

***EE/CprE/SE 492 BIWEEKLY REPORT 3***

***Feb 14 - Feb 27***

***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:** The past two weeks, the engine team was able to get a lot done, including the implementation of the Animation class, Resource Manager, began the Rendering abstraction and Texture Atlas system, and making more progress on the Hyperbolic Shader. At the end of the Live Coding Session on 2/15, Josh got distracted and refactored/reorganized the repository and fixed issues with the stb image Library. Additionally, Spencer began the implementation of the time system and physics engine. The Game Design team generally worked on setting up playtesting, reaching out to people to ask if they’re interested in participating. On the Unity side, general work was done with polishing and implementing details.

o **Past week accomplishments**

* Tasman: Wrestled with environment / stb image issues, learned & implemented Animations from a spritesheet (might need to polish and be more granular with what we’re actually taking from the spritesheet), and began Resource Manager Class. Met with Engine team on 2/15 for a live coding session. In the second week for the report, I created and finished a Resource Manager and began the Tile Map class for holding the Tile information for each of the scenes. Prior to beginning Tile Map implementation, I met with Ben and Spencer to discuss efficient storage for the mapping due to the unconventional method of tiling. At the second week’s engine meeting, we decided to not be smart with it and just use a tree-like structure with each tile maintaining pointers to its neighbors. I began looking into using a quad-tree structure, but I’m having a lot of trouble figuring out how to store the tile map in an offline storage method for loading / shutdown operations.
* Josh: Fixed the issue with the stb image by creating a stb image c file for the inclusion of the specific define. Implemented square and triangle shapes that allow for defining the fineness of mesh. This allows for a rotation without large distortion. Also started fixing issues with the hyperboloid generation such that the rotation axis is not aligned to the hyperboloid.
* Ben: Implemented a texture atlas system to reduce the number of needed textures. Review code with Tasman about the Resource Manager and sprite animations. Began work on hyperbolic shader.
* Lincoln: This week I worked on repurposing the EnemyAi code so that we can have a second more difficult enemy. It will have slightly different behavior compared to the previous enemy.
* Cory: Was looking into tile map implementation as well as looking into places for having a playtest.
* Zach:Finished up the player lighting being affected by lanterns, implemented player death and a basic transition, and started to explore implementing an exchange
* Spencer: Started implementation of a time system and physics engine (euclidean). Finished trap and trap placement implementation in Unity. Also fix bug with NPC dialog in Unity.

o **Pending issues**

* Tasman: N/A, just need to find the time to iron out all of the Tilemap stuff and maybe do more Resource Manager Testing.
* Josh: Need more time to iron out all of the hyperboloid generation. Also want to generate a rectangle with a hyperbolic grid so that I can make a scene looking like a poincare disk.
* Ben: Need to find a way to transform a quad from Euclidean to hyperbolic within the vertex and fragment shaders
* Lincoln: N/A
* Cory: N A
* Zach: N/A
* Spencer: Unsure on how to approach creating a non-euclidean physics simulation.

o **Individual contributions:**

| *Name* | *Hours This Week* | *Total Cumulative Hours* |
| --- | --- | --- |
| Tasman | 24 | 107.5 |
| Josh | 14 | 80 |
| Ben | 16 | 82 |
| Lincoln | 6 | 79 |
| Cory | 10 |  |
| Zach | 6 | 76.5 |
| Spencer | 11 | 85 |

o **Plans for the upcoming week**

* Tasman: I’d like to finalize testing for the Resource Manager since the testing was generally hasty and just a little bit for a sanity / basic functionality check. Additionally, I’d like to finish the TileMap and the testing ASAP so we can actually try to create maps and hopefully potentially try to render from a tile map and tile sheet.
* Josh: I hope to generate a hyperbolic rectangle and use those and rotations to make a poincare disk. Participating in a live coding session on Saturday
* Ben: Integrate texture atlases into main code. Put together a working hyperbolic shader.
* Lincoln: Make some finishing touches on our unity prototype
* Cory:Finish up and begin working for the play tests
* Zach: Finish up unity prototype, to start play tests
* Spencer: Finish the time and euclidean physics engine. Have a testable first version of the non-euclidean physics engine. Get the two npcs implemented with dialog and potentially a forest objective in Unity.