Health And Damage Concepts

Health And Damage Concepts

Concepts Overview

Each gameobject that can take damage will have a Health.cs component attached. The Health.cs component will hold the starting health and the current health of a gameobject. When damage is received the current health of the gameobject will be reduced. When a gameobjects health is reduced to zero it will be destroyed.

Collisions that can potentially cause damage will be detected by Unity 2D collision detection (OnTriggerEnter2D and OnTriggerStay2D).

Damage can be caused by ammo colliding with the player, enemies, and environment objects. Ammo will always try to cause damage to anything with a health component.

Damage can also be caused by contact damage. Contact damage is inflicted by enemies colliding with the player. It's also inflicted by enemies and the player colliding with environment objects.

Contact damage will be controlled by two components that we will create, namely, DealContactDamage.cs and ReceiveContactDamage.cs.

Any gameobject (e.g. the player and enemies) that can deal contact damage will have the DealContactDamage.cs component attached. The DealContactDamage.cs component also defines which layers it affects.

Only gameobjects that have the ReceiveContactDamage.cs component attached (and that are on a layer targeted by the DealContactDamage.cs component) will receive contact damage to their Health.cs component.

Enemy And Player Health Details

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Enemy Health Details

```
public class EnemyDetailsSO : ScriptableObject
{
    Header ENEMY HEALTH
    Tooltip
    public EnemyHealthDetails[] enemyHealthDetailsArray;
    Tooltip
    public bool isImmuneAfterHit = false;
    Tooltip
    public float hitImmunityTime;
    Tooltip
    public bool isHealthBarDisplayed = false;

}
```

We'll be able to set different enemy health for different dungeon levels

```
public struct EnemyHealthDetails
{
    public DungeonLevelSO dungeonLevel;
    public int enemyHealthAmount;
}
```

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Player Health Details

```
public class PlayerDetailsSO : ScriptableObject
{

    Header HEALTH
    Tooltip
    public int playerHealthAmount;
    Tooltip
    public bool isImmuneAfterHit = false;
    Tooltip
    public float hitImmunityTime;


}
```

Post Hit Damage Immunity

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Post Hit Damage Immunity

We don’t want the player dying instantly if they are hit by a simultaneous barrage of damage.

Instead – after a player has taken some damage, they will be given a brief period of immunity.

During this period of immunity the player can’t take any more damage until the immunity has ended.

While the player is immune we’ll flash the player red to show that they have been hit and are immune.

The post hit immunity feature will also work with enemies, but we won’t give our enemies post hit immunity in this game.

We’ll configure the Health.cs component to not take damage while there is post hit immunity.

Player Rolling Damage Immunity

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Player Rolling Damage Immunity

We previously implemented a ‘roll’ manoeuvre for the Player character.

While the player is rolling they also won’t be able to take damage. So the player can roll through ammo fire and not take damage.

If the Player character rolls into an enemy, then the roll stops and they are then liable to take contact damage.

We’ll configure the Health.cs component to not take damage while the player is rolling.

Environment Objects

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Environment Objects

Later in the course we'll add 'Environment Objects'. Although we won't add them in this section of the course, we'll talk about how they also have health and can be damaged / destroyed.

The Environment Objects are mainly for decoration and to provide some interactivity with the environment.

Environment Objects that we are going to implement include bottles, barrels, vases, shelves and skeletons.

Environment objects can be damaged by ammo, and also by contact with the player and enemies.

Ammo Damage

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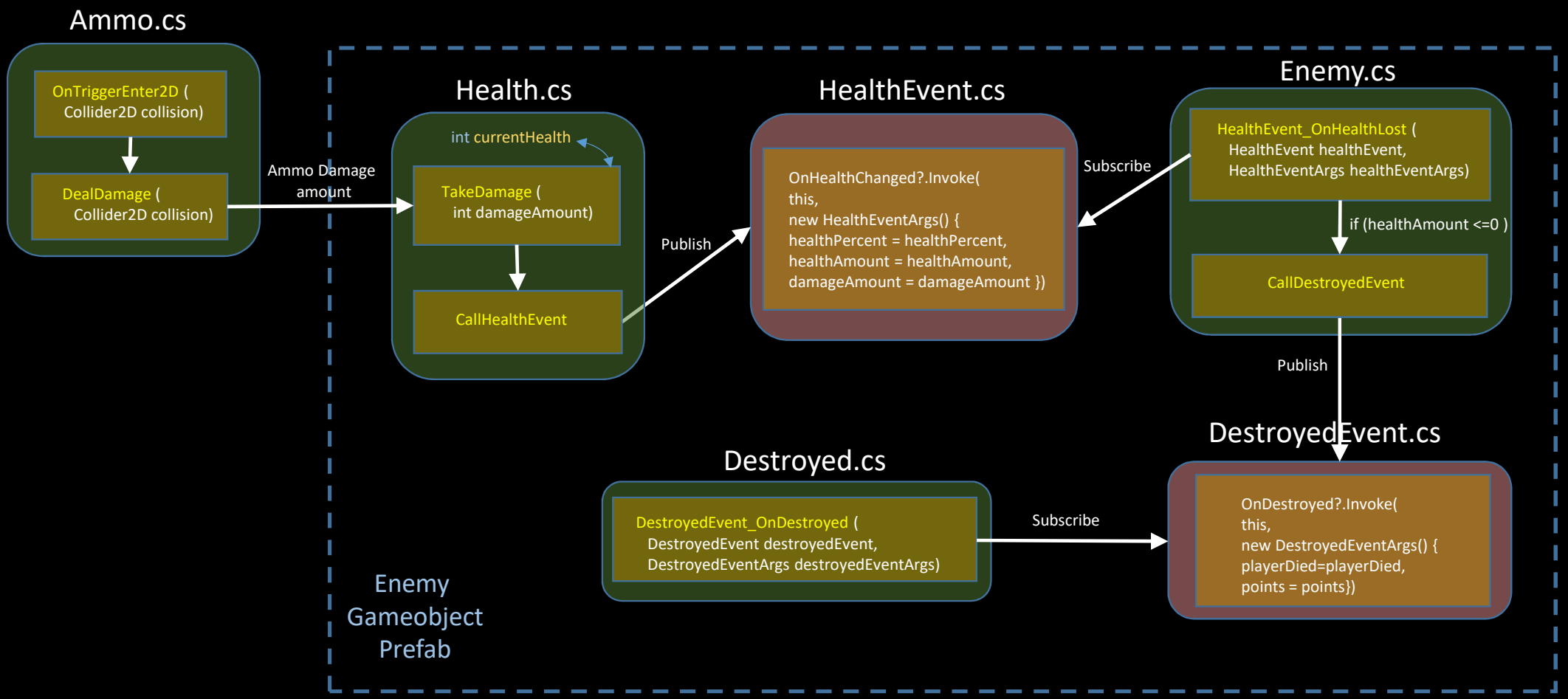
Ammo Damage To Enemies



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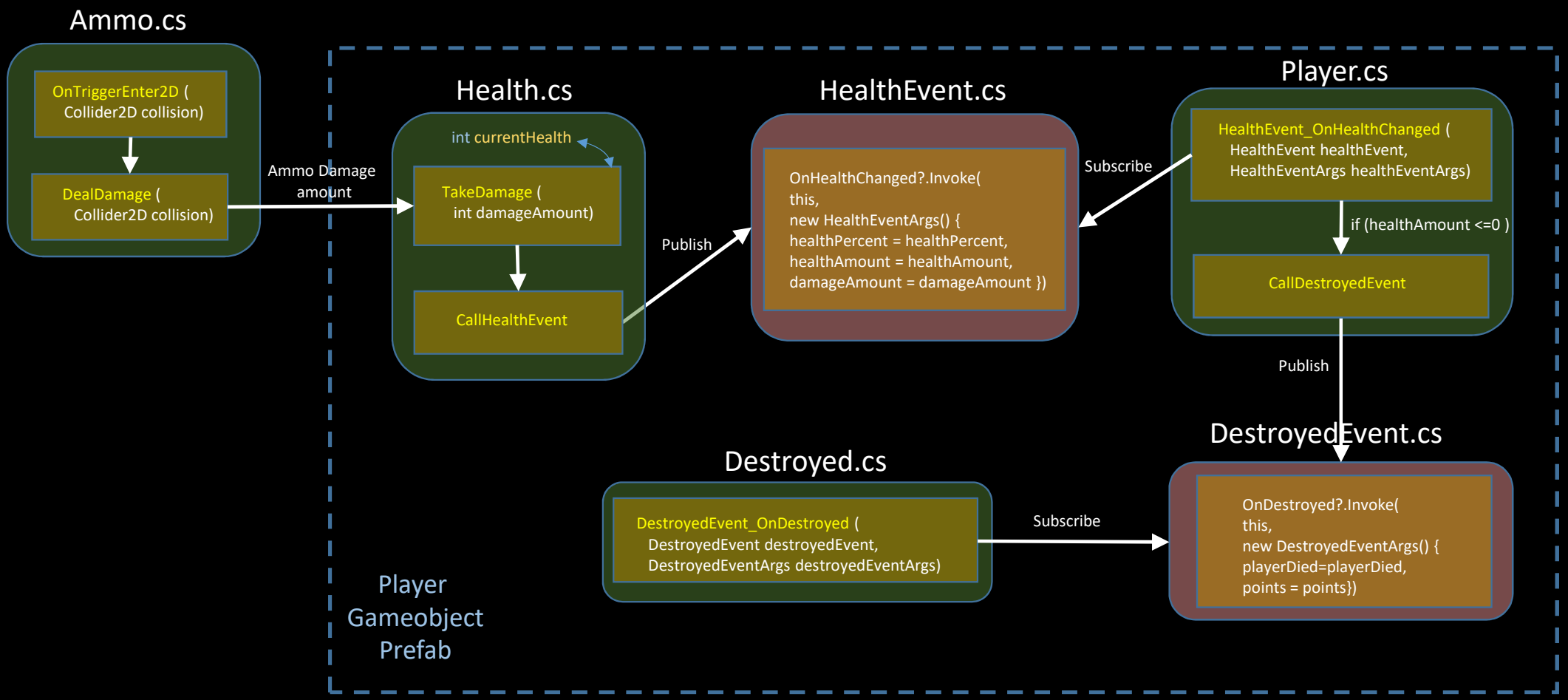
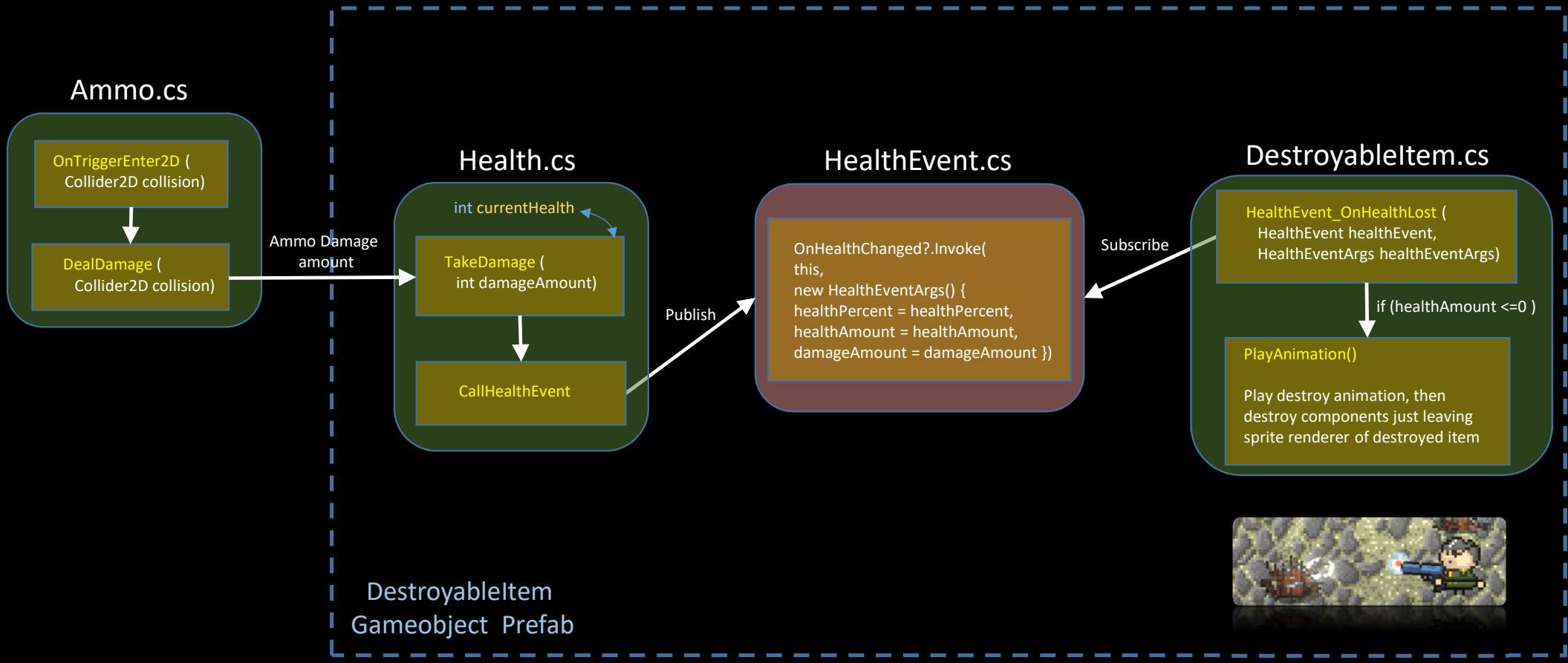
Ammo Damage To Player



Health And Damage Concepts

Ammo Damage To Environment Objects



Contact Damage

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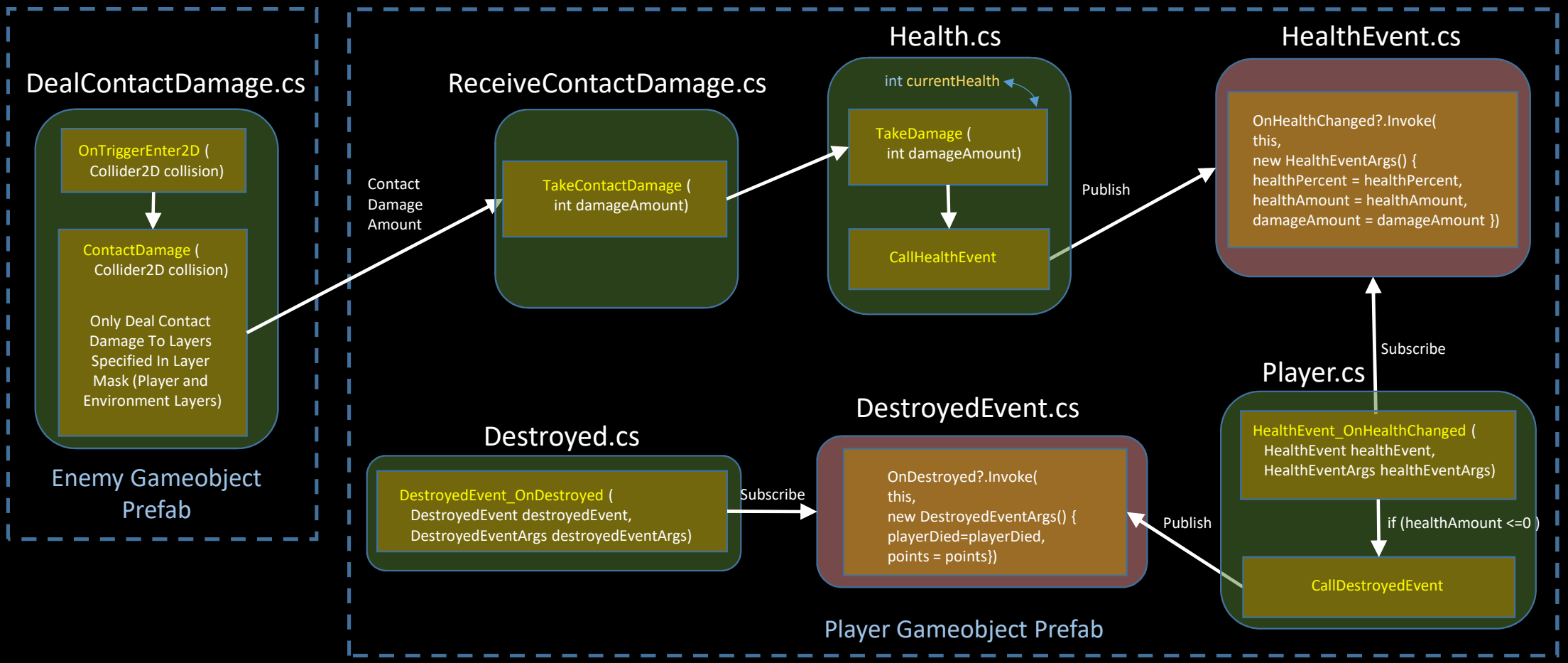
Player Receive Contact Damage From Enemy



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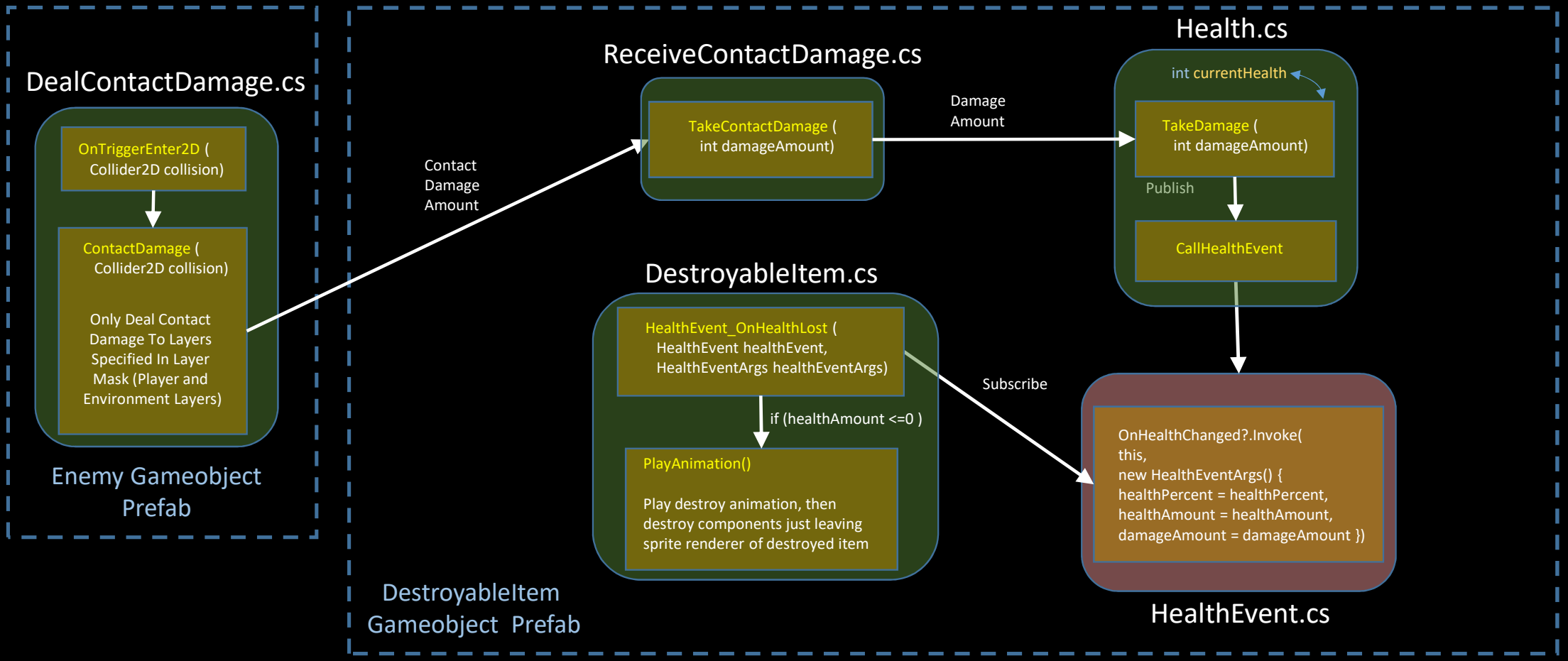
Environment Object Receive Contact Damage From Enemy



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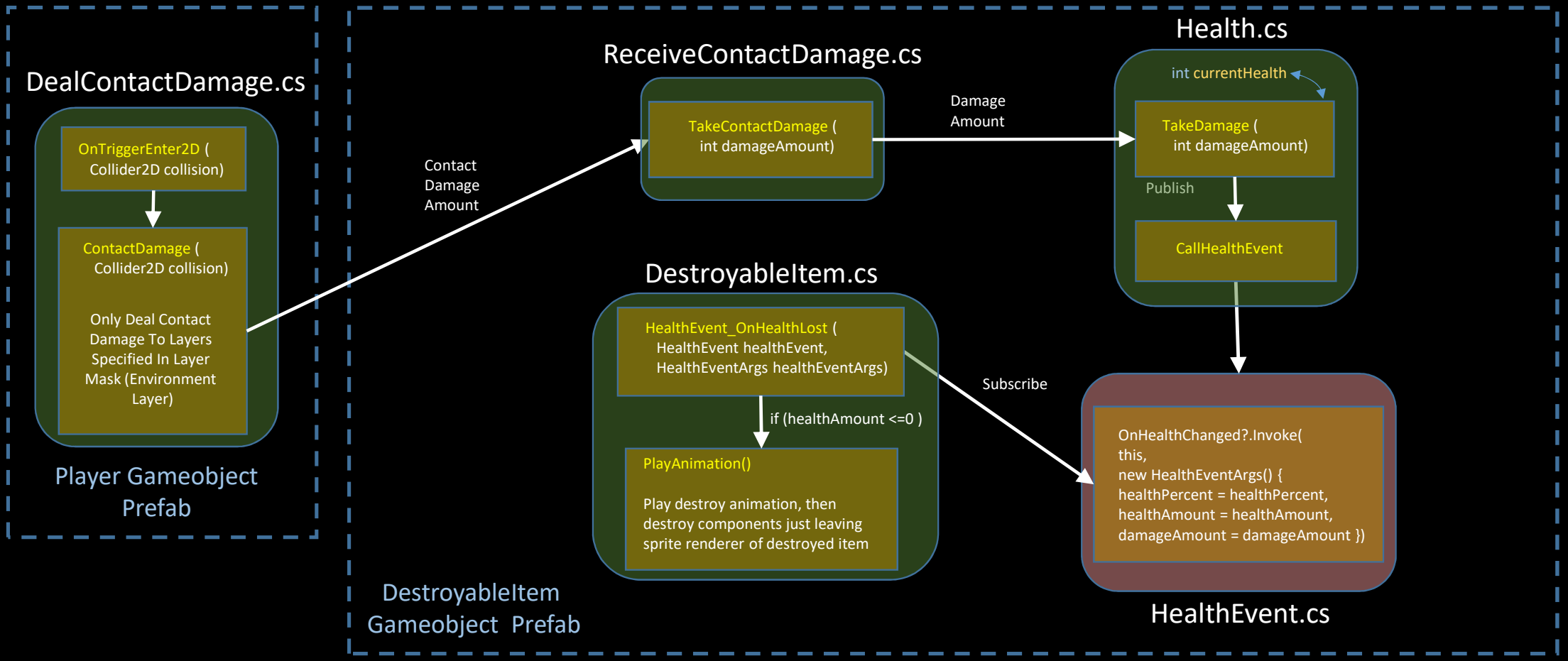
Environment Object Receive Contact Damage From Player



Health UI

Health And Damage Concepts

Health UI