**Date, By, Description (Hours)**

**8/27/2019, Sean, Class Meeting and Project Discussion (1)**

This included the initial class meeting, group picking, and initial project idea brainstorming.

**8/30/2019, Sean, Professional Biography (2)**

The drafting and completion of the professional biographies for the second project assignment.

**9/3/2019, Sean, Class Meeting and Project Discussion (1)**

Second class meeting and continued project idea brainstorming and finalizing main project ideas.

**9/6/2019, Sean, Project Description (2)**

The drafting and completion of the initial project description for the main project repository based on the main ideas decided on during prior meetings.

**9/8/2019, Sean, Discussion of Overall Game Ideas (1)**

Building further depth into possible routes for game design and implementing the game ideas decided in prior meetings.

**9/10/2019, Sean, Class Meeting and Project Discussion (1)**

Third class meeting and addition discussion of game mechanics and expanding ideas from prior meetings. Began discussion of game style, type, and began work on possible test assets.

**9/12/2019, Sean, Capstone Assessment (2)**

The drafting and completion of the individual capstone assessments for the third project assignment.

**9/14/2019, Sean, Researching Game Design Ideas (2)**

Researched into game engine design for the game style decided upon and began drafting early tests and iterations of possible game engine designs for future use.

**9/17/2019, Sean, Class Meeting and Project Discussion (1)**

Fourth class meeting and discussion on possible User Stories and results from prior research.

**9/18/2019, Sean, Researching and Experimentation with Game Display Design (4)**

Expanding from the game engine research, began development of methods to utilize SDL2 for game display and object control.

**9/18/2019, Sean, User Stories (2)**

Made additions to existing stories from prior meeting and finalized said stories for the next assignment and posted to the repository.

**9/20/2019, Sean, Design Diagrams Discussion (2)**

Researched similar design diagrams and used the fundamentals to develop the different complexities of the project’s own design diagrams and used draw.io to create the graphics.

**9/21/2019, Sean, Researching and Experimentation with Object Management (3)**

With the testing of game engines and game display, began research in formats to store data for objects for constant reference and/or to store changes for future uses. Mainly with the aim to store assets for objects that would be used by several iterations or different entities of a similar object in the game, such as map tiles or walls.

**9/22/2019, Sean, Design Diagrams Finalizing (2)**

Made additions and changes to existing diagrams and finalized the last diagram and uploaded the results to the repository.

**9/24/2019, Sean, Class Meeting and Project Discussion (1)**

Class meeting and initial discussion on the task list with rough overall ideas of milestones that would need to be met during the current and following semester.

**9/27/2019, Sean, Initial Task List Discussion (2)**

Began more in-depth development on what tasks need to be completed in the project to meet the desired outcome and demo for the next semester expo.

**10/1/2019, Sean, Class Meeting and Project Discussion (1)**

Class meeting and discussion on the division of work for the tasks made so far.

**10/3/2019, Sean, Task List Finalizing (2)**

Expanding the depth/description of each task and finalizing each task and the assigned team member to complete said task.

**10/8/2019, Sean, Class Meeting and Project Discussion (1)**

Class meeting and beginning discussion on the possible timeline of the tasks laid out in the prior assignment.

**10/9/2019, Sean, Timeline (2)**

Making final adjustments to the times assigned to each task and giving each proper padding for the amount of work that will need to be done during each task across the remainder of the semester and the next.

**10/11/2019, Sean, Effort Matrix (2)**

Using the timeline from the prior task and the assigned member for each task and working on the graphical format for the matrix to fit in the final report and presentation.

**10/12/2019, Sean, Continuing the Design of Early Game Display Functions (4)**

Continuing development and design of game display functions that enable camera movement, object movement, object image changes, object removal, and more.

**10/15/2019, Sean, Class Meeting and Project Discussion (1)**

Class meeting and initial discussion of slideshow themes/design and division of work and presentation scripting.

**10/18/2019, Sean, Experimenting with Functions to Analyze Game Music (1)**

Researched methods of music analysis and decided upon the use of Fast Fourier Transform (FFT) and began development of methods in order to complete this, specifically with library SFML.

**10/23/2019, Sean, Slideshow Discussion (2)**

Began the collections and formatting of project data for the presentation slides and drafted the first version with the initial style for the slides and worked on the script to go along with the presentation.

**10/25/2019, Sean, Brainstorming Possible Game Music Manipulations (3)**

Worked on the initial, high level, design of possible game manipulations that could occur from the music being played. Mainly deciding on what type of music would result in what type of effects and what data from the music could be used in order to complete this.

**10/30/2019, Sean, Slideshow Finalization and Recording (3)**

Finalized the slides for the presentation and worked on the recorded presentation to go along with the slides. Then worked on editing any recording issues and put each part together to create the final video presentation.

**11/6/2019, Sean, Designing High Level Ideas to Implement the Music Manipulations (2)**

Expanding the designs from the prior week, worked on finalizing what data would be used in the music analysis to manipulate the game, and worked on early data collection from sample music and setting example points for further reference once actual functions are built.

**11/12/2019, Sean, Presentation and Class Meeting (2)**

Presented project slides and examined other projects. Afterwards, discussed further plans for development.

**11/15/2019, Sean, Continuing Game Object Design and Early Testing (2)**

Developed early objects for map creation (walls and floor tiles) and corresponding test assets and then worked on logic for taking a simple text tile map and converting it into corresponding game tiles using proper assets and orientations.

**11/19/2019, Sean, Peer Presentations and Class Meeting/Discussion (2)**

Examined other projects. Afterwards, discussed further plans for development.

**11/26/2019, Sean, Peer Presentations and Class Meeting/Discussion (2)**

Examined other projects. Afterwards, discussed further plans for development.

**12/4/2019, Sean, Meeting with Advisor (0.5)**

Discussed project with advisor and received feedback and evaluation.

**12/16/2019, Sean, Test Assets Development (5)**

Worked on finalizing the major test assets for further game development, specifically the various wall art and tile art for the game, and tested various scene situations to make sure that there were assets for any situation that the game map is intended to be in.

**12/20/2019, Sean, Map Creater and Initial Asset Creation (5)**

With the map tile objects created before, worked on designing further map creation logic and implementing said logic into code that would work with the developed display functions and would properly create the maps based on more simple data files.

**12/30/2019, Sean, Initial Audio Analysis Function Creation (5)**

Continued development of functions to complete FFT on playing music. The original functions would use SFML in order to play a .wav file and output a BigArray of complex numbers that could then be somewhat simplified and used for further use. The major point of development was creating boundaries of “sound groups” that would be used to control specific actions in the game. Lower frequencies used fewer parts of the sample, whereas higher frequencies would have hundreds of samples that did not need to be individualized for the purposes of this project.

**1/2/2020, Sean, SFML and SDL Game Display Function Updating (5)**

Worked on further developing the display functions and researched either swapping the all display functions to SFML instead of SDL, but then continued to work on combining the two functions so they could coincide in the game.

**1/15/2020, Sean, Class Meeting and Planning (1)**

Class meeting and began initial test plan ideas.

**1/19/2020, Sean, Test Plans (3)**

Worked on developing all test plans and completing each necessary detail for each test and finalizing the document for submission.

**1/24/2020, Sean, User Documentation (3)**

Worked on developing the user documentation based on the current designs and the planned designs for the final product at the time. Once this was developed, the documentation was converted to separate pages on the repository in Markdown.

**2/5/2020, Sean, Class Meeting and Planning (1)**

Class meeting and continued planning for possible strategies to combine the existing functions into the game engine.

**2/10/2020, Sean, Game Object and Music Initial Combination Experimentation (5)**

Attempted to implement these plans with mostly success, but becomingly more apparent that with the given time and amount of team members, this plan would most likely meet the deadline for the expo. Decided to move to other plans.

**2/14/2020, Sean, PowerPoint Documentation (3)**

Updated presentation slides from the prior semester with current information and added any addition information required for these slides.

**2/20/2020, Sean, Unity Research and Initial Conversion (5)**

Due to the time constraints, more research was done on possible conversion to the Unity Engine, and after review of available functions and overall shorter time to produce a final product, the decision was made to convert existing functions to work in Unity. During this time, more research on fundamental development in Unity was done and most important features of the current engine were either replaced or properly converted to work within the Unity workflow.

**2/26/2020, Sean, Expo Poster Draft (3)**

Used the information from the presentation slides draft the first version of the expo poster and added any additional information that was necessary. Experimented with various colors/fonts/themes for the poster and chose the one that worked best for the project design and had the best readability.

**3/1/2020, Sean, Unity Initial Base Game Setup and Experimentation (5)**

Continuing from the conversions, worked on developing the test game world and fixed any issues that arose from the change. Mostly coming from distancing issues based on how unity handled each tile and what the actual size of each asset for the tiles were, and how that translated into the game distancing. Once correct distancing was found, tiles did not conflict/overlap, and it was possible to quickly develop different stage designs.

**3/4/2020, Sean, Class Meeting and Reviewing (1)**

Class meeting and reviewed other project posters along with collecting criticisms of our own group’s poster and possible adjustments that could be made for the final draft.

**3/10/2020, Sean, Unity Map Creator Conversion (3)**

With sample maps working within Unity, converted the logic of map creation to work with the different language and library changes, and after various modifications, the creator works as well as it had in the prior programs.

**3/16/2020, Sean, Unity Player Asset Creation and Adjustments (4)**

Since the map is working as well as needed for the project demo, development on player objects/assets began. Samples for various actions for split into individual images and sorted/named to be used for future functions. Upon later testing, further adjustments needed to be made so that overall, every image would have a global center and equal sizing.

**3/18/2020, Sean, Unity Player Animation Development (3)**

Used the player assets taken from the prior tasks and began combining them into animations for each move set. Along with this, timing between each frame was adjusted to match the expected look in motions and logic was created within Unity to move between animations based on character variable and actions from the user’s input.

**3/20/2020, Sean, Unity Player Movement and Action Development (5)**

Once the player animation was added into the test area, the player object’s movement functions were created and adjusted to match the player animation and make the overall movement and actions of the player match the “feel” that the user expects.

**3/21/2020, Sean, Unity Sound Analysis Development (3)**

Using functions within Unity, the sound analysis functions developed for the retired engine were converted and updated to work with Unity and were tested to make sure that they matched the expected output from before the conversion.

**3/22/2020, Sean, Unity Visual Sound Analyzer Development (5)**

To assist with further manipulation development functions were created to visualize the audio frequencies from the playing music. This visualizer would also show the adjusting trigger points that would be developed later and would be useful in making sure that the manipulations in the game properly mimic the music as designed.

**3/23/2020, Sean, Poster Final Draft (2)**

Made additions from the new developments, and changes from the criticisms received from the review session and from good design elements produced by other groups.

**3/23/2020, Sean, Unity Music-Manipulated Function Development (5)**

Built from the visualizer and music analysis functions, additional functions were made to take this data and convert it to more usable actions for later objects. Created additional variables that will store trigger points for each frequency group, store history data and other information for other uses, such as adjusting these trigger points, and more.

**3/25/2020, Sean, Unity Projectile Attempt (5)**

From these developments, developed projectiles that would collide with the player and environment and would spawn from a point based on the music played during the current frame. Worked towards having these projectiles have unique properties, such as velocity, travel direction, time to live, number of collisions before death, damage values, and more. Overall, the early production worked OK, but spawned too many, which resulted in changes to the prior functions to make certain triggers harder to meet based on the prior data.

**3/26/2020, Sean, Unity Data Prediction Experimentation (3)**

In order to make these projectiles have more variety, attempted to create functions to see the music data that would be retrieved during the next frame. However, due to the current design and time remaining, this would not get put in the final demo. Unfortunately, when the future data was gathered, it did not correctly match the following frame’s data, which was most likely due to the way that the music data was collected and the difference in time between frames causing inconsistencies. Alternatives were designed, but determined to take too long to produce, so were pushed back for future additions.

**3/30/2020, Sean, Unity Laser Object Development (5)**

Began converting most of the projectile functions to instead use lasers that would have mostly different manipulation logic but would not run into issues with too many objects being spawned from the way the music was being analyzed.

**4/5/2020, Sean, Unity Laser Object Improvement (3)**

With the base laser logic working well, additions were made to make the lasers reach specified distances based on the values of each type of frequencies, what type of frequency the laser is depicting, and whether the laser would collide into any object. This made the lasers act uniquely based on the frequencies, which was a major point of the project design, and made sure that the lasers would not over-shoot a player or other object in the environment.

**4/10/2020, Sean, Final Self-Assessment (2)**

Worked on the final self-assessment report and overall group assessment for the individual assignment and final report.

**4/16/2020, Sean, Expo Demo Video (2)**

Finalized some areas in the test area and objects in the game, and then worked on recording video from the game that depicted key aspects of the built game. This video was then chopped and edited into a short demo for the expo.

**4/18/2020, Sean, Final Report (5)**

Worked on the final report, adding any new information needed and updating prior information for the report and repository.

**4/20/2020, Sean, Final Revisions and Improvement (5)**

Made any final adjustments to the game/repository needed for the posted version on the repository, mainly to make it easier to access, remove unnecessary files, and make any comments over sections for easier additions or for anyone reviewing the project code.