Design Questions

- It is of utmost importance that a new player is able to pick up the game mechanics quickly, because the game is meant to be played in about 30 minutes and becomes fast paced. Moreover, each domain of the game (goals, UI, controls, enemy behaviors, etc.) should all have a short learning curve. Thus, we must question, **is the game understandable to players (even with little-to-no previous experience)?**
- The 3rd person character is central to the game; this character is always in view and is one of the only things that the player can control to affect the game. If the control of the character feels "off" to the player, then the game experience will be diminished. To address these concerns, we question, **do the controls allow for consistent and fluid movement of the character?**
- To ensure the player feels challenged as they get better and more familiar with the game, the obstacles and enemies need to get progressively more difficult. Only then will the player feel that the game poses a challenge that they want to overcome. We question, **do the levels (areas) get progressively more difficult?**
- Moving the character about platforms over dangerous areas and at variable heights is a central part of our game design. We need to know if the current layout and difficulty contribute to the player's enjoyment and/or sense of accomplishment. **Does the player enjoy the presented platforming challenges?**
- Alongside the movement challenges, the largest component of our game is the ranged combat. Using their gun, the player is able to fight enemies, destroy objects, and complete puzzles. Therefore, we seek to answer, **does the player enjoy the ranged combat?**
- The player already expects every interaction in the game to have an accompanied sound. If the audio is consistent with the gameplay, the player won't notice the disparity; though, if the audio is useful and effective, it will certainly be noticed by the user for its *positive* impact on the game. We question, **Does the audio enhance the overall gameplay (or potentially distract from the experience)?**

Approach & Methods

Our main approach of testing the design questions involves note-taking and follow-up questions. Following the conclusion of the game, playtesters were asked a series of open-ended questions regarding their experience. After completion of these questions, players were then presented with an online questionnaire that contained Likert-style questions about the game. All of the questions target our specific established design questions so as to improve our game.

To test if the game is **understandable to all players, even those with little-to-no previous gaming experience**, we inquired players about their comprehension of the game (such as the overall game objective as well as the objective of each area). This included their previous personal experience with games, allowing us to determine if those without much gaming experience were equally able to understand the intention of the game in relation to those with

more experience. To test if the **controls allow for consistent and fluid movement of the character**, we asked both likert-style and open-ended questions regarding the ease and satisfaction of controlling the player, as well as the comfort of the controls and movement. Likert-style questions addressing the difficulty of each area within the game, with 1 representing easy and 7 representing hard, allowed us to see the average perceived **difficulty of each area and how that difficulty progresses over the course of the game**. Furthermore, taking the time of each run allowed us to see if the difficulty matched our expectations and goals.

With platforming as a central part of more than one area within the game, we wanted to test if these **platforming challenges were truly enjoyable** by asking players about their enjoyment of and difficulty with the lava pool platform area. In addition, we asked about the navigability of the environment and layout of the map so as to assess the platforming that wasn't within a specific area, but was still imperative for proceeding in the game. With the other central aspect of our game being combat, we sought to test whether or not the **player enjoyed the ranged combat**. A variety of questions contributed to our understanding of this answer. Likert-style questions gave us a direct, quantitative understanding of players' thoughts of the difficulty and enjoyment of the overall combat of the game. Open-ended questions about the enjoyment and difficulties of each individual area allowed us to assess whether the combat impacted these two qualities. Questions regarding the difficulty, fairness, and enjoyability of the boss fight allowed us to assess the enjoyment of the combat requirement of the final scene. As with all the sections, notes were taken on player comments, which might include things such as "it's really tough to shoot these enemies." Finally, to determine if the **audio enhanced or distracted from the gameplay and overall experience**, we asked an open-ended question about the helpfulness and enjoyability of the accompanying audio. Various notes about players' thoughts on the audio design were also recorded.

Results & Analysis

At the end of each playtesting session, we administered a survey to our playtesters to collect data regarding the difficulty and enjoyment of their experience. For each of the levels in the game (village, kingdom, maze, platform, boss), we asked the player to rate the difficulty and enjoyment of that level on a scale from 1 to 7. Below is a line graph visualizing the results and trends of their responses. The numerical value associated with each data point is the average value of all the responses for a particular level's difficulty or enjoyment. The levels are listed in order from left to right with respect to what is completed first in the game. From the line graph below, we see that the first three levels in the game are on the easier end, which ultimately led to higher levels of enjoyment. Upon reaching the platforming level, we noted a significant increase in difficulty and also a lower level of enjoyment due to the struggles that many of our playtesters had in completing that level. This was largely due to various movement issues that were present in our game, which are outlined in the next section. Lastly, we have found that although our boss fight presents a challenge, it was very enjoyable to complete. In terms of time required to finish the entire game, we found that playesters took on average 18 minutes to complete the initial four levels (village, kingdom, maze, platform) and 5 minutes to complete the

boss fight (although a few of the playtesters were unable to finish due to a collider glitch that sent the player falling through the floor, however, they were very close to completion).

Level Difficulty vs. Enjoyment
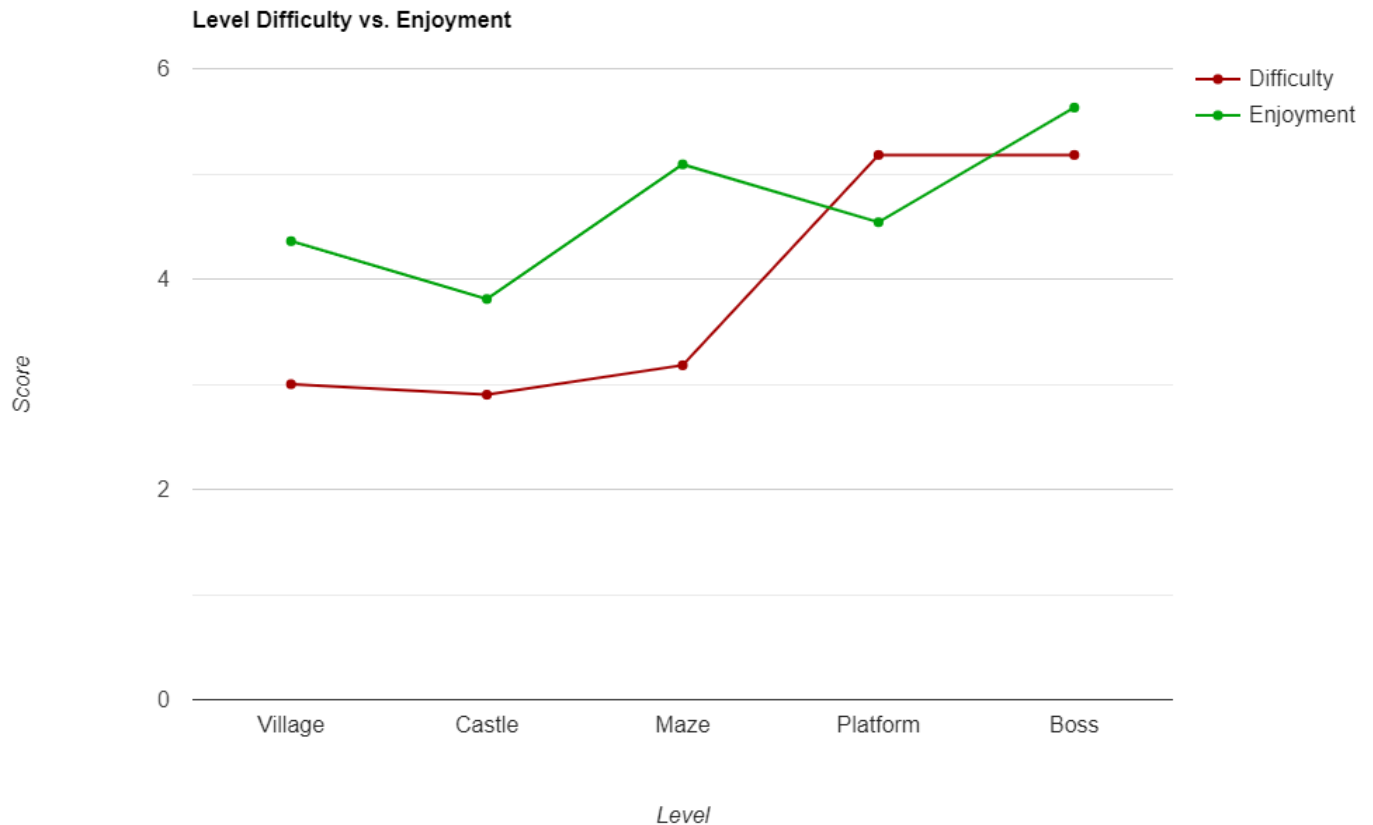
Our playtesters gave us lots of valuable feedback while they played the game. Many bugs such as clipping through walls and some movement difficulties were found and will be tackled for the final portion of this project. Some of our observations are as follows:

- We had a lot of different views on character control. In general, the character control was pretty well-received except for some bugs and concerns over camera control. Some playtesters suggested implementing a way to control mouse sensitivity.
- One of the main points that we learned is that many of our instructions and goals could still be better explained throughout the game. Some of our playtesters expressed that navigating from one area to another was sometimes a bit challenging, especially after respawning and having to figure out what direction to go. Some of our playtesters were a bit confused after interacting with the podium to craft the ultra jam and did not understand that they should follow the light to start the boss fight.
- We learned that there was a lot of concern around audio. Many of our playtesters expressed that the music was a bit loud and got annoying after a while. Some of our playtesters also wanted extra audio cues such as footsteps and better damage audio cues.

- All of our playtesters enjoyed the design and artistic style of the game. Many expressed that the low-poly was very cute and suitable for the world.
- The village was one of the more well-received areas. We had a couple of suggestions such as having more engagement with the village itself and repositioning some of the enemies.
- It was hard to gauge how many targets were still present in the castle area. Our playtesters frequently suggested having some sort of counter on the UI so that the player knows to continue searching. Some of our playtesters did not realize that there were targets on both castles and that the fences were linked. We also got some suggestions to add a couple of enemies since there is no real threat in the castle area.
- The maze was also one of the areas that the playtesters enjoyed the most. However, one of the challenging aspects is keeping track of health and ammo so that the player does not run out while in the maze. We discovered that it is possible to clip out of the maze and will be tackling this issue going forward.
- The platforming area was considered the most challenging. We found some bugs with players going through some of the platforms and sliding across the surfaces. We are also hoping that by changing the placement of the camera, the platforming area would become easier to navigate. Some of our playtesters suggested having checkpoints in the platforming challenge so that the player does not have to start over again.
- The boss fight sparked the most confusion out of all of the areas. It was not clear to the playtester that they should shoot the eyes and mouth of the giant jello boss to damage it. Some extra explanation in the UI could help make this easier for future players. Despite these difficulties, many of our playtesters still enjoyed the boss fight.
- Some of our playtesters felt that the ending of the game was not very rewarding, considering the difficulty of the boss fight.

Future Work

Throughout playtesting, we discovered many issues that need to be addressed and work that needs to be done. While some of these issues arose and carried over from the alpha build of our game, many of them are new or things we had not considered. The following list will identify 3 major categories of issues: Critical Gameplay Issues, which are top-priority issues that must be addressed in order to have a stable and playable final build of the game; Major Issues and Recommendations, which are items that should be addressed but are not critical to the overall gameplay experience; and Minor Bugs and Recommendations, which are less important items that will improve the game but are not a high or immediate priority. Within these categories, the issues are not currently in any particular order. We plan to address the Critical Gameplay Issues first and then attempt to resolve most of the Major Issues and Recommendations before the final build of the game. If we have remaining time to resolve Minor Bugs and Recommendations, we will do so.

Critical Gameplay Issues:

- *Boss fight clipping/death:* It is currently possible to clip through the platforms in the boss fight arena, allowing the player to fall infinitely and somehow miss the death barrier, for which there is no solution except to quit and restart the game from the beginning. We plan on fixing the collision issues and ensuring that the death triggers cannot be missed, and as an additional measure, we may add a force respawn button to the pause menu just in case.
- *Camera positioning:* The position and orientation of the camera makes it difficult to feel and know where the player is in 3D space, making the platforming sections incredibly difficult for many players. We plan on adjusting the position and behavior of the camera to fix this issue, pulling the camera back and making the player's feet more visible.
- *Major collision/clipping issues:* The following collision/clipping issues need to be resolved by adjusting their collisions: the player can clip through the maze walls, the player can clip through the platforms in the platforms area and boss fight

Major Issues and Recommendations:
- *Signs:* The font/color of the text on the signs throughout the map are hard to read from a distance, and some of the signs are easy to miss. We plan on improving the font, clarifying the signs, and placing them more carefully so that players do not miss the instructions for each area. We also plan on revising the instructions to include using the mouse to aim and the fact that the player must collect 30 of each ingredient color, as well as how to collect them.
- *Respawn points:* The current respawn system does not always function well and is often jarring, respawning a player somewhere they had not quite reached yet and maintaining their orientation. We plan on one of two options: changing the respawn location triggers to be more accurate, or making the player respawn next to the most recent ammo station they refilled at. Either way, we will respawn the player with a set orientation that makes sense, not just whatever orientation they died in. We are also considering adding a respawn button to the pause menu in case the player needs to force a respawn.
- *Movement:* Movement could be improved in many ways, but the most critical issues relate to jumping. When landing, the player sometimes slides for a moment, and when jumping against a wall, the player can hover/stick to the wall. We plan on eliminating these sliding and sticking behaviors. It is also possible to Skyrim-horse-climbing-style jump up some surfaces, which we also plan to eliminate by adjusting how the jump works.
- *Boss fight clarity:* Many players had difficulty understanding how to damage the boss. We plan on making the weak spots much more obvious (brighter colors, more flashing, emitting light, etc), and we are considering having a visual similarity between the castle targets (which function similarly to the boss's weak spots) so that the mechanic is introduced to the player prior to the boss fight.
- *Story/Purpose:* The purpose of the game is not very clear beyond "collect jello ingredients." We have already made and plan on adding an introduction sequence that explains the goal of the player (as well as some backstory/motivation).
- *Ultra Jam spawn:* It is possible to spawn infinite Ultra Jams at the crafting podium. We will prevent this by emptying the player's ingredients when crafting the Ultra Jam and

making it impossible to craft more than one. We are also considering ways to make it clear that you should follow the ultra jam (or rework the ending sequence).
- *Death screen home button:* It is easy to accidentally press the Home/main menu button on the death screen, causing the player to have to restart entirely. We will add a confirmation/warning step.
- *Softlocking:* We need to ensure the player cannot reach a point where they cannot go backwards while also having missed too much of an ingredient color. This could involve preventing progression until the previous area is complete, or ensuring that each area is backwards-navigable

Minor Bugs and Recommendations:
- *Sensitivity and volume:* We would like to add menu sliders to control mouse sensitivity and music/SFX volume.
- *Minor collision/clipping issues:* The player can squeeze between the main and side rooms of the castle. The collision on the decorative plane is bad. The snipers' projectiles do not collide with the platforms. Some structures' colliders are too big (or perhaps the projectile's collision should be smaller). The player can walk through signs and the fences in the tutorial area.
- *Castle targets:* We want to add a counter of some sort to tell the player how many targets there are remaining.
- *Audio and animations:* Some things still lack audio or animations or need to have volume adjusted: castle fences falling audio, ingredient pickup animation, boss fight music quieter than main music (which is better?)
- *Fire pits:* Currently do 100 damage, killing the player instantly. This should be lowered.
- *Text edits:* The sign at the end says Ultra Jello, not Ultra Jam. This terminology should be made consistent throughout all text in the game.
- *Boss Fight spawn:* It is possible to land on the middle platform when entering the boss fight, making the player stuck and doomed. We can prevent this by disabling player control until the player lands in the boss fight.
- *Damage:* It is somewhat unclear when the player takes damage. The hurt audio volume should be increased, and we want to make the player flash red or dark gray for a moment when hit.
- *Lighting:* Some issues with lighting still exist. The torches' light auras flicker. Some textures are still broken from baking lighting. World light could be increased slightly to make the game more visible.
- *Score system:* We implemented a score system but never ended up using it or deciding how different things would score. We may decide to include it or not.

These issues will be evaluated, further prioritized, and divided among our team members to implement, since most of them can be implemented by individuals.