DIVISION OF
DIGITAL CONTENTS
DONGSEO UNIVERSITY

Dangerous Kave 12

Cannon fires a bullet

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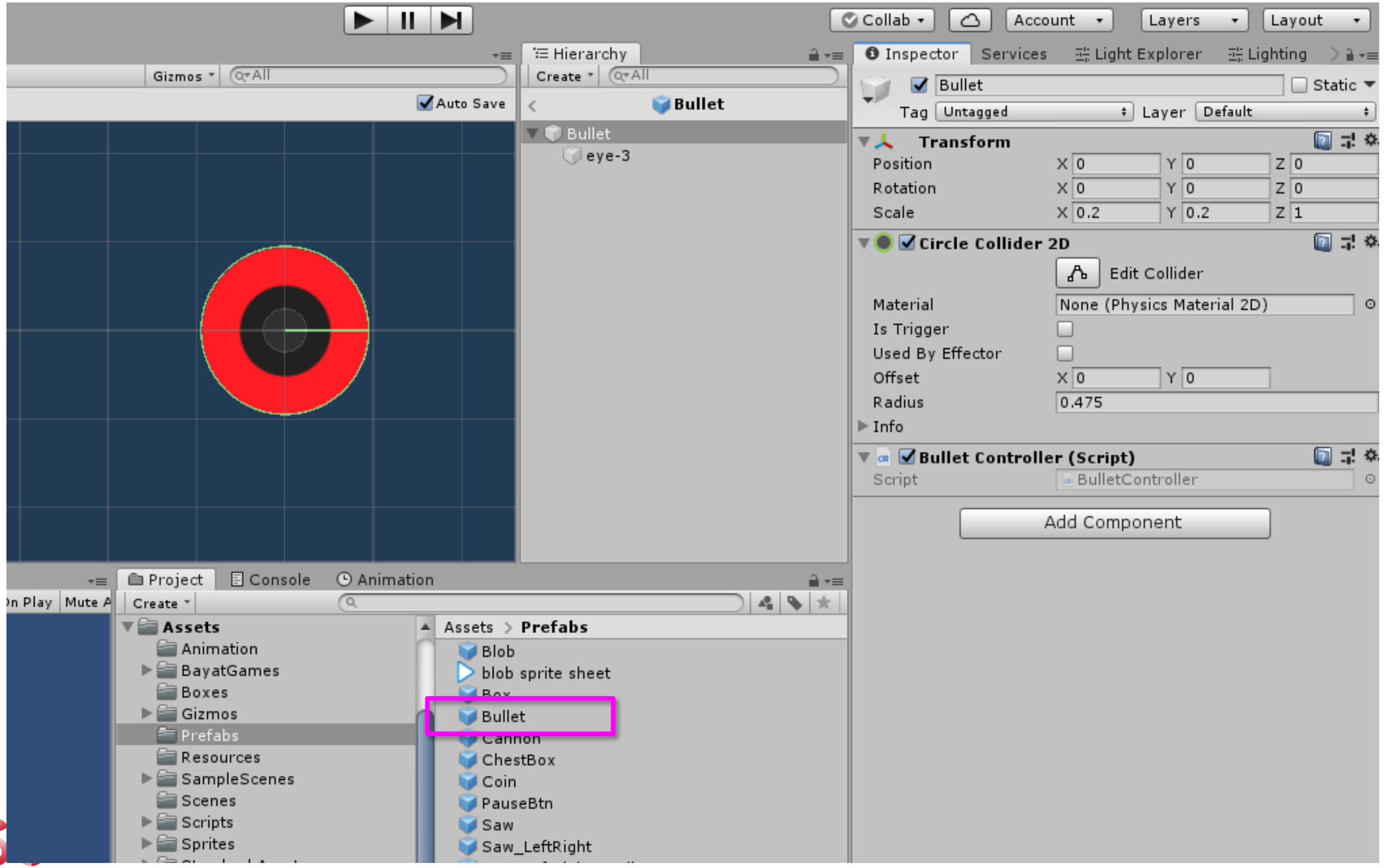
DSU Dongseo University 동서대학교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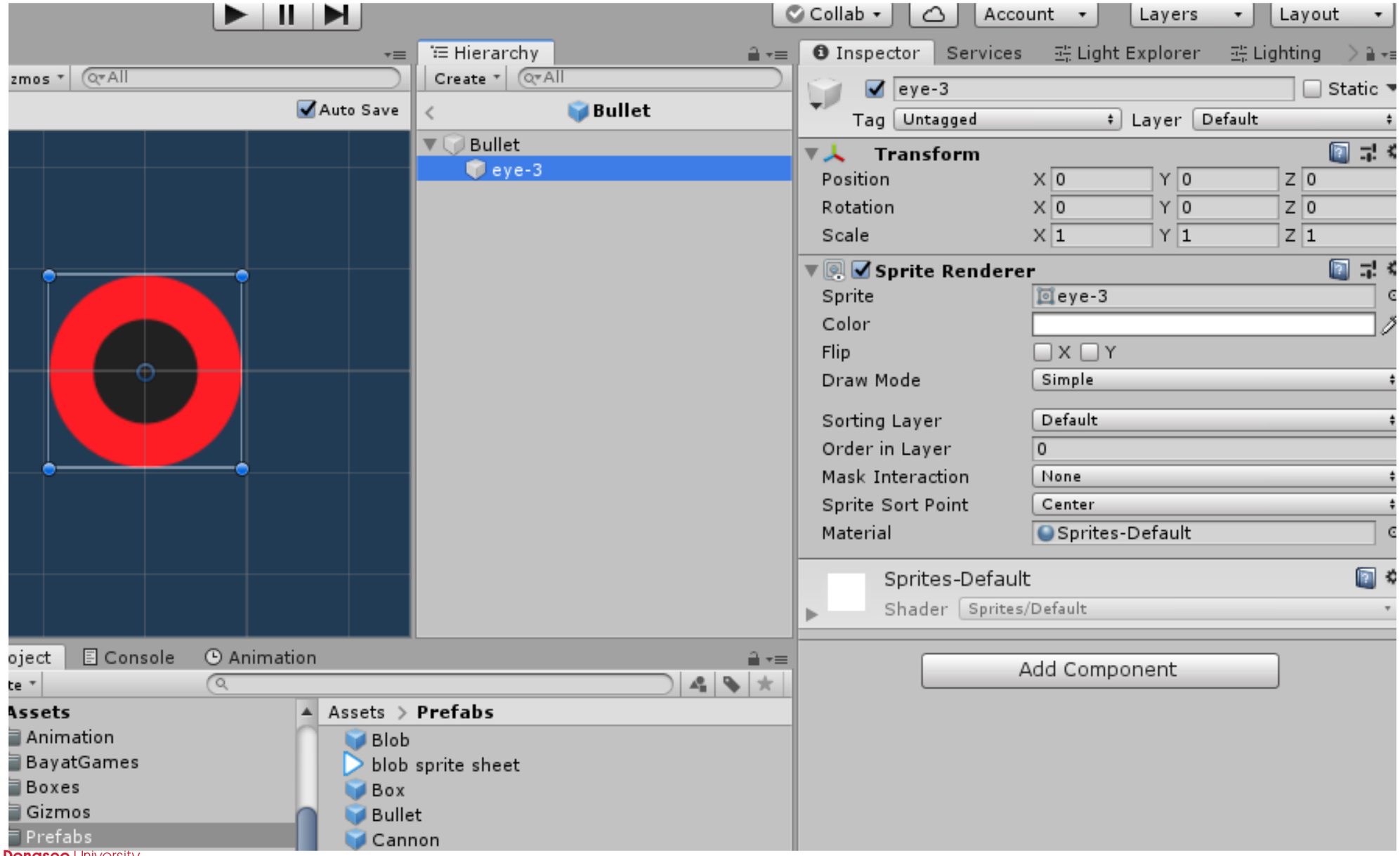
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BoxBehaviour

```
private Vector2 _instantaneousVelocity = Vector2.zero;
    public Vector2 velocity
    {
        get { return _instantaneousVelocity; }
    }

    public Vector2 maxVelocity
    {
        get { return _maxVelocity; }
    }

    private GameObject _player; // reference to the player character

    [SerializeField]
    private BoxCollider2D _boxCollider;
```

```
 void _Update_StateIDLE()
    {
        // Retrieve all colliders we have intersected after velocity has been applied.
        RaycastHit2D[] hits = Physics2D.BoxCastAll(transform.position, _boxCollider.size, 0,
new Vector2(0, 0));
        if (hits.Length >= 1)
        {
            foreach (RaycastHit2D hit in hits)
            {
                // Ignore our own collider.
                if (hit.transform == transform)
                    continue;

                if (hit.transform.gameObject.IsMovingObject())
                {
                    bool isStopIterate = /*virtual*/OnStateIdle_Hit(hit);
                    if( isStopIterate )
                        break;
                }
            }//foreach
        }
        _UpdateCollision();
    }
```

```
void _UpdateCollision()
    {
        /*virtual*/ OnPreCollision();

        if (_movingState == EState.MOVING)
        {
            _curVelocity = Vector2.MoveTowards(_curVelocity, _maxVelocity, _acceleration * Time.deltaTime);
            transform.Translate(_curVelocity * Time.deltaTime);
        }

        _isGrounded = false;
        bool isInAir = true;

        // Retrieve all colliders we have intersected after velocity has been applied.
        Collider2D[] hits = Physics2D.OverlapBoxAll(transform.position, _boxCollider.size, 0);

        _numCollision = hits.Length;

        foreach (Collider2D hit in hits)
        {
            // Ignore our own collider.
            if (hit.transform == transform)
                continue;

            //if( hit.gameObject.IsMovingObject())
            //{
            //    _stateTimer = 0.0f; // initialize timer when there is a collision with 'Player' or 'Box'
            //}
```

```
            isInAir = false;
            ColliderDistance2D colliderDistance = hit.Distance(_boxCollider);

            if (colliderDistance.isOverlapped)
            {
                /*virtual*/ OnOverlapped( hit, colliderDistance);

                // If we intersect an object beneath us, set grounded to true.
                if (Vector2.Angle(colliderDistance.normal, Vector2.up) < 90 && _curVelocity.y < 0)
                {
                    _isGrounded = true;
                }
            }
        }

        if (isInAir != _isInAir)
        {
            _isInAir = isInAir;
        }

        /*virtual*/ OnPostCollision();
    }

    void _StateMOVING_UpdateCollision()
    {
        _UpdateCollision();
    }
```

BoxController

```
35
36      override public void OnPreCollision()
37      {
38          if (base.movingState == EState.MOVING )
39              isContactSawTemp = false;
40      }
41
42      override public void OnOverlapped(Collider2D hit, ColliderDistance2D colliderDistance)
43      {
44          if (hit.transform.CompareTag("Saw"))
45          {
46              isContactSawTemp = true;
47              _grindContactPos = colliderDistance.pointB;
48          }
49
50          if (hit.transform.CompareTag("Player"))
51          {
52              hit.transform.Translate(colliderDistance.pointB - colliderDistance.pointA);
53          }
54          else
```

BulletController

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

public class BulletController : MonoBehaviour
{
    private Vector2 _velocity;
    public Vector2 velocity
    {
        get { return _velocity; }
        set { _velocity = value; }
    }
    private CircleCollider2D _circleCollider;
    private float _lifeTimer = 0.0f;
    private Camera _mainCamera = null;

    // Start is called before the first frame update
    void Start()
    {
        _circleCollider = GetComponent<CircleCollider2D>();
        _mainCamera = Camera.main;
    }
```

BulletController

```
    // Update is called once per frame
    void Update()
    {
        _lifeTimer += Time.deltaTime;
        Vector3 screenPoint = _mainCamera.WorldToViewportPoint(transform.position);
        bool isInViewport = (screenPoint.z > 0 && screenPoint.x > 0 && screenPoint.x < 1 && screenPoint.y >
0 && screenPoint.y < 1);
        if (isInViewport == false)
        {
            Destroy(gameObject);
        }

        transform.Translate(_velocity * Time.deltaTime);
        Collider2D[] hits = Physics2D.OverlapCircleAll(transform.position
            , _circleCollider.radius*transform.localScale.x);
        foreach (Collider2D hit in hits)
        {
            // Ignore our own collider.
            if (hit.transform == transform)
                continue;
            if (hit.transform.CompareTag("Player"))
            {
                // @TODO: must be moved into CharacterController2D
                // @date: 20200428
                Destroy(hit.gameObject);
            }
```

BulletController

```
foreach (Collider2D hit in hits)
        {
            // Ignore our own collider.
            if (hit.transform == transform)
                continue;
            if (hit.transform.CompareTag("Player"))
            {
                // @TODO: must be moved into CharacterController2D
                // @date: 20200428
                Destroy(hit.gameObject);
            }
            LevelManager.CreateEffect(LevelManager.EffectType.SmallImpact, transform.position,
transform.rotation);
            Destroy(gameObject);
            break;
        }
    }
}
```

SawController

```
11
12      override public void OnOverlapped(Collider2D hit, ColliderDistance2D colliderDistance)
13      {
14          if (hit.gameObject.IsMovingObject())
15          {
16              hit.transform.Translate(colliderDistance.pointB - colliderDistance.pointA);
17          }
18          else
19          {
20              if( base.movingState == EState.MOVING )
21                  transform.Translate(colliderDistance.pointA - colliderDistance.pointB);
22          }
23      }
24  }
```

CannonController

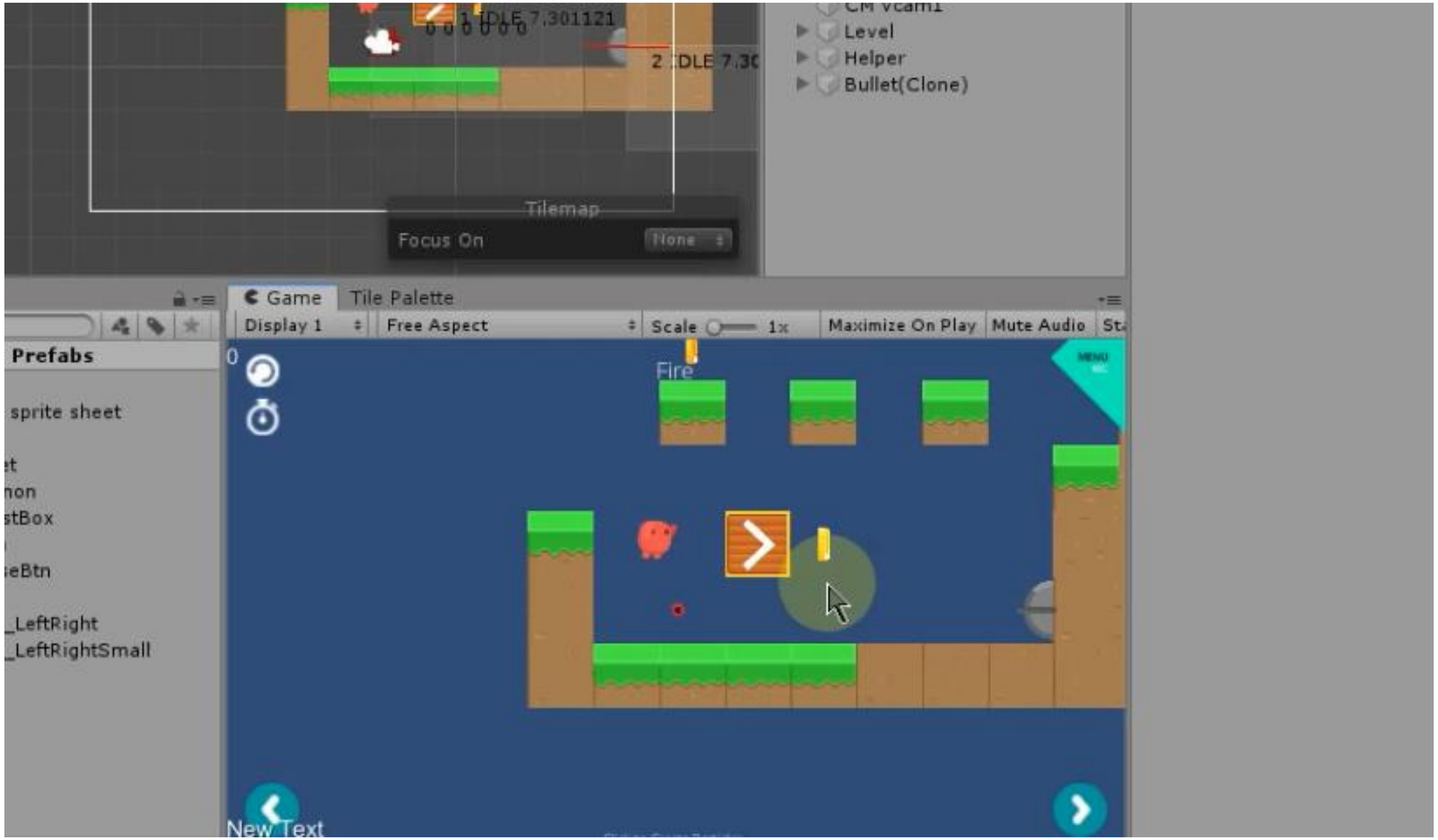
```
public class CannonController : BoxBehaviour
{
    public Transform _muzzlePoint;
    public Transform _bullet;
    public float _fireInterval = 2.0f; // unit: second
    private float _fireTimer = 0.0f;

    // Start is called before the first frame update
    override public void OnStart()
    {
        if (_bullet == null)
            _bullet = Resources.Load("Bullet") as Transform;
    }
```

```
 // Update is called once per frame
    override public void OnUpdate(EState movingState, float stateTimer)
    {
        // need to delete: jintaeks on 20200428
        //if (Input.GetKeyDown(KeyCode.Alpha1))
        //{
        //    if (_bullet)
        //    {
        //        Transform b = Instantiate(_bullet, _muzzlePoint.position,
Quaternion.identity) as Transform;
        //        BulletController bc = b.GetComponent<BulletController>();
        //        bc.velocity = maxVelocity;
        //    }
        //}
        _fireTimer += Time.deltaTime;
        if (_fireTimer >= _fireInterval)
        {
            _fireTimer = 0.0f;
            _FireBullet();
        }
    }
```

```
    override public void OnOverlapped(Collider2D hit, ColliderDistance2D colliderDistance)
    {
        if (hit.transform.CompareTag("Player"))
        {
            hit.transform.Translate(colliderDistance.pointB - colliderDistance.pointA);
        }
        else
        {
            if( base.movingState == EState.MOVING )
                transform.Translate(colliderDistance.pointA - colliderDistance.pointB);
        }
    }

    private void _FireBullet()
    {
        Transform b = Instantiate(_bullet, _muzzlePoint.position, Quaternion.identity) as
Transform;
        BulletController bc = b.GetComponent<BulletController>();
        bc.velocity = maxVelocity;
    }
}
```



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MY **BRIGHT** FUTURE

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