles that were applied are discussed. Based on the created application, usability tests were developed and interviews were conducted. Thanks to the collected data, improvements were made, which are described in this conclusion document.

1 MOTIVATION

Snack & Track is an app created to help students build healthy habits by combining nutrition tracking, physical activity, and motivation in one place. Unlike most apps that focus on either fitness or food, Snack & Track is tailored for student lifestyles, offering simple tasks, friendly design, and gamified rewards.

The app was tested with eight users through tasks like completing daily goals, filtering exercises, exploring recipes, and managing favourites. Most users found the app intuitive and easy to navigate, giving it ratings of 4 or 5 out of 5. They appreciated the clean design, XP system, and visual feedback when tasks were completed. However, some users pointed out that the recipe cards had too much information and that favourites should also be accessible outside the profile. Font loading issues and a lack of interactive elements like animations or sound effects were also mentioned.

In response, the team added clearer labels, prep times, a “full body” filter, and improved the layout for better readability. Although some suggestions like more gamified elements or showing macros on recipe cards were not added to avoid clutter, they are considered for future updates. Overall, the app’s strength lies in its consistency, simplicity, and motivation-driven design. Future plans include adding leaderboards, user-created tasks, and more filtering options to keep users engaged without overwhelming them.

2 RELATED WORK

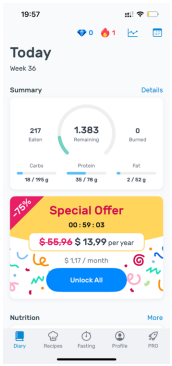
Currently, no app in the Apple Store or Play Market fully satisfies both nutrition and fitness needs.

However, if we divide these categories, the competitors are the following apps:

- YAZIO, fatsecret, MyFitnessPal (for calorie counting),
- Strava, Nike Run Club, Pacer (for counting steps and recording physical activities),
- FitnessOnline (for video recordings of sports activities),
- Cookpad, Tasty (for recipes).
- No Treat Today: Track Sugar, Finch (gamification)

To develop the Snack and Track app, we also reviewed and analysed other apps. For example, we took the idea of creating target rings from the “Apple Fitness” and “Yazio” apps. We changed the ring's purpose and number to indicate the number of kilometres taken, calories consumed, and amount of water drunk.

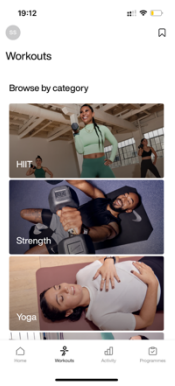
Pic. 1 Apple Fitness



Pic. 2 YAZIO

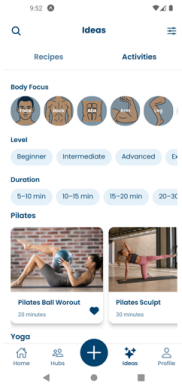
Pic. 3 Snack and Track

We also analysed apps related to recorded sports activities ("Nike Training", "FemaleFitness"). All of them have filters for training specific body parts or types of sports activities, but we think this is not enough, so "Snack and Track" also has filters for training time and difficulty level.



Pic. 4 Nike Training

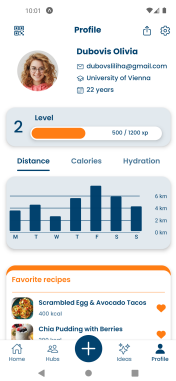
Pic. 5 FemaleFitness



Pic. 6 Snack and Track

Another app that inspired us was "Strava". This app conveniently displays activity analysis in the user's profile, so we also added a user trend graph to our app, but made it variable by category (you can view trends in the number of kilometres travelled, calories burned, and amount of water consumed) in weekly trends.

Pic. 7 Strava



Pic 8. Snack and Track

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3 DESIGN

The color scheme includes three primary colors: #01416D, #00B4BA, #FF7C12, as well as their corresponding halftones #E2E9EE, #C9EFF1, #FFE7D4. In addition, another shade of blue was used to indicate inactive tabs/icons #487696.

Each colour corresponds to a specific area. For example, dark blue indicates activity, main text of headings, and secondary information; orange indicates recipes and calorie counting; and turquoise indicates hydration.

The colours correspond to logical associations, as people usually associate food with warm colours, while water is associated with shades of blue.

The app uses a single font style: Poppins. This font is used in bold, semibold, medium, and regular weights. Font sizes range from 12 for icon labels in the bottom navigation menu to 36 for indicating the user's level in their profile.

The usability of the app is also enhanced not only by the use of contrasting fonts but also by the use of icons. They all have the same design across all screens and categories.

To visually highlight cards with recipes, sports videos, tasks, and other elements, a shadow and corner radius with unified settings are used.

4 IMPLEMENTATION

Our mobile application was implemented using React Native for the Android platform, targeting API levels 30–31. Development and testing were carried out on Google Pixel 5 and Pixel 6 devices. The total implementation time amounted to approximately 260 hours.

4.1 Toolkits, Libraries, and Frameworks

To streamline development and ensure a modern, visually appealing user interface, we utilised the following libraries and frameworks:

React Native and Expo for cross-platform mobile development

@react-navigation/native, @react-navigation/stack and @react-navigation/bottom-tabs for structured navigation

@expo/vector-icons and react-native-vector-icons for iconography

@expo-google-fonts/poppins and expo-font for custom typography

react-native-circular-progress and react-native-svg for data visualisation (e.g., circular metric rings)

react-native-gesture-handler, react-native-screens, and react-native-safe-area-context to ensure responsive, gesture-aware, and device-safe layouts

4.2 Implementation Challenges and Solutions

During development, we encountered a few notable challenges:

Colour Consistency Across Components

With various components requiring coherent but distinguishable themes, maintaining colour consistency became increasingly difficult. To address this, we centralised our colour scheme in a colors.js module. This made it easy to apply a consistent design language and quickly adjust visual themes

Shadow Styling Across Components

Shadows were rendered inconsistently across different components and screen types. To ensure consistent elevation and depth perception, we abstracted all shadow styles into a shadow.js module and reused it across the app.

Font Loading Delays

Custom fonts (Poppins from Google Fonts) occasionally failed to load in time, leading to missing or fallback fonts on first render. This was resolved by adding a conditional check to delay rendering until fonts were fully loaded.

These modular solutions helped us maintain an organised and scalable codebase while also enabling consistent theming and visual feedback throughout the application.

5 EVALUATION

5.1 Research Methods and Data Collection Techniques

The interviews were conducted during the week of May 19-25, 2025. During this period, we interviewed 8 people who are representatives of our target group.

The respondents were the following people:

Boiko Bohdana, 20, studying computer science and coronology at Uni Wien, has an active lifestyle

Laguta Doliana, 20, studying law at Université de Lorraine, has an active lifestyle

Alexander Herman, 21, studying journalism at Uni Wien, has a moderate lifestyle

Stefani Kadlec, 19, studying Germanic studies at the Uni Wien, moderately active lifestyle

Antal Povhan, 23, studying computer science at TU, moderately active lifestyle

Vlad Kolyaduk, 22, studying data science, Ukrainian Catholic University, has an active lifestyle

Narmin Mahammadi, 29, studying human medicine, Med Uni Graz, has a moderate lifestyle

Sofia Pajkusz, 21, studying computer science at Uni Wien, has a moderate lifestyle

The interviews were conducted both offline and online. Some of our team members physically provided a phone with the Snack and Track app, which was already installed. Some respondents wanted to test on their own device, so they downloaded the Expo Go app and scanned the generated QR code using the npx expo start --tunnel command.

Prior to the usability-tasks testing, the respondents were informed about the goal of creating the app and what problems it should solve. The respondents also had the opportunity to browse the screens on their own before starting.

5.2 Research Methods and Data Collection Techniques

For usability testing, 4 usability tests were created. For each test, a list of questions was written to capture all the problems, advantages, disadvantages, and comments. The questions provide different types of answers such as yes/no, rating on a scale from 1 to 5, and detailed answers. Below is a list of all usability tests.

Usability Task 1: Mark a task as completed

"You are looking at the home screen of the app. Your goal is to mark one of today's tasks as completed."

With this task, you can test how easy it is for the user to mark tasks on the home screen. You can also track the user's reaction to the change in the number of points after marking a task as completed.

Usability Task 2: You are planning to view a list of all breakfast recipes. How can you do this?

This task is related to testing the screen with recipes. It checks whether the user can guess about this functionality and whether the “View all” button does what it is supposed to do.

The next task is **Usability Task 3:** Choose a 15-20 minutes physical activity for the arms

Here the user is introduced to the screen of sports activities. The user sees several categories of filters, so it's important to check if it's easy to navigate.

The last task looks as follows: **Usability Task 4** :Find a favorite recipe in “Profile” and dislike it

It checks how the user interacts with likes, whether they perform the actions that are supposed to be performed.

Below are the relevant questions to the usability-tasks and summarized answers of the respondents.

Usability Task 1. Mark a task as completed

"You are looking at the home screen of the app. Your goal is to mark one of today's tasks as completed."

Questions:

1. How intuitive do you find the interaction for completing a task?

All participants found the interaction intuitive.

2. Is it easy to recognise which tasks are available for today?

7 out of 8 participants reported that it was easy to recognise today's tasks.

3. How would you rate the attractiveness of the design of the task section? (Consider layout, colours, spacing, etc.)

6 out of 8 participants found the design attractive.

4. Was the reward system (XP) clear to you after completing a task?

All participants (8 out of 8) understood that completing a task rewarded them with XP and saw the update reflected on the screen.

5. What could improve your experience with this section?

Respondents suggested adding an animation or sound when marking tasks as complete, allowing users to create custom tasks, fading completed tasks more clearly, or adding a toggle to hide calorie-based tasks.

Usability Task 2. You are planning to view a list of all breakfast recipes. How can you do this?

Questions:

1. Was it obvious to you that clicking on "View all" would open a separate list of recipes?

It was clear to everyone.

2. Is the location of the recipe cards convenient for you?

Everyone understood, but Alexander Herman noted that he would like the cards to be smaller so that more of them could fit on the screen.

3. Is there enough information in the short description of the recipe on the card (name, calories)?

Antal Povhan suggest to add a description of macros, Laguta Doliana wanted to see the preparation time, and Bohdana Boiko suggested adding allergen icons. Narmin Mahammadi would like to see how many grams each dish weighs, Vlad Kolyaduk would like to see the level of difficulty of preparation, and Alexander Herman would like to see a dropdown list with ingredients and grams per serving.

4. Is the text of the card description sufficiently large?

The size was sufficient for all testers.

5. Is the colour scheme of the interface appropriate for a recipe section?

Five participants liked the interface, but Vlad Kolyaduk suggested changing the color to green because this color is associated with healthy food, and Alexander Herman said that the color should simply be brighter.

6. Please rate how intuitive this task was on a scale from 1 to 5 (1 - not at all, 5 - completely clear)

7 participants rated it 5, and Vlad Kolyaduk gave it a 4.

Usability Task 3. Choose a 15-20 minute physical activity for the arms

Questions:

1. Was it intuitive for you to apply the filter options?

All the 8 participants found the filter intuitive.

2. Do you feel overwhelmed or confused by the amount of information shown?

7 of 8 participants did not find the filter overwhelming. Yet, Sofia Pajkusz suggested we should hide filters by time and difficulty level in the icon at the top, leave filtering only by body parts on the main screen.

3. Do you find the filter convenient?

All the 8 participants found the filter convenient.

4. Does the filter show you the correct results?

All participants agreed with the correctness of the results.

5. Is something missing from the screen "Activities" that you'd expect to be there?

2 of 8 participants, Stefani Kadlec and Lahuta Doliana, did not find anything missing. Yet, 6 other members outlined two main ideas: additional filters and functional issues. Implementing a full body filter was suggested by Sofia Pajkusz and Narmin Mahammadi, as well as a filter by equipments, offered by Antal Povhan and Vlad Kolyaduk.

6. How appealing is the design of the screen?

All the participants found the design appealing and clean.

7. Would you recommend any changes to the screen design?

5 of 8 participants recommended the following changes: adding workout ratings (Sofia Pajkusz), updating colour palette to brighter tones (Vlad Kolyaduk, Narmin Mahammadi), removing empty categories from being showed after the filter applied (Alexander Herman), slightly bigger cards (Antal Povhan)

8. What could make this screen more enjoyable and easier to use?

4 participants included suggestions for adding more filtering options, Vlad Kolyaduk mentioned short animations, Sofia Pajkusz offered to add ratings.

Usability Task 4. Find a favourite recipe in “Profile” and dislike it

Questions:

1. How intuitive do you find the location of the "Favourite Recipes" section?

6 out of 8 participants found the location intuitive. Bogdana Boyko and Lahuta Doliana noted that it became intuitive only after exploring the available tabs.

2. Is it easy to find?

7 out of 8 participants reported that it was easy to find. Lahuta Doliana indicated that it was not easy.

3. How would you rate the attractiveness of the design of the favourite recipes section? (Consider layout, colours, etc.)

7 out of 8 participants found the design attractive. Vlad Kolyaduk expressed a desire for more colour to enhance the visual appeal.

4. How intuitive is it to understand that tapping the full-colored heart will remove a recipe from your favourites?

All participants found this interaction intuitive

5. After removing a recipe from your favourites, did the result match your expectations?

7 out of 8 participants indicated that the result met their expectations. Alexander Herman suggested the addition of a "discard changes" button to restore unliked recipes.

6. What could improve your experience with this section?

Lahuta Doliana suggested that the "Favourite Recipes" section should be accessible from both the Ideas screen and the Profile screen. Bogdana Boyko and Alexander Herman recommended the inclusion of a feature to discard changes and restore previously unliked recipes.

5.3 Research Methods and Data Collection Techniques

Based on the interviews conducted, the strengths and weaknesses of the project were identified.

Here are the advantages of the Snack and Track app:

- Intuitive interface: during all usability tests, users had no problems navigating and understanding the functionality of buttons or other elements.
- Consistent and attractive design: during the survey conducted during various tests, 63% to 88% of users considered the color scheme appropriate and the design balanced and concise.
- Intuitive navigation: Respondents had no questions about how to navigate between screens, as there were logically placed buttons for returning and displaying the current tab location everywhere.

However, after collecting the data, some drawbacks were also identified.

Here are the weaknesses of the app:

- Small clickable area for buttons: some users found it difficult to hit the button on the first try due to its size
- Cards with elements are too large: some cards (e.g., recipes) have a large image and little description. Respondents would like to see more cards with more detailed descriptions at the same time.

5.4 Feature modifications and analysis of rejected suggestions

After conducting the interviews, we implemented several updates to improve the usability of the interface.

The label “Breakfast” was added to clearly indicate the category while viewing the whole list of recipe ideas.

A new “Full body” activity category was introduced.

The tap area for buttons was increased, so that the user interaction could be easier and smoother.

Preparation time was added to recipe cards for the users to estimate the effort required.

Grams to every meal were added.

The number of recipe cards displayed on the “View all” screen was adjusted to improve readability and layout balance.

The number of challenge cards shown on screen was also modified for better visual organization.

Filtering was refined to not display the names of empty categories.

Some suggestions were not implemented due to reasonable factors. We denied making the list of favorite recipes accessible both in the profile screen and directly on the recipes screen, as having the favorites duplicated in multiple locations could lead to inconsistency in user experience. We decided to locate favourite recipes only in “Profile” screen to maintain the navigation structure.

The same goes to a suggestion of horizontal scroll instead of opening a new “View all” page, because full-screen views provide clearer structure.

A suggestion to add a description of macros was not approved because the total description of macros, as well as the ingredients and a step-by-step guide for preparing the meal, is shown after tapping on the recipe card. If we were to include macros on each

card, right next to its name, calories, cooking time, and grams, the card would have been way too big and overfilled with information.

As far as the filters are concerned, the suggestions about hiding less-eased filters like time and difficulty and adding additional filters for workout types and equipment were found valid, yet too complicated for this version of the app.

Workout ratings highly differ from each person's preferences and needs, thus are irrelevant and should not be implemented.

A suggestion to create personal tasks was considered a bit opposite to the gamification level, because the user would feel obliged to complete the tasks. Plus, the XP-distribution would not be correct.

Some gamified elements like short animations, sounds after completing the task were also mentioned. Too much interaction and gamification could seem unnecessary or irritating for more advanced users, thus we decided to let go of this suggestion in this version.

Additional comments about changing the colour contrast and palette were not included in this version, but may be considered in the future.

6 REFLECTION

Denys-Lev Gusti - Usability Task 1, related to the task questions for the usability test, a usability study conducted with two test participants, the implementation section and in the final report, implementation of synchronised experience on the Home and Profile screens, implementation of likes synchronisation on the Ideas and Profile screens.

Shevkoplias Sofiia - Usability Task 2, related to the task questions for the usability test, a usability study conducted with two test participants, the Related Work and Design sections in the final report, redesign of the challenge cards, and addition of extra descriptions in the challenge cards, formatting of the final report

Sokyruk Yeva - Usability Task 3, related to the task questions for the usability test, a usability study conducted with two test participants, the description of the evaluation of the app in the M4 section in the final report, redesign of the recipes, addition of a header when opening a list (in the recipe category), addition of extra descriptions in the recipe cards, addition of extra activity categories.

Hriazin Ivan - Usability Task 4, related to the task questions for the usability test, a usability study conducted with two test participants, the Reflection and Conclusions and future work sections in the final report, addition of navigation to the recipe/activities window upon pressing the favorite recipes/activities button, redesign of the top bar in the profile.

In this course, we learned how to conduct user analysis, identify target user groups, and create personas. We focused on designing and evaluating user-friendly interfaces by applying usability principles, user-centred design methods, and accessibility and inclusive design practices. The course also covered low- and high-fidelity prototyping, usability testing techniques such as surveys, and provided hands-on experience with tools like Expo and frameworks like React Native for mobile app design and development.

7 CONCLUSION AND FUTURE WORK

Main Strengths of Our Approach:

1. Regular organisational meetings ensured good coordination and communication.

2. Multiple soft deadlines with defined progress benchmarks helped maintain a steady development pace.

3. The creation of a final low-fidelity prototype in Figma significantly supported our development of the high-fidelity prototype, as it clearly defined the required screens and functionalities in advance.

4. Clear distribution of work allowed each team member to focus on specific tasks efficiently.

Main Weaknesses of Our Approach:

1. During implementation, each member applied text styles and colours individually, leading to inconsistencies.

2. Final refinement and unification of typography and colour schemes were only completed at the end of the project, which could have been avoided with an earlier definition of a shared style guide.

In future iterations, we plan to enhance user engagement by introducing additional gamification features. One of the key additions will be a leaderboard to encourage healthy competition among users. This will allow users to compare their progress and achievements with others, potentially increasing motivation and long-term app usage. Other planned features include personalised rewards to further make the user experience better and promote consistent interaction with the app.

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