SPACEMAN

Team details

Name	Roll no	Batch
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Game concept

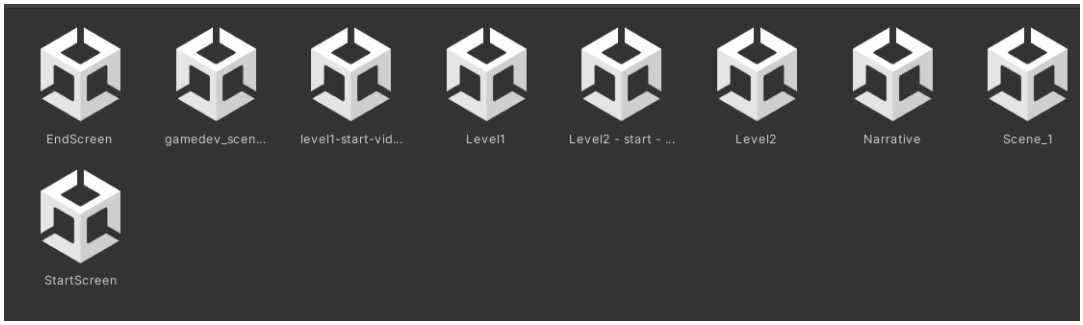
SPACEMAN - A 2D Side Scrolling Platform Game.

Rocket has a sick daughter Grootie. Rocket needs Certain herbs to make up a medicine to cure her. These herbs are scattered across the universe inside different planets. So the game is to collect all the herbs and cure Grootie.

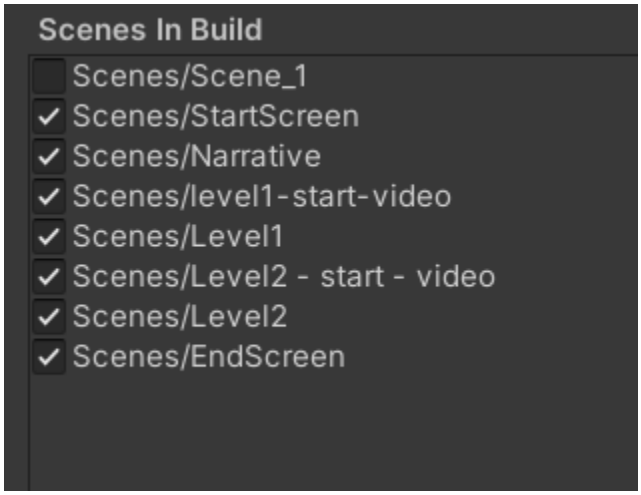
So the player hops from one planet to another and collects the required herbs. In the process of collecting the herbs he might face many challenges which he needs to fight against.

Screenshots

Scenes



Scene order

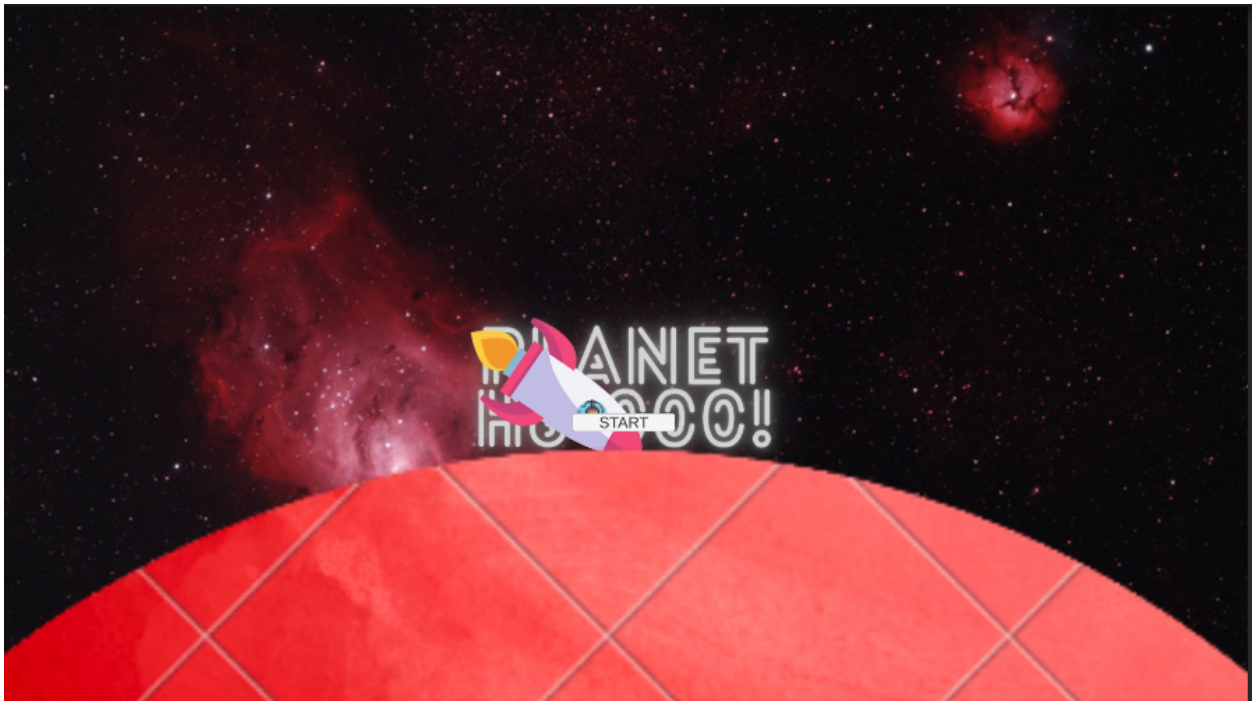


Start screen

Narrative

Level 1

Level 2



End Screen

Components

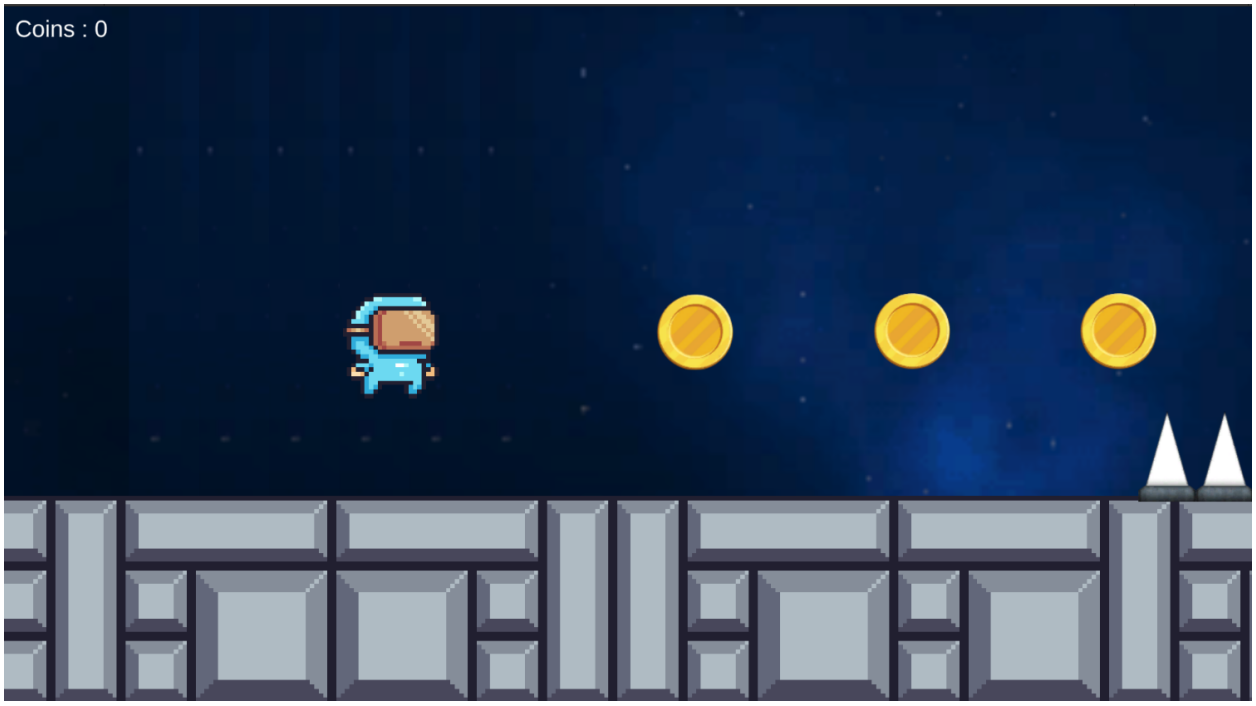
1. Main character

Rocket is the main character.

The actions of Rocket are limited to staying idle at a position, running and jumping.

2. Camera

The game uses a third person perspective where the camera is placed at the sideways of the character and dollies forward as the character moves.

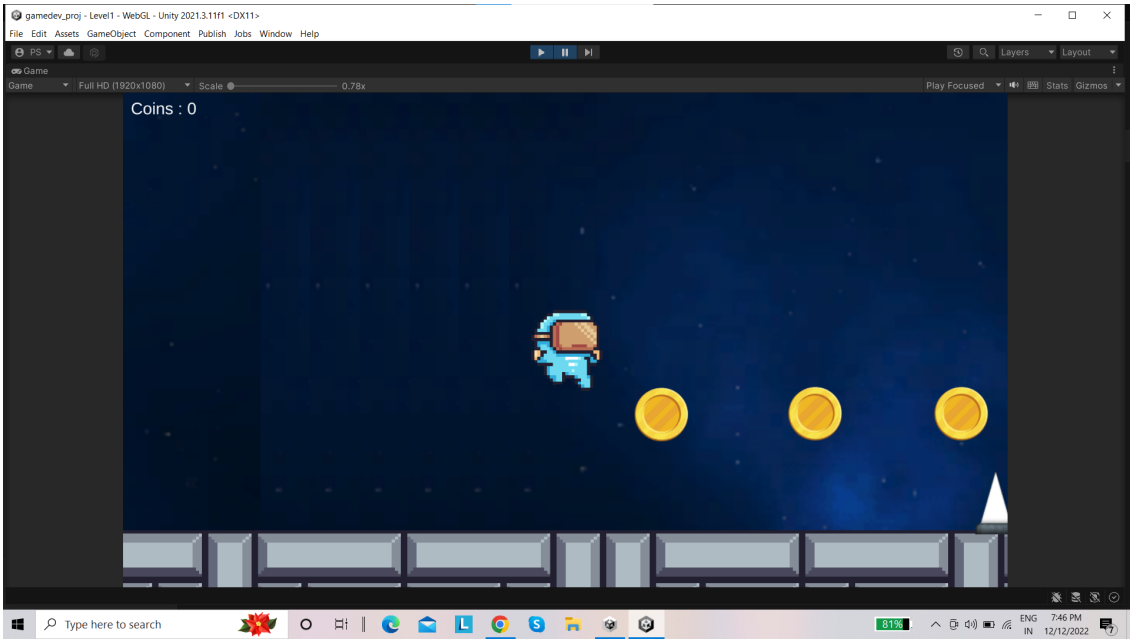


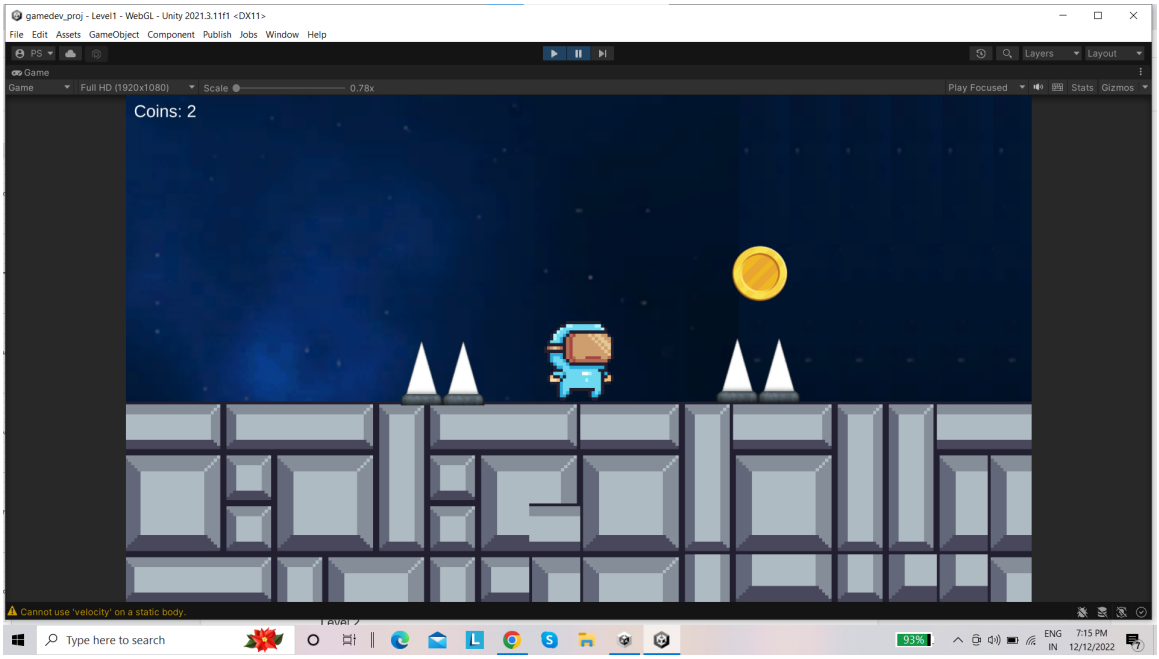
3. Level Design

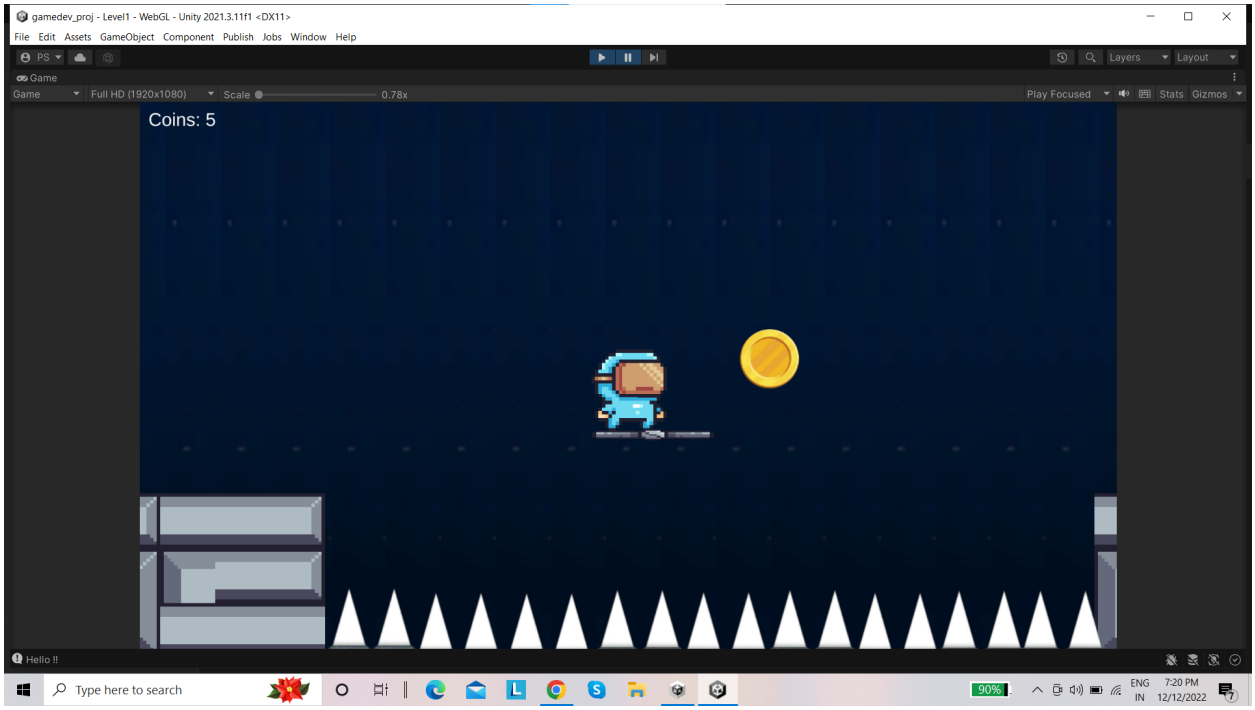
Level 1

The first level is set in a gray planet X6-7901.

Level1 1 - Start Point



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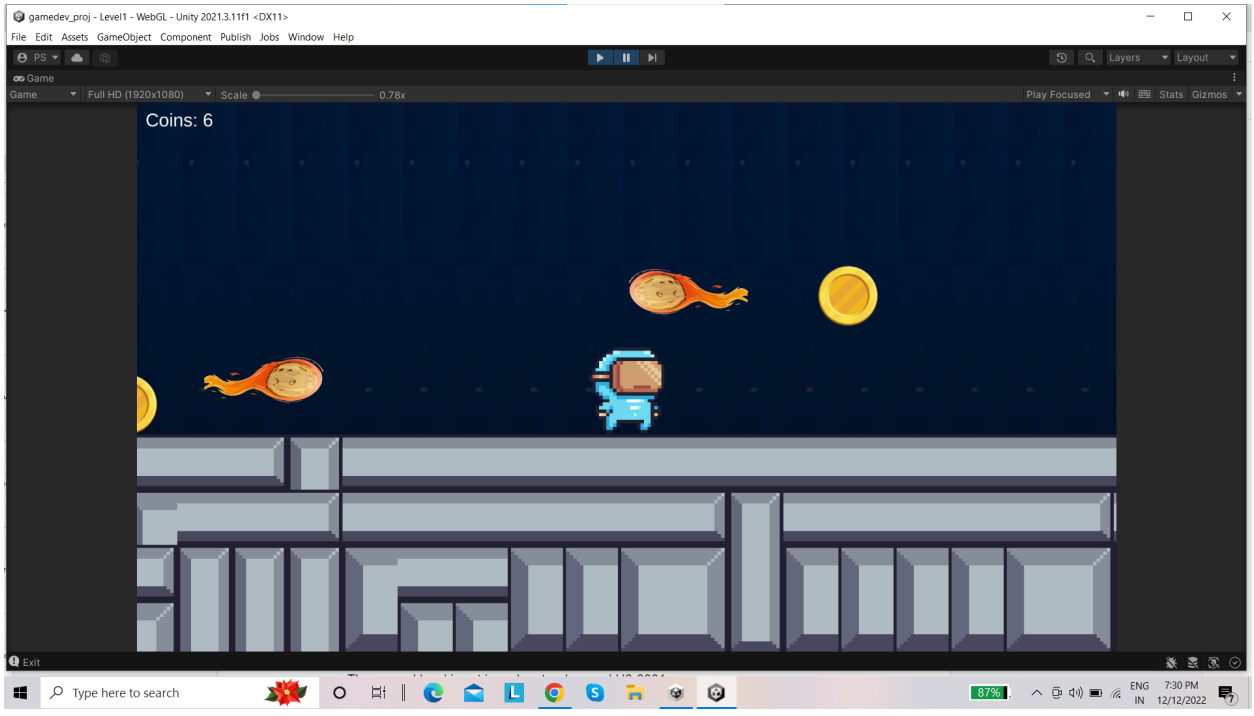
File Edit Assets GameObject Component Publish Jobs Window Help
Coins: 5
Hello !!
Type here to search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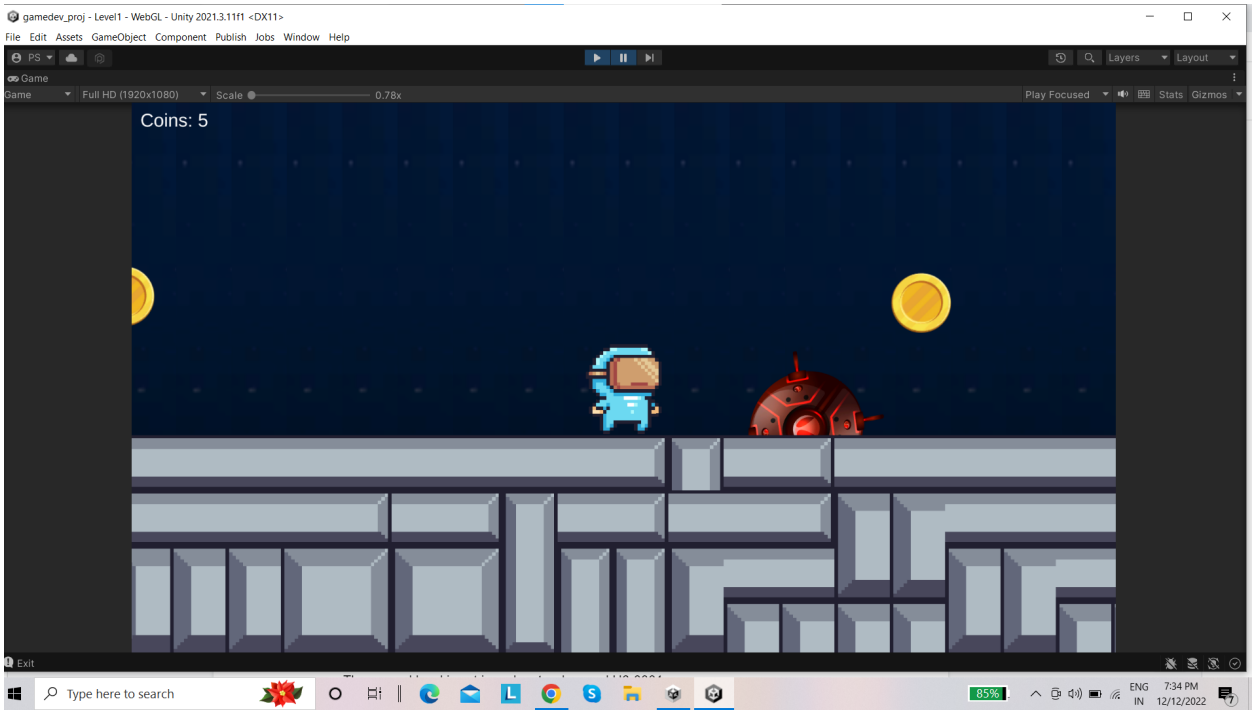
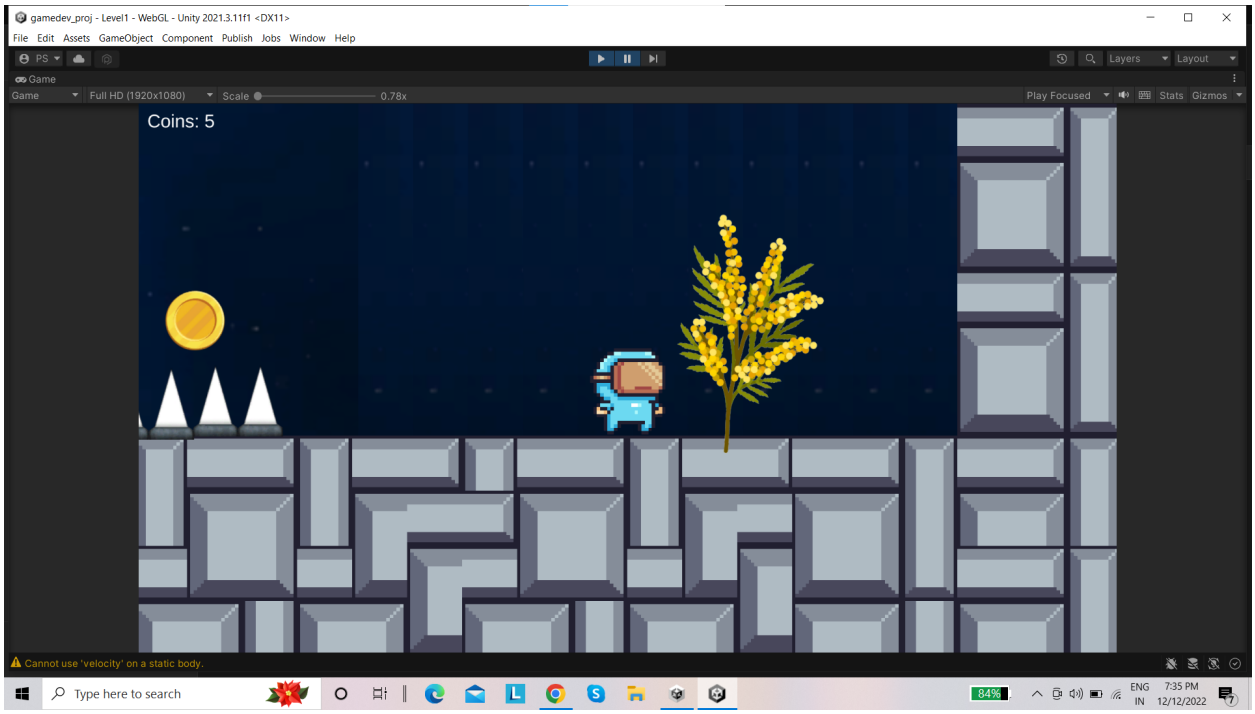
Coins: 6
Exit
Type here to search



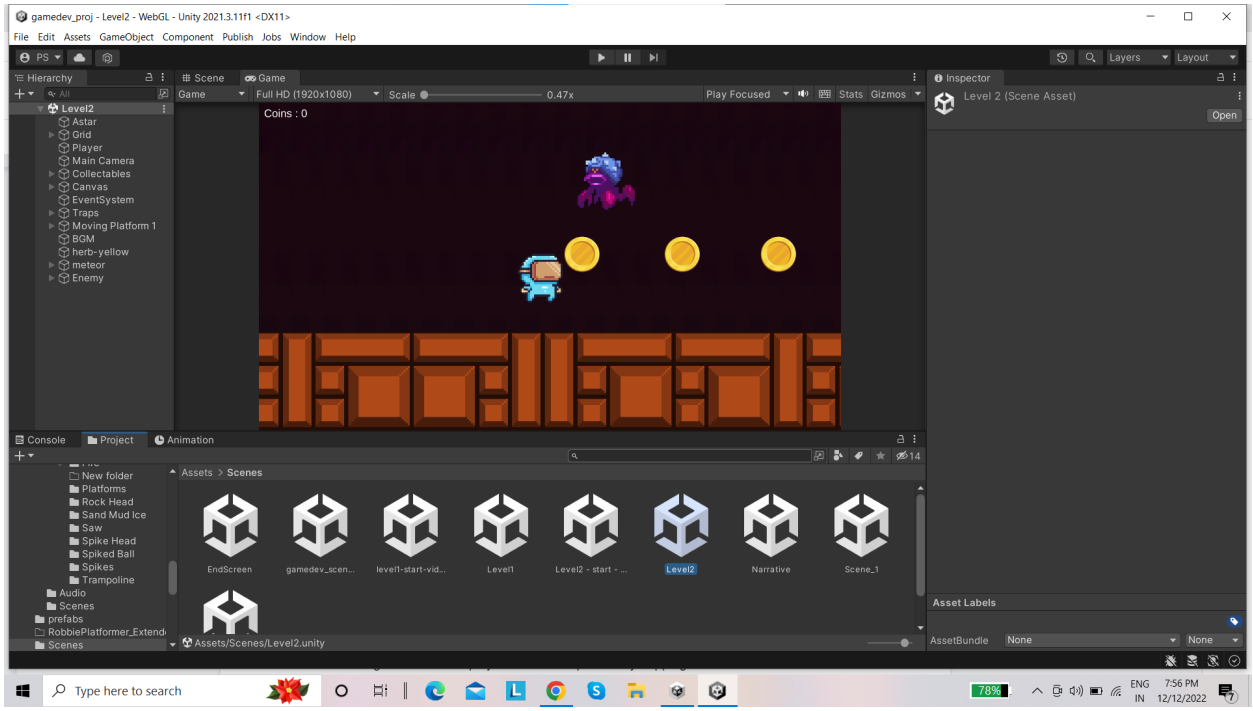
Level 1 - Finish Point

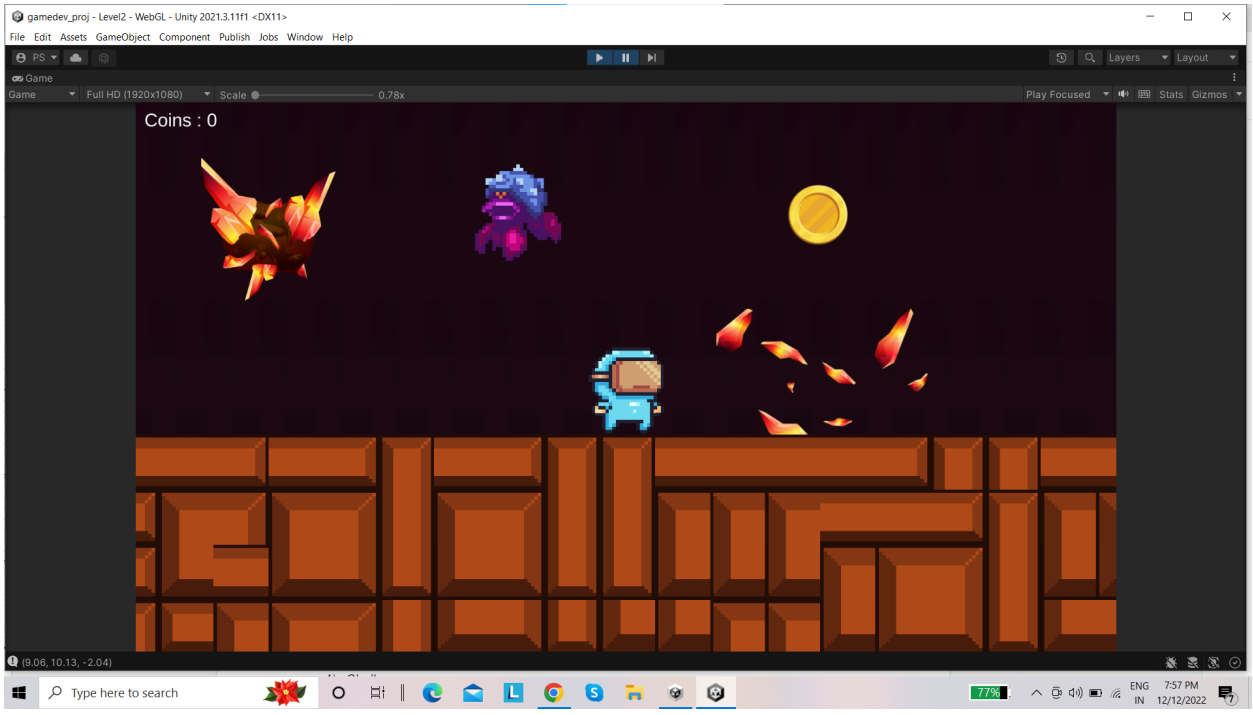


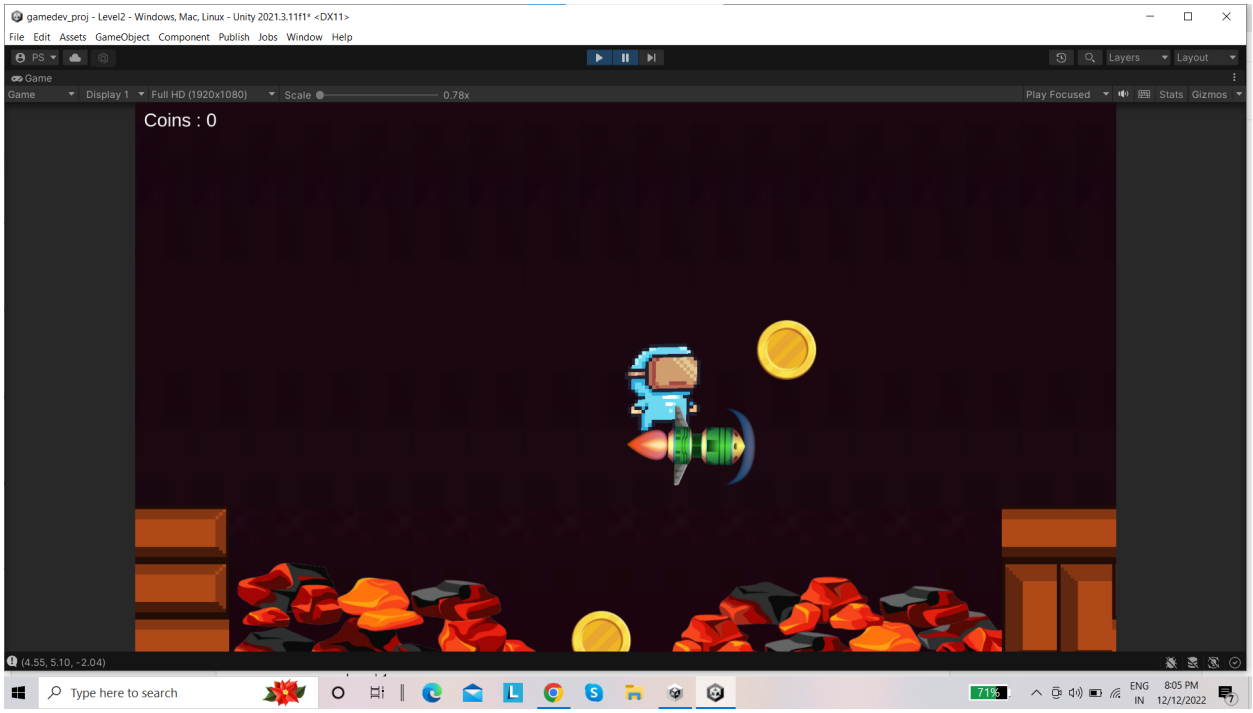
Level 2

The second level is set in a planet red named H6-0001

Level 2 - Start Point



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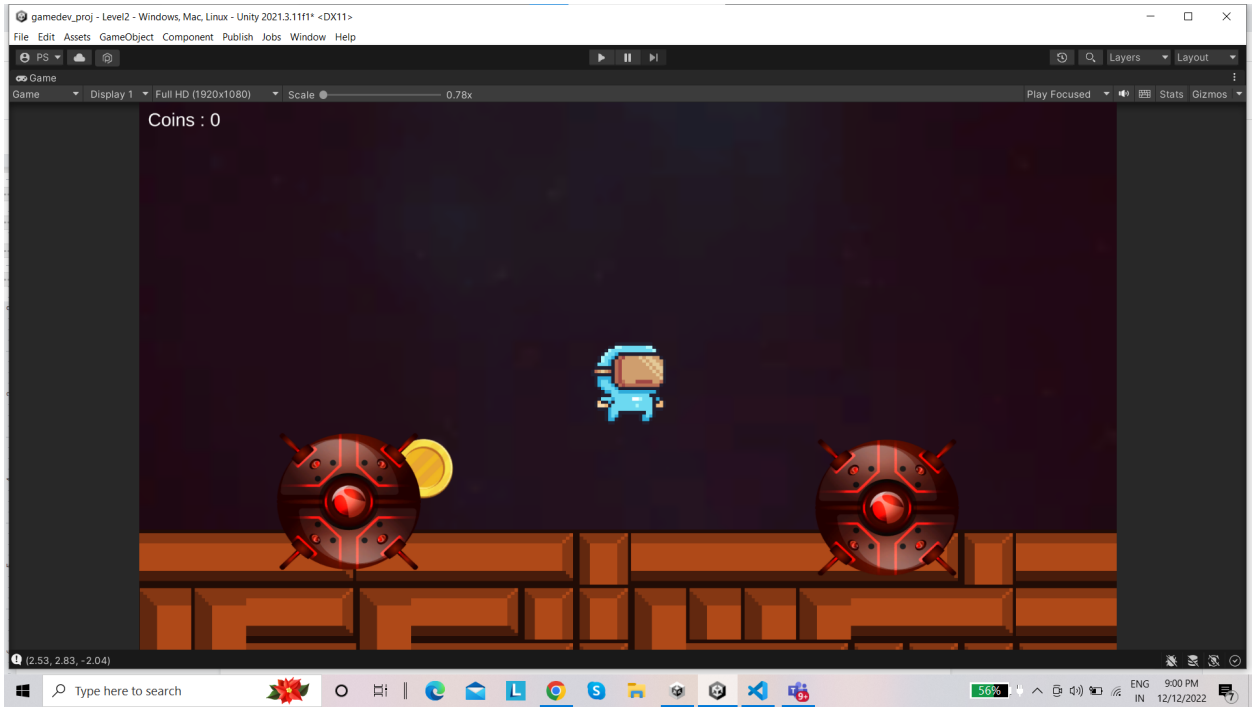
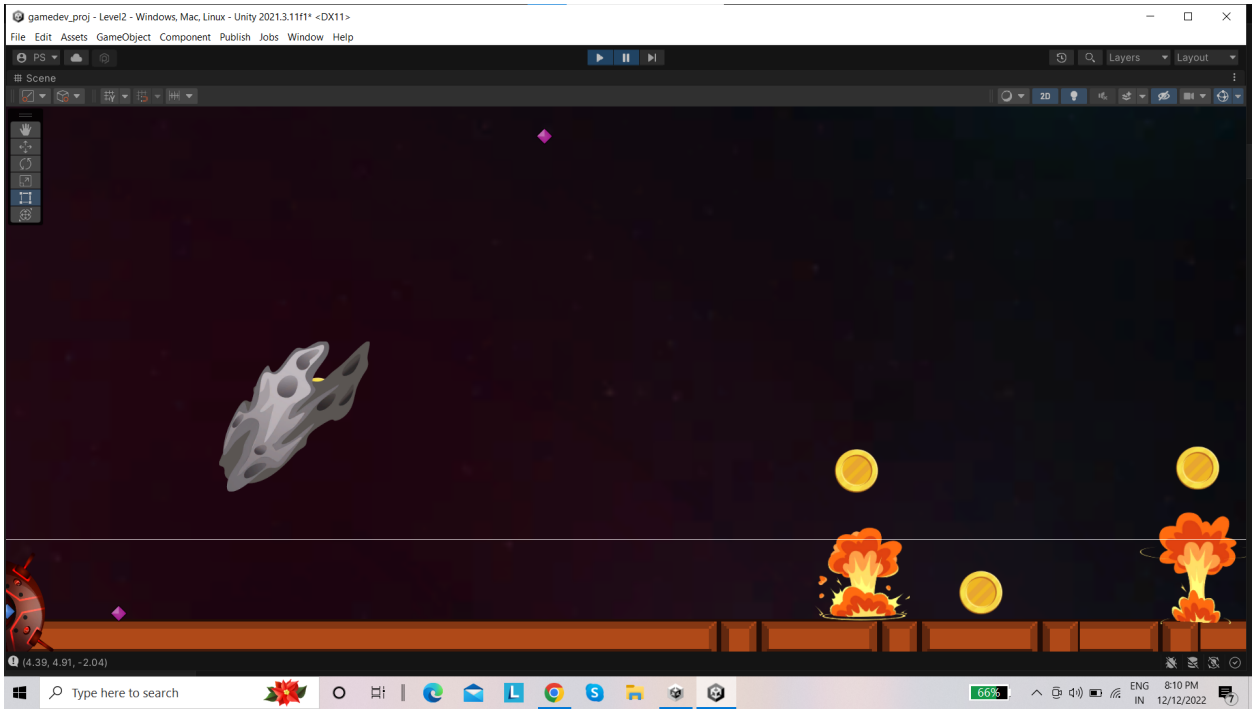
File Edit Assets GameObject Component Publish Jobs Window Help
Game
Display 1
Full HD (1920x1080)
Scale
0.78x
Play Focused
Stats
Gizmos
Coins : 0
(4.55, 5.10, -2.04)
Type here to search


gamedev_proj - Level2 - Windows, Mac, Linux - Unity 2021.3.11f1* <DX11>
File Edit Assets GameObject Component Publish Jobs Window Help
Game
Display 1
Full HD (1920x1080)
Scale
0.78x
Play Focused
Stats
Gizmos
Coins : 0
(2.53, 2.83, -2.04)
Type here to search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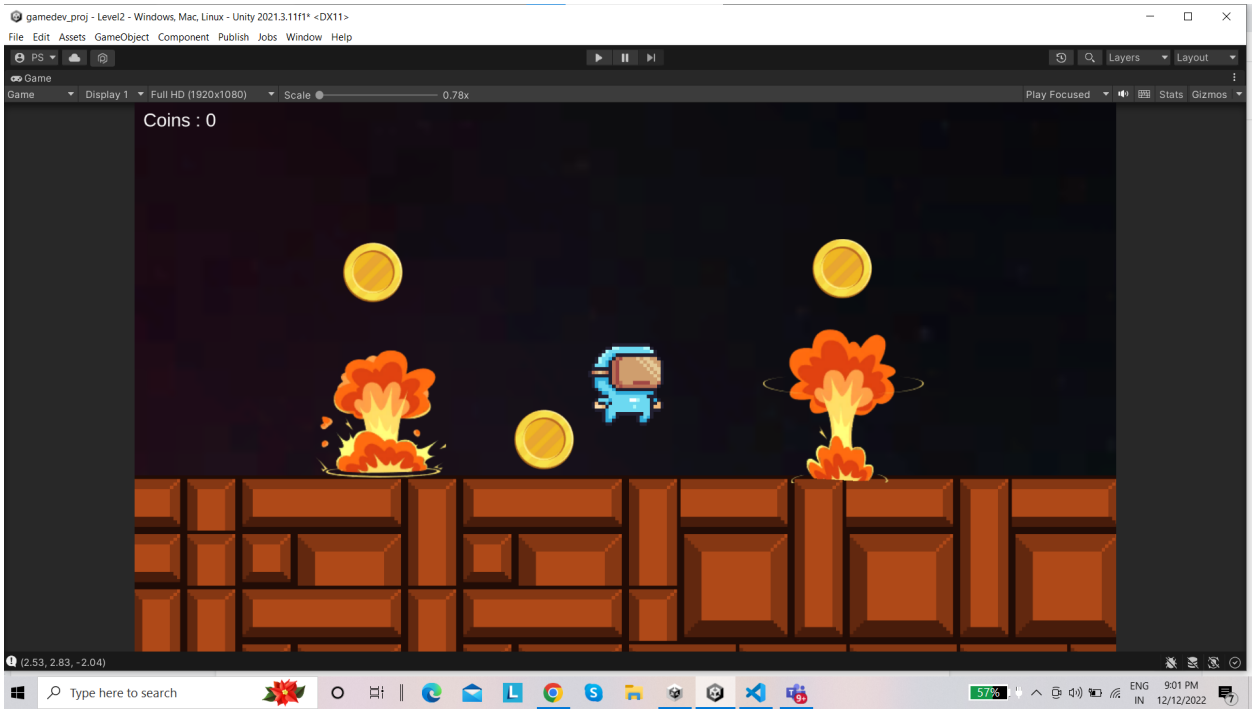
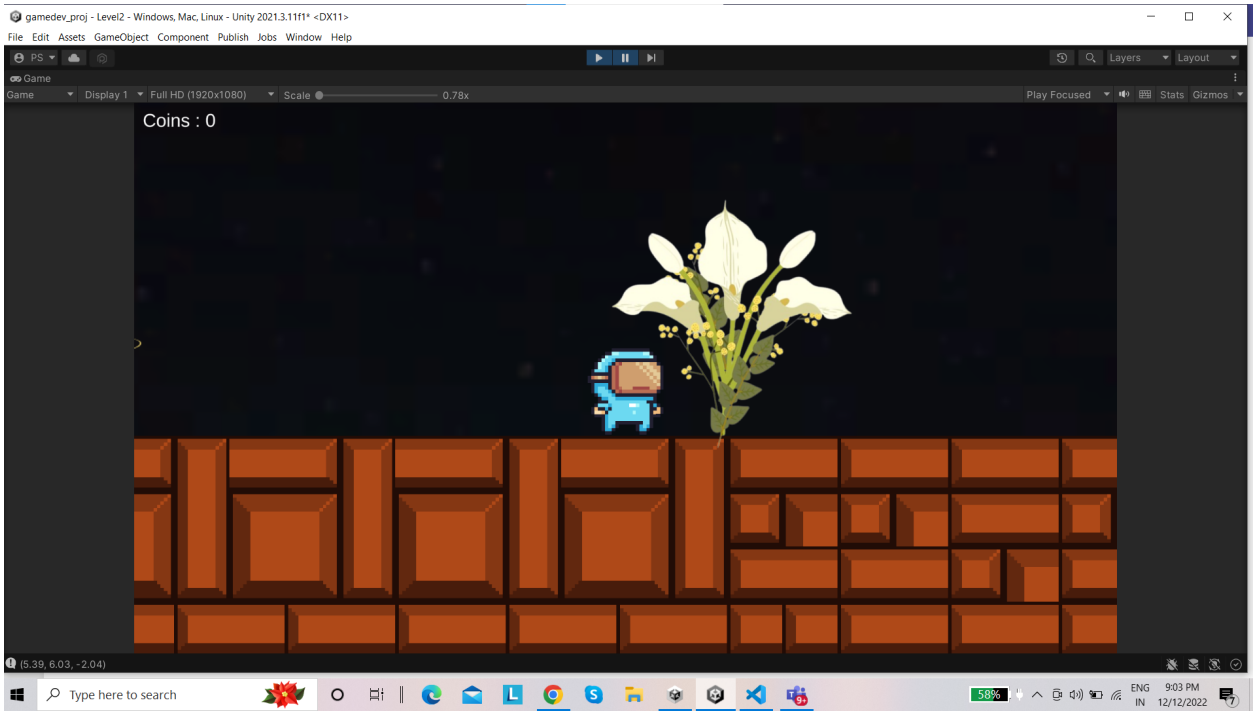
Scene
(4.39, 4.91, -2.04)
Type here to search


gamedev_proj - Level2 - Windows, Mac, Linux - Unity 2021.3.11f1* <DX11>
File Edit Assets GameObject Component Publish Jobs Window Help
Game
Display 1 Full HD (1920x1080) Scale 0.78x Play Focused Stats Gizmos
Coins : 0
(2.53, 2.83, -2.04)
Type here to search

Level 2 - Finish Point



4. Challenges

Level 1:

In level 1, the challenges include a spiked platform which the player should escape by jumping onto a moving platform. Another challenge presented in this level is moving asteroids, which keeps moving from right to left and vice versa, the player will have to jump over it to escape from being hit by the asteroid. A rotating bomb is also present in this game which the player needs to hop avoid by hopping over it.

Spikes

Asteroids

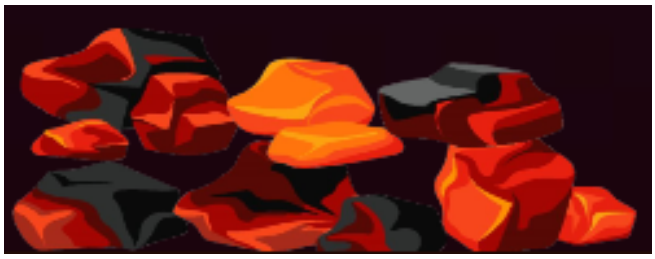
Rotating Bomb

Level 2:

Level 2's challenges are a slight extension of Level 1's challenges and increases the difficulty level of the game. Level 2's challenge includes, hanging rocks which kills the player when the player hits the rock, falling meteors, and 2 rotating bombs which travel in the opposite direction.

Meteor

Lava Rocks

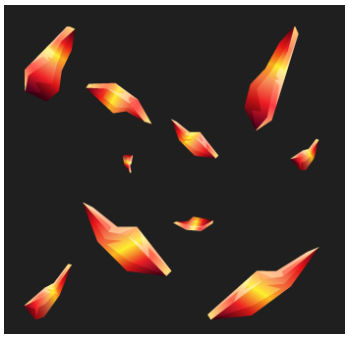


Rotating Bombs

Fire Explosion


Lava Crystal





Bird AI

5. Levels

There are currently 2 levels in the game with the second level's difficulty slightly higher than the first level.

6. Controls

Actions allowed by the player are running, and jumping. Controls for the same are

Running left: Left arrow key

Running right: Right arrow key

Jump: Space

7. Animations

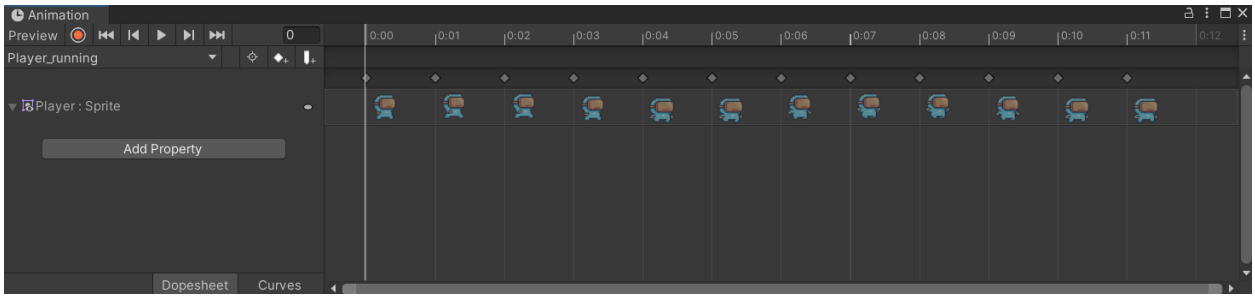
The main character is animated for the State of :-

- Being idle
- Running
- Jumping
- Falling
- Death

The various obstacles are animated for :-

- Moving
- Rotating

Running Animation



8. Collectables

The player will have to collect the coins placed in the space in each level.

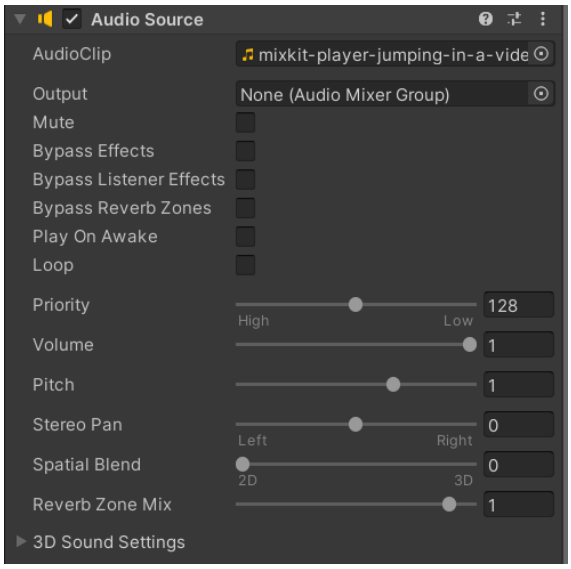
Rule: The player must collect **at least 6 coins** to enter into the next level.

Coins

9. Music

The actions of the player are accompanied by sounds, like unique sounds when the player jumps, collects coins or dies.

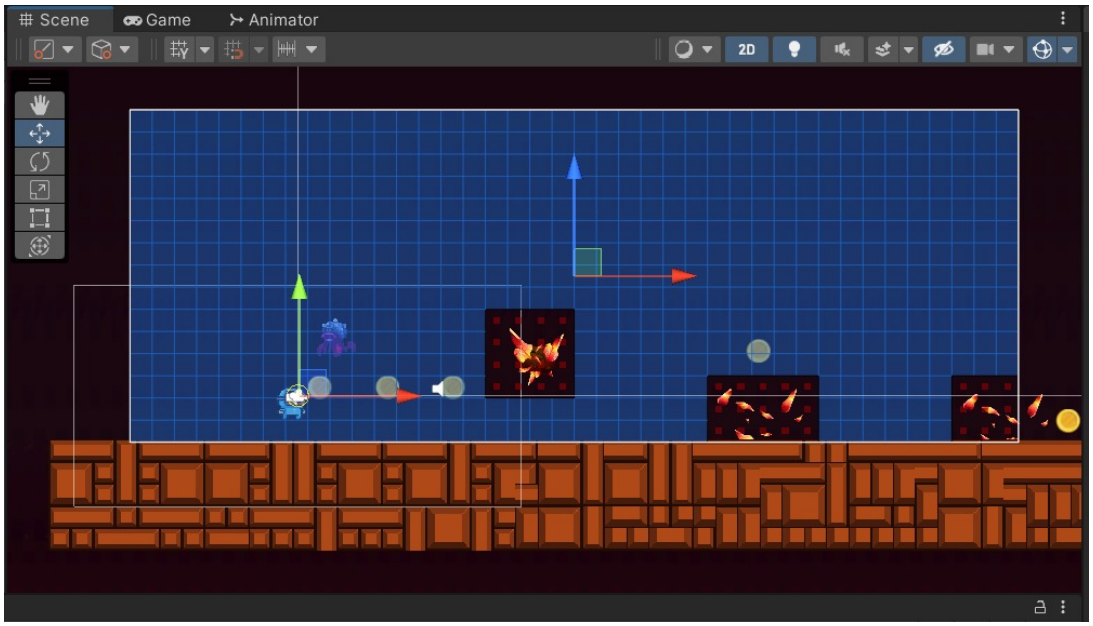
The game also makes use of a soothing background score to immerse the viewer into the game.



10. Game AI

We used the Pathfinding algorithm in our 2D game using A* to allow an enemy character to follow the protagonist to disrupt his mission.

We used a grid layout and defined the obstacles by mentioning the layer in which they lie in. The enemy avoids the obstacles and moves only in the grid area covered in blue.

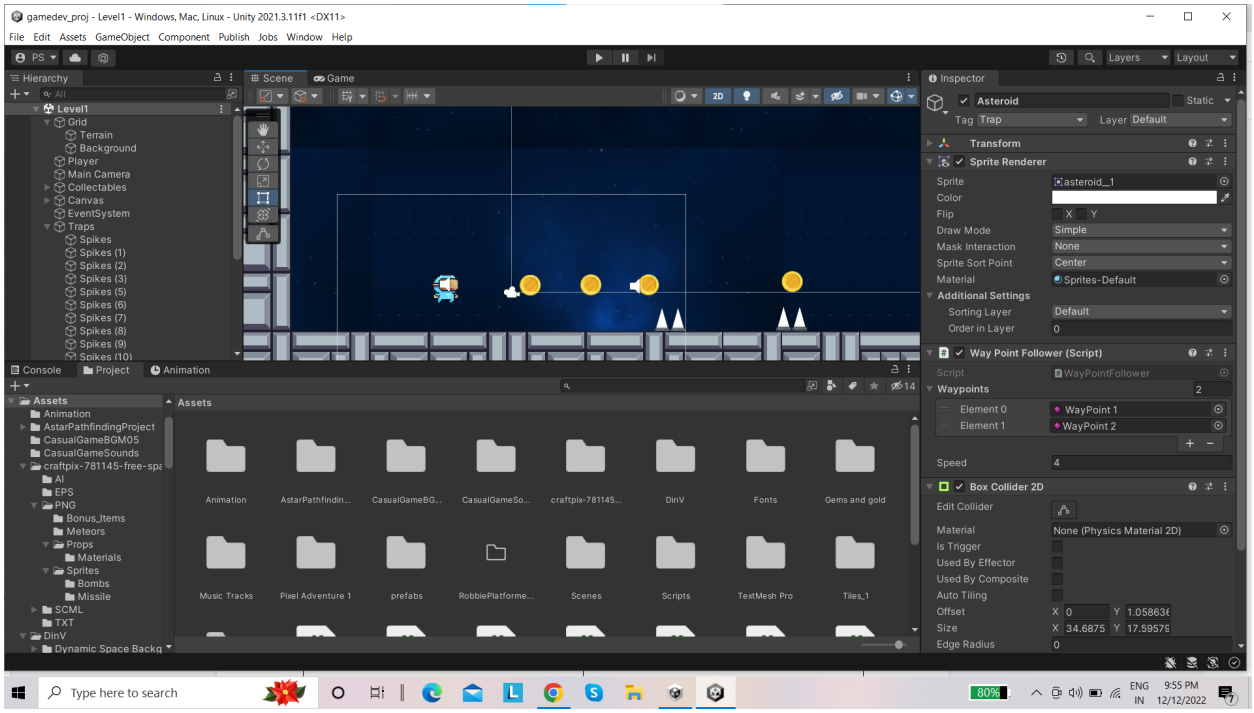


Bird AI

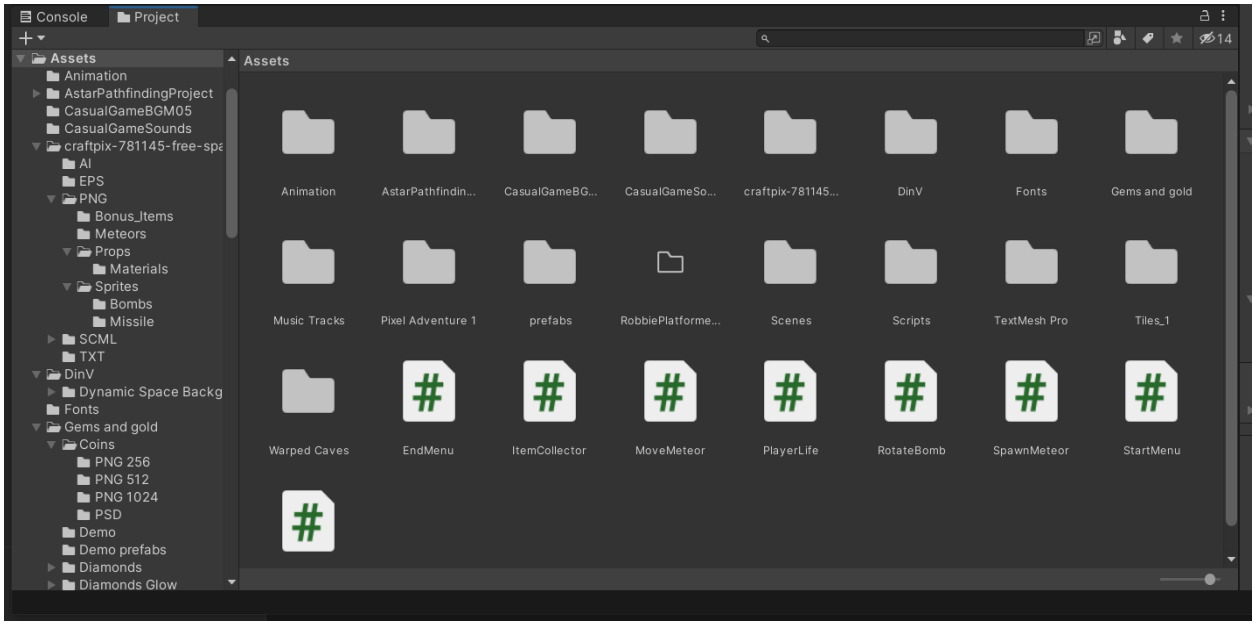
Platform:

Unity - For scripts C# is used

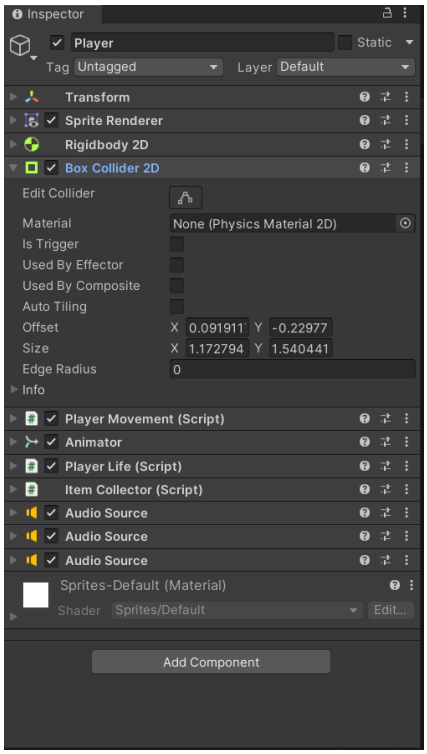
Unity Interface



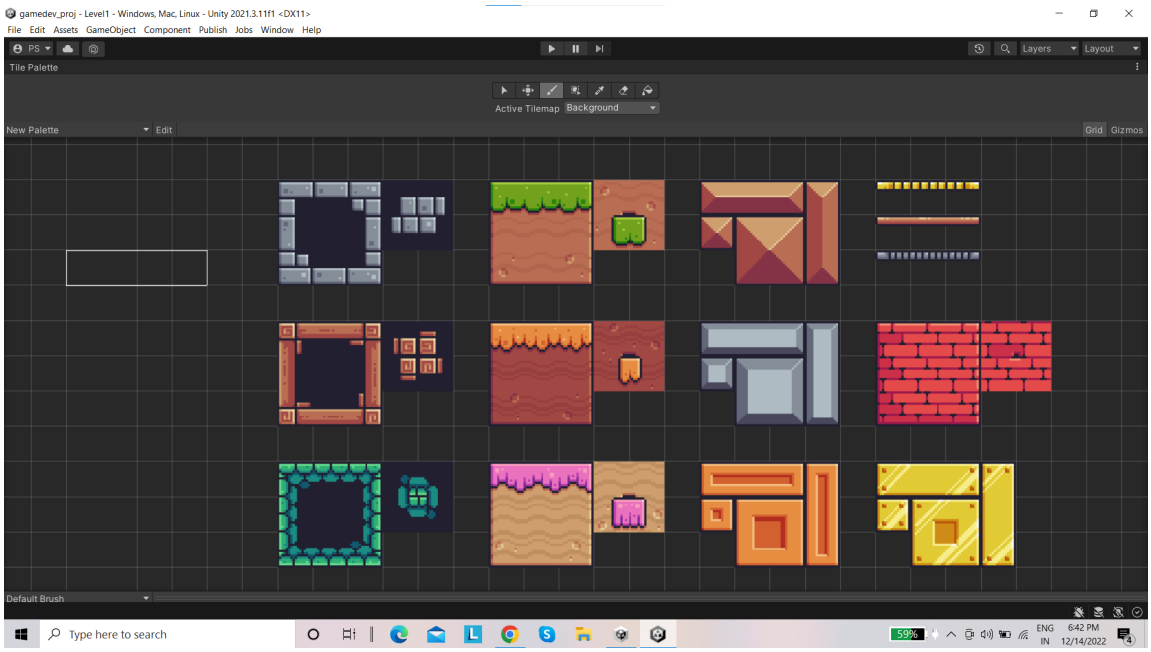
Assets



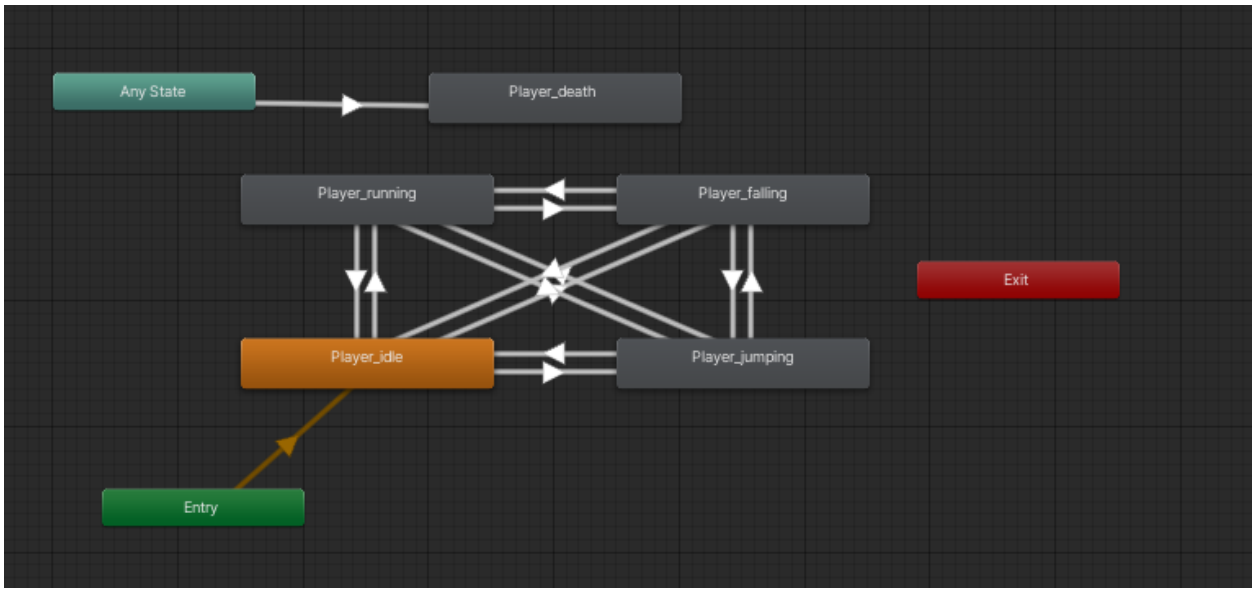
Player Components



Tile Palette



Player Transition Diagram



Graphics

We used sprites to set up the world, character and game objects in our game. We downloaded sprites from the Unity Asset store and used them. For sprite animations, we made use of the sprite sheet provided along with the sprite. We have used keyframe animation to animate the sprites. Sprite Renderer in Unity was used to render the sprites in 2D.

Challenges

Meteors concept -

To implement meteorites hitting the ground and disappearing we used prefabs for the meteors sprites and waypoints concept to make the meteors move from a fixed point above the ground to the terrain. The sprite is destroyed once it reaches the terrain.

Game AI -

A* path finding algorithm is used to make an enemy follow the character. A grid is overlaid on the scene within which the enemy is allowed to follow the character and it recomputes the path each time the target i.e the character moves.

Understanding

1) Game design principles
2) Collision detection and handling
3) Animation
4) Scene management
5) Using sprites

Contributions:

Component	**Worked upon by**
Concept design	Pooja,Fayeka,Hemashirisha,Bharath Kumar
Level design	Pooja,Fayeka,Hemashirisha,Bharath Kumar
Game World creation	Fayeka
Game assets creation	Bharath Kumar
Challenges creation	Pooja
Music	Hemashirisha
Coding in C#	Pooja,Fayeka,Hemashirisha,Bharath Kumar
Design and Narrative	Hemashirisha

References

1. https://www.youtube.com/playlist?list=PLrnPJCHvNZuCVTz6lvhR81nnaf1a-b67U
2. https://www.youtube.com/watch?v=jvtFUfJ6CP8
3. https://arongranberg.com/astar/
4. https://docs.unity3d.com/Manual/Tilemap-Palette.html
5. https://docs.unity3d.com/Manual/AnimationSection.html