Unity

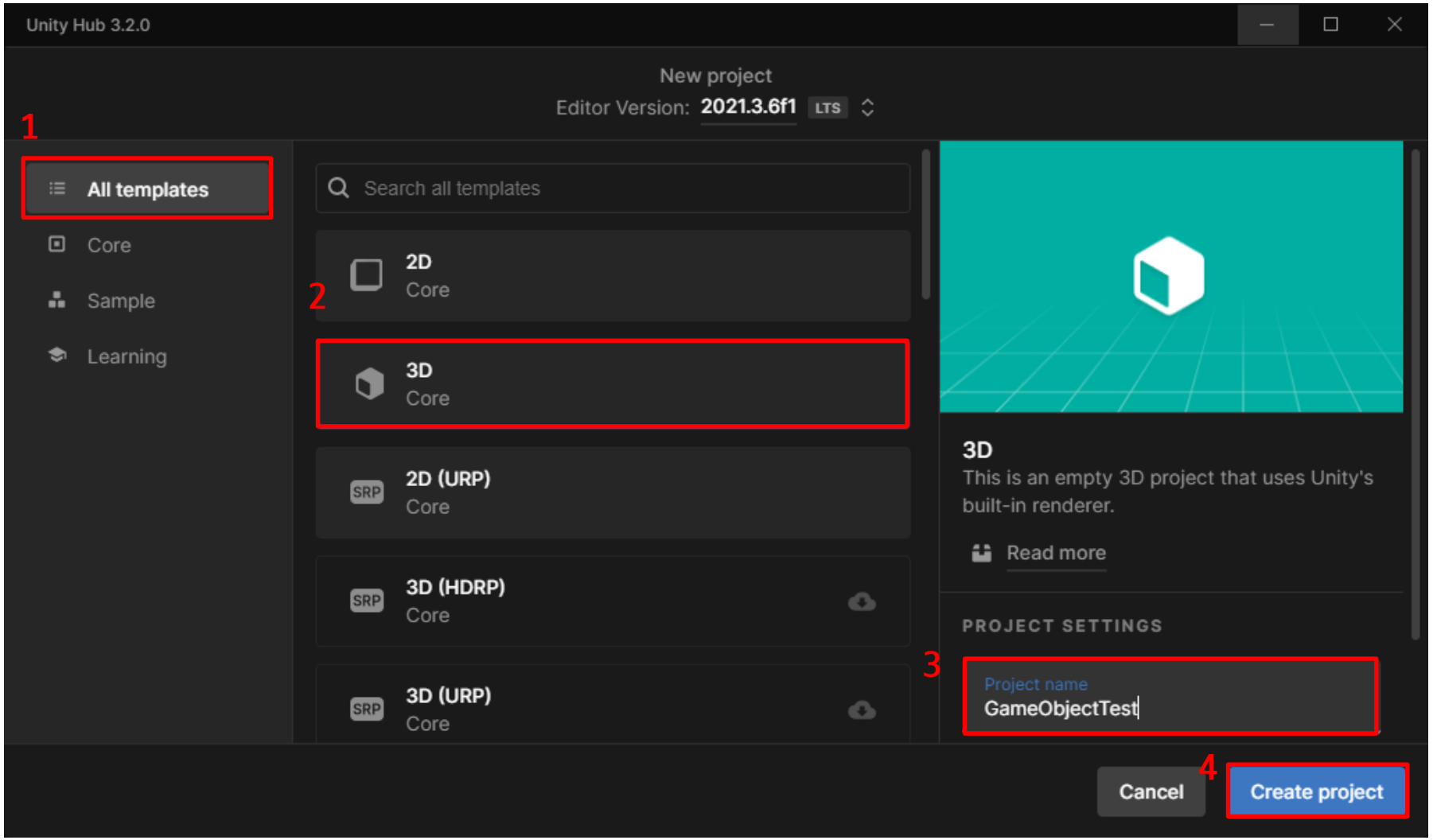
Game Programming

GameObject & Script

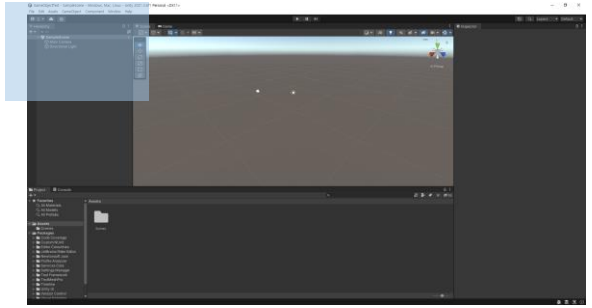
2021.3.6f1

KYUNGSUNG UNIVERSITY SINCE 1955

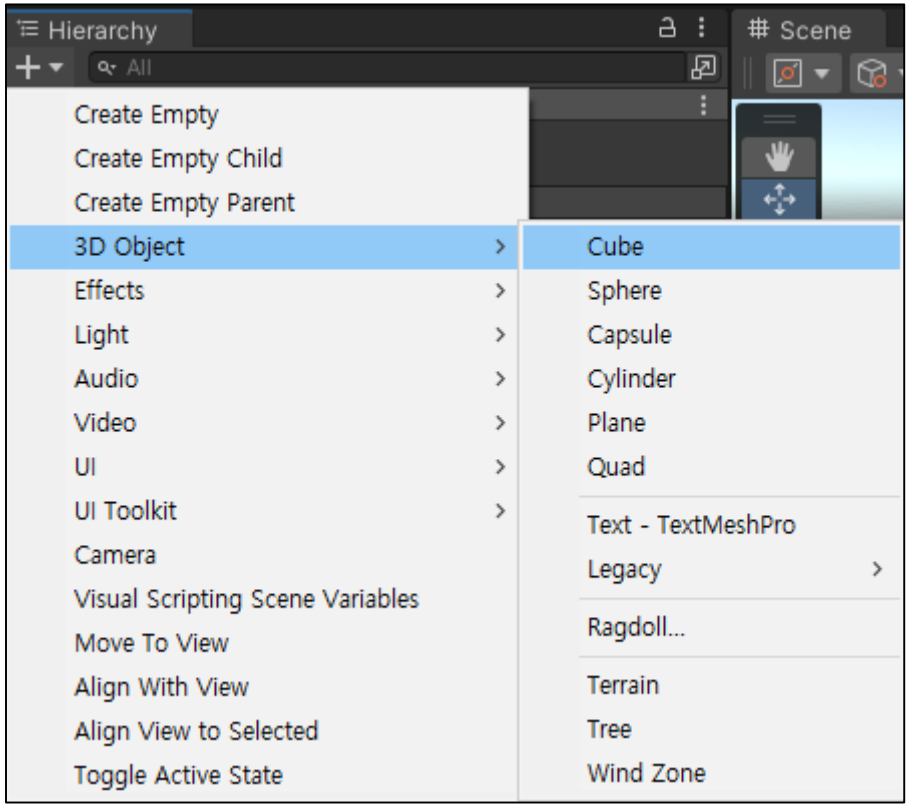
Unity


Unity Hub 3.2.0
New project
Editor Version: 2021.3.6f1 LTS
1
All templates
Core
Sample
Learning
Search all templates
2
2D
Core
3D
Core
2D (URP)
Core
3D (HDRP)
Core
3D (URP)
Core
3D
This is an empty 3D project that uses Unity's built-in renderer.
Read more
PROJECT SETTINGS
3
Project name
GameObjectTest
Cancel
4
Create project

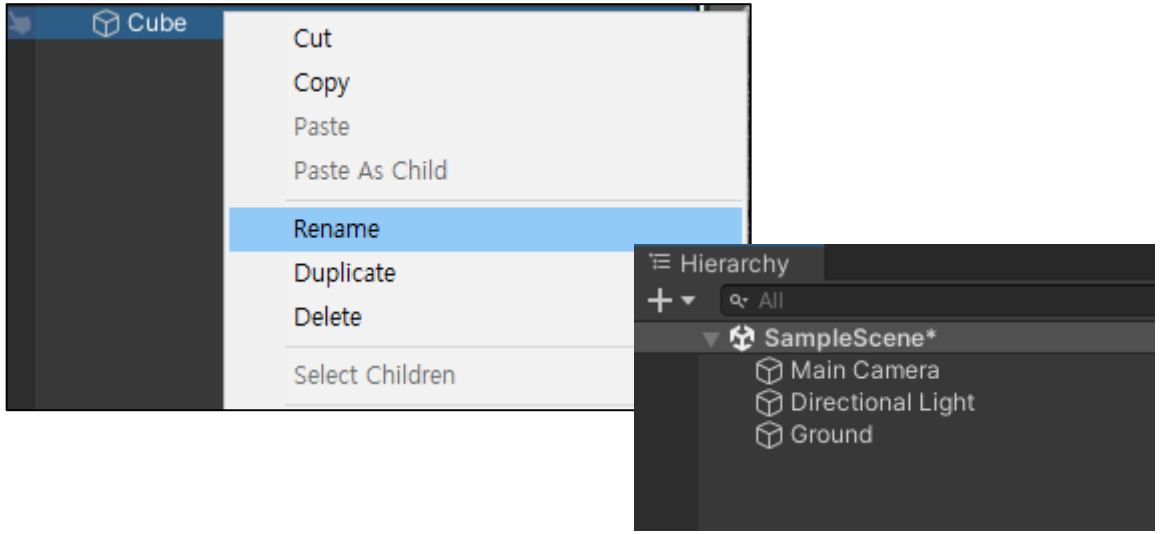
스테이지 만들기



1. Hierarchy – 3D Object - Cube

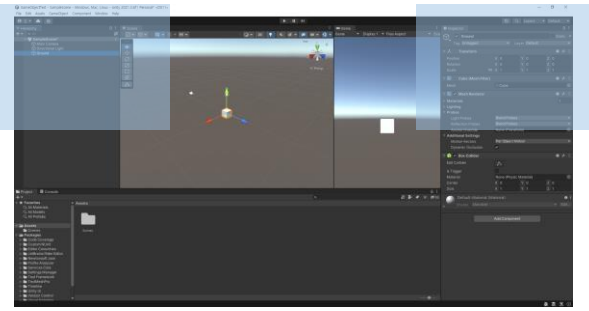


2. Hierarchy - Cube – Rename – “Ground”



Unity

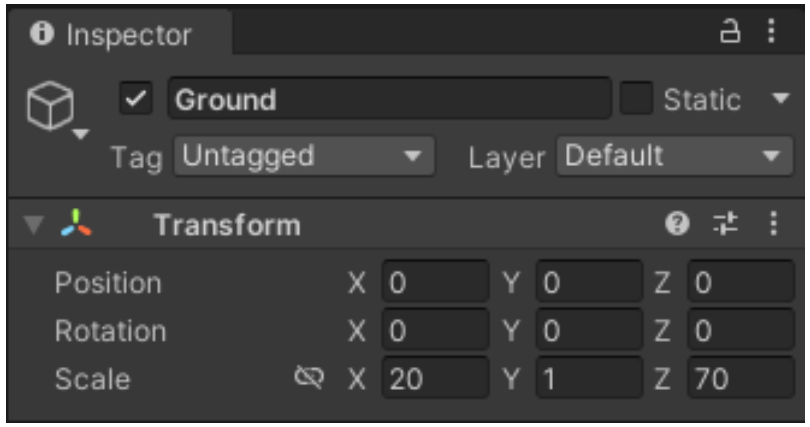
스테이지 만들기

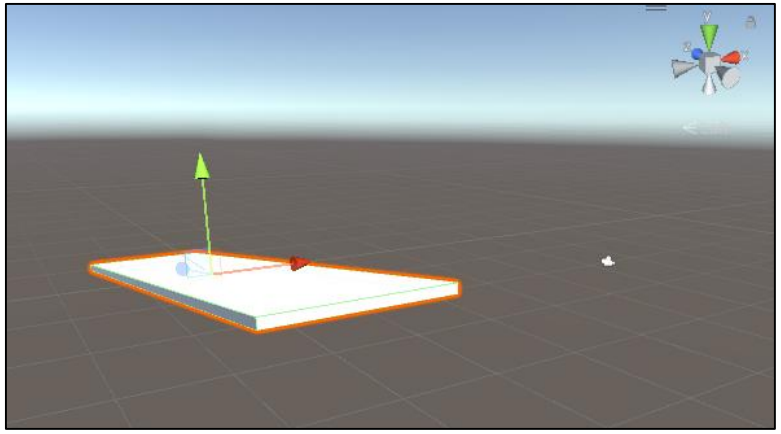


3. Hierarchy - Main Camera – Inspector – Position 0,11,-52

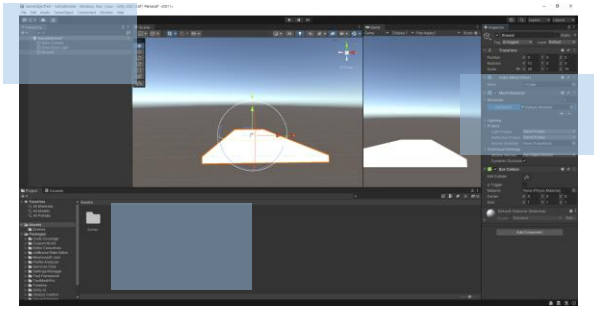
4. Hierarchy - Directional Light – Inspector - Position 40,23,40 - Rotation 50,-30,1

5. Hierarchy - Ground - Inspector – Transform – Rotation 10,0,0 - Scale 20,1,70

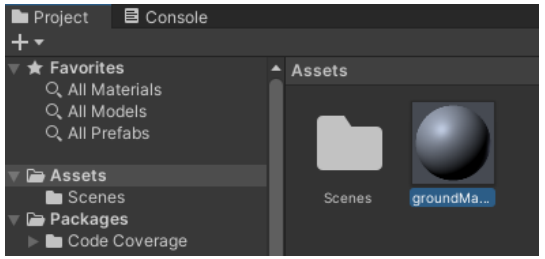


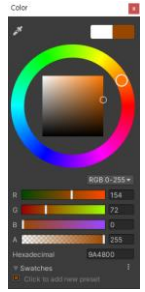


스테이지 만들기



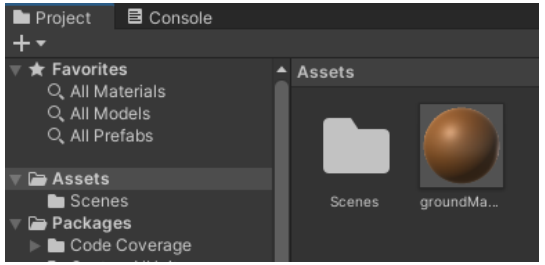
6. Project – Assets – Create – Material – “GroundMaterial”

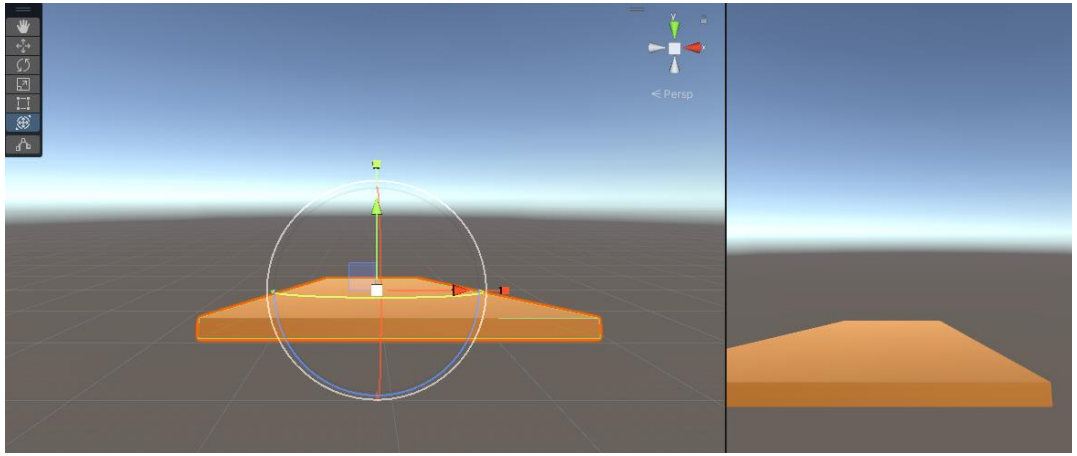


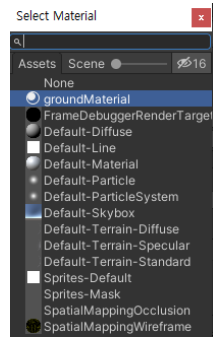


7. Project – Assets - GroundMaterial - Inspector – Main Maps – Albedo – “원하는 색 선택”

8. Project – Assets - GroundMaterial을 Hierarchy – Ground로 DnD(Drag and Drop)

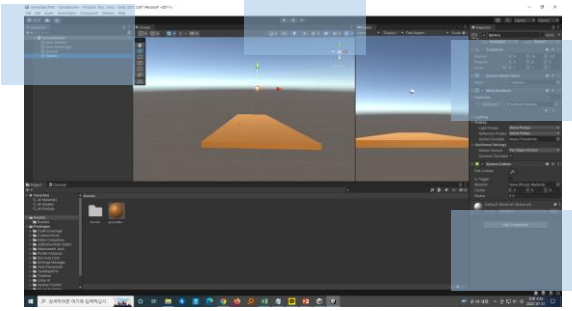




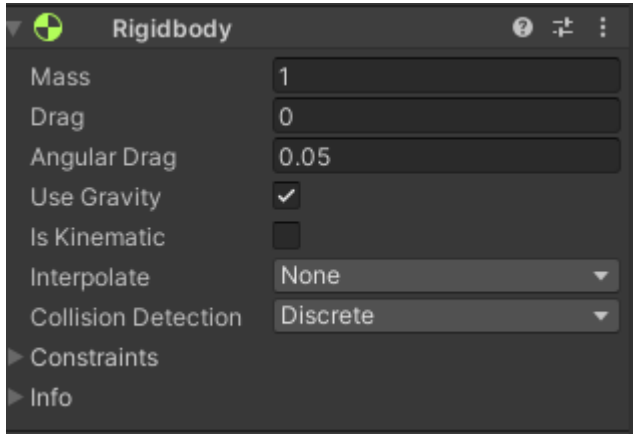


Unity

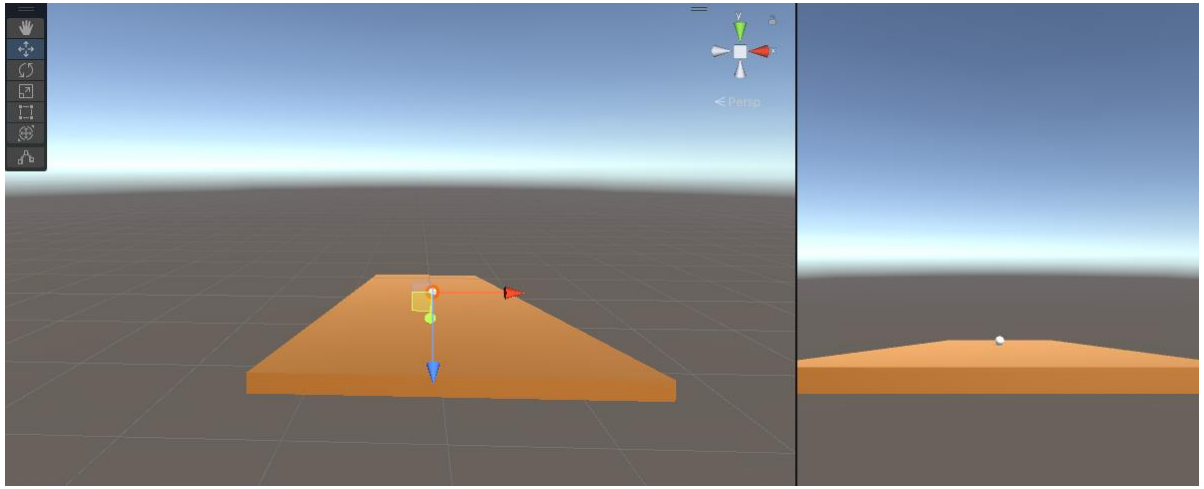
볼 만들기



1. Hierarchy – 3D Object – Sphere – Rename – “Ball”
2. Hierarchy - Ball – Inspector – Position 0,15,-30
3. Hierarchy - Ball – Inspector – Add Component – Physics - Rigidbody

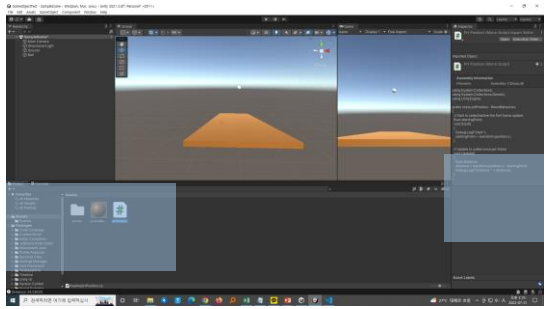


4. Play



Rigidbody : 게임 오브젝트가 물리력의 영향을 받도록 하는 컴포넌트

위치 출력하기

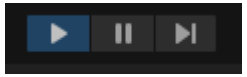


1. Project – Assets – Create – C# script – Rename – “PrtPosition”
2. Project – Assets - PrtPosition 더블 클릭
3. Coding

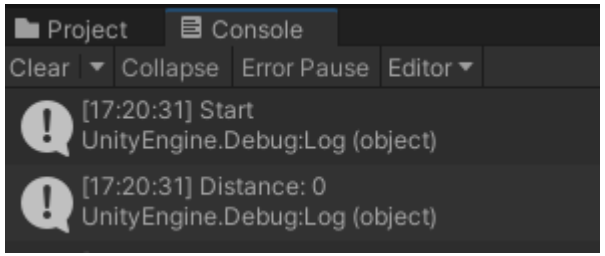
```
using UnityEngine;

public class PrtPosition : MonoBehaviour
{
  // Start is called before the first frame update
  float startingPoint;
  void Start()
  {
    Debug.Log("Start");
    startingPoint = transform.position.z;
  }

  // Update is called once per frame
  void Update()
  {
    float distance;
    distance = transform.position.z - startingPoint;
    Debug.Log("Distance: " + distance);
  }
}
```

4. Hierarchy – Ball – Inspector - Add Component – script –

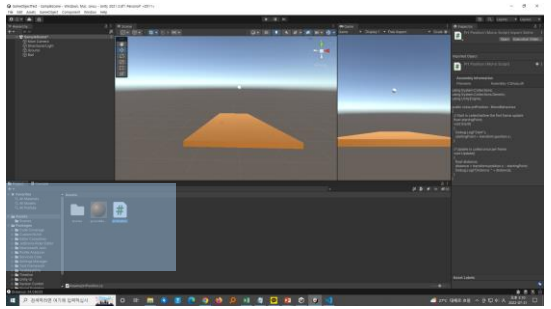
   “PrtPosition” or script파일을 게임오브젝트로 드래그앤드롭

5. Play 

6. Project - Console Click

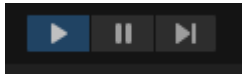


if문을 사용하여 위치 출력하기

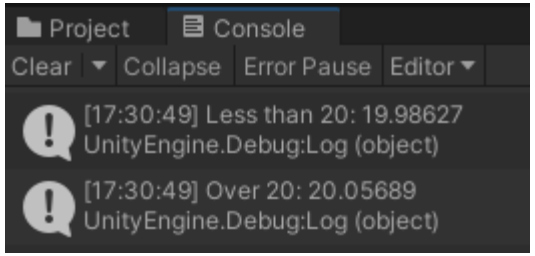


1. Project – Assets - PrtPosition 더블 클릭
2. Coding

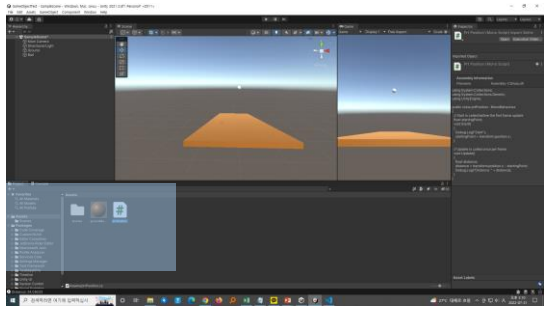
```
using UnityEngine;

public class PrtPosition : MonoBehaviour
{
  // Start is called before the first frame update
  float startingPoint;
  void Start()
  {
    Debug.Log("Start");
    startingPoint = transform.position.z;
  }

  // Update is called once per frame
  void Update()
  {
    float distance;
    distance = transform.position.z - startingPoint;

    if (distance > 40)
      Debug.Log("Over 40: " + distance);
    else if (distance > 20)
      Debug.Log("Over 20: " + distance);
    else
      Debug.Log("Less than 20: " + distance);
  }
}
```

4. Play 

5. Project - Console Click



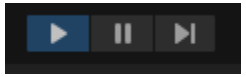
조건에 맞을 때 위치 한 번만 출력하기



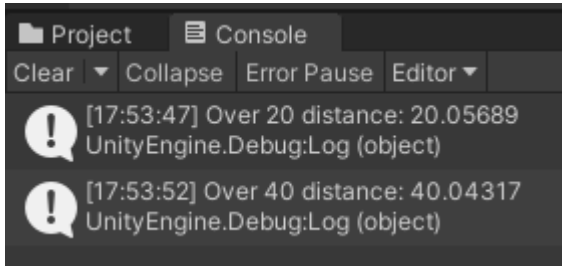
1. Project – Assets – PrtPosition 더블 클릭
2. Coding

```
public class PrtPosition : MonoBehaviour
{
  // Start is called before the first frame update
  float startingPoint;
  bool isOver20 = true;
  bool isOver40 = true;
  void Start()
  {
    startingPoint = transform.position.z;
  }
```

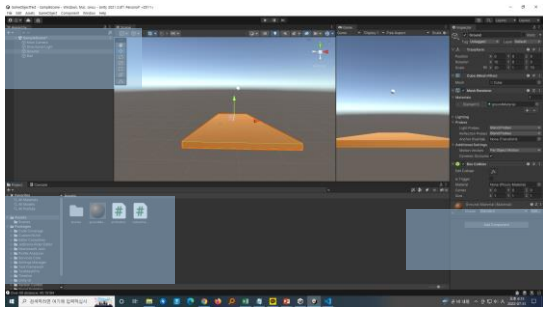
```
// Update is called once per frame
  void Update()
  {
    float distance;
    distance = transform.position.z - startingPoint;

    if (distance > 40)
    {
      if (isOver40)
      {
        Debug.Log("Over 40 distance: " + distance);
        isOver40 = false;
      }
    }
    else if (distance > 20)
    {
      if (isOver20)
      {
        Debug.Log("Over 20 distance: " + distance);
        isOver20 = false;
      }
    }
  }
}
```

3. Play 

4. Project - Console Click

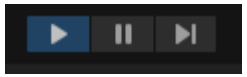


볼의 반지름 변경하기

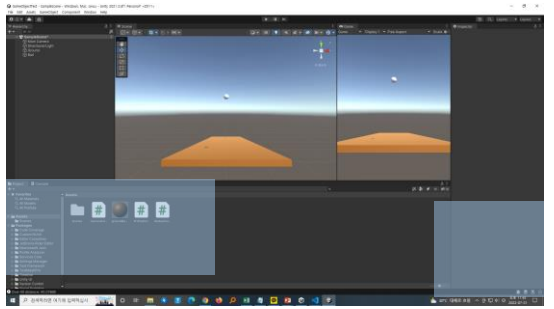


1. Project – Assets – Create – C# script – Rename – “RadiusChange”
2. Project – Assets - RadiusChange 더블 클릭
3. Coding

```
using UnityEngine;

public class RadiusChange : MonoBehaviour
{
  SphereCollider myCollider = new SphereCollider();
  // Start is called before the first frame update
  void Start()
  {
    Rigidbody myRigidbody = GetComponent<Rigidbody>();
    Debug.Log("UseGravity: " + myRigidbody.useGravity);
    myCollider = GetComponent<SphereCollider>();
  }

  // Update is called once per frame
  void Update()
  {
    myCollider.radius = myCollider.radius + 0.01f;
  }
}
```

4. Hierarchy – Ball – Inspector - Add Component – script – “RadiusChange”
5. Play 
6. Hierarchy – Ball – Inspector – RadisuChange(Script) – Kebab Menu – Remove Component

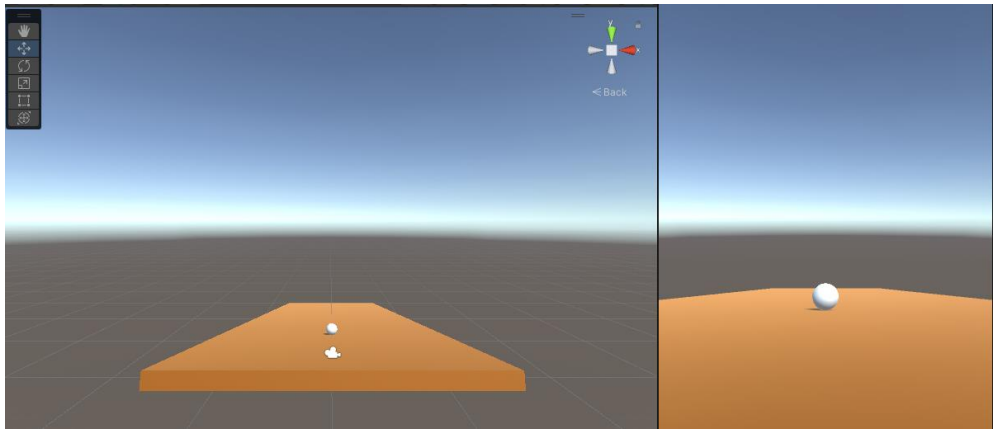
오브젝트 따라가는 카메라



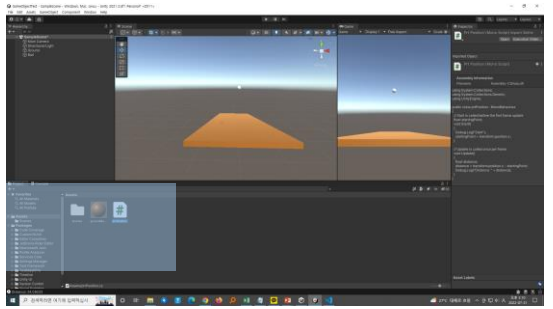
1. Project – Assets – Create – C# script – Rename – “CameraFollow”
2. Project – Assets - CameraFollow 더블 클릭
3. Coding

```
using UnityEngine;

public class CameraFollow : MonoBehaviour
{
  GameObject ball;
  // Start is called before the first frame update
  void Start()
  {
    ball = GameObject.Find("Ball");
  }

  // Update is called once per frame
  void Update()
  {
    transform.position = new Vector3(0,

                        ball.transform.position.y + 3,

                        ball.transform.position.z - 14);
  }
}
```

4. Hierarchy – Main Camera – Inspector - Add Component – script – “CameraFollow”
5. Play



Ground 움직이기(←, → 키 입력)

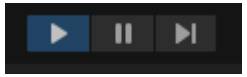


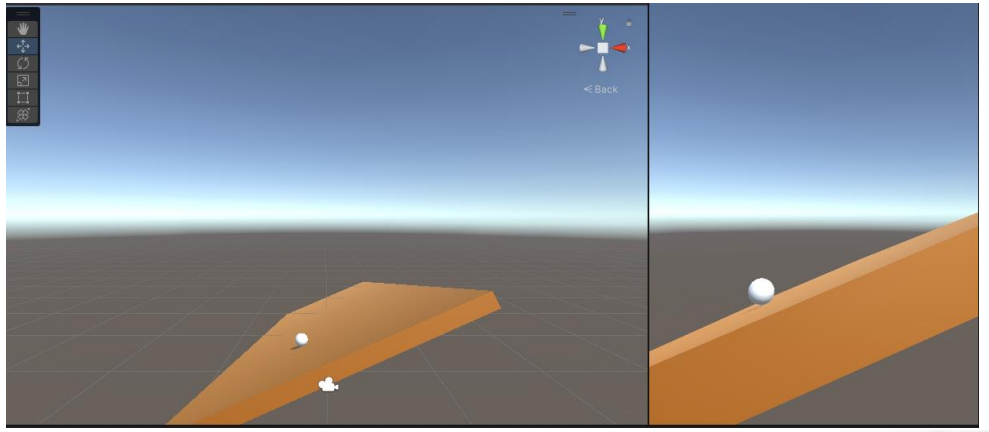
1. Project – Assets– Create – C# script – Rename – “GroundMove”
2. Project – Assets – Assets - GroundMove 더블 클릭
3. Coding

```
using UnityEngine;

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

  }

  // Update is called once per frame
  void Update()
  {
    //Debug.Log(Input.GetAxis("Horizontal"));
    //Debug.Log(Input.GetAxis(“Vertical"));
    float zRotation = transform.localEulerAngles.z;
    zRotation = zRotation - Input.GetAxis("Horizontal")*0.1f;
    transform.localEulerAngles = new Vector3(10, 0, zRotation);
  }
}
```

4. Hierarchy – Ground – Inspector - Add Component – script –

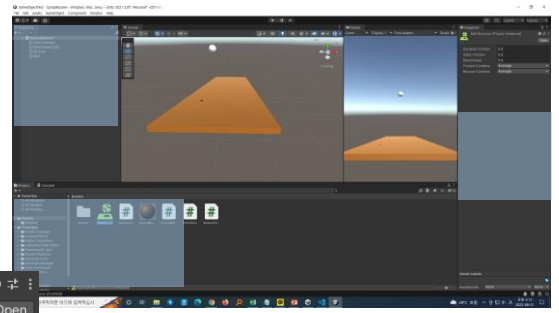
   “GroundMove” or script파일을 게임오브젝트로 드래그앤드롭

5. Play  ←, → 키 입력

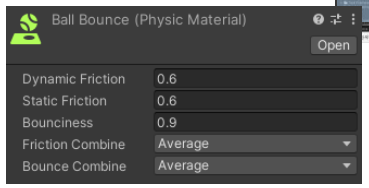


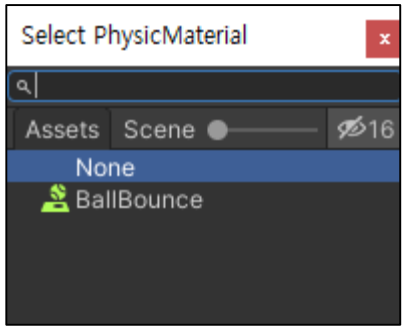
Unity

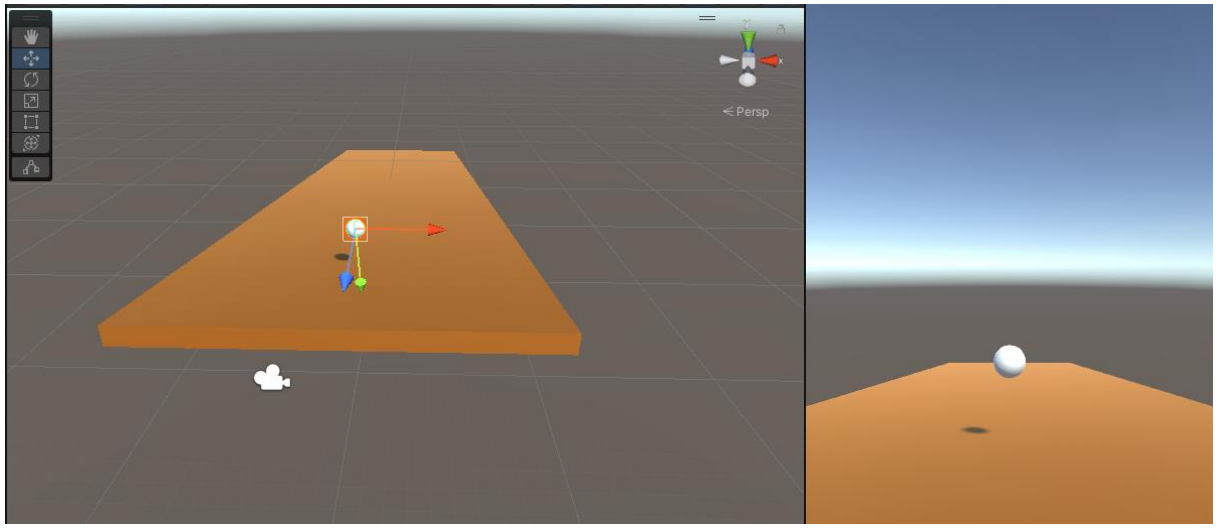
공 튀어 오르기



1. Project – Assets– Create – Physic Material – Rename – “BallBounce”
2. Project – Assets– BallBounce – Inspector – Bounciness : 0.9
3. Hierarchy – Ball – Inspector – Sphere Collider - Material - BallBounce or BallBounce를 Ball로 DnD
4. Play



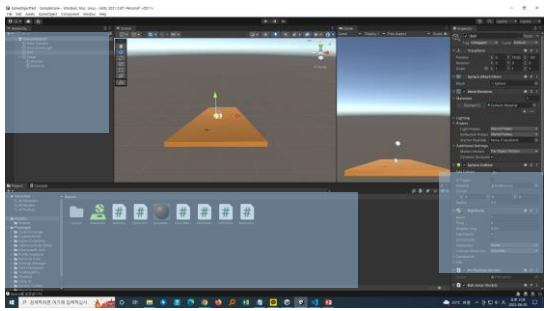




5. Hierarchy - Ground – Inspector – Box Collider – Material – BallBounce(Bounciness : 0.6)
6. Play

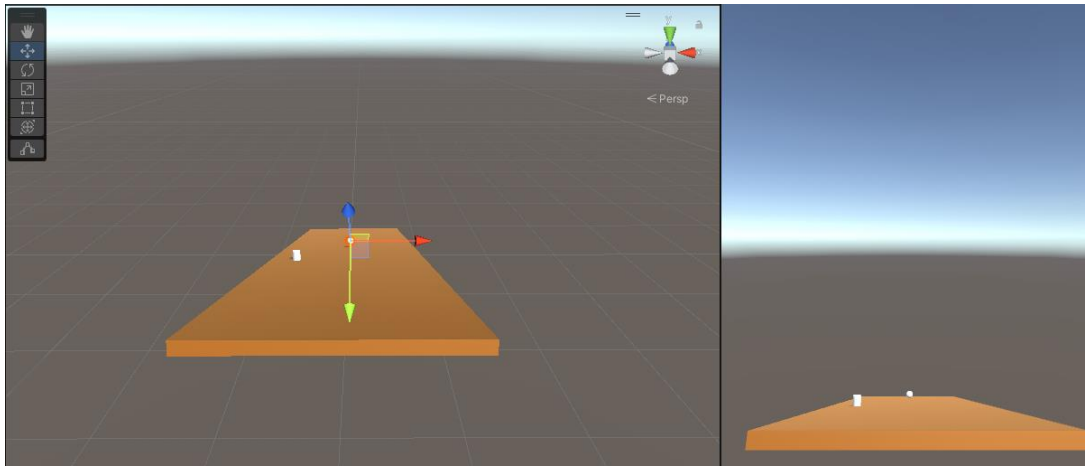
Unity

키 입력으로 공 튀어 오르기(space 키)



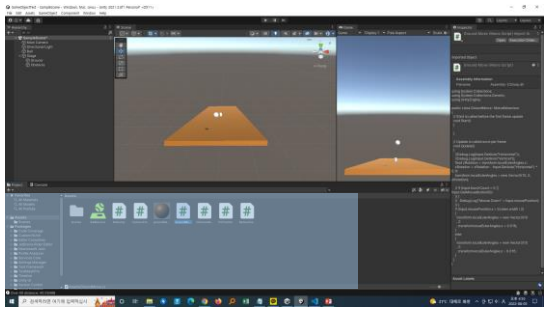
1. Project – Assets – Create – C# Script – Rename – BallJump
2. Project – Assets – BallJump – 더블 클릭
3. Coding
4. Hierarchy – Ball – Inspector – Add Component – Scripts – BallJump
5. Play

```
using UnityEngine;

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

  // Update is called once per frame
  void Update()
  {
    if (Input.GetKeyDown(KeyCode.Space))
    {
      GetComponent<Rigidbody>().AddForce(Vector3.up * 300);
    }
  }
}
```



Unity

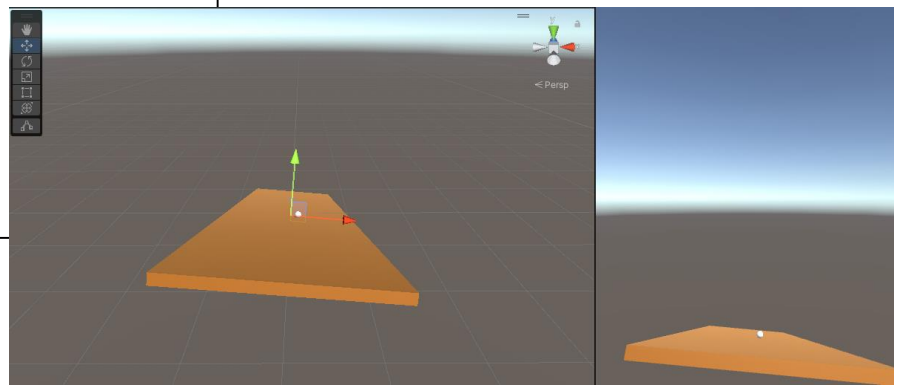
마우스로 Ground 움직이기



1. Project – Assets – GroundMove – 더블 클릭
2. Coding
3. Play

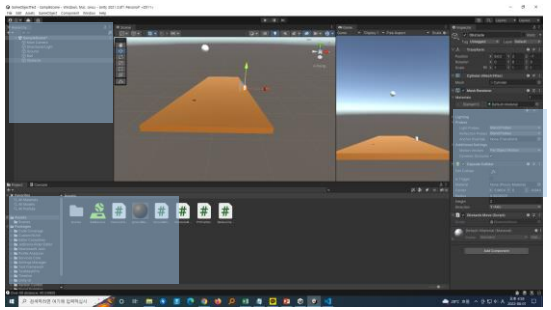
```
using UnityEngine;

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

  }

  // Update is called once per frame
  void Update()
  {
    //Debug.Log(Input.GetAxis("Horizontal"));
    //Debug.Log(Input.GetAxis("Vertical"));
    float zRotation = transform.localEulerAngles.z;
    zRotation = zRotation - Input.GetAxis("Horizontal") * 0.1f;
    transform.localEulerAngles = new Vector3(10, 0, zRotation);
```

```
    if (Input.touchCount > 0 || Input.GetMouseButton(0))
    {
      Debug.Log("Mouse Down" + Input.mousePosition);
      if (Input.mousePosition.x < Screen.width / 2)
      {
        transform.localEulerAngles = new Vector3(10
        , 0
        , transform.localEulerAngles.z + 0.05f);
      }
      else
      {
        transform.localEulerAngles = new Vector3(10
        , 0
        , transform.localEulerAngles.z - 0.05f);
      }
    }
  }
}
```



Unity

장애물 설치 및 좌우 이동하기

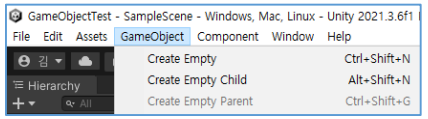


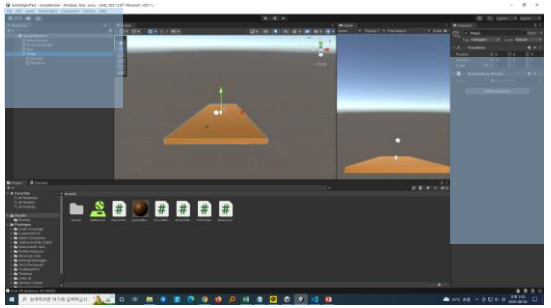
1. Hierarchy – 3D Object – Cylinder – Rename – “Obstacle”
2. Hierarchy - Obstacle – Inspector – Position 0,2,-7
3. Play
4. Project – Assets – Create – C# Script – Rename – “ObstacleMove”
5. Project – Assets – ObstacleMove 더블클릭
6. Coding
7. Hierarchy – Obstacle – Inspector – Add Component – Script – ObstacleMove
8. Play

```
public class ObstacleMove : MonoBehaviour
{
  float delta = 0.01f;
  // Start is called before the first frame update
  void Start()
  {
  }
```

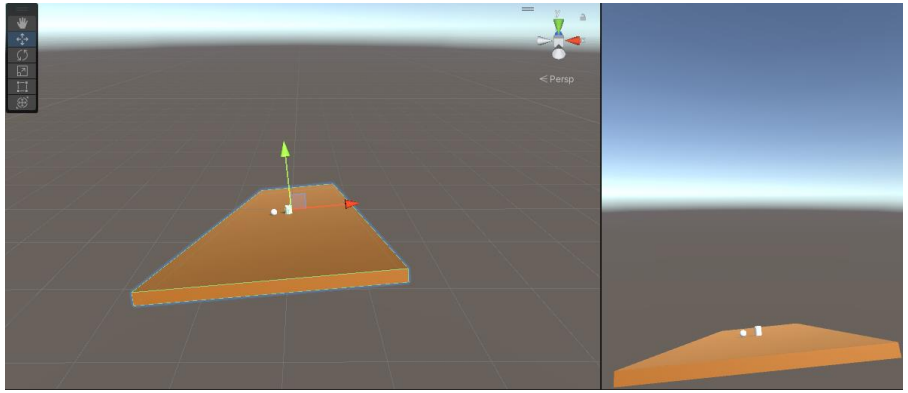
```
// Update is called once per frame
  void Update()
  {
    float newXPosition = transform.position.x + delta;
    transform.position = new Vector3(newXPosition, 2, -7);
    if (transform.position.x < -9)     {
      delta = 0.01f;
    }
    else if (transform.position.x > 9)   {
      delta = -0.01f;
    }
  }
}
```

장애물과 그라운드 합치기





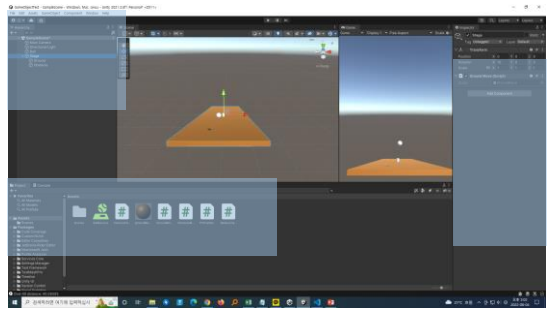
1. GameObject – Create Empty – Rename – “Stage”
2. Hierarchy – Stage – Inspector - Position 0,0,0 – Rotation 10,0,0
3. Hierarchy에 있는 Ground와 Obstacle을 Stage로 드래그 앤 드롭
4. Hierarchy – Stage - Ground – Inspector – Position 0,0,0 – Relation 10,0,0
5. Hierarchy – Stage – Ground – Inspector – Ground Move(Script) – Kebab Menu – Remove Component
6. Hierarchy – Stage - Obstacle – Inspector – Position 0,2,-7 – Scale 1,1,1
7. Hierarchy – Stage – Obstacle – Inspector – Obstacle Move(Script) – Kebab Menu – Remove Component
8. Hierarchy – Stage – Inspector – Add Component – Scripts – Ground Move
9. Play



Unity

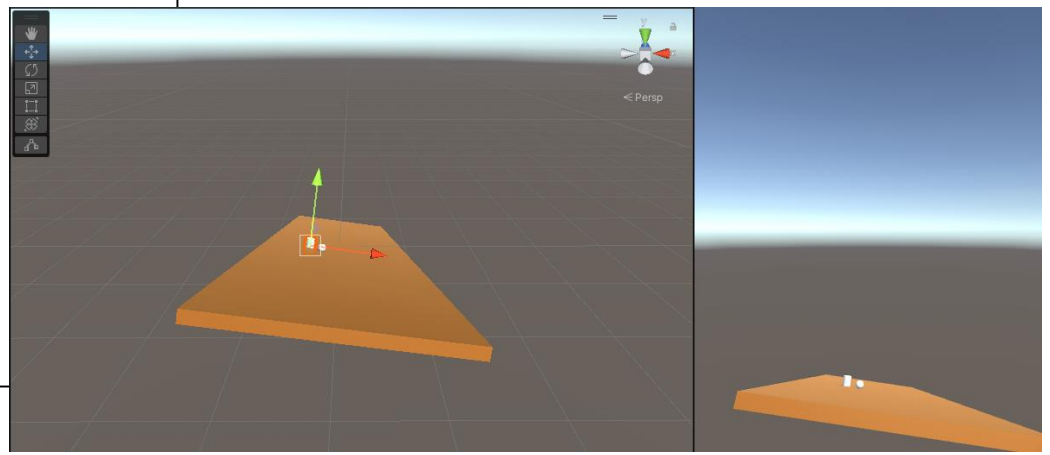
장애물과 그라운드 같이 움직이기

1. Hierarchy – Stage – Obstacle – Inspector – Add Component – Scripts – Obstacle Move
2. Play
3. Project – Assets – ObstacleMove 더블클릭
4. Coding
5. Play



```
using UnityEngine;

public class ObstacleMove : MonoBehaviour{
  float delta = 0.01f;
  // Start is called before the first frame update
  void Start()  {
  }
  // Update is called once per frame
```

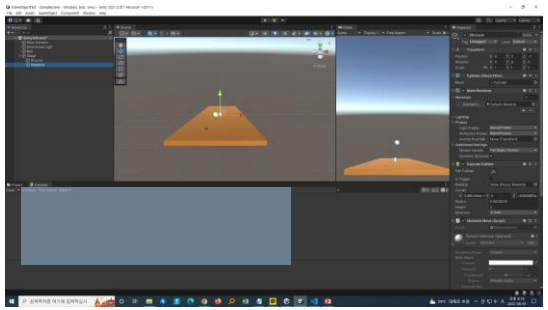
```
// Update is called once per frame
  void Update()
  {
    float newXPosition = transform.localPosition.x + delta;
    transform.localPosition = new Vector3(newXPosition,
    transform.localPosition.y,
    transform.localPosition.z);
    if (transform.localPosition.x < -9)
    {
      delta = 0.01f;
    }
    else if (transform.localPosition.x > 9)
    {
      delta = -0.01f;
    }
  }
}
```



position(global position)을 localPosition으로 변경
Stage에 대한 Obstacle의 상대적 위치

Unity

C# Method & parameter

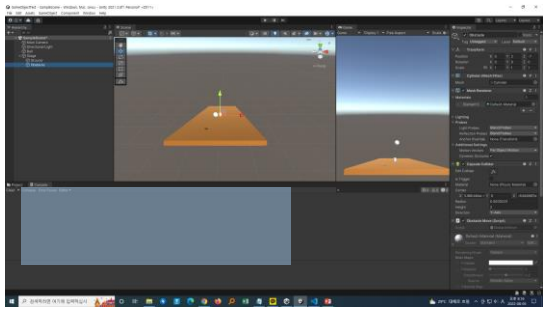


1. **Project** – Assets – ObstacleMove 더블클릭
2. **Coding**
3. **Play**

```
using UnityEngine;

public class ObstacleMove : MonoBehaviour
{
  void TestMethod(string name, int a)
  {
    float distance = Vector3.Distance(GameObject.Find(name).transform.position, transform.position);
    Debug.Log(name + "까지 거리: " + distance);
  }
  float delta = 0.01f;
  // Start is called before the first frame update
  void Start()  {
  }
  // Update is called once per frame
  void Update()  {
    TestMethod("Ball", 0);
    float newXPosition = transform.localPosition.x + delta;
    transform.localPosition = new Vector3(newXPosition, transform.localPosition.y,
    transform.localPosition.z);
    if (transform.localPosition.x < -9)      {
      delta = 0.01f;
    }
    else if (transform.localPosition.x > 9)      {
      delta = -0.01f;
    }
  }
}
```

Unity

물체의 충돌 알아보기



1. Project – Assets – ObstacleMove 더블클릭
2. Coding
3. Play

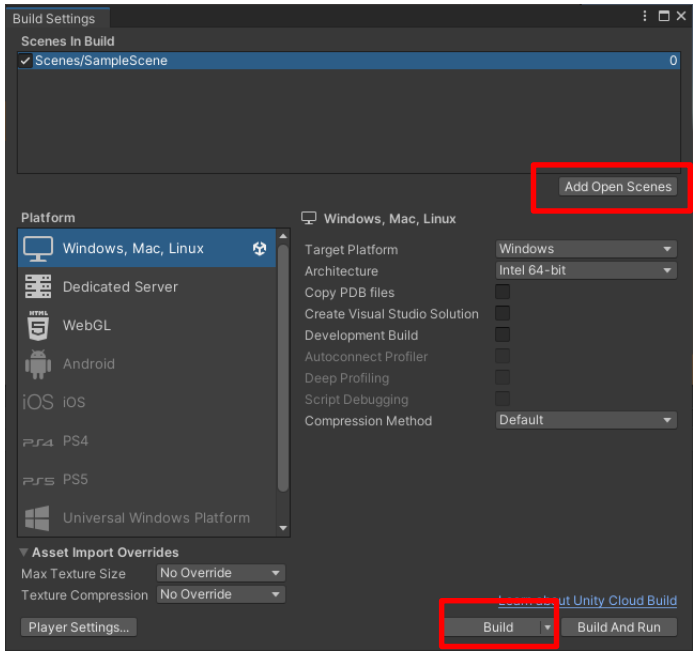
```
using UnityEngine;

public class ObstacleMove : MonoBehaviour
{
  void OnCollisionEnter(Collision collision)
  {
    //Debug.Log(collision.gameObject.name);
    Vector3 direction = transform.position –
              collision.gameObject.transform.position;
    //나의 위치에서 상대의 위치를 빼면 방향이 결정
    direction = direction.normalized * 1000;  //힘 결정
    collision.gameObject.GetComponent<Rigidbody>().AddForce(direction);
  }
  float delta = 0f;
  // Start is called before the first frame update
  void Start()
  {
  }
  // Update is called once per frame
  void Update()
  {

    float newXPosition = transform.localPosition.x + delta;
    transform.localPosition = new Vector3(newXPosition
    , transform.localPosition.y
    , transform.localPosition.z);
    if (transform.localPosition.x < -9)
    {
      delta = 0.01f;
    }
    else if (transform.localPosition.x > 9)
    {
      delta = -0.01f;
    }
  }
}
```

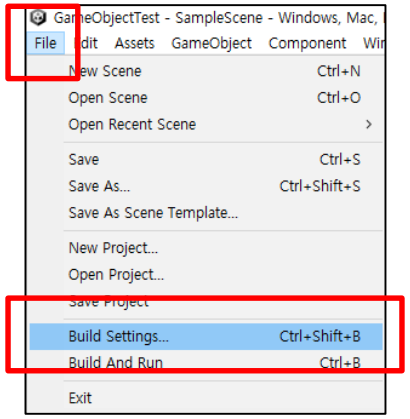
Stage 기울기 변경 실행 & 객체의 Collider 변경 실행

충돌하면 호출되는 method – OnCollisionEnter(Collision col)
col : 충돌체 정보

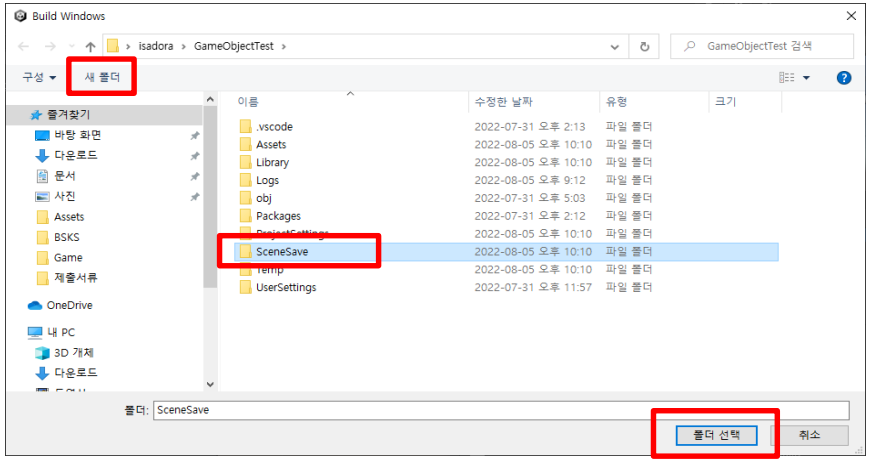
볼 낙하 후 게임 재 시작하기 - 1

1. File – Build Settings
2. Build Settings – Add Open Scenes – Build



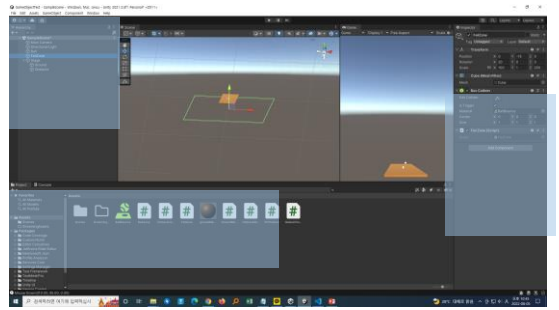


3. 새폴더 – “SceneSave” – 폴더 선택



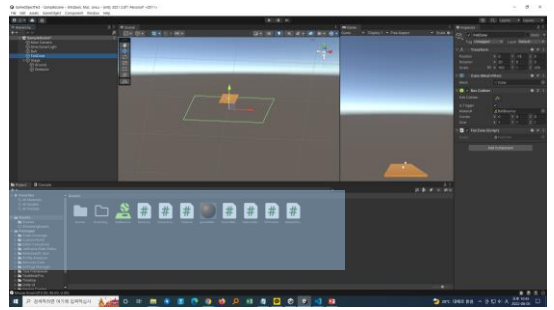
Unity

볼 낙하 후 게임 재 시작하기 - 2



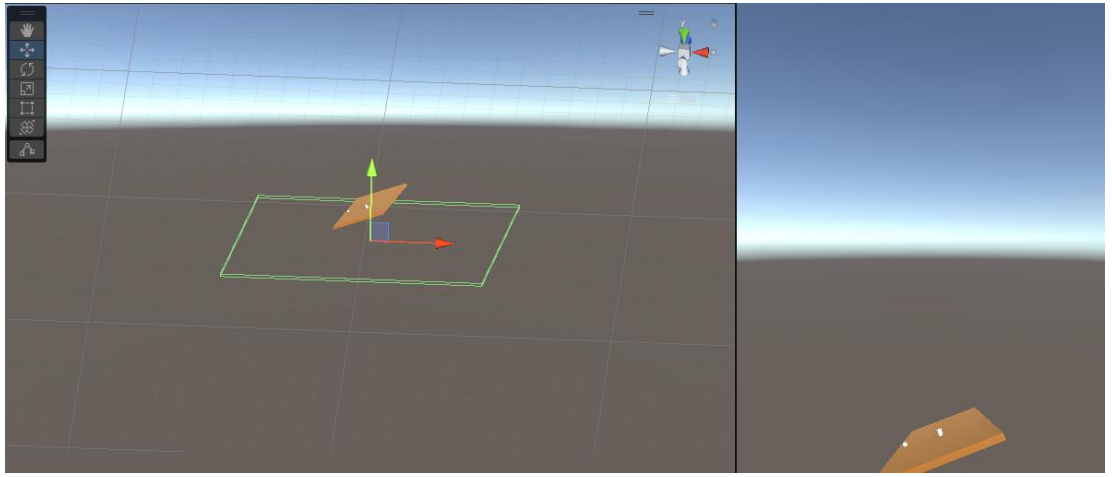
1. Hierarchy – Stage – Ground - ^C & ^V
2. Hierarchy – Stage – Ground(1) – 상위 레벨로 드래그 앤 드롭
3. Hierarchy – Ground(1) - Rename – FailZone
4. Hierarchy – FailZone – Inspector – Position 0,-15,0
5. Hierarchy – FailZone – Inspector – Rotation 20,0,0
6. Hierarchy – FailZone – Inspector – Scale 100,1,200
7. Hierarchy – FailZone – Inspector – Box Collider – Is Trigger – check
8. Hierarchy – FailZone – Inspector – Mesh Renderer – Kebab Menu – Remove Component
9. Project – Assets – Create – C# Script – Rename – FailZone
10. Hierarchy – FailZone – Inspector – Add Component – Scripts – Failzone

볼 낙하 후 게임 재 시작하기 - 3



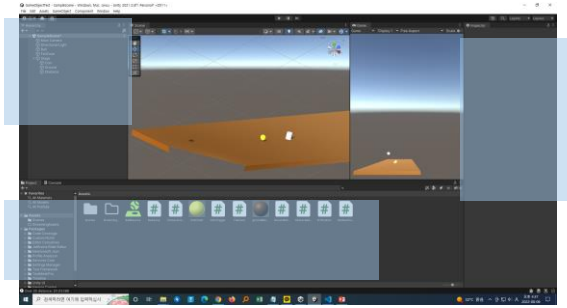
11. Project – Assets – FailZone 더블클릭
12. Coding
13. Play

```
using UnityEngine;
using UnityEngine.SceneManagement;
public class FailZone : MonoBehaviour
{
  void OnTriggerEnter(Collider collider)
  {
    //Debug.Log(collider.gameObject.name);
    if (collider.gameObject.name == "Ball")
    {
      SceneManager.LoadScene(0);
    }
}
  // Start is called before the first frame update
  void Start()
  {

  }

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

  }
}
```



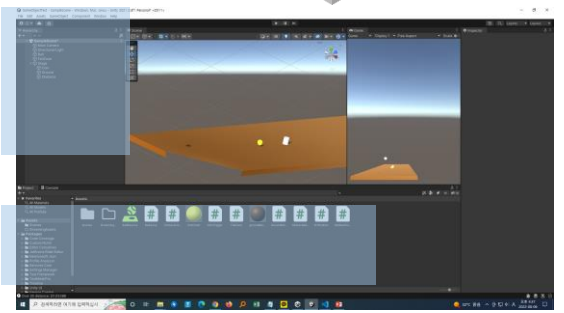
Unity

코인 표시 및 코인 없애기 - 1



1. Hierarchy – 3D Object – Cylinder – Rename – “Coin”
2. Hierarchy – Coin – Inspector – Positon 0,5,-10
3. Hierarchy – Coin – Inspector – Rotation 110,0,0
4. Hierarchy – Coin – Inspector – Scale 1,0.15,1
5. Project – Assets – Create – Material – Rename – “CoinColor”
6. Project – Assets – CoinColor – Inspector – Main Maps – Albedo – “Yellow 계열”
7. Project – Assets – CoinColor를 Hierarchy – Coin으로 DnD
8. Hierarchy – Coin – Inspector – Capsule Collider – Is Trigger – check
9. Hierarchy – Coin을 Hierarchy – Stage로 DnD

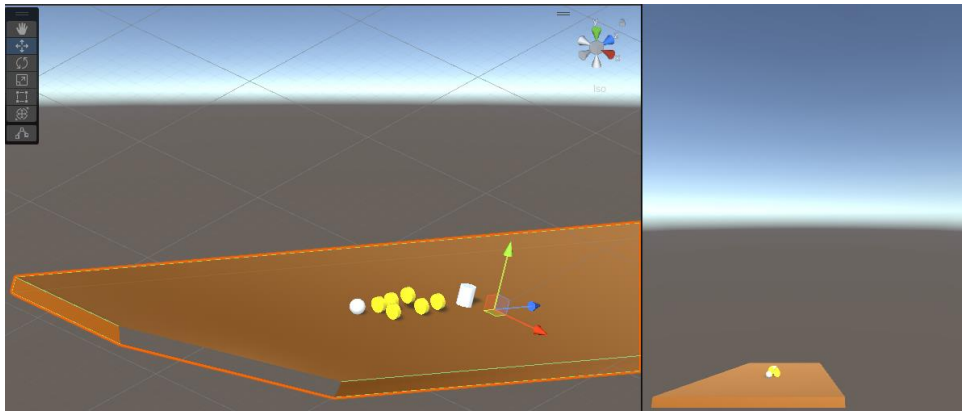
코인 표시 및 코인 없애기 - 2



10. Project – Assets – Create – C# Script – Rename – “CoinTrigger”
11. Coding
12. Project – Assets – CoinTrigger를 Hierarchy – Stage - Coin으로 DnD
13. Play
14. Hierarchy – Stage – Coin - ^C, ^V 5번 – 각 코인 위치 조정
15. Play

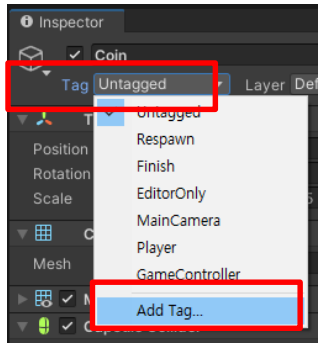
```
using UnityEngine;

public class CoinTrigger : MonoBehaviour
{
  void OnTriggerEnter(Collider collider)
  {
    if (collider.gameObject.name == "Ball")
    {
      Destroy(gameObject);
    }
  }
```

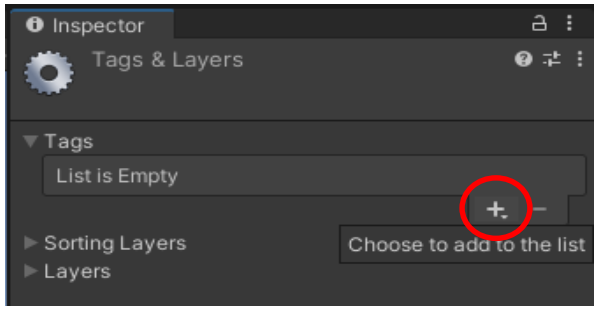
```
// Start is called before the first frame update
  void Start()
  {

  }

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

  }
}
```



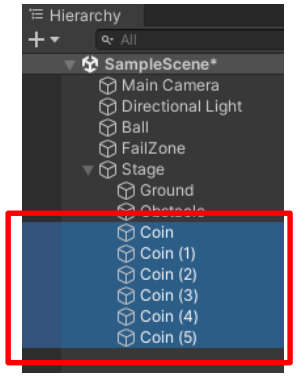
Tag 이용하기 - 1

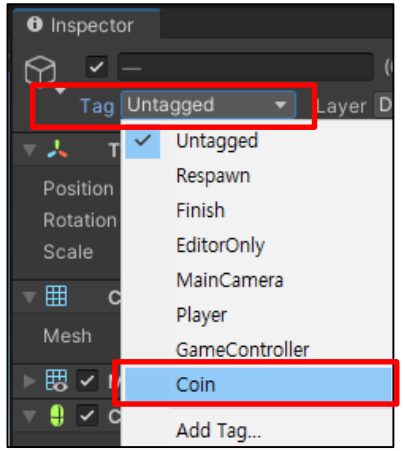
1. Hierarchy – Stage – Coin – Inspector – Tag(UnTagged) – Add Tag – + – “Coin” – Save





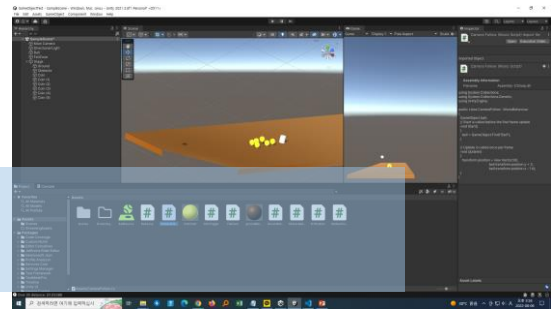
2. Hierarchy – Stage – Coin들 모두 선택(Shift or Ctrl 이용) – Inspector – Tag(UnTagged) - Coin





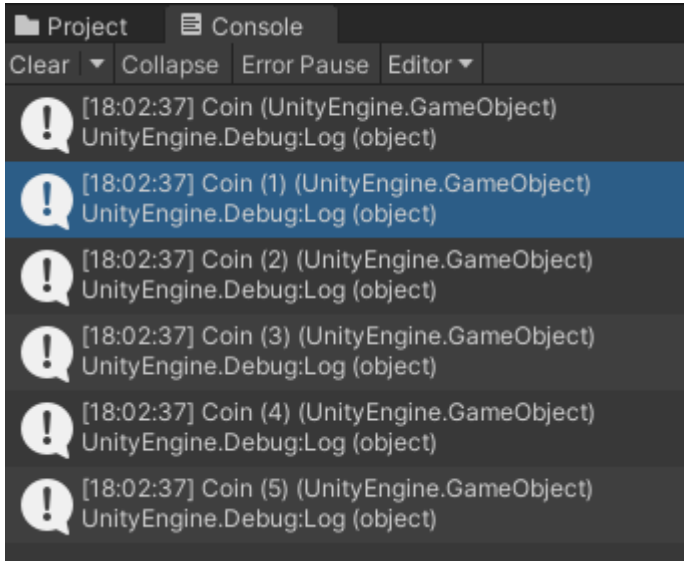
Tag : 여러 개의 게임오브젝트를 하나의 이름으로 관리

Tag 이용하기 - 2



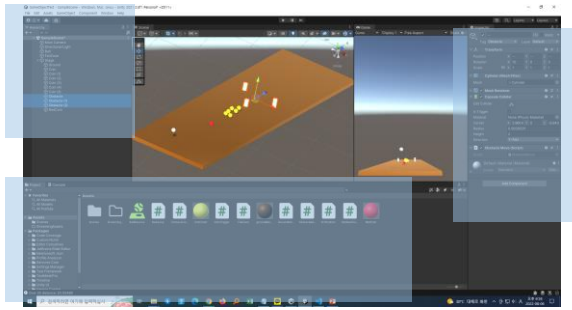
3. Project – Assets – CameraFollow – 더블클릭
4. Coding
5. Play

```
using UnityEngine;

public class CameraFollow : MonoBehaviour
{
  GameObject ball;
  // Start is called before the first frame update
  void Start()
  {
    ball = GameObject.Find("Ball");
    GameObject[] coins = GameObject.FindGameObjectsWithTag("Coin");
    for (int i = 0; i < coins.Length; i++)
    {
      Debug.Log(coins[i].name);
    }
  }

  // Update is called once per frame
  void Update()
  {
    transform.position = new Vector3(0,
                                     ball.transform.position.y + 3,
                                     ball.transform.position.z - 14);
  }
}
```

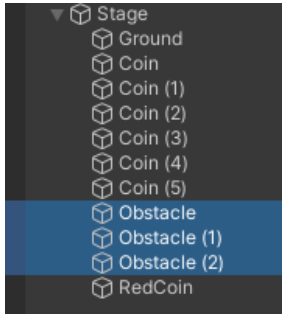


Unity

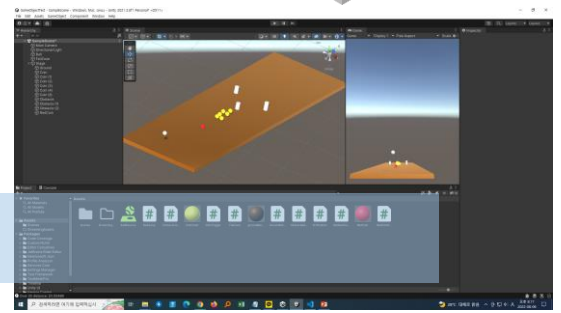
아이템 먹고 장애물 없애기 - 1



1. Hierarchy – Stage – Obstacle – Inspector – Tag(UnTagged) – Add Tag - + - “Obstacle” - Save
2. Hierarchy – Stage – Obstacle - ^C, ^V 3번 – 자리배치
3. Hierarchy – Stage – Obstacle들 모두 선택(Shift or Ctrl 이용) – Inspector – Tag(UnTagged) – Obstacle
4. Hierarchy – Stage – Coin - ^C, ^V – 자리 배치
5. Hierarchy – Stage – Coin(6) – Rename – “RedCoin”
6. Project – Assets – Create – Material – Rename – “RedCoin”
7. Project – Assets – RedCoin을 Hierarchy – Stage – RedCoin으로 DnD
9. Project – Assets – Create – C# Script – Rename – “RedCoinItem”
10. Project – Assets – RedCoinItem – 더블클릭



아이템 먹고 장애물 없애기 - 2



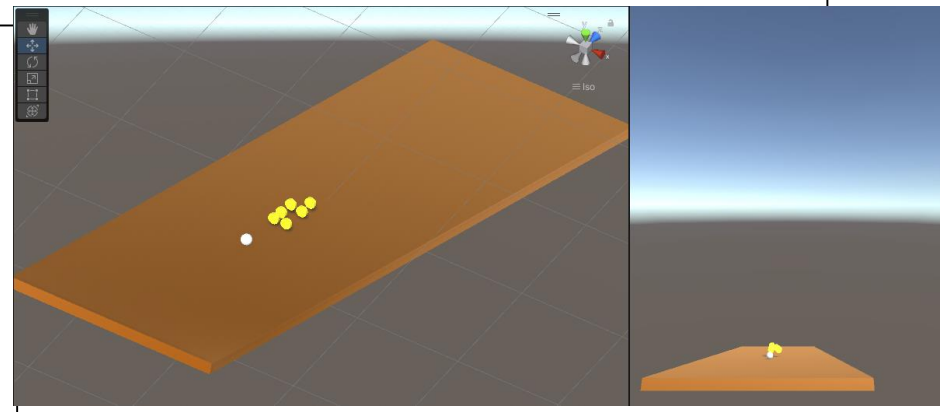
11.Coding

12.Project – Assets – RedCoinItem 을 Hierarchy – RedCoin으로 DnD

13.Play

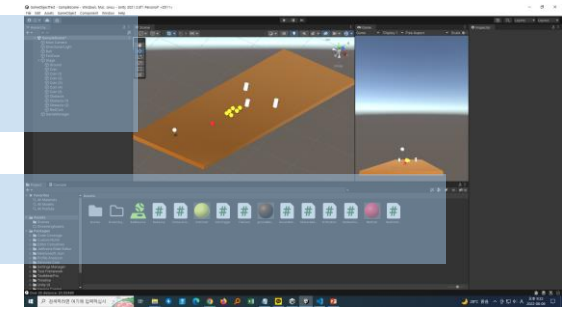
```
using UnityEngine;

public class RedCoinItem : MonoBehaviour
{
  void OnTriggerEnter(Collider collider)
  {
    if (collider.gameObject.name == "Ball")
    {
      DestroyObstacles();
      Destroy(gameObject);
    }
  }
  void DestroyObstacles()
  {
    GameObject[] obstacles = GameObject.FindGameObjectsWithTag("Obstacle");
    for (int i = 0; i < obstacles.Length; i++)
    {
      Destroy(obstacles[i]);
    }
  }
```

```
// Start is called before the first frame update
  void Start()
  {
  }
  // Update is called once per frame
  void Update()
  {
  }
}
```



Unity

GameManager - 1



1. Hierarchy – Create Empty – Rename – “GameManager”
2. Project – Assets – Create – C# Script – Rename – “GameManager”
3. Project – Assets - GameManager를 Hierarchy – GameManager로 DnD
4. Project – Assets – GameManager 더블클릭
5. Coding(코드 추가)

```
using UnityEngine.SceneManagement;


 void RestartGame()
 {
   SceneManager.LoadScene(0);
 }
```

FailZone의 code를 GameManager로 이동
FailZone에서 GameManager의 메소드 호출

6. Project – Assets – FailZone 더블클릭
7. Coding(코드 변경)

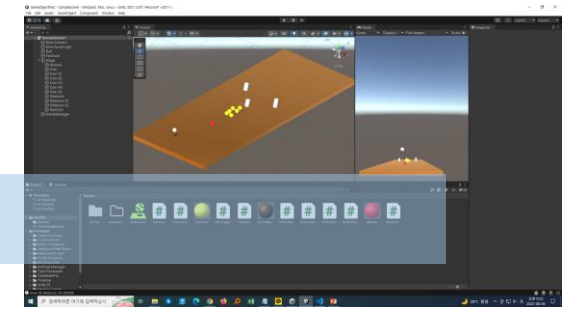
```
 void OnTriggerEnter(Collider collider)
 {
   //Debug.Log(collider.gameObject.name);
   if (collider.gameObject.name == "Ball")
   {
     GameObject.Find("GameManager").SendMessage("RestartGame");
   }
 }
```

8. Play

게임의 전반적인 제어를 위해 사용

Unity

GameManager - 2



9. Project – Assets – GameManager 더블클릭

10. Coding(코드 추가)

```
void RedCoinStart(){
  DestroyObstacles();
}
void DestroyObstacles()
{
  GameObject[] obstacles = GameObject.FindGameObjectsWithTag("Obstacle");
  for (int i = 0; i < obstacles.Length; i++)
  {
    Destroy(obstacles[i]);
  }
}
```

RedCoinItem에서 ^x, ^v로 가져온 코드

11. Project – Assets – RedCoinItem 더블클릭

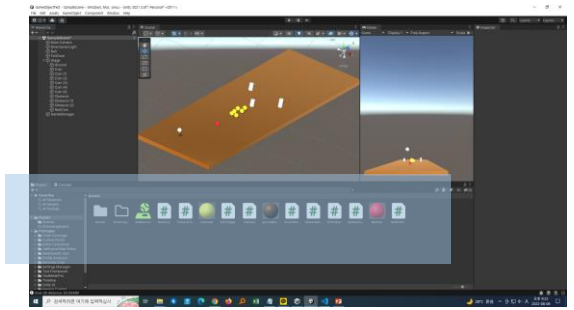
12. Coding(코드 변경)

```
void OnTriggerEnter(Collider collider)
 {
   if (collider.gameObject.name == "Ball")
   {
     GameObject.Find("GameManager").SendMessage("RedCoinStart");
     Destroy(gameObject);
   }
 }
//void DestroyObstacles() 메소드 삭제
```

13. Play

Unity

획득한 동전 개수 세기



1. Project – Assets – GameManager 더블클릭
2. Coding(코드 추가)

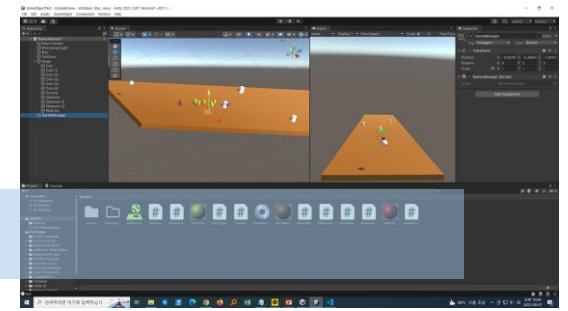
```
int coinCount = 0;
void GetCoin()
{
  coinCount++;

  Debug.Log("동전 : " + coinCount);
}
```

3. Project – Assets – CoinTrigger 더블클릭
4. Coding(코드 추가)

```
void OnTriggerEnter(Collider collider)
{
  if (collider.gameObject.name == "Ball")
  {
    GameObject.Find("GameManager").SendMessage("GetCoin");
    Destroy(gameObject);
  }
}
```

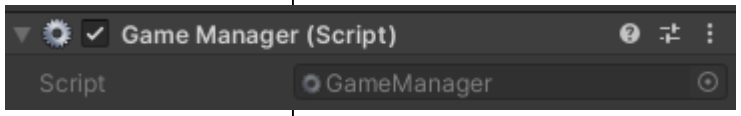
5. Play

다른 클래스의 필드와 메소드 사용하기 - 1



1. Project – Assets – FailZone 더블클릭
2. Coding

```
void OnTriggerEnter(Collider collider)
{
  Debug.Log(collider.gameObject.name);
  if (collider.gameObject.name == "Ball")
  {
    //GameObject.Find("GameManager").SendMessage("RestartGame");
    GameObject gm = GameObject.Find("GameManager");
    GameManager gmComponent = gm.GetComponent<GameManager>();
    //GameManager gmComponent = GameObject.Find("GameManager").GetComponent<GameManager>();
    gmComponent.RestartGame();
  }
}
```



접근할 수 없어서 error

3. Project – Assets – GameManager 더블클릭
4. Coding

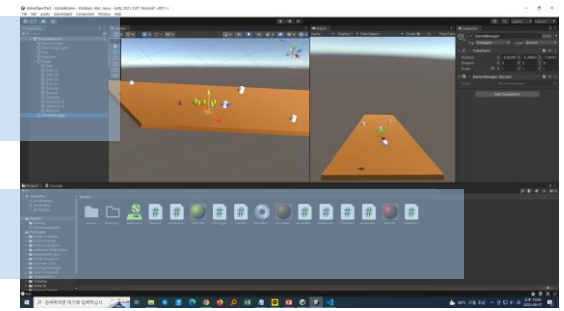
```
public void RestartGame()
 {
   SceneManager.LoadScene(0);
 }
```

void RestartGame()을 public으로 변경

5. Play

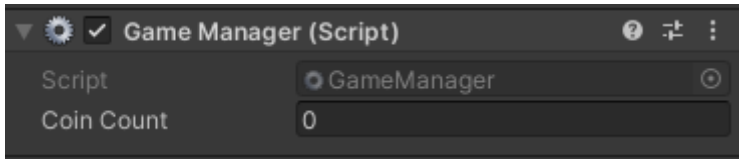
다른 클래스에서의 접근을 허용하려면 필드나 메소드 앞에 public

다른 클래스의 필드와 메소드 사용하기 - 2



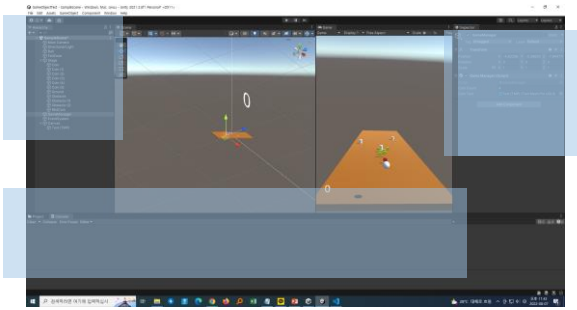
1. Project – Assets – GameManager 더블클릭
2. Coding(int coinCount 변수를 public으로)

```
public int coinCount = 0;
```

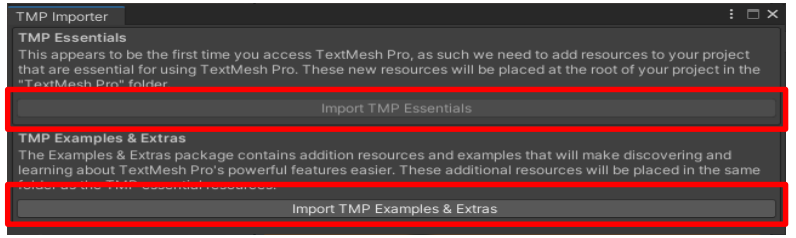


필드를 public으로 하면 Inspector 창에 필드 명 나타남
값을 입력하고 실행하면 반영이 됨
필요한 경우 void Start()에서 초기화

획득한 동전의 개수 표시하기



1. Hierarchy – UI – Text(-TextMeshPro) - Import TMP Essentials 클릭 – Import TMP Examples & Extras 클릭
2. Project – Assets – GameManager 더블 클릭
3. Coding(코드 추가)



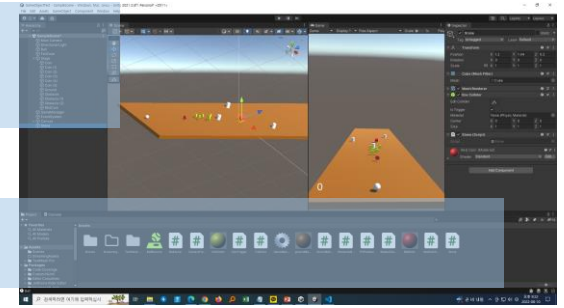

```
using TMPro;

public class GameManager : MonoBehaviour
{
  public int coinCount = 0;
  public TextMeshProUGUI coinText;
  void GetCoin()
  {
    coinCount++;
    coinText.text = coinCount + "";
    Debug.Log("동전 : " + coinCount);
  }
```

한글 포함하면 error, 한글 따로 처리해야 함

4. Hierarchy – GameManager – Inspector – Game Manager(Script) – Coin Text – Text(TMP)
5. Play

Unity

돌 던지기 - 1

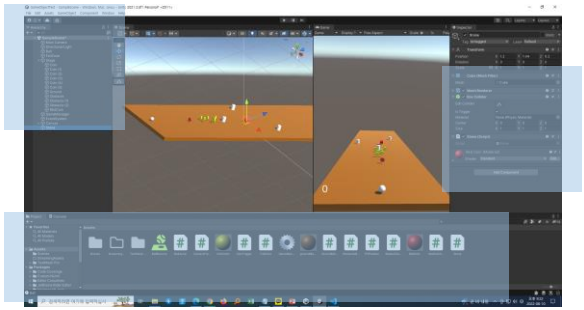


1. **Hierarchy** – 3D Object – Cube – Rename – “Stone”
2. **Project** – Assets – Create – C# Script – Rename – “Stone”
3. **Coding**

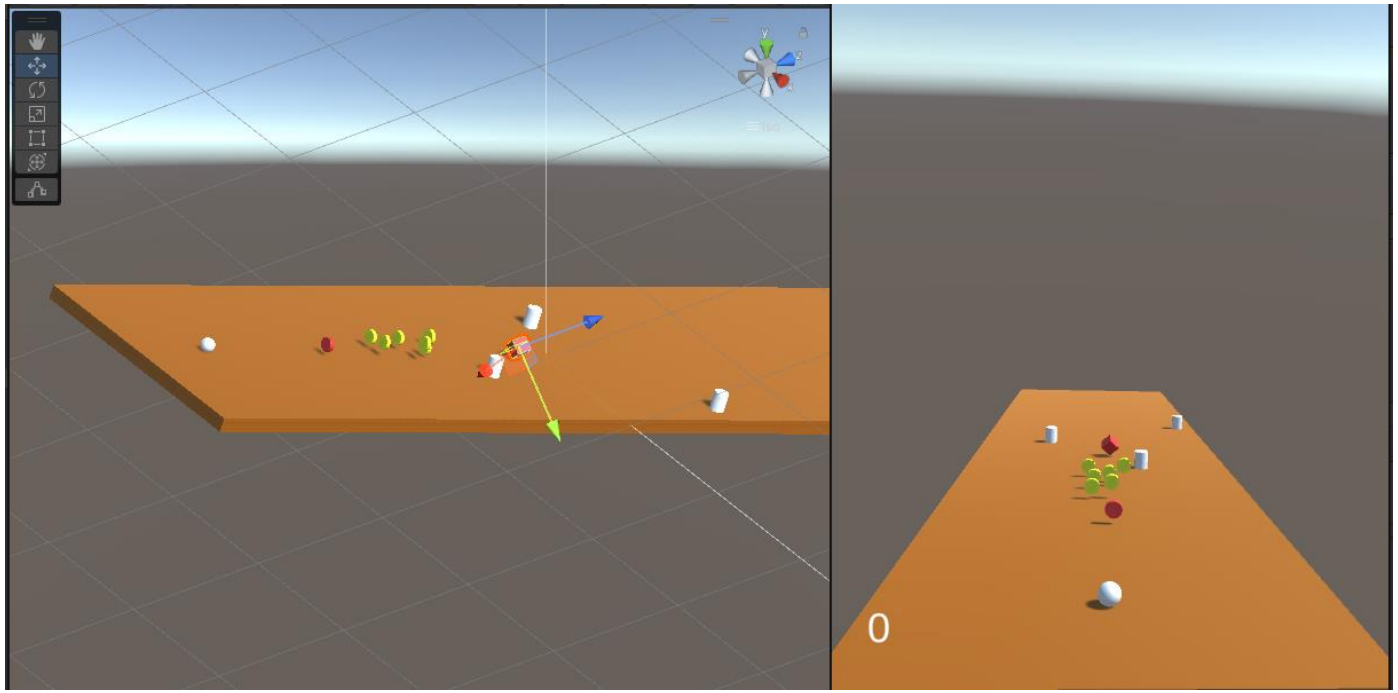
```
using UnityEngine;
public class Stone : MonoBehaviour
{
  Vector3 target;
  // Start is called before the first frame update
  void Start()  {
    target = GameObject.Find("Ball").transform.position;  //위치 지정
  }

  // Update is called once per frame
  void Update()  {
    transform.position = Vector3.MoveTowards(transform.position, target, 0.01f); //target 방향으로 움직이기
    transform.Rotate(new Vector3(0, 0, 5)); //돌 회전하기
  }
  void OnTriggerEnter(Collider collider)  {
    Debug.Log(collider.gameObject.name);
    if (collider.gameObject.name == "Ball")
    {
      GameManager gmComponent = GameObject.Find("GameManager").GetComponent<GameManager>();
      gmComponent.RestartGame();
    }
  }
}
```

Unity

돌 던지기 - 2

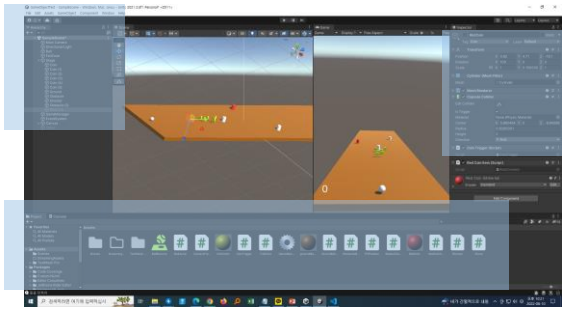


1. Hierarchy – Stone – Inspector – Box Collider – Is Trigger – check
2. Project – Assets - RedCoin을 Hierarchy - Stone으로 DnD
3. Hierarchy – Stone과 Ball을 Stage의 상단에 위치시킴
4. Play



Unity

일정 간격으로 메시지 출력하기 - 1



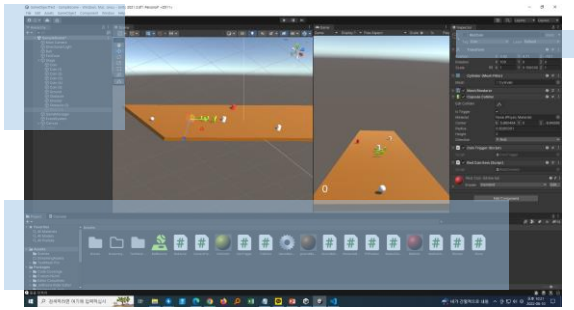
1. Hierarchy – Stage – Obstacle(1) – Rename – “Shooter”
2. Hierarchy – Stage – Shooter – **Inspector** – Obstacle Move(Script) – Kebab Menu – Remove Component
3. Project – Assets - RedCoin을 Hierarchy – Stage – Shooter로 DnD
4. Project – Assets - Create – C# Script – Rename – “Shooter” - 더블클릭
5. **Coding**

```
using UnityEngine;

public class ObstacleMove : MonoBehaviour
{
  void OnCollisionEnter(Collision collision)
  {
    //Debug.Log(collision.gameObject.name);
    Vector3 direction = transform.position - collision.gameObject.transform.position;
    //나의 위치에서 상대의 위치를 빼면 방향이 결정
    direction = direction.normalized * 1000;  //힘 결정
    collision.gameObject.GetComponent<Rigidbody>().AddForce(direction);
  }
```

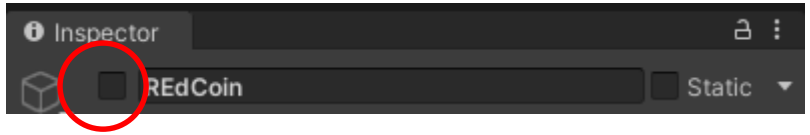
일정 간격으로 메시지 출력하기 - 2

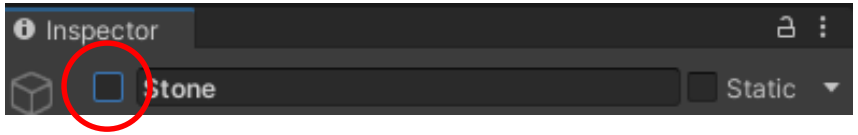
```
  float timeCount = 0;
  // Update is called once per frame
  void Update()
  {
    timeCount += Time.deltaTime;
    if (timeCount > 3)
    {
      Debug.Log("돌을 던져라");
      timeCount = 0;
    }
    float newXPosition = transform.localPosition.x + delta;
    transform.localPosition = new Vector3(newXPosition, transform.localPosition.y,
    transform.localPosition.z);
    if (transform.localPosition.x < -9)
    {
      delta = 0.01f;
    }
    else if (transform.localPosition.x > 9)
    {
      delta = -0.01f;
    }
  }
}
```

일정 간격으로 메시지 출력하기 - 3

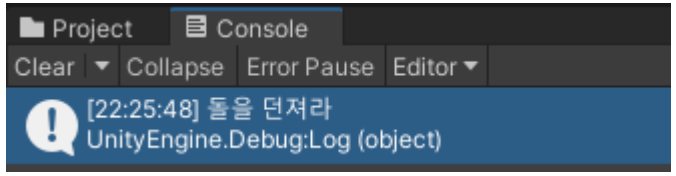


1. Porject – Assets - Shooter를 Hierarchy – Stage - Shooter로 DnD
2. Hierarchy – Stage – RedCoin – Inspector – uncheck(비활성화)
3. Hierarchy – Stone – Inspector – uncheck(비활성화)

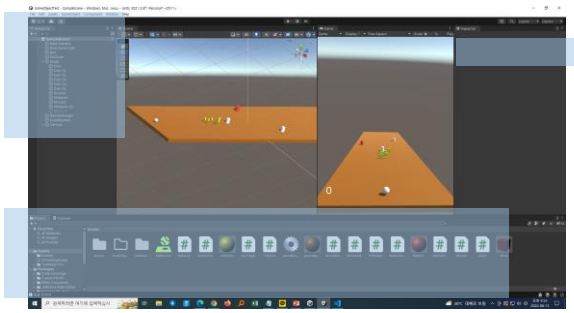




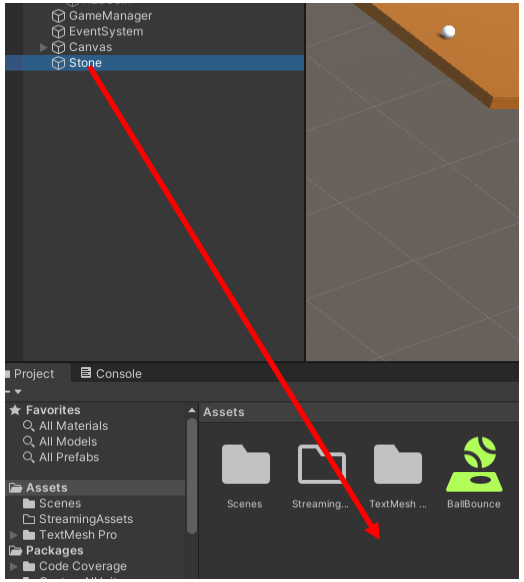
4. Play



Prefab 생성 및 사용하기 - 1



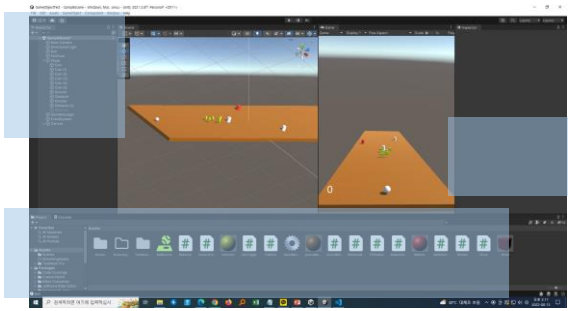
1. Hierarchy – Stone – Inspector – check(활성화)
2. Hierarchy – Stone을 Project – Assets으로 DnD
3. Hierarchy – Stone – Delete(삭제)



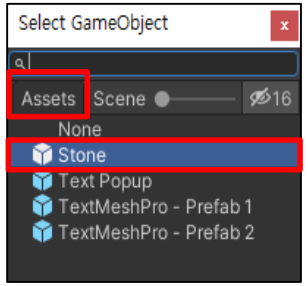
4. Project – Assets - Shooter – 더블클릭
5. Coding(코드 추가)

```
using UnityEngine;

public class Shooter : MonoBehaviour
{
  public GameObject stone;

  void OnCollisionEnter(Collision collision)
```

Prefab 생성 및 사용하기 - 2



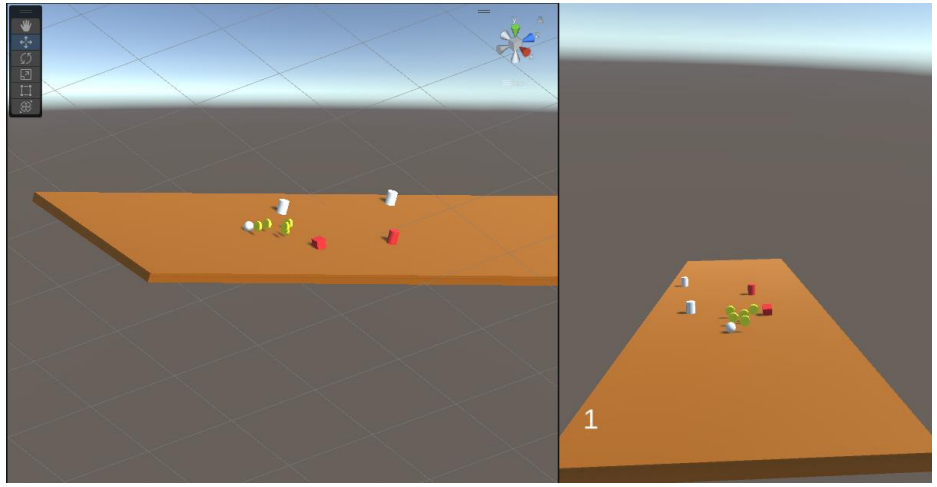
6. Hierarchy – Stage - Shooter – Inspector – Shooter(Script) – Stone
   – Stone 혹은 Project – Assets - Stone(Prefab)을 Hierarchy – Stage
   – Shooter – Inspector – Shooter(Script) – Stone으로 DnD



7. Project – Assets – Shooter - 더블클릭
8. Coding

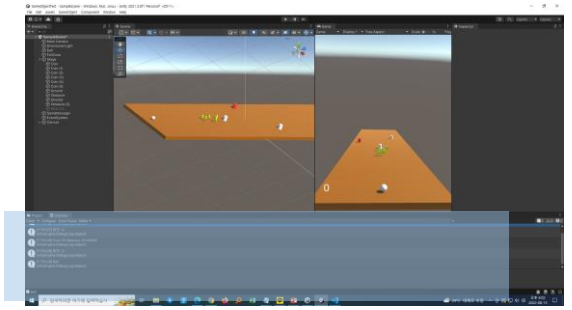
```
void Update()
 {
   timeCount += Time.deltaTime;
   if (timeCount > 3)
   {
     //Debug.Log("돌을 던져라");
     Instantiate(stone, transform.position, Quaternion.identity);
     timeCount = 0;
   }
```

9. Play



Unity

상속



1. Project – Assets – ObstacleMove(Script) - 더블클릭
2. Coding(키워드 추가)

void Update() → protected void Update()

3. Project – Assets – Shooter(Script) - 더블클릭
4. Coding
5. Play

```
using UnityEngine;

public class Shooter : ObstacleMove
{
  public GameObject stone;

  float timeCount = 0;
  // Update is called once per frame
  void Update()
  {
    base.Update();
    timeCount += Time.deltaTime;
    if (timeCount > 3)
    {
      //Debug.Log("돌을 던져라");
      Instantiate(stone, transform.position, Quaternion.identity);
      timeCount = 0;
    }
  }
}
```

ObstacleMove 상속 받음
ObstacleMove에 있는 코드 삭제
Shooter가 움직이기 위해 ObstacleMove의 Update() 메소드 호출
base.Update() 경고, new base.Update()로 변경

Unity

& Save

Unity

Reference

- ✓ https://unity.com/
- ✓ https://docs.unity3d.com/kr/2022.1/Manual/UnityManual.html
- ✓ https://school.programmers.co.kr/learn/courses/1, 정두식
- ✓ https://fiftiesstudy.tistory.com/category/%EC%B7%A8%EB%AF%B8%EB%A1%9C%20%ED%95%98%EB%8A%94%20%EA%B2%8C%EC%9E%84%EC%BD%94%EB%94%A9_gameCodingAsHobby/%EC%9C%A0%EB%8B%88%ED%8B%B0unity%EB%A1%9C%20%EA%B2%8C%EC%9E%84%20%EB%A7%8C%EB%93%A4%EA%B8%B0