

***EE/CprE/SE 492 BIWEEKLY REPORT 4***

***Feb 28 - Mar 13***

***Group number: Team #37 - sdmay25-37***

***Project title: Non-Euclidean Game***

***Client: Josh Deaton***

***Advisor: Dr. Joseph Zambreno***

***Team Members/Role:***

***Tasman Grinnell Project Manager/Rendering Engine Engineer***

***Josh Deaton Rendering Engine Lead***

***Ben Johnson Rendering Engine Engineer***

***Cory Roth Rendering Engine & Game Design Engineer***

***Spencer Thiele Game Design Lead***

***Zach Rapoza Game Design Engineer***

***Lincoln Kness Game Design Engineer***

o **Weekly Summary -** This week, the engine team made a lot of progress, integrating unit testing frameworks with the existing toolchain, refactoring some previous work to integrate better with the new features, ImGui library integration (for GUI rendering), and overall making progress. Additionally, work was done to hunt for a sound library, but we’re currently blocked due to a license request for non-commercial use. In terms of the Game Design team, final refinements were being made in preparation for playtesting, which will occur after spring break, along with encountering many issues with Unity Github Version Control. In general, refinements and additional features were created for the Unity Demo.

o **Past week accomplishments**

* Tasman: Did a bunch of research and understanding how to integrate Catch2 Testing Framework into our Project through CMake for Unit Testing. Unfortunately, since I don’t know CMake, this was really difficult to understand how to do this (and also LOTS of Windows issues). I was also wrestling with the (apparently deprecated and broken) CMake Helper scripts for adding tests in Catch2. This ended up being wasted effort due to all tests being properly registered to CTest and properly running. Additionally, I began looking into Sound Libraries, attempting to find a library that is higher level (than OpenAL which is just about exactly like OpenGL). I found irrKlang, which seems to be a simple library that is very high level, but a license is required, meaning that I had to request a free license for non-commercial projects.
* Josh: Added support for converting between weirstrass model(hyperbolic) and poincare disk. Derived in desmos that the geodesics of a hyperboloid and projecting them from a point on a plane
* Ben: Added ImGui as a library for GUI rendering. Used ImGui to set up an editor and some common UI components for future use. Implemented texture atlasing as a part of the actual engine rendering pipeline. Creating the “game loop” to update & render at fixed and variable times. Moved engine source code into respective components within “App”. Within the editor I made a “Texture Atlas Builder” tool that allows developers to create texture atlases from a folder of images.
* Lincoln: completed the two separate enemies, both these enemies now have an animated sprite. Also added in the grandpa NPC for more lore content to the game demo.
* Cory: Finished Implementation of a sound manager system for the game to play sounds. And make spec list needed for the tilemap
* Zach: Worked on fixing issues with seeds and lanterns. Also implemented 3 new seed types and their random spawning and discovery in the forest scene. Worked on some art.
* Spencer: Finished implementing and tested the time system. Completed shop functionality for two shops along with creating placeable traps and lanterns. Did more planning and recruited more volunteers for the playtest.

o **Pending issues**

* Tasman: Maybe need to consider alternate frameworks or integrating our manual tests with the Catch2 Framework (or just add them to CTest). Additionally, I need to discuss the different sound libraries that are available for us to use (and if we want to use irrKlang, which would require a paid license for commercial use).
* Josh: Weird behavior with rotations when attempting to tile. Rotations seem to need to be swapped to tile correctly, but this is strange behavior that needs to be looked at further.
* Ben: The engine still isn’t in a state where we can import the game. This prevents us from tackling important integration issues.
* Lincoln: N/A
* Cory: N/A
* Zach: N/A
* Spencer: How to handle collision detection in non-euclidean space is still a mystery to me.

o **Individual contributions:**

| *Name* | *Hours These Weeks* | *Total Cumulative Hours* |
| --- | --- | --- |
| Tasman | 11 | 118.5 |
| Josh | 15 | 95 |
| Ben | 32 | 114 |
| Lincoln | 12 | 91 |
| Cory | 14 | 108 |
| Zach | 10 | 86.5 |
| Spencer | 15 | 100 |

o **Plans for the upcoming week**

* Tasman: Discuss and finalize the sound library we’ll use for the project and integrate the library over spring break.
* Josh: Meet with the team on Friday and try to fix the hyperbolic code. Help perform more integration and testing.
* Ben: Finalize the engine loop, ECS, and component system so that game integration can finally begin.
* Lincoln: prepare for our game testing
* Cory: Implement the tilemap system
* Zach: Prepare and start game testing. Along with starting to look into how we are going to port.
* Spencer: Complete remaining implementation for the game prototype in Unity. Get the Unity project built and playable online for playtesting. Ship out a form for the playtest with a guide on playing, a link to the game, and a follow up questionnaire.