W2W

Human Computer Interaction A.Y. 2024/2025

WHAT TO WEAR

Match it. Wear it. Share it.

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Project Overview

How many times have you struggled to find the right outfit?

Choosing what to wear can often be time-consuming and stressful, especially when preparing for important events or trying to avoid outfit repetition.

The goal of our application is to help users create well-matched outfits quickly and effortlessly. By simply entering a clothing item, users instantly receive suggestions on how to best pair it, based on style, color coordination, the occasion, and even current weather conditions.

The innovative integration of real-time weather data ensures that outfit suggestions are not only stylish but also functional, tailored to the specific weather conditions at the time and location of the event.

Additionally, our app fosters a sense of community by allowing users to browse outfits shared by others for inspiration. Registered users can also upload their own outfits, providing a space for creativity and exchange of fashion ideas. The app combines personal preferences and social interaction to create a fashion platform that enhances users' styles without wasting time on endless outfit choices.

Features

01 Outfit Suggestion
Users can enter any clothing item they want to wear and the app provides instant suggestions based on style, color and occasion.

02 Weather Integration
The app uses real-time weather data to adjust outfit suggestions based on the local climate.

03 User Preferences
Users can specify preferred styles and occasions for more personalized recommendations.

04 Community Interaction
Users can browse, share, and interact with outfits shared by others and save their favorite looks for future inspiration.

With its unique combination of personalized suggestions and community engagement, our app is designed to be an indispensable tool for anyone looking to enhance their style

Personas and Scenarios

Identify the key audiences for which the project is intended.

Person #1: Victoria

Name: Victoria Dechamp

Age: 23 years old

Location: Rome, Italy

Occupation: University Student (Communication Sciences)

Background: Originally from Paris, Victoria is currently living in Rome for her university studies. Her multicultural experience has expanded her fashion horizons, blending classic Parisian style with Italian trends

Lifestyle: Active on social media, enjoys experimenting with different fashion trends, and spends a lot of time browsing fashion blogs and Instagram

Scenario

It’s Saturday evening, and Victoria is getting ready for a 90s-themed party at a popular club with her friends. She’s been looking forward to the night all week, but as she stands in front of her wardrobe, excitement quickly turns into frustration. She wants to create a look that’s fun, original, and true to the 90s vibe, but nothing she owns seems quite right.
She starts pulling out different pieces—denim jackets, bold prints, high-waisted pants—but putting them together into a cohesive outfit feels harder than expected. She's unsure whether certain items really fit the theme, and she doesn't want to show up underdressed or looking like she tried too hard. Time is passing quickly, and the pressure of the occasion makes every choice feel more difficult.
She even considers looking online for some ideas, but between the endless scrolling and the lack of personalization, it just adds to her indecision. With the clock ticking, Victoria feels overwhelmed, uncertain, and stuck between wanting to feel confident in her look and not knowing how to get there.

How could our app solve her problem?

Unsure about what to wear, Victoria opens the app and heads to the Explore page, searching for “90s” to find some inspiration. As she scrolls through the outfits shared by other users, ideas begin to take shape. Since she’s set on wearing her leather culottes, Victoria asks the app for outfit ideas. In moments, she receives a curated list of combinations that perfectly match both the item and the look she has in mind.

Person #2: Federico

Name: Federico Totti

Age: 39 years old

Location: Milan, Italy

Occupation: Financial Consultant

Background: Federico has been working in finance for over a decade. As his career progressed, his wardrobe needs have evolved, from casual smart to sharp business attire for high-level meetings

Lifestyle: Works long hours, attending meetings, client consultations, and networking events. He enjoys socializing but often finds himself running out of time to focus on personal matters, including his wardrobe

Scenario

Federico, a financial consultant based in Milan, has a packed schedule filled with meetings, conference calls, and client appointments that require his full attention and presence. Each day, he needs to make sure he’s not only fully prepared for the tasks ahead, but also that he presents himself in a way that exudes professionalism and competence. As he gets ready in the morning, his goal is to quickly choose an outfit that feels right for the day ahead, something that strikes the perfect balance between looking professional, feeling comfortable, and being appropriately dressed for the various settings he’ll be in. However, the unpredictable weather, with its frequent changes in temperature and occasional rain, makes this task far from simple. He wants to avoid the risk of showing up underdressed, overdressed, or unprepared for a sudden downpour. But constantly checking weather forecasts, trying to match them with the right outfit, and planning accordingly is a time-consuming process.

How could our app solve his problem?

Looking for a quick and reliable outfit choice, the app uses his geolocation to generate outfit suggestions tailored to both the weather and the professional setting. Federico picks the most fitting outfit and saves it, appreciating how the app simplifies his morning routine and helps him feel confident and prepared.

Competitors

In the context of developing our WhatToWear application, we have analyzed several existing platforms operating in related sectors. Examining how other projects address similar themes has allowed us to gather valuable insights, better understand user needs, and evaluate which functionalities prove most effective in merging fashion and technology.

In particular, we have focused on **21buttons** and **Getwardrobe**, two applications that approach the subject of clothing in different yet equally interesting and relevant ways for our project.
21buttons stands out as a social fashion network, where users can share their outfits, follow other fashion enthusiasts, and build a true visual identity through their looks.
Getwardrobe, on the other hand, takes a more functional approach: it allows users to catalog their wardrobe, plan outfit combinations, and track clothing usage, offering a practical tool for managing personal style on a daily basis.

This analysis offered us meaningful perspectives to design an engaging and useful app that blends style, personal expression, and wardrobe organization.

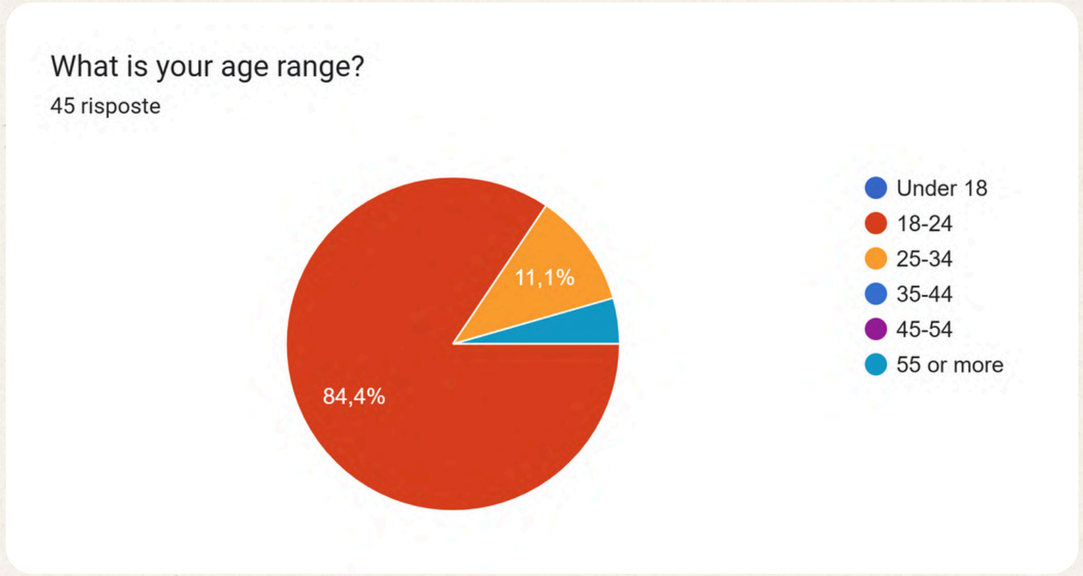
To Summerize:

Community features	✓	✗	✓
Style suggestions	✓	✓	✓
Wardrobe organization	✗	✓	✓
Weather-based recommendations	✗	✗	✓

Questionnaire

To gain a deeper understanding of users' needs and preferences, we have carefully selected a series of questions that focus on their habits and behaviors. This will help us gather valuable insights to improve the app and tailor it more effectively to their expectations.

1.



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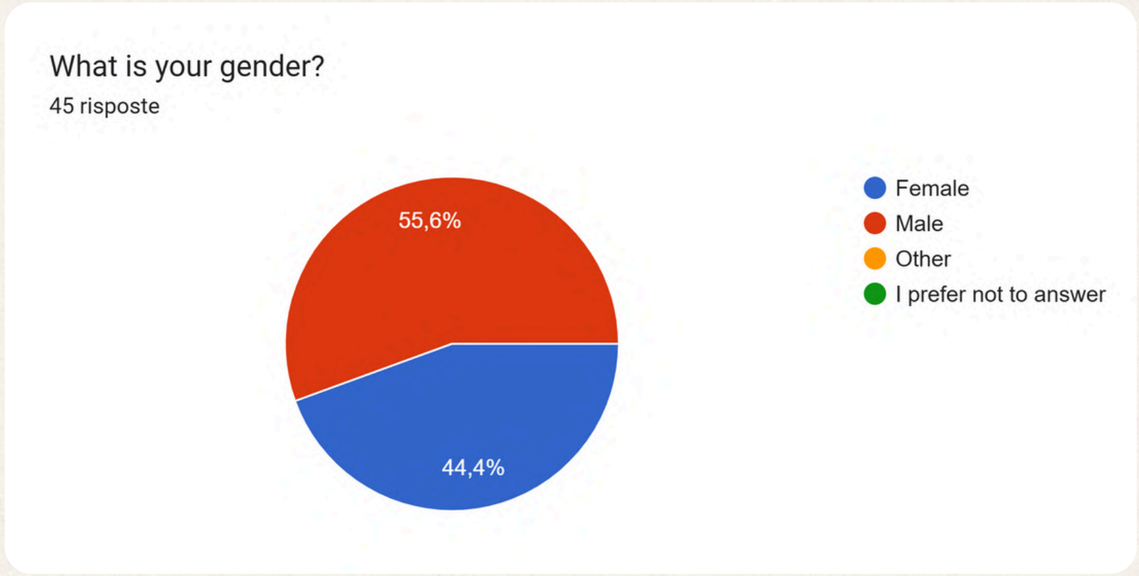
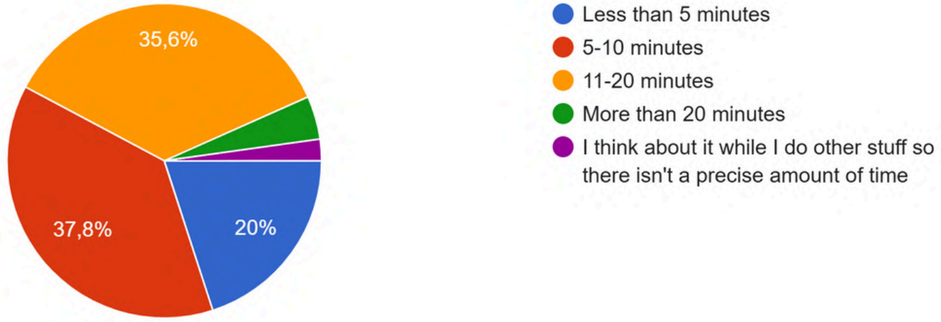


3.

How much time do you usually spend selecting an outfit before going out?

45 risposte



4.

How often do you feel uncertain about how to match your clothes?

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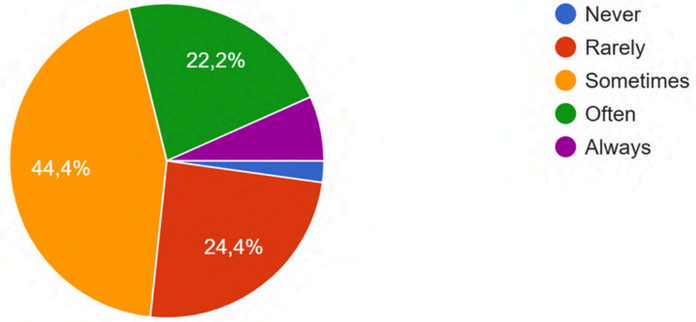

5.

Do you use apps or websites for outfit inspiration?

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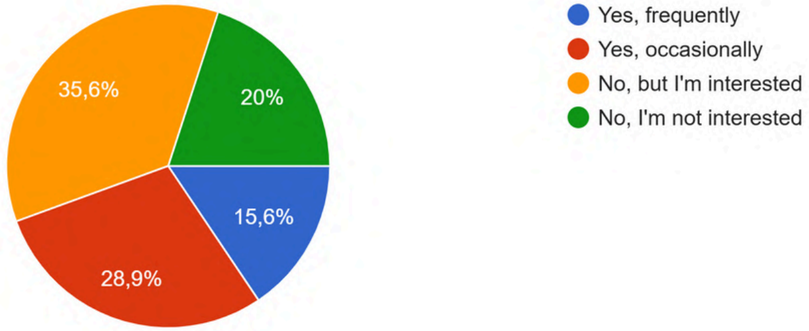

6.

What channels do you currently use to find fashion inspiration? (Select all that apply)

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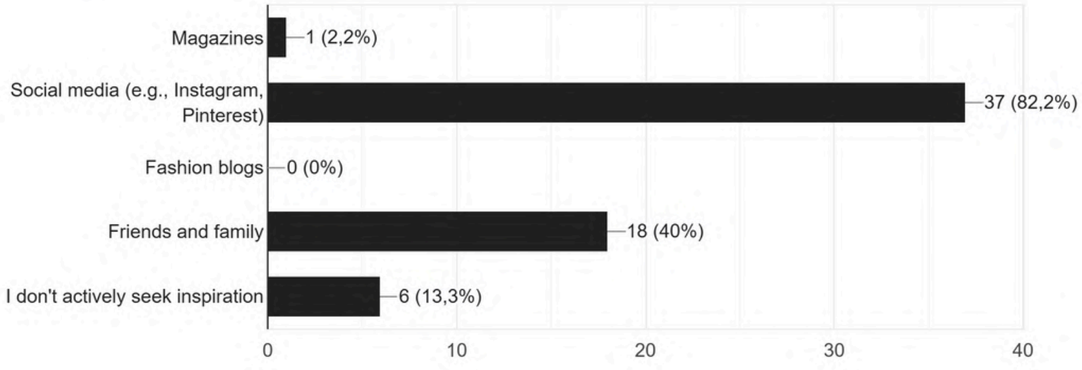

7.

How interested would you be in an app that suggests outfit combinations based on a specific item you want to wear?

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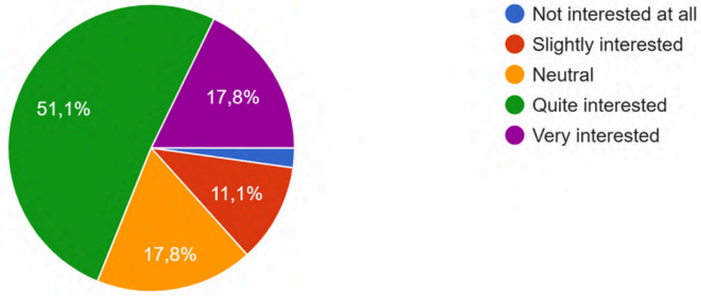

8.

Which features would you find most useful in an app like this? (Select up to 3 features)

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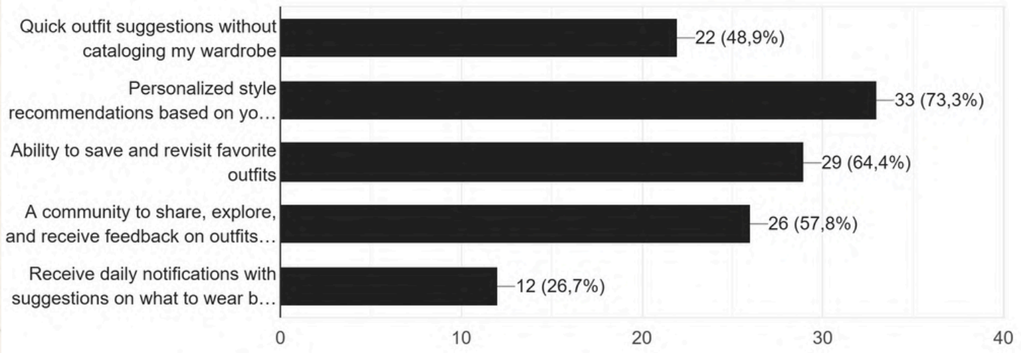
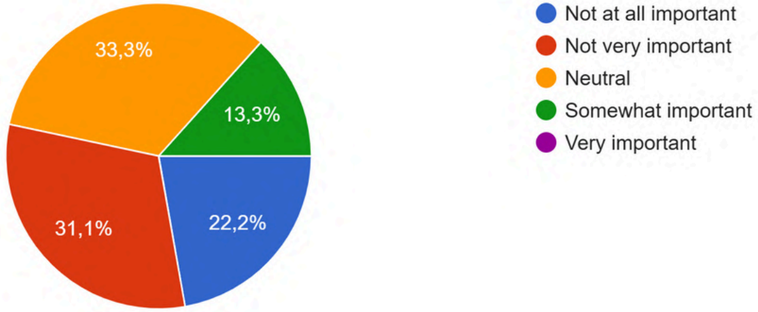


9.

How important is it for you to receive feedback on your outfits from an online community?

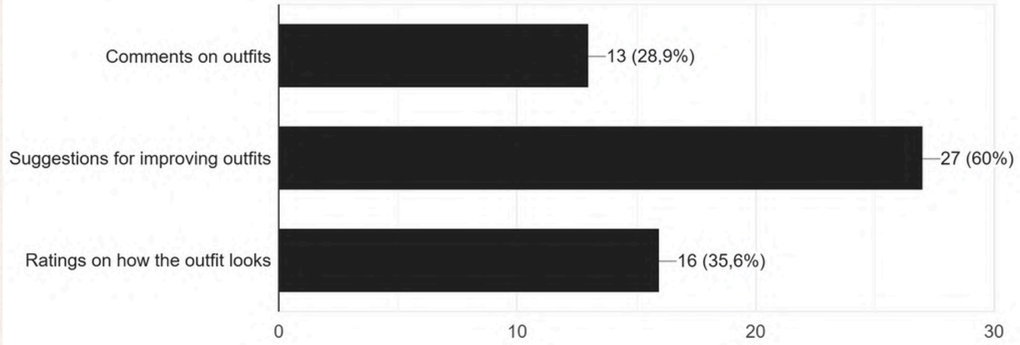
45 risposte



10.

What kind of feedback would you prefer to receive from the community? (Select all that apply)

45 risposte



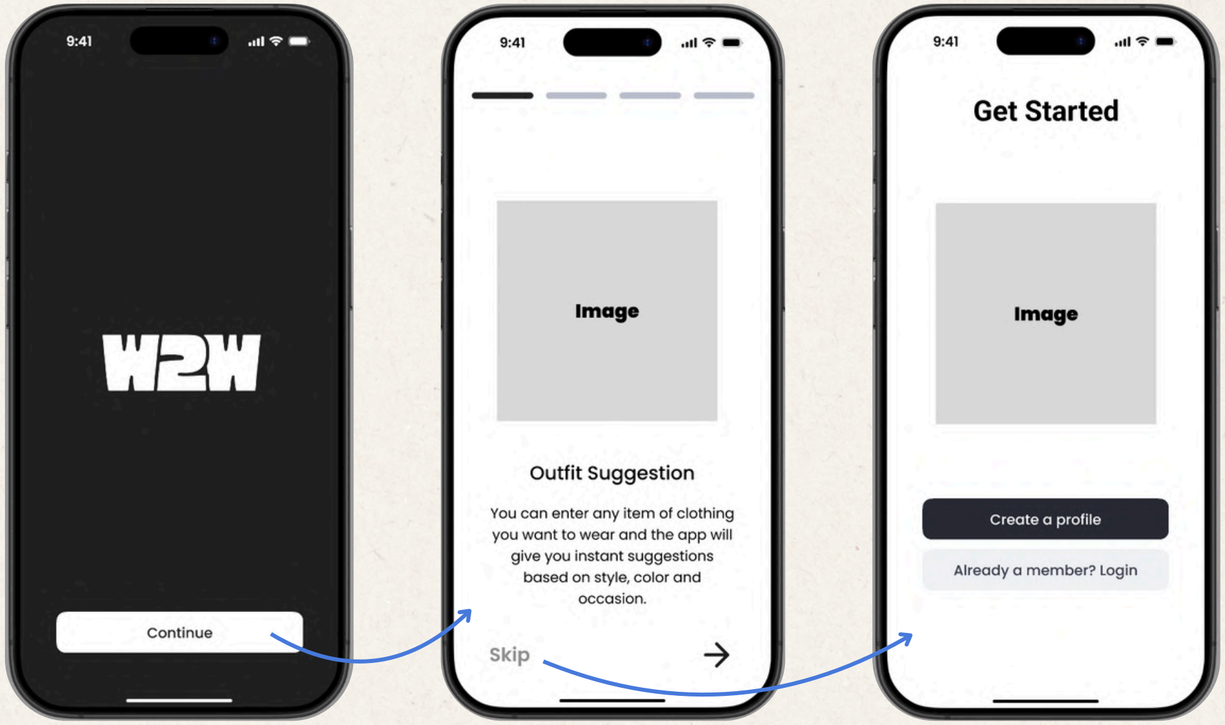
11.

What additional features or functionalities would you like to see in an app that helps you with outfit selection?

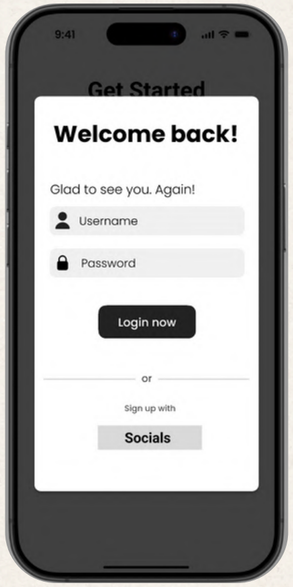
- Weather suggestions
- Colors suggestions
- Wardrobe cataloguing
- A feature that tells us trends around the world, so that we can also take inspiration from them
- Scan outfit from photos like Google lens but better
- No one, proposals are fine

WireFrame

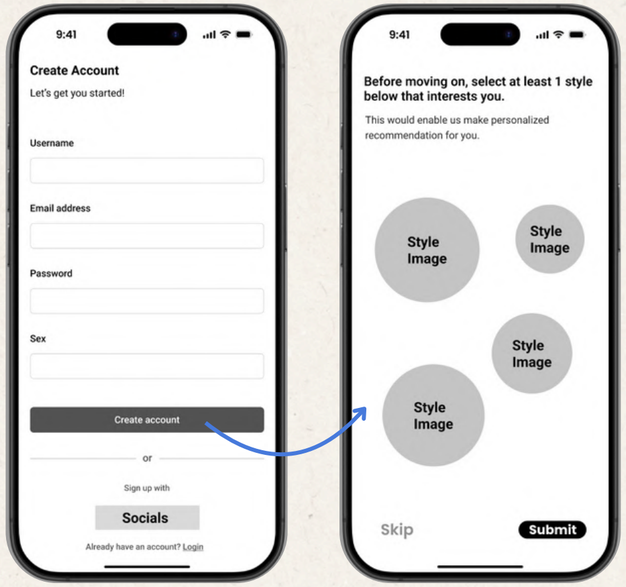
As a first step in developing our application, we began by creating a wireframe, a rough layout without images. This initial structure helped us determine how many screens we needed, how to design them, and which interactions to include. In many ways, the wireframe served as the backbone of our application, providing a clear foundation for the user experience.



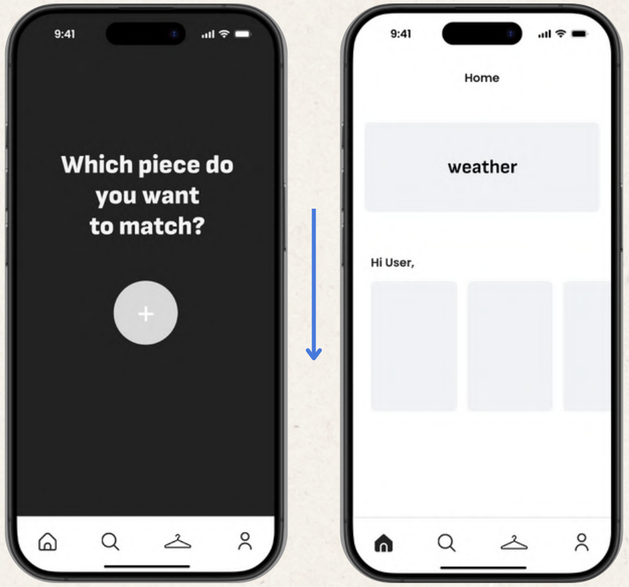
Welcome screen and Introduction



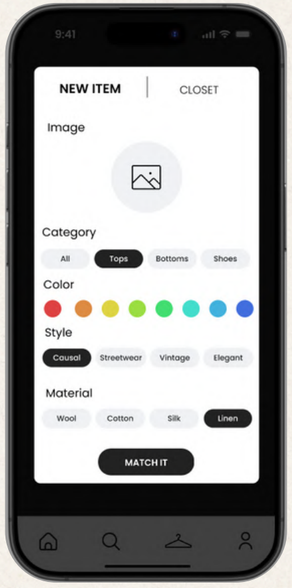
Login Page



Sign in Page

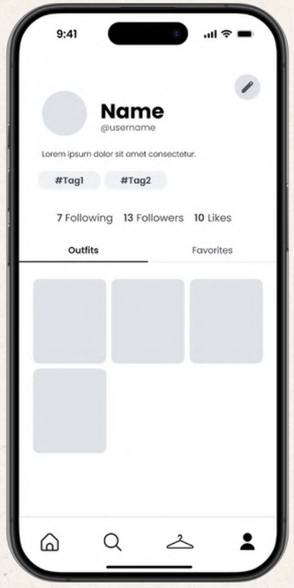


HomePage

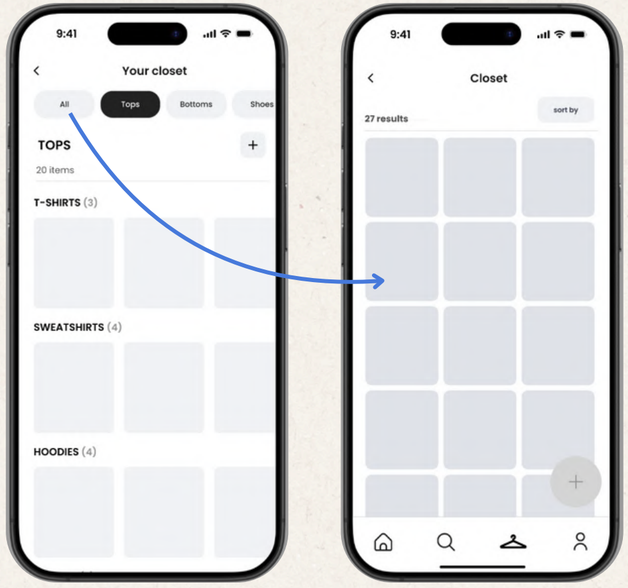


Insert new item

Community



Profile Page



Closet

Design and Analysis

Hierarchical Task Analysis(HTA) is a method for describing tasks by breaking them down into a hierarchy of goals, sub-goals, operations, and plans.

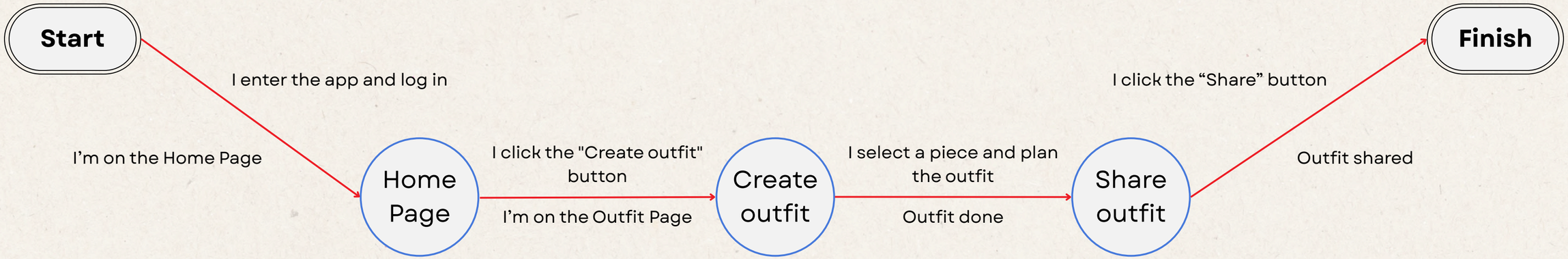
A **State Transition Network**(STN) is a diagram derived from a dataset that maps the flow of data between specific points, called states or nodes, showing how one leads to the next.

In our case, we outlined the core functionalities of our application through a comprehensive user flow that reflects realistic usage scenarios. These include, for example, sharing a newly created outfit directly from the home screen to the community, and saving the daily outfit suggestion after making personal adjustments. Each feature is integrated into a clearly structured process aimed at providing users with intuitive guidance and helping them reach their goals efficiently and confidently.

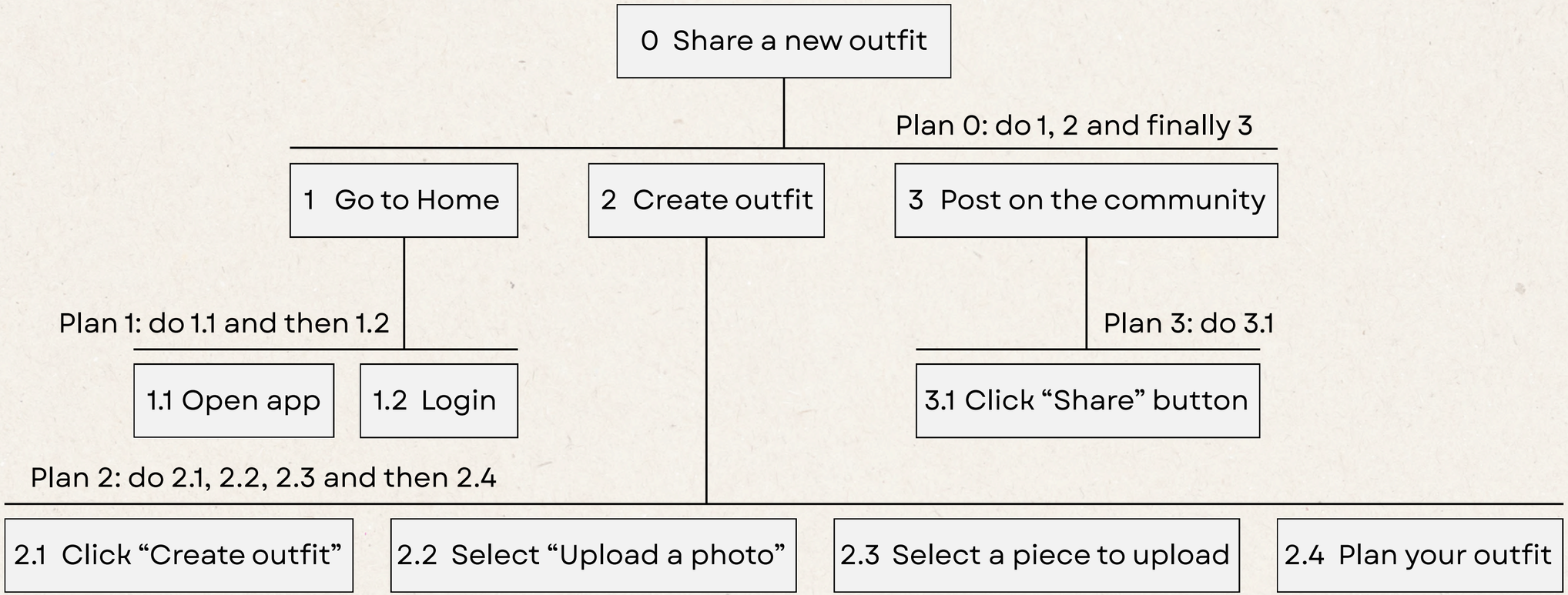
Posting a custom outfit to the community

Users can create a new outfit directly from the home screen via the designated button. They can choose to use an item from their personal wardrobe, select one from our database, or upload a photo of a garment. Based on the selected or uploaded item, a complete outfit will be automatically generated around it. The user is then prompted to plan when they intend to wear the outfit by specifying the occasion, location, date, and time. Finally, they have the option to share their custom outfit with the community.

STN:



HTA:

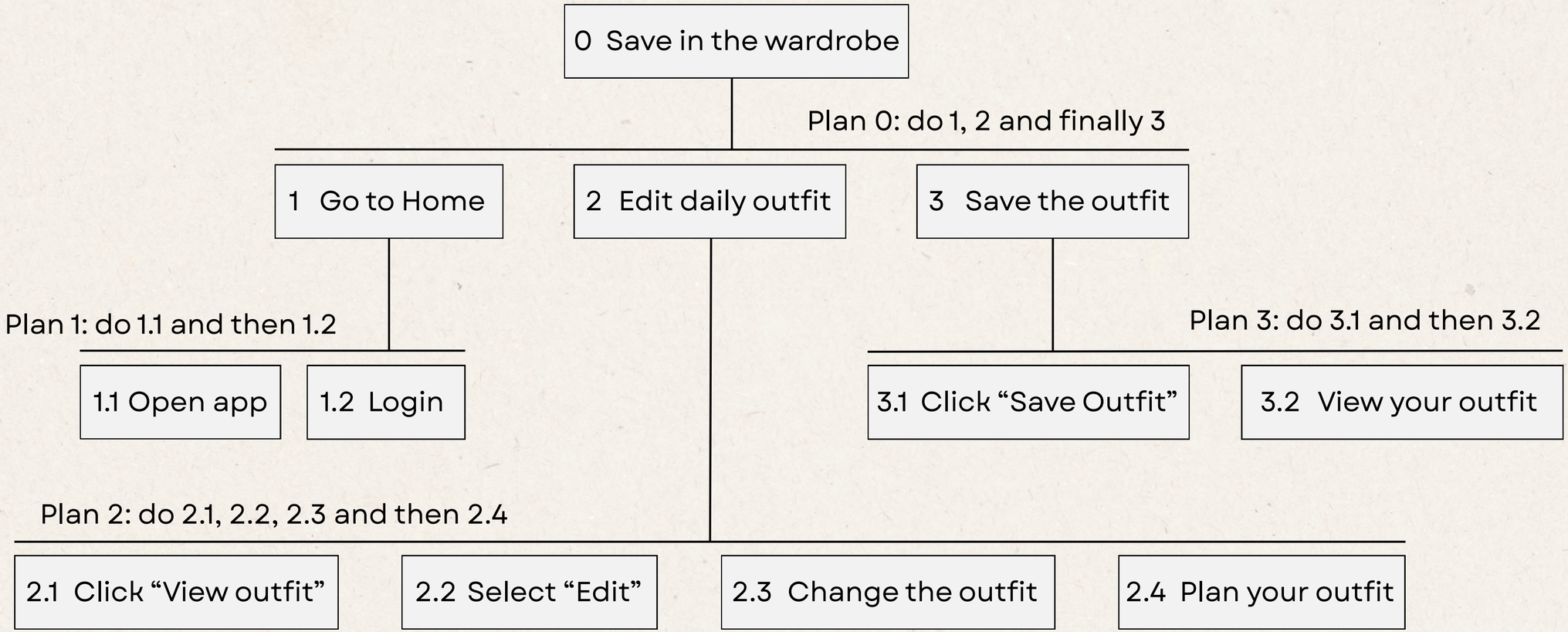

0 Share a new outfit
Plan 0: do 1, 2 and finally 3
1 Go to Home
2 Create outfit
3 Post on the community
Plan 1: do 1.1 and then 1.2
Plan 3: do 3.1
1.1 Open app
1.2 Login
3.1 Click “Share” button
Plan 2: do 2.1, 2.2, 2.3 and then 2.4
2.1 Click “Create outfit”
2.2 Select “Upload a photo”
2.3 Select a piece to upload
2.4 Plan your outfit

Saving an edited daily outfit in the wardrobe

Users can draw inspiration from the daily outfit we suggest on the home screen. They have the option to save it, mark it as a favorite, or customize it as they wish. When saving the outfit, the user is prompted to select a style and specify the occasion. Once saved, the outfit is added to their personal wardrobe and becomes available for future use.

STN:

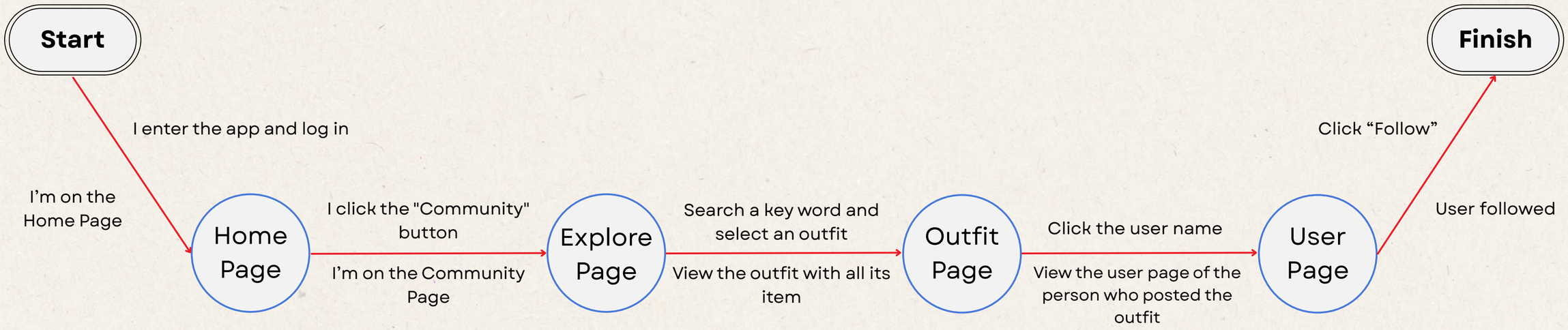
HTA:


0 Save in the wardrobe
Plan 0: do 1, 2 and finally 3
1 Go to Home
2 Edit daily outfit
3 Save the outfit
Plan 1: do 1.1 and then 1.2
1.1 Open app
1.2 Login
Plan 3: do 3.1 and then 3.2
3.1 Click “Save Outfit”
3.2 View your outfit
Plan 2: do 2.1, 2.2, 2.3 and then 2.4
2.1 Click “View outfit”
2.2 Select “Edit”
2.3 Change the outfit
2.4 Plan your outfit

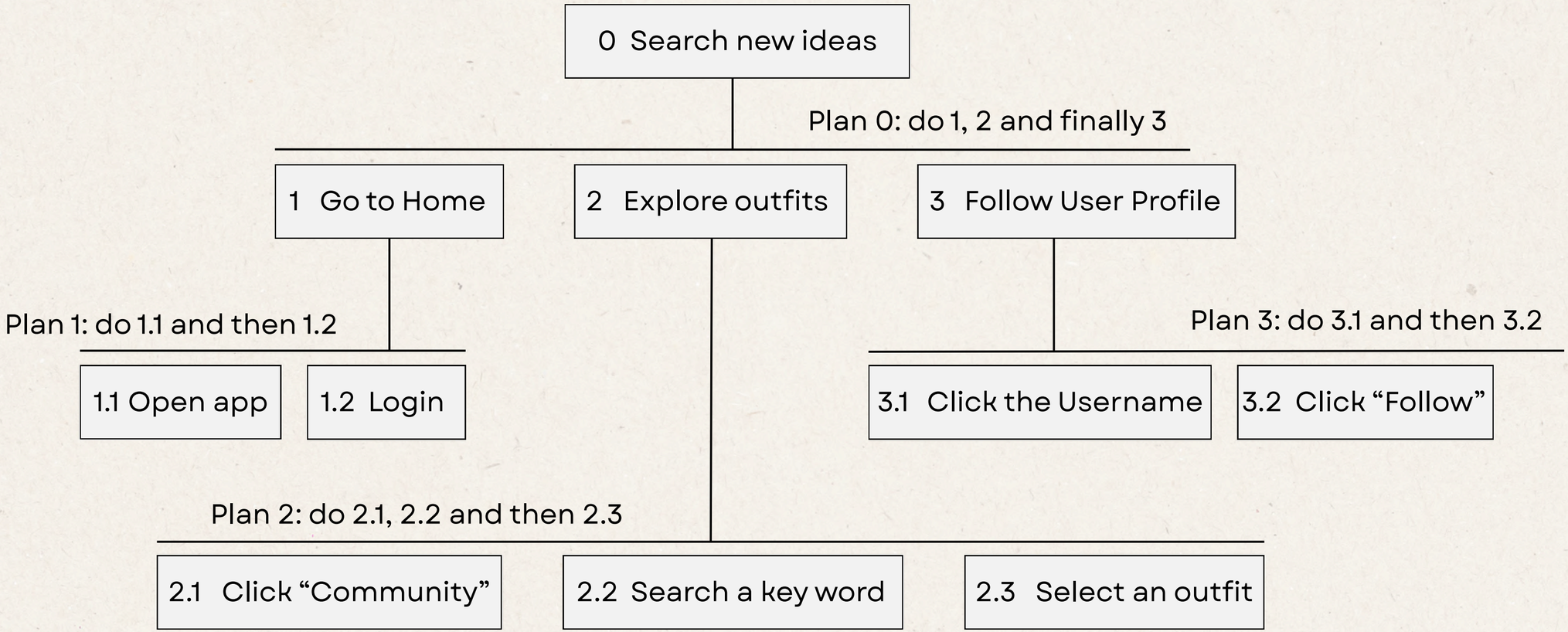
Searching in the community new outfit ideas from other users

Users can explore the community to find inspiration for new outfits. They can browse outfits created by others, view which of their own items are used in the outfits, and check the profile of the user who posted them. If they like a creator’s style, they can start following them to stay updated on their future posts and outfit ideas.

STN:



HTA:


0 Search new ideas
Plan 0: do 1, 2 and finally 3
1 Go to Home
2 Explore outfits
3 Follow User Profile
Plan 1: do 1.1 and then 1.2
1.1 Open app
1.2 Login
Plan 3: do 3.1 and then 3.2
3.1 Click the Username
3.2 Click “Follow”
Plan 2: do 2.1, 2.2 and then 2.3
2.1 Click “Community”
2.2 Search a key word
2.3 Select an outfit

Prototype 0

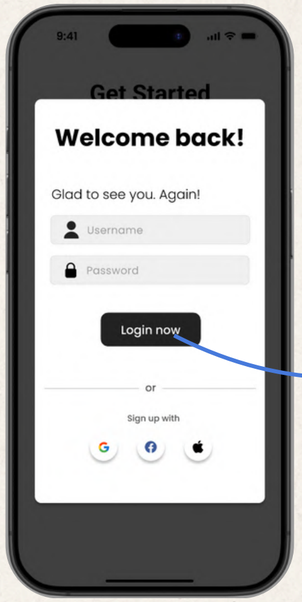
Let's only consider the Analysis Tasks:

Task 1: Posting a custom outfit to the community

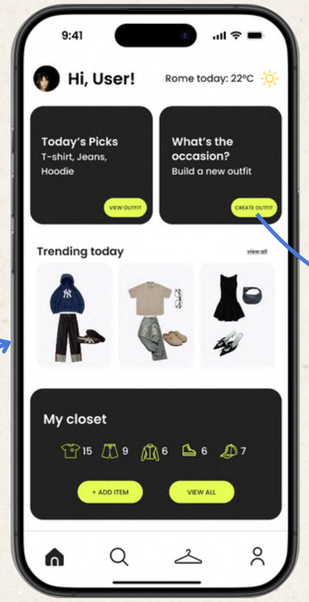
Task 2: Saving an edited daily outfit in the wardrobe

Task 3: Saving an edited daily outfit in the wardrobe

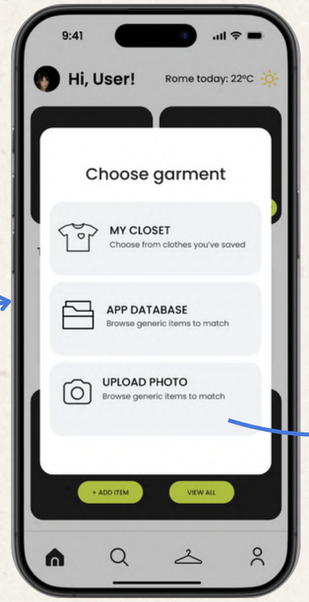
1



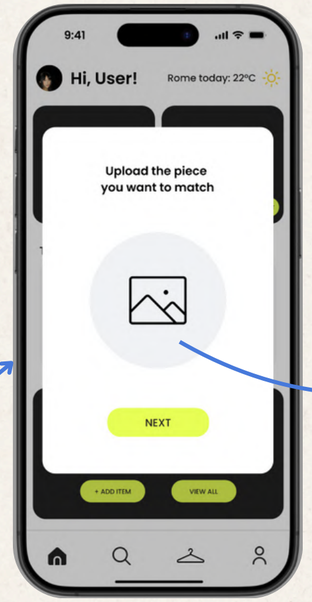
Login Page



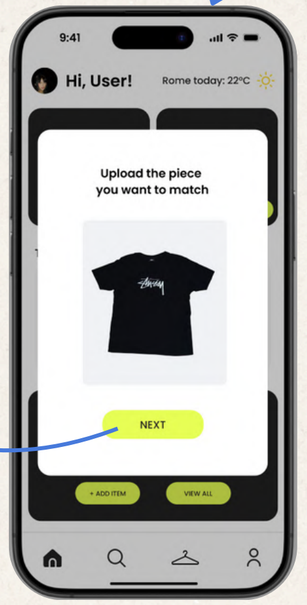
Home Page

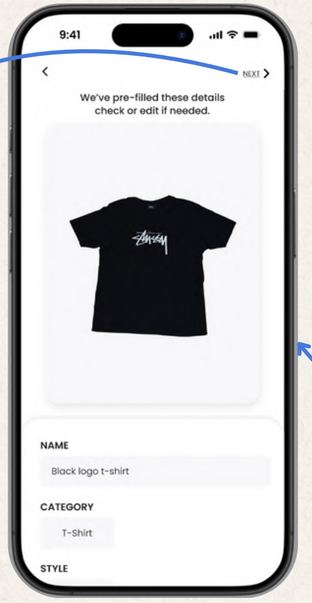


Choose Garment

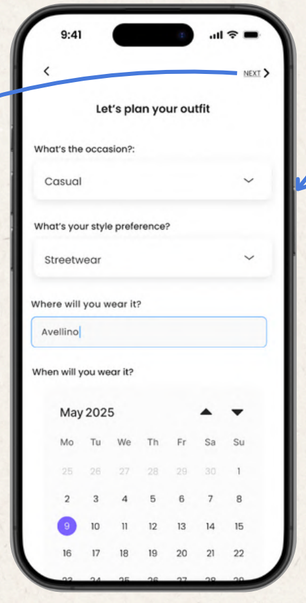


Upload Photo

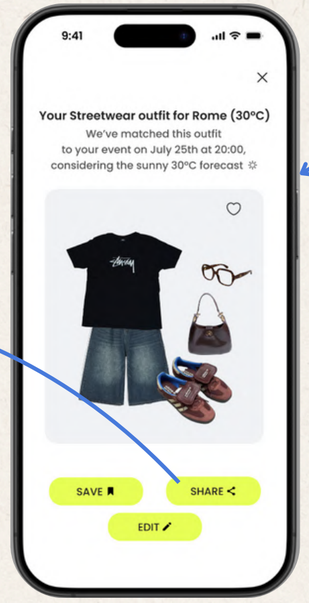




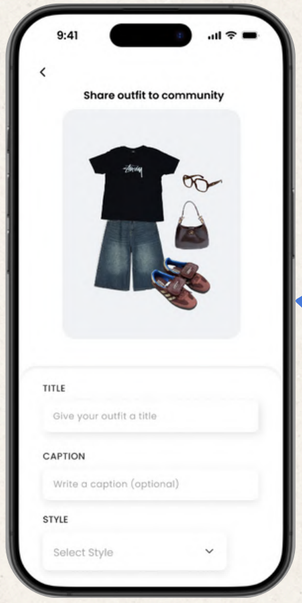
Edit



Plan Outfit

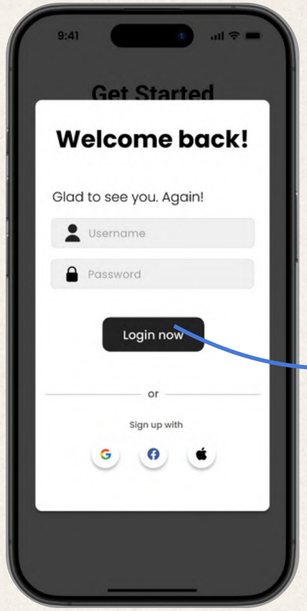


Overview

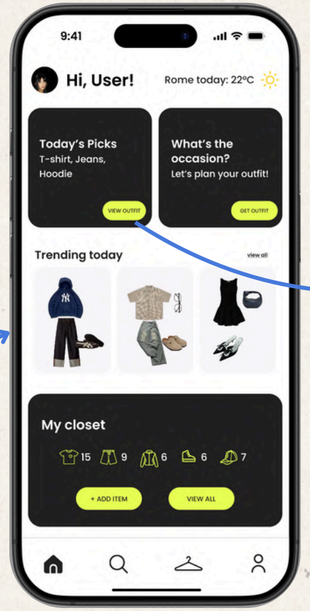


Share Outfit

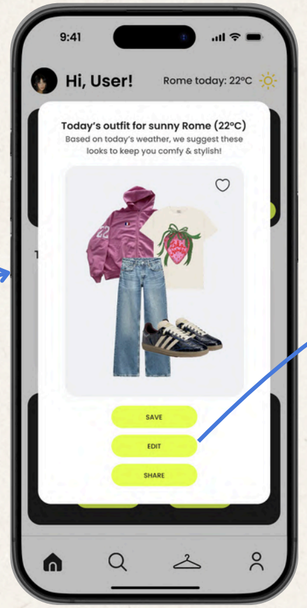
2



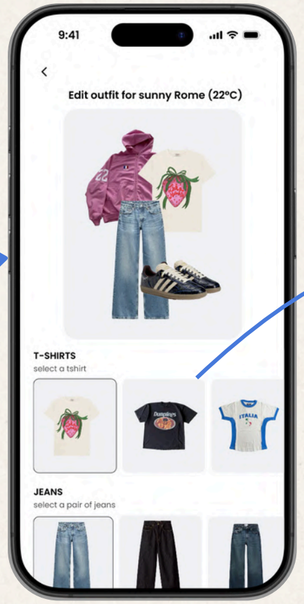
Login Page



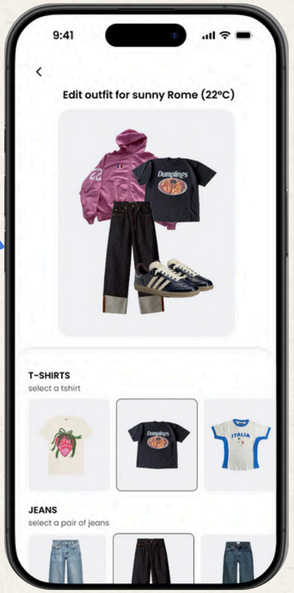
Home Page



View outfit

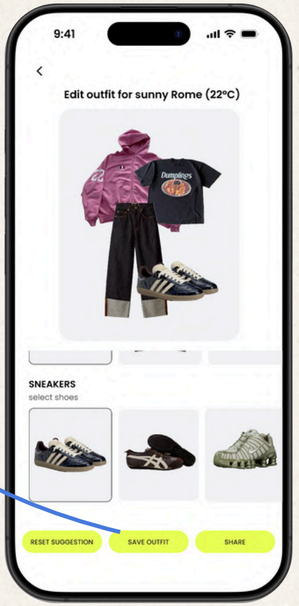


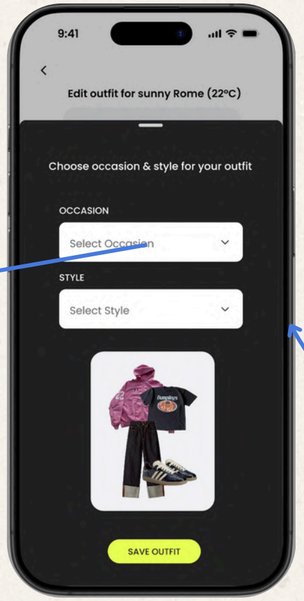
Edit Page



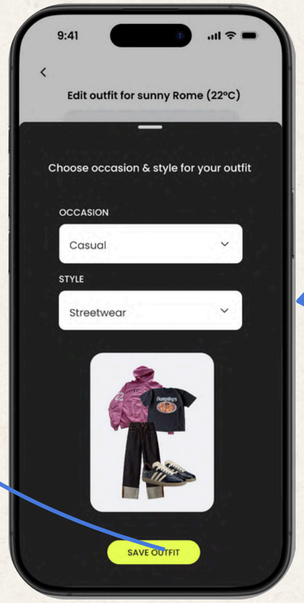
Edit Page

Scroll down

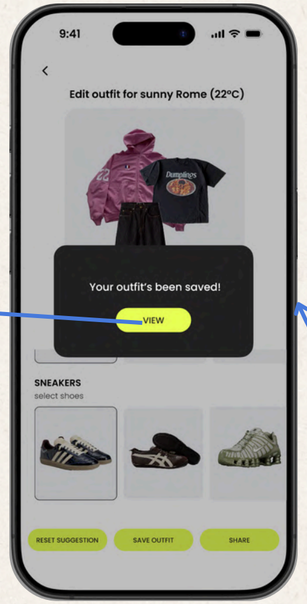




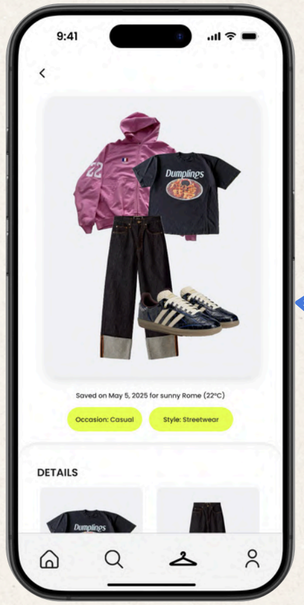
Edit Outfit



Edit Outfit

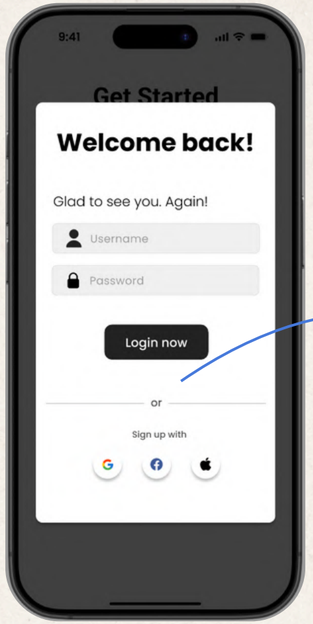


Save Outfit

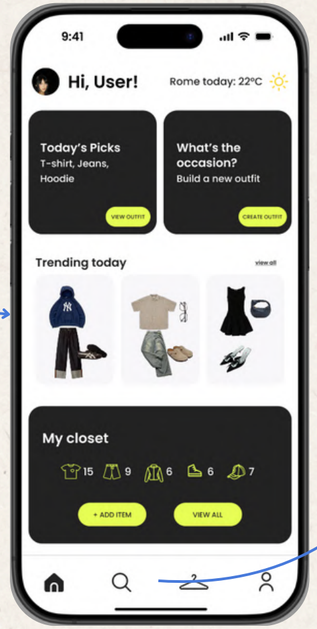


Save Outfit

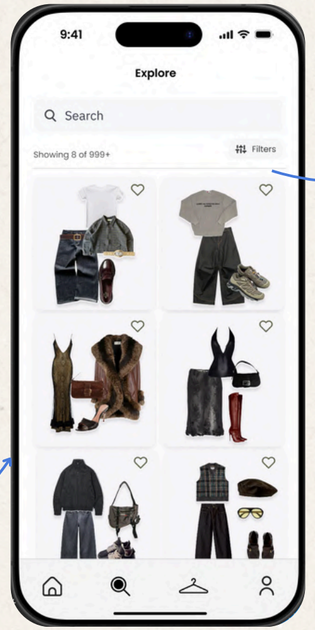
3



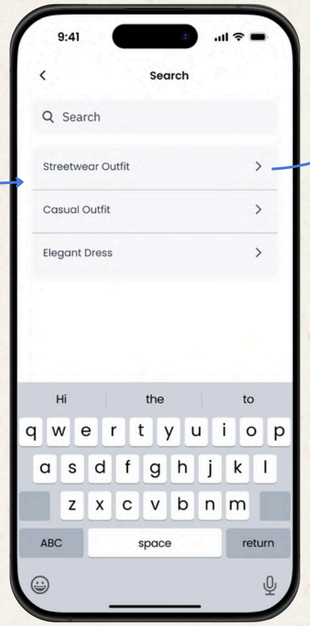
Login Page



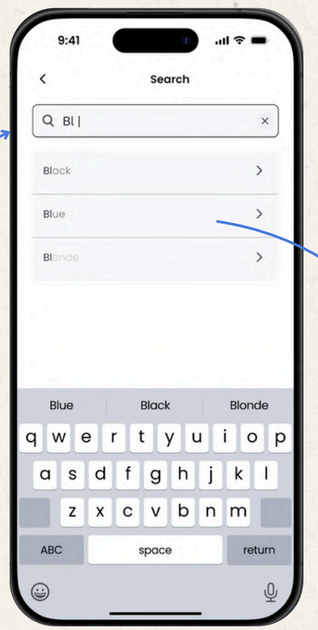
Home Page



Explore Page

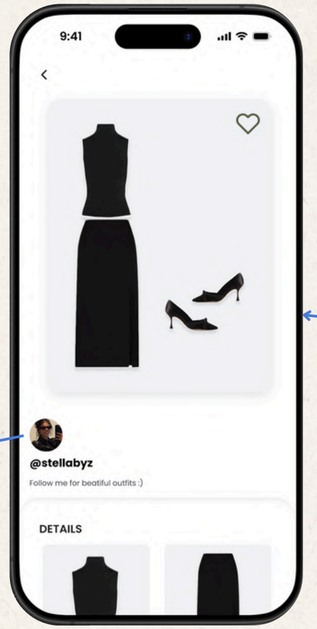


Explore Page



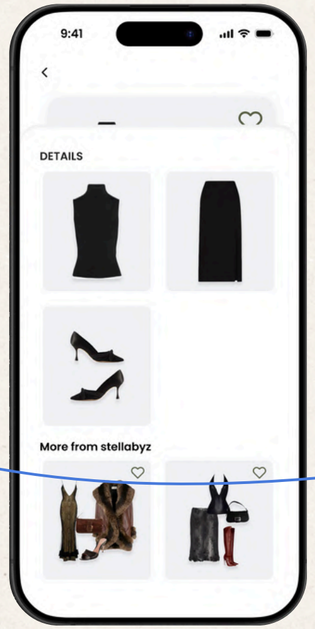
Explore Page

Explore Page

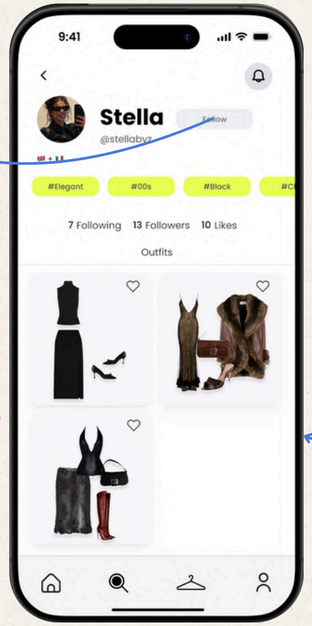


Outfit Page

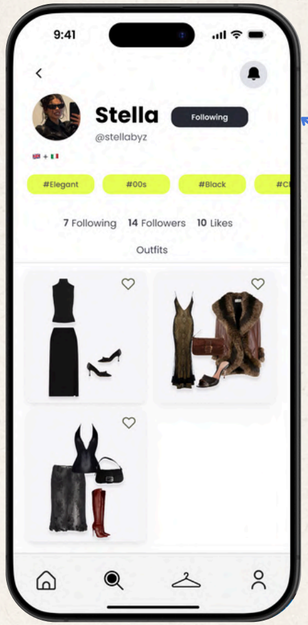
Scroll down



Outfit Page



User Page



User Page

Expert-Based Evaluation

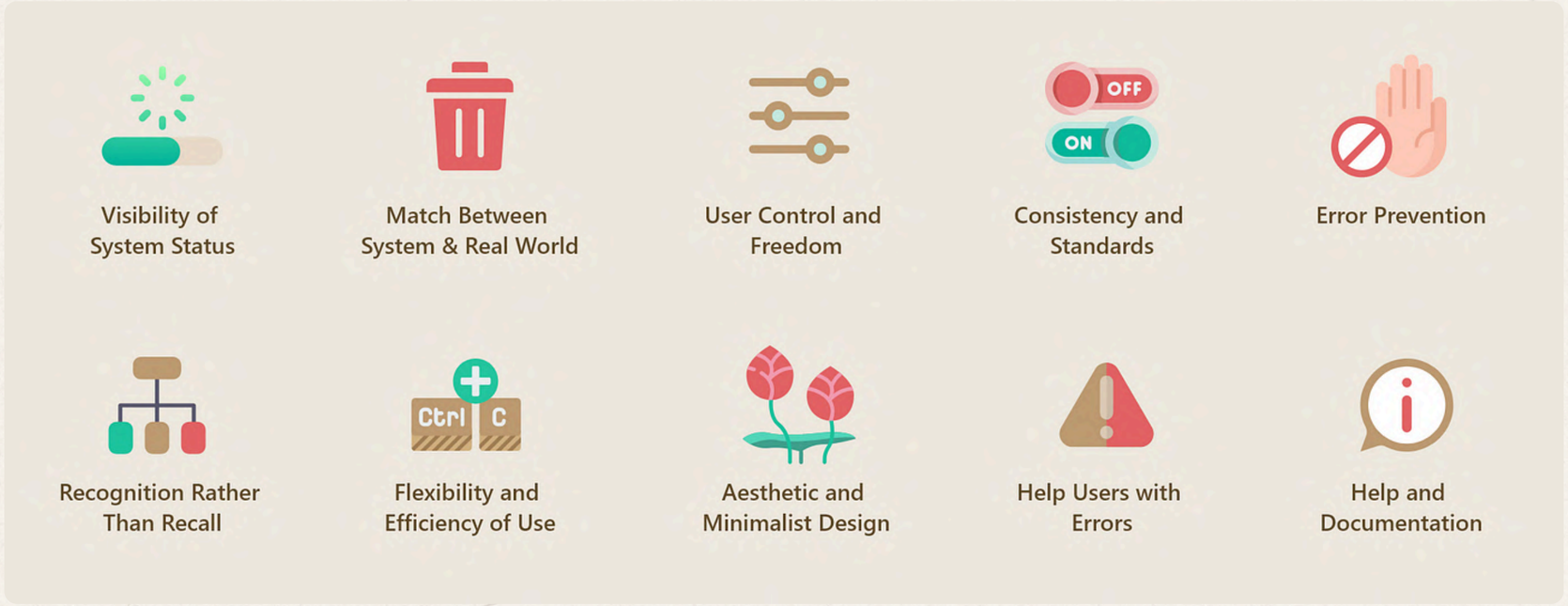
- **Heuristic Evaluation**

  Heuristic evaluation is a widely used method in usability analysis, where multiple evaluators **review an interface design** and provide feedback based on a set of established principles.

  While it is considered one of the less formal techniques in the field of Human-Computer Interaction, it remains highly effective for identifying usability issues.

  Various sets of design heuristics exist, all aiming to uncover potential problems in user interface design and improve the overall user experience.

It’s based on the Jakob Nielsen’s 10 Usability Heuristics...



...with a severity scale:

0. I don’t agree that this is a usability problem at all
1. Cosmetic problem only
2. Minor usability problem
3. Major usability problem
4. Usability catastrophe

Heuristic Evaluation of our project (First part)

Frame	Heuristic violated	Severity	Comment
Onboarding Screen	Recognition Rather than Recall	**2**	Offer users a summary of the onboarding process when they first open the app.
Login/Registration Interface	Help Users Recognize, Diagnose, and Recover from Errors	**3**	During the registration and login processes, when users input their username and password, there are currently no tooltips or error-handling mechanisms available. Implementing real-time feedback and suggestions can significantly improve usability and reduce frustration.
User Profile	Help and Documentation	**2**	No explanation of the hashtag system or how style preferences affect recommendations. New users may not understand the impact of profile customization.
Suggested Outfit Interface	Error Prevention	**2**	There is no confirmation required before overwriting suggested outfits.

Heuristic Evaluation of our project (Second part)

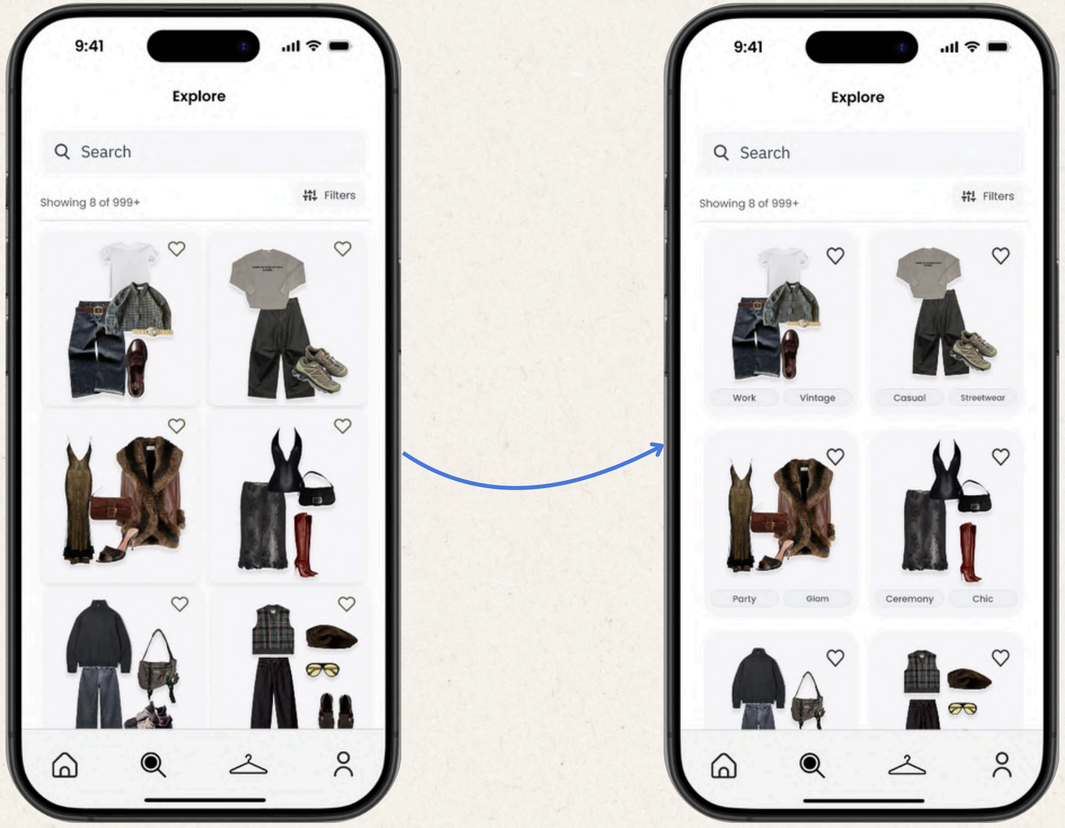
Frame	Heuristic violated	Severity	Comment
Posting an Outfit to the Community	User Control and Freedom	**2**	There is no visible “Cancel” button on the post details form, so users must rely on the system's back arrow, which may not be clear to everyone.
Editing Garment Details	User Control and Freedom	**3**	There is no “Cancel” button available while editing outfits. Users must navigate back through several screens to exit the editing mode.
Outfit Builder Interfaces	Error Prevention	**4**	No real-time validation for mandatory fields allows users to save an outfit without specifying details such as occasion or style. This can result in unusable suggestions later.
Community Explore	Recognition Rather than Recall	**3**	Outfit cards do not include tags for occasions or weather. As a result, users must open each post to understand the context.

Example of “Recognition Rather than Recall ”

Recognition over recall: Design interfaces so that users can recognize information rather than having to remember it. All actions, objects, and options should be clearly visible and accessible. Users shouldn't need to rely on memory to carry out tasks, any necessary instructions or information should be readily available when needed.

“Outfit cards do not include tags for occasions or weather. As a result, users must open each post to understand the context.“

Before



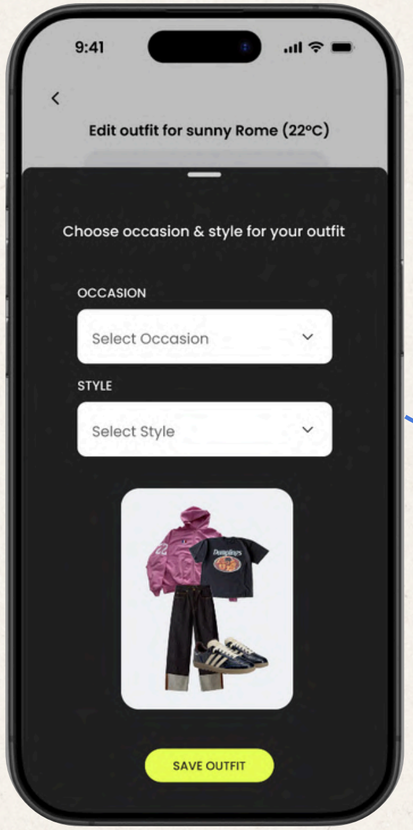
After

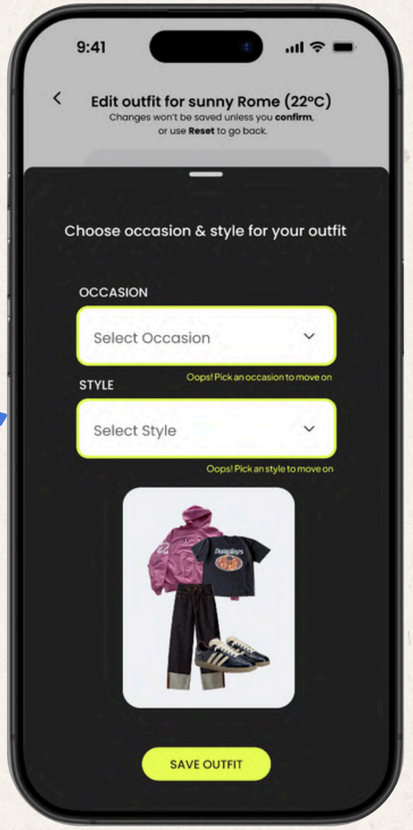
Example of “Error Prevention”

Error prevention: Rather than relying on error messages, it's more effective to design the interface in a way that avoids mistakes before they happen. A well-thought-out system anticipates potential issues and guides users to prevent them.

“No real-time validation for mandatory fields allows users to save an outfit without specifying details such as occasion or style. This can result in unusable suggestions later.“

*Before**





After

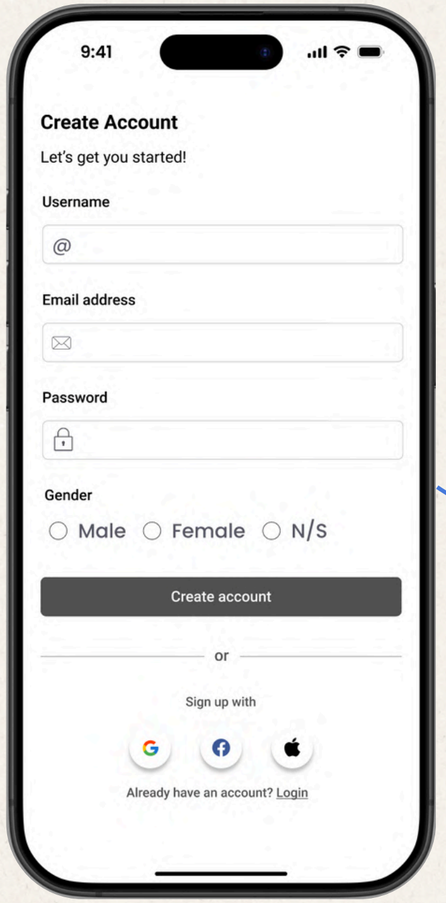
**You can save an outfit without select an occasion and a style*

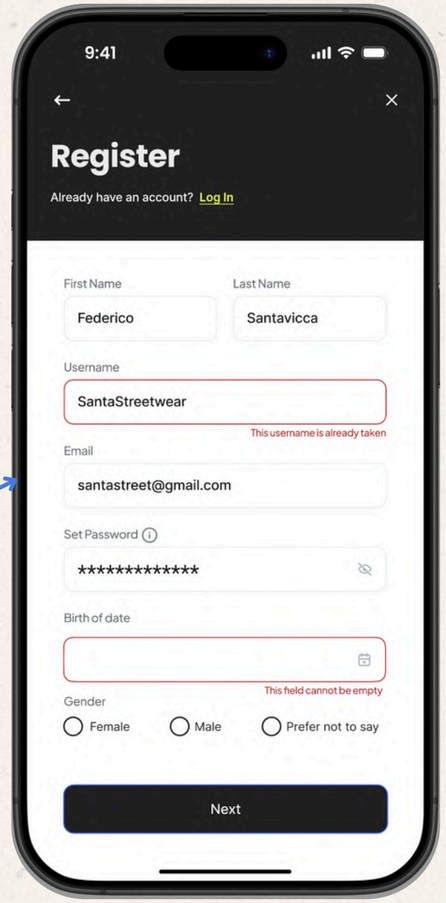
Example of “Help Users Recognize, Diagnose, and Recover from Errors ”

Help Users Recognize, Diagnose, and Recover from Errors: When errors occur, users should be informed clearly and in a way that helps them understand what went wrong, why it happened, and how they can fix it.

“During the registration and login processes, when users input their username and password, there are currently no tooltips or error-handling mechanisms available. Implementing real-time feedback and suggestions can significantly improve usability and reduce frustration.“

Before





After

- **Cognitive Walkthrough**

Cognitive walkthrough is a usability inspection method aimed at identifying issues in interactive systems by evaluating how easily a new user can complete specific tasks.

Unlike heuristic evaluation, which provides a broad, overall assessment of the interface, this method is **task-focused** and ideal for uncovering problems related to learnability.

It is based on the idea that users usually prefer to learn how a system works by actively performing tasks rather than reading instructions or manuals.

For each action the experts must answer four questions:

Q1. Is the effect of the action the same as the user's goal at that point? (Does the user understand that this subtask is needed to reach the goal?)
Q2. Will users see the action is available?
Q3. Once users find the correct action, will they know it is the one they need?
Q4. After the action is taken, will users understand the feedback they get?

Task: Posting a custom outfit to the community

Act. 1: Open the app
Resp. 1: App opens, Login Page is displayed

Act. 2: Log in with credentials
Resp. 2: Login successful, user is redirected to the home page

Act. 3: Click "Create outfit" button
Resp. 3: Outfit creation page opens with options to select the source

Act. 4: Select "Upload a photo"
Resp. 4: Photo upload screen is displayed

Act. 5: Select a piece to upload
Resp. 5: The selected item appears in the outfit builder

Act. 6: Plan the outfit (occasion, location, date, time)
Resp. 6: Planning data is saved and displayed as summary with the entire outfit

Act. 7: Click the “Share” button
Resp. 7: The Share Page is displayed

Act. 8: Fill the informations fields (caption, style..) and post the outfit
Resp. 8: The outfit is shared on the community

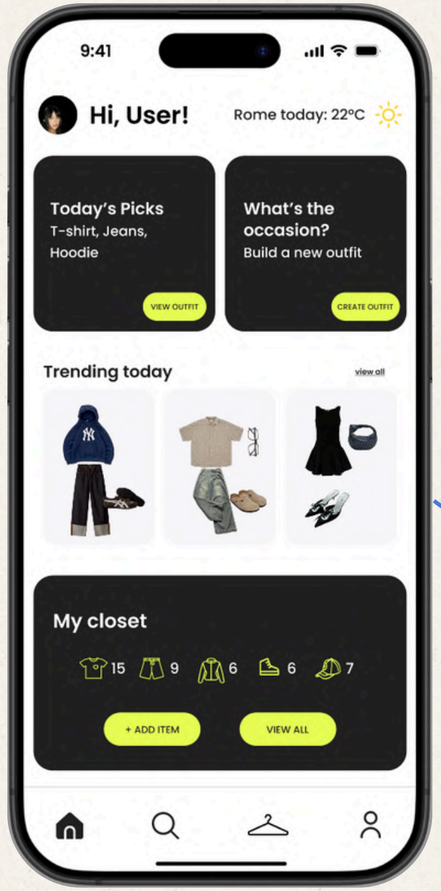
Example of Prototype 1

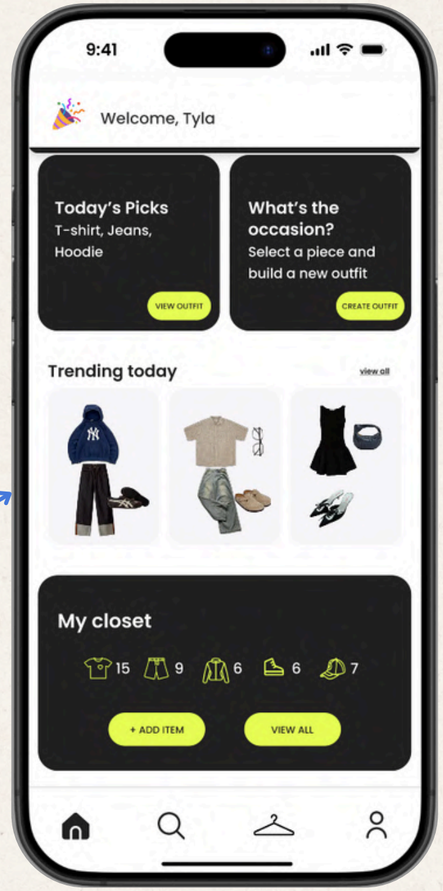
Act. 2: Log in with credentials
Resp. 2: Login successful, user is redirected to the home page

Q4. After the action is taken, will users understand the feedback they get?

“Partial. Show a confirmation message to the user as Login successful.“

Before





After

User-based evaluation

- **Think Aloud**

  In the think-aloud method, the user is asked to perform a series of tasks while **verbally expressing** their thoughts, including what they are doing, why they are doing it, and what they believe is happening.

  The evaluator observes and records both the user's actions and any difficulties encountered.

  This technique is appreciated for its **simplicity and low cost**, as it doesn't require extensive expertise to conduct and provides valuable insights into the user's mental model.

  However, it also has some drawbacks: it tends to produce a large amount of data, the insights gathered are often subjective, and the act of thinking aloud can sometimes interfere with the user’s natural task performance

Task #1: Saving an edited daily outfit in the wardrobe

	Related incidents	Priority	Description	Reason	Good or bad	Solution
Login and navigate to home	None	4	“Okay, I’m in. Looks like the daily outfit is right here on the home.”	The user easily identified the daily outfit area after login.	Good	None
Click “View outfit” and then “Edit”	User looked for Daily outfit	2	“Let me check what this outfit looks like... but where? Oh, there. Good I can also edit it.”	The Daily outfit button is not well displayed .The Edit button was found easily.	Bad	Button more visible
Modify outfit & plan it	None	4	“Wow, there are other clothes I can choose from... ok I have to plan the outfit.”	The user immediately found new clothes to edit the daily outfit, and the reason for planning is well explained.	Good	None
Save and view the changed outfit	None	4	“Okk I have to save it... nice, now it's in my wardrobe!”	The user knows that he has saved the outfit thanks to the notification popup. The popup also shows the outfit in the closet.	Good	None

Task #2: Searching in the community new outfit ideas from other users

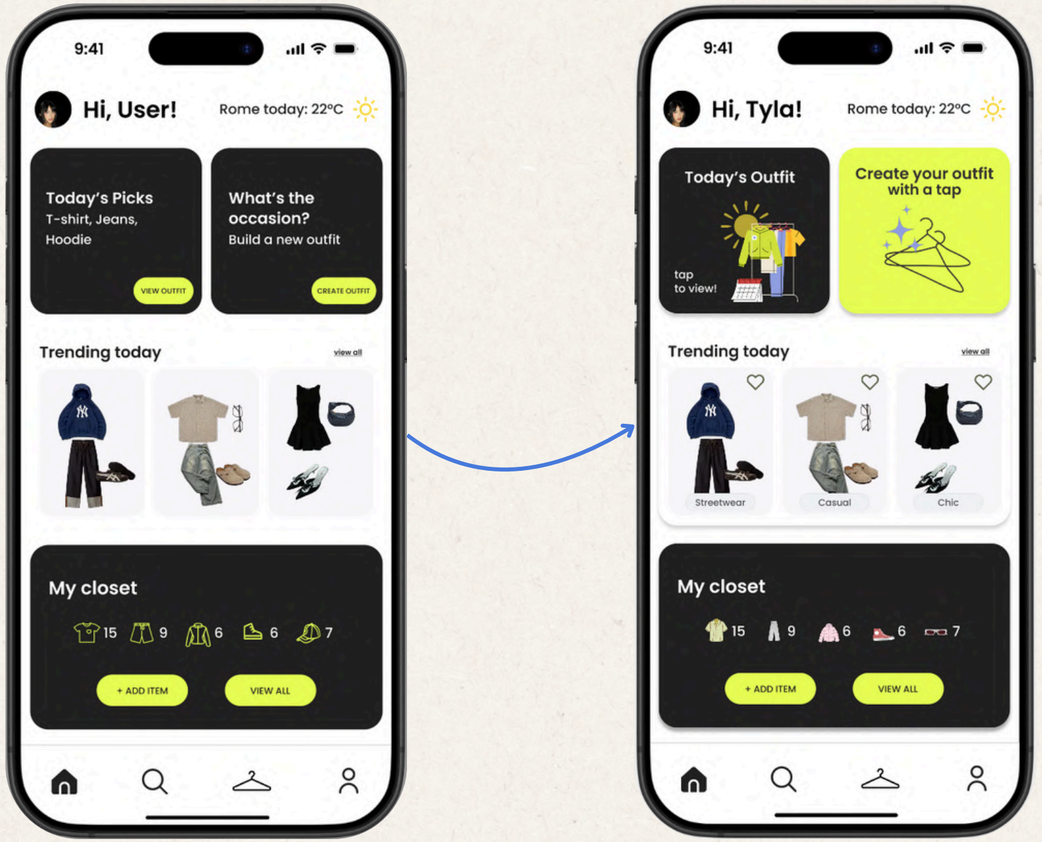
	Related incidents	Priority	Description	Reason	Good or bad	Solution
Login and access Home	None	4	“Alright, I’m in. Let’s see what’s new today.”	User entered the app and landed on the home page without issues.	Good	None
Click Community and search using a Keyword	None	4	“This must be the place to find other people’s outfits. Oh I can search some ideas.”	The label 'Community' and the search bar were easily to found.	Good	None
Select an outfit from results	None	4	“This one looks cool, let’s check it out.”	The results were displayed clearly and the user could choose easily.	Good	None
Click on username and follow the user	User looked for “Follow” button.	2	“Ok I click the username and see the profile.. I want to follow but I dont see the button.. oh there.”	The “Follow” button is not visible enough.	Bad	Change color button.

Example of Prototype 2

We have changed the design of the home buttons to make them more visible and suitable for their functionality.

“Let me check what this outfit looks like... but where? Oh, there. Good I can also edit it.”

Before



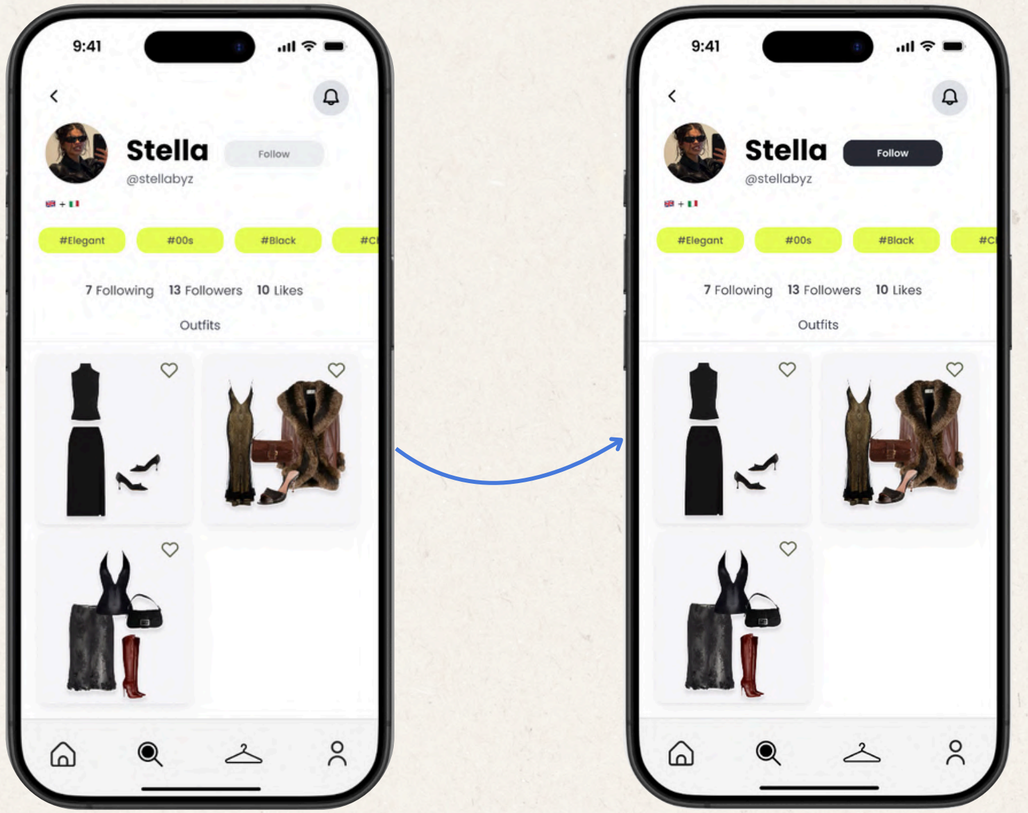
After

Example of Prototype 2

We adjusted the visibility of the “Follow” button by changing its color to make it stand out more clearly in the user profile section.

“Ok I click the username and see the profile.. I want to follow but I dont see the button.. oh there.”

Before



After

- **Controlled Experiment**

A controlled experiment is a type of study in which an observer **tests a hypothesis** by introducing changes to a single variable and observing the resulting effects.

In this setup, only the independent variable is deliberately altered, while all other conditions are kept constant, allowing the researcher to measure its direct impact on the dependent variable.

The results of a controlled experiment are often analyzed using ANOVA, which helps determine whether the differences between groups are statistically significant.

The main advantage of this approach is that it significantly **reduces uncertainty**, making it easier to draw reliable conclusions from the results.

Our Test

We aim to understand how users perceive and interact with the icons in the bottom navigation bar. To explore this, we designed and tested two different interface versions:

Partecipants: Sample of people following the user profile (Between groups)

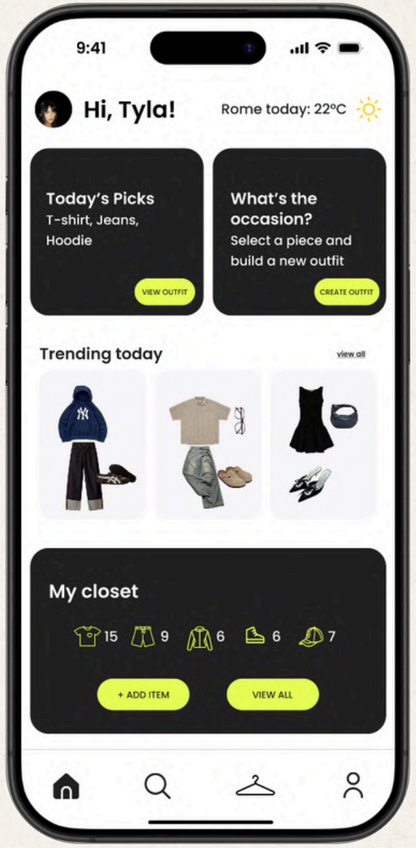
Variables:

- Independent variables: Style 1 and Style 2
- Dependent variables: Time to execute a task (in seconds), number of errors

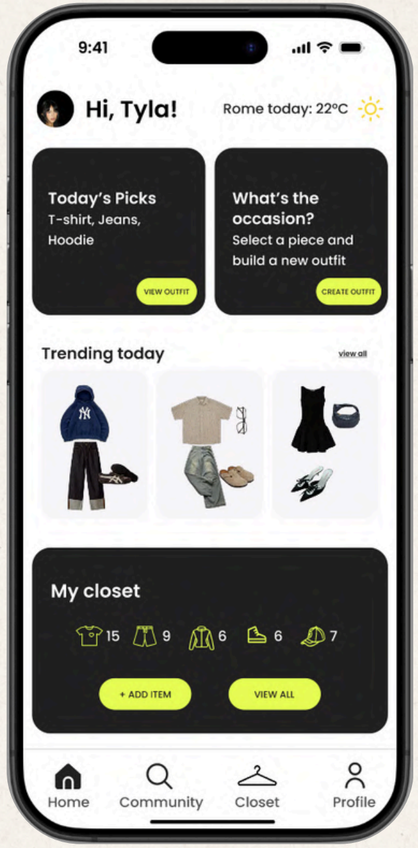
Hypothesis:

- Our hypothesis: users will take less time to perform the task using application with Style 1 than Style 2
- Null Hypothesis: there will be no difference between using application with Style 1 and Style 2

Experiment: user task → Searching in the community new outfit ideas from other users



Interface with icons only



Interface with icons and labels

Results on the time spent

Style 1	Style 2
124	140
99	120
129	122
140	138
102	127
129	123
113	130
122	150
97	107
120	117
105	109
98	99

Analysis of variance: one factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Column 1	12	1378	114,8333	210,3333
Column 2	12	1482	123,5	216,2727

VARIANCE ANALYSIS

Origin of the vari	*SQ*	*gdl*	*MQ*	*F*	*ificance va*	*F crit*
Between G	450,6667	1	450,6667	2,1128	0,160189	4,30095
Within grou	4692,667	22	213,303			
Total	5143,333	23				

2,11 < 4,3 → **Null Hypothesis is true**, there is no difference between using Style 1 and Style 2

Results on the errors

Style 1	Style 2
0	1
1	3
3	4
0	2
1	2
0	2
2	0
2	0
1	2
1	3
3	1
1	2

Analysis of variance: one factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Column 1	12	15	1,25	1,113636
Column 2	12	22	1,833333	1,424242

VARIANCE ANALYSIS

Origin of the vari	*SQ*	*gdl*	*MQ*	*F*	*ificance va*	*F crit*
Between G	2,041667	1	2,041667	1,608955	0,217897	4,30095
Within grou	27,91667	22	1,268939			
Total	29,95833	23				

1,6 < 4,3 → **Null Hypothesis is true**, there is no difference between using Style 1 and Style 2

Future Work

To further improve and expand our application, we may:

- **Integrate an AI-based assistant** to suggest and generate new outfit combinations tailored to user preferences.
- **Develop a real-world deployable version** of the app to support daily fashion planning and wardrobe management.
- **Expand user testing** by involving a larger and more diverse group of participants to gain deeper insights and feedback.
- **Enable real-time notifications** to keep users updated about new posts, community activity, and outfit suggestions.

Thank you for your attention