

# COMP2007 - Game Development

## Week 9 - Code session

### Unity terrain tools

Unity has built-in tools for creating terrain.

A Terrain in Unity is a large mesh, but some handy tools are provided in the terrain component compared to a Mesh renderer

- Height adjustment
- Terrain mesh editing
- Geometry smoothing
- Layered texture painting
- Importing of heightmaps
- Creating holes for cave entrances

#### Height adjustment

Called “Set height” on the component

Provided with brushes and ability to add custom brushes for painting

Raise or lower parts of the terrain to specific heights in unity units

- Great for setting flat areas for putting buildings on etc
- Great for having specific areas above or below water level

#### Terrain mesh editing

Called “Raise or lower terrain” on the component

Paint with the brushes on the mesh to adjust the terrain height according to the selected brush

- Used to edit the terrain with hills and valleys etc
- Using the opacity setting adjusts the terrain more gradually

#### Geometry smoothing

Smooth out any sharp or jagged areas of a terrain

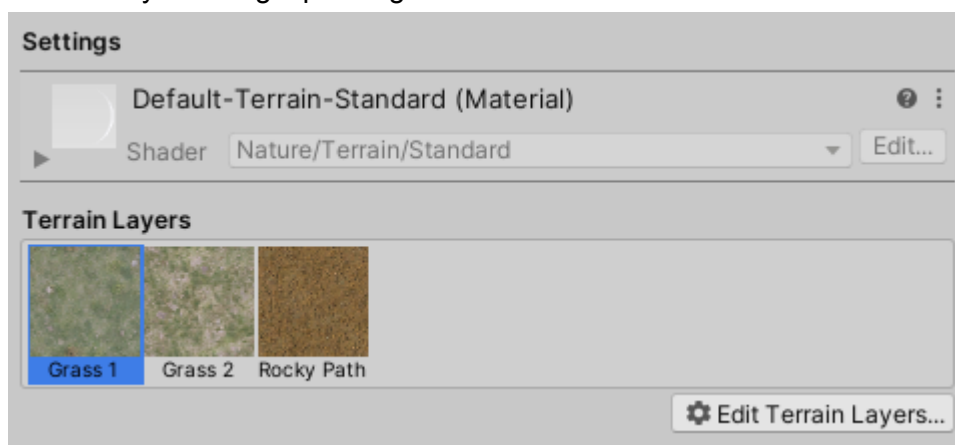
- Create gradual slopes for your characters to walk on
- Great for use with the height adjustment tool to create natural looking, walkable areas

#### Layered texture painting

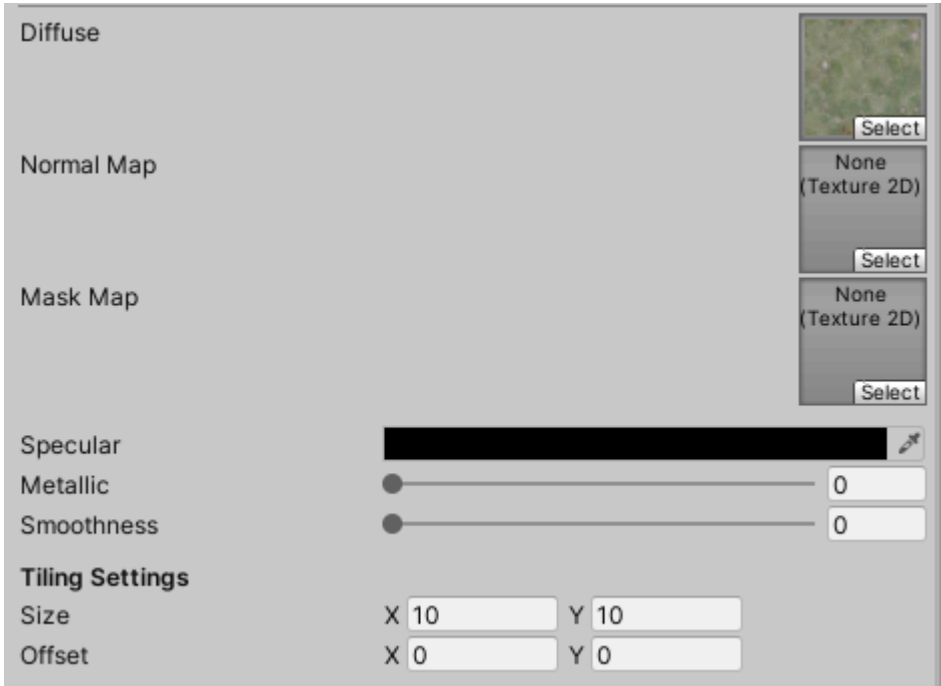
Uses layers of texture images to paint the terrains style

Terrains use a specific shader to layer textures - “Nature/Terrain/Standard”

Select a layer to begin painting

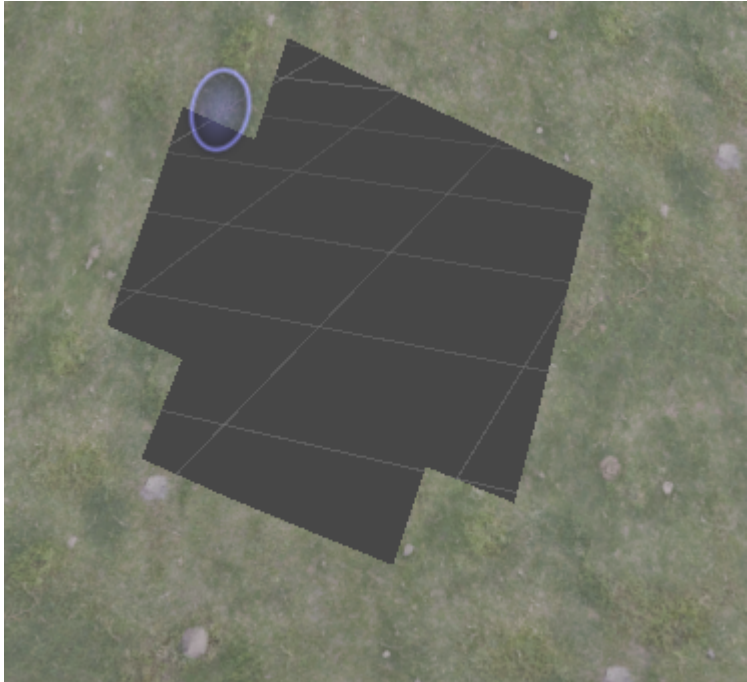


Each layer requires at least a Diffuse texture  
You can add a normal map for realism and a mask map for HD settings  
Set the size of the layer to adjust its view in the scene



### Paint holes

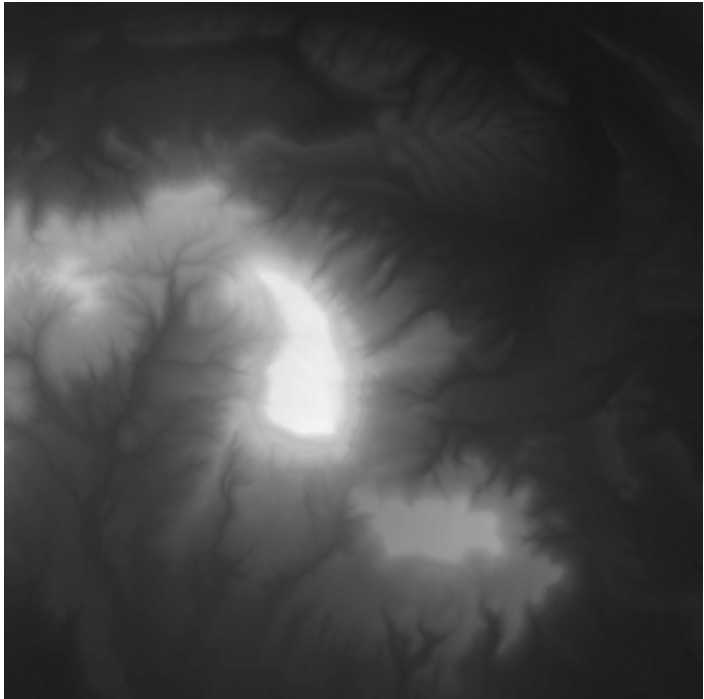
Remove sections of a terrain so your character can pass through into caves etc  
Terrain hole example



### Heightmaps

In the settings section, you can import a “heightmap” image  
This is a black & white image representing the terrain shape  
Lighter areas raise the terrain and darker areas lower it  
Heightmap images are required to be a .raw file type  
Use the Terrain tools package to import heightmap images in .png format

A heightmap image example - the dark areas represent the lower parts, often underwater, lighter areas are hills and mountains



# Links

Creating and editing terrains

<https://docs.unity3d.com/2021.2/Documentation/Manual/terrain-UsingTerrains.html>

Neighbor terrains

<https://docs.unity3d.com/2021.2/Documentation/Manual/terrain-CreateNeighborTerrains.html>

Terrain tools

<https://docs.unity3d.com/2021.2/Documentation/Manual/terrain-Tools.html>

Terrain layers (texturing)

<https://docs.unity3d.com/2020.2/Documentation/Manual/class-TerrainLayer.html>

Terrain brushes

<https://docs.unity3d.com/2021.2/Documentation/Manual/class-Brush.html>

Tree creator tool

<https://docs.unity3d.com/2021.2/Documentation/Manual/tree-FirstTree.html>

Terrain tools (preview package)

<https://docs.unity3d.com/Packages/com.unity.terrain-tools@3.0/manual/index.html>