

Senior Project Requirements

Requirement ID: 1

Type: Functional

Description: Recreate the classic game Pong with modern twists to enhance gameplay and visual appeal.

Rationale: To address the lack of customization and variety in the traditional version of Pong, ensuring it meets the expectations of modern gamers.

Fit Criterion: The modernized version of Pong should incorporate new gameplay features and modes while retaining the nostalgic elements of the original game

Priority: High

Dependencies: None

Requirement ID: 2

Type: Look and Feel

Description: Design visually appealing graphics and animations that enhance the overall aesthetic of the game.

Rationale: To create an engaging and immersive visual experience for players.

Fit Criterion: Players should be impressed by the game's graphics and animations, which should complement the gameplay.

Priority: Medium

Dependencies: None

Requirement ID: 3

Type: Style

Description: Define a cohesive visual style and theme for the game that reflects its modernized approach to the classic Pong concept.

Rationale: To create a visually striking and memorable experience that sets the game apart from traditional Pong iterations.

Fit Criterion: The game's visual elements, including colors, backgrounds, environments, and graphical assets, should maintain coherence with the established visual theme.

Priority: Medium

Dependencies: None

Requirement ID: 4

Type: Usability

Description: Ensure ease of use and intuitive controls for players of all skill levels.

Rationale: To make the game accessible and enjoyable for both veteran Pong players and new gamers.

Fit Criterion: Players should be able to learn and play the game without encountering difficulties or confusion.

Priority: High

Dependencies: 1 (Functional)

Requirement ID: 5

Type: Personalization and Internationalization

Description: Allow players to customize game settings and options.

Rationale: To increase engagement and replayability by allowing players to tailor the game to their preferences.

Fit Criterion: Players should be able to customize aspects such as difficulty level, game speed, and visual themes.

Priority: Medium

Dependencies: 1 (Functional)

Requirement ID: 6

Type: Understandability and Politeness

Description: Implement clear and polite user feedback messages and prompts to guide players through the game and handle errors gracefully.

Rationale: To ensure players can easily understand the game's mechanics and feedback messages, promoting a positive user experience.

Fit Criterion: All user-facing text and messages should be written in a clear and friendly tone, providing helpful guidance and explanations where necessary.

Priority: Medium

Dependencies: 4 (Usability)

Requirement ID: 7

Type: Convenience

Description: Implementation of Simple menus that are organized and simple to follow.

Rationale: To provide users with convenient options for managing their gameplay experience and preferences.

Fit Criterion: Players should be able to go through all menus and change any setting without having difficulties.

Priority: Medium

Dependencies: 4 (Usability)

Requirement ID: 8

Type: Performance

Description: Ensure smooth and responsive gameplay performance.

Rationale: To provide an enjoyable gaming experience without lag or slowdowns.

Fit Criterion: The game should run at a consistent frame rate without noticeable lag or stuttering.

Priority: High

Dependencies: 1 (Functional)

Requirement ID: 9

Type: Security

Description: Make no requirements to need personal information to play.

Rationale: To safeguard player privacy and prevent potential security breaches.

Fit Criterion: Make sure personal information is not asked for from the user so they are not at risk.

Priority: Medium

Dependencies: None

Requirement ID: 10

Type: Precision or Accuracy

Description: Ensure precise collision detection between the ball and paddles to accurately reflect gameplay interactions.

Rationale: To maintain the integrity of the game mechanics and provide a fair and consistent gameplay experience.

Fit Criterion: The collision detection algorithm should accurately determine when the ball makes contact with the paddles, ensuring that gameplay interactions are precise and predictable.

Priority: High

Dependencies: 1 (Functional), 8 (Performance)

Requirement ID: 11

Type: Reliability and Availability

Description: Ensure the game is reliable and available for uninterrupted gameplay.

Rationale: To provide a consistent gaming experience without frequent crashes or downtime.

Fit Criterion: The game should undergo rigorous testing to identify and fix potential bugs or issues that could cause crashes or disruptions. Additionally, measures should be in place to ensure the game server's availability, minimizing downtime.

Priority: High

Dependencies: 1 (Functional)

Requirement ID: 12

Type: Robustness or Fault-Tolerance

Description: Implement robust error handling and recovery mechanisms to prevent crashes and enable seamless restarts in case of unexpected errors.

Rationale: To maintain uninterrupted gameplay and prevent frustration for players by minimizing the impact of crashes or errors.

Fit Criterion: The game should handle potential points of failure, such as memory leaks or resource exhaustion, by gracefully recovering from errors without crashing.

Priority: High

Dependencies: 1 (Functional)

Requirement ID: 13

Type: Scalability or Extensibility

Description: Design the game architecture to be scalable and extensible to accommodate future updates and additions.

Rationale: To ensure that the game can grow and evolve over time without requiring major rewrites or overhauls.

Fit Criterion: The game architecture should allow for easy integration of new features, game modes, and content without disrupting existing functionality.

Priority: Medium

Dependencies: 1 (Functional)

Requirement ID: 14

Type: Longevity

Description: Ensure the game remains playable and supported over an extended period.

Rationale: To provide continued enjoyment for players and ensure the game remains relevant in the long term.

Fit Criterion: The game should be compatible with future hardware and software updates, with provisions for ongoing maintenance and updates.

Priority: High

Dependencies: 15 (Maintainability and Support)

Requirement ID: 15

Type: Maintainability and Support

Description: Ensure the codebase is well-organized and documented for ease of maintenance and future updates.

Rationale: To facilitate ongoing development and support for the game if needed.

Fit Criterion: The code should be commented and structured in a way that allows for easy understanding and modification.

Priority: Medium

Dependencies: None

Requirement ID: 16

Type: Speed and Latency

Description: Minimize input lag and latency to ensure responsive gameplay.

Rationale: To provide a smooth and immersive gaming experience without delays or input lag.

Fit Criterion: Player inputs should result in immediate on-screen actions, with minimal delay between input and response.

Priority: High

Dependencies: 1 (Functional), 8 (Performance)

Requirement ID: 17

Type: Safety-Critical

Description: Implement safety features to protect players from potential harm or discomfort during gameplay.

Rationale: To prioritize player safety and well-being while playing the game.

Fit Criterion: The game should include features such as adjustable brightness levels to prevent eye strain.

Priority: Medium

Dependencies: None

Requirement ID: 18

Type: Consistency

Description: Ensure consistency in game mechanics, UI elements, and overall gameplay experience across different platforms and devices.

Rationale: To provide a cohesive and seamless experience for players regardless of the platform they are playing on.

Fit Criterion: The game should have consistent gameplay mechanics, user interface elements, and performance across various platforms, including PC, mobile, and consoles.

Priority: Medium

Dependencies: None

Requirement ID: 19

Type: Interactivity

Description: Implement interactive elements and features that engage players and encourage active participation.

Rationale: To enhance player engagement and immersion in the game world.

Fit Criterion: The game should include interactive elements such as multiple game modes, customizability, and possible hidden features to discover.

Priority: Medium

Dependencies: None

Requirement ID: 20

Type: Scoring System

Description: Implement a scoring system that accurately tracks player performance and triggers specific in-game events or actions when certain score thresholds are met.

Rationale: To enhance gameplay depth and variety by incorporating dynamic elements that respond to player performance, adding excitement and challenge.

Fit Criterion: The scoring system should monitor player scores in real-time and initiate predetermined game events or actions (e.g., power-ups, level progression, environmental changes) when specific score thresholds are reached.

Priority: Medium

Dependencies: 1 (Functional)

Requirement ID: 21

Type: Game Modes

Description: Implement multiple game modes to offer players diverse gameplay experiences and replay value.

Rationale: To provide players with options for varying gameplay experiences, catering to different preferences and skill levels, and increasing overall engagement and longevity of the game.

Fit Criterion: The game should include at least two distinct game modes, each offering unique challenges, objectives, and mechanics. Game modes should be easily accessible from the main menu and provide clear instructions or objectives to the player.

Priority: Medium

Dependencies: 1 (Functional), 4 (Usability)