Project 1:

room simulation(build)



Table of Contents

[System-as-is: 3](#_Toc176963617)

[Problem: 3](#_Toc176963618)

[Opportunity: 3](#_Toc176963619)

[System knowledge: 3](#_Toc176963620)

[System-to-be: 4](#_Toc176963621)

[Objective(why): 4](#_Toc176963622)

[Functionality(what): 4](#_Toc176963623)

[Who: 4](#_Toc176963624)

[Functional requirements: 5](#_Toc176963625)

[Non-Functional requirements: 5](#_Toc176963626)

[User Story 6](#_Toc176963627)

# System-as-is:

## Problem:

* Lack of visualization
* High risk and design error
* Inefficient Communication Between Clients and Designers/Contractors
* Time-consuming design interior

## Opportunity:

* Immersive 3D Visualization for Improved Decision-Making
* Enhanced Communication and Collaboration
* Personalized Home Design
* Integration with Real-World Resources

## System knowledge:

* 3d modeling and game engine (unity)

# System-to-be:

## Objective(why):

* **Purpose:** The main purpose of this project is to create a virtual room where the user can view their current/ future room and help them visualize to help them renovate or decorate their room.
* **Goal:** Allowing client to have a better understanding/ planning, customization and decision-making of their virtual room.
* **Problem solved:** Many people struggle to visualize how their room improvements, renovations, or new layouts will look in real life. This project will help turning they’re abstract ideas into real-world results, reducing the risk of design mistakes and wasted resources

## Functionality(what):

1. **3d visualization:**

* A 3D room of the user that can be explored and modified. Such as the length/heigh of the room, the color of the room or even the camera angle to see a better view of each side of the room.

1. **Room layout and furniture placement:**

* Tools for arranging and placing virtual furniture, appliances, and décor.
* Able to drag-and-drop furniture from a library of pre-loaded items, with options for resizing and adjusting the orientation.

1. **Real time measurement and scaling:**

* Realistic scaling base on client real room

## Who:

* Client:
  + **Homeowners** looking to renovate or redecorate their homes.
  + **Interior designers and architects** who need a tool to present concepts to clients.
  + **Home buyers** who want to visualize how their furniture and personal style would fit in a potential new home

# Functional requirements:

1. User interface (UI) and interaction:
   * 3d navigation
   * Design/ customization
   * Drag and drop furniture
2. Main menu:
   * Save/load
   * Pre-build room
   * Real-time update
3. Export and sharing file:
   * Export file
   * Share file
4. Simulation features:
   * Object physic

# Non-Functional requirements:

1. Performance
   * Rendering speed
   * Frame rate
2. Usability
   * Intuitive user interface
   * Tutorial and help
3. Security
   * Data encryption

# User Story

|  |  |  |  |
| --- | --- | --- | --- |
| ID | Description | User point | rate |
| 1.Designing room | As a user, I want to create a custom room layout to visualize my dream room before starting construction |  | H |
| 2.Room customization | As a user, I want to adjust the size and layout of my room |  | H |
| 3.Furniture placement | As a user, I want to place my furniture to experiment with different interior design |  | H |
| 4.Save and load | As a user, I want to save my progress to that I can go back and work on it later |  | M |
| 5.Sharing design | As a user, I want to share my design with other |  | L |
| 6.Pre-build template | As a user, I want a Pre-build template to start on the project quickly |  | L |
| 7.User account | As a user, I want to go to my account |  | L |
| 8.User change password | As a user I want to change my password |  | L |
| 9. Users remember me option | As a user I want the application to remember my account |  | L |
| 10.User setting | As a user I want to have a setting to change it from my preference |  | M |
| 11. Material selection | As a user, I want to change material depending on my scenario |  | L |
| 12. User accessibility | As a user, I want to change the layout to my preference |  | L |
| 13. Log out option | As a user, I want to remove/change account |  | L |
| 14. Create new account | As a user, I want to create a account to enter the program |  | L |
| 15. Forgot password | As a user, I want an option that can help me find/change my password |  | L |
| 16. Admin login | As a admin, I want to have a separate login option |  | L |
| 17.Customize house layout | As a user, I want to change the house layout |  | L |
| 18. Customize house structure | As a user, I want to customize my house structure |  | M |
| 19. Users add picture profile | As a user, I want to add my picture profile |  | L |
| 20. User can change picture profile | As a user, I want to change/remove my picture profile |  | L |
| 21. Users add description | As a user, I want to show information about myself to other |  | L |
| 22. User change account | As a user I want to change account but keeping my other account in a list |  | L |
| 23. Report problem | As a user, I want to report problem so that it can be fixed |  | L |
| 24. Change resolution | As a user, I want to change my resolution to my liking |  | L |
| 25. Change brightness | As a user I want to change my brightness |  | L |
| 26. Go to menu | As a user I want a menu to help me |  | L |
| 27. Leave simulation button | As a user I want to leave the application |  | L |
| 28. Message ask if want to save before leaving | As a user, I want a message to tell me to save before leaving in case of a bad situation |  | L |
| 29. backtrack button | As a user, I want a backtrack button in case of a mess up |  | M |
| 30. Rearrange HUD | As a user, I want to customize my HUD to my liking |  | L |
| 31. Add price item | As a user, I want to add the price of furniture |  | L |
| 32. Sum price of room | As a user, I want to see the sum from all the furniture |  | L |
| 33. Dumpster icon | As a user, I can slide furniture to the dumpster to remove item that I don’t want |  | L |
| 34. Floor option | As a user, I want to change the floor material |  | L |
| 35. Material and style library | As a user, I want a shortcut to see all the material and style that I can change |  | L |
| 36. Item collision | As a user, I want to see if my item is colliding with another item |  | H |
| 37.Recent furniture | As a user, I want a shortcut to my most recent use furniture |  | M |
| 38. Zoom in and out of the building | As a user, I want to see the interior closer or further |  | H |
| 39. Gridline | As a user, I want to see a gridline to put my item properly |  | H |
| 40. Change floor level | As a user, I don’t want to get confused on which floor am I on |  | M |
| 41. Individual wall | As a user, I want to change the height of individual walls so that I can create rooms with varying ceiling heights |  | M |
| 42. Curve wall | As a user, I want to create curved walls and windows so that I can design more creative and unconventional structures |  | L |
| 43. first person view | As a user, I want to view my house in first-person mode so that I can experience walking through the rooms |  | M |
| 44.Weather condition | As a user, I want to simulate different weather condition |  | L |
| 45.Environment | As a user, I want to set my house in a different environment  (beach, forest, etc.) |  | L |
| 46. Furniture shortcut | As a user, I want to create a personal file to get my furniture quickly |  | L |
| 47. |  |  |  |
| 48. |  |  |  |
| 49. |  |  |  |
| 50. Tutorial and help | As a user, I want to understand better on how to use the program |  | L |

# 1st iteration :