Administrative	
Group Name / Game Name	Smol
GitHub Link	https://github.com/BlubSta/cgue22-Smol.git
Students	Nicolas Haller 11909461 Kevin Piegler 11909462
Genre	Platformer
Goal	Save yourself from suffocating in space
Game Idea and Content	
Story	Abandoned by your crewmates for being an imposter, you are lost in an asteroid field with a limited amount of oxygen left. You are seeing a spaceship in the distance and try to reach it. Use your oxygen wisely to boost yourself, but don't run out.
Gameplay	The goal is to reach another spaceship to stay alive. This is achievable by jumping from asteroid to asteroid. However as oxygen is running out you try to catch some oxygen bubbles coming out of some asteroids.
User Interaction	● WASD - Move around ○ it is not possible to move while jumping, so aim your jumps ● Space Press - Jump ● Space Hold - Glide (costs oxygen) ● Shift - Sprint (costs oxygen) ● Mouse - Rotate camera ● ESC - Quit game
3D Objects	Static: ● Spaceship - Goal ● Asteroids Dynamic: ● Rotating planet ● Small rocks on asteroids
Scene lighting	● Sun ● Colored Point lights on Spaceships ● Lights from spacesuit

Features	

Category	Feature	Description	Links used
Optional Gameplay	Collision Detection (4 Points)	Player, Asteroids, Small rocks	https://docs.nvidia.com/gameworks/content/gameworkslibrary/physx/guide/Manual/CharacterControllers.html
	Advanced Physics (6 Points)	Small moveable Objects (Rocks) on the asteroids	https://gameworksdocs.nvidia.com/PhysX/4.1/documentation/physxguide/Manual/RigidBodyDynamics.html https://documentation.help/NVIDIA-PhysX-SDK-Guide/ScenesAndActors.html
	Heads-Up Display (4 Points)	Oxygen left	https://learnopengl.com/In-Practice/Text-Rendering
Effects	Texturing: Environment Map (8 Points)	Environment Map of a space ambiente. Skymap reflection can be found at the spaceship cockpit, or for grading, a reflecting box at the beginning of the game is included	https://learnopengl.com/Advanced-OpenGL/Cubemaps https://www.youtube.com/watch?v=QYvi1akO_Po
	Shading: Physically Based Shading (16 Points)	Spaceship and Asteroids	https://learnopengl.com/PBR/Theory https://learnopengl.com/PBR/Lighting
	Post Processing: Lensflare (8 Points)	Lensflare wqhen looking into the sun (skymap sun, not actual light source)	https://www.youtube.com/watch?v=OiMRdkhvwqg
	Advanced Modelling: CPU Particle System (8 Points)	Presentation of oxygenbubbles to refill oxygen	http://www.opengl-tutorial.org/intermediate-tutorials/billboards-particles/particles-instancing/
	Animation Vertex Shader Animation (8 Points)	Sun in the center has a “lavalike” animation with combined sin and cos animation (Made in textureShader)	https://tuwel.tuwien.ac.at/pluginfile.php/2415211/mod_page/content/32/Animation_SS18.pdf?time=1619523068902
	Terrain: Tessellation from Height Map (12 Points)	Not implemented	
	Lighting: Shadow Map with PCF (16 Points)	Not implemented	

For the objectLoader, we relied on this turorial:
OpenGL/C++ 3D Tutorial 45 - OBJ file loader! (Load 3D Models!) | Part 1 but made it on our own for our individual solution. No additional libraries were used.

We have not managed to implement Tessellation and Shadow Map with PCF.

Compulsory

In the final submission (2nd submission) at least 25 points from this list have to be implemented.

3D Geometry (6 Points)

Each object (except trivial) is made in Blender and loaded with our own model loader

Playable (3 Points)

Player moves and has a goal to reach

Advanced Gameplay (3 Points)

Player can navigate with different methods like jumping or gliding based on the oxygen left

Win/Lose Condition (3 Points)

If you fall you loose, if you reach the spaceship you win. Try not to run out of oxygen too.

Intuitive Camera (2 Points)

First Person Camera

Illumination Model (2 Points)

Moving light with player (Spacesuit light) and 2 static lights at the beginning of the game

Textures (2 Points)

PBR Textures (Asteroids and spaceship) and ambient Textures (Planet)

Moving Objects (2 Points)

Planet is slowly rotating

Documentation (1 Point)

this.readDocumentation(), we also documented in our code

Adjustable Parameters (1 Point)

Parameters are adjustable in the config file (settings.ini)