

TankWars

Requirements Specification

Version 1.2

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Summary

This document describes the functionality and scope of the game TankWars. It's purpose is to identify requirements, capabilities and basic structure of the software to aid the development process.

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Introduction

The game is called TankWars and the mission is to shoot and destroy the enemy tanks so that you are the only survivor left. The game is constructed so that there are at least two players and the most four players playing over network. Each user will have it's own tank and partial overview of the map. The user will be able to see enemy tanks and can shoot at them. When the game is over, you will see an end screen where you can choose between two options, "Main menu" or "Exit the game".

Document conventions

- Slick2D - a game engine library that provides basic functionality and LWJGL support
- Kryonet - net
- LWJGL - Lightweight Java Game Library, basic graphics library

System description

The whole system will contain of two libraries: Slick2D, that is based on LWJGL library, and Kryonet. Slick2D handles the graphic and Kryonet will handle the connections over network.

When the clients starts you will encounter a menu of three choices, Host a game, Join a game or Exit the game. When option Host a game is chosen, a client and a server will automatically start and the client automatically connects to the server. When option Join a game is chosen the client will search for a host over the network and connects to it when found. When option Exit is chosen, the program will quit.

The major components of the game will be network components, graphic components.

In the game the user can chose among three different tanks, one strong and slow, one weak and fast and one balanced. In other words, the tanks should have different amount of health points (HP) and weapon strength. All tanks are movable and have the ability to shoot projectiles and collect powerups.

There should be two types of items, destructible and non-destructible (including map, and other static graphic). The destructible items will have different size and health (i.e. bush - weak, can sustain 3 shots before destruction). The power-ups of the game will also be a destructible item, but will contain special power.

When the game is over, you will see an end screen where you can choose between two options, "Main menu" or "Exit the game".

User interface

The first user encounter is the main menu where the user uses the mouse to choose to Host, join or exit the game. In game mode the user uses arrow keys to move the tank and space to shoot projectiles. On the screen the user will see a partial overview of the whole map and the enemy tanks. The partial overview will follow the tank as it moves across the map.

System Functions

Mandatory requirements

The game should be easy to understand and use by the user.
The level of difficulty should be adapted for children.
The system will support two player on a local computer.
All the calculations will be performed on the local computer.
Only one map.
Only one type of tank.

Optional requirements

The system should have a functional server-client communication
Support for minimum two players and up to four players at once.
All the calculations will be performed on the server.
The server will perform all the calculations such as allowed/unallowed movement, impact, status of all players, position of all players etc.
The server communicates back to the clients for graphical update.
Many maps with different obstacles (destroyable, solid).
Variety of tanks for the user to choose.
Different power ups that will show up on the map.
Bonuses such as five hits in a row replenish 10hp.
A chat where you can communicate with other players.

Non functional requirements

Mandatory requirements

No security requirements.
When the user has pressed space to shoot a projectile it should take no more than 0.5 seconds before the shot appears on the screen.
When a user has pressed a direction button it should take no more than 0.5 seconds before the tank moves.
It should take maximum of 2 minutes to start a game.
User bar with health information of the users tank.

Optional requirements

When the user has pressed space to shoot a projectile it should take no more than 0.2 seconds before the shot appears on the screen.
When a user has pressed a direction button it should take no more than 0.1 seconds before the tank moves.
It should take maximum of 1 minute to start a game.
Scoreboard, an overview of the players score.

User bar with health, ammo, power up information of the users tank.

Storage of permanent data

The files containing map configuration and images used in the game should be stored in a folder within the project in an intuitive way.

No other permanent data storage will exist

System Limitations

There will of course exist some limitations. Handling network limitations and problems will probably be the most noticeable one. A maximum amount of players will be set to handle the capacity limitation. Unfortunately network interruptions will be difficult to handle, e.g. when a player loses connection to the server during gameplay he may not be able to reconnect. Some error messages will be implemented for these problems. Some other performance problems may also exist but will be handled with size and amount limitations. The probability of unexpected system crashes to occur is also difficult to completely eliminate.

Use Case Description

