

Alpha Release - Game Programming Lab 2009

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Dirty Derby

1. Introduction

We were able to implement almost every feature from the desirable target, including also some features from the High Target. The following sections give a detailed description of the changes and improvements of the main aspects of the game.

2. Game

2.1. Menu

We added a simple menu to the game in order to let the players choose some options before they start playing, i.e. the number of players. Later we plan to add selection screens for choosing other levels and game modes.

At the end of a round the results will displayed on the screen for every player and there is the possibility to replay the level or exit the game.

2.2. Death Match Mode

We implemented the death match mode with collecting items as described in the formal game proposal. The main goal is to collect items, in order to gain points or a weapon. The round is finished if one of the players has a predefined amount of points.



Image 1: In-game screenshot from the death match mode.

We also implemented a simple damage model. When a player spawns, he gets some amount of health (i.e. 100 points) and if he is hit by i.e. a missile, some damage points are subtracted from his

health points. If it gets below zero, the car of that player is destroyed and he loses some amount of points. After a few seconds the car of that player is spawned again with full health.

2.3. Weapons & Items

We already implemented a simple version of mines and missiles in the prototype. Now there are two additional weapon types and we performed some changes and improvements on the existing ones.

- **Missiles.** They now have a tracking system. In order to successfully hit an opponent's car, one has to orient the car as precise as possible in direction of the target. The hitting precision depends on the aiming.
- **Mines.** The mines now look the same as the point items to make things trickier. Now everyone has to carefully remind himself of where he did put his own mines.
- **Sphere Mines (new).** Once dropped this weapon is attracted to every opponent and since of its shape it can easily move over the terrain. If any player gets too close to the mine it explodes.
- **Bouncer (new).** Once activated, this item stays activated for some amount of time and if any opponent gets too close to the bearer, he is bounced away.

3. Physics

3.1. Car

Unfortunately we still have no sophisticated car physics. There are unsolved stability issues in our constraints that should attach a wheel to a vehicle. Therefore the steering behavior isn't final yet.

3.2. Other Problems

There is one more bug within the physics engine that causes the collision detection to fail. We haven't found that one yet.

4. Graphics

4.1. Models

The main improvement of this aspect is the addition of other variations of the cactus, addition of the sphere mine and some minor changes of the missile.

4.2. Advanced Graphic Effects

For explosion effects and smoke we included a particle system. To visualize an explosion several explosion particles and smoke particles are spawned. And to have a trail smoke for the missiles a particle generator is attached to it, which generates frequently some smoke trail particles.



Image 2: Explosion Effect.



Image 3: Smoke Trail.

4.3. Textures & Shadows

We also created a simple shadow map for the car. A shadow texture is mapped onto the terrain at the car's position.

