Double Tap

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GitHub Repository:
https://github.com/DoubleTapGame/doubleTap

Table of Contents

List of Project Participants

Anthony LiFonti

Roles: Design, Development (React Native), Game Creator
Contributions:

- Designed and implemented the Game Setup screen
- Created the “Rapid Tap” and “Quick Draw” minigames
- Added logic for passing data between screens
- Assisted in work on other screens where needed

Nida Hameed

Roles: Design, Development (React Native), Documentation
Contributions:

- Brainstormed lo-fi mockups with team and created high-fidelity mock-ups using Figma
- Maintained documentation throughout development process
- Worked on Landing page and connecting to other pages
- Compiled documentation of group progress into final report

Sophie Von Hatten

Roles: Design, Development (React Native),
Contributions:

- Brainstormed minigames with team to be included in the application
- Brainstormed lo-fi mockups with team and created high-fidelity mock-ups using Figma
- Worked on scoreboard screens (both for the scores in between rounds of the tournament and the final results); connected Final Results page to the Landing page.
- Added extra styling to overall application (i.e. fonts)

Michael Anthony Cabrera

Roles: Design, Development (React Native), Quality Assurance
Contributions:

- Brainstormed project goals and flow of the application
- Fixed builds by diagnosing pod and node issues for iOS simulating.
- Worked on managing state across different pages to manipulate data.
- Helped write final report by transcribing project narrative.
- Planned project scope and brainstormed games

Abstract of the Project

Double Tap is a competitive, multiplayer minigames mobile application played on a single device. The game requires a minimum of two players and can be played with up to six players. This mobile application is a collection of quick, simple, tapping mini games. This application was designed to create a competitive, yet fun environment with various minigames to keep all the players entertained. The game is a multiplayer game that is played round-robin style with upto six players. Double Tap was designed to create a fun, shareable experience for all of its users and also make potentially make otherwise boring experiences such as waiting in long lines more social and fun.

Project Narrative

Our goal with this project was to create an interactive application that was geared towards some sort of game or interactive experience. We created Double Tap to create a competitive, yet fun, social game with upto six players. We wanted to create a cross-platform, high-quality experience for the user that they could use in any setting. For example, if you and your friends are in a really long line at the amusement park, you could use Double-Tap to occupy your time and make the experience more social and less boring.

For our research, we examined other social applications such as Mario Party that is a series of minigames, Heads Up that's meant to create a social experience, and apps like Air Hockey, that utilize a split screen. We wanted to in a way combine the goals of these applications and create an application, that had mini-games, created a fun, social environment, and utilized a split screen to make it more interactive. This lead to the development of Double Tap as it is today. We aimed to create this game for all people interested in games and socializing.

For more technical decision, we decided to create this game in React Native and decided to create a completely local experience. A lot of other multiplayer games require there to be multiple devices with the app downloaded or have online features. We created the split-screen feature and made it round-bon style so all could play on a single device and eliminate the barrier of needing an app downloaded on all devices. Also, the app uses local and async storage so we could perfect the offline experience and ensure that the users didn't lose their progress in case of a crash or someone accidentally exiting out of it. The use of React Native and re-using components was an advantage in this application's development.

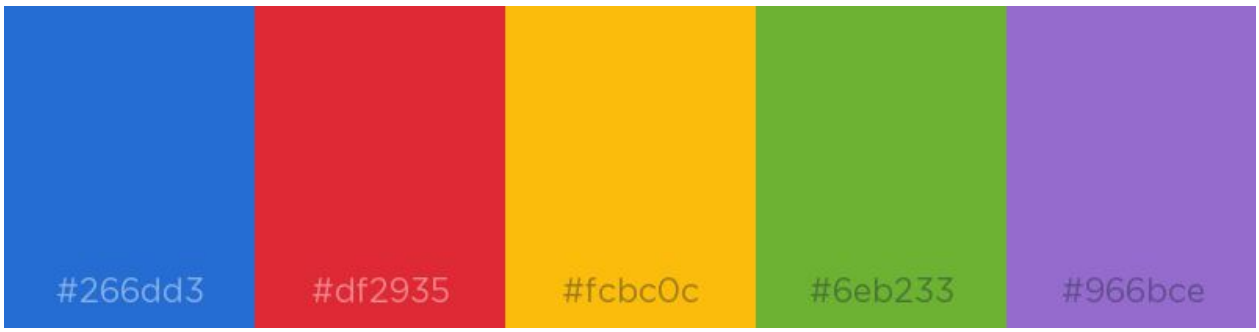
It is our intention to create a unique, fun environment for our users and we are able to do that with simple games. We also tried to make this application very accessible by revolving all of our minigames around tapping, so that it could be accessible to a wider audience of all ages. Double Tap is a simple and fun application with a lot of technical considerations in its development.

Design Specifications and Considerations

This project was created to be a simple mobile game that could be accessible for people of all ages. To reflect this, we wanted to create a simple, yet lively, interface that users could easily navigate and pick-up on as they played different games. We tried to reflect the fun idea of the game through the use of color and simple text blocks.

When the app is first opened, the user sees a purple screen with only two things - the title and a start button. The screen is a purple that seems bright, but is also easy on the eyes. And, the title, Double Tap, is the main piece of text that dominates the screen and is in white. Then, below that is a button. Both the title and the button are white in order to contrast the purple and make sure it is easily seen by anyone on that page. These are also the only two things on the screen so that users can get to the players list and begin the games right away instead of being distracted by unnecessary things. It is meant to increase the conciseness and ease of usage of the application.

The application colors are simple, yet bright. Once the users are on the players list, they are able to add up to six players and each player is able to assign themselves a color that is then later reflected as the background of their section of the split screen before a game begins - each player gets a unique color based on our color pallette. The color choice is meant to reflect a fun, yet clean interface that is fun and inviting to users. We made an effort to pick colors that are not only bright and fun, but also toned down enough to not be too hard on the eyes, especially in darker room settings.



The biggest feature of this application is the split-screen feature. The split-screen is the decision we thought would be best to fulfill the purpose of creating a multiplayer application. Each screen's orientation is facing the user it is meant for. The game they will play and the instructions they'll see and all things needed for the game will fit into that portion of their screen. We also have a help button that is present on both ends and it pulls up the instruction; the

orientation of the instructions depends on which user tapped on them. Each side of the screen first shows the color that is assigned to the people who's turn it is.

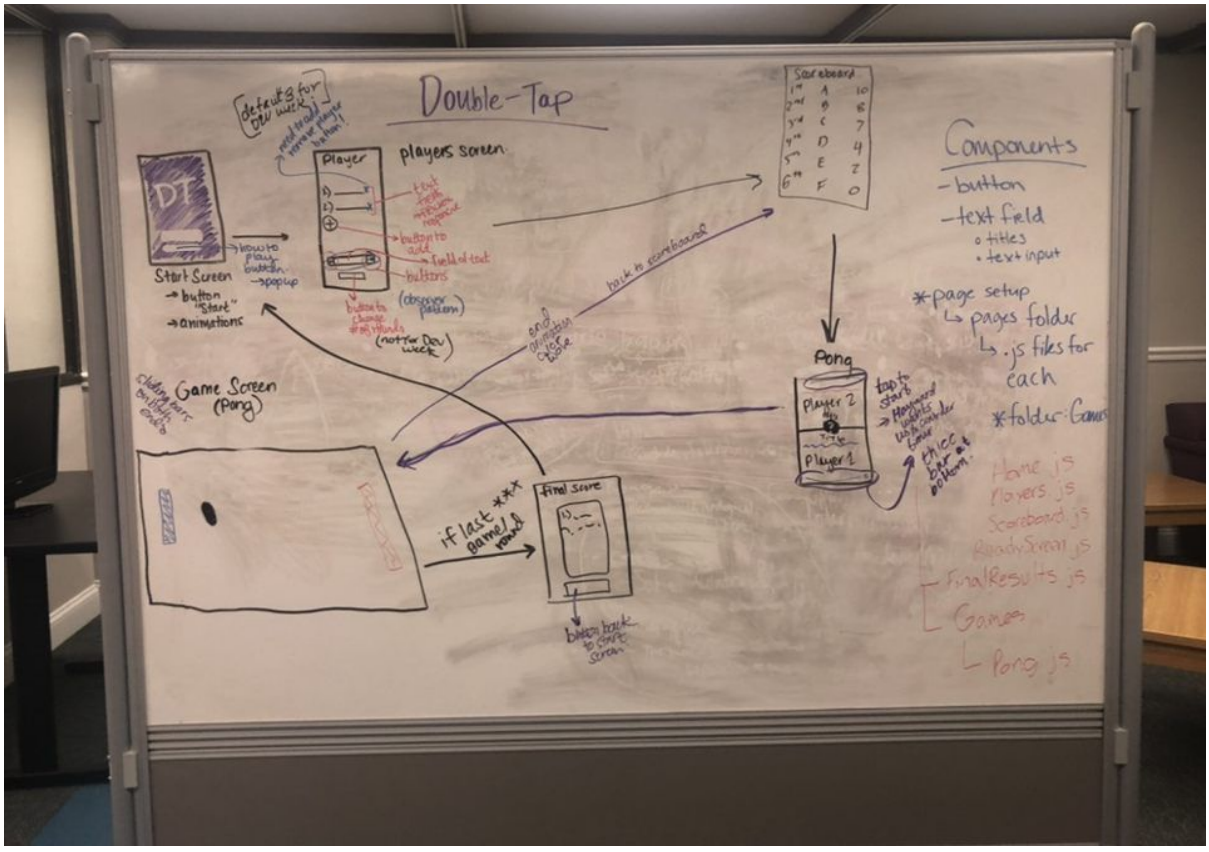
Additionally, we also tried to account for accidental touches during the ready up portion by implementing a timer so that both players are on the same page about the game starting. The timer is a simple bar that is in the center and each player can clearly see it counting down until the beginning of the game mitigating any issues from accidental touches or even cheating by a player. We have a scoreboard that appears after each round to indicate the scores after each round and then after. Additionally, there is a round-robin implementation so that this game can be played with six players. This style of gaming allows us to fulfill our goal of creating a social game that several users can play together.

We wanted this game to be accessible, so we made everything one tap, and made sure to keep our games one touch as well. One of the biggest advantages of this application is it's simplicity. The simple nature, yet detailed logic behind the game creates a really good and fun experience for all the users.

Mockups

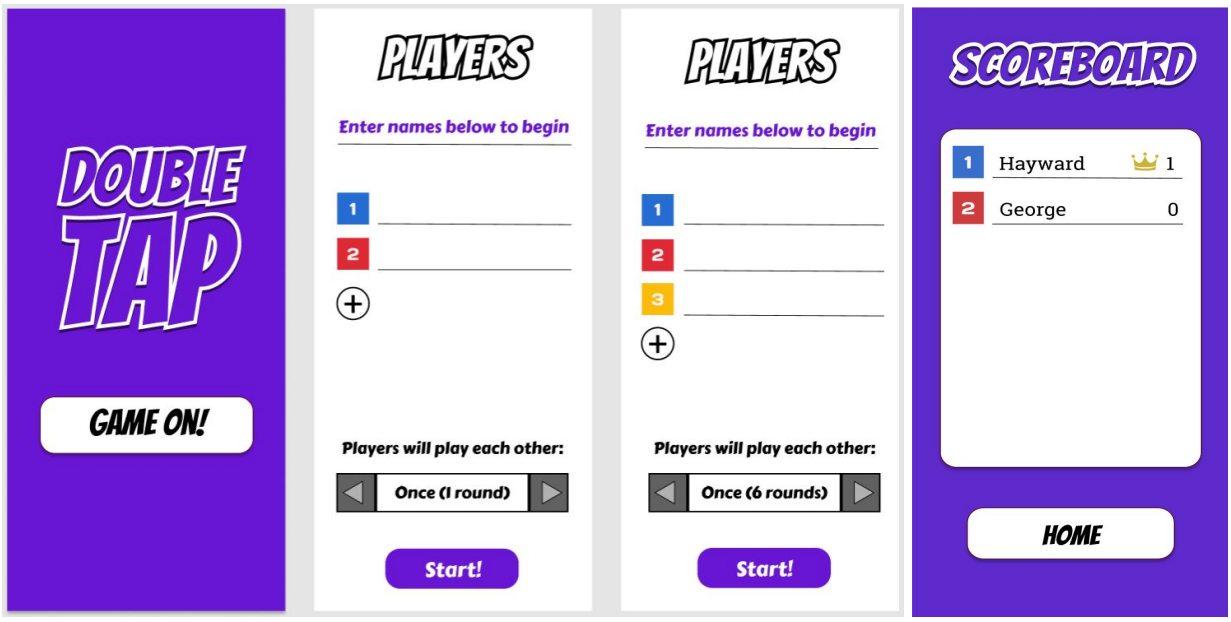
Low-Fidelity Mockup

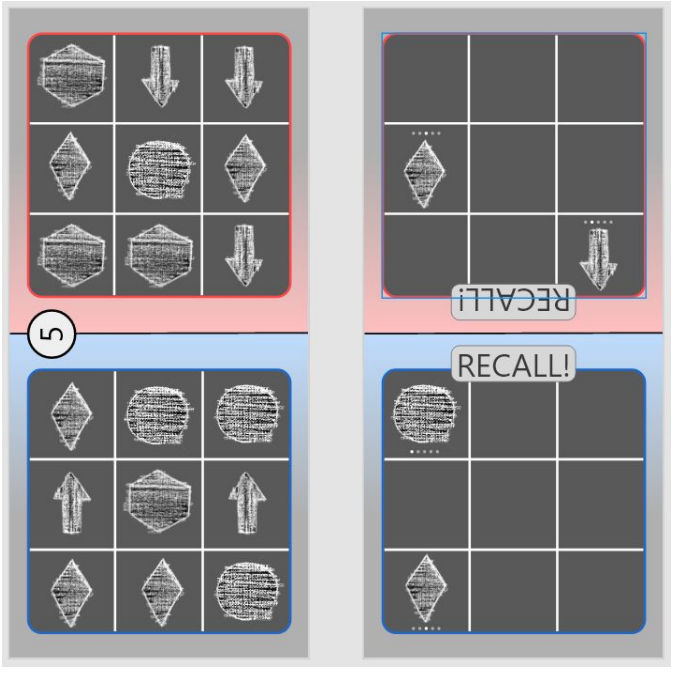
The low-fidelity mockups were done to help create a better understanding of how to frame this application. It helped us understand how to better arrange our components and think more critically about the technical details of the application. We created a flowchart of the application to map out how everything should connect. Through this process, we learned the importance of low-fidelity mockups since this flowchart of screens helped us better understand how to put the application together overall to create smooth transitions and a better experience for our users. It helped us consider what patterns we could user and how to place our components on all of our screens to make them easily accessible, without detracting from the main point of each screen.



High-Fidelity Mockups

The high-fidelity mockups were created using the mockup software called Figma. Figma is a collaborative tool, so we were all able to add our input to the design as we worked on them. This is the end goal that we planned for our project. The mockup of the game was reconsidered and then rendered to look more like the original theme, without the gradient and chalkboard, in the final product. Our high-fidelity mockups helped us create a goal for our final product.





Testing and Iterative Design

Due to the nature of our application being an interactive multiplayer game, testing occurred mainly via user experience throughout the various stages of development. Testing the application in its early development stages occurred in Xcode via simulations, both on Android and iOS devices. By creating an early visual of each screen of Double Tap, our team could check various aspects of the application such as the screen layouts and styles, as well as the algorithms and logic encoded. The quick use of a simulator proved to be efficient in making changes to the code and seeing said changes right away. Additionally, using both an Android and iOS emulator allowed for our team to compare side-by-side the differences/similarities between the two in how the application presented on each respective screen. We continued to use this method of testing throughout the entirety of development for these said benefits.

Once we had established base functionality for the project, we took the application to testing among ourselves and our friends. In testing the application among the project members, we were satisfied with the functionality, and found the games to be simple and fun. When we tested the application among friends, however, we found that the application was not as self-explanatory as we had hoped. Even though we had implemented the button that explained each game, some of the interface was not as user friendly as desired. Specifically, the countdowns and the score counting in some screens were not as easy to understand as desired. This lead to some considerations for alternate ways to display this information. Moving forward, we would create more numerical representations for scores in the tap games.

Restrictions, Limitations, and Constraints

In terms of simulating the project, we ran into some build issues. Due to the nature of working in different branches and on different functions of the application, we used a variety of dependencies that were different depending on the functionality that we were attempting to achieve. In order to avoid merge conflicts, we elected not to push our changes to our pod.lock and xcode.workspace files. This meant that we would not overwrite each others changes in dependencies and work space set ups. Unfortunately, this lead to difficulties building the project when we pulled from one branch without the pod files. Luckily, we were able to solve these build issues by running the command "pod install" in the ios folders when we were running the project. This solved build issues, and ensured that we were able to successfully build and run our projects. Without this discovery, we would not have been able to properly simulate our project, and we were thus able to run the project and diagnose issues in design, usability, and functionality.

We also encountered cross-platform issues. Specifically, we had some trouble implementing fonts across both platforms, as well as styles that appeared on both. This proved to be a bit of a distraction while viewing the application as a whole, however we were fortunately able to properly implement the fonts as planned in our original mock-ups from earlier in the semester. Implementing the fonts was one of the final changes made to Double Tap.

In addition to the fonts, the styles issues that we found were specific to React Native. For example, styling specific views is not yet properly implemented in React Native for iOS platforms. In order to remedy this, we created specific styles for each platform. In the case of styling the borders for the views, we styled the views in android and styled the textboxes in iOS. Although these issues proved to be limiting and restrictive in development, finding the solutions to said issues and making the proper alterations allowed for the styling we set as our goal at the beginning of the semester, ultimately improving the overall aesthetic of the gaming experience.

Conclusion

In conclusion, our application is a fun, multiplayer game featuring a series of minigames that creates a competitive and social experience for our users. The application is created in React Native and is a local, offline experience. The application allows for round-robin style tournaments for upto six people and a minimum of two. The application is all on one device and implements a split-screen function. The application is a fun way to add to any social setting or make potentially boring situations such as waiting in long lines more fun.

With several considerations and inspirations, we successfully developed Double Tap. Although it is not ready for a release, our project still accomplishes the original goal we set for ourselves, which was to create a fun, interactive experience made up of split-screen, tapping minigames that user could compete with using a round-robin style tournament. With the use of React Native, and appealing to all of our strengths as individuals, we were able to complete our goals for Double Tap.