

Lab 1:

3D Game Development

Lab Goals

The goal of today's Lab is to practice the skills we went over in the previous classes.

You will create materials and texture them

You will create a terrain, sculpt it, texture it, and place down trees and grass to make it feel more alive.

You will also see how colliders and rigid bodies work in action.

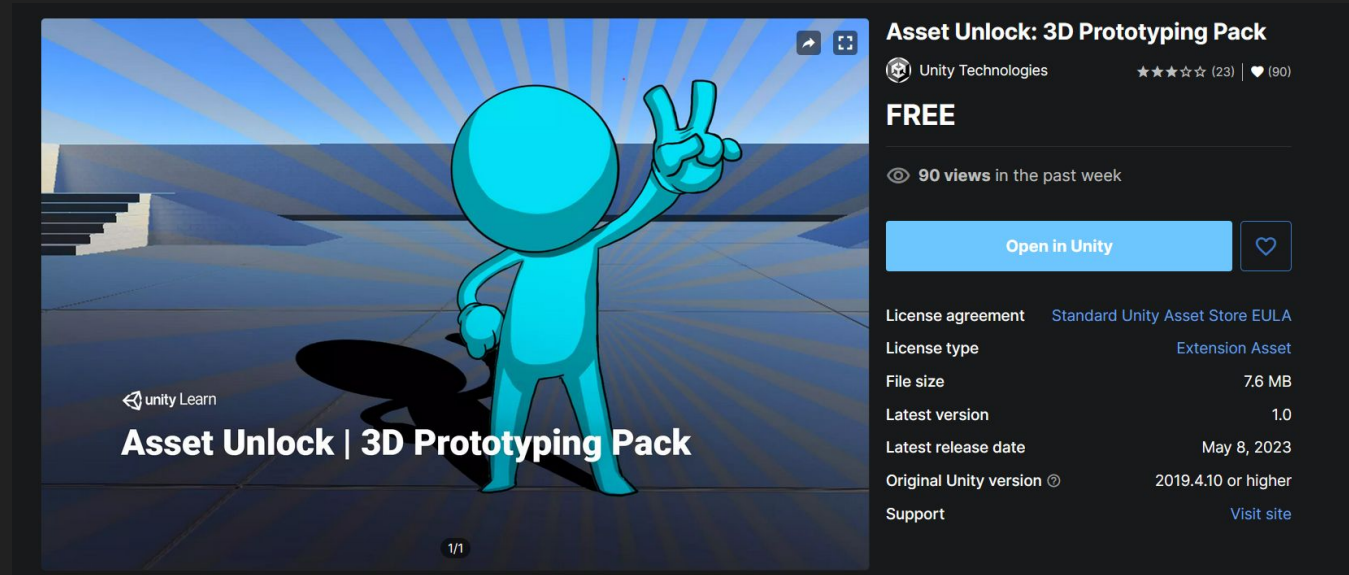


3D Prototyping Pack

We're using the 3D prototyping pack for our character.

To use it in your future project go to Unity Asset Store add the Pack.

The pack provides you with a small level, an animated 3D character and your choice of camera. We're using third person camera.



Importing the 3D Prototyping Pack

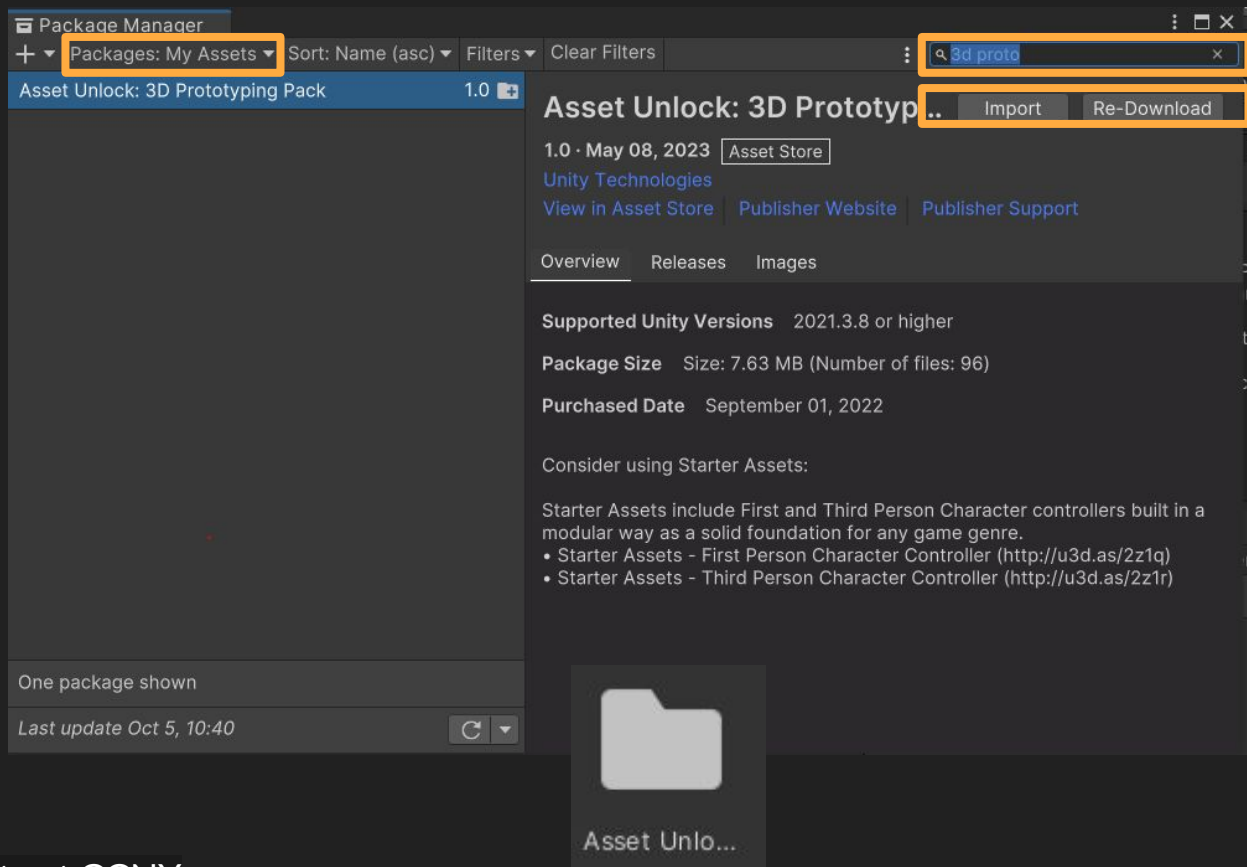
Once you've connected the pack in Unity Asset Store you go to Unity and open

Window -> Package Manager

Inside the Package Manager you Select the Packages: My Assets and you can use the search bar to find the package,

Once you find it you Download it and Import it into your project.

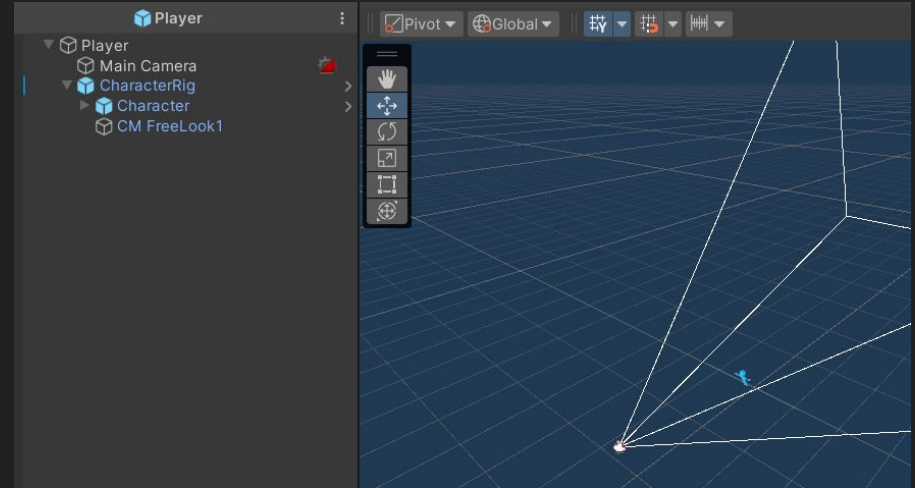
If everything went well you have folder in your Asset folder.



Character

In your PreFabs folder you will find the Player PreFab. It has a camera and the Character Rig From the pack connected to it.

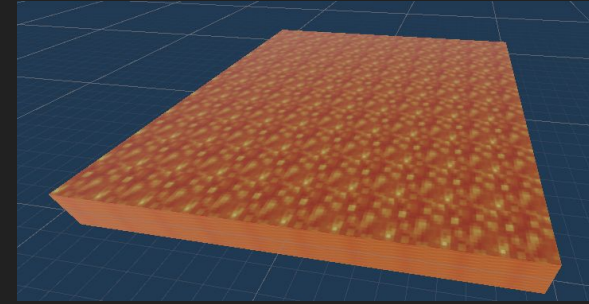
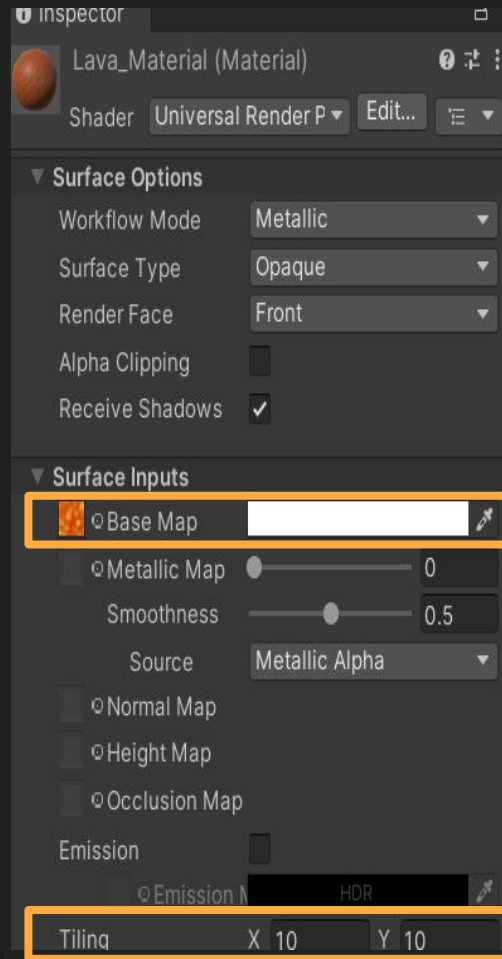
Any time you make a new level you can add it to the scene and you will have fully working 3D character.



Lava Floor Textures

First we will create a Lava Floor, this will use a Material called Lava_Material, it's already connected to the Prefab so you just have to modify its settings.

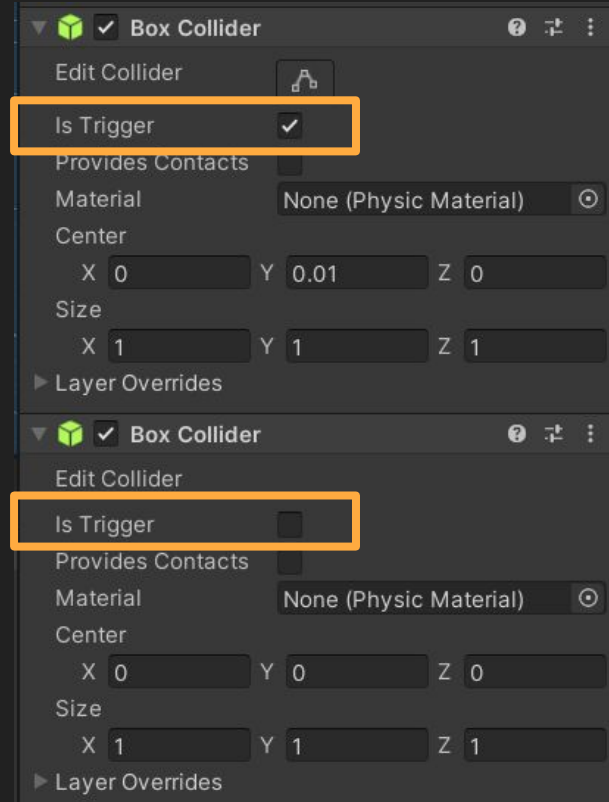
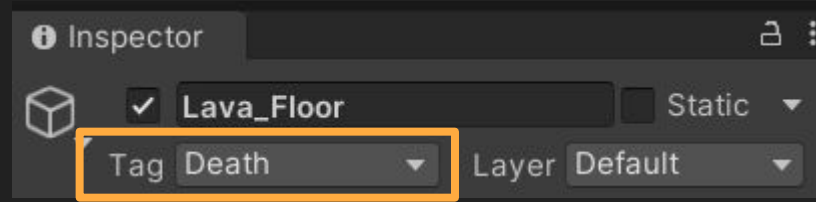
- 1) Add Base Map
- 2) Change the tiling to be x = 10 and y = 10



Lava Collisions

We're going to create two Box Collider Components that are attached to the lava floor.

- 1) First collider will be a physical object
- 2) Second will be a trigger collider, this will tell the Ball object that it touched and should be respawned.
- 3) The Tag with connection to the script attached to the ball is what allows the respawn to occur.

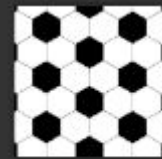
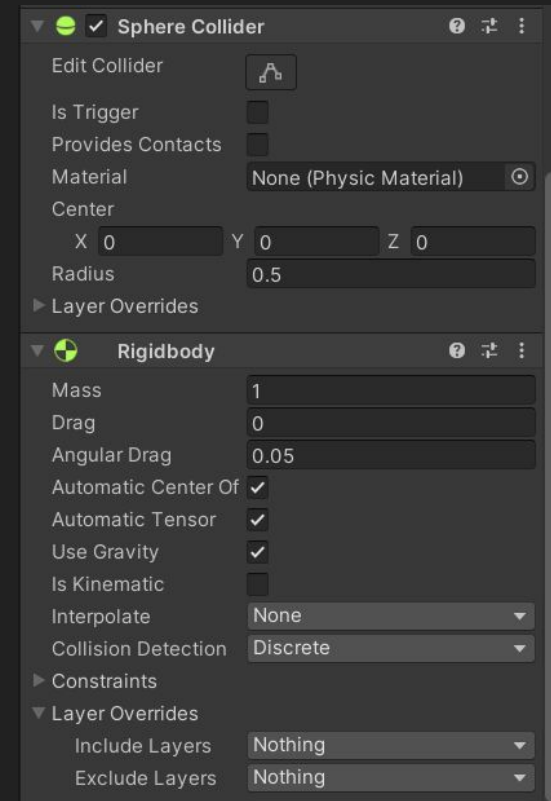
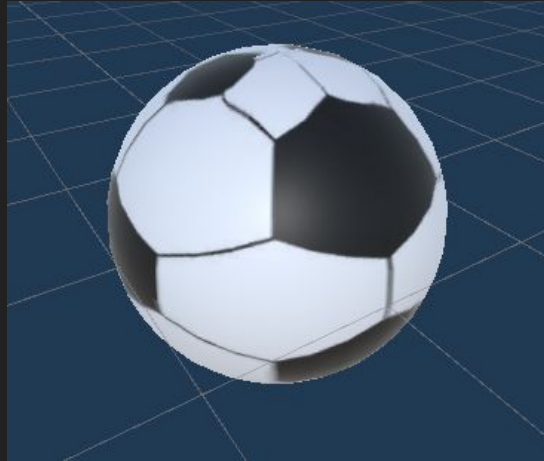
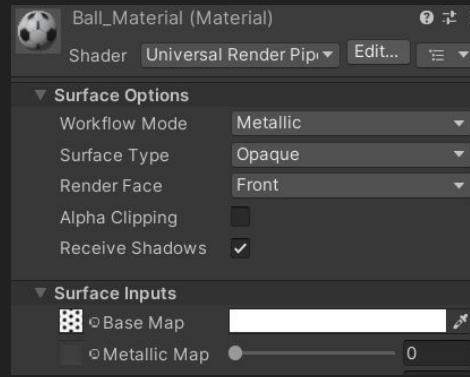


Ball

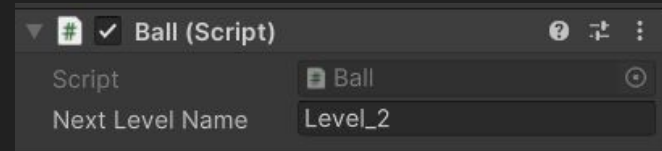
We will create a soccer ball, for the material just add the Base Map.

Physica wise you will add a sphere collider and a rigidbody. You don't need to modify them.

The ball has a script attached. It's responsible for respawning the ball and moving you to the next level.



Ball_Textu...

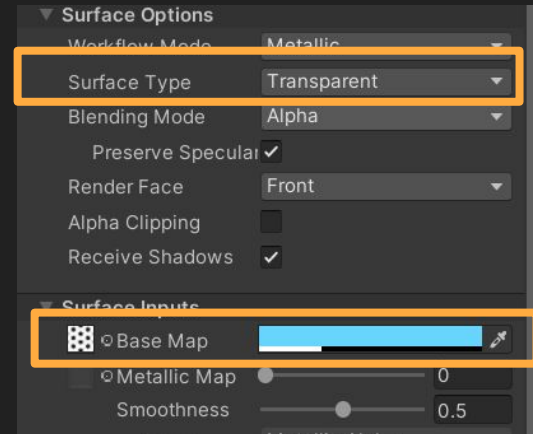
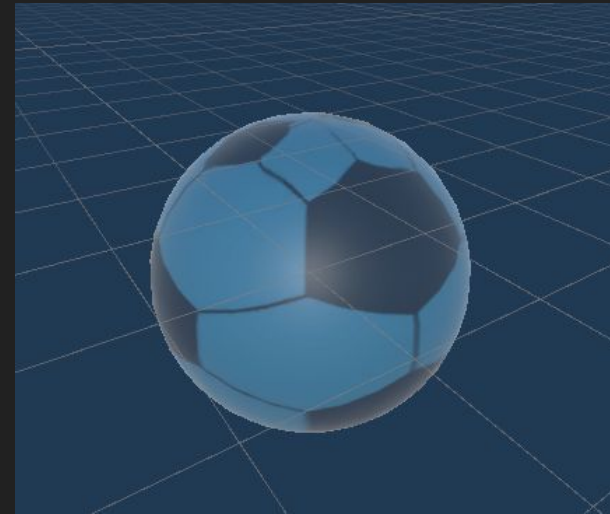


Ball Respawn

Ball Respawn will be a ghostly copy of the ball indicating where it will come back if it falls off the level.

You will add a base map like to the regular ball but then you will make it Transparent and change the alpha to a lower level while changing the color of it.

The ball will have no collisions.



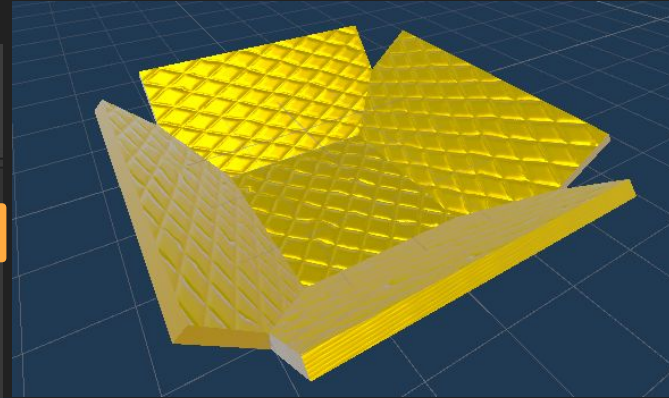
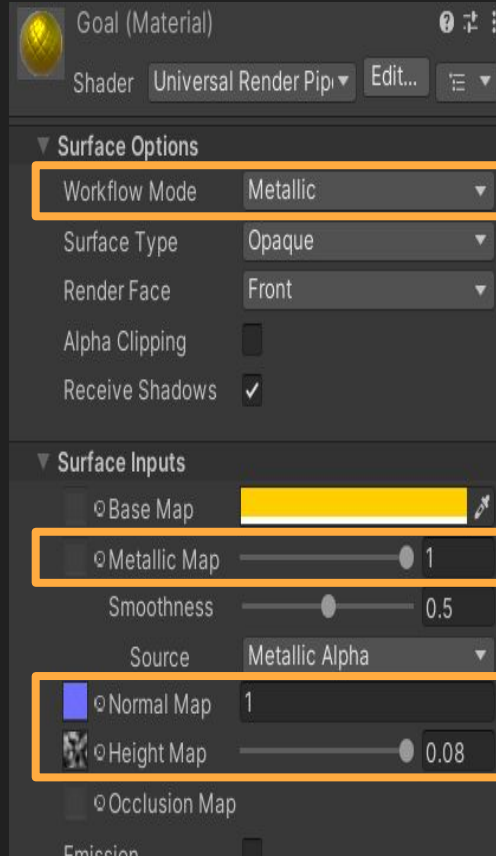
Goal Texture

Texturing the goal.

The goal material will not use any base map but modify the color to be yellow.

While making sure the workflow is in Metallic raise the metallic map to 1 and it will make it very shiny.

Add a Normal Map and a Height Map to give the goal a more detailed look.

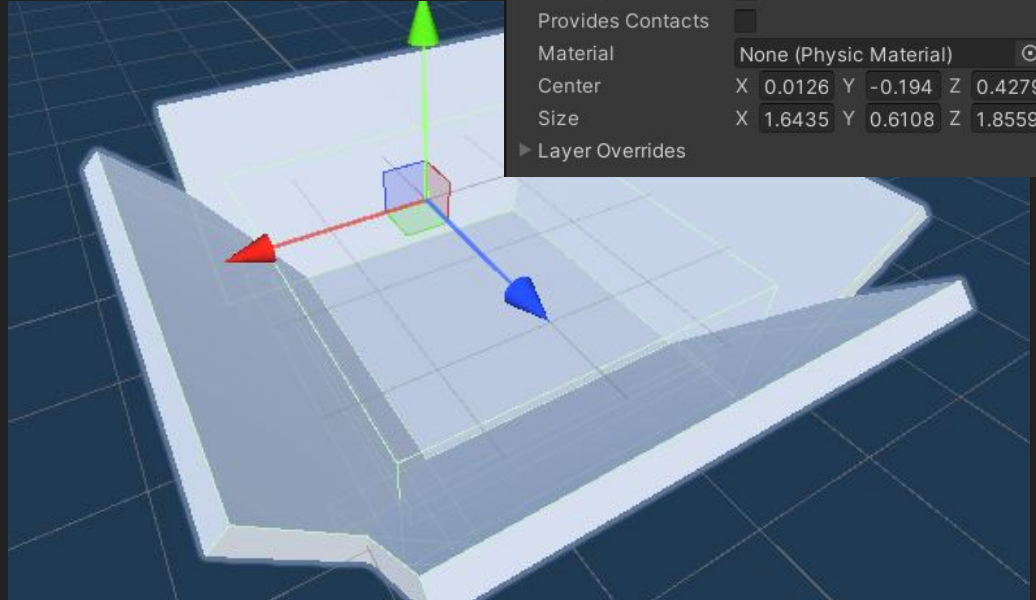
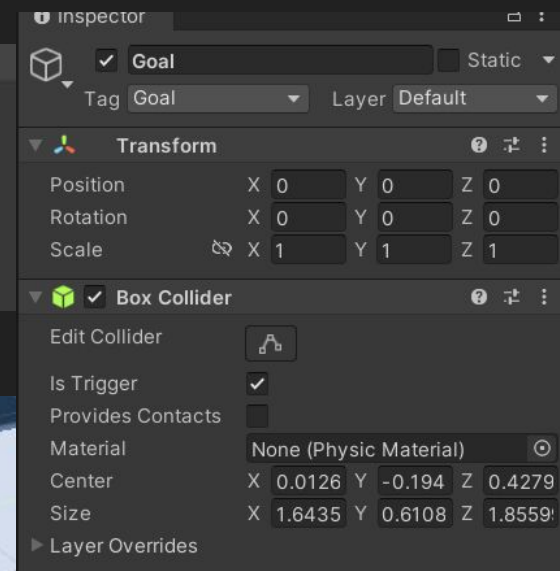


Goal Collisions

The goal is made up of 6 game objects, the Goal which is the parent and 5 cubes which are the children. The children cubes already have Box Colliders that are physical.

You have to add a trigger collider to the Goal parent object so that when the ball hits it we know it's time to go to the next level.

Place that collider in the center of the goal.

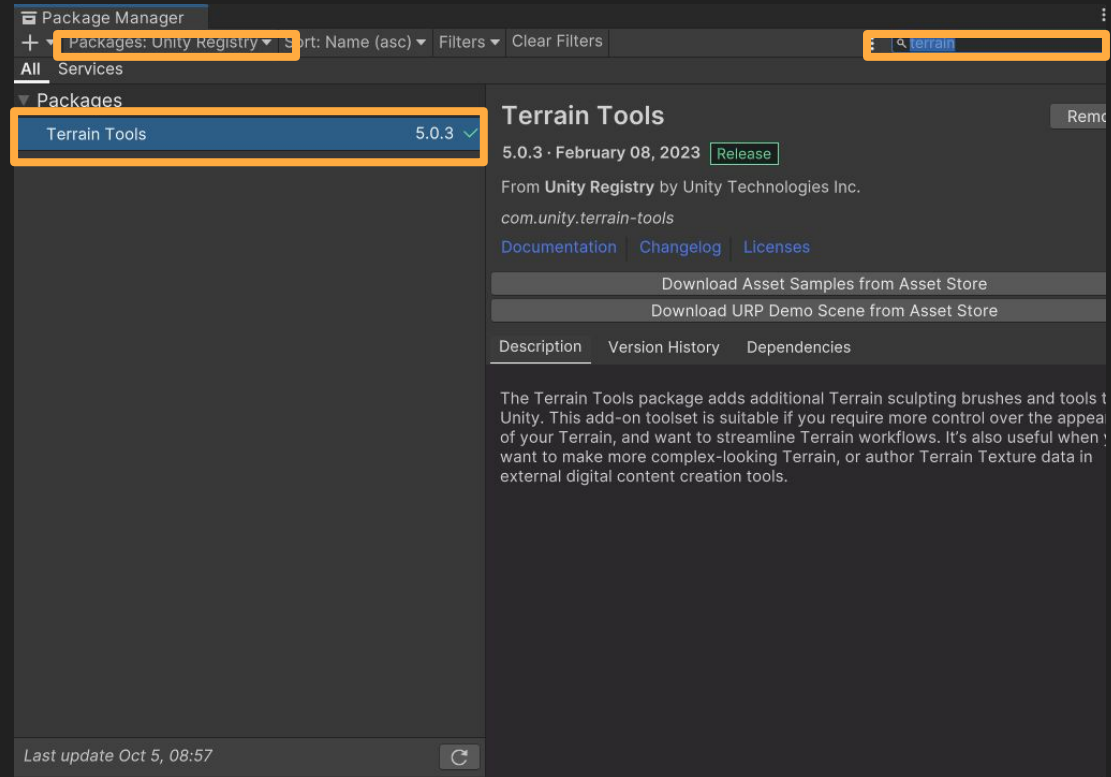


Terrain Package Manager

To work on our terrain we are using Terrain tools package.

It's already installed in on the laptops but if you want to use this in the future you have to go to Window -> Package Manager

Check Packages: Unity Registry and search for Terrin tools

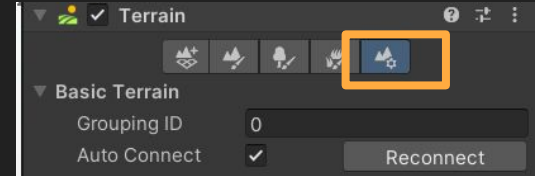
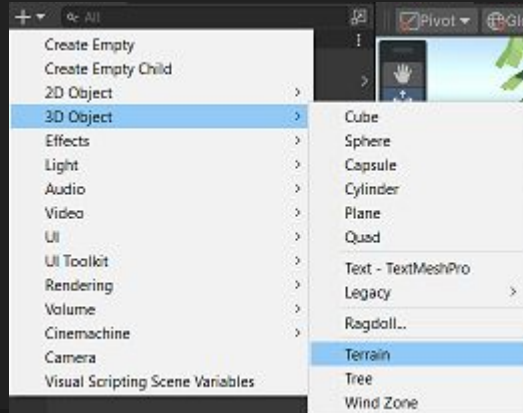
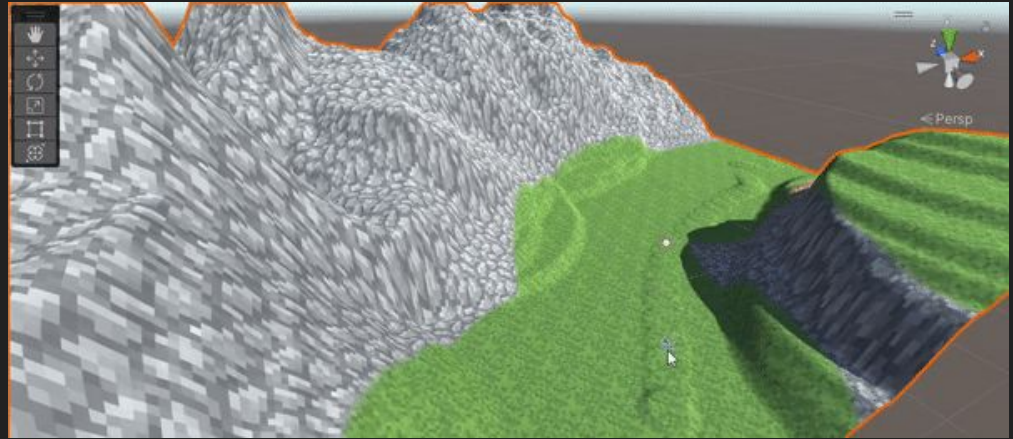


Level - Terrain

To create our world we will use the Terrain Tool.

Click create 3D Object -> Terrain.

Once you created it first thing you will do is got to the Terrain Settings -> Mesh Resolution and changes how big the resolution is.



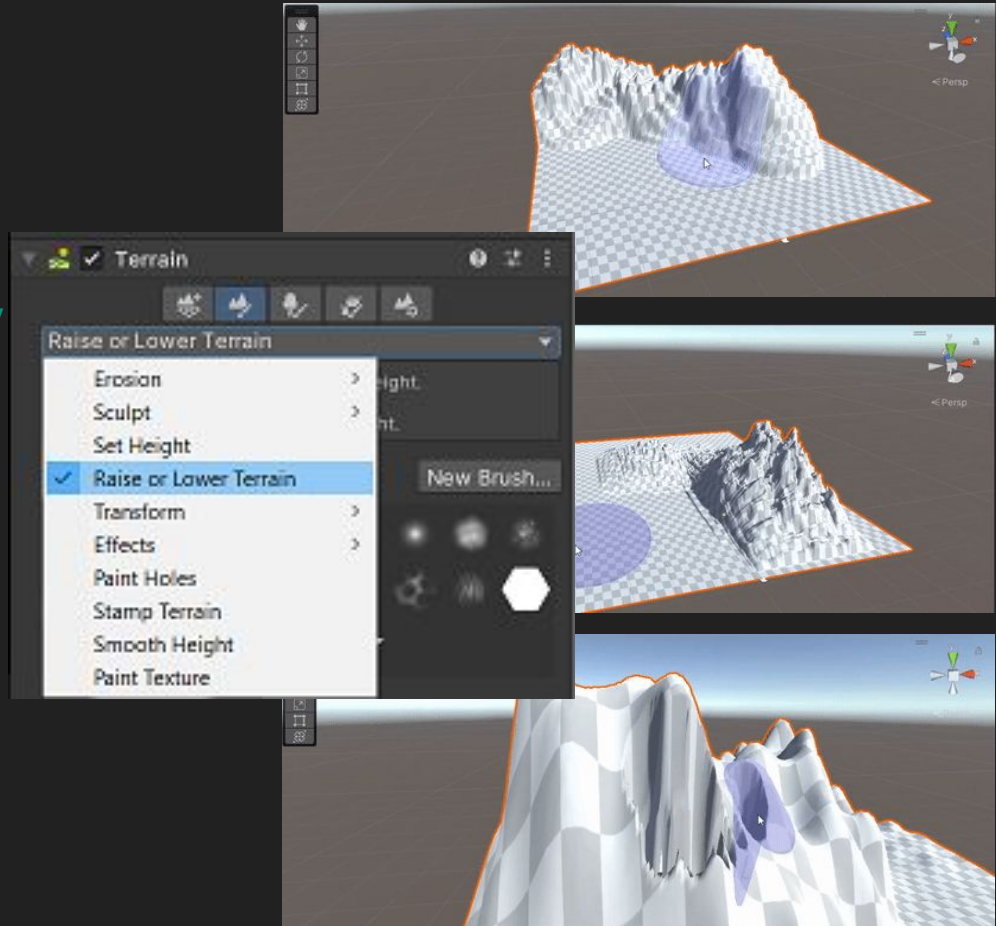
Mesh Resolution (On Terrain Data)	
Terrain Width	20
Terrain Length	20
Terrain Height	600
Detail Resolution I	32
Detail Resolution	32

Creating Hills and Valleys

Once you've properly set up the size of your terrain you will create a level using the terrain Brush tool select any of brush types besieged Paint Texture and raise and lower the level to your liking.

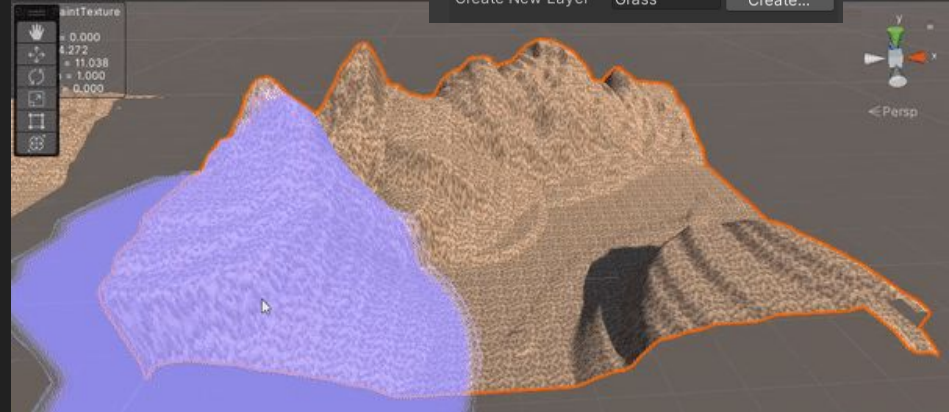
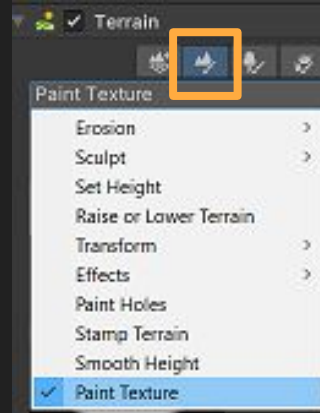
Remember clicking Left Mouse button will rise things

Clicking Ctrl + Left Mouse Button will lower things



Painting Texture

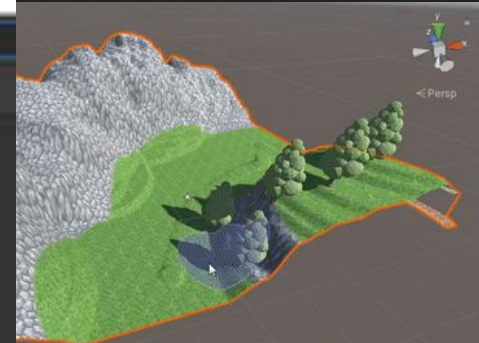
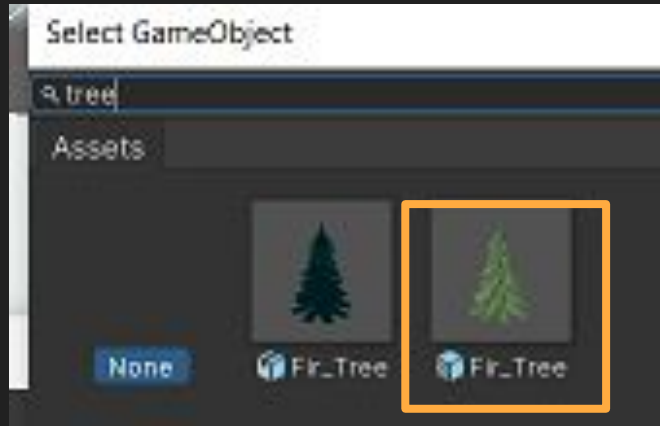
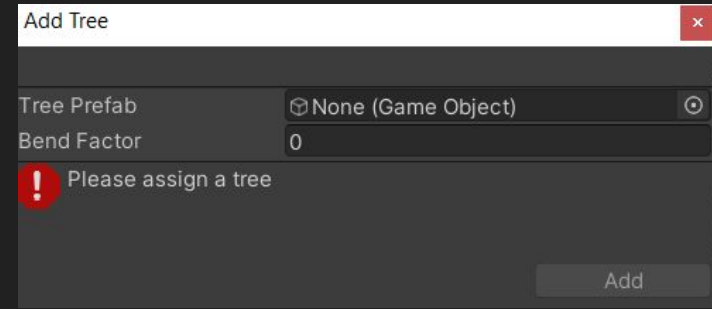
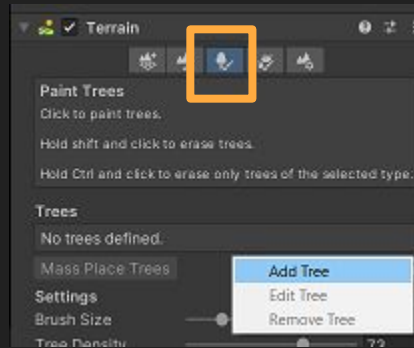
Once you've create a world you like it's time to paint it. Create Layers you want to use, organize them in whatever order feels best and use the paintbrush tool to color your world.



Adding Trees

To add a tree you will go to the third tab and click add Tree, you will select a game object you will choose the one that has a shade square, that means it's a PreFab and it has a box collider added to it.

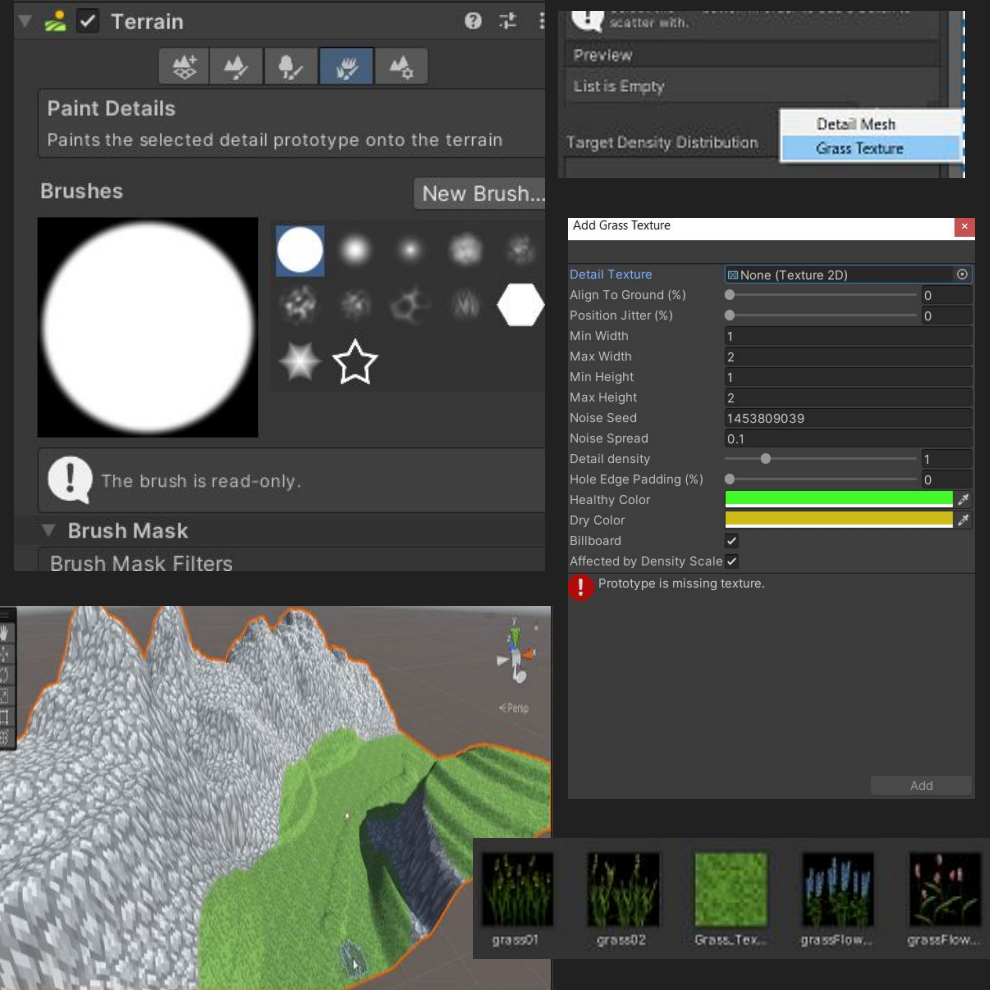
Once you've added it you can paint trees onto your level.



Adding Grass

Finally to add the grass you will go to the grass tab, scroll down and add a grass texture.

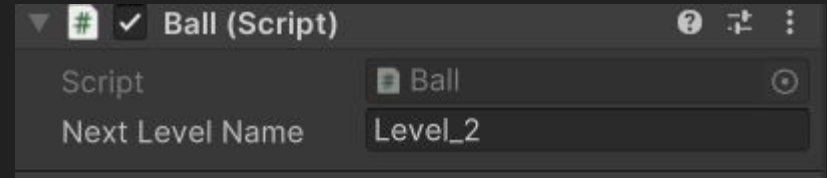
In the big windows you can modify how the grass will behave and look but the main thing you need to do is select a texture added it and start painting.



To Next Level

You've made your first level. If you want to make a series of levels you can next scenes.

In the Scene folder. As we mentioned the ball has a script that will send it to a new level. Depending on what level you want to go after this one you write the name of the Scene in the ball of the previous level.



Adding Scene to Build Settings

Unity has to be aware of other scene that you may want to move between during gameplay so you will have to open File-> Build Settings and while being in your newly created scene add it to the list.

