

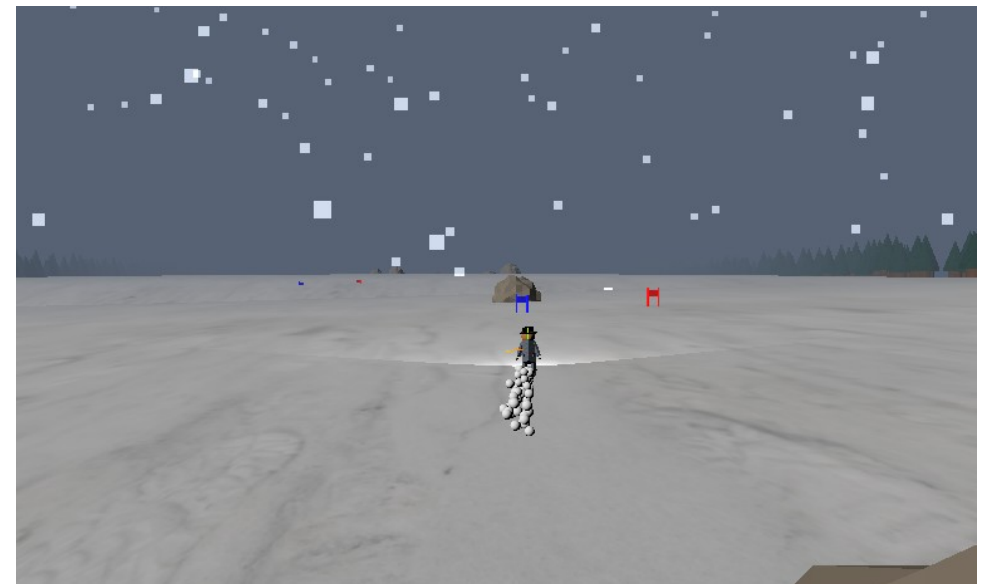
Ski Rush

Ricardo Antunes + 115243

Introduction to Computer Graphics – 2024/2025

Concept

- Skiing Game with single-player and multi-player
- Pass through the gates / run away from your opponent
- Attempt to mimic real life physics and skiing mechanic

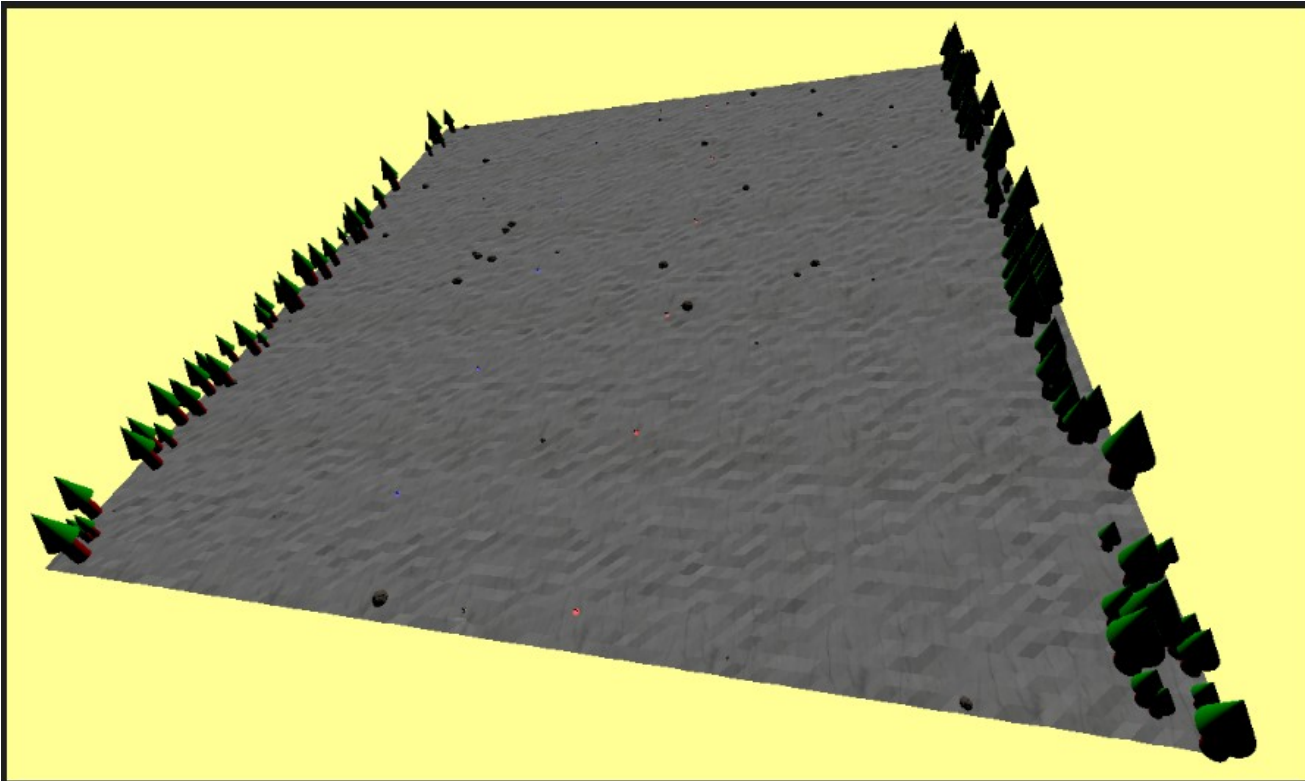


Main ideas

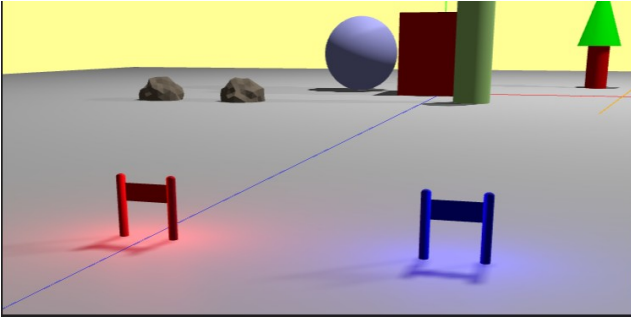
- High-speed, high-adrenaline game
- User can control the skier and the camera when in first-person
- Three.js for rendering and models, SimplexNoise for rock sharpness
- URL – https://ricardo-alexandre-antunes.github.io/ICG_Project/

Models

- Mountain



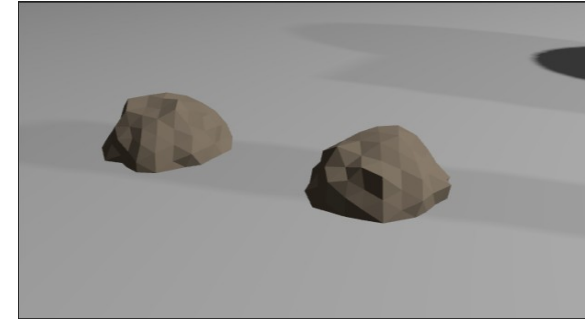
Models - Mountain



Gates



Trees

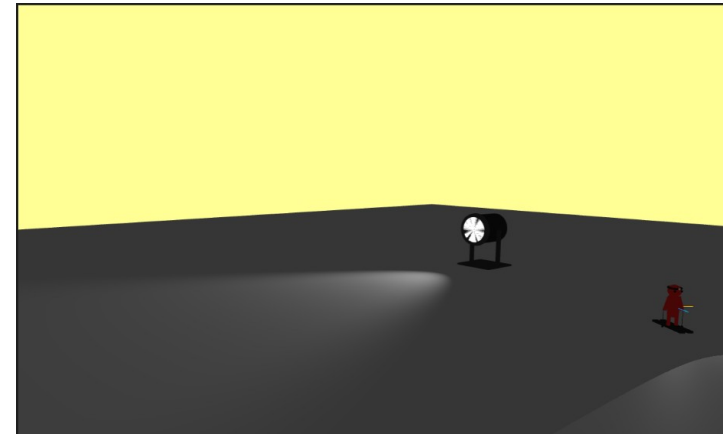


Rocks



Pole

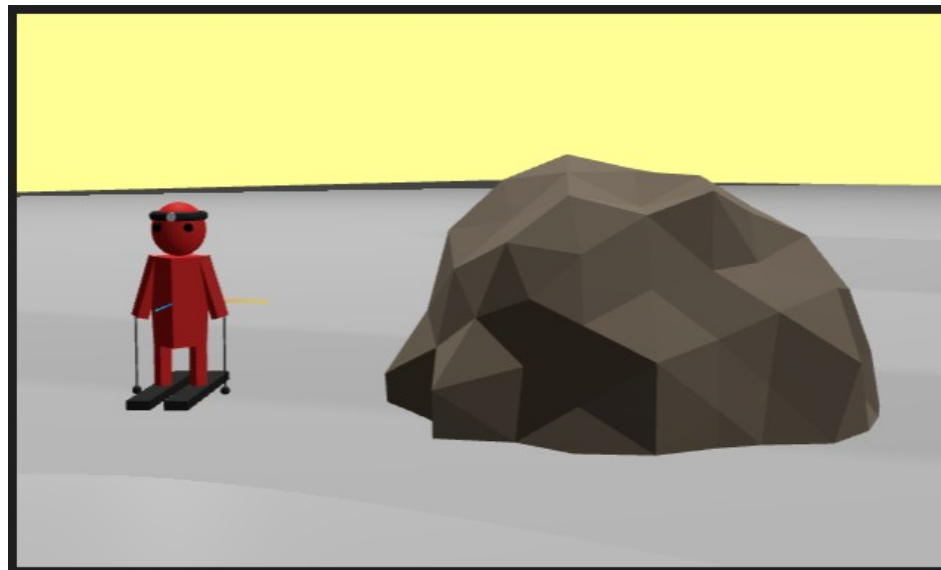
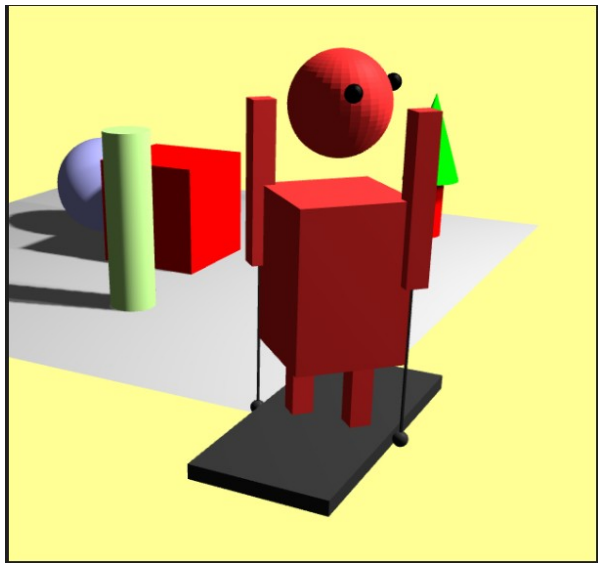
<-
(Not in final
product, but
present in
files)
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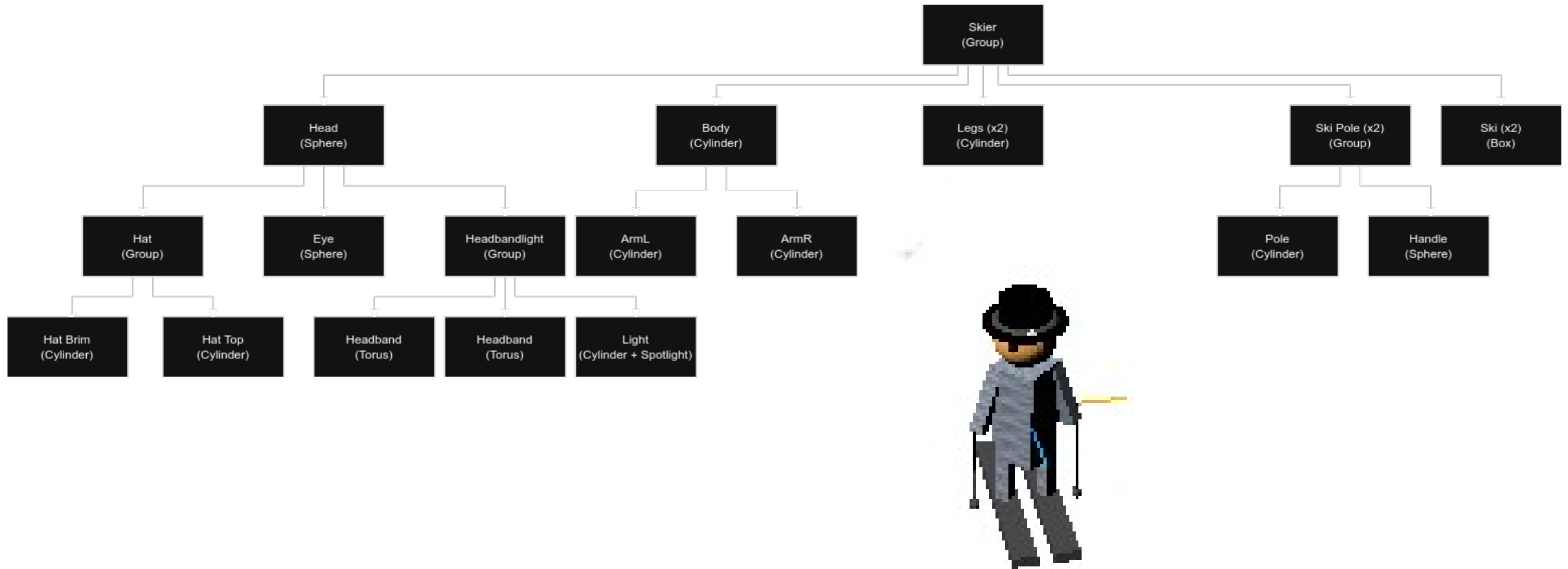
Spotlight

Models

- Character



Models - Character



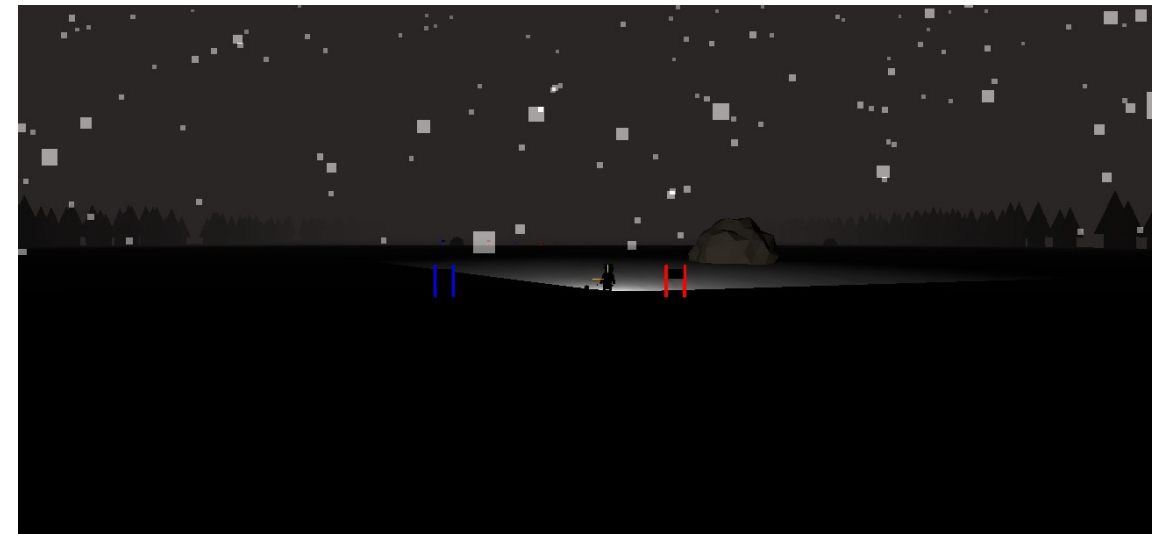
Animation

- Skier has one animation triggered on acceleration
- Leans forward when accelerating



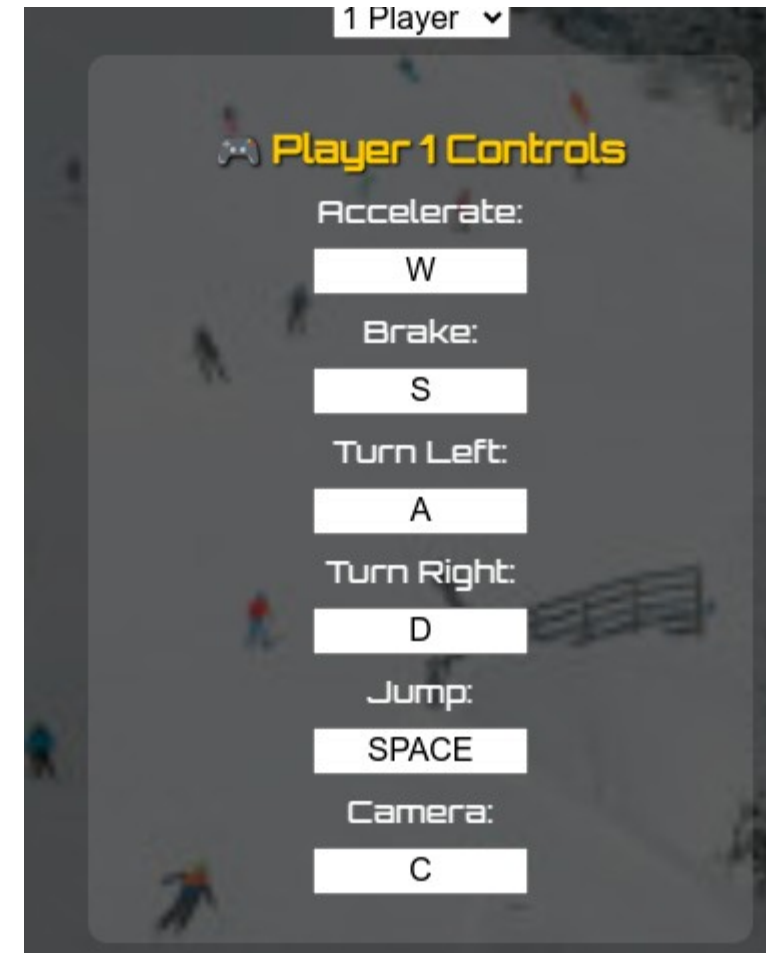
Illumination

- There is a Sun entity that emits light (Directional Light), serves as Day / Night Cycle
- The Skier has a headlight (SpotLight) that serves to light the road ahead when there is night



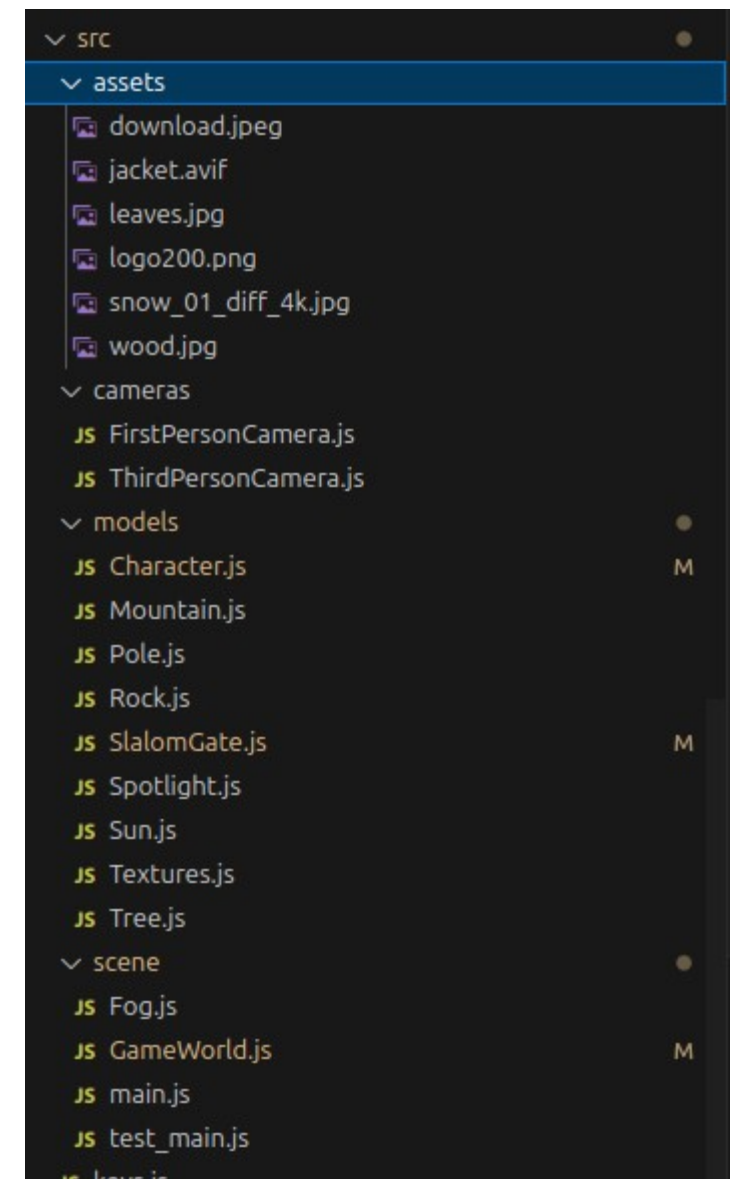
User Interaction

- User can setup controls at the beginning of the game to move and jump
- User can switch to first person camera and control the camera with the mouse



Development

- Index.html only contains basic html
- Every entity separated in different files
- Object-oriented programming
- Project complexity was highly increased due to my personal high-standarts
- Couldn't finish many features nor refine the ones I have in the way I wanted



Conclusions

- This project was a great introduction to managing entities and different aspects such as lighting, shadows and physics
- Being able to do a game (free theme) made this much more enjoyable
- A LOT of work would need to be put in order to put this in a satisfactory level
- Explored a lot of concepts in the classes and in Three.js, especially when creating the skier movement, where manipulating the skier's position and rotation matrixes was needed

References

- References are linked in the code
- <https://github.com/simondevyoutube> → this github and videos helped me structure my code and build my camera objects