



TUGAS PERTEMUAN: 8

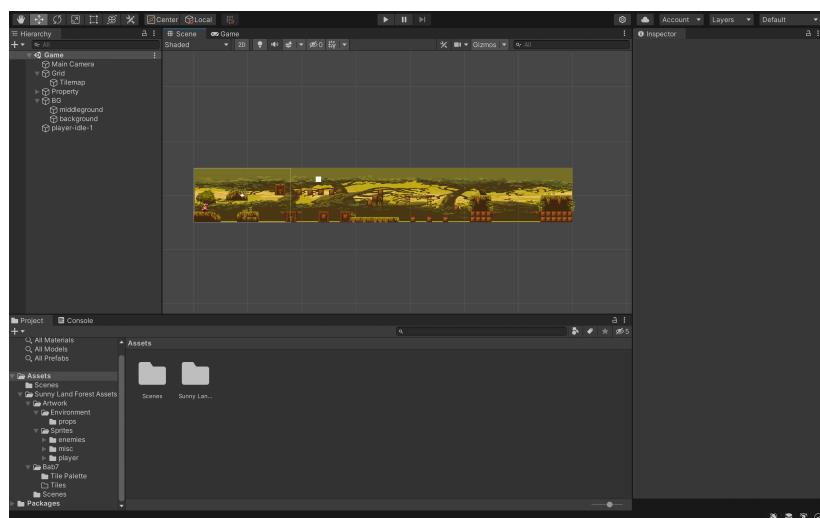
CAMERA & CHARACTER MOVEMENT

NIM	:	2118112
Nama	:	Fiman Frezy Pradana
Kelas	:	C
Asisten Lab	:	ZAIN ARYANATA (2118051)

8.1. Tugas 8 : Membuat Character Movement, Detect Ground, Jumping, & Camera Movement Tidak Termasuk Animasi Karakter

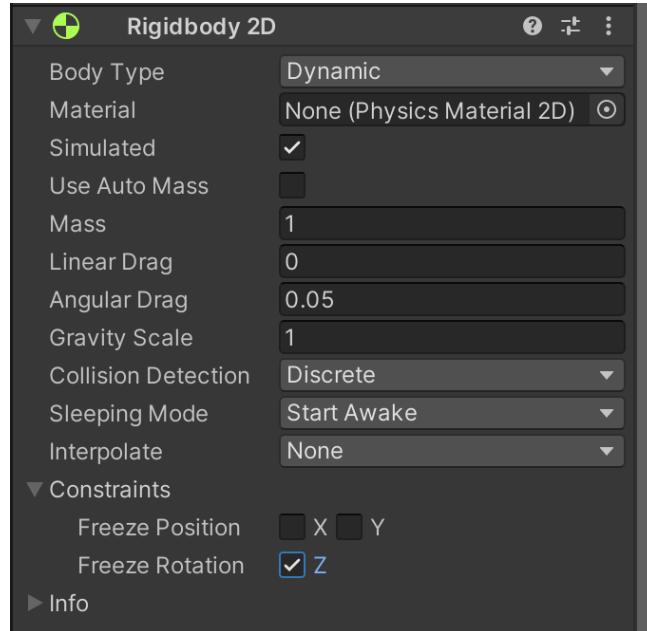
A. Memubuat pergerakan Player

1. Buka file projek unity sebelumnya pada bab 7.

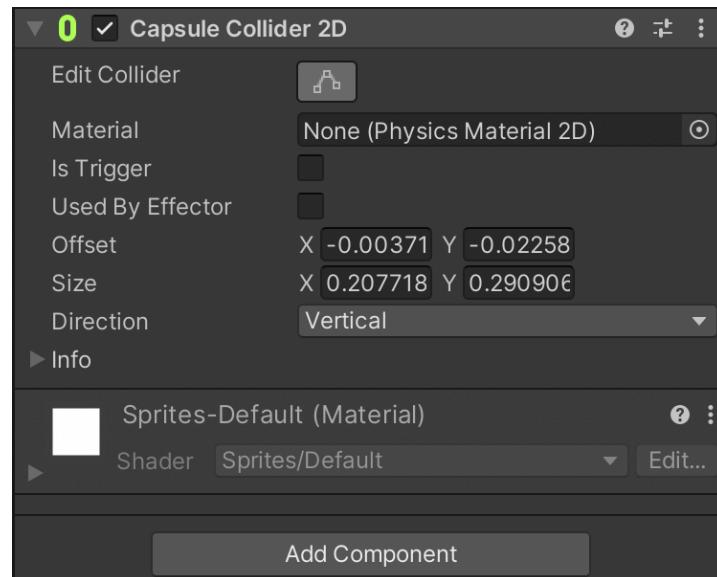




2. klik pada player-idle-1 arahkan ke inspector , pilih Rigidbody 2D > constraints > centang pada freeze Rotation (Z)

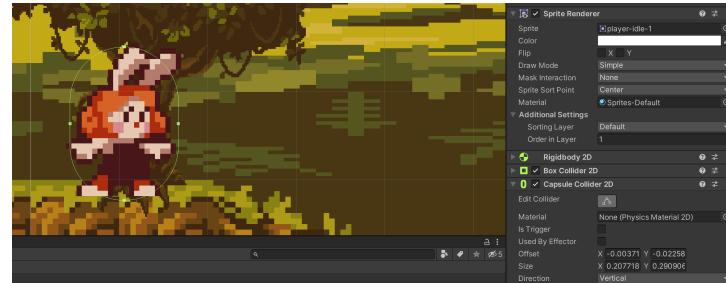


3. Tambahkan komponen Capsule Colider 2D pada player-idle-1 , lalu klik icon sebelah kanan Edit Collider

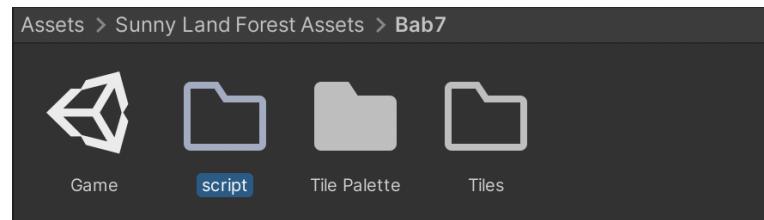




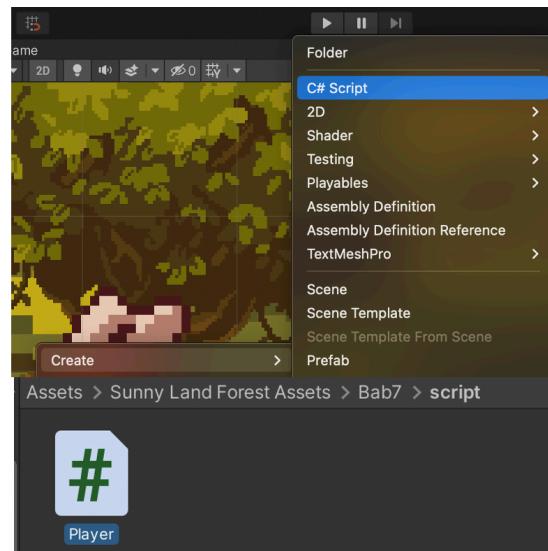
4. Lalu cockan garis oval dengan karakternya atau bisa di input offset x,y dan juga size x ,y nya



5. Buka folder praktikum , lalu bikin folder baru Bernama script

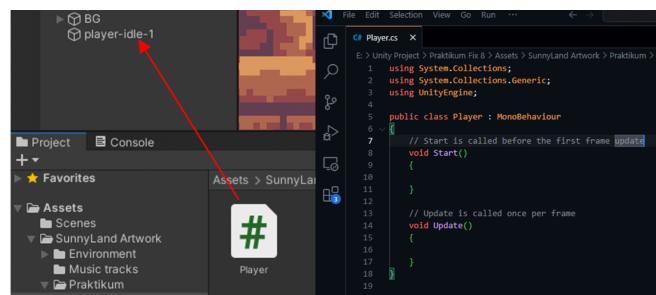


6. Masuk ke dalam folder script , lalu buat C# script , beri nama player





7. Drag & drop script player kedalam hirarki player-idle-1 ,lalu klick 2x pada script player maka akan masuk kedalam text editor sperti ini



8. Masukkan source code dibawah ini , pastikan nama public class harus sama dengan nama file yang dibuat. Setelah berhasil memasukkan source code untuk mencoba source code diatas berhasil, tekan dikeyboard “a” atau “ left arrow” untuk ke arah kanan

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

public class Player : MonoBehaviour
{
    Rigidbody2D rb;

    [SerializeField] float speed = 1;
    float horizontalValue;
    bool facingRight;

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

    void Update ()
    {
        horizontalValue = Input.GetAxisRaw("Horizontal");
    }

    void FixedUpdate()
    {
        Move(horizontalValue);
    }

    void Move(float dir)
    {
        #region gerak kanan kiri
        float xVal = dir * speed * 100 * Time.fixedDeltaTime;
        Vector2 targetVelocity = new Vector2(xVal, rb.velocity.y);
        rb.velocity = targetVelocity;

        if (facingRight && dir < 0)
        {
```

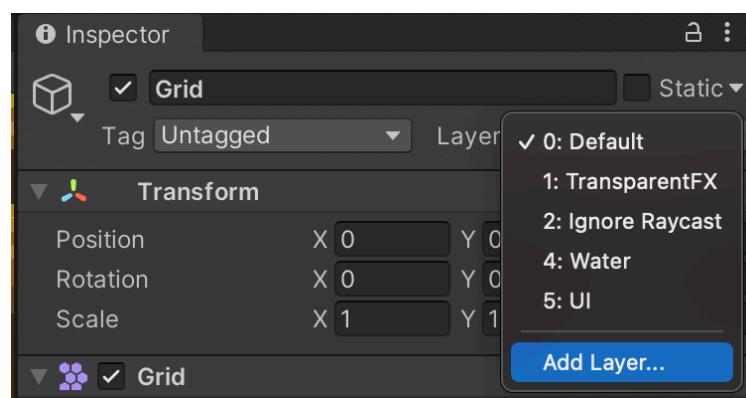


```
// ukuran player
transform.localScale = new Vector3(-1, 1, 1);
facingRight = false;
}

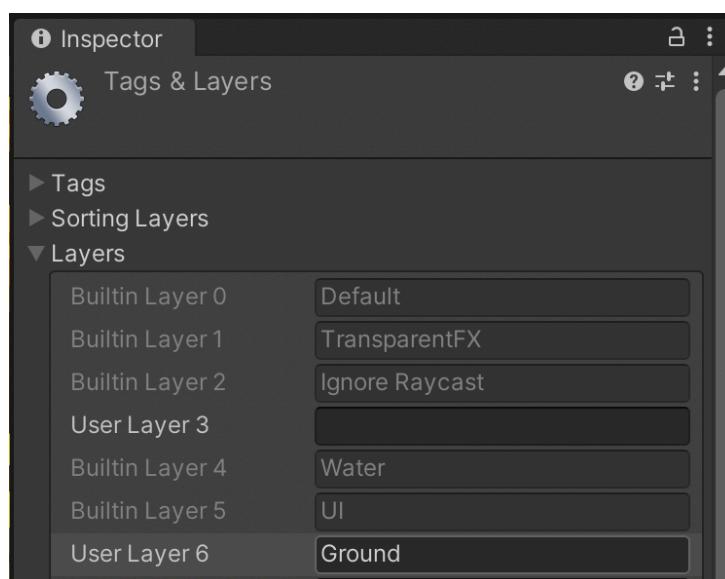
else if (!facingRight && dir > 0)
{
    // ukuran player
    transform.localScale = new Vector3(1, 1, 1);
    facingRight = true;
}

#endifregion
}
```

9. Untuk membuat player loncat menggunakan spasi , kita perlu membuat GorundCheck dengan cara , klick grid pada hierarchy , pergi ke inspector, pilih layer , klick add layer

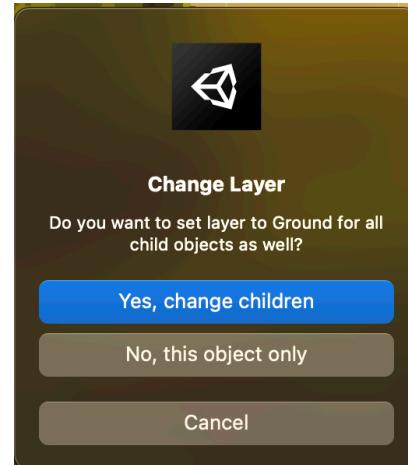


10. Lalu tambahkan “ground” pada user layer 6

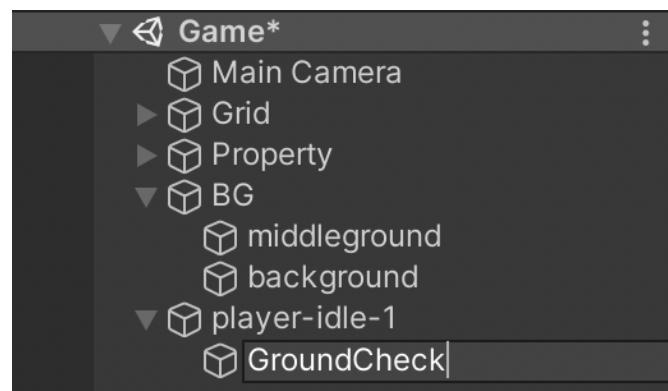




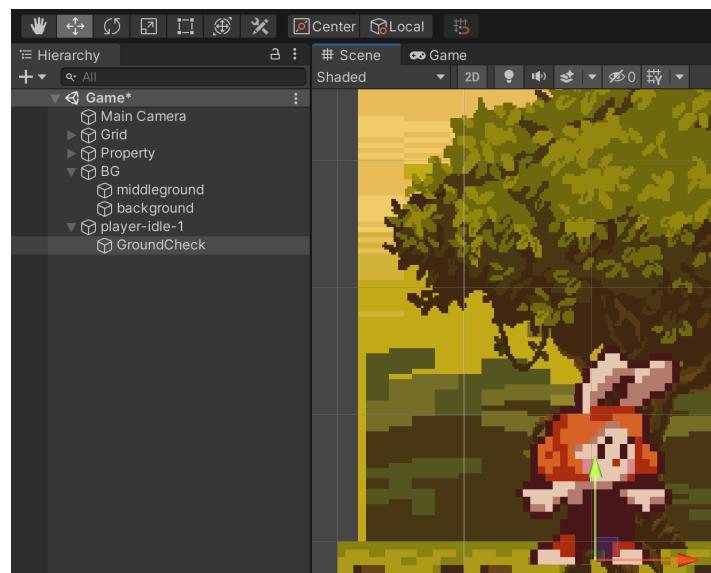
11. Ubah layer menjadi Ground , jika muncul pop up change layer , klick yes saja



12. klik kanan pada player-idle-1 , lalu create empty , beri nama gorundCheck



13. Klick pada hirarki GorundCheck , lalu gunakan “move tools” untuk memindahkan ke bagian bawah player seperti gambar berikut





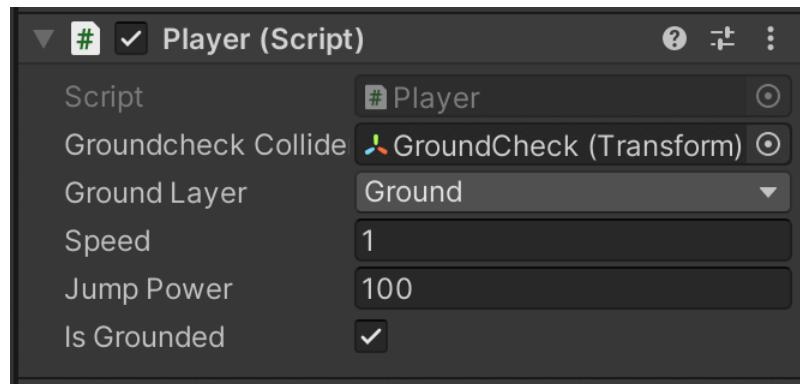
14. Kembali ke script playertambahkan source code seperti ini

```
5  public class Player : MonoBehaviour
6  {
7      Rigidbody2D rb;
8
9      [SerializeField] Transform groundcheckCollider; // +
10     [SerializeField] LayerMask groundLayer; // +
11
12     const float groundCheckRadius = 0.2f; // +
13     [SerializeField] float speed = 1;
14     float horizontalValue;
15
16     [SerializeField] bool isGrounded; // +
17     bool facingRight;
18
[Serializable] Transform groundcheckCollider;
[Serializable] LayerMask groundLayer;
const float groundCheckRadius = 0.2f; // +
[SerializeField] bool isGrounded; // +
bool facingRight;
```

15. Buat void groud check didibawah void fixedUpdate& dan tambahkan Gorund Check (); pada void fixedUpdate

```
void FixedUpdate()
{
    | GroundCheck();
    Move(horizontalValue);
}
void GroundCheck()
{
    isGrounded = false;
    Collider2D[] colliders = Physics2D.OverlapCircleAll(groundcheckCollider.position, groundCheckRadius, groundLayer);
    if (colliders.Length > 0)
        isGrounded = true;
}
```

16. Klick player-idle-1 , lalu ke inspector ke effeck player script di bagian “gorunCheck collider “ tekan icon lalu pilih yang GorundCheck Transform, dan pada ground layer pilih Ground





17. Lalu untuk membuat player melompat tambahkan script berikut

```
13     [SerializeField] float speed = 1;
14     //tambahkan satu baris dibawah ini
15     [SerializeField] float jumpPower = 100;
16
17     float horizontalValue;
18     [SerializeField] bool isGrounded; // +
19     bool facingRight;
20     //tambahkan satu baris dibawah ini
21     bool jump;
22
```

18. Tambahkan juga script berikut di bagian void update, dibawah horizontal value

```
if (Input.GetButtonDown("Jump"))
    jump = true;
else if (Input.GetButtonUp("Jump"))
    jump = false;
```

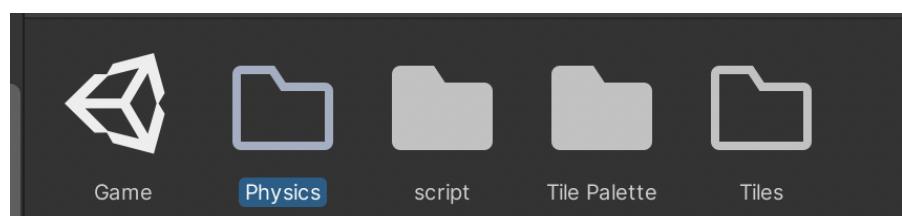
19. Tambahkan juga jump pada parameter move

```
33     void FixedUpdate()
34     {
35         | GroundCheck();
36         Move(horizontalValue,jump);
37     }
```

20. Tambahkan script berikut pada void move

```
48     void Move([float dir,bool jumpflag])
49     {
50         if(isGrounded && jumpflag)
51         {
52             isGrounded = false;
53             jumpflag = false;
54             rb.AddForce(new Vector2(0f, jumpPower));
55         }
56     }
```

21. Buat folder baru untuk dipraktikum Bernama “ physics”

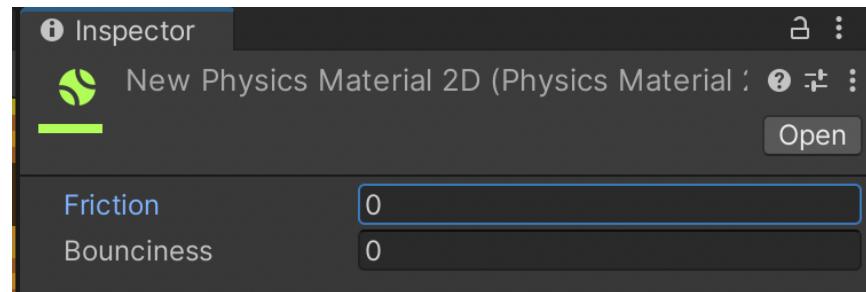




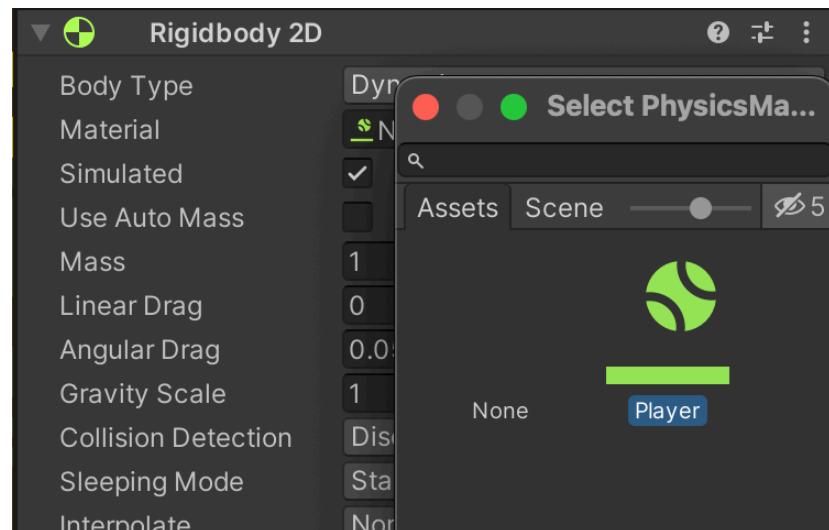
22. Didalam folder pyshics create > 2D > physical material 2D , berinama "player"



23. Klick player (physics Material 2D), dibagian menu inspector, friction dan bounces ubah menjadi 0

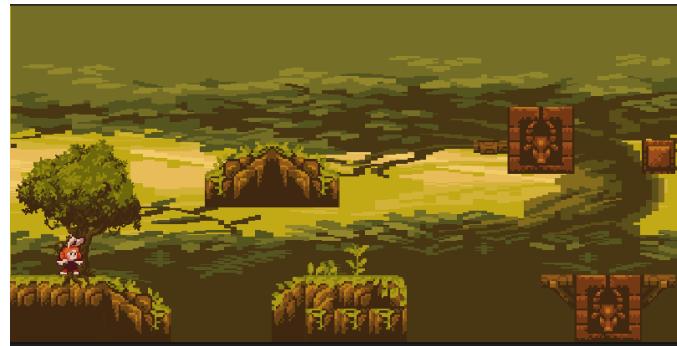


24. Klik hierarchy pilih layer player-idle-1 , pada inspector cari rigidbody 2D lalu klik icon untuk membuka box select physics > Material, lalu pilih asset player sudah kita buat tadi.



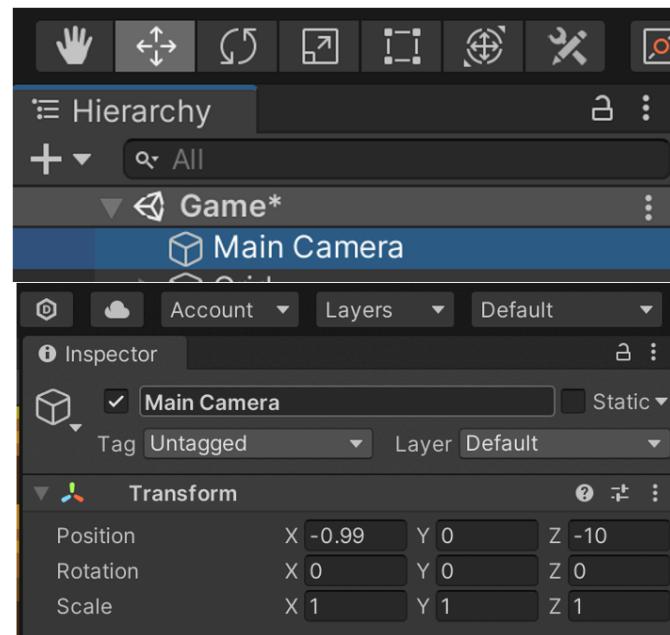


25. Tekan play maka player bisa melompat dengan menekan spasi

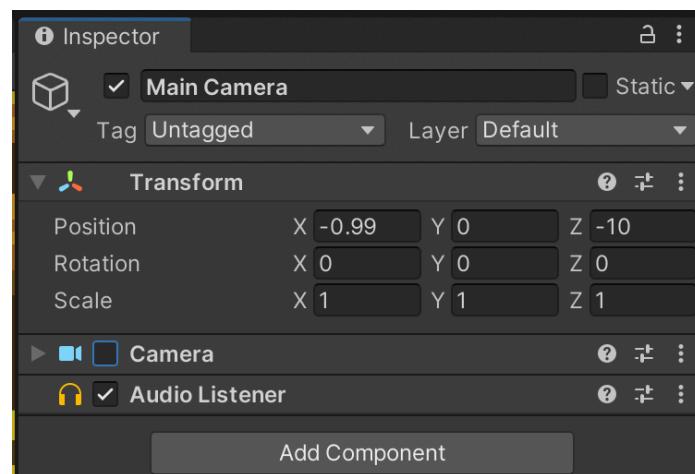


B. Camera Movement

1. Pada hirarki property ubah inspector pada tag main camera menjadi untagged

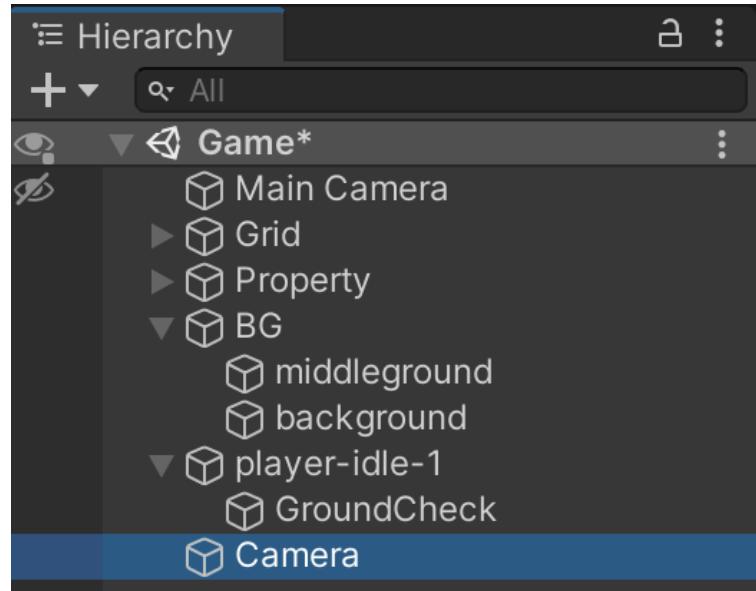


2. Pada effect camera pilih remove component





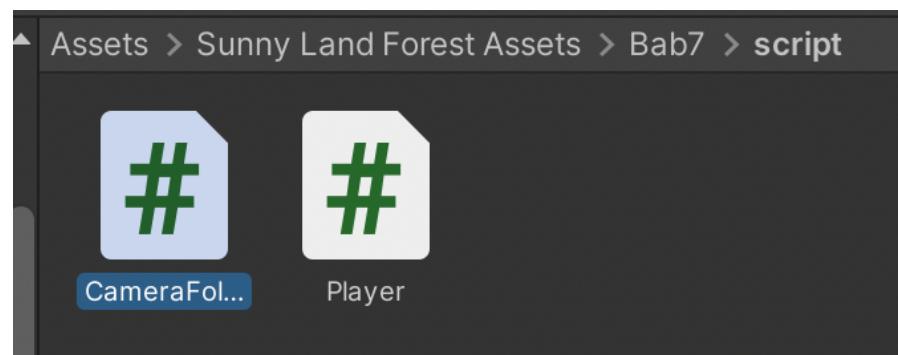
3. Create empty pada hirarky dan rename menjadi camera



4. Sesuaikan setting layer camera seperti gambar dibawah ini



5. Buat file script baru di folder script dengan nama “cameraFollow”





6. Lalu tuliskan script berikut ini

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

public class CameraFollow : MonoBehaviour
{
    public float xMargin = 0.5f;
    public float yMargin = 0.5f;
    public float xSmooth = 4f;
    public float ySmooth = 4f;
    public Vector2 maxXAndY;
    public Vector2 minXAndY;
    private Transform player;

    void Awake()
    {
        player = GameObject.FindGameObjectWithTag("Player").transform;
    }

    bool CheckXMargin()
    {
        return Mathf.Abs(transform.position.x - player.position.x) > xMargin;
    }

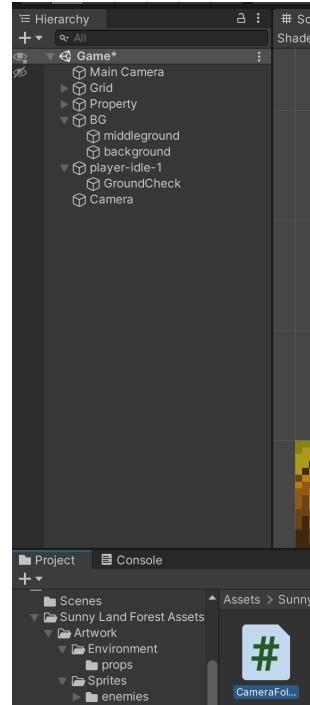
    bool CheckYMargin()
    {
        return Mathf.Abs(transform.position.y - player.position.y) > yMargin;
    }

    void FixedUpdate()
    {
        TrackPlayer();
    }

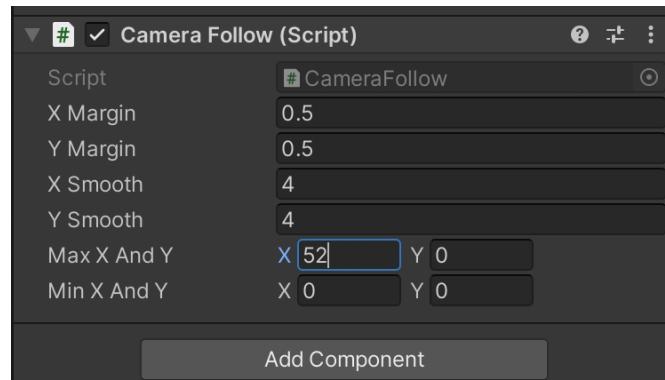
    void TrackPlayer()
    {
        float targetX = transform.position.x;
        float targetY = transform.position.y;
        if (CheckXMargin())
            targetX = Mathf.Lerp(transform.position.x, player.position.x, xSmooth * Time.deltaTime);
        if (CheckYMargin())
            targetY = Mathf.Lerp(transform.position.y, player.position.y, ySmooth * Time.deltaTime);
        targetX = Mathf.Clamp(targetX, minXAndY.x, maxXAndY.x); targetY =
        Mathf.Clamp(targetY, minXAndY.y, maxXAndY.y); transform.position = new Vector3(targetX, targetY, transform.position.z);
    }
}
```



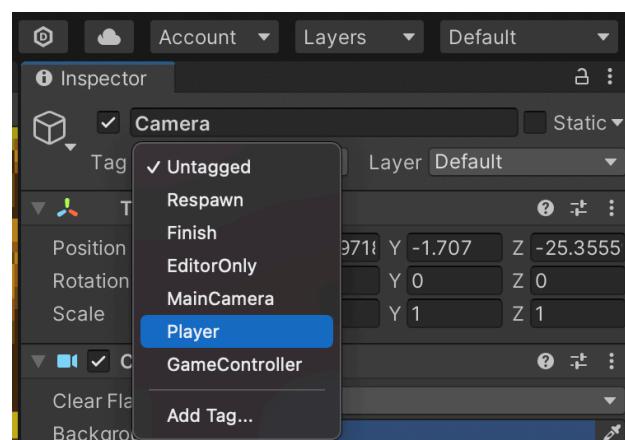
7. Drag and drop script cameraFollow kedalam Hierarchy Camera



8. Lalu klik pada camera, buka inspector pada bagian camera follow(script) ubah max x dan max y nya

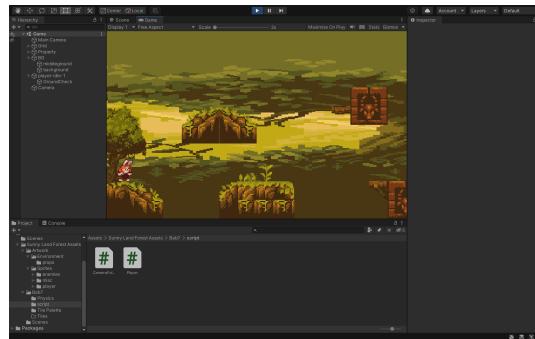


9. Ubah tag di player-idle-1 untagged menjadi “Player”



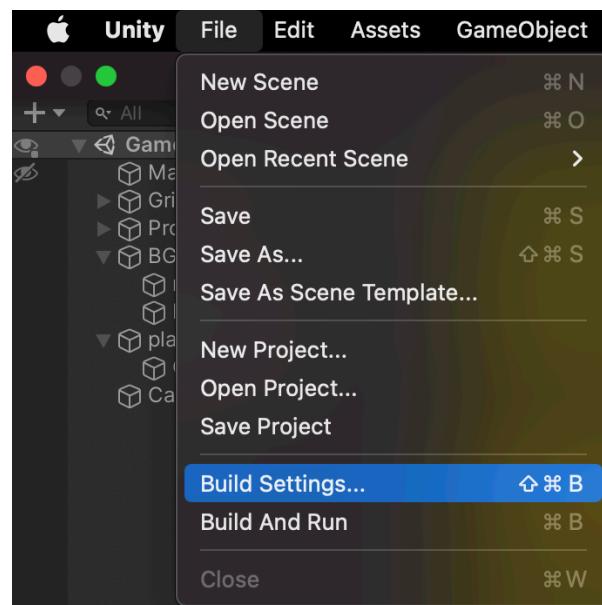


10. Tekan play untuk menjalankan, maka sekarang kamera akan mengikuti pergerakan karakter

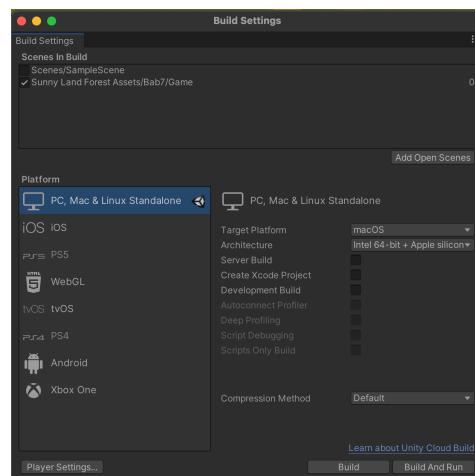


C. Camera Movement

1. Pergi ke menu File kemudian pilih Build Setting (CTRL + SHIFT +B)

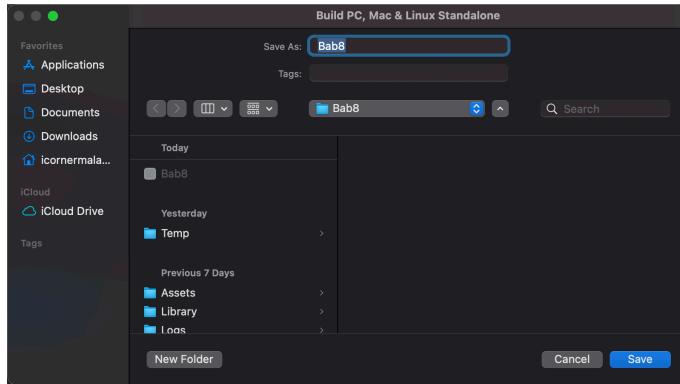


2. Pada setting build ini pilih pc,mac,linuk, Tekan Build, pastikan pada menu scene in build berada pada project Tugas kalian

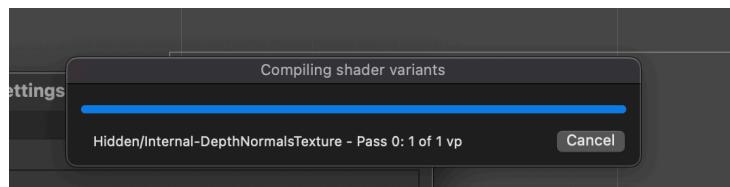




3. Pilih Dimana project disimpan dan tunggu hasilnya



4. Tunggu render gambar hingga selesai



D. Quiz

Source code:

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

public class CameraFollow : MonoBehaviour
{
    [SerializeField] private Transform player;

    void Update(){
        transform.position = new Vector3 (player. position.x,
        transform.position.y, transform.position.z);
    }
}
```

Analisa :

Source code diatas digunakan dalam Unity untuk membuat kamera mengikuti objek pemain. Script ini mengimpor namespace yang diperlukan seperti System.Collections, System.Collections.Generic, dan UnityEngine. Kelas CameraFollow mewarisi dari MonoBehaviour, yang memungkinkan script ini untuk dipasang pada GameObject di Unity. Variabel player bertipe Transform diberi atribut [SerializeField] agar bisa diatur di Inspector Unity tanpa perlu dijadikan public. Pada metode Update(), posisi kamera diatur ulang setiap frame agar sumbu x mengikuti posisi x pemain, sementara sumbu y dan z tetap pada posisi kamera saat ini. Pastikan Transform pemain telah diassign di Inspector agar script berfungsi dengan benar.



E. Link Github Pengumpulan

https://github.com/FirmanFrezyPradana/2118112_PRAK_ANIGAME.git