

# Week 3, Video 3: Scripting Paddles

A Truly Unreal Curriculum

## Overview

Lecture: **Week03\_Video03\_ScriptingPaddles**

The objective of this lecture is to demonstrate how to convert your world into a functioning game by adding user input.

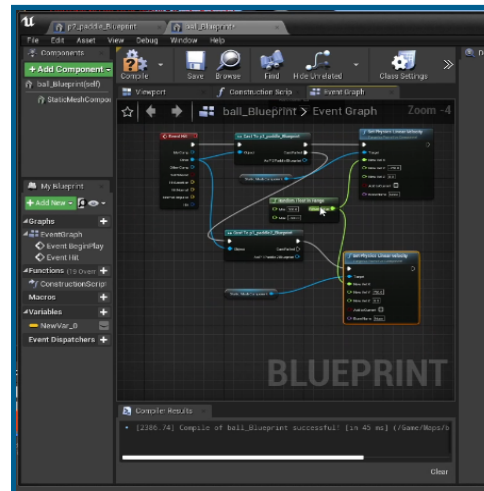
## Outcome

Students will be adding functionality into the player paddles of their pong arena and will also learn how to debug.

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## What is the Blueprint Editor?

The Blueprint Editor is a node-based graph editor for creating and editing visual scripting node networks which are called Blueprints. Blueprints can drive level-based events, control the behaviour of game objects, and can even be used to control animations in more complex games.



## Adding Scripts to Walls

- Select a wall and go to the Details Panel and click the blue button near the top of the panel called “Blueprint/Add Script”
- This will open up a “Create Blueprint From Selection” window. Tick the StaticMeshActor option under the Parent Class section
- Press Ok and exit the Blueprint editor
- Use the renaming feature in the World Outliner to remove the “\_Blueprint” that gets added to the name of the wall you selected.
- Repeat the above steps with the other three walls.

## Adding Keyboard Mappings

- Click on Settings which is located right in the middle of the toolbar above the viewport
- Scroll through the settings on the left of the window and press Input under Engine
- Under the Bindings header, press the + icon beside Axis Mappings. Rename this mapping to p1\_Yaxis.
- Open up the dropdown menu right below and search for ‘W’ which will open up the W option under Keyboard. Keep its scale at 1.0
- Add another mapping by clicking on the + icon beside p1\_Yaxis. Open up the dropdown menu of the new mapping that appears and search for ‘S’ which will open up the S option under Keyboard. Keep its scale at -1.0

## Nodes Used in Lecture

Node	Description
StaticMeshComponent	Used to create an instance of a Static Mesh. A Static Mesh is a unit of geometry that is composed of a static set of polygons. It is the most basic elements used for creating objects and geometry for levels in Unreal Engine.
Add Force	Adds force to actor
Print String	Prints a string to the log or screen



# Scripting Player Paddles

## STEP 1: Setting Keyboard Controls

- Click on Settings which is located right in the middle of the toolbar above the viewport
- Scroll through the settings on the left of the window and press Input under Engine
- Under the Bindings header, press the + icon beside Axis Mappings. Rename this mapping to p1\_Yaxis.
- Open up the dropdown menu right below and search for 'W' which will open up the W option under Keyboard. Keep its scale at 1.0
- Add another mapping by clicking on the + icon beside p1\_Yaxis. Open up the dropdown menu of the new mapping that appears and search for 'S' which will open up the S option under Keyboard. Keep its scale at -1.0

## STEP 2: Event Graph

- Select the p1\_paddle and press the Blue *"Blueprint/Add Script"* button near the top of the Details Panel. Click on the green Select button in the window that opens up
- There are three tabs located under the toolbar near the top which switches between the Viewport, Construction Script and Event Graph. Go to the Event Graph
- Select and delete the three default nodes present in the Event Graph
- Right-click anywhere on the Event Graph. This will open up a menu. Search for p1\_YAxis. Click on p1\_YAxis that shows up under Axis Events at the top

## STEP 3: Identifying Subcomponent

- Click and drag the StaticMeshComponent (Inherited) subcomponent in the panel beside the Event Graph. The component would be right underneath *"p1\_paddle\_Blueprint"*
- Place the component in the Event Graph.

## STEP 4: Adding Force Node

- Click and drag the blue data output pin of the StaticMeshComponent node and release it to open up the nodes menu
- Search for the *"Add Force"* node and select to add the node into the Events Graph
- Connect the execution output pin (which is in the shape of a white outlined triangle) of the InputAxis p1\_YAxis to the execution input pin of the Add Force Node



## STEP 5: Changing Force Vector

- In the Add Force Node, right-click the yellow input data pin that corresponds to Force and select Split Struct Pin

## STEP 6: Using Print String Node to Debug

- Right-click anywhere on the Events Graph to open up the node search menu and search for the “*Print String*” node. Select the node to add
- Connect the execution output pin of the InputAxis p1\_YAxis to the execution input pin of the Print String Node
- Connect the green Axis Value output pin of the InputAxis p1\_YAxis to the purple In String input pin of the Print String Node. Since they are of different data types, Unreal Engine will add a converter automatically to switch data types
- This node will show visually on-screen the value of the InputAxis p1\_YAxis node

## STEP 6: Setting Player Controller

- To the right of the Event Graph is a Details setting panel. Scroll down until you reach the Input section
- Use the dropdown box to change the Auto Receive Input to Player 0

## STEP 7: Connecting Add Force Node

- Back in the Event Graph, connect the execution output pin of the Print String node to the execution input pin of the Add Force node
- Connect the green Axis Value output pin of the InputAxis p1\_YAxis to the green input pin corresponding to Force X of the Add Force node

## STEP 8: Setting Mobility

- Select the p1\_paddle in the World Outliner
- In the Details Panel, go to the Transform section at the top and press Movable from Static in the Mobility row



## STEP 9: Activating Physics Simulation

- Return to the Event Graph and select the StaticMeshComponent (Inherited) subcomponent of the p1\_paddle\_Blueprint
- Go to the Details Panel to the right of the Event Graph and scroll down to the Physics section
- In this section, tick Simulate Physics and untick Enable Gravity

## STEP 10: Adding a Force Multiplier

- With the p1\_paddle selected, go to the Event Graph and right-click to add a “force \* force” node
- Connect another green Axis Value output pin of the InputAxis p1\_YAxis to the green input data pin of the force \* force node and connect the green output data pin of the force \* force node to the green input pin corresponding to Force X of the Add Force node as well as the Print String node (through data converter)
- In the force \* force node, change the value to 1000
- Tick the AccelChange option in the Add Force node

## STEP 11: Adding Constraints to Paddle

- Return to the Event Graph and select the StaticMeshComponent (Inherited) subcomponent of the p1\_paddle\_Blueprint
- Go to the Details Panel to the right of the Event Graph and scroll down to the Physics section
- In this section, go to the Constraints row and tick Lock Position for the Y and Z axes and tick Lock Rotation for the X, Y and Z axes

## Homework Assignment

Complete [A2: Scripting Paddle 2](#) in [Homework Assignment Week 1-3](#) before continuing with the course.

