

# Final Project Report

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## Game Information

### About the Game

*Card Colosseum: War* is a puzzle-action single-player card game where the player competes against an AI opponent in a reinterpretation of the original game *War*. Although the core loop similarly involves card comparison, *Card Colosseum: War* features two elements that shift it firmly into the puzzle-action category:

1. **Puzzle Element:** Tactical decision-making with limited resources, namely Option Points. To elaborate, the player must strategically choose when to Peek, Swap, or Burn, creating a planning and optimization puzzle each turn.
2. **Action Element:** Ties trigger “war,” a timing-based skill mini-game. To elaborate, the player must hit Space precisely as a slider handle moves rapidly, introducing reflex-based action and real-time input.

The visuals reinforce a striking but relevant theme: the weight a soldier carries; the effects of war on families and, broadly, civilians; and the ultimate ruin of war, regardless of the outcome.

### Game Story/Scenario

The narrative visually unfolds through a sequence of evocative backgrounds rather than explicit cutscenes. The main menu shows a lone warrior on horseback, reminding the player of the duty, burden, and resolve real soldiers carry into conflict. Once the game begins, the imagery notably shifts to the face of a child, representing the civilians, especially the families and children of soldiers, who pay the hidden cost of war. Regardless of the final score, the final screen reveals ancient ruins sinking into water, conveying a loud message: despite war’s final score, it leaves irreversible destruction in its wake. Although the narrative is brief, it is indubitably emotionally resonant; its design frames the simple gameplay with a focusably complex set of feelings: those of sacrifice, consequence, and fragility.

### Reference Games

- War (traditional card game)
- WarrioWare (timing mini-games)

### Genre

1. **Puzzle:** The player must manage limited Option Points and solve minor strategic problems each turn, namely when to Peek, Swap, or Burn. This limited resource management and strategic problem-solving create a decision-making loop that mirrors a puzzle-game approach to resource optimization. The player is constantly planning, weighing risks, and manipulating the deck state to influence outcomes.
2. **Action:** Ties trigger “war,” where success depends entirely on precise, real-time input. The slider moves rapidly and continuously, requiring quick reaction and hand-eye coordination. The player’s performance in this action segment directly determines whether they win a “war” and gain Option Points.

These elements fulfill the project requirement and collaborate with the card-game concept.

## Single-Player Requirement

Compliantly, *Card Colosseum: War* is a single-player game where the player competes against an AI opponent.

## Target Audience

- Casual players who enjoy simple, strategic gameplay
- Players who enjoy timing-based challenges
- Peers familiar with Unity projects

# Game Mechanics

## Overall Game System

*Card Colosseum: War* uses a core loop:

1. The player chooses one of three optional tactical actions: Peek, Swap, or Burn.
2. Both sides flip the top card of their deck.
3. The side with the higher rank wins the round.
4. A tie triggers “war.”
5. Scoring updates dynamically.
6. Streaks and “war” victories yield Option Points.

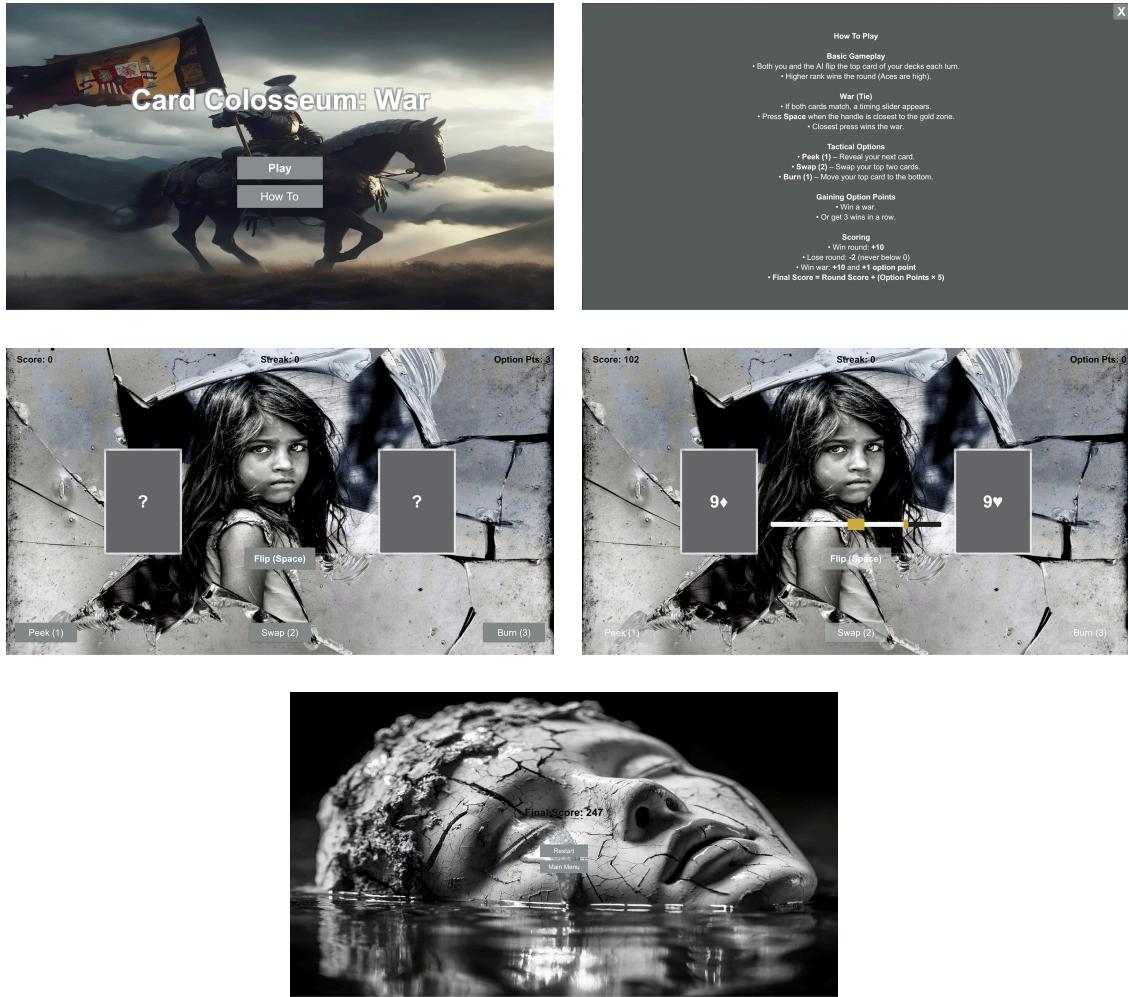
The game maintains state for:

- Decks
- Score
- Win streak
- Option Points
- Timing bar status
- War resolution
- Final score calculation

## Player Character Objectives

- **Short-Term Goals:** Win individual rounds, spend Option Points wisely, and hit the timing bar precisely during “wars”
- **Mid-Term Goals:** Maintain win streaks, accumulate Option Points for a more potent tactical edge, and keep the score high
- **Long-Term Goals:** Achieve the highest possible Final Score and win “wars” efficiently to maximize point multipliers

## Gameplay Example



## Game System, Scoring, Rewards, and Items

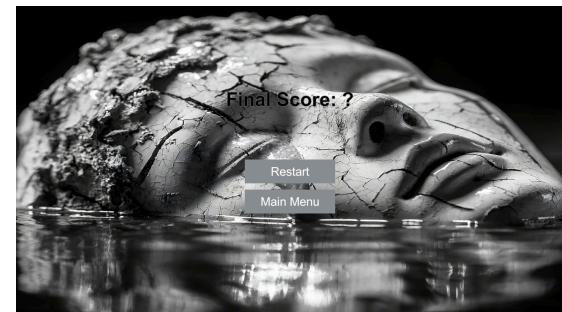
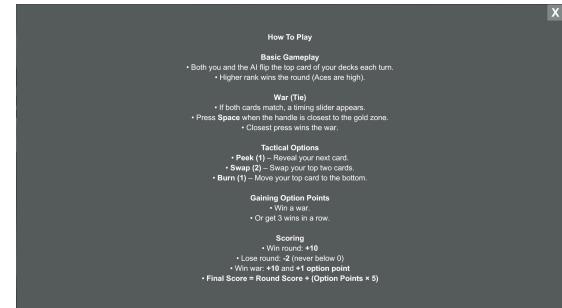
- **Scoring Rules:**
  - Win round: +10 points
  - Lose round: -2 points (never below 0)
  - Win war: +10 points and +1 Option Point
- **Resources/Option Points:**
  - Start with 3.
  - Gain +1 from:
    - Winning a war
    - Every streak of 3 wins
- **Rewards:**
  - Additional Option Points
  - War victories
  - High score
  - Reflex mastery

- **Tactical Items:**
  - Peek (-1 Option Point): Reveal next card
  - Swap (-2 Option Points): Swap top two cards
  - Burn (-1 Option Point): Move top card to bottom

## Control Scheme and Interface

- **Controls:**
  - Mouse: Select UI buttons
  - Space: Flip or confirm timing
  - 1 Key: Peek
  - 2 Key: Swap
  - 3 Key: Burn
- **Interface:**
  - Score label
  - Streak label
  - Option Point counter
  - Visual cards
  - Flip button
  - Tactical buttons
  - “War” Timing Bar
  - End-screen score

## Screen Flow & Game Flow



# Aesthetics

## Graphic Assets

**Pixabay**, a provider of free, open-source, royalty-free images, is the source of all visual assets used in *Card Colosseum: War*. Notably, the selected backgrounds follow a consistent thematic arc that reflects the emotional progression of war:

- **Main Menu:** Warrior on horseback, reminding the player of the duty, burden, and resolve real soldiers carry into conflict
- **Game:** Child in conflict, representing the civilians, especially the families and children of soldiers, who pay the hidden cost of war
- **Results:** Ancient ruins, conveying a loud message: despite war's final score, it leaves irreversible destruction in its wake



- **Card Panels/Buttons:** Grayscale UI aesthetic, cards with thick white borders, and UI buttons with a muted minimalist style, maximizing the narrative's impact as it visually unfolds

## Audio Assets

**Pixabay**, a provider of free, open-source, royalty-free images, is also the source of all audio assets used in *Card Colosseum: War*:

- **Background Audio:** Looping ambient track

## Dynamics & Playtest

### Interesting Observations of Game Dynamics

Playtesting revealed several notable dynamics that shaped players' experience in *Card Colosseum: War*. Players frequently hesitated before selecting Flip, pausing to consider whether to Peek, Swap, or Burn. Players' consideration of the available options showed that the tactical actions successfully transformed a normally luck-based card game into a resource-optimization puzzle. During "war," players visibly leaned forward or verbally reacted when the timing bar appeared. Players' observable, immediate reactions to the timing bar demonstrated that the reflex-based mini-game added an action element, heightening tension at key moments. Some players chose to conserve Option Points rather than use them immediately. Players' resource conservation indicated that the reward structure encouraged long-term strategic thinking over

impulsive play. Players commented on how striking the music and background images were. Players' comments confirmed that the aesthetic choices were immediately noticeable and significantly enhanced their overall enjoyment. Together, these observations show that the game's strategy, action, and thematic mood amalgamate to create a dynamic and varied player experience.

## Encountered Testing Issues

Playtesting identified issues affecting usability and consistency. In early sessions, the timing bar failed to appear during some "wars." The timing bar's encountered unreliability forced immediate examination and fixes to the activation and reset logic. Additionally, in early sessions, players struggled to read text. Players' struggle with legibility inspired color and outline changes. Collectively, these issues reveal that refinement was necessary to ensure reliability, clarity, and smooth interaction.

## Game Improvement Plans

Plans for improving *Card Colosseum: War* focus on strengthening player feedback. After refining in response to early playtesting sessions, players reacted positively to moments of increased polish. Players' positive reactions to refinement signal that further refinements, such as visual transitions, like card-flip animations and fade-ins for results, would likely strengthen player feedback. Overall, these planned adjustments collectively aim to create a smoother, cleaner, and more responsive experience.

# Tech

## Technical Aspects

- Built entirely in Unity 2020.3.48f1
- C# scripts: Card, Deck, GameManager, MainMenuController, OptionSystem, PersistentMusic, ResultsController, TimingBar, UIController
- Standard keyboard/mouse input
- Uses Unity Canvas UI
- Timing Bar uses Unity Slider
- Audio persists via DontDestroyOnLoad

## Software Tools

- Unity
- Visual Studio Code

## Hardware Tools

- MacBook (M-series)
- Standard keyboard and trackpad

# Discussion

## Unimplemented Proposed Features

- **Deck Count Display:** A visual indicator showing how many cards remain in the player's and AI's decks
- **Expanded Narrative Integration:** Additional visual or interactive elements that further reinforce the symbolic war narrative

## Reasons

- **Time Limitations:** Implementing these features would have required additional UI logic and narrative asset preparation, exceeding the project's available development window.
- **Prioritization of Core Mechanics:** Ensuring that flipping, scoring, tactical options, and timing challenges worked reliably took precedence.
- **Avoidance of Overscoping:** A deck-count UI and narrative embellishments risked expanding the project beyond its intended scope.

## Future Enhancements

- **On-Screen Deck Meters:** Adding a sleek, minimalist deck counter that visually communicates remaining cards without cluttering the interface
- **Narrative Transition Effects:** Introducing fade-ins or subtle animations between backgrounds to deepen the symbolic war narrative's impact
- **Audio Story Cues:** Adding brief sound motifs or ambient shifts that reflect narrative progression
- **Contextual Story Prompts:** Including short text overlays that reflect narrative progression

# Collaboration

## Work Distribution

The work distribution centered around development and documentation. Primary tasks related to early concept ideation and prototype implementation in Unity, including the core card mechanics, scoring logic, timing-bar system, and UI layout. Secondary tasks concentrated on reporting and presenting. Explicitly, one member focused on technical tasks and written deliverables, while the team collaborated on conceptual input and the final presentation.

## Collaboration Challenges

- **Scheduling Conflicts:** Difficulty coordinating in-person meeting times caused most development contributions to be asynchronous.
- **Communication Delays:** Asynchronous updates sometimes caused feedback delays.
- **Imbalanced Workload:** One member handled most of the development and documentation due to availability constraints.

## Individual Contributions

- **Justin Birge:**
  - Contributed to initial brainstorming
  - Provided general feedback during development
  - Refined the presentation
- **Keegan Pendleton:**
  - Contributed to initial brainstorming
  - Prepared the presentation
  - Refined the presentation
- **Azaria Reed:**
  - Contributed to initial brainstorming
  - Developed the working prototype in Unity
  - Designed or integrated all aesthetic elements, including backgrounds, UI color palettes, card visuals, and scene flow
  - Responded to general feedback during development
  - Wrote the complete final project report
  - Refined the presentation