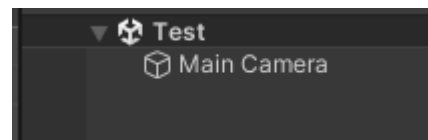
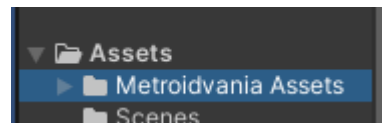
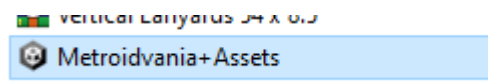
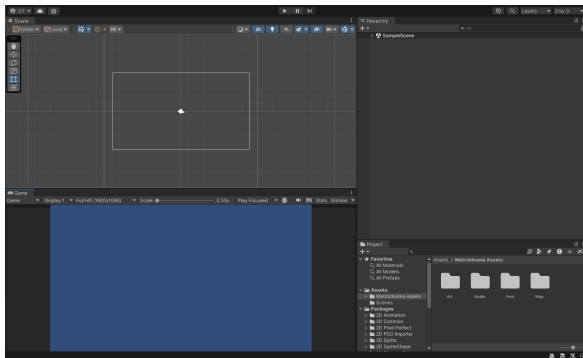


Project MV: Unit 1 IMAGES

*This doc will include steps and helpful screenshots

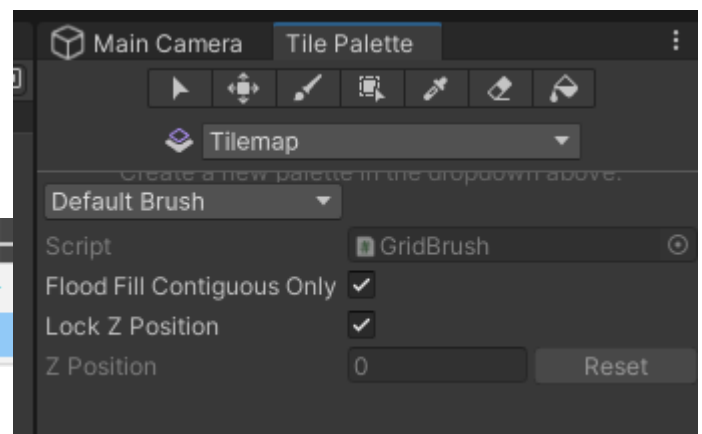
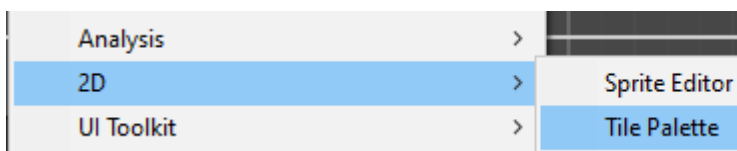
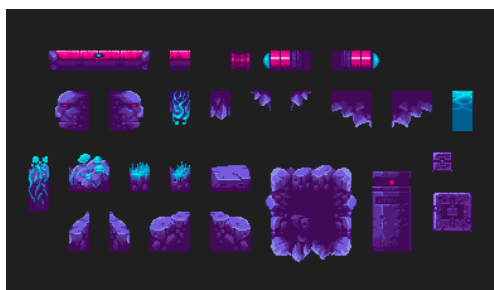
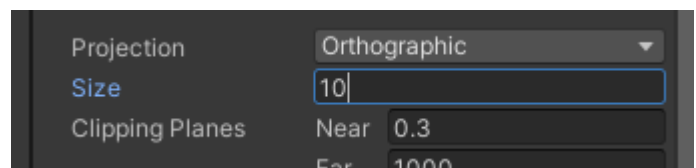
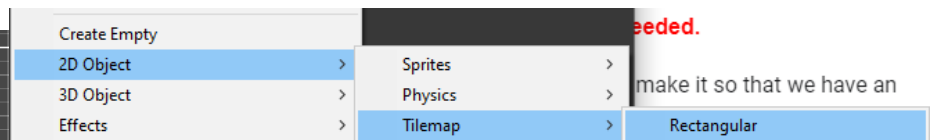
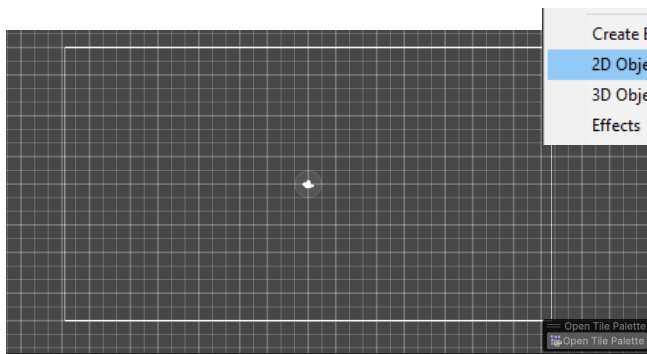
Lesson 1: Intro & SetUp

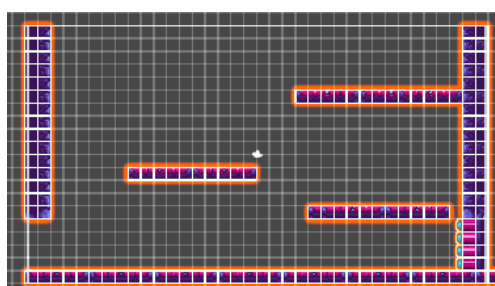
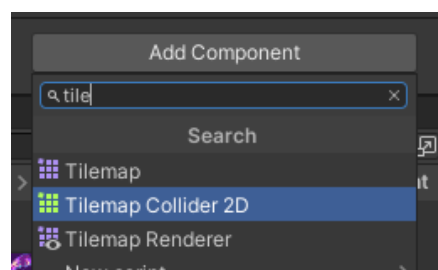
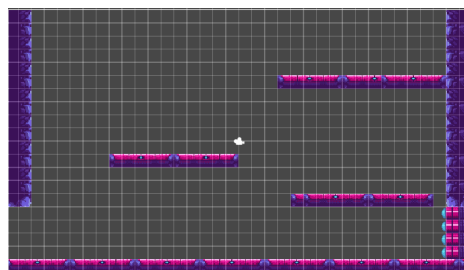
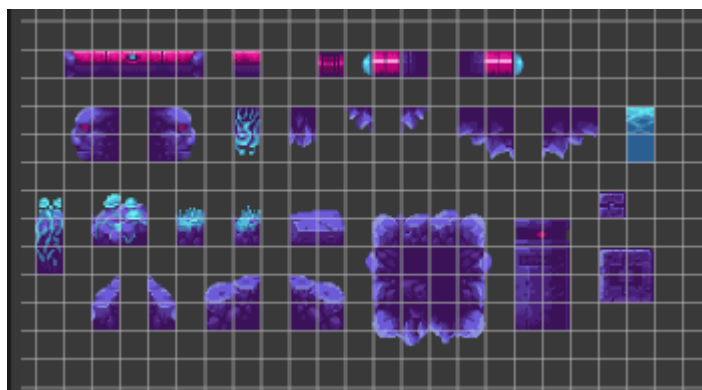
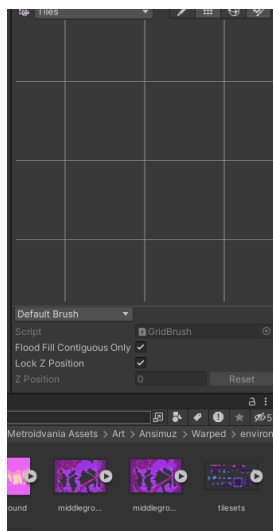
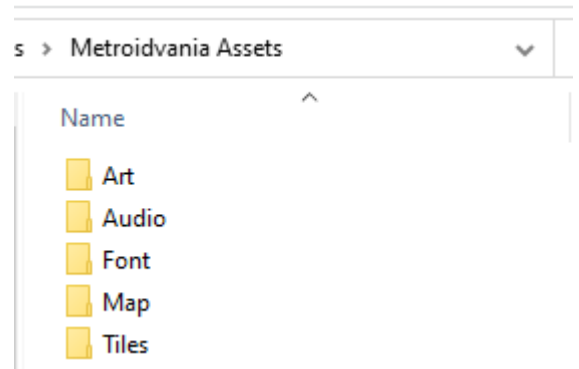
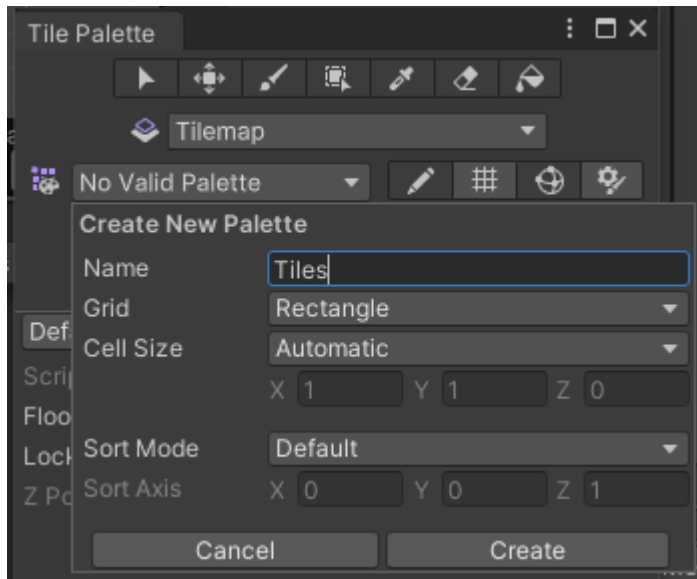
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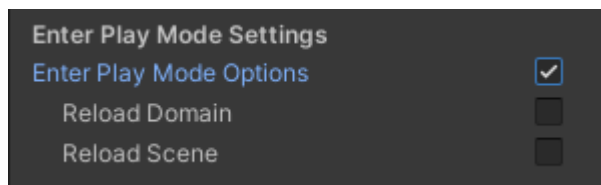
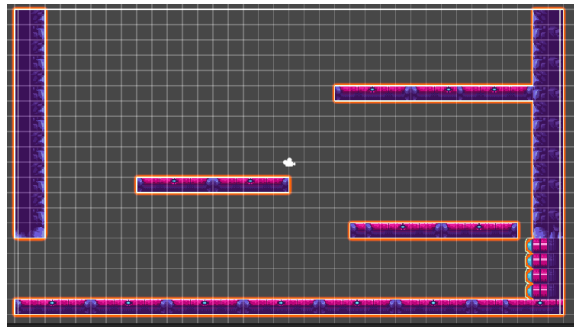
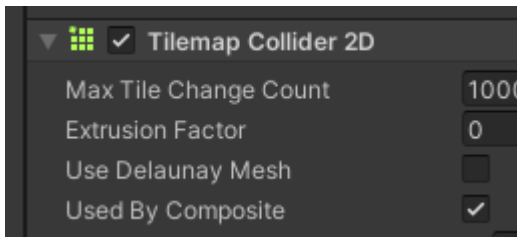


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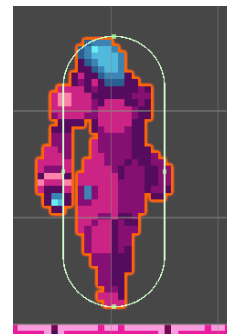
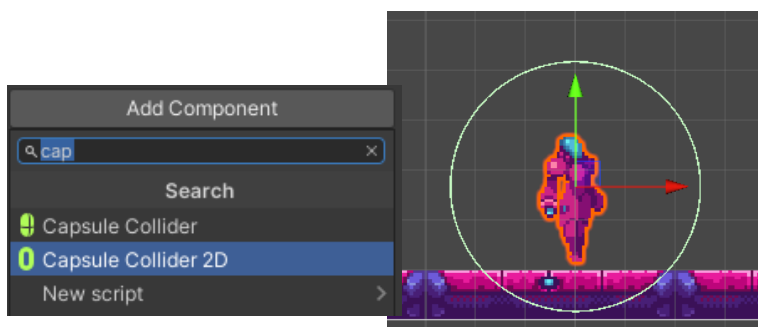
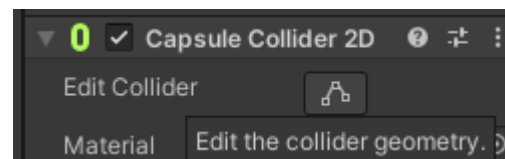
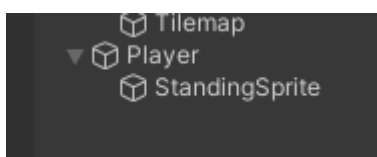
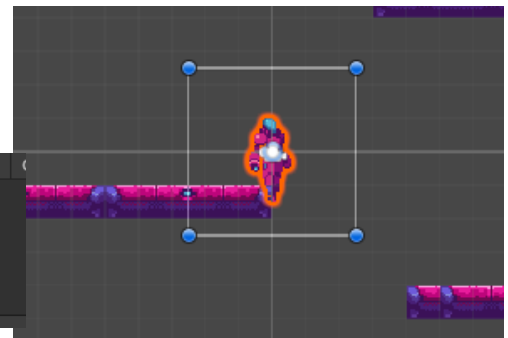
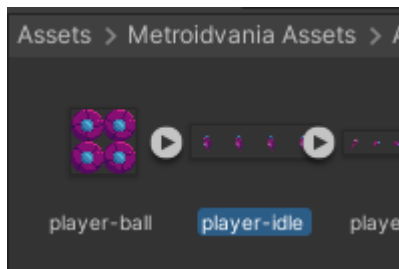
TILEMAP

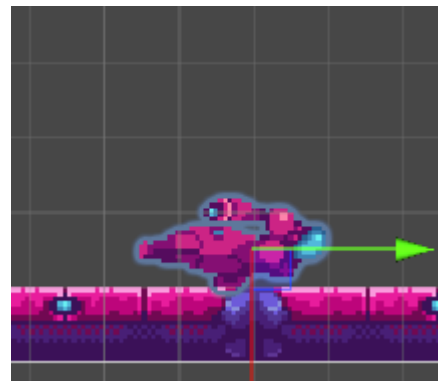
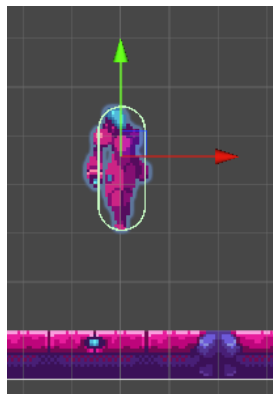
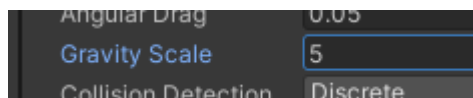
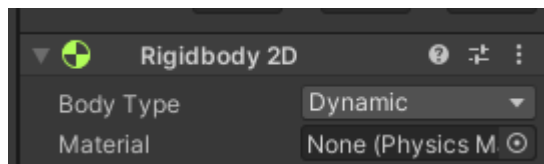




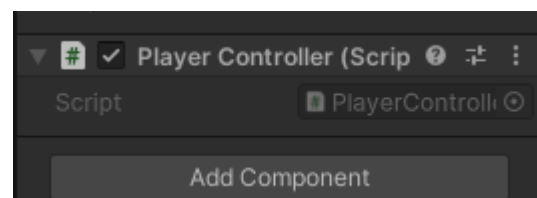
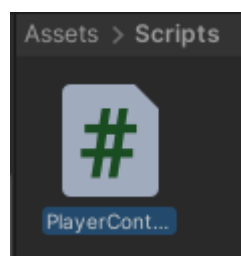
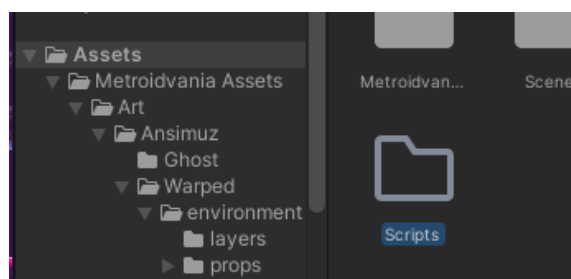


Lesson 2: The Player





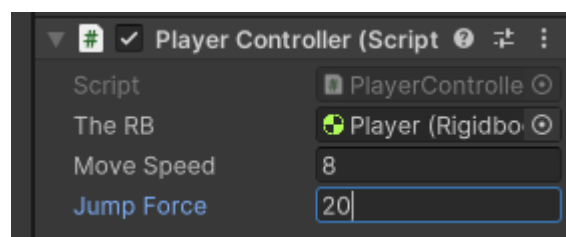
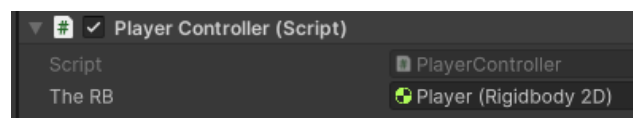
MOVING THE PLAYER



```

5 public class PlayerController : MonoBehaviour
6 {
7     public Rigidbody2D theRB;
8
9     public float moveSpeed;
10    public float jumpForce;

```



```

17 // Update is called once per frame
18 void Update()
19 {
20     theRB.velocity = new Vector2(Input.GetAxisRaw("Horizontal") * moveSpeed, theRB.velocity.y);
21 }
22 }
23

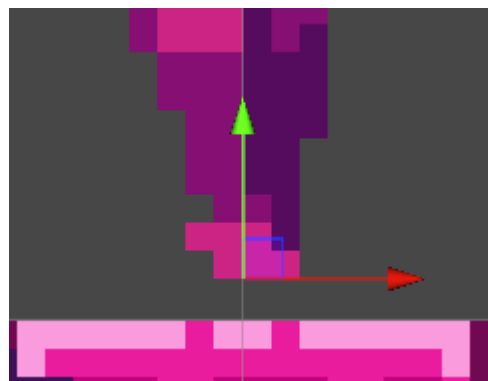
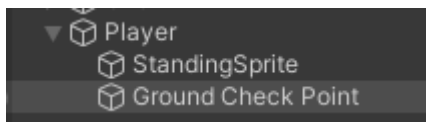
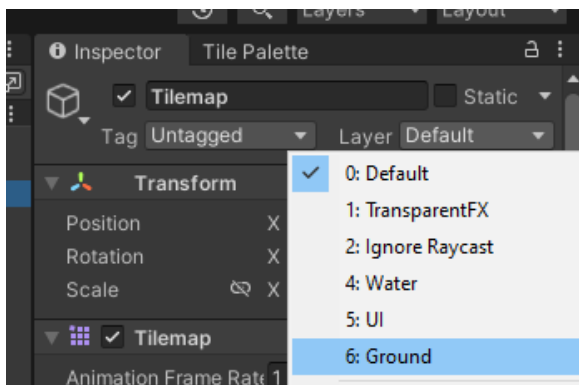
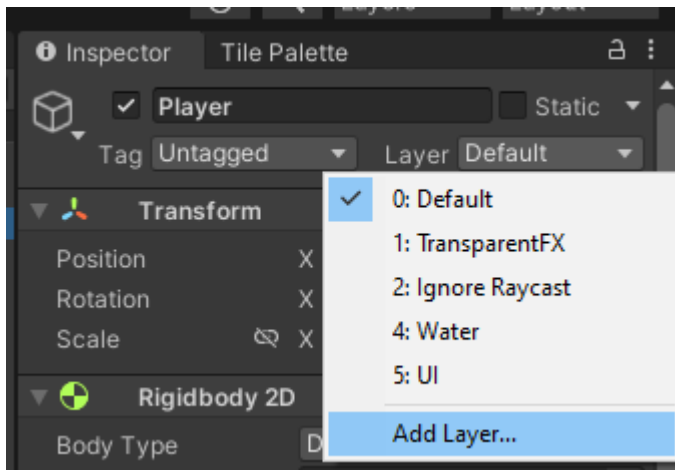
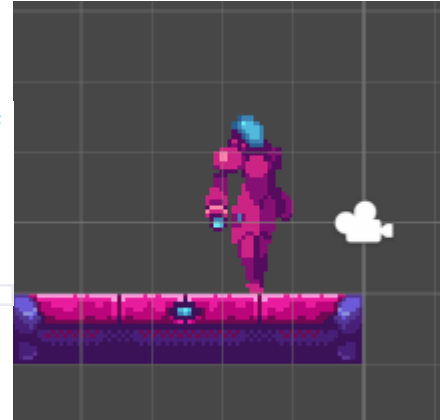
```

JUMPING -

```

20 theRB.velocity = new Vector2(Input.GetAxisRaw("Horizontal") * moveSpeed, theRB.velocity.y);
21
22 if(Input.GetButtonDown("Jump"))
23 {
24     theRB.velocity = new Vector2(theRB.velocity.x, jumpForce);
25 }
26
27
28

```



```

12 public Transform groundPoint;
13 private bool isOnGround;
14 public LayerMask whatIsGround;
15

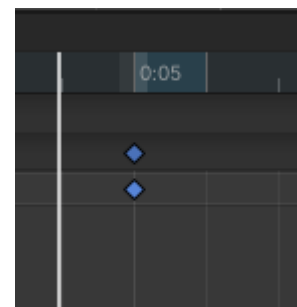
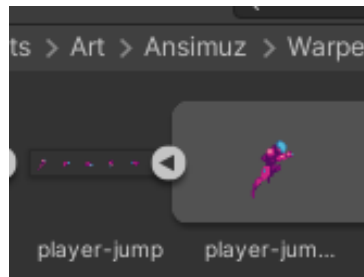
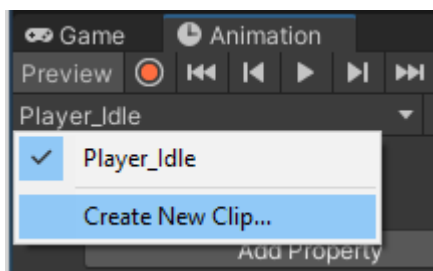
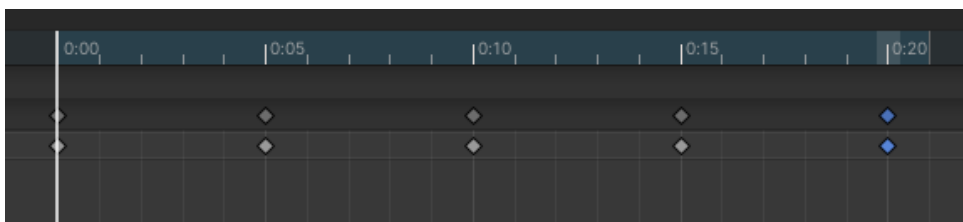
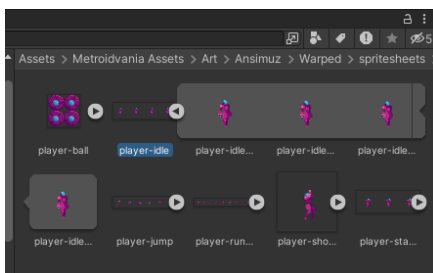
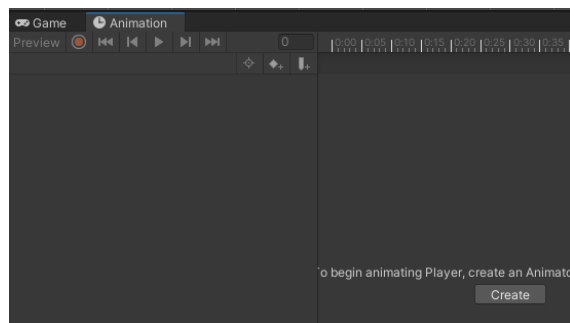
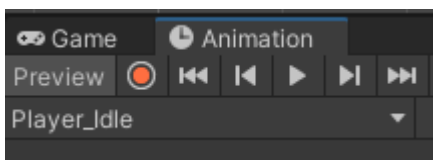
```

*changed to dark mode here so kids can see easier

```
23 void Update()
24 {
25     theRB.velocity = new Vector2(Input.GetAxisRaw("Horizontal") * moveSpeed, theRB.velocity.y);
26
27     isOnGround = Physics2D.OverlapCircle(groundPoint.position, .2f, whatIsGround);
```

```
27     isOnGround = Physics2D.OverlapCircle(groundPoint.position, .2f, whatIsGround);
28
29     if(Input.GetButtonDown("Jump") && isOnGround)
30     {
31         theRB.velocity = new Vector2(theRB.velocity.x, jumpForce);
32     }
33 }
34
35
```

Animations -



Has Exit Time ☐

▼ Settings

Exit Time 0.2857143

Fixed Duration ☒

Transition Duration (s) 0

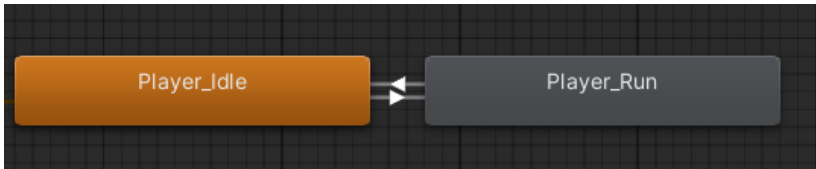
Transition Offset 0

Interruption Source None

Conditions

= speed Greater 0.1

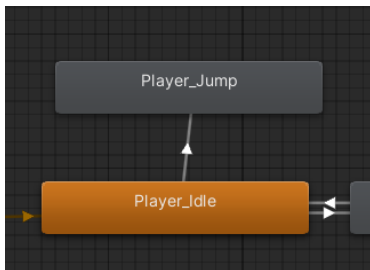
+ -



Conditions

= speed Less 0.1

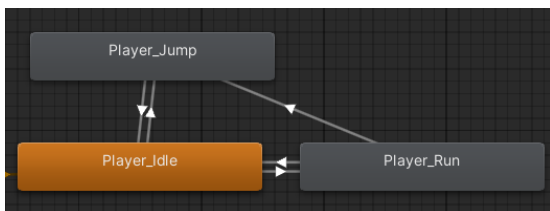
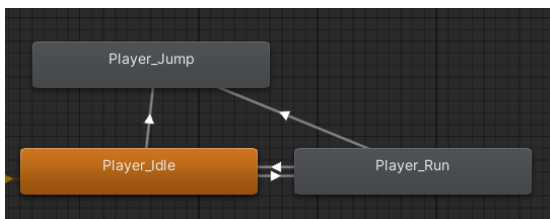
+ -



Conditions

= isOnGround false

+ -



Conditions

= isOnGround true

+ -

```

12 public Transform groundPoint;
13 private bool isOnGround;
14 public LayerMask whatIsGround;
15
16 public Animator anim;
17
18 // Start is called before the first frame
  
```

```

41
42 anim.SetBool("isOnGround", isOnGround);
43 }
44 }
45
  
```



```

41
42     anim.SetBool("isOnGround", isOnGround);
43     anim.SetFloat("speed", Mathf.Abs(theRB.velocity.x));
44 }
45

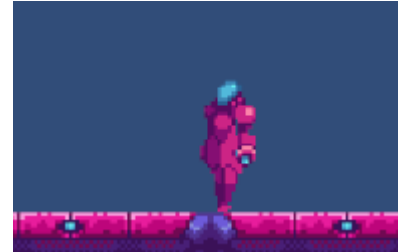
```

FLIPPING THE PLAYER

```

26 {
27     // move sideways
28     theRB.velocity = new Vector2(Input.GetAxisRaw("Horizontal") * moveSpeed, theRB.velocity.y);
29
30
31
32     // checking if on ground
33     isOnGround = Physics2D.OverlapCircle(groundPoint.position, .2f, whatIsGround);
34
35

```



```

29
30     // handle direction change
31     if (theRB.velocity.x < 0)
32     {
33         transform.localScale = new Vector3(-1f, 1f, 1f);
34     } else if (theRB.velocity.x > 0)
35     {
36

```

```

30     // handle direction change
31     if (theRB.velocity.x < 0)
32     {
33         transform.localScale = new Vector3(-1f, 1f, 1f);
34     } else if (theRB.velocity.x > 0)
35     {
36         transform.localScale = Vector3.one;
37     }
38

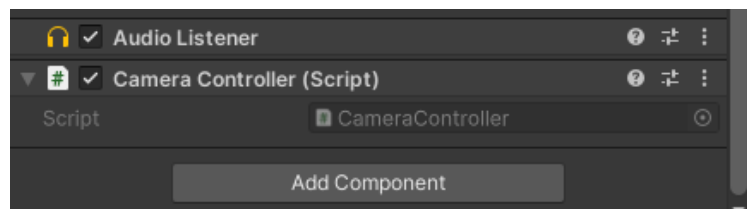
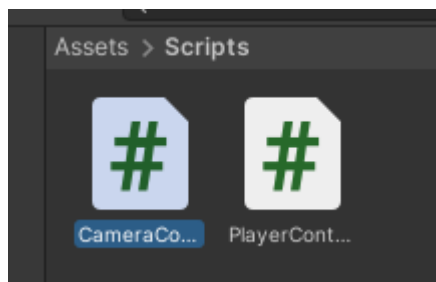
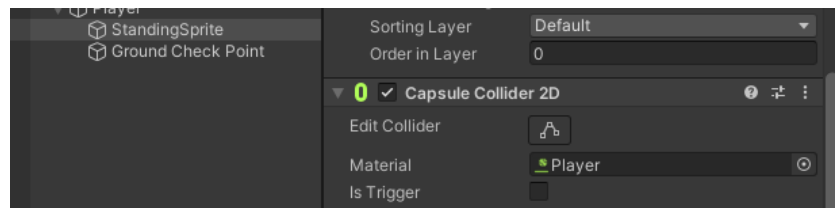
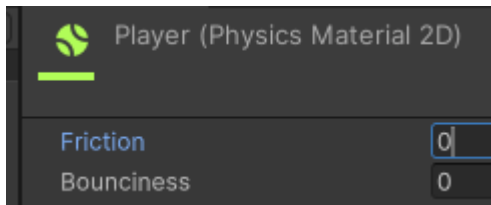
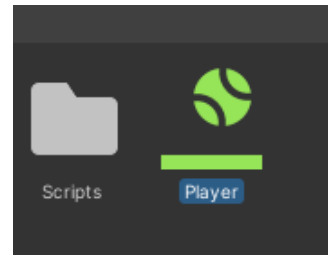
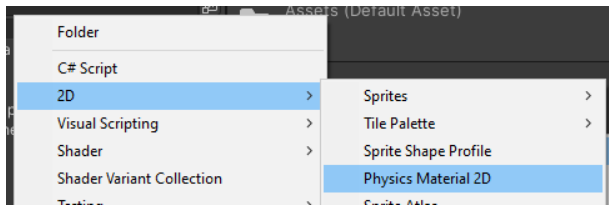
```

```

29
30     // handle direction change
31     if (theRB.velocity.x < 0)
32     {
33         transform.localScale = new Vector3(-1f, 1f, 1f);
34     } else if (theRB.velocity.x > 0)
35     {
36         transform.localScale = Vector3.one;
37     }
38
39     // checking if on ground
40     isOnGround = Physics2D.OverlapCircle(groundPoint.position, .2f, whatIsGround);
41
42     // jumping
43     if (Input.GetButtonDown("Jump") && isOnGround)
44     {
45         theRB.velocity = new Vector2(theRB.velocity.x, jumpForce);
46     }
47

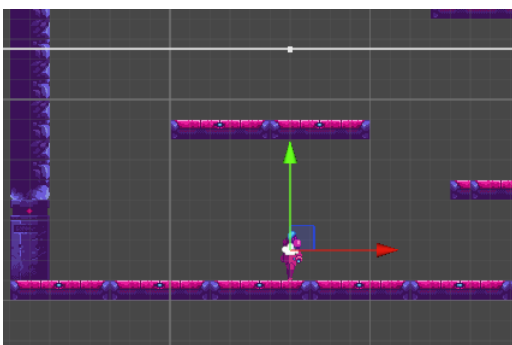
```

LESSON 3: CAMERA CONTROL



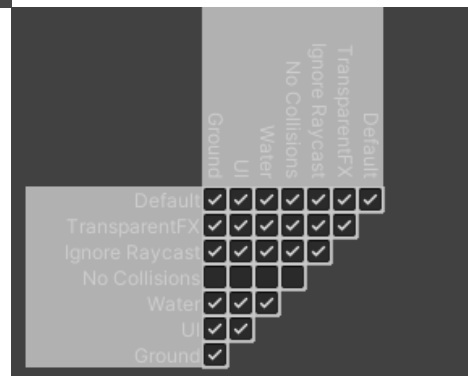
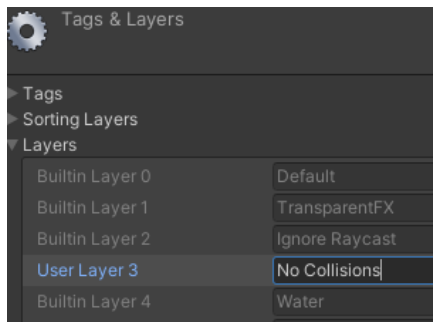
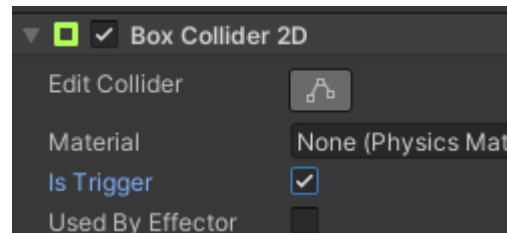
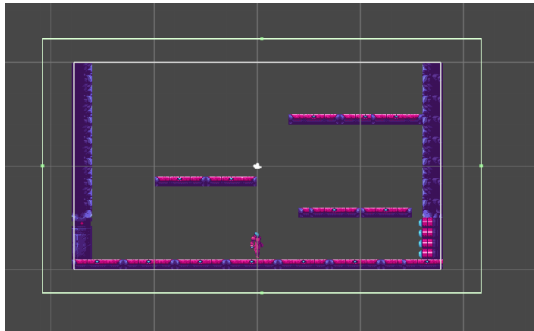
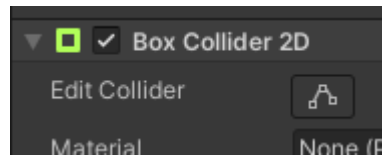
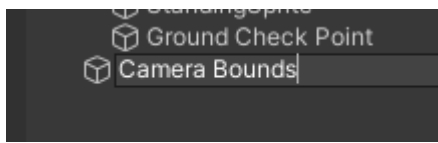
```
5 public class CameraController : MonoBehaviour
6 {
7
8     private PlayerController player;
```

```
9
10 // Start is called before the first frame update
11 void Start()
12 {
13     player = FindObjectOfType<PlayerController>();
14 }
15
```



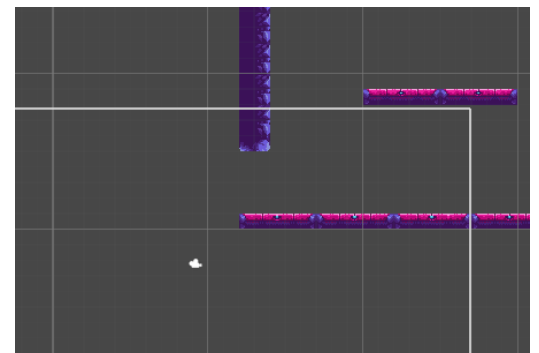
```
17 // Update is called once per frame
18 void Update()
19 {
20     if(player != null)
21     {
22         transform.position = new Vector3(player.transform.position.x, player.transform.position.y, transform.position.z);
23     }
24 }
25
26
```

CLAMPING



```
8 private PlayerController player;
9 public BoxCollider2D boundsBox;
```

```
18 // Update is called once per frame
19 void Update()
20 {
21     if(player != null)
22     {
23         transform.position = new Vector3(
24             Mathf.Clamp(player.transform.position.x, boundsBox.bounds.min.x, boundsBox.bounds.max.x),
25             Mathf.Clamp(player.transform.position.y, boundsBox.bounds.min.y, boundsBox.bounds.max.y),
26             transform.position.z);
27     }
28 }
29
```



```
8 private PlayerController player;
9 public BoxCollider2D boundsBox;
10
11 private float halfHeight, halfWidth;
```

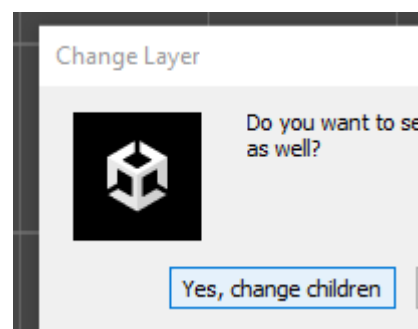
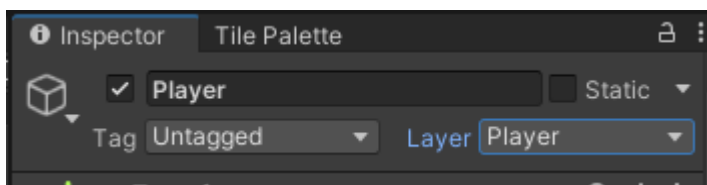
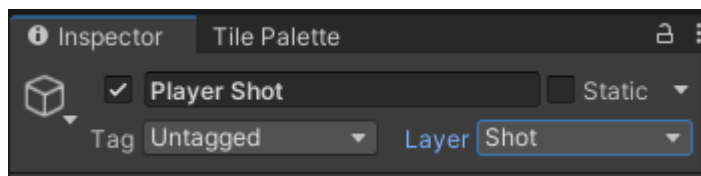
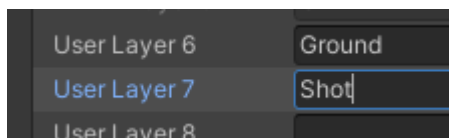
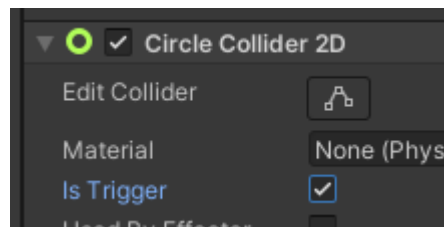
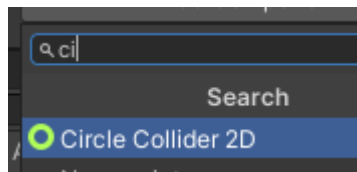
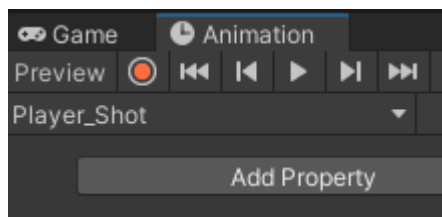
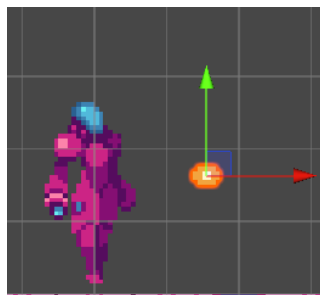
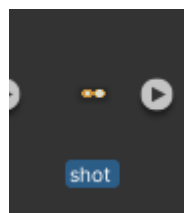
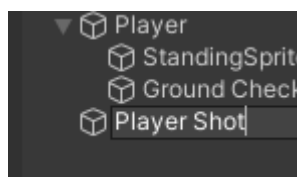
```
14 void Start()
15 {
16     player = FindObjectOfType<PlayerController>();
17
18     halfHeight = Camera.main.orthographicSize;
19     halfWidth = halfHeight * Camera.main.aspect;
20 }
21
```

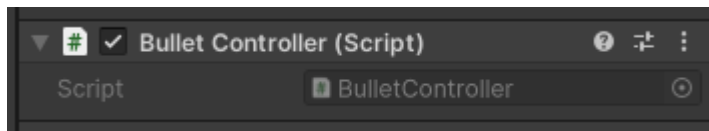
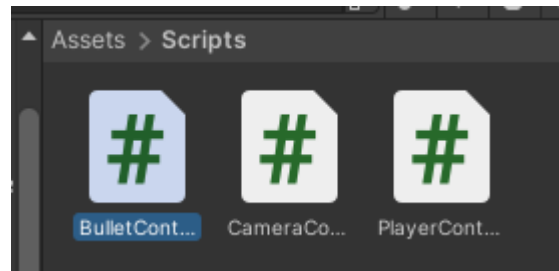
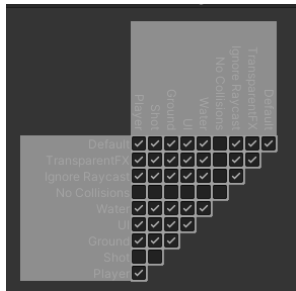
```

22 // Update is called once per frame
23 void Update()
24 {
25     if(player != null)
26     {
27         transform.position = new Vector3(
28             Mathf.Clamp(player.transform.position.x, boundsBox.bounds.min.x + halfWidth, boundsBox.bounds.max.x - halfWidth),
29             Mathf.Clamp(player.transform.position.y, boundsBox.bounds.min.y + halfHeight, boundsBox.bounds.max.y - halfHeight),
30             transform.position.z);
31     }
32 }
33 }
34 }
35

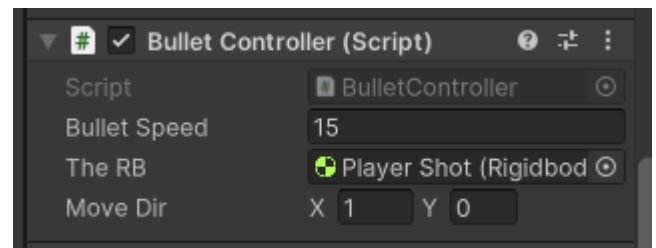
```

Lesson 4: Firing Mechanics





```
6 {
7     public float bulletSpeed;
8     public Rigidbody2D theRB;
9
10    public Vector2 moveDir;
11 }
```



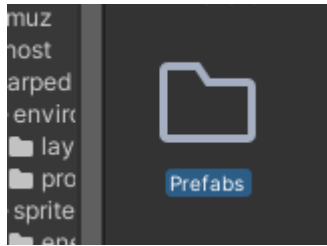
```
19 void Update()
20 {
21     theRB.velocity = moveDir * bulletSpeed;
22 }
23 }
```

```
18
19 private void OnTriggerEnter2D(Collider2D other)
20 {
21     Destroy(gameObject);
22 }
23 }
```

```
24 private void OnBecameInvisible()
25 {
26     Destroy(gameObject);
27 }
28 }
```

```
51
52 if(Input.GetButtonDown("Fire1"))
53 {
54     Instantiate(shotToFire, shotPoint.position, shotPoint.rotation);
55 }
```

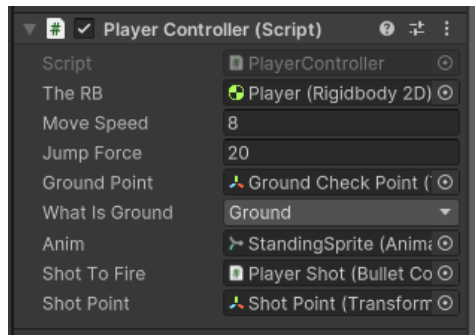
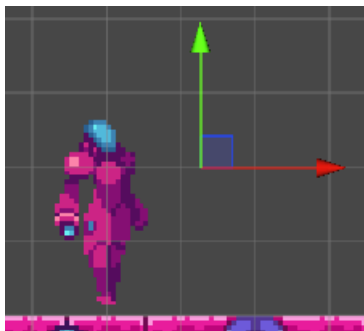
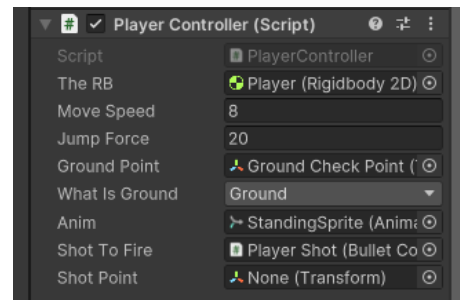
FIRING SHOTS



```

17
18 public BulletController shotToFire;
19 public Transform shotPoint;
20

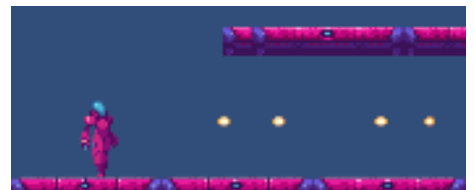
```



```

51
52 if(Input.GetButtonDown("Fire1"))
53 {
54     Instantiate(shotToFire, shotPoint.position, shotPoint.rotation);
55 }
56

```

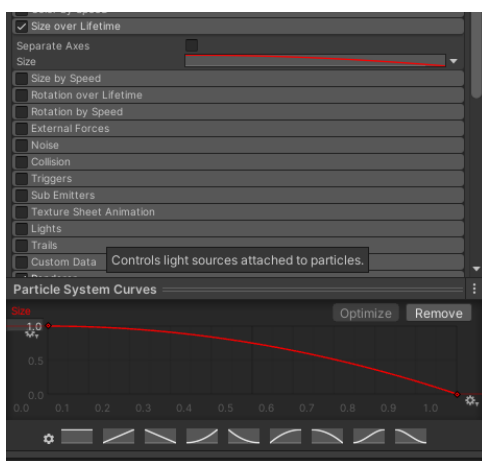
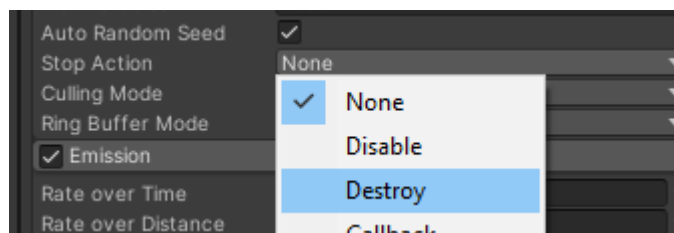
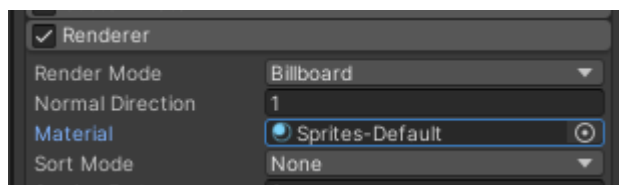
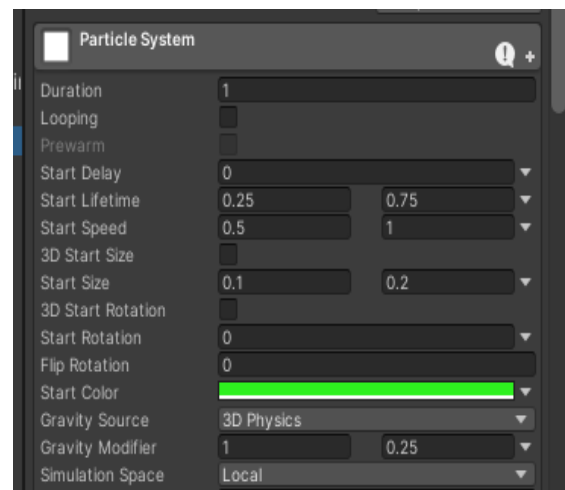
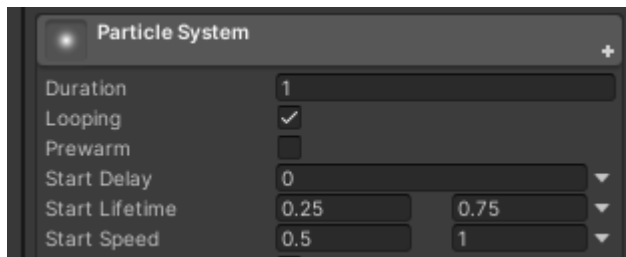
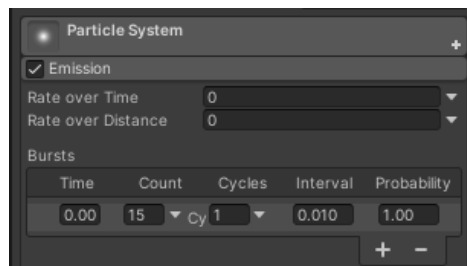
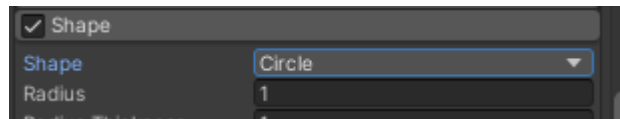
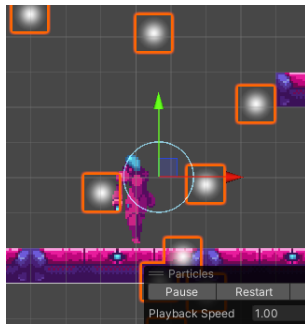


```

51
52 if(Input.GetButtonDown("Fire1"))
53 {
54     Instantiate(shotToFire, shotPoint.position, shotPoint.rotation).moveDir = new Vector2(transform.localScale.x, 0f);
55 }
56

```

ADDING IMPACT



```

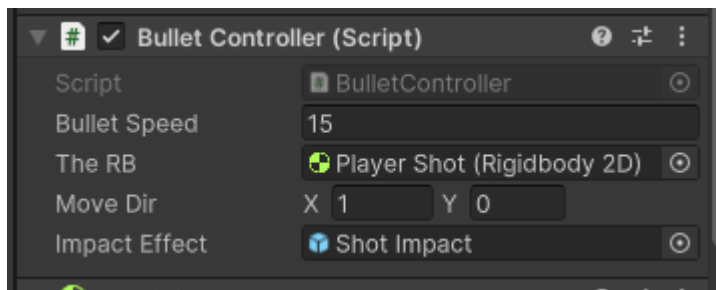
9
10 public Vector2 moveDir;
11
12 public GameObject impactEffect;
13

```

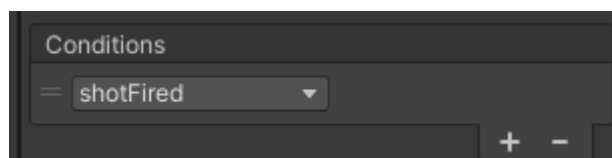
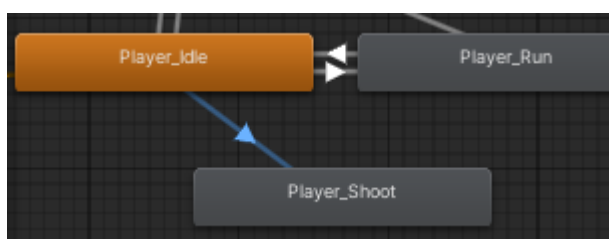
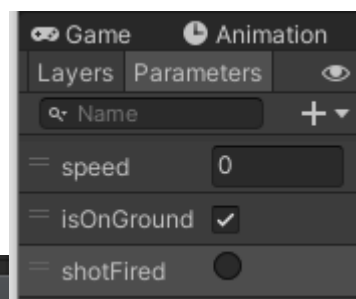
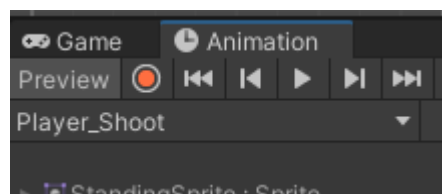
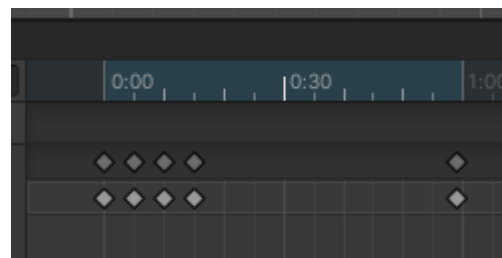
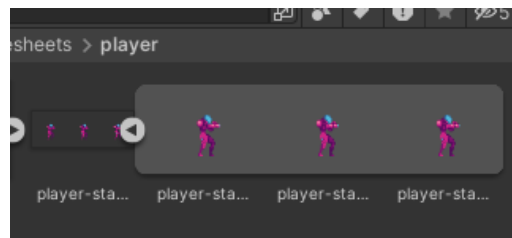
```

20
21 private void OnTriggerEnter2D(Collider2D other)
22 {
23     if (impactEffect != null)
24     {
25         Instantiate(impactEffect, transform.position, Quaternion.identity);
26     }
27
28     Destroy(gameObject);
29 }
30

```



SHOOTING ANIMATION



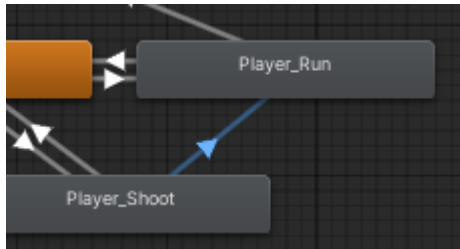


Has Exit Time ☒

▼ Settings

Exit Time

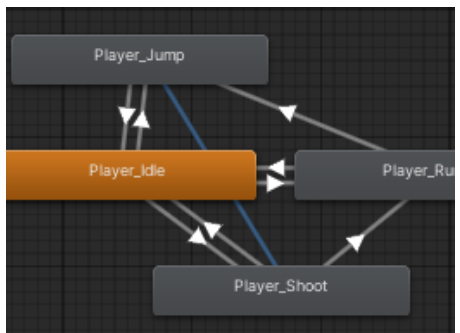
Fixed Duration ☒



Conditions

= speed Greater 0.1

+ -



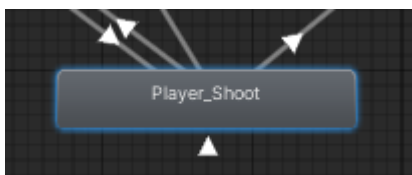
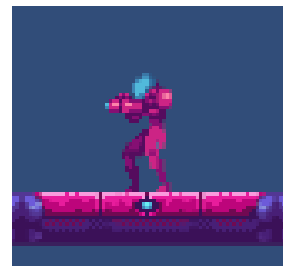
Conditions

= isOnGround false

+ -

```

50
51 // Shooting
52 if(Input.GetButtonDown("Fire1"))
53 {
54     Instantiate(shotToFire, shotPoint.
55     anim.SetTrigger("shotFired");
56 }
57
  
```



Visual Scripting

1.8.0 · December 07, 2022

[Release](#)

[Remove](#)

JetBrains Rider Editor

3.0.18 · January 09, 2023

[Release](#)

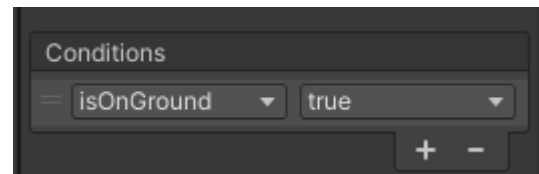
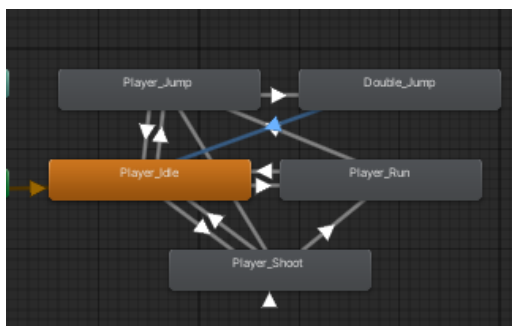
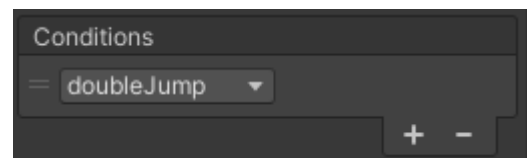
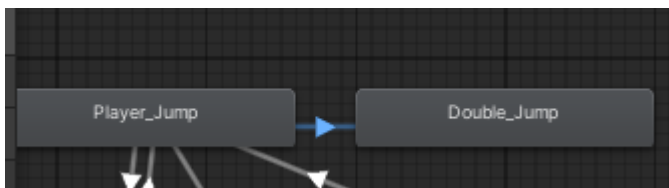
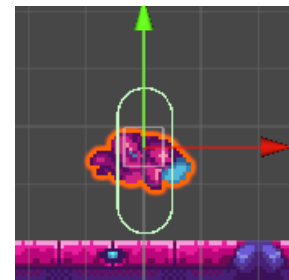
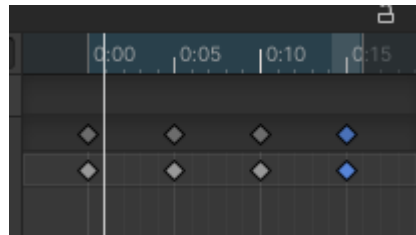
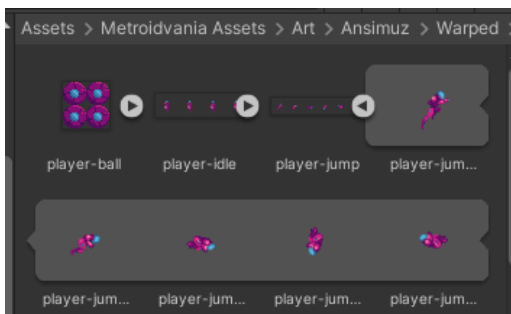
[Remove](#)

BALH BLAH BLAH

Lesson 5: Creating Abilities

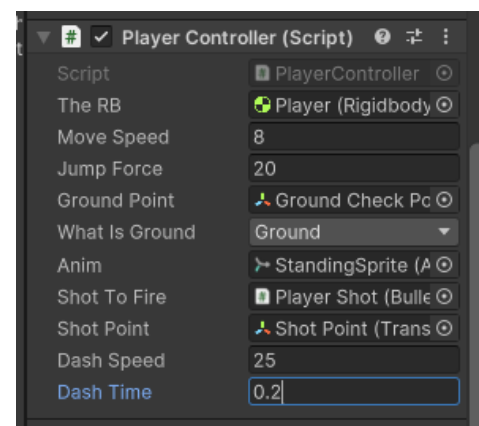
```
18 public BulletController shotToFire;  
19 public Transform shotPoint;  
20  
21 private bool canDoubleJump;  
22
```

```
46  
47 // jumping  
48 if (Input.GetButtonDown("Jump") && (isOnGround || canDoubleJump))  
49 {  
50     if (isOnGround)  
51     {  
52         canDoubleJump = true;  
53     }  
54     else  
55     {  
56         canDoubleJump = false;  
57     }  
58     theRB.velocity = new Vector2(theRB.velocity.x, jumpForce);  
59  
60 }
```



DASHING

```
20  
21 private bool canDoubleJump;  
22  
23 public float dashSpeed, dashTime;  
24 private float dashCounter;  
25
```



```

32 // Update is called once per frame
33 void Update()
34 {
35     if (Input.GetButtonDown("Fire2"))
36     {
37         dashCounter = dashTime;
38     }
39
40     if (dashCounter > 0)
41     {
42     }
43     else
44     {
45         // move sideways
46         theRB.velocity = new Vector2(Input.GetAxisRaw("Horizontal") * moveSpeed, theRB.velocity.y);
47
48         // handle direction change
49         if (theRB.velocity.x < 0)
50         {
51             transform.localScale = new Vector3(-1f, 1f, 1f);
52         }
53         else if (theRB.velocity.x > 0)
54         {
55             transform.localScale = Vector3.one;
56         }
57     }
58 }
59

```

```

39 }
40
41 if (dashCounter > 0)
42 {
43     dashCounter = dashCounter - Time.deltaTime;
44 }
45 else
46 {

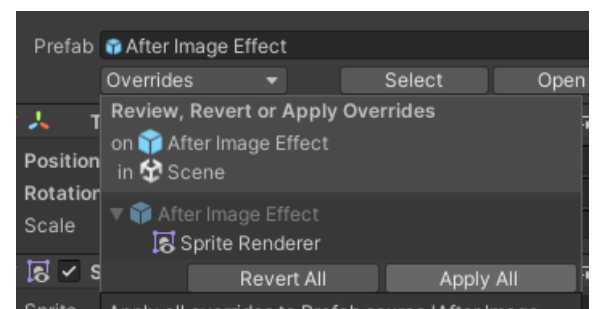
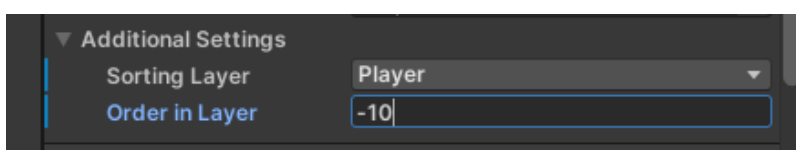
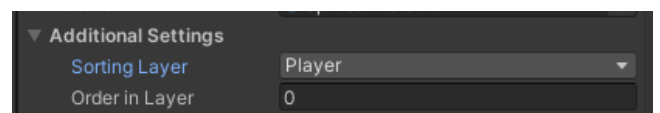
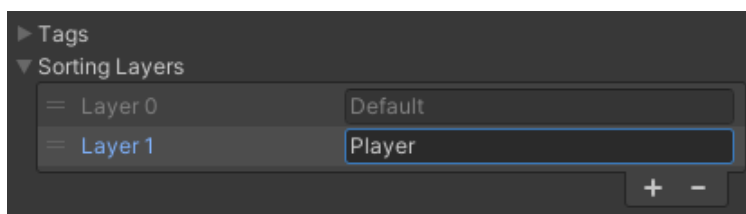
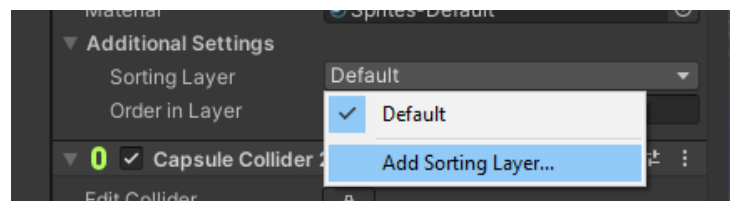
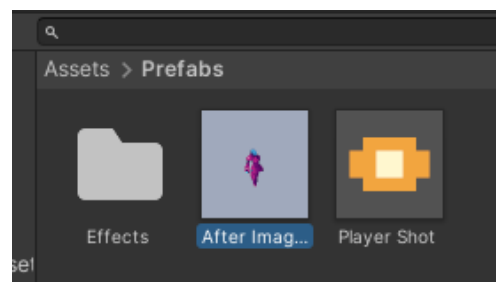
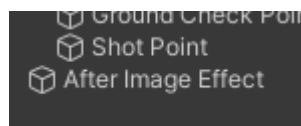
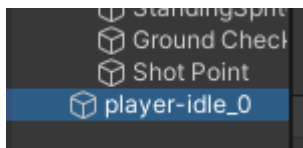
```

```

1 if (dashCounter > 0)
2 {
3     dashCounter = dashCounter - Time.deltaTime;
4
5     theRB.velocity = new Vector2(dashSpeed * transform.localScale.x, theRB.velocity.y);
6 }
7 else

```

Dash animation



```

24     private float dashCounter;
25
26     public SpriteRenderer theSR, afterImage;
27     public float afterImageLifetime, timeBetweenAfterImages;
28     private float afterImageCounter;
29     public Color afterImageColor;
30
31     // Start is called before the first frame update

```

```

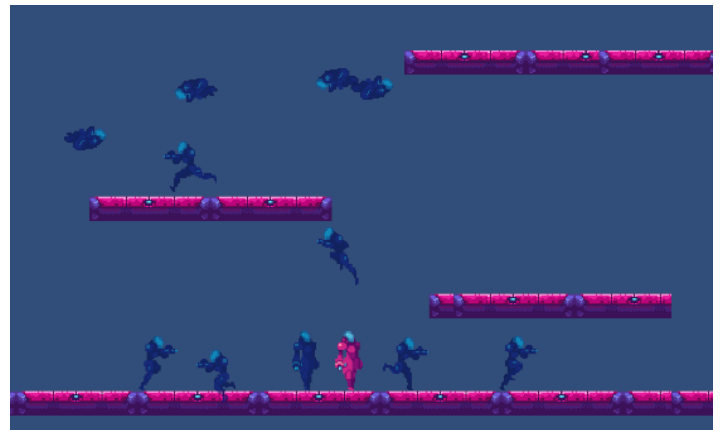
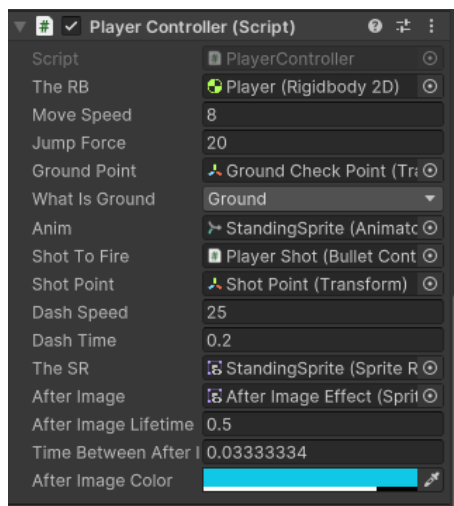
39     {
40         //dashing
41         if(Input.GetButtonDown("Fire2"))
42         {
43             dashCounter = dashTime;
44             ShowAfterImage();
45         }
46     }
47
48     if (dashCounter > 0)

```

```

103
104     public void ShowAfterImage()
105     {
106         SpriteRenderer image = Instantiate(afterImage, transform.position, transform.rotation);
107         image.sprite = theSR.sprite;
108         image.transform.localScale = transform.localScale;
109         image.color = afterImage.color;
110     }
111
112 }

```



```

109     image.color = afterImageColor;
110
111     Destroy(image.gameObject, afterImageLifetime);
112 }
113
114
115

```

```

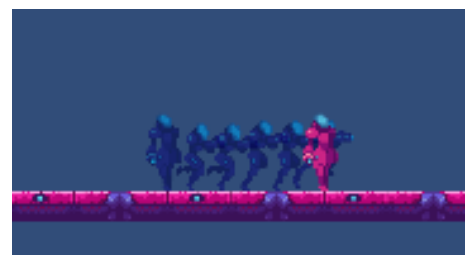
110
111     Destroy(image.gameObject, afterImageLifetime);
112
113     afterImageCounter = timeBetweenAfterImages;
114 }
115
116

```

```

47     if (dashCounter > 0)
48     {
49         dashCounter = dashCounter - Time.deltaTime;
50
51         theRB.velocity = new Vector2(dashSpeed * transform.localScale.x, theRB.velocity.y);
52
53         afterImageCounter -= Time.deltaTime;
54         if (afterImageCounter <= 0)
55         {
56             ShowAfterImage();
57         }
58     }
59
60

```



```

29     public Color afterImageColor;
30
31     public float waitAfterDashing;
32     private float dashRechargeCounter;
33

```

```

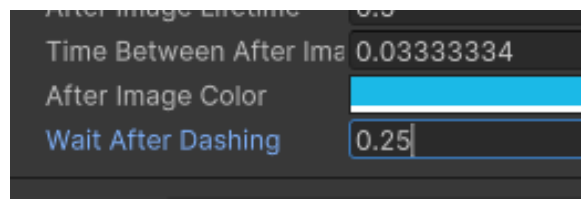
39
40 // Update is called once per frame
41 void Update()
42 {
43     if (dashRechargeCounter > 0)
44     {
45         dashRechargeCounter -= Time.deltaTime;
46     }
47     else
48     {
49
50         //dashing
51         if (Input.GetButtonDown("Fire2"))
52         {
53             dashCounter = dashTime;
54             ShowAfterImage();
55         }
56     }
57 }
58

```

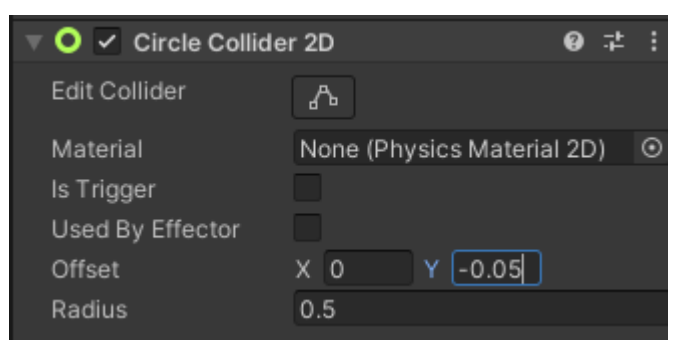
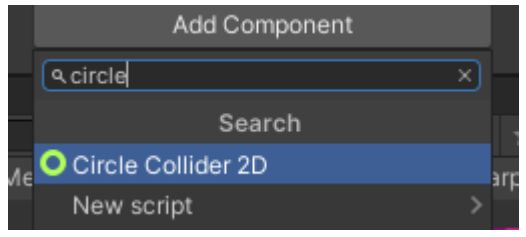
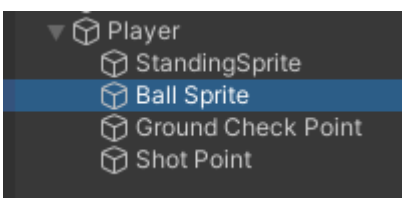
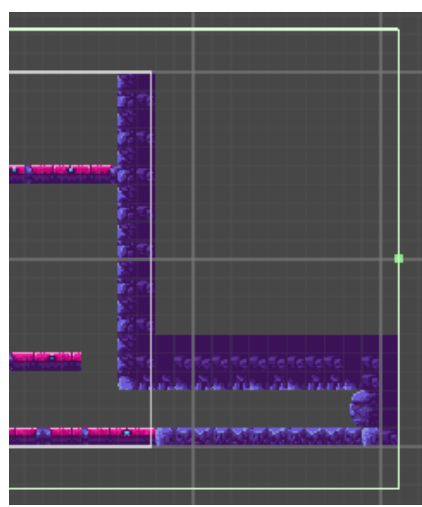
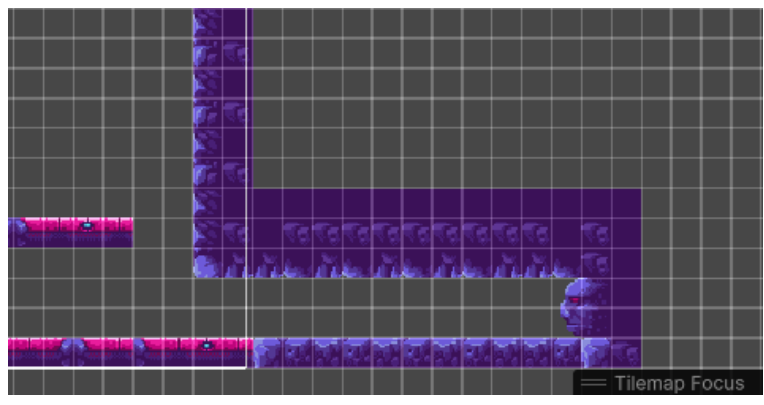
```

64         afterImageCounter -= Time.deltaTime;
65         if (afterImageCounter <= 0)
66         {
67             ShowAfterImage();
68         }
69         dashRechargeCounter = waitAfterDashing;
70     }
71     else

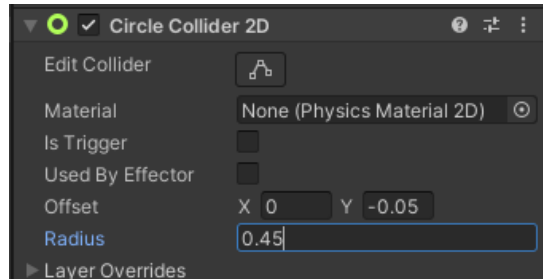
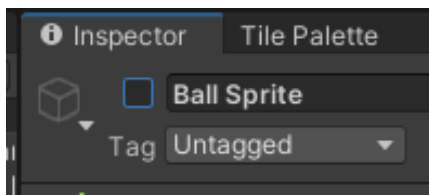
```



BECOMING A BALL -

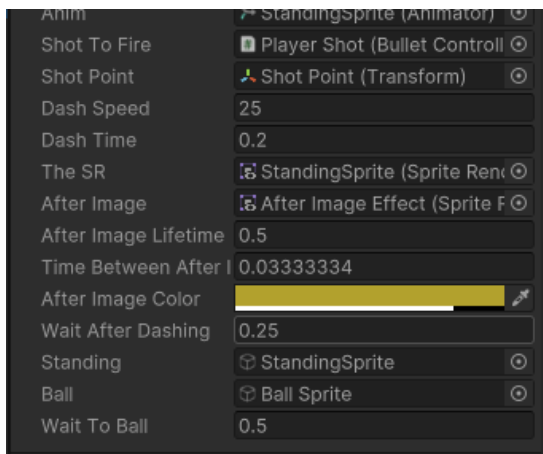


Or



```
33
34 public GameObject standing, ball;
35 public float waitToBall;
36 private float ballCounter;
37
```

```
53
54 //dashing
55 if (Input.GetButtonDown("Fire2") && standing.activeSelf)
56 {
57     dashCounter = dashTime;
```

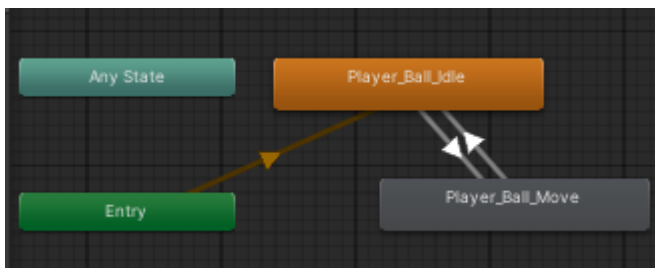
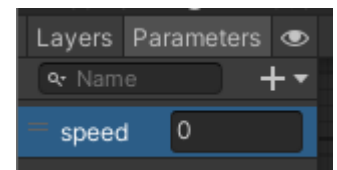
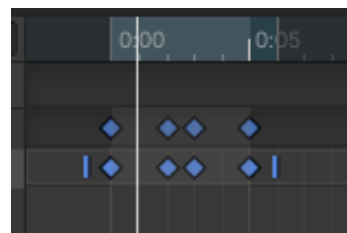
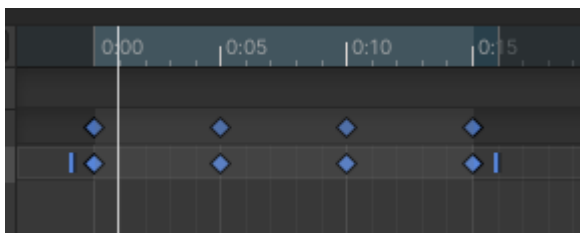
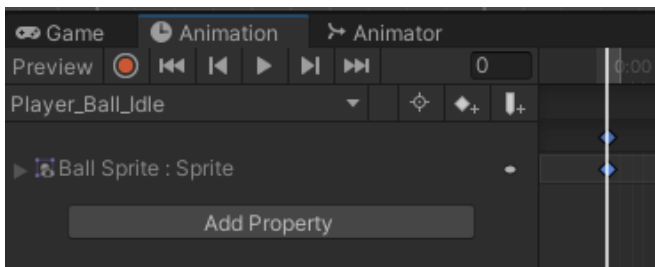


```
117
118 // ball mode
119 if(!ball.activeSelf)
120 {
121     if(Input.GetAxisRaw("Vertical") < -.9f)
122     {
123         ballCounter -= Time.deltaTime;
124         if(ballCounter <= 0)
125         {
126             ball.SetActive(true);
127             standing.SetActive(false);
128         }
129     }
130     else
131     {
132         ballCounter = waitToBall;
133     }
134 }
```

```

    else
    {
        ballCounter = waitToBall;
    }
} else
{
    if (Input.GetAxisRaw("Vertical") > -.9f)
    {
        ballCounter -= Time.deltaTime;
        if (ballCounter <= 0)
        {
            ball.SetActive(false);
            standing.SetActive(true);
        }
    }
    else
    {
        ballCounter = waitToBall;
    }
}
```

Oi ANIMATING BALL -



```

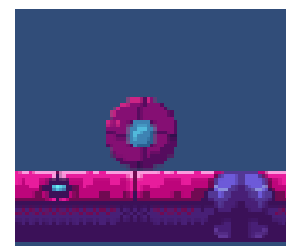
35 public float waitToBall;
36 private float ballCounter;
37
38 public Animator ballAnim;
39
40

```

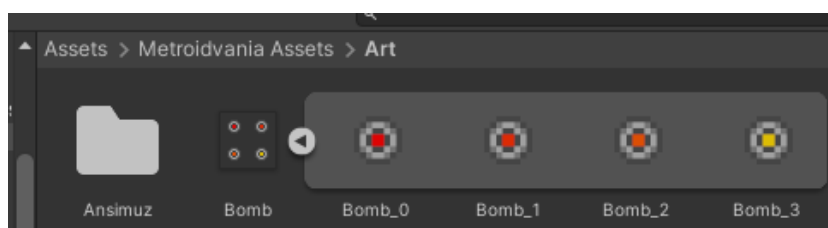
```

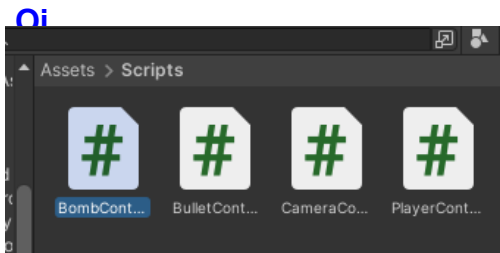
153
154
155 // moving animations
156 if(standing.activeSelf)
157 {
158     anim.SetBool("isOnGround", isOnGround);
159     anim.SetFloat("speed", Mathf.Abs(theRB.velocity.x));
160 }
161
162 if(ball.activeSelf)
163 {
164     ballAnim.SetFloat("speed", Mathf.Abs(theRB.velocity.x));
165 }
166
167

```



Dropping bombs





```

public class BombController : MonoBehaviour
{
    public float timeToExplode = .5f;
    public GameObject explosion;

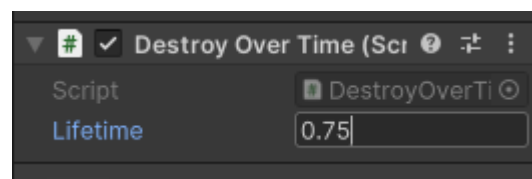
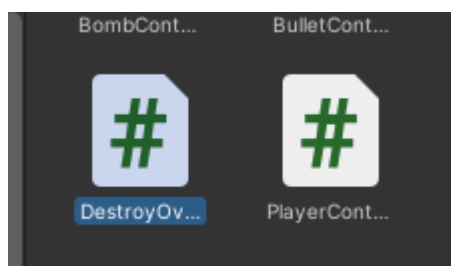
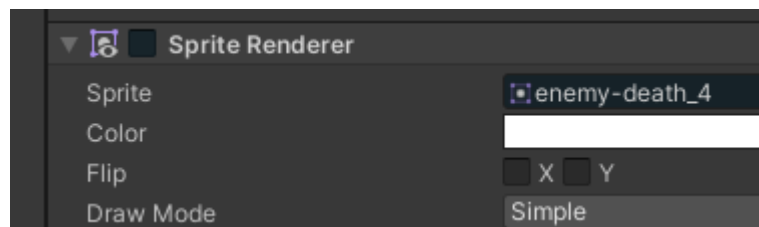
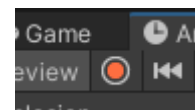
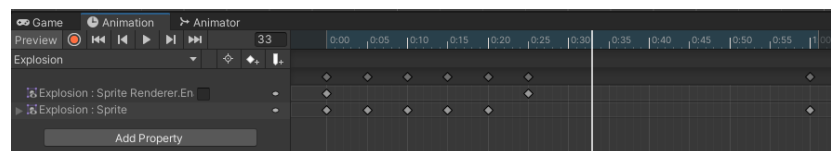
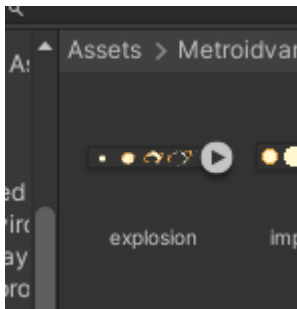
    // Start is called before the first frame update
    void Start()

```

```

// Update is called once per frame
void Update()
{
    timeToExplode -= Time.deltaTime;
    if(timeToExplode <= 0)
    {
        if(explosion != null)
        {
            Instantiate(explosion, transform.position, transform.rotation);
        }
        Destroy(gameObject);
    }
}

```

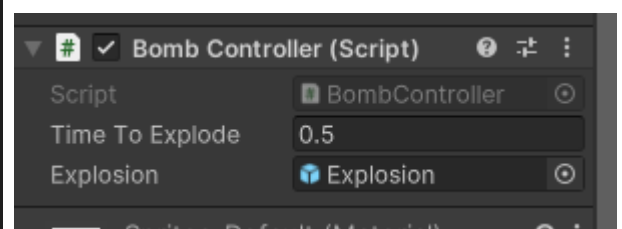


```

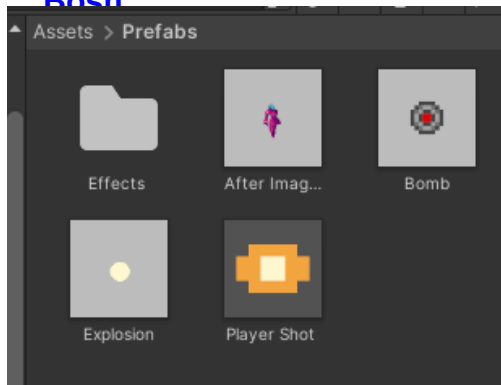
using System.Collections;
using System.Collections.Generic;
using UnityEngine;

public class DestroyOverTime : MonoBehaviour
{
    public float lifetime;
    // Start is called before the first frame update
    void Start()
    {
        Destroy(gameObject, lifetime);
    }
}

```

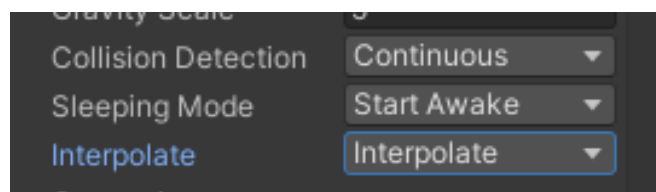
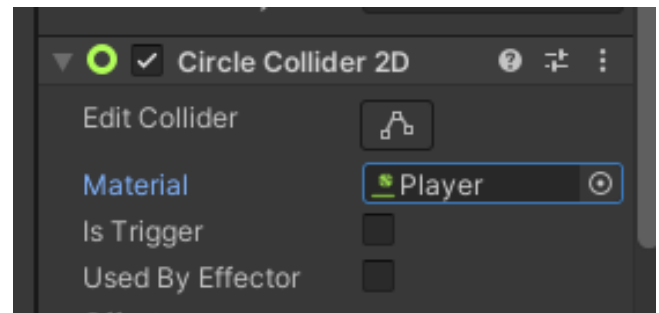
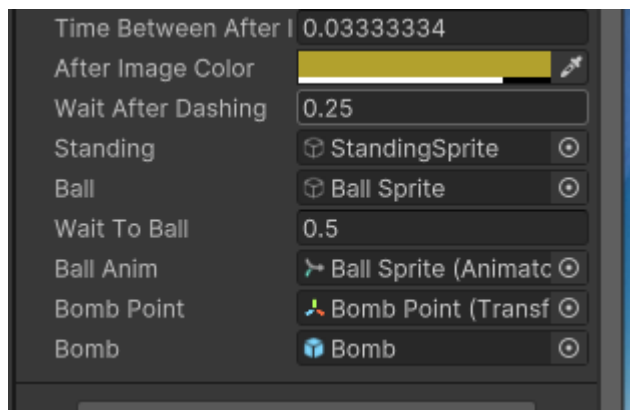


Bosh

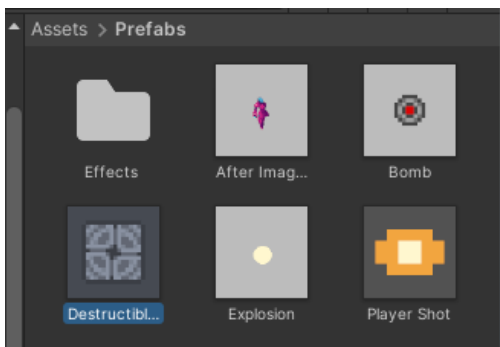
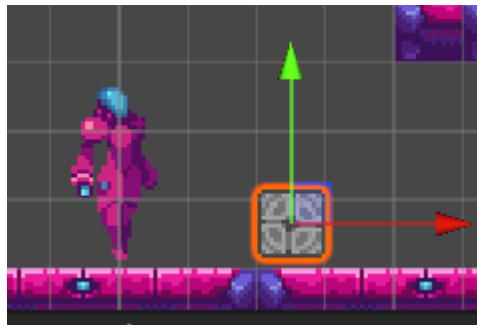
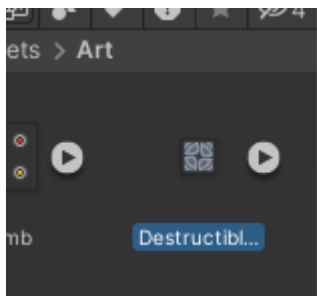


```
37  
38     public Animator ballAnim;  
39  
40     public Transform bombPoint;  
41     public GameObject bomb;  
42  
43
```

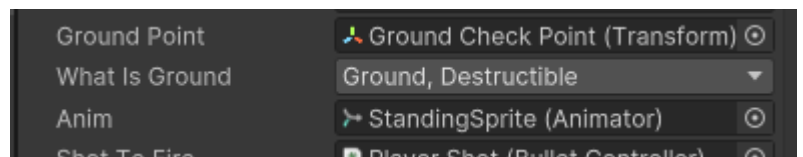
```
116  
117 // Shooting  
118 if (Input.GetButtonDown("Fire1"))  
119 {  
120     if (standing.activeSelf)  
121     {  
122         Instantiate(shotToFire, shotPoint.position, shotPoint.rotation).moveDir = new Vector2(transform.localScale.x, 0f);  
123         anim.SetTrigger("shotFired");  
124     } else if (ball.activeSelf)  
125     {  
126         Instantiate(bomb, bombPoint.position, bombPoint.rotation);  
127     }  
128 }  
129  
130  
131
```



Oi

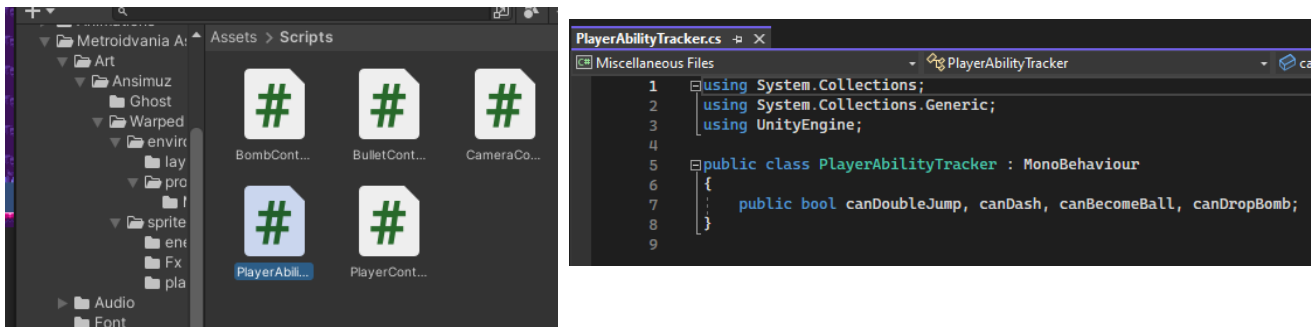


```
7 public float timeToExplode = .5f;  
8 public GameObject explosion;  
9  
10 public float blastRange;  
11 public LayerMask whatIsDestructible;  
12
```



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```

Lesson 6: Le bosh - unlocking abilities



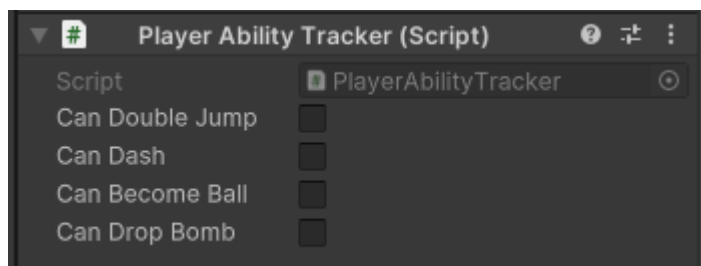
```
40 public Transform bombPoint;
41 public GameObject bomb;
42
43 private PlayerAbilityTracker abilities;
44
45 // Start is called before the first frame update
46 void Start()
47 {
48     abilities = GetComponent<PlayerAbilityTracker>();
49 }
50
```

```
61
62 //dashing
63 if (Input.GetButtonDown("Fire2") && standing.activeSelf && abilities.canDash)
64 {
65     dashCounter = dashTime;
```

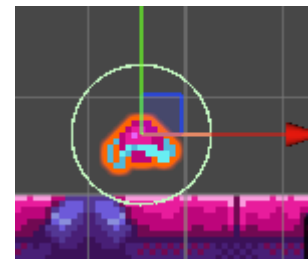
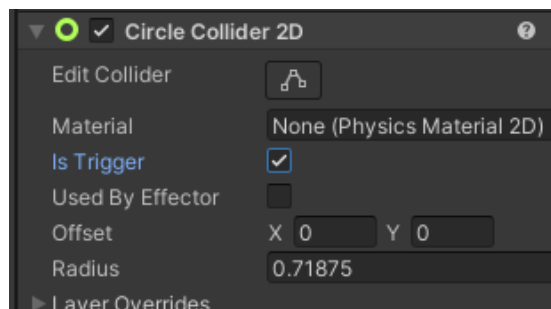
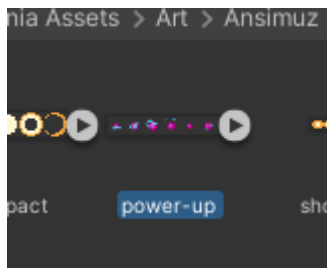
```
81 isOnGround = Physics2D.OverlapCircle(groundPoint.position, .2f, whatIsGround);
82
83 // jumping
84 if (Input.GetButtonDown("Jump") && (isOnGround || (canDoubleJump && abilities.canDoubleJump)))
85 {
86     if (isOnGround)
```

```
133
134 // ball mode
135 if (!ball.activeSelf)
136 {
137     if (Input.GetAxisRaw("Vertical") < -.9f && abilities.canBecomeBall)
138     {
139         ballCounter -= Time.deltaTime;
```

```
124 Instantiate(shotToFire, shotPoint.position, shotPoint.rotation);
125 anim.SetTrigger("shotFired");
126 // dropping bombs
127 } else if (ball.activeSelf && abilities.canDropBomb)
128 {
129     Instantiate(bomb, bombPoint.position, bombPoint.rotation);
130 }
131 }
132
```



Oi unlocking system

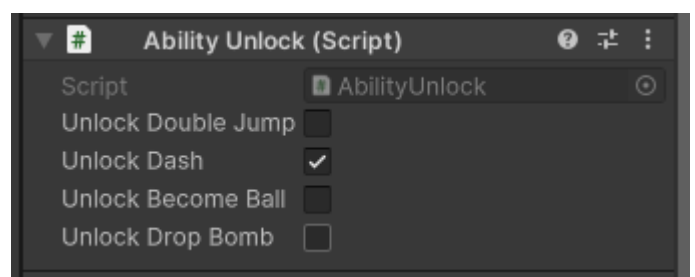
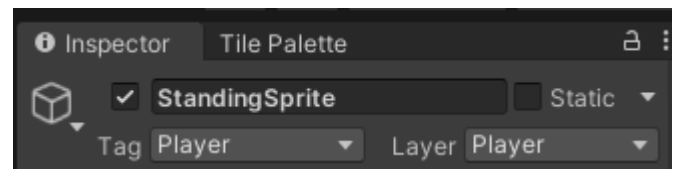
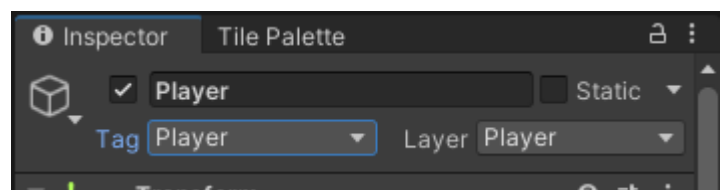


```
4
5 public class AbilityUnlock : MonoBehaviour
6 {
7
8     public bool unlockDoubleJump, unlockDash, unlockBecomeBall, unlockDropBomb;
9 }
```

```
9
10 private void OnTriggerEnter2D(Collider2D other)
11 {
12     if(other.tag == "Player")
13     {
14         PlayerAbilityTracker player = other.GetComponentInParent<PlayerAbilityTracker>();
15     }
```

```
8     public bool unlockDoubleJump, unlockDash, unlockBecomeBall, unlockDropBomb;
9
10 private void OnTriggerEnter2D(Collider2D other)
11 {
12     if(other.tag == "Player")
13     {
14         PlayerAbilityTracker player = other.GetComponentInParent<PlayerAbilityTracker>();
15
16         if(unlockDoubleJump)
17         {
18             player.canDoubleJump = true;
19         }
20     }
```

```
20
21     if (unlockDash)
22     {
23         player.canDash = true;
24     }
25
26     if (unlockBecomeBall)
27     {
28         player.canBecomeBall = true;
29     }
30
31     if (unlockDropBomb)
32     {
33         player.canDropBomb = true;
34     }
35
36     Destroy(gameObject);
37 }
38
39
40 }
```



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