Parchment

Sprint #1 Planning Document

Team 12

Jacob Brown
Raymond Xie
Xiaoyan “Larry” Li
Jack Locascio
Drew Hatfield
Josh Gerber

Sprint Overview

During Sprint 1, our goal is to create a working, but not yet fully fledged, GUI that allows users to create and manage their game projects. We also aim to begin development on the codebase behind the game editor and the game virtual machine, with an emphasis on parsing and storing data as well as rendering the game itself, albeit in a rudimentary fashion for sprint 1. Most of the *editing* of game projects (including sprite, audio, map, page, script, prototype, status, and logic editing) will not be implemented in sprint 1, aside from very basic editing features involving pages. Instead, the creation, storage, and interpretation of game projects and data files will be focused on in this sprint, as well as basic GUI capabilities, to ensure we have a good technical foundation for our engine in subsequent sprints.

Scrum Master: Jacob Brown

Meeting Plan: Wednesdays/Saturdays 8:00 pm

Risks and Challenges

Given the limited time constraint of the sprint, one of our team’s biggest difficulties to overcome will be bringing all the separate engine components together and ensuring the resulting product is functional. There are a myriad of dependencies present in the game engine and as a result, it is vital that core parts of the engine are functional and all members must have a thorough understanding of their roles to ensure their code meshes well with others once code is merged. It is imperative, particularly in the early stages of this sprint, that there is constant communication so we develop a strong foundation for Parchment to ensure smooth development further down the line as additional features are added.

Current Sprint Detail

User Story #1

As a user, I would like to create and name a new game project so that I can start developing.

Task #	Description	Estimated Time	Owner
1	Develop a menu bar that includes dropdowns and buttons for general editor use.	2 hrs (each)	Jacob, Drew
2	Create a function to initialize a new game object.	2 hr	Jack
3	Create a prompt asking the user the name of their game and where the game data file should be saved.	2 hrs	Drew
4	Save new game data file in the requested location.	1 hr	Jack
5	Add unit test for game creation functionality	3 hrs	Jack

Acceptance Criteria:

1. Given that the executable of the game engine is implemented properly, when the engine opens then a window with a menu bar at the top, including a “File” dropdown (among others), should appear.
2. Given that the file dropdown is implemented correctly, when the user selects the option to create a new game, a popup should appear asking them for the name of their project.
3. Given that the new game popup is implemented correctly, when the user creates a new game, they should be met with a prompt asking for the file location to save their game data file to.

User Story #2

As a user, I would like to import an existing game project file so that I can continue developing.

Task #	Description	Estimated Time	Owner

1	Create a function to parse the Parchment project file into game data objects.	10 hrs	Larry
2	Create a window that allows users to navigate directories and select a game data file to import.	2 hrs	Jacob
3	Add unit tests for game importing functionality.	3 hrs	Larry

Acceptance Criteria:

1. Given that the “File” dropdown is implemented correctly, the user should be able to open an existing project from the dropdown.
2. Given that the “File” dropdown is implemented correctly, when the user opens the existing project option, they should be able to navigate directories and choose the desired project to import.
3. Given that the file parsing function is implemented properly, when users import an existing project then the project should successfully load and get stored in memory for editing.

User Story #3

As a user, I would like to save a game project so that my work progress is kept.

Task #	Description	Estimated Time	Owner
1	Create a function to serialize and save the current game data object as a game project file.	10 hrs	Jack
2	Add unit test for game saving functionality	3 hrs	Jack
3	Create a prompt that asks users “are you sure?” if they decide to exit the engine with unsaved changes.	2 hrs	Drew

Acceptance Criteria:

1. Given that the serialization function is implemented correctly, when the user saves a game project, then an accurate game data file that represents the full data of the game being edited should be created.

2. Given that the “Save” button is implemented correctly, when a user decides to save their project, the game data file should be saved to their disk.
3. Given that the save prompt is implemented correctly, when the user attempts to close out of the project with unsaved changes then the engine will prompt the user to save their changes.

User Story #4

As a user, I would like to delete an existing game project and it’s associated files so that I can manage existing projects.

Task #	Description	Estimated Time	Owner
1	Create a prompt asking the user “are you sure?” if they decide to delete their existing project.	2 hrs	Jacob
2	Create a function to delete the project data file associated with a project and free remaining game objects	1 hr	Larry
3	Add unit test for game deleting functionality	1 hr	Larry
4	Create a prompt that tells users a project was successfully deleted.	2 hrs	Drew

Acceptance Criteria:

1. Given that the delete button is implemented correctly, when the user attempts to delete the project, then the engine will prompt the user with a confirmation message.
2. Given that a user clicks “delete project”, when the engine finishes deleting the file, the user will be presented with a success message.
3. Given correct implementation of deletion, when the deletion process finishes, there will be no deletion-related memory leaks.

User Story #5

As a user, I would like to change the name of an existing game project so that I can have flexibility with naming.

Task #	Description	Estimated Time	Owner
1	Create a function that changes the name of the project file.	1 hr	Larry
2	Create a function and associate it with the button that changes the name of the current project and calls the name-changing function that was made in task 2.	1 hr	Jacob
3	Create a prompt that tells users the name change was successful.	1 hr	Drew
4	Add unit tests for renaming functionality.	1 hr	Larry

Acceptance Criteria:

1. Given an existing Parchment project, a user should be able to select the rename project option.
2. Given an existing Parchment project, if a user enters a new name, the program should rename and refactor (if necessary) the project.
3. Given an existing Parchment project, if a user cancels the rename, the name should not change.

User Story #6

As a user, I would like to export my game project so that I can release the game.

Task #	Description	Estimated Time	Owner
1	Create a function to serialize current game data objects as a game project file.	10 hrs	Jack
2	Create a function to create a file and write game data to it.	2 hrs	Jack
3	Test that the game properly exports	2 hrs	Larry

Acceptance Criteria:

1. Given the export game button is implemented correctly, clicking the button will create a new game project file in the desired directory.
2. Given the file creation function is implemented correctly, the game data in the game data file should be transferred to a string.
3. Given the file creation function is implemented correctly, the exported file should contain all the data in the game object.

User Story #7

As a user, I would like to access a game view window so that I can see the current page.

Task #	Description	Estimated Time	Owner
1	Create a game view window.	2 hrs	Jacob
2	Create an algorithm that renders the current page onto the game view widget (including research).	15 hrs (each)	Josh, Raymond
3	Connect the game view window to the render loop.	1 hr	Drew

Acceptance Criteria:

1. Given the game view window is implemented correctly, a game view window should be created if the widget is clicked.
2. Given the rendering algorithm is correctly implemented, the game view should be updated with the current page successfully as necessary.
3. Given the game view window is successfully launched, it should be able to be closed successfully.

User Story #8

As a user, I would like to access a page editor view so that I can edit maps.

Task #	Description	Estimated Time	Owner
1	Create a page editor view window.	1 hrs	Jacob
2	Connect the page editor window to the render loop.	2 hrs (each)	Jacob, Drew

3	Add unit tests for opening the page editor window.	1 hr	Larry

Acceptance Criteria:

1. Given the main Parchment window is implemented correctly, a page editor button/widget should be displayed in the “Add” dropdown.
2. Given the ”Page Editor” button is implemented correctly, a page editor window should be displayed when the widget is clicked.
3. Given the page editor window’s launch is successful, it should display any current map objects for editing.

User Story #9

As a user, I would like to view the information of the currently selected page.

Task #	Description	Estimated Time	Owner
1	Create a function that retrieves the current page object.	2 hrs (each)	Jacob, Drew
2	Create a function that updates the page editor view as necessary.	3 hrs (each)	Jacob, Drew
3	Test that all page information properly propagates to the view.	2 hrs	Larry

Acceptance Criteria:

1. Given the data-retrieval function is implemented correctly, it should return the current page object.
2. Given that an object information window is set up correctly, all required information components should be displayed to the user.
3. Given the function that updates information components is set up correctly, information should be updated if the page’s characteristics are changed.

User Story #10

As a user, I would like to create a page in the page editor.

Task #	Description	Estimated Time	Owner
1	Create a function that creates a new page object and adds it to	2 hrs (each)	Jacob, Drew

	the game object and makes it current.		
2	Associate the create function from task 1 with the create button.	1 hr (each)	Jacob, Drew
3	Add unit tests for page creation functionality.	1 hr	Larry

Acceptance Criteria:

1. Given that the create button is successfully implemented, it should be displayed in the “Add” dropdown in Parchment’s top menu bar.
2. Given that the create function is correctly associated with the create button, the action of clicking the button should evoke the create function at runtime.
3. Given that the create button is successfully implemented, the user should have the option to cancel if they decide not to create a new page.

User Story #11

As a user, I would like to delete a page.

Task #	Description	Estimated Time	Owner
1	Create the function that deletes the current page object.	1 hr	Jacob, Drew
2	Associate the delete function with the delete button.	1 hr (each)	Jacob, Drew
3	Add unit tests for page deletion functionality.	1 hr	Larry

Acceptance Criteria:

1. Given that the delete button is successfully implemented, it should be displayed to the user in the page editor.
2. Given that the delete function is correctly associated with the delete button, the action of clicking the button should evoke the delete function at runtime.
3. Given that the delete button is successfully implemented, the user should have the option to cancel if they decide not to delete their selected page.

User Story #12

As a user, I would like to access an entity editor view so that I can edit entities.

Task #	Description	Estimated Time	Owner
1	Create an entity editor view window.	2 hrs	Jacob
2	Add the entity editor window into the render loop.	2 hrs	Jacob
3	Test that the entity editor opens properly.	1 hr	Larry

Acceptance Criteria:

1. Given that the main Parchment window is implemented correctly, an entity editor button/widget should be displayed in the “Add” dropdown.
2. Given that the entity editor button is implemented correctly, an entity editor window should be displayed when it is clicked.
3. Given that the entity editor window successfully launches, users should have the option to close the window if desired.

User Story #13

As a user, I would like to create a new entity on the current page.

Task #	Description	Estimated Time	Owner
1	Create a function that creates a new entity object and adds it to the page object and makes the entity current.	2 hrs	Jacob, Drew
2	Associate the create function from task 1 with the create button.	3 hrs	Drew
3	Add unit tests for entity creation functionality.	1 hr	Larry

Acceptance Criteria:

1. Given that the create button is successfully implemented, it should be displayed on the “Add” dropdown.
2. Given that the create button is successfully implemented, if a user decides not to create an entity, they should be able to cancel the action.

3. Given that the function is correctly associated with the create button, the action of clicking the button should evoke the create function at runtime.

User Story #14

As a user, I would like to delete an existing entity from the current page.

Task #	Description	Estimated Time	Owner
1	Create a function that deletes the current entity.	2 hrs	Jacob, Drew
2	Associate the delete function created in task 1 with the delete button.	1 hrs	Jacob
3	Add unit tests for entity deletion functionality.	1 hr	Larry

Acceptance Criteria:

1. Given that the delete button is successfully implemented, it should be displayed on the entity editor window.
2. Given that the delete button is successfully implemented, if a user decides not to delete an entity, they should be able to cancel the action.
3. Given that the function is correctly associated with the delete button, the action of clicking the button should evoke the delete function at runtime.

User Story #15

As a user, I would like to view the information of the currently selected entity.

Task #	Description	Estimated Time	Owner
1	Create a function that retrieves the current entity object.	2 hrs	Jack, Larry
2	Create a function that updates the entity editor view.	2 hrs	Drew
3	Test that all entity information properly propagates to the view.	2 hrs	Larry

Acceptance Criteria:

1. Given the data-retrieval function is implemented correctly, it should return the current entity object.
2. Given the object information window is set up correctly, all required object information components should be displayed to the user.
3. Given the function that updates information components is set up correctly, information should be updated if the entity's characteristics are changed.

User Story #16

As a user, I would like to view all entities on the current page.

Task #	Description	Estimated Time	Owner
1	Create a function that renders an entity (including research).	2 hrs (each)	Josh, Raymond
2	Create an algorithm that renders the array of entities onto the page.	2 hrs (each)	Josh, Raymond
3	Add the render algorithm to the rendering loop.	1 hr (each)	Jacob, Drew
4	Test that all entities properly appear on the page.	1 hr	Larry

Acceptance Criteria:

1. Given that the entity rendering function is correctly implemented, it should render an entity sprite on the page at the desired position and attribute.
2. Given that the rendering algorithm is correctly implemented, all entities should be rendered in order on the page.
3. Given the rendering algorithm is correctly added to the render loop, the entities on the page should be updated every time tick.

User Story #17

As a user, I would like to specify an entity as the current one and associate it with all editor widgets.

Task #	Description	Estimated Time	Owner
1	Create a function that updates which entity is selected and creates a visual cue (such as a	1 hr (each)	Jacob, Drew

	bold outline, to notify the user that the entity is currently selected).		
2	Associate the function created in task 1 with the clicking of the entity name.	1 hr (each)	Jacob, Drew
3	Test that the entity selection functionality works as expected.	1 hr	Larry

Acceptance Criteria:

1. Given the correctly implemented buttons in the entity list, all the entity names will react to clicking actions.
2. Given the update function is correctly implemented, it should set the global current entity to the desired one.
3. Given the correctly implemented button/function, if a user selects a different entity, it should be marked as the selected entity rather than the currently selected entity.

User Story #18

As a user, I would like to run the game (locate the game file) using the game VM so that I can try the game.

Task #	Description	Estimated Time	Owner
1	Create the CMAKE configuration that builds the project.	2 hrs	Jack
2	Set up the environment of OpenGL and SDL (may involve research and testing).	5 hr (each)	Josh, Raymond
3	Do research and create functions that can create render contexts.	10 hrs (each)	Josh, Raymond
4	Test that the game runs properly.	1 hr	Larry

Acceptance Criteria:

1. Given the correctly written CMAKE configuration, running the cmake command should link all required libraries and compile the source files to the desired executable.
2. Given the environment is set up successfully, the program should have a stable SDL and OpenGL environment and the user should be able to use their intended commands.
3. Given SDL/OpenGL dependent functions are correctly implemented, the program should display an SDL window with OpenGL rendering context.

Remaining Backlog

Functional

1. Subsystem Editor General
    a. ~~I would like to create and name a new game project so that I can start developing. #1~~
    b. ~~I would like to import an existing game project file so that I can continue developing. #2~~
    c. ~~I would like to save a game project so that my work progress is kept. #3~~
    d. ~~I would like to delete an existing game project and it's associated files so that I can manage existing projects. #4~~
    e. ~~I would like to change the name of an existing game project so that I have flexibility with naming. #5~~
    f. ~~I would like to export my game project so that I can release the game. #6~~
    g. I would like to change Parchment settings (game res, framerate, Vsync, color scheme, fullscreen) so that I can configure it to my preference.
    h. I would like to have my game assets loaded and rendered by Parchment so that I can focus on game development.
    i. I would like to be able to view all assets associated with a game project so that I can manage them.
    j. I would like to be able to undo and redo actions so that I can fix mistakes.
    k. I would like to use UI hotkeys so that I can more efficiently navigate the interface.

2. Object Tree Viewer
    a. I would like to access an object tree view so that I can view all objects in the project.
    b. I would like to list all the components in the game in the object tree.

c. I would like to click any component to view and edit it in the corresponding editor.

3. Game Viewer
   a. ~~I would like to access a game view window so that I can see the current page. #7~~

4. Page Editor
   a. ~~I would like to access a page editor view so that I can edit maps. #8~~
   b. ~~I would like to view the information of the currently selected page. #9~~
   c. ~~I would like to create a page in the page editor. #10~~
   d. ~~I would like to delete a page. #11~~
   e. I would like to have control over the camera on the page.
   f. I would like to list all the pages created in the game.
   g. I would like to view and edit the description of the current page.
   h. I would like to add a script to a page.
   i. I would like to make a special kind of page as a menu page for menus.
   j. I would like to make a special kind of page as a setting page to let users configure their game.
   k. I would like to make a special kind of page as a HUD page that displays information above other pages.
   l. I would like to make a special kind of map page that contains a series of maps.
   m. I would like to make a special kind of page that uses script and entities with camera control to create cutscenes.

5. Map Editor
   a. I would like to access a map editor view so that I can edit maps.
   b. I would like to create a new map and edit it in the editor so I don't need to already have an existing map.
   c. I would like to view the information of the currently selected map.
   d. I would like to list all the maps created in the current map page
   e. I would like to select a map as current and associate it with another editor widget.
   f. I would like to view and edit the description of the current map.
   g. I would like to import an existing image or map so that I can bring in outside assets.
   h. I would like to delete an existing map so that I can manage maps.
   i. I would like to edit map properties such as size so that I can have different map types.

j. I would like to add a tile from the tile editor to the current map.
k. I would like to put entities on the current map.
l. I would like to add scripts to the current map.

6. Entity Editor
   a. ~~I would like to access an entity editor view so that I can edit entities. #12~~
   b. ~~I would like to view the information of the currently selected entity. #15~~
   c. ~~I would like to create a new entity on the current page. #13~~
   d. ~~I would like to view all entities on the current page. #16~~
   e. ~~I would like to specify an entity as the current one and associate it with all other editor widgets. #17~~
   f. ~~I would like to delete an existing entity from the current page. #14~~
   g. I would like to view and edit the description of the current entity.
   h. I would like to add statuses to the current entity.
   i. I would like to associate a prototype to the current entity.
   j. I would like to add sprite to the current entity.
   k. I would like to edit existing entities (on the map or otherwise) so that I can iterate on item design.

7. Prototype Editor
   a. I would like to access a prototype editor view so that I can edit sprites.
   b. I would like to view the information of the currently selected prototype.
   c. I would like to create a new prototype.
   d. I would like to list all the prototypes.
   e. I would like to select a prototype as the current one and associate with other editor widgets.
   f. I would like to view and edit the description of the current prototype.
   g. I would like to add a script to the prototype.
   h. I would like to edit the attribute of the prototype.

8. Status Editor
   a. I would like to access a status editor view so that I can edit statuses.
   b. I would like to view the information of the currently selected Status.
   c. I would like to list all statuses defined in the project.
   d. I would like to select a status and associate it with another editor widget.
   e. I would like to create a status in the status editor.
   f. I would like to view and edit the description of the current status.
   g. I would like to add a sprite to a status.
   h. I would like to edit the effect of a status.

9. Sprite Editor
    a. I would like to access a sprite editor view so that I can edit sprites.
    b. I would like to view the information of the currently selected sprite.
    c. I would like to list all sprites I have made so that I can easily manage them.
    d. I would like to edit existing sprites so that I can iterate on sprite design.
    e. I would like to create a sprite.
    f. I would like to use basic pixel manipulation tools (pencil, fill, eraser, etc) so that I can edit sprites.
    g. I would like to change the pixel color and use a color picker so that I can create colorful sprites.
    h. I would like to create simple animations so that my sprites have motion.
    i. I would like to use selection tools so that I can move, copy, and paste sprites in the editor.
    j. I would like to import an image for a sprite so that I can bring in outside assets.
    k. I would like to delete an existing sprite.
    l. I would like to use multiple layers so that I can create more complex sprites. (time permitting)

10. Logic Editor
    a. I would like to access a logic editor view so that I can edit statuses.
    b. I would like to view the information of the currently selected Logic.
    c. I would like to list all the logics in the project.
    d. I would like to choose a logic as the current one and associate it with other editor widgets.
    e. I would like to create a logic.
    f. I would like to add targets to the logics.
    g. I would like to add a special logic target to achieve a special result like ending the game if an objective is reached so that the game can be beaten.
    h. I would like to make customized logic targets so that I can make different kinds of interactions between game components.

11. Script Editor
    a. I would like to access a script editor view so that I can edit scripts
    b. I would like to view the information of the currently selected script.
    c. I would like to create a script in the script view.
    d. I would like to list all the scripts in the project.
    e. I would like to delete a script.

f. I would like to choose a script as the current one and associate it with other editor widgets.
g. I would like to add movements to the current script
h. I would like to add actions to current script
i. I would like to add signals to current script
j. I would like to view and edit the description of the current script.
k. I would like to be able to define player interactions in the script so that I can implement interactivity.

12. Control Editor
    a. I would like to access a control editor view so that I can edit scripts.
    b. I would like to view the information of the currently selected Control mapping.
    c. I would like to change settings for player controls so that I can have custom controls.
    d. I would like to bind different mouse controls so that I can make mouse controlled games.
    e. I would like the option to define controller/gamepad bindings so that the game can be played with a gamepad. (time permitting)
    f. I would like to map controls to script so that I can control their movement.
    g. I would like to add event listeners to keys so that the player can trigger scripts.

13. Audio Editor
    a. I would like to access an audio editor view so that I can edit audio.
    b. I would like to import audio for items/sprites so that I can have specific audio tied to game objects.
    c. I would like to import audio for music so that my game can have a soundtrack.
    d. I would like to view and delete audio so that I can manage audio assets.

14. Networking Editor
    a. I would like to access a networking editor view so that I can edit scripts.
    b. I would like the option to implement local co-op so that I can create more types of games. (time permitting)

15. Game Virtual Machine
    a. ~~I would like to run the game (locate the game file) using the game VM so that I can try the game. #18~~

b. I would like to let the virtual machine read and parse the game file.
c. I would like to let the virtual machine render the game pages.
d. I would like to let the virtual machine play the in-game sound.

Non-Functional

1. Usability
    a. I would like to view in-application tutorials or documentation so that I can learn the features of the engine. (time permitting)
    b. As a beginner user, I would like to have documentation readily available to assist and streamline development. (time permitting)

2. Testing
    a. I would like to launch a game instance *using Parchment* so that I can test & debug the game.

3. Source Control
    a. I would like to enable source control so that I can manage different versions of my game. (time permitting)

4. Expandability
    a. I would like a system to write and execute my own C++ code so that I can extend Parchment's basic capabilities. (time permitting)

5. Performance
    a. As a user, I would like to develop games that can run within the 30-60 FPS range at minimum.