ULTIMATE ENDLESS RUNNER KIT

USER MANUAL

Table of Contents

Introduction

Getting Started

1. Import the unity package into an empty project.
2. Go to Project > UltimateKit > Scenes > Scene_1.
3. Click "Don't Save" if prompted to save the current scene. (The project only uses a single scene file)
4. Press the play button to get an idea of the menu flow and gameplay.

Frequent References

The documentation will frequently refer to some elements that are the core of the project:

Player

The *Player* is the prefab that contains the primary character of the game. This prefab also has a number of scripts attached to it. The word "Player" will not be used to refer to the user in this document. The *Player* behavior is controlled by *ControllerScript.js* or *ControllerScriptCS.cs*.

Patch

Patches are the environments/ surroundings of the game. They are generated by *PatchesRandomizer.js* or *PatchesRandomiserCS.cs* during run time. Each patch has the default displacement of 3000 meters.

At any particular time, two patches are always active, the one the *Player*, is on and the immediate next one. Every time the *Player* passes a patch completely it is destroyed and the next one is generated.

Spline

The spline is a line passing over each patch, which defines the path of the *Player* and the location where obstacles will be generated.

CPs

The spline is manipulated using CPs, which is short for Check Points. If the patch is completely straight, only two CPs are needed to draw a straight spline. However, if the path has bends and curves, multiple CPs are needed to be arranged to draw a spline that has exactly the same shape and centered on the path of the patch. Take a look at the sample patches to acquaint yourself with how CPs are related to the spline.

Custom Menu

The default GUI consists of a set of menus and the HUD. It is referred in the documentation and script comments by the term "Custom Menu". This is because the GUI implementation does not use the GUI class or most of the components provided by the Unity Engine.

The term "NGUI Menus" is also used frequently which as the name suggests refers to the menus and HUD implementation using the NGUI library. The menus designed and programmed using the NGUI library are complete replicas of the Custom Menus. The developer has the choice of using the one most suitable to their needs.

Audience

The user guide is composed assuming that the reader/ developer has an understanding of game development in Unity and Javascript or C# programming for Unity.

Project Architecture

The project doesn't use much of the physics, GUI components etc. provided by the Unity Engine to maximize performance on mobile platforms.

Physics

The character/ player physics has been defined as needed in the *ControllerScript.js* or *ControllerScript.cs.*

Menus

There are two types of menu implementations provided in the project. The first one is the Custom Menu that is primarily controlled by the *MenuScript.js* or *MenuScriptCS.cs*. The *ShopScript* manages the shop components of the Custom Menu. A few additional scripts in the Shop Menu manage its smaller components. The menu has been explained in detail in the "Adding a Menu" section. All the scripts of the Custom Menu can be located at Project > UltimateKit > Assets > UI > Custom > Scripts if you are using Javacript or Project > UltimateKit > Assets > UI > Custom > C# Scripts if you are using C# programming language.

The second type of menu has been implemented using the free version of the NGUI library. All the scripts and assets used in the NGUI menu can be located at Assets > UI > NGUI. The scripts used by NGUI are only available in the C# programming language.

Collisions

There are two kinds of collisions detected during gameplay. The first and the most common one is the front collisions with obstacles detected and handled by the *PlayerFrontCollider.*

The second type of collisions is called "stumble" which are detected by *PlayerSidesCollider* if the *Player* bumps into an obstacle sideways. This triggers the *Enemy* (police car by default) to chase the *Player* for a unit time (5 seconds by default) and then move out of the camera. If the player stumbles (collides sides ways) into another obstacle while the *Enemy* is chasing it, game over routine is called and the death scene is played.

Sounds

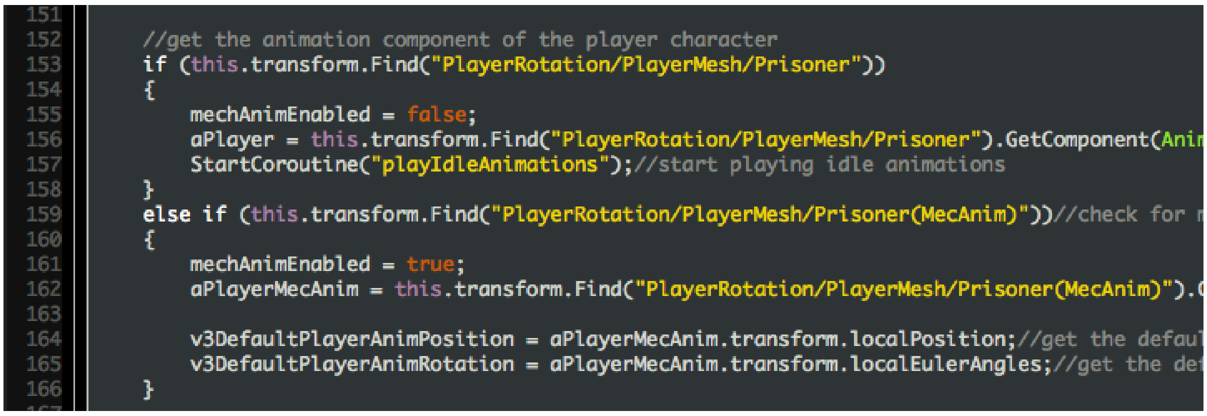
All the sounds used in the scene are 2D sounds. All the audio sources have been added to the *SoundManager* prefab located in the scene. A script also named as *SoundManager* has been added to the prefab and is responsible for playing or stopping a sound as needed. Exposed variables are used to hold the references of the audio sources.

Personalizing the Template

How to switch between Legacy and Mecanim Animations

There are two types of animation systems used in the project. By default legacy animation system is active. The *ControllerScript* is the only script that controls the character animations. This script uses a Boolean type variable named *mechAnimEnabled* to check which type of animation system is enabled and uses the appropriate animation system.

In the *Start()* function of the *ControllerScript* the type of character prefab used is checked and the appropriate animation system is enabled. If the *Prisoner* prefab is used in Hierarchy > Player > PlayerRotation > PlayerMesh, the *Start()* function is hardcoded to use legacy animations and if the *Prisoner(MecAnim)* prefab is used in the same path, the mecanim animation system will be used.

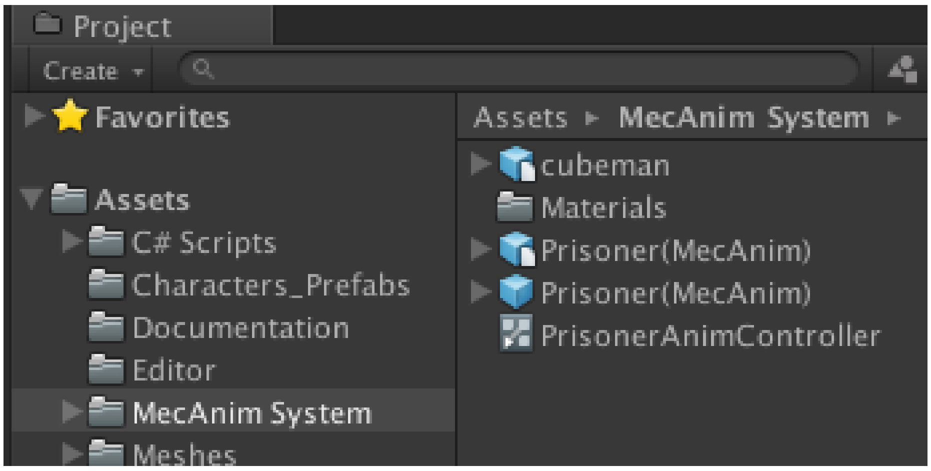


```
    //get the animation component of the player character
    if (this.transform.Find("PlayerRotation/PlayerMesh/Prisoner"))
    {
        mechAnimEnabled = false;
        aPlayer = this.transform.Find("PlayerRotation/PlayerMesh/Prisoner").GetComponent(Ani
        StartCoroutine("playIdleAnimations");//start playing idle animations
    }
    else if (this.transform.Find("PlayerRotation/PlayerMesh/Prisoner(MecAnim)"))//check for
    {
        mechAnimEnabled = true;
        aPlayerMecAnim = this.transform.Find("PlayerRotation/PlayerMesh/Prisoner(MecAnim)").

        v3DefaultPlayerAnimPosition = aPlayerMecAnim.transform.localPosition;//get the defau
        v3DefaultPlayerAnimRotation = aPlayerMecAnim.transform.localEulerAngles;//get the de
    }
```

Code snippet where animation type is determined

The legacy-animated character can be found at the path: Project > Assets > Characters Prefabs. Alternatively the mecanim animated character and all its dependencies can be found at Project > UltimateKit > Assets > MecAnim System folder.



The *cubeman* .fbx file contains the animations that will be applied to the prisoner character. The *Prisoner(MecAnim)* .fbx file is the character mesh that will be rigged and animated in Unity. To work, it has to be placed at Hierarchy > Player > PlayerRotation > *PlayerMesh*. The *PrisonerAnimController* is the Animator Controller used by the *Prisoner(MecAnim)* prefab.

How to Switch from Legacy to Mecanim Animation System

1. Delete the *Prisoner* prefab from Hierarchy > Player > PlayerRotation > PlayerMesh.
2. Drag and drop the *Prisoner(MecAnim)* prefab from Project > UltimateKit > Assets > MecAnim System to Hierarchy > Player > PlayerRotation > PlayerMesh.

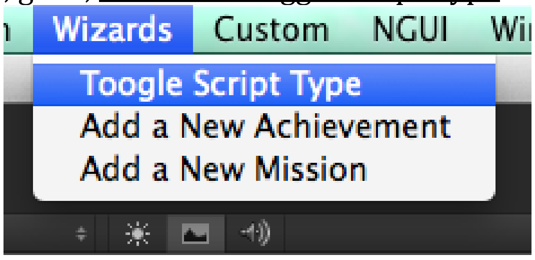
How to Switch from Mecanim to Legacy Animation System

1. Delete the *Prisoner(MecAnim)* from Hierarchy > Player > PlayerRotation > PlayerMesh.
2. Drag and drop the *Prisoner* prefab from Project > UltimateKit > Assets > Characters_Prefabs to Hierarchy > Player > PlayerRotation > PlayerMesh.

How to Change the Script Type (Javascript & C#)

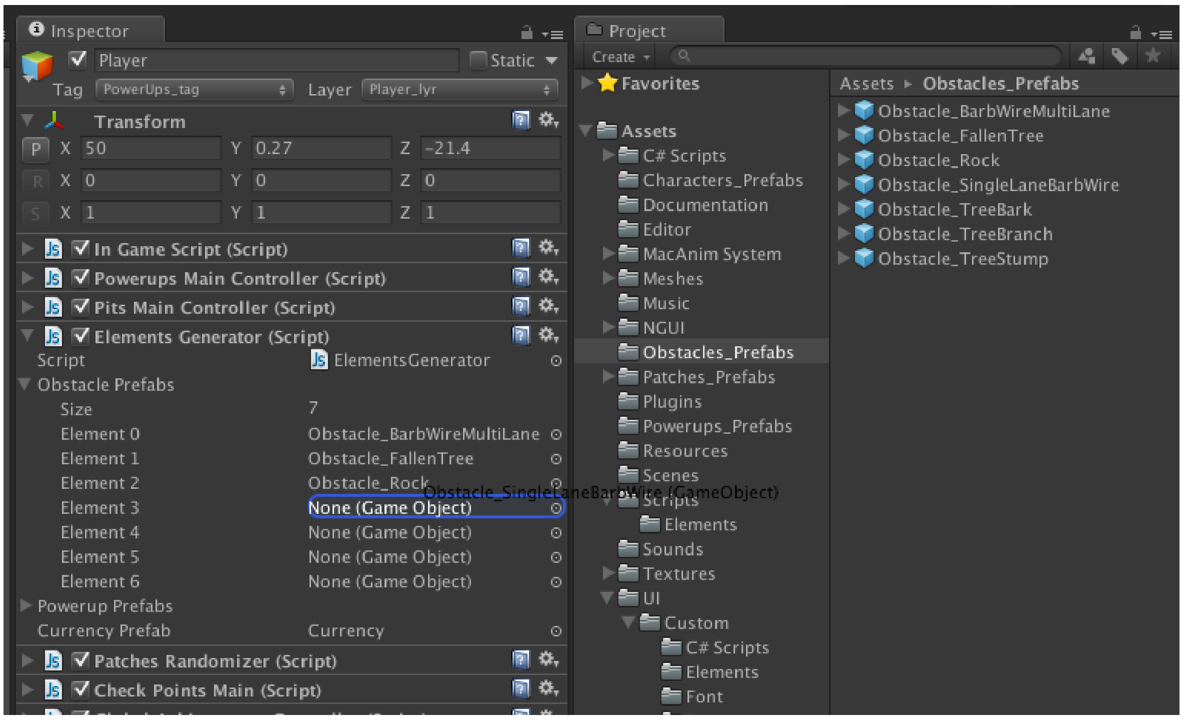
To the change the scripting language from Javascript to C# or vice versa you need to follow these steps:

1. From the title bar, go to, Wizards > Toggle Script Type.



A message will be displayed on the Console window telling you that the script type has been switched successfully.

2. You now need to tell the *ElementGenerator* script again about which obstacles, power-ups and currency prefab you are using so that it can generate them on the path. To do that:
   a. Click Hierarchy > Player.
   b. Expand the *ElementsGenerator* script.
   c. Expand the Obstacle Prefabs array.
   d. Allocate memory according to the number of obstacles in your project.
   e. Drag all the obstacles from Project > UltimateKit > Assets > Obstacle Prefabs folder to Obstacle Prefabs array in the script as shown in the screen shot.



Player
Tag PowerUps_tag Layer Player_lyr

Transform
P X 50 Y 0.27 Z -21.4
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1

In Game Script (Script)
Powerups Main Controller (Script)
Pits Main Controller (Script)
Elements Generator (Script)

Script	ElementsGenerator
Obstacle Prefabs	
Size	7
Element 0	Obstacle_BarbWireMultiLane
Element 1	Obstacle_FallenTree
Element 2	Obstacle_Rock
Element 3	None (Game Object)
Element 4	None (Game Object)
Element 5	None (Game Object)
Element 6	None (Game Object)
Powerup Prefabs	
Currency Prefab	Currency

Obstacle_SingleLaneBarbWire (GameObject)

Patches Randomizer (Script)
Check Points Main (Script)

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C# Scripts
Characters_Prefabs
Documentation
Editor
MacAnim System
Meshes
Music
NGUI
Obstacles_Prefabs
Patches_Prefabs
Plugins
Powerups_Prefabs
Resources
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Custom
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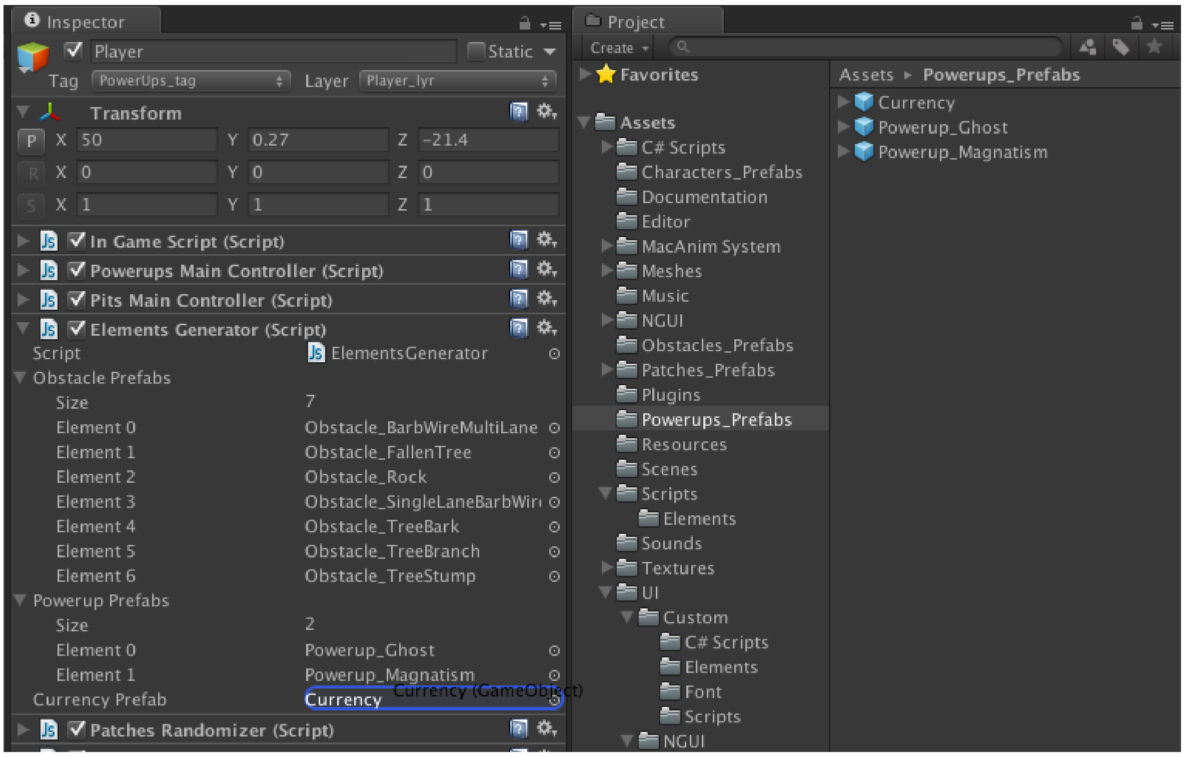
Font

Assets ▸ Obstacles_Prefabs
Obstacle_BarbWireMultiLane
Obstacle_FallenTree
Obstacle_Rock
Obstacle_SingleLaneBarbWire
Obstacle_TreeBark
Obstacle_TreeBranch
Obstacle_TreeStump

   f. Next do the same for the Powerup Prefabs array and the Currency array. Drag and drop the prefabs from the Project > UltimateKit > Assets > Powerup Prefabs folder to the array as shown in the screen shot below:



```
Inspector
Player                                   Static
Tag  PowerUps_tag        Layer  Player_lyr
Transform
P  X 50     Y 0.27    Z -21.4
R  X 0      Y 0       Z 0
S  X 1      Y 1       Z 1
In Game Script (Script)
Powerups Main Controller (Script)
Pits Main Controller (Script)
Elements Generator (Script)
  Script              ElementsGenerator
  Obstacle Prefabs
    Size              7
    Element 0         Obstacle_BarbWireMultiLane
    Element 1         Obstacle_FallenTree
    Element 2         Obstacle_Rock
    Element 3         Obstacle_SingleLaneBarbWir
    Element 4         Obstacle_TreeBark
    Element 5         Obstacle_TreeBranch
    Element 6         Obstacle_TreeStump
  Powerup Prefabs
    Size              2
    Element 0         Powerup_Ghost
    Element 1         Powerup_Magnatism
  Currency Prefab     Currency    Currency (GameObject)
Patches Randomizer (Script)
```

```
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  Plugins
  Powerups_Prefabs
  Resources
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    Elements
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  Textures
  UI
    Custom
      C# Scripts
      Elements
      Font
      Scripts
    NGUI

Assets ▸ Powerups_Prefabs
  Currency
  Powerup_Ghost
  Powerup_Magnatism
```
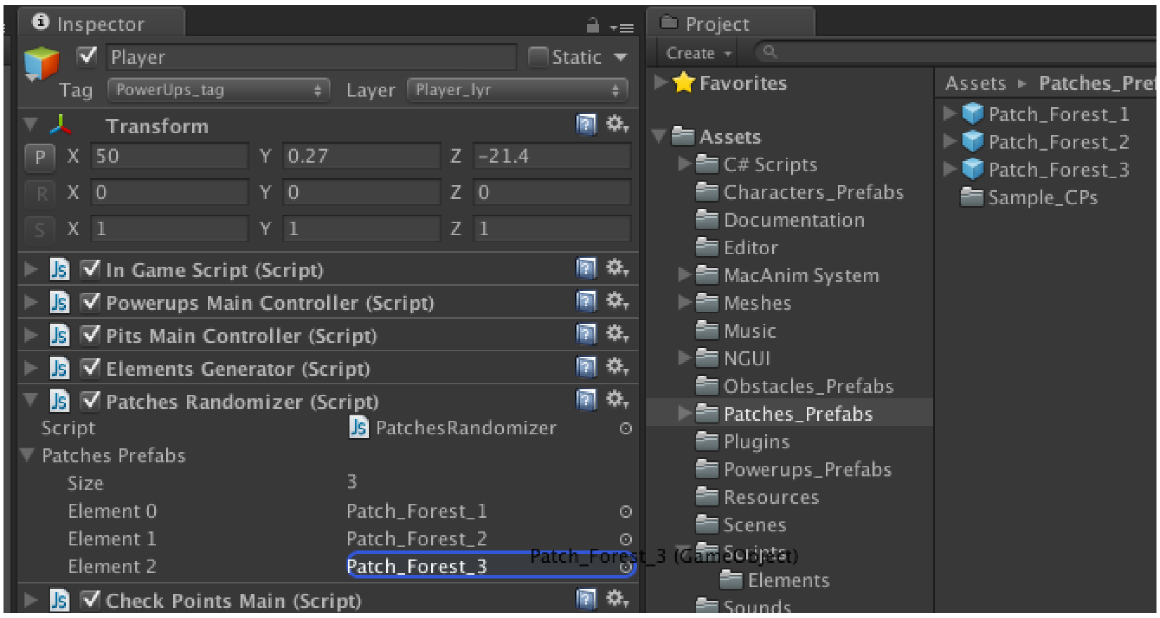

3. The final step is to tell the *PatchesRandomiser* script about the environment patches we will be using. To do that, drag the patches prefabs from the Project > UltimateKit > Assets > Patches_Prefabs folder to the Patches Prefabs array in the *PatchesRandomiser* script.



```
Inspector
Player                                   Static
Tag  PowerUps_tag        Layer  Player_lyr
Transform
P  X 50     Y 0.27    Z -21.4
R  X 0      Y 0       Z 0
S  X 1      Y 1       Z 1
In Game Script (Script)
Powerups Main Controller (Script)
Pits Main Controller (Script)
Elements Generator (Script)
Patches Randomizer (Script)
  Script              PatchesRandomizer
  Patches Prefabs
    Size              3
    Element 0         Patch_Forest_1
    Element 1         Patch_Forest_2
    Element 2         Patch_Forest_3    Patch_Forest_3 (GameObject)
Check Points Main (Script)
```

```
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  Patches_Prefabs
  Plugins
  Powerups_Prefabs
  Resources
  Scenes
  Scripts
    Elements
  Sounds

Assets ▸ Patches_Pre
  Patch_Forest_1
  Patch_Forest_2
  Patch_Forest_3
  Sample_CPs
```

That's it, go ahead and hit play to check if everything is working as expected.

Notes:

- The script type is changed by the *ToggleScriptType.cs* script located in the Project > Assets > Editor folder.

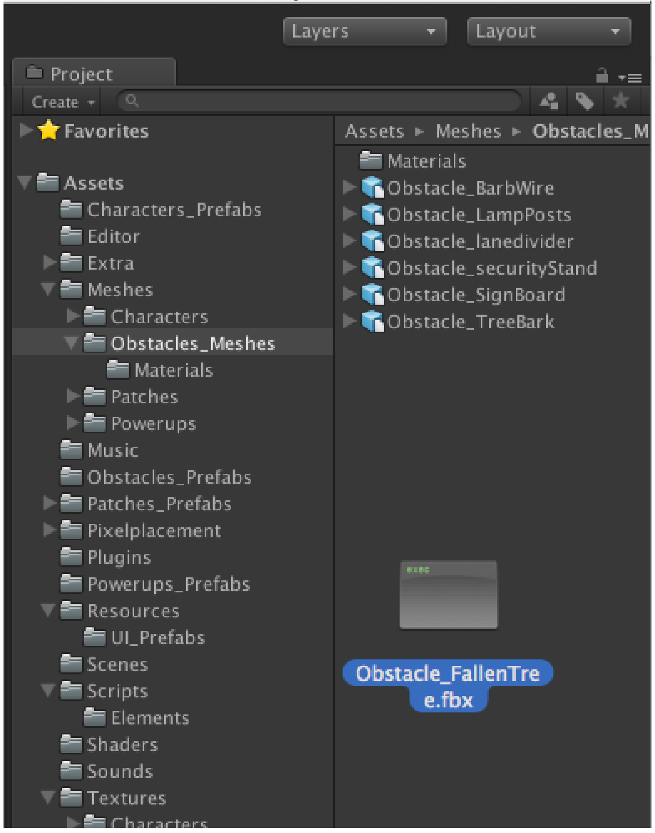
- The script type is changed by removing the current scripts from the prefabs located in the Hierarchy and replacing them with the alternative scripts.
- The *EditorAttributes* file located in the Project > UltimateKit > Assets > Resources folder carries the information about the type of scripting language currently active.

Optimization Note:

- Several prefabs that are generated at runtime carry both C# and Javascript version of the same script. The scripting language currently in use makes the use of the appropriate script. Its best to remove one of these scripts once you decide which scripting language to use.

Adding an Obstacle

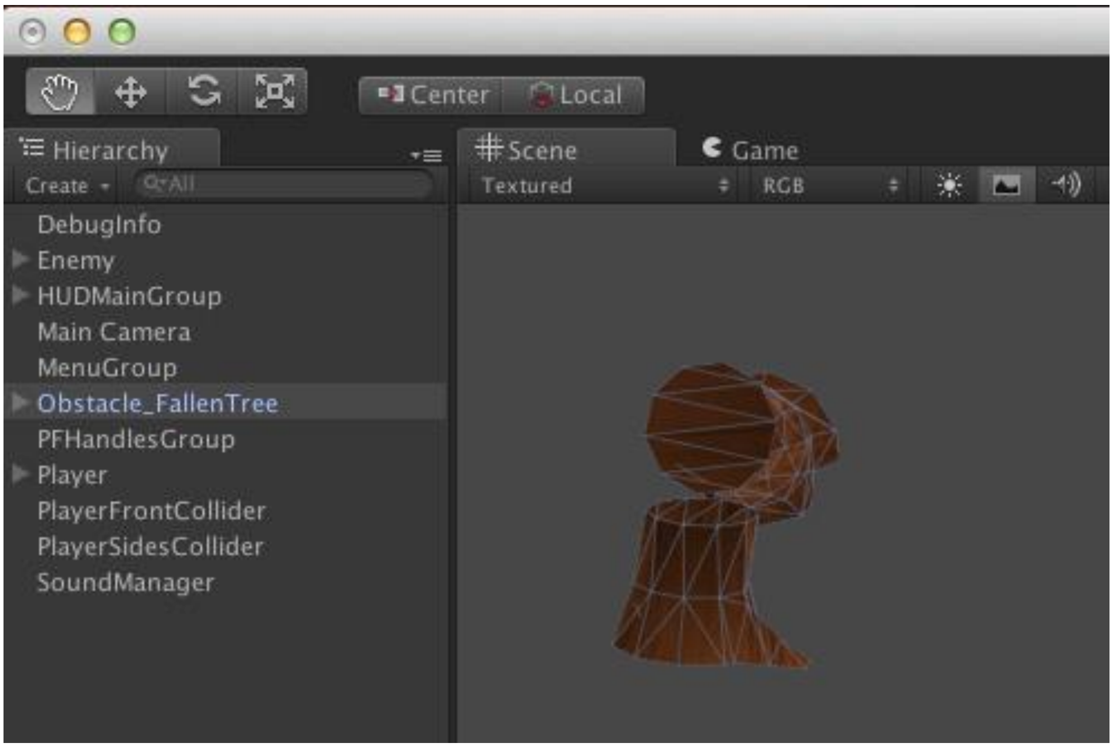
1. Import the .fbx of the asset that you will use as an obstacle.



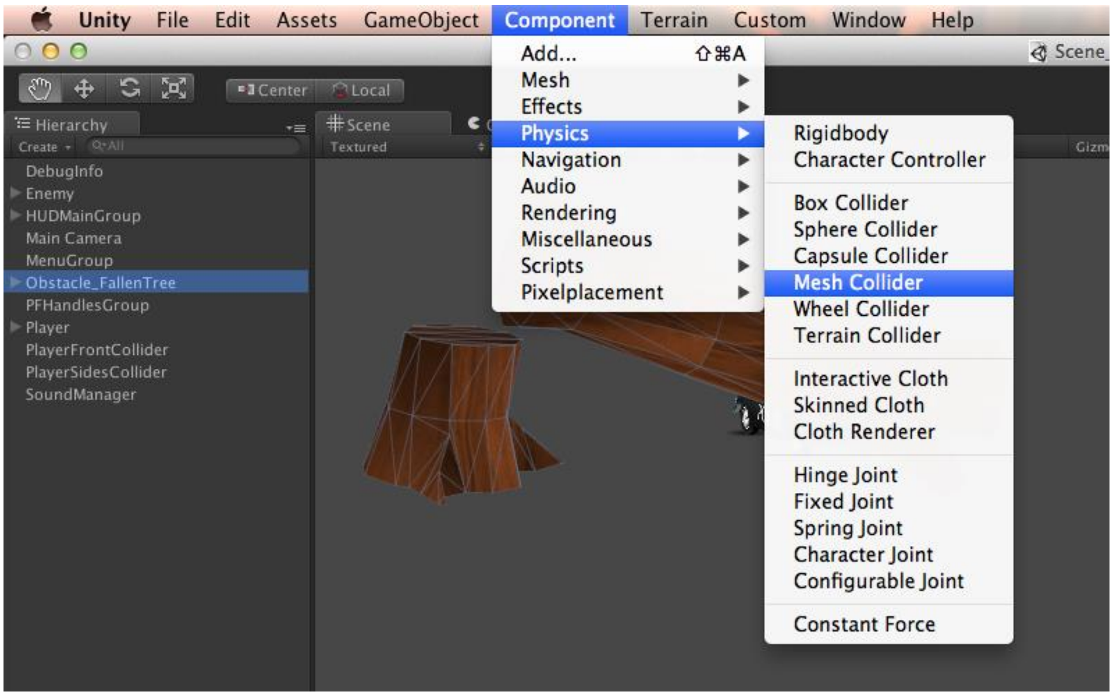
Optimization Notes:

- Use Model > Scale Factor to adjust the scale.
- Use Model > Mesh Compression to compress the imported asset as much as you can without compromising its appearance.
- Select "None" in Rig > Animation Type if your asset isn't rigged.
- Uncheck the Import Animation option in Animations > Import Animation if your asset isn't animated.

2. Drag the imported asset in "Hierarchy" tab to create a prefab.



3. Select Component > Physics > Mesh Collider to add a mesh collider to your obstacle asset.

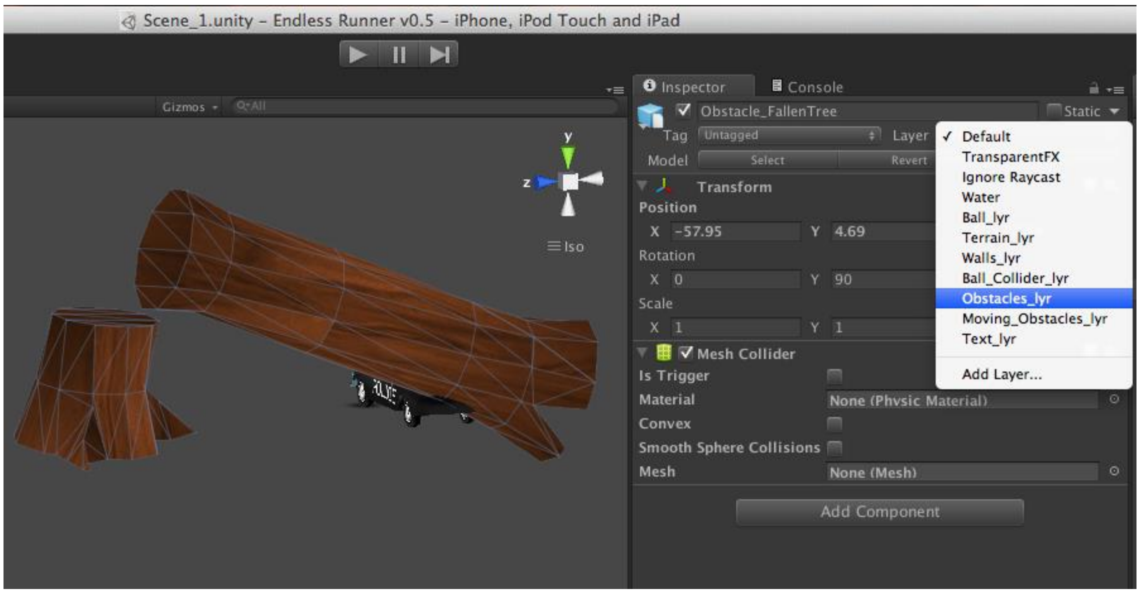


Optimization Notes:

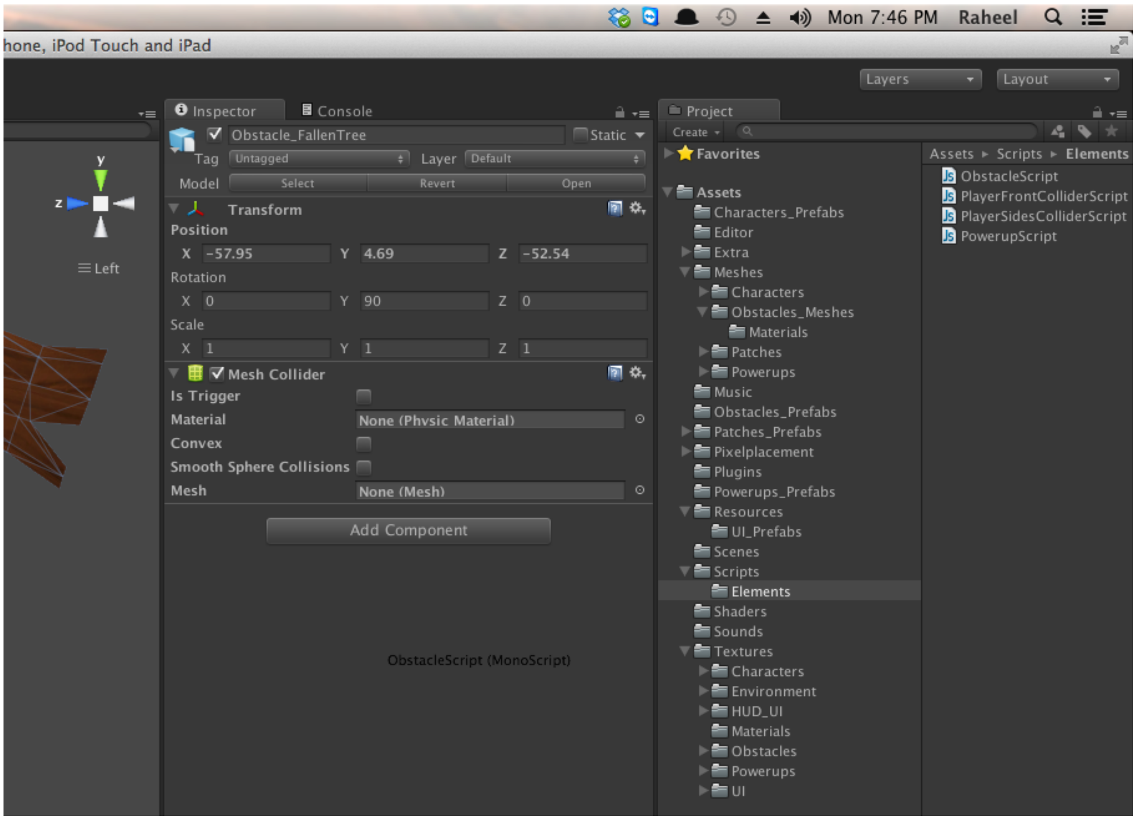
- Use primitive colliders such as Sphere, Box etc. for better performance during gameplay.
- Do not scale the collider component on your prefab for optimizing object pooling.

4. Select Layer > Obstacles_lyr in the *Inspector* tab.

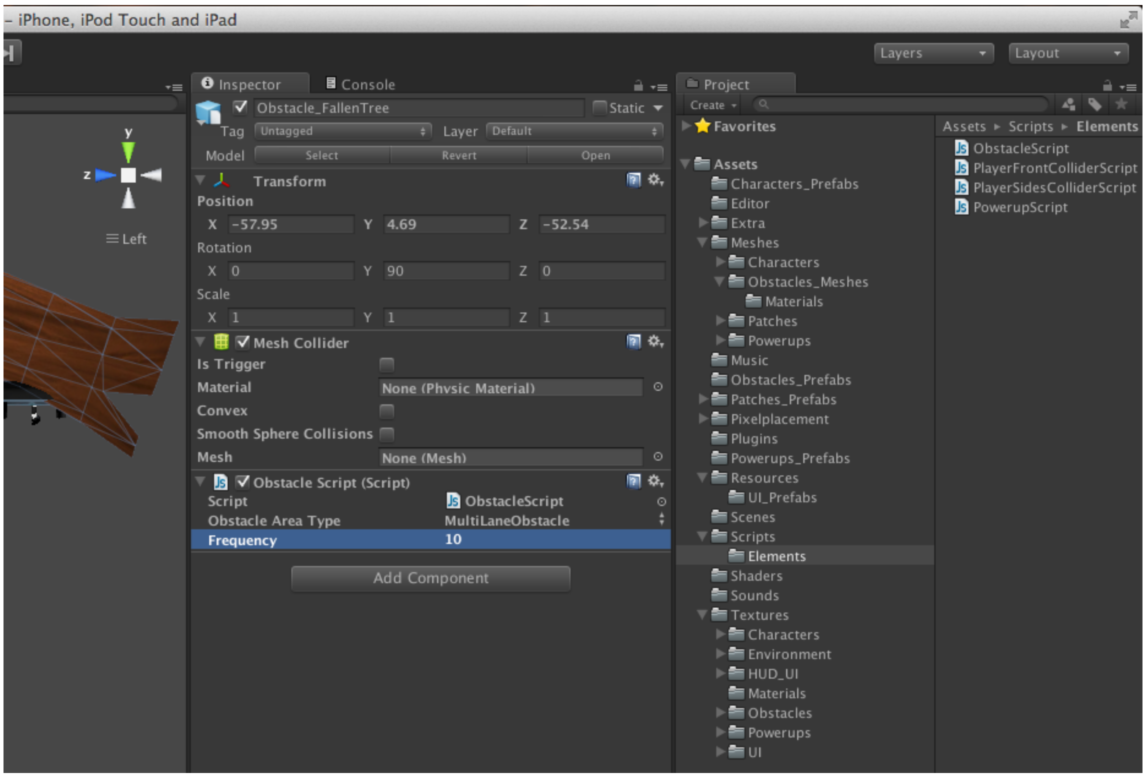
Note: Make sure the object with the collider has the layer "Obstacle_lyr". You can also change the layer of all the objects of an obstacle prefab to "Obstacle_lyr" to keep things simple.



5. Go to Project > UltimateKit > Assets > Scripts > Elements.
6. Add the "ObstacleScript.js" on your obstacle's prefab.

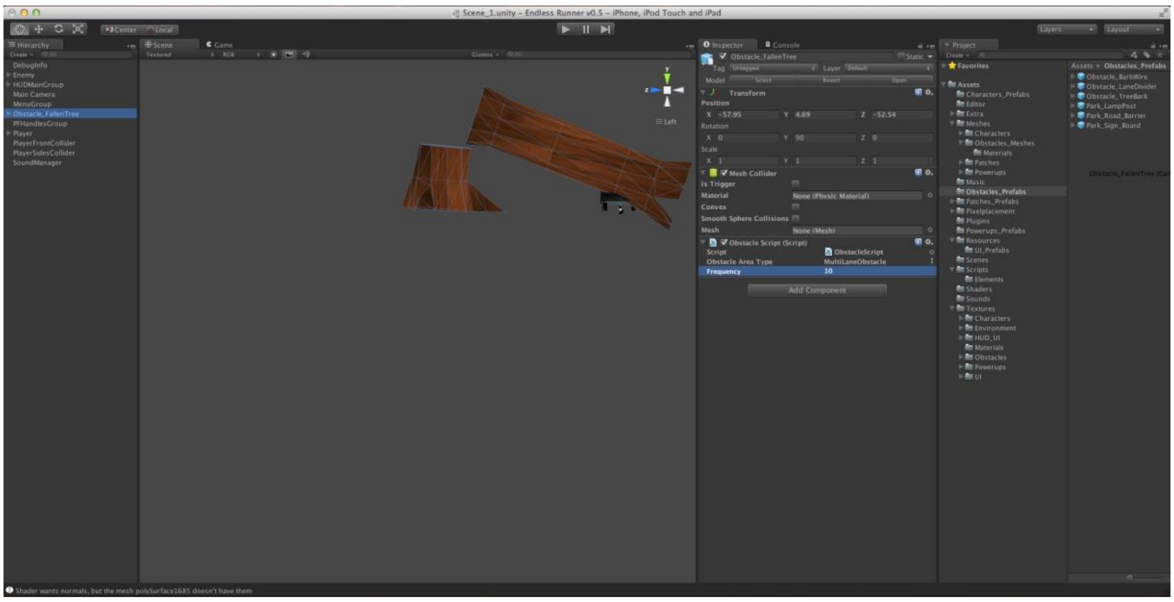


7. Set the *Obstacle Area Type* on the *Obstacle Script* Component.
8. Set the Frequency. (Default Value is 10)

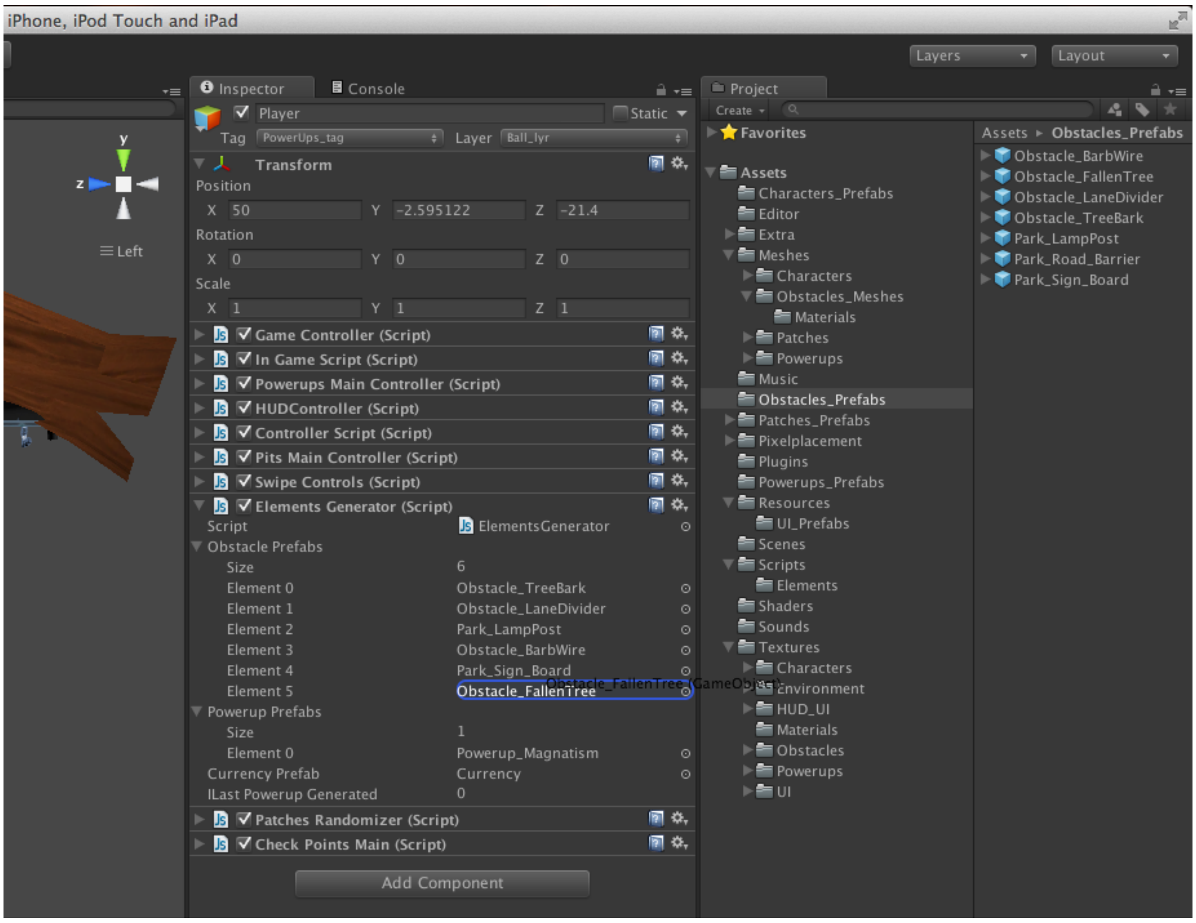


Obstacle_FallenTree
Tag: Untagged
Layer: Default
Transform
Position X -57.95 Y 4.69 Z -52.54
Rotation X 0 Y 90 Z 0
Scale X 1 Y 1 Z 1
Mesh Collider
Is Trigger: unchecked
Material: None (Physic Material)
Convex: unchecked
Smooth Sphere Collisions: unchecked
Mesh: None (Mesh)
Obstacle Script (Script)
Script: ObstacleScript
Obstacle Area Type: MultiLaneObstacle
Frequency: 10

9. Drag the newly created prefab to *Obtacles_Prefabs* or any other folder in the *Project* tab to create a prefab.



10. To make the created obstacle appear on the path during gameplay, you need to add it to Hierarchy > Player > Elements Generator > Obstacle Prefabs.
11. Remove the newly created obstacle from the Hierarchy tab before launching the game.



```
iPhone, iPod Touch and iPad
Layers  Layout
Inspector  Console
Player  Static
Tag PowerUps_tag  Layer Ball_lyr
Transform
Position  X 50  Y -2.595122  Z -21.4
Rotation  X 0  Y 0  Z 0
Scale  X 1  Y 1  Z 1
Game Controller (Script)
In Game Script (Script)
Powerups Main Controller (Script)
HUDController (Script)
Controller Script (Script)
Pits Main Controller (Script)
Swipe Controls (Script)
Elements Generator (Script)
  Script                  ElementsGenerator
  Obstacle Prefabs
    Size                  6
    Element 0             Obstacle_TreeBark
    Element 1             Obstacle_LaneDivider
    Element 2             Park_LampPost
    Element 3             Obstacle_BarbWire
    Element 4             Park_Sign_Board
    Element 5             Obstacle_FallenTree
  Powerup Prefabs
    Size                  1
    Element 0             Powerup_Magnatism
  Currency Prefab         Currency
  lLast Powerup Generated 0
Patches Randomizer (Script)
Check Points Main (Script)
Add Component
```

```
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  Extra
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    Characters
    Obstacles_Meshes
      Materials
    Patches
    Powerups
  Music
  Obstacles_Prefabs
  Patches_Prefabs
  Pixelplacement
  Plugins
  Powerups_Prefabs
  Resources
    UI_Prefabs
  Scenes
  Scripts
    Elements
  Shaders
  Sounds
  Textures
    Characters
    Environment
    HUD_UI
    Materials
    Obstacles
    Powerups
    UI

Assets ▸ Obstacles_Prefabs
  Obstacle_BarbWire
  Obstacle_FallenTree
  Obstacle_LaneDivider
  Obstacle_TreeBark
  Park_LampPost
  Park_Road_Barrier
  Park_Sign_Board
```
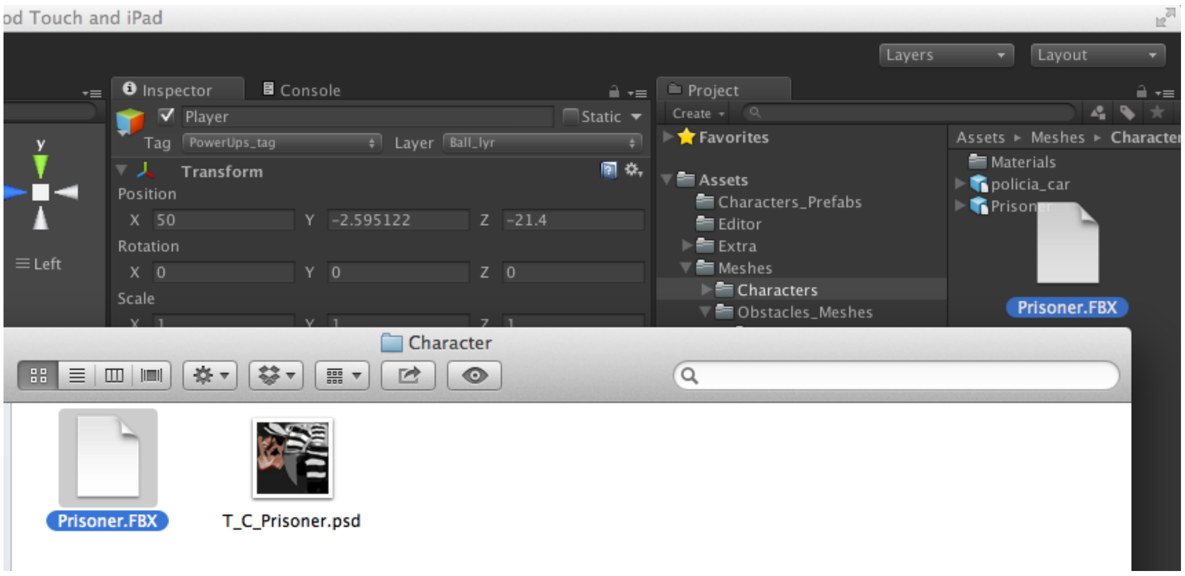

Replacing Player Character

1. Import the player .fbx that will be used as the main character.



```
od Touch and iPad
Layers  Layout
Inspector  Console
Player  Static
Tag PowerUps_tag  Layer Ball_lyr
Transform
Position  X 50  Y -2.595122  Z -21.4
Rotation  X 0  Y 0  Z 0
Scale  X 1  Y 1  Z 1

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    Characters
    Obstacles_Meshes

Assets ▸ Meshes ▸ Characte
  Materials
  policia_car
  Prisoner
Prisoner.FBX

Character
Prisoner.FBX   T_C_Prisoner.psd
```
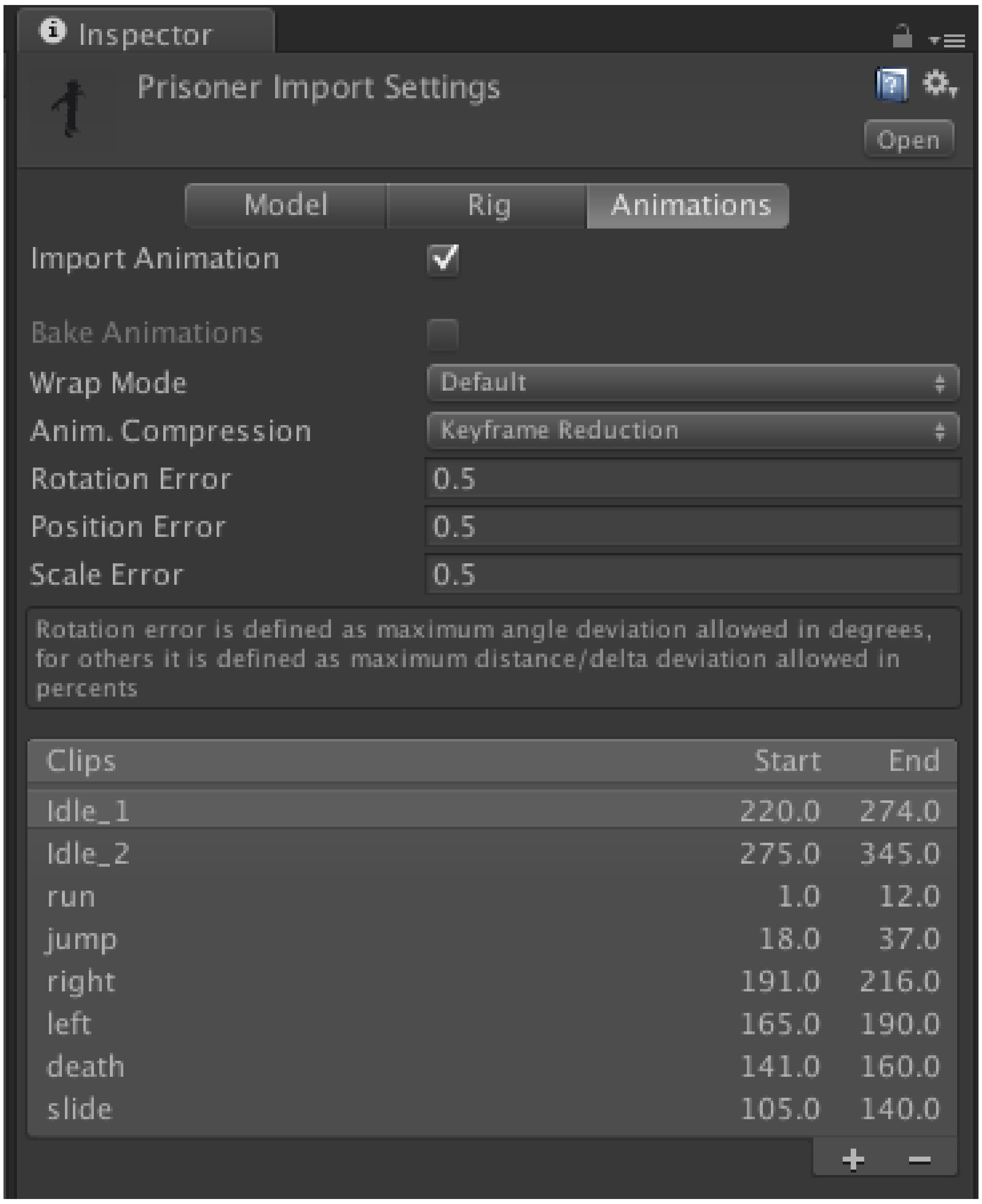

Optimization Notes:

- Use Model > Scale Factor to adjust the scale.
- Use Model > Mesh Compression to compress the imported asset as much as you can without compromising its appearance.

2. Define the animation frames.



Import Animation ✓

Bake Animations

Wrap Mode: Default

Anim. Compression: Keyframe Reduction

Rotation Error: 0.5

Position Error: 0.5

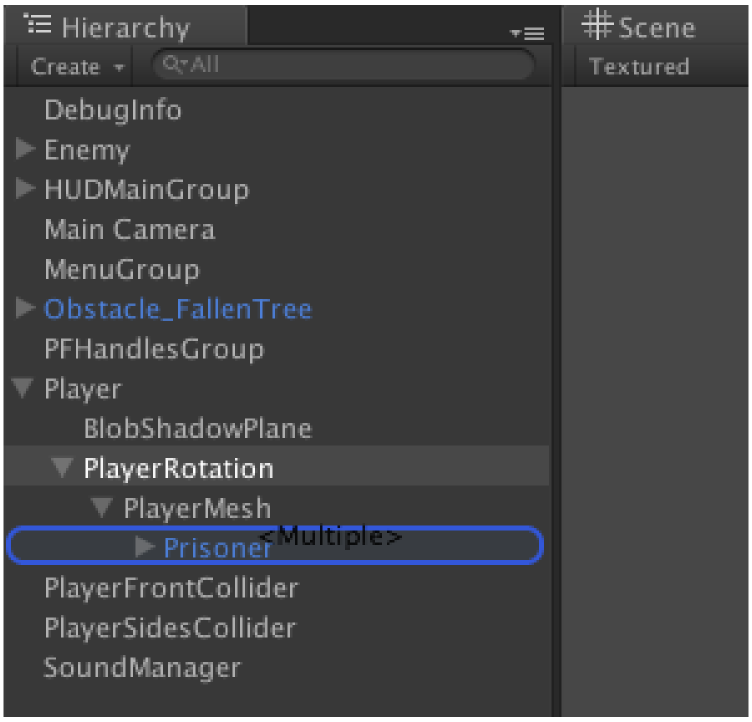
Scale Error: 0.5

Rotation error is defined as maximum angle deviation allowed in degrees, for others it is defined as maximum distance/delta deviation allowed in percents

Clips	Start	End
Idle_1	220.0	274.0
Idle_2	275.0	345.0
run	1.0	12.0
jump	18.0	37.0
right	191.0	216.0
left	165.0	190.0
death	141.0	160.0
slide	105.0	140.0

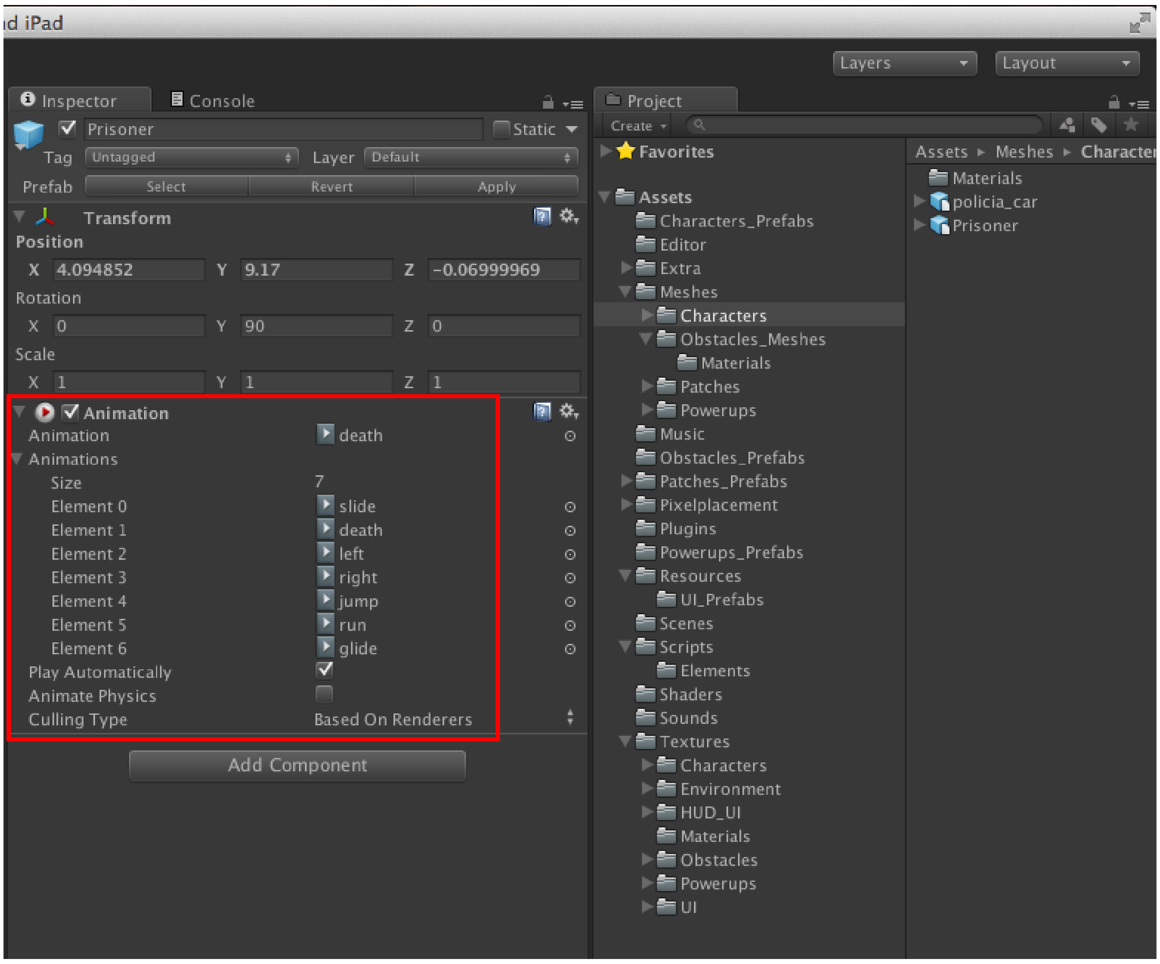
Note: If you are working with the legacy animation system, the *ControllerScript* uses all the animations listed in the above screenshot. If a certain animation is not defined, an exception will be thrown when the script attempts to play that animation.

3. Drag the imported asset in Hierarchy > Player > PlayerRotation > PlayerMesh.



DebugInfo
Enemy
HUDMainGroup
Main Camera
MenuGroup
Obstacle_FallenTree
PFHandlesGroup
Player
BlobShadowPlane
PlayerRotation
PlayerMesh
Prisoner <Multiple>
PlayerFrontCollider
PlayerSidesCollider
SoundManager

4. If you are working with the legacy animation system, make sure the *Animation* component of the character prefab has all the animations that will be used by the *ControllerScript.*



Prisoner Static
Tag Untagged Layer Default
Prefab

Transform
Position
X 4.094852 Y 9.17 Z -0.06999969
Rotation
X 0 Y 90 Z 0
Scale
X 1 Y 1 Z 1

Animation

Animation	death
Animations	
Size	7
Element 0	slide
Element 1	death
Element 2	left
Element 3	right
Element 4	jump
Element 5	run
Element 6	glide
Play Automatically	✓
Animate Physics	
Culling Type	Based On Renderers

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Characters_Prefabs
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Meshes
Characters
Obstacles_Meshes
Materials
Patches
Powerups
Music
Obstacles_Prefabs
Patches_Prefabs
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Powerups_Prefabs
Resources
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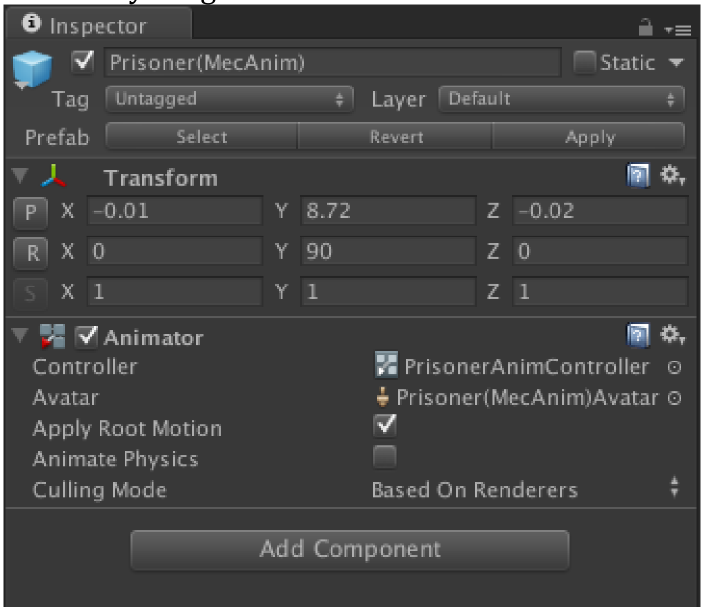
Textures
Characters
Environment
HUD_UI
Materials
Obstacles
Powerups
UI

Assets ▸ Meshes ▸ Character
Materials
policia_car
Prisoner

On the other hand if you are using the mecanim animation system, make sure the Animator component has everything it needs to run the animations.


Inspector

Prisoner(MecAnim) — Static

Tag: Untagged — Layer: Default

Prefab: Select | Revert | Apply

Transform

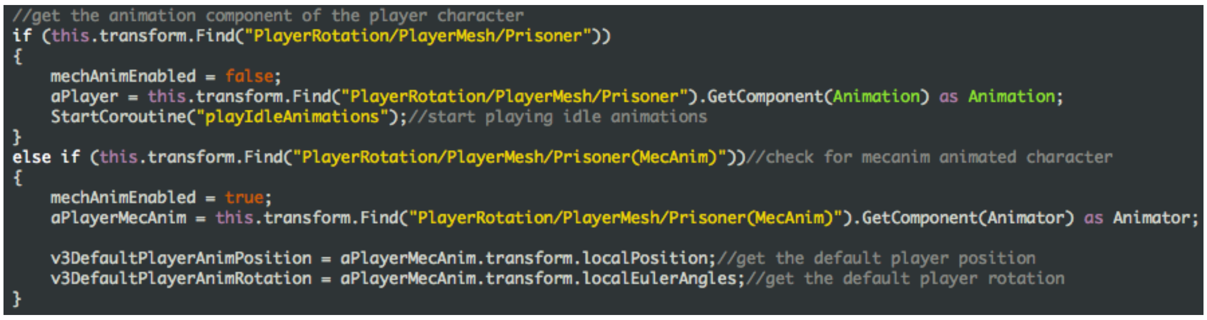
	X	Y	Z
P	-0.01	8.72	-0.02
R	0	90	0
S	1	1	1

Animator

Controller	PrisonerAnimController
Avatar	Prisoner(MecAnim)Avatar
Apply Root Motion	✓
Animate Physics	
Culling Mode	Based On Renderers

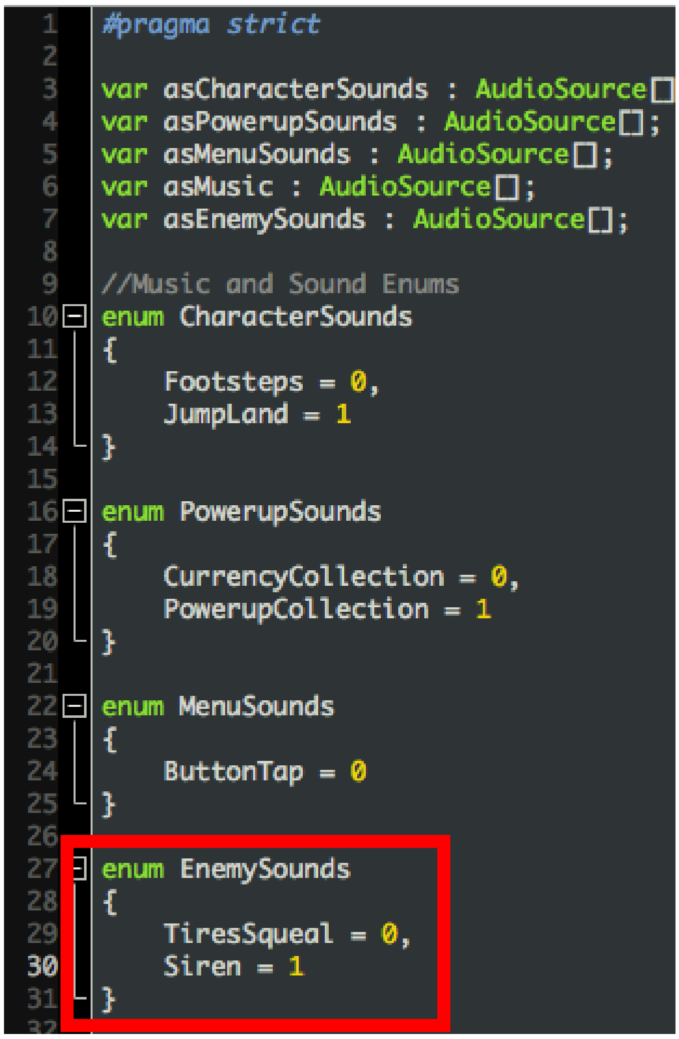
Add Component

5. If your character prefabs don't have the default names used in the project, make sure you change the name in the *Start* function according to the animation system used, so the *ControllerScript* knows where to get the animations from.


```
//get the animation component of the player character
if (this.transform.Find("PlayerRotation/PlayerMesh/Prisoner"))
{
    mechAnimEnabled = false;
    aPlayer = this.transform.Find("PlayerRotation/PlayerMesh/Prisoner").GetComponent(Animation) as Animation;
    StartCoroutine("playIdleAnimations");//start playing idle animations
}
else if (this.transform.Find("PlayerRotation/PlayerMesh/Prisoner(MecAnim)"))//check for mecanim animated character
{
    mechAnimEnabled = true;
    aPlayerMecAnim = this.transform.Find("PlayerRotation/PlayerMesh/Prisoner(MecAnim)").GetComponent(Animator) as Animator;

    v3DefaultPlayerAnimPosition = aPlayerMecAnim.transform.localPosition;//get the default player position
    v3DefaultPlayerAnimRotation = aPlayerMecAnim.transform.localEulerAngles;//get the default player rotation
}
```

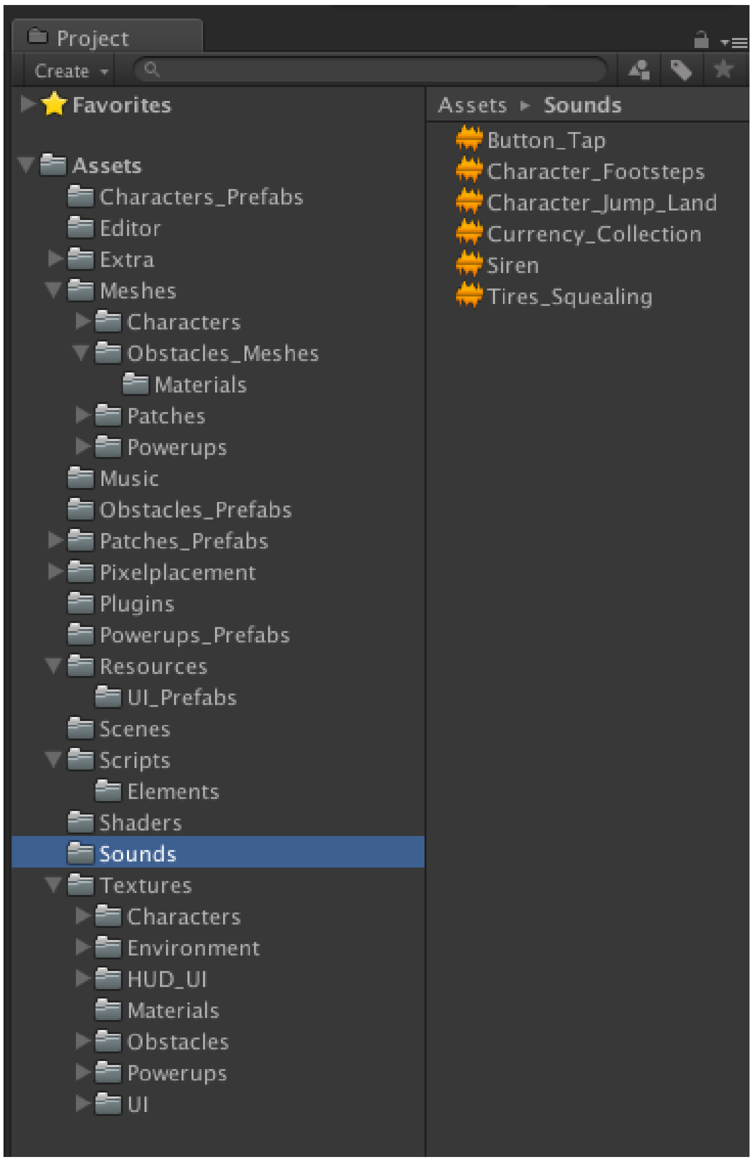
Adding a Sound

1. Go to Project > UltimateKit > Scripts > *SoundManager*.
2. Add the sound's name in the relevant *enum.* Lets take the Siren sound played by the police car as an example.



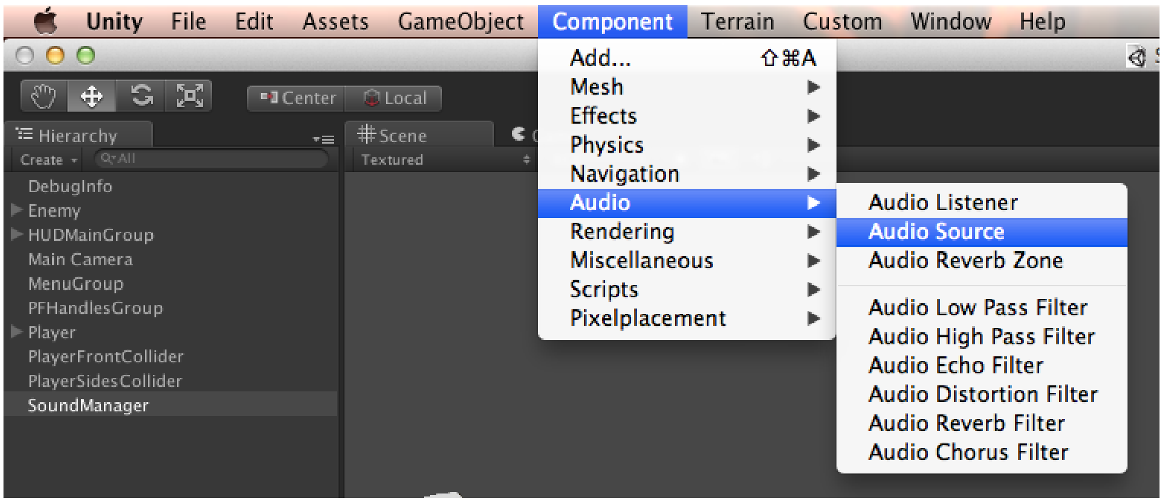
```
#pragma strict

var asCharacterSounds : AudioSource[]
var asPowerupSounds : AudioSource[];
var asMenuSounds : AudioSource[];
var asMusic : AudioSource[];
var asEnemySounds : AudioSource[];

//Music and Sound Enums
enum CharacterSounds
{
    Footsteps = 0,
    JumpLand = 1
}

enum PowerupSounds
{
    CurrencyCollection = 0,
    PowerupCollection = 1
}

enum MenuSounds
{
    ButtonTap = 0
}

enum EnemySounds
{
    TiresSqueal = 0,
    Siren = 1
}
```

3. Import the sound. (Drag and drop the sound from the Finder/ Window to <u>Project > Assets > UltimateKit > Sounds</u>)

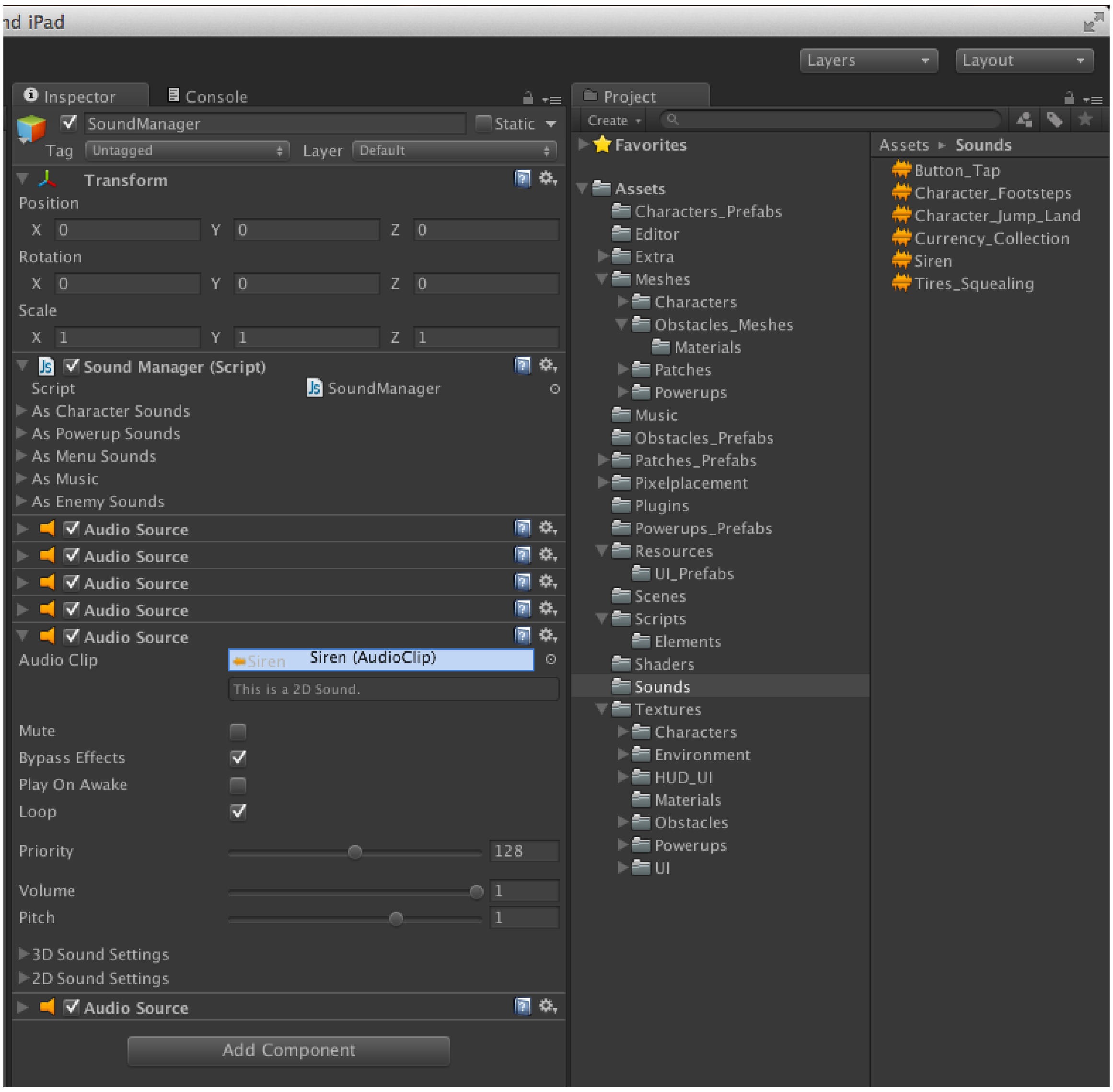


Optimization Notes:
- Change the *Audio Format* and *Load type* as needed.
- Uncheck *3D Sound* as the project by default doesn't uses 3D sounds.

4. Select Hierarchy > SoundManager.
5. Select Component > Audio > Audio Source. (This will add another Audio Source to your *SoundManager* prefab to be used later)

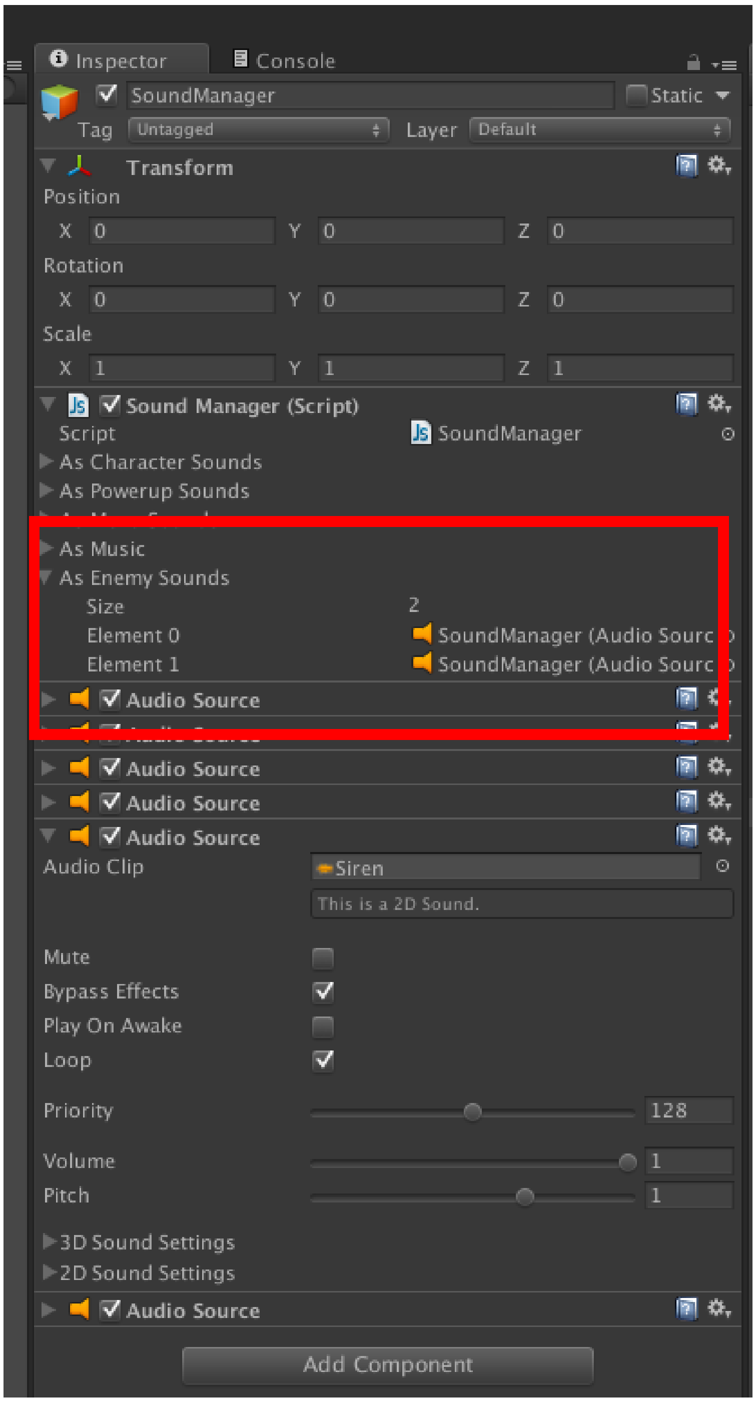


6. Drag the sound from Project > Sounds to Audio Source > Audio Clip of the newly created Audio Source Component.



Position X 0 Y 0 Z 0
Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1
Script SoundManager
Audio Clip Siren (AudioClip)
This is a 2D Sound.
Mute ☐
Bypass Effects ✓
Play On Awake ☐
Loop ✓
Priority 128
Volume 1
Pitch 1

7. Increase the array size of the relevant array.



Inspector | Console

SoundManager — Static
Tag Untagged — Layer Default

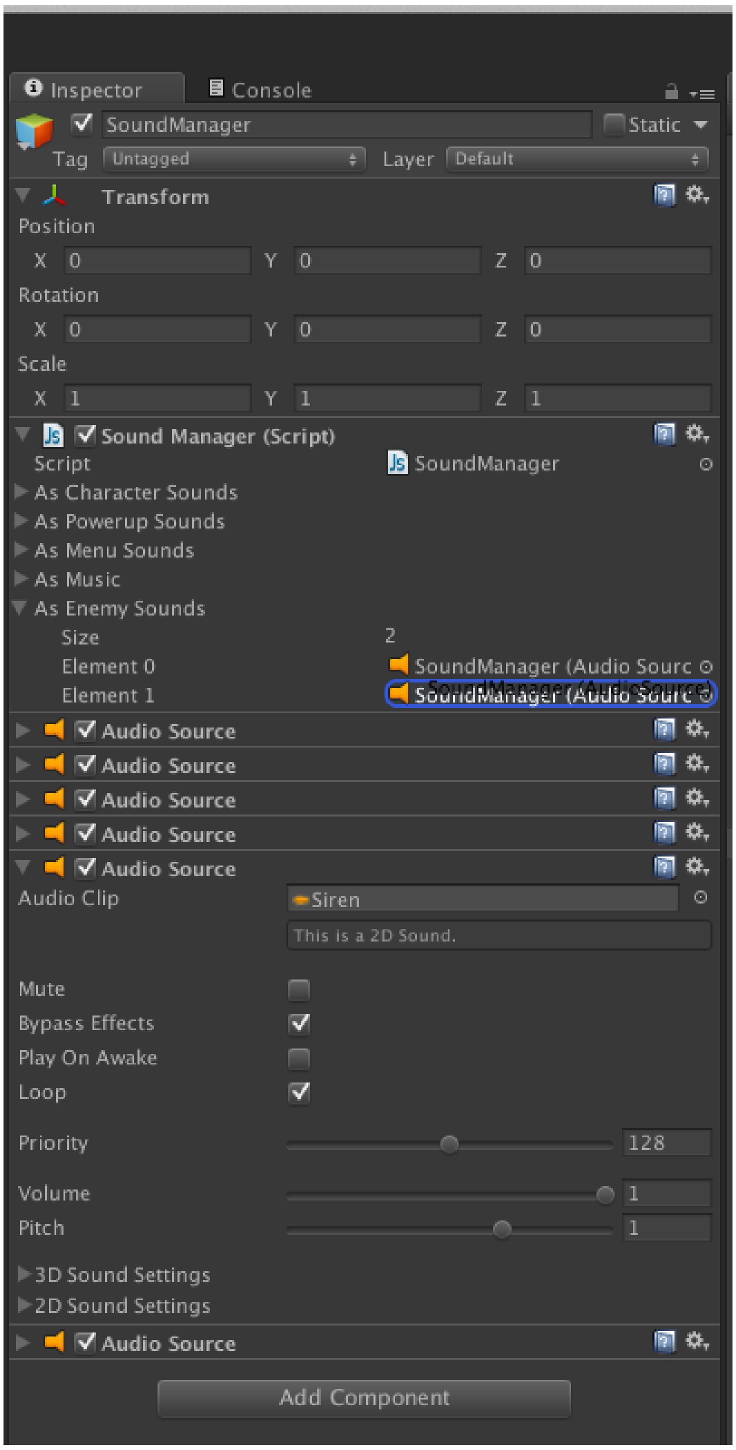
Transform
Position X 0 Y 0 Z 0
Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1

Sound Manager (Script)
Script SoundManager
As Character Sounds
As Powerup Sounds
As Music
As Enemy Sounds
Size 2
Element 0 SoundManager (Audio Sourc
Element 1 SoundManager (Audio Sourc

Audio Source
Audio Source
Audio Source
Audio Source
Audio Clip Siren
This is a 2D Sound.
Mute ☐
Bypass Effects ✓
Play On Awake ☐
Loop ✓
Priority 128
Volume 1
Pitch 1
3D Sound Settings
2D Sound Settings
Audio Source

Add Component

8. Drag the Audio Source and drop it as the last index of the array.



SoundManager Static
Tag Untagged Layer Default

Transform
Position X 0 Y 0 Z 0
Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1

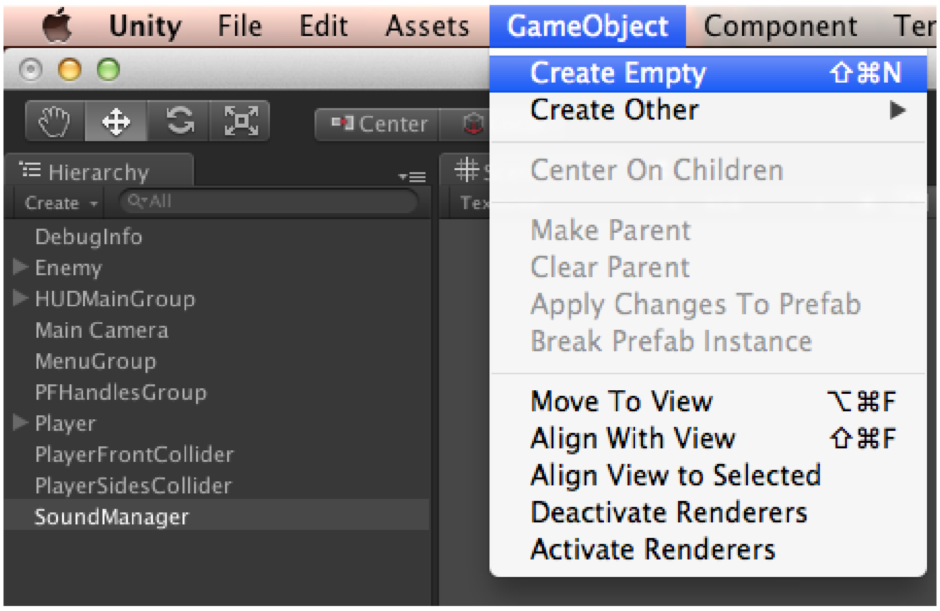
Sound Manager (Script)
Script SoundManager
As Character Sounds
As Powerup Sounds
As Menu Sounds
As Music
As Enemy Sounds
Size 2
Element 0 SoundManager (Audio Sourc
Element 1 SoundManager (Audio Sourc

Audio Source
Audio Source
Audio Source
Audio Source
Audio Source
Audio Clip Siren
This is a 2D Sound.
Mute ☐
Bypass Effects ✓
Play On Awake ☐
Loop ✓
Priority 128
Volume 1
Pitch 1
3D Sound Settings
2D Sound Settings
Audio Source

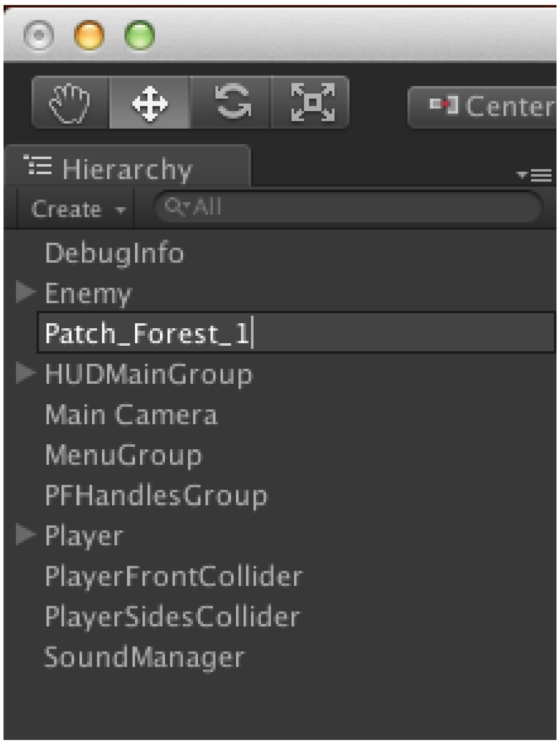
9. Use the "playSound(...)" function from SoundManager in the scripts where you need to use the newly added sound.

Adding a Patch

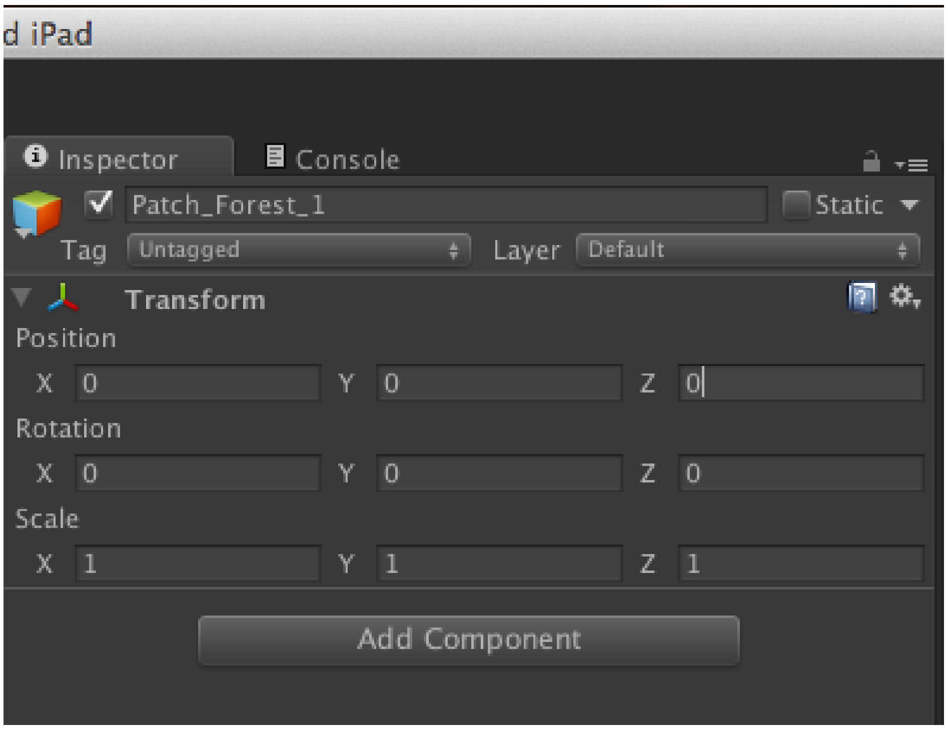
1. In the *Hierarchy* tab, add a new game object by selecting GameObject > CreateEmpty.



2. Name the empty game object.



3. Set the game object position and rotation transforms to zero.


d iPad

Inspector | Console

Patch_Forest_1 | Static

Tag: Untagged | Layer: Default

Transform

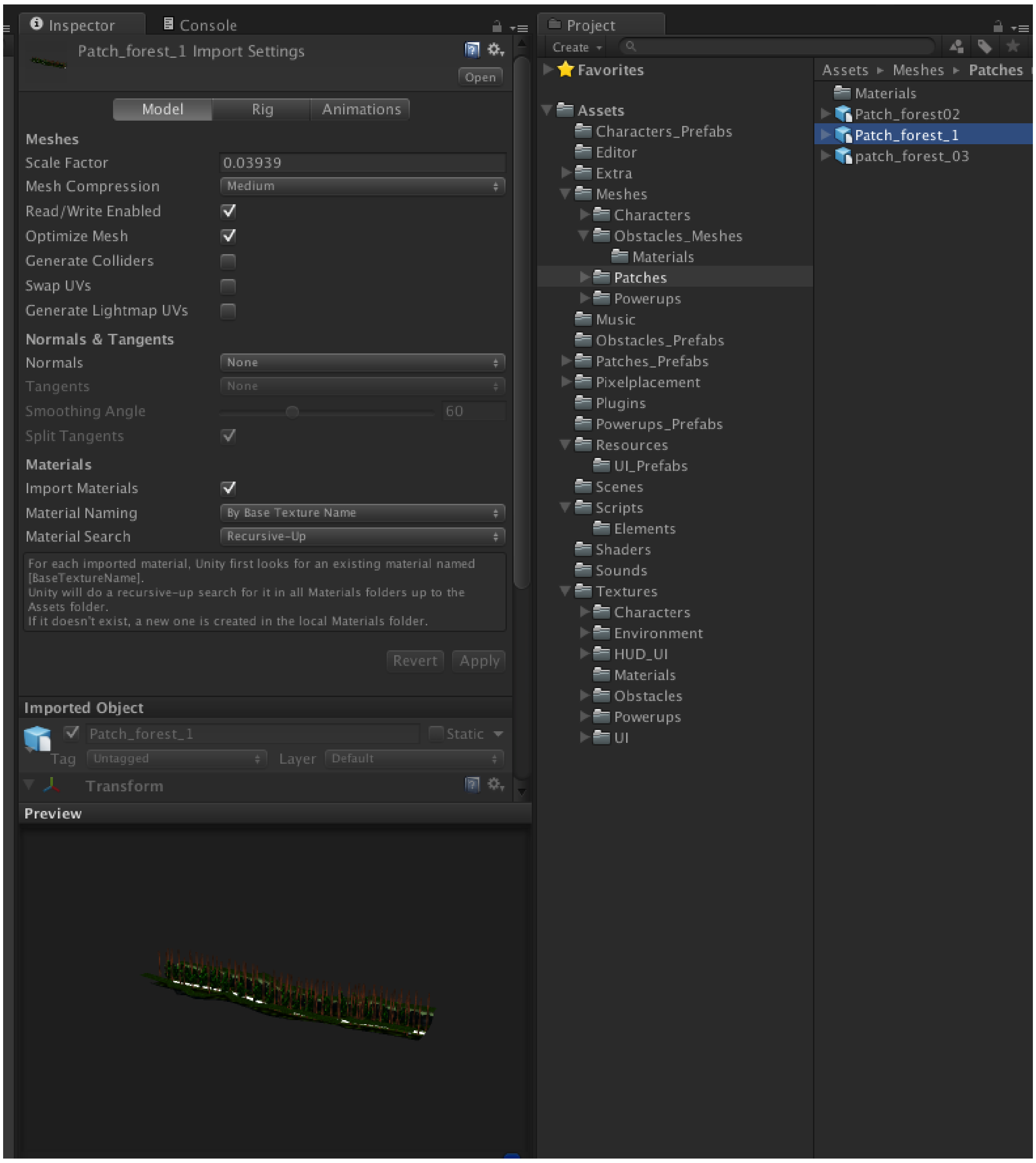
Position: X 0, Y 0, Z 0

Rotation: X 0, Y 0, Z 0

Scale: X 1, Y 1, Z 1

Add Component

4. Import the patch .fbx.



Patch_forest_1 Import Settings

Meshes
Scale Factor 0.03939
Mesh Compression Medium
Read/Write Enabled ✓
Optimize Mesh ✓
Generate Colliders
Swap UVs
Generate Lightmap UVs

Normals & Tangents
Normals None
Tangents None
Smoothing Angle 60
Split Tangents ✓

Materials
Import Materials ✓
Material Naming By Base Texture Name
Material Search Recursive-Up

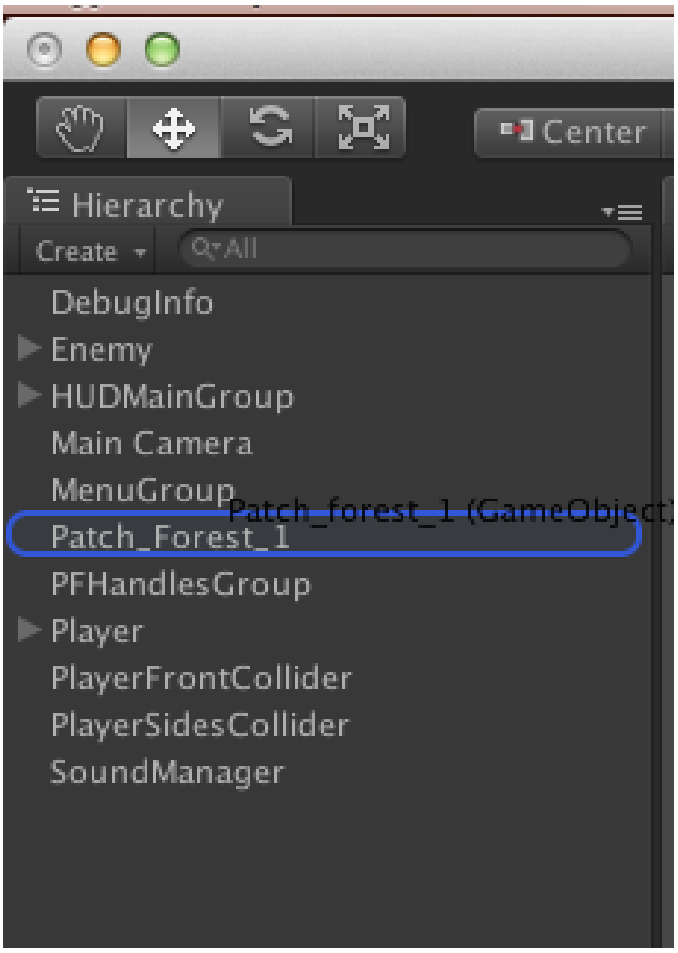
For each imported material, Unity first looks for an existing material named [BaseTextureName].
Unity will do a recursive-up search for it in all Materials folders up to the Assets folder.
If it doesn't exist, a new one is created in the local Materials folder.

Imported Object
Patch_forest_1 Static
Tag Untagged Layer Default
Transform

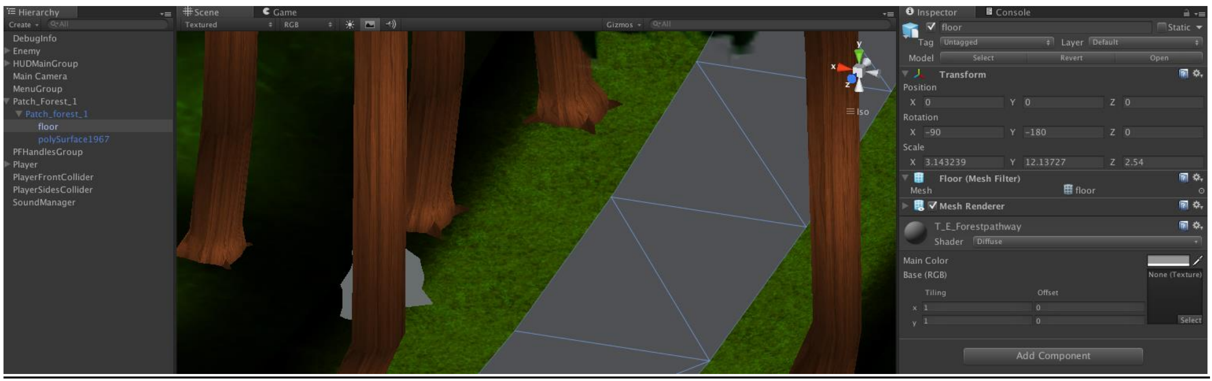
Optimization Notes:

- Use Model > Scale Factor to adjust the scale.
- Use Model > Mesh Compression to compress the imported asset as much as you can without compromising its appearance.
- Select “None” in Rig > Animation Type if your asset isn’t rigged.
- Uncheck the Import Animation option in Animations > Import Animation if your asset isn’t animated.

5. Drag the imported .fbx and drop it in the created empty game object.

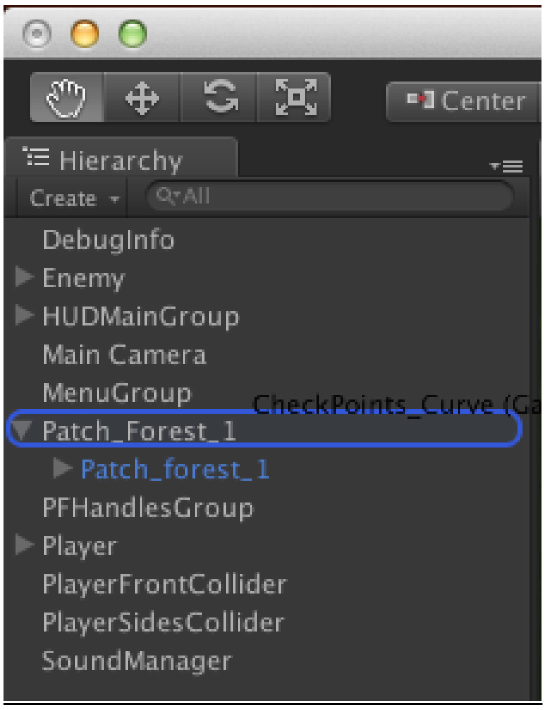


6. Select the floor of your patch where the character will run and perform two steps:
    a. Select <u>Component > Physics > Mesh Collider</u>.
    b. Select <u>Layer > Terrain lyr.</u>

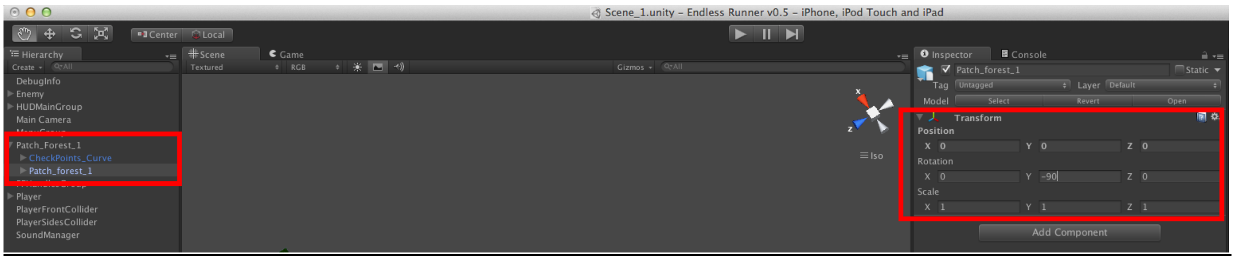


floor
Static
Tag Untagged Layer Default
Model Select Revert Open
Transform
Position X 0 Y 0 Z 0
Rotation X -90 Y -180 Z 0
Scale X 3.143239 Y 12.13727 Z 2.54
Floor (Mesh Filter)
Mesh floor
Mesh Renderer
T_E_Forestpathway
Shader Diffuse
Main Color
Base (RGB) None (Texture)
Tiling Offset
x 1 0
y 1 0

7. Select <u>Project > Patches_Prefabs > Sample_CPs.</u>
8. Drag the "CheckPoints_Straight" prefab into the patch prefab if your patch's path is in a straight line. If the path is not in a straight line, drag the "CheckPoints_Curve" instead.



9. Rotate the patch if it does not have the same orientation as the spline.



Patch_forest_1
Tag Untagged Layer Default
Transform
Position X 0 Y 0 Z 0
Rotation X 0 Y -90 Z 0
Scale X 1 Y 1 Z 1

Adjusting CPs of a Straight Patch

a. Adjust the Model > Scale Factor of your .fbx and make sure the patch is exactly the size of the spline.

Note: Make sure the spline is centered on the path.

b. Select Hierarchy > **patch name**.

c. Click *CheckPoints_Straight*.

d. From the title bar, select Custom > Patch CP Generator. (This saves all the changes you have made to the spline)

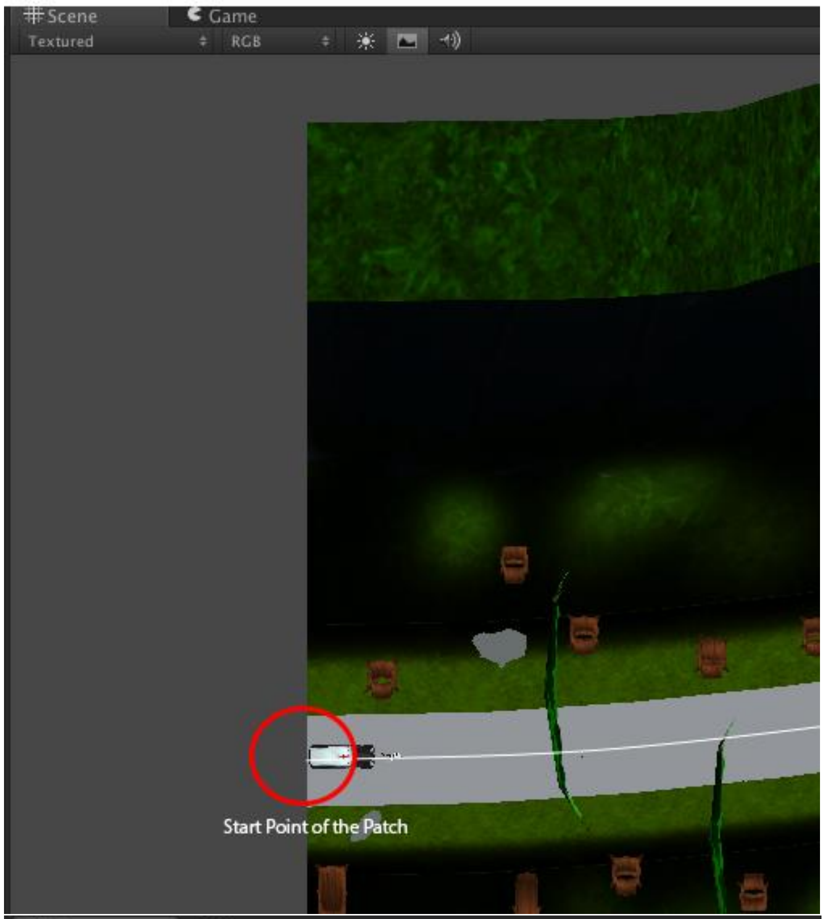
e. Select the **patch name**.

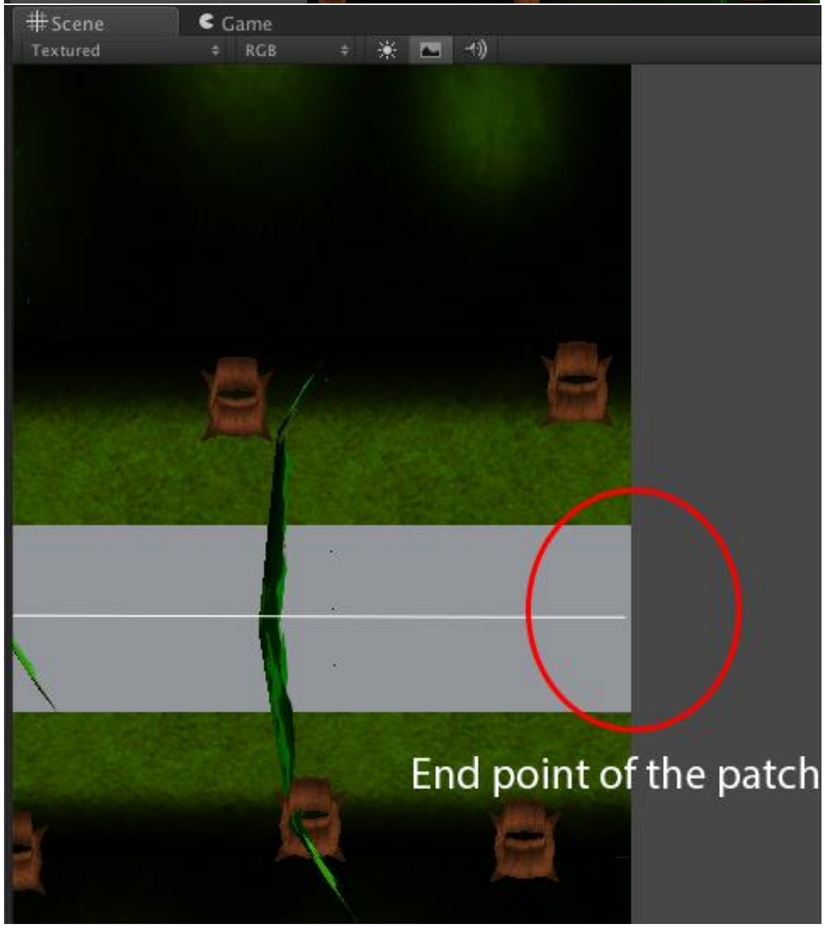
f. Drag the patch to Project > Patches_Prefabs to save the created prefab.

Adjusting CPs of a Curved Patch

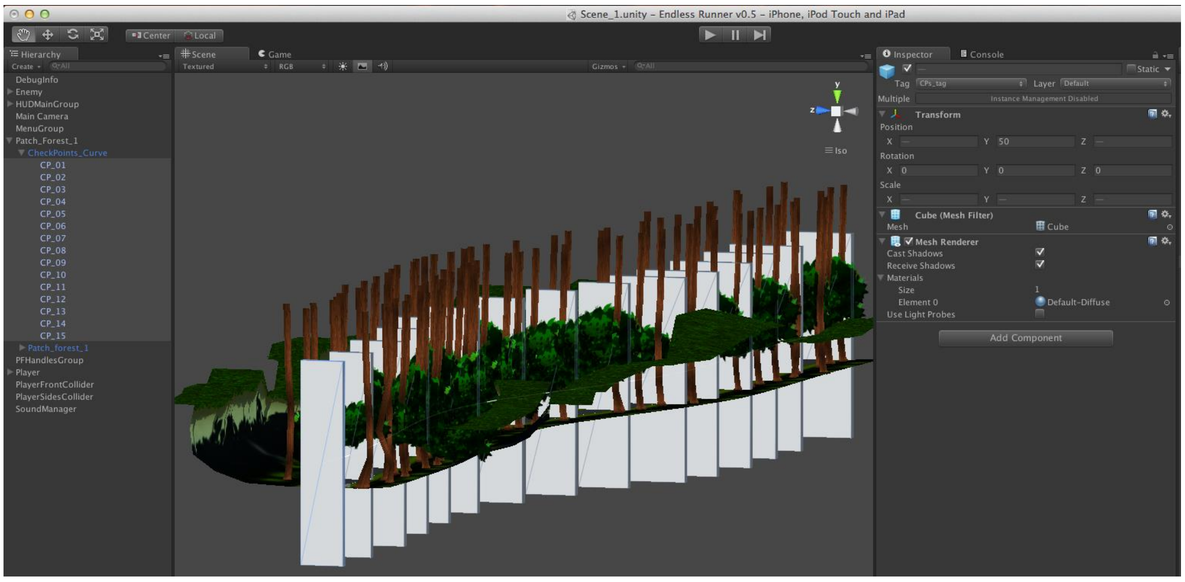
a. Adjust the Model > Scale Factor of your .fbx and make sure the patch is exactly the size of the spline.

Note: The start and end points of the spline should be centered on the start and end of the path.


Scene
Game
Textured
RGB
Start Point of the Patch


Scene
Game
Textured
RGB
End point of the patch

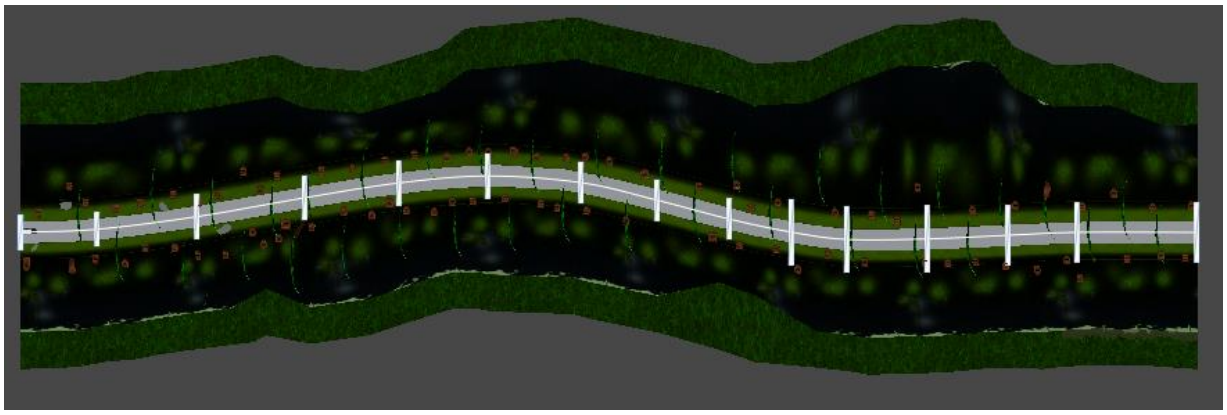
b. Select <u>Hierarchy > *patch name* > CheckPoints_Curve</u>.
c. Select all the CPs.
d. Check the *Mesh Renderer* component from <u>Inspector > Mesh Renderer.</u> (This will display all the Check Points that shape the spline)



DebugInfo
Enemy
HUDMainGroup
Main Camera
MenuGroup
Patch_Forest_1
CheckPoints_Curve
CP_01
CP_02
CP_03
CP_04
CP_05
CP_06
CP_07
CP_08
CP_09
CP_10
CP_11
CP_12
CP_13
CP_14
CP_15
Patch_forest_1
PFHandlesGroup
Player
PlayerFrontCollider
PlayerSidesCollider
SoundManager

Static
Tag CPs_tag Layer Default
Multiple Instance Management Disabled
Transform
Position X — Y 50 Z —
Rotation X 0 Y 0 Z 0
Scale X — Y — Z —
Cube (Mesh Filter)
Mesh Cube
✓ Mesh Renderer
Cast Shadows ✓
Receive Shadows ✓
Materials
Size 1
Element 0 Default-Diffuse
Use Light Probes

e. Adjust the CPs so that the spline is centered on the path at every point on that path. You can only change the position of the CPs; changing their rotation or scale will have no effect on the spline.

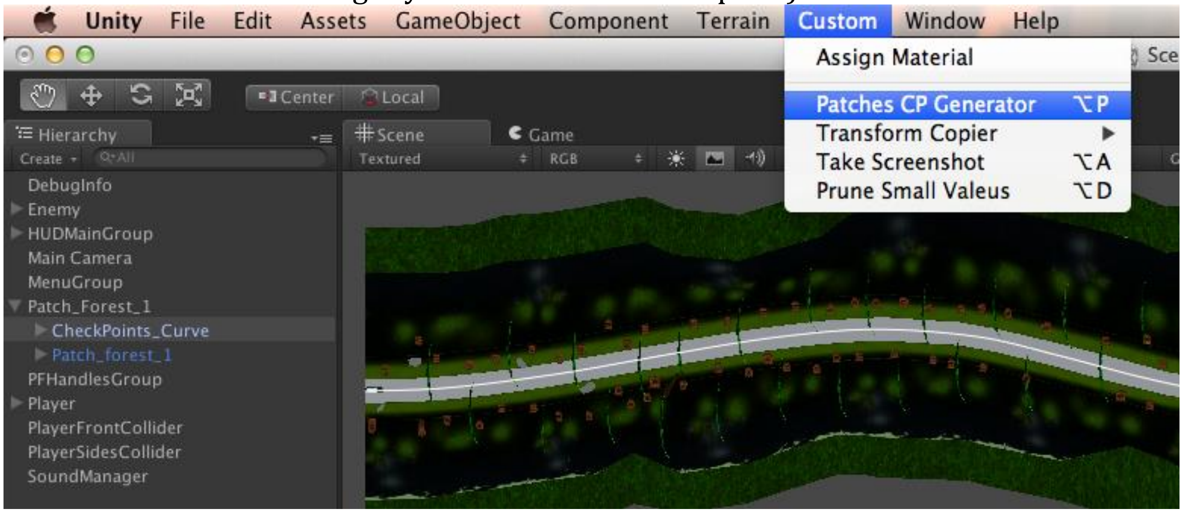


Notes:

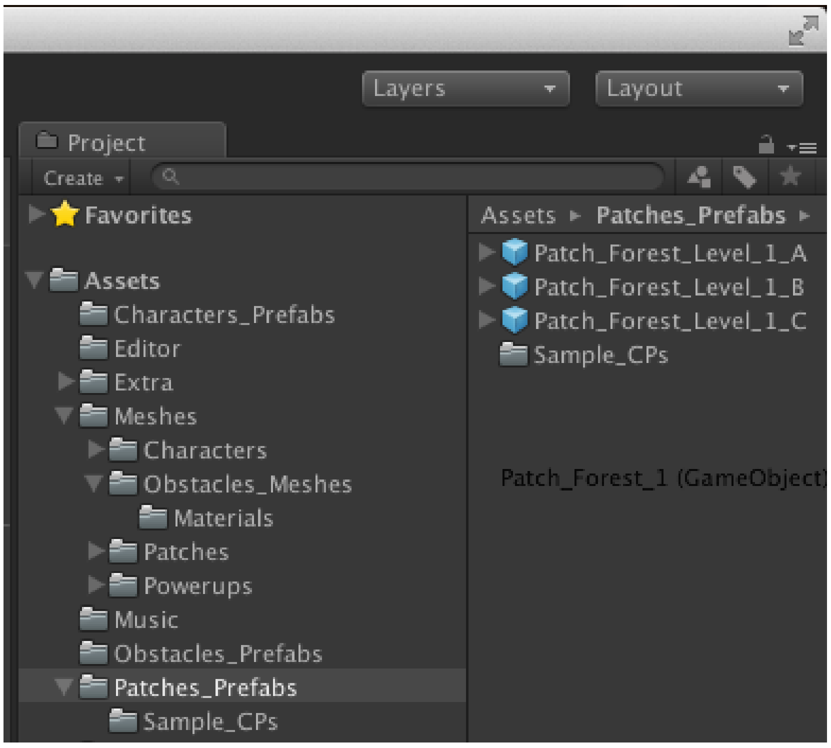
- Make sure your Editor's camera is in Isometric mode. (You can change the camera mode by clicking the cube in the top right corner of the screen.)
- Make sure the Editor is in top view.
- You can add or remove CPs as required but make sure not to miss a number in the sequence.

f. Check off the *Mesh Renderer* component from <u>Inspector > Mesh Renderer</u> when you're done adjusting the spline.
g. Click *CheckPoints_Straight/ CheckPoints_Curve* or whatever you have named the prefab containing the checkpoints.

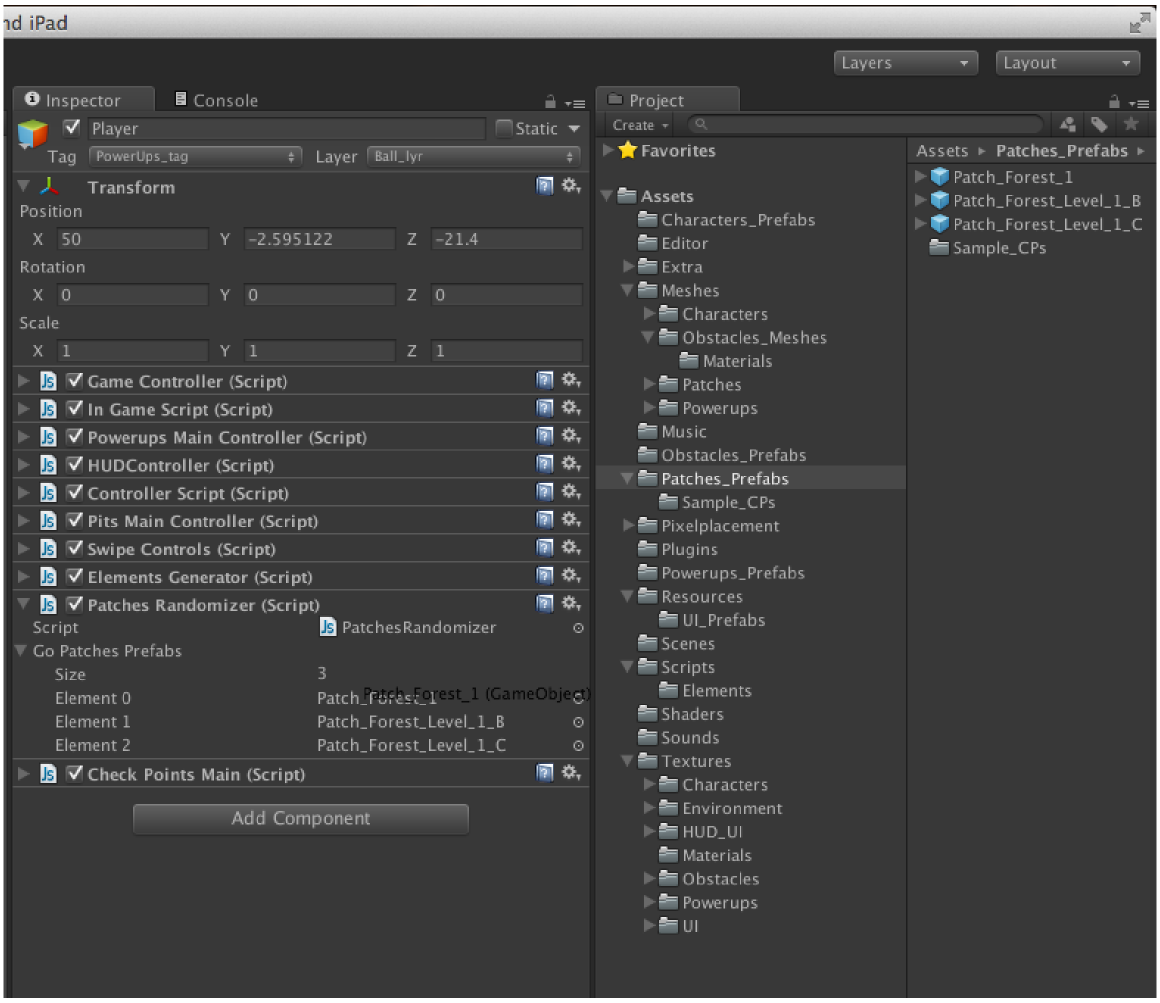
h. From the title bar, select Custom > Patch CP Generator. (This saves all the changes you have made to the spline)



i. Select the *patch name*.
j. Drag the patch to Project > Patches_Prefabs to save the created prefab.



10. Once the patch has been saved, select Player > Patches Randomizer from the Hierarchy.
11. Increase the array size of "Go Patches Prefabs".
12. Drag and add the newly created patch from Project > Assets > Patches_Prefabs, to the *Go Patches Prefabs* array.



```
☑ Player                              ☐ Static
Tag  PowerUps_tag          Layer  Ball_lyr
Transform
Position
  X 50        Y -2.595122     Z -21.4
Rotation
  X 0         Y 0             Z 0
Scale
  X 1         Y 1             Z 1
☑ Game Controller (Script)
☑ In Game Script (Script)
☑ Powerups Main Controller (Script)
☑ HUDController (Script)
☑ Controller Script (Script)
☑ Pits Main Controller (Script)
☑ Swipe Controls (Script)
☑ Elements Generator (Script)
☑ Patches Randomizer (Script)
  Script              PatchesRandomizer
  Go Patches Prefabs
    Size              3
    Element 0         Patch_Forest_1 (GameObject)
    Element 1         Patch_Forest_Level_1_B
    Element 2         Patch_Forest_Level_1_C
☑ Check Points Main (Script)
```

13. Remove the patch from the *Hierarchy* tab.

Menu and Shop

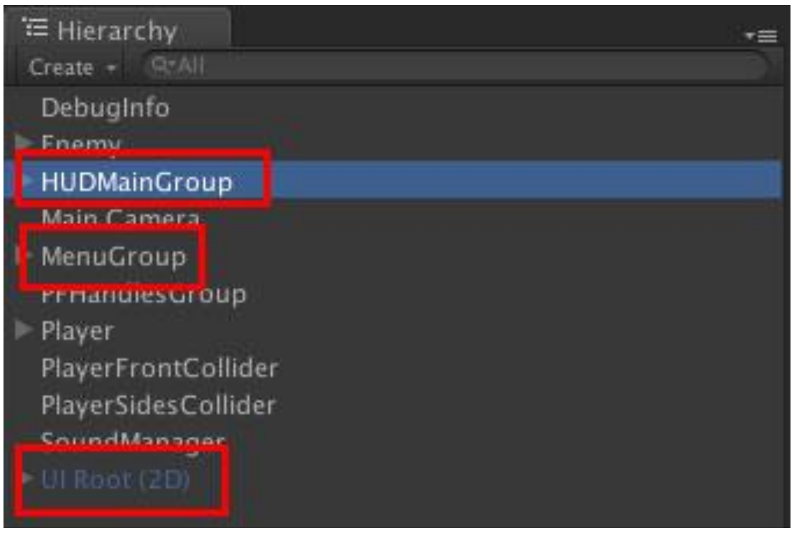
Switch between Custom Menu and NGUI

By default the Custom Menu will be enabled; switching between the two types of the menus is pretty straightforward. The *InGameScriptCS.cs* always checks which type of menu has been enabled. The rest of the scripts that need to use the menus find out which menu system is active by checking with the *InGameScriptCS.cs*.

NOTE: NGUI menu has been only scripted in C# so if you want to use the NGUI menu system please make sure that you are using C# scripts. To find out how to change script from Javascript to C# please refer to the "How to Change the Script Type".

Switch from Custom Menu to NGUI

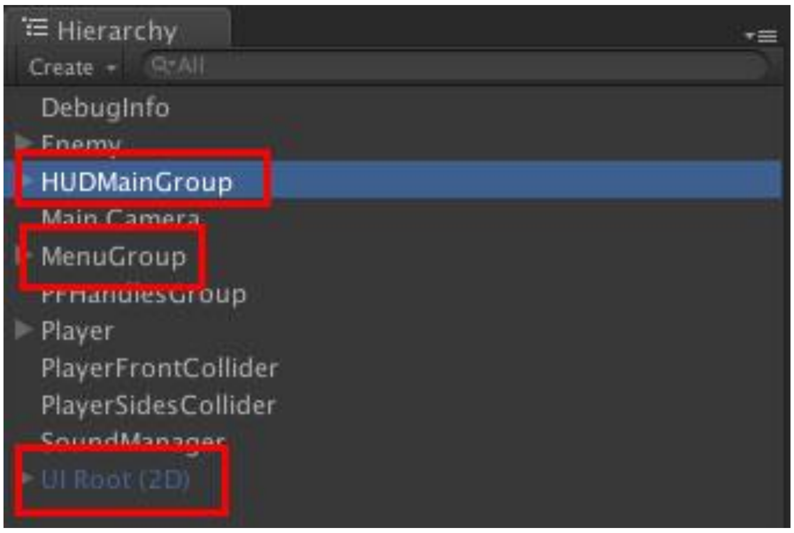
To disable the custom menu, you need to disable *HUDMainGroup* and the *HUDMainGroup.* Then to enable the NGUI menu you need to enable *UI Root (2D).*



1. Disable the *HUDMainGroup* located in the Hierarchy.
2. Disable the *MenuGroup* located in the Hierarchy.
3. Enable the *UI Root (2D)* prefab located in the Hierarchy.

Switch from NGUI to Custom Menu

To enable the custom menu, you need to enable *HUDMainGroup* and the *HUDMainGroup.* Then to disable the NGUI menu you need to disable *UI Root (2D).*



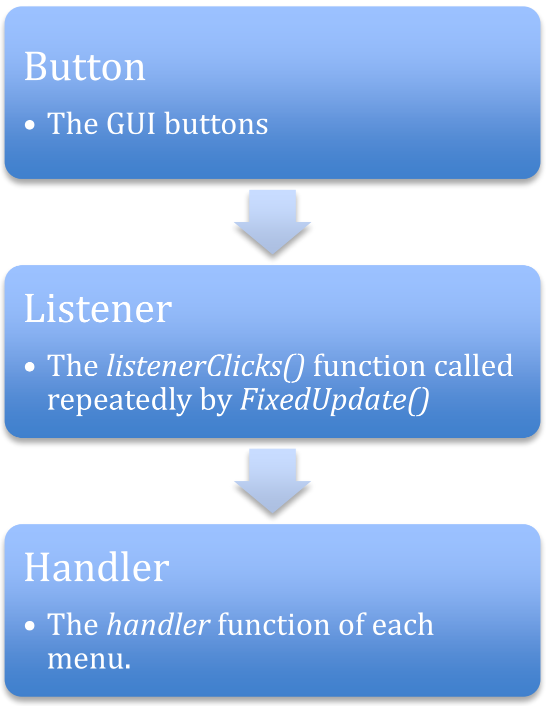
1. Enable the *HUDMainGroup* located in the Hierarchy.
2. Enable the *MenuGroup* located in the Hierarchy.
3. Disable the *UI Root (2D)* prefab located in the Hierarchy.

Menu Script Architecture (Custom Menu)

The architecture of the menu controller, which is the *MenuScript.js* script, relies on a three-tier architecture. The first layer consists of the buttons that in-turn consist of a plane, a material and a box collider.

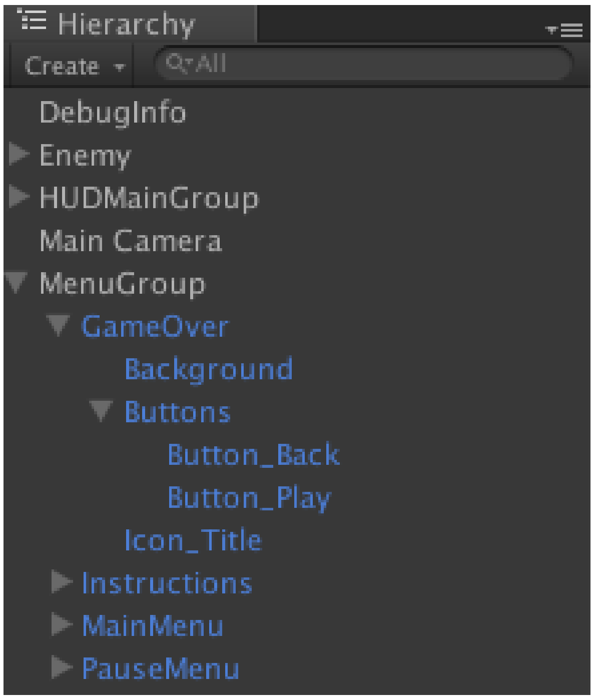
The second layer is the listener that consists of a function named *listenerClicks()* in the *MenuScript.js*. This function is called by the *FixedUpdate()* function to listen for any interaction with the screen. If the user taps on the screen, the camera raycasts the menu in search of the button tapped. If the raycast finds a collider in its way, a relevant handler is called. By relevant, we mean the handler of the active menu.

Finally, the third layer consists of handler functions. Each menu has a single handler function that defines the implementation of all the buttons the menu has. When the listener function calls the handler function, it also passes the transform of the button tapped as a parameter. The handler function uses this transform and compares it with the array of buttons' transforms, to check which button's implementation to execute.


Button
• The GUI buttons
Listener
• The *listenerClicks()* function called repeatedly by *FixedUpdate()*
Handler
• The *handler* function of each menu.

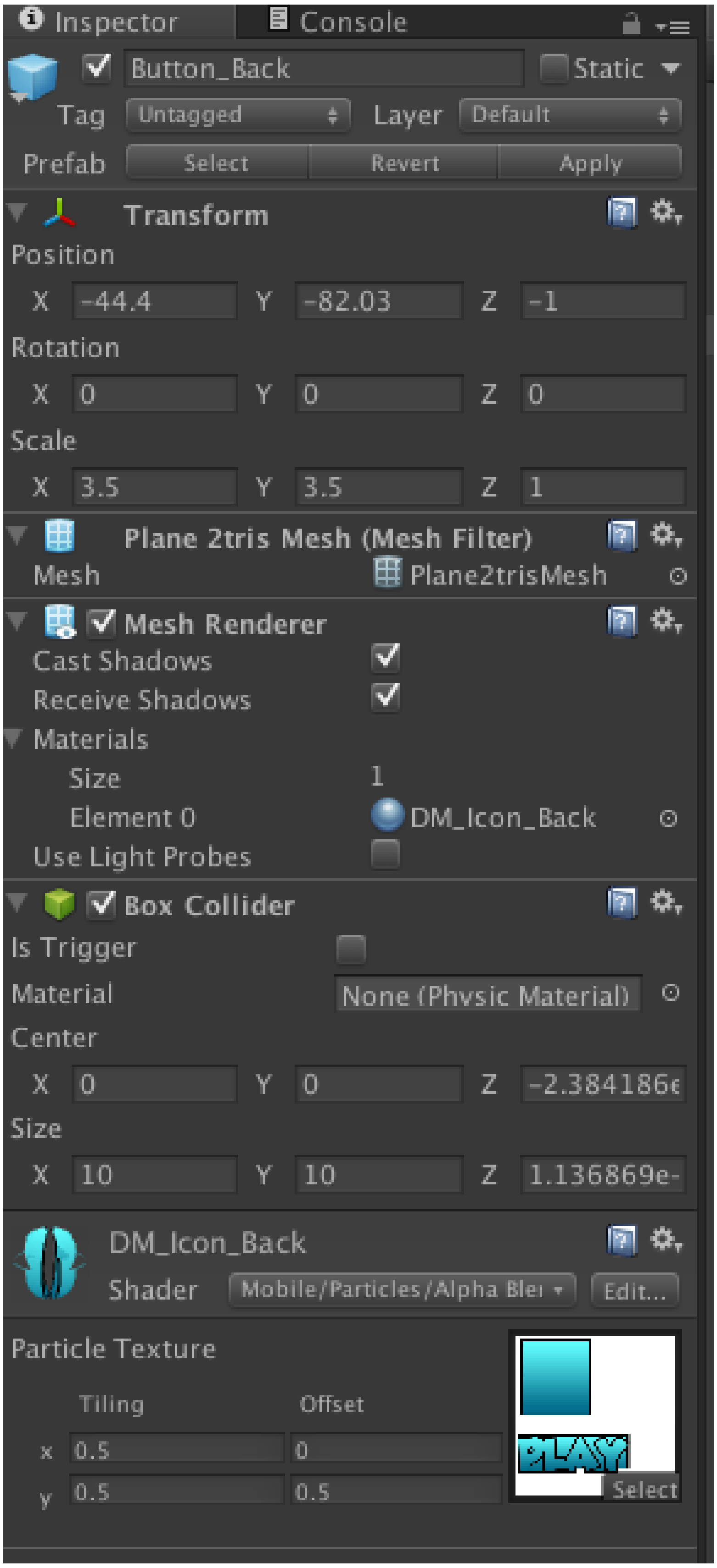
Adding a Custom Menu

The *MenuGroup* prefab in the Hierarchy tab is the parent of all the menu prefabs used. The menus are present in the scene at all times. They are displayed by bringing them in front of the HUD Camera by the *MenuScript*. The project uses the low-poly plane named *Plane2tirsMesh* located at Project > Assets > Meshes. As always, the lower the poly-count, the better the performance.



By convention in the project, an empty GameObject is created to contain the backgrounds, icons and buttons (*GameOver* is used as an example in the above screen shot). All of the buttons are enclosed in yet another empty GameObject named *Buttons*. Each button is a plane that also has a box collider as a component to detect raycasts (raycasts are used to detect taps on buttons).

In the following example the button named *Button_Back* is shown with all its components. Notice the low-poly plane used instead of the default plane used by Unity. Secondly, observe that a box collider has been attached to the button to detect raycasts. A box collider can be added by selecting the plane and then selecting Component > Physics > Box Collider from the title bar.



Inspector | Console

✓ Button_Back | Static

Tag: Untagged | Layer: Default

Prefab: Select | Revert | Apply

Transform

Position: X -44.4 | Y -82.03 | Z -1

Rotation: X 0 | Y 0 | Z 0

Scale: X 3.5 | Y 3.5 | Z 1

Plane 2tris Mesh (Mesh Filter)

Mesh: Plane2trisMesh

✓ Mesh Renderer

Cast Shadows ✓

Receive Shadows ✓

Materials

Size 1

Element 0: DM_Icon_Back

Use Light Probes ☐

✓ Box Collider

Is Trigger ☐

Material: None (Physic Material)

Center: X 0 | Y 0 | Z -2.384186e

Size: X 10 | Y 10 | Z 1.136869e-

DM_Icon_Back

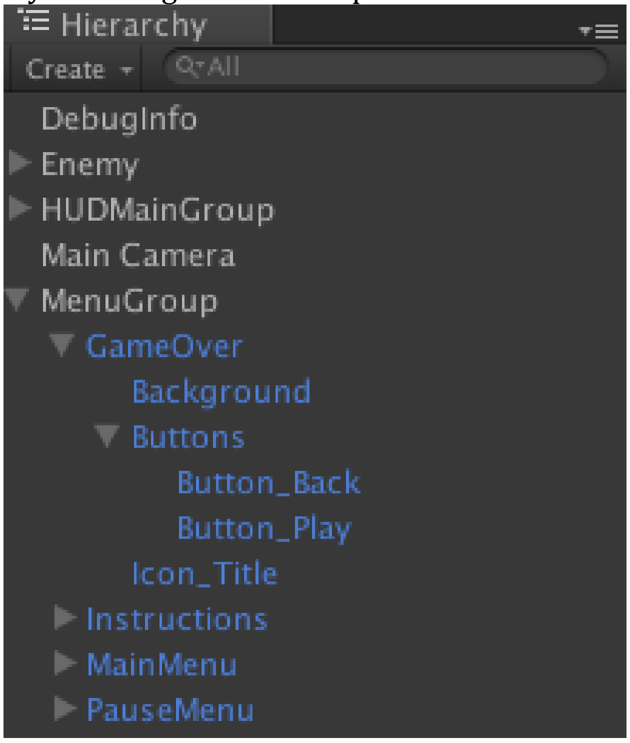
Shader: Mobile/Particles/Alpha Blei | Edit...

Particle Texture

	Tiling	Offset
x	0.5	0
y	0.5	0.5

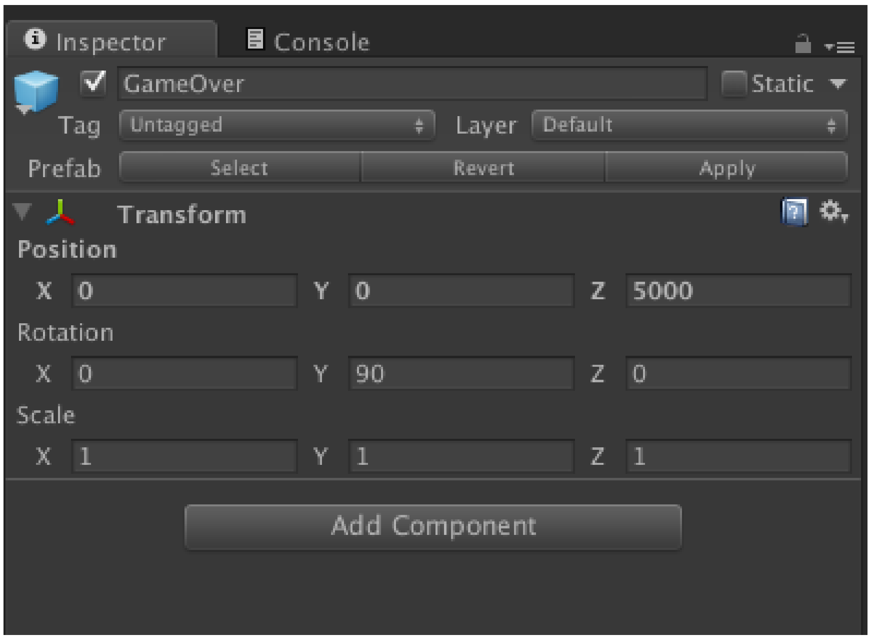
1. As mentioned before, make sure all components of the menu are enclosed in a single game object. (For the sake of example, lets call the menu “GameOver”)

2. Place the *GameOver* prefab in the *MenuGroup* prefab located in the Hierarchy tab along with its components.



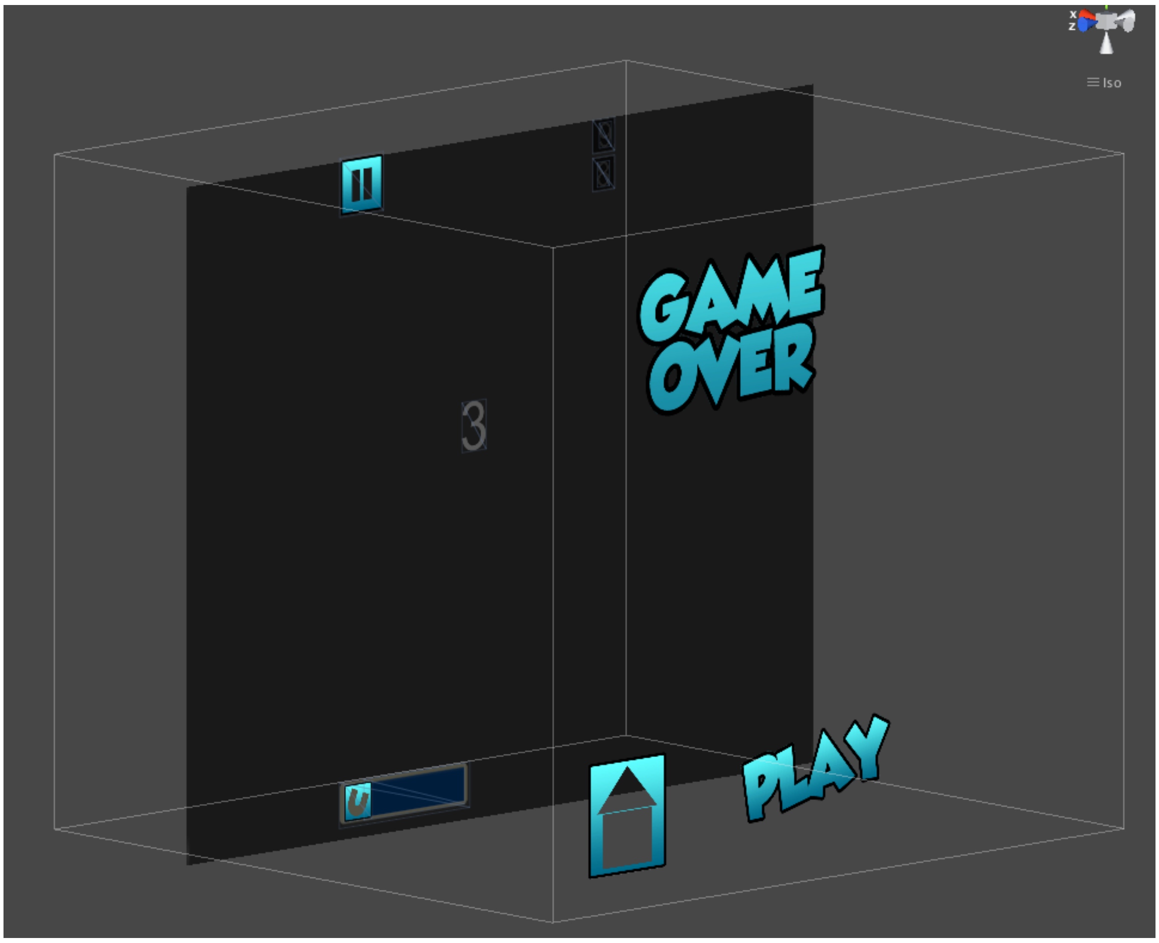
```
DebugInfo
Enemy
HUDMainGroup
Main Camera
MenuGroup
  GameOver
    Background
    Buttons
      Button_Back
      Button_Play
    Icon_Title
  Instructions
  MainMenu
  PauseMenu
```

3. Set the position of the *GameOver* prefab at 0,0,5000. (This brings the prefab into the HUD Camera as the HUD Camera is located at (0,0,5000))

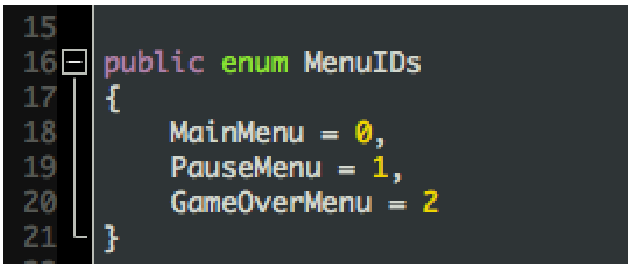


GameOver
Tag Untagged Layer Default
Transform
Position X 0 Y 0 Z 5000
Rotation X 0 Y 90 Z 0
Scale X 1 Y 1 Z 1

4. Double click on Hierarchy > HUDMainGroup to display it in the Editor and make sure the menu items are facing towards the negative x-axis. The screen shot shows the menu title, the buttons, the semi-transparent background and also the HUD elements in the background (ignore these while designing a menu or disable the HUDMainGroup if these are in the way but make sure to enable it once your done with the menu).

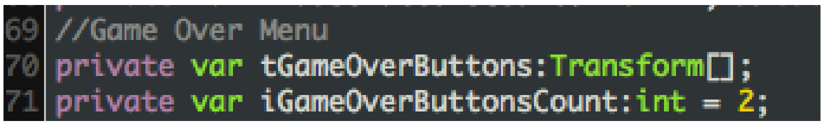


5. Open the *MenuScript.js* from Project > Assets > UI > Scripts or C# Scripts.
6. Add the name of the newly created menu in the *MenuIDs* enum.



```
public enum MenuIDs
{
    MainMenu = 0,
    PauseMenu = 1,
    GameOverMenu = 2
}
```

7. Create a Transform type array to store the transforms of the buttons in the GameOver menu.
8. Create an integer type variable to store the number of button in the GameOver menu.



```
//Game Over Menu
private var tGameOverButtons:Transform[];
private var iGameOverButtonsCount:int = 2;
```

9. Store the *GameOver* menu's transform the *tMenuTransform* array.
10. Initialize the transform type array that holds the references of the buttons in the *GameOver* menu.

```
//game over menu initialization
tMenuTransforms[MenuIDs.GameOverMenu] = tMenuGroup.Find("GameOver").GetComponent(Transform) as Transform;
tGameOverButtons = new Transform[iGameOverButtonsCount];
tGameOverButtons[0] = tMenuTransforms[MenuIDs.GameOverMenu].Find("Buttons/Button_Back");
tGameOverButtons[1] = tMenuTransforms[MenuIDs.GameOverMenu].Find("Buttons/Button_Play");
```

11. Create a handler function for *GameOver* menu to define the implementation of its buttons. In our case, we have two buttons.

```
private function handlerGameOverMenu(buttonTransform : Transform)
{
    if (tGameOverButtons[0] == buttonTransform)//main menu button
    {
        hInGameScript.procesClicksDeathMenu(GameOverMenuEvents.Back);
        CloseMenu(MenuIDs.GameOverMenu);
        ShowMenu(MenuIDs.MainMenu);
        CurrentMenu = MenuIDs.MainMenu;
    }
    else if (tGameOverButtons[1] == buttonTransform)//play button
    {
        hInGameScript.procesClicksDeathMenu(GameOverMenuEvents.Play);
        CloseMenu(CurrentMenu);
    }
}
```

12. Add a new case in the *listenerClicks* function. This function will call the *GameOver* handler function if its button is pressed.

```
else if (CurrentMenu == MenuIDs.GameOverMenu)
    handlerGameOverMenu(hit.transform);
```

13. Add a new case in the *ShowMenu(…)* function to display the *GameOver* menu prefab when needed. Setting the prefab's y position to zero brings it in front of the HUD Camera.

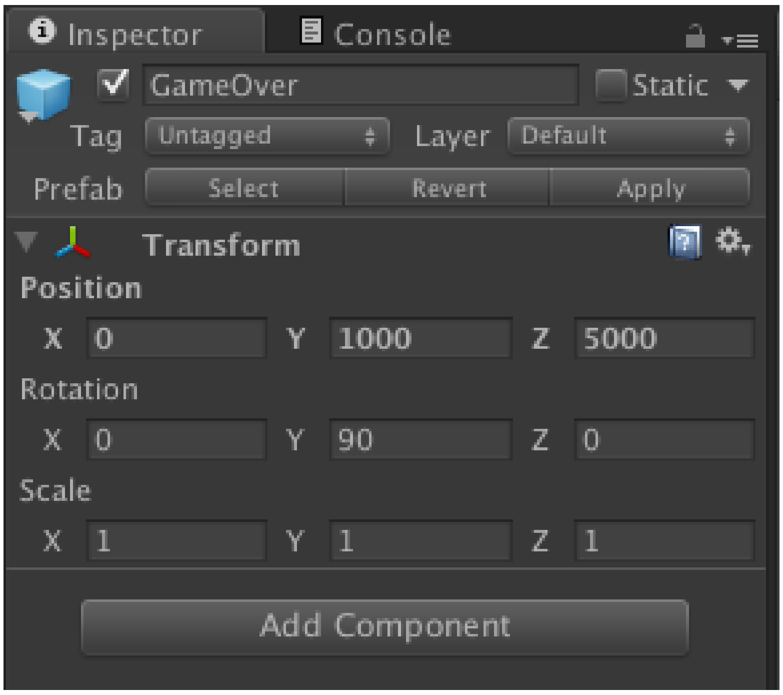
```
else if (MenuIDs.GameOverMenu == index)
{
    tMenuTransforms[MenuIDs.GameOverMenu].position.y = 0;
}
```

14. Add a case and its implementation in the *CloseMenu(…)* function as shown below. Setting the prefab's y position to 1000 moves it away from the HUD Camera.

```
else if (index == MenuIDs.GameOverMenu)
{
    tMenuTransforms[MenuIDs.GameOverMenu].position.y = 1000;
}
```

Note: Whenever you need to use the created menu, call the *ShowMenu(…)* function passing the appropriate parameter. Similarly, to close the menu, call the *CloseMenu(…)* function with the same parameter.

15. Set the position of the newly created *GameOver* menu prefab to (0,1000,5000). This will remove it from the HUD Camera in default conditions.



GameOver
Tag: Untagged
Layer: Default

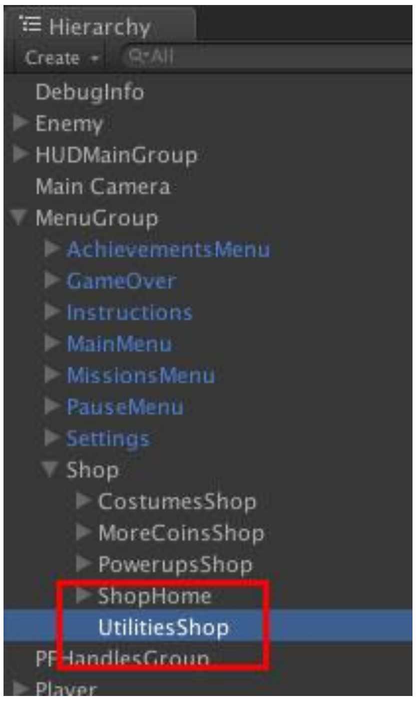
Position X 0 Y 1000 Z 5000
Rotation X 0 Y 90 Z 0
Scale X 1 Y 1 Z 1

Adding a Custom Shop Menu

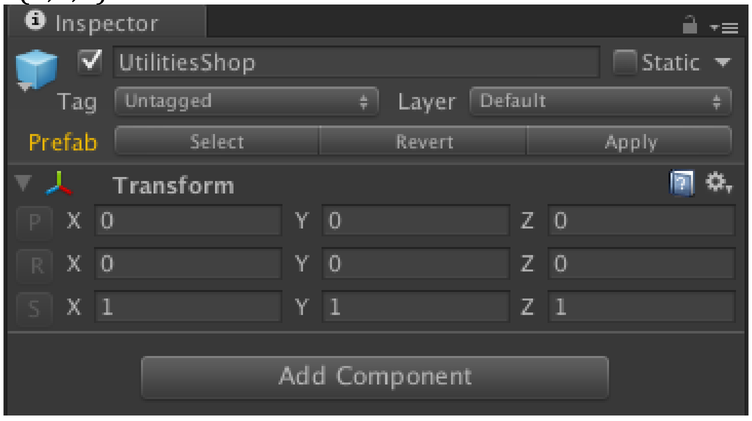
Adding a new shop is no different than adding a regular menu. The menus are contained in the *Shop* game object present in the *MenuGroup* prefab and the *ShopScript.js* or *ShopScriptCS.cs* controls the shop menus depending upon which programming language you are using. Just like the rest of the menus, shop menus are also displayed by bringing them in front of the HUD Camera by the *ShopScript*.

Lets take the example of utilities shop menu to walkthrough the process of creating a custom shop menu.

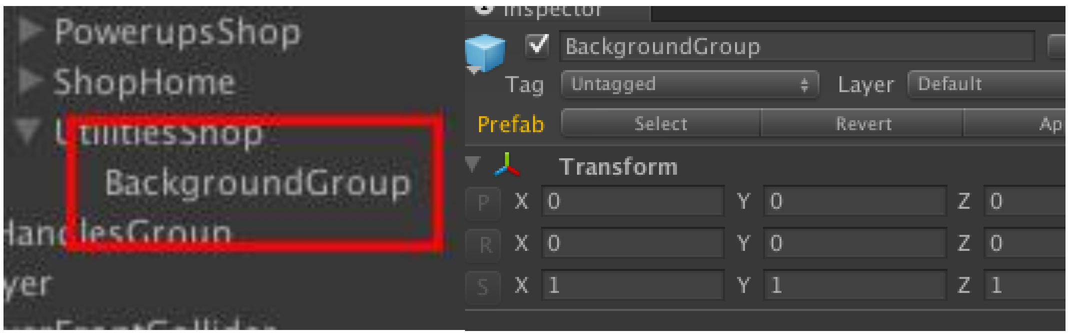
1. Create an empty gameobject under *Shop* and name it appropriately. For the example we will name it *UtilitiesShop*.



2. Set the transform and rotation values of the prefab to zero and set the scale to (1,1,1).



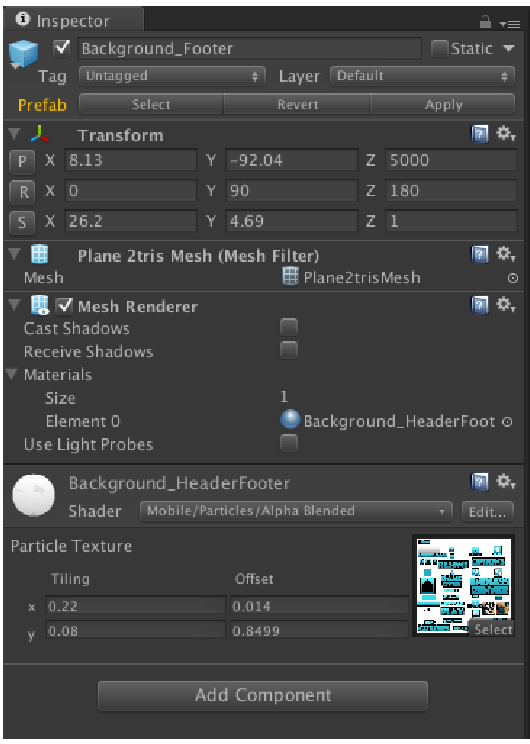
3. Now populate the Utilities game object with all the menu components you need it to hold. You can try copying these components from other menus or adding new textures. Make sure to set the Mesh Filter component to Plane2trisMesh provided in the Project > Assets > Meshes folder. This will make sure the plane is facing towards the camera.
4. Lets go ahead and add a component to the newly created menu. We will start with the background and work our way to the front. Like all the other shop menus I want the background to have a white plane, a header and footer. To keep everything clean I create an empty game object and put it under *UtilitiesShop*. I also set its transform to the default values (position and rotation at zero and the scale at one).

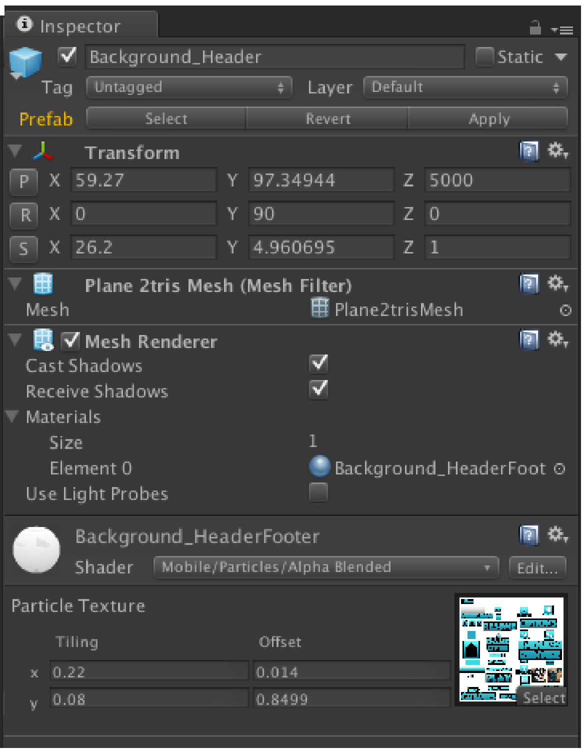

PowerupsShop
ShopHome
UtilitiesShop
BackgroundGroup

Inspector
BackgroundGroup
Tag Untagged Layer Default
Prefab Select Revert
Transform
P X 0 Y 0 Z 0
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1

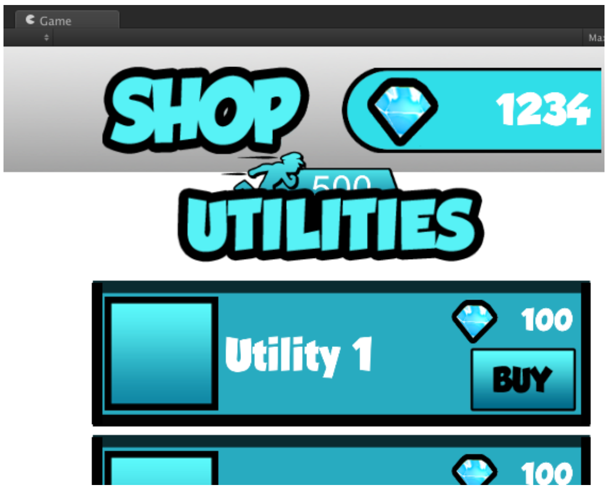
5. I now add more empty game objects under the *BackgroundGroup* and turn them into planes by adding components. For example I create an empty game object named Background_Footer and attach the Plane2trisMesh (located at Project > Assets > Meshes), a Mesh Renderer component and the Background_HeaderFooter material (located at Project > Assets > Textures > UI > Materials).

   We do the same with more empty game objects and design the *Background_Header* and BackgroundCollider component. The following screen shots show the final components when they have been set up on the screen.

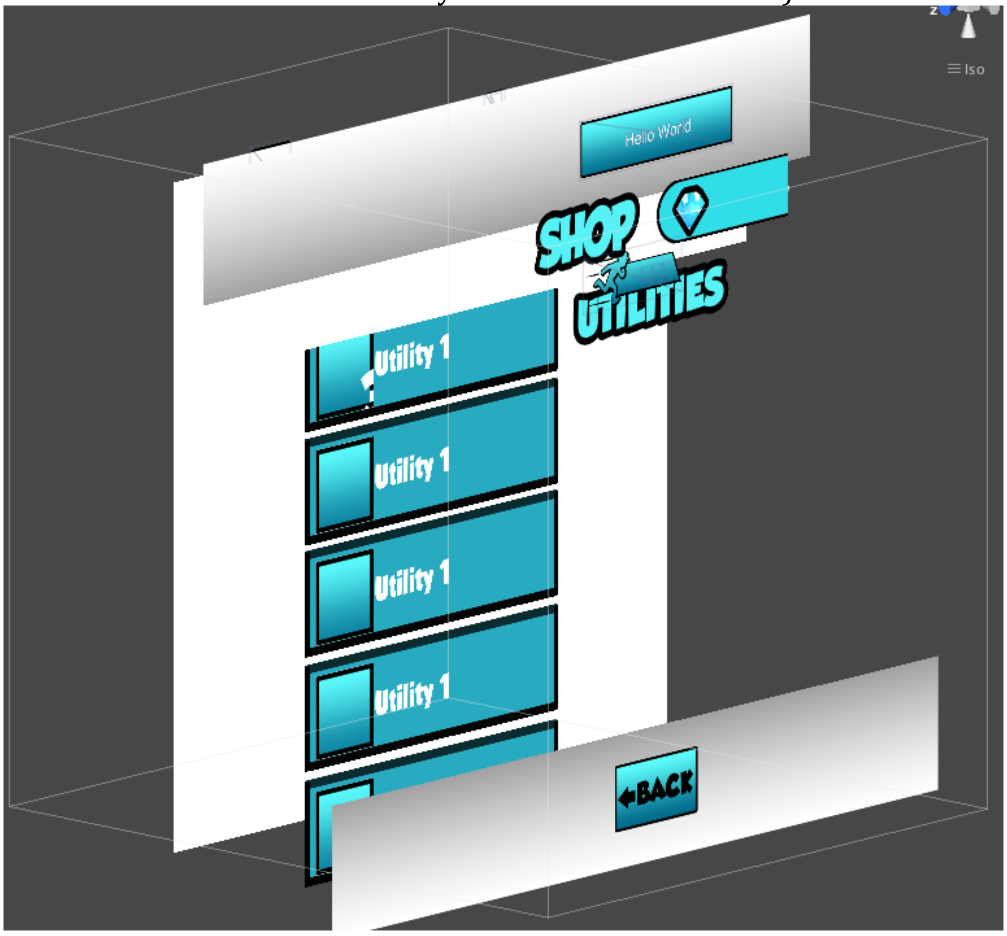

Inspector
Background_Footer Static
Tag Untagged Layer Default
Prefab Select Revert Apply
Transform
P X 8.13 Y -92.04 Z 5000
R X 0 Y 90 Z 180
S X 26.2 Y 4.69 Z 1
Plane 2tris Mesh (Mesh Filter)
Mesh Plane2trisMesh
Mesh Renderer
Cast Shadows
Receive Shadows
Materials
Size 1
Element 0 Background_HeaderFoot
Use Light Probes
Background_HeaderFooter
Shader Mobile/Particles/Alpha Blended Edit...
Particle Texture
Tiling Offset
x 0.22 0.014
y 0.08 0.8499
Add Component


Inspector
Background_Header Static
Tag Untagged Layer Default
Prefab Select Revert Apply
Transform
P X 59.27 Y 97.34944 Z 5000
R X 0 Y 90 Z 0
S X 26.2 Y 4.960695 Z 1
Plane 2tris Mesh (Mesh Filter)
Mesh Plane2trisMesh
Mesh Renderer
Cast Shadows ✓
Receive Shadows ✓
Materials
Size 1
Element 0 Background_HeaderFoot
Use Light Probes
Background_HeaderFooter
Shader Mobile/Particles/Alpha Blended Edit...
Particle Texture
Tiling Offset
x 0.22 0.014
y 0.08 0.8499

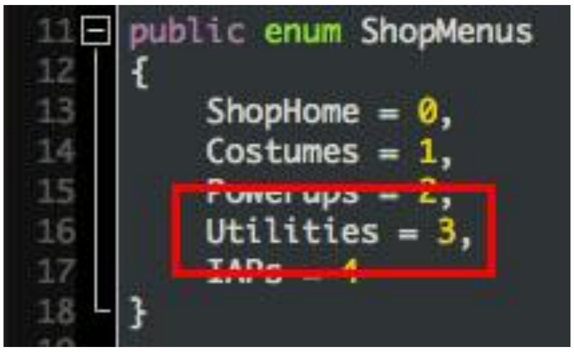
6. Once you're done with the designing part, check if the menu looks as you intended in the Game window.



You can also do that by double click on Hierarchy > HUDMainGroup to display it in the Editor. Make sure the menu items are facing towards the negative x-axis. The screen shot shows all the menu components that are derived from the UI_Atlas located at Project > Assets > Textures > UI. It also shows the HUD elements in the background (ignore these while designing a menu or disable the HUDMainGroup if these are in the way but make sure to enable it once your done with the menu).

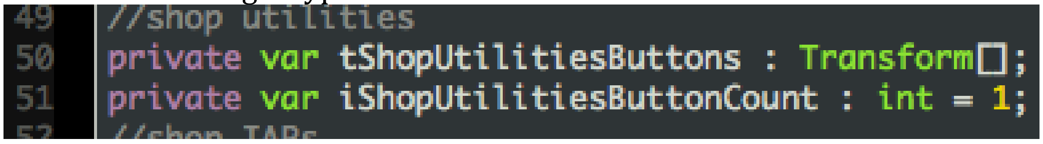


7. Now you need to tell the *ShopScript* that a new shop menu has been added and to do that add the name of the newly created menu in the *ShopMenus* prefab.



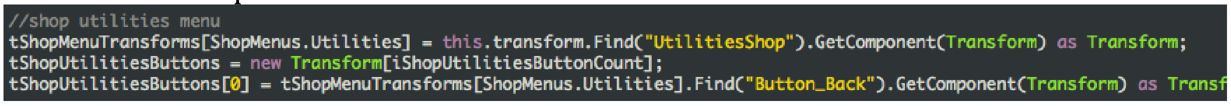
```
public enum ShopMenus
{
    ShopHome = 0,
    Costumes = 1,
    PowerUps = 2,
    Utilities = 3,
    IAPs = 4
}
```

8. Create a Transform type array to store the transforms of the buttons in the Utilities menu. In this case we only have a 'back' button to take the user back to the Shop Home menu.
9. Create an integer type variable to store the number of buttons.



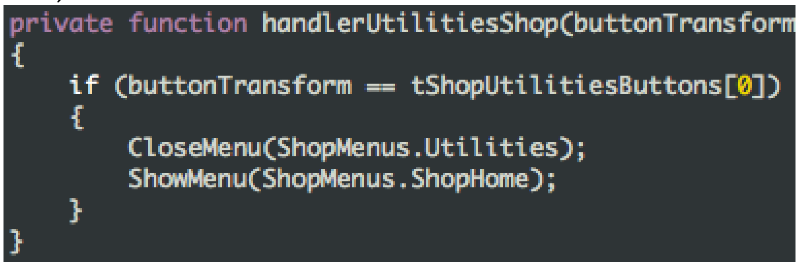
```
//shop utilities
private var tShopUtilitiesButtons : Transform[];
private var iShopUtilitiesButtonCount : int = 1;
//shop IAPs
```

16. Store the *UtilitiesShop* menu's transform the *tMenuTransform* array in the start function. This reference is used to make the menu appear in front of the camera and move it away when its not needed.
17. Initialize the transform type array that holds the references of the buttons in the shop utilities menu in the start function.



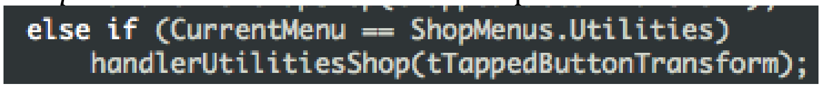
```
//shop utilities menu
tShopMenuTransforms[ShopMenus.Utilities] = this.transform.Find("UtilitiesShop").GetComponent(Transform) as Transform;
tShopUtilitiesButtons = new Transform[iShopUtilitiesButtonCount];
tShopUtilitiesButtons[0] = tShopMenuTransforms[ShopMenus.Utilities].Find("Button_Back").GetComponent(Transform) as Transf
```

18. Create a handler function for to define the implementation of its buttons. In our case, we have the 'back' button.



```
private function handlerUtilitiesShop(buttonTransform
{
    if (buttonTransform == tShopUtilitiesButtons[0])
    {
        CloseMenu(ShopMenus.Utilities);
        ShowMenu(ShopMenus.ShopHome);
    }
}
```

19. Add a new case in the *listenerClicks* function. This function will call the *UtilitiesShop* handler function if its button is pressed.



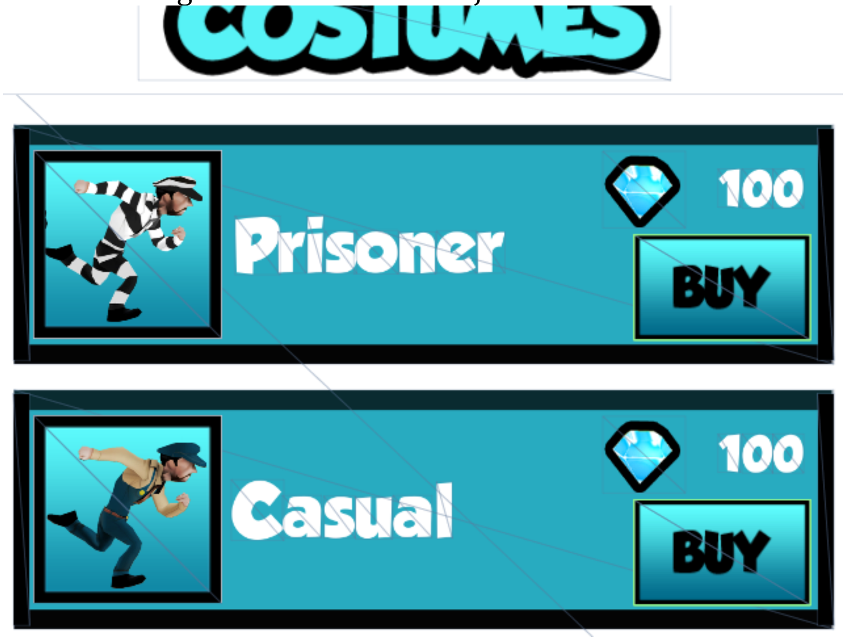
```
else if (CurrentMenu == ShopMenus.Utilities)
    handlerUtilitiesShop(tTappedButtonTransform);
```

Note: The *ShowMenu* and *CloseMenu* functions are used to display and hide the required shop menus. These menus input the index of the menu based on the *ShopMenu* enum.

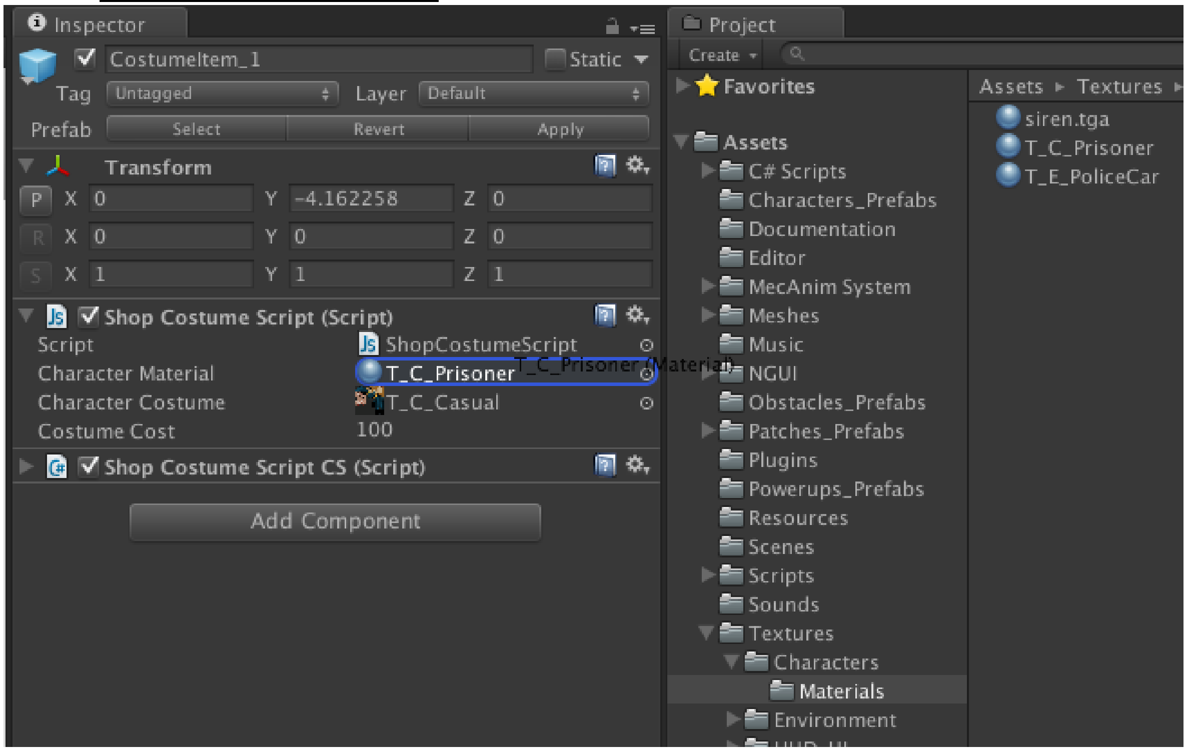
Adding a new Costume Shop Item

To add a new costume, open the *CostumeItemGroup* located at Hierarchy > MenuGroup > Shop > CostumesShop. This game object contains all the slide-able costume items that are displayed when the user views the costume shop. To add a new one:

1. Duplicate an existing *CostumeItem* and adjust it in the list.



2. Tap the *CostumeItem* prefab and add the character material in the *ShopCostumeScript* from Project > Assets > Textures > Characters > Materials > T_C_Prisoner.



Inspector

CostumeItem_1 Static
Tag Untagged Layer Default
Prefab Select Revert Apply

Transform
P X 0 Y -4.162258 Z 0
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1

Shop Costume Script (Script)
Script ShopCostumeScript
Character Material T_C_Prisoner T_C_Prisoner (Material)
Character Costume T_C_Casual
Costume Cost 100

Shop Costume Script CS (Script)

Add Component

Project

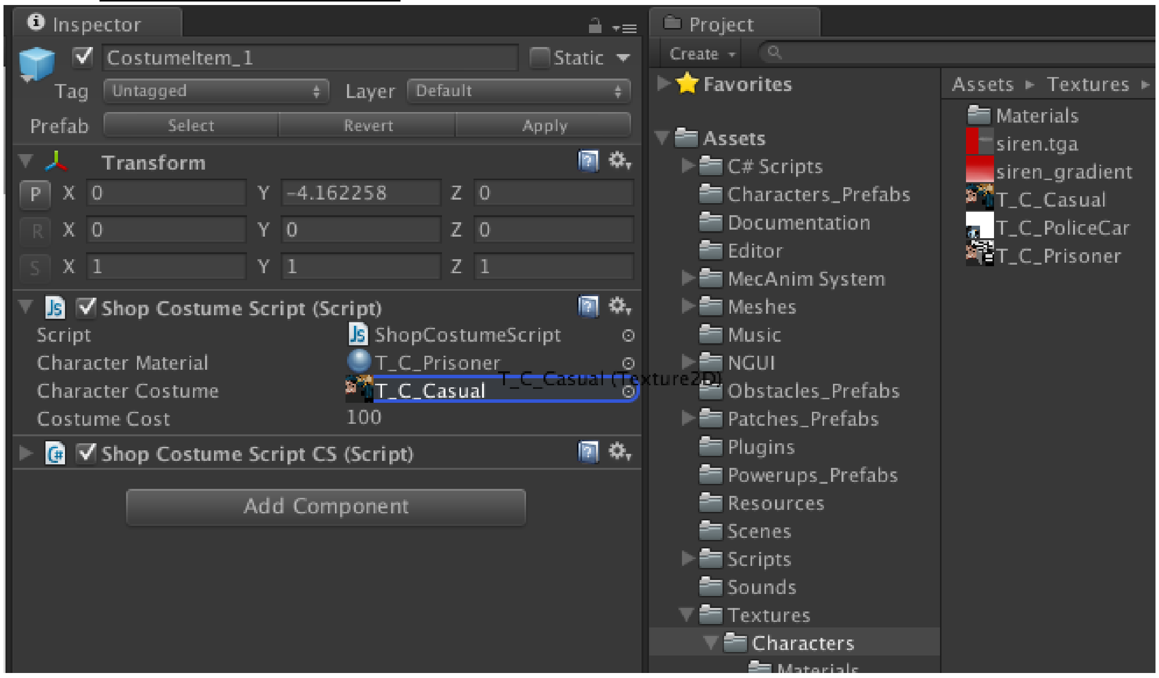
Create

Favorites

Assets
C# Scripts
Characters_Prefabs
Documentation
Editor
MecAnim System
Meshes
Music
NGUI
Obstacles_Prefabs
Patches_Prefabs
Plugins
Powerups_Prefabs
Resources
Scenes
Scripts
Sounds
Textures
Characters
Materials
Environment

Assets ▸ Textures ▸
siren.tga
T_C_Prisoner
T_E_PoliceCar

3. Add the character costume texture that you have created for the character. The default ones are placed at the path: Project > Assets > Textures > Characters.



Inspector

CostumeItem_1 Static
Tag Untagged Layer Default
Prefab Select Revert Apply

Transform
P X 0 Y -4.162258 Z 0
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1

Shop Costume Script (Script)
Script ShopCostumeScript
Character Material T_C_Prisoner
Character Costume T_C_Casual
Costume Cost 100

T_C_Casual (Texture2D)

Shop Costume Script CS (Script)

Add Component

Project
Create
Favorites
Assets
C# Scripts
Characters_Prefabs
Documentation
Editor
MecAnim System
Meshes
Music
NGUI
Obstacles_Prefabs
Patches_Prefabs
Plugins
Powerups_Prefabs
Resources
Scenes
Scripts
Sounds
Textures
Characters
Materials

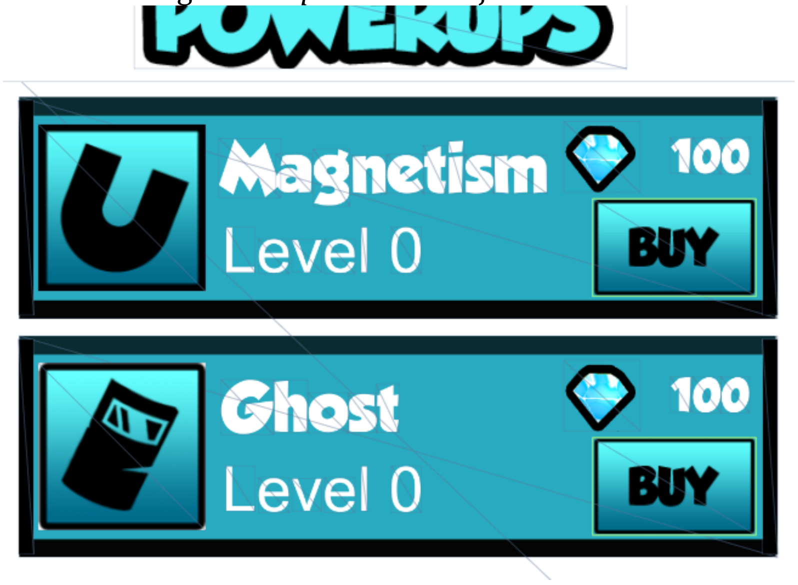
Assets ▸ Textures ▸
Materials
siren.tga
siren_gradient
T_C_Casual
T_C_PoliceCar
T_C_Prisoner

4. Set the cost of the costume.

Adding a new Power-up Shop Item

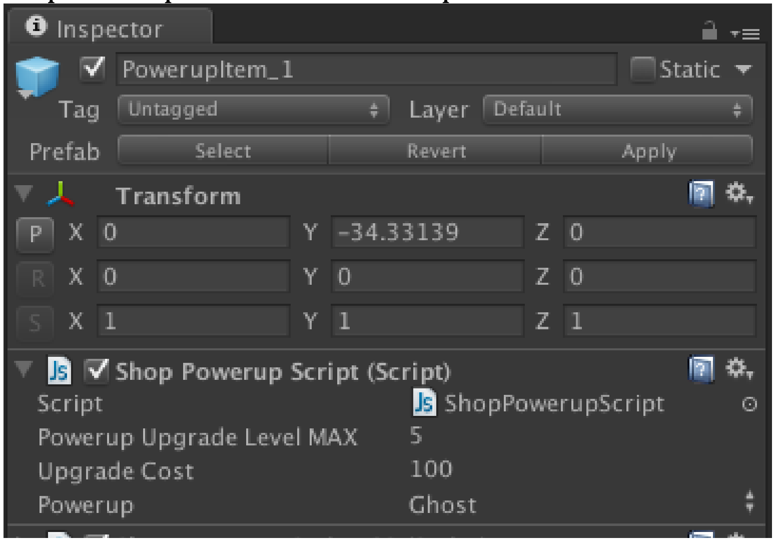
To add a new power-up item, open the *PowerupsItemGroup* located at Hierarchy > MenuGroup > Shop > PowerupsItemShop. This game object contains all the slide-able power-up items that are displayed when the user views the power-up shop. To add a new one:

1. Duplicate an existing *PowerupItem* and adjust it in the list.



2. Tap the *PowerupItem* prefab and add a value for “Power-up Upgrade Level MAX” in the *ShopPowerupScript*. This variable determines the number of times a power-up can be upgraded.

3. Add a value for the Upgrade Cost.
4. Select the power-up for which this component has been created.

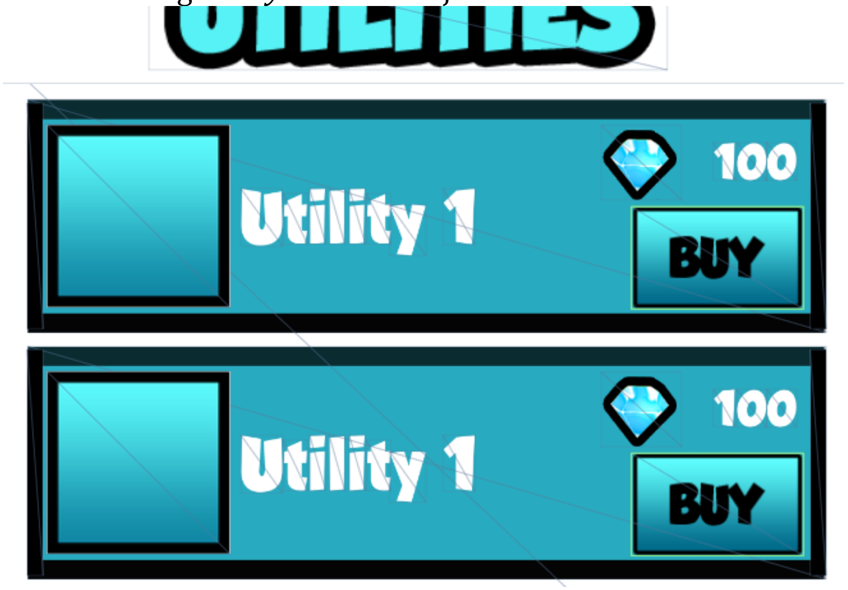


PowerupItem_1 Static
Tag Untagged Layer Default
Position X 0 Y -34.33139 Z 0
Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1
Shop Powerup Script (Script)
Script ShopPowerupScript
Powerup Upgrade Level MAX 5
Upgrade Cost 100
Powerup Ghost

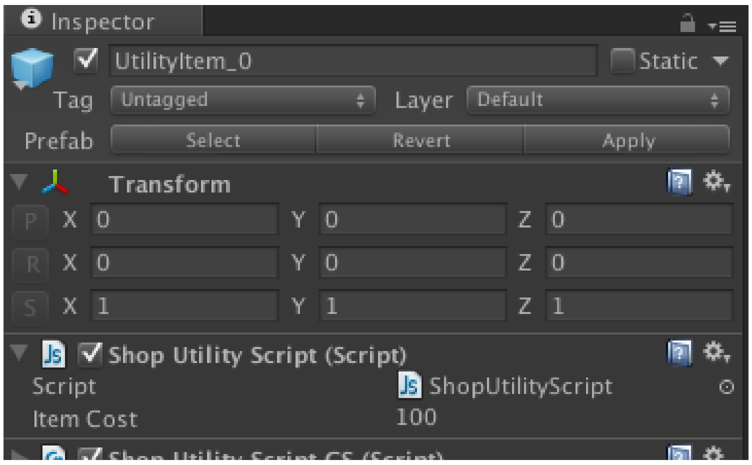
Adding a new Utility Shop Item

To add a new utility item, open the *UtilitiesItemGroup* located at Hierarchy > MenuGroup > Shop > UtilitiesShop. This game object contains all the slide-able utility items that are displayed when the user views the utilities shop. To add a new one:

1. Duplicate an existing *UtilityItem* and adjust it in the list.



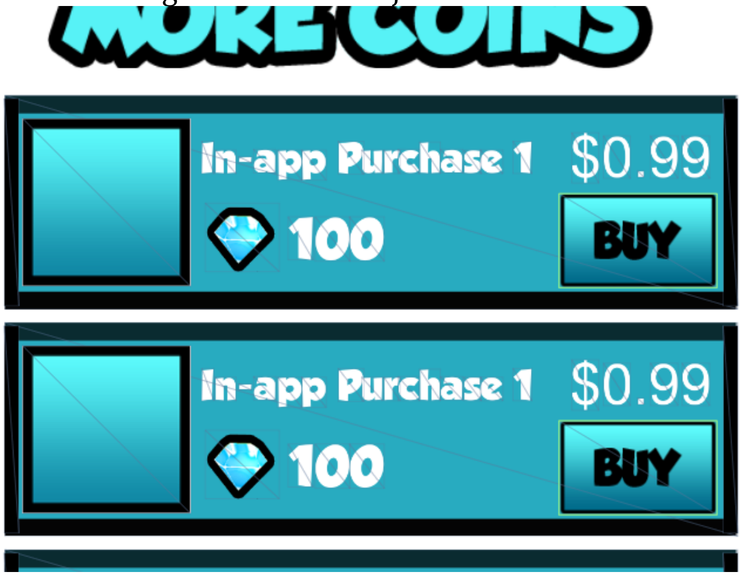
2. Tap the *UtilityItem* prefab and add a cost value in the *ShopUtilityScript.*


Inspector
UtilityItem_0 Static
Tag Untagged Layer Default
Prefab Select Revert Apply
Transform
P X 0 Y 0 Z 0
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1
Shop Utility Script (Script)
Script ShopUtilityScript
Item Cost 100

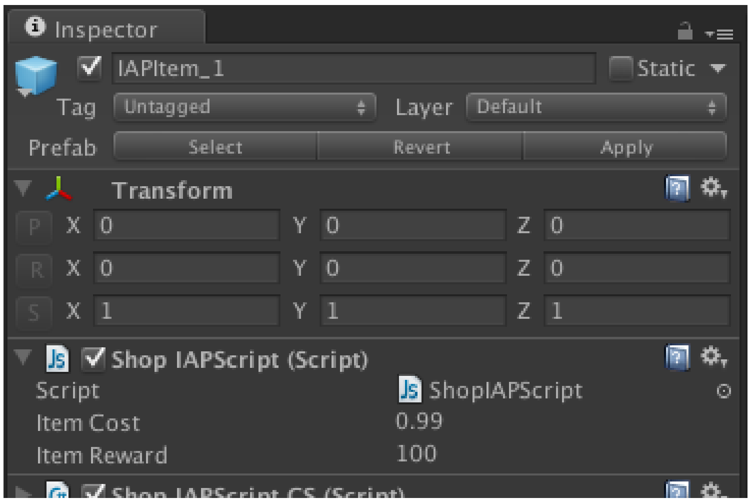
Adding a new In-App Purchase Shop Item

To add a new power-up item, open the *IAPItemGroup* located at Hierarchy > MenuGroup > Shop > MoreCoinsShop. This game object contains all the slide-able in-app purchase items that are displayed when the user views the more coins shop. To add a new one:

1. Duplicate an existing *IAPItem* and adjust it in the list.



2. Tap the *IAPItem* prefab and add a cost value in the *ShopIAPScript.* This cost value is the amount of real currency you want to deduct for the purchase.
3. Add the reward value. This is the amount of virtual game currency that will be award on making the in-app purchase.


IAPItem_1

Tag	Untagged
Layer	Default
Prefab	Select / Revert / Apply

Transform

	X	Y	Z
P	0	0	0
R	0	0	0
S	1	1	1

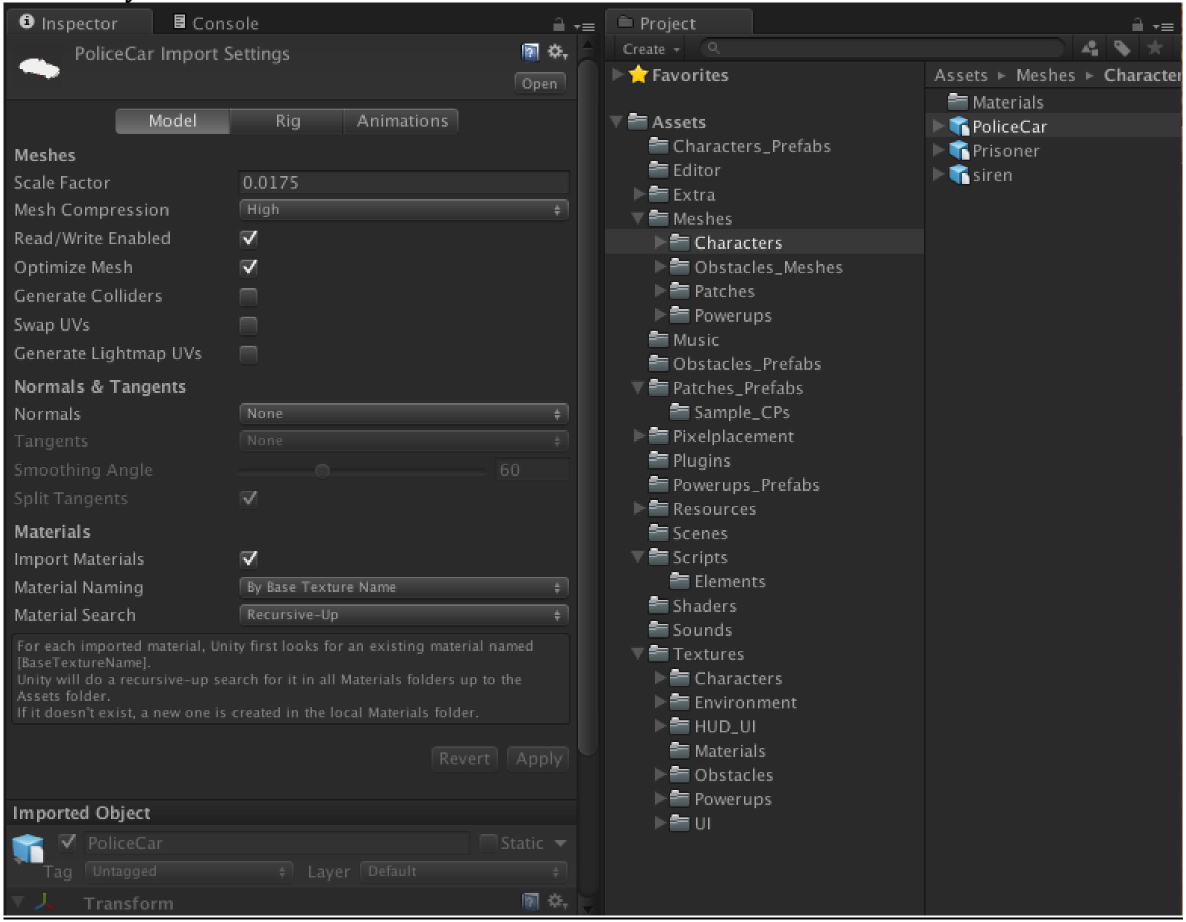
Shop IAPScript (Script)

Script	ShopIAPScript
Item Cost	0.99
Item Reward	100

Shop IAPScript CS (Script)

Replacing the Enemy Character

1. Import the player .fbx that will be used as the main enemy.
   Optimization Notes:
   - Use <u>Model > Scale Factor</u> to adjust the scale.
   - Use <u>Model > Mesh Compression</u> to compress the imported asset as much as you can without compromising its appearance.
   - Select "None" in <u>Rig > Animation Type</u> if your asset isn't rigged.
   - Uncheck the Import Animation option in <u>Animations > Import Animation</u> if your asset isn't animated.


PoliceCar Import Settings

Model | Rig | Animations

Meshes

Scale Factor	0.0175
Mesh Compression	High
Read/Write Enabled	✓
Optimize Mesh	✓
Generate Colliders	
Swap UVs	
Generate Lightmap UVs	

Normals & Tangents

Normals	None
Tangents	None
Smoothing Angle	60
Split Tangents	✓

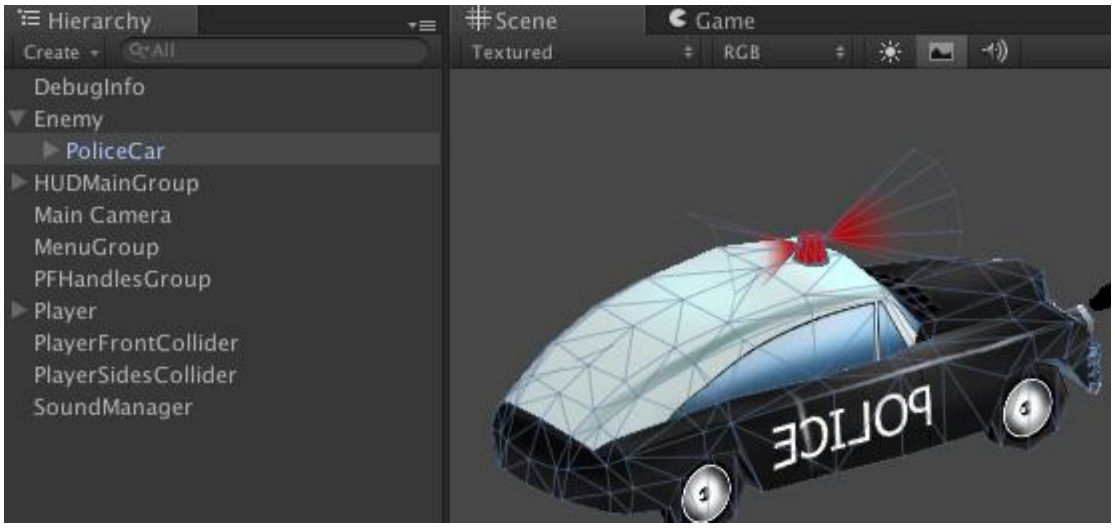
Materials

Import Materials	✓
Material Naming	By Base Texture Name
Material Search	Recursive-Up

For each imported material, Unity first looks for an existing material named [BaseTextureName].
Unity will do a recursive-up search for it in all Materials folders up to the Assets folder.
If it doesn't exist, a new one is created in the local Materials folder.

Imported Object: PoliceCar, Tag Untagged, Layer Default

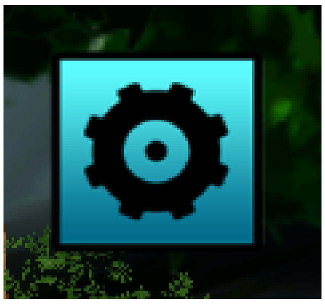
2. Drag the imported asset in Hierarchy > Enemy.



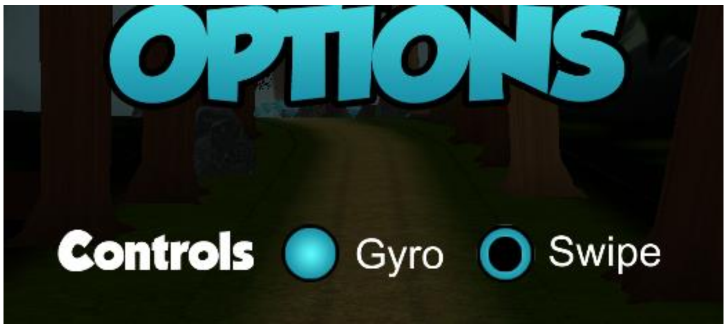
3. Change the implementation in the Project > Assets > Scripts > *EnemyController* as needed.

How to Switch between Gyro and Swipe Controls

The type of controls mechanism can be switched from the settings menu. Clicking the following button located on the main menu accesses the settings menu:

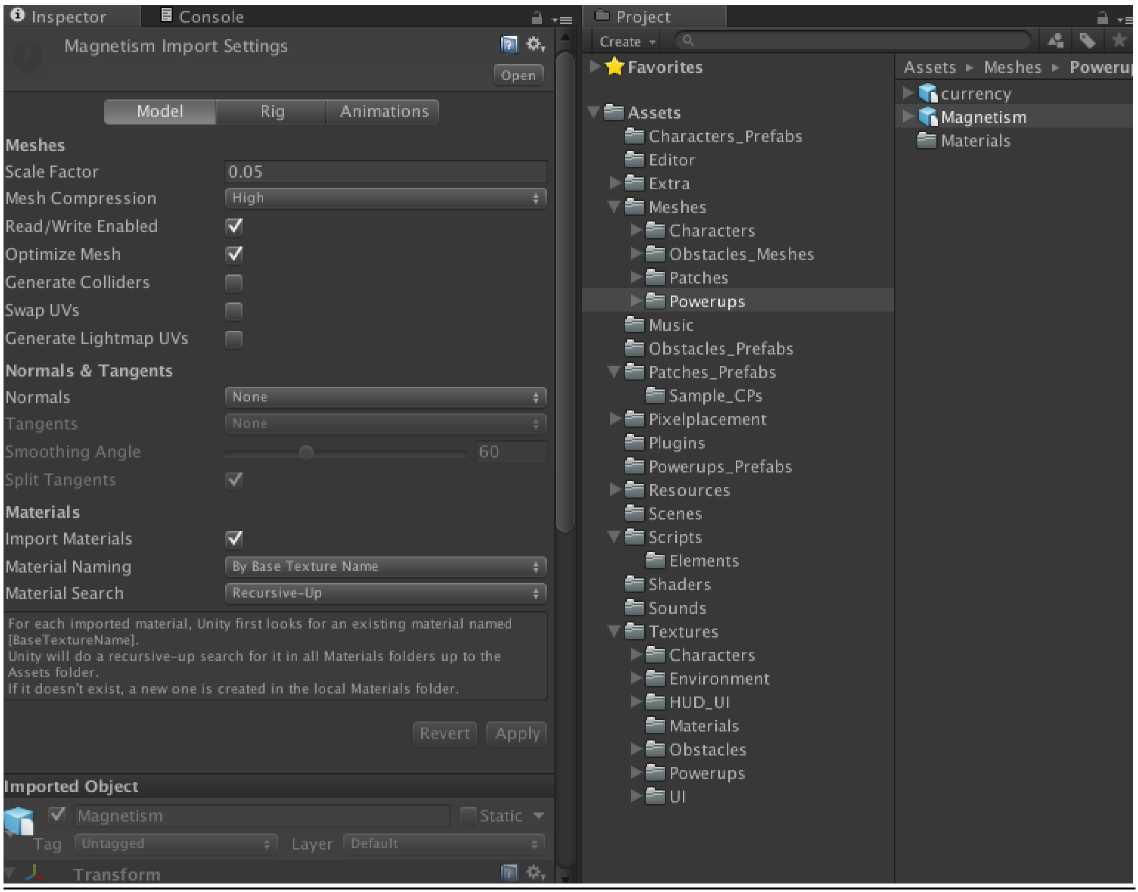


The radio buttons in the in the settings menu can be used to toggle between swipe and gyro controls:



Adding a Power-up

1. Import the .fbx of the asset that you will use as an obstacle.
   Optimization Notes:
   - Use Model > Scale Factor to adjust the scale.
   - Use Model > Mesh Compression to compress the imported asset as much as you can without compromising its appearance.
   - Select "None" in Rig > Animation Type if your asset isn't rigged.
   - Uncheck the Import Animation option in Animations > Import Animation if your asset isn't animated.



Inspector | Console

Magnetism Import Settings

Open

Model | Rig | Animations

Meshes

Scale Factor	0.05
Mesh Compression	High
Read/Write Enabled	✓
Optimize Mesh	✓
Generate Colliders	
Swap UVs	
Generate Lightmap UVs	

Normals & Tangents

Normals	None
Tangents	None
Smoothing Angle	60
Split Tangents	✓

Materials

Import Materials	✓
Material Naming	By Base Texture Name
Material Search	Recursive-Up

For each imported material, Unity first looks for an existing material named [BaseTextureName].
Unity will do a recursive-up search for it in all Materials folders up to the Assets folder.
If it doesn't exist, a new one is created in the local Materials folder.

Revert | Apply

Imported Object

Magnetism | Static
Tag Untagged | Layer Default
Transform

Project

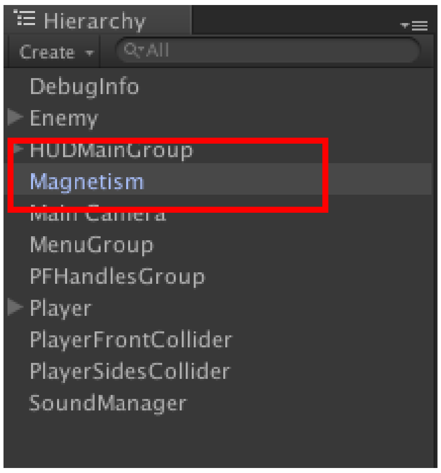
Create

Favorites

Assets
- Characters_Prefabs
- Editor
- Extra
- Meshes
  - Characters
  - Obstacles_Meshes
  - Patches
  - Powerups
- Music
- Obstacles_Prefabs
- Patches_Prefabs
  - Sample_CPs
- Pixelplacement
- Plugins
- Powerups_Prefabs
- Resources
- Scenes
- Scripts
  - Elements
- Shaders
- Sounds
- Textures
  - Characters
  - Environment
  - HUD_UI
  - Materials
  - Obstacles
  - Powerups
  - UI

Assets ▸ Meshes ▸ Poweru
- currency
- Magnetism
- Materials

2. Drag the imported asset in "Hierarchy" tab to create a prefab.

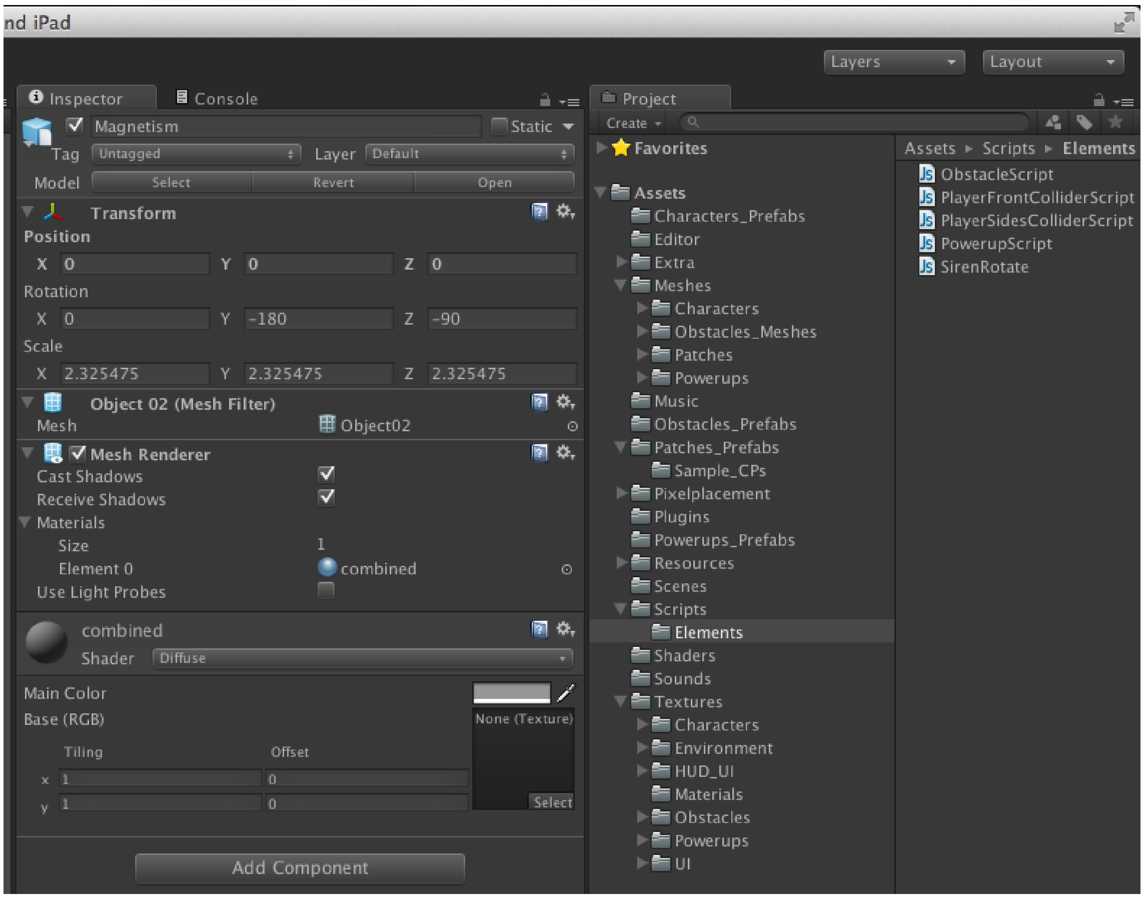


Hierarchy

Create | All

- DebugInfo
- Enemy
- HUDMainGroup
- Magnetism
- Main Camera
- MenuGroup
- PFHandlesGroup
- Player
- PlayerFrontCollider
- PlayerSidesCollider
- SoundManager

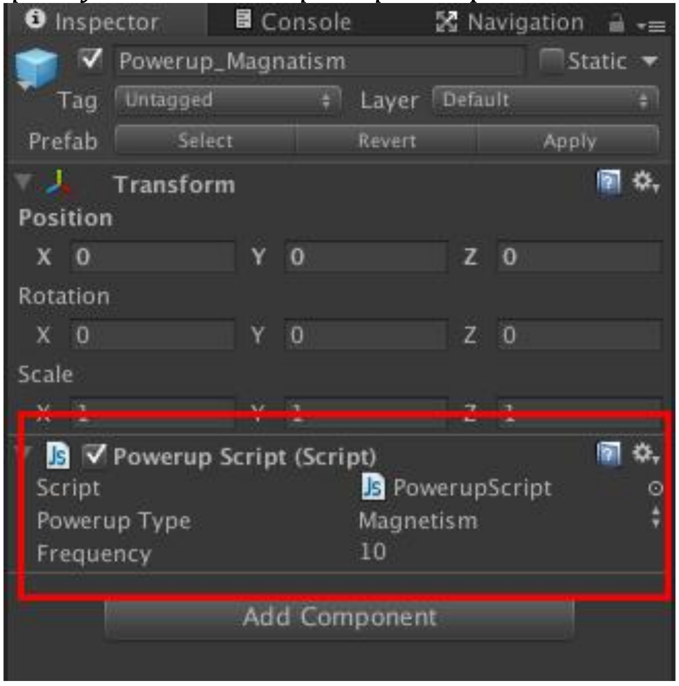
3. Go to Project > Assets > Scripts > Elements.



Assets ▸ Scripts ▸ Elements

- ObstacleScript
- PlayerFrontColliderScript
- PlayerSidesColliderScript
- PowerupScript
- SirenRotate

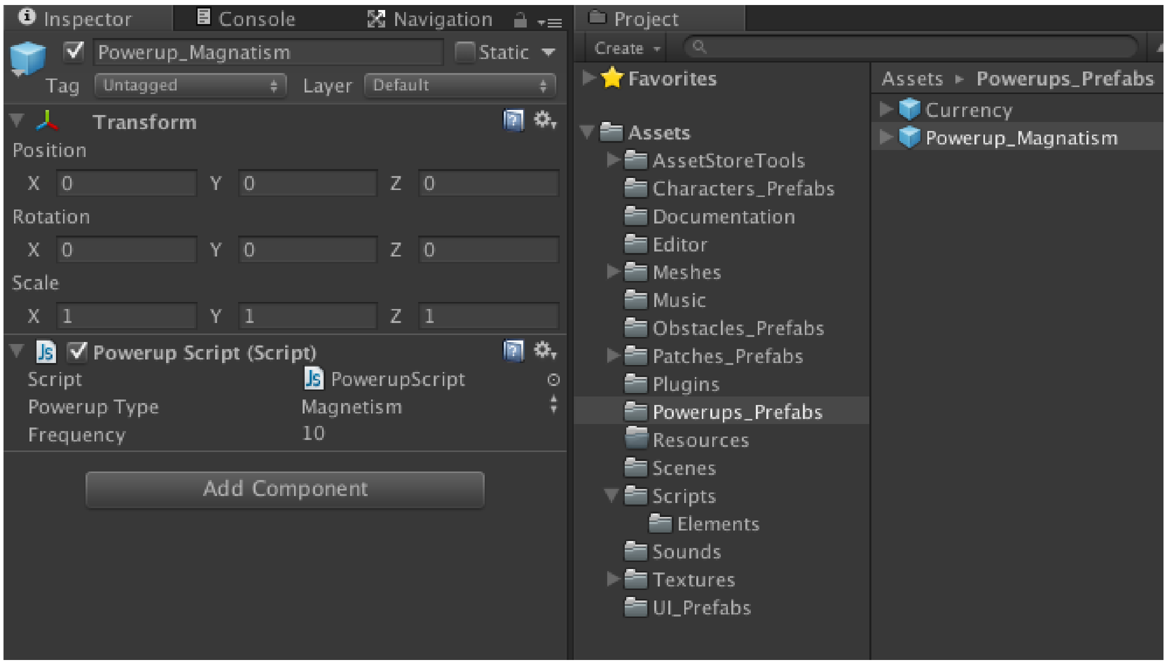
4. Add the "PowerupScript.js" on your power-up's prefab.
5. Set the *Powerup Type* on the *Powerup Script* component.
6. Set the *Frequency* on the *Powerup Script* component.



Powerup Script (Script)

Script	PowerupScript
Powerup Type	Magnetism
Frequency	10

7. Drag and drop your newly created power-up prefab to Project > Powerups_Prefabs.



Powerup_Magnatism Static
Tag Untagged Layer Default

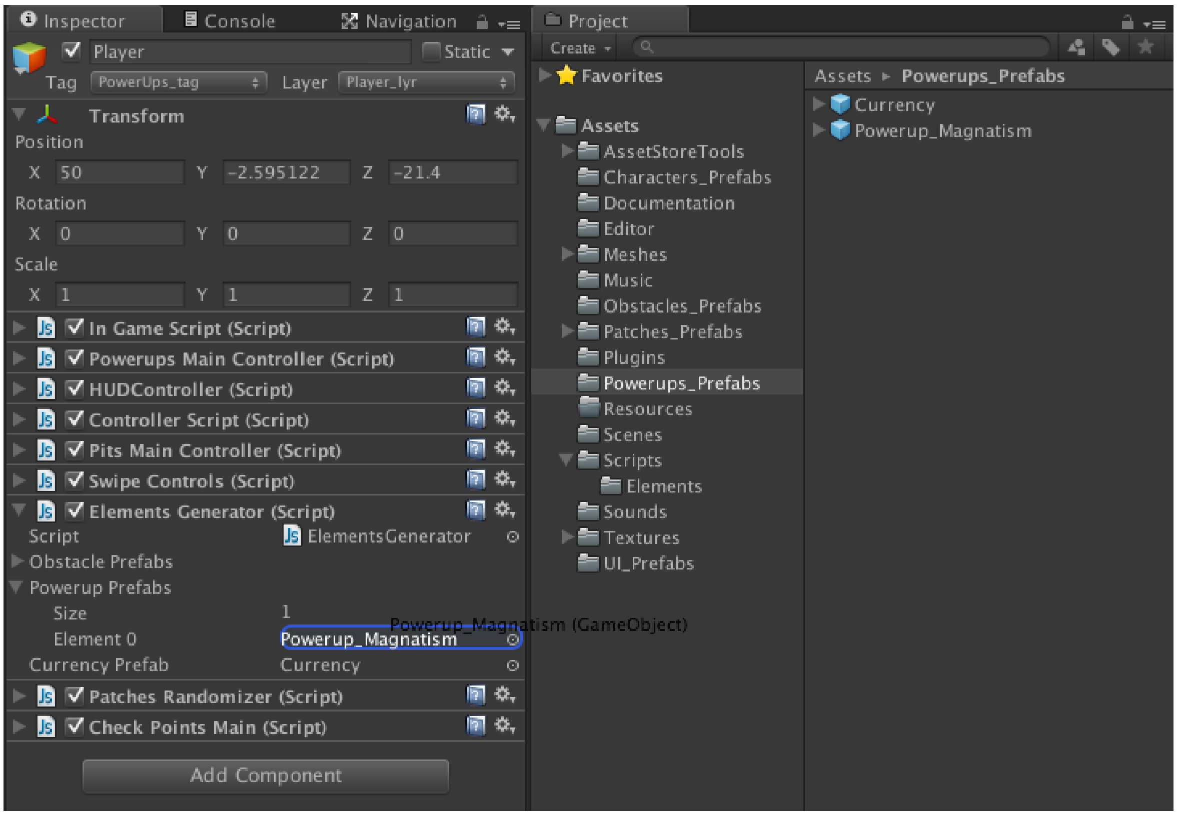
Transform
Position X 0 Y 0 Z 0
Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1

Powerup Script (Script)
Script PowerupScript
Powerup Type Magnetism
Frequency 10

Assets ▸ Powerups_Prefabs
Currency
Powerup_Magnatism

Assets
AssetStoreTools
Characters_Prefabs
Documentation
Editor
Meshes
Music
Obstacles_Prefabs
Patches_Prefabs
Plugins
Powerups_Prefabs
Resources
Scenes
Scripts
Elements
Sounds
Textures
UI_Prefabs

8. New, we have to tell the *ElementGenerator* script about our newly created power-up so that it will generate the power-up on the path during gameplay. To do that, simply drag and drop the saved prefab to the *ElementGenerator* script that's a part of the *Player* prefab. The prefab has to drop in the *Powerup Prefabs* hierarchy to take effect.



Player Static
Tag PowerUps_tag Layer Player_lyr

Transform
Position X 50 Y -2.595122 Z -21.4
Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1

In Game Script (Script)
Powerups Main Controller (Script)
HUDController (Script)
Controller Script (Script)
Pits Main Controller (Script)
Swipe Controls (Script)
Elements Generator (Script)
Script ElementsGenerator
Obstacle Prefabs
Powerup Prefabs
Size 1
Element 0 Powerup_Magnatism
Powerup_Magnatism (GameObject)
Currency Prefab Currency
Patches Randomizer (Script)
Check Points Main (Script)

Assets ▸ Powerups_Prefabs
Currency
Powerup_Magnatism

Assets
AssetStoreTools
Characters_Prefabs
Documentation
Editor
Meshes
Music
Obstacles_Prefabs
Patches_Prefabs
Plugins
Powerups_Prefabs
Resources
Scenes
Scripts
Elements
Sounds
Textures
UI_Prefabs

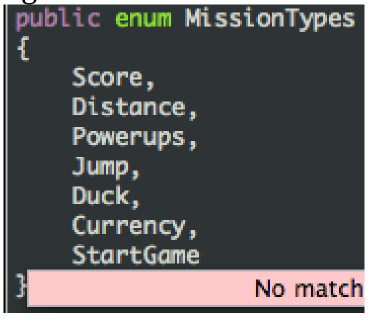
9. Finally delete the power-up prefab from the Hierarchy tab. It does not belong in the scene by default because it is generated programmatically during runtime.

Adding a New Mission

The missions are managed in the *MissionsController* script. When the game starts, the *MissionsController* script reads all the available missions from the *MissionsList* text file located in the Project > Assets > Resources folder. These are stored in the instance of the *MissionDetail* class. It also checks the progress of the missions which is stored using *PlayerPrefs*. The progress of missions is stored in the *MissionDetail.missionCount* variable, which is integer type.

A particular mission's progress is checked by *incrementMissionCount(…)* function. This function is introduced in the relevant script and is given the mission type and it increments the count of that type of mission variable each time a relevant event is triggered. For example we need to record duck/ slide event to use that in form of a mission. To do that, we call this function in the *ControllerScript* in the *duckPlayer()* function. The following steps elaborate how to add a new mission.

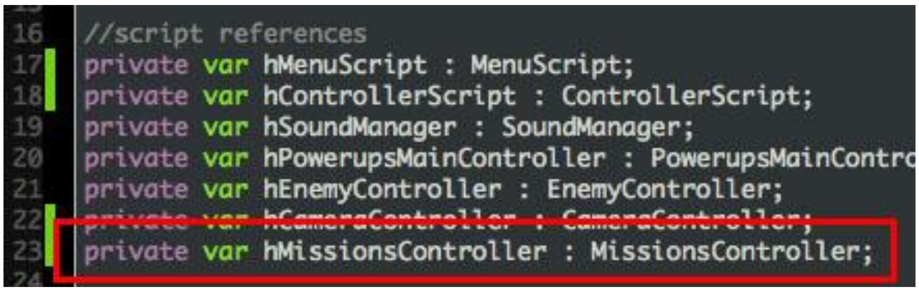
1. **If you want to add a type of mission that has already been defined, jump to Step 4**. If you want to add a new type of mission that has not been implemented yet, you will first need to add that type in the *MissionType* enum located in the *MissionsController* script. For this example, we will add the mission of "Start a new game x times". So, for the first step, we add the member called "StartGame" in the *MissionType* enum. Following is a code snippet of where the change will be made.



```
public enum MissionTypes
{
    Score,
    Distance,
    Powerups,
    Jump,
    Duck,
    Currency,
    StartGame
}
```

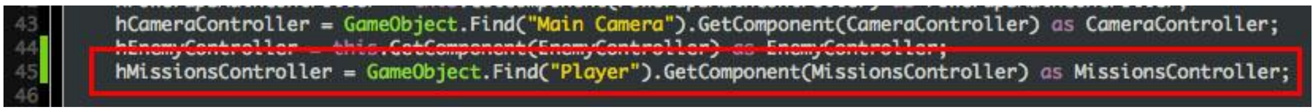
2. Now, you need to introduce the *incrementMissionsCount(…)* in the appropriate scripts so that the added mission can be tracked. For this example, we visit the *InGameScript* because that script is responsible for controlling the game flow, which includes launching, pausing and ending a game. We add this function in the *launchGame()* function because this function is responsible for beginning a run.

   Before we do that, we also need to make a variable carrying the reference to the *MissionScript*. To do that, we follow the example of all the other scripts and add the following lines of code:



```
//script references
private var hMenuScript : MenuScript;
private var hControllerScript : ControllerScript;
private var hSoundManager : SoundManager;
private var hPowerupsMainController : PowerupsMainContro
private var hEnemyController : EnemyController;
private var hCameraController : CameraController;
private var hMissionsController : MissionsController;
```

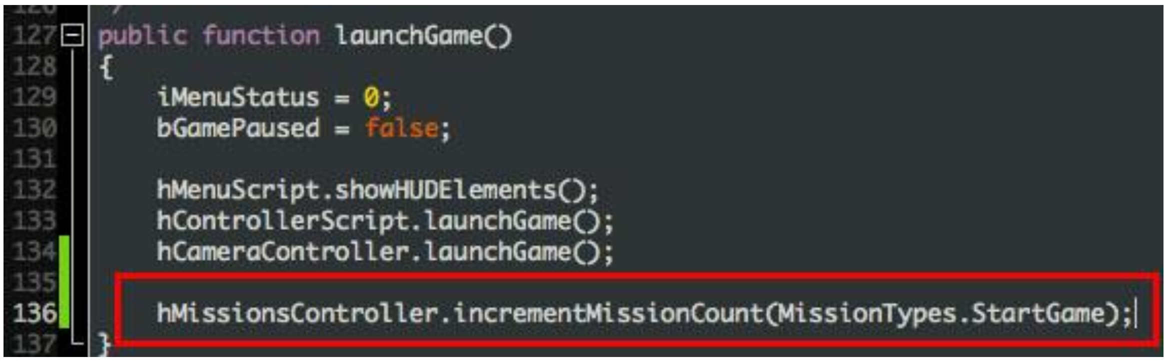
A global variable of the type *MissionsController.*



```
hCameraController = GameObject.Find("Main Camera").GetComponent(CameraController) as CameraController;
hEnemyController = this.GetComponent(EnemyController) as EnemyController;
hMissionsController = GameObject.Find("Player").GetComponent(MissionsController) as MissionsController;
```

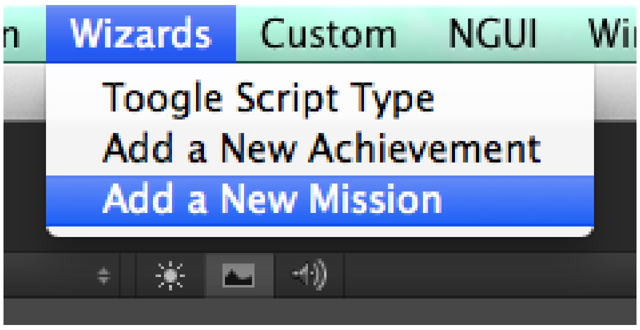
Get the reference of the *MissionsController* in the *Start()* function.

3. Now we can call the *incrementMissionsCount(…)* in the *launchGame()* function as shown below:

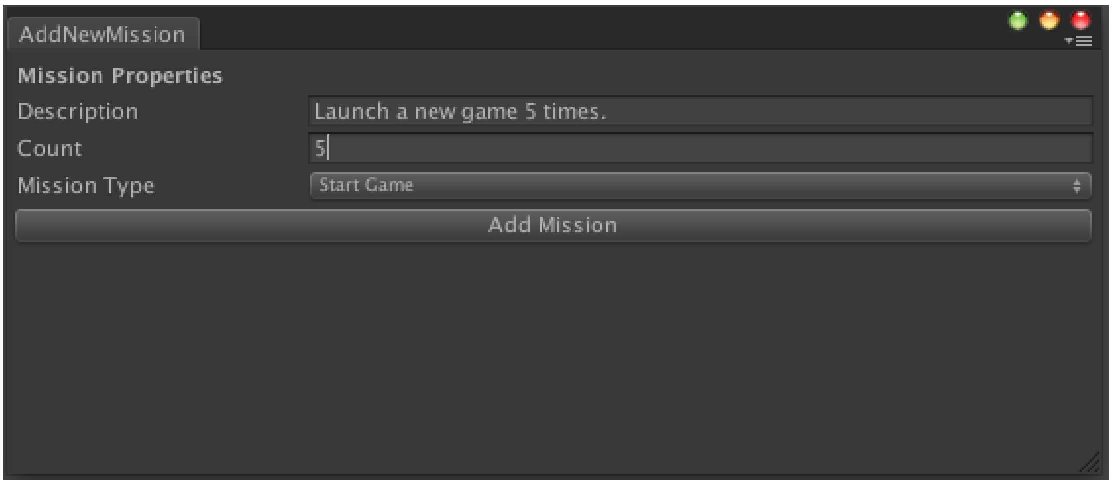


```
public function launchGame()
{
    iMenuStatus = 0;
    bGamePaused = false;

    hMenuScript.showHUDElements();
    hControllerScript.launchGame();
    hCameraController.launchGame();

    hMissionsController.incrementMissionCount(MissionTypes.StartGame);
}
```

4. From here on it's much easier. From the title bar, go to Wizards > Add a New Mission.



5. Add the description of your mission, for example: "Launch a new game 5 times."
6. Add the number of time a task has to be performed to complete the mission to the count field. In this case it will be 5.
7. Finally select the type of mission it is. In the current example it will be "StartGame".
8. Hit the "Add Mission" button. A message will be displayed in the console announcing that the mission has been added.


AddNewMission

Mission Properties

Description	Launch a new game 5 times.
Count	5
Mission Type	Start Game

Notes:

- The missions are stored in a text file in the Project > Assets > Resources folder. Each mission is stored using three lines. The first line is the mission description, the second is the mission count and the last is the mission type.
- To remove a mission, you need to remove the three lines of the particular mission. Be sure to not leave any empty lines, even at the end of the file if you choose to edit it manually.

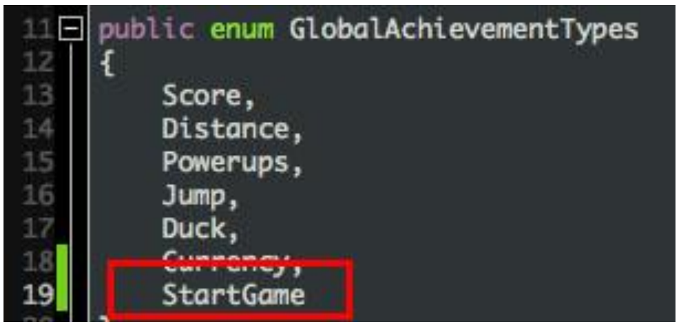
Adding a New Achievement

The achievements are managed in the *GlobalAchievementsController* script. When the game starts, the *GlobalAchievementsController* script reads all the available achievements from the *GlobalAchievementsList* text file located in the Project > Assets > Resources folder. These are stored in the instance of the *GlobalAchievementDetail* class. It also checks the progress of the achievements which is stored using *PlayerPrefs*. The progress of achievements is stored in the *GlobalAchievementDetail.achievementCount* variable, which is integer type.

A particular achievements's progress is checked by *incrementAchievementCount(…)* function. This function is introduced in the relevant script and is given the achievements type and it increments the count of that type of achievements variable each time a relevant event is triggered. For example we need to record duck/ slide event to use that in form of a achievements. To do that, we call this function in the *ControllerScript* in the *duckPlayer()* function. The following steps elaborate how to add a new achievement.

1. **If you want to add a type of mission that has already been defined, jump to Step 4.** If you want to add a new type of achievements that has not been implemented yet, you will first need to add that type in the *GlobalAchievementType* enum located in the *GlobalAchievementController* script. For this example, we will add the mission of "Start a new game x times". So, for the first step, we add the member called "StartGame" in the

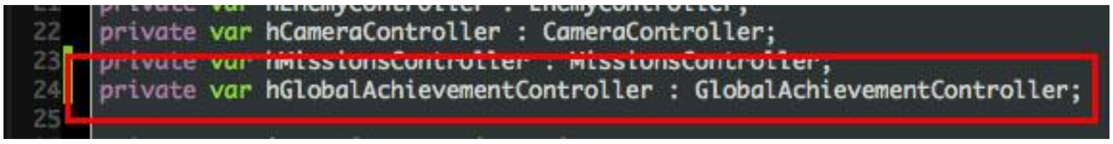
GlobalAchievementType enum. Following is a code snippet of where the change will be made:



```
public enum GlobalAchievementTypes
{
    Score,
    Distance,
    Powerups,
    Jump,
    Duck,
    Currency,
    StartGame
```

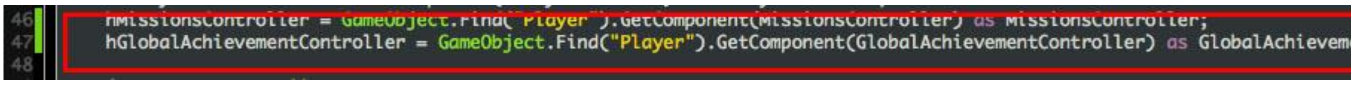
2. Now, you need to introduce the *incrementAchievementCount(...)* in the appropriate scripts so that the added achievement can be tracked. For this example, we visit the *InGameScript* because that script is responsible for controlling the game flow, which includes launching, pausing and ending a game. We add this function in the *launchGame()* function because this function is responsible for beginning a run.

   Before we do that, we also need to make a variable carrying the reference to the *GlobalAchievementScript*. To do that, we follow the example of all the other scripts and add the following lines of code:



```
private var hEnemyController : EnemyController;
private var hCameraController : CameraController;
private var hMissionsController : MissionsController;
private var hGlobalAchievementController : GlobalAchievementController;
```

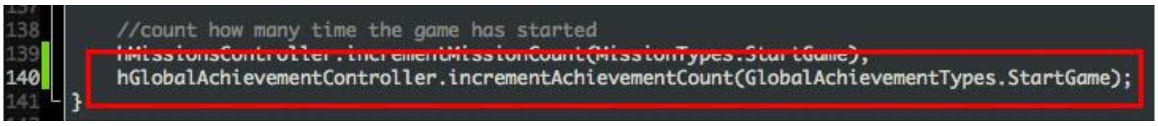
<u>A global variable of the type *GlobalAchievementsController*</u>



```
hMissionsController = GameObject.Find("Player").GetComponent(MissionsController) as MissionsController;
hGlobalAchievementController = GameObject.Find("Player").GetComponent(GlobalAchievementController) as GlobalAchievem
```

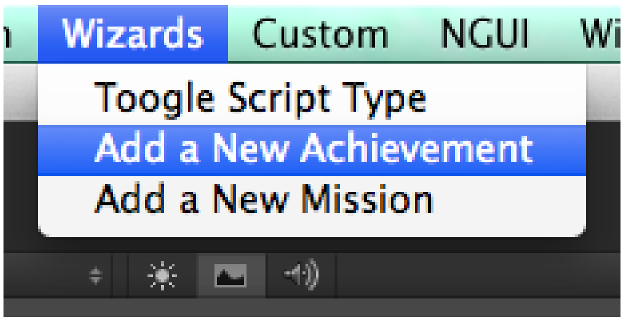
<u>Get the reference of the *GlobalAchievementsController* in the *Start()* function</u>

3. Now we can call the *incrementMissionsCount(...)* in the *launchGame()* function as shown below:

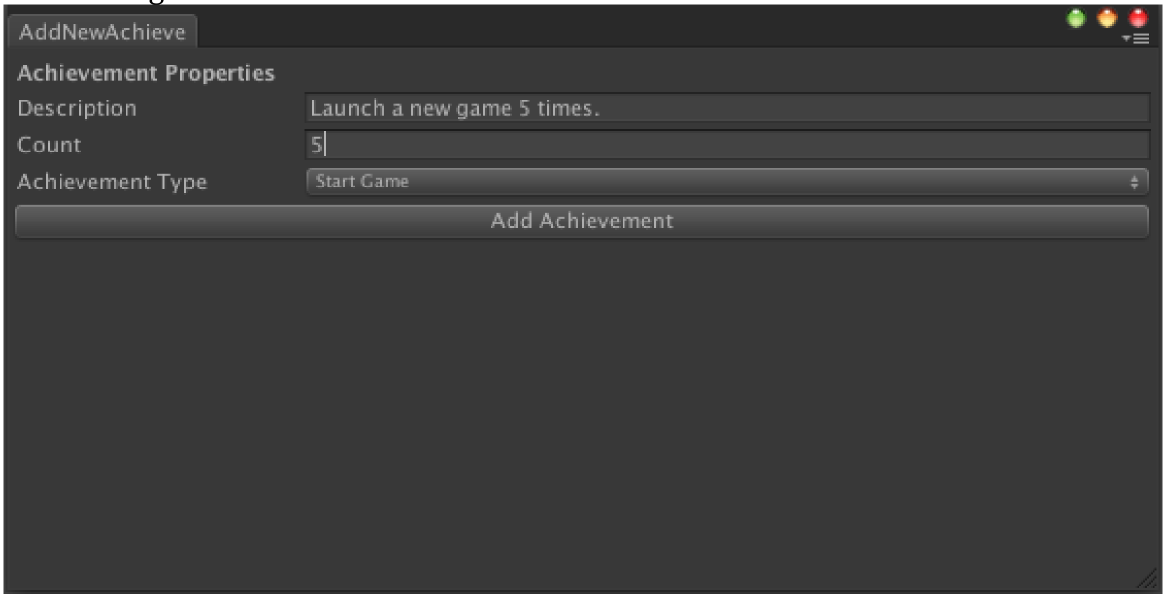


```
    //count how many time the game has started
    hMissionsController.incrementMissionCount(MissionTypes.StartGame);
    hGlobalAchievementController.incrementAchievementCount(GlobalAchievementTypes.StartGame);
}
```

4. From here on it's much easier. From the title bar, go <u>to Wizards > Add a New Achievement</u>.



5. Add the description of your mission, for example: “Launch a new game 5 times.”
6. Add the number of time a task has to be performed to complete the achievements to the count field. In this case it will be 5.
7. Finally select the type of achievements it is. In the current example it will be “StartGame”.
8. Hit the “Add Achievement” button. A message will be displayed on the console announcing that the achievement has been added.



Achievement Properties
Description: Launch a new game 5 times.
Count: 5
Achievement Type: Start Game

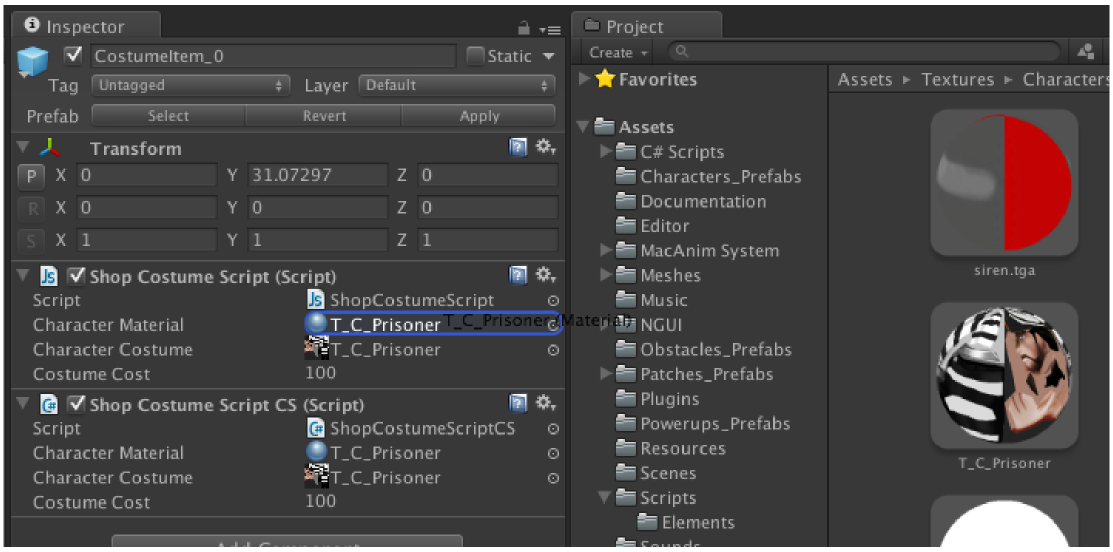
Notes:

- The achievements are stored in a text file in the Project > Assets > Resources folder. Each achievement is stored using three lines. The first line is the achievement description, the second is the achievement count and the last is the achievement type.
- To remove an achievement, you need to remove the three lines of the particular achievement. Be sure to not leave any empty lines, even at the end of the file if you choose to edit it manually.

Project Exceptions and Resolutions

EXCEPTION: Character material not assigned to costume shop element. Check the user documentation.

This message means that you are using a using a costume in the Shop but forgot to assign the material (used by the Player character) to it. To fix this, go to Hierarchy > MenuGroup > Shop > CostumesShop > CostumeItemGroup > CostumeItem_x. Go through the *CostumeItem(s)* and check which *ShopCostumeItemScript* has its Character Material missing. Once you find it, drag and drop it from Project > Assets > Textures > Materials > Characters.



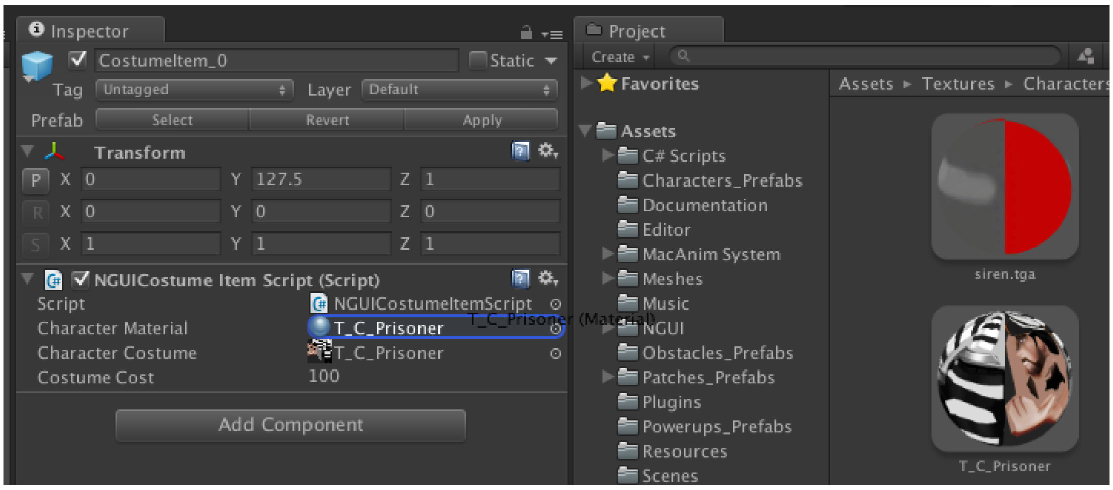
CostumeItem_0 Static
Tag Untagged Layer Default
Prefab

Transform
P X 0 Y 31.07297 Z 0
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1

Shop Costume Script (Script)
Script ShopCostumeScript
Character Material T_C_Prisoner T_C_Prisoner (Material)
Character Costume T_C_Prisoner
Costume Cost 100

Shop Costume Script CS (Script)
Script ShopCostumeScriptCS
Character Material T_C_Prisoner
Character Costume T_C_Prisoner
Costume Cost 100

Alternatively, if you are using the **NGUI Menu**, you will have to go to Hierarchy > UI Root (2D)> Shop > ShopCostumes > CostumeItemGroup > CostumeItem_x. Check which *NGUICostumeItemScript.cs* has its Character Material missing.



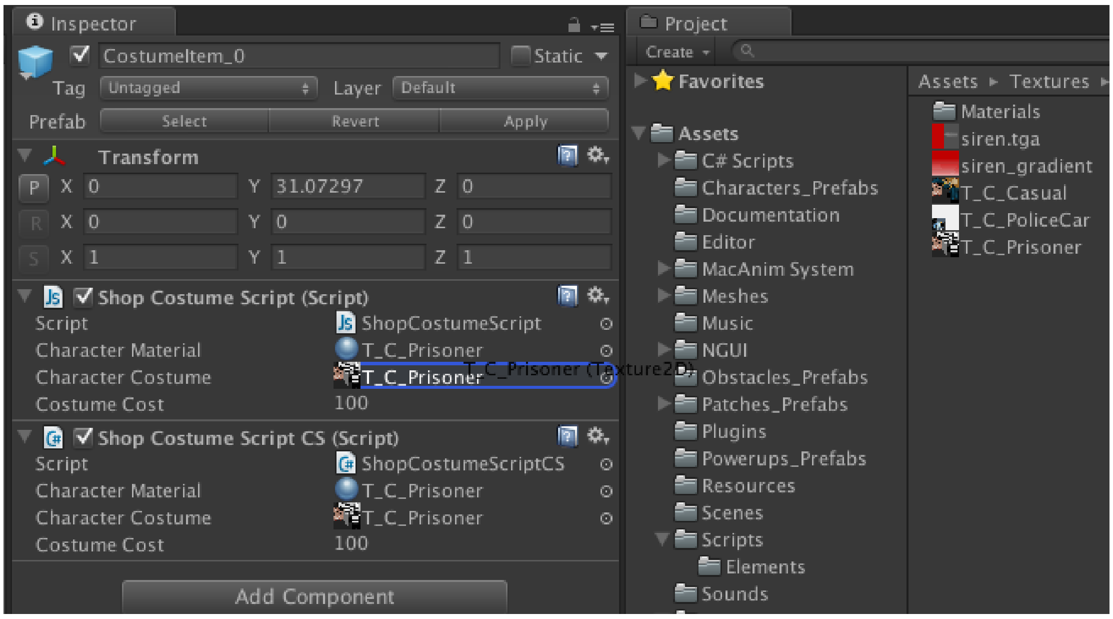
CostumeItem_0 Static
Tag Untagged Layer Default
Prefab

Transform
P X 0 Y 127.5 Z 1
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1

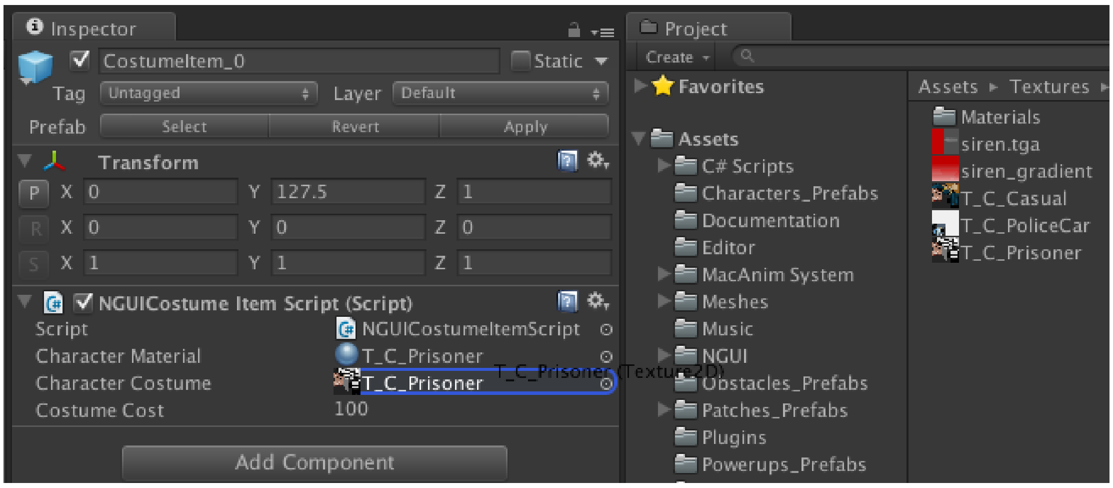
NGUICostume Item Script (Script)
Script NGUICostumeItemScript
Character Material T_C_Prisoner T_C_Prisoner (Material)
Character Costume T_C_Prisoner
Costume Cost 100

EXCEPTION: Character texture not assigned to costume shop element. Check the user documentation.

This message means that you are using a costume in the Shop but forgot to assign the texture to exposed variable of the *ShopCostumeScript*. To fix this, go to Hierarchy > MenuGroup > Shop > CostumesShop > CostumeItemGroup > CostumeItem_x. Go through the *CostumeItem(s)* and check which *ShopCostumeItemScript* has its Character Costume missing. Once you find it, you need to drag and drop the appropriate texture.

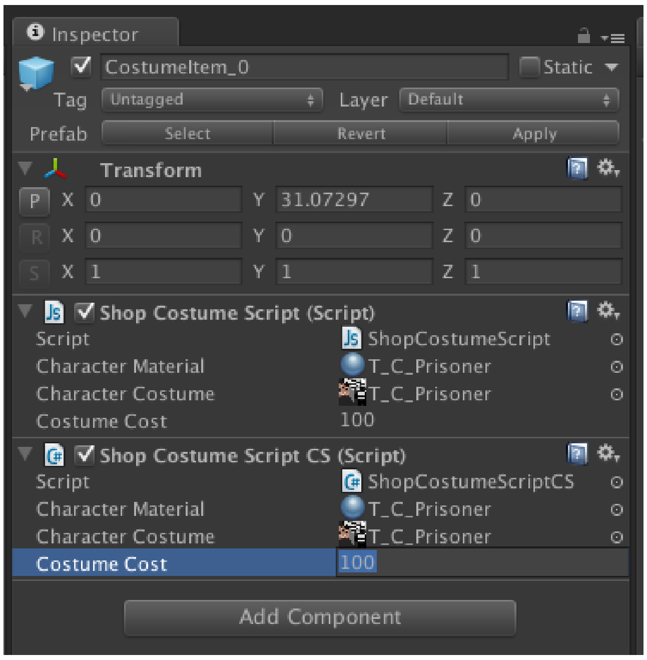

CostumeItem_0
Tag Untagged Layer Default
Transform
P X 0 Y 31.07297 Z 0
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1
Shop Costume Script (Script)
Script ShopCostumeScript
Character Material T_C_Prisoner
Character Costume T_C_Prisoner
Costume Cost 100
Shop Costume Script CS (Script)
Script ShopCostumeScriptCS
Character Material T_C_Prisoner
Character Costume T_C_Prisoner
Costume Cost 100

Alternatively, if you are using the **NGUI Menu**, you will have to go to Hierarchy > UI Root (2D)> Shop > ShopCostumes > CostumeItemGroup > CostumeItem_x. Check which *NGUICostumeItemScript.cs* has its <u>Character Costume </u>missing.

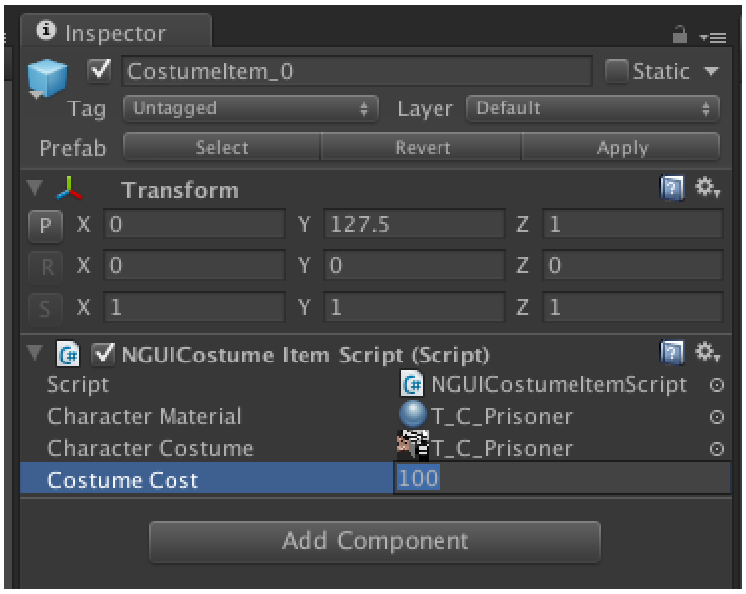

CostumeItem_0
Tag Untagged Layer Default
Transform
P X 0 Y 127.5 Z 1
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1
NGUICostume Item Script (Script)
Script NGUICostumeItemScript
Character Material T_C_Prisoner
Character Costume T_C_Prisoner
Costume Cost 100

EXCEPTION: No cost assigned to the costume shop element. Check the user documentation.

This message means that you have not assigned a price to the exposed variable of a *CostumeItem*. To fix this, go to Hierarchy > MenuGroup > Shop > CostumesShop > CostumeItemGroup > CostumeItem_x. Go through the *CostumeItem(s)* and check which *ShopCostumeItemScript* has its price missing or set to zero and change it.

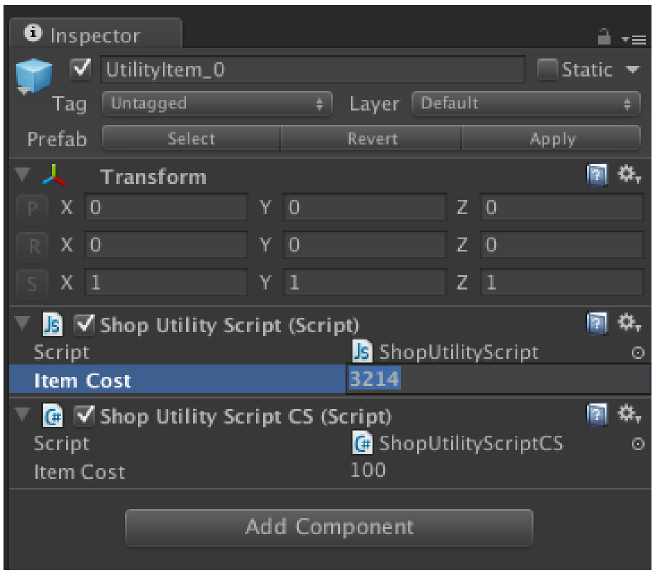

```
Inspector
CostumeItem_0                         Static
Tag  Untagged        Layer  Default
Prefab  Select  Revert  Apply
Transform
P  X 0    Y 31.07297   Z 0
R  X 0    Y 0          Z 0
S  X 1    Y 1          Z 1
Shop Costume Script (Script)
Script               ShopCostumeScript
Character Material   T_C_Prisoner
Character Costume    T_C_Prisoner
Costume Cost         100
Shop Costume Script CS (Script)
Script               ShopCostumeScriptCS
Character Material   T_C_Prisoner
Character Costume    T_C_Prisoner
Costume Cost         100
Add Component
```

Alternatively, if you are using the **NGUI Menu**, you will have to go to Hierarchy > UI Root (2D)> Shop > CostumesShop > CostumeItemGroup > CostumeItem_x. Check which *NGUICostumeItemScript.cs* has its price missing or set to zero and change it.


```
Inspector
CostumeItem_0                         Static
Tag  Untagged        Layer  Default
Prefab  Select  Revert  Apply
Transform
P  X 0    Y 127.5   Z 1
R  X 0    Y 0       Z 0
S  X 1    Y 1       Z 1
NGUICostume Item Script (Script)
Script               NGUICostumeItemScript
Character Material   T_C_Prisoner
Character Costume    T_C_Prisoner
Costume Cost         100
Add Component
```

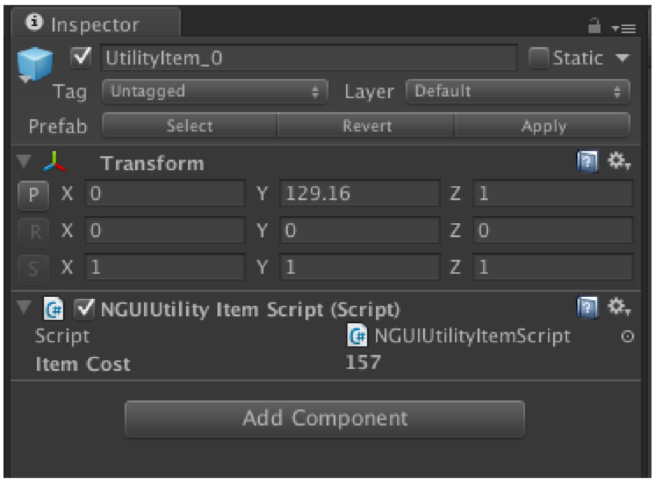
EXCEPTION: No cost assigned to the Utility shop element. Check the user documentation.

This message means that you have not assigned a price to the exposed variable of a *UtilityItem*. To fix this, go to Hierarchy > MenuGroup > Shop > UtilityShop > UtilityItemGroup > UtilityItem_x. Go through the *UtilityItem(s)* and check which *ShopUtilityScript* has its price missing or set to zero and change it.



```
Inspector
UtilityItem_0                      Static
Tag    Untagged        Layer  Default
Prefab   Select   Revert   Apply
Transform
P  X 0    Y 0    Z 0
R  X 0    Y 0    Z 0
S  X 1    Y 1    Z 1
Shop Utility Script (Script)
Script        ShopUtilityScript
Item Cost     3214
Shop Utility Script CS (Script)
Script        ShopUtilityScriptCS
Item Cost     100
Add Component
```

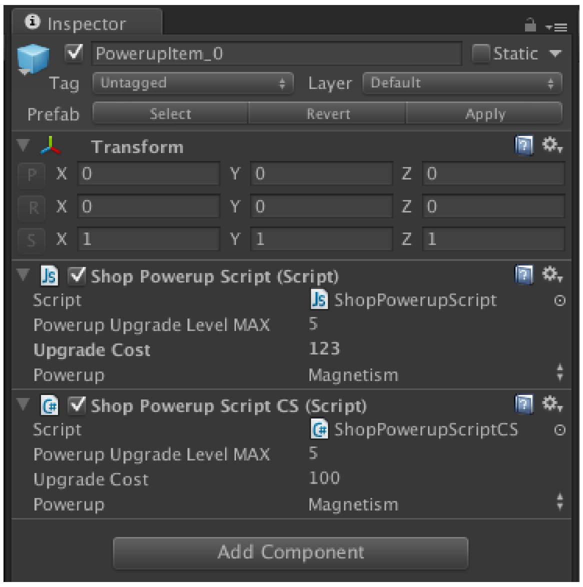
Alternatively, if you are using the **NGUI Menu**, you will have to go to Hierarchy > UI Root (2D)> Shop > ShopUtility > UtilityItemGroup > UtilityItem_x. Check which *NGUIUtilityItemScript.cs* has its price missing or set to zero and change it.



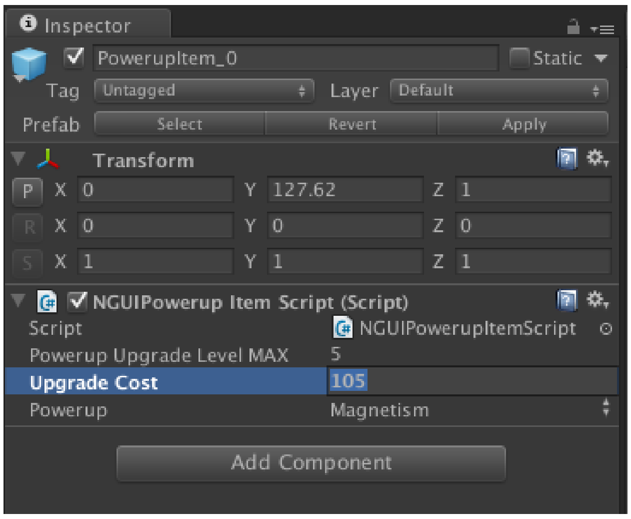
```
Inspector
UtilityItem_0                      Static
Tag    Untagged        Layer  Default
Prefab   Select   Revert   Apply
Transform
P  X 0    Y 129.16    Z 1
R  X 0    Y 0         Z 0
S  X 1    Y 1         Z 1
NGUIUtility Item Script (Script)
Script        NGUIUtilityItemScript
Item Cost     157
Add Component
```

EXCEPTION: No cost assigned to the Power-up shop element. Check the user documentation.

This message means that you have not assigned a price to the exposed variable of a *PowerupItem*. To fix this, go to Hierarchy > MenuGroup > Shop > PowerupsShop > PowerupsItemGroup > PowerupItem_x. Go through the *PowerupItem(s)* and check which *ShopPowerupScript* has its price missing or set to zero and change it.

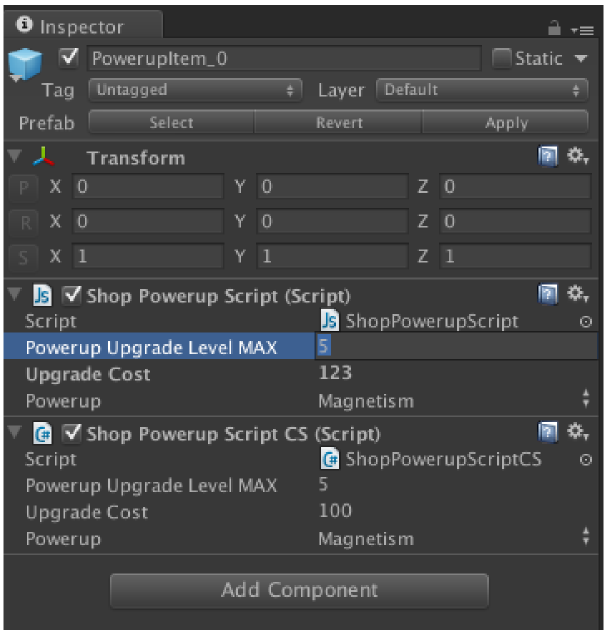

Inspector
PowerupItem_0 Static
Tag Untagged Layer Default
Prefab Select Revert Apply
Transform
P X 0 Y 0 Z 0
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1
Shop Powerup Script (Script)
Script ShopPowerupScript
Powerup Upgrade Level MAX 5
Upgrade Cost 123
Powerup Magnetism
Shop Powerup Script CS (Script)
Script ShopPowerupScriptCS
Powerup Upgrade Level MAX 5
Upgrade Cost 100
Powerup Magnetism
Add Component

Alternatively, if you are using the **NGUI Menu**, you will have to go to Hierarchy > UI Root (2D)> Shop > ShopPowerup > PowerupItemGroup > PowerupItem_x. Check which *NGUIPowerupItemScript.cs* has its price missing or set to zero and change it.


Inspector
PowerupItem_0 Static
Tag Untagged Layer Default
Prefab Select Revert Apply
Transform
P X 0 Y 127.62 Z 1
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1
NGUIPowerup Item Script (Script)
Script NGUIPowerupItemScript
Powerup Upgrade Level MAX 5
Upgrade Cost 105
Powerup Magnetism
Add Component

EXCEPTION: Power-up upgrade level cannot be zero. Check the user documentation.

This message means that you have not assigned a maximum upgrade level to the exposed variable of a *PowerupItem*. To fix this, go to Hierarchy > MenuGroup > Shop > PowerupsShop > PowerupsItemGroup > PowerupItem_x. Go through the *PowerupItem(s)* and check which *ShopPowerupScript* has its *Powerup Upgrade Level MAX* missing or set to zero and change it.


Inspector

PowerupItem_0 | Static

Tag: Untagged | Layer: Default

Prefab: Select | Revert | Apply

Transform

	X	Y	Z
P	0	0	0
R	0	0	0
S	1	1	1

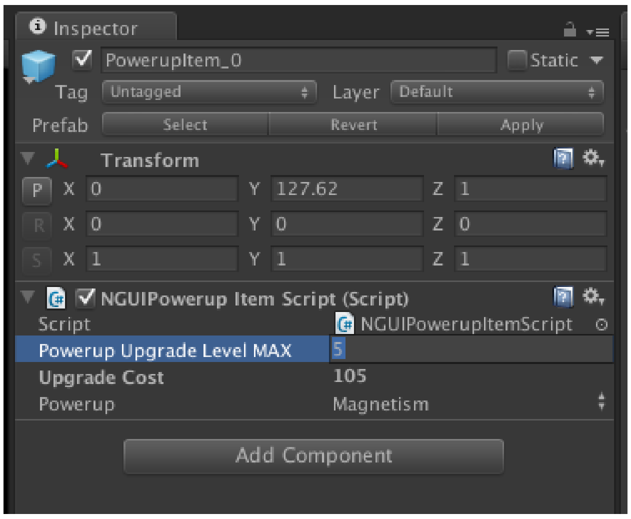
Shop Powerup Script (Script)

Script	ShopPowerupScript
Powerup Upgrade Level MAX	5
Upgrade Cost	123
Powerup	Magnetism

Shop Powerup Script CS (Script)

Script	ShopPowerupScriptCS
Powerup Upgrade Level MAX	5
Upgrade Cost	100
Powerup	Magnetism

Alternatively, if you are using the **NGUI Menu**, you will have to go to Hierarchy > UI Root (2D)> Shop > ShopPowerup > PowerupItemGroup > PowerupItem_x. Check which *NGUIPowerupItemScript.cs* has its *Powerup Upgrade Level MAX* variable missing or set to zero and change it.


Inspector

PowerupItem_0 | Static

Tag: Untagged | Layer: Default

Prefab: Select | Revert | Apply

Transform

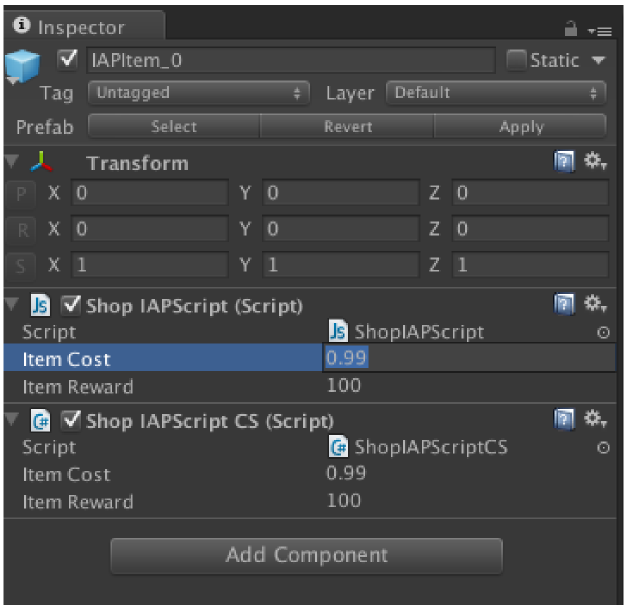
	X	Y	Z
P	0	127.62	1
R	0	0	0
S	1	1	1

NGUIPowerup Item Script (Script)

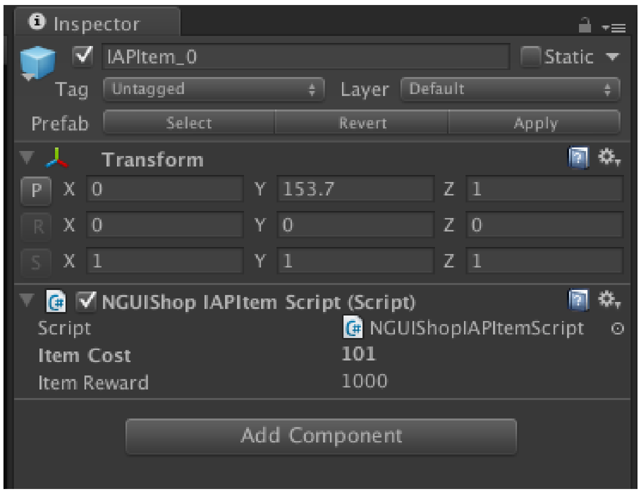
Script	NGUIPowerupItemScript
Powerup Upgrade Level MAX	5
Upgrade Cost	105
Powerup	Magnetism

EXCEPTION: No cost assigned to the IAP shop element. Check the user documentation.

This message means that you have not assigned a cost to the exposed variable of a *IAPItem*. To fix this, go to Hierarchy > MenuGroup > Shop > MoreCoinsShop > IAPItemGroup > IAPItem_x. Go through the *IAPItem(s)* and check which *ShopIAPScript* has its *Item Cost* missing or set to zero and change it. This is the cost in dollars that the user will be spending to purchase a virtual currency pack.

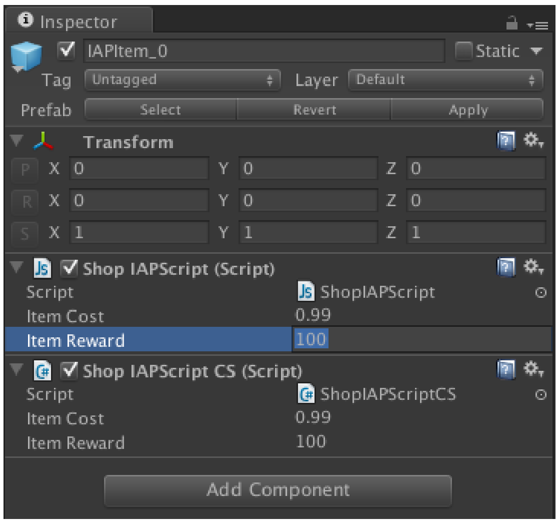

Inspector
IAPItem_0
Static
Tag Untagged
Layer Default
Prefab Select Revert Apply
Transform
P X 0 Y 0 Z 0
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1
Shop IAPScript (Script)
Script ShopIAPScript
Item Cost 0.99
Item Reward 100
Shop IAPScript CS (Script)
Script ShopIAPScriptCS
Item Cost 0.99
Item Reward 100
Add Component

Alternatively, if you are using the **NGUI Menu**, you will have to go to Hierarchy > UI Root (2D)> Shop > ShopIAPs > IAPsItemGroup > IAPItem_x. Check which *NGUIShopIAPItemScript.cs* has its *Item Cost* missing or set to zero and change it.

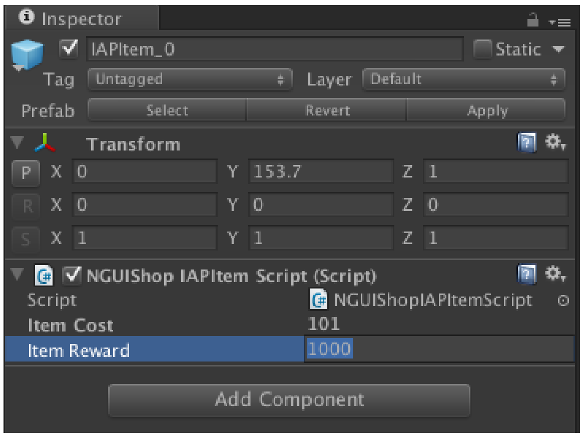

Inspector
IAPItem_0
Static
Tag Untagged
Layer Default
Prefab Select Revert Apply
Transform
P X 0 Y 153.7 Z 1
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1
NGUIShop IAPItem Script (Script)
Script NGUIShopIAPItemScript
Item Cost 101
Item Reward 1000
Add Component

EXCEPTION: No reward assigned to the IAP shop element. Check the user documentation.

This message means that you have not assigned a reward to the exposed variable of an *IAPItem*. To fix this, go to Hierarchy > MenuGroup > Shop > MoreCoinsShop > IAPItemGroup > IAPItem_x. Go through the *IAPItem(s)* and check which *ShopIAPScript* has its *Item Reward* missing or set to zero and change it. This is the reward in virtual currency that the user will receive if he purchases this IAP pack.


Inspector
IAPItem_0 Static
Tag: Untagged Layer: Default
Prefab: Select Revert Apply
Transform
P X 0 Y 0 Z 0
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1
Shop IAPScript (Script)
Script: ShopIAPScript
Item Cost: 0.99
Item Reward: 100
Shop IAPScript CS (Script)
Script: ShopIAPScriptCS
Item Cost: 0.99
Item Reward: 100
Add Component

Alternatively, if you are using the **NGUI Menu**, you will have to go to Hierarchy > UI Root (2D)> Shop > ShopIAPs > IAPsItemGroup > IAPItem_x. Check which *NGUIShopIAPItemScript.cs* has its *Item Reward* missing or set to zero and change it.


Inspector
IAPItem_0 Static
Tag: Untagged Layer: Default
Prefab: Select Revert Apply
Transform
P X 0 Y 153.7 Z 1
R X 0 Y 0 Z 0
S X 1 Y 1 Z 1
NGUIShop IAPItem Script (Script)
Script: NGUIShopIAPItemScript
Item Cost: 101
Item Reward: 1000
Add Component

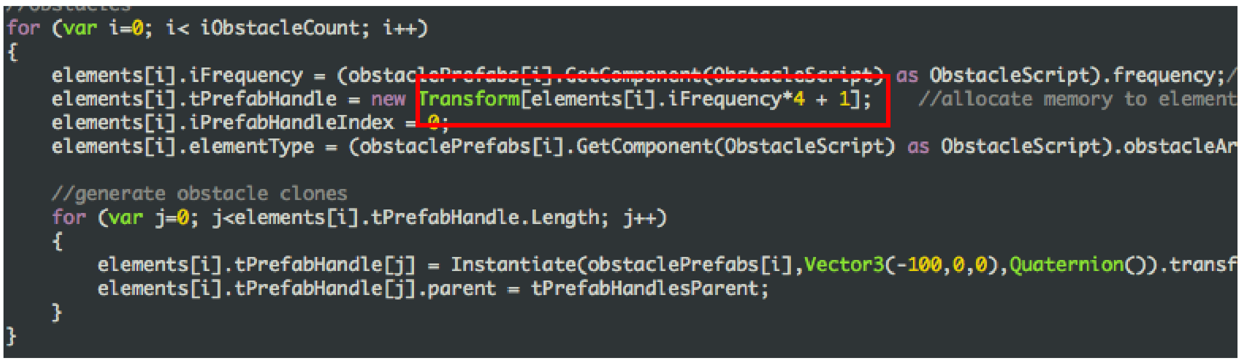
Frequently Asked Questions

Obstacles and/ or currency units disappear whenever the *Player* gets to a new patch.

The *ElementsGenerator* script instantiates and pools all the elements (currency, obstacles and power-ups) when the game starts. When a new patch is generated, elements from these pools are placed at the needed locations. Sometimes when a very few obstacles are used, the elements' clones pooled are not enough for placement in multiple patches. In this case, whenever a new patch is generated, obstacles currently in front of the player are relocated to the next patch making them disappear suddenly from the screen.

To fix this, all you need to do is to increase the number of clones in the pool. The following screen highlights the code in the *setPrefabHandlers* function in the *ElementGenerator* script where the number of obstacles to pool is calculated. Lets say the frequency of an element was set to 10; the clones pooled will be 41.

The number ‘4’ can be replaced with a higher number to generate more elements.



```
for (var i=0; i< iObstacleCount; i++)
{
    elements[i].iFrequency = (obstaclePrefabs[i].GetComponent(ObstacleScript) as ObstacleScript).frequency;/
    elements[i].tPrefabHandle = new Transform[elements[i].iFrequency*4 + 1];    //allocate memory to element
    elements[i].iPrefabHandleIndex = 0;
    elements[i].elementType = (obstaclePrefabs[i].GetComponent(ObstacleScript) as ObstacleScript).obstacleAr

    //generate obstacle clones
    for (var j=0; j<elements[i].tPrefabHandle.Length; j++)
    {
        elements[i].tPrefabHandle[j] = Instantiate(obstaclePrefabs[i],Vector3(-100,0,0),Quaternion()).transf
        elements[i].tPrefabHandle[j].parent = tPrefabHandlesParent;
    }
}
```

How do I change the length of the patches to a value other than the default (3000 meters)?

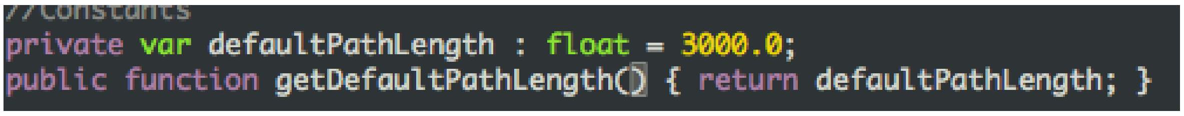
The patches used in the project are 3000 meters by default.

1. To change their length, the first step is to create new patches of the required length in a 3D modeling tool.

2. The second step is to set the checkpoints as explained in the “Adding a Patch” tutorial.

3. Once you have the patches, you also need to tell the *CheckPointsScript* the size of the patches to generate. If you skip this step, the patches will be generated after the default (3000 meter) distance.

Change the *defaultPathLength* variable in *CheckPointsScript* to match the size of your new patches.



```
//Constants
private var defaultPathLength : float = 3000.0;
public function getDefaultPathLength() { return defaultPathLength; }
```

What is the difference between Achievements and Missions?

The Achievements or Global Achievements are meant to be used as Game Center Achievements. They will usually need a lot of game time to complete.

The Missions are updated during gameplay. On completion their notification is displayed on HUD. The user can check their progress from the Pause Menu as well as the Missions Menu. They are programmed to be displayed in sets of three. On completion of one, the next one takes it place.

How do I turn the fog off?

Fog is great for hiding the horizon and reducing draw calls. The fog is turned on when the game is launched from the *Start* function of the *InGameScript*.