

Harbor Pursuit

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Idea of the game

- Time challenge race
- Checkpoint based
- Reset mechanism if player gets stuck
- Chase cam perspective
- Obstacles such as spilled oil or chicanes



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Physics

- Turning Wheels
- Speed Softcap
- Adjusted Camera
- Different Undergrounds



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Physics

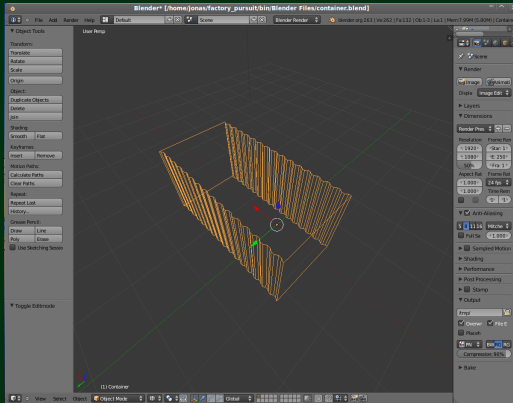
- Turning Wheels
- Speed Softcap
- Adjusted Camera
- Different Undergrounds



Content Creation

Mesh Modeling

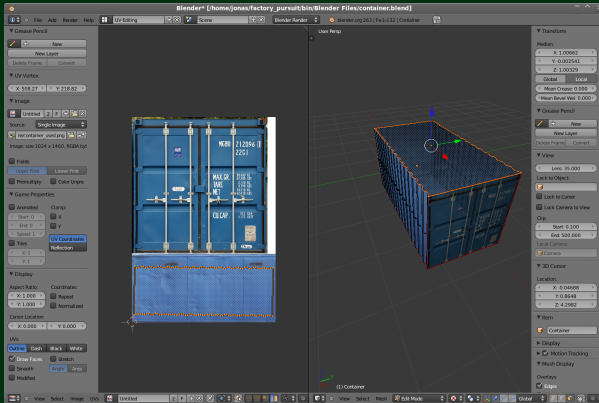
All models are created using Blender 2.63



Content Creation

Texturing

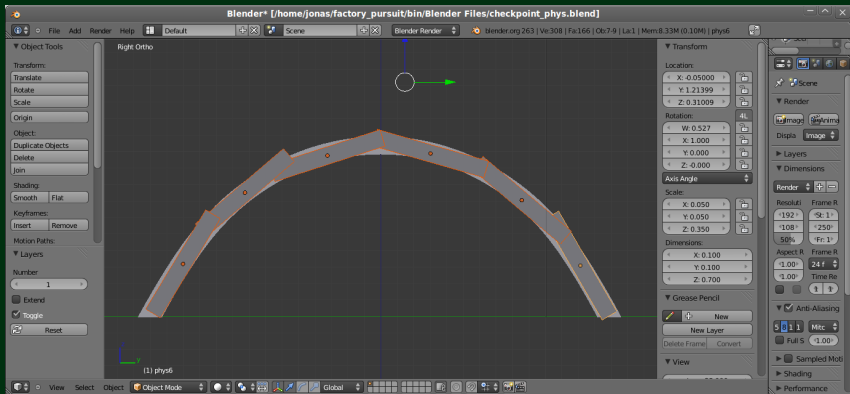
UV Textures are also defined in Blender and then exported



Content Creation

Physical representation

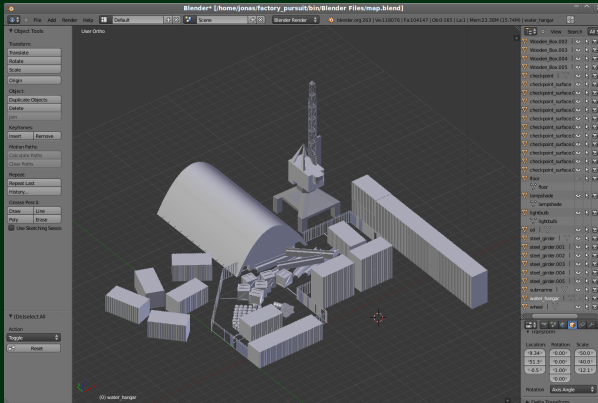
A Python script is used to export basic physical shape of an object



Content Creation

Map creation

The map is put together in Blender and exported using a script



Content Creation

File Format: XML

The Objects properties:

```
<geometries>
  <geometry id="container" path="container.obj">
    <physic shape="box" rotation="0;0;1;0" scale="2;1;1" translation="1;0;0"/>
  </geometry>

  <geometry id="box" path="Box.obj"/>
</geometries>
```



Content Creation

File Format: XML

The Objects properties:

```
<geometries>
  <geometry id="container" path="container.obj">
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  </geometry>

  <geometry id="box" path="Box.obj"/>

```

The whole map:

```
<?xml version="1.0" ?>
<!DOCTYPE swpws12bML>
<map scale="20;20;20" translation="-4.5;20;80">
  <add geometry="arrow" id="Arrow" rotation="0;-0.819152;0.573577;-180" scale="0.4;0.4;0.4" translation="8.952002;0.440319;-9.6"/>
  <add geometry="arrow" id="Arrow.001" rotation="-1;0;0;-90" scale="0.3;0.3;0.3" translation="7.671239;0.8;-7.027170"/>
  <add geometry="arrow" id="Arrow.002" rotation="-0.497543;-0.710565;0.497543;-109.207519" scale="0.4;0.4;0.4" translation="14.111111;0.0;0.0"/>
  <add geometry="barrel" id="Barrel" rotation="0;0;1;0" scale="0.2;0.2;0.2" translation="2.200000;-0.000590;-4.263316"/>
  <add geometry="barrel" id="Barrel.001" rotation="0;0;1;0" scale="0.2;0.2;0.2" translation="2.173820;-0.000590;-4.700000"/>
  <add geometry="barrel" id="Barrel.002" rotation="0;0;1;0" scale="0.2;0.2;0.2" translation="2.252496;-0.000590;-5.149575"/>
  <add geometry="barrel" id="Barrel.003" rotation="0;0;1;0" scale="0.2;0.2;0.2" translation="2.522242;-0.000590;-5.542954"/>
  <add geometry="barrel" id="Barrel.004" rotation="0;0;1;0" scale="0.2;0.2;0.2" translation="2.870663;-0.000590;-5.891375"/>
  <add geometry="barrel" id="Barrel.005" rotation="0;0;1;0" scale="0.2;0.2;0.2" translation="3.196605;-0.000590;-6.239796"/>

```



Content Creation

Animation

- Vertex Shader based animation
- set start/end rotation as quaternion
- triangular function interpolates linear between quaternions



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Graphics

Particle Effect

- Billboard
- Emitter
- Color, rotation, scaling
- Randomized direction
- Car speed
- Different alpha channels



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Particle Effect

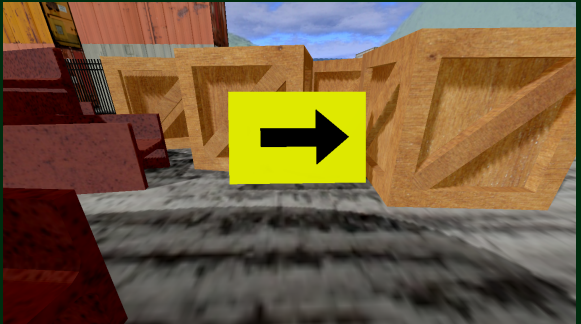
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Graphics

HDR/Bloom

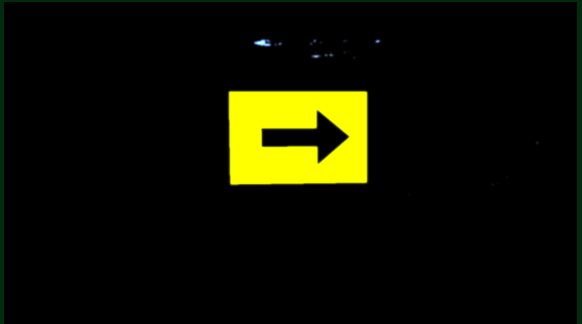
- RGB texture
- Downscaled and blurred multiple times
- Added to HDR texture



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Graphics

HDR/Bloom

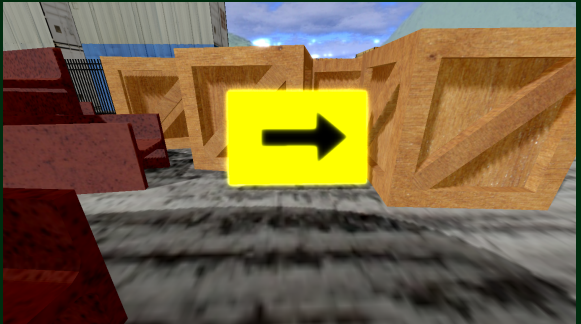
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HDR/Bloom

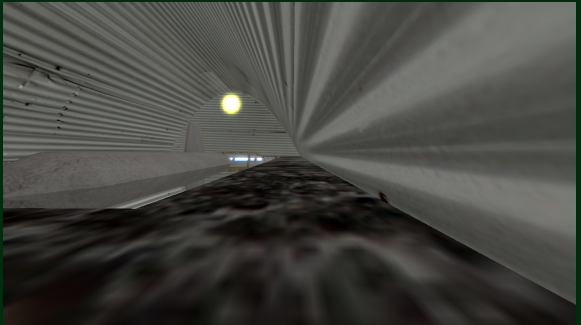
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Graphics

Tone Mapping

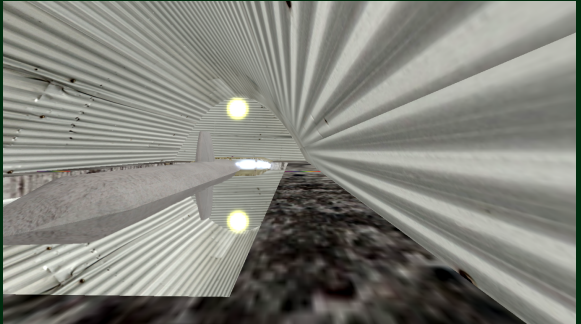
- When entering a dark room, the scene appears dark
- It slowly brightens up, as the eye adapts



Graphics

Tone Mapping

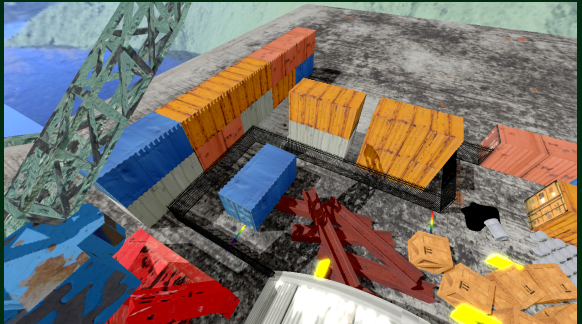
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Graphics

Shadow Mapping

- Basic shadow mapping
- Calculated in real time



Graphics

Shadow Mapping

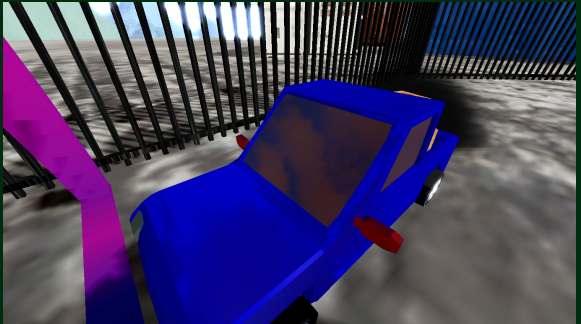
- Basic shadow mapping
- Calculated in real time



Graphics

Environment Mapping

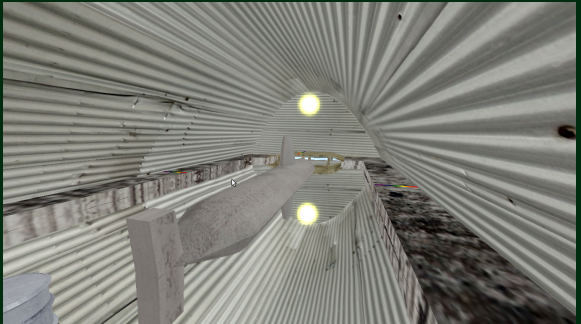
- The skybox is reflected in the paint and glass of the car



Graphics

Reflection

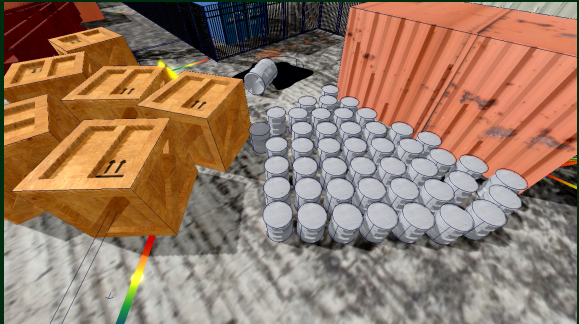
- The water surface reflects the scene in real time



Graphics

Debug Drawing

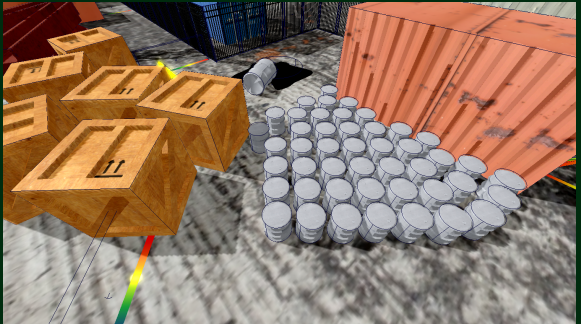
- There are two modes for debugging physics:
 - 1 Show non-culled wireframes
 - 2 Show all wireframes



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