
Sprint 1 Planning Document

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**Sprint Overview**

During this sprint, our team hopes to set up the basics for our game. To be able to start, everyone will need to become familiar with the program GoDot. Setting up aspects like movement, maps, pause screens, loading different versions, character creation, menus, and course are our main goals, but in general we want controls and setup complete so we can proceed with battles next sprint.

**Scrum Master:** Trey Rosenfeldt

**Meeting Plan:** Wednesdays @ 3:00pm, Thursdays @ 10:15 am

**Risks and Challenges:**

Because none of our team has an extensive background in game design, a challenge during this sprint is becoming familiar with game creation and the Godot framework we are implementing. This creates a risk of falling behind schedule due to dedicating too much time into learning the system instead of doing actual coding for the game. Another challenge is building the map to the right specifications so that we can continue to add new features to it as the project progresses.

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**Current Sprint Detail**

**User Story #2**
As a player, I would like to save my game and be able to log into the same location, and point of the story I was at when I exited.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Train on Godot's GDScript + tutorials to familiarize myself with the language / game development | 5 Hrs | Jonah |
| 2 | Devise game state saving implementation | 1 Hr | Jonah |
| 3 | Create a save function and a corresponding save button | 2 Hrs | Jonah |
| 4 | Debug and play test | 2 Hrs | Jonah |
| 5 | Connect to the menu UI | 1 Hr | Jonah |

Acceptance Criteria:

- Given the pause menu has been implemented, the user will be able to open the menu and click a save button.
- Given the save button has been clicked, the user will be able to safely log out and open the game to their previous save.
- Given the save button has been clicked, the user will be able to force quit the game, and be able to open the game to their previous save.

**User Story #3**

As a player, I would like to delete my save from the game.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Create a delete function and a corresponding delete button | 2 Hrs | Jonah |
| 2 | Debug and play test | 2 Hrs | Jonah |
| 3 | Connect to the menu UI | 1 Hr | Jonah |

Acceptance Criteria:

- Given the pause menu has been implemented, the user will be able to open the menu and click a delete button.
- Given the delete button has been clicked, the user will be taken out of the game.
- Given the delete button has been clicked, the user will not be able to load their previous game.

**User Story #4**

As a player, I would like to interact with a pause screen to adjust the volume of sound effects and music.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Create a pause button on the display | 2 Hrs | Jonah |
| 2 | Create an interactable pause menu UI | 5 Hrs | Jonah |
| 3 | Create a volume control for music + SFX | 2 Hrs | Jonah |
| 4 | Connect to the menu UI | 1 Hr | Jonah |
| 5 | Debug and play test | 1 Hr | Jonah |

Acceptance Criteria:

- Given the game is running, there will be a button on the screen that the user can click, which will bring up the pause menu
- Given the button has been implemented, there will be an interactable pause menu with setting controls, which can also be closed and reopened whenever the user presses the button
- Given the pause menu has been implemented properly, there will be a control for volume of the music + SFX

**User Story #5**

As a player, I would like to interact with a pause screen to adjust the brightness of the screen and contrast.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Create a brightness/screen contrast control | 2 Hrs | Jonah |
| 2 | Connect to the menu UI | 1 Hr | Jonah |
| 3 | Debug and play test | 1 Hr | Jonah |

Acceptance Criteria:

- Given the pause menu has been implemented properly, there will be a brightness/screen contrast control for the display.
- Given the brightness/screen contrast control has been implemented, the user will be able to increase or decrease the brightness/screen contrast.
- Given the brightness/screen contrast was changed, the user will be able to observe these effects taking place in real time.

**User Story #6**

As a player, I would like to be able to set custom key bindings for controls in the game.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Creation of a menu where default key bindings can be inspected | 2 Hrs | Austin |
| 2 | Allow for custom key bindings settings | 2 Hrs | Austin |
| 3 | Create a method for saving the new key bindings once entered | 2 Hrs | Austin |
| 4 | Connect key binding menu to the pause menu | 2 Hrs | Austin |

Acceptance Criteria:

- Given that the player is within the game, they will be able to access a menu where they can view the default key bindings and their functionality
- Given that the player is within the key binding menu, they will be able to change the key binds to their liking
- Given that a new key binding has been entered, the player will be able to save their bindings so they stay until changed again
- Given that the user is in the pause menu, they will have the option to access the key binding menu

**User Story #7**

As a player, I would like to be able to move through the map using keyboard controls (up, down, left, right).

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Learning + Understanding the basics of Godot | 5 Hrs | Austin |
| 2 | Determining the ideal base key mappings for the player | 2 Hrs | Austin |
| 3 | Creating functionality and response when the player presses a key | 5 Hrs | Austin |

Acceptance Criteria:

- Given that the player is using a keyboard, the default key bindings will be in comfortable positions that are intuitive and fluid to use
- Given that the actions available to a player are planned out, their will be a keyboard control for each action
- Given that the user presses a key, that keys specific action will perform within the game

**User Story #8**

As a player, I would like to be able to view a mini-map of Purdue University for easier navigation

during exploration and quests.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Learn to use GoDot | 5 Hr | Jennifer |
| 2 | Track player's location and scale it down | 5 Hr | Jennifer |
| 3 | Design mini-map (colors, layout) | 1 Hr | Jennifer |
| 4 | Playtest and debug | 3 Hr | Jennifer |

Acceptance Criteria:

- Given that the game is running and the player is exploring the world, when I open the mini-map, then I expect to see a scaled-down version of Purdue University's campus.
- Given that the mini-map is displayed on the screen, when my player moves in the game world, then my position on the mini-map should update in real-time to reflect my movement.
- Given that the mini-map is displayed in the upper-left corner, when I navigate different areas of the campus, then the mini-map should maintain the correct scale and positioning relative to the player's movement without overlapping other UI elements.

**User Story #9**

As a player and Purdue student, I would like to explore where buildings are on the main campus and their names.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Brainstorm map color scheme | 1 Hr | Jennifer |
| 2 | Create the basic main campus map layout plan | 4 Hr | Jennifer |
| 3 | Create tilemap assets | 3 Hr | Jennifer |
| 4 | Add icons on the main playing screen that players click to pause, access inventory, view characters, view achievements, and view quests | 3 Hr | Jennifer |
| 5 | Make a pop up with the name of the building that the player hovers their mouse over | 2 Hr | Jennifer |
| 6 | Play test and debug | 3 Hr | Jennifer |

Acceptance Criteria:

- Given that the player is exploring the main campus, when I move my character near a building, then the mini-map should display the correct building in its corresponding location.
- Given that the player hovers their mouse over a building, when the cursor is over a labeled structure, then a pop-up should appear displaying the building's name.
- Given that the main playing screen includes interactive icons, when I click on an icon for inventory, achievements, quests, or character view, then the corresponding menu should open to a new window.
- Given that the main playing screen includes a pause button, when I click on the button, then the corresponding smaller menu should open with the main screen darkened in the background.

**User Story #24**
As a player, I would like to save the characters that I create in a database and also access a database of pre-made characters throughout the game

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Learn how to use Godot and set up a plan on how the character database should be implemented. | 2 Hr | Mohana |
| 2 | Create a system for saving custom characters into a database. | 2 Hr | Mohana |
| 3 | Implement a system to load and display pre-made characters from the database. | 2 Hr | Mohana |
| 4 | Implement UI for selecting and switching between custom and pre-made characters. | 2 Hr | Mohana |
| 5 | Debug and test to ensure the character selection and saving systems work properly. | 2 Hr | Mohana |

Acceptance Criteria:

- Given the player creates a character, then the character should be saved in the database.
- Given the player wants to access pre-made characters, then the game should retrieve them from the database.
- Given the player selects a character, then the game should load the chosen character.
- Given the player exits and reloads the game, the last selected character should be retained.

**User Story #25**
As a player, I would like to customize my character's head, including hairstyles, facial hair, mouth structure, and eyes.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Create a design for the character customization UI focused on head features. | 2 Hr | Mohana |
| 2 | Implement functionality for selecting different hairstyles, facial hair, and face details. | 2 Hr | Mohana |
| 3 | Implement a system to apply selected head customizations to the character model. | 2 Hr | Mohana |
| 4 | Save selected head customization settings to local storage. | 2 Hr | Mohana |
| 5 | Debug and test to ensure head customization options function correctly. | 2 Hr | Mohana |

Acceptance Criteria:

- Given the player selects a hairstyle, facial hair, or face feature, then the changes should be reflected on the character model.
- Given the player saves the customization, then the game should store the chosen options.
- Given the player loads a saved character, then their head customizations should persist.

**User Story #26**
As a player, I would like to customize my character's clothing and colors, including outfits, ties, bowties, and overall color schemes.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Create a UI for customizing the character's outfit and colors. | 2 Hr | Mohana |
| 2 | Implement outfit selection, including different clothing types (shirts, jackets, accessories, etc.). | 2 Hr | Mohana |
| 3 | Implement color customization for different clothing parts. | 2 Hr | Mohana |
| 4 | Save selected outfit and color choices in local storage. | 2 Hr | Mohana |
| 5 | Debug and test the customization system to ensure proper application of outfits and colors. | 2 Hr | Mohana |

Acceptance Criteria:

- Given the player selects an outfit, then the character's appearance should update

accordingly.

- Given the player modifies colors, then the chosen colors should be reflected immediately.
- Given the player saves their customization, then the choices should be stored.
- Given the player reloads the game, then their selected outfit and colors should persist.

**User Story #32**

As a player, I would like to be able to view my character's item inventory outside of battle.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Create a design for the inventory. | 1 Hrs | Trey |
| 2 | Implement the design for the inventory and allow the item bar to connect with the inventory UI | 3 Hr | Trey |
| 3 | Allow to have new items into the inventory and delete items in the inventory | 2 Hrs | Trey |
| 4 | Implement a use option for usable healing potions. | 3 Hrs | Trey |
| 4 | Debug and test the program to make sure all UIs work together | 3 Hrs | Trey |

Acceptance Criteria:

- Given the player clicks the inventory button, then the inventory will open
- Given the player removes an item from the inventory, then it will be removed from the inventory
- Given the player uses a usable, then it will be removed from the inventory and set to true to be used
- Given a player gets an item, then it should appear inside their inventory

**User Story #38**

As a Player, I would like to have a HUD with things like being able to see how many attacks I have left and being able to see how much more experience I need to level up and a health bar.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Learn how to use GoDot and set up a plan on how the HUD should be built | 3 Hrs | Trey |
| 2 | Implement a health bar, item bar, and any other needed for the layout | 4 Hr | Trey |
| 3 | Implement experience and a level bar | 1 Hrs | Trey |
| 4 | Debug and test response time with the HUD | 2 Hrs | Trey |

Acceptance Criteria:

- Given the player gains experience, then the experience bar will increase and if needed level up allowing the payer.

- Given the player has items in the item bar or modifies the item bar, then the item bar will reflect the modification.
- Given the player loads into the game, the HUD should load with low latency.

**User Story #47**

As a player, I would like to have a quest menu so I can see what I need to complete, as well as potential rewards for completing these quests.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Create a design for the quest screen and how it will interact with the main HUD | 1 Hrs | Trey |
| 2 | Implement a UI panel to display quest information as well as the reward you will receive for completing the quest. | 4 Hr | Trey |
| 3 | Implement an addition to the main HUD to see the quests you are on now. | 1 Hrs | Trey |
| 4 | Debug and test the program | 2 Hrs | Trey |

Acceptance Criteria:

- Given the player accepts a quest, then it should appear on the main screen and current quests.
- When the player is looking at the quest, the player should be able to see what reward you get and what the quest entails.
- Given the player finishes the quest, then the quest should be removed from current quests and moved to completed quests.
- Given the player finishes the quest, then quests that require that quest should appear.

**User Story #50**

As a player, I would like to go onto a computer UI to see my graduation status and when I need to do my classes.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Create a phone icon that players can click to access information about status and course information. | 1 Hr | Helen |
| 2 | Create a screen with sections for graduation status, current courses, and a link to information about further classes. | 2 Hrs | Helen |
| 3 | Create a progress bar to indicate graduation status. | 3 Hrs | Helen |
| 4 | Develop section that details current course information including information about the lecture hall/classroom, professor, time, and course description. | 3 Hrs | Helen |

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|---|---|---|---|
| 5 | Test and debug. | 1 Hr | Helen |

Acceptance Criteria:

- Given the player is in gameplay, when the player clicks on the phone icon, then a window displaying graduation status and current courses pops up.
- Given the player is viewing the current course and graduation status page, when a temporary “complete course” button is pressed, the graduation status bar updates.
- Given the player is viewing the current course and graduation status page, when a temporary “complete course” button is pressed, then current course information disappears.
- Given the player completed a course, when a temporary “new course” button is pressed, then new course information is filled in.

**User Story #52**

As a player, I would like to be able to have a tutorial experience to ease me into the controls of the game.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Creating a button on the menu to access the tutorial | 1 Hrs | Austin |
| 2 | Developing the layout of where the character will move through in the tutorial | 4 Hr | Austin |
| 3 | Designing the tutorial | 5 Hrs | Austin |

Acceptance Criteria:

- Given that the menu is functional, the player will be able to access the tutorial by pressing a button
- Given that the tutorial is able to be accessed, it will have a layout that is conducive to learning the basics of the game
- Given that the tutorial is functional, the player will be able to pass it if they follow along with the provided instructions

**User Story #54**

As a player and Purdue student, I would like to see the classes I will take each semester and which classes I need for prerequisites.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Set up an outline for and create a screen that displays from the button clicked on the current information page. | 2 Hrs | Helen |
| 2 | Create a display for the player’s current degree plan. | 4 Hrs | Helen |
| 3 | Create more information buttons for each course. | 1 Hrs | Helen |

| | | | |
|---|---|---|---|
| 4 | Create a button that displays the course prerequisite flowchart. | 2 Hrs | Helen |
| 5 | Test and debug. | 1 Hr | Helen |

Acceptance Criteria:

- Given a player is on the current course information page, when the “See degree plan” button is pressed, then the window transitions to displaying the player's degree plan.
- Given a player is viewing the current degree plan page, when the “see prerequisite flowchart” button is pressed, then the course prerequisite flowchart appears.
- Given the player pushed the “See degree plan” button and the new window appeared, when the player views their degree plan, then there are 8 sections to represent the 8 semesters, with a list of classes with a short description for each.

**User Story #56**

As a player and Purdue student, I would like to learn where the classes are whether that is large lecture halls or small classes.

| # | Description | Estimated Time | Owner |
|---|---|---|---|
| 1 | Learn how to work with GoDot using examples/tutorials. Look through useful tools. | 5 Hrs | Helen |
| 2 | Import list of courses, information about them, and their prerequisites. | 3 Hrs | Helen |
| 3 | Create popups for each course to display more information including a description of the course, professor, location with a description, and prerequisites. | 2 Hrs | Helen |
| 4 | Test and debug | 1 Hr | Helen |

Acceptance Criteria:

- Given a player is viewing their degree plan, when any course’s “more information” button is pressed, then a window pops up.
- Given a player pressed the course’s “more information” button, when a window appears, then it displays the professor, location, course description, and course prerequisites.
- Given a player is viewing a course’s more information, when the player clicks on the prerequisites more information page, a window displaying this other course’s information appears.

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**Remaining Backlog**

| **Table of Contents** | Highlighted = worked on this sprint | ~~Crossed out~~ = finished a previous sprint |
|---|---|---|

**Functional Requirements:**

**Game Setup and Core Functionality**

1. As a Player, I would like a login and account creation so I can see the leaderboards and (if time allows) go into multiplayer areas.
2. As a player, I would like to save my game and be able to log into the same location, and point of the story I was at when I exited.
3. As a player, I would like to delete my save from the game.
4. As a player, I would like to interact with a pause screen to adjust the volume of sound effects and music.
5. As a player, I would like to interact with a pause screen to adjust the brightness of the screen and contrast.
6. As a player, I would like to be able to set custom key bindings for controls in the game.

**Exploration and World Interaction**

7. As a player, I would like to be able to move through the map using keyboard controls (up, down, left, right).
8. As a player, I would like to be able to view a mini-map of Purdue University for easier navigation during exploration and quests.
9. As a player and Purdue student, I would like to explore where buildings are on the main campus and their names.
10. As a player and Purdue student, I would like to go into classrooms and into other buildings.
11. As a player and Purdue student, I would like to be able to learn about Purdue trivia by interacting with the environment and NPCs.
12. As a player, I would like to see teachers in their office hours and the ability to see classes full during their class time.
13. As a player, I would like to go onto a computer UI to see what classrooms are full during what time of day.
14. As a player, I would like to be able to experience different biomes/regions within the Purdue campus.
15. As a player, I would like to experience different music /audio depending on where I am on the map.
16. As a player, I would like to experience different music/audio depending on who I am battling / whether I am in combat or not.
17. (If time allows) As a Player, I would like to be able to explore/unlock fast-travel locations.
18. (If time allows) As a Player, I would like to have buses around Purdue that I can fast-travel with.
19. (If time allows) As a Player, I would like to see major events on campus like the grand pre and industrial round table, as well as things like clubs and Greek life.
20. (If time allows) As a Player, I would like to have daytime and night time and time when I can go to my classes.

21. (If time allows) As a Player, I would like to have seasons along with events happening at the correct time of year.
22. (If time allows) As a Player, I would like a calendar to see the events and what day it is.
23. (If time allows) As a Player, I would like to have to go to sleep to skip the night and if I don't sleep I get fatigued.

### Character and Customization Features

24. As a player, I would like to save the characters that I create in a database and also access a database of pre-made characters throughout the game
25. As a player, I would like to customize my character's head, including hairstyles, facial hair, mouth structure, and eyes.
26. As a player, I would like to customize my character's clothing and colors, including outfits, ties, bowties, and overall color schemes.
27. As a player, I would like to have a class system for my characters (e.g. general fighter, hard hitter, healer, etc.) during battle.

### Combat and Items

28. As a player, I would like to battle random enemies as I travel through the map
29. As a player, I would like to be able to use different attacks in battle.
30. As a player, I would like to be able to switch between character items during battle.
31. As a player, I would like to be able to use items that enhance my battling power and provide healing.
32. As a player, I would like to be able to view my character's item inventory outside of battle.
33. As a player, I would like to be able to view my character's abilities
34. As a player, I'd like to be able to collect items I encounter while roaming around the game.
35. As a player, I would like to see all of the items I am able to collect and which ones I have collected.
36. As a player, I would like to be able to battle boss professor cyborgs that grant greater rewards than NPCs do.
37. As a player, I would like to be able to develop different battle strategies based on which college my enemy is from.
38. As a Player, I would like to have a HUD with things like being able to see how many attacks I have left and being able to see how much more experience I need to level up and a health bar.
39. As a Player, I would like my HUD updated if I am attacked and lose health and if I heal.
40. As a player, I would like to be able to have items that can refresh the amount I can use an item or have an item that can increase the damage of an item.
41. As a player, I would like to get stronger or more abilities based on my level.
42. As a player, I would like to have level-ups of my items (similar to evolutions in Pokemon)

### Quest and Achievement Progression

43. As a player, I would like to be able to unlock and complete quests from NPCs to unlock new content.
44. As a player, I would like to be able to see cutscenes for key moments during the main quest.
45. As a player, I would like to be able to see cutscenes for the introduction as well as a final graduation scene where you can traverse walking on the stage.

46. As a player, I would like to be able to unlock achievements as I progress through and make choices throughout the game.
47. As a player, I would like to have a quest menu so I can see what I need to complete, as well as potential rewards for completing these quests.
48. As a player, I would like to change majors (this means having the teachers and buildings for full majors).
49. As a player, I would like to add minors (this means having the teachers and buildings for full majors)
50. As a player, I would like to go onto a computer UI to see my graduation status and when I need to do my classes.
51. As a player, I would like to talk to my academic advisor when I need new classes.

### Tutorial and Learning Features

52. As a player, I would like to be able to have a tutorial experience to ease me into the controls of the game.
53. As a player and Purdue student, I would like to see what classes are required for me to graduate/finish the game.
54. As a player and Purdue student, I would like to see the classes I will take each semester and which classes I need for prerequisites.
55. As a player and Purdue student, I would like to learn which classes in specific majors are more complex and in what order Purdue requires you to take them
56. As a player and Purdue student, I would like to learn where the classes are whether that is large lecture halls or small classes.
57. As a player and Purdue student, I would like to learn which teachers in specific majors are more complex, what classes they teach, and where their office is.

### Multiplayer and Social Features

58. (If time allows) As a Player, I would like to have a multiplayer area.
59. (If time allows) As a Player, I would like to communicate with online players.
60. (If time allows) As a Player, I would like to have a leaderboard about who had the quickest completion time.
61. (If time allows) As a Player, I would like to have a leaderboard about who had the highest percentage of questions answered correctly.
62. (If time allows) As a Player, I would like to see a stats page about how I did and things like how long I walked or how many items I collected, etc.

## Non-Functional Requirements:

### Architecture and Performance

We plan to develop the game entirely through Godot, which is an open-source game engine for creating 2D and 3D games. Godot handles all aspects of game development and design, such as character modeling, scene creation and manipulation, physics, movement, and audio, and contains support for multiplayer games, if necessary. Godot's custom language "GDScript" will be utilized for development, and it will all be done within a Godot environment.

Godot offers a lightweight development experience, allowing us to have small download sizes and efficient performance for our game - this is crucial, as reducing input delay and latency is vital to a smooth and effective experience. We aim to limit this latency to under 50ms, but striving to keep it as close to a 15-30 ms range. Godot ties seamlessly with Github, which will allow us to

control the flow of our development process and monitor new changes and implementations as we work through the different aspects of the development process.

If we deploy the game on the web and/or mobile, we will utilize the built-in Godot services that are in place for a smooth deployment, which will allow for consistency across all game versions, and offer great portability for the product. Save files will be stored locally, on the user's system, as there is no need for a database to store individual player information as the game is single-player. Should we choose to implement Multiplayer, the necessary information and the game itself will be hosted through a remote server such as AWS or DigitalOcean.

### Security

Security will be a strong point in our project when we are working on the login sequence and page. We will have to make sure that the user names and passwords get saved, hashed, and salted to secure valuable user information while requiring passwords to be at least 8 characters. The game will also securely save the points they were in the game. Saving the point they were in the game includes achievements, location, and bosses defeated. Along with making sure the data is safe we also have to make sure if a flood of requests comes in or if someone is trying to do specific attacks our program is prepared and can handle/timeout the user account where 5 failed attempts will trigger a temporary lock.

### Usability

The interaction with the game's UI/UX is very important, as a smooth and comfortable experience is necessary for immersion to be preserved, as well as to ensure the learning experience is not interrupted. The response time of each button should be minimal, aiming to be under 40ms, and reducing lag and stuttering is a priority to ensure a proper gaming experience. Similarly, ensuring that load times stay within 10 seconds (on the high end) will maintain proper immersion. The log-in system will be necessary for saving progress so that a user does not have to restart their learning experience if they run out of time in that session. Implementing this feature and maintaining a smooth experience is vital to the performance of the product, and will be a priority during production.

### Hosting/Deployment

The game will be contained in a complete game package, which will be downloadable by interested players. The game will be set up so that it can be deployed to the web and/or to mobile, by utilizing Godot's built-in services. Similarly, if the project develops further, we will utilize Godot's provided MultiplayerAPI to support multiplayer play, and will host the website through a DigitalOcean or AWS server.