Week 5, Video 1: All About UI

A Truly Unreal Curriculum

Overview

Lecture: **Week05_Video01_AllAboutUI**

The objective of this lecture is to implement User Interface in the form of a Heads-up Display

Outcome

Students will be using the Unreal Motion Graphics UI Designer to create a scoring system for their game, Pong.

Creating Variables for Ball

- With the pong ball selected, open the Blueprint Editor and go to the Components panel located to the left of the Editor
- Hover over Variables until an orange button appears. Press it to create a variable
- Select the new Variable that appears in the panel and go to the Details panel located to the right of the Editor
- Rename the variable *"P1_Score"* and change its Type to Float
- Repeat this process again to create a second variable called *"P2_Score"*

What is UMG?
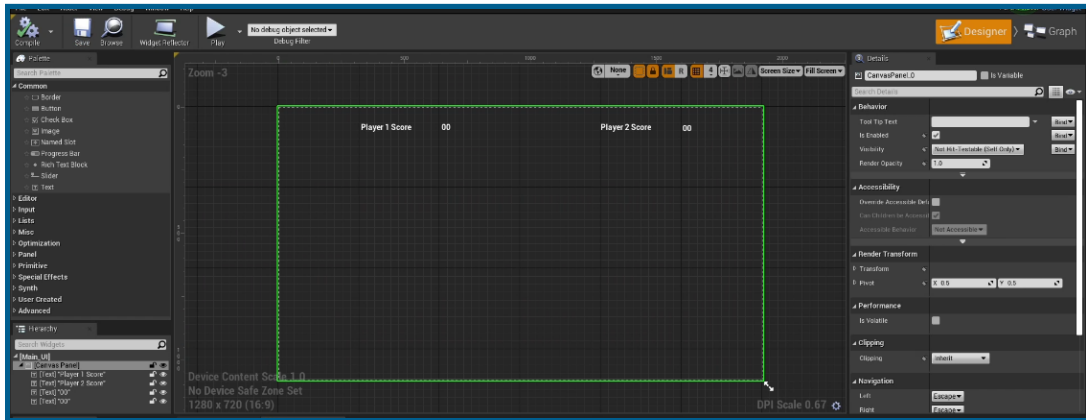
Unreal Motion Graphics UI Designer (UMG) is a visual User Interface (UI) development tool that can be used to create UI such as menus, HUDs and more. UMG is mainly widget-based. These widgets are developed in a specialized Widget Blueprint which uses 2 tabs: the Designer tab allows for the visual layout of the UI while the Graph tab facilitates the functionality behind the Widgets.

Nodes Used in Lecture

Node	Description
float + float	Addition (x + y)
Create Widget	Calls a widget blueprint
Add to Viewport	Adds an element to the game's viewport

Scripting Score Variables

STEP 1) Settings Scores to 0

- Go to your Event Graph and drag and drop both of your variables beside the Add Random Initial Velocity node which is beside the EvenBeginPlay node. Select the Set option when prompted
- Connect the output of the Add Random Initial Velocity node to the input of P1_Score and connect the output of P1_Score to the input of P2_Score

STEP 2) Incrementing Scores by 1

- Go to the goal-scoring portion of your Event Graph.
- For the portion which sets up the velocity for p1_paddle_Blueprint, drag the P1_Score variable and select the Get option when prompted
- Add a *"float + float"* node and connect the output of the Get P1_Score variable to the Input of the float + float node. Make sure the float + float node is set to 1
- Add another P1_Score variable and select the Set option when prompted. Connect the output of the float + float node to the green triangle input of the Set P1_Score variable and connect the main output of the Add Random Initial Velocity Direction to the main input of the Set P1_Score variable
- Repeat this process with P2_Score in the portion which sets up the velocity for p2_paddle_Blueprint

STEP 3) Building User Interface

- Go to the Content Browser located below the viewport and right click and go to Create Advanced Asset → User Interface → Widget Blueprint
- Rename this new widget *"Main UI"* and double click to open the UMG Designer
- Click the Graph button which is located towards the top right to open the Blueprint Graph.
- In the My Blueprint panel located towards the left, create two new variables called UI_P1Score and UI_P2Score set to type Float and press Compile
- Click the Designer button (beside the Graph button) to return to the Widget Designer
- In the Palette panel located towards the left, under Commons, select, drag, and drop a Text widget into your designer. It should be near the top of the dotted frame which represents your game screen
- With the text widget selected, go to the Details Panel located towards the right, and under Content, change the Text to *"Player 1 Score"*

- Do the same with another text widget for *"Player 2 Score"* (you can also control C and V to copy and paste the original text widget)
- Set two more text widgets beside both Player 1 Score and Player 2 Score and set the text to *"00"*. For both of these widgets, press the Bind option (right beside text box) and set to the UI_P1Score and UI_P2Score variables
- Make sure to move all these widgets around in the Designer until they are in a clean orientation and Save

STEP 4) Mapping UI Floats to Ball Float Variables

- Open up the ball's blueprint and go to the P1_Score and P2_Score variables which set the scores to 0
- Add a *"Create Widget"* node and set the class to Main UI
- Connect the output of the Set P2_Score variable to the input of the Create Main UI Widget node
- Add an *"Add to Viewport"* node and connect the main output of the Create Main UI Widget node to the main input of the Add to Viewport node
- Connect the blue Return value output of the Create Main UI Widget node to the Target input of the Add to Viewport node
- Right-click on the blue Return output of the Create Main UI Widget and select *"Promote to Variable"* in the menu that appears
- The variable will show up in the My Blueprint panel under Variables. Rename this variable to UI Reference
- Connect the blue output of the UI Reference variable to the Target input of the Add to Viewport node and connect the main output of the UI Reference variable to the main input of the Add to Viewport node. Make sure the output string of the Create Main UI Widget node is disconnected from the input of the Add to Viewport node

STEP 5) Referencing UI Variable to Incrementing Scores

- Go to the incrementing score portion of your Event graph. Drag and drop the UI Reference variable you created and set to Get
- Drag out the output and release to add a node called Set UI P1Score
- Connect the green value output of the Set P1_Score variable (which you created for incrementing Player 1's score) to the green value input of the Set UI P1Score node. Connect the main output of the Set P1_Score variable to the main input as well Set UI P1Score node as well
- Drag out another output chain of the UI Reference variable and repeat the same process as above but with the Set UI P2Score and the Set P2_Score variable (which you created for incrementing Player 2's score)