Project Title: Study Room Matcher

Team Members Info

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Study Protocol

Consent Script (Before Starting)

"Hello, and thank you for participating in our user testing session today. Before we begin, I'd like to explain what we're doing and get your consent to participate.

We are testing a paper prototype for an app called "Study Room Matcher" that helps users find virtual study rooms. We want to emphasize that we are testing the prototype, not you. There are no wrong actions or responses.

During this session:

- You'll be asked to complete 3 tasks using our paper prototype
- We'll ask you to think aloud while completing these tasks
- We would like to record video of your hands interacting with the prototype (not your face)
- The session will take approximately 20-30 minutes

This testing is completely voluntary. You can stop at any time for any reason without penalty. Your personal information will remain confidential - we will only collect demographic information like age, education level, and occupation, but no identifying details.

The data collected will only be used for improving our design and for academic purposes related to this project.

Do you have any questions about the process? Do you consent to participate in this user testing session? Do you consent to video recording of your hands interacting with our prototype?"

[Wait for verbal consent before proceeding]

User Briefing (After Consent)

"Great, thank you for your consent. Now, let me introduce you to our app.

StudyRoom Matcher is designed to help users quickly and easily find virtual study rooms that match their academic and environmental preferences. Whether you're a student preparing for exams, a professional upskilling, or just looking for a quiet, focused environment, the app helps you connect with others who want the same study atmosphere.

You'll be given a series of tasks that simulate how someone might use our app. As you go through the tasks, please say your thoughts out loud - anything that comes to mind about what you're seeing, what you expect to happen, and any confusion or questions you have.

Remember, we're testing the prototype, not you. Your honest feedback will help us improve the design.

Do you have any questions before we begin the first task?"

Research Statement

We aim to understand whether providing customizable study preferences enhances users' ability to find suitable virtual study partners, and how UI design impacts engagement, clarity, and match satisfaction.

To narrow down the research statement, we proposed 3 questions for the research:

Research Question 1: Does allowing users to customize their study preferences (subject, environment, duration) improve satisfaction and matching outcomes?

Research Question 2: How does interface clarity and feedback (e.g., visual indicators, navigation buttons) affect task efficiency and error rates?

Research Question 3: Are users able to easily navigate through different tasks without guidance?

Hypothesis

If users can customize their study room preferences (e.g., subject, atmosphere, music), they will experience higher satisfaction, increased usability, and more successful matches compared to using default or random match systems.

Hypothesis 1: Users who are given the ability to customize their study preferences (e.g., subject, study environment, and session duration) will report higher satisfaction levels and

more successful match outcomes than users who receive randomly assigned or default matches.

Hypothesis 2: Interfaces that provide clear visual feedback (e.g., loading indicators, confirmation messages) and consistent navigation options (e.g., back/home buttons) will lead to faster task completion and fewer user errors compared to interfaces lacking these features.

Hypothesis 3: Users will be able to complete tasks with minimal assistance if the interface follows consistent patterns, uses intuitive labels, and provides visible cues, leading to higher independent task completion rates. And the time they finish each task should be less than 3 minutes.

Training Materials Provided to Users

Training Material

Testing Methodology

To test our research statement—that customizable study preferences and intuitive UI design improve virtual matching outcomes, task efficiency, and user satisfaction—we conducted a **user study** using a high-fidelity prototype of the Study Room Matcher.

Study Setup

- **Participants:** 3 users (Age range: 26–30, all technically proficient, graduate-level education)
- **Environment:** Remote or in-person testing using a paper or high-fidelity prototype
- **Format:** Moderated usability testing with observation, think-aloud protocol, and post-task survey

Procedure

1. **Consent & Briefing:** Each participant received a combined consent and briefing script before beginning.

2. **Scenario-Based Tasks:** Participants were asked to complete the following tasks using the prototype:

    - Quick Match a Study Room
    - Create your Study Room
    - Advanced Match with Extra Preferences

3. **Think-Aloud Protocol:** Participants were instructed to verbalize their thoughts as they interacted with the system.

4. **Observation:** The moderator documented errors, confusion, hesitations, and navigation issues.

5. **Post-Task Survey & Interview:** Participants provided feedback on their experience, including perceived usability, satisfaction, and match quality.

Measures Collected

Quantitative Measures

1. **Task Completion Rate:** Whether users successfully completed the customization and matching flow.
    - **Rationale:** A higher completion rate indicates users understood and could utilize preference-based matching.
    - **Success Criterion: ≥90%** of users complete the task.

2. **Time on Task:** The time it took to complete each task (e.g., Create Room, Quick Match).
    - **Rationale***:* Longer task times may suggest confusion, poor labeling, or missing feedback (e.g., no loading indicator).
    - **Success Criterion**: **≥90%** of users complete the task within **2 minutes.**

3. **Error Count:** Number of observed misclicks, hesitations, questions, or backtracking.
    - **Rationale***:* Indicates usability breakdowns due to poor interface feedback, lack of control, or ambiguous wording.
    - **Success Criterion: ≥90%** of users complete the task less than making **3 mistakes.**

4. **System Usability Scale (SUS) Score:** Users shall rate their overall satisfaction with the matching process at **≥80/100** on the System Usability Scale (SUS).

- **Rationale:** Administer the **8-item** SUS questionnaire post-task. Provides a standardized, holistic measure of perceived usability.
- **Success Criterion**: Average **SUS score ≥8**0 (considered "excellent" usability).

Qualitative Measures

1. **User Satisfaction Ratings (Post-task Interview):** Verbal responses to questions like “Was this match what you expected?” or “Did the preferences feel useful?”
    - **Rationale***:* Helps determine whether users felt the customization improved their experience.

2. **Qualitative Feedback (Think-Aloud):** Comments on ease or frustration during selection of tags, atmosphere, or custom options.
    - **Rationale***:* Reveals whether the customization process is intuitive and effective.

Quantitative and Qualitative Data Collected

Demographics

interviewer 1(Yuqian):

Time: April 15th, 2025

Place: interviewee’s home

Equipment: Camera, pens, paper, high-fidelity prototype

Participant Profile1

- **Age:** 26 years old
- **Gender:** Male
- **Technical proficiency levels**: confident
- **Educational background:** Master's
- **Occupation/field**: Data Scientist

Interviewer2(Zhaoqi):

Time: April 17th, 2025

Place: Living room

Equipment: Camera, pens, paper, high-fidelity prototype

Participant Profile2

- **Age:** 26 years old
- **Gender: Female**
- **Technical proficiency levels**: confident
- **Educational background:** Master's
- **Occupation/field**: Data Analyst

Interviewer3(Jieyao)

Time: April 16th, 2025

Place: interviewee's home

Equipment: iPhone, pens, paper,high-fidelity prototype

Participant Profile3

- **Age: 30** years old
- **Gender: Male**
- **Technical proficiency levels**: confident
- **Educational background: Master's**
- **Occupation/field**: software engineer

Table: Qualitative and Quantitative Data

Participant	Task	Completion	Errors	Time(s)	Average System Usability Scale (SUS) Score	Observation
P1 (Data Scientist, 26)	Quick Match	Completed	1	35	95	- Wanted to quit the quick match but couldn't find the button
	Create Room	Completed	3	52	81	- Selected too many tags without realize the limits

						- Couldn’t differentiate what tags have been selected because of the font and color of the tag - Hesitated when selected the tags
	Advanced Match	Completed	2	48	90	- Wanted to change to quick match in the middle, but there was no button for this function - Asked about the difference between advanced match and quick match
P2 (Data Analyst, 26)	Quick Match	Completed	1	47	98	unsure what to do after the match button
	Create Room	Completed	5	62	78	was not sure that bgm were not labels
	Advanced Match	Completed	3	61	89	lossed in the middel were user can choose to quick match or create room
P3(Softwar Engineer, 30)	QuickMatch	Completed	2	40	93	-Can not find the visible button to go back
	Create Room	Completed	3	60	88	-Confused about the customised yellow tag bar
	Advanced Match	Completed	2	55	90	Can not find the go back button,

						and,after match successful , Enter button was confusing

Interview Script(User Satisfaction & Expectations):

Participant 1

Task	Question Type	Sample Question	Purpose	User Behaviors
Quick Match	Post-task Interview	"Was this match what you expected?"	Understand expectation vs. result	"I didn't expect the quick match would be that convenient, I like the function."
	Think-Aloud Prompt	"Is anything confusing here?"	Spot interface pain points	"Hmm.. I want to know how many study buddies there are in the study room before I get in. Is there a way to know about it?"
Advanced Match	Post-task Interview	"Did the preferences help you?"	Evaluate customization effectiveness	"I think the preferences selection definitely helped me because I selected the advanced match for extra needs. Especially I want to change the subject to study when I get a new study room."
	Post-task Interview	"Do you feel more control of who you would match with?"	Evaluate customization effectiveness	"Sure.. I was more confident about the match result once I added more preference restrictions."
	Think-Aloud Prompt	"What do you think this does?"	Catch confusion before errors happen	"I think the advanced match helps me to increase the precision of the match based on my extra needs? Am I correct?"
Create your study	Think-Aloud Prompt	"Is this what you were expecting?"	Understand expectation vs. result	"Yes.. but I just hope there will be a button for me if I want to quit the

room				study room.”
	Post-task Interview	“Was it easy or difficult to complete the task?”	Spot the usability	“In general, I think it was pretty easy for me to create my own study room. I just hope that tags can be more prominent after I choose them. Sometimes I don’t remember which one I choose.”

Participant 2

Task	Question Type	Sample Question	Purpose	User Behaviors
Quick Match	Post-task Interview	“Was this match what you expected?”	Understand expectation vs. result	“So this is the study room? is a lot quicker than i thought ”
	Think-Aloud Prompt	“Is anything confusing here?”	Spot interface pain points	“Not really, i feel like this study room does not know me at all and probably would not stay.”
Advanced Match	Post-task Interview	“Did the preferences help you?”	Evaluate customization effectiveness	“Yes I like the tags give me more information about what I'm studying for ”
	Post-task Interview	“Do you feel more control of who you would match with?”	Evaluate customization effectiveness	“I like this one one it feels m0re meaning full ”
	Think-Aloud Prompt	“What do you think this does?”	Catch confusion before errors happen	“may be be more clear about what i can choose feel like the information are not that clear.”
Create your study	Think-Aloud Prompt	“Is this what you were expecting?”	Understand expectation vs. result	“yes but there should be more things i can

room				choose by creating a room”
	Post-task Interview	“Was it easy or difficult to complete the task?”	Spot the usability	“over all this part feel natural to me ”

Participant 3:

Task	Question Type	Sample Question	Purpose	User Behaviors
Quick Match	Post-task Interview	“Was this match what you expected?”	Understand expectation vs. result	“Wait… am I already matched? There’s no loading or something. It just kind of jumped to this screen.”
	Think-Aloud Prompt	“Is anything confusing here?”	Spot interface pain points	“Honestly, no. I expected to see some profiles or at least know who I’m matching with. It felt too automatic.”
Advanced Match	Post-task Interview	“Did the preferences help you?”	Evaluate customization effectiveness	“Yeah, they helped! I wanted to study for a specific exam, so I picked the subject and it matched me with people doing the same thing.”
	Post-task Interview	“Do you feel more control of who you would match with?”	Evaluate customization effectiveness	“Definitely more than Quick Match. I like being able to set filters—it felt more tailored.”
	Think-Aloud Prompt	“What do you think this does?”	Catch confusion before errors happen	“Maybe it lets me choose more specific stuff… like the subject or how many people I want in a room?” “And also the BGM on

				and quiet, these two button,after being selected, the tags below don't have difference."
Create your study room	Think-Aloud Prompt	"Is this what you were expecting?"	Understand expectation vs. result	"Mostly, yeah. I thought there'd be more customization though, like setting a time or naming the room."
	Post-task Interview	"Was it easy or difficult to complete the task?"	Spot the usability	"Pretty easy, but I think the interface could be a little clearer, and also when I entered the room, the room do not have any other infos for me: music type, how many time remaining, the preference that I set before"

Results

Research Question 1: Does allowing users to customize their study preferences (subject, environment, duration) improve satisfaction and matching outcomes?

Findings:

- All participants successfully completed the advanced matching and reported that customization helped them feel more in control of who they were matched with.
- One participant said, "It's nice that I could pick music or no music—otherwise I'd probably get a match I couldn't focus on."
- All participants scored average SUS >80, which means the system design for advanced matches was "excellent".

Conclusion: Customization features enhanced the perceived match quality and contributed to higher satisfaction. However, participants mentioned that there are still rooms to improve the error handling system(eg. add buttons to return to the home page or back to the last step).

Research Question 2: How does interface clarity and feedback (e.g., visual indicators, navigation buttons) affect task efficiency and error rates?

Findings:

- All participants hesitated or asked for missing navigation elements (no back/home/confirm buttons) led to repetitive clicks and occasional restarts.
- The absence of visual cues (like progress reminde) on the advanced matching caused uncertainty.
- Participants also wanted to know how many study buddies were in the matched study room before they entered.
- Some participants found it different to differentiate the selected tags and unselected tags because the color didn't change prominently.

Conclusion: Lack of differentiation colors of the tags and missing navigation controls back to the previous pages directly increased task time and errors. Participants expected confirmations and more visibility into system status.

Research Question 3: Are users able to easily navigate through different tasks without guidance?

Findings:

- No participant completed all tasks without asking at least one clarifying question.
- Users frequently paused when transitioning between pages (e.g., from "Create Room" to match preview), unsure of what step they were in. However, they were able to figure it out after a small hint.
- Observed behaviors included hesitations, backtracking, and unclear mental models of task flow.

Conclusion: The current navigation flow was not intuitive enough for users to complete tasks independently. The prototype lacked sufficient guidance to support self-guided usage.

Reflection on Study Validity

Strengths:

- Realistic tasks and moderately complex scenarios reflected actual app usage.

- Think-aloud protocol revealed rich, qualitative insights about decision-making and confusion.
- Multiple roles (student, engineer, analyst) provided diverse perspectives.

Limitations:

- Small sample size (n=3), all highly educated and tech-savvy—limits generalizability to broader student populations.
- Prototype did not include live system feedback, which may have impacted perception of responsiveness.

Suggestions for Improving the Study Method

- **Expand Participant Pool:** Include more users with varying tech literacy, education levels, and familiarity with study apps.
- **Include A/B Testing:** Compare customizable matching vs. random/default matching to directly test impact on satisfaction.
- **Add Pre-task Survey:** Collect baseline data on users' current study habits and preferences for richer context.

Suggestions for Improving the Study Method

Based on the findings, the next iteration of the prototype will include:

1. **Clearer System Feedback:**
    - Add "please wait" slogan to advanced match to show the matching is in processing
    - Show the amount of people in the matched room for the users before entering the room

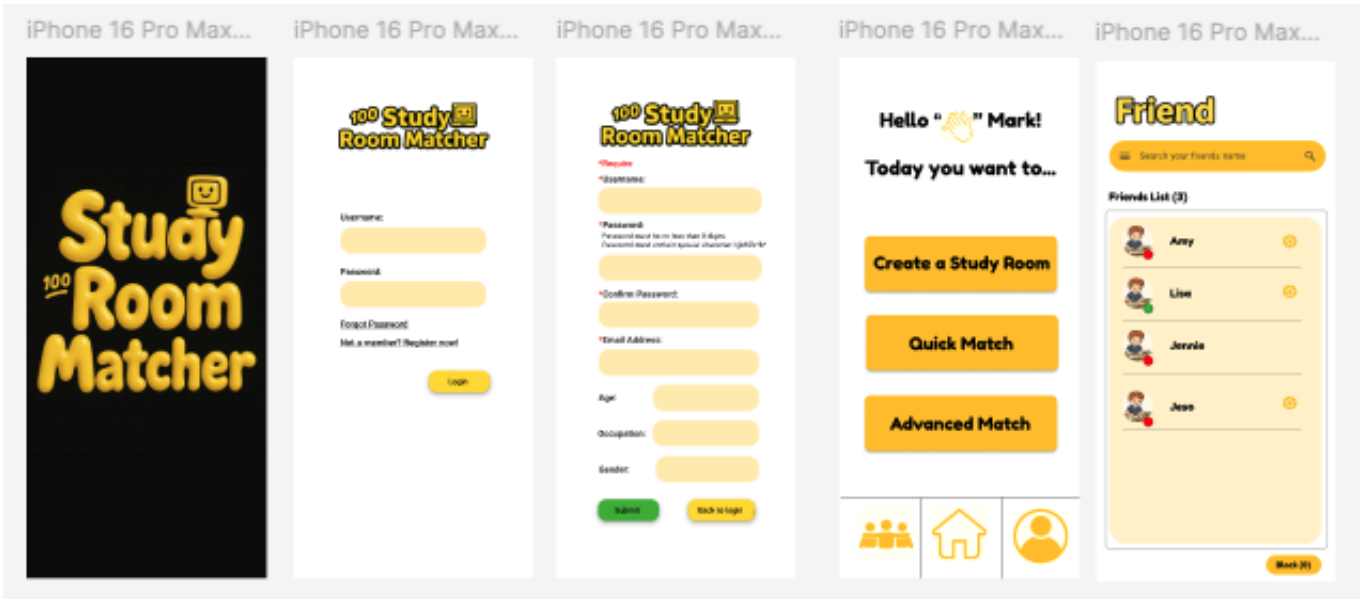
2. **Improved Navigation:**

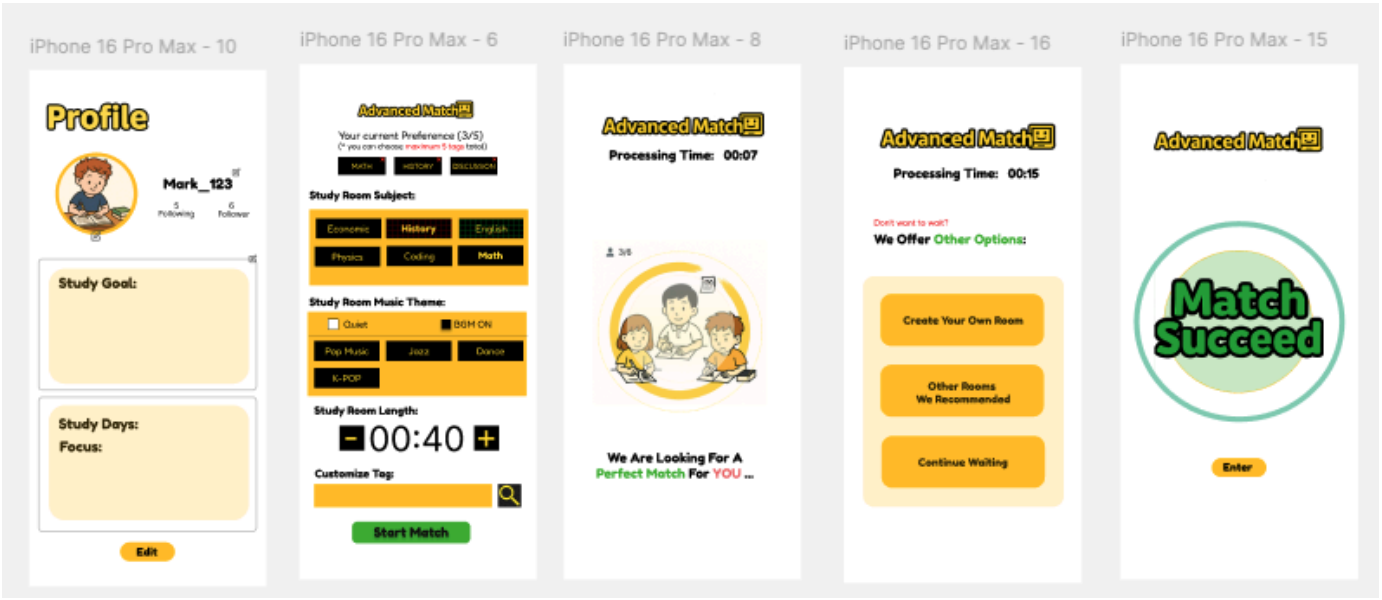
    - Add "Back", "Home" buttons to advanced match, quick match and create your study room feature pages
    - Introduce the "quick match" button to the advanced match feature page in case of users want to change to quick match feature while advanced match processing
    - Introduce the "advanced match" button to the quick match feature page in case of users want to change to the advanced match feature while quick match processing

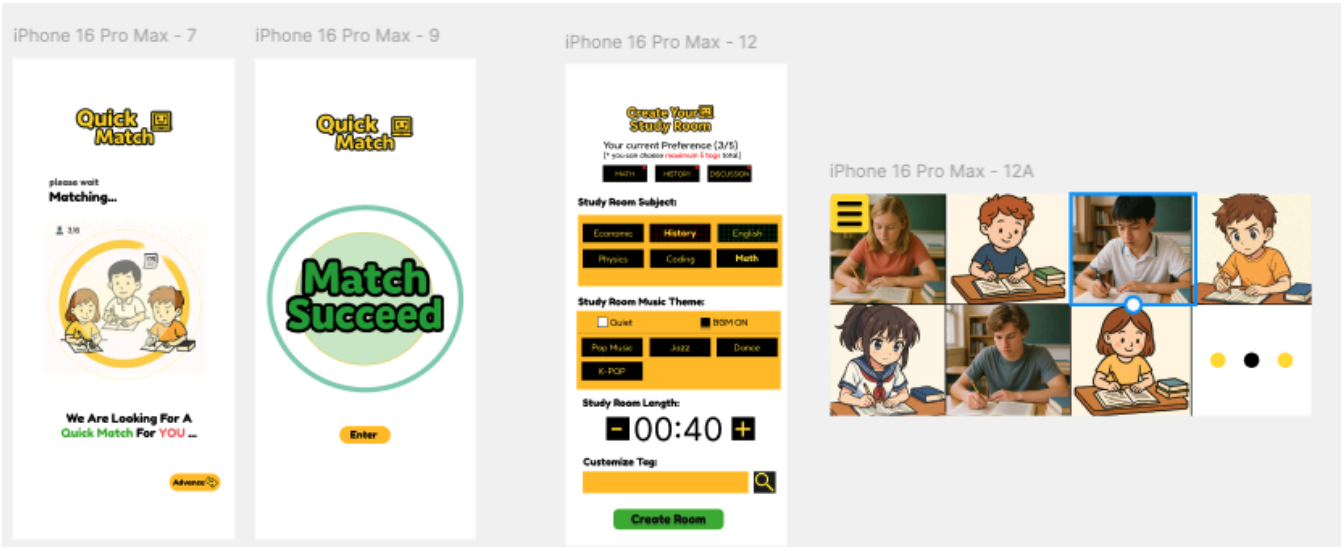
3. **Refined Language and Labels:**
    - Align all the create room tags to “create your study room” to eliminate the inconsistency
    - Clarify the “study days” to “total study days” in the profile page
    - Clarify the “focus” to “current focus” in the profile page
    - Change the "Match Succeed" to more natural phrases like “Match Successful”
    - Change the “Enter” button to “Join Room” button
    - Add a phrase of “Congrats” after match succeed

4. **Modified the color match to reduce confusion**
    - Only highlight the selected tag as yellow, the unselected tags remain light green
    - Remove the yellow background frame to make the page looks more clean

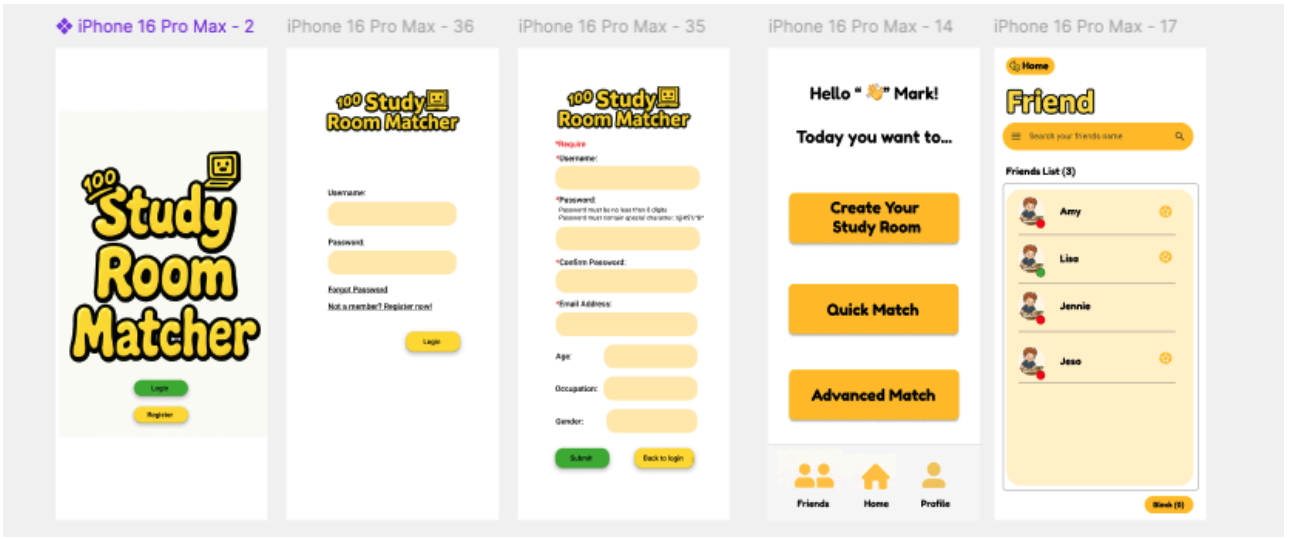
Appendix1 Original High-fidelity Prototype(before improving)

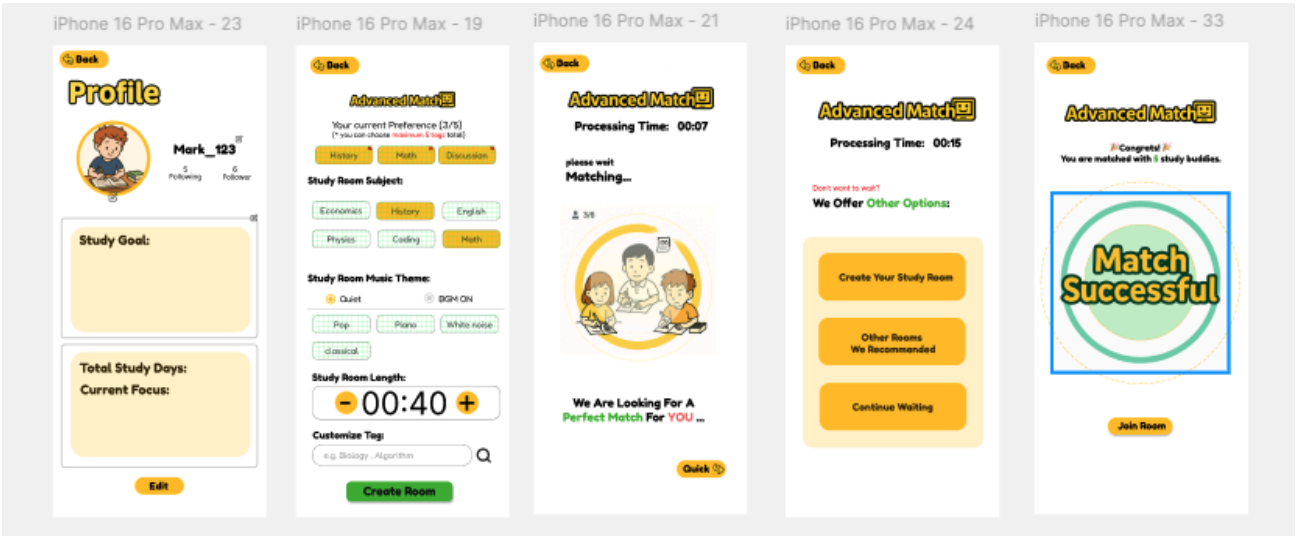


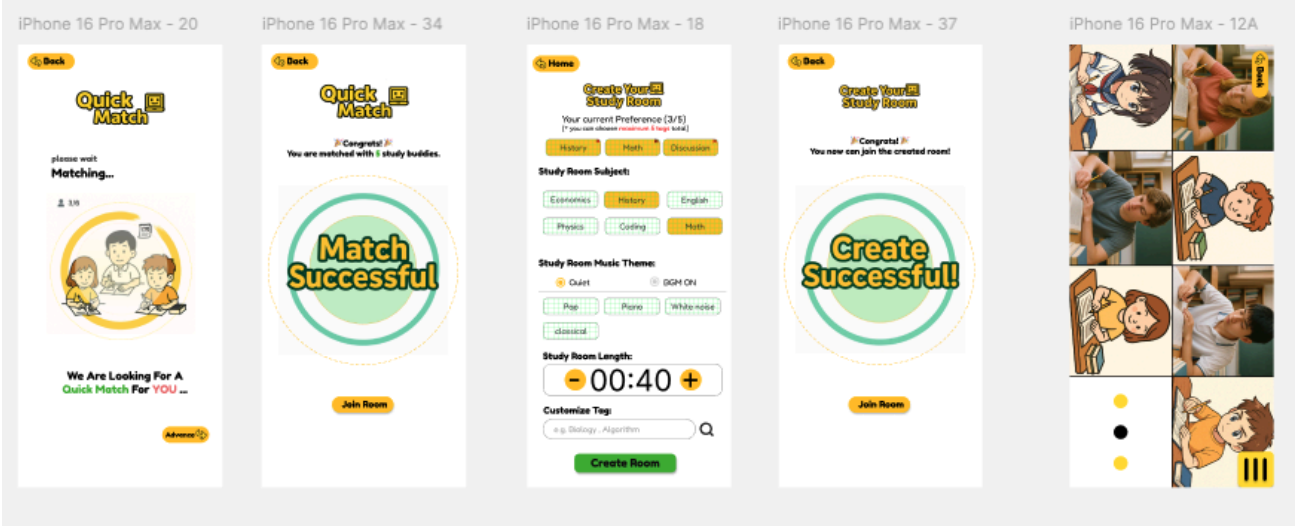




Appendix2 Revised High-fidelity Prototype(final version)







Appendix3 SUS Score Form – Study Room Matcher

Please indicate how strongly you agree or disagree with each of the following statements about your experience using the *Study Room Matcher* prototype. Use the scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

#	Statement	1	2	3	4	5
1	I think I would like to use this system frequently.	☐	☐	☐	☐	☐
2	I found the system unnecessarily complex. *(R)*	☐	☐	☐	☐	☐
3	I thought the system was easy to use.	☐	☐	☐	☐	☐
4	I think I would need the support of a technical person to use this system. *(R)*	☐	☐	☐	☐	☐
5	I felt confident using the system.	☐	☐	☐	☐	☐
6	I found the system unnecessarily inconsistent. *(R)*	☐	☐	☐	☐	☐
7	I felt the system's features were well integrated.	☐	☐	☐	☐	☐

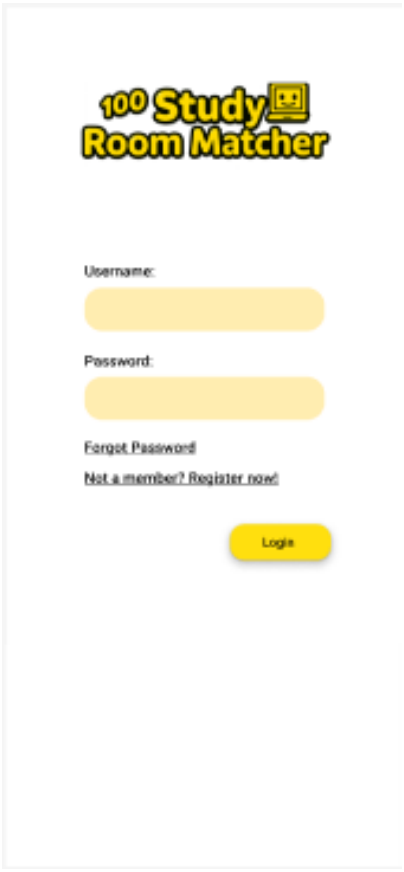
8	I needed to learn a lot of things before I could get going with this system. *(R)*	☐	☐	☐	☐	☐

Instructions for Scoring:

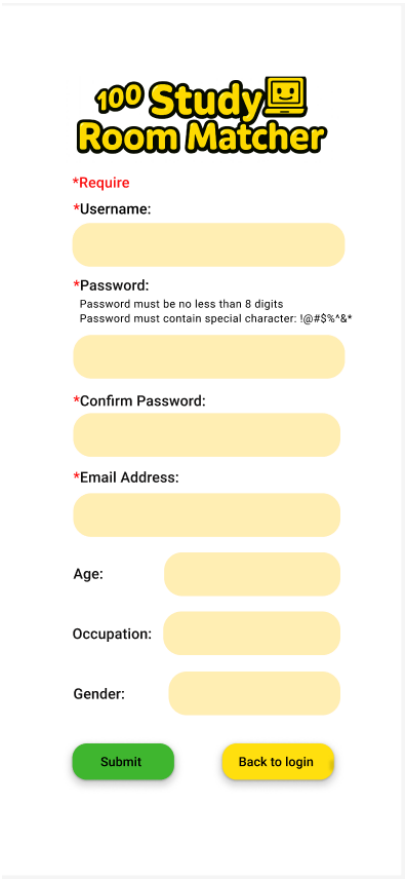
- Reverse the score for negatively worded items marked *(R)* (i.e., 5 becomes 1, 4 becomes 2, etc.).
- Sum all the item scores and multiply by 2.5 to get a usability score out of 100.

implementation link:

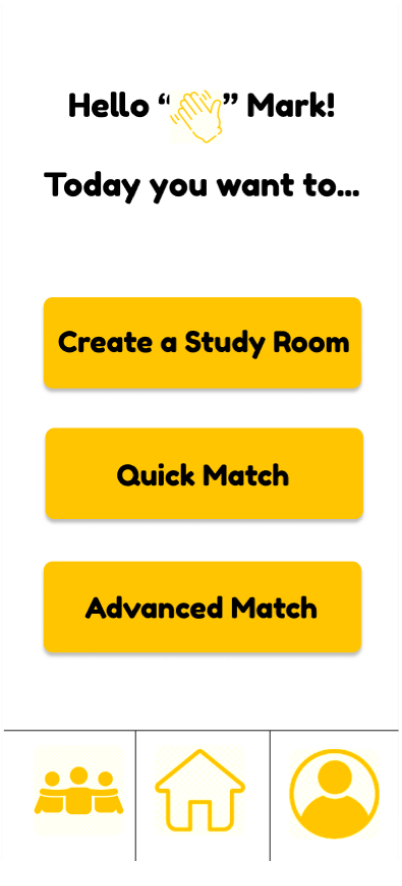
https://drive.google.com/file/d/1tRLcPmRzp_Sid5jL-u8n5O6Y2pw7uhjQ/view?usp=sharing



This is the login page. Please enter the corresponding username and password. If you are a new user, please register. If you forgot your password, click 'Forgot Password'.



This is the registration page. Please enter a unique username and choose a password. Enter the same password in the 'Confirm Password' field. The email address you provide will be used to prevent account loss or for password reset. You may optionally enter your age, occupation, and gender. This data will help us find the best study room for you.

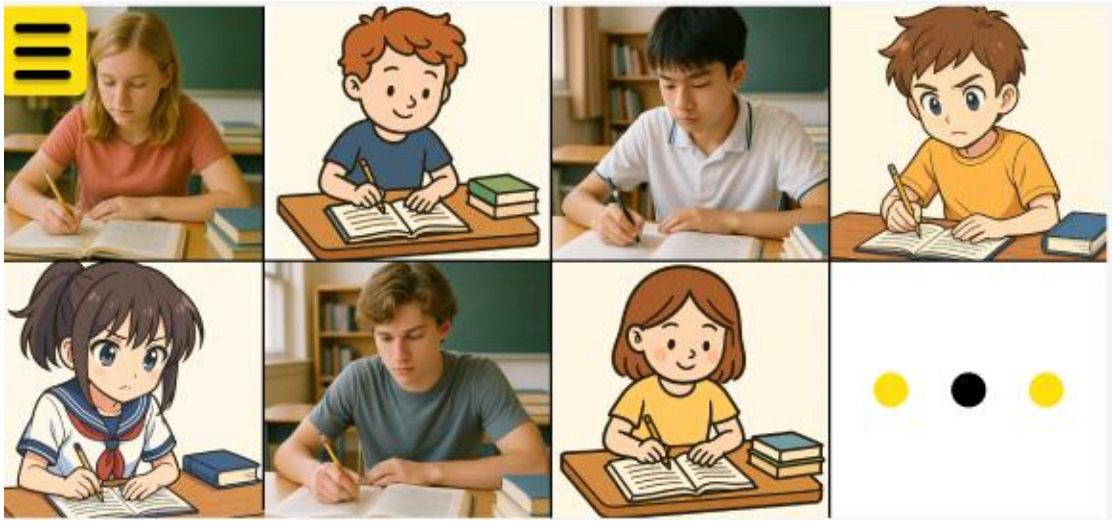


This is the home page, where you can choose to create a study room based on your needs, join a study room at random, or join a current study room that suits your needs. The three icons at the bottom, from left to right, are the Friends page, Home page, and Profile page. You can access them as needed.

This is the Friends page, where you can track your friends' activities. You can search for your friends using the search bar at the top. The colored dot at the bottom-right corner indicates their status: light red means they are offline, and green means they are online. You can also pay extra attention to them by clicking the star to the left of their name.

This is your profile page, where you can change your profile photo and edit your username. You can also see how many people are following you, with the follower count displayed. Additionally, you can set your study goals, track the days you've focused on, and record your study days.

This is the Advanced Match page, where you can choose up to 5 subject tags based on your preferences. You can also select the room's BGM theme. If 'Quiet' is selected, there will be no music. When 'BGM On' is selected, you can choose music based on your preference. You can decide the time length for your stay in the study room. If you can't find the tag you need, you can always use the search bar at the bottom to search for it. After making your selections, click the 'Start Match' button to find your study room.



This is the Study Room page, where you can see all of your study buddies. On the top left is the menu, where you can check your current session duration, the current weather, and toggle your camera on or off. You can also report a user for inappropriate behavior.

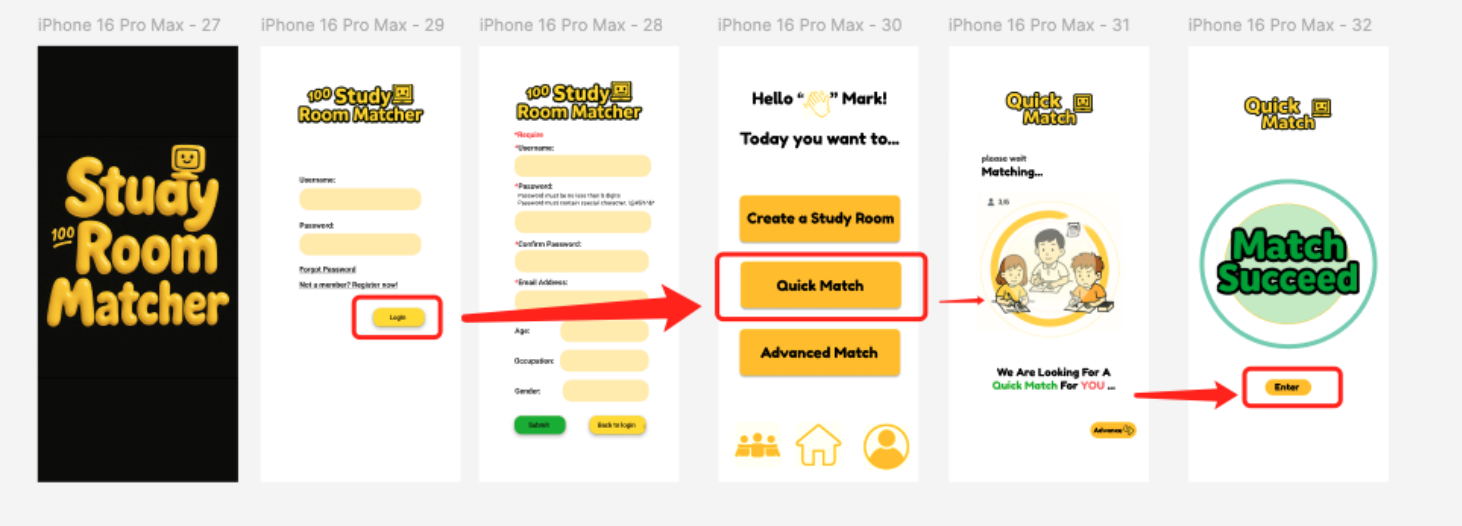
NN/g

Slay_The_Final_Group

Jieyao Heuristic Evaluation Workbook

Reference Framework: Jakob Nielsen's 10 Usability Heuristics

Evalutor: Jieyao Chen
Date:April.7
Product: StudyRoom Matcher Phtotype
User Group: Students
Device :Laptop
Task: Quick Match:



Slay_the final_Group

Heuristic Evaluation Workbook

1 Visibility of System Status

The design should always keep users informed about what is going on, through appropriate feedback within a reasonable amount of time.

- Does the design clearly communicate its state?
- Is feedback presented quickly after user actions?

Issues

- The "Matching..." screen only shows a static "Processing Time" counter, with no animation or feedback.
- The user might think the app is frozen or unresponsive, especially if network delay occurs.

Recommendations

- Add a visual loading indicator (e.g., spinning icon, animation, or pulsing dot).
- Display dynamic status feedback (e.g., "Searching for users...", "Almost there...").
- Show estimated waiting time or a progress ring.

2 Match Between System and the Real World

The design should speak the users' language. Use words, phrases, and concepts familiar to the user, rather than internal jargon. Follow real-world conventions, making information appear in a natural and logical order.

- Will user be familiar with the terminology used in the design?
- Do the design's controls follow real-world conventions?

Issues

- The final confirmation screen says "Match Succeed" which is grammatically incorrect and uncommon in user-friendly interfaces.
- Terminology like "Enter" is vague and lacks contextual meaning.

Recommendations

- Replace "Match Succeed" with "Match Successful" or "You are Matched!"
- Add a sentence that aligns with users' real-world expectations: "You are matched with 2 study buddies."
- Replace "Enter" with "Join Room"

Heuristic Evaluation Workbook

3

User Control and Freedom

Users often perform actions by mistake. They need a clearly marked "emergency exit" to leave the unwanted action without having to go through an extended process.

- Does the design allow users to go back a step in the process?
- Are exit links easily discoverable?
- Can users easily cancel an action?
- Is *Undo* and *Redo* supported?

Issues

- There is no way for the user to cancel or go back once the matching process has started.
- No visible "Back" or "Home" navigation on the Matching screen.

Recommendations

- Include a "Cancel Matching" button.
- Add a persistent back/home icon or swipe-back gesture support.

4

Consistency and Standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform and industry conventions.

- Does the design follow industry conventions?
- Are visual treatments used consistently throughout the design?

Issues

- The "Enter" button on the Match Success screen has a different size and color treatment compared to the "Login" or "Quick Match" buttons.
- Icons and labels are inconsistently styled (some outlined, some filled, some

Recommendations

- Unify the button style (color, radius, padding, font) across all screens.
- Apply consistent icon style and align it with material or iOS design standards.

Heuristic Evaluation Workbook

5 Error Prevention

Good error messages are important, but the best designs carefully prevent problems from occurring in the first place. Either eliminate error-prone conditions, or check for them and present users with a confirmation option before they commit to the action.

- Does the design prevent slips by using helpful constraints?
- Does the design warn users before they perform risky actions?

Issues

- There is no confirmation screen or constraint before beginning the Match.
- Users may accidentally tap "Quick Match" without understanding what will happen.

Recommendations

- Provide a pop-up confirmation: "Are you ready to match now?"
- Include a short tooltip on first-time use explaining "Quick Match" function.

6 Recognition Rather Than Recall

Minimize the user's memory load by making elements, actions, and options visible. The user should not have to remember information from one part of the interface to another. Information required to use the design (e.g. field labels or menu items) should be visible or easily retrievable when needed.

- Does the design keep important information visible, so that users do not have to memorize it?
- Does the design offer help in-context?

Issues

- There is no visual summary of what the Quick Match process will do once the user taps the button.
- The user has to remember what comes next.

Recommendations

- Add a brief description below the "Quick Match" button: "Automatically connects you to study groups based on your time."
- Use icons with labels to visually represent progress steps (e.g., Login > Select > Match >

Heuristic Evaluation Workbook

7 Flexibility and Efficiency of Use

Shortcuts — hidden from novice users — may speed up the interaction for the expert user such that the design can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

- Does the design provide accelerators like keyboard shortcuts and touch gestures?
- Is content and funtionality personalized or customized for individual users?

Issues

- No shortcuts or user preferences available for returning users.
- The process is identical every time, even if the user is familiar.

Recommendations

- Add a "Skip to Match" or "1-click Quick Match" for returning users.
- Allow users to set their preferred study mode and auto-apply it in future sessions.

8 Aesthetic and Minimalist Design

Interfaces should not contain information that is irrelevant or rarely needed. Every extra unit of information in an interface competes with the relevant units of information and diminishes their relative visibility.

- Is the visual design and content focused on the essentials?
- Have all distracting, unnecessary elements been removed?

Issues

- The "Match Succeed" text has a green fill with thick black outline that is visually heavy.
- Text size is disproportionately large.
- The welcome page color should be more light, dark background is too heavy. not to energetic suit for the study type

Recommendations

- Use modern flat typography without outlines.
- Maintain hierarchy using font weight and spacing, not just size or stroke.
- Reduce text size and align with overall minimalist visual identity.

Heuristic Evaluation Workbook

9

Help Users Recognize, Diagnose, and Recover from Errors

Error messages should be expressed in plain language (no error codes), precisely indicate the problem, and constructively suggest a solution.

- Does the design use traditional error message visuals, like bold, red text?
- Does the design offer a solution that solves the error immediately?

Issues

- No error message shown when matching fails or times out.
- No guidance provided if something goes wrong (e.g., no network, no users).

Recommendations

- Implement a failure fallback: "No match found. Try again or switch to Advanced Match."
- Use friendly error visuals (sad emoji, empty state illustrations) with retry options.

10

Help and Documentation

It's best if the system doesn't need any additional explanation. However, it may be necessary to provide documentation to help users understand how to complete their tasks.

- Is help documentation easy to search?
- Is help provided in context right at the moment when the user requires it?

Issues

- The app does not provide any help popups, walkthroughs, or onboarding.
- First-time users are not informed of what "Quick Match" means.

Recommendations

- Include a quick onboarding screen or tooltip on first launch.
- Provide a "?" icon near major buttons for optional help.

NN/g

Nielsen Norman Group

Heuristic Evaluation Workbook

Use this workbook to conduct your own heuristic evaluation.

For each of Jakob's 10 Usability Heuristics, look for specific places where the interface fails to adhere to the guideline. Write your recommendations for how to fix those usability issues.

https://www.nngroup.com/articles/ten-usability-heuristics/

Nielsen Norman Group

Heuristic Evaluation Workbook

EVALUATOR: Yuqian Tan

DATE: April 17, 2025

PRODUCT: Study Room Matcher

TASK: Using Advanced Match

1 Visibility of System Status

The design should always keep users informed about what is going on, through appropriate feedback within a reasonable amount of time.

- Does the design clearly communicate its state?
- Is feedback presented quickly after user actions?

Issues

No real-time feedback for user actions
(no loading indication after clicking "start match"

Recommendations

Add a progress/loading sign after match submission

2 Match Between System and the Real World

The design should speak the users' language. Use words, phrases, and concepts familiar to the user, rather than internal jargon. Follow real-world conventions, making information appear in a natural and logical order.

- Will user be familiar with the terminology used in the design?
- Do the design's controls follow real-world conventions?

Issues

"Match Succeed" sounds robotic or non-native

"Study Days: Focus" label in Friend Profile unclear in meaning

Recommendations

Change "Match Succeed" to more natural phrases like "Match Found!" or "You're All Set!".

Rename profile fields to common terms (e.g., "Total Study Days" and "Current Focus").

Heuristic Evaluation Workbook

3

User Control and Freedom

Users often perform actions by mistake. They need a clearly marked "emergency exit" to leave the unwanted action without having to go through an extended process.

- Does the design allow users to go back a step in the process?
- Are exit links easily discoverable?
- Can users easily cancel an action?
- Is *Undo* and *Redo* supported?

Issues	Recommendations
No back or cancel buttons, preventing users from reversing actions or changing inputs mid-process	Include persistent navigation and cancel buttons at each step

4

Consistency and Standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform and industry conventions.

- Does the design follow industry conventions?
- Are visual treatments used consistently throughout the design?

Issues	Recommendations
Icons and labels (e.g., “Create Room” vs. “Create a Study Room”) are inconsistent	Keep consistent icon use and screen structure for smoother learning

Heuristic Evaluation Workbook

5

Error Prevention

Good error messages are important, but the best designs carefully prevent problems from occurring in the first place. Either eliminate error-prone conditions, or check for them and present users with a confirmation option before they commit to the action.

- Does the design prevent slips by using helpful constraints?
- Does the design warn users before they perform risky actions?

Issues	Recommendations
Users cannot quit the match if they change their mind after matching starts	Add buttons to quit the match

6

Recognition Rather Than Recall

Minimize the user's memory load by making elements, actions, and options visible. The user should not have to remember information from one part of the interface to another. Information required to use the design (e.g. field labels or menu items) should be visible or easily retrievable when needed.

- Does the design keep important information visible, so that users do not have to memorize it?
- Does the design offer help in-context?

Issues	Recommendations

Heuristic Evaluation Workbook

7

Flexibility and Efficiency of Use

Shortcuts — hidden from novice users — may speed up the interaction for the expert user such that the design can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

- Does the design provide accelerators like keyboard shortcuts and touch gestures?
- Is content and funtionality personalized or customized for individual users?

Issues	Recommendations

8

Aesthetic and Minimalist Design

Interfaces should not contain information that is irrelevant or rarely needed. Every extra unit of information in an interface competes with the relevant units of information and diminishes their relative visibility.

- Is the visual design and content focused on the essentials?
- Have all distracting, unnecessary elements been removed?

Issues	Recommendations
Some screens don't show the selected tags prominantly due to the colors alike	Differentiate the selected tags by changing the colors

Heuristic Evaluation Workbook

9

Help Users Recognize, Diagnose, and Recover from Errors

Error messages should be expressed in plain language (no error codes), precisely indicate the problem, and constructively suggest a solution.

- Does the design use traditional error message visuals, like bold, red text?
- Does the design offer a solution that solves the error immediately?

Issues	Recommendations

10

Help and Documentation

It's best if the system doesn't need any additional explanation. However, it may be necessary to provide documentation to help users understand how to complete their tasks.

- Is help documentation easy to search?
- Is help provided in context right at the moment when the user requires it?

Issues	Recommendations
No onboarding or tooltips provided	Add short onboarding tips on first use

NN/g

Nielsen Norman Group

Heuristic Evaluation Workbook

Use this workbook to conduct your own heuristic evaluation.

For each of Jakob's 10 Usability Heuristics, look for specific places where the interface fails to adhere to the guideline. Write your recommendations for how to fix those usability issues.

Nielsen Norman Group

Heuristic Evaluation Workbook

Evaluator: Zhaoqi Gao
Date: 4/18/2025
Product: Study room matcher
Task: Create study room

1

Visibility of System Status

The design should always keep users informed about what is going on, through appropriate feedback within a reasonable amount of time.

- Does the design clearly communicate its state?
- Is feedback presented quickly after user actions?

Issues	Recommendations
The user is not notified after the room is created.	Add a page for the user to confirm room creation.

2

Match Between System and the Real World

The design should speak the users' language. Use words, phrases, and concepts familiar to the user, rather than internal jargon. Follow real-world conventions, making information appear in a natural and logical order.

- Will user be familiar with the terminology used in the design?
- Do the design's controls follow real-world conventions?

Issues	Recommendations
The labels on the 'Choose Room' page are not clear regarding the usage of each option.	Use better icons and include the function name for each icon.

Heuristic Evaluation Workbook

3

User Control and Freedom

Users often perform actions by mistake. They need a clearly marked "emergency exit" to leave the unwanted action without having to go through an extended process.

- Does the design allow users to go back a step in the process?
- Are exit links easily discoverable?
- Can users easily cancel an action?
- Is *Undo* and *Redo* supported?

Issues	Recommendations
Once the user chooses to create a room, there is no button to back out.	Add a home button on the 'Create Room' page.

4

Consistency and Standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform and industry conventions.

- Does the design follow industry conventions?
- Are visual treatments used consistently throughout the design?

Issues	Recommendations
The style in the application is not consistent.	Reformat all the text styles to maintain consistency.

Heuristic Evaluation Workbook

5

Error Prevention

Good error messages are important, but the best designs carefully prevent problems from occurring in the first place. Either eliminate error-prone conditions, or check for them and present users with a confirmation option before they commit to the action.

- Does the design prevent slips by using helpful constraints?
- Does the design warn users before they perform risky actions?

Issues	Recommendations
In the BGM selection section, it's unclear which BGM has been chosen, similar to the subject section.	Make it clearer which labels have been selected and which have not.

6

Recognition Rather Than Recall

Minimize the user's memory load by making elements, actions, and options visible. The user should not have to remember information from one part of the interface to another. Information required to use the design (e.g. field labels or menu items) should be visible or easily retrievable when needed.

- Does the design keep important information visible, so that users do not have to memorize it?
- Does the design offer help in-context?

Issues	Recommendations
The app does not keep track of the subjects the user has selected in the past.	Arrange the tags according to the user's habits, so they can see the most used tags first.

Heuristic Evaluation Workbook

7

Flexibility and Efficiency of Use

Shortcuts — hidden from novice users — may speed up the interaction for the expert user such that the design can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

- Does the design provide accelerators like keyboard shortcuts and touch gestures?
- Is content and funtionality personalized or customized for individual users?

Issues	Recommendations
The app does not remember the user's previous choices.	Save the previous room creation details as the layout for the current room creation.

8

Aesthetic and Minimalist Design

Interfaces should not contain information that is irrelevant or rarely needed. Every extra unit of information in an interface competes with the relevant units of information and diminishes their relative visibility.

- Is the visual design and content focused on the essentials?
- Have all distracting, unnecessary elements been removed?

Issues	Recommendations
The tags seem a bit too heavy for the theme.	Keep it in a lighter tone.

Heuristic Evaluation Workbook

9

Help Users Recognize, Diagnose, and Recover from Errors

Error messages should be expressed in plain language (no error codes), precisely indicate the problem, and constructively suggest a solution.

- Does the design use traditional error message visuals, like bold, red text?
- Does the design offer a solution that solves the error immediately?

Issues	Recommendations
There is no indicator of how many music options the user can choose from, or whether the music is considered a tag.	Clarify that music tags are different from theme tags.

10

Help and Documentation

It's best if the system doesn't need any additional explanation. However, it may be necessary to provide documentation to help users understand how to complete their tasks.

- Is help documentation easy to search?
- Is help provided in context right at the moment when the user requires it?

Issues	Recommendations
Currently, there is no popup or user instructions inside the app.	Add a notification on the side to guide the user during their first time.

Summary of Heuristic Evaluation

Based on heuristic evaluations by Zhaoqi, Jieyao, and Yuqian, here is the heuristic violations summary.

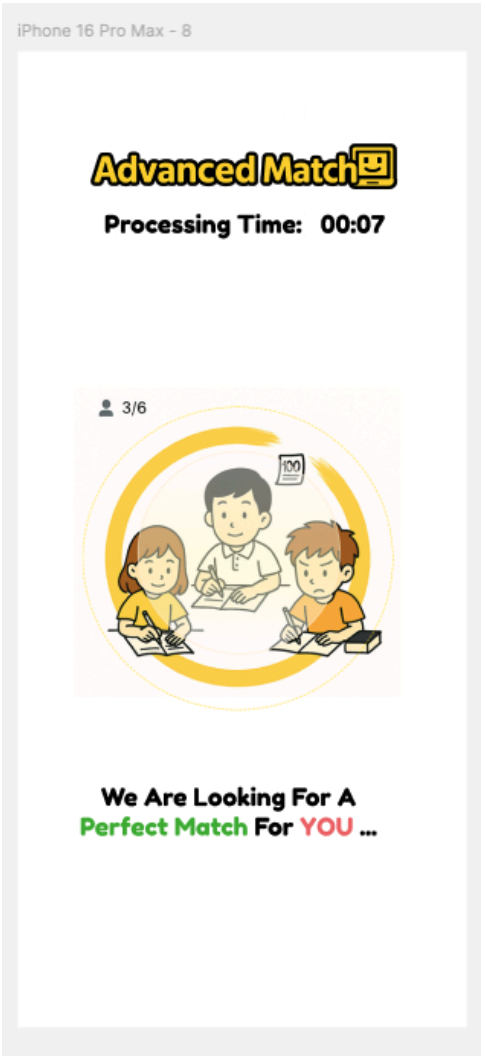
Visibility of System Status

Reported Issues:

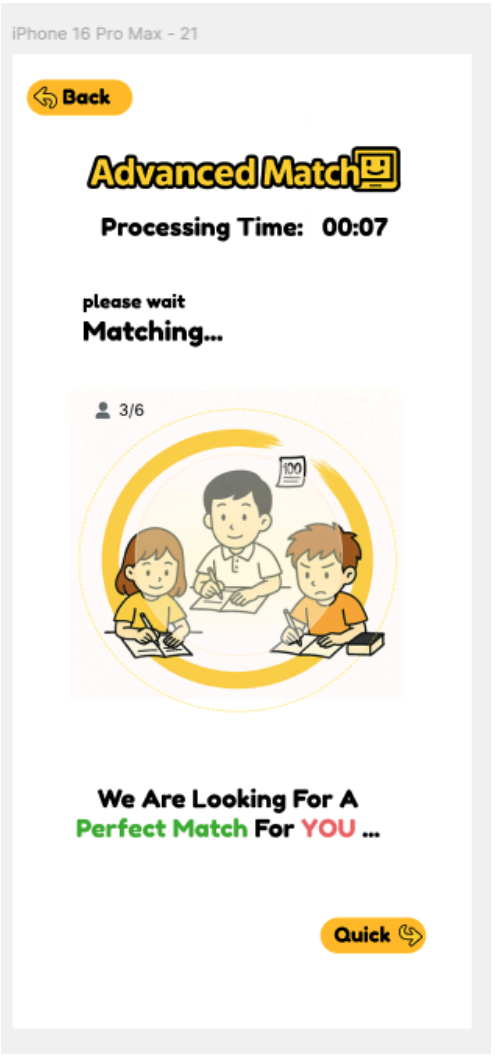
- No feedback during matching

Modification: We added the “please wait, matching” phrase to the advanced match processing page to provide feedback so that the user knows matching is in progress. It largely increases the visibility of system status.

Original Prototype:



Revised Prototype:



Match Between System and the Real World

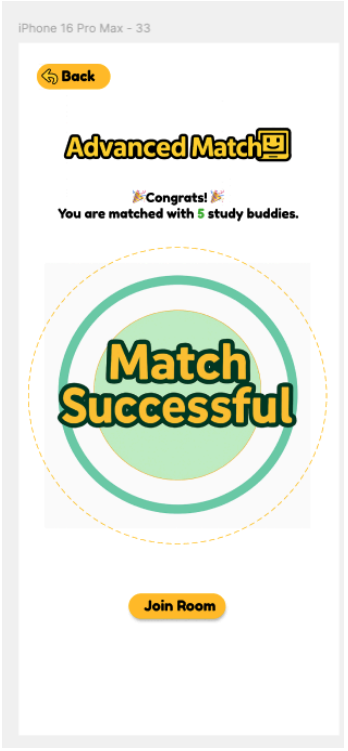
Reported Issues:

- Unnatural phrases like “Match Succeed”
- Confusing labels like “Enter” or “Focus”

Modification1: We changed the phrase “Match Succeed” to a more natural phrase “Match Successful” to give real world users a more direct result.

Original Prototype:

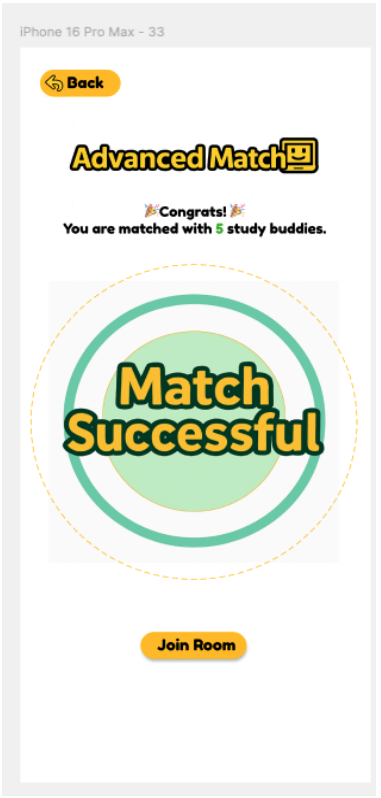
Revised Prototype:

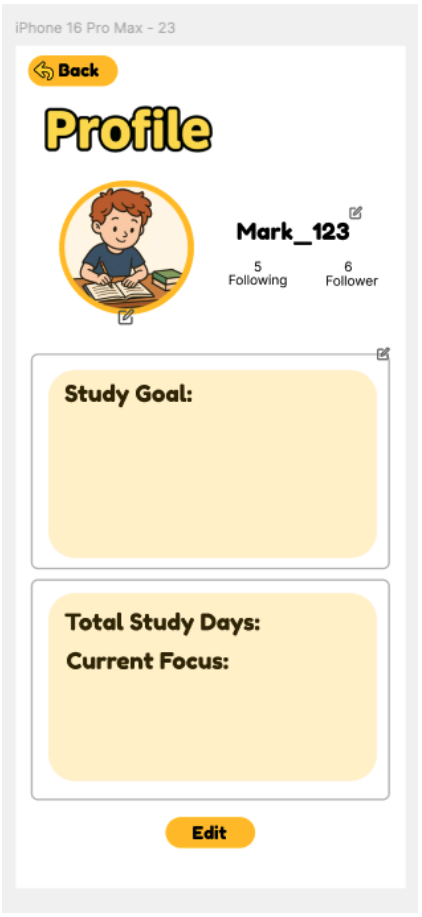


Modification2: We changed the label name of “Enter” to “Join Room” to eliminate the confusion of the label naming. Also, label names change from “Focus” to “Current Focus”; “Study Days” to “Total Study Days” to enhance understanding of the button contents.

Original Prototype:

Revised Prototype:





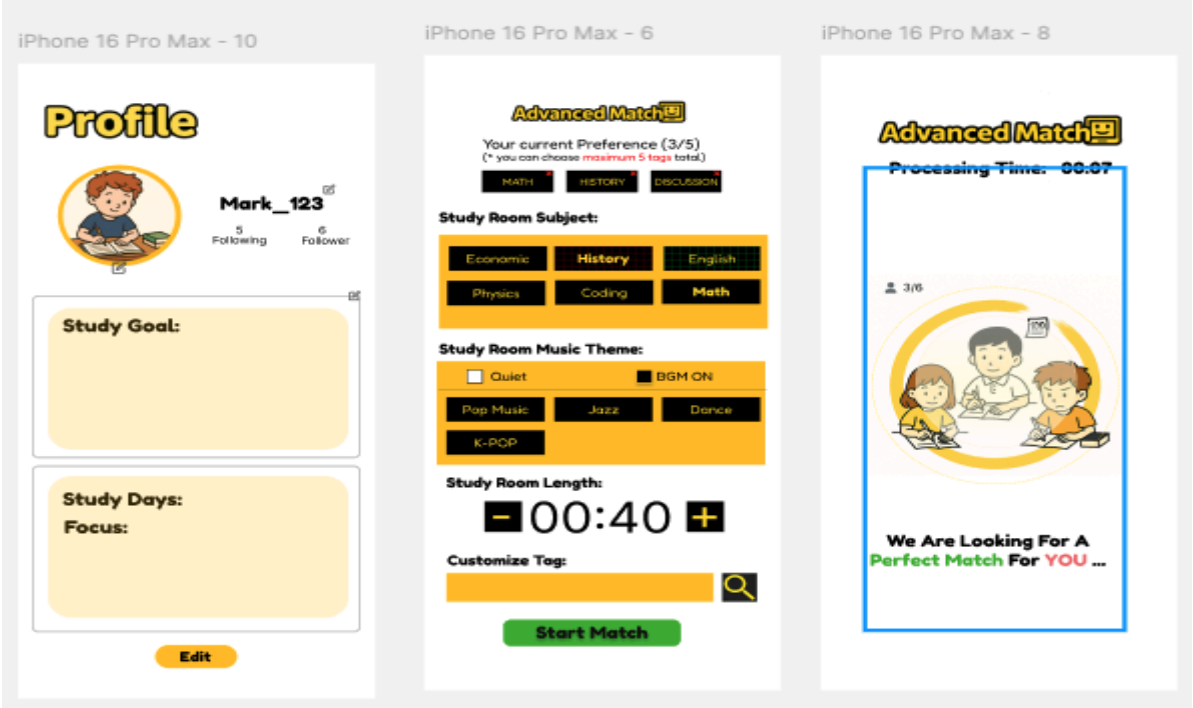
User Control and Freedom

Reported Issues:

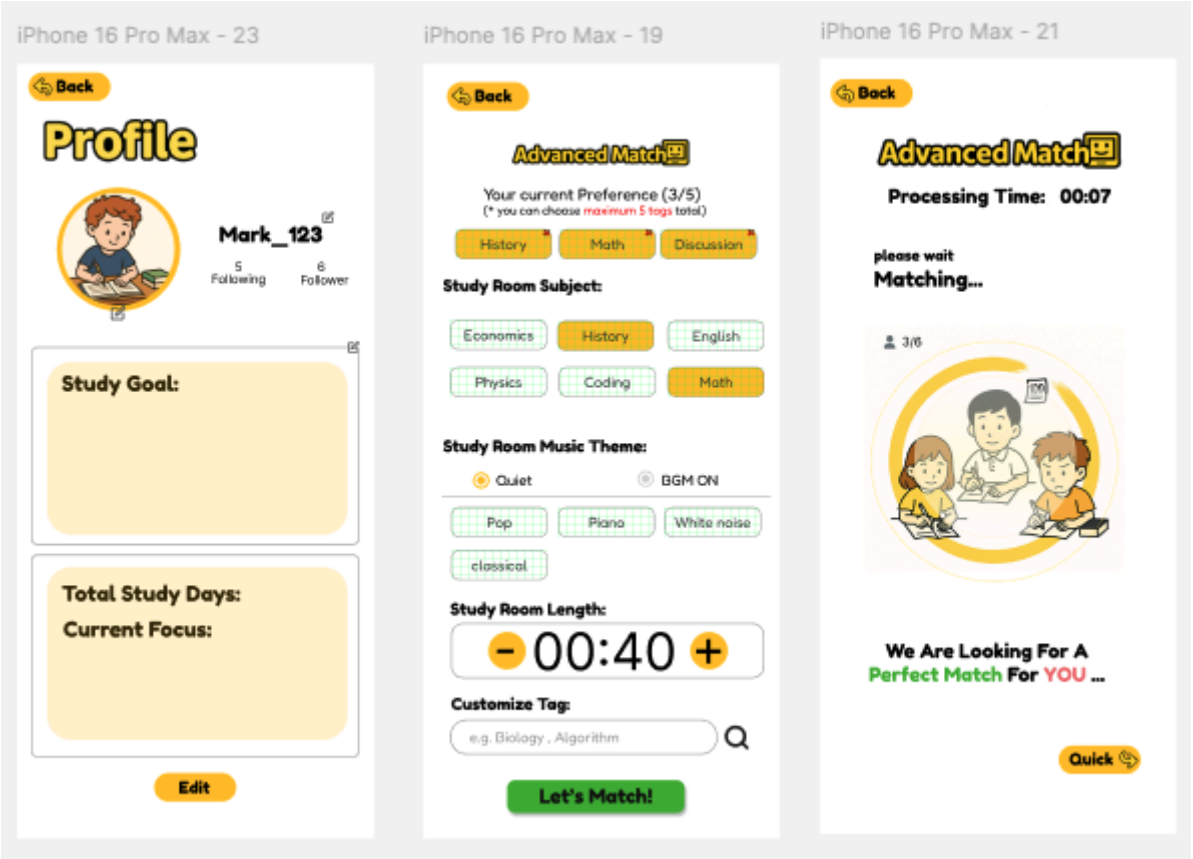
- No cancel/back/home buttons
- No way to exit a process once started

Modification1: We added a “Back” button to allow the backtracking of the steps so that users can feel more control over the operation process.

Original Prototype:

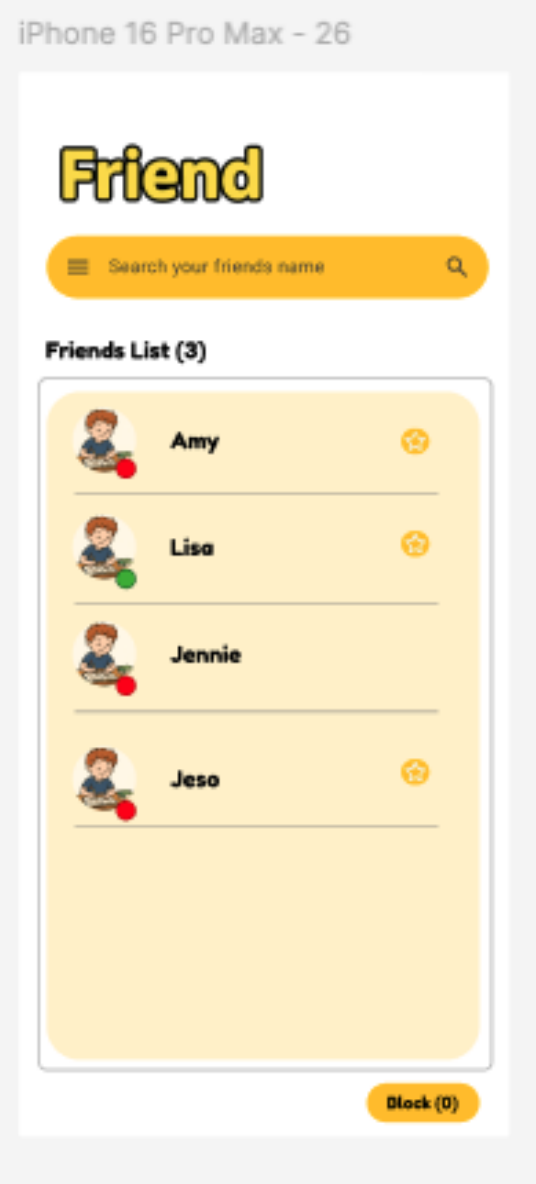


Revised Prototype:

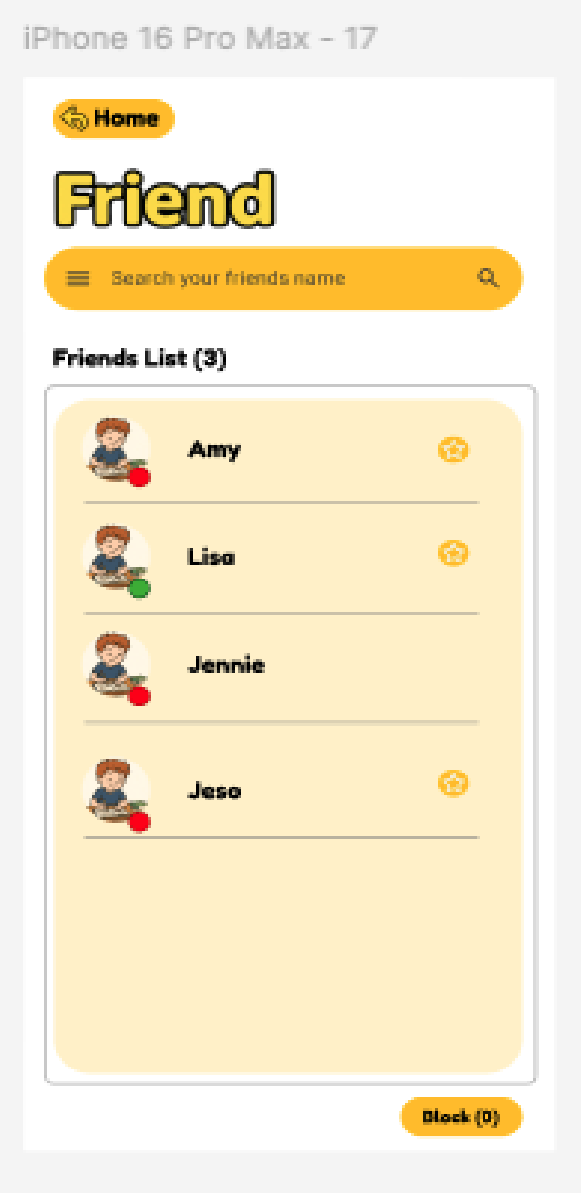


Modification2: We added a “Home” button on the Friend page to navigate user back to the Home page through an easy click.

Original Prototype:



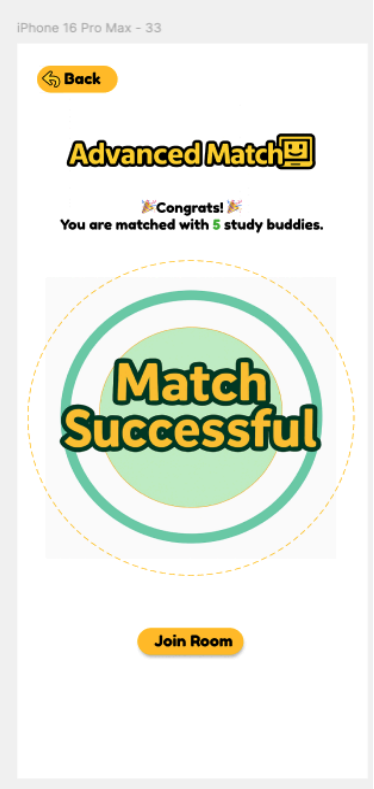
Revised Prototype:

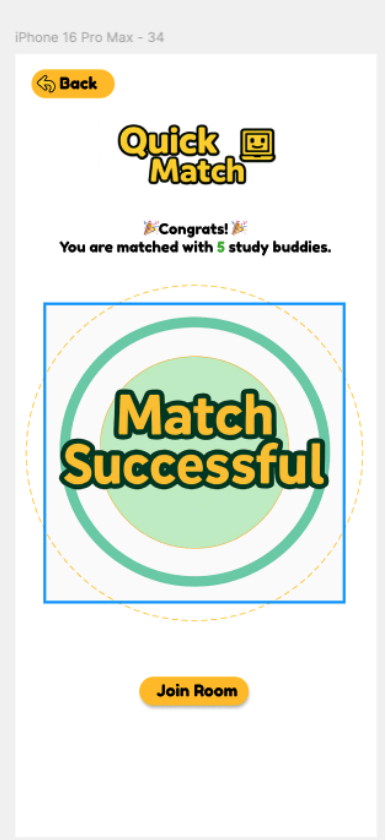


Modification3: We added a “Back” button for the matching process to provide more options for the users. Users can change their mind whenever they want by clicking the “Back” button.

Original Prototype:

Revised Prototype:





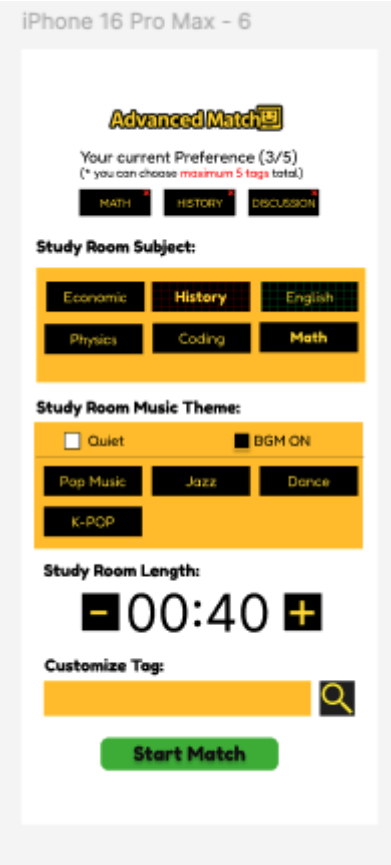
Consistency and Standards

Reported Issues:

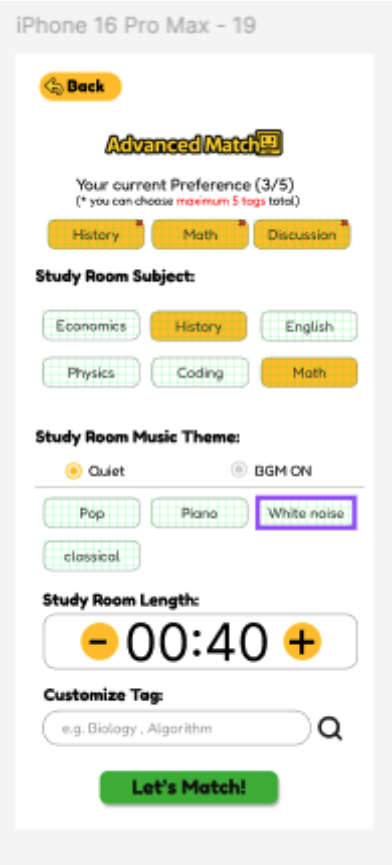
- Inconsistent icon, button styles, and font treatments
- Varying terminology (“Create Room” vs “Create Study Room”)

Modification1: We changed the font and frame style from sharp rectangle to a rounder style, which is more consistent with our logo design.

Original Prototype:

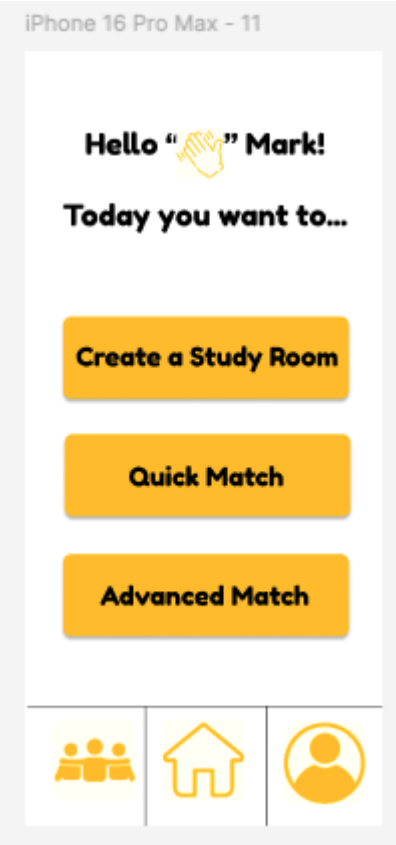


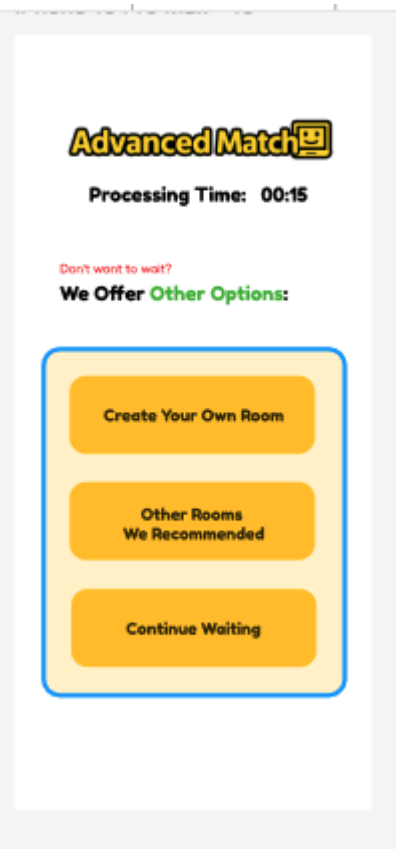
Revised Prototype:



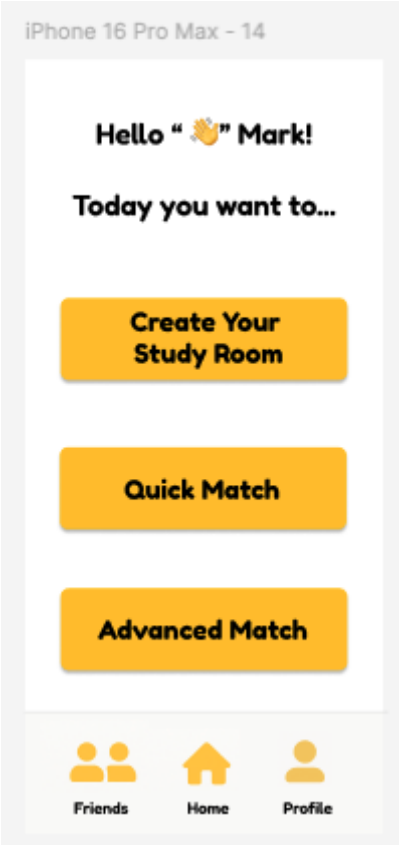
Modification2: To show the consistency and reduce the confusion, we align all the term from “create room” to “create your study room”

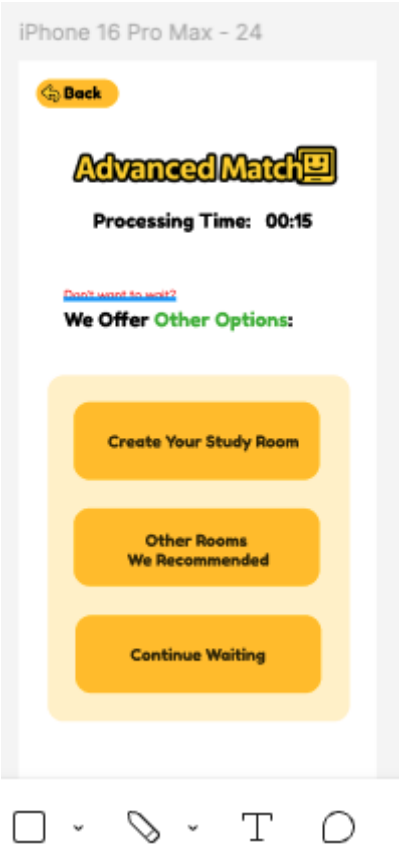
Original Prototype:





Revised Prototype:





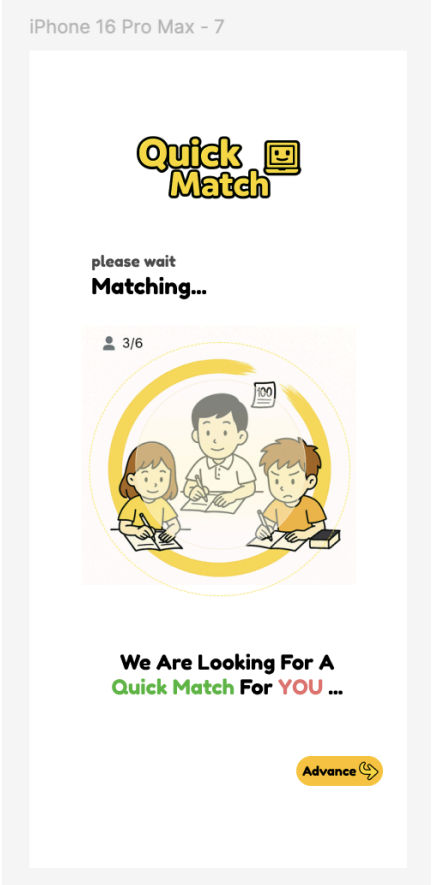
Error Prevention

Reported Issues:

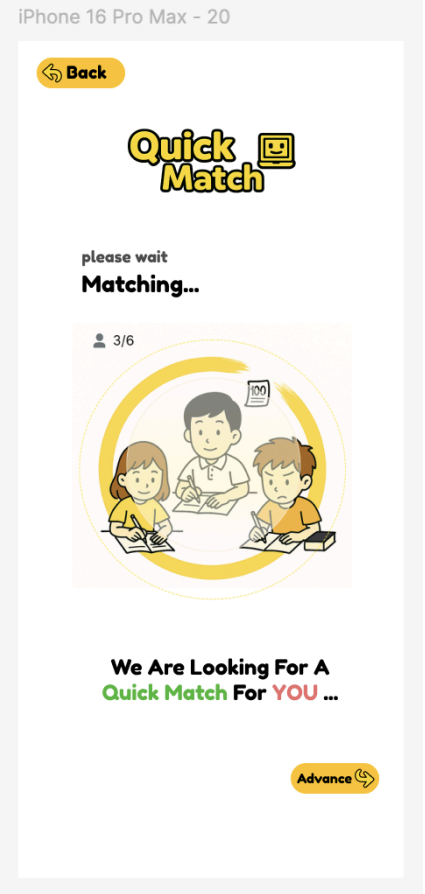
- No confirmation before Quick Match
- No limits or warnings for tag over-selection

Modification1: Add a “back” button for the user if they accidentally quick, or they want to make another change in the middle. By doing this, we can prevent the users from getting into a match by mistakes.

Original Prototype:



Revised Prototype:



Modification2(Implement in the future): We are planning to provide a pop-up confirmation: "Are you ready to match now?" or include a short tooltip on first-time use explaining the "Quick Match" function. By doing so, we can visibly show to the users that the amount of selected tags has reached the limit.

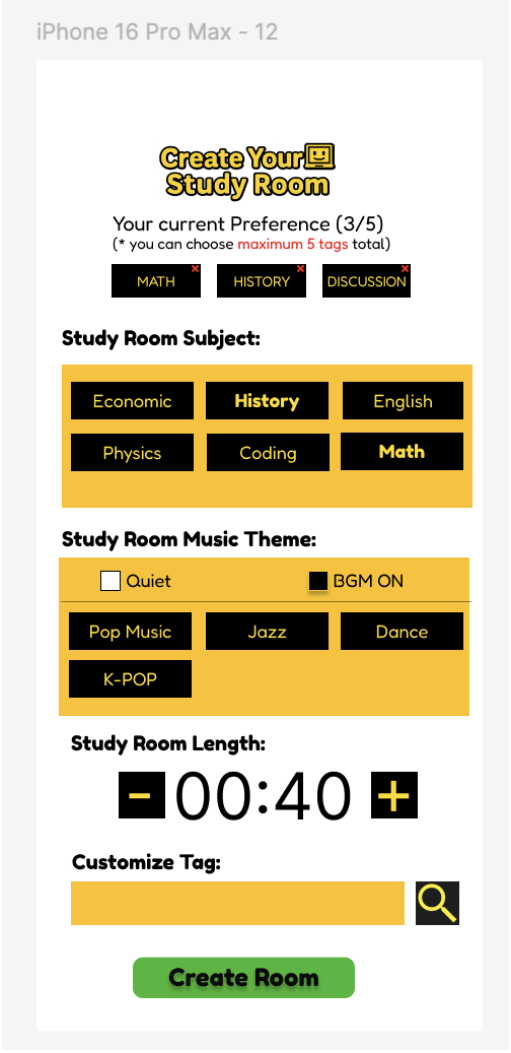
Recognition Rather Than Recall

Reported Issues:

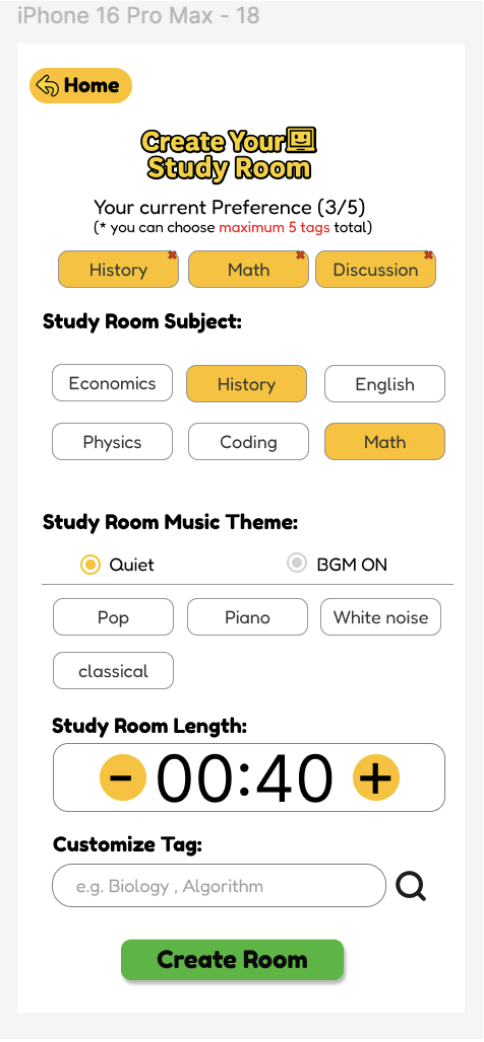
- Selected tags are hard to see
- App does not remember previously selected subjects/tags

Modification1: We made the selected tags more visible and Took care of the layout and formatting. The new layout is easier for users to differentiate the selected tags from the options, which eliminate the users' confusion.

Original Prototype:



Revised Prototype:



Modification2(Implement in future):

- Add a brief description below the "Quick Match" button: "Automatically connects you to study groups based on your time."
- Use icons with labels to visually represent progress steps (e.g., Login > Select > Match > Join).

Flexibility and Efficiency of Use

Reported Issues:

- No shortcut options for returning users
- Same process every time

Modification(Implement in the future): Allow users to set their preferred study mode and auto-apply it in future sessions. We aim to make our application more efficient and simplify the process of matching in the future.

Aesthetic and Minimalist Design

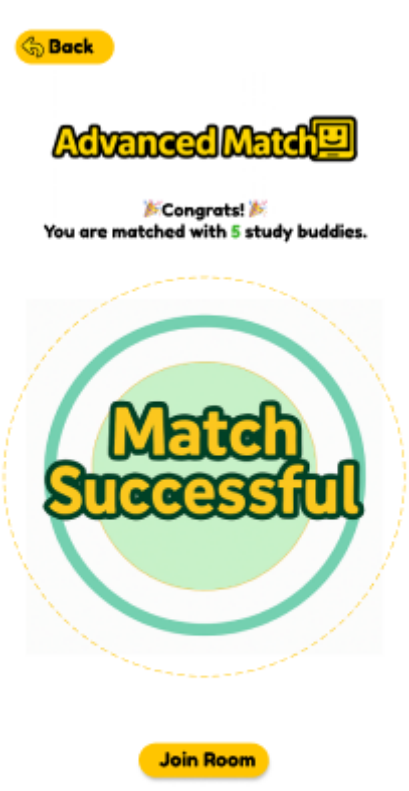
Reported Issues:

- Bold tags and outlined text create visual clutter
- "Match Succeed" visual is too heavy

Modification: We change the logo style to make "Match Succeed" lighter to make the user feel more relaxed when they match successfully.

Original Prototype:

Revised Prototype:



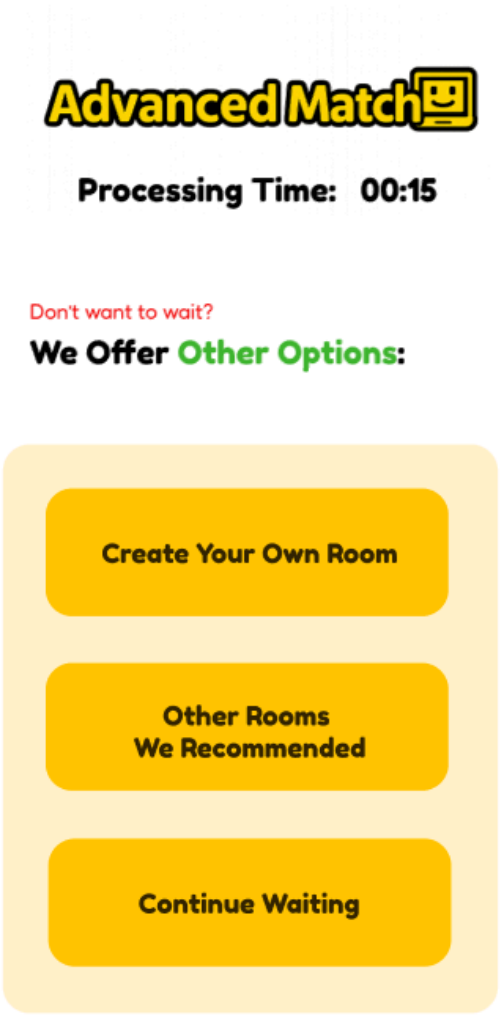
Help Users Recognize, Diagnose,and Recover from Errors

Reported Issues:

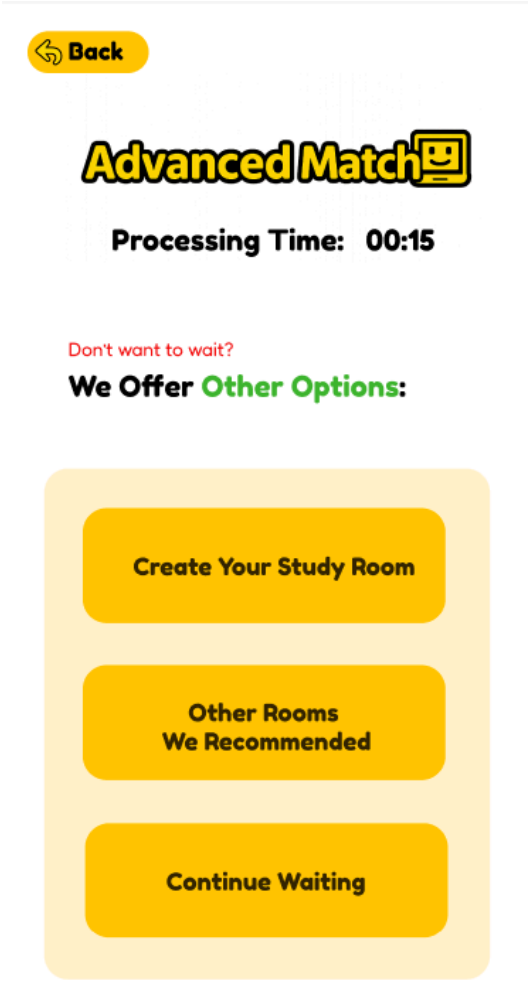
- No error messages if matching fails
- No retry or fallback options

Modification: We added a “back” button for the wait page to provide more options for users if they want to change their mind while in the matching process. The change that we made improved the flexibility of the app.

Original Prototype:



Revised Prototype:



Help and Documentation

Reported Issues:

- No onboarding for new users
- No explanations for buttons/features

Modification1: We added an explanation page to help new users get all the information they need for our application when they first use it.(Guidance)

Modification2 (Implement in the future): We plan to add a prompt window that will automatically pop up when the user visits the page for the first time. This will help users learn and understand the features thoroughly on mobile.