**Helen Nicholson. /Udacity Project/ VR NanoDegree / HNStorytellersRevenge**

***Using Unity 2017-4-25f2 - Unity Long Term Support (LTS) version***

https://unity3d.com/unity/qa/lts-releases

***Developed on iMac Pro (2017) using macOS High Sierra v10.13.6,***

Processor 3.2 GHz Intel Xeon W, Graphics Radeon Pro Vega 56 8176 MB

Deployed onto iPhoneX iOS 12.1

**Description**

The StoryTellersRevenge is a prototype for a 360 video app voyaging the world with special focus on Califronia and Cullerfornia (Cullercoats Bay, England).

The main scene sets the scene with a desk with a story book that can be opened and pages turned with accompanying narrative providing intro to the story line for the app. Frozen island is satirical take on a desert island without sun.

The VidIntro scene leads the user into amazing 360 journeys travelling the seas and exploring deep blue waters around the world. More of a Protaginist Journey.

The user then gets to choose 1 of 2 endings – California or Cullerfornia. Cullerfornia is how the local tourisyt board sell Cullercoats Bay, in the NE England, United Kingdom.

The theme throughout is waters. 3D particles and animated objects are superimposed onto 360 video.

**Development Process**

360 videos of world travel provided by Udacity were used for the Intro video.

360 videos were stitched using AutoPano Pro and balanced using AutoPano Giga.

360 videos for Ending 1 were taken using a Ricoh Theta V 360 camera. Files were stitched using RicoTheta app.

Videos and audio were edited in Adobe Premier Pro.

Handbrake was used to convert files into a fast1080p30 format.

Switch was used to convert audio files into .wav files.

Google Resonance Audio was used to play audio so audio was handled within Unity.

Videos are all streamed from a dropbox folder.

This was quite a technical challenge using so many packages and applications – working out correct file formats and trying to overcome problem of streaming videos on an iPhone with only mediocre internet access.

I set up a Test360Video application in Unity just to test streaming – with bare minimum files – and found that the performance of streaming videos in this test was quite slow and probably not very encouraging for a user.

Until streaming performance within a Unity app can be improved then I think I will stick to importing videos into the Unity assets files rather than depend on variable result s of streaming.

I want users to want to use my app again and to be sure that audio and video synchronise.

However there was a lot to be learnt in a very lengthy and re-iterative process.

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**SCENES**

**Scene : Main**

Zooms into desk with closed book, Vacation box and 4 coloured cubes.

Particles and rotating title – based on PowerBooks asset

Click on book to open pages and listen to narration (introduction)

Click on Vacation Box to goto FrozenIsaldn scene

Clcik on cubes to go to interactive 360 video scens

Blue box -> bluewater video

**Scene : FrozenIsland**

**Scene : VidIntro**

Plays 360 Video on a Sphere using an Unlit/FlippyShader streaming video from a URL to a dropbox link

Controls to play/pause video, restart video scene and go back to Home scene

When intro ended then 2 canvases appear to allow user to choose ending 1 or ending 2

**Scene : VidEnd1**

Plays 360 Video on a Sphere using an Unlit/FlippyShader streaming video from a URL to a dropbox link

Controls to play/pause video, restart video scene and go back to Home scene

Addition control to allow user to choose other ending

**Scene: VidEnd2**

Plays 360 Video on a Sphere using an Unlit/FlippyShader streaming video from a URL to a dropbox link

**Controls** tare provided to play/pause video, restart video scene and go back to Home scene

Addition control to allow user to choose other endings. >>

**Video links :**

# Intro –

# *Intro : IntrovFinalVideoFast1080p30*

https://www.dropbox.com/s/ina2t6m8oik2uny/IntrovFinalVideoFast1080p30.mp4?dl=0

# Ending1 : California - California9fast1080p30.mp4

<https://www.dropbox.com/s/s1hgel5uqga5evb/California9fast1080p30.mp4?dl=0>

1. Ending 2 : Cullerfornia. CullerfroniaFast1080p30.mp4

<https://www.dropbox.com/s/eay2bomeg3jd37e/CaliforniaFast1080p30.mp4?dl=0>

https://www.dropbox.com/s/ffxtykrzg5yivxw/CullerfroniaFast1080p30.mp4?dl=0

**Technical Development**

An interactive 360VideoPlayer app – My360VideoPlayer2017-4 for a video player working for URL & skybox & fliipyshader methods

**Other Assets Useds**

PowerBooks, FreeMountain

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**TestVideo used**

1. Short video example codec fast1080p using Handbrake - 3840x1920. MB

<https://www.dropbox.com/s/0ac5m1l6qr8y507/BW_Short.mp4?d=0>

1. Staycation video 1920 x 960. Fast1080p codec. Video HN dropbox. MB

<https://www.dropbox.com/s/norln14m8wbo8n5/BlueWaterStaycationFast1080.mp4?dl=1>

**TECHNICAL (scenes, Game Objects & scripts)**

**Streaming Videos**

Game currently set to stream videos from a URL to a DropBox file

Intro Video set up as Index 0 & **videoURL0**; Ending 1 Index=1 & **videoURL1**; Ending 1 Index=2 **VideoURL2**

For streaming from URL then URL scripts are used

***VideoURLController.cs*** used to control Play/Pas/Restart and Home

Project set up so Ending 1 and Ending 2 can be loaded up without leaving scene

However this seemed to delay streaming though)so other method used – each video set up as a different scene and scene loaded

***GotoDiffScenes*** used to play new scenes – each video streamed is set up as a new scene

***GvrPlayPauseURL, GvrRestartURL, GvrHomeButton***

Used to control Play, Pause, Restart and Home

**Playing Videos from Assets**

Project also set up so videos can be played from videos stored in Asssets/StoryTellersRevenge/Videos

In this case video clips names can be stored as an array with a video Clip index pointing to the array

Videos can be played by reloading a different video without exiting from the scene

***GvrPlayPause, GvrRestart, GvrHomeButton with GotoDiffScenes***

Used to control Play, Pause, Restart and Home

***Progress Bar*** game object

Used to control video playhead progress bar with a canvas used to display overall length of video and current time

NB. This is diasbled to try and improve mobile performance as performance of video played is more important than this feature

***VideoEffects***

Was set up so that video effects such as interactive gameobjects and particles etc could be played and set up in a different file

However when streaming videos this would again risk slowing dowm=n play back so the code was incorporated into VideoURLController

**Game Objects**

**Video Player component**

Set Source to URL and leave URL blank

URL is set in VideoURLController script

**Videos**

**3 different videos are used for Intro /Ending 1 and Ending 2**

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**CHANGES LOG**

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**Current Problems**

**21 Nov 2018**

Vid1 and Vid2 scenes set up to play video from Assets and not streamed – need to change

Can’t switch to diff endings from End1 and End2 scenes

**Method Used to create Scenes : 360Video, 360VidURL, 360Video-v2**

1. **Create New Render Texture**

Same size as video and 2D

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1. **Create new unlit shader – FlippyShader**

Open Shader (code)

Delete existing code and replace with this

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// Upgrade NOTE: replaced 'mul(UNITY\_MATRIX\_MVP,\*)' with 'UnityObjectToClipPos(\*)'  
  
// Based on Unlit shader, but culls the front faces instead of the back  
  
Shader "Unlit/FlippyShader" {  
Properties {  
    \_MainTex ("Base (RGB)", 2D) = "white" {}  
}  
  
SubShader {  
    Tags { "RenderType"="Opaque" }  
    Cull front    // ADDED BY BERNIE, TO FLIP THE SURFACES  
    LOD 100  
  
    Pass {    
        CGPROGRAM  
            #pragma vertex vert  
            #pragma fragment frag  
  
            #include "UnityCG.cginc"  
  
            struct appdata\_t {  
                float4 vertex : POSITION;  
                float2 texcoord : TEXCOORD0;  
            };  
  
            struct v2f {  
                float4 vertex : SV\_POSITION;  
                half2 texcoord : TEXCOORD0;  
            };  
  
            sampler2D \_MainTex;  
            float4 \_MainTex\_ST;  
  
            v2f vert (appdata\_t v)  
            {  
                v2f o;  
                o.vertex = UnityObjectToClipPos(v.vertex);  
                // ADDED BY BERNIE:  
                v.texcoord.x = 1 - v.texcoord.x;                  
                o.texcoord = TRANSFORM\_TEX(v.texcoord, \_MainTex);  
                return o;  
            }  
  
            fixed4 frag (v2f i) : SV\_Target  
            {  
                fixed4 col = tex2D(\_MainTex, i.texcoord);  
                return col;  
            }  
        ENDCG  
    }  
}  
}

**3.Create New Material**

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1. **In Assets/Materials drag NewUnlitShader onto New Material**

With NewMaterial and FlippyShader in same directory (Assets/Materials)

Drang FlippyShader onto New Material

A picture containing indoor

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1. **From Assets / Textures drag NewVideoRender texture into Select box of NewMaterial**

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1. **Drag NewVideoMaterial onto VideoScreenSphere (mesh Renderer)**

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1. **Set NewVideoRender on VideoComponent**

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**A screenshot of a cell phone

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