
BINARY SHOOTOUT
PLAY
MENU
EXIT

# TRACK: TOOLS OF ENLIGHTENMENT

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# INTRODUCTION

CREATE AN INTERACTIVE 2D SHOOTER GAME WHICH DEMONSTRATES EDUCATIONAL CONCEPTS TO ENCOURAGE STUDENTS INTO LEARNING COURSE MATERIAL.




ARCADE MYSTERY SCIENCE ADVENTURE

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# PROJECT DETAILING

A 2D shooter game created on Unity game engine which demonstrates the concepts of data structures and analysis.
The players are going to be provided with a numerical question based on an educational concept, it would require a numeric solution
In the game, there are going to be unlimited enemies. The player would need to kill as many enemies as was the numeric answer.. In the event that the player kills the required number of enemies, they would have passed the level.

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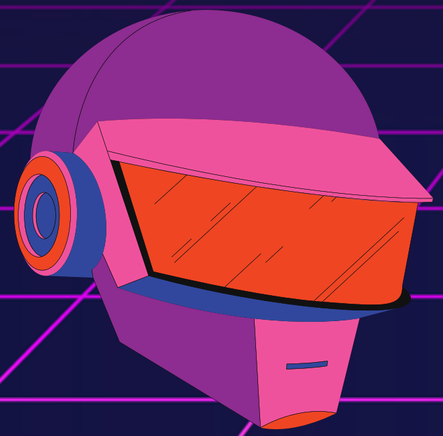
# TECHNICAL CONCEPTS

Multiple assets will be used throughout the project. An asset is representation of any item that can be used in your game or project. An asset may come from a file created outside of Unity, such as a 3D model, an audio file, an image, or any of the other types of file that Unity supports. There are also some asset types that can be created within Unity, such as an Animator Controller, an Audio Mixer or a Render Texture.  Textures will be used for providing brackgrounds and character sprites. C# scripts will be used for providing intructions to the engine like action and movements



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# DEMONSTRATION

The player character and the background have been created by unity assets present in the asset store. Basic movements, animations and other dynamic characteristics of the game have been added by C# scripts.

Various functionalities like rigid body collisions,shooting effects and camera bounds have also been implemented.

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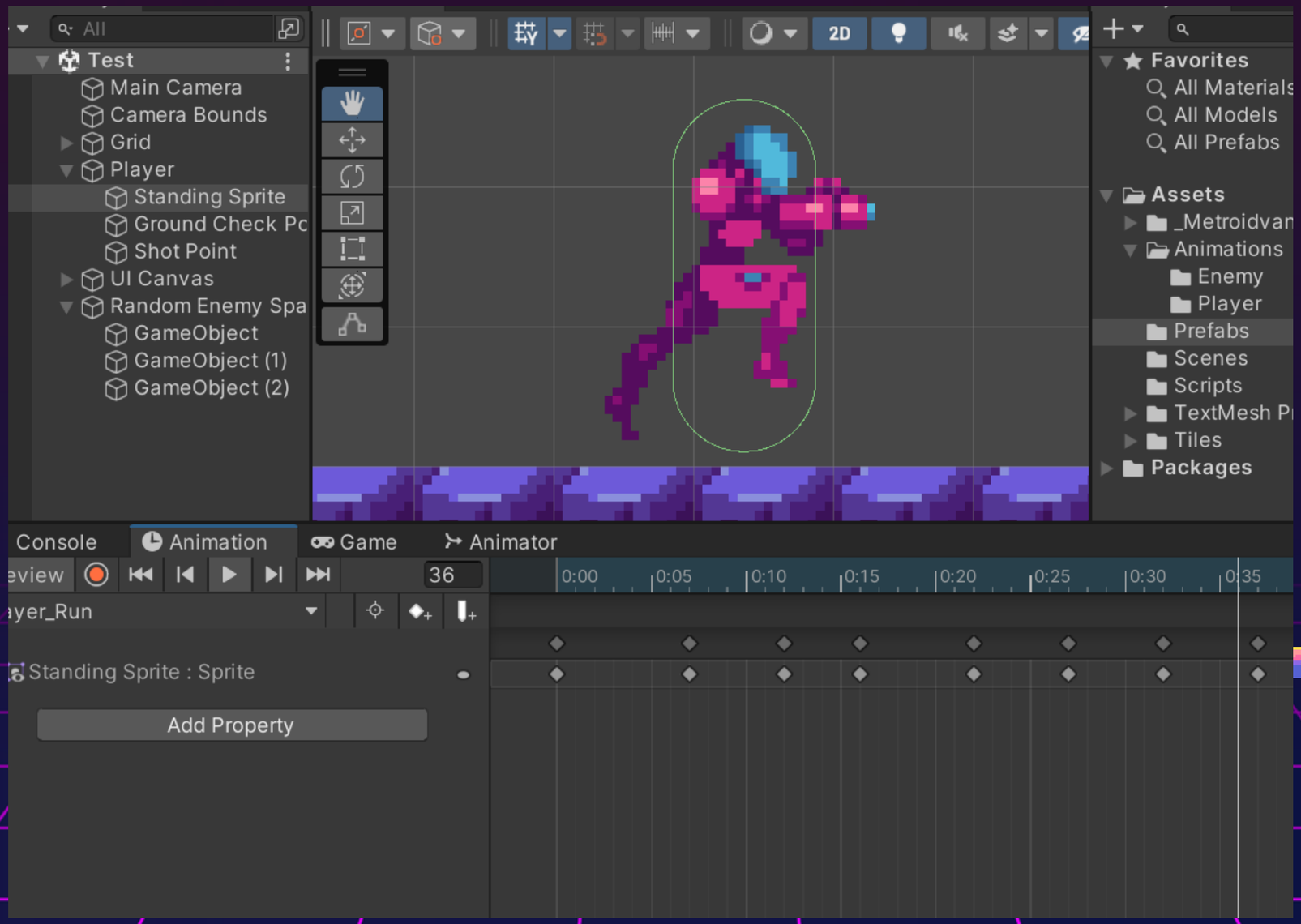
All
Test
Main Camera
Camera Bounds
Grid
Player
Standing Sprite
Ground Check Pc
Shot Point
UI Canvas
Random Enemy Spa
GameObject
GameObject (1)
GameObject (2)
2D
Favorites
All Materials
All Models
All Prefabs
Assets
_Metroidvan
Animations
Enemy
Player
Prefabs
Scenes
Scripts
TextMesh P
Tiles
Packages
Console
Animation
Game
Animator
36
0:00
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yer_Run
Standing Sprite : Sprite
Add Property

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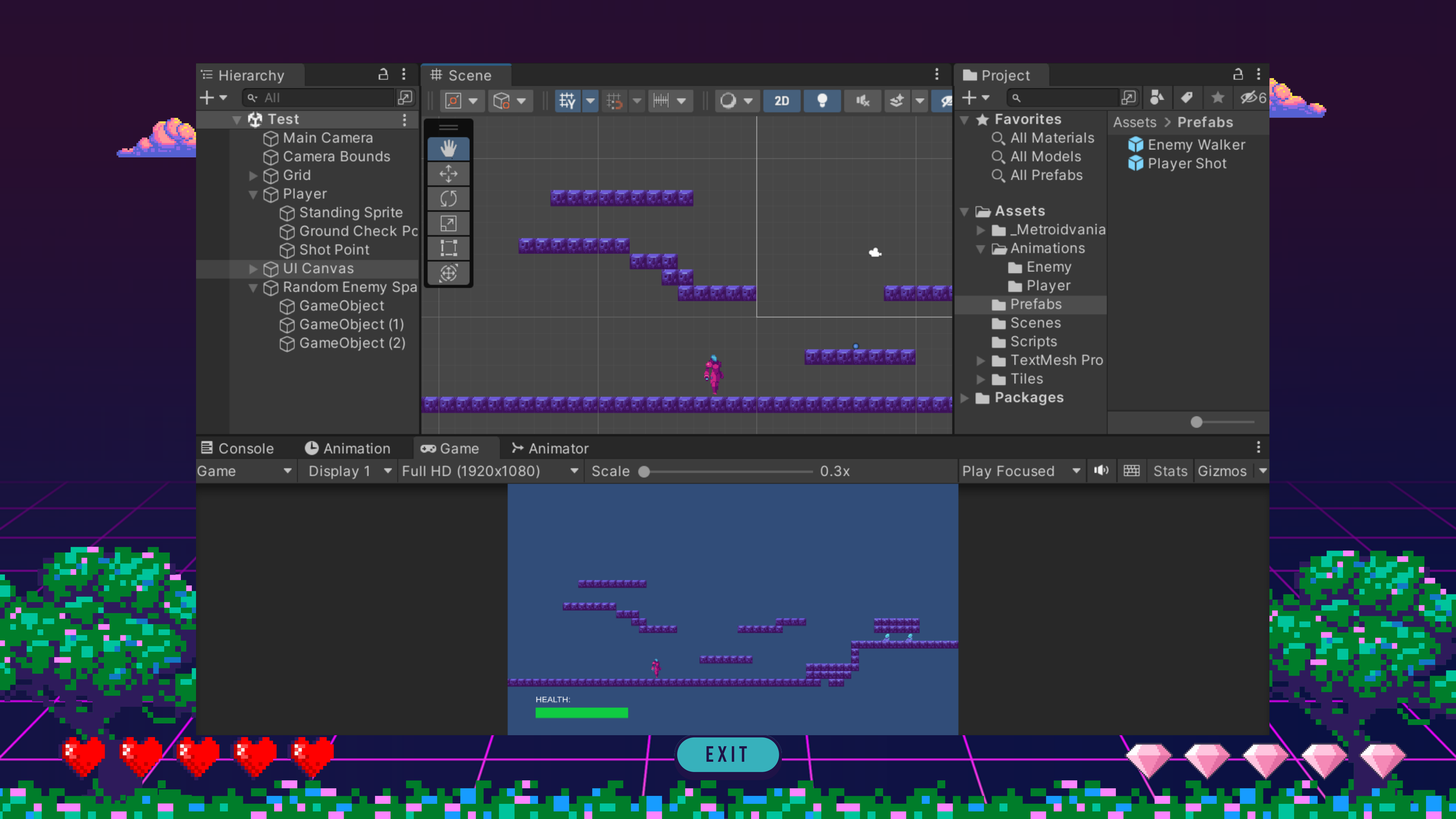
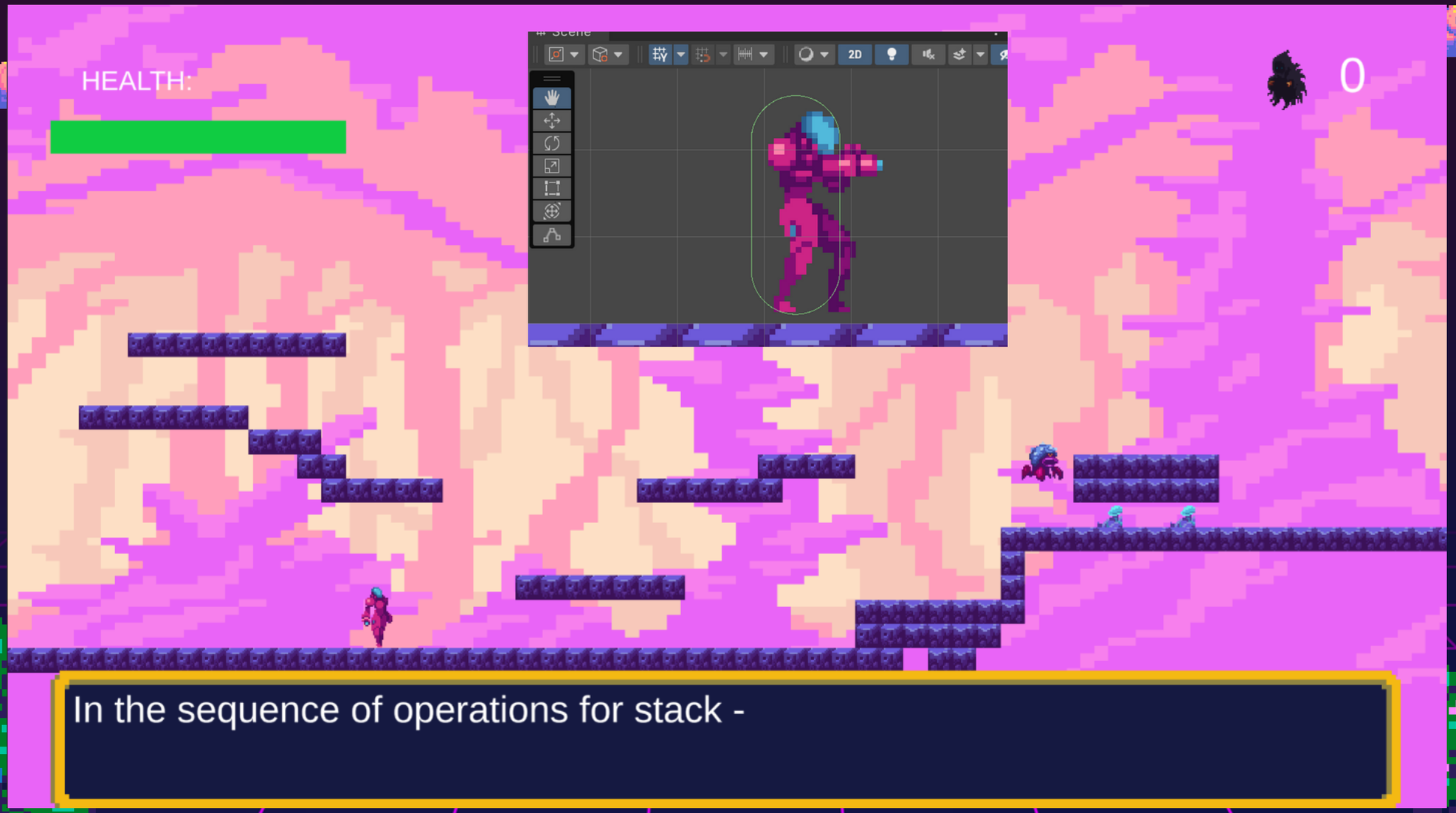

Hierarchy
Test
Main Camera
Camera Bounds
Grid
Player
Standing Sprite
Ground Check Pc
Shot Point
UI Canvas
Random Enemy Spa
GameObject
GameObject (1)
GameObject (2)
Scene
2D
Project
Favorites
All Materials
All Models
All Prefabs
Assets
_Metroidvania
Animations
Enemy
Player
Prefabs
Scenes
Scripts
TextMesh Pro
Tiles
Packages
Assets > Prefabs
Enemy Walker
Player Shot
Console
Animation
Game
Animator
Game
Display 1
Full HD (1920x1080)
Scale
0.3x
Play Focused
Stats
Gizmos
HEALTH:
EXIT

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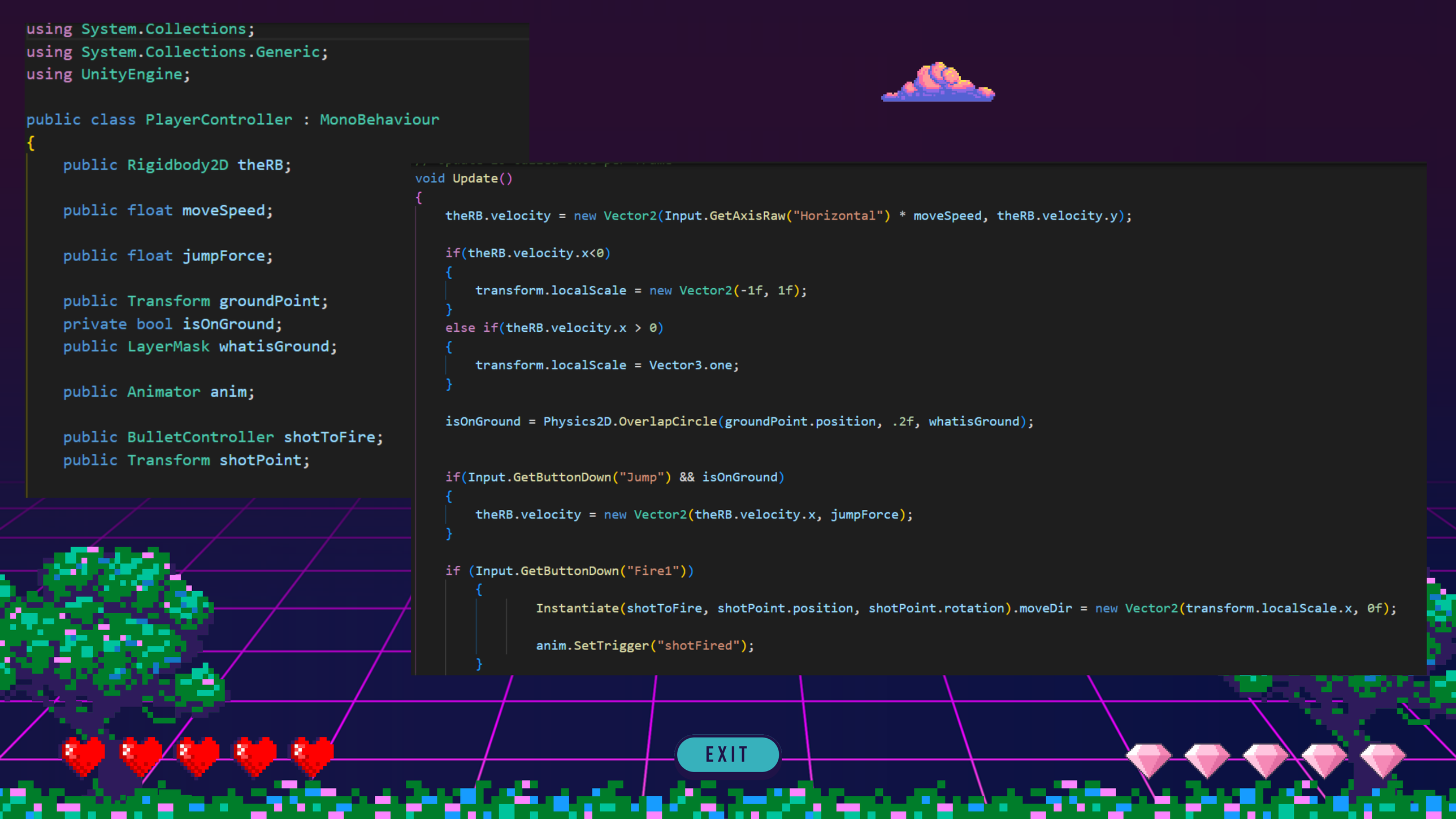
```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;

public class PlayerController : MonoBehaviour
{
    public Rigidbody2D theRB;

    public float moveSpeed;

    public float jumpForce;

    public Transform groundPoint;
    private bool isOnGround;
    public LayerMask whatisGround;

    public Animator anim;

    public BulletController shotToFire;
    public Transform shotPoint;
```

```
void Update()
{
    theRB.velocity = new Vector2(Input.GetAxisRaw("Horizontal") * moveSpeed, theRB.velocity.y);

    if(theRB.velocity.x<0)
    {
        transform.localScale = new Vector2(-1f, 1f);
    }
    else if(theRB.velocity.x > 0)
    {
        transform.localScale = Vector3.one;
    }

    isOnGround = Physics2D.OverlapCircle(groundPoint.position, .2f, whatisGround);


    if(Input.GetButtonDown("Jump") && isOnGround)
    {
        theRB.velocity = new Vector2(theRB.velocity.x, jumpForce);
    }

    if (Input.GetButtonDown("Fire1"))
        {
            Instantiate(shotToFire, shotPoint.position, shotPoint.rotation).moveDir = new Vector2(transform.localScale.x, 0f);

            anim.SetTrigger("shotFired");
        }
```



# GAME FUNCTIONALITIES

The user has been provided with basic controls to move the character left or right, make the character jump and shoot the enemies.

Enemies keep spawning at random points until the user kills the required number of enemies to pass the level.

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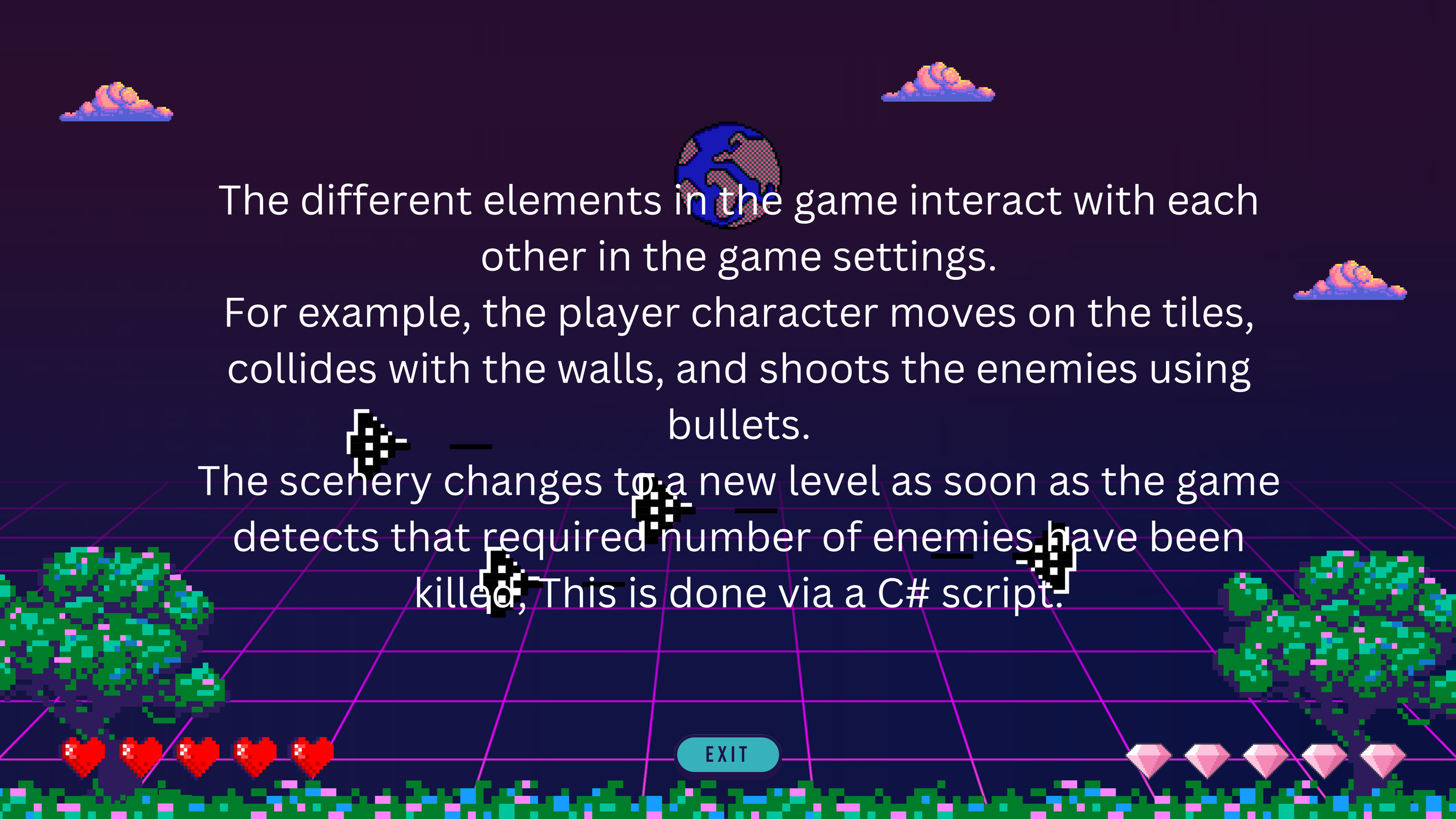
The different elements in the game interact with each other in the game settings.
For example, the player character moves on the tiles, collides with the walls, and shoots the enemies using bullets.
The scenery changes to a new level as soon as the game detects that required number of enemies have been killed, This is done via a C# script.



# ENLIGHTENING MINDS

The questions have been preloaded into the game, alongwith the answers.
This is mainly due to time constraints on our part.

The main motive of the game is to make studies more entartaining, hence this method of implementing answers via a simple shootout game. The user would simultaneously be relaxed while playing the game, hence they would not get as exhausted as compared to the traditional system of education.

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# FUTURE SCOPE

Only a very basic version of the game could be implemented due to time constraints. However, there are numerous ways to increase the functionalities of the game.

Different sections of the game can be designed for different topics to increase the use cases of the game. Questions would get progressively more difficult as the player moves up the levels.

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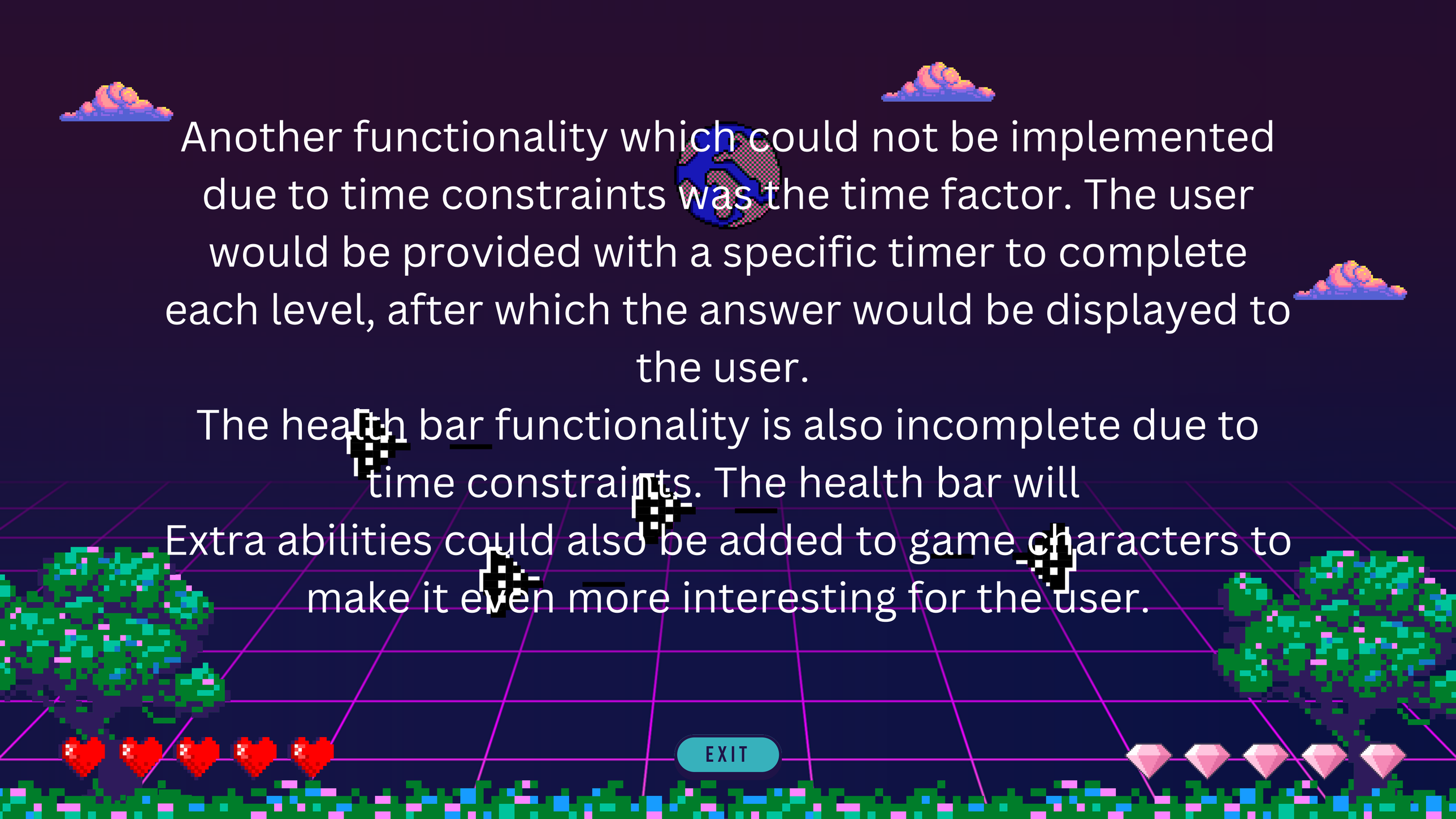
Another functionality which could not be implemented due to time constraints was the time factor. The user would be provided with a specific timer to complete each level, after which the answer would be displayed to the user.

The health bar functionality is also incomplete due to time constraints. The health bar will

Extra abilities could also be added to game characters to make it even more interesting for the user.



Also, before beginning any specific section of the game, the game could provide a synopsis of the topic that the mentioned section would be implementing, so as to provide the user with a basic idea.

In case the user doesn't know the answer to a particular question, they can still complete the level by shooting the enemies. After the level is complete, an explanation button could be provided to the user, through which they could opt for the explanation to that question.

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There is another selling proposition for the game. For example - if the user isn't willing to study by themselves, they can just come forward and play the game, which would enhance their concepts about the respective topic without them spending any extra time or effort in studying. It would also lead them to practice questions related to the topic.

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THANK YOU FOR
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