

VR Project Design Document

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1 App Info

Tentative Title: **Wizard's Dungeon Laboratory**

<input type="checkbox"/>	Education & Training	<input type="checkbox"/>	Mental Health & Fitness
<input type="checkbox"/>	Travel & Discovery	<input checked="" type="checkbox"/>	Media & Entertainment
<input type="checkbox"/>	Productivity & Collaboration	<input checked="" type="checkbox"/>	Gaming
<input type="checkbox"/>	Art & Creativity	<input type="checkbox"/>	Other: _____

2 Pitch

To goal is for users to play:

Our goal is to create a wizard's lab where one can follow recipes and create objects by mixing different magical ingredients. The user can unlock different recipes and unlock the treasure room.

This will be especially fun in VR b/c:

It will be fun because one mixes bizarre ingredients!

At a high level, during the app, users will:

Be able to grab different objects, like – grabbing books, ingredients, etc. and be able to interact with them, like – opening books, adding ingredients to the boiler to make new objects, using the objects to unlock other books. Other objects that are grabbable can also be put into the boiler and all objects will be respawned. The last recipe will unlock the treasure room!

This experience will be targeted at devices with:

<u>6</u>	degrees of freedom, giving users control over the	<u>movement & rotation</u>	of their head & controllers.
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3 Basics

The app will take place in:

Dungeon

and the user will get around the scene with:

Continuous

movement.

The user will be able to grab:

- books
- key
- all objects on the shelves

There will be sockets:

- on the reading stand for the book

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Events & Interactions

There will be haptic / audio feedback when:

- Haptic feedback exists when user comes in contact with an interactable and when they grab it.
- Audio feedback exists when the user adds the ingredients to the pot, make the correct recipe or make an incorrect recipe.

There will also be 3D sound from:

- The pot (when user adds the ingredients to the pot, make the correct recipe or make an incorrect recipe)

If the user is:

Near the help book	and presses the trigger,	The help menu pops up to showcase different options
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By default, the left hand will have a:

Direct	interactor.
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and the right hand will have a:

Direct	interactor.
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And you will not be able to toggle on a Ray interactor using the thumb stick / button

When the user opens the "help" menu, the Ray interactor will automatically turn ON. User will be able to only interact with the "help" menu using the ray interactor and nothing else in the scene.

The main menu will be located:

As a help book on the table

and from the main menu, the user will be able to:

- Toggle ON/OFF the background music
- Toggle ON/OFF the sound effects
- Toggle ON/OFF the haptics
- Restart the game

[Optional] There will be additional UI elements for:

<ul style="list-style-type: none">- Instructions for the game- Progress Indication for the recipe (recipe completed/wrong ingredient sequence)- Game completion message

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Optimization & Publishing (Optional)

To make the user experience more accessible / comfortable:

<ul style="list-style-type: none">- There are instructions from the beginning to explain the game to the user.- There is a help book which opens a help UI menu.- The help menu allows the user to switch OFF the background music / sound effects / haptics for their comfort.- The user can restart the game via the help menu.- Objects can respawn if they are put in the magic pot so that the user can have multiple tries.

Given that this app is targeting the Meta Quest, target metrics are:

Frames per second:	>= 50	FPS
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Milliseconds per frame:	< 20	ms (= 1,000 / FPS)
Triangles per frame:	30 - 180	tris
Draw calls per frame:	200-500	batches

Lighting strategy:

<input type="checkbox"/>	All baked	<input type="checkbox"/>	Mostly baked with some mixed	<input checked="" type="checkbox"/>	All real-time
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Light probes will not be used for more realistic mixed lighting.

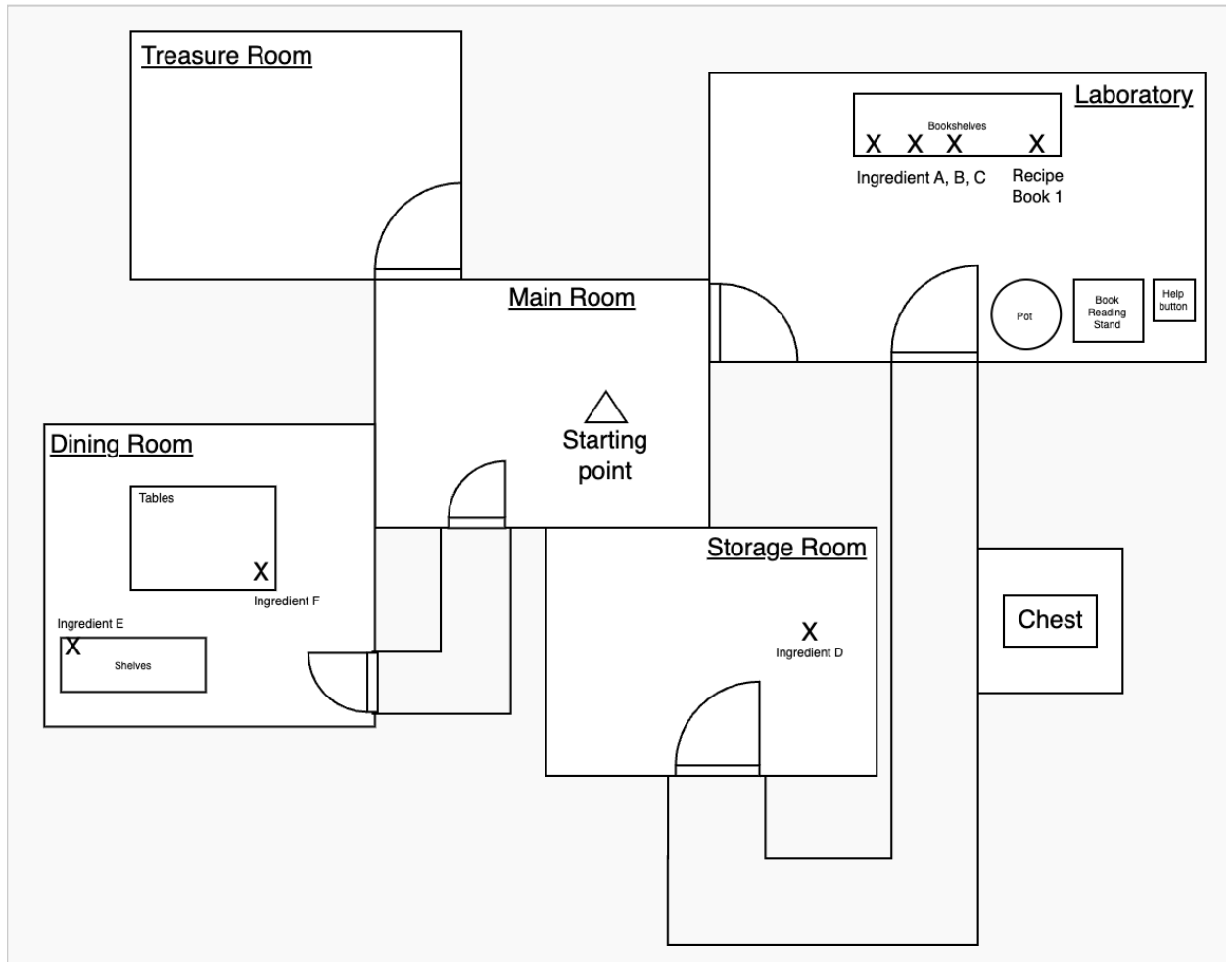
6

Other features



- Objects can be respawned.
- The door opens when the user is in its proximity
- Keys can be used to open the locks in the chest and treasure room.



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Sketch



Project Grading Checklist

Item	Points	Done? ( )
Events & Feedback System	20	
Includes sound effects for important interactions.	4	
Haptic feedback (controller vibrations) is implemented in at least one action.	4	
An interactive trigger system (e.g., opening a door, activating an effect) is present.	4	
Events are logically triggered in response to user interactions.	4	
The user receives some form of progress feedback (audio, text, or UI indicators).	4	
UI Implementation	10	
A functional UI element (menu, pop-up, or interaction panel) is present.	2	
UI is legible in VR (proper distance, size, and placement).	2	
UI responds to user actions (e.g., button clicks, gaze interaction, laser pointer input).	2	
UI does not obstruct important interactions in the scene.	2	
UI remains consistent and intuitive for the user.	2	
User Experience & Comfort	15	
The scale of the environment is realistic and comfortable.	3	
Locomotion settings minimize motion sickness risk.	3	
Interaction mechanics feel natural and intuitive.	3	
Proper accessibility considerations (color contrast, alternative controls).	3	
The project is designed for at least 5 minutes of smooth VR engagement.	3	
Performance Optimization	10	
The project runs at a stable frame rate on Quest 3.	2	
Uses optimized assets (low-poly where needed, baked lighting, occlusion culling).	2	

Redundant physics calculations and objects are removed or limited.	2	
Uses efficient rendering settings for a smooth experience.	2	
No major memory leaks or excessive performance drops occur.	2	