

TOP TRUMPS

Development of a Top Trumps Game Project

FEASIBILITY REPORT

Group 2 – Cyrus Bhatti, Joshua Porter-Lightwood, Omar Rashad, Sam Aoudi & Shopitha Sivanathan

Executive Summary:

The Top Trumps Game Project represents a visionary endeavour to transform the cherished Top Trumps card game into an engaging and secure digital gaming experience. The primary objective of the Top Trumps Game Project is to bridge the gap between a classic card game and the digital age. It seeks to offer a modernised and captivating gaming experience, catering to both nostalgic players and new enthusiasts. The project combines tradition with innovation to deliver a secure and enjoyable gaming platform. The project encompasses multiple facets, including user registration and authentication, database management, user interface design, real-time multiplayer support, and the implementation of AI-driven computer opponents. It also addresses the critical concern of user data security, safeguarding the integrity and privacy of player information. Utilising a robust technology stack featuring ASP.NET MVC, C#, Microsoft Identity, Entity Framework, HTML, CSS and JavaScript, the project aligns with established industry best practices. Data storage is facilitated through SQL Server or alternative database systems. The development process presents unique challenges such as creating AI algorithms for computer opponents at varying difficulty levels and ensuring the utmost data security. It also opens doors to explore real-time multiplayer gaming experiences and emphasises the significance of user-friendly design and interface. The Top Trumps Game Project holds substantial promise in the digital gaming market. By systematically addressing the challenges, adhering to the best practices and maintaining a strong focus on security and user experience, this project aims to deliver an engaging, secure, and ensuring gaming experience. With careful execution, it has the potential to become a remarkable addition to the online gaming landscape.

This feasibility report will provide an in-depth analysis of the project's viability, offering insights into technical, financial, and operational aspects. It serves as a foundation for informed decision-making and outlines the key considerations necessary for the successful execution of the Top Trumps Game Project.

Background:

The Top Trumps Game Project emerges from a confluence of factors and opportunities rooted in the timeless appeal of the classic Top Trumps card game, the growing digital gaming market, and an educational context that encourages practical application of web development knowledge. The project takes inspiration from the enduring popularity of the Top Trumps card game. Top Trumps has been a beloved pastime for generations, known for its engaging and competitive gameplay. The project recognises the potential to translate this classic card game into a modern and accessible digital platform, providing an enjoyable and nostalgic experience for long-time players and attracting a new audience of digital gamers.

Digital gaming platforms have experienced a significant surge in demand, particularly in the wake of changing consumer preferences and the global shift towards online entertainment. The project acknowledges the presence of a robust market for online card games, board games, and nostalgic gaming experiences. By offering a digital version of Top Trumps, the project aims to tap into the market and cater to the diverse interests of gamers.

The Top Trumps Game Project has a distinct educational context. It is undertaken as part of a learning journey, with team members seeking to apply their acquired knowledge of C# and ASP.NET MVC to a real-world development project. This educational aspect of the project underscores its dual

purpose: not only to create an enjoyable gaming platform but also to enhance the practical skills and experience of the development team.

The project seeks to bridge the divide between traditional tabletop gaming and modern digital gaming, addressing the evolving tastes of players while preserving the essence of the cherished card game. This endeavour aligns with broader trends in the gaming industry, which emphasise the revival of classic games in digital formats. Furthermore, it demonstrates the potential for combining learning experiences with practical application.

In summary, the Top Trumps Game Project is founded on a rich heritage of gaming enjoyment, a recognition of market dynamics, and the educational aspirations of its development team. It endeavours to offer an enticing and secure gaming experience that appeals to a wide audience, integrating the classic card game into the digital age while equipping developers with valuable skills and knowledge in the process.

Online of Project:

To address the varied requirements of users and to transform their experience, the application incorporates a range of innovative features that seamlessly combine a cutting-edge technology with user-focused design. The following features stand at the core of this experience:

- User Registration and Authentication
- User Profile Management
- Gameplay
- Card Management
- Multiplayer Support
- Computer Opponents
- Scoring & Progress Tracking

User Registration and Authentication are crucial features for the project for several reasons such as user identification and personalisation, data security and privacy, account verification and user accountability and data-driven insights. User identification and personalisation is important as registration allows players to create unique user accounts. This personalised enhances the gaming experience and helps users identify with their in-game personas. Authentication ensures that user data and accounts are protected. Users can feel confident that their personal information, game progress and in-game achievements are secure. Email verification during registration helps confirm the authenticity of user accounts, reducing the risk of fraudulent or automated accounts.

Authentication makes users accountable for their actions, discouraging inappropriate or abusive behaviour in the gaming community. User registration allows for the collection of user data, which can be analysed to gain insights into user behaviour and preferences. This data can be used to refine and improve the gaming experience. User Registration and Authentication are fundamental to the Top Trumps Game Project as they enhance user experience, ensure data security, enable community engagement and provide the basis for fair and competitive gameplay.

User Profile Management is a critical feature for the Top Trumps Game Project for several reasons as such as personalised and player identity, player recognition and reputation, social engagement, user experience enhancement and data insights. User Profile Management allows players to personalise

their gaming experience. They can create a unique identity within the gaming community. This personalisation fosters a sense of attachment to the game. User profiles enable other players to recognise and remember each other. This recognition can lead to more engaging and personalised interactions during multiplayer games. User profiles often include social features which enhance social engagement and networking among players. An attractive and user-friendly profile management interface can improve the overall user experience, making it easier for players to navigate and customise their profiles. User profiles provide valuable data for the project, allowing developers to gain insights into user behaviour, preferences and interactions. This information can inform future updates and improvements to the gaming experience. User Profile Management is essential for enhancing player engagement and personalisation within the Top Trumps Game Project. It not only adds depth to the gaming experience but also provides valuable data for continual improvement and refinement of the platform.

Gameplay is a core and fundamental feature of the Top Trumps Game Project, and its importance cannot be overstated for several reasons such as Core Gaming Experience, Player Enjoyment, Competitive Element, Card Battles, Strategic Thinking, Randomness and Variety, Fairness and Balance, User Retention and Competitive Gaming Community. Gameplay is the heart of the project, defining the core experience that users seek. It is the central element that attracts players and keeps them engaged. Engaging and well-designed gameplay is essential for providing players with an enjoyable and entertaining experience. It is the primary reason users visit the platform. The gameplay introduces a competitive element, where players strive to win card battles and outsmart their opponents. This competitiveness enhances player engagement and motivates them to improve their strategies. Gameplay involves card battles, which are the essence of the Top Trumps game. Users expect an authentic representation of the card battles, as this is the unique and defining feature of Top Trumps. The gameplay challenges players to think strategically. They must assess card attributes and make informed decisions on which attribute they should choose to play, enhancing their critical thinking skills. Effective gameplay incorporates randomness in card distribution, ensuring that each game is unique and unpredictable. This variety adds to the replay value and excitement of the game. Well-designed gameplay ensures fairness and balance, preventing any one player from having an unfair advantage. This fairness is essential for player satisfaction. Engaging gameplay is a key factor in user retention. Players return to the platform for enjoyable gameplay experiences and the satisfaction of winning card battles. High-quality gameplay contributes to building a competitive and thriving gaming community, attracting more players and enthusiasts to the platform. Gameplay is the foundation of the Top Trumps Game Project, driving player engagement, enjoyment and competition. It is the primary reason users visit the platform and is instrumental in creating an authentic and immersive Top Trumps gaming experience.

Card Management is a pivotal feature for the Top Trumps Game Project, and its significance is underlined by several essential reasons such as Central to Game Concept, Card Distribution, Player Involvement, Card Attributes, Player Interaction, Strategic Decision-Making, Card Availability, Game Progression, Competitive Element, Variety and Authentic Representation. Card management is at the core of the project's concept, as it emulates the central gameplay mechanic of the traditional Top Trumps card game. Managing and using cards is what makes Top Trumps unique and engaging. Effective card management ensures the fair and random distribution of cards at the start of the game, an integral part of maintaining a balanced and enjoyable gaming experience. Card management requires player participation, as they select the attribute to play during the game. This involvement is essential for player agency and enjoyment. Managing card attributes is a strategic aspect of gameplay, as players must assess and compare the attributes of their cards to determine

the best moves. It adds depth to the gaming experience. The management of cards fosters interaction between players as they compare card attributes and compete in battles. This interaction is central to multiplayer gaming. Players must make strategic decisions about which cards to play, based on their knowledge of the card attributes and their understanding of the game mechanics. This decision-making element enhances the intellectual challenge of the game. Card management ensures that players can view their own cards and those in play during the game. This transparency is vital for informed gameplay. Managing cards affects the progression of the game, as players must deplete their hands of cards through battles to win. Card management is central to the competitive aspect of the game, where players aim to outmanoeuvre their opponents by making quick attribute choices. Effective card management ensures that each game is unique and offers different strategies, contributing to the longevity of the gaming experience. Accurate card management replicates the Top Trumps card game's authentic representation, preserving the essence of the traditional game. Card Management is of paramount importance for the Top Trumps Game Project as it directly aligns with the core concept of the game, fosters player interaction, strategic thinking, and competition, and adds to the authenticity of the gaming experience. It is an indispensable element in recreating the Top Trumps card game in a digital format.

Multiplayer support is a vital feature for the Top Trumps Game Project for several significant reasons such as Social Engagement, Competition and Challenge, Player Versus Player Battles, Varied Player Skill Levels, Community Building and Competitive Gaming Environment. Multiplayer support encourages social interaction and engagement among players. It enables users to connect with friends or meet new opponents, fostering a sense of community within the gaming platform. Multiplayer gameplay introduces competition and challenges, motivating players to enhance their skills and strategies. It adds an exciting dimension to the gaming experience, making it more compelling. Multiplayer support enables head-to-head player battles, allowing users to compete directly with one another. This competitive element is a primary draw for many players. Multiplayer accommodates a broad range of player skill levels, making the game accessible to both beginners and experienced gamers. This inclusivity can attract a wider audience. Multiplayer gaming fosters a sense of belonging and community within the gaming platform. Players can form connections and friendships with others who share their interest. A thriving multiplayer community can lead to a competitive gaming environment, attracting more players and enthusiasts to the platform. Competitive play often leads higher engagement. Multiplayer support is essential for the Top Trumps Game Project as it brings social engagement, competition and dynamic gameplay. It not only enhances the overall gaming experience but also significantly contributes to the project's popularity and success by attracting a diverse and engaged player base.

Computer opponents, also known as AI opponents, play a crucial role in the Top Trumps Game Project for several compelling reasons such as Accessible Single-Player Experience, Practice and Skill Development, Varied Difficulty Levels, Challenge and Engagement, Continual Playability, Testing and Strategy Development, Complete Gaming Experience, Flexibility in Game Sessions and Balanced Gameplay. AI opponents provide a valuable single-player mode, allowing users to enjoy the game even when there are no human opponents available. This accessibility ensures that the game remains engaging for players at all times. AI opponents offer a training ground for players to practice and improve their gaming skills. Beginners can familiarise themselves with the game mechanics, while more experienced players can refine their strategies. Offering computer opponents at varying difficulty levels, such as easy, medium, and hard, accommodates players of different skill levels. It ensures that the game remains challenging for experienced players while remaining accessible to beginners. AI opponents provide a source of challenge and engagement, ensuring that players have a

competitive experience, even when playing alone. Computer opponents contribute to the game's playability and replay value. Players can enjoy a diverse range of gaming experiences, whether competing against human opponents or challenging AI opponents. Advanced players can use AI opponents to test new strategies or refine existing ones, honing their skills for future matches against human opponents. The presence of AI opponents ensures that the game offers a complete and fulfilling gaming experience, whether player prefer solo play or multiplayer games. AI opponents allow players to enjoy short game sessions when time is limited, making the game suitable for various time constraints. Computer opponents contribute to balanced gameplay, as they adhere to predefined AI algorithms and do not introduce the unpredictability that human players might bring. Computer opponents are essential for the Top Trumps Game Project as they provide a versatile and accessible gaming experience, accommodate players of all skill levels, and ensure continuous engagement and challenge. They contribute significantly to the game's playability and versatility, making it a well-rounded and inclusive gaming platform.

Scoring and Progress Tracking are essential features for the Top Trumps Game Project for a variety of important reasons such as Competitive Element, Achievements and Goals, Motivation for Improvement, Game History, Transparent and Fair Play, Player Engagement, Social Interaction, Data Analysis and Retention and Longevity. Scoring and progress tracking introduce a competitive element to the game, motivating players to strive for higher scores and improved performance. Players can set goals and achievements based on their progress and scores, which adds a sense of accomplishment and purpose to their gaming experience. Scoring and progress tracking provide players with tangible evidence of their skills and growth, motivating them to continually improve and refine their gameplay strategies. Scoring and progress tracking maintain a game history for each player, allowing them to review past games, strategies, and results. This is valuable for analysis and learning. Scoring and progress tracking ensure that the game is transparent and fair, as they provide an objective measure of player performance. This discourages cheating and promotes fair competition. Players are more likely to remain engaged with the game when they can monitor their progress and track their improvement over time. Sharing progress and scores with friends or other players can lead to social interaction and discussions, further enhancing the gaming community. It generates valuable data that can be analysed to gain insights into player behaviour, preferences and areas of interest. This data can inform future updates and enhancements to the game. Scoring and progress tracking contribute to player retention by providing a sense of continuity and purpose in the game. Players are more likely to return to the platform when they have specific goals and scores to achieve.

Requirements:

User Management:

- The system must allow users to register for an account.
- Users must be able to log in using their credentials.
- User registration must include a unique email and password.
- The system must validate the email addresses during registration.
- Passwords should be securely hashed and stored.
- Users must have the option to reset their passwords if forgotten.
- The system should send email notifications for account-related events (e.g., registration).

Gameplay:

- The game must replicate the classic Top Trumps card game mechanics.
- Users should be able to create or join multiplayer game rooms.
- The system must support real-time gameplay for multiplayer matches.
- Players should have a limited time to make their attribute selections during a match.
- The game must feature card battles where attributes are compared.
- Users should have the option to play against computer opponents.
- Computer opponents should be available at various difficulty levels (easy, medium, hard).
- The game must use a random distribution of cards at the start of each match.

Card Management:

- Users must be able to view and select attributes from their decks.
- The system should display the selected card attributes during gameplay.
- Players must be able to see the attributes of cards played by opponents.
- Card management should support dragging and dropping cards into play.
- The game should automatically determine the winner of a card battle based on attributes.
- Cards that are won or lost during battles should be clearly indicated.
- Players should have access to a card history log during the game.
- The system must prevent cheating and tampering with card attributes.

Scoring and Progress Tracking:

- The game should track and display scores for each player during a match.
- Scoring should be based on the number of card battles won.
- The system must maintain a history of user scores and achievements.
- Progress tracking should include statistics on gameplay performance.
- Users must be able to view their game history and performance over time.

User Interaction:

- In-game notifications should keep players informed about game events (e.g., achievements)
- The platform should have moderation tools to maintain a respectful gaming environment.
- Users should be able to report inappropriate behaviour or content.

User Profile Management:

- The system should display in-game achievements and statistics on user profile.
- The profile management interface should be user-friendly and intuitive.
- Profiles must display information about a player's wins, losses and game history.

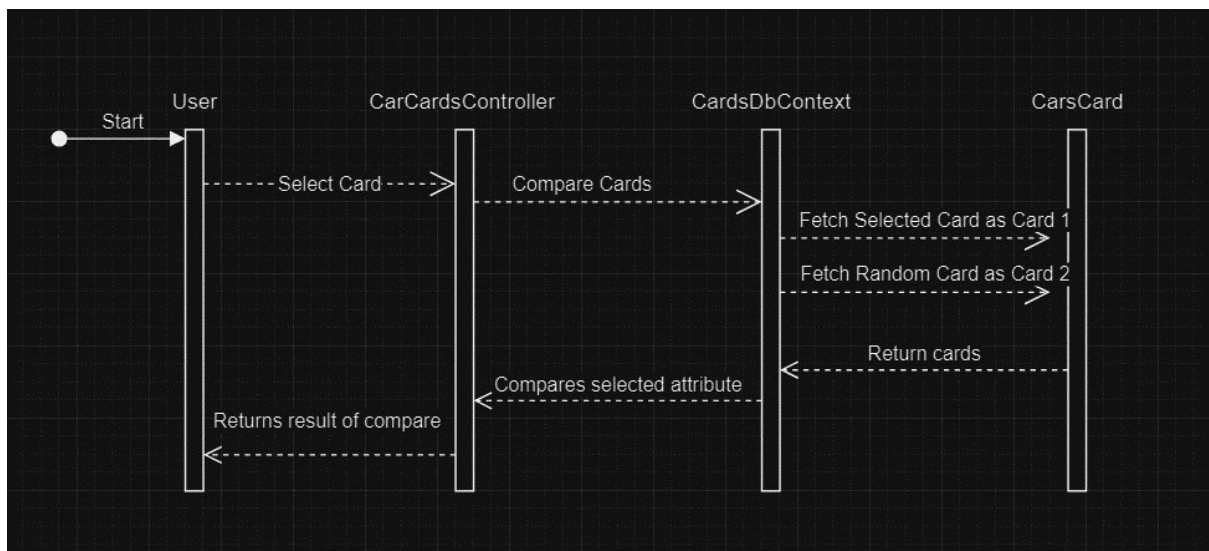
Multiplayer Support:

- The system should support multiplayer game play with a variable number of players.
- Multiplayer support should be scalable to accommodate future updates and increased player demand.

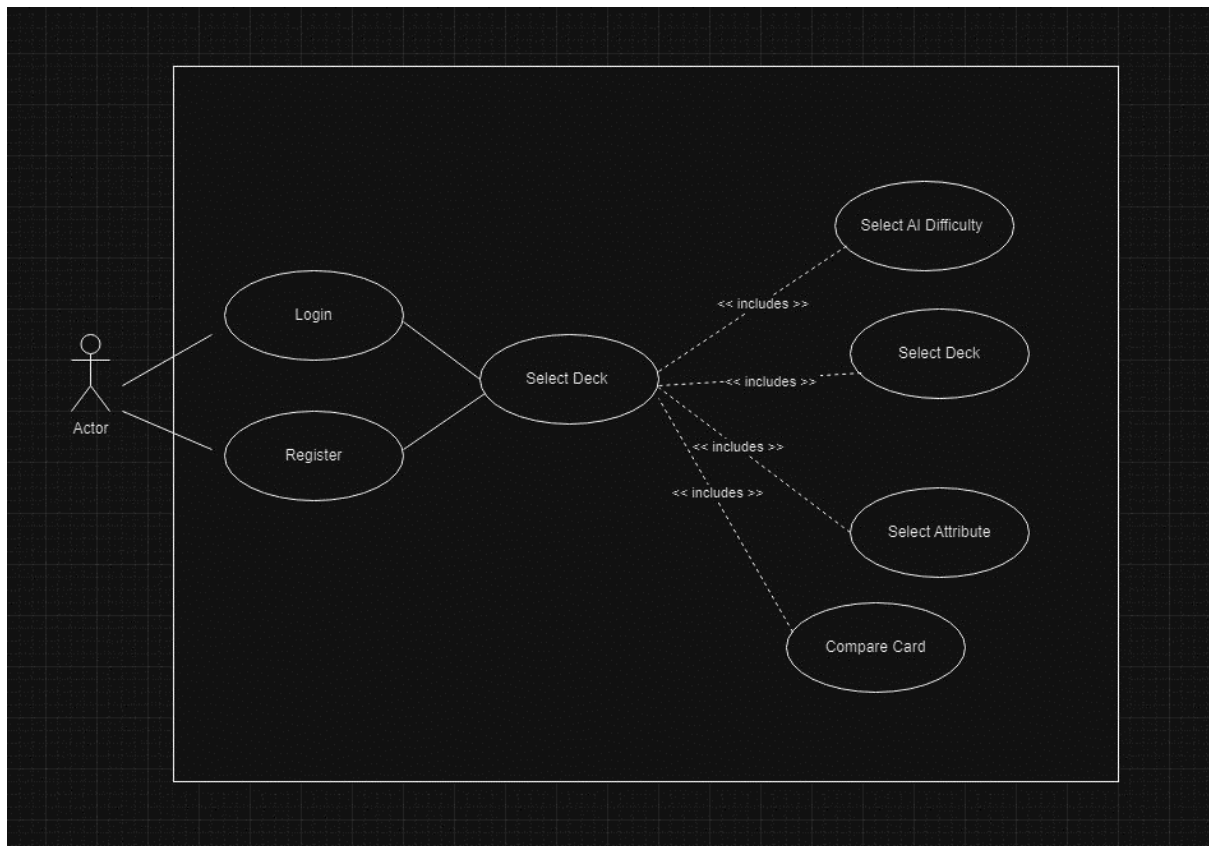
These requirements provide a comprehensive overview of the key functionalities and features required for the Top Trumps Game Project, covering user management, gameplay, card management, scoring, user interaction, user profile management and multiplayer support. These requirements serve as the foundation for the successful development and implementation of the project.

Diagrams:

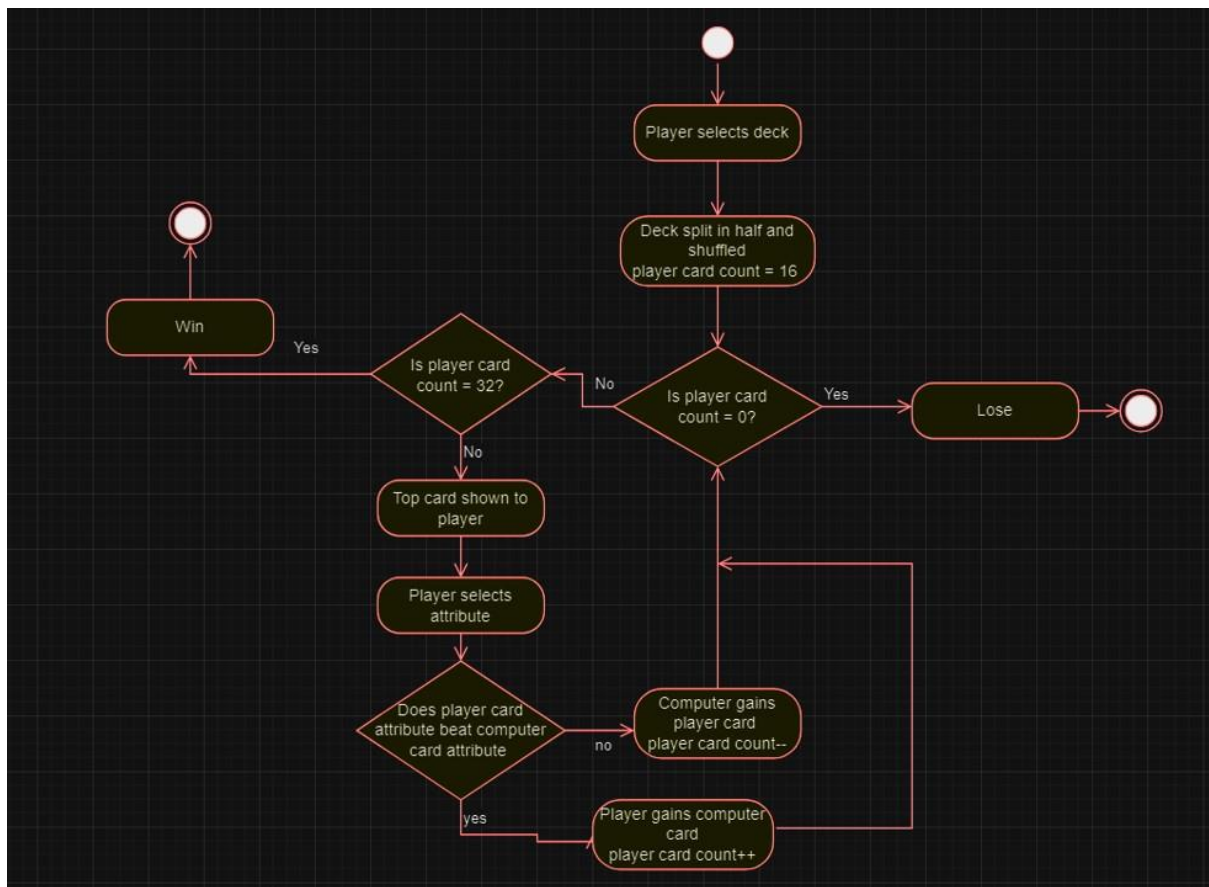
Sequence Diagram:



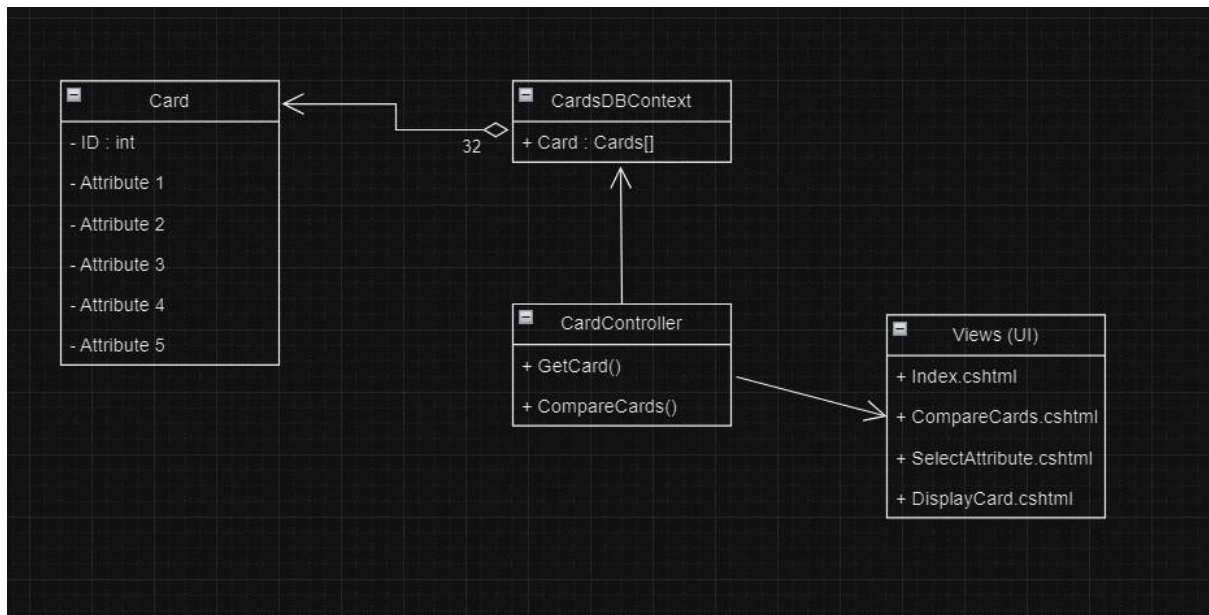
Use Case Diagram:



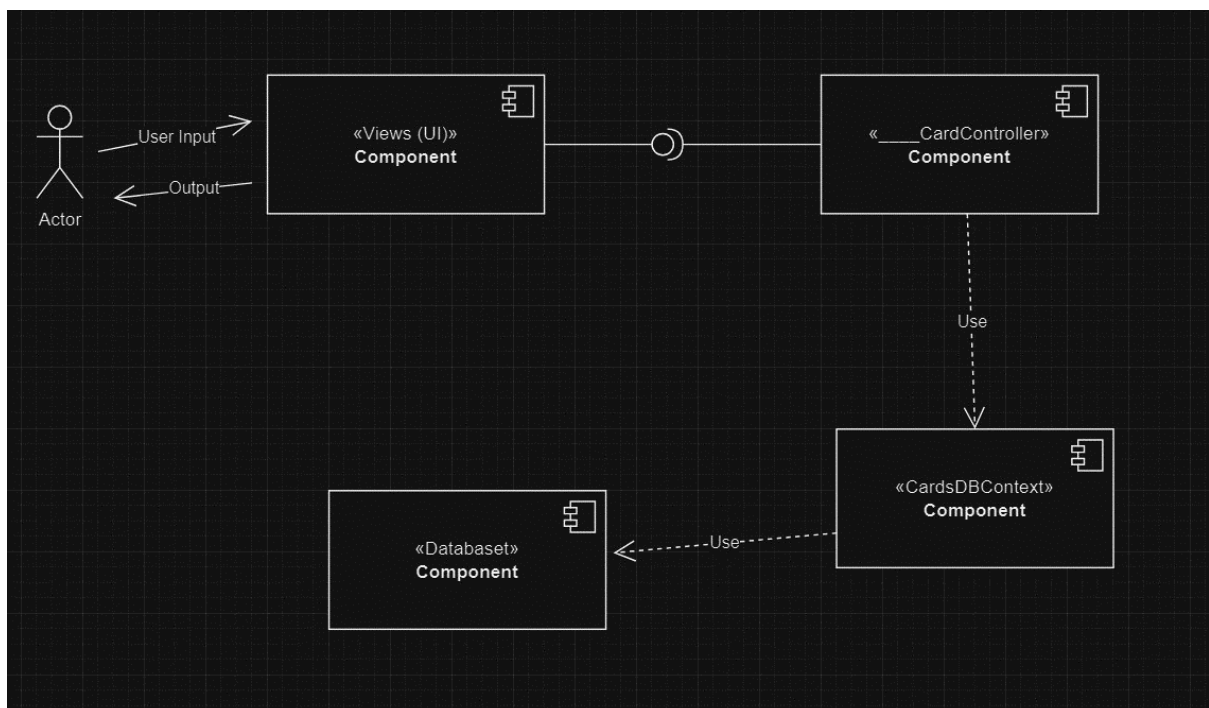
Activity Diagram:



Class Diagram:



Component Diagram:



Conclusion:

Based on a comprehensive analysis, the development of the Top Trumps Game Project is deemed feasible. The project addresses a wide range of needs including user engagement, market demand, security, and skill development. It strives to create a fulfilling and secure gaming experience that captures the essence of Top Trumps while catering to the evolving preferences of modern players. With a well-designed user interface, this project holds the potential to achieve success in the market.

This feasibility report serves as a foundational document for informed decision-making regarding the development and launch of the “Top Trumps Game Project”. Further detailed planning, development and testing are recommended to ensure the project’s efficacy and user satisfaction.