## Controls:

P - Toggle camera-cursor offset

WASD - Player movement (up, left, down, right, respectively)

ESC - Exit the program

R - Reset the program

Scroll wheel - Zooming in/out

Mouse 1/ spacebar - fire bullet

## Test Plan

1. Hold W,A,S, and D to move up, left, down, and right respectively, also should see animation playing.
2. Hold adjacent keys moves diagonally such as WA - moves up and left
3. Hold opposite direction keys - stops player movement
4. Hold WASD - no movement
5. Hold WA, release A - moves up due to W still being held (try other combinations)
6. When pressing movement keys, camera should follow player’s center
7. Press P to activate the camera-cursor offset, then move the cursor around on the screen. Camera should be centered between cursor and player
8. Press P again to deactivate the offset and the camera should smoothly transition back to the center of the player
9. Press mouse 1 or spacebar and release -> fires one bullet from center of players model
10. Hold mouse 1 or spacebar -> rapidly fires bullets toward mouse position
11. Hold mouse 1 or spacebar while moving with WASD and mouse- bullet should be in front of player and faster than player
12. Hold mouse 1 while moving with WASD and don’t move mouse - bullet should be shooting at mouse cursor position
13. Fire at enemies to damage them which kills them after 6 bullets land
14. Walk towards enemies and touch them and take damage.
15. Walk along the edges of the room to test room boundaries.
16. Press ESC to exit the game
17. Press R should reset the game, with the player in the middle of the screen and camera centered on player
18. The game also resets upon player death.
19. When player dies, screen should slowly turn dark
20. Scroll up - should zoom in and stop at a certain point
21. Scroll down - should zoom out and stop at a certain point
22. Audio tests
    1. Fire a bullet to hear bullet firing sound
    2. Hit a enemy to hear enemy being hit sound
    3. Get hit by a bullet to hear player being hit sound
    4. Lose all your health to hear death sound
23. Fire a bullet at the wall and watch it disappear (bullet to collision test) - also works for enemy bullets
24. Invulnerability for player after getting damaged (bullet should pass through them - to be changed later)
25. Player or enemy being hit, their color should flicker red for a quick second
26. Press T -> tutorial pop up on the screen in loaded font
27. Press G -> debug mode is enabled. The user should see all aabb colliders of entities being shown as red rectangle.
28. Move cursor around -> player character should always look at the cursor no matter of their walking direction.
29. Stay still and wait for enemy spawn -> wolves should shoot three bullets at a time (shotgun), bees should shoot one bullet at a time, and bombers should try to hit the player with their body. Bullets cause one damage and bombers cause two. They will be deleted once collide with player.
30. When enemy is killed, some of them should drop pickable sushi.
31. When player pick up sushi, they should be healed up as shown by the health bar. If they reach maximum health then nothing should happen.
32. When enemy bullet shoot directly to player, it should be deleted once it hits the player character mesh.
33. When player walk to enemy, it should not be damaged as long as the mesh is not colliding to enemy’s aabb.
34. AI tests
    1. Stay far away from the enemy. The enemy should be moving and idling randomly.
    2. Stay closer to enemy but hide behind an object. The enemy should try to find the player with A\* algorithm.
    3. Stay out of the object. The enemy should move closer to player and start shooting from a distance.
35. When stay still, player idling animation should be played.
36. Bees and bomber should face the direction of player.
37. Wolves should face to the direction they are travelling.
38. Walk around an object (a pillar) and see the layers of rendering. Every entity should be drawn that the one in front is rendered afterwards.
39. Focus mode. Player can hold shift to enter the focus mode. During focus mode, collider of player character will should become a small red circle on reimu's sprite. Moreover, player motions and bullets should be slowed as well to allow accurate dodging.
40. When player enters invulnerable state, left top blue bar should be the countdown for next invulnerability.
41. Combometer. When player kills an enemy, the combometer should increase by 0.02. When they are being hit by enemy, combometer resets to 1. The combometer value should affect elapsed time, so it flows faster.
42. When killing any enemy, a death animation should be played. Also, an item should be dropped that follows Bezier curve movements.
43. Each time when player starts to play, a map should be generated following BSP.
44. Going near the boss room should show a boss health bar ui I'm the bottom of the screen
45. Shooting and hitting the boss should decrease the health bar
46. When boss dies, health bar ui should also disappear
47. Boss should be idle until she takes 2 damage (assuming no attack buffs, this will take 2 bullets). Then she should activate phase 1
48. The boss has 4 phases, at 100%, 75%, 50%, and 25% of max hp. Triggering one of these states should make boss invulnerable, stop firing, delete all bullets in vicinity for a few seconds. Phase change should introduce new bullet patterns.
49. In the last phase, 0-25%, the boss has two distinct bullet patterns. They take turns appearing randomly.
50. Exiting boss room or going out of boss range should disable the boss firing and remove health bar ui
51. Flow fields, enemies should follow the path to reimu through the flow field.
52. Shooting reimus bullet into walls should show a breaking animation
53. When starting a new game, or seeing a boss, the player should be able to interact with the dialogue box. Press space or mouse left to go to the next dialogue.
54. When pressing escape, instead of directly going out of the game, the player should be able to see the pause menu, where they can restart, resume, or exit to main menu.
55. When in the main menu, the player should be able to resume a game they are playing, or start a new game, or quit.
56. When enemies drop items that can be bought with coins, if players have enough coins, they should be able to buy it with “E”.
57. When entering a newly explored room, fog of war should expand on the current Reimu location to the entire room.
58. When a player tries to enter a room, doors should be unlocked. When the player is physically in the room, the door should be locked until the player kills all enemies in that room.
59. When players enter the main menu, they should hear a particular sound track. When the player goes in the room, they should hear another track that's different from the main menu.