WBP_MainMenu - Widget
WBP_Options - Widget
Feature - Main menu with Graphics Options menu

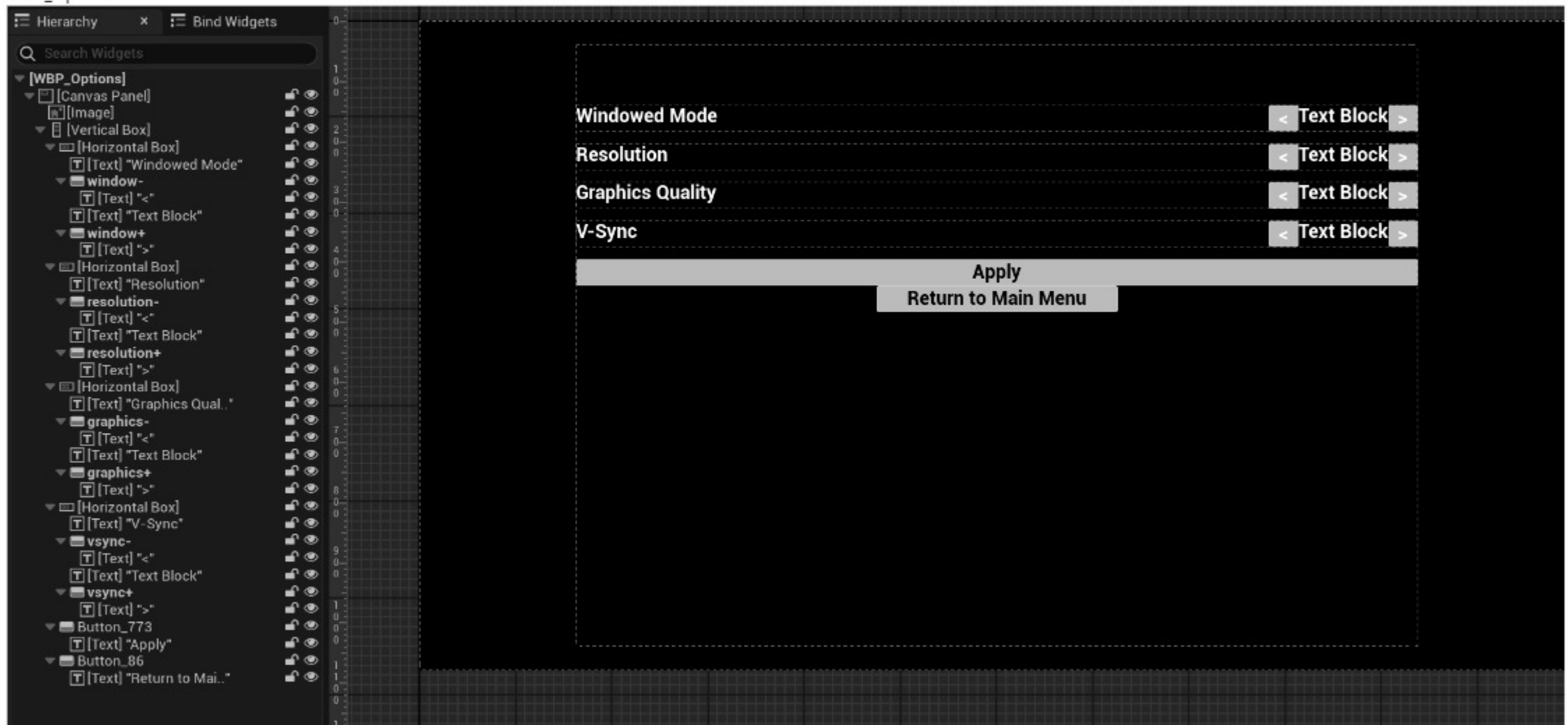**WBP_MainMenu**

Involved Variables
StartButton - Button
OptionButton - Button
QuitButton - Button

Involved Functions
Start Up Function - Event Construct
Button Functions - On Clicked
(StartButton/OptionsButton/QuitButton)

**WBP_Options**

Involved Variables
ApplyButton - Button
MainButton - Button
Graphics+ - Button
Graphics- - Button
Resolution+ - Button
Resolution- - Button
Vsync+ - Button
Vsync- - Button
Window+ - Button
Window- - Button
WindowMode - EWindow Mode Type Enum
ResolutionIndex - Integer
Resolution - Int Point
GraphicsIndex - Integer
VSync - Bool

Involved Functions
Return to Main Menu - On Clicked (MainButton)
Change Window Mode - On Clicked (Window+ or
Window-)
Change Resolution - On Clicked (Resolution+ or -)
Change Graphics - On Clicked (Graphics+ or -)
Change VSync - On Clicked (Vsync+ or -)
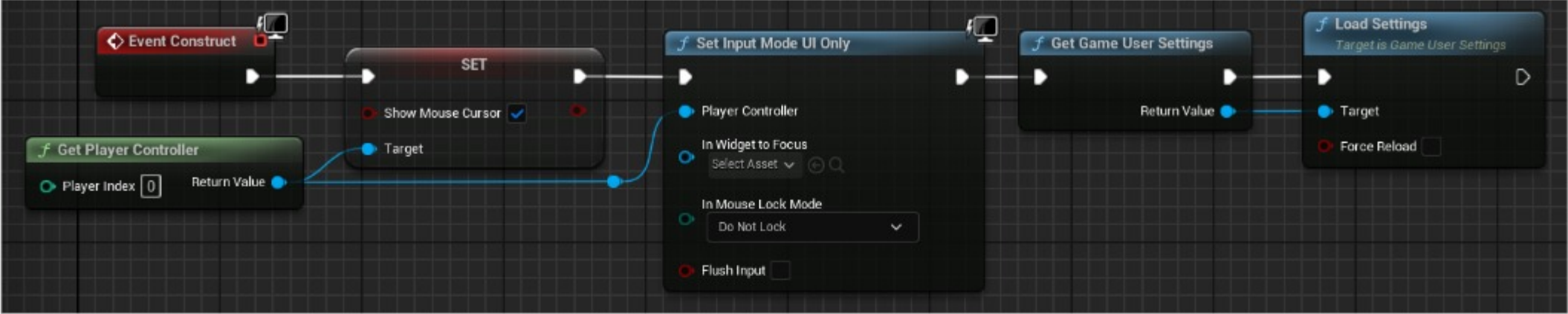Apply Changes - On Clicked (ApplyButton)
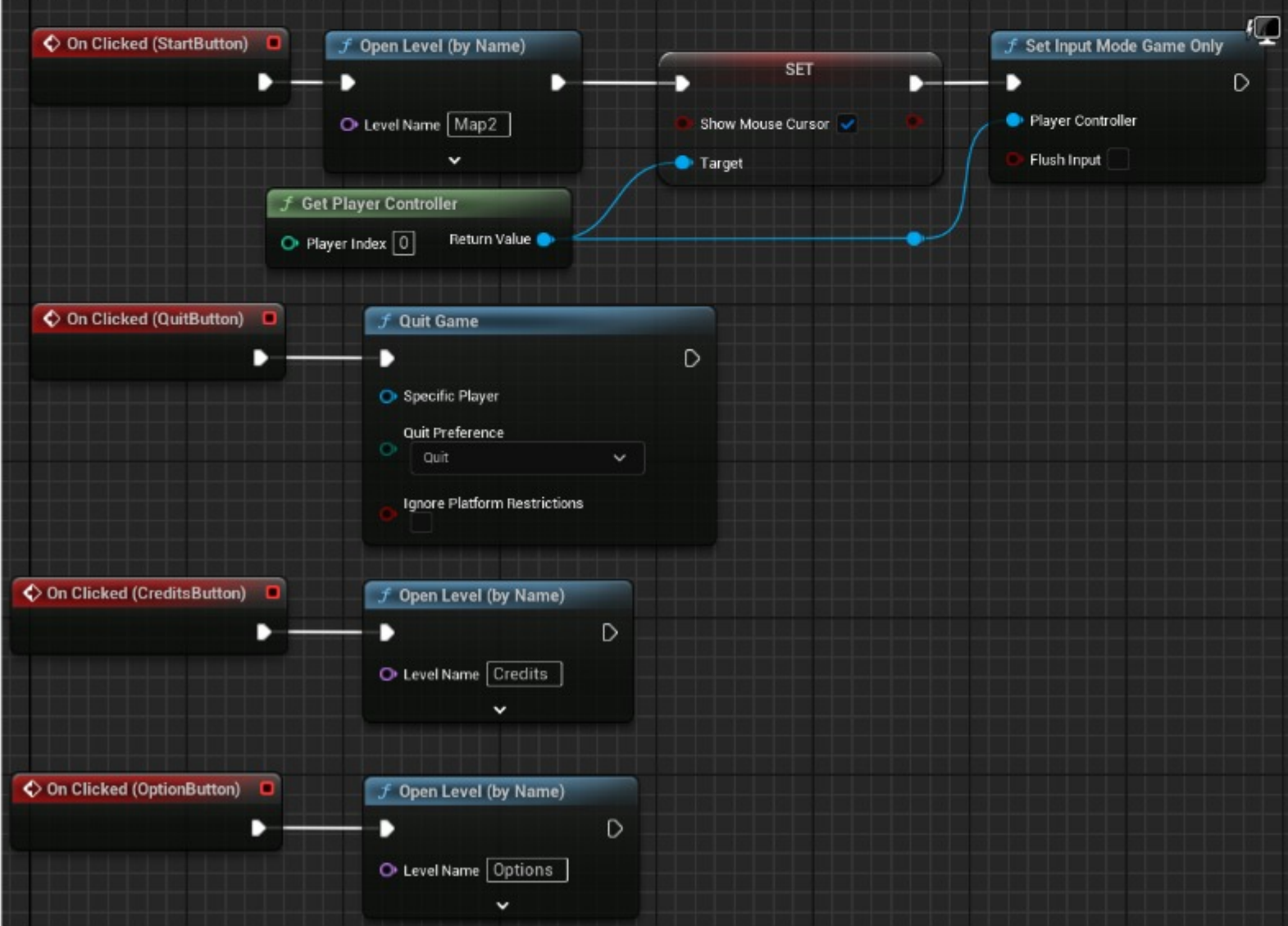Load Settings - Event Construct
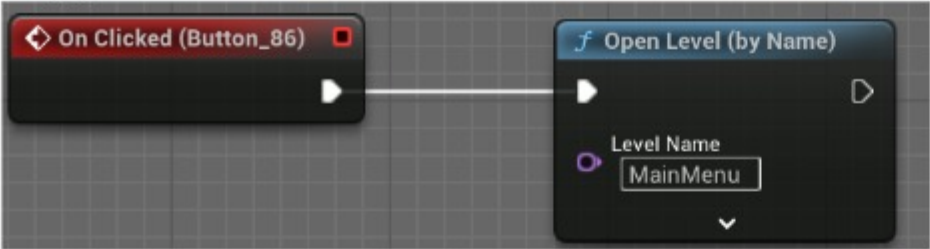
WBP_MainMenu



WBP_Options

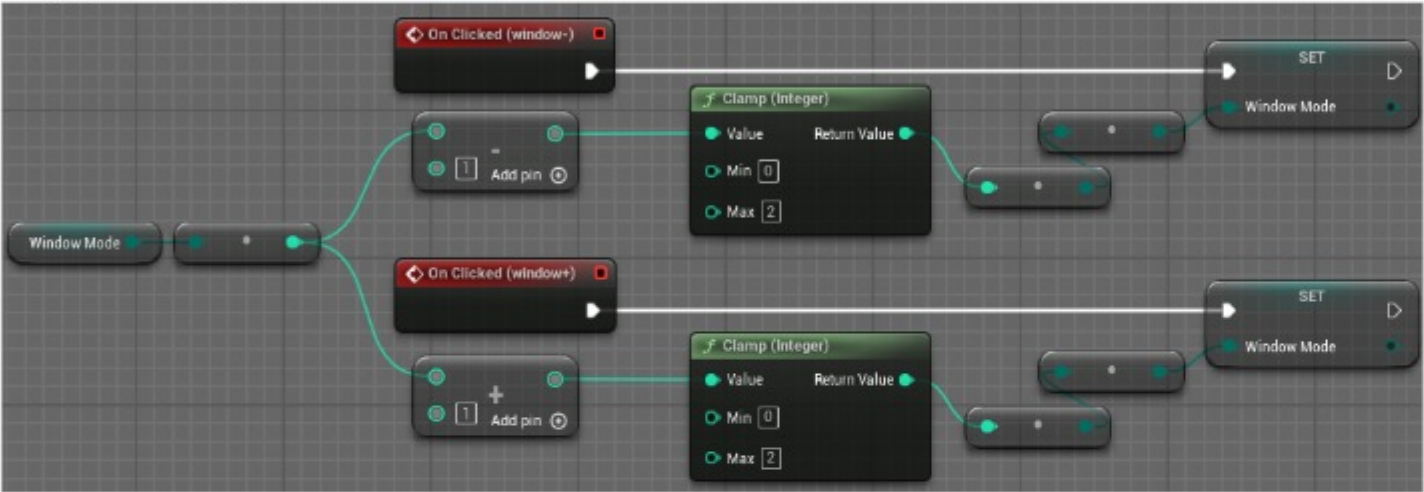## WBP_MainMenu Start Up Function



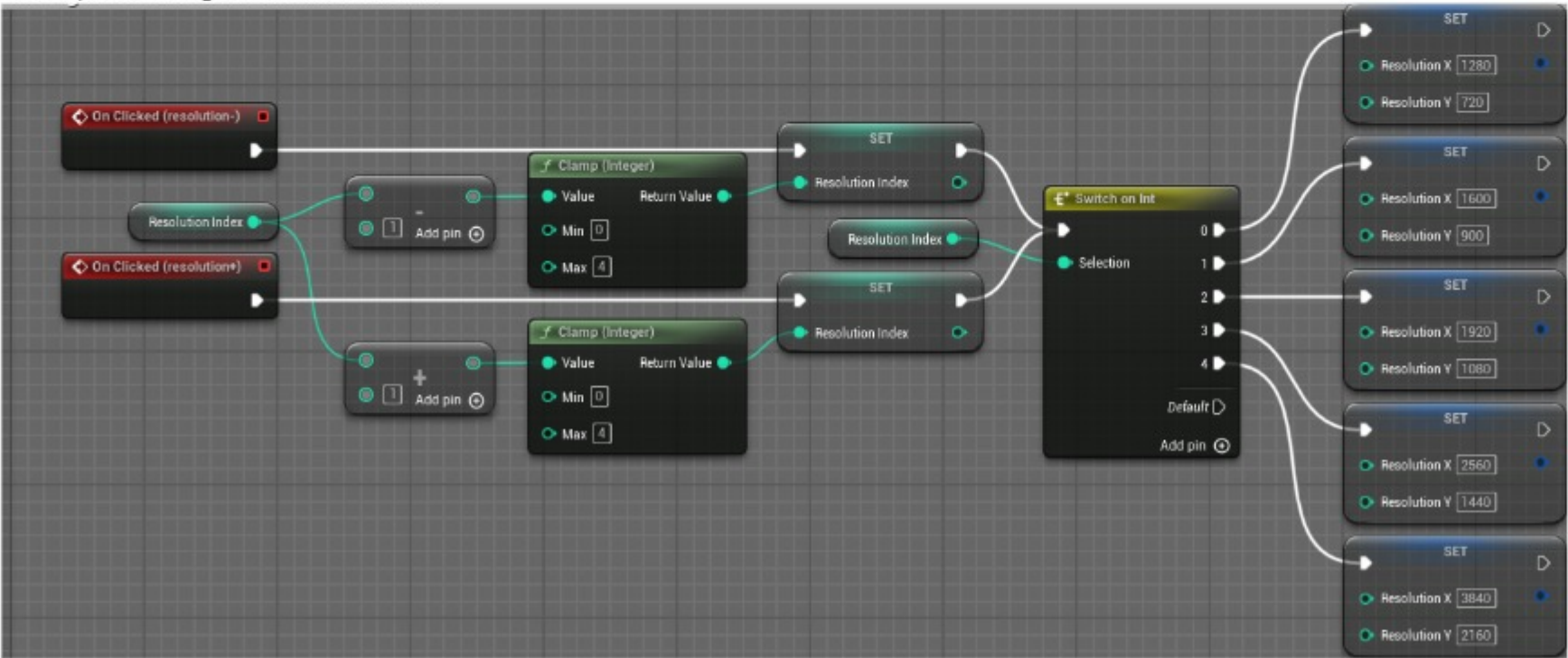## WBP_MainMenu Button Functions



## WBP_Options Return to Main Menu Function



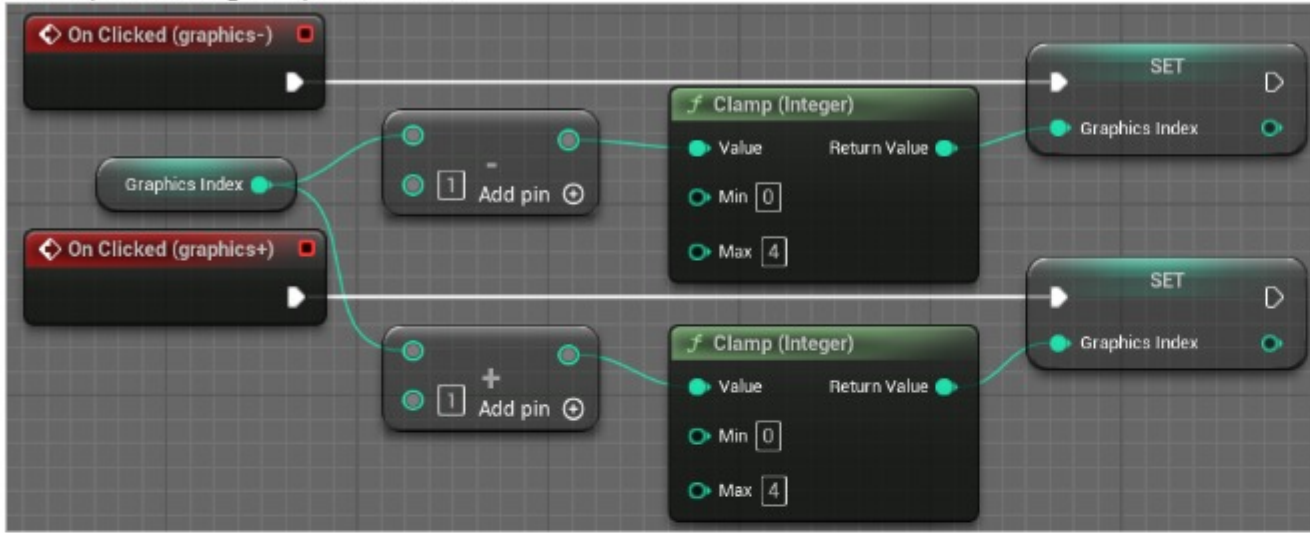## WBP_Options Change Window Mode Function
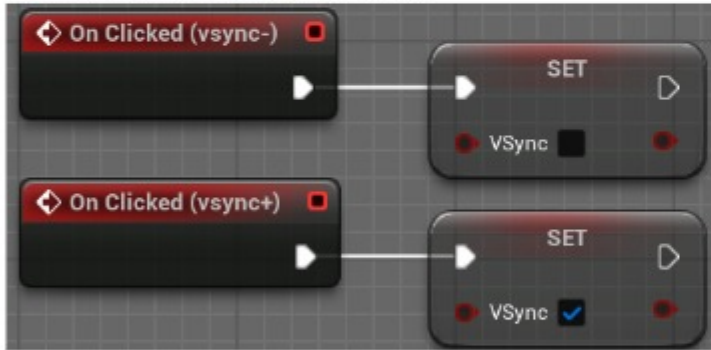


## WBP_Options Change Resolution Function
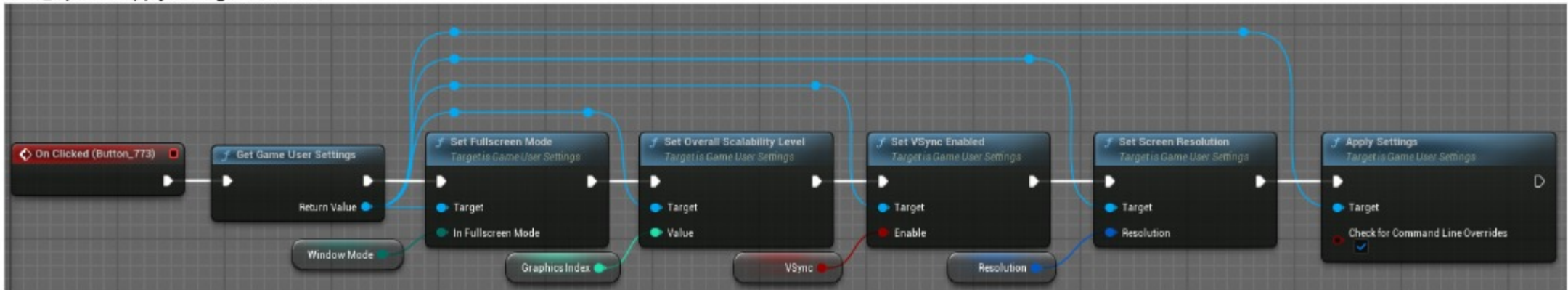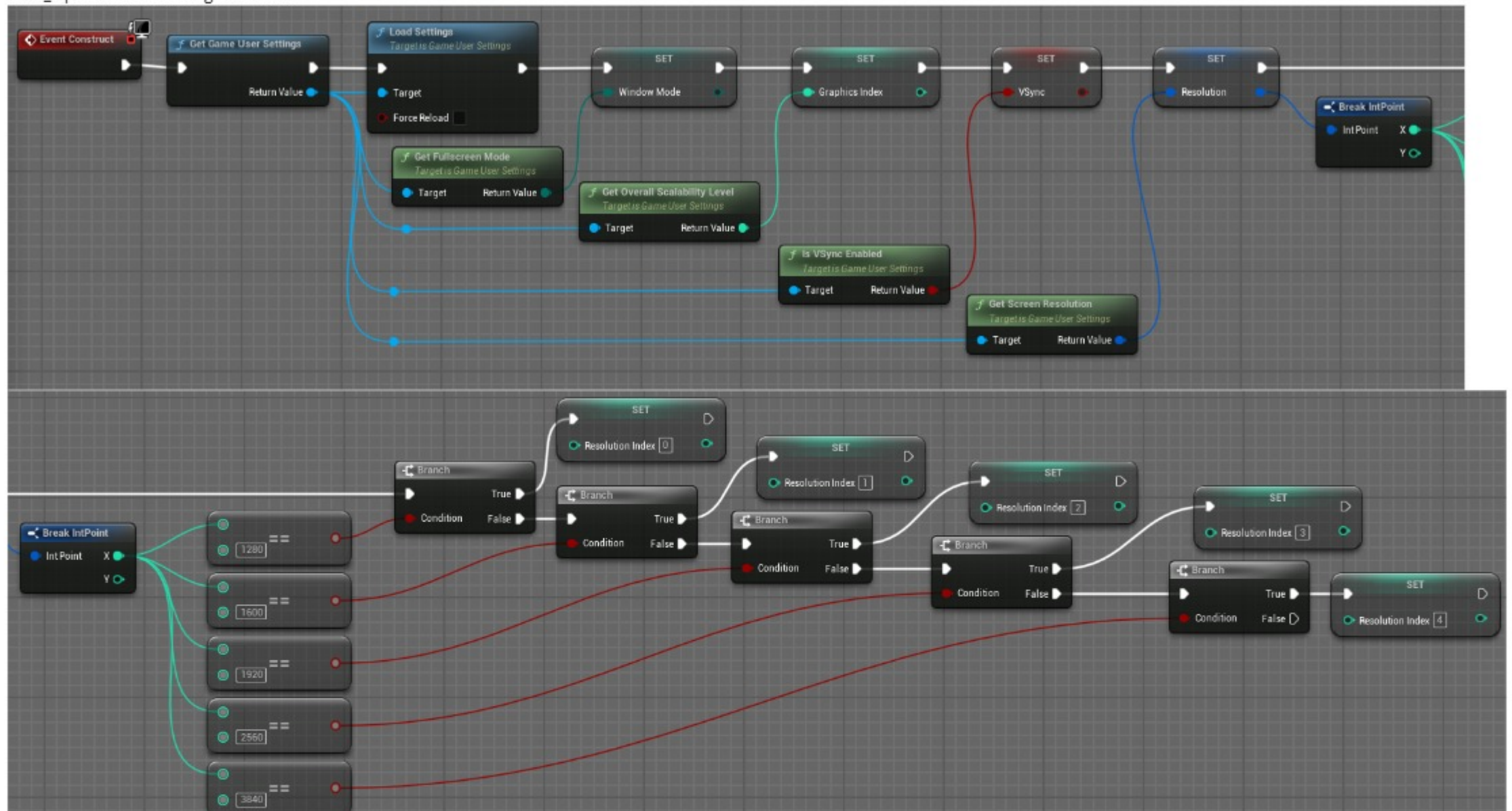
**WBP_Options Change Graphics Function**



**WBP_Options Change VSync Function**



**WBP_Options Apply Changes Function**



**WBP_Options Load Settings Function**

**Pseudo Code**

WBP_MainMenu Start Up Function
On Event Construct
  Set bool Show Mouse Cursor to True with target Player Controller
  Set Input Mode to UI Only with target Player Controller
  Get Game User Settings
  Load Settings with target Return Value of User Settings

WBP_MainMenu Button Functions
On Clicked (Start Button)
  Open Level by Name of Map02
  Set bool Show Mouse Cursor to False with target Player Controller
  Set Input Mode to Game Only with target Player Controller

On Clicked (Quit Button)
  Quit Game

On Clicked (Options Button)
  Open Level by Name of Options

WBP_Options Return to Main Menu Function
On Clicked (Main Button)
  Open Level by Name of MainMenu

WBP_Options Change Window Mode Function
On Clicked (Window-)
  Set EWindow Mode Type Enum WindowMode to value of WindowMode converted to an integer - 1, clamped at 0 and 2 and converted back from an integer.

On Clicked (Window+)
  Set EWindow Mode Type Enum WindowMode to value of WindowMode converted to an integer + 1, clamped at 0 and 2 and converted back from an integer.

WBP_Options Change Resolution Function
On Clicked (Resolution-)
  Set integer ResolutionIndex to value of ResolutionIndex - 1, clamped at 0 and 4.
  Switch on Int values 0 to 4.
    If 0, set Int Point Resolution to X = 1280 and Y = 720
    If 1, set Int Point Resolution to X = 1600 and Y = 900
    If 2, set Int Point Resolution to X = 1920 and Y = 1080
    If 3, set Int Point Resolution to X = 2560 and Y = 1440
    If 4, set Int Point Resolution to X = 3840 and Y = 2160

On Clicked (Resolution+)
  Set integer ResolutionIndex to value of ResolutionIndex + 1, clamped at 0 and 4.
  Switch on Int values 0 to 4.
    If 0, set Int Point Resolution to X = 1280 and Y = 720
    If 1, set Int Point Resolution to X = 1600 and Y = 900
    If 2, set Int Point Resolution to X = 1920 and Y = 1080
    If 3, set Int Point Resolution to X = 2560 and Y = 1440
    If 4, set Int Point Resolution to X = 3840 and Y = 2160

WBP_Options Change Graphics Function
On Clicked (Graphics-)
  Set integer GraphicsIndex to value of GraphicsIndex - 1, clamped at 0 and 4.

On Clicked (Graphics+)
  Set integer GraphicsIndex to value of GraphicsIndex + 1, clamped at 0 and 4.

WBP_Options Change VSync Function
On Clicked (Vsync-)
  Set bool VSync to False.

On Clicked (Vsync+)
  Set bool VSync to True.

WBP_Options Apply Changes Function
On Clicked (ApplyButton)
  Get Game User Settings
  Set Fullscreen Mode of target Return Value of User Settings to EWindow Mode Type Enum WindowMode.
  Set Overall Scalability Level of target Return Value of User Settings to integer GraphicsIndex.
  Set VSync Enabled of target Return Value of User Settings to bool VSync.
  Set Screen Resolution of target Return Value of User Settings to Int Point Resolution.
  Apply Settings to target Return Value of User Settings.

WBP_Options Load Settings Function
On Event Construct
  Get Game User Settings
  Load Settings of target Return Value of User Settings.
  Set Enum WindowMode to Fullscreen Mode of target Return Value of User Settings.
  Set integer GraphicsIndex to Overall Scalability Level of target Return Value of User Settings.
  Set bool VSync to Return Value of VSync Enabled of target Return Value of User Settings.
  Set Int Point Resolution to Screen Resolution of target Return Value of User Settings.
  Break Int Point Resolution
    If Resolution X = 1280
      Set integer ResolutionIndex to 0
    If Resolution X = 1600
      Set integer ResolutionIndex to 1
    If Resolution X = 1920
      Set integer ResolutionIndex to 2
    If Resolution X = 2560
      Set integer ResolutionIndex to 3
    If Resolution X = 3840
      Set integer ResolutionIndex to 4

## Summary and Explanation

### WBP_MainMenu Start Up Function

This simple function serves to ensure the player can see and use their mouse while in the Main Menu, and loads previous settings. It only runs once when the Main Menu is started, where it quickly sets mouse visibility to True, and sets the game mode to UI. It then gets the game settings and loads previous settings.

### WBP_MainMenu Button Functions

The first button, the Start Button, loads up the first level. It then undoes what was done in the Start Up Function by returning mouse visibility to False and setting the Input Mode to Game Only. The player is then ready to begin playing the game.

The Quit button does exactly as expected, quitting out of the game, using the handy internal Unreal method for quitting.

The Options button opens a new level named 'Options', where WBP_Options takes over.

### WBP_Options Return to Main Menu Function

This is a simple button to return back to the Main Menu without making any changes or after changes have been made.

### WBP_Options Change Window Mode Function

This function takes the Enum variable WindowMode and either adds or subtracts 1 after converting it to an integer. It is clamped at 0 and 2 so it cannot go beyond, and then converted back into an Enum for use in the Apply Settings Function.

### WBP_Options Change Resolution Function

The + and - buttons here serve only to change the value of the integer variable ResolutionIndex, adding or subtracting 1, to determine what our Int Point variable Resolution should become. It simply takes its former value, adds or subtracts 1, and then clamps that value at 0 and 4 so it cannot go beyond. It then takes that integer, and depending on its value, sets to the Int Point X and Y values to screen resolution values for use in the Apply Settings Function.

### WBP_Options Change Graphics Function

Similarly, this function works by adding or subtracting 1 to the integer GraphicsIndex depending on which button is pressed. This value is clamped at 0 and 4 to prevent it going beyond.

### WBP_Options Change VSync Function

This function is even simpler, either setting the bool VSync to True or False depending on which button is pressed.

### WBP_Options Apply Changes Function

This function is where the magic happens, taking the values of the variables determined in previous functions and having them determine actual changes. When the ApplyButton button is pressed, it gets a reference to the Game User Settings, and then proceeds through each setting one by one. First, it sets the Fullscreen Mode of the game using the Enum WindowMode determined in the Change Window Mode Function. It then changes the Overall Scalability of the window using the GraphicsIndex integer. Next, it either enables or disables VSync depending on the value of the VSync bool set in the Change VSync Function. It then sets the resolution using the values in the Int Point Resolution determined in the Change Resolution Function. Lastly, it applies these settings to the game, making the changes happen.

### WBP_Options Load Settings Function

This function serves to load all previous settings. It triggers once when the widget is first initialised, getting the Game User Settings and then Loading the settings. With these settings, it then sets the variables WindowMode, GraphicsIndex, VSync, Resolution and ResolutionIndex to where they should be. The ResolutionIndex is determined by the X value of the Resolution Int Point. With these changes, we now have a fully functioning main menu and options menu with persisting graphical changes, applicable to any game. While there are more options that could be changed such as audio or controls, this options menu focuses on the key graphics options found in most games.