

The Computer Science House on Randolph Presents

Tanks of Fury

“Xtreme Tank Battles”

Tanks of Fury is an intense turn-based 3D game that combines the horrifying power of tanks and the intelligence of the human mind. One hero has to fight against the Fuhrer's power tanks (bot) or worse the betrayal by his family in 1940s Europe. The setting takes place in nazi-occupied Europe 1944. Our hero, a tank operator, has to choose between good or evil, life or death, and manage to keep his sanity.

Design Document

Version 2.0

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Tanks of Fury

Design History

This section is a brief history of any changes that have been made to the game. These changes can include bug fixes, game balancing or updates that bring new content to the game. These updates usually start coming after the game has been released to the public so a wider audience can help with bug reporting and general thoughts about the game. This feedback is then taken into consideration from the developers of the game through game updates and patches.

Version 2.0

- Terrain generator

Version 1.0

- Initial release of the game

Game Overview

Game Concept

The main reason for developing this game was to modernize an old classic game. Scorched Earth was released for the DOS platform in 1991 originally. Even though the physics have aged well, the visuals are lacking because of the limited hardware at the time. Now that technology has advanced enough and we have the power of the Unity 5 game engine, we wanted to breath new life into the old classic. We want to keep the original feel of the game while adding new 3D graphics and gameplay mechanics that will compliment the original game.

We also wanted to add a background story to the game to help immerse the player in the game play. The story takes place during World War II where the player takes control of a Tank Operator that has to battle other tanks to clear the map before their allies can cross the battlefield safely.

Feature Set

- Minecraft style world where everything is made of blocks
- Destructible terrain
- Different types of terrain
- Wind speed will affect the projectile trajectory
- Tanks
- Weapon upgrades
- 3D graphics
- Free roam camera or 1st person view camera
- Turn based game play

- P v CPU or P v P
- Character level progressions
- Timer for player turns to prevent slow game play
- Different European Flags from World War II

Genre

This game is a turn based strategic game where each player has to perform their actions only during their designated turns.

Target Audience

Our player base should enjoy playing games that favor brains over brawn style of game play. With the turn based mechanics, the players have more time to develop their strategies before making moves.

Game Flow Summary

This style of game play allows for more thinking and a more strategic approach to beating the enemy. This also makes the game play slower as the flow of time is constantly stopping and starting. During their turn, the player has a limited amount of distance they can move their tanks plus the distance limit of the gun forces the player to overcome these limitations as part of their strategy.

Look and Feel

The main style of the game will follow the Minecraft block design. The terrain and the tanks will be made out of blocks that can be destroyed as explosions occur from gun fire. This will create

holes and hills which the player will need to navigate through and around to get the most optimal position to take out the enemy.

Game Scope

Story

Our hero, a Canadian tank operator, fighting in nazi-occupied Europe has to defend his country by destroying other tanks. The hero has three main enemies, his brother, Father, and Mother who have been hypnotized by the Nazis. As he continues through the story our hero has to choose between life or death as the only way he can continue living is by killing his family. Once he kills his Mother, the last one alive, it turns out he is the one who was hypnotized. Once he finds out the game finishes with a gun shoot and a black screen.

Locations

- Forest
- Mountain area with hills and valleys
- River based map with a single bridge crossing
- All locations will have some kind of wind speed that affects projectiles

Levels

- will be based on the P v CPU approach where enemies will spawn after a certain amount of turns
- After a specific number of enemies have been killed, a boss enemy will appear and once defeated, will signify the end of the level / map

Weapons

- the player will be able to use their main weapon which deals normal damage and has infinite ammo

- there will be 5 different power ups the player can get throughout the map that grant the user different types of attacks
- The player also has the ability to put down land mines before the match begins that are hidden to all players and will trigger once someone moves on top of them causing damage

Gameplay and Mechanics

Game Progression

The user progresses throughout the game by defeating all the enemies on each map. As the player defeats enemies their stats will increase (Health, Shields, Attack). Once a specific amount of enemies has been defeated, a boss enemy will appear and will be significantly more difficult than the previous enemies they faced.

Game play is turn based so if you are playing another player you have to wait until they are done there turn.

Movement

The player gets to move their tank during their turn. They are limited to how far they can move it during their turn. They can also jump over hills allowing them to get into a better position to defeat the enemies.

In order to move it has to be your turn if you are playing against another player. The controllers are simple and yet efficient and understandable. To move forward is 'w', left 'a', back 's', and right 'd'. You move the tanks canon up by using 'q' and down by using 'e'. You can also jump using the space button and fire by clicking 'f'.

By pressing escape you can pause the game and even exit it and return back to the main menu.

Power Ups

Some power ups increase the stats of the player's tank like their shields, health, attack and movement. Other power ups allow the user to modify their attack like shoot multiple projectiles, have a farther travel distance on their attacks or increase the blast zone of their attack. These power ups are picked up by moving the player's tank over the corresponding tile, the power up will be automatically applied if it increases their stats while the player is able to choose when to use their ammo upgrades. (which are temporary)

Gameplay

The game will start with each player placing landmines on the map, these mines are hidden from everyone and will detonate when a tank goes on top of the corresponding tile.

Once all the mines have been placed the game will start with a player's turn. During each player's turn that player can move their tank a limited distance before running out of 'gas'. The tanks can also jump and need to in order to scale hills. Once the player has moved their tank they can fire a projectile. The projectile needs to be aimed manually by the user, customizing its angle and the amount of power to put into the shot. Once the user is satisfied with the settings, they can fire the projectile and see where it lands. Where the projectile lands will be an explosion where everything in the area will be damaged, terrain will be destroyed and tanks will be damaged. Before the user fires the projectile, they can choose to use one of their ammo upgrades to give them a special projectile that can do unique features compared to the regular projectile. All maps will have some kind of wind speed affecting projectiles in the air altering their flight pattern slightly or majorly depending on the value which will be randomly generated per map. Once an enemy has been defeated, the user's stats will be increased. More enemies will show up after each defeated enemy. If the user takes too many turns, more enemies will spawn

to make it more difficult for the user to progress. Once a specific number of enemies have been defeated, a boss enemy will appear which the user will need to defeat in order to complete level.

User Interface

The user interface will be very minimal, when in the battles, the user will have a dashboard where they can see their health, shield, any power ups they have, their stats. When they are ready to attack and fire their projectile, they will click a button on the dash that will then pull a new dashboard up with the angle and power they want to use in the shot.

Sound

There will be a quiet overworld song playing during the main sections of the game. There will also be sound effects for when the tank moves, fires a projectile and when the projectile explodes.

Artificial Intelligence

The AI will primarily use a random element when moving the tanks and firing. We will script the AI to use the current location of the player and then draw a circle with a large circumference around the player. From there, a random vector will be chosen which will be used to fire the projectile to that location. Depending on the difficulty, if the AI misses to many times, the circumference of the circle will shrink or a guaranteed hit will be recorded doing damage against the player's tank. Also depending on the difficulty, if the user is hit, the AI will either increase or decrease on accuracy. The AI will also prioritize weather to grab power ups or go after the player right away.

Design Analysis

The five Schell's lens our group decides to discuss in this analysis includes the lens of Skill, Time, Chances, Simplicity/Complexity, and lastly the lens of Essential Experience.

Acknowledging the fact that some of other lenses are also important to our overall design.

However, we truly believed that the following five lenses will have the biggest impact to our unique game and there is why.

- The first lens I will be discussing is The Lens of Essential Experience. Throughout this game we really want the player to have the following experience. First being the feeling that every action user takes is going to impact the future of him, the game, and his opponent either positively or negatively. For instance, when player destroys a bridge connects two lands from a river; it will stop his opponent from moving closer to player in the near future. Hence player will won't feel like whatever he destroy are pointless or serve no purpose. Secondly, we want player to have that feel of getting better and learning something new every time and they play our game. For example, player might not know what a certain type of ammo will do or even the physics behind that ammo he just picked up. However, as player progress through the game, he/she will have a better understanding of the game mechanics. And that brings us to our last point; we want our player to feel a sense of progression from playing our game. To allow player capture that moment, every time they completed a level, we will award them with new power up to their ammo, heal and movement speed to their tank.
- The second lens I will be discussing is The Lens of Time. Since our game is associated with turn base type gameplay, the only thing that determines the length of the gameplay

is how skill the player. After all, player had to actively destroy their opponent or get destroyed. To prevent the game from dragging too long, we are going to include a timer mechanic from turn to turn. To prevent the game from ending too early we are going to placing both battling tanks far apart from each other. In doing so, both tanks will have enough time to move closer to each other, making the game more intense as turns pass by.

- The third lens I will be discussing is The Lens of Skill. Schorded Earth 3D is a simple game on the surface, but deep under it actually requires a lot of skills. For instance, to do well, player are required to perform complex polynomial calculation on ammo projectile to be able to damage their opponent. On top of that, players also have to take in the tanks surrendering terrain as part of they calculates, because terrain can either be used as protection and to immobilize your opponent. As the player continue to play Tanks of Fury, their in game knowledge will be improving as well. For example, player can uses wind speed to increase the latitude and longitude of their projectile and shoot “mud blocks” in front of their opponent’s face to block their view point.

To answer the question of “Are there type of skill this game is missing?” The answer is yes, since our game is turn base, there would not be any guns blazing and quick time event. Furthermore, there are not many management skills required to play our game besides managing players special ammo.

- The fourth lens I will be discussing is The Lens of Economy. To make Tanks of Fury more interesting, players will be receiving up grade points upon completing each level

and extra points will be distributed if they complete a level within certain turns as reward. Despite the extra reward, Tanks of Fury still have a pretty balanced economy because there are not other ways to obtain upgrade points other than beating the level. Unfortunately we are not EA, so there will not be loot crates or real world currency involve in this game. Anyway, with upgrade points, players are able to upgrade or customize their tanks to better fit their play style. For instance, a more aggressive player might put all their upgrade points on damage, whereas a balance player would prefer to upgrade both damage and health. The last lens I will be discussing in this analysis is The Lens of Punishment. When play make mistakes in Tanks of Fury, they will be punished. Some of the punishment we included is, loss of HP that could lead to death and restart to level, various debuffs that makes player's tank weaker, and terrain traps that disable movement of the tanks. In doing so, we are hoping that player will take a more strategic approach to the game and encourage the player to improve their skills. However, since Tanks of Fury is really skill oriented, there won't be any reward from punishment.

Overview

Tanks of Fury is an intense turn-based 3D game that combines the horrifying power of tanks and the intelligence of the human mind. One hero has to fight against the Fuhrer's power tanks (bot) or worse the betrayal by his family in 1940s Europe. The setting takes place in nazi-occupied Europe 1944. Our hero, a tank operator, has to choose between good or evil, life or death, and manage to keep his sanity.

This game is innovative as it combines the popular and ever-growing 3D world of minecraft with the realistic properties of World War 2 tanks.

Some key areas of innovation include:

- Story
- Real World Physics
- Power Ups
- Multiplayer
- Environment
- Camera

Story

Our hero, a Canadian tank operator, fighting in nazi-occupied Europe has to defend his country by destroying other tanks. The hero has three main enemies, his brother, Father, and Mother who have been hypnotized by the Nazis. As he continues through the story our hero has to choose between life or death as the only way he can continue living is by killing his family. Once he kills his Mother, the last one alive, it turns out he is the one who was hypnotized. Once he finds out the game finishes with a gun shoot and a black screen.

Real World Physics

The game implements real world physics such as global wind speeds that affect the angle of projectiles. By introducing real world physics the game creates a challenge for the user similar to Super Smash Bros. Where there isn't a learning curve but skills can be attained. This is extremely important when our hero has to fight his family and every precise shot is important in order to insure his survival. By adding real-world physics it creates an addiction similar to the one in Super Smash Bros.

Game Mechanics

Tanks of Fury is a simple game on the surface, but deep under it actually requires a lot of skills. For instance, to do well, player are required to perform complex polynomial calculation on projectiles to be able to damage their opponent. On top of that, players also have to take in the tanks surrounding terrain as part of their calculations, because terrain can either be used as protection and to immobilize your opponent. As the player continue to play Tanks of Fury, their in game knowledge will be improving as well. For example, player can uses wind speed to increase the latitude and longitude of their projectile and shoot "mud blocks" in front of their opponent's face to block their view point.

Power Ups

When the game starts the user starts off with their 'default' ammo which is infinite or they can pick up special ammo while roaming the world. These items can range from longer or thicker bullets to represent stronger missiles. Tanks can also pick up armour and other items. Each item offers different properties that give an advantage to that tank.

Environment

The world is made of blocks similar to Minecraft where the environment can be affected by the missiles. The environment is procedurally generated that way each scene is different and offers a unique experience each time a new level is loaded. Our environment includes separate biomes such as Forest and Rivers; each biome has different game mechanics which creates a real-world environment for the users.

By creating a world that the tanks can change it creates an endless amount of possibilities.

Tanks can create bases by creating craters in a mountainous range. The tanks can destroy the path for another tank such that it traps the tank in a certain range. The environment is what is going to really benefit the users as it creates a dynamic way to solve problems.

Camera

Our camera is a freeform camera that can be adjusted to meet users needs to help them line up their shots. Since the player only has their own skills to line up each shot they need as many camera angles as possible in order to hit their target.

Tanks of Fury

Tanks of Fury is a game that has an open-ended experience that will create endless options for players. This game will include a simplistic and user-friendly design with an engaging story. This game will have the option to complete our story or verse their friends in multiplayer mode.

You Are In Control

The user will be able to handle the controls of their tank such that they can gain custom power-ups, change the design of the map so it meets their needs, choose the country they are fighting for. Players will be able to move the camera which will create an open minded experience as it will not be in a fixed position.

Experience

Every action user takes is going to impact the future of them, the game, and his opponent either positively or negatively. For instance, when player destroys a bridge connects two lands from a river; it will stop his opponent from moving closer to player in the near future. Hence player will won't feel like whatever he destroy are pointless or serve no purpose. Secondly, we want player to have that feel of getting better and learning something new every time they play our game. For example, player might not know what a certain type of ammo will do or even the physics behind that ammo they just picked up. However, as players progress through the game, they will have a better understanding of the game mechanics. And that brings us to our last point; we want our player to feel a sense of progression from playing our game. To allow player capture that moment, every time they complete a level, we will award them with new power up for their ammo, health and movement speed to their tank.

Summary

This game combines the key components in every successful game currently in the market and THEN some. Our game has randomly generated terrain with a destructible environment that adds an endless options for the end-user. This combined with real world physics, and a story worth of being a movie is the recipe needed in order to have an infinite amount of fun.