Game Design Document

H.E.A.T - Armored Warfare

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Project Description

Become an experienced tank crew captain in this top-down vehicle shooter. Navigate your tank through maps using cover and concealment. Your end goal is to out-maneuver your opponents and hit their tank where it is weakest or to destroy their forward operating base (FOB).

In H.E.A.T - Armored Warfare, tanks are pitted against one-another on a large map filled with various obstacles and terrain. Tanks have realistic mechanics to simulate armor, weaponry, and capabilities of modern armored vehicles.

Gameplay will be highly technical and reward the most strategic players. Knowing the capabilities and weaknesses of your tank as well as the enemies is a great start. As you become more experienced you will develop the skills required to obtain victory on the battlefield: stealth, terrain navigation, cover, and attack angles.

Gameplay Concepts

Goal

Players will navigate their tank around a map to outmaneuver and destroy other tank crews.

The main goal is to destroy all tanks on the enemy team or destroy the enemy Forward Operating Base (FOB), which is near the enemy spawn point. Your opponents will seek to destroy your tank and FOB as well.

Losing

There are three ways a player can lose a match in H.E.A.T.: by having your entire team of tanks destroyed, having less points/kills than the opposing team when the match timer expires, or finally, by having enemies destroy your FOB.

User Skill

This game is very technical and highly rewards knowledge and skill.

Maneuvering your tank into good positions is critical. You need to use concealment to surprise enemies, and use cover to prevent enemies from hitting you. When in combat, angling your tank armor correctly toward an enemy tank will drastically reduce damage taken, and you will do more damage to enemy tanks if you can hit them at the correct angle.

Knowing the stats of your tank as well as enemies such as armor thickness and vulnerable points give a huge advantage, as you can use the most effective rounds against your enemy and hit their tank where it will hurt the most. Knowing a tanks speed, turret rotation speed, and other stats will also help you out maneuver other tanks to get better positioning in battle.

Paying attention to the map is also a skill that is highly rewarded. Using cover will both conceal and protect you from enemies, and if you plan things well, you can force enemies to move over difficult terrain, where they will move slower and become better targets. Just watch out so you don't get caught moving slow yourself.

Level Progression

As a player uses tanks they can unlock additional modifications and changes for that tank that will tradeoff some stats for others; for example, a higher health bar would result in a slower movement speed. As the player increases their level, new tanks will be available to use. Skins and other cosmetics are available for increased monetization.

Game Mechanics

General Overview

Players will navigate their tank around a map to outmaneuver and destroy other tank crews in this highly technical tank warfare. The mouse and keyboard will control the tank movement and shooting. Tanks take damage when hit by enemy fire until a damage threshold is met, at which point the tank is destroyed and the player must wait until the match finishes. The game has 2D maps with 3D graphics, and contains cover and terrain objects.

Style and Genre:

This will be a 3D top-down vehicle shooter. Various armored vehicles will combat against each other in real time battles, whether that is against AI or other players.

Player interaction:

The tanks are controlled with the WASD keys (A/D rotate the tank, W/S move the tank)
Mouse controls turret direction. Firing weapons will be done with the left click
Other controls like changing ammo type and using equipment will be mapped to different keyboard buttons.

(stretch goal): allow custom key mapping

Another set of choices that the player can make revolve around their tank. They can select from various types of tanks, each with a variety of "attachments" or characteristics, allowing players to optimize their tank's balance between armor, speed, maneuverability, damage output, and other stats. This would start with different armor thicknesses and various gun sizes, but may be added to in the future.

Level Design:

Levels will be designed as a 2D map with 3D visuals. Objects and Terrain will be scattered around the map. Tanks can use objects like buildings, greenery, rocks, hills, etc for cover and concealment. Some terrain will be difficult to drive over, lowering vehicle speed, or impossible to drive through.

Settings for these maps will include terrain such as forests, farmland, roadways, rural towns, and large urban cities.
(stretch goal): implement environmental destruction

Combat Element:

You will navigate the map and attempt to destroy other tanks. Strategy will be the key to victory.

Detecting and viewing other tanks while avoiding detection yourself will be critical. This element of combat will rely on your tank's optics, concealment mechanics, and your tanks' view angles.

Damage dealt to other tanks will be determined by calculations involving armor thickness, hit angles, ammunition type, gun size, etc.

An especially important part of strategy will revolve around tank vulnerable spots. Each tank will have a small hitbox located on part of the tank (engine in the back, front wheels on the treads, etc) that will deal massive damage if hit. Protect your own vulnerable spot with cover, while enticing your enemies to expose theirs to you.

Additional Elements:

The player(s) will gain insight into tank stats (armor thickness, ammunition types, vulnerable areas, penetration angles, etc), strategy, and level navigation from crew dialogue in pre-map rundowns. This will also serve as a way to build attachment to the characters in the crew.

(stretch goal): There will be a campaign that plays a bit like a survival game. Limited resources and permanent game overs. (short campaign makes up for this).

(stretch goal): Upgrades, ammunition, and additional equipment for your tank will become available as you progress through the game by scavenging from destroyed enemies, finding items on the maps, and through level progression.

(stretch goal): Tanks can have a secondary weapon such as a machine gun or smaller cannon?

(stretch goal): Add infantry and other enemy types besides tanks that would require different strategies to defeat.

(stretch goal): Crew members can die or become injured during the game if you are damaged too badly. This makes reloading take longer, movement and gunning non-simultaneous, etc.

LAYERED TETRAD

The elemental tetrad framework can be used to give a better understanding on how the mechanics of the game work.

Inscribed Layer:

Aesthetics: The game is laid out in third person, with the camera taking place on top of the player. Enemies and obstacles are placed around the map for the player to interact with.

Mechanics: A player wins by killing all enemies, destroying the FOB or having most points when the time runs out. As the player progresses through the map, they can free-roam with their camera, to come up with tactics before engaging the enemies.

Narrative: There is no specific story to this game, however, the point of the game can be considered the narrative. As stated previously, the goal is to destroy all tanks on the enemy team or destroy the enemy Forward Operating Base (FOB).

Technology: The game will be built on the Unity Engine, using several online packages and modules the program provides. Most of the game's functionality will come from C# scripts.

Dynamic Layer:

Aesthetics: Since the game is laid out as a third person top shooter with a free-roam capability; the player will be able to scout the entire map as soon as they spawn.

Mechanics: As the player moves through the map the player will try to keep distance from enemies by panning their camera to see enemies before they see you so you can use ambushing to your advantage. With that being said, not every enemy will be alone so you must choose your strategy wisely. No matter the gamemode, the player will either have to avoid or kill enemies. If they do not, the player will be punished.

Narrative: The game gathers dynamic narratives by ultimately letting the player play the game how they want to. They will be enticed by the endless ways to go about playing the game. A big component of this is equipment for the tank. The player can gather tank items that have advantages and disadvantages which ultimately changes the user's play style. Although the objectives do not change, the play styles are constantly changing and the player needs to adapt.

Technology: The game will use a similar camera to the game "League Of Legends". That is, a camera that follows the player from the top down and has a free lock mode where the player can free roam with the camera to look at enemy positions. The player will move with the WASD keys and point and shoot their projectiles with the mouse. The enemies will spawn in a corresponding spawn radius(sometimes in groups) and roam the area.

Cultural Layer:

Aesthetics: This game will not be built to follow any specific graphical styles. It will have a simplistic, clean blocky look like “BattleBit Remastered” or “Roblox”.

Mechanics: This game will be windows based, and will try to capture the casual gaming feel in its mechanics, that many popular casual games have.

Narrative: (N/A) There is no story to this game, so its narrative simply derives from the player simply winning or losing the game. Therefore, it holds little cultural significance.

Technology: (N/A) There is no cultural significance being held in the technologies used to build the game.

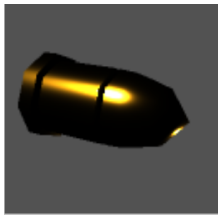
Gameplay Objects and Items

The game will take place on various maps, similar to many games on the market. Players will select their tank, then enter a game and map. Once enough tanks enter into the game, the map will populate, spawn in tanks, and start the match. Once an entire team of tanks is destroyed, the game will end and return all players to the menu.

Player Tank

This is the object the player will be controlling throughout the game.

Tank Projectile



These objects are the main combat elements of the game. <Projectile Functionality TBD>

Tank Gun

Tank Gun is on player object picture

This is the object connected to the player object that will hold the capabilities of shooting the projectiles to damage enemy players.

Enemy Tank

This is the object enemy players will consist of. It will have the functionality link to the tank gun. It is the same model as the player tank, but painted red

Tank Vulnerability Box

This object will be located on the structure of all tanks. It serves as the area on the tank that will cause the most damage if hit by a projectile object.

Obstacles

These objects will serve as either obstacles to the player and enemy tanks, or cover. It all depends on the tactics the player decides to use after scanning the map with the free-roam camera.

Terrain (Whole Map)

These objects will serve as decoration for the map to give it a more live feel to it.

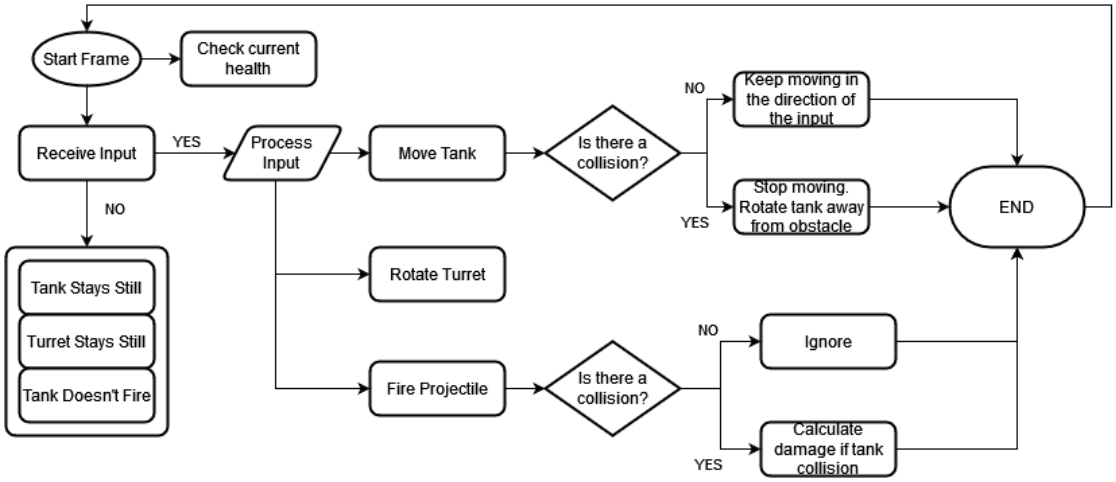
Technical Information

This section will provide an in-depth analysis of the objects that will be used in the game and the scripting relating to each. Flowcharts will be provided for the game objects detailing the processes of the game.

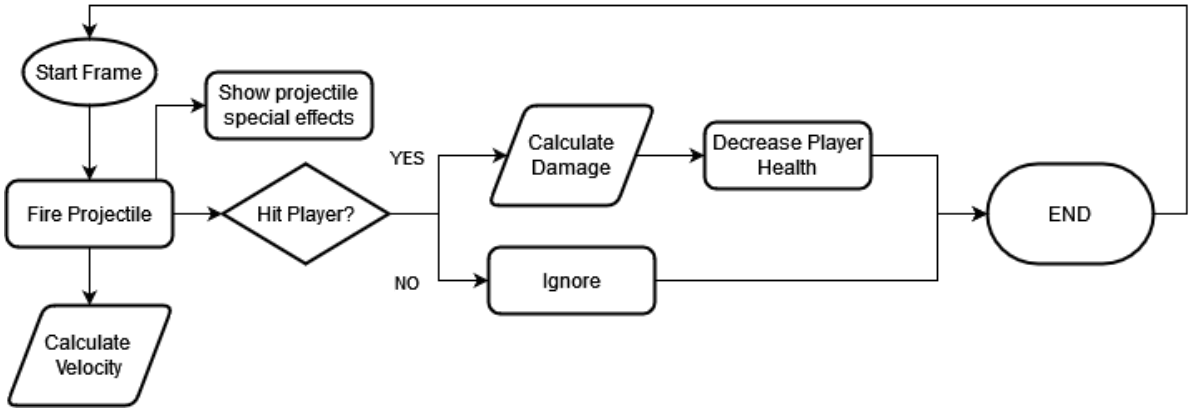
Basics

This game will be a Windows based game made in the Unity Game Engine in a 3D project layout. The main platform to run on will be PC with possible expansion to PS5, Xbox X/S, and Nintendo Switch. All game scripts will be written in C# using Unity's built in classes and functions. Other not previously mentioned assets might be used. We will start with free assets for prototyping, then look for better assets or design our own custom assets if necessary. Mainly all assets will be used for design purposes

Player Tank Flowchart



Tank Projectile Flowchart



Enemy Tank Flowchart