

Unreal Engine 4 Blueprint: Ladder Volume

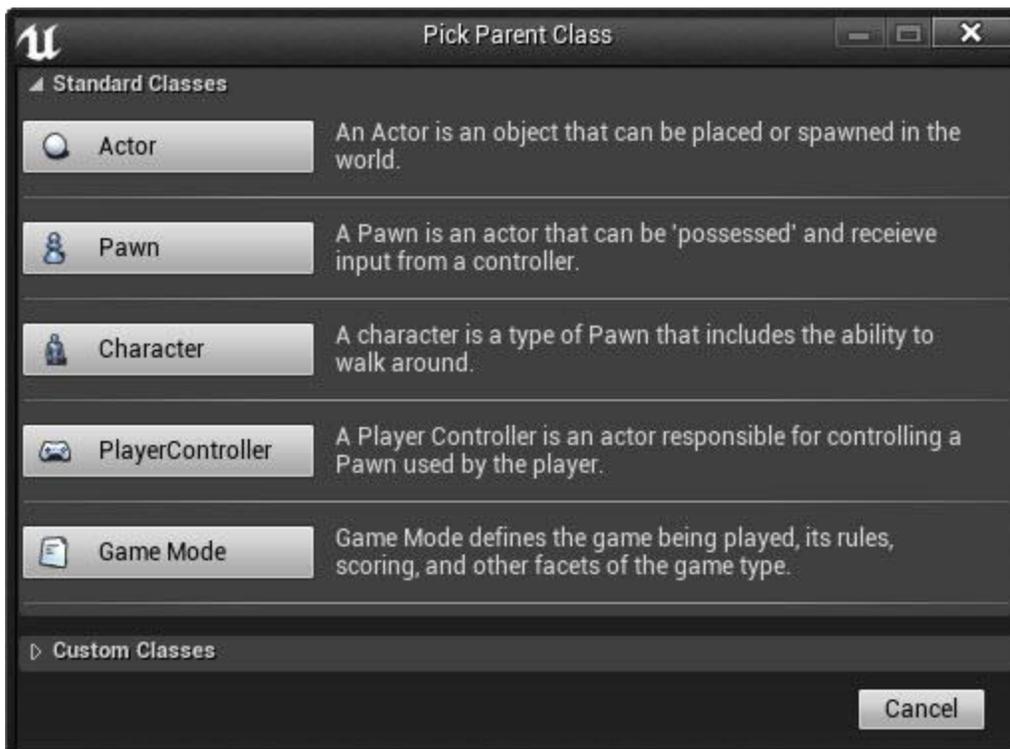
Introduction

Like many of you, I have been working my way through Unreal Engine 4 and learning all I can about the flexible Blueprint system. In many ways, Blueprint has you think more like a programmer than Kismet ever did but the power this system wields goes beyond what that old system could accomplish. So I took it upon myself to learn how to use Blueprint and implement features that I can use in my current and future game projects using the new Class Blueprint, self-contained systems that have both a mesh and functionality saved as a reusable asset. Taking a challenge from a friend who uses mostly Unity, I dove in to creating something that the community seemed to be calling for, a Ladder Volume. ***Currently, this is designed for a single player game. This tutorial assumes some knowledge of using Blueprint.**

The first step to creating this Blueprint is to click the Blueprint button and select New Class Blueprint.



2. Selecting this option brings up this menu.

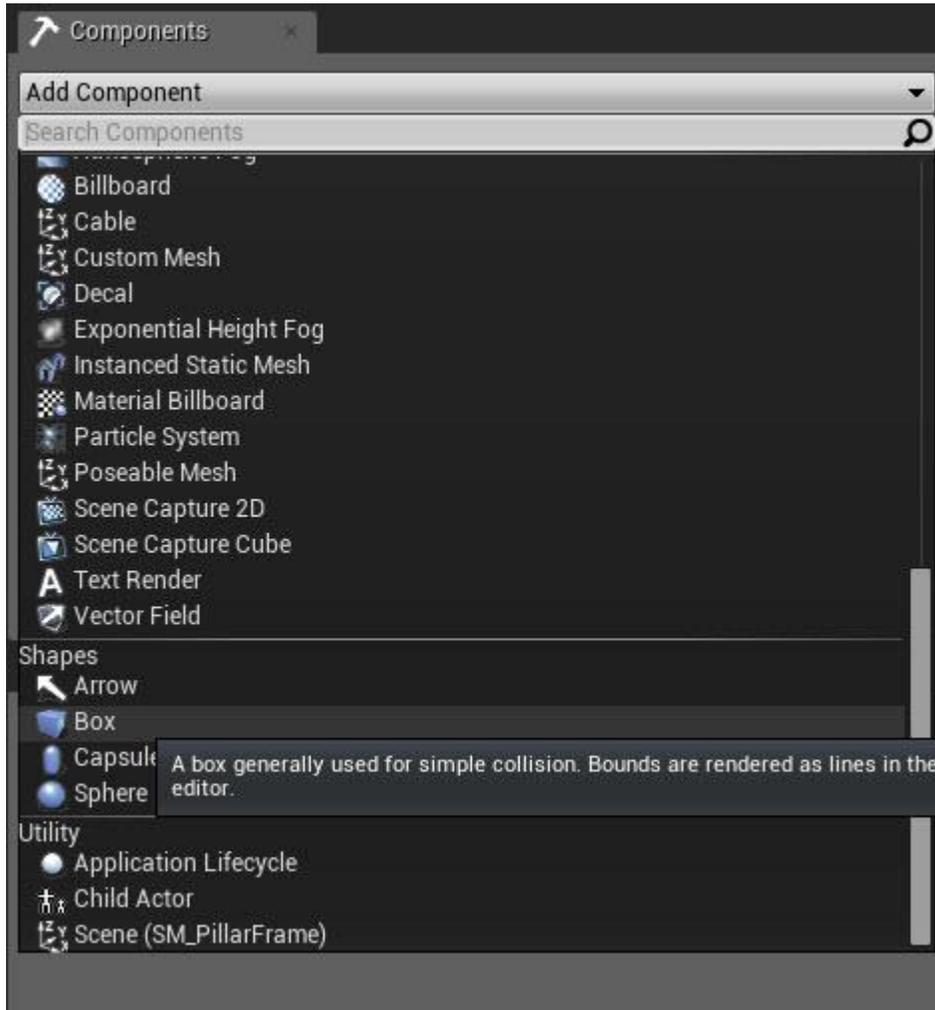


3. Select Actor

Building the Ladder with Components

This takes us to our new Class Blueprint and the Components Screen. Components allows us to assemble our ladder using props, basic shapes, text, and many other options.

4. Start by clicking the Add Component drop down, scrolling down to Shapes, and selecting Box.



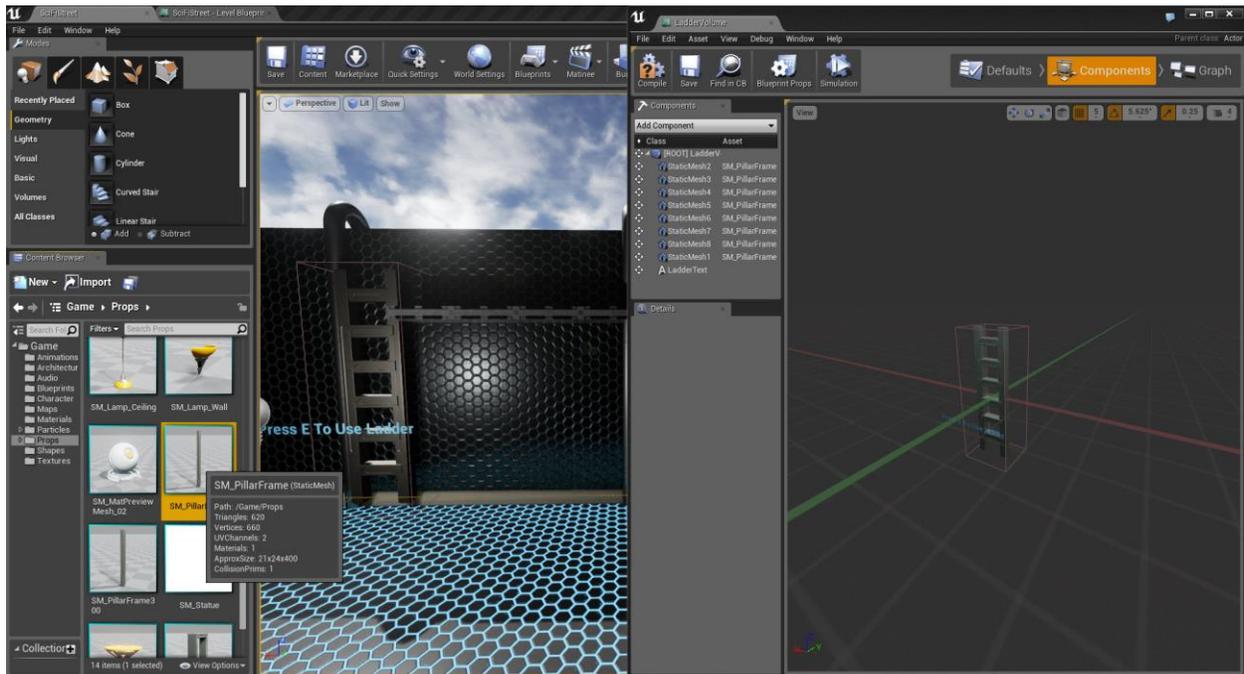
This will add a box to the Root of our Blueprint. The Root is the object to which all other objects will be attached and will serve as our trigger volume for the ladder.

5. Change the box settings in the Details Panel



I gave it a variable name of LadderVolume and changed the Box Extents to what you see above. The ladder will have a height of 200 units. Feel free to make it as large or small as you like.

6. Begin dragging components from the Props folder into your Blueprint. I used the SM_PillarFrame to build my ladder.



Props can be moved around just like you would in the Perspective Viewport. Arrange your ladder pieces so that they fit in the box.

7. Add a Text Renderer from the Add Component drop down so that we can tell the player how to use the ladder.

8. Move it to a good location and change the text in the Details Panel. You might also want to change the color to something more visible. Turn off its Visibility as well, so we can toggle it later.

Now, let's move on to making this thing functional!

Detecting the Player and Handling Inputs

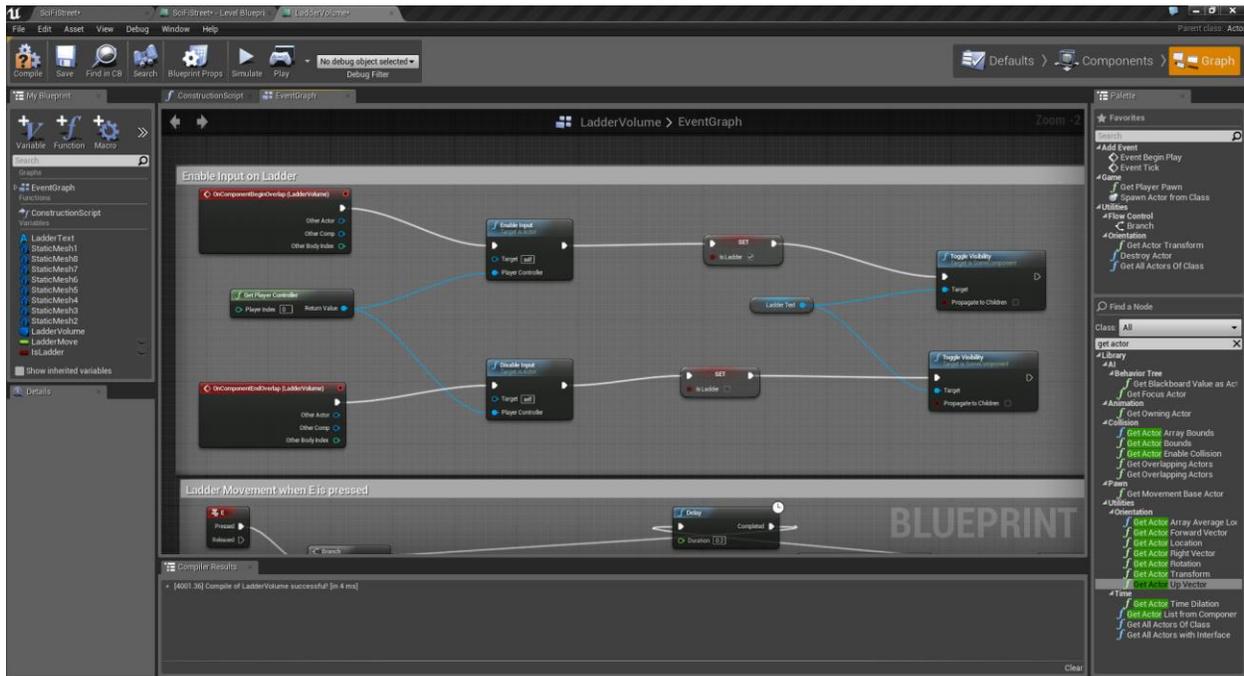
Now here is the fun part. We have to tell Blueprint to recognize that there is a player in the volume, that the player is pressing and holding down the E key, and to move the player up in the world. Easy right?

9. Click the Graph Tab in the top right of the Class Blueprint

10. Click the LadderVolume variable in the list from the left.

Blueprint menus are context sensitive and UE4 needs to know what Component we want to create events for.

11. Create the following Blueprint. Utilize the search box in the Find A Node box on the right. Create a new Variable by clicking the Variable + button in the My Blueprint Pane.

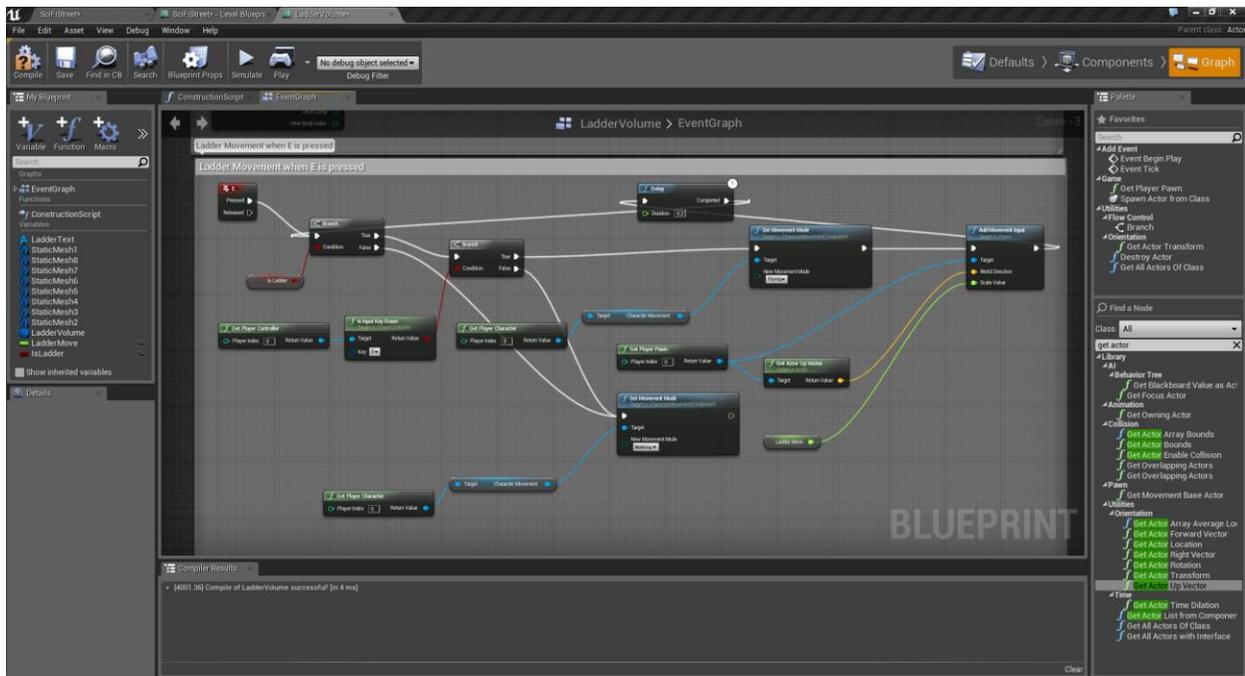


What we are telling Blueprint is that when the player enters the volume Enable Input so we can detect if the right key is pressed. We also want to set the IsLadder variable to True when the player enters and False when they leave. Lastly, I Toggle Visibility on the LadderText so that it appears when the player enters and disappears when they leave.

Moving the Player

Now we want to move the player up in the world. The ladder volume does this by changing the player's movement to be flying temporarily. If the player leaves the volume or stops holding the E key, the movement mode is set back to walking. I haven't tried it yet but I am sure you could call a custom climbing animation here.

12. Create the following Blueprint. Utilize the search box in the Find A Node box on the right. Create a new Variable by clicking the Variable + button in the My Blueprint Pane.



This was the hardest part to figure out. When the player presses E, the Branches check 2 things. First, is the variable IsLadder true, meaning is the player inside the volume. Second, it checks to see if the player is holding down the E key. If either is False, the player's movement mode is set back to Walking. If both checks are True, the player's movement is set to Flying and the input is sent to the player pawn. The player's location is found through Get Actor Up Vector and the Scale Value is set in the LadderMove variable. I found 5.0 to work pretty well but feel free to use your own value. Finally, a Delay causes a recheck of the 2 variables every 0.2 seconds.

13. Compile your Class Blueprint and Save All your hard work. Drop a copy of your Class Blueprint into your level and Play. Walk up to the ladder, your text should display. Hold E and watch the player rise!

About Me



My name is Justin Plowman. I am Indie Game Developer and Educator based in Grand Rapids, MI. I currently teach 3d Art and Game Development at the West Michigan Center for Arts and Technology, a nonprofit afterschool program for teens. My current project, Wizzit, is an adventure puzzle game for mobile platforms, currently being built in Unreal Engine 4.

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