CSCI356: Group Assignment

Tank Game: User Manual

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Introduction to the game

Tank Game is a tank battle simulator that uses advanced pathfinding and AI to navigate through complex mazes, collect items and engage at each other. The game also incorporates physics and particles to make for exciting battles. No two battles are ever the same in the Tank Game!

The map consists of a battlefield, two mazes and 2 spawn areas:

Each team has a spawn area, where the tanks spawn at different time before heading into one of the maze paths.

Each team has a maze path where the tanks attempt to navigate through to find the battlefield. The faster they get their the faster they can support their team in the battlefield!

The Battlefield is where the two teams of tanks engage at one another in a thrilling showdown!

Instructions

Camera controls

Camera movement along X axis	Mouse in the LEFT/RIGHT corner of the window
Camera movement along Y axis	Mouse in the TOP/BOTTOM corner of the window
Camera zoom	Mouse scroll
Camera rotation	Right mouse click held down

Tank options

Spawn Team 1 tank	Key “1”
Spawn Team 2 tank	Key “2”
Select/deselect single tank	Left mouse click
Select/deselect multiple tanks	Click and drag left mouse click
Edit multiple selection	SHIFT held down with left mouse click

Other

Exit application	Key “ESC”

Highlighted features

World

Spawn areas - areas where tanks spawn when added to the game, or after they've been destroyed.

Mazes - tanks have to go through the maze before entering the battleground.

Battleground - centre area where opposing tanks meet and battle, after they leave the maze.

Sky - sky box used to create a space sky simulation.

The Map: spawns (left, right sides), maze (in between) and the battlefield (Centre).

Real-time strategy (RTS) camera

User has an overview of the whole simulation, rotation, zoom, and movement along X and Y axis enabled.

Tanks

Actions - tanks do not require user interaction, as they have their own state machines, that are explained below, and are able to think on their own about their next action.

Movement - tanks can move forward, reverse, and adjust turret and barrel according to the position of the shooting target.

Selection - user can select one or multiple tanks in order to view current state and health.

Battle between two opposing tanks, can see the particle effects as they fire on each other.

AI - state machines

Spawn - tank in spawn mode.

Battleground - tank in the battleground mode, ready to battle.

Wander - tank in wander state, wandering around the battleground.

Power up - tank collected power up item.

Attack - tank is in an attack mode once it detect an enemy tank in its shooting range.

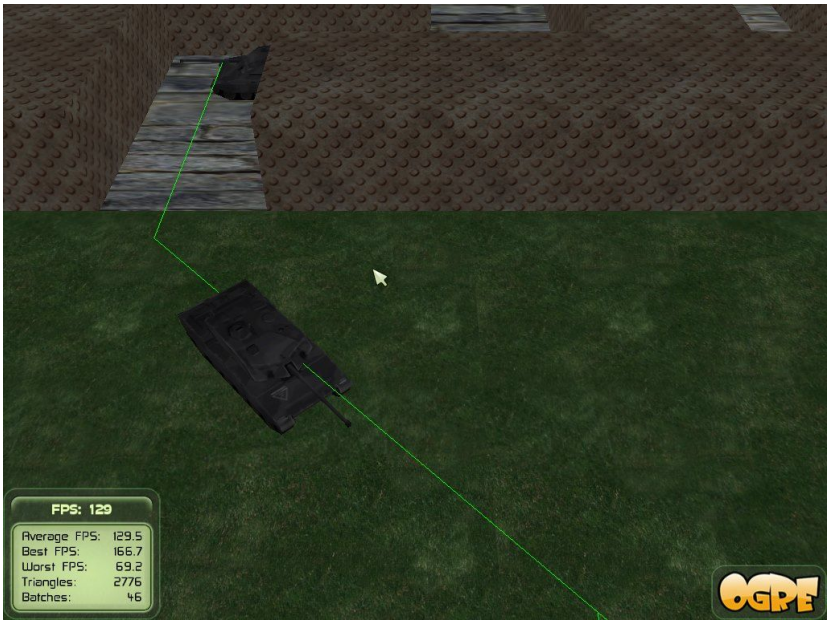
Destroyed - tank is destroyed (has no more health), and ready to spawn again.

Two opposing teams

There are two different opposing teams in the tank battle, where each team has different tank type.

Pathfinding

A* algorithm - implemented for path finding. The tank's path is shown to the user with lines.



Tanks finding their way through the maze on to the battlefield

Power ups

Tank can collect power ups that randomly spawn in the battleground area.

Health power up - tank restores some health.

Fire power - increases power of the launched projectile.

Rate of fire - increases the frequency at which the tank can launch its projectiles.

Tank speed movement - allows tank to move faster.

Trophies - used to accumulate team scores.

Particle System

Explosion - when tanks shoots, the shot follows a parabolic trajectory and explodes on impact, giving damage to the tanks.

Sounds

Firing sound - sound will occur once the tank fires a projectile.

Acknowledgments

A special thanks and credit to the Ogre tutorials and demos.
A special thanks to the tutorials provided by our subject coordinator Dr Casey Chow on moodle.
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All materials and textured used from the Ogre library and provided by the tutorials in class and Ogre tutorials.

References

Tank firing sound (mp3 file) downloaded from:
http://soundbible.com/1326-Tank-Firing.html

Tank Clip Art downloaded from:
http://www.clipartpanda.com/categories/tank-clip-art-free

Participation

Every participant of the group agrees that an equal effort has been put in working on this group assignment.