

RESEARCH ASSIGNMENT REPORT

HEP509 – Human Factors



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INTRODUCTION

Board games have shown a steady increase in popularity over the years with their ability to allow socialising between friends and family to flourish. In conjunction with the ever-growing world of technology, there has been a birth of several different products and services which allow games to play their board games online. One such popular website is Board Game Arena.

Board Game Arena

Board Game Arena is a website which allows gamers to play their favourite board games online. Founded in 2010 the popular site hosts tens of thousands of games each day. The website has an extensive library of board games for users to play in the browser with no need for any external software, depending on the game these can be played either solo or with others. The website offers the ability to add friends, message other users and post on forums.

The website provides great functionality for its users however reviewing the website has revealed several areas for improvement in the user experience which are believed would highly benefit its users.

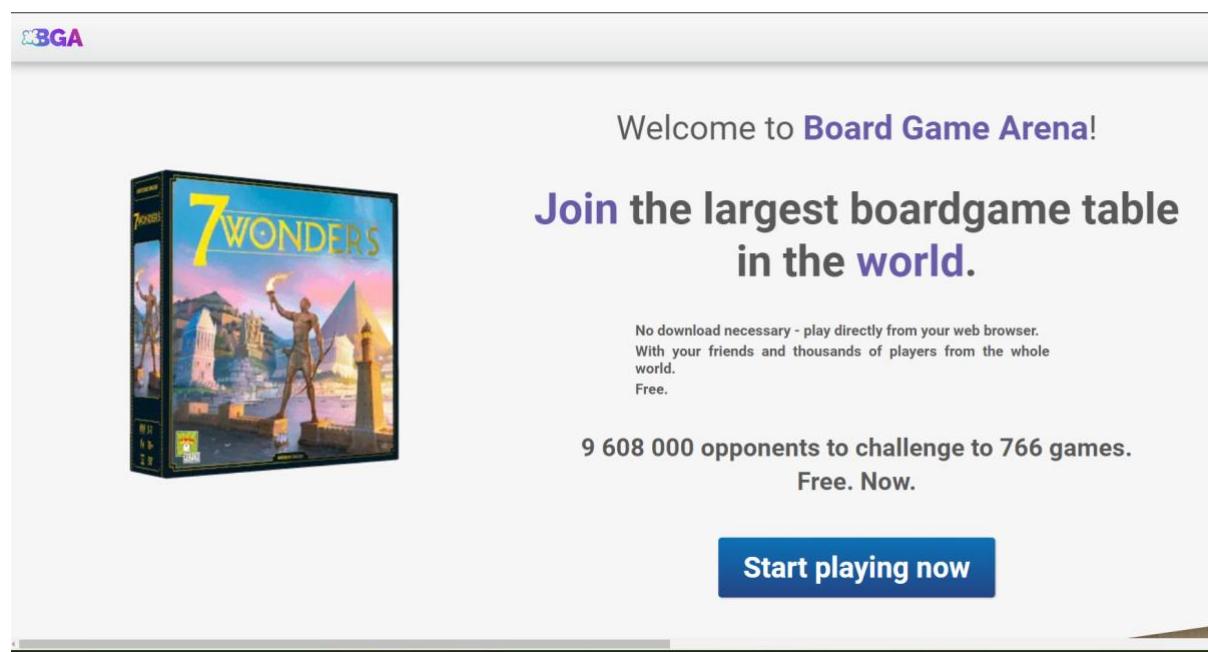


Figure 1. 1 - Board Game Area Landing Page (Board Game Arena, n.d.)

Research Focus Justification

The necessity for this research exercise on Board Game Arena comes from the desire to build upon the already sound functionality. It is believed that the research outlined in this report will inform design changes which will see a significant improvement in the user experience. Some initial online research has shown that users are not the fondest of the current UX/UI design.

A screenshot of a Reddit post in the [r/boardgames](#) subreddit. The post is titled "New Board Game Arena UI". The original poster asks, "Anyone else having problems figuring out the new BGA user interface?". They mention that the last interface was confusing enough, but recent updates have made it borderline unusable, with their group spending 5 minutes trying to find a table they created. Two replies follow. The first reply, from a user who has upvoted 13 times, states that the old UI wasn't great but at least let you get things done, while the new one is bad from a UI perspective and hard to use. The second reply, from a user who has upvoted 2 times, discusses how designers create boated UIs that display less information, forcing users to zoom out significantly. They also note that developers do not use the UI themselves, catering only to new users, which has led to a decline in UX for expert players as useful features become worse. The reply ends with a statement that POS! (Pointless) and includes a link.

Figure 1.2 - User Feedback on UX from Reddit

The feedback above shows clear unhappiness with the UX from its users with a clear desire for functionality, simplicity, and clarity.

Scope of Research

As part of this report, the following exercises will be completed:

- Initial Research on Website Target Audience
- Heuristic Evaluation of Website
- Development of a Robust Usability Test Plan
- Critical Evaluation of the Research Plan

Research Questions

For the research to have a structured approach, research questions must be set out to ensure a central focus for the research team to work towards.

For this plan, they are as follows:

- What impact does the landing page design have on new users' sign-up rate?
- How can effective onboarding improve user retention on the site and create a more enjoyable experience?
- How can improvements to consistency in layout and UI elements improve the user experience on the site?

Target Audience Research

Some initial research was conducted in advance of the heuristic evaluation. This was done so that the target audience was established for the website to ensure that research/testing thereafter could be conducted through the lens of the target audience making the whole process more user-centric. The research methods utilised for this are proposed to be literature/online reviews and questionnaires.

Heuristic Evaluation

The heuristic evaluation of the website, from the perspective of the target audience,x was undertaken using Jakub Nielsen's 10 Heuristics for User Interface Design (Nielsen, 1994). This was a vital step in establishing the main areas for improvement to target throughout the research phase.

Development of Usability Testing

The findings are to be used to inform the development of the usability testing plan. This plan will comprise adopting various research methods to gather data from the target audience. It will include a data analysis and participant recruitment strategy, both of which are key steps to ensuring that the test is user-centric and produces useful actionable results for the design team.

INITIAL RESEARCH AND EVALUATION

As part of the initial research, an evaluation of Board Game Arena both a literature/online review and heuristic evaluation was undertaken. These were both used to form the user persona (Appendix A) and areas of improvement for usability testing. This persona will help to humanise the user base for the designer of the usability testing but will also ensure clear user goals and pain points to ensure a user-centric design.

Literature and Online Review

Initial online research shows board games have grown in popularity over the years with this is anticipated to continue (Figure 2.1).

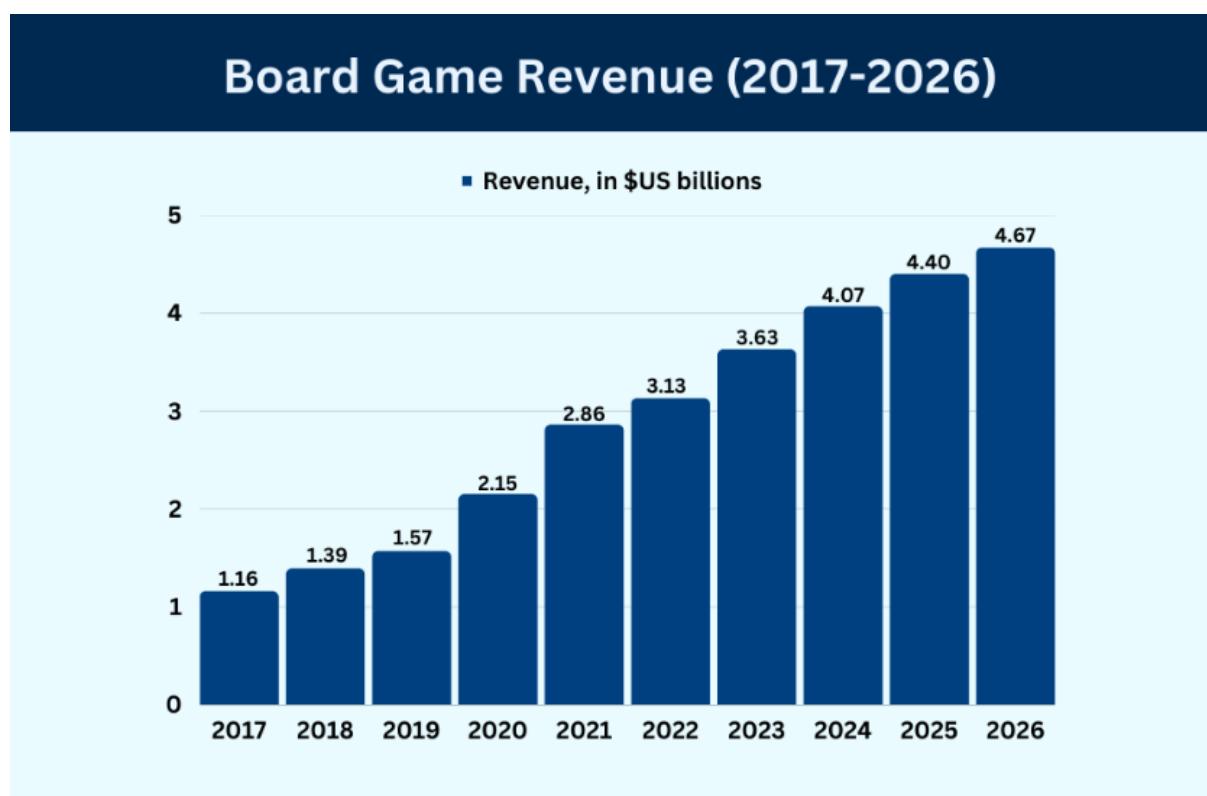


Figure 2.1 - Board Game Revenues, 2017-2026 (Statista, n.d.)

This indicates that there is a wider audience of new gamers looking to get into playing board games which could be facilitated by playing online.

Research conducted by Cross et al (Cross et al., 2023) showed that board gamers tended to be middle-aged, higher-educated, white males. Further findings identified that gamers preferred to play shorter competitive games with around 3-4 players. This research indicates that some focus should be considered for promoting the shorter games aimed at small/mid-sized groups that could be utilised to improve the user experience on the site.

Heuristic Evaluation

This section provides a summary of the main improvement areas identified from the heuristic evaluation with the full detailed evaluation available in the Appendix (Appendix B)

- Onboarding could benefit from clear and plentiful exit points to promote user freedom and a structure to provide users with information about the status of their onboarding.
- The main call to action on the homepage is misleading and could use a redesign to reflect its purpose more accurately and build trust with users.
- The verification process could be streamlined or redesigned to make the user experience feel less disjointed.
- Log out button is not easily accessible to users which could be confusing and frustrating for users. The icon for the user settings is obscure and not a commonly used icon which may confuse users.
- Several UI elements are inconsistent and do not utilise the space aesthetically or efficiently to convey information.
- Input validation on user input forms is not provided which can lead to an increased number of errors by the user, increased frustration, and reduced trust.
- Language settings are not easily changed once users are signed in and require access to account settings.
- FAQ and help sections are hidden away in profile settings and not easily accessible to users.

MAIN USER RESEARCH

User Questionnaires

Alongside the literature and online reviews, it is proposed that a questionnaire be conducted amongst the target audience to gain a more user-centric perspective on user goals, pain points, demographics, and psychographics. These are a useful way to get feedback/information from a large portion of the userbase and do not require physical attendance from the user and can be filled out in their own time.

The proposed questionnaire can be found in the appendix (Appendix C).

Analytics

It is proposed that the use of analytics such as bounce rate, sign-up conversion rates etc. can provide vital information to tangibly measure the performance of any design changes that are made throughout the process. These can help give an insight into the wider user base without spending too many resources, this type of research method also isn't too intrusive for the user by not requiring them to fill out forms or undertake testing directly.

Usability Testing

Usability testing is a key aspect of ensuring user-centrality of the design process. The testing not only gives insight into how users interact with a product but also ensures user centricity with visceral/instant feedback from the user on the user experience. Measurements such as error rate, time on task, success rate etc. can give vital tangible evidence to conclude the UX. This can be essential for measuring the performance of new designs with further usability testing. The testing can also help either reinforce or uncover new usability issues with the product which the design team did not previously unveil.

The full proposed usability testing plan can be viewed in the Appendix (Appendix D).

Improvements Critique and Recommendations

Improvement Areas

This section will discuss each of the improvement areas identified by the Heuristic Evaluation of the website and look to provide some insight into their validation for selection.

Onboarding

The onboarding for the website provides good information for the user but is a slightly disjointed experience which can appear quite jarring to some users. The onboarding process is vital to creating a good first impression with the user and making sure they grasp the product and its features successfully to maximise not only their efficiency using the product but also their satisfaction whilst using it.

Inconsistent UI Design/Layout

The design for the site seems quite disjointed from page to page and even some UI elements on the same page seem strange and unrelated to the others on the page. A consistent design must be kept across all pages of the website as this helps users massively when it comes to recognition of UI elements and their purpose but also helps them navigate the pages effectively leading to less confusion and frustration (Nikolov, 2017).

User Error Prevention

Errors are frustrating aspects of technology to deal with for users especially when the design doesn't do the most it can to help prevent these errors. On the site, there are aspects where this is done within the games where user actions are prevented which would cause errors and adequate warnings are provided. However, particularly on the side of sign-up and the changing of account settings user validation is lacking which can lead to user errors, increased user frustration and reduced user trust.

Flexibility of UX

Giving the user flexibility within their user experience is a great way to encourage exploration and usage of a product and contributes to an overall more satisfactory user experience. This can be achieved through several ways, but the primary areas identified for the site are language and accessibility settings and the provision of shortcuts for some user processes (i.e. email verification). Improvements to these could make users feel like they have more control over their experience and view the site in a more positive light.

Design Recommendations

Following on from the points above there are several design recommendations that should be considered for the design iterations and further usability testing. Low-fidelity prototypes of these designs can be viewed in the appendix (Appendix E).

Onboarding

Onboarding should be a more structured approach which gives users essential information about the product and how to use it (Weinberg, 2019). It should also have liberal use of descriptive images as well as text to help effectively prime the user for what is to come in the user experience. The onboarding should also have plentiful and visible exit points for users who do not wish to follow it all the way through.

UI Design/Layout

A new design and layout are proposed which utilises the brand colours and more effectively uses the space on the page to display essential information to the user without them having to excessively scroll to find it. Standardised icons and buttons are to be implemented to allow users to favour recognition over recall when navigating.

Input Validation

It is recommended that input validation combined with useful tooltips be implemented for any user forms on the site. This will help prevent users from entering or trying to submit erroneous information and receiving error messages.

Increased Flexibility

It is recommended that consideration for easily accessible buttons for language and accessibility settings are added to the navbar, so they are easily found by users. This will allow further flexibility and tailoring of each user experience to a specific user which will contribute to making the website feel more welcoming and encourage users to come back.

Conclusions

This report has provided an outline for a research plan for a redesign of the UX for the website Board Game Arena.

It outlined an initial research stage which involves the use of a literature and online review combined with a comprehensive heuristic evaluation of the website itself. The report then outlines further testing in the form of user questionnaires and usability testing which will help to gain vital information on the users and the latter give insight into the user's process when using the product which can be used to develop and establish key aspects to focus on for future designs.

The report concluded with a critical analysis of the areas of improvement that were identified by the heuristic evaluation and provided some initial recommendations for design changes which could be utilised in future usability testing.

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APPENDIX A – USER PERSONA



Ben

"The Experience In-person Gamer"

- 32
- Engineer
- Edinburgh, Scotland
- Favourite Game: Ticket to Ride
- Likes to play games with friends

Bio

Ben is an structural engineer by trade who likes to unwind by meeting up with his friends on the weekends to play his favourite board games. They often play in person at their local board game cafe but don't think they get to meet up as often as they would like as travelling and organising meet-ups can sometimes be a logistical nightmare.

Ben wants an app or website which allows him and his friends to play their favourite games more frequently and conveniently when in-person gaming is becoming difficult.

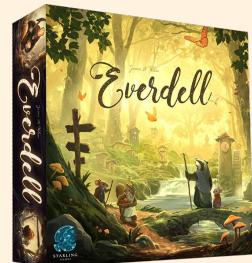
Core Needs

- A simple consistent UX/UI to interact with.
- A large library of games to choose from.
- Onboarding to get them started with the option to explore on their own if they like.
- Play games with friends easily.
- Feel part of a community and meet new friends.

Pain Points

- Complicated UI making experience intimidating and confusing.
- Being dropped in at the deep end when signing up with no information/help.
- Encountering errors when playing with no feedback or visual indicators to help

Favourite Games



APPENDIX B – HEURISTIC EVALUATION

HEURISTIC EVALUATION

HEP509 – Human Factors



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INTRODUCTION

This evaluation will be carried out whilst attempting to undertake the following tasks using the Board Game Arena website:

- Create an account
- Find a solo game to play
- Complete solo game
- Add a friend
- Change account display name
- Log out of account.

VISIBILITY OF SYSTEM STATUS

Design Issues

1. There is a good onboarding process which highlights key areas for new users to interact with. There are times where this seems quite unorganised and spontaneous. This can lead users becoming confused and frustrated which can lead to knowledge retention for users being lower, there is also no perspective/progress meter to show users how much they have done or how much they have left to go for onboarding.

Design Recommendations

1. Implement a more structured approach to on boarding which will allow users to retain information about how to use each of the website's features. Make sure to include a progress bar which will allow for users to stay informed about where they are currently in the onboarding process and how long they have until they finish.

MATCH BETWEEN SYSTEM AND THE REAL WORLD

Design Issues

1. Once the homepage before signing up there is a large button which says, "play now". Clicking this button takes the user to a page which prompts them to sign up. The language here might slightly confuse the user as clicking the button does not take them directly to play games and instead introduces an intermediate step which isn't bad but should be clearly indicated by the language on the button. This could lead to confusion and frustration for the user and lead to them developing a lack of trust and familiarity with the site.

Design Recommendations

1. Changing the label on the button to something like "Sign Up and Play" sets more realistic expectations for the user and helps "prime" them adequately for the upcoming outcome from clicking the button.

USER CONTROL AND FREEDOM

Design Issues

1. The onboarding and tips provided by the website are great for new users but to accomplish this some of the features and user freedom is removed to ensure that they choose the “right” option on the screen. There is no clear way to exit out of this which limits the user’s freedom of exploration on the site. This might lead to users feeling “trapped” and stunt their desire to explore the site for fear that it might happen again and might make them wary to return to the site.
2. When signing up the users only have access to limited functionality on the site until they verify their email. Whilst this is good as a security feature to stop botters and hackers from detracting from other users’ experiences, it does not give the user full freedom when they are using the product.

Design Recommendations

1. Provide clear and frequent exit points throughout the onboarding process and for any tips provided throughout the user experience.
2. Expanding the features slightly for users allowing them to play only with friends or solo. A hyperlink to the email provider of the email that the user has entered should also be implemented to make this process more efficient for users to verify and gain full access to the site.

CONSISTENCY AND STANDARDS

Design Issues

1. The button for logging out is difficult to find and is hidden away in the account settings panel, the icon for settings is also abnormal and might confuse users as to its purpose. This may cause the user to become confused and add to their cognitive load by making them having to learn new information about the site layout which is non standard.
2. Page designs and layouts vary a lot from page to page which makes each of the pages feel like they are from different sites. This can make the user's journey feel disjointed and doesn't allow the user to become familiar with the UI and explore the site effectively.
3. Some use of different text in the middle page text which might suggest to the user that these are clickable which they are not. This might lead to the user getting confused and less trusting of the site.

Design Recommendations

1. Add a log out button for the user which is visible and easy to use for the user, change the profile settings icons to more "industry" standard ones which will make them more recognisable to users.
2. Page designs should use more standardised components and layouts to create a cohesive design across the site which will allow familiarity to be formed by the user throughout their journey.
3. Consistent approach to webpage text and usage of hyperlinks to be established so users can tell these apart from non-interactive elements.

ERROR PREVENTION

Design Issues

1. When changing the email address in the user settings users can enter any text and the process will still go through requesting the user to verify the email. This could possibly lead to serious issues for the user and possible loss of account entirely.
2. When creating a new account there is no help provided to users as it pertains to what characters they can include in usernames and passwords. This can lead to users entering invalid information for these fields leading to a frustrating experience.

Design Recommendations

1. Input validation should be added to the field for changing email and examples for email address formats should be displayed via. a tooltip.
2. Provide tool tips and input validation for form fields when user is creating account.

RECOGNITION RATHER THAN RECALL

Design Issues

1. Related to consistency and standards, the page layouts and designs are inconsistent which causes the user to have to learn the locations and functions of specific UI elements on each time the page loads as opposed to recalling these from similar designs on other pages. This increases the users cognitive load and can lead to an overall detrimental user experience.

Design Recommendations

1. Page designs should use more standardised components and layouts to create a cohesive design across the site which will allow familiarity to be formed by the user throughout their journey.

FLEXIBILITY AND EFFICIENCY OF USE

Design Issues

1. Once user has logged in there is no easy way for them to change the sites language unless they go into the profile settings menus which is relatively obscure unless users know where it is. This can lead to the site becoming less accessible overall for users wishing to change languages when on the site.

Design Recommendations

1. Add a language change button to the navbar at the top which is easy for users to recognise and use.

AESTHETIC AND MINIMALIST DESIGN

Design Issues

1. The webpage design is overall quite minimalist, but the aesthetics are poor with the use of various font sizes and text colours in strange places. The site also has quite a lot of under-utilised blank space with large page sections which could be condensed into a more succinct design to get across same points.

Design Recommendations

1. Minimalist elements of the design should be implemented along with aesthetics and company branding to align with the rest of the webpage. Redesign of layout to be implemented to make better use of the space on the page and get information across more succinctly. Consistent font sizes for webpage text sections.

HELP USERS RECOGNISE, DIAGNOSE AND RECOVER FROM ERRORS

Design Issues

1. No notable issues found.

Design Recommendations

HELP AND DOCUMENTATION

Design Issues

1. FAQ and Support is hidden in the user profile menu in the difficult to discern "settings" section and not very easy to access for new users. This can lead to a reduced trust from the user when they encounter an issue and want to try and resolve it through the help section but they cannot easily find them. They might just get frustrated and leave the site entirely.

Design Recommendations

1. Help button to be added to navbar so it is always visible for users and easy to access.

APPENDIX C – USER QUESTIONNAIRE TEMPLATE

BoardGameArena User Survey

1. What is your age?

- Under 18
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65+

2. What is your experience level with board games?

- Newbie
 - Played a Few
 - Play Regularly
 - Experienced Gamer
-

3. Order these aspects of playing from most to least important for you? (Playing w/ Friends/Family, Meeting New People, Competition, Way to pass the time)

4. How would you say you feel about game suggestions?

- Like to find them on my own
- Like recommendations based on games I already like
- Willing to try anything

5. Please visit www.boardgamearena.com.

(Log out if current user)

How would you rate the information provided on the first page?

- Too much info (Cluttered and confusing)
- The right amount of information
- Lack of information (Unclear)

6. Do you feel the website has a clear brand and identity? (if yes, what do you like?)

7. What are the current barriers (if any) for you using a website like BoardGameArena to play your boardgames?

APPENDIX D – USABILITY TEST PLAN

USABILITY TEST PLAN

HEP509 – Human Factors



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INTRODUCTION

This plan comprises the usability testing for the Board Game Arena website. The plan will consider the comprehensive heuristic evaluation of the website to establish the website's main target audience, set a clear objective for the testing and form a design for the usability test.

The goal of the usability testing is to determine any insights for users using the website to play board games who have experience in real life but not online as this was identified as the target audience in the initial heuristic evaluation.

To accomplish this the test will look to examine the ease of navigation for users, users' ability to search for courses and the accessibility for international users.

Test participants will comprise participants from the target audience as this group is believed to give the most useful data from the usability testing. The design team can then use this data from the testing to formulate new designs to test until it is sufficiently refined to be taken into the implementation stage.

Test Methodology

The usability test itself will comprise a summative assessment which will look to gauge the usability of the website when participants undertake a set of tasks. Tests will be approximately 15-20 minutes in length though no actual strict time limit will be implemented for the participants.

The testing will focus on a few key performance indicators (KPIs):

- Task Success Rate
- Time on Task
- User Satisfaction
- Error Rate

These areas are felt to be the key areas which will give the most useful insight into the user experience.

For this testing, the user will be monitored and required to complete the testing at a designated testing facility provided by the tester. All hardware and software will be provided for the participants.

Participants

Selection Criteria

Participant selection will be aimed to be from the target audience where possible, which will allow for greater insight into the target user experience of the product. This target audience would be centred around a user persona which will have been developed during an initial research phase.

Participant Recruitment

Recruitment for the testing process will largely take place through advertisements online in board gaming forums and on social media. The aim is to have around 5 participants. This adheres to industry rules of thumb on the size of the participant group for usability studies.

Testing Incentives

Participants will be incentivised with a free 1-year subscription to Board Game Arena which allows them access to the whole category of games and much more features.

Test Scenarios

Task List and Sequence

During the testing, the participants will be asked to complete the following tasks:

- Task 1 – Create an account
- Task 2 – Find a solo game to play
- Task 3 – Add a friend
- Task 4 – Change account password
- Task 5 – Log out of account

Effort has been made to keep these tasks focused on the needs of the participants but also keep them simple enough to not induce additional stress during testing. These tasks are to be completed sequentially as they appear in the list above.

Success Criteria

Successful completion of each task will be determined if the following success conditions are met:

- Task 1 – User successfully creates and verifies their account
- Task 2 – User successfully can find a solo game, start the game and finish it
- Task 3 – User can send a friend request to another user successfully
- Task 4 – User can change their password on their account
- Task 5 – User can log out of their account.

Test Schedule

Test Timeline

The following indicative dates have been determined for each of the phases of testing:

- Preparation Phase – 15/01/2024 – 22/01/2024
- Execution Phase – 23/01/2024
- Analysis Phase – 24/01/2024 – 31/01/2024

It should be noted after the analysis phase that a further assessment as it pertains to further usability testing and design iteration is to be undertaken. After which the timelines for further testing will be established.

Test Location

The testing is to take place at the designated testing facility located at:

1 Testing Way, Testingville, T35 T1NG, UK

Pilot Testing

Pilot testing is to be undertaken during the Preparation Phase to ensure that the execution phase does not encounter any unexpected issues on the day.

Data Analysis Plan

Data Types

Data gathered from the usability testing will be as follows:

- Task Success Rate (Quantitative)
- Time on Task (Quantitative)
- User Satisfaction (Quantitative)
- Error Rate (Quantitative)

Data Handling

The tester will store the data securely to ensure that sensitive user data is not at risk of a breach. The data will then be accessed by a dedicated data analyst to analyse the data to determine any salient trends. This data can then be compared to subsequent testing cycles to tangibly measure the usability performance of designs.

Reporting

Once analysed the data will then be presented in a report format to the relevant stakeholders within the design team to adequately inform the next iterations of the design. Non-technical language must be used by the reporter to ensure the analysis findings are understood by all parties.

Risks and Contingencies

Potential Risks

As with any project, there will be several risks that should be considered, and stakeholders should be aware of:

- Suitable participants are not able to be recruited.
- Hardware/Software failure during testing

Contingency Plans

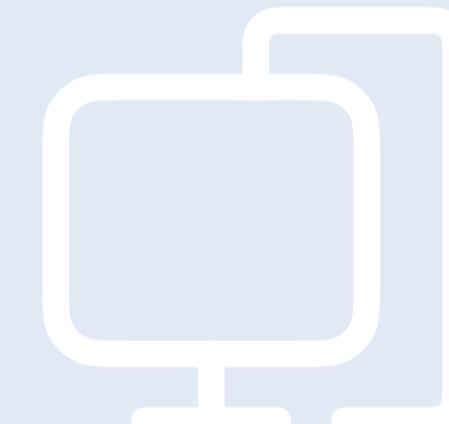
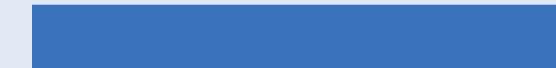
To adequately deal with the risks mentioned above the following contingencies are put in place:

- In the event that suitable participants are not able to be sourced for the proposed testing date, testing should still be carried out on the day for the suitable participants sourced for the test with a secondary date proposed for additional testing. This will mean that the preliminary dates for the analysis phase will need to be adjusted to suit.
- In the event that there is a hardware or software failure during testing, it should be ensured that there is at least 2 no. free testing stations to allow participants to transfer over to if needed. If a major failure occurs (i.e. more than 2 testing stations fail) testing will be rescheduled to suit.

APPENDIX E – LOW-FIDELITY PROTOTYPES

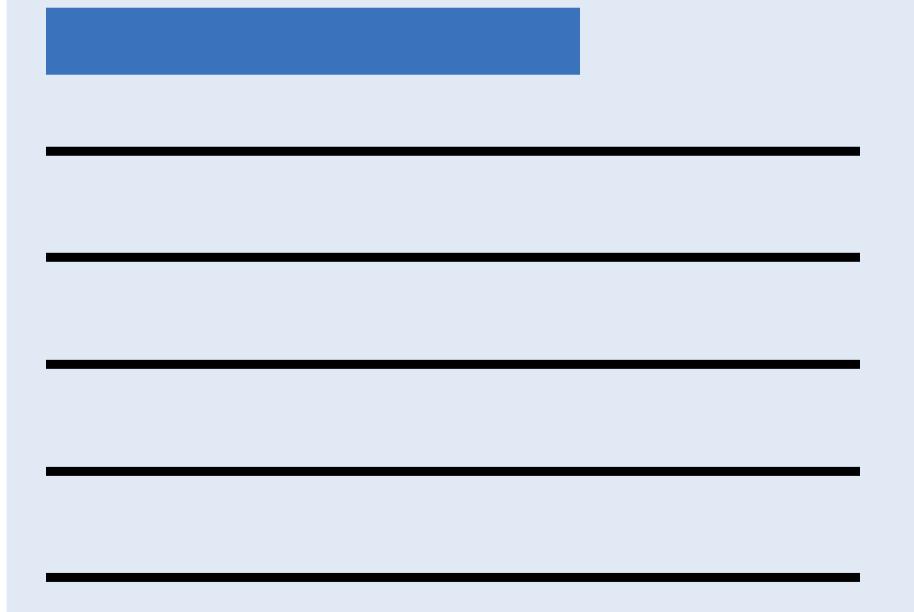
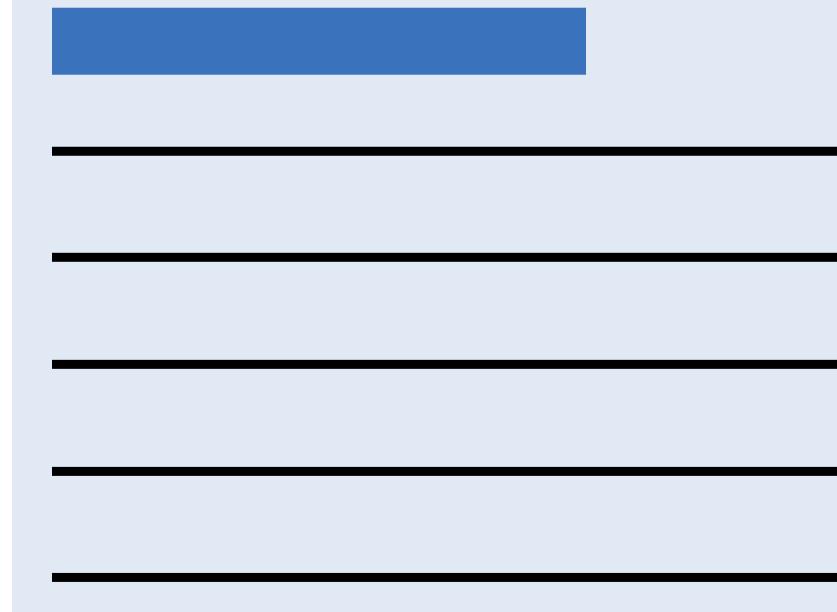
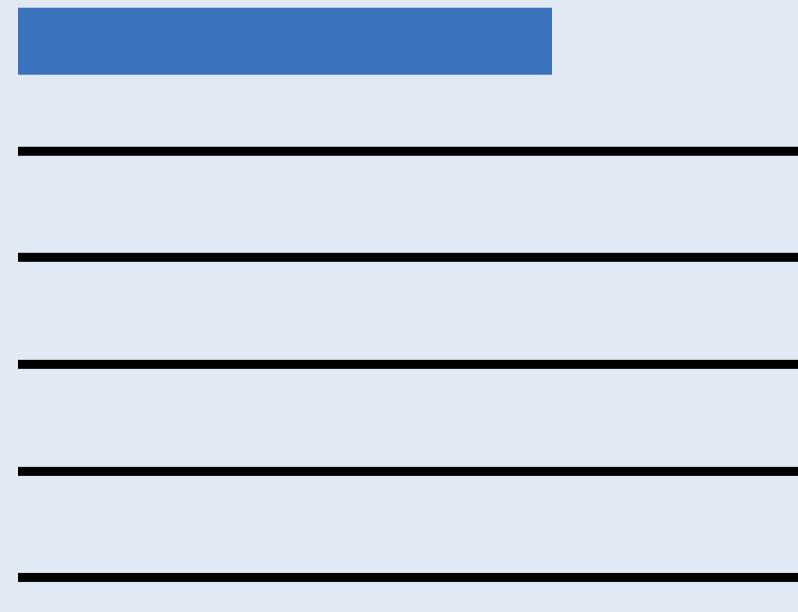
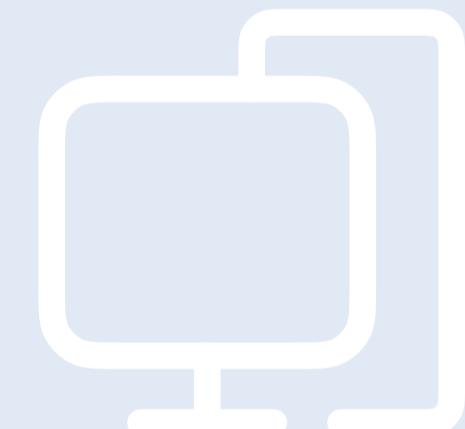
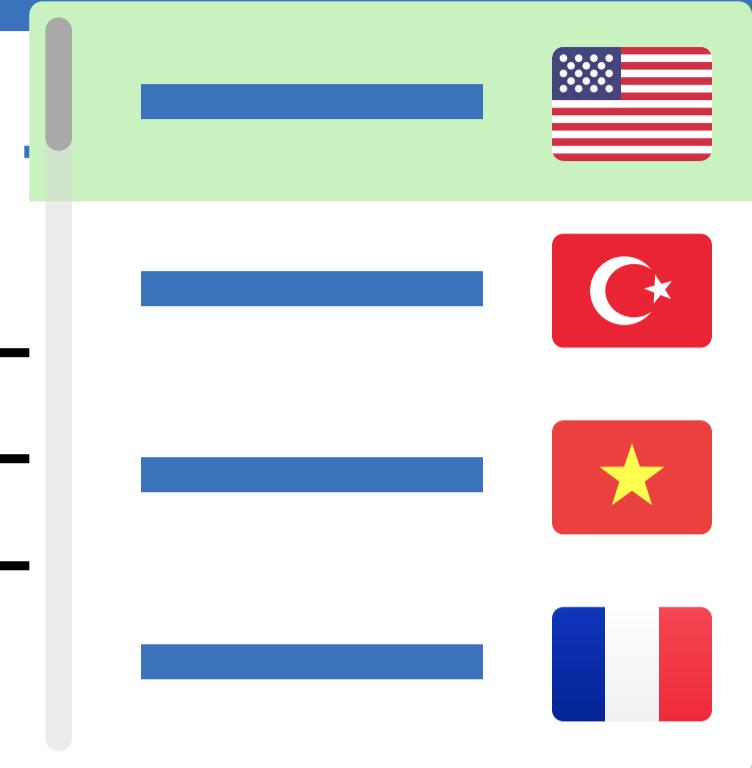


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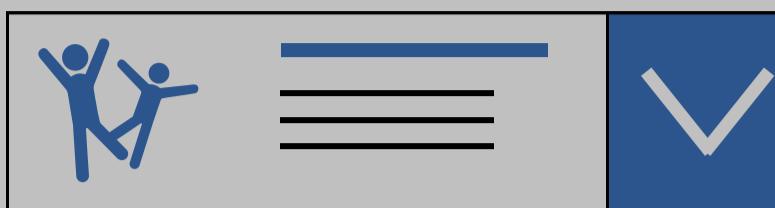

eg. BoardGamer4eva
eg. boardgamelover@gmail.com

SIGN UP & PLAY

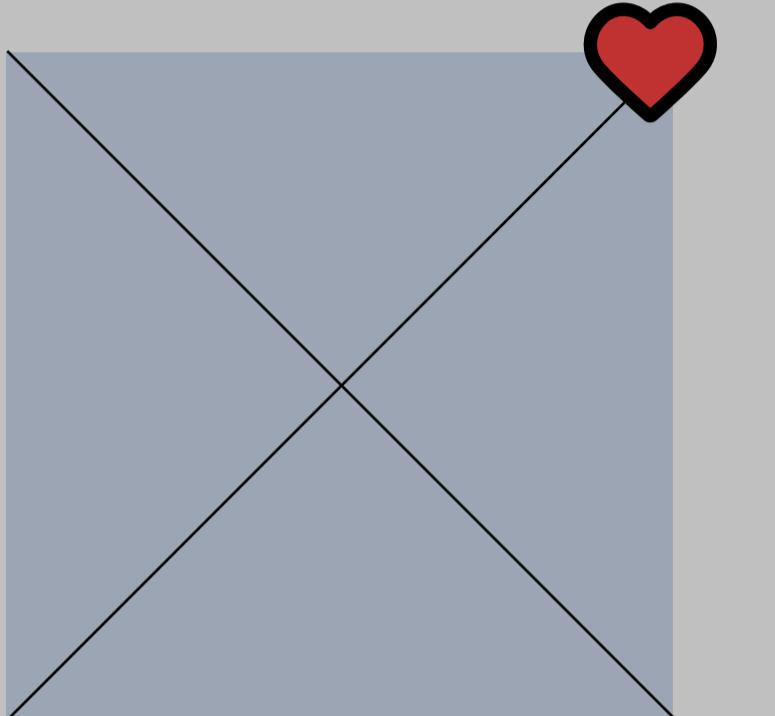


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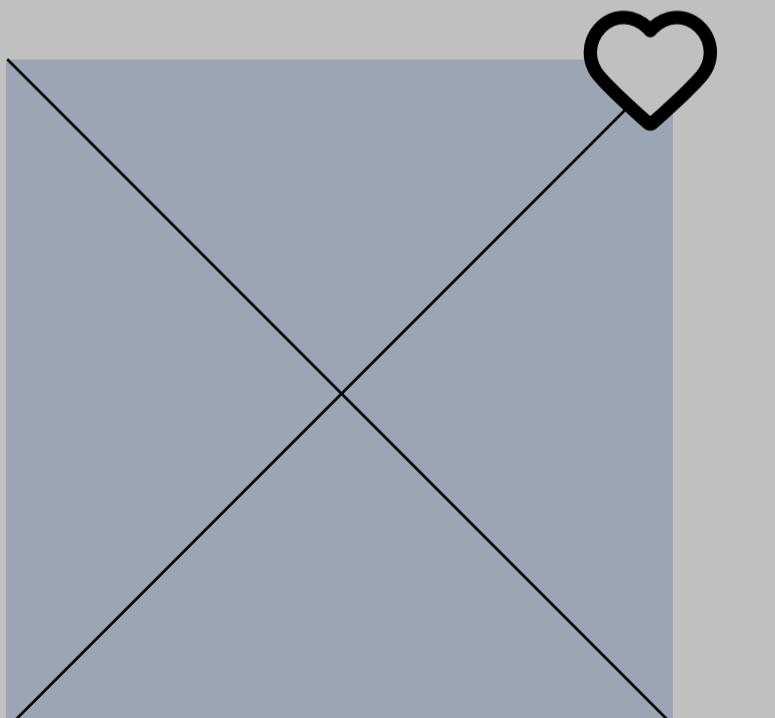

XxxXX425276
eg. boardgamelover@gmail.com**SIGN UP & PLAY**



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WELCOME TO BOARD GAME ARENA

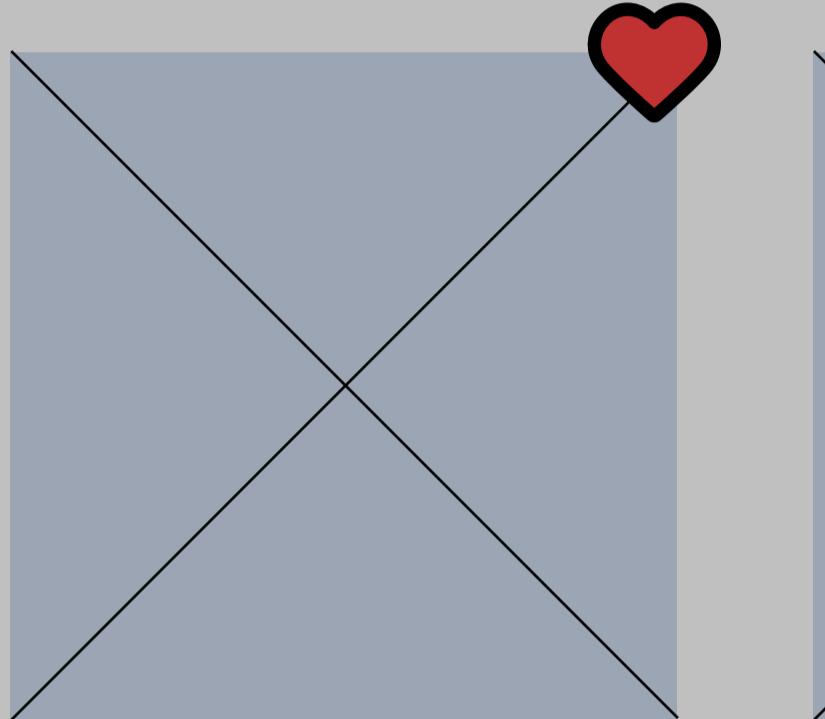
Thanks for signing up!

NEXT

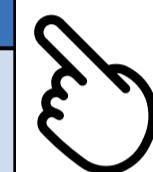
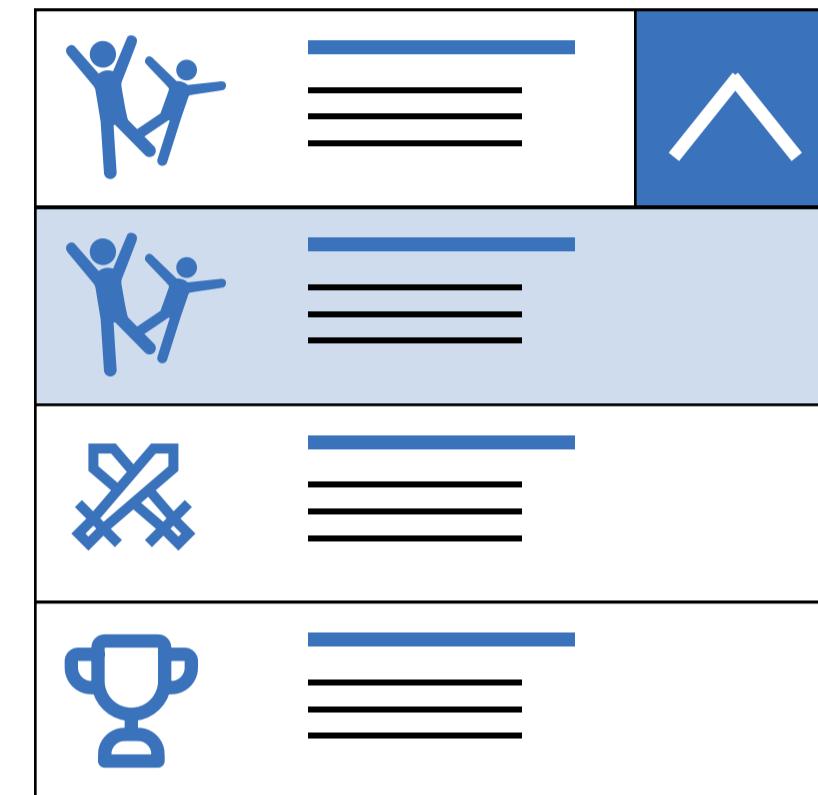
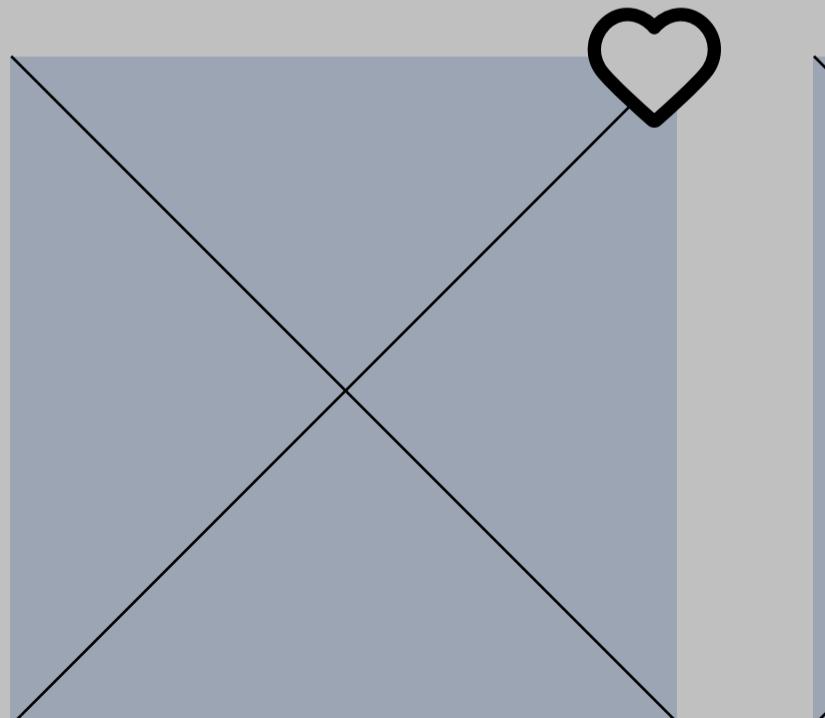


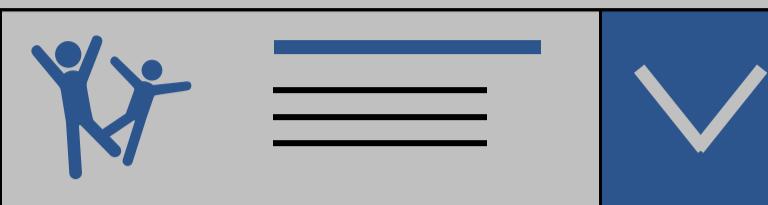


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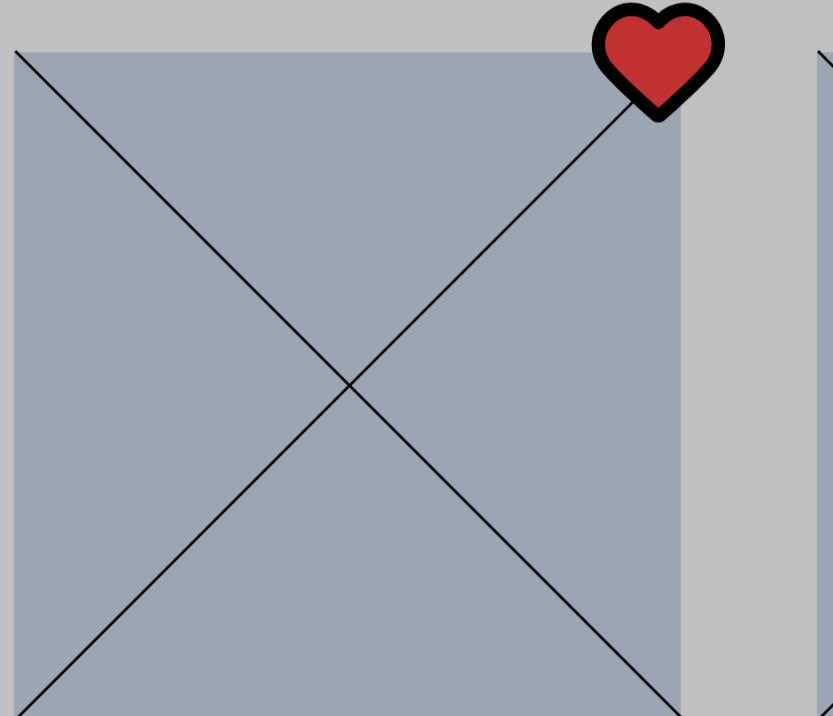


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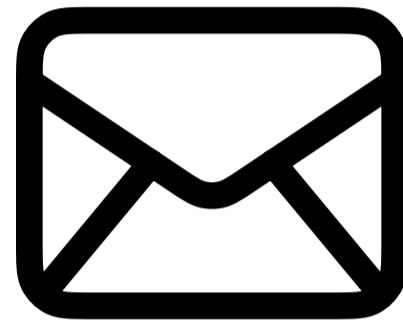
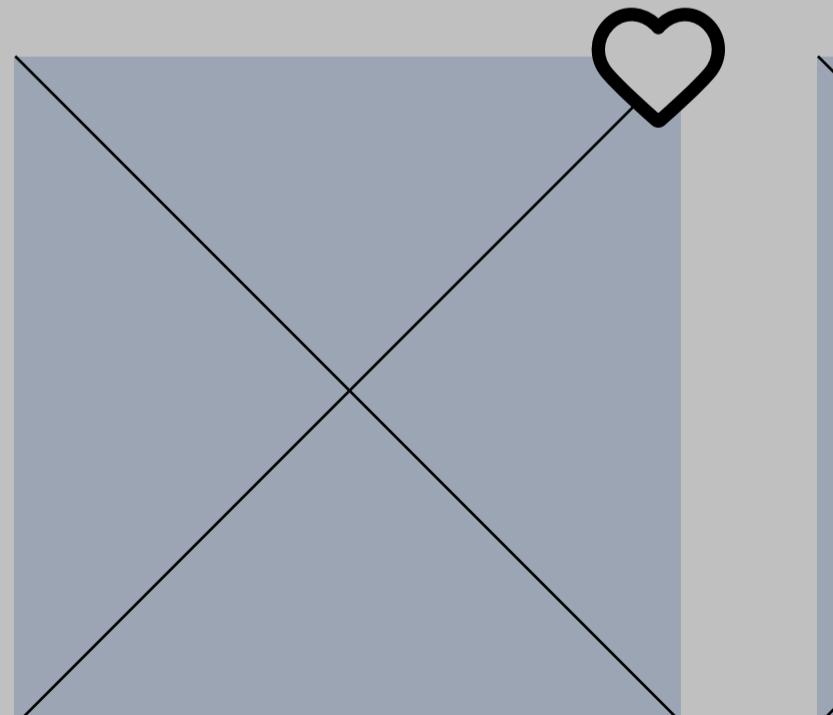
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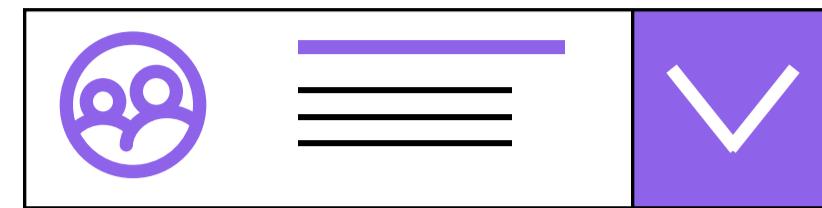
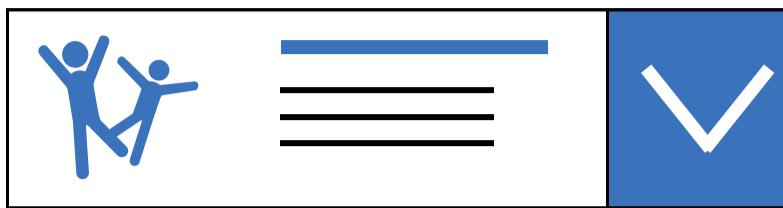


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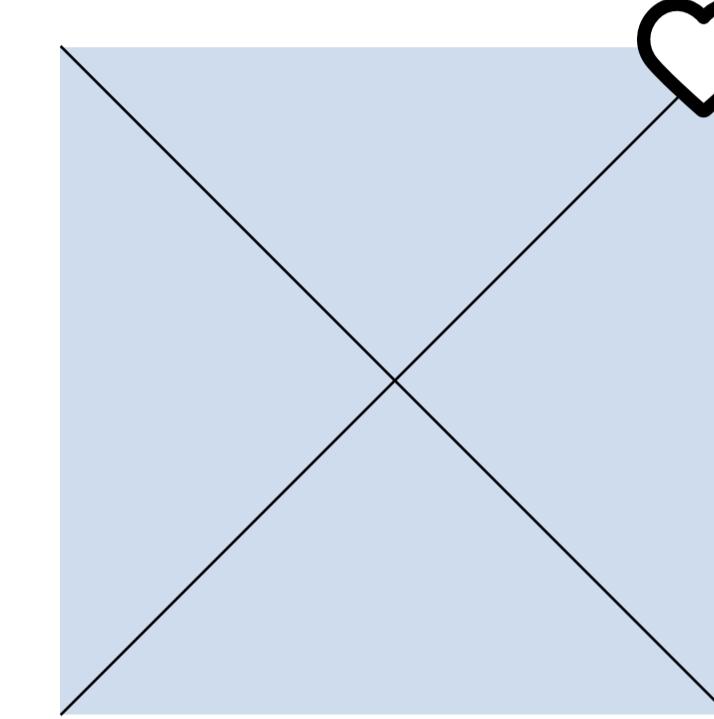
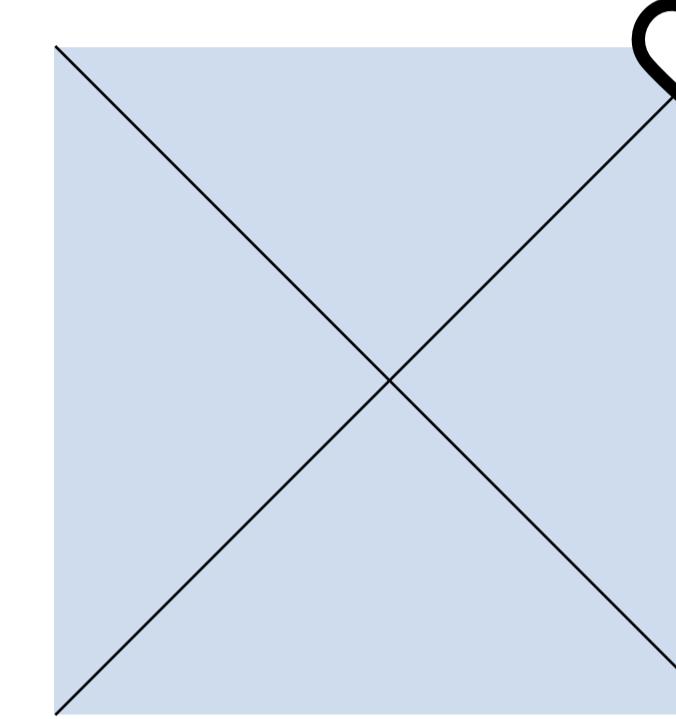
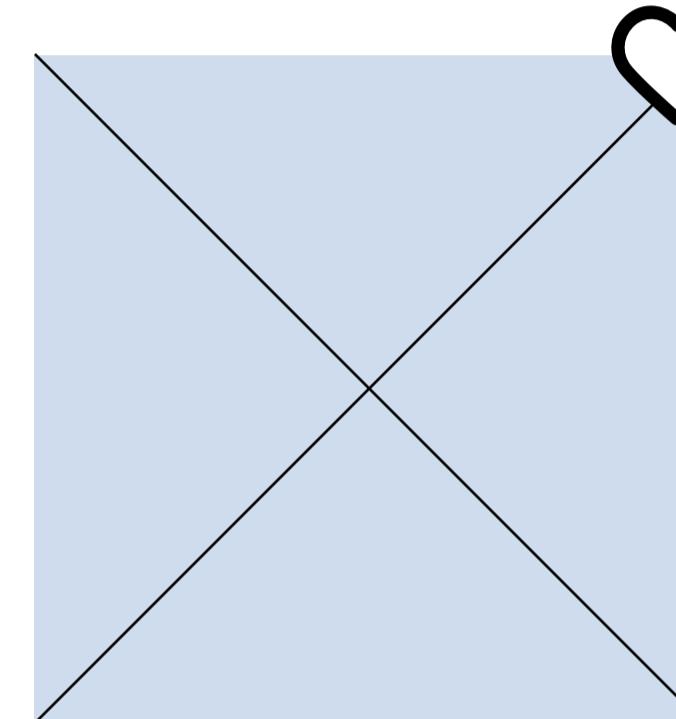
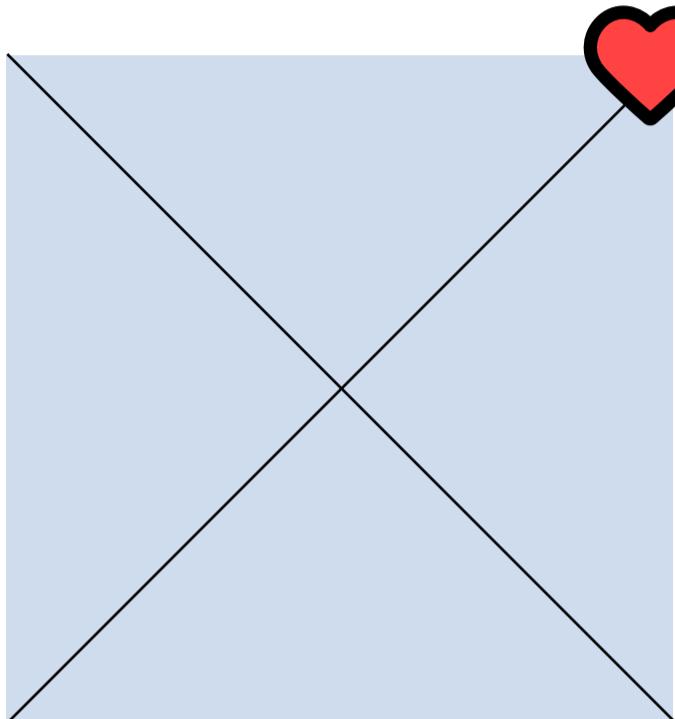


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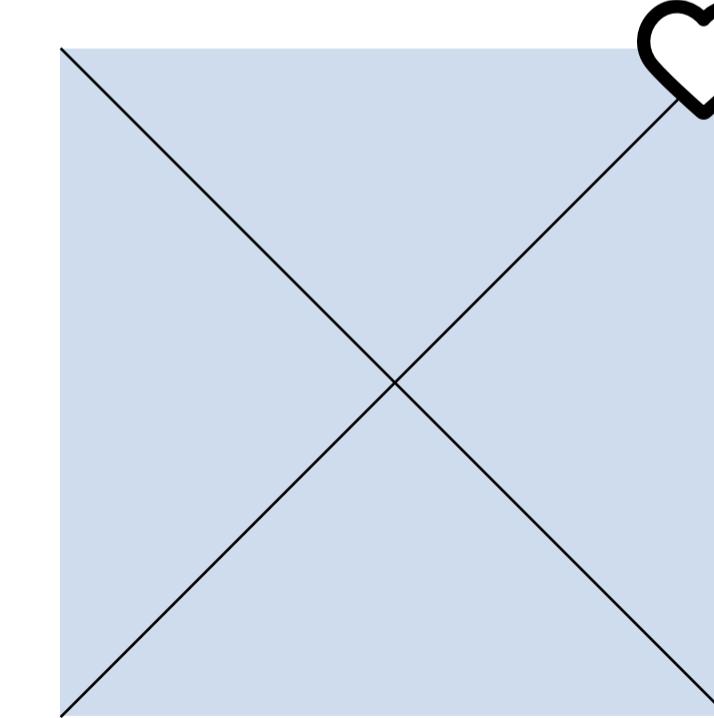
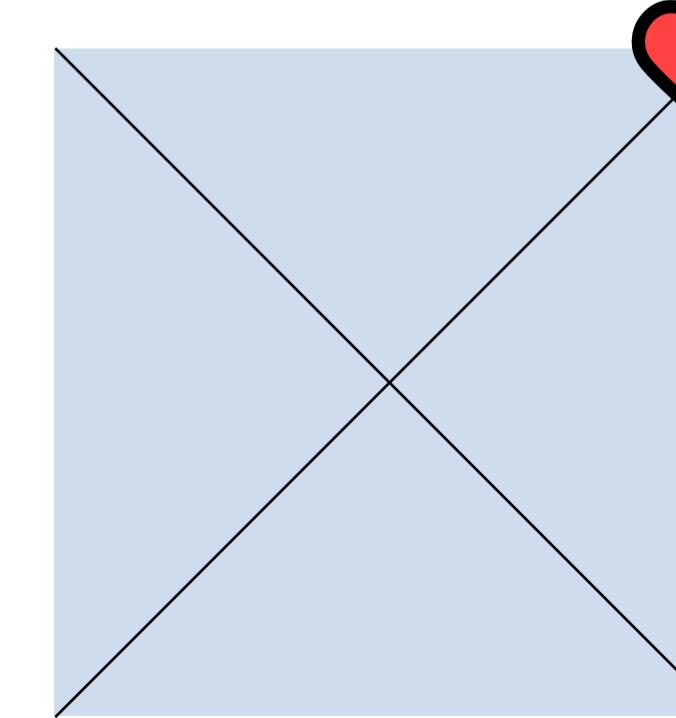
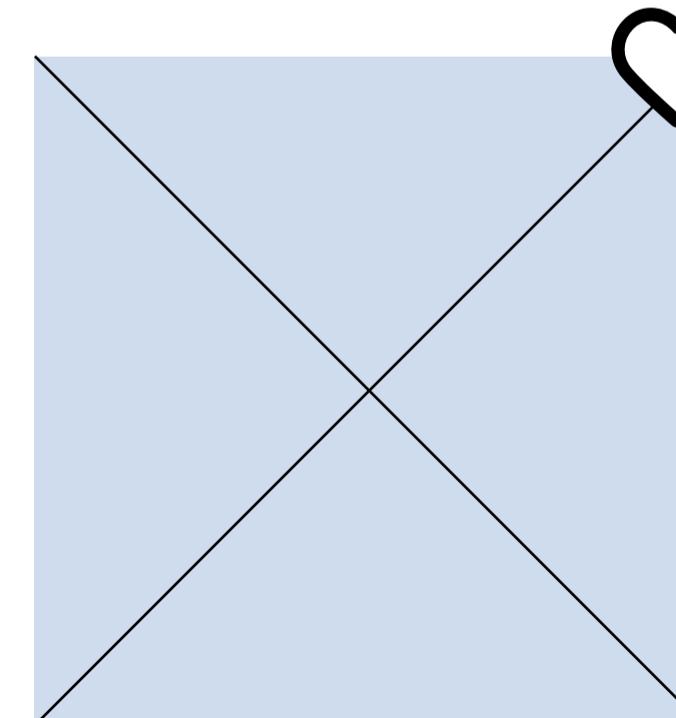
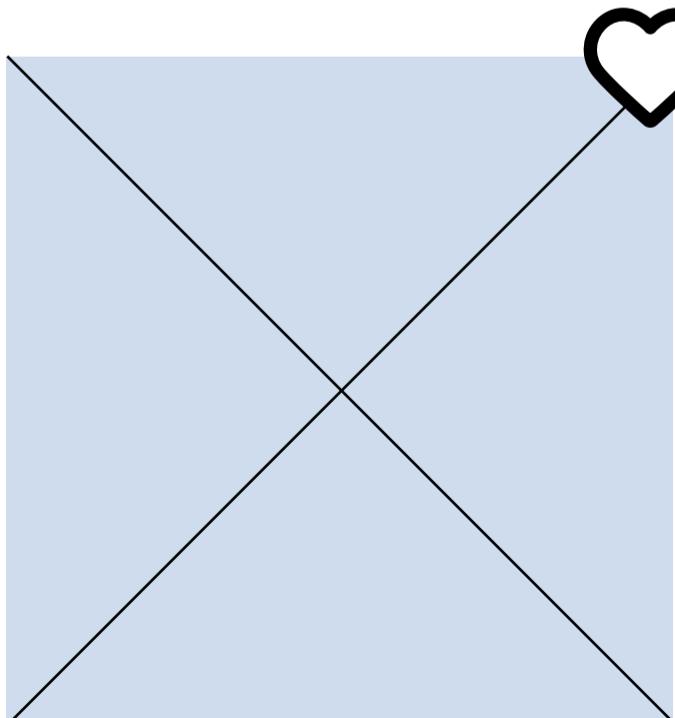


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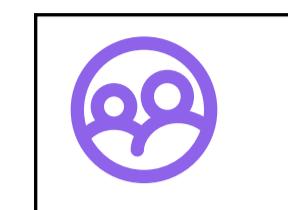


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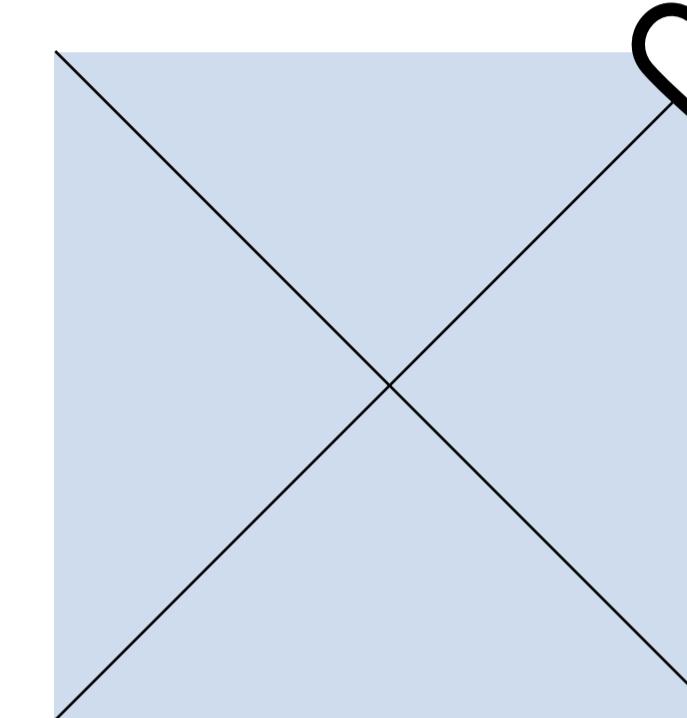
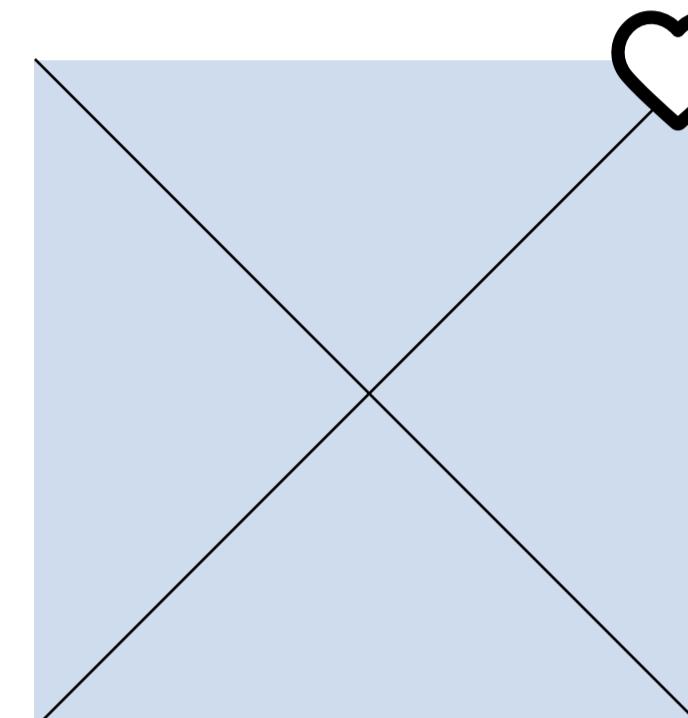
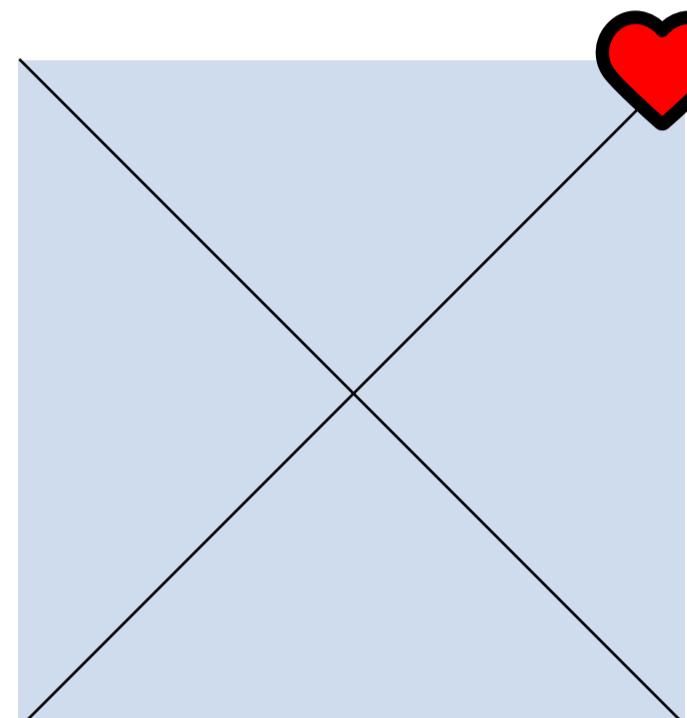
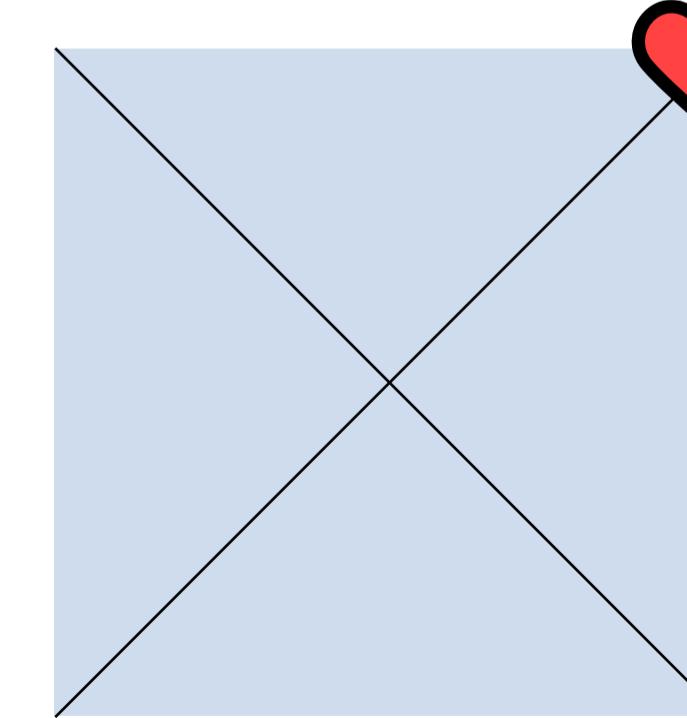
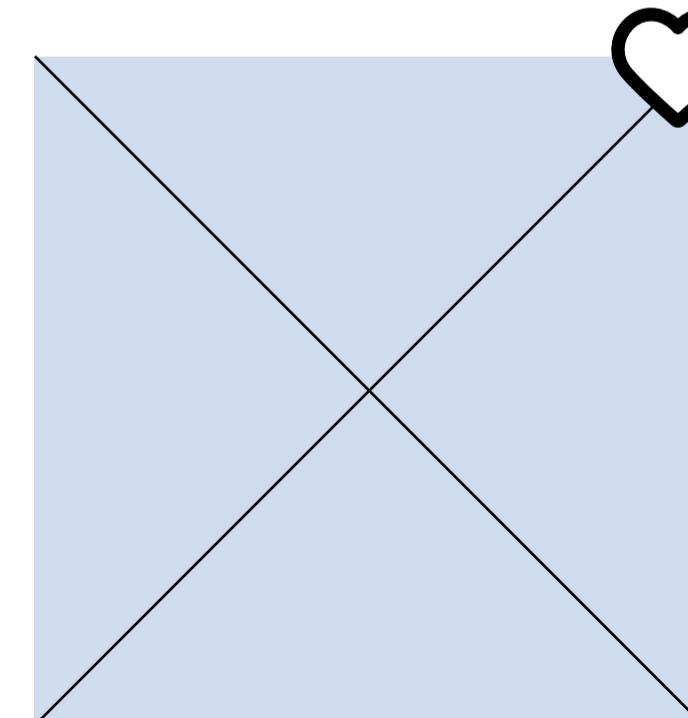
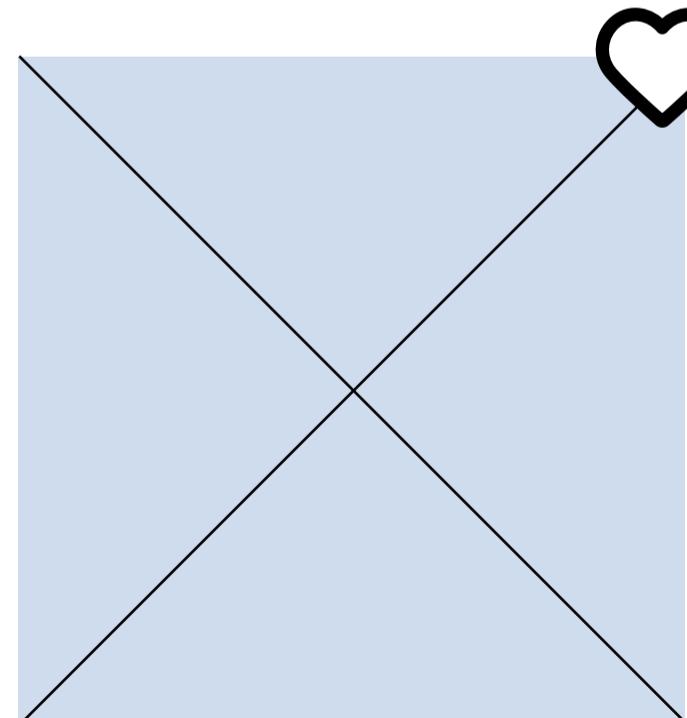
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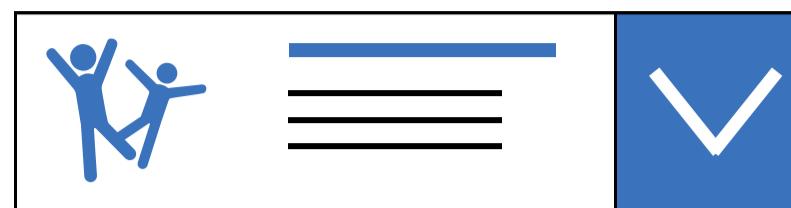
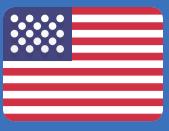
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15 Minutes 3 Players

15 Minutes 3 Players

15 Minutes 3 Players

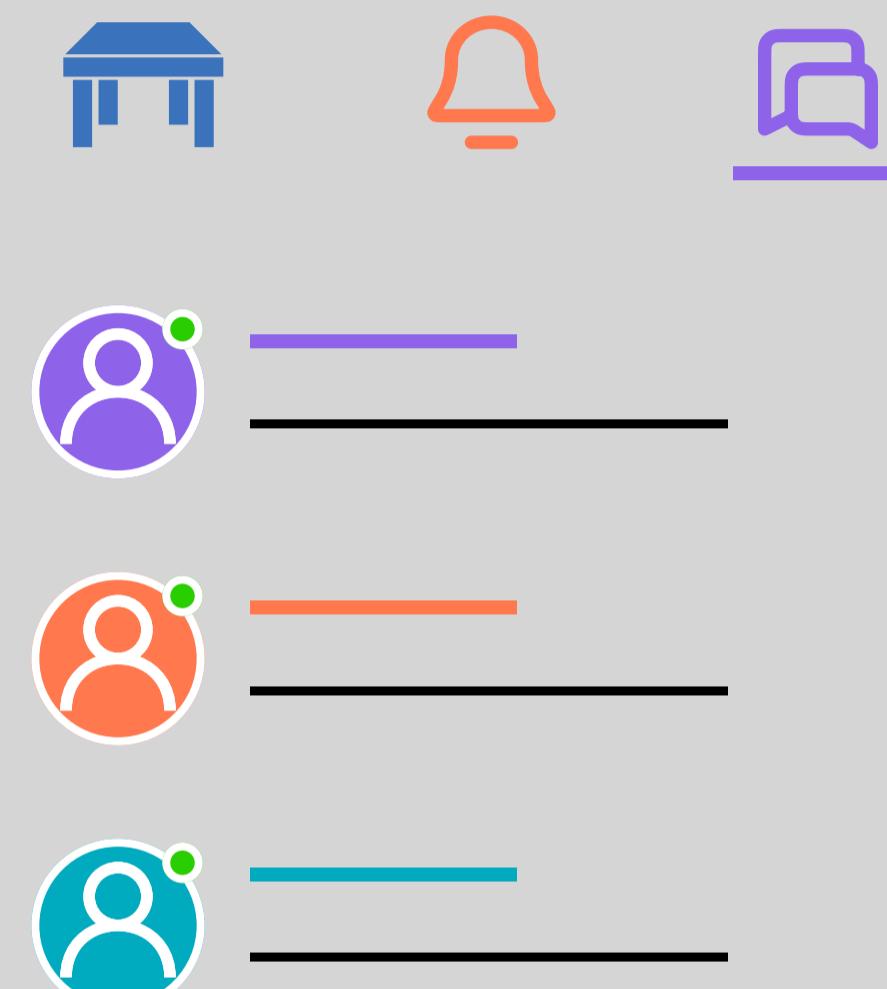
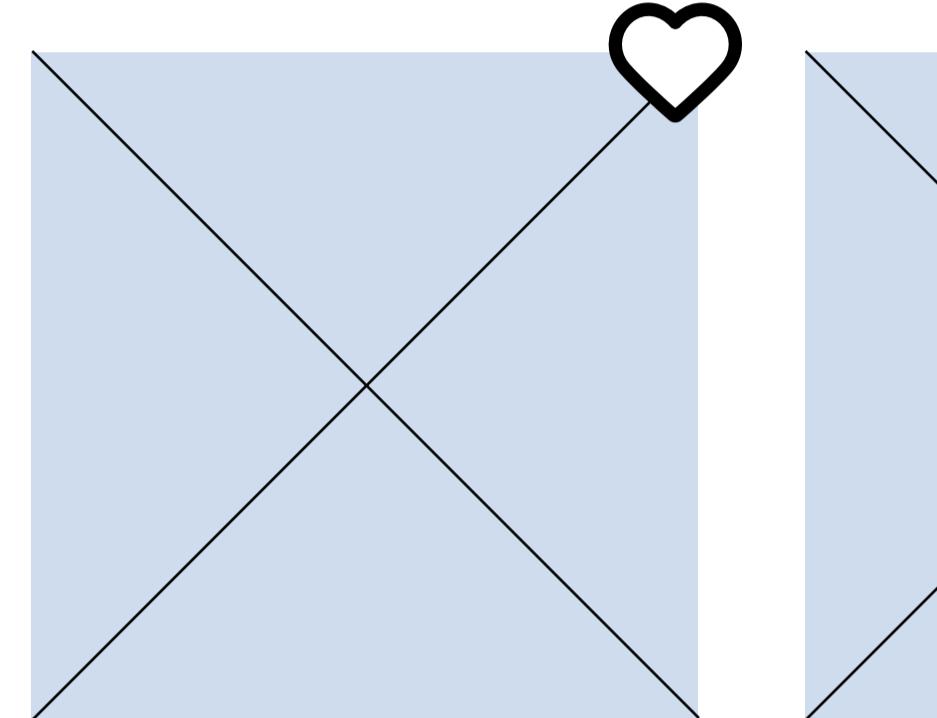
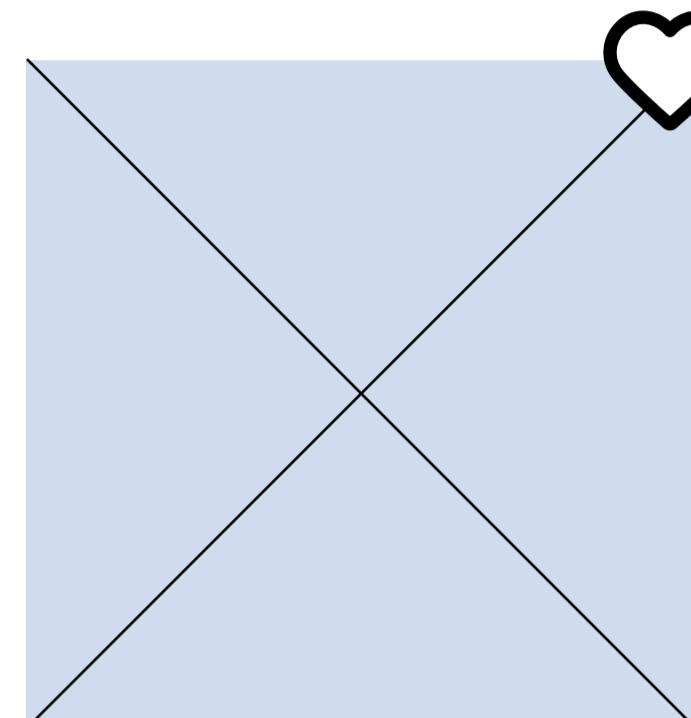
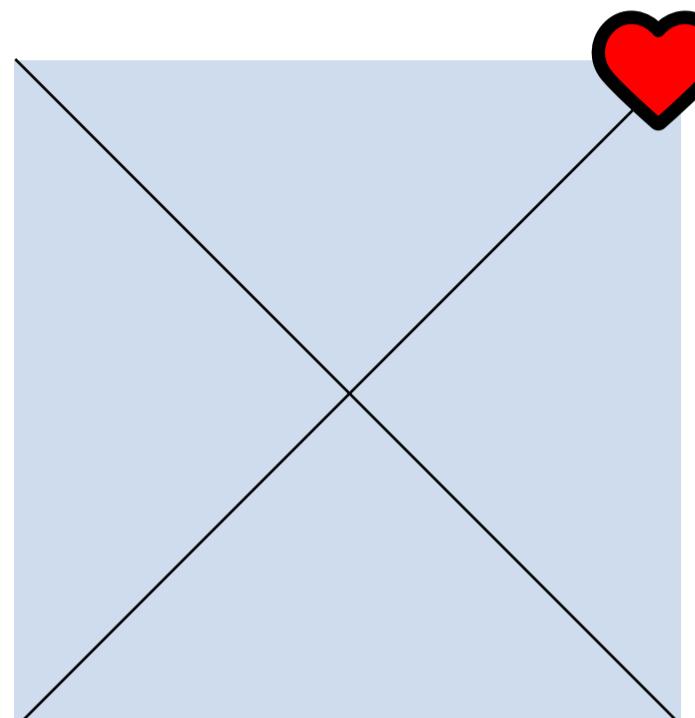


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