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## Developing a Space Exploration Game

Throughout the semester, I wrote and iterated upon a 2D video game engine in Java. I started off with creating a UI system with scalable elements and buttons, then moved onto creating a viewport which allowed for panning and zooming. In further games, I developed enemy AI, a physics engine, and randomly seeded map generation. My capstone project is my final game, Space, which is the final iteration of my game engine.

I began this project by polishing and enhancing my existing UI system. I added a minimap that the player can use to see where they are in the game which interactively allows the player to travel between locations. As the game progresses and new planets are randomly generated, they are dynamically added into this map.

Each time the player travels to a new planet, the next stage of planets is procedurally generated. An event is randomly selected from a CSV of possible events, then scaled to a random difficulty, in order to allow for the most replayability.

I also developed a text box system that guides the player through each stage of the game. When a planet is generated, a corresponding tree, which contains all of the text options the user could use, is generated in the backend. Based on the user's choices, they can progress through different paths of the tree as they visit planets.

Finally, I implemented a saving and loading system that the player can use at any point in the game. Each time the player saves, the map of planets they are on and their progress is saved into an XML file that can later be loaded.