

## Task description

### Groupname: superpyramid

#### Group members:

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#### Story / Scene-Description:

Non-realistic, futuristic looking scene, which is composed of some ring formed objects. The scene is lighted with many different animated flying spheres. The lights are moving circular around a big sphere in the middle. The small spheres disappear, if the big sphere in the middle them.

At the end, the animation of the camera gets faster and a shutter effect appears. In the end of that animation, the camera shows a fully black image.

#### Implementation:

The implementation is based on our Computer graphics game "SuperMarbleRace". We removed all game specific files and restructured it a little bit.

The deferred shading effect can be seen everywhere, because the small spheres light up the scene with different colours (50 lights).

To make the flat regions more complex, the parallax mapping effect adds a brick structure on these areas. So, the result is, that the scene looks like it would be composed of many polygons.

The third effect in our scene is a point light shadow. This is implemented through a change of the ambient light of the deferred shading step. So, parts of the scene, which are in shadow have a lower ambient light intensity. The point light, which generates shadows, is the big sphere in the middle of the scene (rendered into a cubemap from that position).

Additionally, the lights are blurred with a bloom effect. This effect was part of our Computer Graphics game. Because of the deferred shading effect, the bloom effect has to be adjusted a little bit.

## Controls:

It is possible to stop the animated camera by pressing the “j” key. The camera perspective can then be changed by “wasd”, shift, space (= directions, down, up).

Used resources:

- <https://learnopengl.com/>
- <http://www.opengl-tutorial.org/>

## Libraries:

- Glew
- OpenGL
- Glfw
- FreeImage

## Effects

- Parallax Mapping: Scene  
<https://learnopengl.com/#!Advanced-Lighting/Parallax-Mapping>
- Deferred Shading: Sphere Lightning  
<https://learnopengl.com/#!Advanced-Lighting/Deferred-Shading>
- Point Shadow: Shadow for big sphere in the middle  
<https://learnopengl.com/#!Advanced-Lighting/Shadows/Point-Shadows>
- Bloom (CG Game effect): blurring the lights

## Model Creation:

- Self made via Blender

## Graphic Card:

- NVIDIA

## Video (Youtube):

[https://www.youtube.com/watch?v=25J1F\\_YCMBQ&list=WL&index=110](https://www.youtube.com/watch?v=25J1F_YCMBQ&list=WL&index=110)