Week 4, Video 1: Ball Functionality

A Truly Unreal Curriculum

Overview

Lecture: **Week04_Video01_BallFunctionality**

The objective of this lecture is to continue with the scripting process from the previous lecture and apply it to the other paddle and the pong ball.

Outcome

Students will be adding functionality into the ball for their game, Pong.

Nodes Used in Lecture

Node	Description
Event BeginPlay	Event when play begins for actor
Set Physics Linear Velocity	Sets the linear velocity of an actor
Print String	Prints a string to the log or screen
Cast To	Attempts to check if the object you are casting from is the object you cast to in order to access specific properties
Random Float in Range	Generate a random number between Min and Max values
Event Hit	Event when this actor bumps into a blocking object or blocks another actor that bumps into it.

Adding Initial Movement to Ball

- Select the cube which was set in the middle of your pong arena. This cube is the ball that will be used in your game
- Press the blue *"Edit Blueprint"* button in the Details Panel. In the drop-down menu that opens up, select *"Open Blueprint Editor"*
- In the Event Graph tab of the Blueprint Editor, add the Static Mesh Component by selecting it from the Components panel located to the left of the Editor and drag it to the Blueprint
- Drag out the output node and release it to open up the menu to search for nodes
- Search for the *"Set Physics Linear Velocity"* node and select to add
- In the node, right-click the New Vel input and press Split Struct Pin. Set the New Vel Y to **750.0**
- Right-click the Blueprint and add the *"Event BeginPlay"* node. Drag the output of this pin to the input (white triangle at the top) of the Set Physics Linear Velocity node
- Select the ball once again and in the Details Panel, make sure the following settings are selected.

Mobility	ticked
Simulate Physics	ticked
Enable Gravity	unticked
Lock Position	**X:** unticked **Y:** ticked **Z:** ticked
Lock Rotation	**X:** ticked **Y:** ticked **Z:** ticked
Simulates Generates Hit Events	ticked

Adding Deflection Mechanics

- Open the Blueprint Editor with the ball selected and go to the Event Graph tab
- Add an Event Hit node to the graph
- Search for the *“Cast To p2_paddle_Blueprint”* node and add it to the graph
- Drag the data output pin of the Event Hit node to the input pin of the Cast To p2_paddle_Blueprint node
- In the Event Hit node, drag the blue output pin that corresponds to Other and drag it to the blue input pin that corresponds to Object in the Cast To p2_paddle_Blueprint node
- Add another Set Physics Linear Velocity node. Drag the output pin of the Cast To p2_paddle_Blueprint node to the input pin of the Set Physics Linear Velocity node you just added
- Once again, right-click the New Vel input of the Set Physics Linear Velocity node and press Split Struct Pin. Set the New Vel Y to **-750.0**
- Search for the “Cast To p1_paddle_Blueprint” node and add it to the graph
- Drag the output pin of the Cast To p2_paddle_Blueprint node that corresponds to the Cast Failed to the input pin of the Cast To p1_paddle_Blueprint node you just added
- Once again, add another Set Physics Linear Velocity node
- Drag the output pin of the Cast To p1_paddle_Blueprint node to the input pin of the Set Physics Linear Velocity node you just added and set the New Vel Y value to **750.0** after splitting the pins
- In the Event Hit node, drag the blue output pin that corresponds to Other and drag it to the blue input pin that corresponds to Object in the Cast To p1_paddle_Blueprint node

Random Vertical Deflection

- Search for and add a *“Random Float in Range*” node and add it to your Event Graph
- Set the Max value of the node to **500.0** and the Min value to **-500.0**
- Drag the green Return Value output pin of the Random Float in Range node to the New Vel X input pin of the Set Physics Linear Velocity node with the -750.0 New Vel Y value
- Drag another green Return Value output pin of the Random Float in Range node to the New Vel X input pin of the Set Physics Linear Velocity node with the 750.0 New Vel Y value

Homework Assignment

Complete A3: Wall Deflection in Homework Assignment Week 4-6 before continuing with the course.