

Milestone 1: Game Mechanics, Input Controls, and Networking

1. Establish coding conventions, and folder structures, and determine what needs to be as addressable.

- Define a coding style guide that all developers must follow.
- Set up a version control system to manage source code.
- Create a project structure that organizes files and directories in a logical manner.
- Decide which assets will be stored locally vs. remotely and establish a protocol for accessing them.

2. Set up network framework architecture for multiplayer gameplay.

- Set up a networking framework to use.
- Determine how player movement and interactions will be synchronized.
- Create a lobby system for players to join multiplayer games.
- Test the multiplayer system with multiple players on different machines.
- Ensure that the game is synchronized and runs smoothly on all machines.
- Do a stress test.

3. Develop the player movement mechanics and interactions with the game environment, the animations will be provided and tweaked as per the requirement.

- Implement basic movement walking, running, jumping, climbing the ladder, opening/closing the door, crouching, slipping, falling, and swimming animations.
- Create a player movement to pick up, use and throw items.
- Implement more advanced movement mechanics (Parkour Mechanics) such as sliding, wall running, edge walking, rope walking, spin jumps, climbing pillars, climbing buildings, and gliding.
- Test and fine-tune movement mechanics to ensure smooth and responsive gameplay.

Reference Videos

<https://youtube.com/clip/UgkxC5HpITi33sX1Qcd-qUsrzhIUsu7ueeOJ>
<https://youtube.com/clip/UgkxEZYVEYySPb6BinW0kM3gjc2axz82IsgO>
<https://youtube.com/clip/UgkxYHvMfhEsEgYxIx6stEHsfui9wVMSemE>
<https://youtube.com/clip/Ugkxyb9tIjLv0n-KPoJq5w1DleJ-ia9ikhXi>
<https://youtube.com/clip/Ugkxr9j6Kg5dzKWPPpO6QK6h4ieHtFFdwdJwq>
https://youtube.com/clip/UgkxmkDuYkZ-gCt4PZGTgjr3SpDIqwp_p8tA
https://youtube.com/clip/UgkxIPO8nJvP_I-sLPhg-2odqc8NQHSXNk0G
<https://youtube.com/clip/Ugkxl2vQjnzRUg3xoL2r1uENmfWQT45m5oCj>
<https://youtube.com/clip/UgkxD2NwfBWxt3ZVac6DAauxQ8a0fEWSMi4z>

https://youtube.com/clip/UgkxhvNCCupqcZaSc91M4Ks0P_rrc2_QWjb8

<https://youtube.com/clip/UgkxKNShyxUD4TDpVobmse-H460UL3MMfXan>
https://youtube.com/clip/UgkxSZ_53IyeVtTtmiwKMso8RK1ra6iHtyhu
<https://youtube.com/clip/UgkxA1j0sSO1-4fmb5m1Q1VPvFppkLqVztnG>
https://youtube.com/clip/UgkxbmIfAoUazfVj5_uFLM9Uoh63t--jr0e5
<https://youtube.com/clip/UgkxKL5ee9HPJX6-k5i6-lrSnIz7SYBvbBrN>
<https://youtube.com/clip/Ugkxz8HuJDkC8CZlaB4cVulvkHrAC55aBKGn>

YouTube Video Tutorials

<https://www.youtube.com/watch?v=RiyibgxX5og>
<https://www.youtube.com/@projectmasquerade4016/videos>
<https://www.youtube.com/watch?v=XBvPjwFYqvo&t=1017s>

Free Parkour Sample project – Can check for reference

Github

https://github.com/knela96/Dynamic-Parkour-System/blob/Git-Pages/docs/Downloads/DynamicParkourSystem_Documentation.pdf

4. Implement item pickups (banana peel, magic potion, smoke bomb, oil spill, and portals) with their functionality.

- Define the behavior and effects of each item when picked up or used.
- Implement a system for spawning items at random locations in the game world.
- Ensure that each item can be picked up and used correctly by players.
 - Banana Peel – When stepped over or touched by a player, the player will flip and fall over.
 - Magic Potion – When consumed the player will become invisible for a certain amount of time to other players.
 - Smoke Bomb – When used there will be smoke surrounding the players, but the player who used the smoke bomb will be able to see other players.
 - Oil Spill – There will be oil cans and barrels on the map, the player can topple oil barrels or throw oil cans, this will spill oil and anyone who touches it will flip and fall, the spill will be there for a certain number of seconds.
 - Portals – The player can throw ring collectible items and open a portal gate like in dr strange to be able to teleport to another section of the map. When used the portal will open for a certain number of seconds and then closes.
 - Run-through potion – When this item is consumed the player can run through the walls for a certain number of seconds.
 - Speed Shoes – When used the player will be able to run at a faster speed for a certain number of seconds.
 - Jump Shoes – When used the player can make longer jumps.
 - Glider – When used the player can jump from the top of buildings and glide.

5. Implement the vision system for the players, which will make the other players not visible if not in the line of sight.

- Define the range and cone of vision for each player.
- Implement a system for checking if a player is within another player's line of sight.
- Ensure that players are rendered correctly based on their visibility status.

6. Implement the object culling system for the walls and roofs of the buildings becoming semitransparent or invisible if the player is behind walls or inside a building.

- Determine which rendering technique to use (such as occlusion culling or frustum culling, etc)
- Implement a system for dynamically adjusting walls and roofs' visibility and transparency based on player location.
- Ensure that objects are rendered correctly based on their visibility status.

7. Implement the input system to use keyboard, mouse, and mobile phone touch screens.

- Define the controls for each input method (keyboard, mouse, touch)
- Implement a system for mapping controls to player actions.
- Ensure that controls are responsive and easy to use on all platforms.

8. Conduct testing of all the above game mechanics to ensure smooth gameplay across all platforms.

- Develop test cases for each game mechanic.
- Conduct automated and manual testing to identify bugs and performance issues.
- Prioritize and fix issues based on severity and impact on gameplay.
- Verify that all game mechanics work correctly on all supported platforms.