Tank Trouble

User Manual

Game Overview

Tank Trouble is a 2-D top-view arcade tank game. Take advantage of your tank's superior mobility and ricocheting shots to destroy other tanks over a series levels and complete the game in the fastest time.

Multiple enemy types provide a dynamic experience where the player must be constantly aware of his surroundings and take every advantage to win.

Menu and GUI

The menu allows the player to set it to easy or hard mode. It then provides the option the start or exit the game.

In-game, the right-hand side has the GUI that the player can use for information, as well as an exit button. The GUI shows the player health, when the dash is ready, when the cannon is loaded, total enemies destroyed, the current level, and the number of seconds since the game started.

Upon being destroyed a new menu pops up that allows the player to return to the main menu, restart the level, or exit the game. It displays a "You lose!" message, and the total number of tanks eliminated.

Upon clearing every level, a new menu pops up that allows the player to return to the main menu or exit the game. It displays a "You win!" message, the total number of tanks eliminated, and the time it took to complete the game.

Controls

Tank Trouble is played with your mouse and keyboard.

W and **S** controls the forward and backwards movement of your tank, while **A** and **D** turn your tank. **Shift** gives your tank a short dash, providing quicker movement speed and invincibility to get to safety or utilize an advantage.

Your turret is aimed and fired using your mouse, pointing towards the cursor, and is fired by pressing the **left mouse button**.

Mechanics

- Projectiles ricochet off walls a number of times before being destroyed.
- Projectiles ricochet at an angle, allowing banking shots.
- Projectiles destroy each other
- Dashing provides momentary invincibility and a speed boost.
- When enemies are nearly ready to fire while engaging with the player, a white circle will appear around them, to allow the player to react to incoming danger.
- Your own projectiles can damage you. Mind the ricochet!
- Enemy projectiles can also damage each other, but at reduced damage.
- Enemies will avoid shooting other friendlies.

Levels

Levels spawn with a number of enemies and some obstacles. Upon clearing the level of enemies, the game will immediately progress to the next level, so be ready!

Difficulty Modes

Tank Trouble currently has two modes of difficulty. Easy mode, and hard mode. Easy mode is the default experience, while hard mode provides a challenge.

Hard mode changes:

- Increased enemy health
- Increased enemy rate of fire
- Increased enemy speed
- Increased player dash cooldown
- Reduced player rate of fire
- Reduced player health
- Reduced projectile hit size, to make it harder to counter enemy shots with your own.

Enemy Types

There are four enemy types:

Normal

The normal tank has default health, fire rate, and speed. This is a filler enemy that is easy to destroy but can easily overwhelm the player if not paid attention to. Their shots bounce the same amount of time as the player's.

Heavy

The heavy tank has higher health and lower speed, but otherwise similar behavior to the normal enemy. It is meant to be harder to destroy.

Gunner

The gunner tank has lower health and much lower speed, but much high rate of fire. Its turret turns very slow. Its shots only bounce once and has some spread but have lower damage. Its purpose is area denial and to suppress the player. Pushing this while the turret is pointed at your is ill-advised, as their rate of fire greatly exceeds your own. This is often supported by other tanks.

Sniper

The sniper tank has lower health and much lower speed and a very slow rate of fire. Its turret turn rate is very slow. Its shots do not bounce but are very fast, and they do slightly more damage. It provides support to other tanks by catching the player off-guard while they are dealing with other tanks.

AI Behavior

The AI keeps track of two separate states: a targeting state and a movement state.

For movement:

The AI starts in an idle state. Once it spends a certain amount of time in an idle state, it will pick a random valid location to move to, and switch to the movement state to carry it out.

The movement state has the tank turn towards the current waypoint and accelerate towards it.

The chase state occurs when the tank has line of state of the player the player is within their detection range. In the chase state, the enemy tank begins following the player.

The pursuit state occurs when the tank loses line of sight of the player while in the chase state. It will attempt to move to the last known location of the player. If at any point while in this state the player re-enters line of sight, it will revert back to the chase state.

The stuck state occurs at any point the AI has not moved a certain amount in a movement state. It will reverse before reacquiring a new waypoint.

Once the waypoint(s) have been reached, the AI reverts back to an idle state.

For targeting:

The AI starts in a searching state. Once a player enters its detection range and the AI has line of sight of the player, it will change to a tracking state.

In the tracking state, the AI will attempt to estimate the future position of the player and shoot at the estimated location. If line of sight is lost, it will revert back to the search state unless the player is reacquired in the pursuit state. When the AI is almost ready to fire, a white circle will appear around them.

Adding Levels

Levels can be created by going from the project directory, “data/levels” and creating new .xml files that follow the “level_template.xml” file and renaming the new file following the naming scheme and order of the other levels.

Levels can be added to the game by changing the “max_levels” constant in the Constants tab of the project folder to the number of levels currently created.

Setting “level_designer” to true in the constants tab of the project will help in creating new levels, as it will load the “level_designer.xml” level and allows you to instantly reload any changes you make to it.