

# Epic Tanks

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## I. INTRODUCTION

Epic Tanks is an immersive and thrilling turn-based strategy game that immerses players in intense tank battles. Inspired by the success of popular games like Pocket Tanks and Shell Shock, this project aimed to deliver an engaging and fun experience for players who enjoy strategic gameplay. In this paper, we will delve into the objectives, key features, system design, use cases, algorithms, and data structures that came together to create this epic gaming experience.

## II. OBJECTIVES

The core objective of the Epic Tanks project was to develop a turn-based strategy game that allows players to take control of powerful tanks, each equipped with a diverse range of abilities. Players are empowered to move their tanks across the battlefield, aim with precision, adjust power levels, and unleash an array of ammunition to obliterate their opponents. The game begins with an ammunition drafting phase, where players must make strategic decisions in selecting their arsenal for the battles ahead. The ultimate goal is to reduce the enemy tank's HP to zero, emerging as the victorious player.

## III. KEY FEATURES

The development process saw the introduction of several exciting features and crucial changes that significantly enhanced the gameplay experience:

### a) Destructible Terrain (Unimplemented)

One of the initial ideas was to incorporate destructible terrain, where tanks could alter the landscape to create new tactical opportunities or barriers. However, due to design complexity and resource constraints, this feature was postponed for future updates.

### b) Varied Projectile Types

To add depth and strategy to the game, different projectile types were introduced, each having its unique flight path. While all projectiles deal the same damage, players must choose wisely as each type behaves differently during flight, affecting the shot's accuracy and trajectory.

### c) Restart Level and Tutorial

Aiming to create a user-friendly experience, the game now offers a "Restart Level" feature, allowing players to replay a level to improve their tactics. Additionally, an in-game tutorial was added to guide new players through the gameplay mechanics, ensuring a smooth learning curve.

### d) Bombing Run Shot

An exciting addition to the arsenal, the "Bombing Run" shot type was introduced, giving players a powerful attack option with the potential for significant destruction. This shot is ideal for turning the tide of a battle in one swift move.

### e) Wind Element

To simulate realistic environmental conditions, a wind element was incorporated, affecting the flight path of projectiles. The constantly changing wind direction and strength require players to adjust their shots, adding an element of unpredictability to the battles.

### f) Map Exploration

Strategic planning is key to victory, and the ability to move the screen and explore the battlefield adds depth to the gameplay. Players can gain a better understanding of the terrain, enemy positions, and potential vantage points, influencing their tactical decisions.

## I. SYSTEM DESIGN

To ensure a robust and maintainable codebase, the system design focused on breaking down larger classes into smaller, more manageable units. The GamePane class was divided into three separate classes - GamePane, Decorations, and

InGameTutorial, streamlining code organization and facilitating future updates. While initially considering an interface or abstract class for projectiles, a regular class approach was chosen to offer flexibility. This design decision enables the implementation of various projectile types with ease while maintaining code clarity.

## **II. USE CASES**

The use cases for Epic Tanks were meticulously designed to provide players with an immersive and enjoyable gaming experience. The gameplay loop includes:

### **1. Start Game**

Players can choose between single-player or multiplayer modes, offering a thrilling solo experience against computer-controlled AI or engaging battles against friends.

### **2. Ammunition Drafting Phase**

Players take turns selecting their ammunition for the upcoming battles. The order in which ammunition is chosen determines the sequence of shots in the game, requiring strategic planning and decision-making.

### **3. Tank Control and Shooting**

During their turn, players have full control over their tank. They can move the tank left or right, adjust the angle of the shot, and change the shot's power. This level of control empowers players to execute strategic maneuvers and precise attacks.

### **4. Projectile Flight**

After firing the shot, the projectile follows a calculated trajectory based on the chosen angle, power, and environmental factors like wind. Players must anticipate and adapt to these variables to land successful shots.

### **5. Battle Outcome**

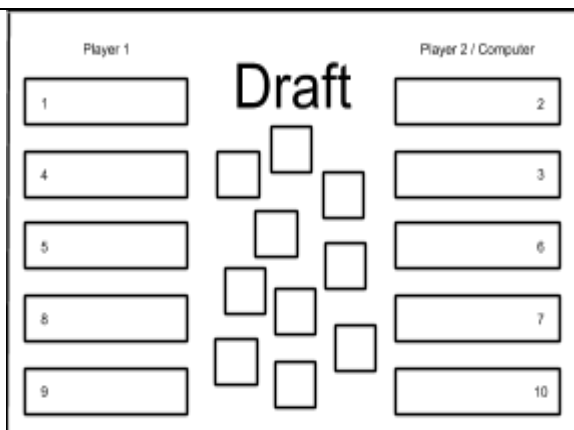
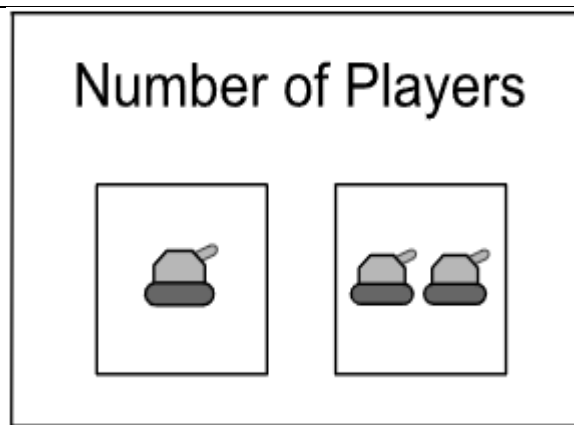
The battle outcome is determined by the skillful execution of shots, tactical maneuvers, and ammunition choices. The player whose tank loses all its HP first is declared the loser, while the other emerges victorious.

## **III. CONCLUSION**

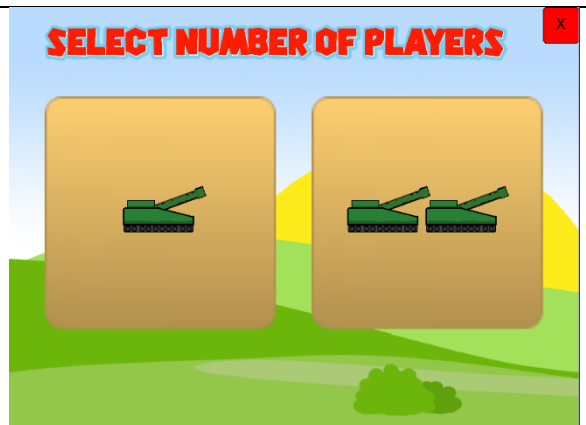
Epic Tanks has proven to be an exceptional turn-based strategy game, expertly combining elements from popular titles while introducing unique and

exciting gameplay features. The carefully crafted use cases, diverse ammunition types, and the incorporation of dynamic elements such as wind have resulted in an unforgettable gaming experience. The successful implementation of algorithms and data structures for realistic projectile flight and tank movement ensures smooth and immersive gameplay. Whether players seek a challenging solo experience or thrilling battles against friends, Epic Tanks provides endless fun and entertainment for gaming enthusiasts of all ages. As the project continues to evolve, with plans for destructible terrain and further updates, players can look forward to an even more captivating gaming experience in the future. Epic Tanks has cemented its place as a remarkable turn-based strategy game, setting the bar high for future game development endeavors.

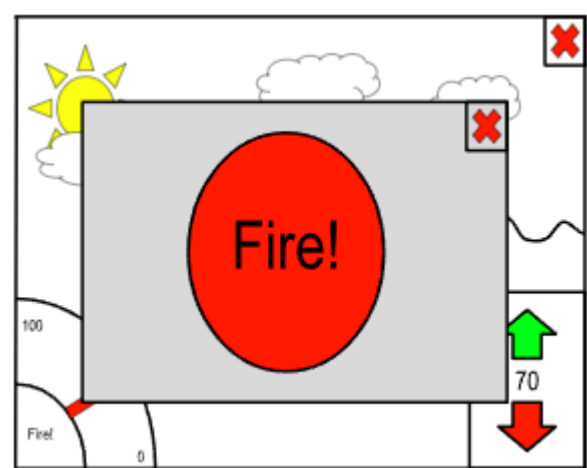
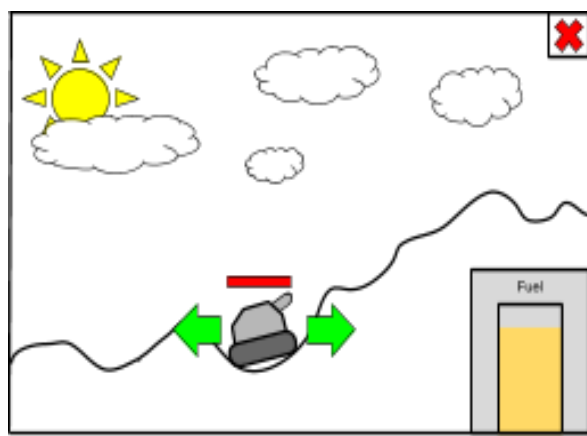
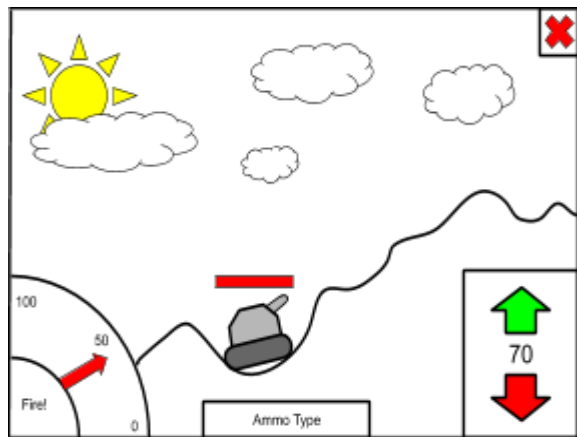
## Conceptual



## In-game



## Conceptual



## In-game

