게임프로그래밍

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날짜 : **2023-12-13**

목차

원본 코드

```
public class BallController : MonoBehaviour
{
    private Rigidbody rigidBody;

    void Start()
    {
        rigidBody = GetComponent<Rigidbody>();
    }

    void FixedUpdate()
    {
        //물리 적용 전 호출
        Vector3 speed = new Vector3();

        if (Input.GetKey(KeyCode.LeftArrow))
            speed.x -= 6f;
        if (Input.GetKey(KeyCode.RightArrow))
            speed.x += 6f;
        if (Input.GetKey(KeyCode.UpArrow))
            speed.z += 6f;
        if (Input.GetKey(KeyCode.DownArrow))
            speed.z -= 6f;

        //rigidBody.velocity = speed;
        rigidBody.velocity = Vector3.Lerp(rigidBody.velocity, speed, 2f * Time.deltaTime);
    }
}
```
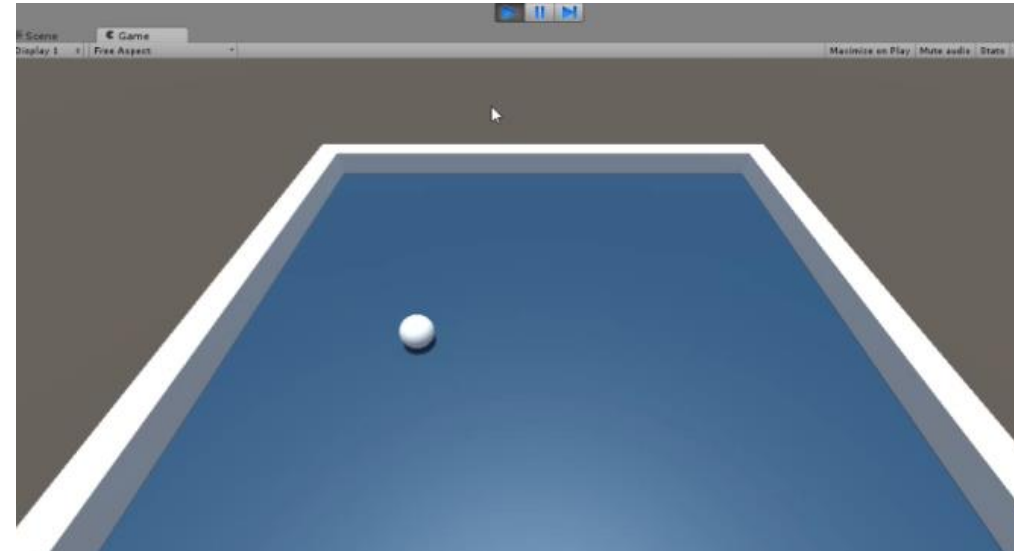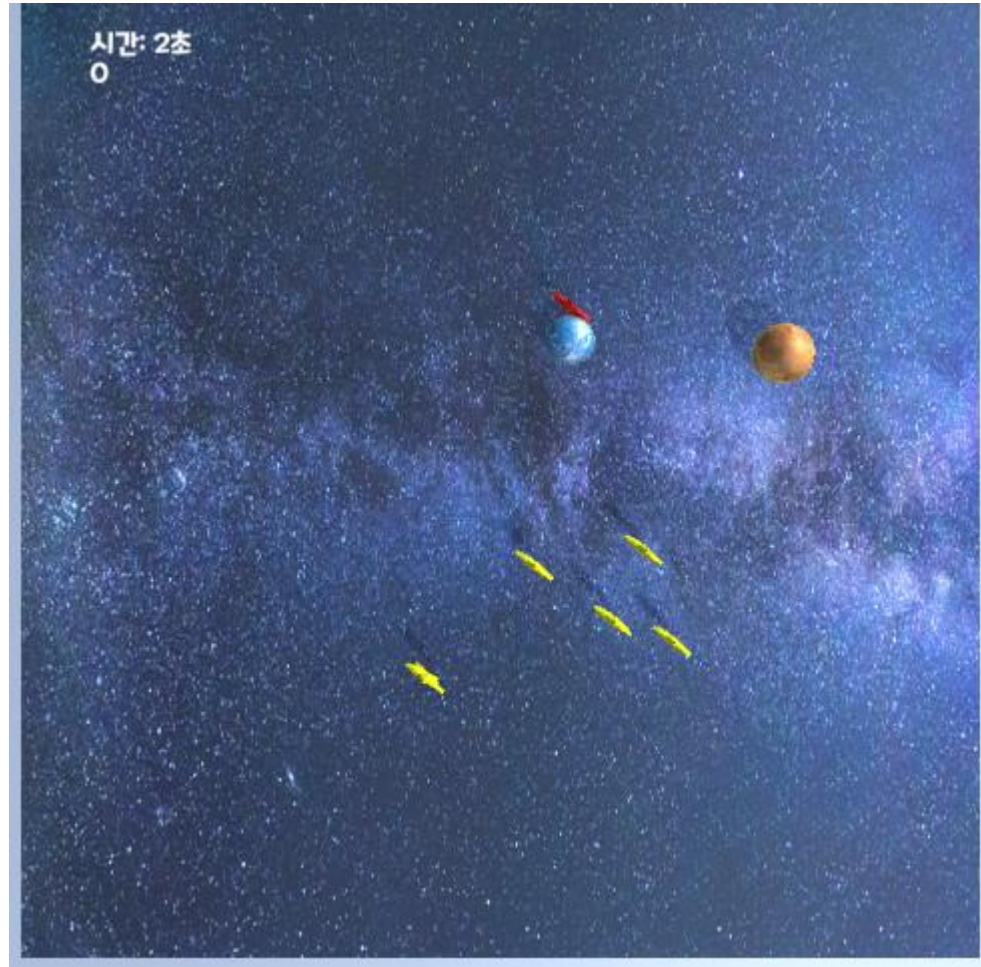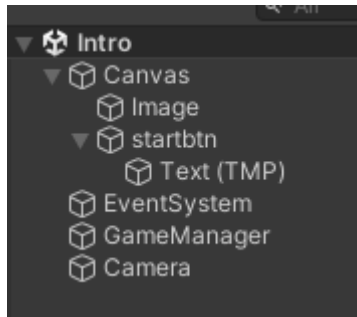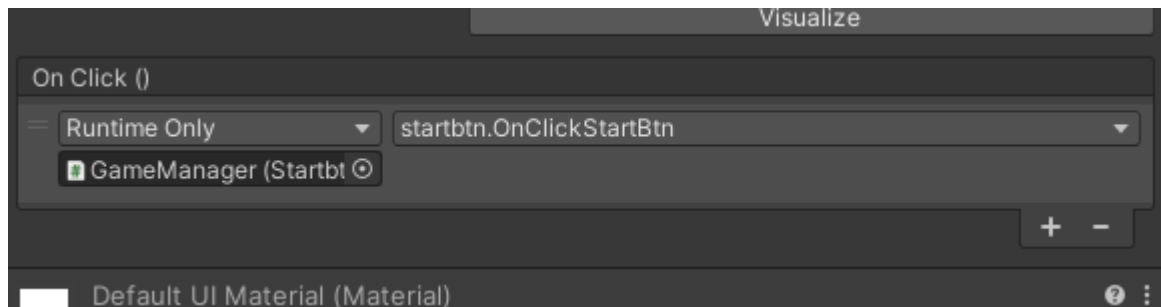
https://m.blog.naver.com/beaqon/220736703529
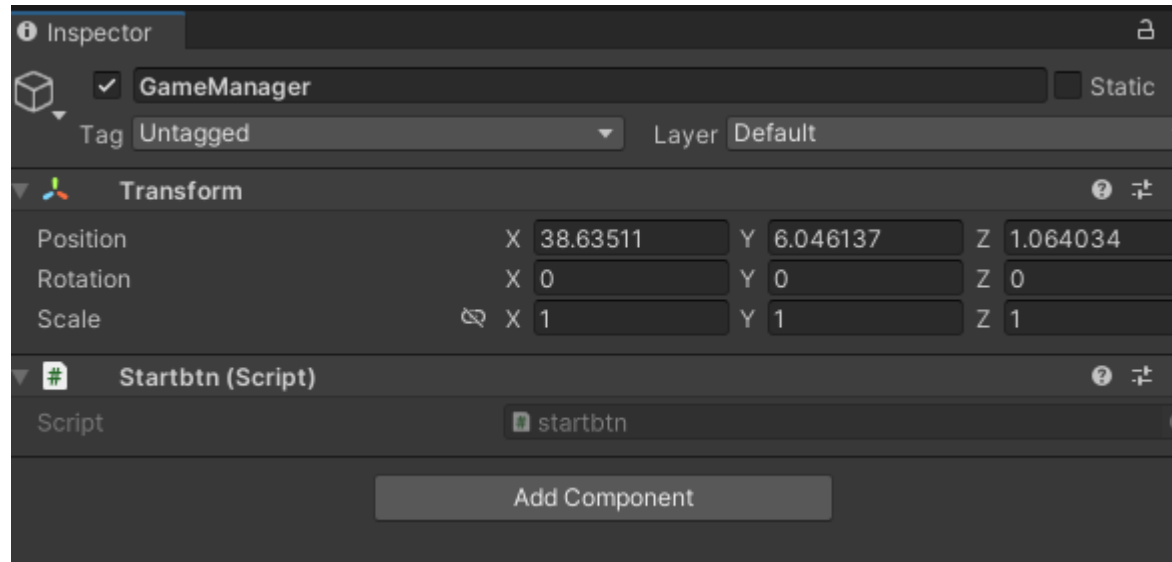
업그레이드 계획

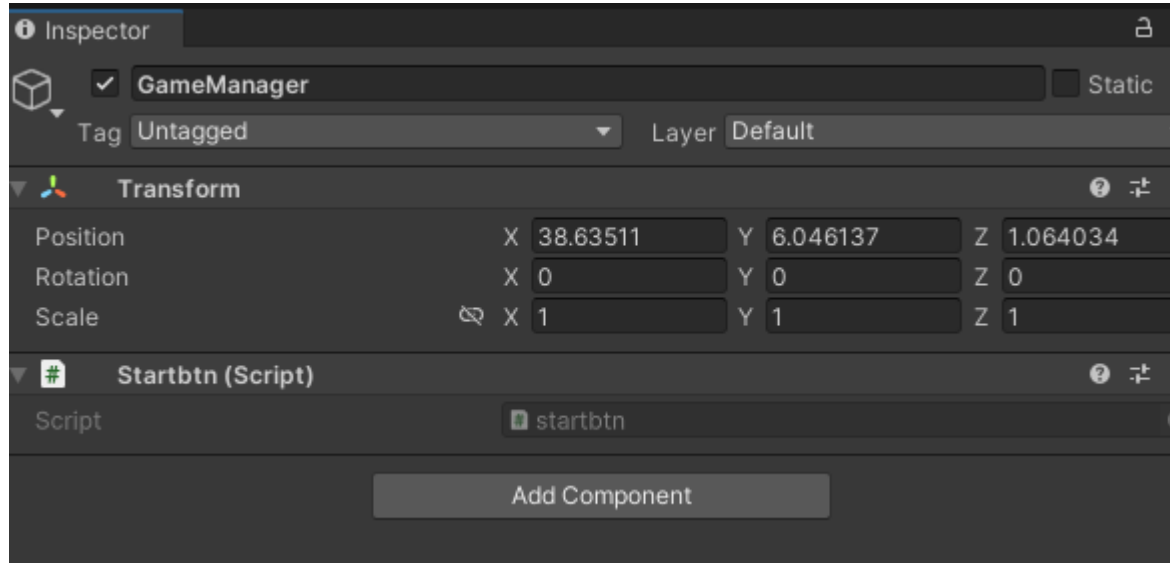지구가 태양을 피하며 별을 수집하는 게임

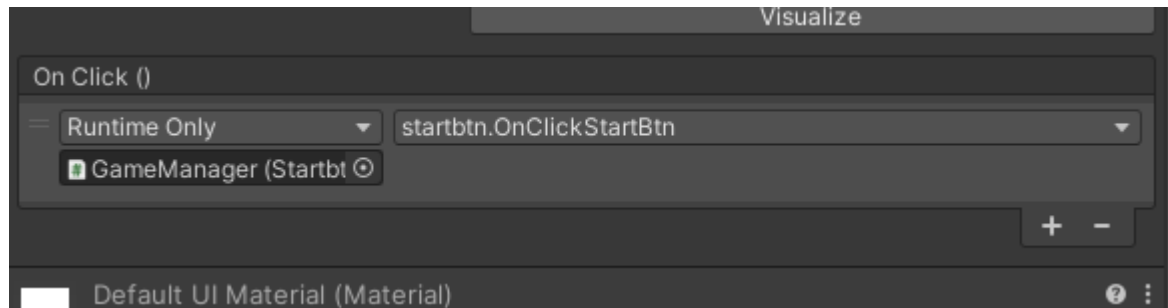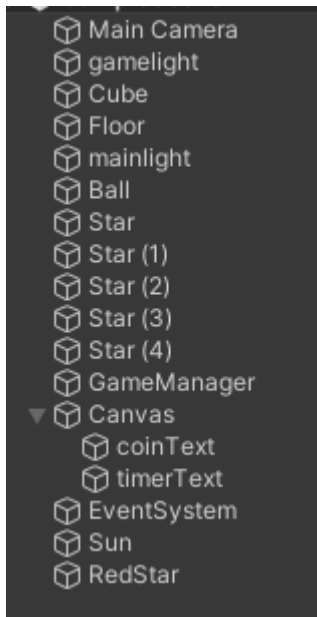# 업그레이드 후 소개 - 인트로

업그레이드 후 소개 - 인트로

업그레이드 후 소개 - 인트로


```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;
using UnityEngine.SceneManagement;
public class startbtn : MonoBehaviour
{
    public void OnClickStartBtn( )
    {
        SceneManager.LoadScene("SampleScene");
    }
}
```

업그레이드 후 코드 소개 - 메인게임

업그레이드 후 코드 소개 - 메인게임

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

public class floor : MonoBehaviour
{
    // Start is called before the first frame update
    void Start()
    {

    }

    // Update is called once per frame
    void Update()
    {

    }
    void OnCollisionEnter(Collision collision)
    {
        if (collision.gameObject.name == "Ball")
        {
            GameObject.Find("GameManager").SendMessage("GameEnd");
        }
    }
}
```
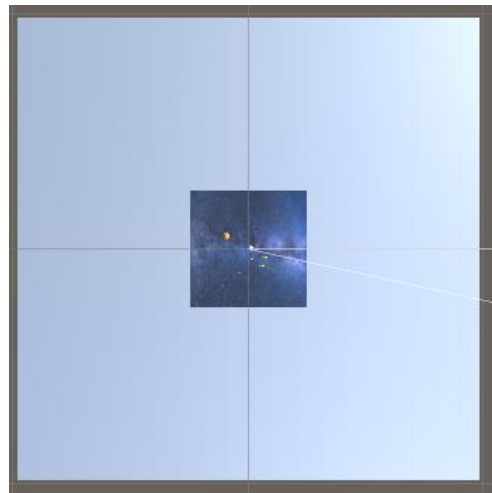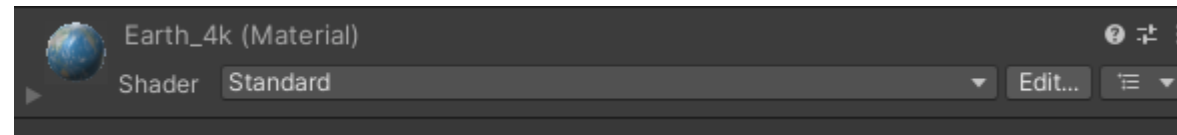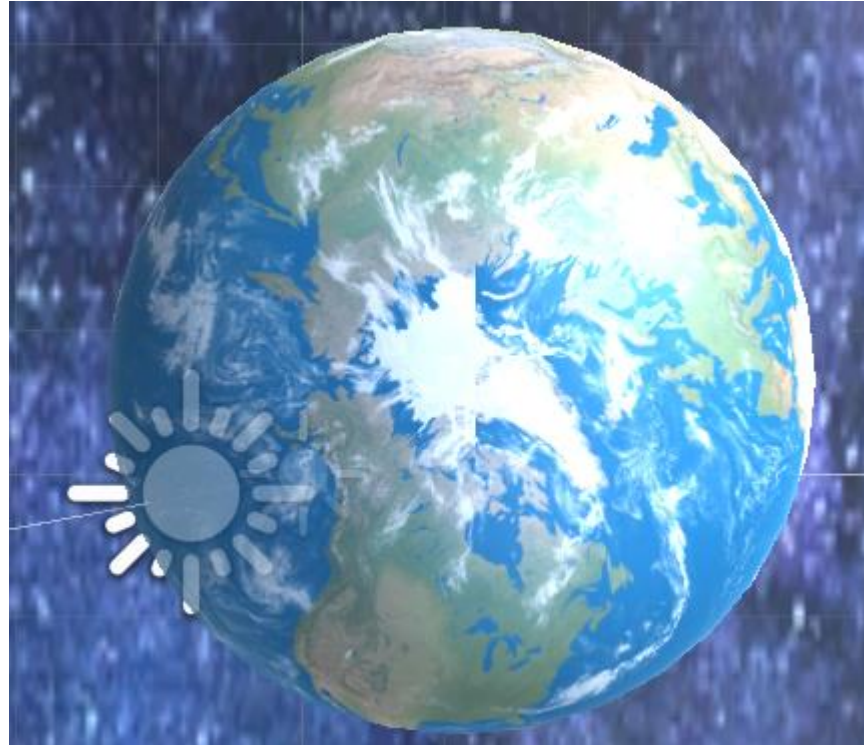
업그레이드 후 코드 소개 - 메인게임

업그레이드 후 코드 소개 - 메인게임

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

public class Sun : MonoBehaviour
{
    public float speed = 0.03f; // 이동 속도
    private Vector3 direction; // 현재 이동 방향
    private bool isMoving = true; // 현재 움직이는 상태인지 표시

    // Start is called before the first frame update
    void Start()
    {
        ChooseNewDirection();
    }

    // Update is called once per frame
    void Update()
    {
        if (isMoving)
            MoveInDirection();

        // X축 또는 Z축 범위를 벗어났다면 반대 방향으로 변경
        if (transform.localPosition.x < -22 || transform.localPosition.x > 22)
        {
            direction.x = -direction.x;
        }
        if (transform.localPosition.z < -22 || transform.localPosition.z > 22)
        {
            direction.z = -direction.z;
        }
    }

    void ChooseNewDirection()
    {
        // 랜덤한 방향 선택 (X와 Z 축에서 -1.0f, 1.0f 사이)
        direction = new Vector3(Random.Range(-1.0f, 1.0f), 0, Random.Range(-1.0f, 1.0f)).normalized;

    }

    void MoveInDirection()
    {
        // 현재 방향으로 이동
        transform.localPosition += direction * speed;
    }
```
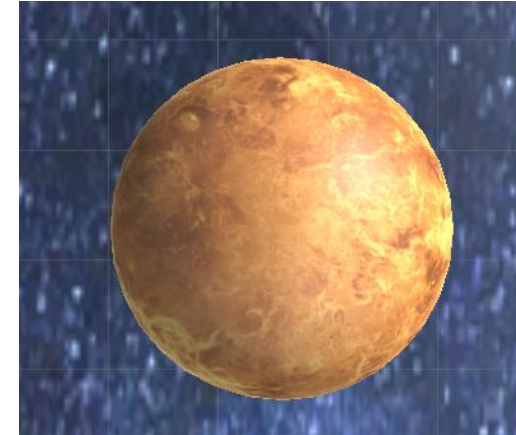
```csharp
    private void OnCollisionEnter(Collision collision)//공과 장애물 충돌
    {
        Debug.Log(collision.gameObject.name + "충돌");

        GameObject.Find("GameManager").SendMessage("GameEnd");
    }

    public void StopMovingForSeconds(float seconds)
    {
        StartCoroutine(StopMovingCoroutine(seconds));
    }

    private IEnumerator StopMovingCoroutine(float seconds)
    {
        isMoving = false;
        yield return new WaitForSeconds(seconds);
        isMoving = true;
    }
}
```

업그레이드 후 코드 소개 - 메인게임

```
public class Star : MonoBehaviour
{
    public AudioSource audioSource; // AudioSource 추가
    public AudioClip audioClip; // AudioClip 추가

    // Start is called before the first frame update
    void Start()
    {
        if (audioSource == null)
            audioSource = GetComponent<AudioSource>();
    }

    // Update is called once per frame
    void Update()
    {
        transform.Rotate(new Vector3(0, 0, 100f) * Time.deltaTime); // 회전
    }

    private void OnTriggerEnter(Collider other) // 충돌 감지
    {
        if (other.gameObject.name == "Ball")
        {
            PlaySound();
            GameObject.Find("GameManager").SendMessage("GetCoin");
            float x = Random.Range(-24.0f, 24.0f);
            float y = 0;
            float z = Random.Range(-24.0f, 24.0f);

            // 별의 위치를 랜덤한 값으로 변경
            transform.position = new Vector3(x, y, z);

            // 소리 재생

        }
    }

    // 소리 재생 함수
    void PlaySound()
    {
        if (audioSource != null && audioClip != null)
            audioSource.PlayOneShot(audioClip);
    }
}
```
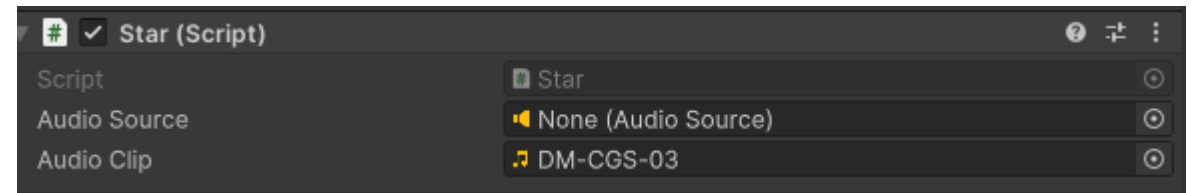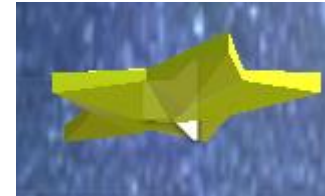

Star (Script)

Script	Star
Audio Source	None (Audio Source)
Audio Clip	DM-CGS-03

업그레이드 후 코드 소개 - 메인게임

```
public class RedStar : MonoBehaviour
{
    public AudioSource audioSource; // AudioSource 추가
    public AudioClip audioClip; // AudioClip 추가

    // Start is called before the first frame update
    void Start()
    {
        if (audioSource == null)
            audioSource = GetComponent<AudioSource>();
    }

    // Update is called once per frame
    void Update()
    {
        transform.Rotate(new Vector3(0, 0, 100f) * Time.deltaTime);
    }

    private void OnTriggerEnter(Collider other) // 충돌 감지
    {
        if (other.gameObject.name == "Ball")
        {
            PlaySound();
            GameObject.Find("GameManager").SendMessage("GetCoin");
            float x = Random.Range(-24.0f, 24.0f);
            float y = 0;
            float z = Random.Range(-24.0f, 24.0f);

            // 별의 위치를 랜덤한 값으로 변경
            transform.position = new Vector3(x, y, z);

            // 소리 재생

            // Sun 객체의 움직임을 멈추기
            GameObject sun = GameObject.Find("Sun");
            if (sun != null)
            {
                Sun sunScript = sun.GetComponent<Sun>();
                if (sunScript != null)
                {
                    sunScript.StopMovingForSeconds(3.0f);
                }
            }
        }
    }
}
```
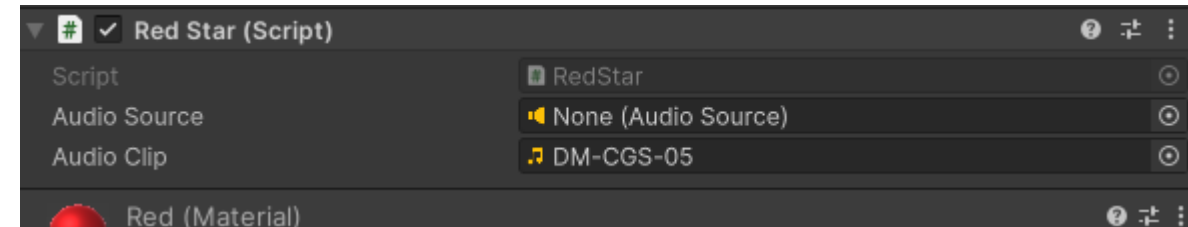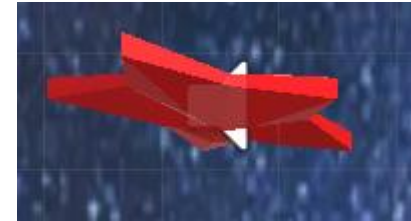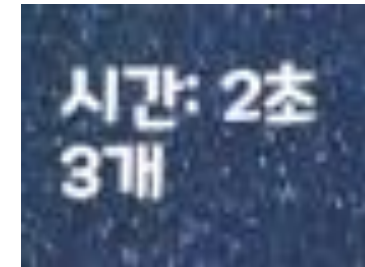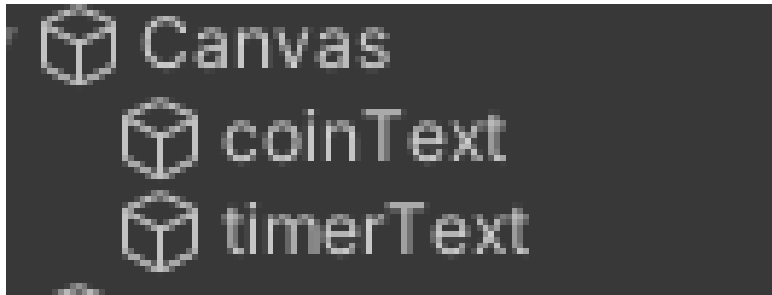
```
// 소리 재생 함수
void PlaySound()
{
    if (audioSource != null && audioClip != null)
        audioSource.PlayOneShot(audioClip);
}
```

▼	#	✔ Red Star (Script)		❓ ⤢ ⋮
	Script		RedStar	⊙
	Audio Source		None (Audio Source)	⊙
	Audio Clip		DM-CGS-05	⊙
●	Red (Material)			❓ ⤢ ⋮

업그레이드 후 코드 소개 - 메인게임

업그레이드 후 코드 소개 - 메인게임

```
public class GameManager : MonoBehaviour
{
    public static int coinCount = 0;
    private float timer = 0.0f;
    public TextMeshProUGUI timerText;
    public TextMeshProUGUI coinText;
    public static int seconds = 0;

    // Start is called before the first frame update
    void Start()
    {

    }

    // Update is called once per frame
    void Update()
    {
        timer += Time.deltaTime;

        if (timer >= 1f)
        {
            seconds++;
            timerText.text = "시간: " + seconds + "초";
            timer = 0;
        }
    }

    void GetCoin()
    {
        coinCount++;
        coinText.text = coinCount + "개";
    }

    void GameEnd()
    {
        Debug.Log("게임이 종료되었습니다");
        PlayerPrefs.SetInt("coinCount", coinCount);
        PlayerPrefs.SetInt("seconds", seconds);
        SceneManager.LoadScene("End");
    }
}
```
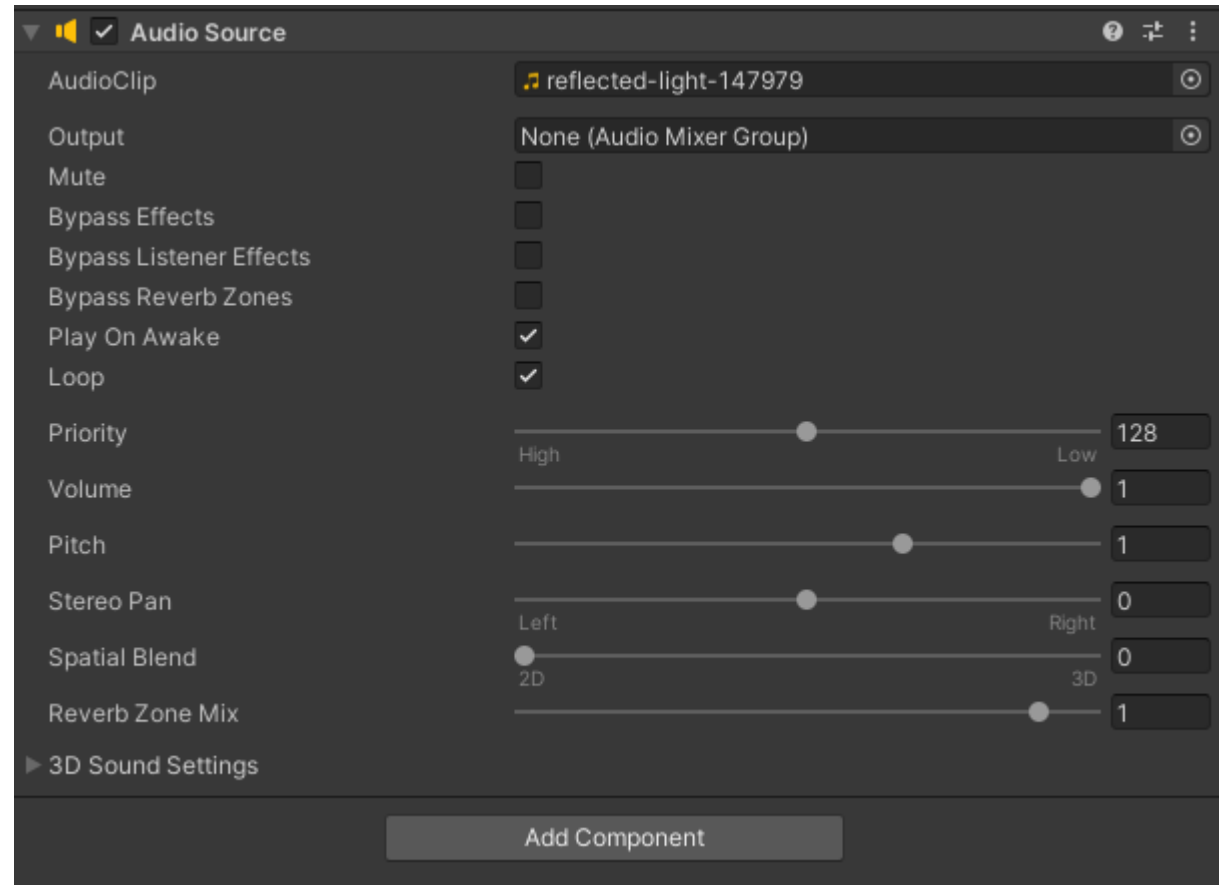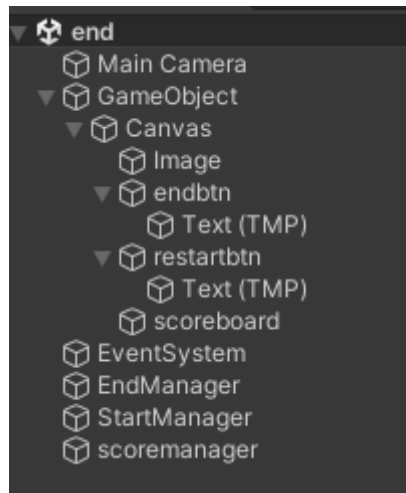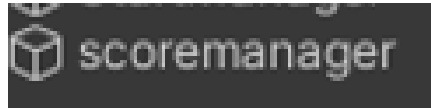
GameManager

Audio Source		
AudioClip	♫ reflected-light-147979	⊙
Output	None (Audio Mixer Group)	⊙
Mute	☐	
Bypass Effects	☐	
Bypass Listener Effects	☐	
Bypass Reverb Zones	☐	
Play On Awake	☑	
Loop	☑	
Priority	High Low	128
Volume		1
Pitch		1
Stereo Pan	Left Right	0
Spatial Blend	2D 3D	0
Reverb Zone Mix		1
▶ 3D Sound Settings		

Add Component

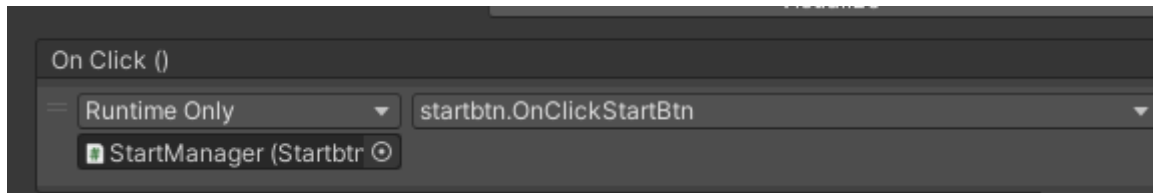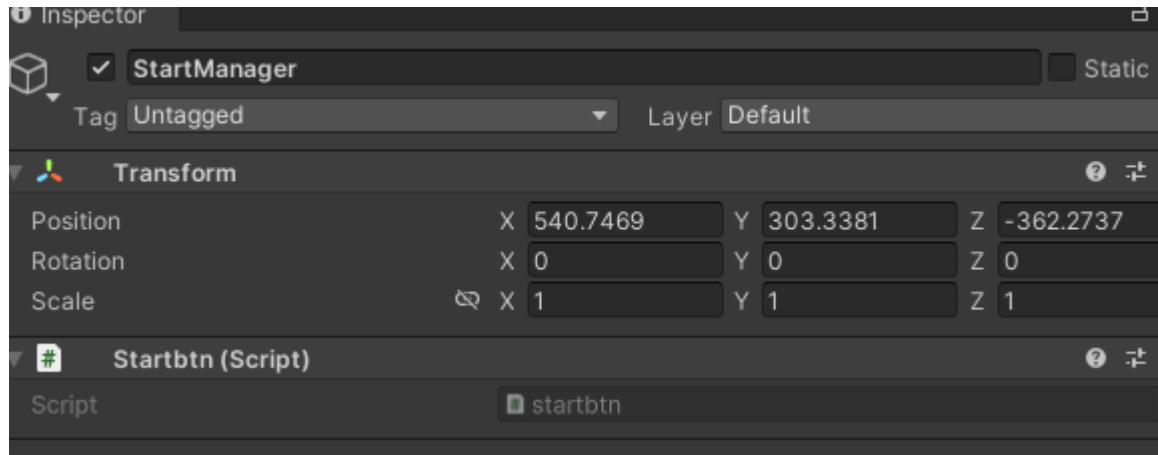# 업그레이드 후 코드 소개 - 종료화면

업그레이드 후 코드 소개 - 종료화면


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

public class score : MonoBehaviour
{
    public TextMeshProUGUI scoreboard;

    // Start is called before the first frame update
    void Start()
    {
        int coinCount = PlayerPrefs.GetInt("coinCount", 0);
        int seconds = PlayerPrefs.GetInt("seconds", 0);

        scoreboard.text = "개수: " + coinCount + "\n시간: " + seconds + "초";
    }
}
```
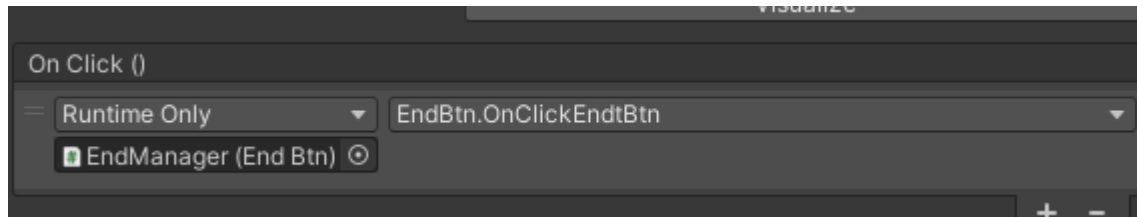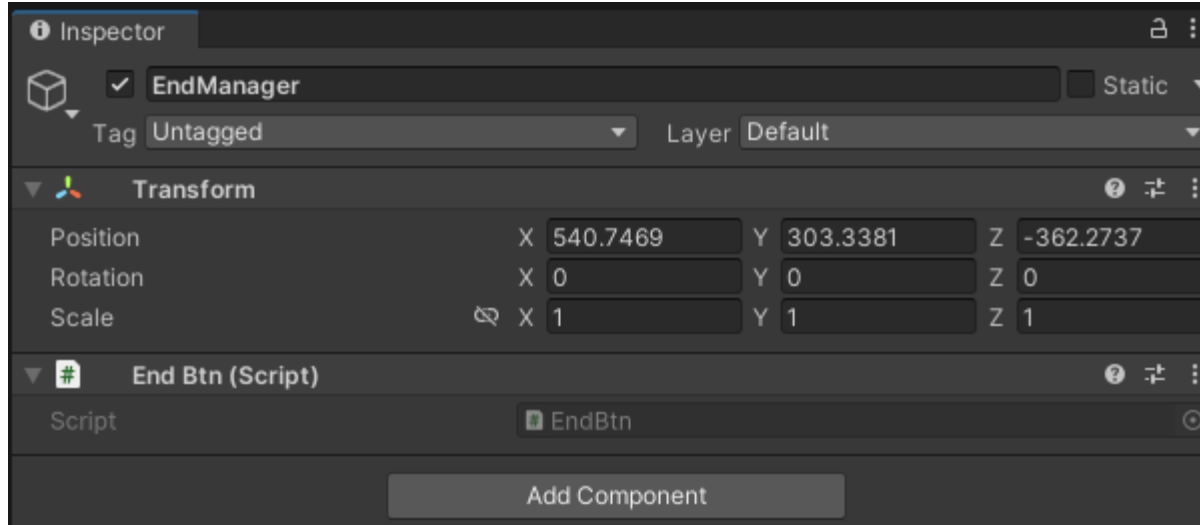
업그레이드 후 코드 소개 - 종료화면

업그레이드 후 코드 소개 - 종료화면


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

public class EndBtn : MonoBehaviour
{

    public void OnClickEndtBtn()
    {
        #if UNITY_EDITOR
            UnityEditor.EditorApplication.isPlaying = false;
        #else
            Application.Quit();
        #endif
    }
}
```

게임 실행

https://jeonsanghoon0711.github.io/gameunity/

출처

https://ljhyunstory.tistory.com/139

https://blockdmask.tistory.com/590

https://assetstore.unity.com/packages/3d/props/simple-gems-ultimate-animated-customizable-pack-73764

https://the-pond.tistory.com/entry/%EC%9C%A0%EB%8B%88%ED%8B%B0%EA%B0%95%EC%A2%8C-%EB%B0%A9%ED%96%A5%ED%82%A4%EB%A1%9C-%EC%98%A4%EB%B8%8C%EC%A0%9D%ED%8A%B8-%EC%9B%80%EC%A7%81%EC%9D%B4%EB%8A%94-%EA%B0%84%EB%8B%A8%ED%95%9C-%EB%B0%A9%EB%B2%95

https://assetstore.unity.com/packages/3d/environments/planets-of-the-solar-system-3d-90219

https://pixabay.com/ko/photos/%ED%95%98-%EC%88%98-%EB%B3%84-%EB%B0%A4%ED%95%98%EB%8A%98-2695569/

https://www.engedi.kr/unity/?idx=3807883&bmode=view

https://assetstore.unity.com/packages/audio/sound-fx/free-casual-game-sfx-pack-54116

https://pixabay.com/ko/music/search/%EC%9A%B0%EC%A3%BC/