



TUGAS PERTEMUAN: 10

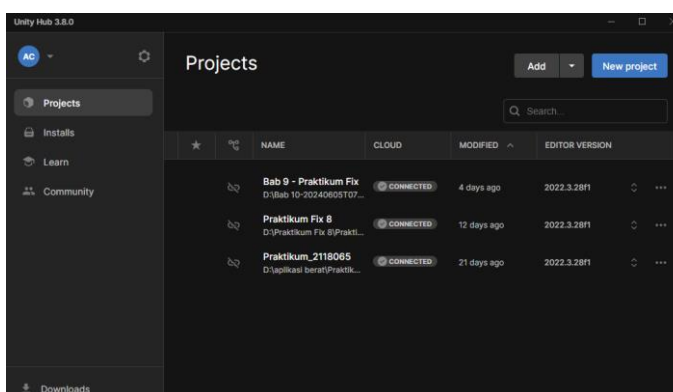
ENEMY AI

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Asisten Lab	:	DEVINA DORKAS MANUELA (2218108)
Referensi	:	Contoh : FREE Pixel Art Kit 2D Environments Unity Asset Store

10.1 Tugas 1 : Enemy AI

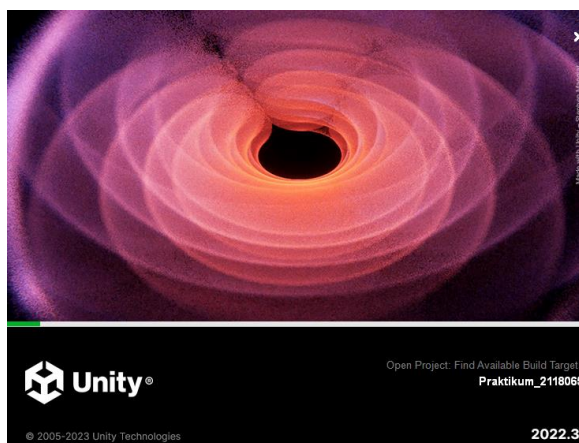
A. Enemy AI

1. Masuk ke dalam aplikasi unity



Gambar 10.1 Membuka Unity

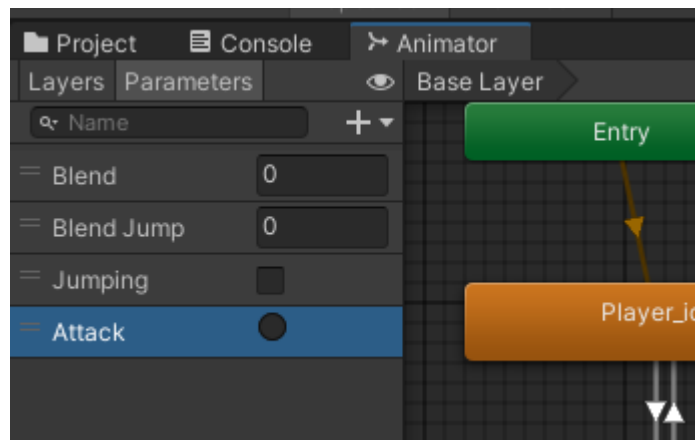
2. Pilih folder yang ingin dibuka atau yang sudah diunduh property



Gambar 10.2 Membuka file unity



3. Pada window unity pilih animator dan tambahkan parameter attack dengan tipe data trigger



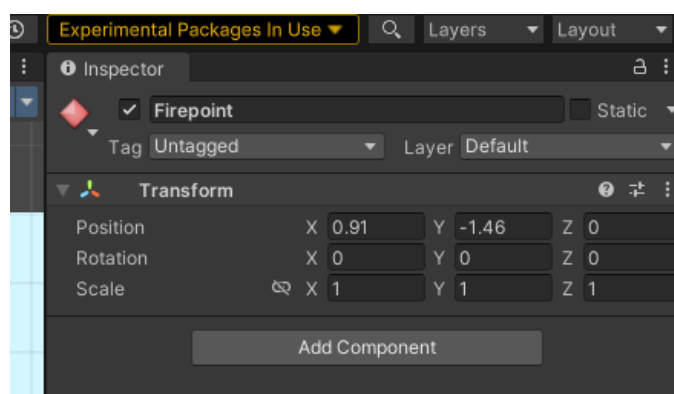
Gambar 10.3 Menambahkan parameter

4. Pada hirarki player buat new empty berupa firepoint



Gambar 10.4 Menambahkan firepoint

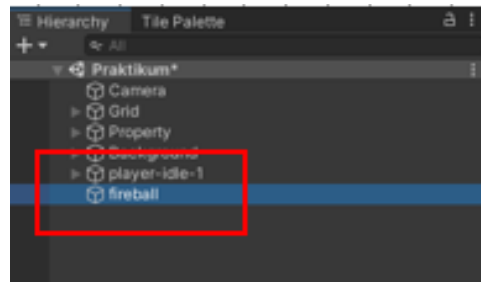
5. Pada hirarki firepoint klik inspector untuk mengubah bentuk objek menjadi titik sesuai keinginan



Gambar 10.5 Mengubah bentuk objek firepoint

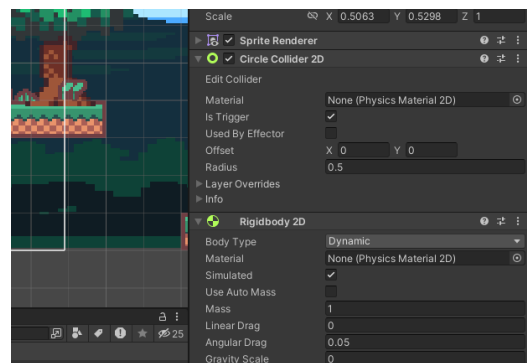


6. Pada hirarki tambahkan new empty baru dan rename menjadi fireball
lalu tambahkan asset dari objek yang diinginkan



Gambar 10.6 menambahkan hirarki fireball

7. Tambahkan ke dalam inspector fireball rigidbody dan collider sebagai pelengkap objek



Gambar 10.7 menambahkan komponen objek fireball

8. Drag and drop fireball pada hirarki ke dalam folder new dan rename menjadi resources



Gambar 10.8 Letakkan fireball ke dalam folder praktikum resources



9. Pada Script player tambahkan source code agar player mampu menembakkan peluru

```
#Tambahkan dibawah fungsi fixedUpdate
IEnumerator Attack()
{
    animator.SetTrigger("Attack");
    yield return new WaitForSeconds(0.25f);

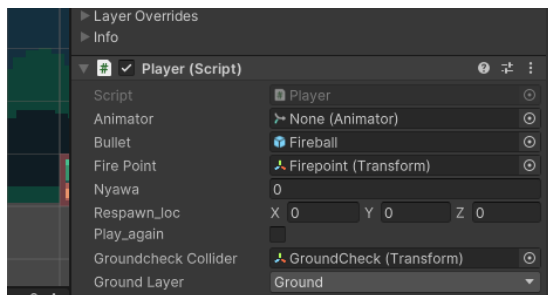
    float direction = 1f;

    GameObject fireball = Instantiate(bullet,
    firePoint.position, Quaternion.identity);

    fireball.GetComponent<Rigidbody2D>().velocity =
    new Vector2(direction * 10f, 0);

    Destroy(fireball, 2f);
}
#Tambahkan pada Function Void Update
if (Input.GetKeyDown(KeyCode.C))
{
    StartCoroutine(Attack
```

10. Pada inspector player script ubah target bullet menjadi fireball dan sesuaikan firepointnya



Gambar 10.9 Menyesuaikan inspector komponen player script

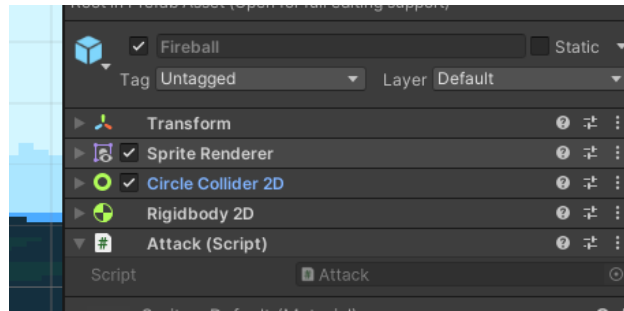
11. Buat script baru Bernama attack lalu masukkan source code

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

public class Attack : MonoBehaviour
{
    private void OnTriggerEnter2D(Collider2D collision)
    {
        if (collision.gameObject.CompareTag("Enemy"))
        {
            Destroy(gameObject);
            Destroy(collision.gameObject);
        }
    }
}
```



12. Pada inspector fireball masukkan attack script



Gambar 10.10 Menambahkan komponen ke fireball

13. Create new hirarki lalu rename menjadi slime 1 dan 2



Gambar 10.11 Menambahkan objek musuh

14. Buat script baru Bernama enemy behavior agar musuh memiliki kondisinya tersendiri dalam berpatroli

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

public class Enemy_Behavior : MonoBehaviour
{
    [SerializeField] float moveSpeed = 1f;
    Rigidbody2D rb;

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

    void Update()
    {
        if (isFacingRight())
        {
            rb.velocity = new Vector2(moveSpeed, 0f);
        }
        else
        {
            rb.velocity = new Vector2(-moveSpeed, 0f);
        }
    }

    private bool isFacingRight()
```



```
{
    return transform.localScale.x > Mathf.Epsilon;
}

private void OnTriggerExit2D(Collider2D collision)
{
    transform.localScale = new Vector2(-
transform.localScale.x, transform.localScale.y);
}
}
```

15. Buat script lagi Bernama enemy_ai yang akan diberikan ke dalam musuh yang lain

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

public class Enemy_AI : MonoBehaviour
{
    public float speed; // Kecepatan gerakan musuh
    public float lineOfSite; // Jarak penglihatan musuh
    private Transform player; // Transform dari pemain
    private Vector2 initialPosition; // Posisi awal
    musuh

    // Use this for initialization
    void Start()
    {
        // Mencari pemain berdasarkan tag
        player =
GameObject.FindGameObjectWithTag("Player").transform;
        // Menyimpan posisi awal musuh
        initialPosition =
GetComponent<Transform>().position;
    }

    // Update is called once per frame
    void Update()
    {
        // Menghitung jarak antara musuh dan pemain
        float distanceToPlayer =
Vector2.Distance(player.position, transform.position);

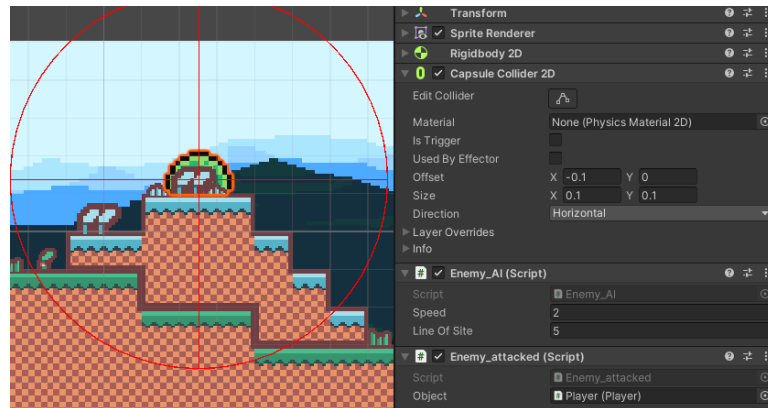
        // Jika pemain berada dalam jarak penglihatan
        musuh
        if (distanceToPlayer < lineOfSite)
        {
            // Musuh bergerak menuju pemain
            transform.position =
Vector2.MoveTowards(this.transform.position,
player.position, speed * Time.deltaTime);
        }
        else
        {
            // Musuh kembali ke posisi awal
        }
    }
}
```



```
        transform.position
        Vector2.MoveTowards(transform.position,
        initialPosition, speed * Time.deltaTime);
    }

    // Untuk menggambar jarak penglihatan musuh di
    editor
    private void OnDrawGizmosSelected()
    {
        Gizmos.color = Color.red;
        Gizmos.DrawWireSphere(transform.position,
        lineOfSite);
    }
}
```

16. Pada inspector musuh ke 2 ubah raidus line of sight agar musuh mampu mendeteksi player secara sensitif



Gambar 10.12 Mengubah nilai line of sight

17. Pada script player tambahkan source code untuk respawn player

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

public class Player : MonoBehaviour
{
    public Animator animator;
    public GameObject bullet;
    public Transform firePoint;
    public int nyawa;
    [SerializeField] Vector3 respawn_loc;
    public bool play_again;

    Rigidbody2D rb;

    [SerializeField] Transform groundcheckCollider;
    [SerializeField] LayerMask groundLayer;
    const float groundCheckRadius = 0.2f; // +

    [SerializeField]
```



```
float speed = 1;
float jumpPower = 350;
float horizontalValue;

[SerializeField]
bool isGrounded; // +
bool facingRight;
bool jump;

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

    respawn_loc = transform.position;
}

void Update()
{
    horizontalValue =
Input.GetAxisRaw("Horizontal");
    if (Input.GetButtonDown("Jump"))
    {
        animator.SetBool("Jumping", true);
        jump = true;
    }

    else if (Input.GetKeyDown(KeyCode.C))
    {
        StartCoroutine(Attack());
    }

    else if(nyawa < 0)
    {
        playagain();
    }

    else if(transform.position.y < -10)
    {
        play_again = true;
        playagain();
    }

    else if (Input.GetButtonUp("Jump"))
    {
        jump = false;
    }
}

void playagain()
{
    if(play_again == true)
    {
        nyawa = 3;
        transform.position = respawn_loc;
        play_again = false;
    }
}
```




```
void FixedUpdate()
{
    GroundCheck();
    Move(horizontalValue, jump);

    animator.SetFloat("Blend",
Mathf.Abs(rb.velocity.x));
    animator.SetFloat("Blend Jump", rb.velocity.y);
}

IEnumerator Attack()
{
    animator.SetTrigger("Attack");
    yield return new WaitForSeconds(0.25f);

    float direction = 1f;

    GameObject fireball = Instantiate(bullet,
firePoint.position, Quaternion.identity);
    fireball.GetComponent<Rigidbody2D>().velocity =
new Vector2(direction * 10f, 0);

    Destroy(fireball, 2f);
}

void GroundCheck()
{
    isGrounded = false;
    Collider2D[] colliders =
Physics2D.OverlapCircleAll(groundcheckCollider.position,
groundCheckRadius, groundLayer);
    if (colliders.Length > 0)
    {
        isGrounded = true;
    }
    animator.SetBool("Jumping", !isGrounded);
}

void Move(float dir, bool jumpflag)
{
    if (isGrounded && jumpflag)
    {
        isGrounded = false;
        jumpflag = false;
        rb.AddForce(new Vector2(0f, jumpPower));
    }

    #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
    }
}
```

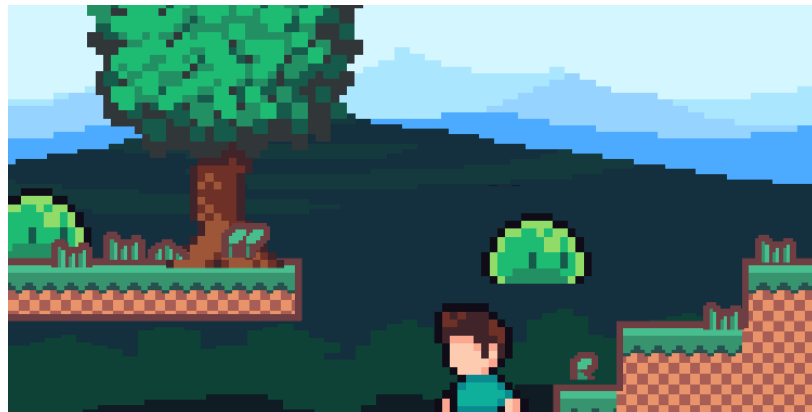


```
transform.localScale = new Vector3(-1, 1, 1);  
facingRight = false;}  
else if (!facingRight && dir > 0{  
    // ukuran player  
    transform.localScale = new Vector3(1, 1, 1);  
    facingRight = true;}  
#endregion}}
```

18. Buat script enemy attacked agar musuh bisa mati saat mengenai peluru dari player

```
using System.Collections;  
using System.Collections.Generic;  
using UnityEngine;  
public class Enemy_attacked : MonoBehaviour{  
    [SerializeField] private Player Object;  
    void Start(){  
        if (Object == null){  
            Object =  
GameObject.FindWithTag("Player").GetComponent<Player>(;  
        }}  
    void OnTriggerEnter2D(Collider2D other){  
        if (other.CompareTag("Player")){  
            Object.nyawa--;  
  
            if (Object.nyawa < 0)  
            {  
                Object.play_again = true; }}}
```

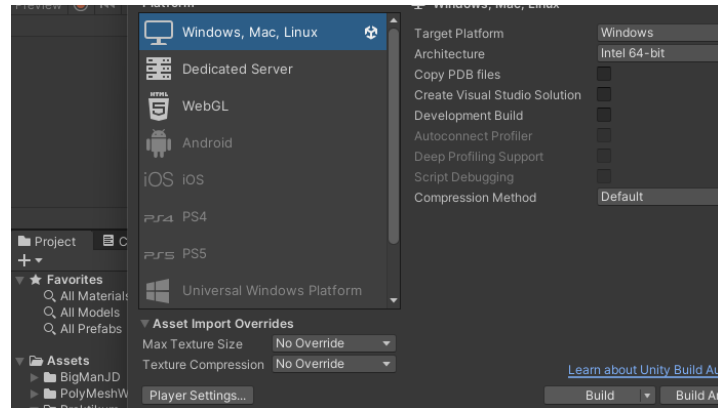
19. Hasil tampilan penerapan Enemy Ai yang akan mengikuti playet



Gambar 10.13 Tampilan penerapan enemy ai



20. Render file unity dan save ke tempat yang ingin dituju



Gambar 10.14 Merender File

B. Kuis

```
using UnityEngine;

public class PlayerAttack : MonoBehaviour{
    public int attackRange = 2.0f;
    public int attacDamage = 10;

    void Update() {
        if (Input.GetButtonDown("Fire1"))
        {
            PerformMeleeAttack();
        }

        void PerformMeleeAttack() {
            RaycastHit hit;
            if (Physics.Raycast(transform.position,
            transform.forward, out hit, attackRange)) {
                // Lengkapi kode di sini untuk mengenai musuh
                dan mengurangi health mereka
            }
        }
    }
}
```

Jawaban

```
void PerformMeleeAttack()
{
    RaycastHit hit;
    if (Physics.Raycast(transform.position,
    transform.forward, out hit, attackRange))
    {

        if (hit.collider.gameObject.CompareTag("Enemy"))
        {
            hit.collider.gameObject.GetComponent<Enemy>().TakeDa
            mage(attackDamage);
        }
    }
}
```