

ti&m

Hack Night Bern

Start your first game in Unity



Unity

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Preparation



- Download Unity Hub: <https://unity.com/download>
- Create a Unity ID (can be done in the Hub):
<https://id.unity.com/en/conversations/9982d9f2-527e-4144-bd82-64a23d33b55001bf?view=register>
- Inside Unity Hub: Install Unity Editor Version 2022.3.20f1 LTS and include Visual Studio in your Editor installation.
- Clone Repository: <https://github.com/A-w-K/BernHackNight>
- Open the project then open the file /Scenes/MainScene

Intro

Unity Editor

GameObjects

Components (Component Based Design)

Rigid Bodies and Colliders

Animations

Hacking on Challenges



Pizza and Socializing



Even more Hacking on Challenges



That's me

- Senior Software Engineer at ti&m
- Hacking since 2010
- Hobby GameDev since 2018
- Gamer
- Father of 2 (2yr, 3months)



Unity

„Unity is a cross-platform game engine developed by Unity Technologies, used to create video games for PCs, consoles, mobile devices, and websites.»

- Supports 2D, 3D, VR, AR
- Cross-Plattform: Development for over 25 platforms including iOS, Android, Windows, Mac
- Asset Store: Access to thousand of assets
- Large Community
- Development with C#

Fast Learning Curve thanks to big community.



**Unity Game
Development**

Source: <https://blog.potenzaglobalsolutions.com/5-rarely-known-advantages-and-disadvantages-of-unity-game-development/>

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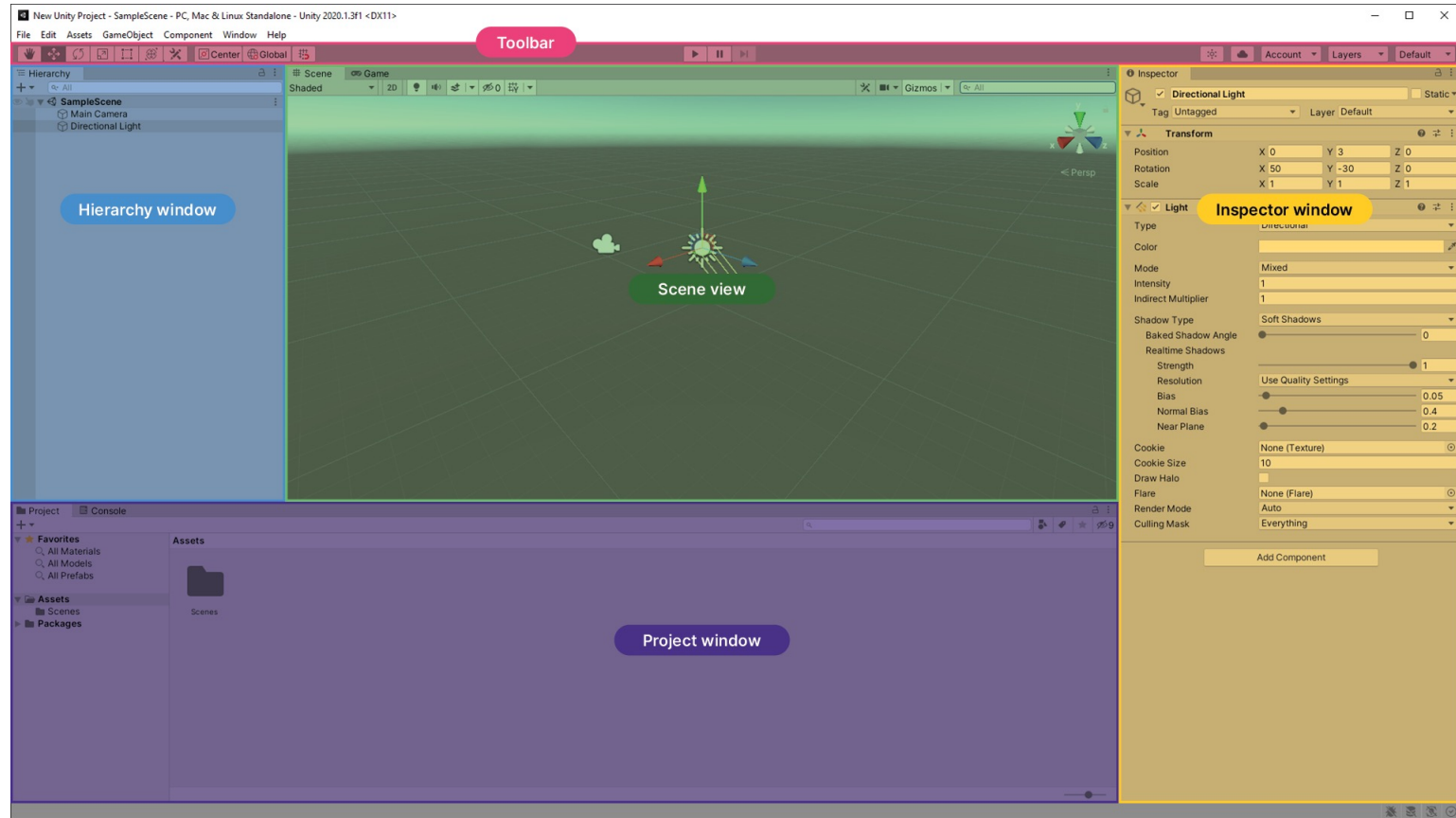
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Unity Editor



overwhelming at first – and at second glance

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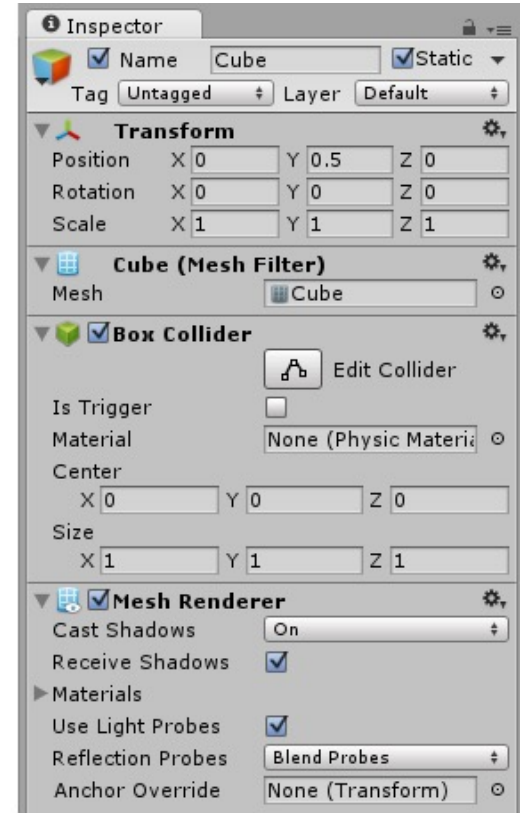
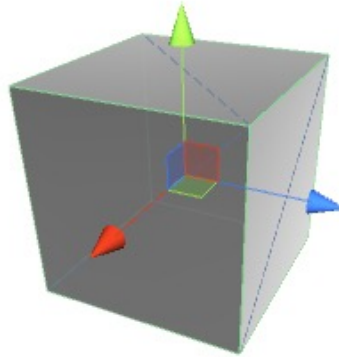


Even more Hacking on Challenges



Game Objects

- Basic building blocks
- Placed in the Game World
- Hold components
- Prefabs are reusable GameObjects



The simplest GameObject only has a Transform component

Game Objects - Scripting

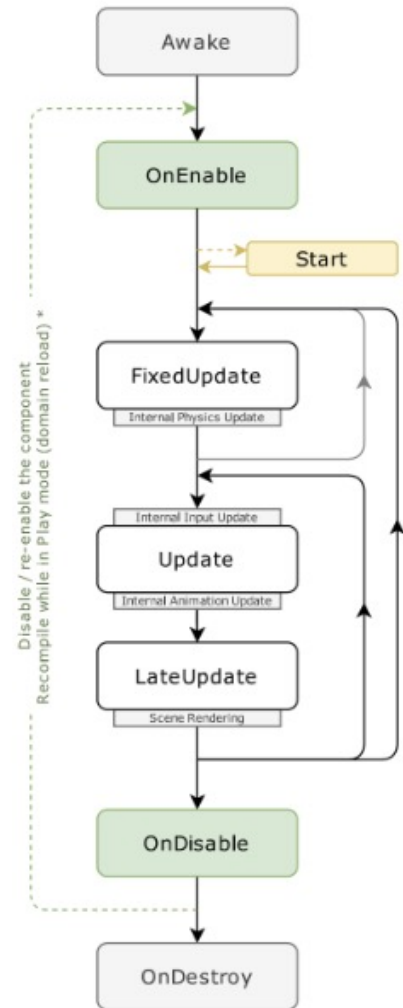
```
public class Collectible : MonoBehaviour
{
    // Start is called before the first frame update
    void Start()
    {
    }

    // Update is called once per frame
    void Update()
    {
        // time in milliseconds since last update
        var delta = Time.deltaTime;

        // move object in x direction
        transform.Translate(new Vector3(1f, 0f));

        // get another component attached to this gameobject
        var collider = GetComponent<Collider2D>();
    }
}
```

The simplest GameObject only has a Transform component



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Components (Component Based Design)

- Composition over inheritance
- C# scripts that are added to GameObjects
- Components are designed to be reusable
- Serve a specific purpose (e.g. manage the health of an entity)
- [SerializeField] – make properties accessible in the editor

```
[SerializeField]  
private int _maxHealth;  
[SerializeField]  
private int _minHealth;  
private int _health;
```

Unity Message | 0 references

```
private void Start()  
{  
    _health = _maxHealth;  
}
```

1 reference

```
public void Damage(int _damage)  
{  
    _health -= _damage;  
    if (_health < _minHealth)  
    {  
        HandleDeath();  
    }  
}
```

1 reference

```
private void HandleDeath()  
{  
    Debug.Log(gameObject.name + " has died.");  
    Destroy(gameObject);  
}
```

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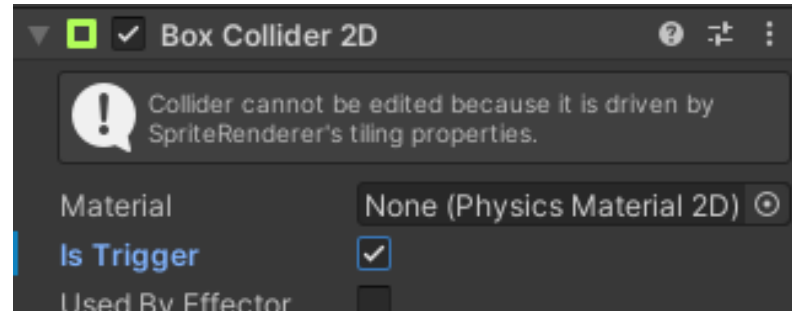
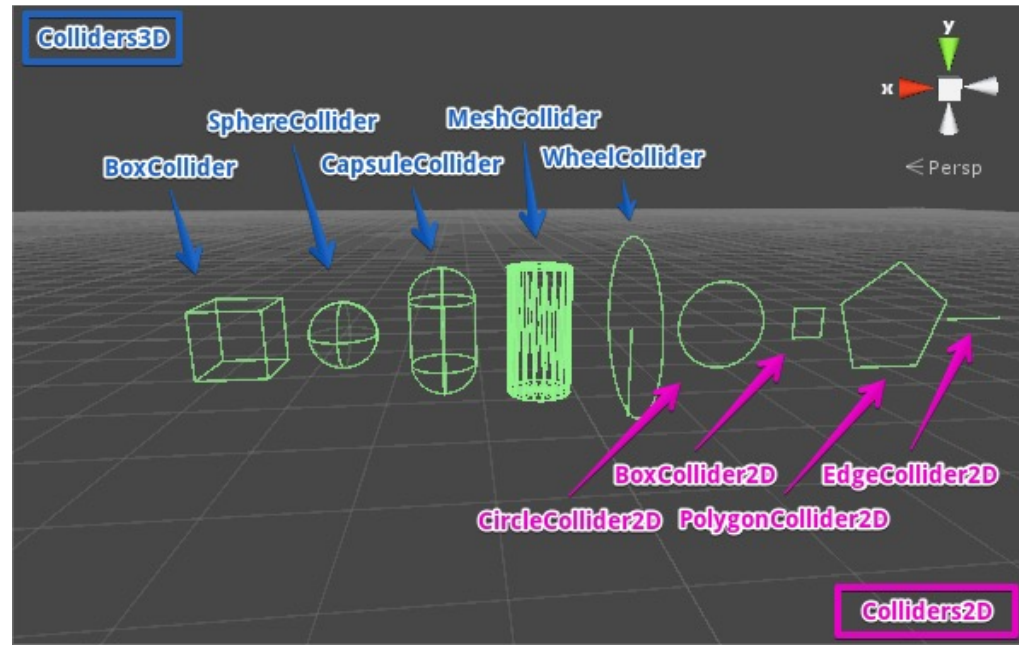
Rigid Bodies and Colliders

Rigidbody gives GameObjects Physics properties like:

- Mass
- Linear/Angular Drag
- Gravity Scale
- Positional/Rotational Constraints

Colliders define the physical shape of an object

Triggers won't hinder movement



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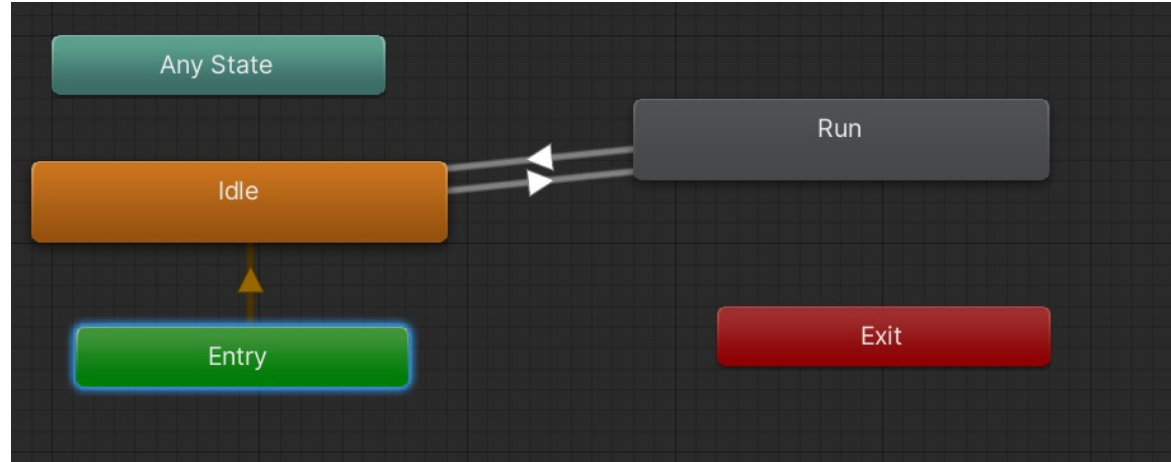


Even more Hacking on Challenges



Animations (2D)

- Select multiple sprites and drag them into the scene to create a basic animation
- Use the animator window to create transitions between animations
- Set animation states or send triggers to the animator



```
_animator = GetComponent<Animator>();  
_animator.SetBool("isRunning", true);  
_animator.SetTrigger("shoot");
```

Bring your characters to life

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Introduction to Challenges

1. Challenge

The basic game from the repository can be started and character moves by keyboard input

2. Challenge

Make Player face the direction he is moving
Add jump animation to the character

Hint: search for „TODO“s in /Scripts/PlayerController.cs

3. Challenge

Add collectible fruits (/Scripts/Collectible.cs)

4. Challenge

Show score and time at the top of the game

5. Challenge

Complete the game loop (Win-Condition, Loose-Condition, Restart the game)



Happy coding!



Useful ressources

- Unity Editor Manual: <https://docs.unity3d.com/Manual/index.html>
- Unity Scripting: <https://docs.unity3d.com/ScriptReference/index.html>
- Unity Asset Store: <https://assetstore.unity.com/>
- Unity Tutorials: <https://learn.unity.com/tutorials>
- Itch.io Asset Store: <https://itch.io/game-assets>
- GameDev YouTube Channels I recommend (no particular order):
 - <https://www.youtube.com/@Blackthornprod>
 - <https://www.youtube.com/@JonasTyroller>
 - <https://www.youtube.com/@ZygerGFX>
 - <https://www.youtube.com/@Tarodev> (he wrote the movement controller we used in the challenge)
 - <https://www.youtube.com/@bitemegames>
 - <https://www.youtube.com/@DevDuck>
 - <https://www.youtube.com/@LlamAcademy>
 - <https://www.youtube.com/@PirateSoftware>