The Computer Science House on Randolph

Tanks of Fury
"Xtreme Tank Battles"

Design Document
Version 1.0
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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 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 game play 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

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.

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.

Power Ups

Some power ups increase the stats of the players 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 players 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 players turn. During each players 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 users stats will be increased. More enemies will show up after each defeated enemy. If the user takes too man 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 players tank. Also depending on the difficulty, if the user is hit, the AI will either increase or decrease om accuracy. The AI will also prioritize weather to grab power ups or go after the player right away.