GOODGAME

PROJECT REPORT

ANDRE MARTIN, JINA PAK, ERBOL KULANTAEV, JACQUES VAN NIEKERK
CPSC 2350

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OVERVIEW

Our project aims to develop an application tailored for tabletop gaming enthusiasts, providing a user-friendly platform for searching specific tabletop games or inputting criteria to find suitable matches. The application will also be considered an educational platform where users are able to ask questions to a chatbot about game rules, recommendations, or general game knowledge. The primary focus of our endeavor, undertaken as part of our Software Practices class, lies in the detailed process and development journey rather than solely on the final product.

Our application will offer a comprehensive database of tabletop games, provided by BoardGameGeek, allowing users to effortlessly navigate through various options. Upon selecting a game, users will have the option to engage with a chatbot feature designed to address any queries or concerns they may have regarding the chosen game. The user will also be given the option to immediately contact the chatbot from the main page, to ask questions or recommendations for tabletop games.

Within our application, will be applying two APIs (Application Programming Interface) to access and integrate with external databases or services. These APIs will enable seamless retrieval of information regarding tabletop games, ensuring that our platform remains up to date with the latest game releases and information.

Throughout the development process, our team will prioritize iterative design, robust testing methodologies, and efficient project management techniques. By embracing industry-standard practices and collaborative problem-solving, we aim to not only deliver a functional application but also cultivate invaluable skills and insights into software development practices.

Ultimately, our project seeks to foster a learning environment where students can explore the intricacies of software development, tackle real-world challenges, and emerge with a deeper understanding of the iterative nature of building impactful digital solutions.

SDLC

Our Project Team decided to choose the Test-Driven Development (TDD) approach within the Agile framework. This SDLC (Software Development Life Cycle) stood out from the rest because it appeared to be highly beneficial in the development of this type of project. With this chosen model, we will apply the appropriate principles to the project which are listed below:

- **Incremental Development**: TDD emphasizes breaking down the development process into small, manageable units. For a project where the focus is on iterative improvement and continuous testing, this approach allows the team to incrementally build and refine features. In the case of our tabletop game application, this means gradually adding functionalities such as search algorithms, chatbot integration and documentation, and user interface improvements while ensuring that each component functions correctly.
- **Continuous Feedback Loop**: TDD fosters a continuous feedback loop where tests are written before the actual code is implemented. This is the first part of the Red-Green-Refactor rule of one of TTD's principles. It ensures that each piece of functionality is thoroughly tested, leading to higher code quality and fewer bugs. In the context of our tabletop game application, this approach allows our team to catch and address any issues early in the development process, leading to a more robust and reliable final product.
- **Maintainability and Refactoring**: TDD encourages frequent refactoring and code improvements without the fear of introducing bugs. As the project evolves, our team can easily refactor code to improve readability, performance, and maintainability while ensuring that existing functionalities remain intact. This is particularly important for a project like our tabletop game application, which may require updates and enhancements over time to adapt to changing user needs and technological advancements.
- **Clear Documentation and Specification**: TDD inherently promotes clear documentation through the creation of test cases that serve as executable specifications for the system. This ensures that all team members have a shared understanding of the project requirements and desired behaviors. For the tabletop game application, this means having a comprehensive suite of tests that not only verify the correctness of the code but also serve as living documentation for future development efforts.
- **Learning and Skill Development**: By following the TDD approach, team members can gain valuable experience in writing automated tests, designing modular and testable code, and collaborating effectively within an Agile environment. This fosters a culture of learning and continuous improvement, where team members can exchange knowledge and best practices, ultimately enhancing their skills as software developers.

USER STORIES (BoardGameGeek API)

Name	Kyle
Age	35
Education	MEd, Bachelor's of Science
Occupation	Middle School Teacher
Family	Single, Father of one child (age 9)

Background	• Lives in lower east side Vancouver area. • Spends a lot of time outside of working hours marking assignments or preparing projects for students. • Teaches Science and Mathematics
Characteristics	• Exceptional at multi-tasking • Optimistic of technological advantages in the education field
Goals	• Seeking educational board games that can be utilized inside the classroom. • Wants to find popular games with a significant number of positive reviews. • Would like to search easily for different levels of complexity of gameplay
Challenges	• Limited amount of time to go into game shops to inquire information • Games within school systems are outdated and obsolete in teaching
Behaviours	• Tries to incorporate tablet game exercises into the teaching modules • Encourages students to push their creative ambitions using game-like interactive activities
Quotes & Motivations	• Quote: “Children learn better within a fun and interactive environment.” • Motivations: Educational prowess, nature greatness in children

As a middle school teacher, I want to easily find appropriate gaming material so that I can utilize it to help educate and entertain my students.

USER STORIES (cont.)

Name	Maven
Age	20
Education	High School Graduate
Occupation	College Student
Family	Parents, 2 younger brothers

Background	• Lives in Burnaby with parents. • Taking four classes this semester and has joined two school clubs (Chess Club and Tabletop Games Club) • Has a large collection of board games at home, mostly older classic board games.
Characteristics	• Enjoys puzzles and strategic games • Organized and follows a strict schedule
Goals	• Wants to balance homework and social activities. • Find new games to bring to her Tabletop Games Club that all members can play. • Wants to impress her club members by finding popular and exceptional games
Challenges	• Due to busy schedule, does not have much time to travel to shops • Doesn't own many new games
Behaviours	• An introvert and usually uncomfortable in large groups • Excels at critical thinking situations
Quotes & Motivations	• Quote: "I want to find the best games out there in the market to challenge my club." • Motivations: Networking, creating connections, seeking approval

As a busy college student, I want to search for games with specific criteria so that I can impress the members in my club.

USER STORIES (BotPress API)

Name	Gary	
Age	49	
Education	Professional Engineer	
Occupation	Senior Engineer	
Family	Married	
Background	• Lives in Downtown Vancouver • Extremely tech-savvy • Works full time at a consulting firm	
Characteristics	• Values efficiency and policies • Serious nature and follows rules	
Goals	• Wants to optimize the amount of moves it would take to complete certain games	
Challenges	• Finds forums to be too clogged with varied levels of helpfulness about strategies for games	
Behaviours	• Is a firm believer of min-max gameplay • Enjoys the company of a computer over a person	
Quotes & Motivations	• Quotes: “I want the best approach to completing a challenge.” • Motivations: Socio-emotional activation, challenge-orientated	
As a Senior Engineer, I want to utilize the assistance from an AI application so that I can research the most optimal moves for games.		

USER STORIES (cont.)

Name	Linh	
Age	33	
Education	Bachelor of Arts	
Occupation	Stay-at Home Mom	
Family	Married, 2 Children (Ages 9 & 7)	
Background	• Lives in North Vancouver • Husband works abroad throughout the year • Not too tech-savvy when it comes to newer released electronics	
Characteristics	• Values spending time with her children in the evening and weekends • Disapproves letting children use an iPad as their main source of entertainment	
Goals	• Wants to lessen television and movie exposure to children by offering to play board games • Would like to educate herself in games without spending too much time reading rules or guidebooks	
Challenges	• Struggles with reading convoluted rulebooks and guidebooks • Her children have many questions as they play games • Usually hard to find a good source for answers online	
Behaviours	• Organizes weekly game nights with children • Tends to avoid playing new games since the rules are not that familiar to them	
Quotes & Motivations	• Quotes: “I wish I had a way to easily ask questions about a certain game without spending lots of time looking up rules.” • Motivations: Quality family time, education through technology, inspire resourcefulness	
As a stay-at home mom, I want help explaining new games to my children so that I can easily teach them without navigating through many rule books.		

TECHNOLOGY STACK

HTML – For creating website template

CSS – For making the website pretty and responsive

JS – For making website interactive

React – For faster and easier development. We chose this library over others (Angular, Vue, Svelte), since React compared to Angular has a lower entry threshold, and Angular is used for much bigger projects. React is also the most mainstream JS library/framework for web development, so it makes React the perfect option for us.

Material UI – For making the implementation even easier by using its pre-built components and color schemes. It is also good for having as centralized style base, provided by MUI

React-Router-Dom – Since React does not have a built-in URL control system, we must use this library, which is a part of React Ecosystem, so this library is the best option for this task.

Redux(mb) – For having centralized frontend datastore, so it is easier to handle data. Since we have not started coding yet, it is hard to say if we really need this library, or if it would be an additional and useless library to use.

React-Spring – For easier animation implementation. We chose this library because, unlike other famous react animation libraries, it does not contain any additional features we do not need, such as typescript support or server-side rendering. It also has a great compatibility with Jest, the testing-library we chose.

Jest/React-testing-library – For frontend testing. Jest was created by Facebook, which is already putting this testing library above others, since React is also a Facebook product. Jest is also the most famous testing library, so hence it is most beneficial to learn. React-testing-library is a part of the React ecosystem, so it must be used when we talk about react testing. Two of these libraries complement each other and most of the time used together

Netlify – For website Hosting. We chose Netlify hosting website over Heroku and others, since we do not have and need any backend code, just a frontend, and Netlify seems to be the best option for this.

APIs & FEATURES

BoardGameGeek API: https://boardgamegeek.com/wiki/page/BGG_XML_API&redirectedfrom=XML_API

We chose this API because it's the main source of information about gameboards, the first focal point of our project. The API allows us to do calls to get all sorts of information such as showing what category the board game recommendation falls under, information on a summary of the board game, and reviews about the specific board game in question.

Features:

- Search up board games by category.
- Display information about board games.
- Display user reviews about board games.

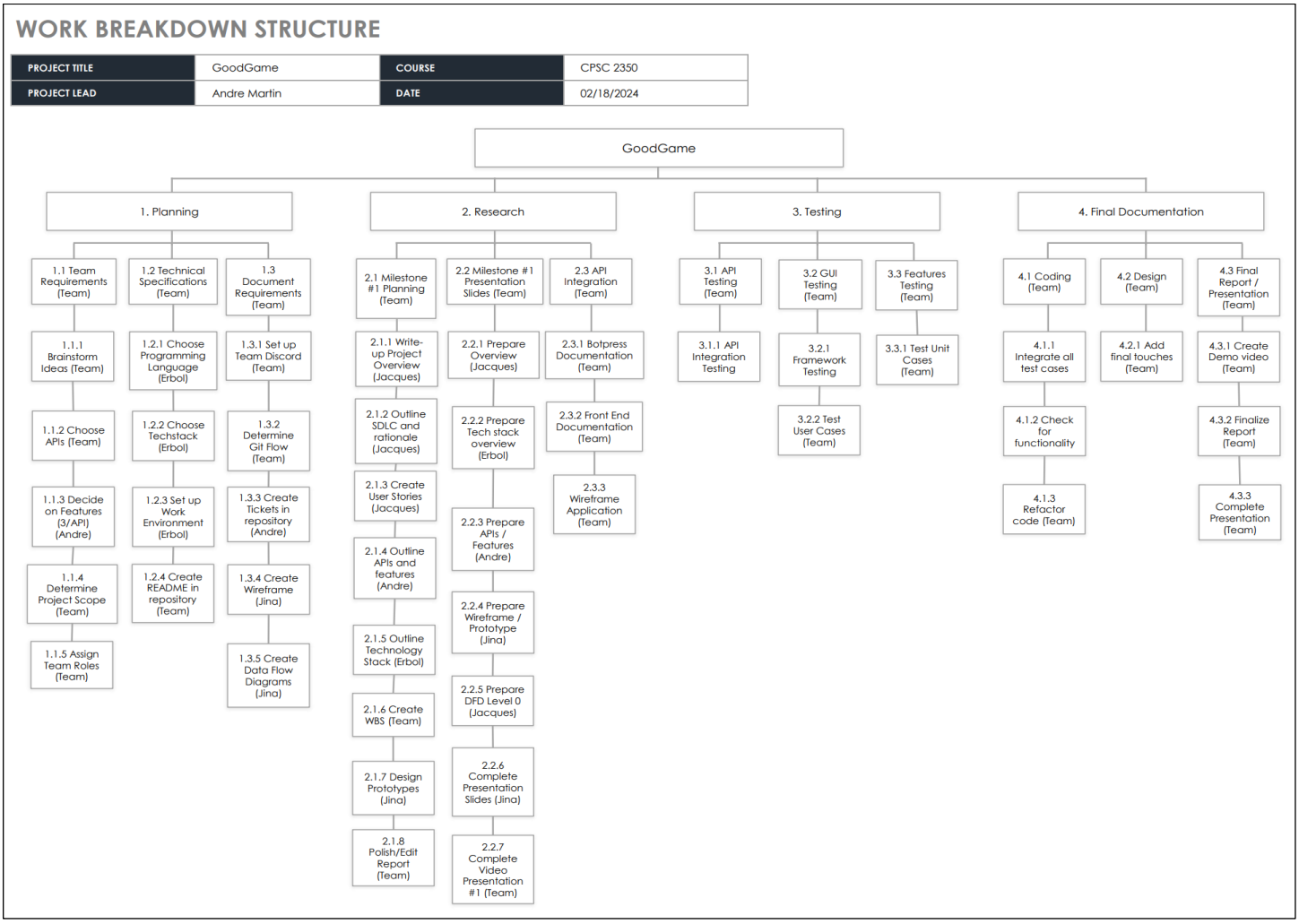
BotPress API: https://botpress.com/docs/developers/howTo/build-integration/

We chose this API because it's the second focal point of this project, a chatbot. We want to combine both this chatbot/AI API with the BoardGameGeek API to create a chatbot that is capable of small conversations if you have questions for it, or if you have questions or want recommendations about educational board games. Our focus on this chatbot is for educational purposes that support an inclusive learning environment.

Features:

- Interacts with users with suggested prompts.
- Displays recommendations for board games based on some user prompts.
- Capable of small conversations if the user opts to do so.

WORK BREAKDOWN STRUCTURE



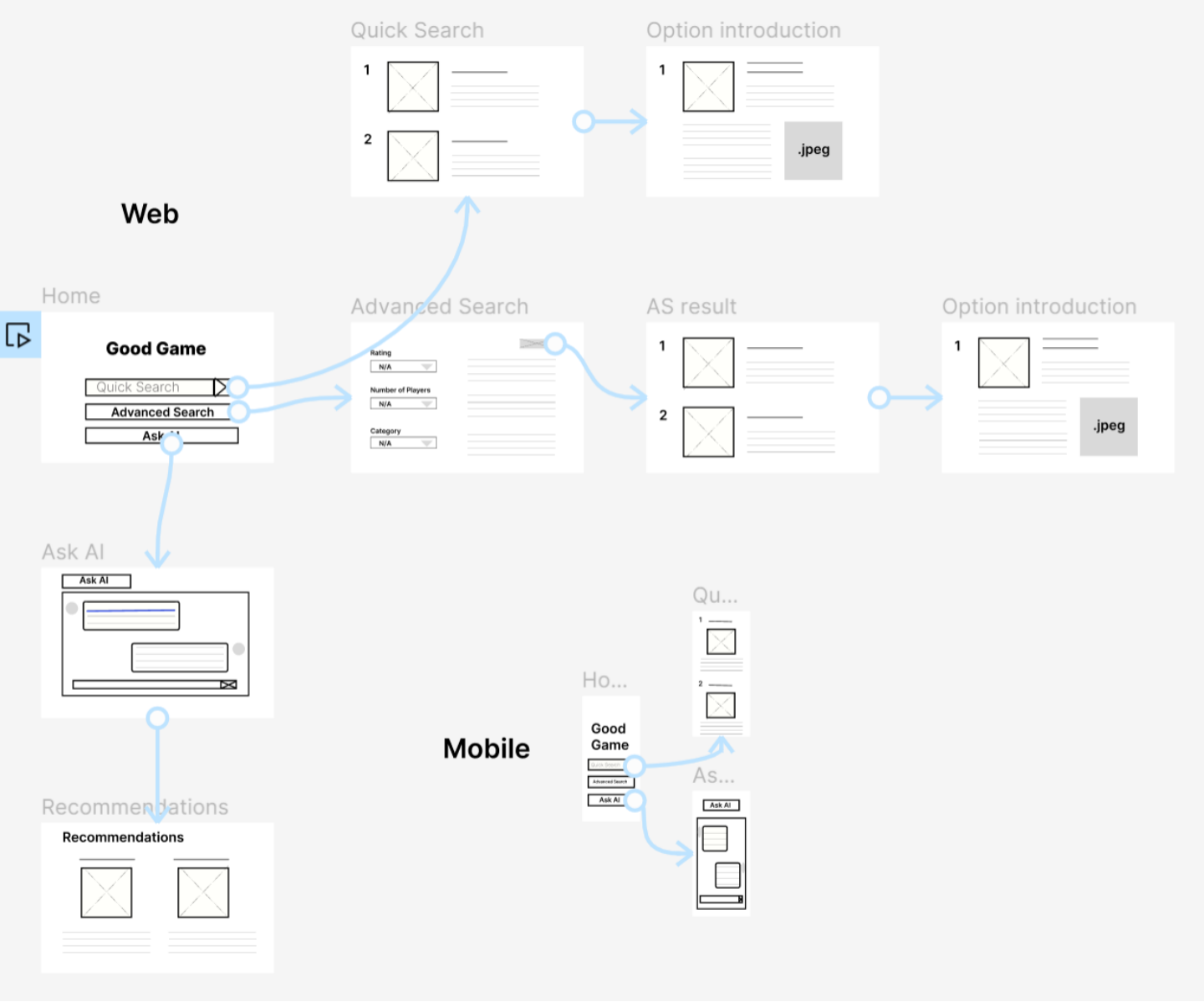
The WBS link can be found here:

https://langara-my.sharepoint.com/:x:/r/personal/jvanniekerk00_mylangara_ca/Documents/WBS_chart1.xlsx?d=wce3bac06ea164aeabefedd817b85a266&csf=1&web=1&e=sx3cda

PROJECT TIMELINE

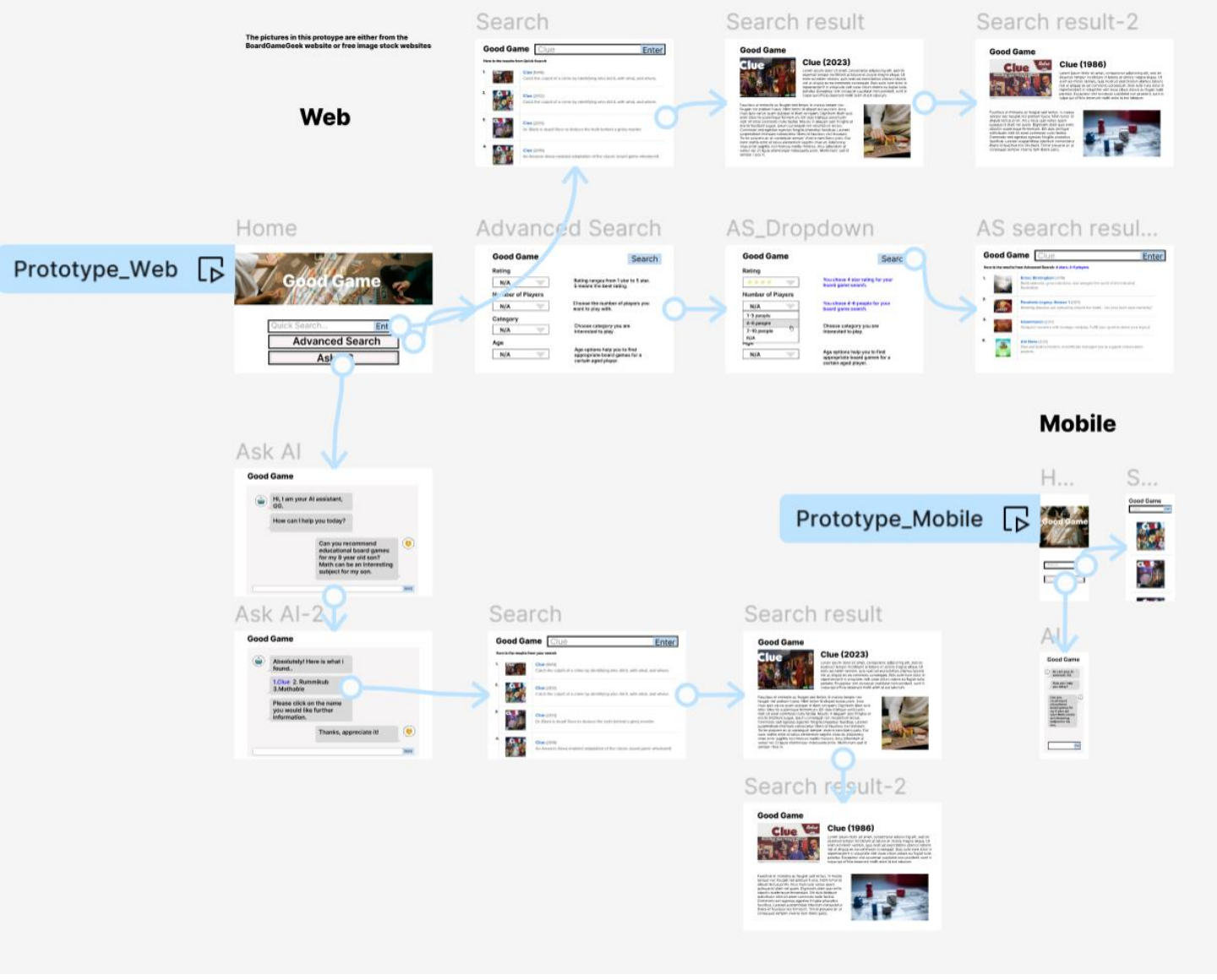
PROJECT WIREFRAME

https://www.figma.com/file/G1rSd4qxcyEcpc9ybdRP5D/Wireframe_GoodGame?type=design&node-id=0%3A1&mode=design&t=NIbHtaw3psQ0Gc9S-1



PROJECT PROTOTYPE

https://www.figma.com/file/gcGV3nC0OATxkR8QHSEClV/Prototypes_GoodGame?type=design&node-id=0%3A1&mode=design&t=NIbHtaw3psQ0Gc9S-1



DATA FLOW DIAGRAMS