

Game Proposal: Enchanted Grotto

CPSC 427 – Video Game Programming

Team: The Alchemists

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Story:

The enchanted grotto that the main character is living in is corrupted, and you must make different potions to heal parts of the land.

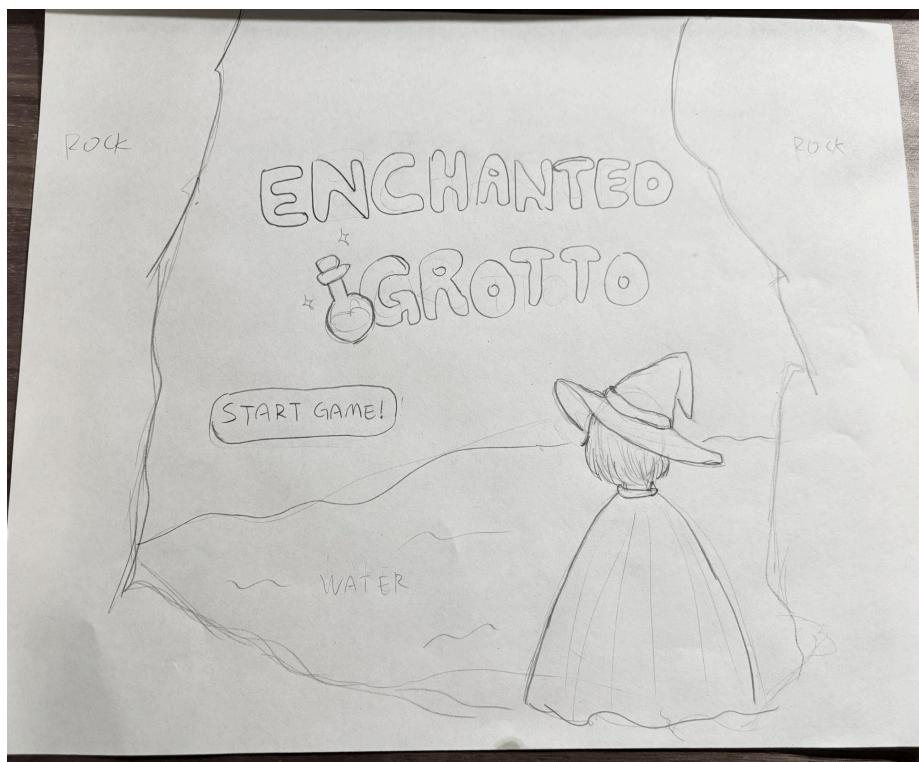
Each area in the grotto requires a specific potion to restore the land. Specific potions may require ingredients from unhealed lands, introducing a hierarchy to the potions you can make.

Once you have fully healed all areas and created a master potion to fully restore the land, requiring ingredients from all “corrupted areas”, you win the game.

You collect ingredients through foraging and exploring the terrain outside, coming back to your grotto to make the potions.

Scenes:

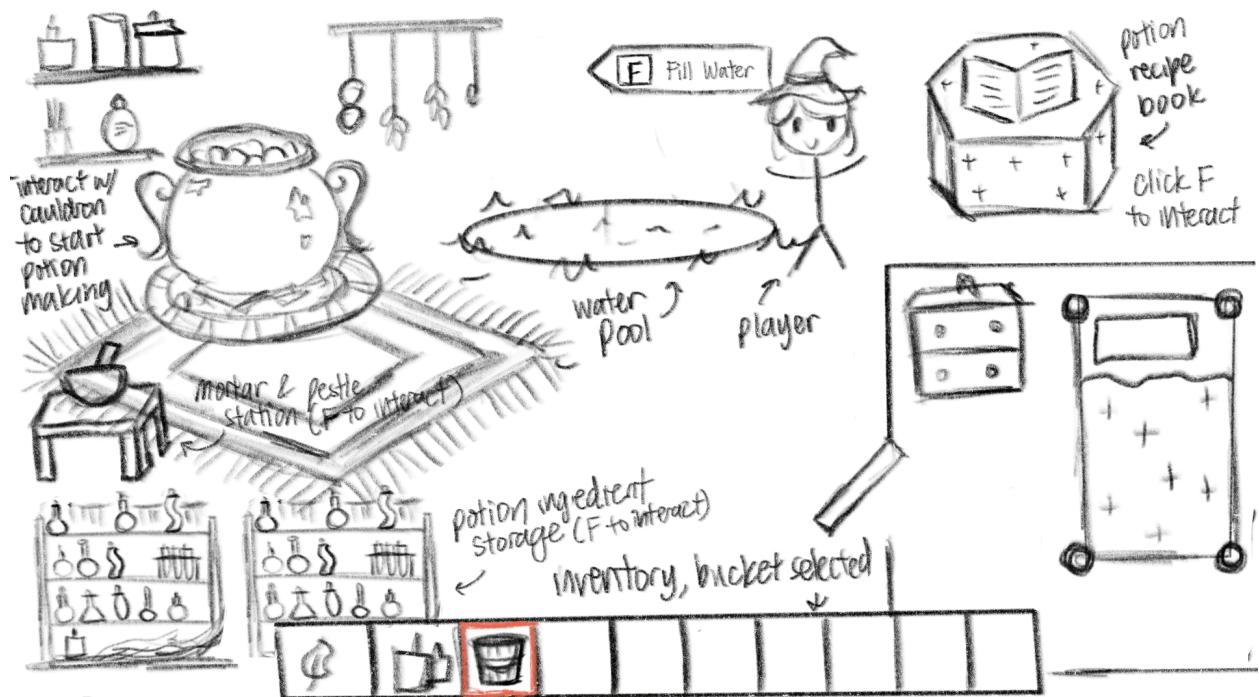
Start Screen



Character Selection

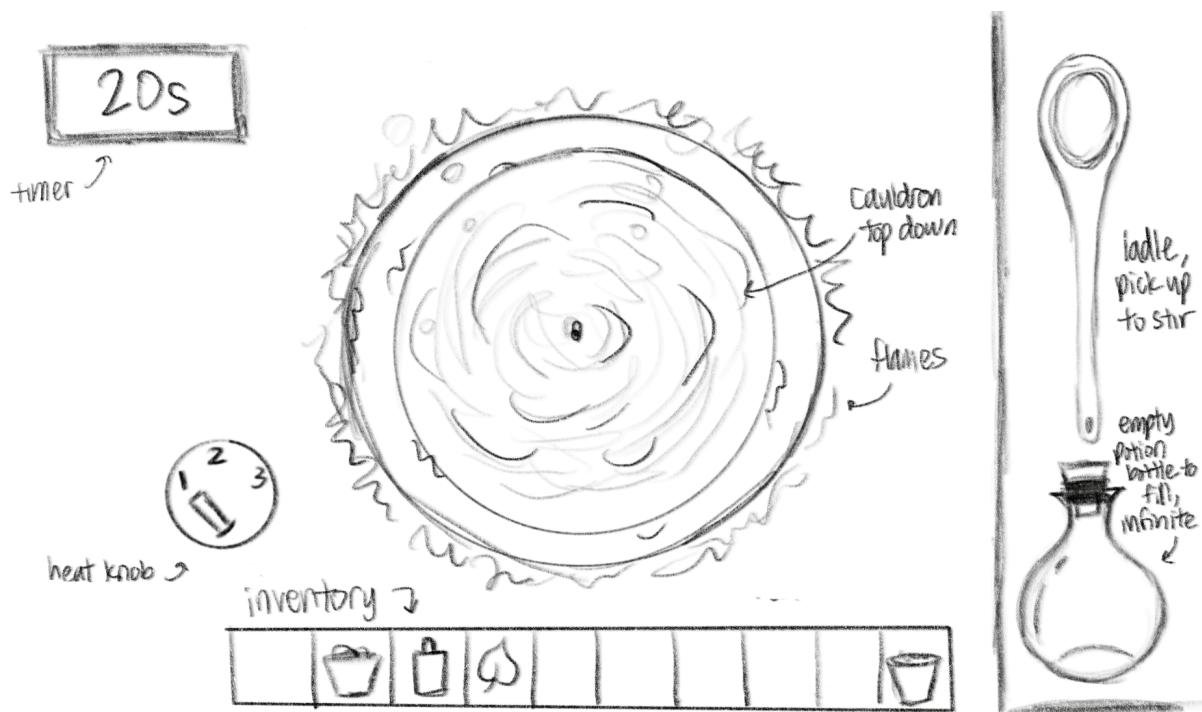


Inside the grotto



Here is an example scene of the player inside the grotto (home base). The player will be able to interact with the water pool by clicking F and while holding a bucket to fill it with water. The player will also be able to similarly interact with the cauldron with F to open the potion making menu. They are also able to interact with the potions recipe book, the mortar and pestle station, and the storage area.

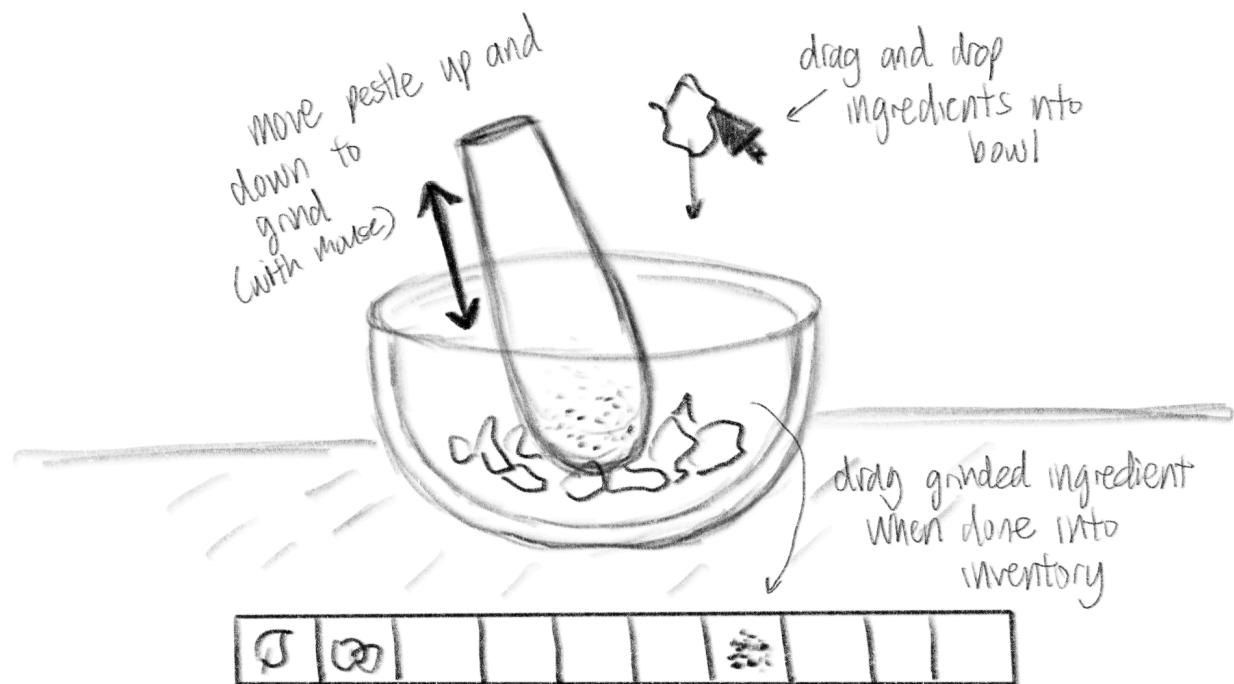
Potion Making Menu



Here is the potion making menu that players will be able to make potions in. Here are some steps that players may have to take to make a potion.

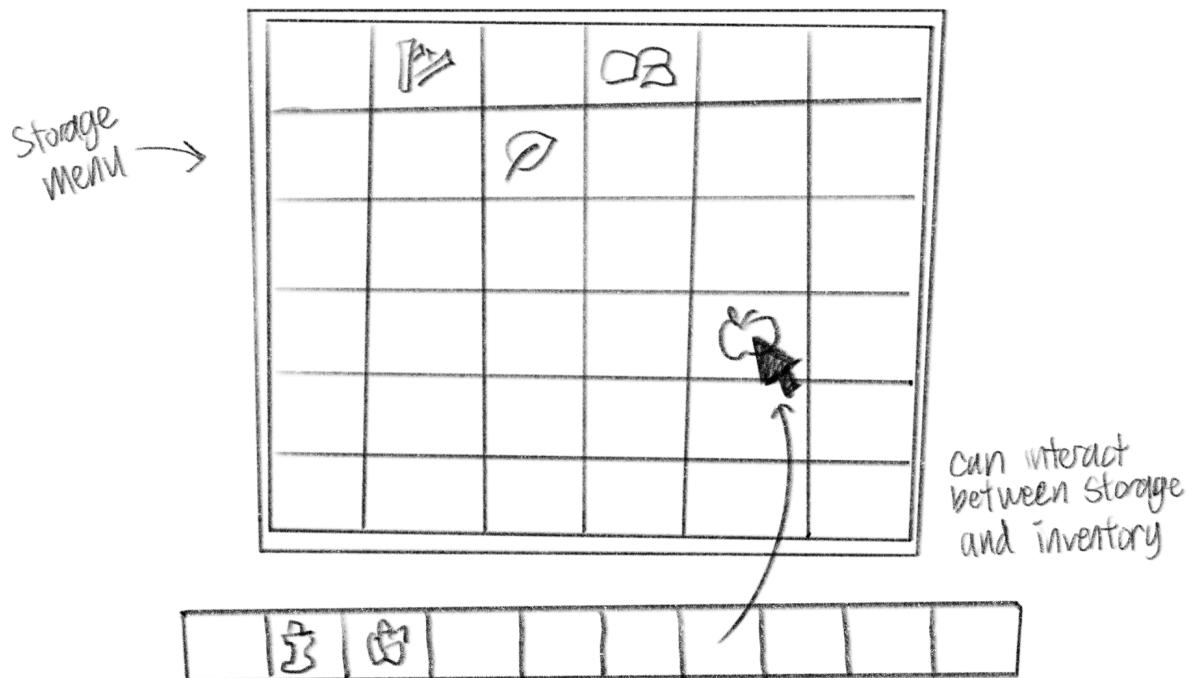
- Prepare ingredients (grinding if necessary)
- Heat base liquid (3 levels, match heat level from the recipe), once you turn the knob, a timer pops up in the potion making screen/next to the cauldron
- Add ingredients inside (at the right ratios)
- Stirring (a certain amount of times, optional we can do CW vs CCW, circle percent)
- Waiting (visual indicator for potion colour state / max 30-40 seconds - for more advanced recipes, it's possible to go back to the stirring step)
- Bottle up (after waiting for the right time, drag bottle onto cauldron)

Mortar and Pestle Menu



This scene is activated when interacting (clicking F) next to the mortar and pestle station inside the grotto. Players will interact with the ingredients from their inventory to grind and crush them.

The Storage

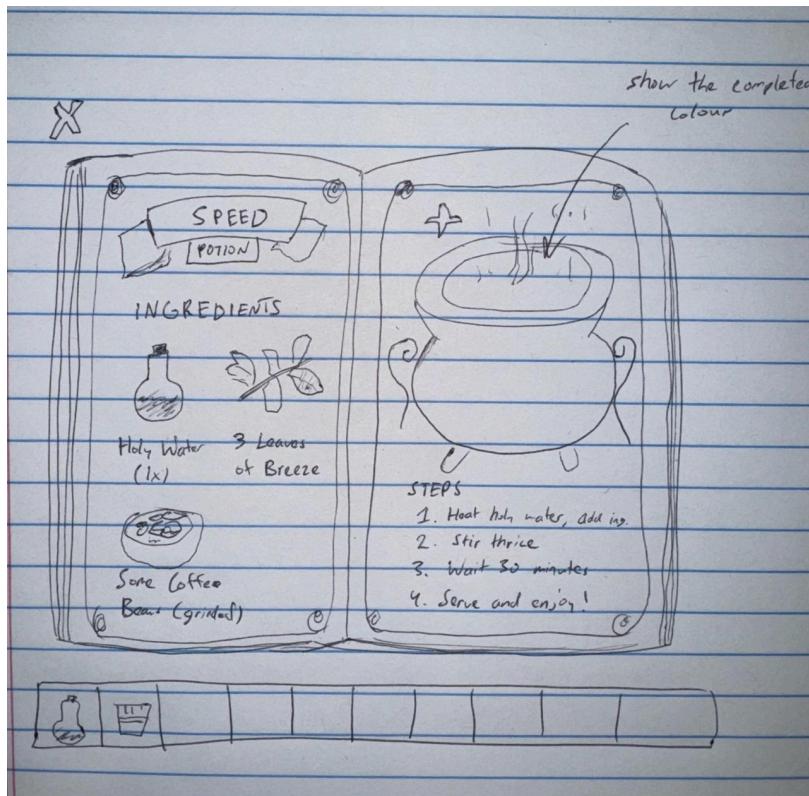


This storage area is interactable from inside the grotto, where players can move items between their inventory and the 30 storage slots.

Recipe Book

The recipe book user interface can be accessed through interacting with the 'recipe book table' in the grotto through the F keybind. The recipe book is only meant for sharing how a potion will be crafted and is separate from the potion making menus.

- Example Speed Potion:



Annotated for clarity:

INGREDIENTS: Holy Water (1x), 3 Leaves of Breeze, Some Coffee Beans (grinded)

STEPS

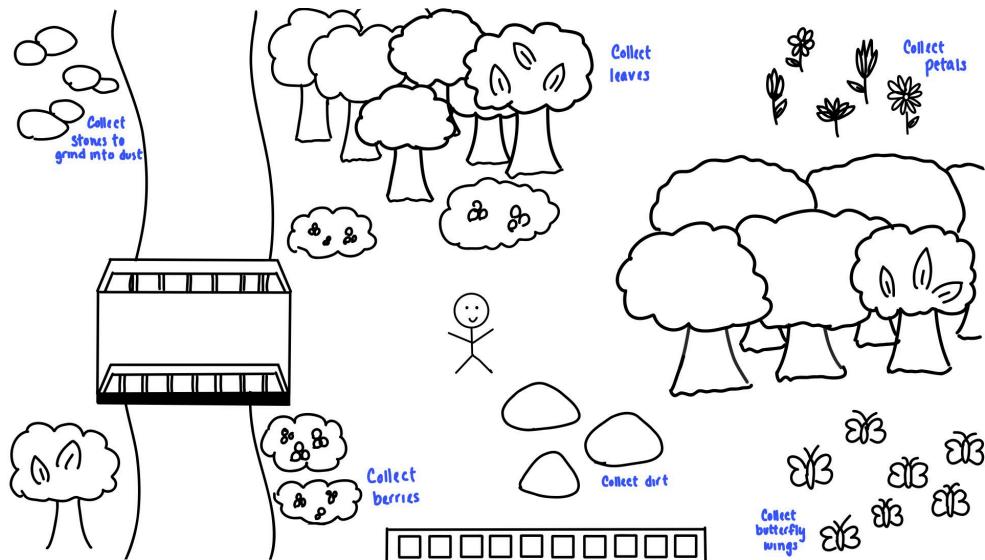
1. Heat holy water, add ingredients
2. Stir thrice
3. Wait 30 minutes
4. Serve and enjoy!

The cauldron image in the recipe book will show the expected colour for some given potion, once brewed.

The Wilderness

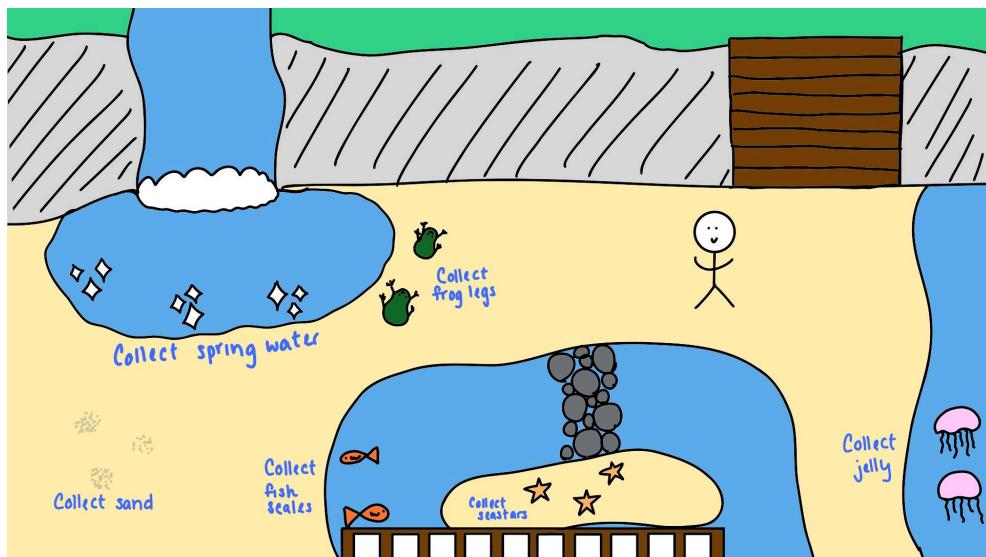
Main area, and 3 unlockable (corrupted) areas of different biome/plant compositions

- a. Forest Area



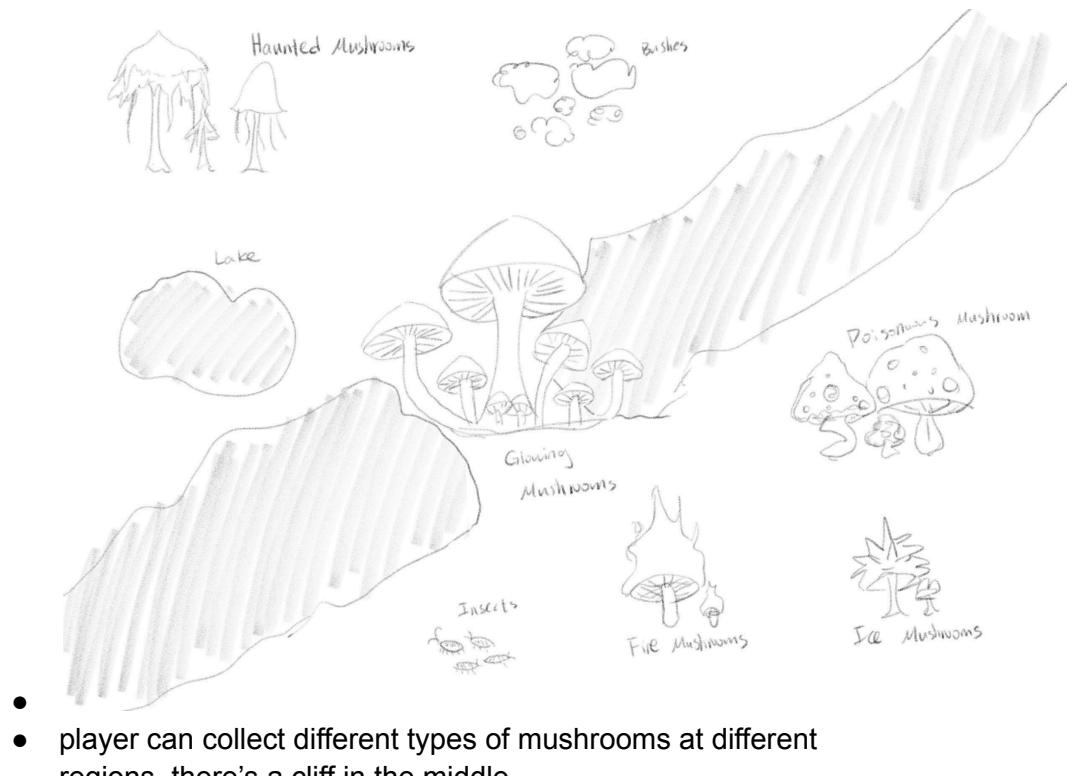
The player can walk around in the forest, crossing over a river which turns into the waterfall in the water area. They can collect berries, dirt, butterfly wings, petals, leaves, and stones to grind into dust for potion crafting.

b. Water Area



The player can walk around the beach/water area and interact with the objects. They can collect spring water, sand, frog legs, fish scales, seastars, and jelly.

c. Mushroom Area



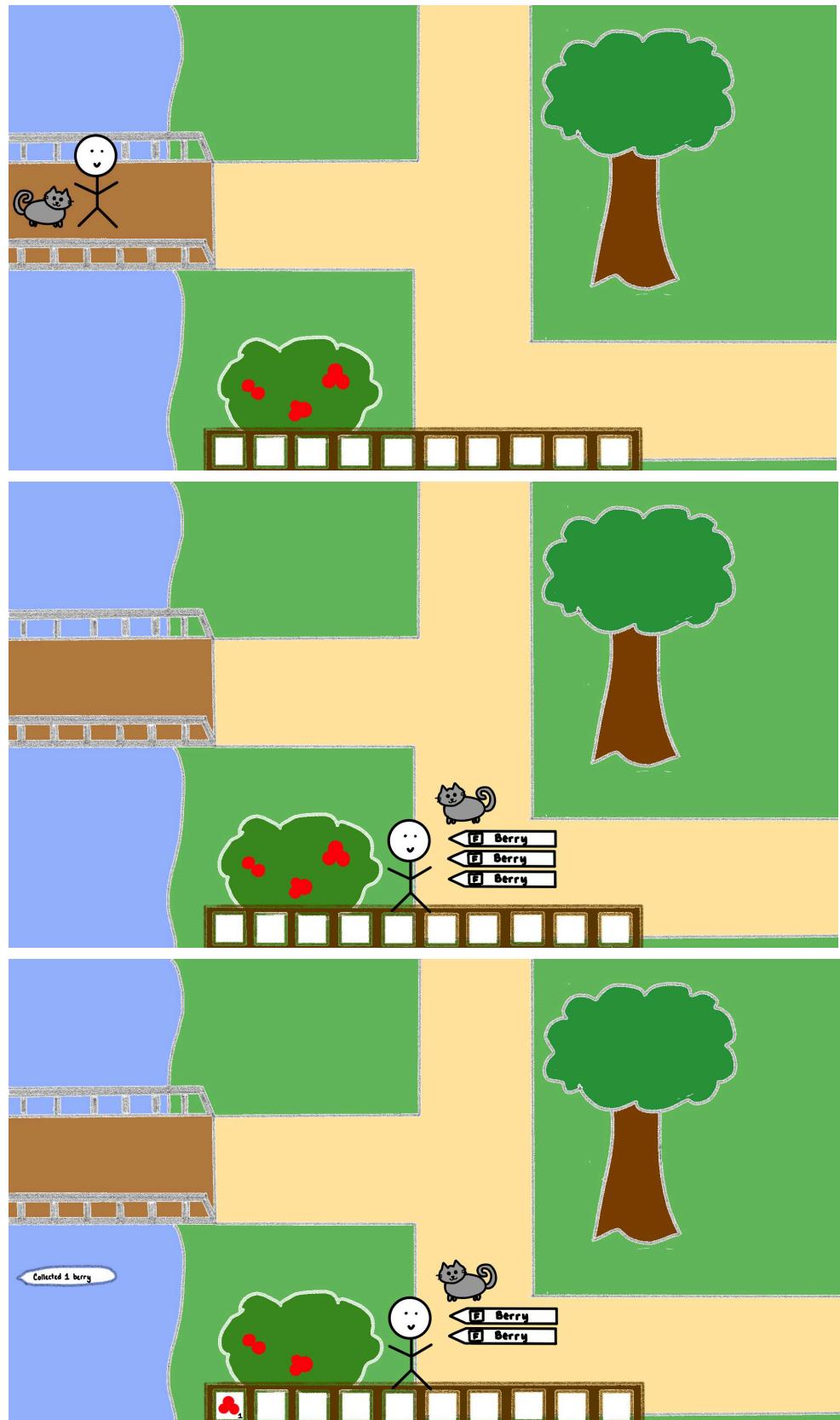
- player can collect different types of mushrooms at different regions, there's a cliff in the middle

d. Desert



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e. Foraging in the wilderness



The player can walk around in the unlocked/restored parts of the wilderness and their pet cat will follow them. They cannot walk through obstacles or into bodies of water. Upon moving into a certain proximity with an entity with collectable items, a popup will appear next to the character for each item with an F button to indicate what should be pressed in order to collect it. When the player presses F, one instance of the popup will disappear, and the corresponding item will disappear from the map and show up in the user's inventory menu. A notification will appear to the left of the screen with "Collected 1 <item>".

The player may not carry more than 10 stacks of items at one time. If they try to pick up another item while having a full inventory, clicking F will display a notification to the screen saying that "Inventory is full".

Technical Elements:

Rendering:

- Potion color changing in the cauldron while being made
- Indicators for being able to pick up foraged items
- Cauldron timers and flame simulation

Geometric, Sprite, Sound, and other assets:

- Character and pet sprites
- Structures in the wilderness (trees, water, etc.)
- Potion ingredients
- Potion making assets (cauldron, mortar/pestle, ladle, etc)
- Sounds: walking around, interacting with an object (whenever F is pressed), opening/closing a chest, opening/closing recipe book, cauldron bubbling, ingredient being dropped into cauldron with a splash, selecting an item in inventory, grinding ingredients with pestle, timer clock ticking, stirring, background music

2D geometry manipulation:

- Moving around ingredients in potion making menus requires transformations of ingredients upon sprite collision or interaction (e.g., moving the pestle up and down and having a powder form)

Gameplay logic:

- Foraging and picking up items
- Interacting with machines
- Handling potion-making process and determining which recipe the player has followed
- Persistent storage for inventory and chest storage
- Use WASD to control character movement, F to interact with items

AI:

- The player has a pet cat that follows them around in the wilderness through path-finding.

Physics:

- Basic physics with walking into terrain, dropping ingredients in the cauldron (gravity). Having the cauldron liquid move around or have splashes when ingredients are dropped

Advanced Technical Elements:

- Multiple cauldrons - Allow players to brew multiple potions at the same time. Makes gameplay faster, but not necessary for a base game.
- Stirring - similar to neal.fun, players can have fun by attempting to stir in a perfect circle each time, which would affect the final quality of the potion if done incorrectly. Almost no impact on the game if skipped, just for fun.
- Difficulty - The quality of the potion required for unlocking regions depends on the difficulty set in the menu. Makes the game customizable for players who want a challenge, but also not necessary for a base game.
- Random terrain generation - the wilderness area of the grotto changes for every game. This makes the game more replayable, but it is fine for the game to use the same areas each time. Alternatively, we can design many different areas and have the game randomly pick between them.
- The cat can help the player retrieve items from water or hard to reach locations

Devices:

Our game will only support mouse and keyboard:

- WASD: move around map
- F: main interactions (foraging, opening cauldron menu)
- Left click: drag and drop ingredients, making and interacting with potions

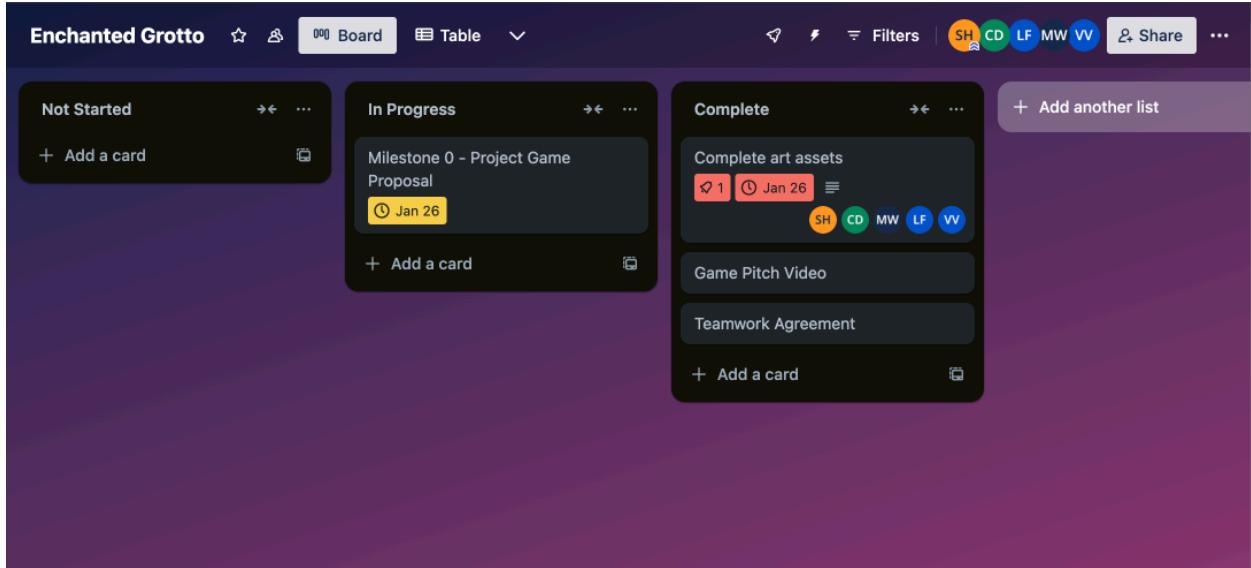
Tools:

Specify and motivate the libraries and tools that you plan on using except for C/C++ and OpenGL.

- Procreate and Adobe Fresco for Art Assets
- Trello and Github Issues will be used for managing tasks
- Bandlab for editing sound assets
- For libraries, none at this moment, some may be added in the future

Team management:

We'll use [Trello](#) to manage our team tasks and deadlines.



Gameplay:

- Potions: Everyone
- Recipe Book: Victor
- Character Interaction with Environment: Michelle
- Character Movement: Stephanie

Game Engine: Michelle, Stephanie

Art assets: Michelle, Corina

Sound assets: Stephanie

UI/UX: Victor, Corina

Project Management: Stephanie

Internal deadlines:

The team will check in 2 days before milestone due dates (soft deadline) and aim to have all work done by then.

Policies:

We will evaluate the workload based on the time taken, as well as the relevance of the task to the assignment (for example, creating art assets vs. coding the game engine, there should be a balance of everyone working on the game engine).

We estimate to spend 8-10 hours per week per person on the project.

If the workload is unfair, bring it up to the team during a meeting and come up with a compromise by redistributing work/pushing back deadlines/assigning less work in the future.

We will have weekly meetings/checkups on our progress throughout the project so we know if a team member is struggling or unable to finish their task.

We will have a document tracking the tasks taken by each person, and ad-hoc tasks will be assigned to the person with the fewest tasks/lowest workload assigned.

If a team member fails to finish a task even after discussing, then after the 3rd infraction they will be reported to the TAs/professor.

Development Plan:

Provide a list of tasks that your team will work on for each of the weekly deadlines. Account for some testing time and potential delays, as well as describing alternative options (plan B). Include all the major features you plan on implementing (no code).

Milestone 1: Skeletal Game

https://canvas.ubc.ca/courses/153847/assignments/2064534?module_item_id=7677116

Week 1 (primarily Assets, Movement)

- Setting up classes, designing ECS systems and structure of code
 - Includes input-driven response systems for movement; see below
- Draw minimal assets (character, grotto and wilderness basic setup and structure)
- Set up collision handling with greyboxed terrain, so players are unable to walk into structures
- Map WASD and F to character movement and interacting with objects
- Create logic for determining potion quality depending on steps of potion-making

Week 2 (primarily Rendering)

- Setup menu skeletons without full implementation: potion making menu, mortar and pestle menu, recipe book menu, storage menu. Not necessarily anything has to be inside the menu screens yet.

- Implement moving between the grotto and open wilderness (unlockable regions don't need to be in effect yet)
- Compile bug report for Milestone 1 submission
- Milestone 1 short video

Milestone 2: Minimal Playability

https://canvas.ubc.ca/courses/153847/assignments/2064535?module_item_id=7677138

Week 1

- Bug bash from Milestone 1
- Ability to interact with collectible items in the wilderness, forage from them and have access to your inventory
- Create more assets for potions and ingredients
- Set up stirring and dropping ingredients with the cauldron and potion making menu
- Create the recipe book menu
- Implement persistence for inventory

Week 2

- Create the mortar and pestle menu, doesn't have to be fully functioning, can just be dropping ingredients into the bowl and having it be ground.
- Have forageable ingredients for Speed potion (this is our sample potion)
- Speed potion recipe and process finished

Week 3: Buffer

- Continue work from previous weeks if incomplete - buffer (Plan B)
- Perform playability testing
- Continue bug bash
- Milestone 2 short video

Milestone 3: Playability

https://canvas.ubc.ca/courses/153847/assignments/2064536?module_item_id=7677146

Week 1

- Different potion-making levels are implemented at a base level so that you can at least make very basic potion recipes outside of just the speed potion

- Interaction with objects (foraging) is complete, all interactable nature elements are added to the map
- Have the storage menu complete so users can store items between their inventory and the storage. Include data persistence
- Perform playability testing

Week 2

- Have the pet AI that follows you
- Have the mortar and pestle menu working where you can grind up ingredients and interact with the pestle
- Have the recipe book menu complete

Week 3: Buffer

- Continue work from previous weeks if incomplete - buffer (Plan B)
- Perform playability testing (again)
- Milestone 3 short video

Milestone 4: Final Game

https://canvas.ubc.ca/courses/153847/assignments/2064537?module_item_id=7677151

Week 1

- Finalize all art assets
- Add sound effects/assets
- Ensure potion making is smooth, extend with particles/graphics/physics
- Have all regions unlockable with different potions that are crafted
- Have different potion qualities set up based on how well the player makes the potion and follows the recipe

Week 2

- Implement additional technical elements if time allows
- Final bug bash and polish
- Milestone 4 short video