

Tanks 2D - User Manual

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General Statement:

Tanks 2D is an interactive video game where the user controls a tank and attempts to shoot other tanks without being shot first in order to win the game. The game consists of two different game modes: single player and two player. In the single player mode, the user has to beat 10 different levels in order to beat the game; These 10 levels increase in difficulty as the game progresses. In each level, the user battles against computer controlled tanks. In the two player mode, two users control tanks that fight against each other, and the player who dies first loses. If the 2 player controlled tanks collide, or for some reason, they die at the same time, then the game ends in a tie.

Introduction / Background / Motivation:

The initial inspiration behind Tanks 2D came from another online game named TankTrouble (tanktrouble.com). In this game, there are three game modes: single player, two players, and three players. In the single player mode, there is a single computer controlled enemy tank that tracks and targets the player tank. Once the enemy has found the player, the enemy will fire a bullet, and the bullet will ricochet off the wall several times before disappearing if it does not hit the player tank first. The same is true when the player fires at the enemy tank, and both tanks must be careful not to shoot themselves with the bouncing bullets. The gameplay is essentially the same for the two and three player modes, but there are no computer controlled tanks since all of the tanks are controlled by the users.

After examining the TankTrouble game, the group immediately wanted to create a similar video game. However, they did not only want to recreate the game, but they also wanted to improve upon some of the flaws that they noticed. Many of these flaws occurred in the single player mode. For instance, the game only has only one difficulty level, and it is a bit challenging for new players since the enemy tank is quite intelligent, and the bullets bounce so many times that it is easy for players to shoot themselves with their own bullets. Another fault discovered within the original game is that the levels are a bit bland and repetitive. Specifically, each level only has one enemy tank, and the mazes look similar to each other. Therefore, the group decided to implement their own version of the TankTrouble game containing improvements to these design flaws.

After much careful design and implementation, the group finally produced a game consisting of two game modes similar to the TankTrouble single and two player modes. However, in the single player mode, the group added multiple enemy tanks that are not as intelligent, which makes shooting enemies a bit easier. Furthermore, they added more variety to the game by creating two types of enemy tanks: static and moving tanks. The moving tanks resemble the TankTrouble enemy tanks, but the static tanks are a bit different since they do not

move after the player tanks, and they only rotate to shoot when the player is nearby. Another important aspect to note is that bullets can only bounce off of walls once and will disappear if they hit a wall a second time. This makes the game significantly easier to play for casual players and more interesting overall. Another unique aspect to this game is that players have the ability to gain shield power-ups on select levels. This allows the player to be immune to enemy tanks while the shield is activated.

With regards to the two player mode, if the tanks collide, then both players die, and the game ends in a draw. This is an upgrade to TankTrouble since the original game allows tanks to overlap each other. The gameplay is also enhanced since the mazes consist of various “wall materials,” which help to make the game more aesthetically appealing. The game also has a settings option that allows the user to adjust the difficulty level, change the display size, and determine whether or not the FPS will be shown on the screen during the game.

Instructions for Playing Tanks 2D:

When the application starts, the main menu appears with background music and four buttons that the user can select: single player game, two player game, settings menu, or instructions menu. If the single player game is selected, the campaign mode begins with the maze for level 1 out of 10. The player must navigate through the maze and try to shoot and destroy the various enemy tanks before advancing to the next level. If the player tank dies, then the player loses a life, and the current level restarts if the player still has lives remaining. The number of lives as well as the number of kills throughout the single player campaign will be displayed on the top of the screen. The top of the screen will also contain the current level number. Each level has its own unique maze where tanks cannot move or shoot through the walls. As mentioned, the moving enemy tanks will navigate through the mazes on their own, while the static tanks will wait for the player controlled tank to approach. Both types of enemies will fire as soon as they have a clear path to the player. Therefore, players may find it advantageous to hide behind walls and try to bounce the bullets off the walls at the enemies. If the player completes all 10 levels, then the player is notified that they won the game, and they can go back to the main menu on their command.

After selecting the two player game mode from the main menu, a new maze loads on the screen and allows a simple, local two player game. There are no computerized enemy tanks, but now there are two user controlled tanks. Each player tries to destroy the other and be the last tank standing. The player that dies first loses, and the other player wins. If both players die simultaneously, or if both tanks run into each other, then the game ends in a tie. If at any point during a single or two player game a player wishes to pause the game, they may choose to do so.

If the settings menu is selected from the main menu, the user has three different settings that may be adjusted. First, the difficulty of a single player game can be changed by selecting one of three options: easy, medium, or hard. These options determine how fast enemy tanks can move and rotate and how many bullets an enemy can shoot at once. The next setting allows the

user to change the display size of the application so that the game properly fits his/her computer's screen or personal preferences. There are three display sizes available: small (500 x 500), medium (1000 x 1000) and large (1500 x 1500). The third settings option allows the user to toggle between whether or not the FPS (frames per second) should be displayed on the screen during a game (both single and two player). The final settings option allows the player to choose whether or not he/she wants to play with shields (a power up that appears in certain levels that gives a temporary shield to the player).

The last option on the main menu takes the user to the instructions scene, which contains all of the different possible controls for the game. Players can choose between using keyboard controls or video game controllers. Controllers that are supported include Xbox One, Xbox 360, and PS4. **Note:** Mac users may have to install third party software in order for certain video game controllers to be compatible.

Controls:

Action	Keyboard Player 1	Keyboard Player 2 (2 Player Game Mode Only)	Xbox / PlayStation controller*
Move forwards	Up arrow	W	Left joystick up
Move backwards	Down arrow	S	Left joystick down
Rotate right	Right arrow	D	Right/left joystick right
Rotate left	Left arrow	A	Right/left joystick left
Shoot	Space	1	Right trigger
Pause	P	P	Start/options button
Go back to main menu	Esc (or click on the home icon)	Esc (or click on the home icon)	Back/share and start/options buttons simultaneously (or click on the home icon)

Table 1 All of the Possible Gameplay Controls

*To use Xbox or Playstation controller, just plug it in and set it up like you would for any other videogame

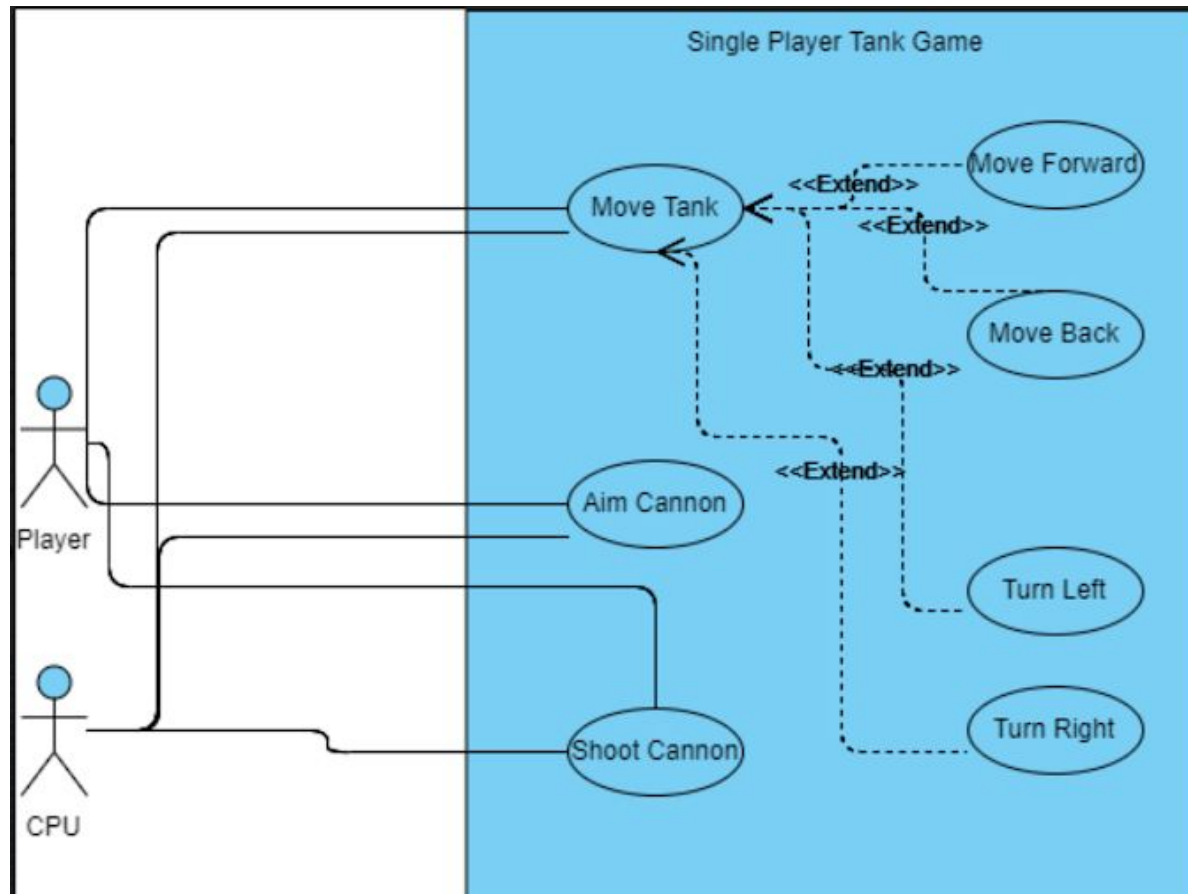


Figure 1 Tanks 2D UML Case Diagram

As Figure 1 shows, the gameplay is quite simple. The system for a single player game has only two main entities that interact with the game: human players and A.I. players, and there are several key services performed. Both entities can move their tank in one of four directions: forward, back, turn left, or turn right. The entities also aim and shoot the bullets from the tank.