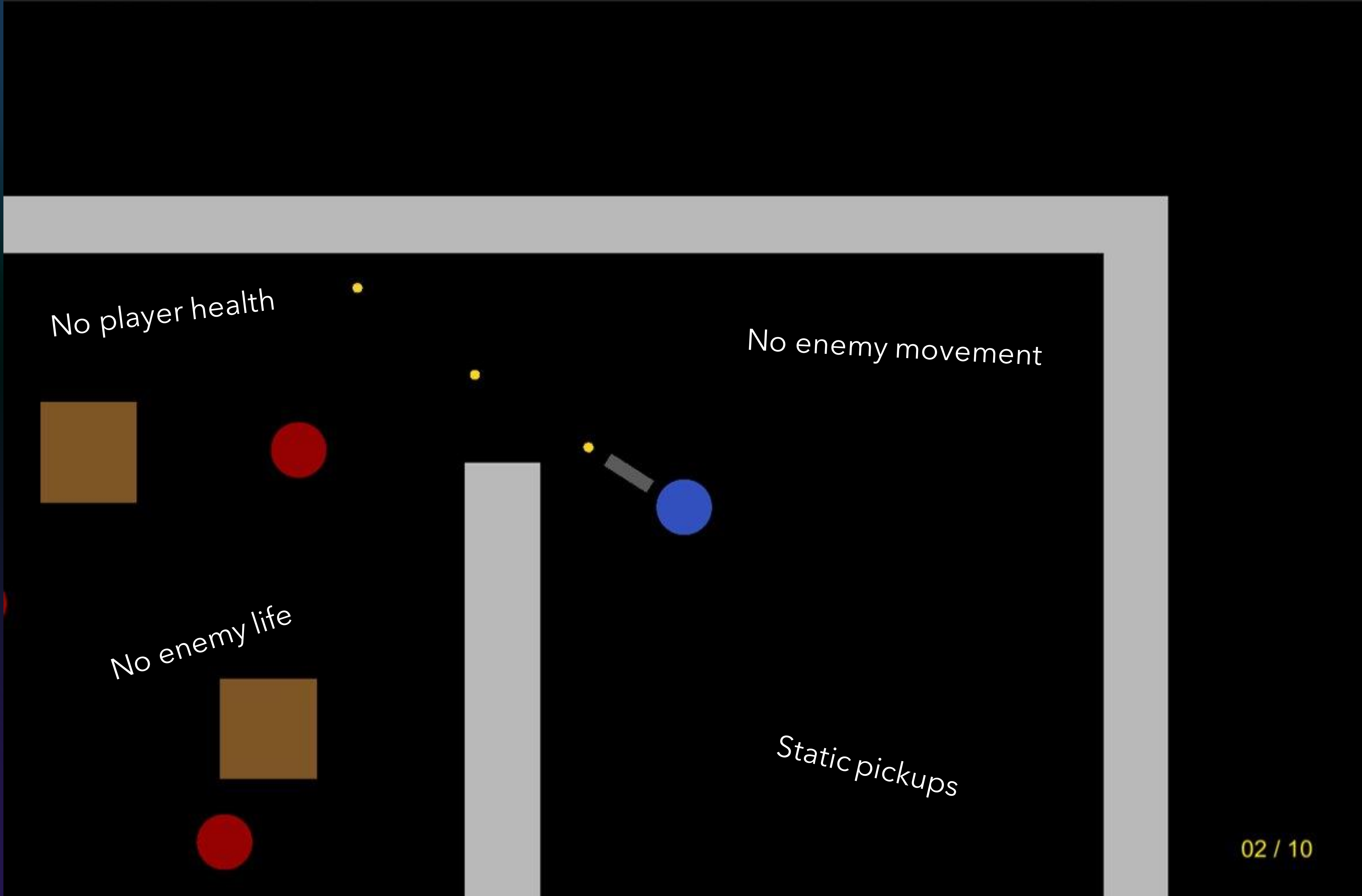
Adding to my TopDown Shooter

TOBIAS STÜBI

31.05.2022

Old



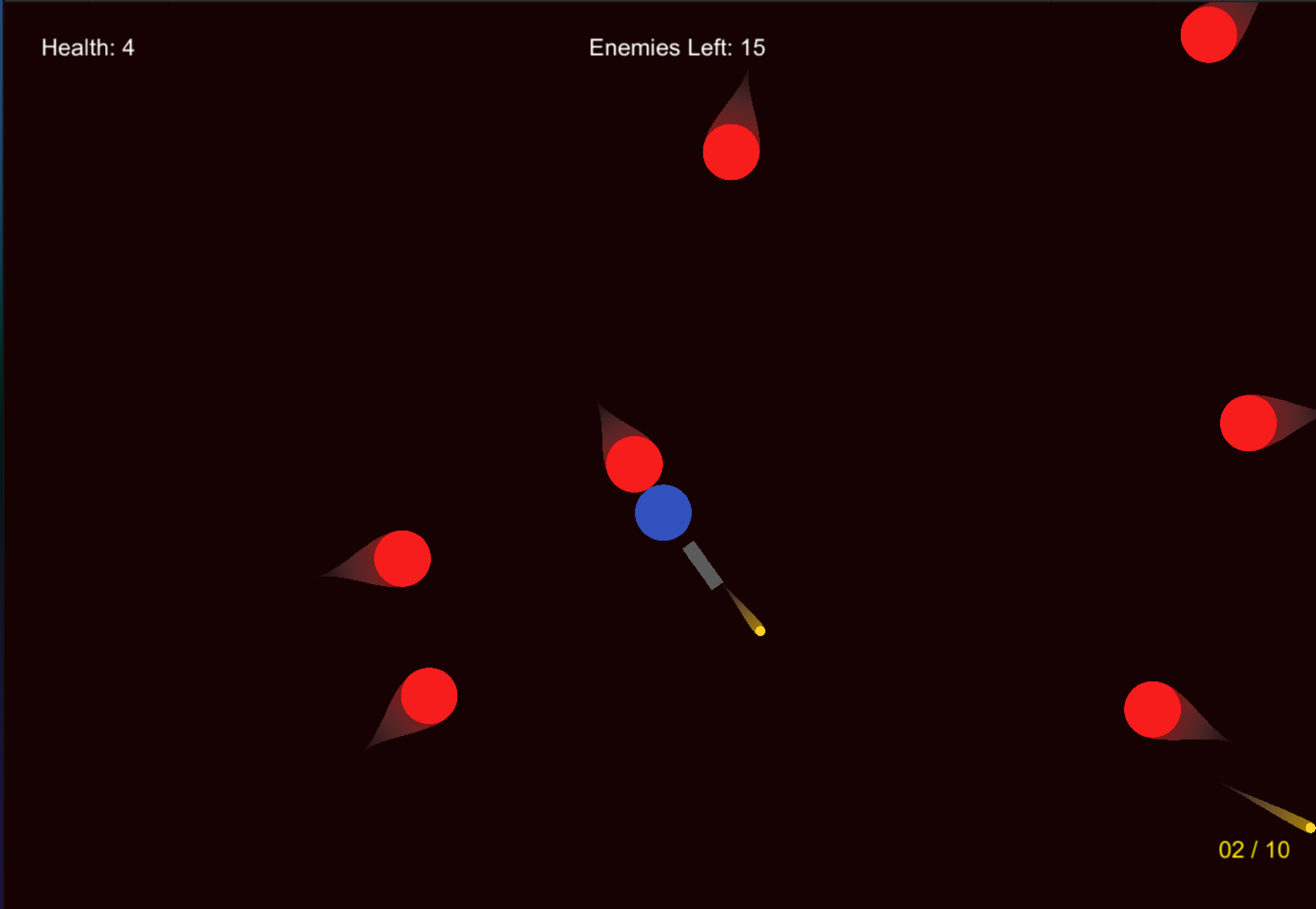
No player health

No enemy movement

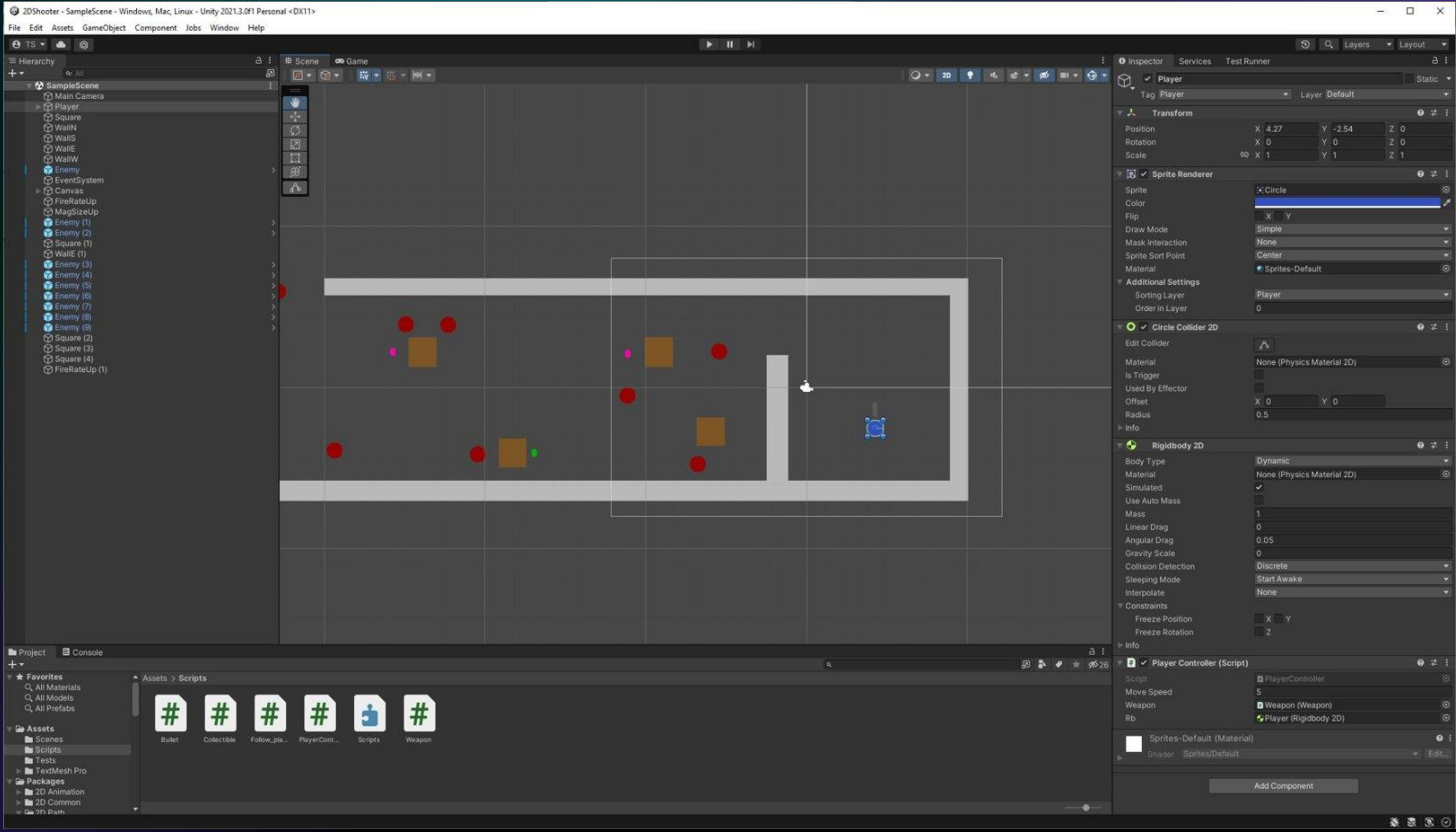
No enemy life

Static pickups

New



Old



2DShooter - SampleScene - Windows, Mac, Linux - Unity 2021.3.0f1 Personal <DX11>

SampleScene
- Main Camera
- Player
- Square
- WallN
- WallS
- WallE
- WallW
- Enemy
- EventSystem
- Canvas
- FireRateUp
- MagSizeUp
- Enemy (1)
- Enemy (2)
- Square (1)
- WallE (1)
- Enemy (3)
- Enemy (4)
- Enemy (5)
- Enemy (6)
- Enemy (7)
- Enemy (8)
- Enemy (9)
- Square (2)
- Square (3)
- Square (4)
- FireRateUp (1)

Player — Static
Tag Player — Layer Default

Transform
Position X 4.27 Y -2.54 Z 0
Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1

Sprite Renderer
Sprite: Circle
Color
Flip: X Y
Draw Mode: Simple
Mask Interaction: None
Sprite Sort Point: Center
Material: Sprites-Default
Additional Settings
Sorting Layer: Player
Order in Layer: 0

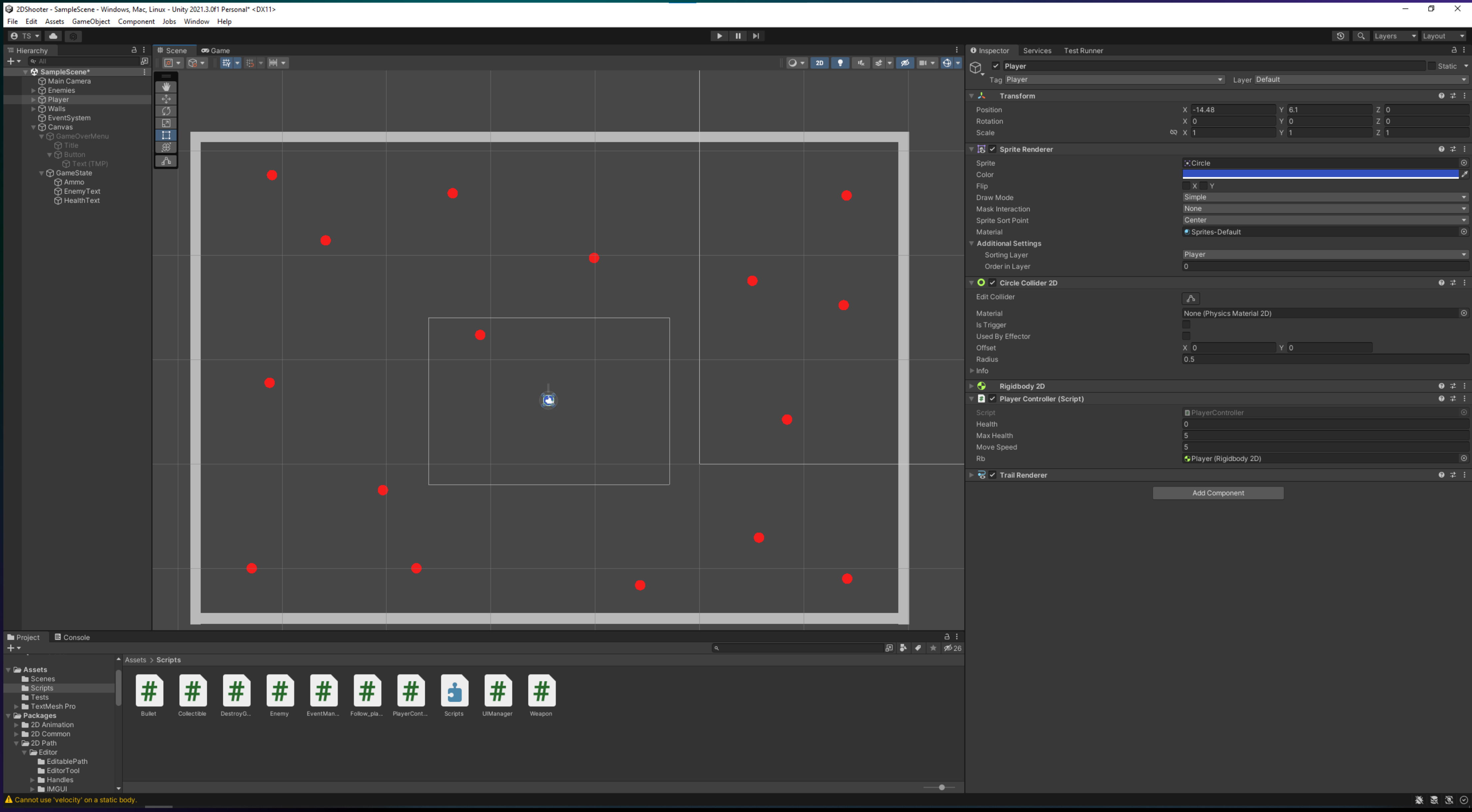
Circle Collider 2D
Edit Collider
Material: None (Physics Material 2D)
Is Trigger
Used By Effector
Offset X 0 Y 0
Radius 0.5
Info

Rigidbody 2D
Body Type: Dynamic
Material: None (Physics Material 2D)
Simulated: ✓
Use Auto Mass
Mass: 1
Linear Drag: 0
Angular Drag: 0.05
Gravity Scale: 0
Collision Detection: Discrete
Sleeping Mode: Start Awake
Interpolate: None
Constraints
Freeze Position: X Y
Freeze Rotation: Z
Info

Player Controller (Script)
Script: PlayerController
Move Speed: 5
Weapon: Weapon (Weapon)
Rb: Player (Rigidbody 2D)

Sprites-Default (Material)
Shader: Sprites/Default

New



2DShooter - SampleScene - Windows, Mac, Linux - Unity 2021.3.0f1 Personal* <DX11>

☑ Player □ Static

Tag Player Layer Default

Transform

Position	X -14.48	Y 6.1	Z 0
Rotation	X 0	Y 0	Z 0
Scale	X 1	Y 1	Z 1

☑ Sprite Renderer

Sprite	Circle
Color	🟦
Flip	□ X □ Y
Draw Mode	Simple
Mask Interaction	None
Sprite Sort Point	Center
Material	Sprites-Default
Additional Settings	
Sorting Layer	Player
Order in Layer	0

☑ Circle Collider 2D

Edit Collider	
Material	None (Physics Material 2D)
Is Trigger	□
Used By Effector	□
Offset	X 0 Y 0
Radius	0.5
Info	

Rigidbody 2D

☑ Player Controller (Script)

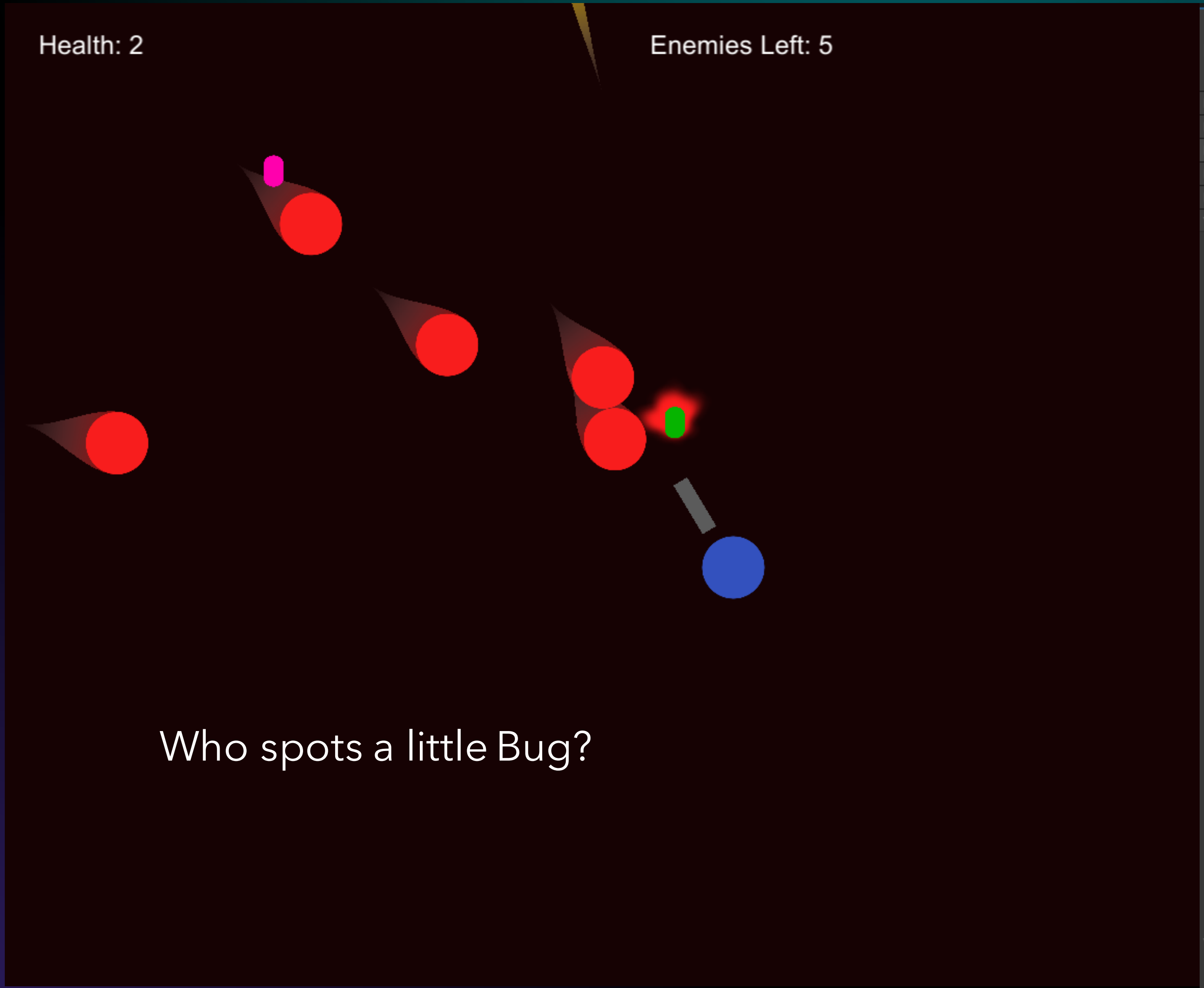
Script	PlayerController
Health	0
Max Health	5
Move Speed	5
Rb	Player (Rigidbody 2D)

☑ Trail Renderer

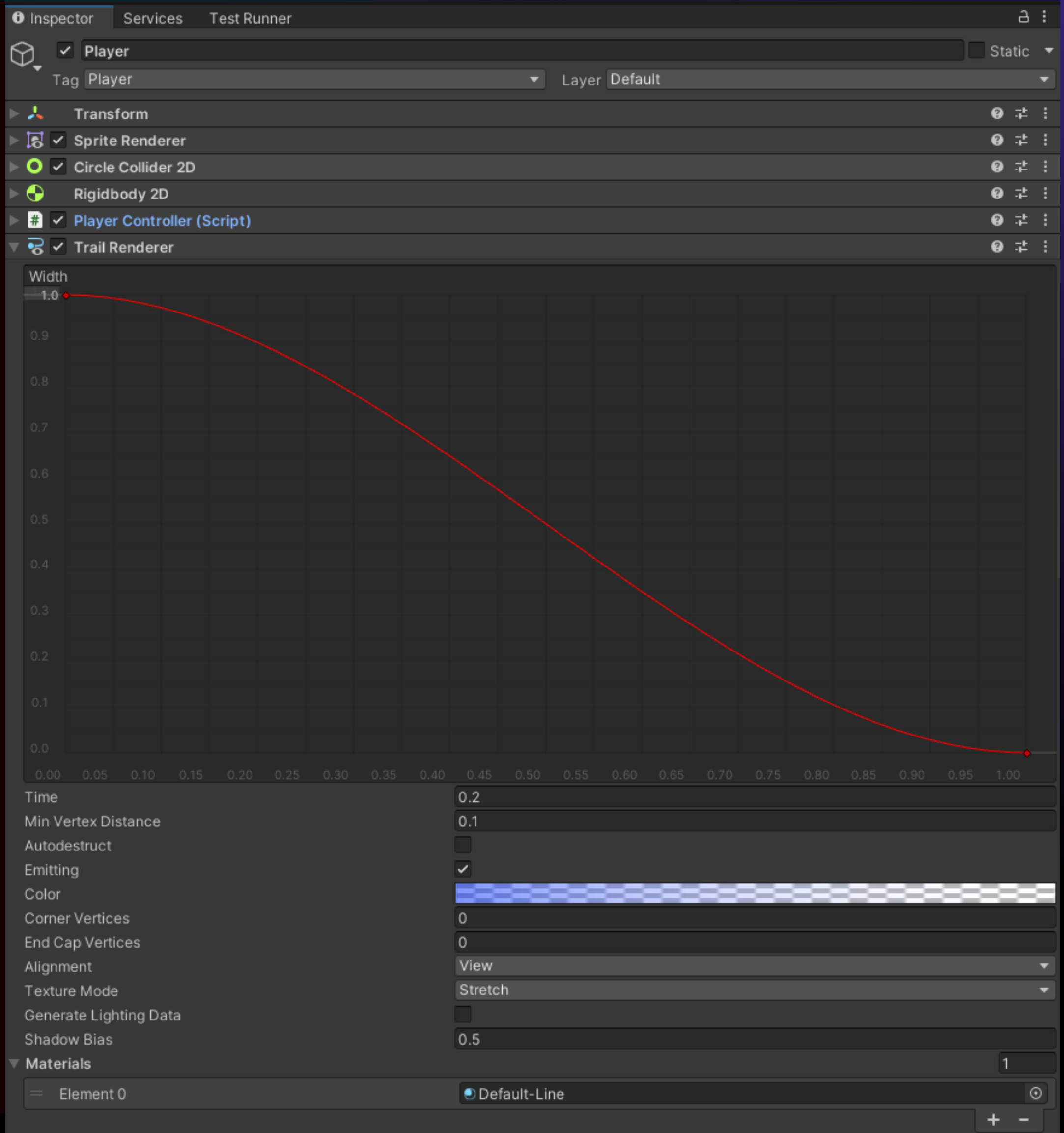
Add Component

⚠ Cannot use 'velocity' on a static body.

Trails and Particle System



Who spots a little Bug?



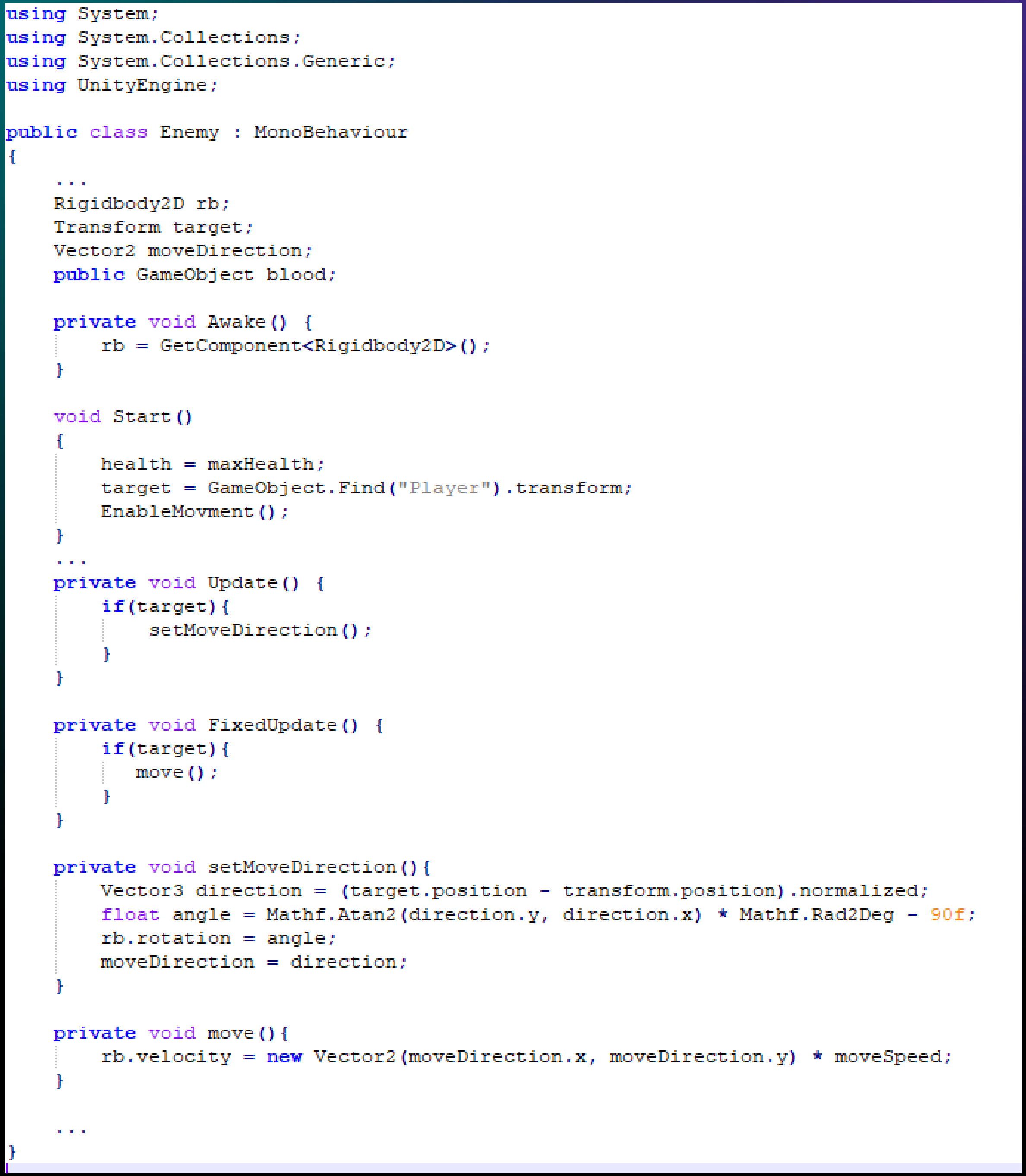
☑ Player

Tag Player

Layer Default

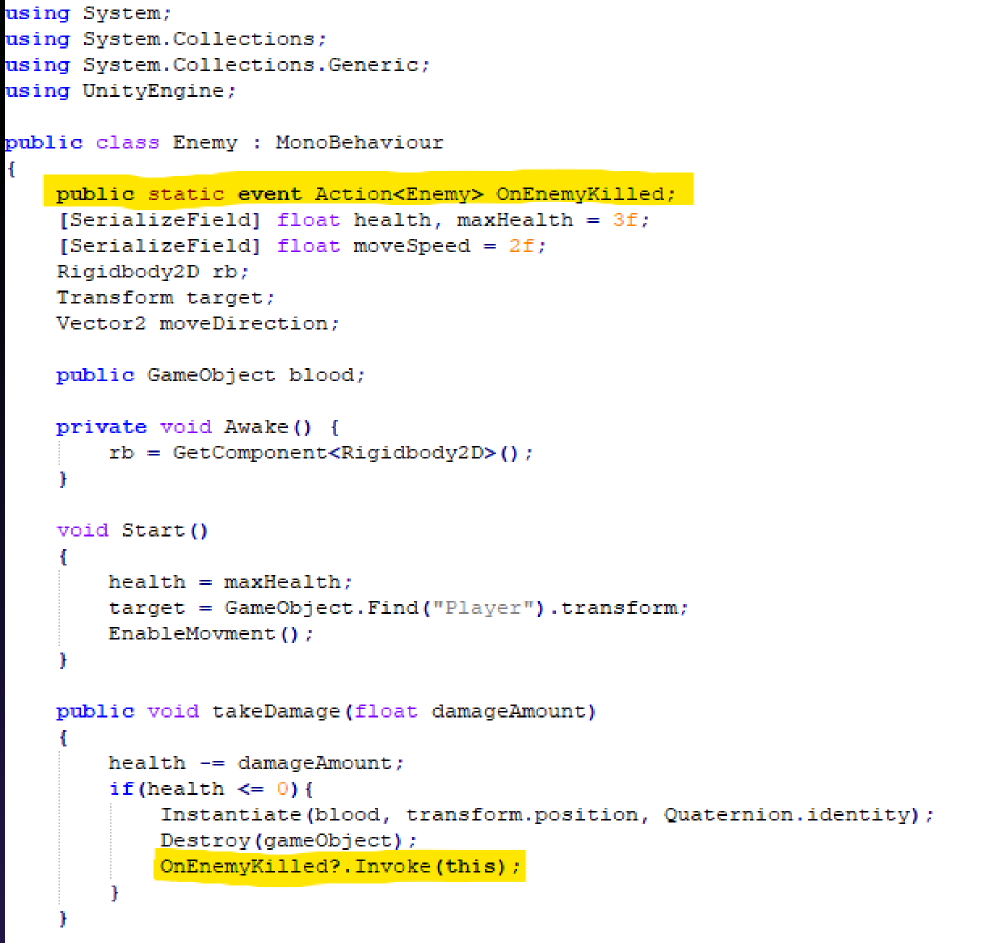
Time	0.2
Min Vertex Distance	0.1
Autodestruct	□
Emitting	☑
Color	
Corner Vertices	0
End Cap Vertices	0
Alignment	View
Texture Mode	Stretch
Generate Lighting Data	□
Shadow Bias	0.5
Materials	1
Element 0	Default-Line

Enemies follow the player

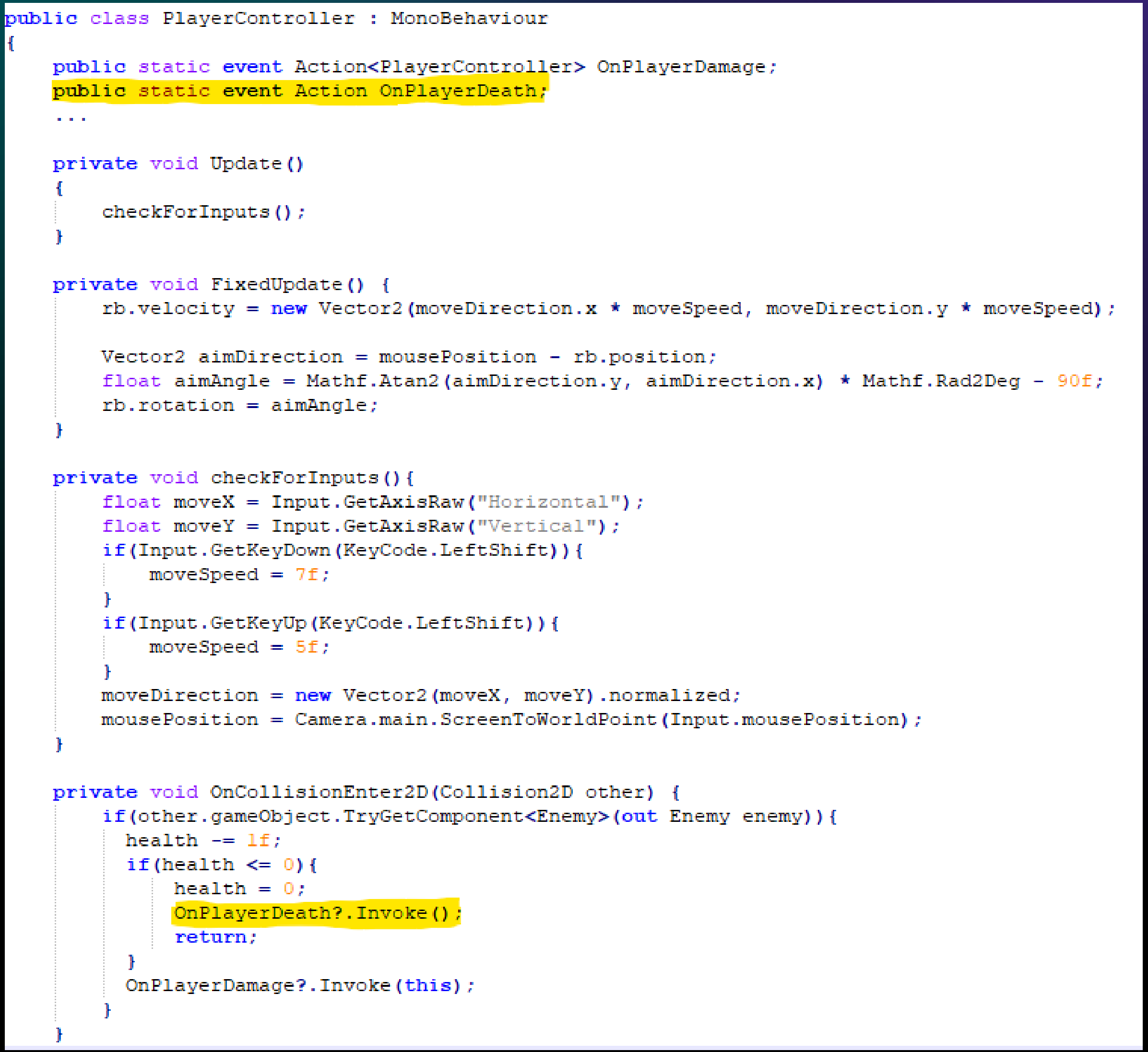


```
using System;
using System.Collections;
using System.Collections.Generic;
using UnityEngine;

public class Enemy : MonoBehaviour
{
    ...
    Rigidbody2D rb;
    Transform target;
    Vector2 moveDirection;
    public GameObject blood;

    private void Awake() {
        rb = GetComponent<Rigidbody2D>();
    }

    void Start()
    {
        health = maxHealth;
        target = GameObject.Find("Player").transform;
        EnableMovment();
    }
    ...
    private void Update() {
        if(target){
            setMoveDirection();
        }
    }

    private void FixedUpdate() {
        if(target){
           move();
        }
    }

    private void setMoveDirection(){
        Vector3 direction = (target.position - transform.position).normalized;
        float angle = Mathf.Atan2(direction.y, direction.x) * Mathf.Rad2Deg - 90f;
        rb.rotation = angle;
        moveDirection = direction;
    }

    private void move(){
        rb.velocity = new Vector2(moveDirection.x, moveDirection.y) * moveSpeed;
    }

    ...
}
```

Event Based Approach

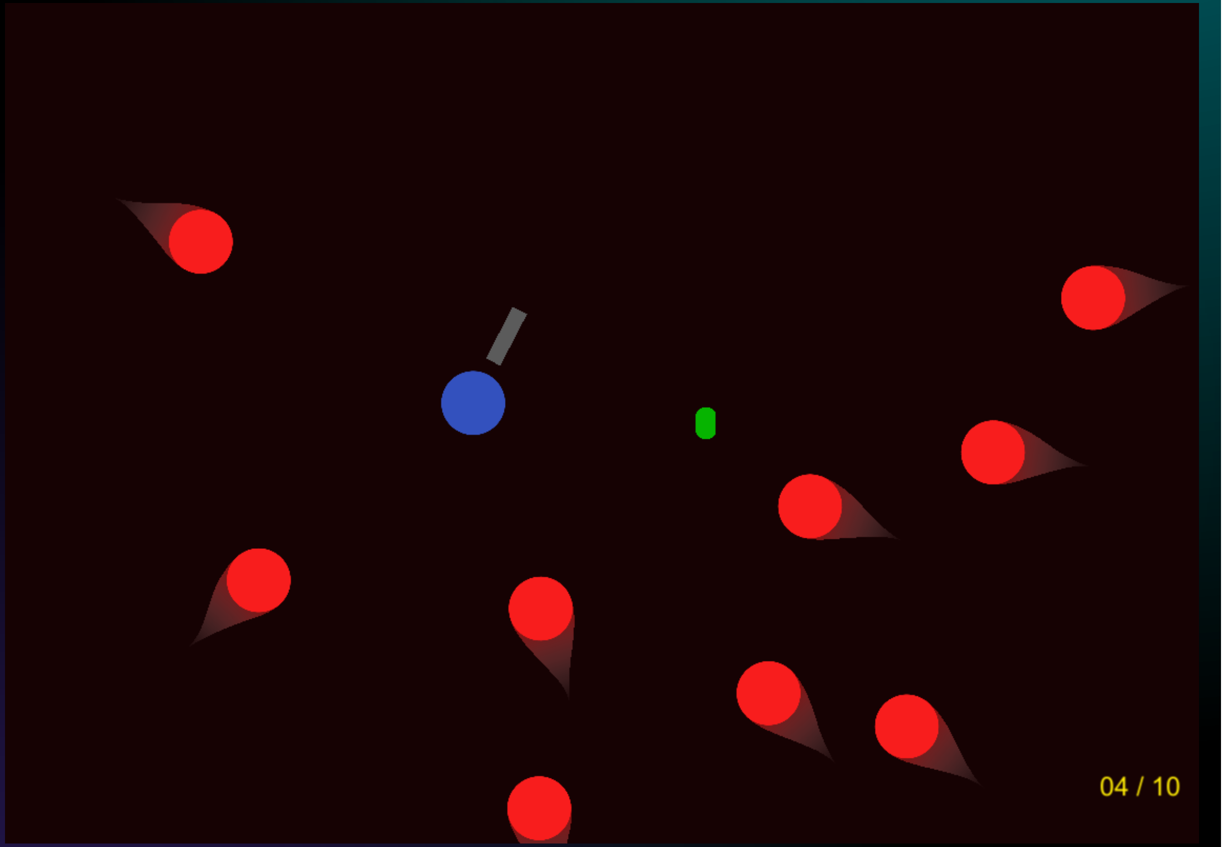


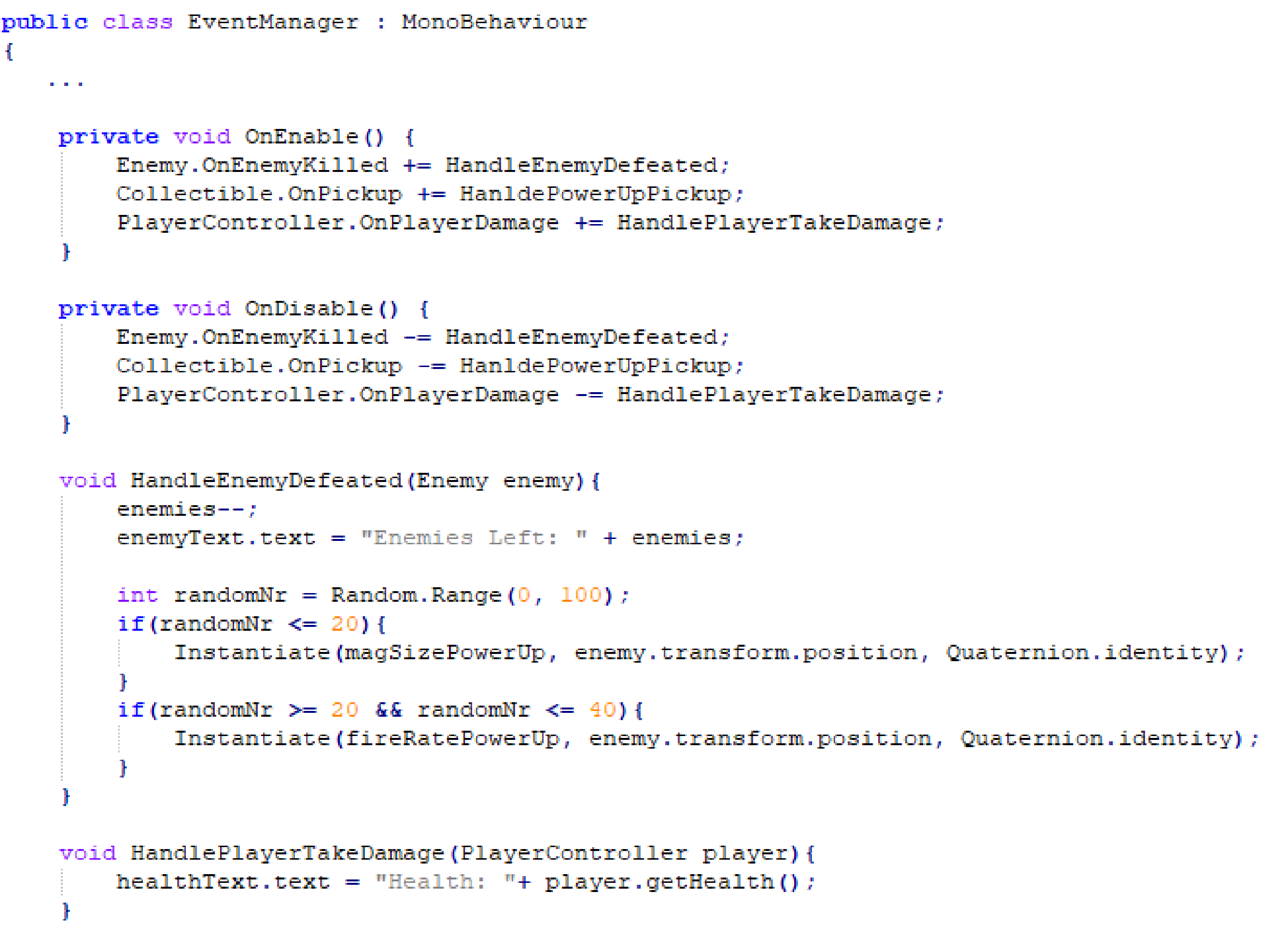
```
using System;
using System.Collections;
using System.Collections.Generic;
using UnityEngine;

public class Enemy : MonoBehaviour
{
    public static event Action<Enemy> OnEnemyKilled;
    [SerializeField] float health, maxHealth = 3f;
    [SerializeField] float moveSpeed = 2f;
    Rigidbody2D rb;
    Transform target;
    Vector2 moveDirection;

    public GameObject blood;

    private void Awake() {
        rb = GetComponent<Rigidbody2D>();
    }

    void Start()
    {
        health = maxHealth;
        target = GameObject.Find("Player").transform;
        EnableMovment();
    }

    public void takeDamage(float damageAmount)
    {
        health -= damageAmount;
        if(health <= 0){
            Instantiate(blood, transform.position, Quaternion.identity);
            Destroy(gameObject);
            OnEnemyKilled?.Invoke(this);
        }
    }
```



```
public class PlayerController : MonoBehaviour
{
    public static event Action<PlayerController> OnPlayerDamage;
    public static event Action OnPlayerDeath;
    ...

    private void Update()
    {
        checkForInputs();
    }

    private void FixedUpdate() {
        rb.velocity = new Vector2(moveDirection.x * moveSpeed, moveDirection.y * moveSpeed);

        Vector2 aimDirection = mousePosition - rb.position;
        float aimAngle = Mathf.Atan2(aimDirection.y, aimDirection.x) * Mathf.Rad2Deg - 90f;
        rb.rotation = aimAngle;
    }

    private void checkForInputs(){
        float moveX = Input.GetAxisRaw("Horizontal");
        float moveY = Input.GetAxisRaw("Vertical");
        if(Input.GetKeyDown(KeyCode.LeftShift)){
            moveSpeed = 7f;
        }
        if(Input.GetKeyUp(KeyCode.LeftShift)){
            moveSpeed = 5f;
        }
        moveDirection = new Vector2(moveX, moveY).normalized;
        mousePosition = Camera.main.ScreenToWorldPoint(Input.mousePosition);
    }

    private void OnCollisionEnter2D(Collision2D other) {
        if(other.gameObject.TryGetComponent<Enemy>(out Enemy enemy)){
          health -= 1f;
          if(health <= 0){
              health = 0;
              OnPlayerDeath?.Invoke();
              return;
          }
          OnPlayerDamage?.Invoke(this);
        }
    }
```

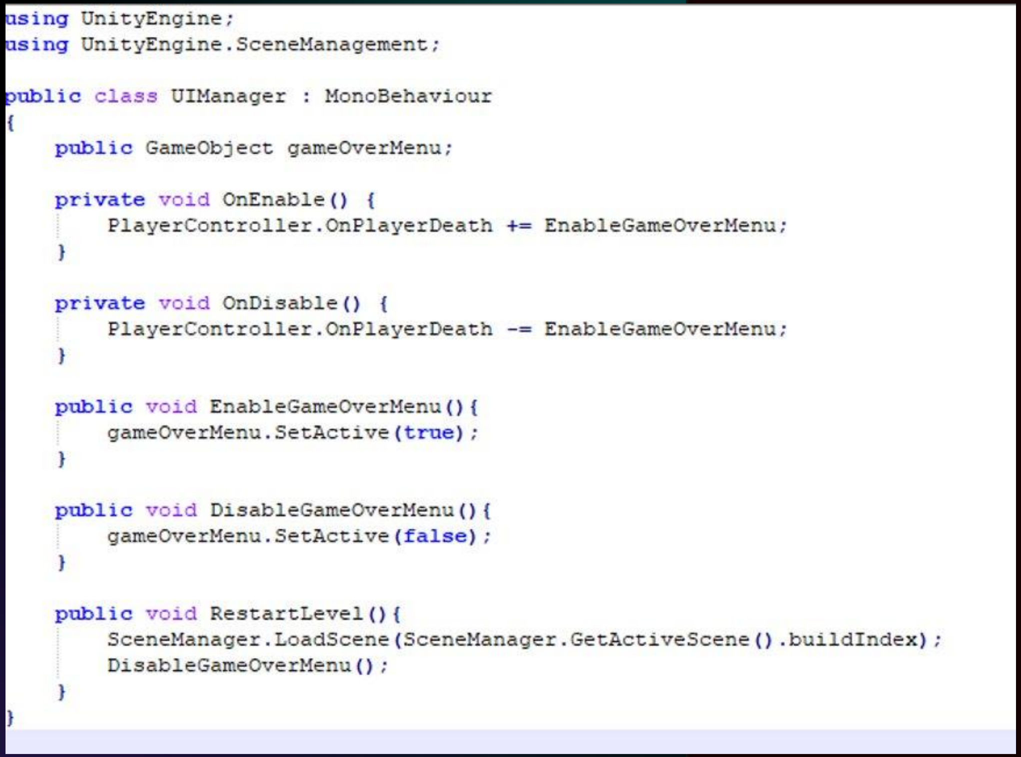
Enemies drop PowerUps



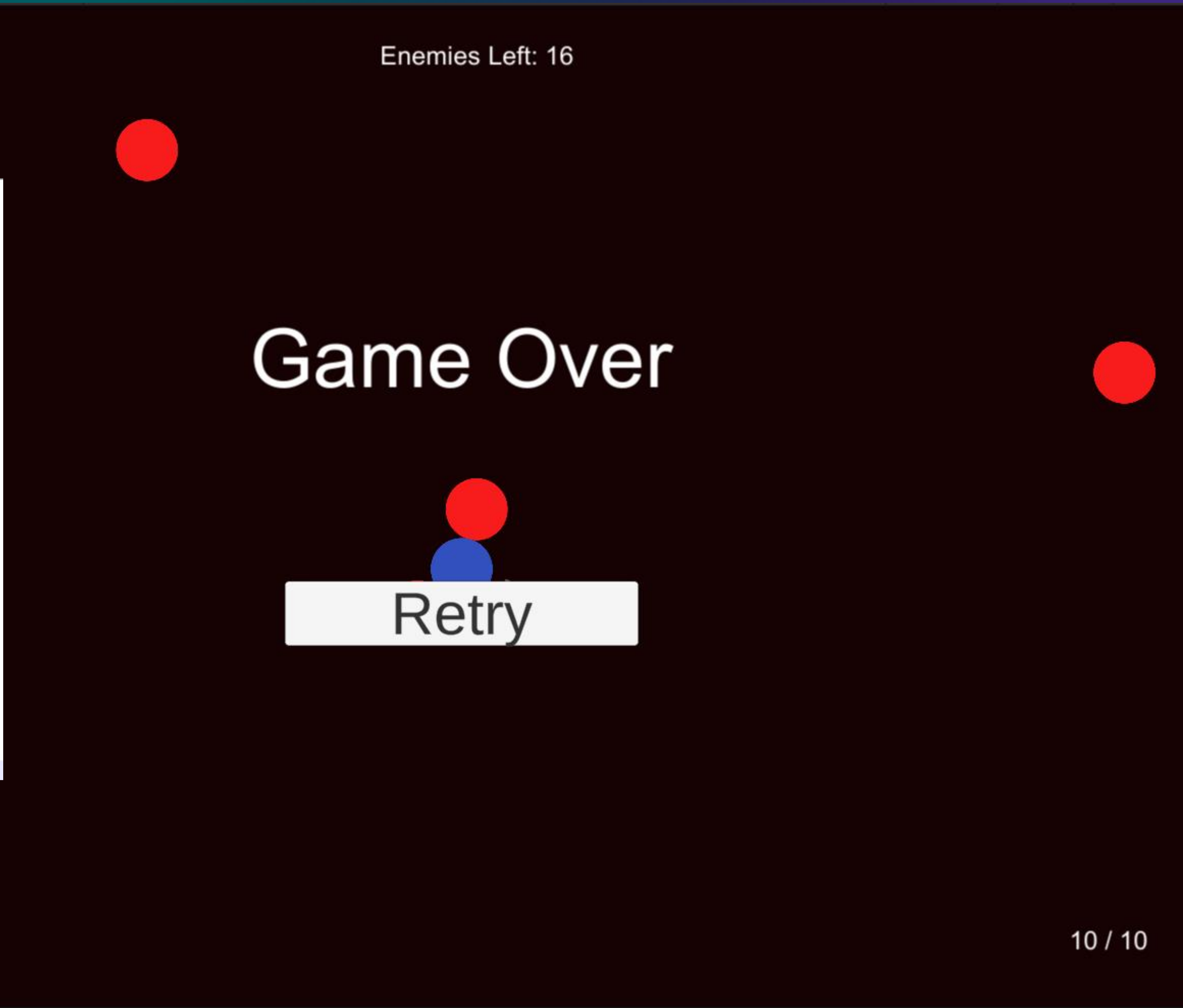


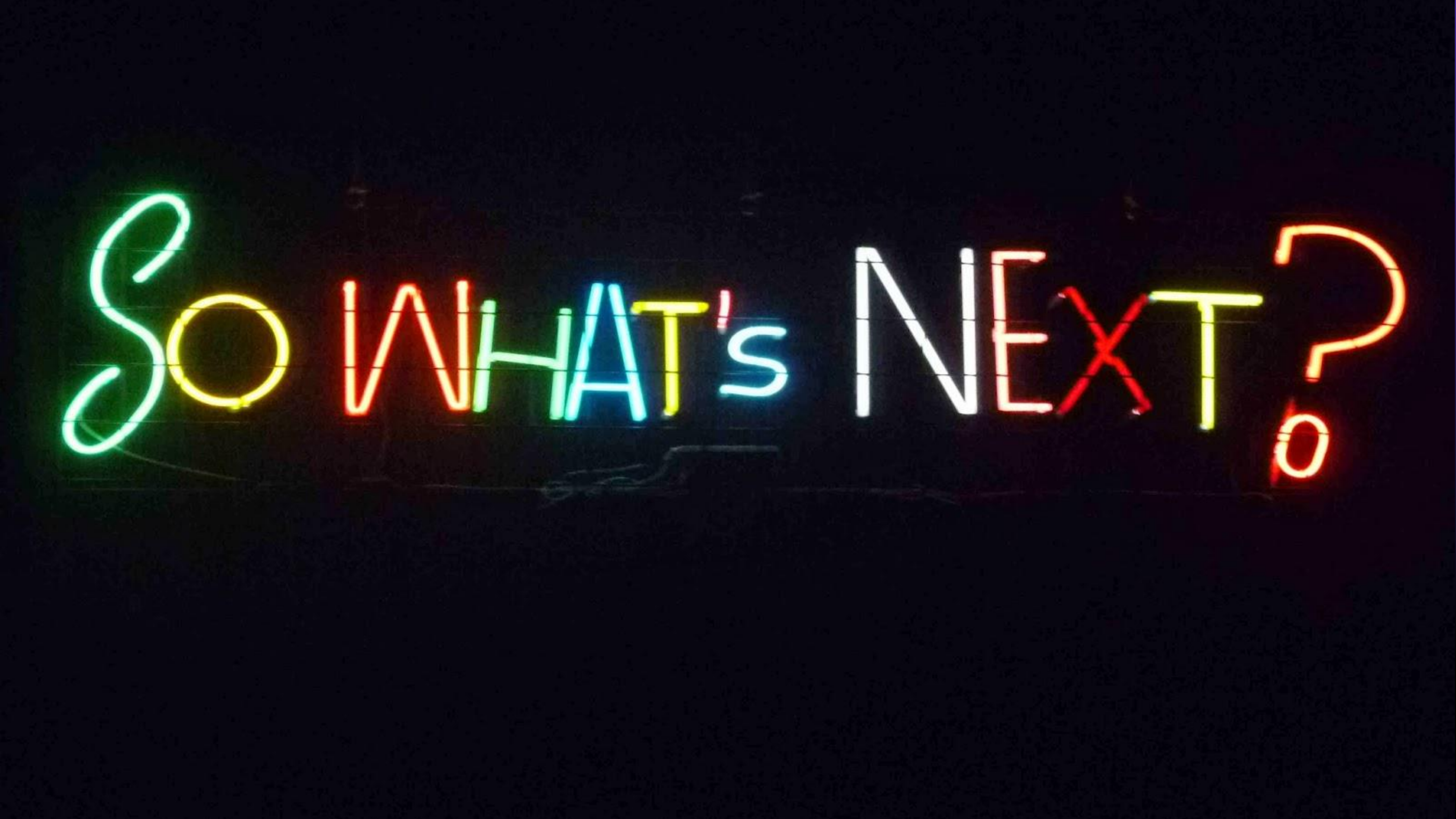
```
public class EventManager : MonoBehaviour
{
   ...

    private void OnEnable() {
        Enemy.OnEnemyKilled += HandleEnemyDefeated;
        Collectible.OnPickup += HanldePowerUpPickup;
        PlayerController.OnPlayerDamage += HandlePlayerTakeDamage;
    }

    private void OnDisable() {
        Enemy.OnEnemyKilled -= HandleEnemyDefeated;
        Collectible.OnPickup -= HanldePowerUpPickup;
        PlayerController.OnPlayerDamage -= HandlePlayerTakeDamage;
    }

    void HandleEnemyDefeated(Enemy enemy){
        enemies--;
        enemyText.text = "Enemies Left: " + enemies;

        int randomNr = Random.Range(0, 100);
        if(randomNr <= 20){
            Instantiate(magSizePowerUp, enemy.transform.position, Quaternion.identity);
        }
        if(randomNr >= 20 && randomNr <= 40){
            Instantiate(fireRatePowerUp, enemy.transform.position, Quaternion.identity);
        }
    }

    void HandlePlayerTakeDamage(PlayerController player){
        healthText.text = "Health: "+ player.getHealth();
    }
```

Game Over Screen



```
using UnityEngine;
using UnityEngine.SceneManagement;

public class UIManager : MonoBehaviour
{
    public GameObject gameOverMenu;

    private void OnEnable() {
        PlayerController.OnPlayerDeath += EnableGameOverMenu;
    }

    private void OnDisable() {
        PlayerController.OnPlayerDeath -= EnableGameOverMenu;
    }

    public void EnableGameOverMenu(){
        gameOverMenu.SetActive(true);
    }

    public void DisableGameOverMenu(){
        gameOverMenu.SetActive(false);
    }

    public void RestartLevel(){
        SceneManager.LoadScene(SceneManager.GetActiveScene().buildIndex);
        DisableGameOverMenu();
    }
}
```




So WHAT's NEXT?

Any Questions?

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