

# Requirements and Analysis Document for Tank Wars

Version: Iteration 1

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Authors:

(This version overrides all previous versions.)

## Introduction

The purpose of this application is to entertain the user(s) with a simple but fun game based on the retro version of the artillery game *Tank Wars*.

## Definitions, acronyms and abbreviations

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## Requirements

### User Interface

Tank Wars will have a menu and it will be the first thing you see when you start the game application. The menu will have basic settings and optional buttons where you can choose what the conditions for the game will be like. Using the the keyboard you can navigate around the menu and when you have entered the given conditions that you want for the game, you can start the game by pressing the Start-button.

After the game is started you will see the playing field. There will be a landscape with a terrain and the tanks will be located on that terrain. (Explain the concept of the design?)

### Functional Requirements

The player will be able to do the following:

- Choose and set the game according to provided optional game settings at the start menu.
  - Select difficulty - easy, medium and hard are the available difficulties.
    - The hard option provides the gameplay with a intense wind that makes it harder to move a tank in a certain direction.
    - The intensity of the wind increases depending what difficulty is chosen.
    - The wind direction and intensity will be displayed in the gameplay.

- Select number of game rounds.
- Select number of players to play against - the player can choose between playing against other players or players generated by the computer (AI).
  - The player can customize the tank by choosing a color for the tank and a name that will be displayed during the gameplay when it is the player's turn.
- Default settings will be provided so that the game can be started immediately without affecting the gameplay.
- Each player controls a tank.
  - The tank can be moved forward and backwards only if the player has enough fuel.
  - The fuel will be displayed with numbers in the gameplay and change...
- Utveckla - hur ändras bensinen??**
- The player can aim the tank, if the tank has enough fuel.
  - 180 grader ????
- The tank can shoot.
  - The shot can destroy other tanks but also the terrain giving it a new shape.
  - The shot will travel in the direction it is aimed and with a certain velocity.
- The terrain changes its shape.
  - A new terrain is drawn at the start of each game round.
  - The shape of the terrain changes during the game according to where the players shoot.
- A tank can be damaged by:
  - A shot fired by another tank.
  - If the tank shoots itself somehow.
  - Getting stuck in a deep terrain area.
  - Falling when the surrounding terrain is destroyed.

At the end of each game round players are awarded for kills and wins.

- After the last rounds the sum of the collected points from every round is calculated for each player. The player with the biggest number of points is the winner of the game.
- No time constraints for the rounds.
- The game is turn based. The next player is chosen by the application according to a randomly generated order.
- New turn after each shot.
- Interrupted games will not be saved.
- A round ends when only one tank is left on the field.
  - This tank will be the winner of the round.

## Non-functional Requirements

- Pop up box is displayed when a game round is finished, the box informs the players about the point distribution and the winner of the current gameplay.

- Usability
  - The instructions for the game are easy, almost intuitive.
  - If a player is not familiar with the game it should not be hard to understand how to play the game.
  - Easy language.
  - Only a few interfaces.
- Supportability
  - (The player of the game receives help?)
- Performance
  - The game will run without any problems or interference. The players actions will not cause the game to crash or slow down.
  - The game will have a certain tempo/speed that is relevant for its 2D animation. Playing the game will be expected to work.
- Maintainability
  - If something has an error or that it is incomplete then those problems will be fixed eventually. Possible improvements to the program can also be implemented and the game can be expanded.
- Testability
  - The code will be possible to test and also modify if needed.
- Compliance
  - (Laws of the game or distribution?)
- Availability
  - The application should be available for both Windows and Mac users.  
(supportability??)
- Implementation
  - The code will be written in Java.

## Use Cases

Skiss på use case diagram här:

[https://drive.google.com/drive/folders/1vHwz\\_SVo\\_bkRlw234u33EMXGRtzbiIF](https://drive.google.com/drive/folders/1vHwz_SVo_bkRlw234u33EMXGRtzbiIF)

## Use Case listing

våra use case tabeller ska klistras in här

## Domain Model

### 4.1

## **Class responsibilities**

TankWars: Overall representation of the game.

Player: Represents the player and its score. It holds a tank.

GameBoard: Represents the game frame. Holds a destructible terrain that the tanks move over.

AI: A player played by the computer.

Tank: Represents the tank that the player can control. It has a position, health points, a fuel level and the tank can move. The tank holds a gun and a weapon.

TankGun: Representation of the tank's gun. The gun can be aimed, fired and its behavior will be described with attributes such as *shot*.

Weapon: Upgrades the tank's ability to shoot. The weapon class can be extended by specific weapon classes.

## **References**