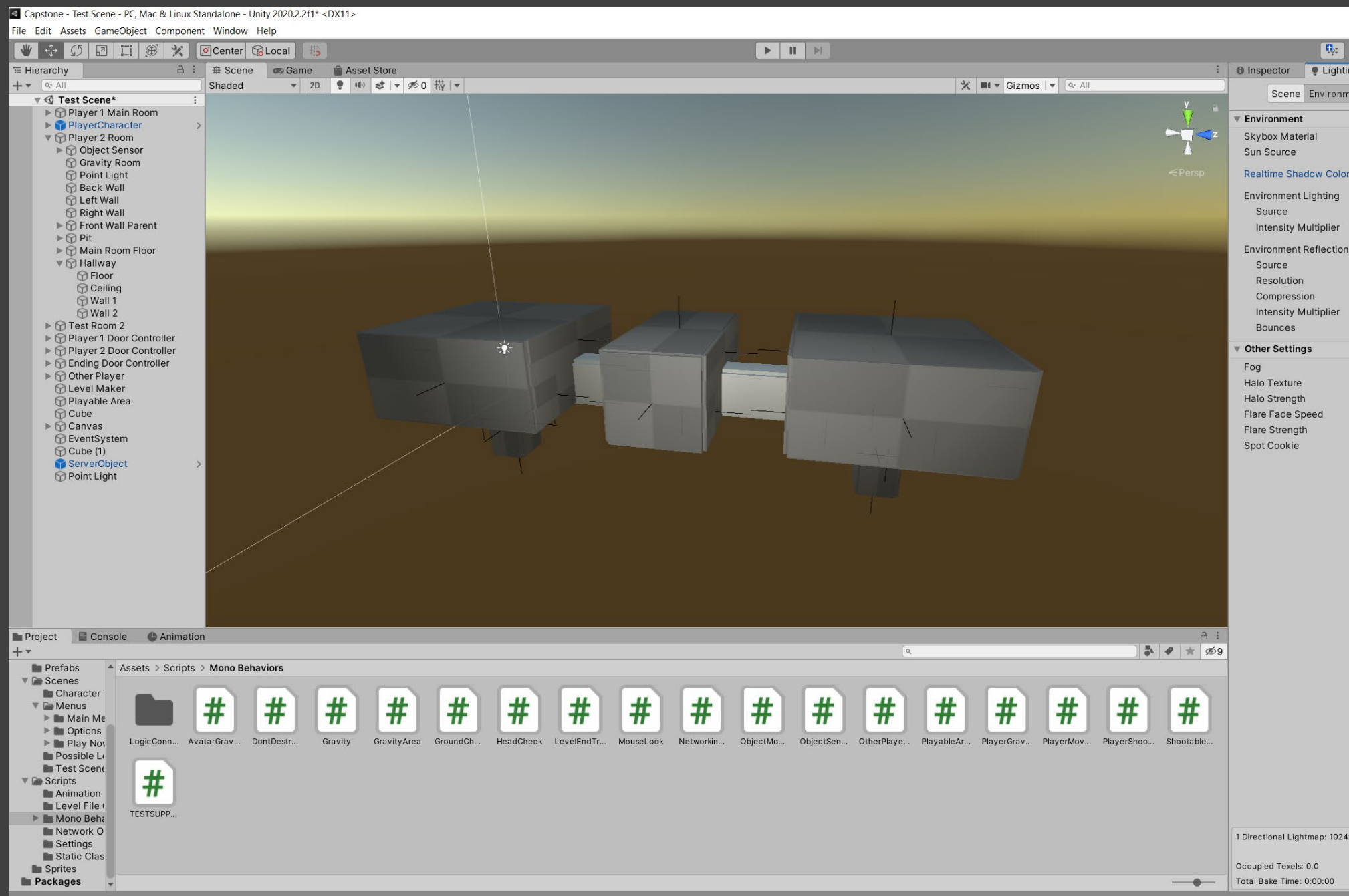# CREATING A MULTIPLAYER VIRTUAL EXPERIENCE

Christian Albert   calbert@umd.edu   Physics
Science, Discovery and the Universe

The view of a test scene from within the Unity Interface

MISSION

The object of this project was to apply knowledge of computer science and physics topics to create an online multiplayer physics-based puzzle videogame. The production of this game also focused on the objective of implementing a custom dedicated server, and facilitating smooth server client interactions.
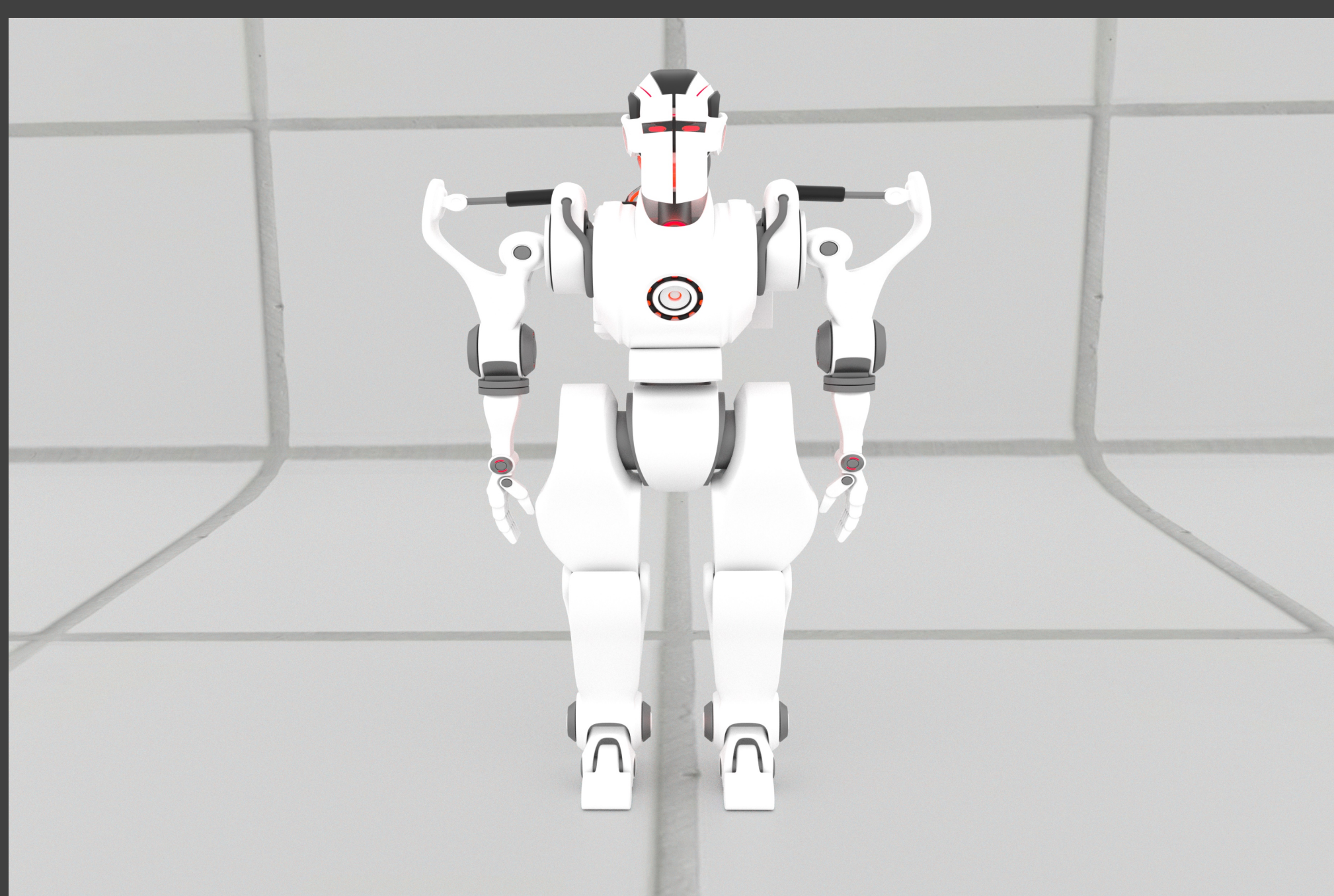
METHOD

This project was primarily created using the Unity game engine and its integrated editor. Scripting was completed using the C# scripting language for both the game processes as well as the server. 3D models were created and edited using Blender software. This array of software allowed for a custom final product.

ACTIVITIES

- Designed and implemented a custom dedicated server
- Used physics and linear algebra concepts to implement custom gravity for the project that function regardless of direction
- Implemented pressure plate system as well as movable doors
- Designed and created custom puzzles that force the use of game mechanics in unique and complex ways for completion
- Used 3D modeling software in order to create, rig, and animate custom 3D models for use in the game.
- Created custom title screen and menus.
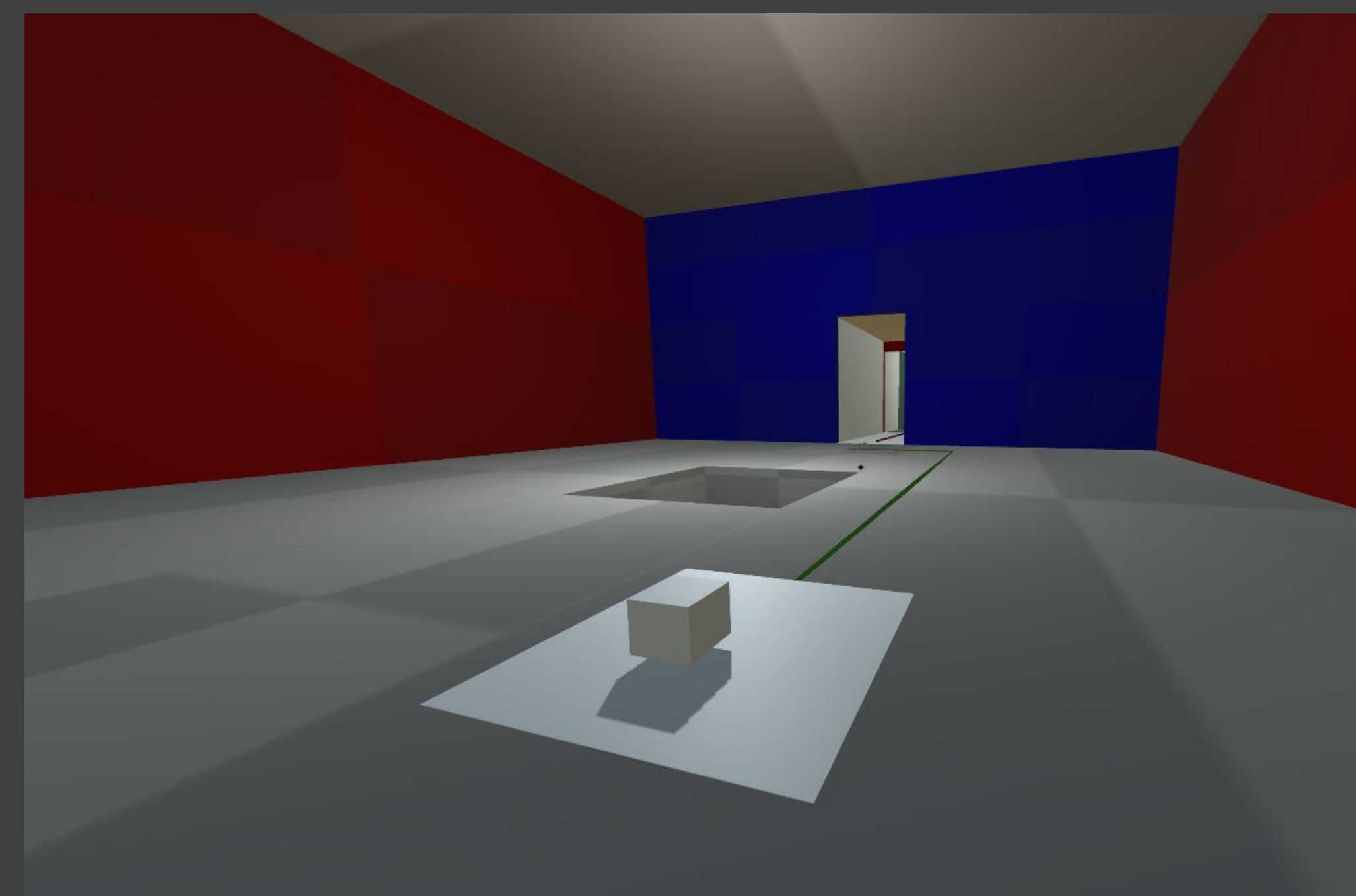
First-person player perspective in the first level of the game

IMPACT

Work on this project allowed my partner and I to learn how to work as part of a team in order to solve complex computer science and media creation problems. The project also allowed our team to educate ourselves on the creation of dedicated servers, and the development and management of complex and interdependent scripts.

FUTURE

The experience of working on this project in helped solidify my personal decision to pursue computer science as a major instead of physics. I now intend to change my major to computer science. Working on this project has allowed me to reflect on which aspects I enjoyed most and focused my search for specific internship types for the near future.

Final 3D model of the player based on *Argon* model from *turbosquid.com*