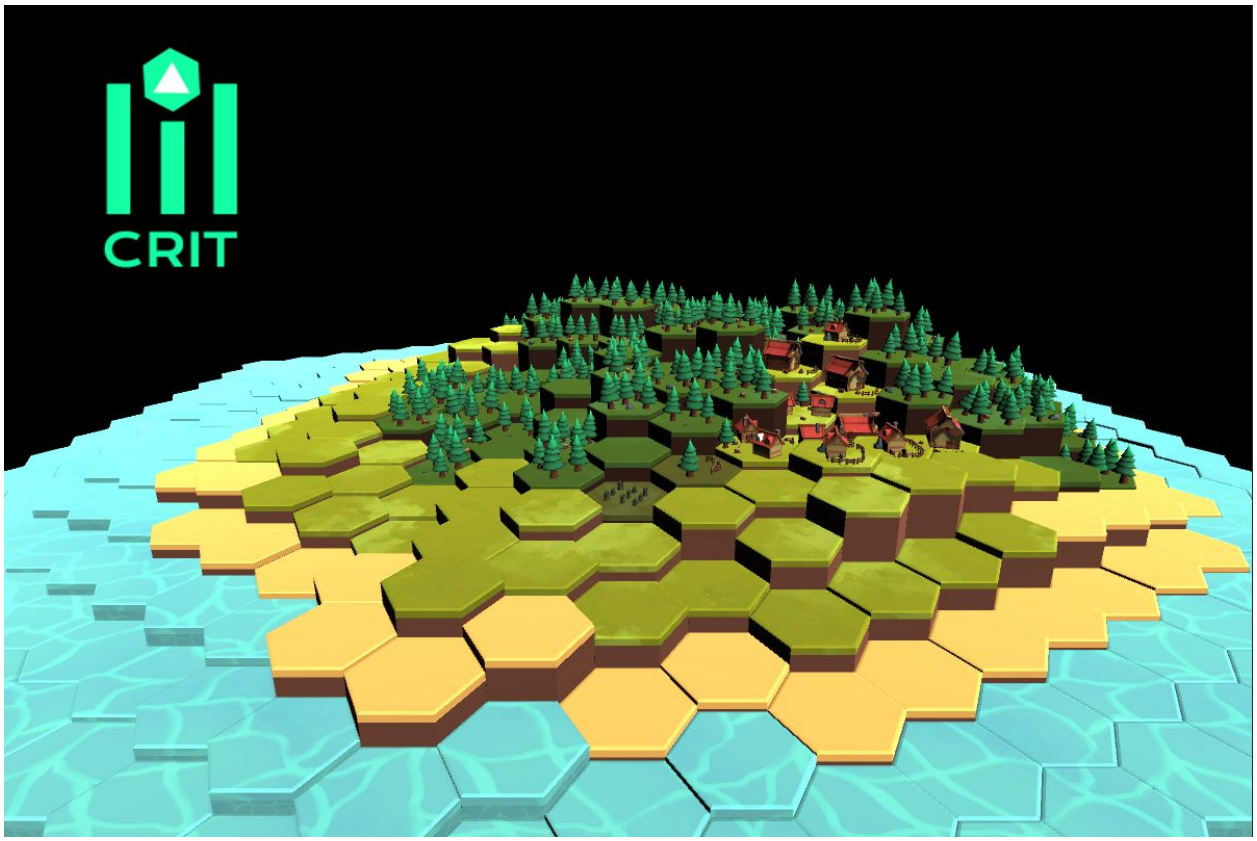
Hex Terrain Gen
V1.0



*** IMPORTANT ***

The hex terrain tool requires gizmos to be turned on for paint functionality to work properly, if you are trying to use the tool but you do not see the brush indicator or are unable to perform certain actions, check your gizmos.

This tool is designed to speed up the process of making Hexagon Floors for game levels. As such it has the ability to paint height, biome, and props onto the floor.

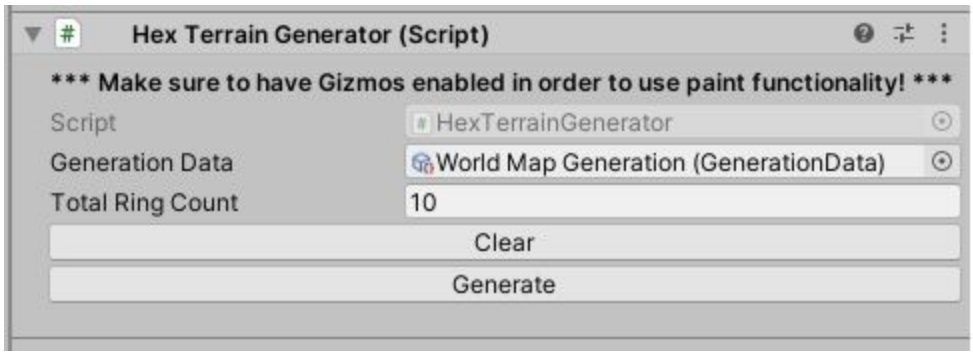
Quick Start

1. Drag in the **Hex Terrain Generator** prefab into the scene
2. Choose the **Generation Data** scriptable object that this generator will use for hex sizes, biome data, and more.
    a. Included in this asset is a premade Generation Data at ***"Data/Generation Data/World Map Generation"***, but you can make new ones as your game needs.
3. Enter the **Total Ring Count** you want for your hex floor. This determines the radius of the hex grid.
4. Click the **Generate** button to create the initial terrain.
5. From here, new options will appear allowing you to select the different options (biome, height, props, etc) and paint them onto the terrain (see details below).

Tool Overview

Hex Terrain Generator GUI

Pre Generation



Important Note: as the Note at the top mentions if you don't have gizmos enabled the paint functionality won't work properly.

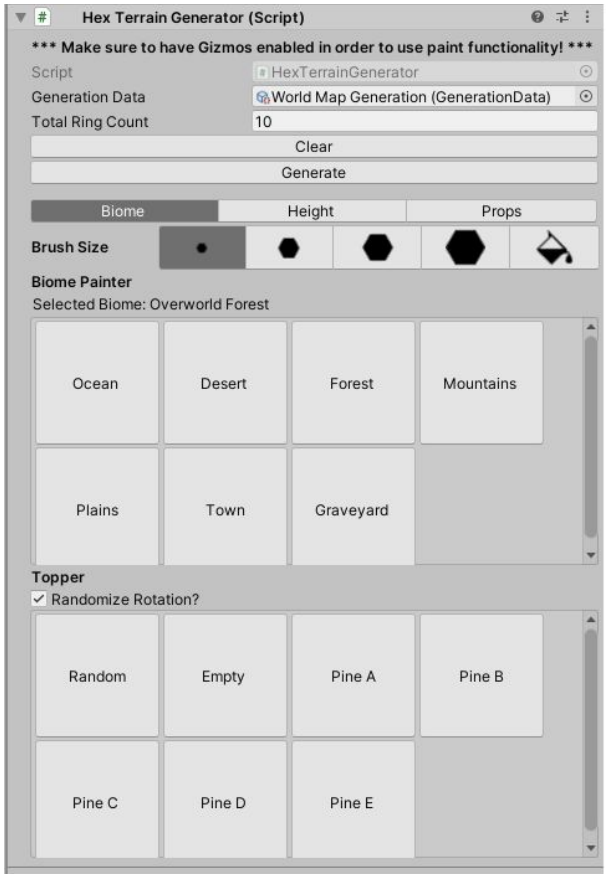
Generation Data: Needs to be set so the tool has the necessary data to create the terrain as well as the tool options for biome and props. A Generation Data is included in the asset.

Total Ring Count: How Many Rings of Hexes will be Generated for the Terrain. Higher Numbers will spawn more hexes and may slow down Computers.

Clear: Removes the current generation and all data

Generate: Creates a new Blank Terrain canvas, with all hexes being set to the default biome of the generation data

Post Generation - Biome:

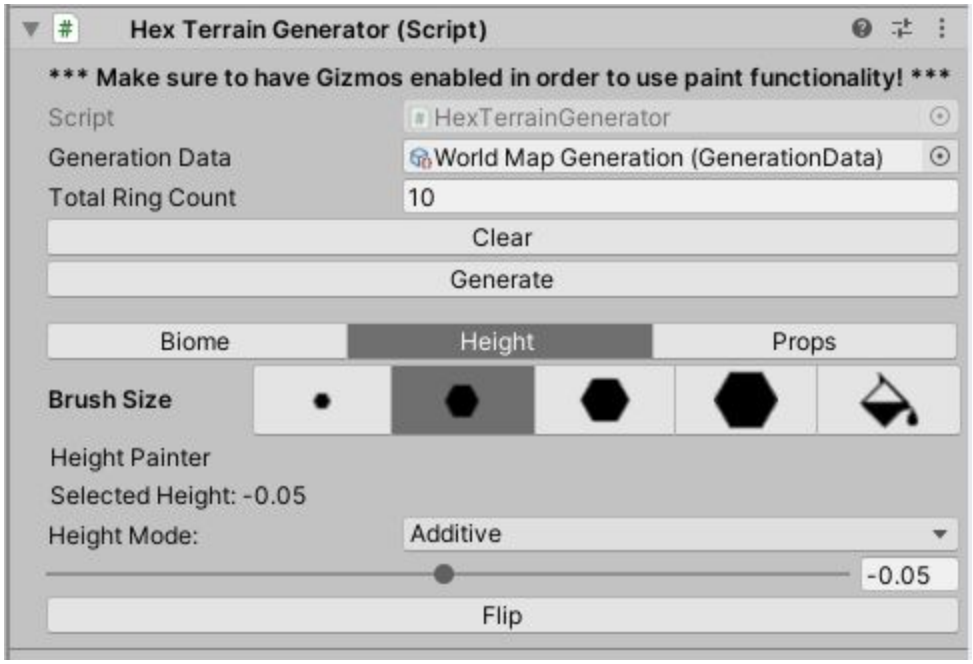


Brush Size: This is the current size set for the brush, it goes single(one Hex), small, medium, large, and fill. Each option adds an extra ring of hexes.

Selected Biome: The Buttons in the first section are the different biomes you have setup in the generation data, selecting one will allow you to paint that biome onto the Hexes in the scene.

Topper: Here you can select whether you want to randomize the rotation of the topper, and you can also pick a specific topper to paint or let them be randomized. These are grabbed from what you have set up in each of the biome data.

Post Generation - Height:



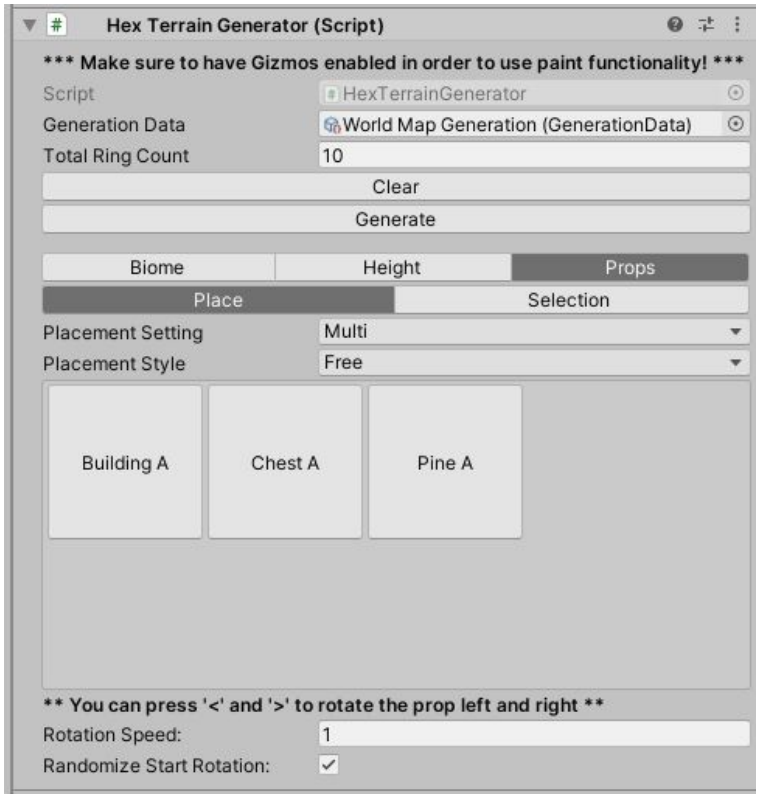
Height Mode: This option lets you chose between a few different modes for adding height.

- Additive: as you hold down the mouse the height changes by the set value
- Override: Height Is set to the given value
- Variation Additive: Height is adjusted by an amount between the min and max values
- Variation Override: Height is set to a value between the min and max values
- Flatten: Tiles within brush size are set to the same height as the clicked on tile.

Value: the slider and, when using variation modes, min/max fields are for setting how much the height of the tiles are adjusted or set too.

Flip: the flip button is a quick way to change the value to the opposite you have set.

Post Generation - Props



Place / Selection: these two buttons switches the prop tool between placing new props down and selecting existing props to move.

Placement setting: Set between single and multiple, this option decides weather you just want to place one prop and have to select a prop to place again or if you want to be able to keep placing the same prop after the initial placement

Placement style: Set between Snap and free, this decides whether the prop will be placed at the center of the selected hex or if it can be moved around the hex freely

Prop Selection: all the props that are set up in the generation data appear here for the user to select what prop they want to place

Rotation Options: Here is a note about how to control rotation of a prop while placing it and the settings for the rotation speed and to be able to randomize the start rotation.

Interacting with the Tool

[Explain common use case scenarios and how to get info from the tool. EG a player is on a certain hex, how do I pull that hexes info? I want to move from Hex A to B, how can I get the position data etc to be able to do this? etc]

Data Types

The hex terrain tool uses scriptable objects to hold the data for all parts of this tool. Below are the different types of data and how to use them.

Generation Data:

The generation data is the main holder for all generation settings and data. It is placed directly into the Hex Terrain Generator component to fill out the inspector.

Fields

- Hex Offset
    - This list is used in the generation of the Hex floor to give the proper positioning for each hex around the hex that is creating them.
    - This shouldn't need to change unless you create your own hex model that does not match the size of the provided Hex Tile.
    - In order to get these numbers for your new hex you just need to place six hexes in proper position around a central hex and enter there X and Z position into the hex offset list.(Do this with the central hex being at 0,0,0)
- Hex Scale
    - In the cases where you want different level maps having different hex sizes (ie a close up rts map having small hexes to match a character, and an overworld map having larger to represent a bigger space)
    - You should always leave the y as 1 and change the X and Z to the same number
- Default Biome Data
    - This is the default biome that will be used when generating the map, all tiles will be initially set to this.
- Biome Sets
    - These are all the biomes that can be painted on for this generation. You may want to have seperate sets of generation data with different biomes, in cases such as an overworld map having one of each region, and a town map that has a set of biomes for that town(Keep in mind that biomes are a material for the ground and a list of tile toppers that can spawn on top of the tile, so for the town example they can be set up as a road tile and a sidewalk tile and so on)
- Props
    - These are a list of prop lists that can be placed with this generator

    - Props differ from tile toppers in that they can be placed over multiple tiles.

Biome Data:

The biome data is the holder for all data for what a tile will look like and what toppers it can have when it is of that biome type. A biome can be used to generalize a whole region like an overworld map forest, or it can be used as a specific kind of tile like in a close up town as a street or side walk.

Fields

- Biome ID:
    - An identifier for this biome, not currently used in the generator this is more just there in case there is a case where you need an identifier.
- Display Name:
    - What is shown in the Hex terrain generator custom inspector
- Display Texture
    - Texture that is shown on the button for this biome
- Biome Tiles
    - List of Tile data for this biome, you could have one or multiple, since the floor tile data keeps the material that the tile will use you could have multiple tile data in this list to randomize the material that is used
- Biome Toppers
    - This holds the Topper List Data for the toppers that can be randomly placed on this tile.

Floor Tile Data:

The floor tile data holds the data and information needed to properly initialize a Hex tile.

Fields

- Biome
    - A naming Field currently unused
- Floor Audio ID
    - Currently unused but here to be used to hook up different audio sounds based on the tile
- Buildable

    - Currently unused but here in case there is a building system and the need to know if a tile is buildable
- Surface Material
    - The material used for the top of a tile
- Body Material
    - The material used for the sides of the tile
- Tile Prefab
    - The prefab for this tile, all floor tiles can be set to the same thing but in the cases where you may want a tile that is more custom this can be replaced

Topper List Data:

The Topper List Data is used to Hold all the Tile Topper Data together in easy to use/find lists based on what would be used together. These lists can be used to easily add them to different biomes based on what might be in the biome.

Fields

- Tile Toppers
    - A List of Tile Topper Data.

Tile Topper Data:

The Tile Topper Data Holds all the data needed to place a tile topper on top of a Hex Tile

Fields

- ID
- Display Name
    - The name that is shown in the custom inspector
- Editor Icon
    - The Icon that is shown in the Custom inspector for the button
- Topper Prefab
    - The prefab that is spawned on top of the Hex Tiles

Prop List Data:

The PropList Data is used to Hold all the Prop Data together in easy to use/find lists based on what would be used together.

Fields

- Props
    - A List of Prop Data.

Prop Data:

TheProp data is the information needed for spawning and placing props.

Fields

- ID
- Display Name
    - The name shown in the custom inspector
- Flatten Radius
    - The radius around the prop where the ground will get flattened, useful for multi tile buildings
- Editor Icon
    - The texture that will get displayed in the custom inspector
- Prop Prefab
    - The prefab of the prop

Advanced

Adding New Models

Hexes

Hex model Prefabs are set in the Floor Tile data scriptable objects, if you want a specific floor tile to have a different hex prefab then you would chang it there(for instance having a different Hex model for rivers or mountains or Oceans)

Hexe Materials(Surface, Body)

To set new Materials that will be used on the top and sides of Hexes for each biome you will need to go to the floor tile data for the hex you want to change.

There are two fields Surface material and Body Material, these fields will set the materials of a hex when it gets this Floor Tile Data applied to it.

Remember Floor Tile Data's are created for each biome so you can have multiple variations of hexes for each biomes

Toppers

To add new Tile Toppers to the tool, you will need to create a new Tile Topper Data scriptable. It is here where you will set the prefab for the Topper.

After creating a new Tile Topper Data you will either need to add it to an existing Topper List Data or create a new one to add it to. These are used to hold Toppers that will commonly get used together so that biomes can be set up with a short list of these instead of a long unruly list of the toppers themselves.

Props

To add new Props to the tool, you will need to create a new Prop data scriptable object, this scriptable object is where you will set the prefab and other data for the Prop.

After creating the new Prop Data you will need to add it to the Generation data's list of props.

Adding to the Code

[Possibly break into more section. We should explain where to add more to the scriptables, recommendations on where to add expansions people may want, and where in code is best to add certain properties]