

# UE4 Utilities

7<sup>th</sup> Week, 2021



UNREAL  
ENGINE



# UE4 Utilities

- › To easily move logic from one project to another
- › To keep your project well structured and organized
- › Blueprint Function Libraries
  - To move some generic functions in our project
- › Actor Components
  - To move part of some actor classes' source code
  - **Loose Coupling:** a software engineering concept
    - › You can easily remove and add things you need.
- › Interfaces
  - To make our project better structured and organized



# Blueprint Function Libraries

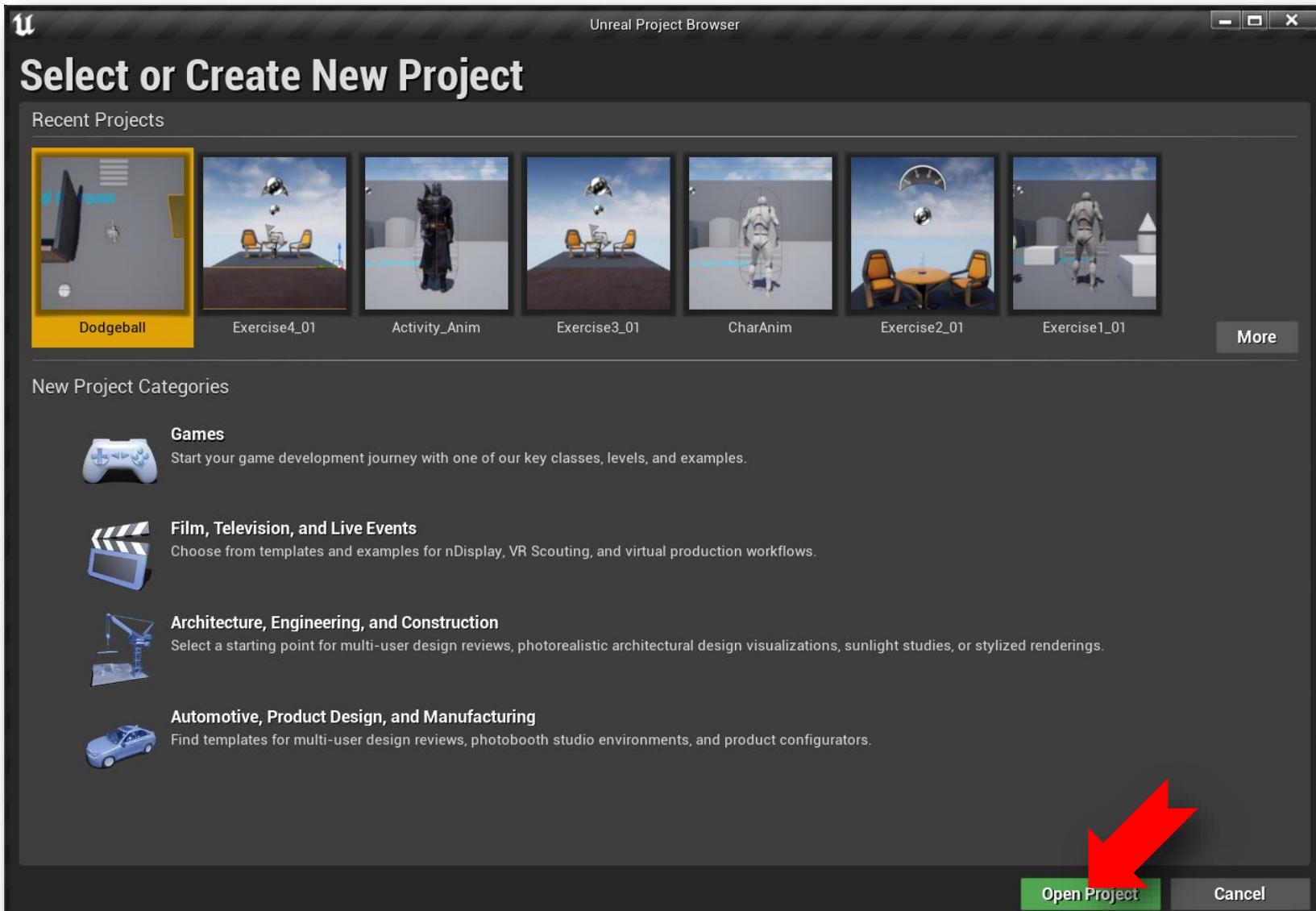
## › **BlueprintFunctionLibrary**

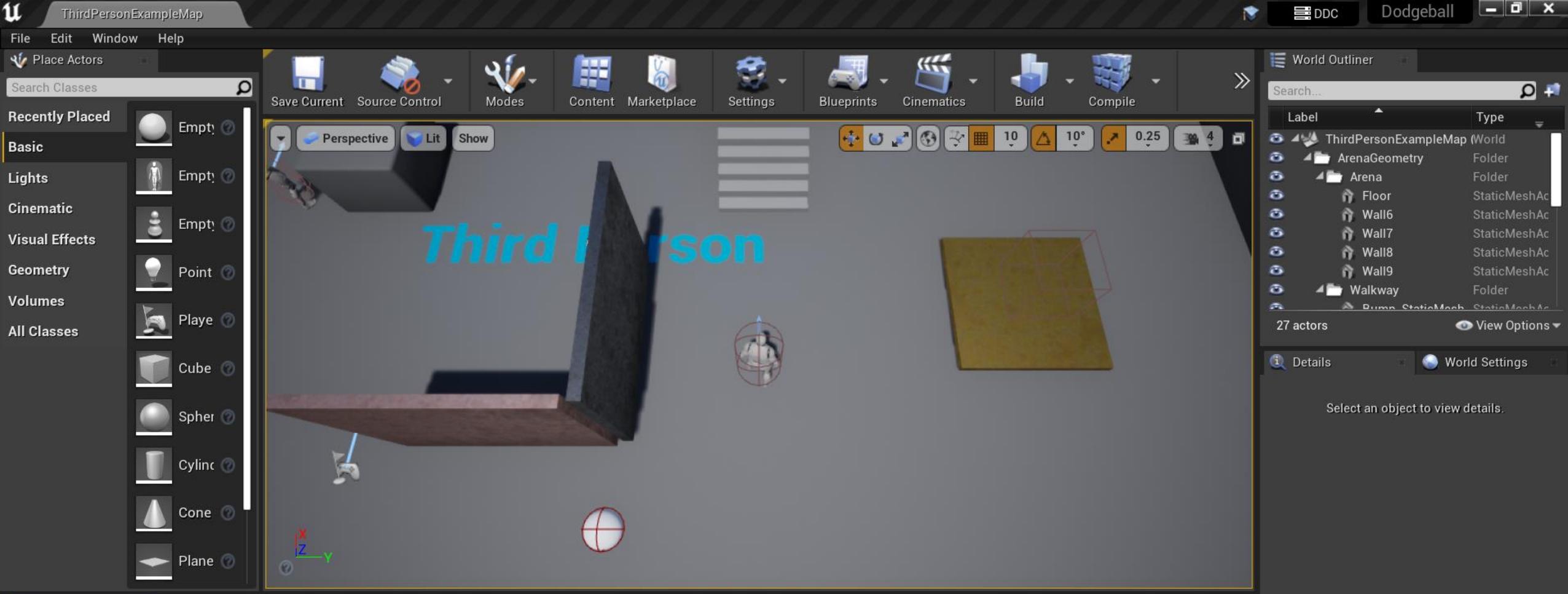
- To contain a collection of static functions that don't really belong to any specific actor and can be used in multiple parts of your project
- Ex) **KismetMathLibrary** and **KismetSystemLibrary**

› We can move the **CanSeeActor** function from the **EnemyCharacter** class to the **Blueprint Function** library class.



# Exercise 7.01: Moving The CanSeeActor Function to The Blueprint Function Library





The "Content Browser" panel shows the "Dodgeball" category under "C++ Classes". The left sidebar shows the project structure:

- Content
  - Geometry
  - Mannequin
  - Physics
  - StarterContent
  - ThirdPerson
  - ThirdPersonCPP
    - Blueprints
    - Maps

The "C++ Classes" section is highlighted with a red box. The "Dodgeball" item is selected, and a context menu is open over it, with the "New C++ Class..." option highlighted. A tooltip says "Right-Click Create a new class in /Classes\_Game/Dodgeball." The bottom status bar shows "6 items" and "View Options".



# Choose Parent Class

This will add a C++ header and source code file to your game project.

Show All Classes

## Player State

A PlayerState is created for every player on a server (or in a standalone game).

## Game State Base

GameStateBase is a class that manages the game's global state, and is spawned by GameModeBase.

## Blueprint Function Library

This class is a base class for any function libraries exposed to blueprints.

## Slate Widget

A custom Slate widget, deriving from SCompoundWidget.

## Slate Widget Style

A custom Slate widget style, deriving from FSlateWidgetStyle, along with its associated UObject wrapper class.

Selected Class

Blueprint Function Library

Selected Class Source

BlueprintFunctionLibrary.h



Next >

Create Class

Cancel



# Name Your New Blueprint Function Library

Enter a name for your new class. Class names may only contain alphanumeric characters, and may not contain a space.

When you click the "Create" button below, a header (.h) file and a source (.cpp) file will be made using this name.

Name	DodgeballFunctionLibrary	Dodgeball (Runtime) ▾	Public	Private
Path	C:/Users/sunje/Desktop/Unreal/Dodgeball/Source/Dodgeball/	Choose Folder		
Header File	C:/Users/sunje/Desktop/Unreal/Dodgeball/Source/Dodgeball/DodgeballFunctionLibrary.h			
Source File	C:/Users/sunje/Desktop/Unreal/Dodgeball/Source/Dodgeball/DodgeballFunctionLibrary.cpp			

< Back

Create Class

Cancel

The screenshot shows the Unreal Engine 4 Editor interface with the following details:

- Top Bar:** Includes tabs for 파일(F), 편집(E), 보기(V), Git(G), 프로젝트(P), 빌드(B), 디버그(D), 테스트(S), 분석(N), 도구(I), 확장(X), 창(W), 도움말(H), 검색 (Ctrl+Q), and a search icon.
- Toolbar:** Includes icons for Undo, Redo, Cut, Copy, Paste, Find, Replace, and others.
- Project Explorer:** Shows the project structure under the 'Dodgeball' solution:
  - Engine
  - Games
  - Dodgeball
    - 참조
    - 외부 종속성
    - Config
    - Source
      - Dodgeball
        - Dodgeball.Build.cs
        - Dodgeball.cpp
        - Dodgeball.h
        - DodgeballCharacter.cpp
        - DodgeballCharacter.h
        - DodgeballFunctionLibrary.cpp
        - DodgeballFunctionLibrary.h
        - DodgeballGameMode.cpp
        - DodgeballGameMode.h
        - DodgeballProjectile.cpp
        - DodgeballProjectile.h
        - EnemyCharacter.cpp
        - EnemyCharacter.h
        - VictoryBox.cpp
        - VictoryBox.h
        - Wall.cpp
        - Wall.h
      - Dodgeball.Target.cs
  - Status Bar:** Shows 100 %, 문제가 검색되지 않음 (No problems found), 줄: 1, 문자: 1, 탭, CRLF, and Git 변경 내용.
  - Bottom Status Bar:** Shows 준비 (Ready).

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

DodgeballFunctionLibrary.cpp DodgeballFunctionLibrary.h ✘ ✗ VictoryBox.cpp VictoryBox.h Wall.h

```
// Fill out your copyright notice in the Description page of Project Settings.  
#pragma once  
  
#include "CoreMinimal.h"  
#include "Kismet/BlueprintFunctionLibrary.h"  
#include "DodgeballFunctionLibrary.generated.h"  
  
/*  
 */  
UCLASS()  
class DODGEBALL_API UDodgeballFunctionLibrary : public UBlueprintFunctionLibrary  
{  
    GENERATED_BODY()  
};
```

솔루션 탐색기

솔루션 탐색기 검색(Ctrl+.)

솔루션 'Dodgeball' (2/2개 프로젝트)

- Engine
  - UE4
- Games
  - Dodgeball
    - 참조
    - 외부 종속성
    - Config
    - Source
      - Dodgeball
        - Dodgeball.Build.cs
        - Dodgeball.cpp
        - Dodgeball.h
        - DodgeballCharacter.cpp
        - DodgeballCharacter.h
        - DodgeballFunctionLibrary.h
        - DodgeballFunctionLibrary.cpp
        - DodgeballGameMode.cpp
        - DodgeballGameMode.h
        - DodgeballProjectile.cpp
        - DodgeballProjectile.h
        - EnemyCharacter.cpp
        - EnemyCharacter.h
        - VictoryBox.cpp
        - VictoryBox.h
        - Wall.cpp
        - Wall.h
      - Dodgeball.Target.cs

준비

100 % 문제가 검색되지 않음 줄: 1 문자: 1 탭 CRLF

솔루션 탐색기 Git 변경 내용

↑ 소스 제어에 추가 ↻

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

DodgeballFunctionLibrary.cpp DodgeballFunctionLibrary.h\* ✎ × VictoryBox.cpp VictoryBox.h Wall.h

Dodgeball

```
1 // Fill out your copyright notice in the Description page of Project Settings.
2
3 #pragma once
4
5 #include "CoreMinimal.h"
6 #include "Kismet/BlueprintFunctionLibrary.h"
7 #include "DodgeballFunctionLibrary.generated.h"
8
9 /**
10 * 
11 */
12 UCLASS()
13 class DODGEBALL_API UDodgeballFunctionLibrary : public UBlueprintFunctionLibrary
14 {
15     GENERATED_BODY()
16
17 public:
18     // Can we see the given actor
19     static bool CanSeeActor(const UWorld* World, FVector Location, const AActor* TargetActor,
20                             TArray<const AActor*> IgnoreActors = TArray<const AActor*>());
21 };
22
23 }
24
```

Ctrl+S

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+.)

슬루션 탐색기 'Dodgeball' (2/2개 프로젝트)

- Engine
- UE4
- Games
- Dodgeball
  - 참조
  - 외부 종속성
  - Config
  - Source
    - Dodgeball
      - Dodgeball.Build.cs
      - Dodgeball.cpp
      - Dodgeball.h
      - DodgeballCharacter.cpp
      - DodgeballCharacter.h
      - DodgeballFunctionLibrary.cpp
      - DodgeballFunctionLibrary.h
      - DodgeballGameMode.cpp
      - DodgeballGameMode.h
      - DodgeballProjectile.cpp
      - DodgeballProjectile.h
      - EnemyCharacter.cpp
      - EnemyCharacter.h
      - VictoryBox.cpp
      - VictoryBox.h
      - Wall.cpp
      - Wall.h

준비

문제가 검색되지 않음

줄: 21 문자: 70 열: 91 템 CRLF

소스 제어에 추가

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

DodgeballFunctionLibrary.cpp DodgeballFunctionLibrary.h VictoryBox.cpp VictoryBox.h Wall.h EnemyCharacter.cpp

87  
88 bool AEnemyCharacter::CanSeeActor(const AActor \* TargetActor) const  
89 {  
90 if (TargetActor == nullptr)  
91 return false;  
92  
93 // Store the results of the Line Trace  
94 FHitResult Hit;  
95  
96 // Where the Line Trace starts and ends  
97 FVector Start = SightSource->GetComponentLocation();  
98 FVector End = TargetActor->GetActorLocation();  
99  
100 // The trace channel we want to compare against  
101 ECollisionChannel Channel = ECollisionChannel::ECC\_GameTraceChannel1;  
102  
103 FCollisionQueryParams QueryParams;  
104 // Ignore the actor that's executing this Line Trace  
105 QueryParams.AddIgnoredActor(this);  
106 // And the target we're checking for  
107 QueryParams.AddIgnoredActor(TargetActor);  
108  
109 // Execute the Line Trace  
110 GetWorld()->LineTraceSingleByChannel(Hit, Start, End, Channel, QueryParams);  
111  
112 // Sweep Trace logic (not used, only for demonstration)  
113 /\*  
114 // Rotation of the shape used in the Sweep Trace  
115 FQuat Rotation = FQuat::Identity;  
116 // Shape of the object used in the Sweep Trace  
117 FCollisionShape Shape = FCollisionShape::MakeBox(FVector(20.f, 20.f, 20.f));  
118 GetWorld()->SweepSingleByChannel(Hit, Start, End, Rotation, Channel, Shape);  
119 \*/  
120  
121 // Show the Line Trace inside the game

Ctrl+C

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

솔루션 'Dodgeball' (2/2개 프로젝트)  
Engine  
UE4  
Games  
Dodgeball  
참조  
외부 종속성  
Config  
Source  
Dodgeball  
Dodgeball.Build.cs  
Dodgeball.cpp  
Dodgeball.h  
DodgeballCharacter.cpp  
DodgeballCharacter.h  
DodgeballFunctionLibrary.cpp  
DodgeballGameMode.cpp  
DodgeballGameMode.h  
DodgeballProjectile.cpp  
DodgeballProjectile.h  
EnemyCharacter.cpp  
EnemyCharacter.h  
VictoryBox.cpp  
VictoryBox.h  
Wall.cpp  
Wall.h  
Dodgeball.Target.cs

Git 변경 내용

준비

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

DodgeballFunctionLibrary.cpp\* ✘ DodgeballFunctionLibrary.h VictoryBox.cpp VictoryBox.h Wall.h EnemyCharacter.cpp

Dodgeball

```
// Fill out your copyright notice in the Description page of Project Settings.

#include "DodgeballFunctionLibrary.h"

bool AEnemyCharacter::CanSeeActor(const AActor* TargetActor) const
{
    if (TargetActor == nullptr)
        return false;

    // Store the results of the Line Trace
    FHitResult Hit;

    // Where the Line Trace starts and ends
    FVector Start = SightSource->GetComponentLocation();
    FVector End = TargetActor->GetActorLocation();

    // The trace channel we want to compare against
    ECollisionChannel Channel = ECollisionChannel::ECC_GameTraceChannel1;

    FCollisionQueryParams QueryParams;
    // Ignore the actor that's executing this Line Trace
    QueryParams.AddIgnoredActor(this);
    // And the target we're checking for
    QueryParams.AddIgnoredActor(TargetActor);

    // Execute the Line Trace
    GetWorld()->LineTraceSingleByChannel(Hit, Start, End, Channel, QueryParams);

    // Sweep Trace logic (not used, only for demonstration)
    /*
    // Rotation of the shape used in the Sweep Trace
    FQuat Rotation = FQuat::Identity;
    // Shape of the object used in the Sweep Trace
    FCollisionShape Shape = FCollisionShape::MakeBox(FVector(20.f, 20.f, 20.f));
    */

    return Hit.bBlockingHit;
}
```

Ctrl+V

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+.)

- 슬루션 'Dodgeball' (2/2개 프로젝트)
  - Engine
  - UE4
  - Games
  - Dodgeball
    - 참조
    - 외부 종속성
    - Config
    - Source
      - Dodgeball
        - Dodgeball.Build.cs
        - Dodgeball.cpp
        - Dodgeball.h
        - DodgeballCharacter.cpp
        - DodgeballCharacter.h
        - DodgeballFunctionLibrary.cpp
        - DodgeballFunctionLibrary.h
        - DodgeballGameMode.cpp
        - DodgeballGameMode.h
        - DodgeballProjectile.cpp
        - DodgeballProjectile.h
        - EnemyCharacter.cpp
        - EnemyCharacter.h
        - VictoryBox.cpp
        - VictoryBox.h
        - Wall.cpp
        - Wall.h
      - Dodgeball.Target.cs

준비

소스 제어에 추가

The screenshot shows the Visual Studio Code interface with the following details:

- Top Bar:** Includes tabs for 파일(F), 편집(E), 보기(V), Git(G), 프로젝트(P), 빌드(B), 디버그(D), 테스트(S), 분석(N), 도구(I), 확장(X), 창(W), 도움말(H), 검색 (Ctrl+Q), and a search icon.
- Left Sidebar:** Shows the project navigation tree with the current file path: DodgeballFunctionLibrary.cpp\* → DodgeballFunctionLibrary.h → VictoryBox.cpp → VictoryBox.h → Wall.h → EnemyCharacter.cpp.
- Code Editor:** Displays the content of DodgeballFunctionLibrary.cpp. A red rectangle highlights several lines of code related to the Line Trace logic.

```
1 // Fill out your copyright notice in the Description page of Project Settings.
2
3
4 #include "DodgeballFunctionLibrary.h"
5 #include "Engine/World.h"
6 #include "DrawDebugHelpers.h"
7 #include "CollisionQueryParams.h"
8
9 bool UDodgeballFunctionLibrary::CanSeeActor(const UWorld* World, FVector Location, const AActor* TargetActor,
10                                         TArray<const AActor*> IgnoreActors)
11 {
12     if (TargetActor == nullptr)
13         return false;
14
15     // Store the results of the Line Trace
16     FHitResult Hit;
17
18     // Where the Line Trace starts and ends
19     FVector Start = Location;
20     FVector End = TargetActor->GetActorLocation();
21
22     // The trace channel we want to compare against
23     ECollisionChannel Channel = ECollisionChannel::ECC_GameTraceChannel1;
24
25     FCollisionQueryParams QueryParams;
26     // Ignore the actor that's executing this Line Trace
27     QueryParams.AddIgnoredActors(IgnoreActors);
28     // And the target we're checking for
29     //QueryParams.AddIgnoredActor(TargetActor);
30
31     // Execute the Line Trace
32     World->LineTraceSingleByChannel(Hit, Start, End, Channel, QueryParams);
33
34     // Sweep Trace logic (not used, only for demonstration)
35     /*

```

- Right Sidebar:** Includes the Solution Explorer (solution tasks) and a detailed file tree for the 'Dodgeball' project, showing files like Dodgeball.Build.cs, Dodgeball.cpp, Dodgeball.h, DodgeballCharacter.cpp, DodgeballCharacter.h, DodgeballFunctionLibrary.h, DodgeballGameMode.cpp, DodgeballGameMode.h, DodgeballProjectile.cpp, DodgeballProjectile.h, EnemyCharacter.cpp, EnemyCharacter.h, VictoryBox.cpp, VictoryBox.h, Wall.cpp, Wall.h, and Dodgeball.Target.cs.
- Bottom Status Bar:** Shows status icons, file paths (e.g., Win64, 로컬 Windows 디버거), and text input fields for 줄: 44, 문자: 48, 열: 51, 탭, CRLF, and Git 변경 내용.

The screenshot shows the Microsoft Visual Studio IDE interface with the following details:

- Top Bar:** Includes tabs for 파일(F), 편집(E), 보기(V), Git(G), 프로젝트(P), 빌드(B), 디버그(D), 테스트(S), 분석(N), 도구(I), 확장(X), 창(W), 도움말(H), 검색 (Ctrl+Q), and a search icon.
- Toolbar:** Includes icons for Undo, Redo, Cut, Copy, Paste, Find, Replace, and others.
- Project Selector:** Shows "Develop" and "Win64".
- Status Bar:** Shows "로컬 Windows 디버거", file paths, and status indicators like "문제가 검색되지 않음".
- Code Editor:** Displays the content of `DodgeballFunctionLibrary.cpp`. A specific line of code, `DrawDebugLine(World, Start, End, FColor::Red);`, is highlighted with a red rectangle and labeled "Ctrl+S".
- Solution Explorer:** Shows the project structure for "Dodgeball" (2/2개 프로젝트). It includes the Engine, UE4, Games, Dodgeball, Source, and various files like Dodgeball.Build.cs, Dodgeball.cpp, Dodgeball.h, DodgeballCharacter.cpp, DodgeballCharacter.h, DodgeballFunctionLibrary.cpp, DodgeballGameMode.cpp, DodgeballGameMode.h, DodgeballProjectile.cpp, DodgeballProjectile.h, EnemyCharacter.cpp, EnemyCharacter.h, VictoryBox.cpp, VictoryBox.h, Wall.cpp, Wall.h, and Dodgeball.Target.cs.
- Bottom Status Bar:** Shows "출: 44", "문자: 48", "열: 51", "탭", "CRLF", "슬루션 탐색기", and "Git 변경 내용".

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Develop Win64 로컬 Windows 디버거 Live Share

DodgeballFunctionLibrary.cpp DodgeballFunctionLibrary.h Wall.h EnemyCharacter.cpp EnemyCharacter.h\*

14 private:  
15     UPROPERTY(VisibleAnywhere, BlueprintReadOnly, Category = LookAt, meta = (AllowPrivateAccess = "true"))  
16     class USceneComponent\* SightSource;  
17  
18 public:  
19     // Sets default values for this character's properties  
20     AEnemyCharacter();  
21  
22 protected:  
23     // Called when the game starts or when spawned  
24     virtual void BeginPlay() override;  
25  
26     // Change the rotation of the character to face the given actor  
27     bool LookAtActor(AActor\* TargetActor);  
28  
29     // Can we see the given actor  
30     //bool CanSeeActor(const AActor\* TargetActor) const;  
31     // Whether the enemy can see the player this frame  
32     bool bCanSeePlayer = false;  
33     // Whether the enemy could see the player last frame  
34     bool bPreviousCanSeePlayer = false;  
35  
36 FTimerHandle ThrowTimerHandle;  
37  
38 float ThrowingInterval = 2.f;  
39 float ThrowingDelay = 0.5f;  
40  
41 void ThrowDodgeball();  
42  
43 //The class used to spawn a dodgeball object  
44 UPROPERTY(EditDefaultsOnly, BlueprintReadOnly, Category = Dodgeball)  
45 TSubclassOf<class ADodgeballProjectile> DodgeballIClass;

Ctrl+S

100% 문제가 검색되지 않음 줄: 31 문자: 4 열: 7 탭 CRLF

솔루션 탐색기

솔루션 탐색기 검색(Ctrl+Shift+F)

솔루션 'Dodgeball' (2/2개 프로젝트)  
Engine  
UE4  
Games  
Dodgeball  
참조  
외부 종속성  
Config  
Source  
Dodgeball  
Dodgeball.Build.cs  
Dodgeball.cpp  
Dodgeball.h  
DodgeballCharacter.cpp  
DodgeballCharacter.h  
DodgeballFunctionLibrary.cpp  
DodgeballFunctionLibrary.h  
DodgeballGameMode.cpp  
DodgeballGameMode.h  
DodgeballProjectile.cpp  
DodgeballProjectile.h  
EnemyCharacter.cpp  
EnemyCharacter.h  
VictoryBox.cpp  
VictoryBox.h  
Wall.cpp  
Wall.h  
Dodgeball.Target.cs

솔루션 탐색기 Git 변경 내용

준비 ↑ 소스 제어에 추가 ▲

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball Live Share

DodgeballFunctionLibrary.cpp DodgeballFunctionLibrary.h Wall.h EnemyCharacter.cpp\* EnemyCharacter.h

```
1 // Fill out your copyright notice in the Description page of Project Settings.
2
3
4 #include "EnemyCharacter.h"
5 #include "Engine/World.h"
6 // #include "DrawDebugHelpers.h"
7 #include "Kismet/KismetMathLibrary.h"
8 #include "Kismet/GameplayStatics.h"
9 #include "TimerManager.h"
10 #include "DodgeballProjectile.h"
11 #include "DodgeballFunctionLibrary.h"
12 #include "GameFramework/ProjectileMovementComponent.h"
13
14 // Sets default values
15 AEnemyCharacter::AEnemyCharacter()
16 {
17     // Set this character to call Tick() every frame. You can turn this off to improve performance if you don't need it.
18     PrimaryActorTick.bCanEverTick = true;
19
20     SightSource = CreateDefaultSubobject<USceneComponent>(TEXT("Sight Source"));
21     SightSource->SetupAttachment(RootComponent);
22 }
23
24 // Called when the game starts or when spawned
25 void AEnemyCharacter::BeginPlay()
26 {
27     Super::BeginPlay();
28 }
29
30
31 // Called every frame
32 void AEnemyCharacter::Tick(float DeltaTime)
33 {
34     Super::Tick(DeltaTime);
35 }
```

100 % 문제가 검색되지 않음 출: 128 문자: 3 혼합 CRLF

솔루션 탐색기

솔루션 탐색기 검색(Ctrl+Shift+F)

솔루션 탐색기 'Dodgeball' (2/2개 프로젝트)

- Engine
- UE4
- Games
- Dodgeball
- 참조
- 외부 종속성
- Config
- Source
- Dodgeball
- Dodgeball.Build.cs
- Dodgeball.cpp
- Dodgeball.h
- DodgeballCharacter.cpp
- DodgeballCharacter.h
- DodgeballFunctionLibrary.cpp
- DodgeballFunctionLibrary.h
- DodgeballGameMode.cpp
- DodgeballGameMode.h
- DodgeballProjectile.cpp
- DodgeballProjectile.h
- EnemyCharacter.cpp
- EnemyCharacter.h
- VictoryBox.cpp
- VictoryBox.h
- Wall.cpp
- Wall.h
- Dodgeball.Target.cs

솔루션 탐색기 Git 변경 내용

준비 ↑ 소스 제어에 추가 ↻

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Develop Win64 로컬 Windows 디버거 Live Share

DodgeballFunctionLibrary.cpp DodgeballFunctionLibrary.h Wall.h EnemyCharacter.cpp\* EnemyCharacter.h

Dodgeball

```
67
68     bool AEnemyCharacter::LookAtActor(AActor* TargetActor)
69     {
70         if (TargetActor == nullptr)
71             return false;
72
73         const TArray<const AActor*> IgnoreActors = { this, TargetActor };
74         if (UDodgeballFunctionLibrary::CanSeeActor(GetWorld(), SightSource->GetComponentLocation(), TargetActor, IgnoreActors))
75         {
76             FVector Start = GetActorLocation();
77             FVector End = TargetActor->GetActorLocation();
78
79             // Calculate the necessary rotation for the Start point to face the End point
80             FRotator LookAtRotation = UKismetMathLibrary::FindLookAtRotation(Start, End);
81
82             // Set the enemy's rotation to that rotation
83             SetActorRotation(LookAtRotation);
84             return true;
85         }
86
87         return false;
88     }
89
90     /*bool AEnemyCharacter::CanSeeActor(const AActor* TargetActor) const
91     {
92         if (TargetActor == nullptr)
93             return false;
94
95         // Store the results of the Line Trace
96         FHitResult Hit;
97
98         // Where the Line Trace starts and ends
99         FVector Start = SightSource->GetComponentLocation();
100        FVector End = TargetActor->GetActorLocation();
```

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

슬루션 탐색기 'Dodgeball' (2/2개 프로젝트)

- Engine
- UE4
- Games
- Dodgeball
  - 참조
  - 외부 종속성
  - Config
  - Source
    - Dodgeball
      - Dodgeball.Build.cs
      - Dodgeball.cpp
      - Dodgeball.h
      - DodgeballCharacter.cpp
      - DodgeballCharacter.h
      - DodgeballFunctionLibrary.cpp
      - DodgeballFunctionLibrary.h
      - DodgeballGameMode.cpp
      - DodgeballGameMode.h
      - DodgeballProjectile.cpp
      - DodgeballProjectile.h
      - EnemyCharacter.cpp
      - EnemyCharacter.h
      - VictoryBox.cpp
      - VictoryBox.h
      - Wall.cpp
      - Wall.h

준비

문제가 검색되지 않음

줄: 128 문자: 3 혼합 CRLF

슬루션 탐색기 Git 변경 내용

↑ 소스 제어에 추가 ↻

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Develop Win64 로컬 Windows 디버거 Live Share

DodgeballFunctionLibrary.cpp DodgeballFunctionLibrary.h Wall.h EnemyCharacter.cpp\* EnemyCharacter.h

101 // The trace channel we want to compare against  
102 ECollisionChannel Channel = ECollisionChannel::ECC\_GameTraceChannel1;  
103  
104 FCollisionQueryParams QueryParams;  
105 // Ignore the actor that's executing this Line Trace  
106 QueryParams.AddIgnoredActor(this);  
107 // And the target we're checking for  
108 QueryParams.AddIgnoredActor(TargetActor);  
109  
110 // Execute the Line Trace  
111 GetWorld() ->LineTraceSingleByChannel(Hit, Start, End, Channel, QueryParams);  
112  
113 // Sweep Trace logic (not used, only for demonstration)  
114 /\*  
115 // Rotation of the shape used in the Sweep Trace  
116 FQuat Rotation = FQuat::Identity;  
117 // Shape of the object used in the Sweep Trace  
118 FCollisionShape Shape = FCollisionShape::MakeBox(FVector(20.f, 20.f, 20.f));  
119 GetWorld() ->SweepSingleByChannel(Hit, Start, End, Rotation, Channel, Shape);  
120 \*  
121  
122 // Show the Line Trace inside the game  
123 DrawDebugLine(GetWorld(), Start, End, FColor::Red);  
124  
125 return !Hit.bBlockingHit;  
126 }  
127 \*/  
128 void AEnemyCharacter::ThrowDodgeball()  
129 {  
130 if (DodgeballIClass == nullptr) {  
131 return;  
132 }  
133  
134 FVector ForwardVector = GetActorForwardVector();  
135 }

100 % 문제가 검색되지 않음

Ctrl+S

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

슬루션 탐색기 'Dodgeball' (2/2개 프로젝트)

- Engine
- UE4
- Games
- Dodgeball
- 참조
- 외부 종속성
- Config
- Source
- Dodgeball
- Dodgeball.Build.cs
- Dodgeball.cpp
- Dodgeball.h
- DodgeballCharacter.cpp
- DodgeballCharacter.h
- DodgeballFunctionLibrary.cpp
- DodgeballFunctionLibrary.h
- DodgeballGameMode.cpp
- DodgeballGameMode.h
- DodgeballProjectile.cpp
- DodgeballProjectile.h
- EnemyCharacter.cpp
- EnemyCharacter.h
- VictoryBox.cpp
- VictoryBox.h
- Wall.cpp
- Wall.h
- Dodgeball.Target.cs

슬루션 탐색기 Git 변경 내용

준비 ↑ 소스 제어에 추가 ▲

The screenshot shows the Microsoft Visual Studio interface. The top menu bar is visible with various options like 파일(F), 편집(E), 보기(V), Git(G), 프로젝트(P), 빌드(B), 디버그(D), 테스트(S), 분석(N), 도구(T), 확장(X), 창(W), 도움말(H), 검색 (Ctrl+Q), and Dodgeball. A red arrow points to the 'Solution Build' option in the 'Build' menu. The main code editor window on the left contains C++ code for a Dodgeball game, specifically from the DodgeballFunctionLibrary.cpp file. The Solution Explorer window on the right shows the project structure for 'Dodgeball' with files like Dodgeball.Build.cs, Dodgeball.cpp, Dodgeball.h, etc. The status bar at the bottom indicates a successful build.

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(T) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball

Live Share

DodgeballFunctionLibrary.cpp DodgeballFunctionLibrary.h

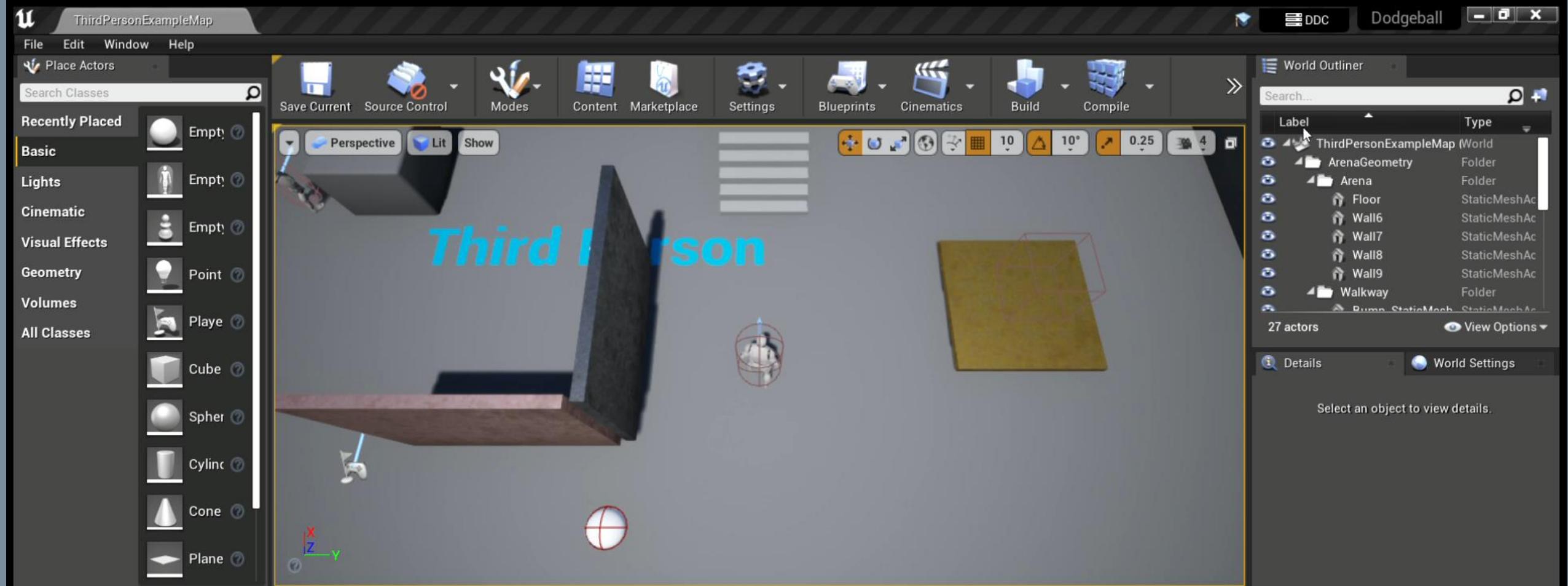
Dodgeball

```
101 // The trace channel we want to
102 ECollisionChannel Channel = ECollisionChannel::Channel::Trace;
103
104 FCollisionQueryParams QueryParams;
105 // Ignore the actor that's executing the trace
106 QueryParams.AddIgnoredActor(this);
107 // And the target we're checking for collision against
108 QueryParams.AddIgnoredActor(Target);
109
110 // Execute the Line Trace
111 GetWorld()->LineTraceSingleByChannel(
112     Channel, Start, End, Rotation, QueryParams);
113
114 // Sweep Trace logic (not used, but required)
115 /*
116 // Rotation of the shape used in the sweep trace
117 FQuat Rotation = FQuat::Identity;
118 // Shape of the object used in the Sweep Trace
119 FCollisionShape Shape = FCollisionShape::MakeBox(FVector(20.f, 20.f, 20.f));
120 GetWorld()->SweepSingleByChannel(Hit, Start, End, Rotation, Channel, Shape);
121 */
122
123 // Show the Line Trace inside the game
124 DrawDebugLine(GetWorld(), Start, End, FColor::Red);
125
126 return !Hit.bBlockingHit;
127 }
128 */
129 void AEnemyCharacter::ThrowDodgeball()
130 {
131     if (DodgeballIClass == nullptr) {
132         return;
133     }
134
135     FVector ForwardVector = GetActorForwardVector();
```

100 % 문제가 검색되지 않음 줄: 128 문자: 3 혼합 CRLF

빌드에 성공했습니다. 소스 제어에 추가 1

솔루션 탐색기 Git 변경 내용



Add/Import Save All C++ Classes Dodgeball

Content Browser

Content Geometry Mannequin Physics StarterContent ThirdPerson ThirdPersonCPP Blueprints Maps

Dodgeball Character FunctionLibrary Dodgeball GameMode Dodgeball Projectile Enemy Character VictoryBox Wall

7 items View Options



# Actor Components (1)

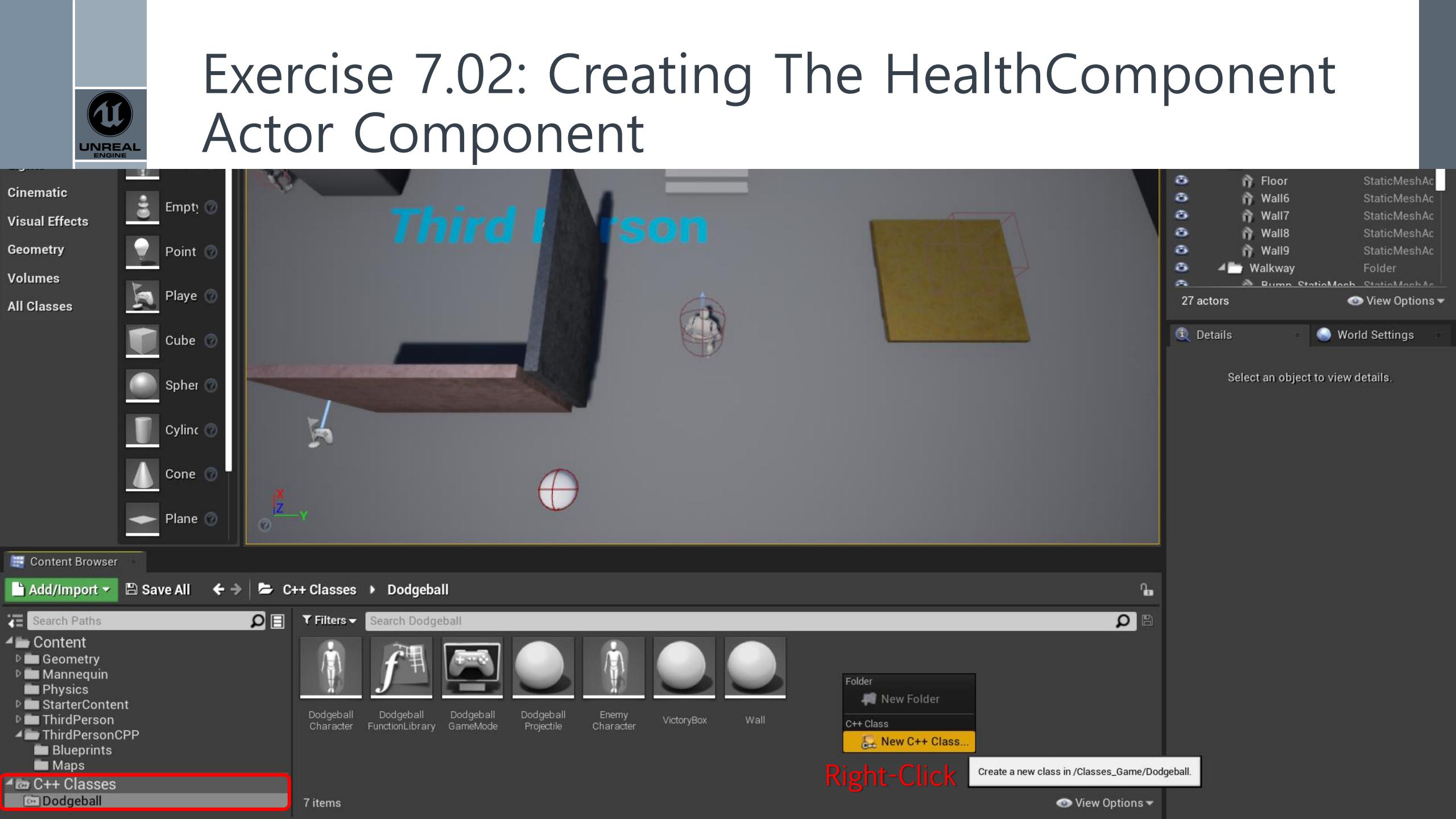
- › Objects that can be added to an Actor and can have multiple types of functionality
  - Ex) being responsible for a character's inventory or making a character fly
- › Must always belong to and live inside an Actor, which is referred to as their **Owner**
- › Several different types of existing Actor Components
  - Code-only Actor Components
  - Mesh Components
  - Collision Components
  - Camera Components



# Actor Components (2)

- › Two main way to add logic to our Actors:
  - Directly in the **Actor** class or **Actor Components**
- › Loose Coupling
  - To use Actor Components instead of placing logic directly inside an Actor
  - When adding logic to your project can be encapsulated in a separate component
- › Ex) Two options to implement the health logic for both of the player character and enemy character
  - You implement the health logic in a base character class
  - You implement the health logic in an Actor Components

# Exercise 7.02: Creating The HealthComponent Actor Component





# Choose Parent Class

This will add a C++ header and source code file to your game project.

Show All Classes

## Character

A character is a type of Pawn that includes the ability to walk around.

## Pawn

A Pawn is an actor that can be 'possessed' and receive input from a controller.

## Actor

An Actor is an object that can be placed or spawned in the world.

## Actor Component

An ActorComponent is a reusable component that can be added to any actor.

## Scene Component

A Scene Component is a component that has a scene transform and can be attached to other scene components.

Selected Class

Actor Component

Selected Class Source

ActorComponent.h



Next >

Create Class

Cancel



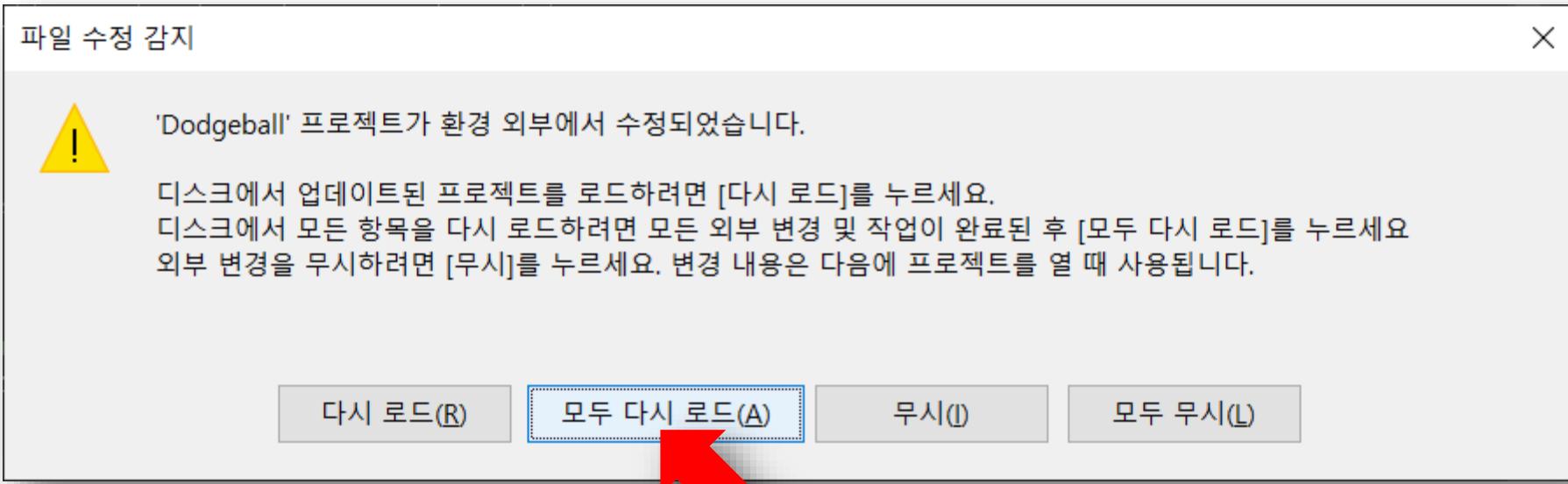
# Name Your New Actor Component

Enter a name for your new class. Class names may only contain alphanumeric characters, and may not contain a space.

When you click the "Create" button below, a header (.h) file and a source (.cpp) file will be made using this name.

Name	<input type="text" value="HealthComponent"/>	Dodgeball (Runtime)	Public	Private
Path	<input type="text" value="C:/Users/sunje/Desktop/Unreal/Dodgeball/Source/Dodgeball/"/>			
Header File	C:/Users/sunje/Desktop/Unreal/Dodgeball/Source/Dodgeball/HealthComponent.h			
Source File	C:/Users/sunje/Desktop/Unreal/Dodgeball/Source/Dodgeball/HealthComponent.cpp			

  
[Back](#)[Create Class](#)[Cancel](#)



파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

HealthComponent.h\* DodgeballFunctionLibrary.cpp DodgeballFunctionLibrary.h Wall.h EnemyCharacter.cpp

Dodgeball

```
// Fill out your copyright notice in the Description page of Project Settings.

#pragma once

#include "CoreMinimal.h"
#include "Components/ActorComponent.h"
#include "HealthComponent.generated.h"

UCLASS( ClassGroup=(Custom), meta=(BlueprintSpawnableComponent) )
class DODGEBALL_API UHealthComponent : public UActorComponent
{
    GENERATED_BODY()

public:
    // Sets default values for this component's properties
    UHealthComponent();

protected:
    // Called when the game starts
    virtual void BeginPlay() override;

    // The owner's initial and current amount health points
    UPROPERTY(EditDefaultsOnly, Category = Health)
    float Health = 100.f;

public:
    // Called every frame
    virtual void TickComponent(float DeltaTime, ELevelTick TickType, FActorComponentTickFunction* ThisTickFunction) override;

    // Take health points from its owner
    void LoseHealth(float Amount);
};


```

Ctrl+S

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

- 슬루션 'Dodgeball' (2/2개 프로젝트)
  - Engine
    - UE4
  - Games
    - Dodgeball
      - 참조
      - 외부 종속성
      - Config
      - Source
        - Dodgeball
          - Dodgeball.Build.cs
          - Dodgeball.cpp
          - Dodgeball.h
          - DodgeballCharacter.cpp
          - DodgeballCharacter.h
          - DodgeballFunctionLibrary.cpp
          - DodgeballFunctionLibrary.h
          - DodgeballGameMode.cpp
          - DodgeballGameMode.h
          - DodgeballProjectile.cpp
          - DodgeballProjectile.h
          - EnemyCharacter.cpp
          - EnemyCharacter.h
          - HealthComponent.cpp
          - HealthComponent.h
          - VictoryBox.cpp
          - VictoryBox.h

준비 ↑ 소스 제어에 추가 ▲

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

서버 템플릿

HealthComponent.cpp\* X HealthComponent.h\* DodgeballFunctionLibrary.cpp DodgeballFunctionLibrary.h Wall.h

Dodgeball

```
1 // Fill out your copyright notice in the Description page of Project Settings.
2
3
4 #include "HealthComponent.h"
5 //#include "Kismet/KismetSystemLibrary.h"
6
7 // Sets default values for this component's properties
8 UHealthComponent::UHealthComponent()
9 {
10     // Set this component to be initialized when the game starts, and to be ticked every frame. You can turn these features
11     // off to improve performance if you don't need them.
12     PrimaryComponentTick.bCanEverTick = false;
13
14     // ...
15 }
16
17
18 // Called when the game starts
19 void UHealthComponent::BeginPlay()
20 {
21     Super::BeginPlay();
22
23     // ...
24 }
25
26
27
28 // Called every frame
29 void UHealthComponent::TickComponent(float DeltaTime, ELevelTick TickType, FActorComponentTickFunction* ThisTickFunction)
30 {
31     Super::TickComponent(DeltaTime, TickType, ThisTickFunction);
32
33     // ...
34 }
35
```

100 % 문제가 검색되지 않음 줄: 5 문자: 40 탭 CRLF

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

슬루션 탐색기 'Dodgeball' (2/2개 프로젝트)

- Engine
- UE4
- Games
- Dodgeball
- 참조
- 외부 종속성
- Config
- Source
- Dodgeball
- Dodgeball.Build.cs
- Dodgeball.cpp
- Dodgeball.h
- DodgeballCharacter.cpp
- DodgeballCharacter.h
- DodgeballFunctionLibrary.cpp
- DodgeballFunctionLibrary.h
- DodgeballGameMode.cpp
- DodgeballGameMode.h
- DodgeballProjectile.cpp
- DodgeballProjectile.h
- EnemyCharacter.cpp
- EnemyCharacter.h
- HealthComponent.cpp
- HealthComponent.h
- VictoryBox.cpp
- VictoryBox.h
- Wall.cpp

슬루션 탐색기 Git 변경 내용

준비 ↑ 소스 제어에 추가 ▲

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

HealthComponent.cpp\* × HealthComponent.h\* DodgeballFunctionLibrary.cpp DodgeballFunctionLibrary.h Wall.h

Dodgeball

```
16
17
18 // Called when the game starts
19 void UHealthComponent::BeginPlay()
20 {
21     Super::BeginPlay();
22
23     // ...
24 }
25
26
27
28 // Called every frame
29 void UHealthComponent::TickComponent(float DeltaTime, ELevelTick TickType, FActorComponentTickFunction* ThisTickFunction)
30 {
31     Super::TickComponent(DeltaTime, TickType, ThisTickFunction);
32
33     // ...
34 }
35
36 void UHealthComponent::LoseHealth(float Amount)
37 {
38     Health -= Amount;
39     if (Health <= 0.f) {
40         Health = 0.f;
41         UKismetSystemLibrary::QuitGame(this, nullptr, EQuitPreference::Quit, true);
42     }
43 }
44
```

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

- 슬루션 'Dodgeball' (2/2개 프로젝트)
  - Engine
    - UE4
  - Games
    - Dodgeball
      - 참조
      - 외부 종속성
      - Config
      - Source
        - Dodgeball
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          - Dodgeball.cpp
          - Dodgeball.h
          - DodgeballCharacter.cpp
          - DodgeballCharacter.h
          - DodgeballFunctionLibrary.cpp
          - DodgeballFunctionLibrary.h
          - DodgeballGameMode.cpp
          - DodgeballGameMode.h
          - DodgeballProjectile.cpp
          - DodgeballProjectile.h
          - EnemyCharacter.cpp
          - EnemyCharacter.h
          - HealthComponent.cpp
          - HealthComponent.h
          - VictoryBox.cpp
          - VictoryBox.h
          - Wall.cpp

준비

100 % 문제가 검색되지 않음

줄: 5 문자: 40 탭 CRLF

Git 변경 내용

↑ 소스 제어에 추가 ▲

Ctrl+S



# Exercise 7.03: Integrating The HealthComponent Actor Component

The screenshot shows the Unreal Engine Editor interface. The top menu bar includes File, 편집(E), 보기(V), Git(G), 프로젝트(P), 빌드(B), 디버그(D), 테스트(S), 분석(N), 도구(I), 확장(X), 창(W), 도움말(H), 검색 (Ctrl+Q), and Dodgeball. The toolbar below has icons for file operations like Open, Save, and Find. The main editor area shows the code for DodgeballProjectile.h, which is highlighted with a red border. The code defines a class ADodgeballProjectile that inherits from AActor. It includes properties for a SphereComponent and a ProjectileMovement component, and a public constructor ADodgeballProjectile(). The protected BeginPlay() method is overridden. A UPROPERTY for Damage is defined with a value of 34.f. The bottom right corner of the code area has a red box with the text "Ctrl+S". To the right of the editor is a file browser titled "솔루션 탐색기" (Solution Explorer) showing the project structure for 'Dodgeball'.

```
8
9     UCLASS()
10    class DODGEBALL_API ADodgeballProjectile : public AActor
11    {
12        GENERATED_BODY()
13
14    private:
15        UPROPERTY(VisibleAnywhere, BlueprintReadOnly, Category = Dodgeball, meta = (AllowPrivateAccess = "true"))
16        class USphereComponent* SphereComponent;
17
18        UPROPERTY(VisibleAnywhere, BlueprintReadOnly, Category = Dodgeball, meta = (AllowPrivateAccess = "true"))
19        class UProjectileMovementComponent* ProjectileMovement;
20
21    public:
22        // Sets default values for this actor's properties
23        ADodgeballProjectile();
24
25    protected:
26        // Called when the game starts or when spawned
27        virtual void BeginPlay() override;
28
29        // The damage the dodgeball will deal to the player's character
30        UPROPERTY(EditAnywhere, Category = Damage)
31        float Damage = 34.f;
32
33    public:
34        // Called every frame
35        virtual void Tick(float DeltaTime) override;
```

DodgeballProjectile.h\*

솔루션 탐색기

솔루션 탐색기 검색(Ctrl+F)

- 솔루션 'Dodgeball' (2/2개 프로젝트)
  - Engine
  - UE4
  - Games
  - Dodgeball
    - 참조
    - 외부 종속성
    - Config
    - Source
      - Dodgeball
        - Dodgeball.Build.cs
        - Dodgeball.cpp
        - Dodgeball.h
        - DodgeballCharacter.cpp
        - DodgeballCharacter.h
        - DodgeballFunctionLibrary.h
        - DodgeballFunctionLibrary.cpp
        - DodgeballGameMode.cpp
        - DodgeballGameMode.h
        - DodgeballProjectile.cpp
        - DodgeballProjectile.h
        - EnemyCharacter.cpp
        - EnemyCharacter.h

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

HealthComponent.cpp HealthComponent.h\* Wall.h DodgeballProjectile.h DodgeballProjectile.cpp\* ✎ ✕

```
// Fill out your copyright notice in the Description page of Project Settings.

#include "DodgeballProjectile.h"
#include "Components/SphereComponent.h"
#include "DodgeballCharacter.h"
#include "GameFramework/ProjectileMovementComponent.h"
#include "HealthComponent.h"

// Sets default values
ADodgeballProjectile::ADodgeballProjectile()
{
    // Set this actor to call Tick() every frame. You can turn this off to improve performance if you don't need it.
    PrimaryActorTick.bCanEverTick = true;

    SphereComponent = CreateDefaultSubobject(TEXT("Sphere Collision"));
    SphereComponent->SetSphereRadius(35.f);
    SphereComponent->SetCollisionProfileName(FName("Dodgeball"));
    SphereComponent->SetSimulatePhysics(true);
    //Simulation generates Hit events
    SphereComponent->SetNotifyRigidBodyCollision(true);

    // Listen to the OnComponentHit event by binding it to our function
    SphereComponent->OnComponentHit.AddDynamic(this, &ADodgeballProjectile::OnHit);

    // Set this Sphere Component as the root component,
    // otherwise collision won't behave properly
    RootComponent = SphereComponent;

    ProjectileMovement = CreateDefaultSubobject(TEXT("Projectile Movement"));
    ProjectileMovement->InitialSpeed = 1500.f;
}

// Called when the game starts or when spawned

```

100 % 문제가 검색되지 않음 ↶ ↷ 줄: 56 문자: 35 열: 41 혼합 CRLF

준비 ↶ ↷ 소스 제어에 추가 ↶ ↷

슬루션 탐색기

솔루션 탐색기 검색(Ctrl+Shift+F)

솔루션 탐색기 Dodgeball (2/2개 프로젝트)

- Engine
- UE4
- Games
- Dodgeball
  - 참조
  - 외부 종속성
  - Config
  - Source
    - Dodgeball
      - Dodgeball.Build.cs
      - Dodgeball.cpp
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      - DodgeballCharacter.cpp
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      - DodgeballProjectile.h
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      - EnemyCharacter.h
      - HealthComponent.cpp
      - HealthComponent.h
      - VictoryBox.cpp
      - VictoryBox.h
      - Wall.cpp

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball Live Share

HealthComponent.cpp HealthComponent.h\* Wall.h DodgeballProjectile.h DodgeballProjectile.cpp\* OnHit(UPrimitiveComponent \* HitComp, AActor \* OtherActor, UPrimitiveComponent \* OtherComp, FVector NormalImpulse, const FHitResult& Hit)

```
34 // Called when the game starts or when spawned
35 void ADodgeballProjectile::BeginPlay()
36 {
37     Super::BeginPlay();
38     SetLifeSpan(5.f);
39 }
40
41 // Called every frame
42 void ADodgeballProjectile::Tick(float DeltaTime)
43 {
44     Super::Tick(DeltaTime);
45 }
46
47
48
49
50 void ADodgeballProjectile::OnHit(UPrimitiveComponent* HitComp, AActor* OtherActor, UPrimitiveComponent* OtherComp,
51 FVector NormalImpulse, const FHitResult& Hit)
52 {
53     ADodgeballCharacter* Player = Cast<ADodgeballCharacter>(OtherActor);
54     if (Player != nullptr) {
55         UHealthComponent* HealthComponent = Player->FindComponentByClass<UHealthComponent>();
56         if (HealthComponent != nullptr) {
57             HealthComponent->LoseHealth(Damage);
58         }
59         Destroy();
60     }
61 }
62 }
```

Ctrl+S

슬루션 탐색기

솔루션 탐색기 검색(Ctrl+Shift+F)

솔루션 탐색기 'Dodgeball' (2/2개 프로젝트)

- Engine
- UE4
- Games
- Dodgeball
  - 참조
  - 외부 종속성
  - Config
  - Source
    - Dodgeball
      - Dodgeball.Build.cs
      - Dodgeball.cpp
      - Dodgeball.h
      - DodgeballCharacter.cpp
      - DodgeballCharacter.h
      - DodgeballFunctionLibrary.cpp
      - DodgeballFunctionLibrary.h
      - DodgeballGameMode.cpp
      - DodgeballGameMode.h
      - DodgeballProjectile.cpp
      - DodgeballProjectile.h
      - EnemyCharacter.cpp
      - EnemyCharacter.h
      - HealthComponent.cpp
      - HealthComponent.h
      - VictoryBox.cpp
      - VictoryBox.h
    - Wall.cpp

준비

문제가 검색되지 않음

줄: 57 문자: 40 열: 49 혼합 CRLF

소스 제어에 추가

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

DodgeballCharacter.h\* X HealthComponent.cpp HealthComponent.h\* Wall.h DodgeballProjectile.h

Dodgeball // Copyright Epic Games, Inc. All Rights Reserved.

```
1 // Copyright Epic Games, Inc. All Rights Reserved.
2
3 #pragma once
4
5 #include "CoreMinimal.h"
6 #include "GameFramework/Character.h"
7 #include "DodgeballCharacter.generated.h"
8
9 UCLASS(config=Game)
10 class ADodgeballCharacter : public ACharacter
11 {
12     GENERATED_BODY()
13
14     /** Camera boom positioning the camera behind the character */
15     UPROPERTY(VisibleAnywhere, BlueprintReadOnly, Category = Camera, meta = (AllowPrivateAccess = "true"))
16     class USpringArmComponent* CameraBoom;
17
18     /** Follow camera */
19     UPROPERTY(VisibleAnywhere, BlueprintReadOnly, Category = Camera, meta = (AllowPrivateAccess = "true"))
20     class UCameraComponent* FollowCamera;
21
22     class UHealthComponent* HealthComponent;
23
24 public:
25     ADodgeballCharacter();
26
27     /** Base turn rate, in deg/sec. Other scaling may affect final turn rate. */
28     UPROPERTY(VisibleAnywhere, BlueprintReadOnly, Category=Camera)
29     float BaseTurnRate;
30
31     /** Base look up/down rate, in deg/sec. Other scaling may affect final rate. */
32     UPROPERTY(VisibleAnywhere, BlueprintReadOnly, Category=Camera)
33     float BaseLookUpRate;
34
35 protected:
```

Ctrl+S

100 % ✓ 문제가 검색되지 않음 줄: 22 문자: 42 열: 45 템 CRLF

준비 ↑ 소스 제어에 추가 ▲ 1

솔루션 탐색기

솔루션 탐색기 검색(Ctrl+Shift+F)

솔루션 'Dodgeball' (2/2개 프로젝트)

- Engine
- UE4
- Games
- Dodgeball
  - 참조
  - 외부 종속성
  - Config
  - Source
    - Dodgeball
      - Dodgeball.Build.cs
      - Dodgeball.cpp
      - Dodgeball.h
      - DodgeballCharacter.cpp
      - DodgeballCharacter.h
      - DodgeballFunctionLibrary.cpp
      - DodgeballFunctionLibrary.h
      - DodgeballGameMode.cpp
      - DodgeballGameMode.h
      - DodgeballProjectile.cpp
      - DodgeballProjectile.h
      - EnemyCharacter.cpp
      - EnemyCharacter.h
      - HealthComponent.cpp
      - HealthComponent.h
      - VictoryBox.cpp
      - VictoryBox.h
    - Wall.cpp

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Develop Win64 로컬 Windows 디버거 Live Share

DodgeballCharacter.h HealthComponent.cpp HealthComponent.h\* DodgeballProjectile.h DodgeballCharacter.cpp\*

// Copyright Epic Games, Inc. All Rights Reserved.

#include "DodgeballCharacter.h"  
#include "HeadMountedDisplayFunctionLibrary.h"  
#include "Camera/CameraComponent.h"  
#include "Components/CapsuleComponent.h"  
#include "Components/InputComponent.h"  
**#include "HealthComponent.h"**  
#include "GameFramework/CharacterMovementComponent.h"  
#include "GameFramework/Controller.h"  
#include "GameFramework/SpringArmComponent.h"  
  
// ADodgeballCharacter  
ADodgeballCharacter::ADodgeballCharacter()  
{  
 // Set size for collision capsule  
 GetCapsuleComponent()->InitCapsuleSize(42.f, 96.0f);  
  
 // set our turn rates for input  
 BaseTurnRate = 45.f;  
 BaseLookUpRate = 45.f;  
  
 // Don't rotate when the controller rotates. Let that just affect the camera.  
 bUseControllerRotationPitch = false;  
 bUseControllerRotationYaw = false;  
 bUseControllerRotationRoll = false;  
  
 // Configure character movement  
 GetCharacterMovement()->bOrientRotationToMovement = true; // Character moves in the direction of input...  
 GetCharacterMovement()->RotationRate = FRotator(0.0f, 540.0f, 0.0f); // ...at this rotation rate  
 GetCharacterMovement()->JumpZVelocity = 600.f;  
 GetCharacterMovement()->AirControl = 0.2f;

100 % 문제가 검색되지 않음 출: 51 문자: 87 열: 90 탭 CRLF

준비 ↗ 소스 제어에 추가 ↗

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

솔루션 'Dodgeball' (2/2개 프로젝트)  
Engine  
UE4  
Games  
Dodgeball  
참조  
외부 종속성  
Config  
Source  
Dodgeball  
Dodgeball.Build.cs  
Dodgeball.cpp  
Dodgeball.h  
DodgeballCharacter.cpp  
DodgeballCharacter.h  
DodgeballFunctionLibrary.h  
DodgeballFunctionLibrary.cpp  
DodgeballGameMode.cpp  
DodgeballGameMode.h  
DodgeballProjectile.cpp  
DodgeballProjectile.h  
EnemyCharacter.cpp  
EnemyCharacter.h  
HealthComponent.cpp  
HealthComponent.h  
VictoryBox.cpp  
VictoryBox.h  
Wall.cpp

슬루션 탐색기 Git 변경 내용

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Develop Win64 로컬 Windows 디버거 Live Share

DodgeballCharacter.h HealthComponent.cpp HealthComponent.h\* DodgeballProjectile.h DodgeballCharacter.cpp\* DodgeballCharacter.h

35 // Create a camera boom (pulls in towards the player if there is a collision)  
36 CameraBoom = CreateDefaultSubobject<USpringArmComponent>(TEXT("CameraBoom"));  
37 CameraBoom->SetupAttachment(RootComponent);  
38 CameraBoom->TargetArmLength = 900.0f; // The camera follows at this distance behind the character  
39 CameraBoom->SetRelativeRotation(FRotator(-70.f, 0.f, 0.f)); // The camera looks down at the player  
40 CameraBoom->bUsePawnControlRotation = false; // Ignore pawn's pitch, yaw and roll  
41 CameraBoom->bInheritPitch = false;  
42 CameraBoom->bInheritYaw = false;  
43 CameraBoom->bInheritRoll = false;  
44  
45 // Create a follow camera  
46 FollowCamera = CreateDefaultSubobject<UCameraComponent>(TEXT("FollowCamera"));  
47 FollowCamera->SetupAttachment(CameraBoom, USpringArmComponent::SocketName); // Attach the camera to the end of the boom and let  
48 FollowCamera->bUsePawnControlRotation = false; // Camera does not rotate relative to arm  
49  
50 HealthComponent = CreateDefaultSubobject<UHealthComponent>(TEXT("Health Component"));  
51  
52 // Note: The skeletal mesh and anim blueprint references on the Mesh component (inherited from Character)  
53 // are set in the derived blueprint asset named MyCharacter (to avoid direct content references in C++)  
54  
55 // Input  
56  
57 void ADodgeballCharacter::SetupPlayerInputComponent(class UInputComponent\* PlayerInputComponent)  
58 {  
59 // Set up gameplay key bindings  
60 check(PlayerInputComponent);  
61 //PlayerInputComponent->BindAction("Jump", IE\_Pressed, this, &ACharacter::Jump);  
62 //PlayerInputComponent->BindAction("Jump", IE\_Released, this, &ACharacter::StopJumping);  
63  
64 PlayerInputComponent->BindAxis("MoveForward", this, &ADodgeballCharacter::MoveForward);  
65 PlayerInputComponent->BindAxis("MoveRight", this, &ADodgeballCharacter::MoveRight);  
66  
67 PlayerInputComponent->BindAxis("MoveLeft", this, &ADodgeballCharacter::MoveLeft);  
68  
69 }

Ctrl+S

100 % 문제가 검색되지 않음 출: 51 문자: 87 열: 90 탭 CRLF

솔루션 탐색기

솔루션 탐색기 검색(Ctrl+Shift+F)

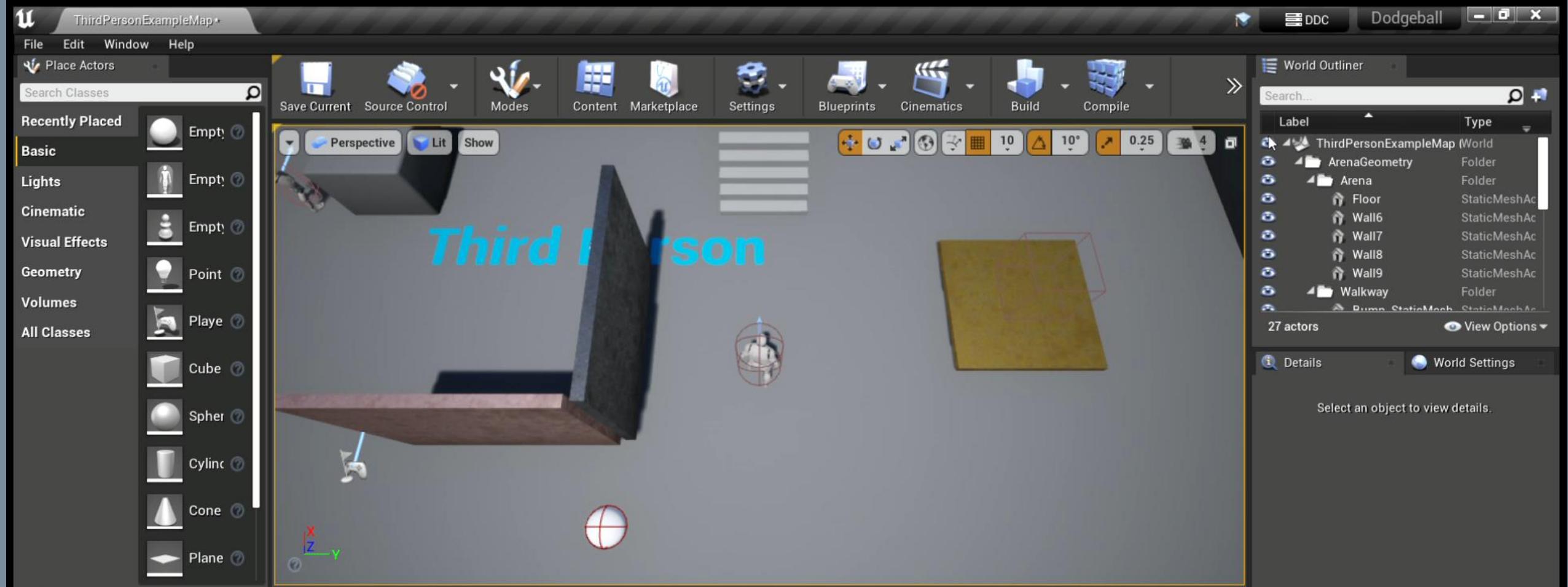
솔루션 'Dodgeball' (2/2개 프로젝트)  
Engine  
↳ UE4  
Games  
↳ Dodgeball  
↳ 참조  
↳ 외부 종속성  
↳ Config  
↳ Source  
↳ Dodgeball  
↳ Dodgeball.Build.cs  
↳ Dodgeball.cpp  
↳ Dodgeball.h  
↳ DodgeballCharacter.cpp  
↳ DodgeballCharacter.h  
↳ DodgeballFunctionLibrary.h  
↳ DodgeballFunctionLibrary.cpp  
↳ DodgeballGameMode.cpp  
↳ DodgeballGameMode.h  
↳ DodgeballProjectile.cpp  
↳ DodgeballProjectile.h  
↳ EnemyCharacter.cpp  
↳ EnemyCharacter.h  
↳ HealthComponent.cpp  
↳ HealthComponent.h  
↳ VictoryBox.cpp  
↳ VictoryBox.h  
↳ Wall.cpp

솔루션 탐색기 Git 변경 내용

준비 ↑ 소스 제어에 추가 ▲

The screenshot shows the Microsoft Visual Studio interface with the following details:

- Top Bar:** 파일(F), 편집(E), 보기(V), Git(G), 프로젝트(P), Dodgeball, Live Share.
- Left Sidebar:** 파일, 편집기, 최근 파일 목록.
- Central Area:** 코드 편집기 창. 파일: DodgeballCharacter.h, DodgeballCharacter.cpp. 내용은 DodgeballCharacter.h의 구조입니다.
- Build Menu (Open):** 솔루션 빌드(B) (선택됨), 솔루션 다시 빌드, 솔루션 정리(C), 솔루션의 전체 프로그램 데이터베이스 파일 빌드, 솔루션에서 코드 분석 실행(Y), Dodgeball 빌드(U), Dodgeball 다시 빌드(E), Dodgeball 정리(N), Dodgeball에서 코드 분석 실행(A), 프로젝트만(I), 일괄 빌드(T)..., 구성 관리자(O)..., 컴파일(M), 파일에서 코드 분석 실행(F).
- Right Sidebar:** 솔루션 탐색기, 솔루션 탐색기 검색(Ctrl+Shift+F). 목록에는 Dodgeball 프로젝트와 그 하위 파일들이 표시됩니다.
- Bottom Status Bar:** 100%, 문제가 검색되지 않음, 줄: 51, 문자: 87, 열: 90, 탭, CRLF, 솔루션 탐색기, Git 변경 내용.
- Bottom Left Status Bar:** 저장되었습니다.



Content Browser

Add/Import Save All C++ Classes Dodgeball

Search Paths Filters Search Dodgeball

Content Geometry Mannequin Physics StarterContent ThirdPerson ThirdPersonCPP Blueprints Maps

Dodgeball Character FunctionLibrary Dodgeball GameMode Dodgeball Projectile Enemy Character Health Component VictoryBox Wall

8 items View Options



# Interfaces

- › Classes that contain a collection of functions that an object must have if it implements that Interface
- › Essentially works as a contract that the object signs, saying that it will implement all the functions present on that Interface
- › Owner implement that Interface and then call that function from the Interface.
  - This will make it easy for us to specify how each actor behaves.
    - › Ex) when running out of health points: some actors might simply destroyed, others might trigger an in-game event, and others might simply end the game



# Blueprint Native Event

- › An event that is declared in C++ that can have a default behavior but that can be overridden in Blueprint
- › When using the **UFUNCTION** macro in C++, simply adding the **BlueprintNativeEvent** tag to that macro

```
UFUNCTION(BlueprintNativeEvent)
void MyEvent();
virtual void MyEvent_Implementation();
```

- Blueprint signature: to override the event in Blueprint
- C++ signature: to override the event in C++
  - › Simply the name of event followed by **\_Implementation**, and should always be a **virtual** function
  - › In order to implement its default behavior, you have to implement

# Exercise 7.04 Creating The HealthInterface Class





# Choose Parent Class

This will add a C++ header and source code file to your game project.

Show All Classes

## Game State Base

GameStateBase is a class that manages the game's global state, and is spawned by GameModeBase.

## Blueprint Function Library

This class is a base class for any function libraries exposed to blueprints.

## Slate Widget

A custom Slate widget, deriving from SCompoundWidget.

## Slate Widget Style

A custom Slate widget style, deriving from FSlateWidgetStyle, along with its associated UObject wrapper class.

## Unreal Interface

A UObject Interface class, to be implemented by other UObject-based classes.

Selected Class

Unreal Interface

Selected Class Source



Next >

Create Class

Cancel



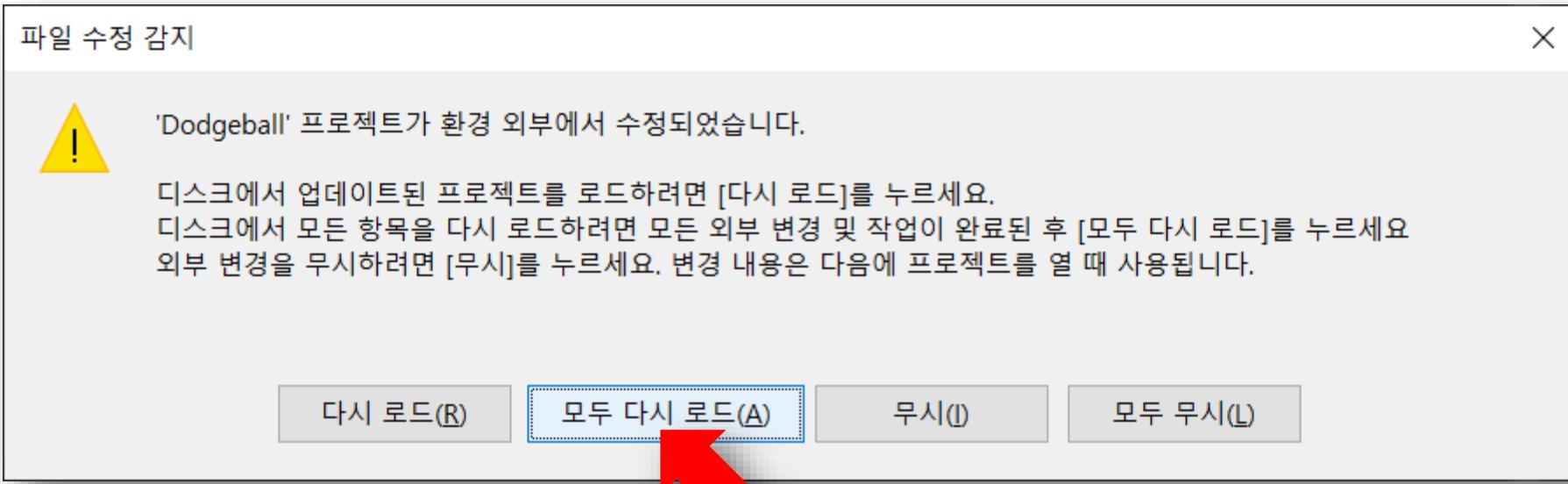
# Name Your New Unreal Interface

Enter a name for your new class. Class names may only contain alphanumeric characters, and may not contain a space.

When you click the "Create" button below, a header (.h) file and a source (.cpp) file will be made using this name.

Name	<input type="text" value="HealthInterface"/>	Dodgeball (Runtime)	Public	Private
Path	<input type="text" value="C:/Users/sunje/Desktop/Unreal/Dodgeball/Source/Dodgeball/"/>			
Header File	C:/Users/sunje/Desktop/Unreal/Dodgeball/Source/Dodgeball/HealthInterface.h			
Source File	C:/Users/sunje/Desktop/Unreal/Dodgeball/Source/Dodgeball/HealthInterface.cpp			

  
[Back](#)[Create Class](#)[Cancel](#)



파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

서버 템플릿 도구상자

HealthInterface.cpp HealthInterface.h DodgeballCharacter.h HealthComponent.cpp HealthComponent.h

Dodgeball (전역 범위)

```
// Fill out your copyright notice in the Description page of Project Settings.  
  
#include "HealthInterface.h"  
  
// Add default functionality here for any IHealthInterface functions that are not pure virtual.
```

솔루션 탐색기

솔루션 탐색기 검색(Ctrl+.)

솔루션 'Dodgeball' (2/2개 프로젝트)

- Engine
- UE4
- Games
- Dodgeball
  - 참조
  - 외부 종속성
  - Config
  - Source
    - Dodgeball
      - Dodgeball.Build.cs
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      - DodgeballCharacter.cpp
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      - DodgeballFunctionLibrary.cpp
      - DodgeballFunctionLibrary.h
      - DodgeballGameMode.cpp
      - DodgeballGameMode.h
      - DodgeballProjectile.cpp
      - DodgeballProjectile.h
      - EnemyCharacter.cpp
      - EnemyCharacter.h
      - HealthComponent.cpp
      - HealthComponent.h
      - HealthInterface.cpp
      - HealthInterface.h
      - VictoryBox.cpp

100 % 문제가 검색되지 않음 줄: 1 문자: 1 탭 CRLF

솔루션 탐색기 Git 변경 내용

준비 ↑ 소스 제어에 추가 ▲ 1

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

서버  
템플릿  
도구  
설정

HealthInterface.cpp HealthInterface.h DodgeballCharacter.h HealthComponent.cpp HealthComponent.h

Dodgeball (전역 범위)

```
1 // Fill out your copyright notice in the Description page of Project Settings.
2
3 #pragma once
4
5 #include "CoreMinimal.h"
6 #include "UObject/Interface.h"
7 #include "HealthInterface.generated.h"
8
9 // This class does not need to be modified.
10 UINTERFACE(MinimalAPI)
11 class UHealthInterface : public UInterface
12 {
13     GENERATED_BODY()
14 };
15
16 /**
17 */
18 class DODGEBALL_API IHealthInterface
19 {
20     GENERATED_BODY()
21
22     // Add interface functions to this class. This is the class that will be inherited to implement this interface.
23     public:
24 };
25
26
```

100 % 문제가 검색되지 않음 줄: 1 문자: 1 탭 CRLF

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+.)

- 슬루션 'Dodgeball' (2/2개 프로젝트)
  - Engine
    - UE4
  - Games
    - Dodgeball
      - 참조
      - 외부 종속성
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          - EnemyCharacter.h
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          - HealthComponent.h
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          - HealthInterface.h
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준비 ↑ 소스 제어에 추가 ▲

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

서버  
템플릿  
도구  
설정

HealthInterface.cpp HealthInterface.h\* DodgeballCharacter.h HealthComponent.cpp HealthComponent.h

Dodgeball

```
1 // Fill out your copyright notice in the Description page of Project Settings.
2
3 #pragma once
4
5 #include "CoreMinimal.h"
6 #include "UObject/Interface.h"
7 #include "HealthInterface.generated.h"
8
9 // This class does not need to be modified.
10 UINTERFACE(MinimalAPI)
11 class UHealthInterface : public UInterface
12 {
13     GENERATED_BODY()
14 };
15
16 /**
17 */
18 class DODGEBALL_API IHealthInterface
19 {
20     GENERATED_BODY()
21
22     // Add interface functions to this class. This is the class that will be inherited to implement this interface.
23     public:
24
25         UFUNCTION(BlueprintNativeEvent, Category = Health)
26         void OnDeath();
27
28         virtual void OnDeath_Implementation() = 0;
29     };
30
31 }
```

OnDeath\_Implementation()

Ctrl+S

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

슬루션 탐색기 'Dodgeball' (2/2개 프로젝트)

- Engine
- UE4
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      - DodgeballProjectile.h
      - EnemyCharacter.cpp
      - EnemyCharacter.h
      - HealthComponent.cpp
      - HealthComponent.h
      - HealthInterface.cpp
      - HealthInterface.h
      - VictoryBox.cpp

준비

문제가 검색되지 않음

줄: 28 문자: 44 열: 47 템 CRLF

↑ 소스 제어에 추가 ↑

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball Live Share

HealthInterface.cpp HealthInterface.h DodgeballCharacter.h\* X HealthComponent.cpp HealthComponent.h

```
// Copyright Epic Games, Inc. All Rights Reserved.
#pragma once
#include "CoreMinimal.h"
#include "GameFramework/Character.h"
#include "HealthInterface.h"
#include "DodgeballCharacter.generated.h"

UCLASS(config=Game)
class ADodgeballCharacter : public ACharacter, public IHealthInterface
{
    GENERATED_BODY()

    /** Camera boom positioning the camera behind the character */
    UPROPERTY(VisibleAnywhere, BlueprintReadOnly, Category = Camera, meta = (AllowPrivateAccess = "true"))
    class USpringArmComponent* CameraBoom;

    /** Follow camera */
    UPROPERTY(VisibleAnywhere, BlueprintReadOnly, Category = Camera, meta = (AllowPrivateAccess = "true"))
    class UCameraComponent* FollowCamera;

    class UHealthComponent* HealthComponent;

public:
    ADodgeballCharacter();

    virtual void OnDeath_Implementation() override;

    /** Base turn rate, in deg/sec. Other scaling may affect final turn rate. */
    UPROPERTY(VisibleAnywhere, BlueprintReadOnly, Category=Camera)
    float BaseTurnRate;

    /** Base look up/down rate, in deg/sec. Other scaling may affect final rate. */
    UPROPERTY(VisibleAnywhere, BlueprintReadOnly, Category=Camera)
```

Ctrl+S

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

슬루션 탐색기 'Dodgeball' (2/2개 프로젝트)

- Engine
- UE4
- Games
- Dodgeball
  - 참조
  - 외부 종속성
  - Config
  - Source
    - Dodgeball
      - Dodgeball.Build.cs
      - Dodgeball.cpp
      - Dodgeball.h
      - DodgeballCharacter.cpp
      - DodgeballCharacter.h
      - DodgeballFunctionLibrary.cpp
      - DodgeballFunctionLibrary.h
      - DodgeballGameMode.cpp
      - DodgeballGameMode.h
      - DodgeballProjectile.cpp
      - DodgeballProjectile.h
      - EnemyCharacter.cpp
      - EnemyCharacter.h
      - HealthComponent.cpp
      - HealthComponent.h
      - HealthInterface.cpp
      - HealthInterface.h
      - VictoryBox.cpp

준비

소스 제어에 추가

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(T) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

서버  
템플릿  
도구  
설정

HealthInterface.cpp HealthInterface.h DodgeballCharacter.cpp DodgeballCharacter.h HealthComponent.h

Dodgeball

```
// Copyright Epic Games, Inc. All Rights Reserved.  
  
#include "DodgeballCharacter.h"  
#include "HeadMountedDisplayFunctionLibrary.h"  
#include "Camera/CameraComponent.h"  
#include "Components/CapsuleComponent.h"  
#include "Components/InputComponent.h"  
#include "HealthComponent.h"  
#include "GameFramework/CharacterMovementComponent.h"  
#include "GameFramework/Controller.h"  
#include "GameFramework/SpringArmComponent.h"  
#include "Kismet/KismetSystemLibrary.h"  
  
// ADodgeballCharacter  
  
ADodgeballCharacter::ADodgeballCharacter()  
{  
    // Set size for collision capsule  
    GetCapsuleComponent()->InitCapsuleSize(42.f, 96.0f);  
  
    // set our turn rates for input  
    BaseTurnRate = 45.f;  
    BaseLookUpRate = 45.f;  
  
    // Don't rotate when the controller rotates. Let that just affect the camera.  
    bUseControllerRotationPitch = false;  
    bUseControllerRotationYaw = false;  
    bUseControllerRotationRoll = false;  
  
    // Configure character movement  
    GetCharacterMovement()->bOrientRotationToMovement = true; // Character moves in the direction of input...  
    GetCharacterMovement()->RotationRate = FRotator(0.0f, 540.0f, 0.0f); // ...at this rotation rate  
    GetCharacterMovement()->JumpZVelocity = 600.f;  
    GetCharacterMovement()->AirControl = 0.2f;
```

100 % 문제가 검색되지 않음

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

솔루션 'Dodgeball' (2/2개 프로젝트)  
Engine  
UE4  
Games  
Dodgeball  
참조  
외부 종속성  
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Dodgeball  
Dodgeball.Build.cs  
Dodgeball.cpp  
Dodgeball.h  
DodgeballCharacter.cpp  
DodgeballCharacter.h  
DodgeballFunctionLibrary.h  
DodgeballFunctionLibrary.cpp  
DodgeballGameMode.cpp  
DodgeballGameMode.h  
DodgeballProjectile.cpp  
DodgeballProjectile.h  
EnemyCharacter.cpp  
EnemyCharacter.h  
HealthComponent.cpp  
HealthComponent.h  
HealthInterface.cpp  
HealthInterface.h  
VictoryBox.cpp

슬루션 탐색기 Git 변경 내용

준비 ↑ 소스 제어에 추가 ▲

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

HealthInterface.cpp HealthInterface.h DodgeballCharacter.cpp\* DodgeballCharacter.h HealthComponent.h

Dodgeball

```
36 // Create a camera boom (pulls in towards the player if there is a collision)
37 CameraBoom = CreateDefaultSubobject<USpringArmComponent>(TEXT("CameraBoom"));
38 CameraBoom->SetupAttachment(RootComponent);
39 CameraBoom->TargetArmLength = 900.0f; // The camera follows at this distance behind the character
40 CameraBoom->SetRelativeRotation(FRotator(-70.f, 0.f, 0.f)); // The camera looks down at the player
41 CameraBoom->bUsePawnControlRotation = false; // Ignore pawn's pitch, yaw and roll
42 CameraBoom->bInheritPitch = false;
43 CameraBoom->bInheritYaw = false;
44 CameraBoom->bInheritRoll = false;

45 // Create a follow camera
46 FollowCamera = CreateDefaultSubobject<UCameraComponent>(TEXT("FollowCamera"));
47 FollowCamera->SetupAttachment(CameraBoom, USpringArmComponent::SocketName); // Attach the camera to the end of the boom and let
48 FollowCamera->bUsePawnControlRotation = false; // Camera does not rotate relative to arm

49 HealthComponent = CreateDefaultSubobject<UHealthComponent>(TEXT("Health Component"));

50 // Note: The skeletal mesh and anim blueprint references on the Mesh component (inherited from Character)
51 // are set in the derived blueprint asset named MyCharacter (to avoid direct content references in C++)
52 }

53 void ADodgeballCharacter::OnDeath_Implementation()
54 {
55     UKismetSystemLibrary::QuitGame(this, nullptr, EQuitPreference::Quit, true);
56 }

57 // Input
58 void ADodgeballCharacter::SetupPlayerInputComponent(class UInputComponent* PlayerInputComponent)
59 {
60     // Set up gameplay key bindings
61     check(PlayerInputComponent);
62     //PlayerInputComponent->BindAction("Jump", IE_Pressed, this, &ACharacter::Jump);
63 }

64 // Input
65 void ADodgeballCharacter::SetupPlayerInputComponent(class UInputComponent* PlayerInputComponent)
66 {
67     // Set up gameplay key bindings
68     check(PlayerInputComponent);
69     //PlayerInputComponent->BindAction("Jump", IE_Pressed, this, &ACharacter::Jump);
70 }
```

100 % 문제가 검색되지 않음

줄: 12 문자: 40 탭 CRLF

Ctrl+S

솔루션 탐색기

솔루션 탐색기 검색(Ctrl+Shift+F)

- 솔루션 'Dodgeball' (2/2개 프로젝트)
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          - DodgeballCharacter.h
          - DodgeballFunctionLibrary.h
          - DodgeballFunctionLibrary.cpp
          - DodgeballGameMode.cpp
          - DodgeballGameMode.h
          - DodgeballProjectile.cpp
          - DodgeballProjectile.h
          - EnemyCharacter.cpp
          - EnemyCharacter.h
          - HealthComponent.cpp
          - HealthComponent.h
          - HealthInterface.cpp
          - HealthInterface.h
          - VictoryBox.cpp

솔루션 탐색기 Git 변경 내용

준비 ↑ 소스 제어에 추가 ↻

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball Live Share

HealthInterface.cpp HealthComponent.cpp\* HealthInterface.h DodgeballCharacter.cpp DodgeballCharacter.h

```
// Fill out your copyright notice in the Description page of Project Settings.

#include "HealthComponent.h"
//#include "Kismet/KismetSystemLibrary.h"
#include "HealthInterface.h"
#include "GameFramework/Actor.h"

// Sets default values for this component's properties
UHealthComponent::UHealthComponent()
{
    // Set this component to be initialized when the game starts, and to be ticked every frame. You can turn these features
    // off to improve performance if you don't need them.
    PrimaryComponentTick.bCanEverTick = false;
}

// ...

// Called when the game starts
void UHealthComponent::BeginPlay()
{
    Super::BeginPlay();
}

// ...

// Called every frame
void UHealthComponent::TickComponent(float DeltaTime, ELevelTick TickType, FActorComponentTickFunction* ThisTickFunction)
{
    Super::TickComponent(DeltaTime, TickType, ThisTickFunction);
}

// ...
```

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+.)

- 슬루션 'Dodgeball' (2/2개 프로젝트)
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          - DodgeballFunctionLibrary.h
          - DodgeballGameMode.cpp
          - DodgeballGameMode.h
          - DodgeballProjectile.cpp
          - DodgeballProjectile.h
          - EnemyCharacter.cpp
          - EnemyCharacter.h
          - HealthComponent.cpp
          - HealthComponent.h
          - HealthInterface.cpp
          - HealthInterface.h
          - VictoryBox.cpp

준비

소스 제어에 추가

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

HealthInterface.cpp HealthComponent.cpp\* × HealthInterface.h DodgeballCharacter.cpp DodgeballCharacter.h

Dodgeball

```
19 // Called when the game starts
20 void UHealthComponent::BeginPlay()
21 {
22     Super::BeginPlay();
23     // ...
24 }
25
26
27
28
29
30 // Called every frame
31 void UHealthComponent::TickComponent(float DeltaTime, ELevelTick TickType, FActorComponentTickFunction* ThisTickFunction)
32 {
33     Super::TickComponent(DeltaTime, TickType, ThisTickFunction);
34     // ...
35 }
36
37
38 void UHealthComponent::LoseHealth(float Amount)
39 {
40     Health -= Amount;
41     if (Health <= 0.f) {
42         Health = 0.f;
43         //UKismetSystemLibrary::QuitGame(this, nullptr, EQuitPreference::Quit, true);
44         if (GetOwner()->Implements<UHealthInterface>()) {
45             IHealthInterface::Execute_OnDeath(GetOwner());
46         }
47     }
48 }
49
```

Ctrl+S

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

- 슬루션 'Dodgeball' (2/2개 프로젝트)
  - Engine
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      - 참조
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          - DodgeballCharacter.h
          - DodgeballFunctionLibrary.h
          - DodgeballFunctionLibrary.cpp
          - DodgeballGameMode.cpp
          - DodgeballGameMode.h
          - DodgeballProjectile.cpp
          - DodgeballProjectile.h
          - EnemyCharacter.cpp
          - EnemyCharacter.h
          - HealthComponent.cpp
          - HealthComponent.h
          - HealthInterface.cpp
          - HealthInterface.h
          - VictoryBox.cpp

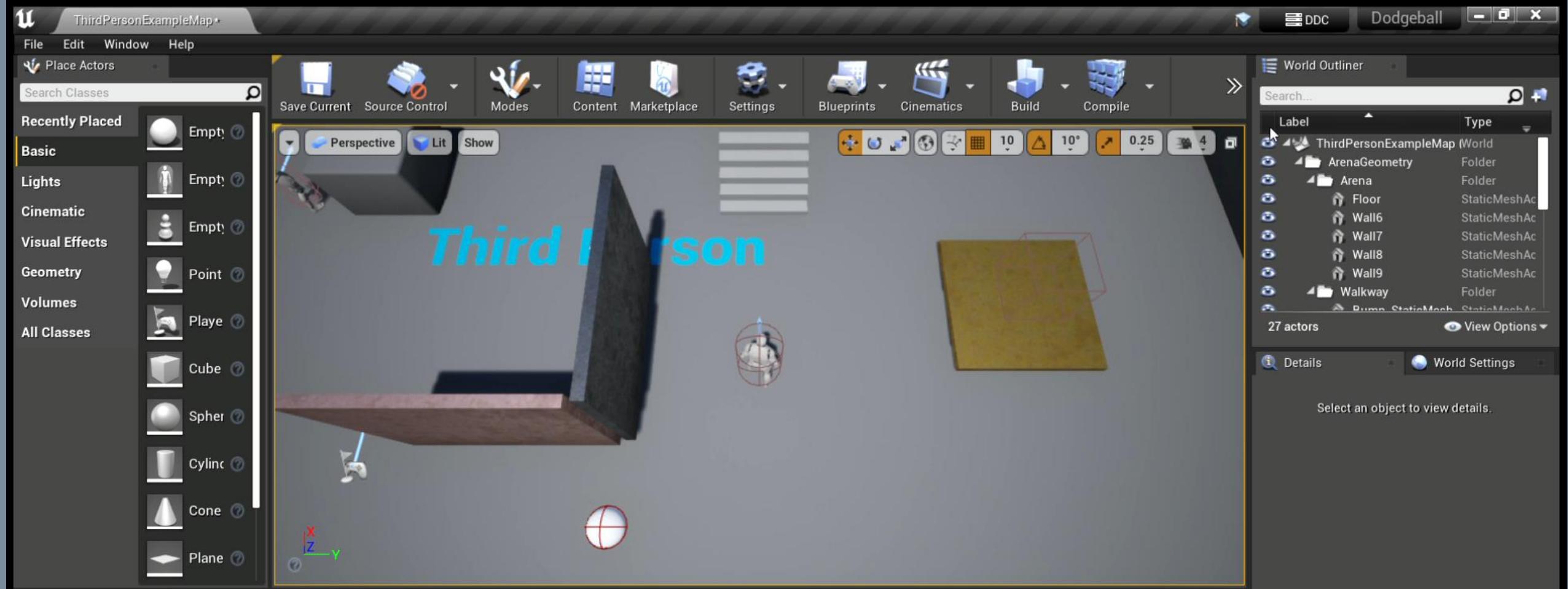
준비 ↑ 소스 제어에 추가 ▲

The screenshot shows the Unreal Engine Editor interface. The top navigation bar includes File (파일), Favorites (편집(E)), View (보기(V)), Git (G), Project (프로젝트(P)), Build (빌드(B)), Debug (디버그(D)), Test (테스트(S)), Analysis (분석(N)), Tools (도구(T)), Extend (확장(X)), Window (창(W)), Help (도움말(H)), and Search (검색 (Ctrl+Q)). The title bar displays the project name 'Dodgeball'. The main area shows code snippets for HealthInterface.cpp and HealthComponent.cpp. A red arrow points to the 'Build Solution' option in the Build menu, which is highlighted in the dropdown. The right side of the screen features the Solution Explorer, showing the project structure with files like Dodgeball.Build.cs, Dodgeball.cpp, Dodgeball.h, DodgeballCharacter.cpp, DodgeballFunctionLibrary.h, DodgeballGameMode.h, DodgeballProjectile.h, EnemyCharacter.cpp, EnemyCharacter.h, HealthComponent.cpp, HealthComponent.h, HealthInterface.cpp, HealthInterface.h, and VictoryBox.cpp.

```
// Called when the game starts
void UHealthComponent::BeginPlay()
{
    Super::BeginPlay();
    // ...
}

// Called every frame
void UHealthComponent::TickComponent(float DeltaTime, ELevelTick TickFunction)
{
    Super::TickComponent(DeltaTime, TickFunction);
    // ...

    void UHealthComponent::LoseHealth(float Amount)
    {
        Health -= Amount;
        if (Health <= 0.f) {
            Health = 0.f;
            // UKismetSystemLibrary::QuitGame(this, nullptr, EQuitPreference::Quit, true);
            if (GetOwner()->Implements<UHealthInterface>()) {
                IHealthInterface::Execute_OnDeath(GetOwner());
            }
        }
    }
}
```



# Activity 7.01: Moving The LookAtActor Logic To An Actor Component





# Choose Parent Class

This will add a C++ header and source code file to your game project.

Show All Classes

## Pawn

A Pawn is an actor that can be 'possessed' and receive input from a controller.

## Actor

An Actor is an object that can be placed or spawned in the world.

## Actor Component

An ActorComponent is a reusable component that can be added to any actor.

## Scene Component

A Scene Component is a component that has a scene transform and can be attached to other scene components.

## Player Camera Manager

A PlayerCameraManager is responsible for managing the camera for a particular player.

Selected Class

Scene Component

Selected Class Source

SceneComponent.h



Next >

Create Class

Cancel



# Name Your New Scene Component

Enter a name for your new class. Class names may only contain alphanumeric characters, and may not contain a space.

When you click the "Create" button below, a header (.h) file and a source (.cpp) file will be made using this name.

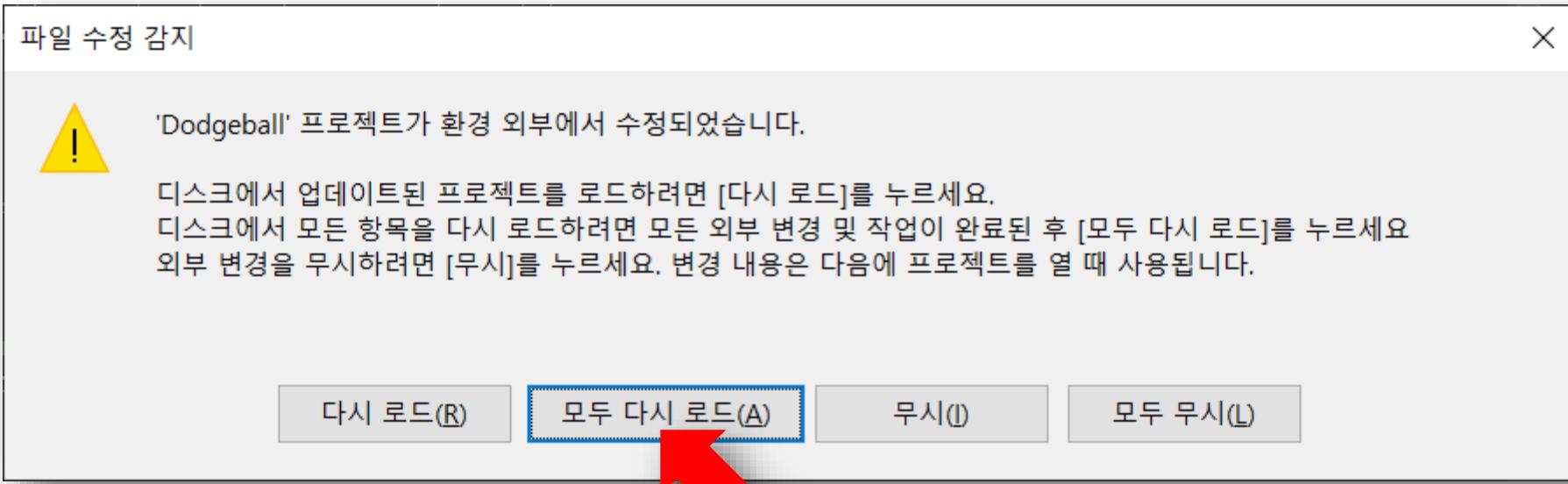
Name	<input type="text" value="LookAtActorComponent"/>	Dodgeball (Runtime)	Public	Private
Path	<input type="text" value="C:/Users/sunje/Desktop/Unreal/Dodgeball/Source/Dodgeball/"/>	<input type="button" value="Choose Folder"/>		
Header File	C:/Users/sunje/Desktop/Unreal/Dodgeball/Source/Dodgeball/LookAtActorComponent.h			
Source File	C:/Users/sunje/Desktop/Unreal/Dodgeball/Source/Dodgeball/LookAtActorComponent.cpp			

< Back

Create Class

Cancel





파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

LookAtActorComponent.h\* X HealthInterface.cpp HealthComponent.cpp HealthInterface.h DodgeballCharacter.cpp

Dodgeball

```
// Fill out your copyright notice in the Description page of Project Settings.

#pragma once

#include "CoreMinimal.h"
#include "Components/SceneComponent.h"
#include "LookAtActorComponent.generated.h"

UCLASS( ClassGroup=(Custom), meta=(BlueprintSpawnableComponent) )
class DODGEBALL_API ULookAtActorComponent : public USceneComponent
{
    GENERATED_BODY()

public:
    // Sets default values for this component's properties
    ULookAtActorComponent();

protected:
    // Called when the game starts
    virtual void BeginPlay() override;

    // Change the rotation of the character to face the given actor
    // Returns whether the given actor can be seen
    bool LookAtActor();

    AActor* TargetActor;

    // Whether the enemy can currently see the target
    bool bCanSeeTarget = false;

public:
    // Called every frame
    virtual void TickComponent(float DeltaTime, ELevelTick TickType, FActorComponentTickFunction* ThisTickFunction) override;
}
```

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+.)

- 슬루션 'Dodgeball' (2/2개 프로젝트)
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          - DodgeballFunctionLibrary.cpp
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          - DodgeballGameMode.h
          - DodgeballProjectile.cpp
          - DodgeballProjectile.h
          - EnemyCharacter.cpp
          - EnemyCharacter.h
          - HealthComponent.cpp
          - HealthComponent.h
          - HealthInterface.cpp
          - HealthInterface.h
          - LookAtActorComponent.cpp

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

LookAtActorComponent.h\* HealthInterface.cpp HealthComponent.cpp HealthInterface.h DodgeballCharacter.cpp

Dodgeball

```
9
10 UCLASS( ClassGroup=(Custom), meta=(BlueprintSpawnableComponent) )
11 class DODGEBALL_API ULookAtActorComponent : public USceneComponent
12 {
13     GENERATED_BODY()
14
15     public:
16         // Sets default values for this component's properties
17         ULookAtActorComponent();
18
19     protected:
20         // Called when the game starts
21         virtual void BeginPlay() override;
22
23         // Change the rotation of the character to face the given actor
24         // Returns whether the given actor can be seen
25         bool LookAtActor();
26
27         AActor* TargetActor;
28
29         // Whether the enemy can currently see the target
30         bool bCanSeeTarget = false;
31
32     public:
33         // Called every frame
34         virtual void TickComponent(float DeltaTime, ELevelTick TickType, FActorComponentTickFunction* ThisTickFunction) override;
35
36         FORCEINLINE void SetTarget(AActor* NewTarget) { TargetActor = NewTarget; }
37
38         FORCEINLINE bool CanSeeTarget() const { return bCanSeeTarget; }
39
40     };
41 }
```

Ctrl+S

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

- 슬루션 'Dodgeball' (2/2개 프로젝트)
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          - DodgeballGameMode.h
          - DodgeballProjectile.cpp
          - DodgeballProjectile.h
          - EnemyCharacter.cpp
          - EnemyCharacter.h
          - HealthComponent.cpp
          - HealthComponent.h
          - HealthInterface.cpp
          - HealthInterface.h
        - LookAtActorComponent.cpp

준비 ↑ 소스 제어에 추가 ▲

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

LookAtActorComponent.cpp\* X LookAtActorComponent.h HealthInterface.cpp HealthComponent.cpp HealthInterface.h

Dodgeball → ULookAtActorComponent TickComponent(float DeltaTime, ELevelTick TickType)

```
1 // Fill out your copyright notice in the Description page of Project Settings.
2
3 #include "LookAtActorComponent.h"
4
5 // Sets default values for this component's properties
6 ULookAtActorComponent::ULookAtActorComponent()
7 {
8     // Set this component to be initialized when the game starts, and to be ticked every frame. You can turn these features
9     // off to improve performance if you don't need them.
10    PrimaryComponentTick.bCanEverTick = true;
11
12    // ...
13 }
14
15
16
17 // Called when the game starts
18 void ULookAtActorComponent::BeginPlay()
19 {
20     Super::BeginPlay();
21
22    // ...
23 }
24
25
26
27 // Called every frame
28 void ULookAtActorComponent::TickComponent(float DeltaTime, ELevelTick TickType, FActorComponentTickFunction* ThisTickFunction)
29 {
30     Super::TickComponent(DeltaTime, TickType, ThisTickFunction);
31
32     bCanSeeTarget = LookAtActor();
33 }
34
35
```

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

슬루션 탐색기 'Dodgeball' (2/2개 프로젝트)

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      - DodgeballCharacter.h
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      - DodgeballFunctionLibrary.h
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      - EnemyCharacter.h
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      - HealthComponent.h
      - HealthInterface.cpp
      - HealthInterface.h
    - LookAtActorComponent.cpp

준비

문제가 검색되지 않음

줄: 32 문자: 32 열: 35 템 CRLF

↑ 소스 제어에 추가 ↑

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

LookAtActorComponent.cpp\* LookAtActorComponent.h HealthComponent.cpp HealthInterface.h EnemyCharacter.cpp ✘

Dodgeball

```
67
68     bool AEnemyCharacter::LookAtActor(AActor* TargetActor)
69     {
70         if (TargetActor == nullptr)
71             return false;
72
73         const TArray<const AActor*> IgnoreActors = { this, TargetActor };
74         if (UDodgeballFunctionLibrary::CanSeeActor(GetWorld(), SightSource->GetComponentLocation(), TargetActor, IgnoreActors))
75         {
76             FVector Start = GetActorLocation();
77             FVector End = TargetActor->GetActorLocation();
78
79             // Calculate the necessary rotation for the Start point to face the End point
80             FRotator LookAtRotation = UKismetMathLibrary::FindLookAtRotation(Start, End);
81
82             // Set the enemy's rotation to that rotation
83             SetActorRotation(LookAtRotation);
84             return true;
85         }
86
87         return false;
88     }
89
90     bool AEnemyCharacter::CanSeeActor(const AActor* TargetActor) const
91     {
92         if (TargetActor == nullptr)
93             return false;
94
95         // Store the results of the Line Trace
96         FHitResult Hit;
97
98         // Where the Line Trace starts and ends
99         FVector Start = SightSource->GetComponentLocation();
100        FVector End = TargetActor->GetActorLocation();
```

Ctrl+C

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

솔루션 'Dodgeball' (2/2개 프로젝트)

- Engine
- UE4
- Games
- Dodgeball
  - 참조
  - 외부 종속성
  - Config
  - Source
    - Dodgeball
      - Dodgeball.Build.cs
      - Dodgeball.cpp
      - Dodgeball.h
      - DodgeballCharacter.cpp
      - DodgeballCharacter.h
      - DodgeballFunctionLibrary.cpp
      - DodgeballFunctionLibrary.h
      - DodgeballGameMode.cpp
      - DodgeballGameMode.h
      - DodgeballProjectile.cpp
      - DodgeballProjectile.h
      - EnemyCharacter.cpp
      - EnemyCharacter.h
      - HealthComponent.cpp
      - HealthComponent.h
      - HealthInterface.cpp
      - HealthInterface.h
    - LookAtActorComponent.cpp

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Develop Win64 로컬 Windows 디버거 Live Share

LookAtActorComponent.cpp\* X LookAtActorComponent.h HealthComponent.cpp HealthInterface.h EnemyCharacter.cpp

Dodgeball AEnemyCharacter LookAtActor(AActor \* TargetActor)

```
26
27     // Called every frame
28     void ULookAtActorComponent::TickComponent(float DeltaTime, ELevelTick TickType, FActorComponentTickFunction* ThisTickFunction)
29     {
30         Super::TickComponent(DeltaTime, TickType, ThisTickFunction);
31
32         bCanSeeTarget = LookAtActor();
33     }
34
35     bool AEnemyCharacter::LookAtActor(AActor* TargetActor)
36     {
37         if (TargetActor == nullptr)
38             return false;
39
40         const TArray<const AActor*> IgnoreActors = { this, TargetActor };
41         if (UDodgeballFunctionLibrary::CanSeeActor(GetWorld(), SightSource->GetComponentLocation(), TargetActor, IgnoreActors))
42         {
43             FVector Start = GetActorLocation();
44             FVector End = TargetActor->GetActorLocation();
45
46             // Calculate the necessary rotation for the Start point to face the End point
47             FRotator LookAtRotation = UKismetMathLibrary::FindLookAtRotation(Start, End);
48
49             //Set the enemy's rotation to that rotation
50             SetActorRotation(LookAtRotation);
51             return true;
52         }
53
54         return false;
55     }
56 
```

Ctrl+V

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

- 슬루션 'Dodgeball' (2/2개 프로젝트)
  - Engine
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      - 참조
      - 외부 종속성
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      - Source
        - Dodgeball
          - Dodgeball.Build.cs
          - Dodgeball.cpp
          - Dodgeball.h
          - DodgeballCharacter.cpp
          - DodgeballCharacter.h
          - DodgeballFunctionLibrary.cpp
          - DodgeballFunctionLibrary.h
          - DodgeballGameMode.cpp
          - DodgeballGameMode.h
          - DodgeballProjectile.cpp
          - DodgeballProjectile.h
        - EnemyCharacter.cpp
        - EnemyCharacter.h
        - HealthComponent.cpp
        - HealthComponent.h
        - HealthInterface.cpp
        - HealthInterface.h
      - LookAtActorComponent.cpp

준비

↑ 소스 제어에 추가 ▲

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

LookAtActorComponent.cpp\* × LookAtActorComponent.h HealthComponent.cpp HealthInterface.h EnemyCharacter.cpp

Dodgeball

```
26
27     // Called every frame
28     void ULookAtActorComponent::TickComponent(float DeltaTime, ELevelTick TickType, FActorComponentTickFunction* ThisTickFunction)
29     {
30         Super::TickComponent(DeltaTime, TickType, ThisTickFunction);
31
32         bCanSeeTarget = LookAtActor();
33     }
34
35     bool ULookAtActorComponent::LookAtActor()
36     {
37         if (TargetActor == nullptr)
38             return false;
39
40         TArray<const AActor*> IgnoreActors = { GetOwner(), TargetActor };
41         if (UDodgeballFunctionLibrary::CanSeeActor(GetWorld(), GetComponentLocation(), TargetActor, IgnoreActors))
42         {
43             FVector Start = GetOwner()->GetActorLocation();
44             FVector End = TargetActor->GetActorLocation();
45
46             // Calculate the necessary rotation for the Start point to face the End point
47             FRotator LookAtRotation = UKismetMathLibrary::FindLookAtRotation(Start, End);
48
49             // Set the enemy's rotation to that rotation
50             GetOwner()->SetActorRotation(LookAtRotation);
51             return true;
52         }
53
54         return false;
55     }
56 }
```

Ctrl+S

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

- 슬루션 'Dodgeball' (2/2개 프로젝트)
  - Engine
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      - HealthInterface.cpp
      - HealthInterface.h
      - LookAtActorComponent.cpp

준비 ↑ 소스 제어에 추가 ▲

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

LookAtActorComponent.cpp LookAtActorComponent.h HealthInterface.h EnemyCharacter.cpp EnemyCharacter.h\*

```
// Fill out your copyright notice in the Description page of Project Settings.
#pragma once

#include "CoreMinimal.h"
#include "GameFramework/Character.h"
#include "EnemyCharacter.generated.h"

UCLASS()
class DODGEBALL_API AEnemyCharacter : public ACharacter
{
    GENERATED_BODY()

private:
    UPROPERTY(VisibleAnywhere, BlueprintReadOnly, Category = LookAt, meta = (AllowPrivateAccess = "true"))
    //class USceneComponent* SightSource;
    class ULookAtActorComponent* LookAtActorComponent;

public:
    // Sets default values for this character's properties
    AEnemyCharacter();

protected:
    // Called when the game starts or when spawned
    virtual void BeginPlay() override;

    // Change the rotation of the character to face the given actor
    //bool LookAtActor(AActor* TargetActor);

    // Can we see the given actor
    //bool CanSeeActor(const AActor* TargetActor) const;

    // Whether the enemy can see the player this frame
    bool bCanSeePlayer = false;
}
```

Ctrl+S

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+.)

- 슬루션 'Dodgeball' (2/2개 프로젝트)
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          - EnemyCharacter.h
          - HealthComponent.cpp
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          - HealthInterface.h
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준비 ↑ 소스 제어에 추가 ▲

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball Live Share

LookAtActorComponent.cpp LookAtActorComponent.h HealthInterface.h EnemyCharacter.cpp\* EnemyCharacter.h

```
// Fill out your copyright notice in the Description page of Project Settings.

#include "EnemyCharacter.h"
#include "Engine/World.h"
// #include "DrawDebugHelpers.h"
// #include "Kismet/KismetMathLibrary.h"
#include "Kismet/GameplayStatics.h"
#include "TimerManager.h"
#include "DodgeballProjectile.h"
// #include "DodgeballFunctionLibrary.h"
#include "GameFramework/ProjectileMovementComponent.h"
#include "LookAtActorComponent.h"

// Sets default values
AEnemyCharacter::AEnemyCharacter()
{
    // Set this character to call Tick() every frame. You can turn this off to improve performance if you don't need it.
    PrimaryActorTick.bCanEverTick = true;

    //SightSource = CreateDefaultSubobject<USceneComponent>(TEXT("Sight Source"));
    //SightSource->SetupAttachment(RootComponent);
    LookAtActorComponent = CreateDefaultSubobject<ULookAtActorComponent>(TEXT("Look At Actor Component"));
    LookAtActorComponent->SetupAttachment(RootComponent);

    // Called when the game starts or when spawned
    void AEnemyCharacter::BeginPlay()
    {
        Super::BeginPlay();

        // Fetch the character currently being controlled by the player
        ACharacter* PlayerCharacter = UGameplayStatics::GetPlayerCharacter(this, 0);
        LookAtActorComponent->SetTarget(PlayerCharacter);
}

100 % 문제가 검색되지 않음 출: 75 문자: 3 혼합 CRLF
```

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+.)

- 슬루션 'Dodgeball' (2/2개 프로젝트)
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        - DodgeballProjectile.h
        - EnemyCharacter.cpp
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        - HealthComponent.cpp
        - HealthComponent.h
        - HealthInterface.cpp
        - HealthInterface.h
        - LookAtActorComponent.cpp
      - HealthComponent.h
      - HealthInterface.h
      - LookAtActorComponent.h

준비 ↑ 소스 제어에 추가 ↻

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

LookAtActorComponent.cpp LookAtActorComponent.h HealthInterface.h EnemyCharacter.cpp\* × EnemyCharacter.h

Dodgeball (전역 범위)

```
34 ACharacter* PlayerCharacter = UGameplayStatics::GetPlayerCharacter(this, 0);
35 LookAtActorComponent->SetTarget(PlayerCharacter);
36 }
37 }

38 // Called every frame
39 void AEnemyCharacter::Tick(float DeltaTime)
40 {
41     Super::Tick(DeltaTime);
42
43     // Fetch the character currently being controlled by the player
44     //ACharacter* PlayerCharacter = UGameplayStatics::GetPlayerCharacter(this, 0);
45
46     // Look at the player character every frame
47     //bCanSeePlayer = LookAtActor(PlayerCharacter);
48     bCanSeePlayer = LookAtActorComponent->CanSeeTarget();
49

50     if (bCanSeePlayer != bPreviousCanSeePlayer)
51     {
52         if (bCanSeePlayer)
53         {
54             //Start throwing dodgeballs
55             GetWorldTimerManager().SetTimer(ThrowTimerHandle, this, &AEnemyCharacter::ThrowDodgeball,
56                                         ThrowingInterval, true, ThrowingDelay);
57         }
58         else
59         {
60             //Stop throwing dodgeballs
61             GetWorldTimerManager().ClearTimer(ThrowTimerHandle);
62         }
63     }
64
65     bPreviousCanSeePlayer = bCanSeePlayer;
66
67 }
```

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

슬루션 탐색기 'Dodgeball' (2/2개 프로젝트)

- Engine
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- Games
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  - 외부 종속성
  - Config
  - Source
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      - HealthInterface.h
      - LookAtActorComponent.cpp

파일(F) 편집(E) 보기(V) Git(G) 프로젝트(P) 빌드(B) 디버그(D) 테스트(S) 분석(N) 도구(I) 확장(X) 창(W) 도움말(H) 검색 (Ctrl+Q) Dodgeball — □ ×

Live Share

LookAtActorComponent.cpp LookAtActorComponent.h HealthInterface.h EnemyCharacter.cpp\* × EnemyCharacter.h

```
// Called to bind functionality to input
//void AEnemyCharacter::SetupPlayerInputComponent(UInputComponent* PlayerInputComponent)
//{
//    Super::SetupPlayerInputComponent(PlayerInputComponent);
//}

/*
bool AEnemyCharacter::LookAtActor(AActor* TargetActor)
{
    if (TargetActor == nullptr)
        return false;

    const TArray<const AActor*> IgnoreActors = { this, TargetActor };
    if (UDodgeballFunctionLibrary::CanSeeActor(GetWorld(), SightSource->GetComponentLocation(), TargetActor, IgnoreActors))
    {
        FVector Start = GetActorLocation();
        FVector End = TargetActor->GetActorLocation();

        // Calculate the necessary rotation for the Start point to face the End point
        FRotator LookAtRotation = UKismetMathLibrary::FindLookAtRotation(Start, End);

        // Set the enemy's rotation to that rotation
        SetActorRotation(LookAtRotation);
        return true;
    }

    return false;
}
*/
bool AEnemyCharacter::CanSeeActor(const AActor* TargetActor) const
{
    if (TargetActor == nullptr)
        return false;

    // Store the results of the Line Trace

```

Ctrl+S

슬루션 탐색기

슬루션 탐색기 검색(Ctrl+Shift+F)

- 슬루션 'Dodgeball' (2/2개 프로젝트)
  - Engine
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      - HealthInterface.cpp
      - HealthInterface.h
      - LookAtActorComponent.cpp

준비 ↑ 소스 제어에 추가 ▲

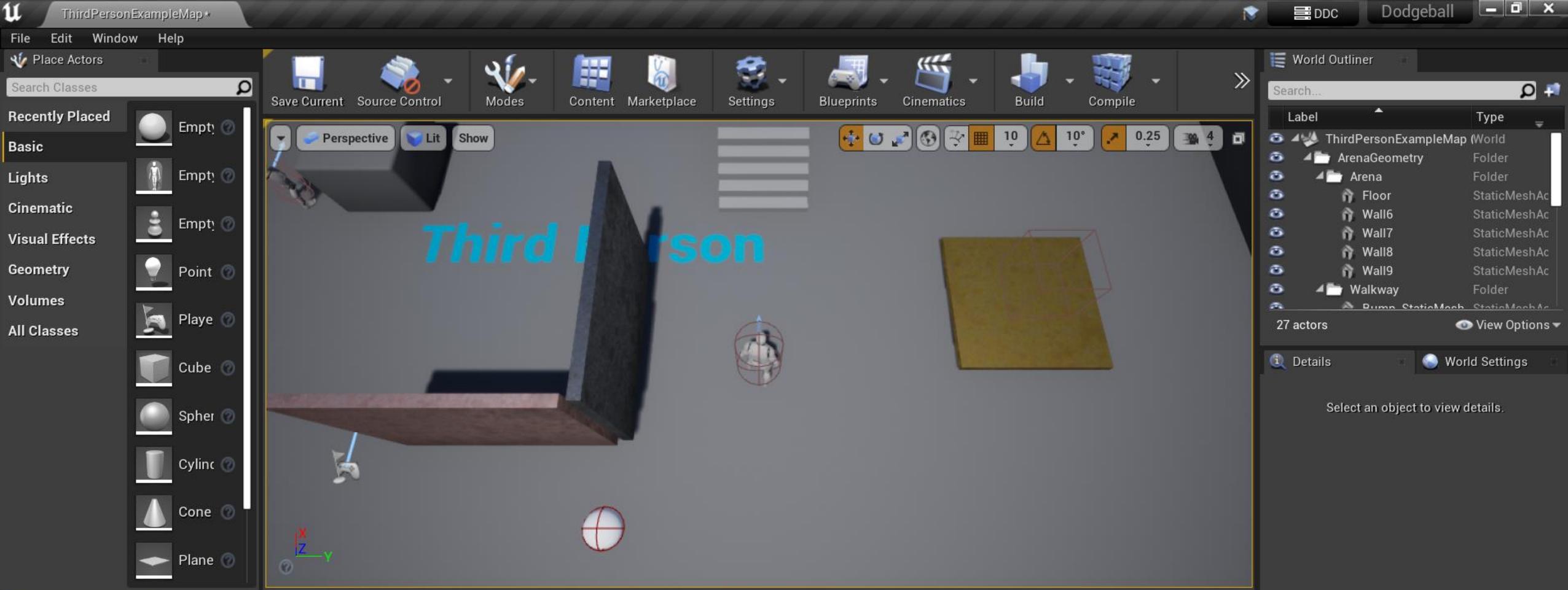
The screenshot shows the Unreal Engine 4 Editor interface. The top navigation bar includes tabs for 파일(F), 편집(E), 보기(V), Git(G), 프로젝트(P), 빌드(B), 디버그(D), 테스트(S), 분석(N), 도구(T), 확장(X), 창(W), 도움말(H), and 검색 (Ctrl+Q). A search icon and the project name "Dodgeball" are also present. On the right side, there are icons for Live Share and a key icon.

The main area displays code for the `LookAtActorComponent.cpp` file. The code implements functionality for an enemy character to look at a target actor. It includes methods for setting up player input, calculating rotation to face a target, and determining if an enemy can see a target actor.

A red arrow points to the "솔루션 빌드(B)" (Solution Build) option in the Build menu, which is highlighted in yellow. Other options in the menu include "솔루션 다시 빌드(B)", "솔루션 정리(C)", "솔루션의 전체 프로그램 데이터베이스 파일 빌드", "솔루션에서 코드 분석 실행(Y)", "Dodgeball 빌드(U)", "Dodgeball 다시 빌드(E)", "Dodgeball 정리(N)", "Dodgeball에서 코드 분석 실행(A)", "프로젝트만(J)", "일괄 빌드(T)...", and "구성 관리자(O)...".

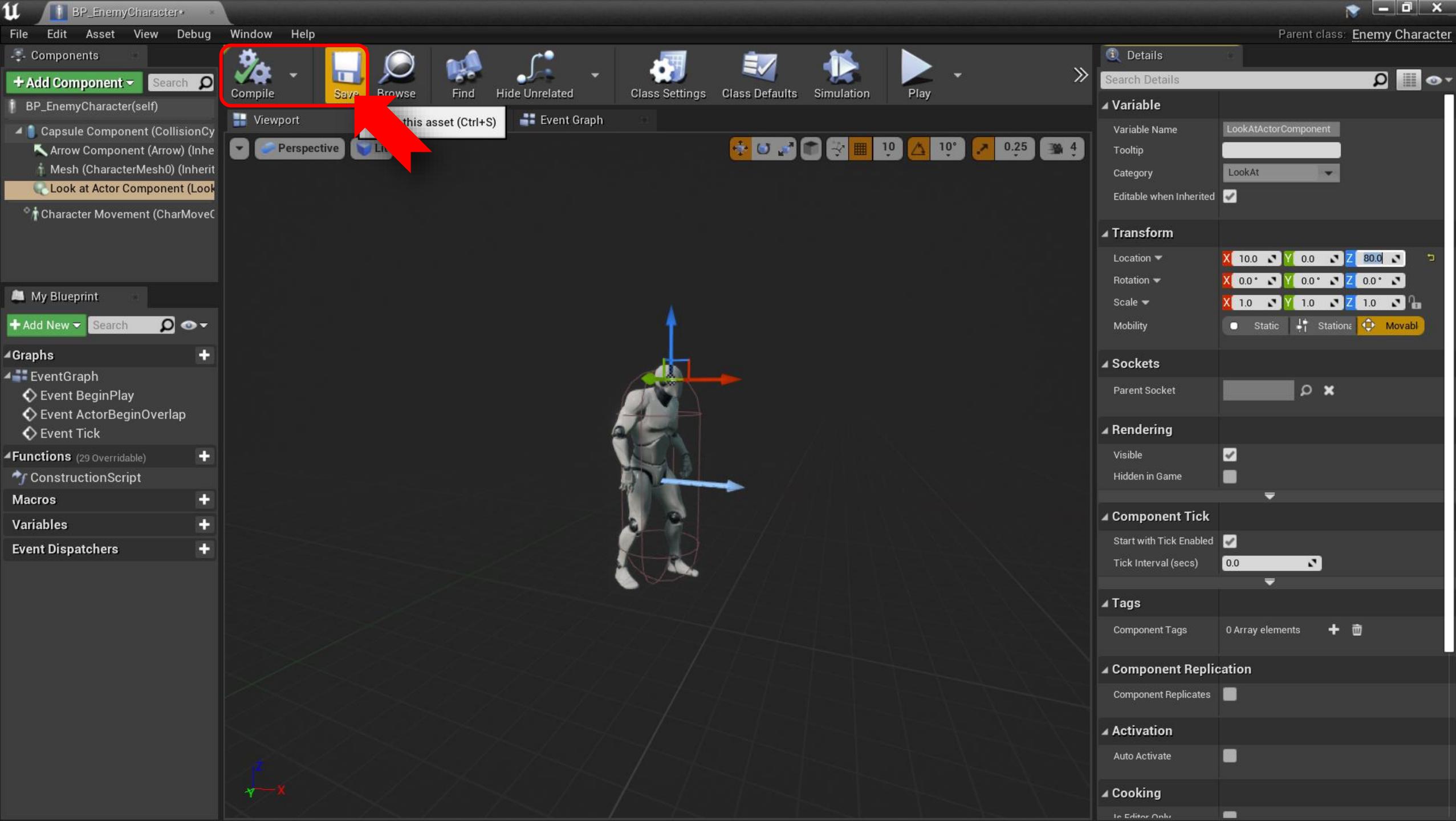
The right panel shows the "Solution Explorer" with a tree view of the project structure under the "Dodgeball" folder, including subfolders like Engine, Games, Source, and specific files like `Dodgeball.Build.cs`, `Dodgeball.h`, etc.

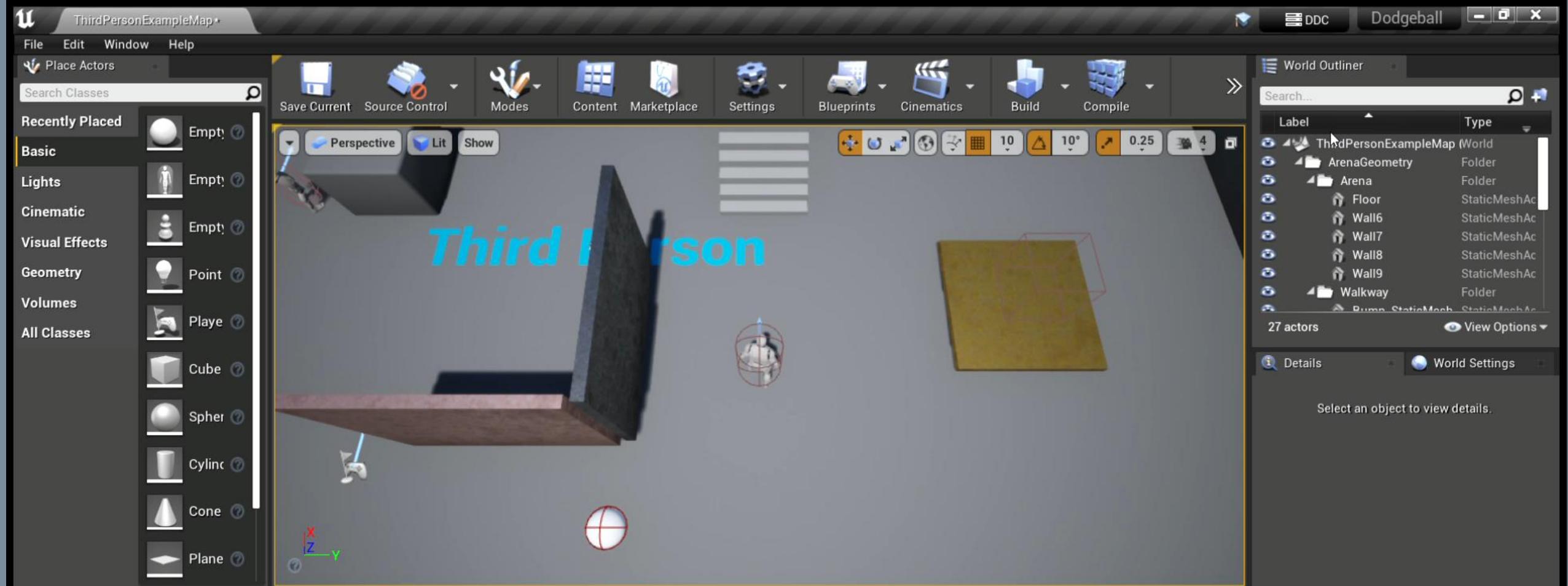
At the bottom, status bars show "100 %", "문제가 검색되지 않음" (No problems found), "줄: 75", "문자: 3", "혼합", "CRLF", and "솔루션 탐색기 Git 변경 내용". A blue footer bar at the very bottom contains the message "저장되었습니다." (File saved).



This screenshot shows the Content Browser in the Unreal Engine 4 Editor. The top bar includes the "Add/Import" button, "Save All" button, and navigation icons. The Content Browser interface has a search bar, filters, and a preview area. The left sidebar shows the project structure under the "ThirdPersonCPP" folder, including "Content", "Geometry", "Mannequin", "Physics", "StarterContent", "ThirdPerson", and "ThirdPersonCPP" (which is expanded). The right side shows a grid of blueprint assets: "BP\_Dodgeball Projectile", "BP\_EnemyCharacter" (highlighted with a red arrow), "BP\_GhostWall", "BP\_VictoryBox", "BP\_Wall", and "ThirdPersonCharacter". A red arrow points to the "BP\_EnemyCharacter" asset. At the bottom, it says "6 items (1 selected)" and "View Options".







The Content Browser panel at the bottom of the screen shows the following structure under "Content/ThirdPersonCPP/Blueprints":

- BP\_DodgeballProjectile
- BP\_EnemyCharacter
- BP\_GhostWall
- BP\_VictoryBox
- BP\_Wall
- ThirdPersonCharacter

The status bar at the bottom indicates "6 items (1 selected)" and "View Options".