



**TREEGEN 2023** - procedural tree generator. Create trees quickly and easily using many settings like curves, sliders, etc. Fully customizable, no code required, just use.

## Global

Trunk Material - surface of trunk and branches.

Leaves Material - the surface of the leaves.

Seed - sets the noise distribution function branches from trunk and root.

Tree Noise Force - the impact of noise functions at the direction of the branches.

Tree Noise Seed - noise sets the function direction of the branches.

## Trunk

Trunk Iterations - the maximum level of inheritance growing branches.

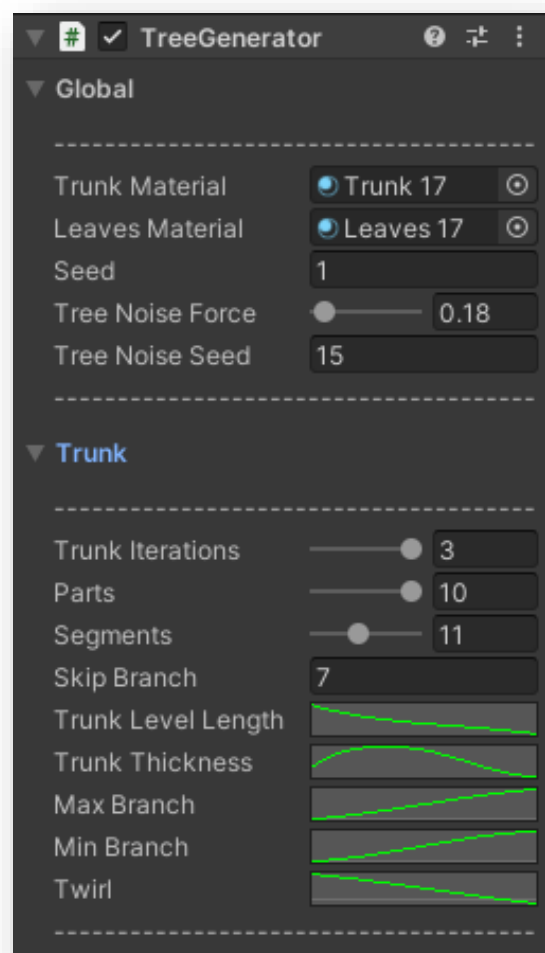
Parts - the number of faces for the segment of the branch.

Segments - the number of stages of the trunk.

Skip Branch - period of stages which will grow the branches.

Trunk Segment Length - long each individual segment of the trunk.

Trunk Level Length - total length of branches of each level.



Trunk Thickness - the thickness of the trunk for each individual segment.

Max Branch - the maximum number of branches for each segment.

Min Branch - the minimum number of branches for each segment.

Twirl - the slope of the branches for each segment.

## Branch

Branch Segments - the number of stages of the branch.

Skip Sub Branch - period of stages which will grow the branches.

Branch Thickness - the thickness of the branch for each individual segment.

Max Sub Branch - the maximum number of branches for each segment.

Min Sub Branch - the minimum number of branches for each segment.

Inner Twirl - the slope of the branches for each segment.

This generator does not allow to set the number of parts per segment for the branches. Depending on the end-this branch or the usual number of parts is equal to 3 or 4.

## Root

Root Iterations - the maximum level of inheritance growing branches.

Root Segments - the number of stages of the branch.

Root Branch - period of stages which will grow the branches.

Root Branch Count - number of main roots (coming out of the trunk).

Root Thickness - the thickness of the root.

Root Segment Length - long each individual segment of the root.

Root Level Length - total length of branches of each level.

Root Twirl - the slope of the branches for each segment.

Root Noise Force - the impact of noise functions at the direction of the branches.

Root Noise Seed - noise sets the function direction of the branches.

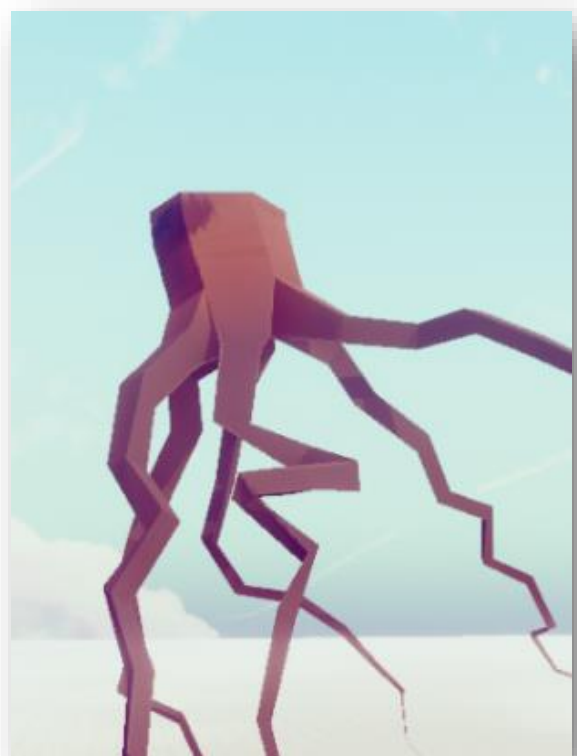
The image shows a software interface with two main sections: 'Branch' and 'Root'. Each section contains several parameters with sliders and input fields.

**Branch Section:**

- Branch Segments: Slider set to 3.
- Skip Sub Branch: Input field set to 1.
- Branch Thickness: A graph showing a green line that starts high and tapers off to the right.
- Max Sub Branch: A graph showing a green line that starts low and increases to the right.
- Min Sub Branch: A graph showing a green line that starts low and increases to the right.
- Inner Twirl: A graph showing a green line that starts low and increases to the right.

**Root Section:**

- Root Iterations: Slider set to 0.
- Root Segments: Slider set to 2.
- Skip Root Branch: Input field set to 1.
- Root Branch Count: Slider set to 6.
- Root Thickness: Input field set to 1.
- Root Segment Length: A graph showing a green line that starts high and tapers off to the right.
- Root Level Length: A graph showing a green line that starts high and tapers off to the right.
- Root Twirl: A graph showing a green line that starts high and tapers off to the right.
- Root Noise Force: Input field set to 1.38.
- Root Noise Seed: Input field set to 2.



## Leaves

Leaves - should a tree have leaves?

Leaves Type - type of leaf shape.

Mesh - finished mesh for leaves.

Start Iteration - the initial level branches which will grow leaves.

End Iteration - the final level with leaves.

Start Segment - the initial segment from which will grow the leaves.

Count Segment - the number of segments with leaves.

Leaves Scale - the base size of the shape.

Leaves Scale Curve - scale modifier each level of the branch.

Leaves Scale Seg - scale modifier each individual segment of the branch.

Leaves Offset Curve - offset modifier each level of the branch.

Leaves Turnaround Strength - rotation of the leaf segments in relation to each other.

Leaves Random Turnaround - Randomly apply a turnaround to leaf segments ranging from zero to "Leaves Turnaround Strength".

Leaves Offset - baseline offset.

Leaves Detail - the number of faces depends on the shape.

Leaves Noise Force - the impact of noise on the values of vertices leaves.

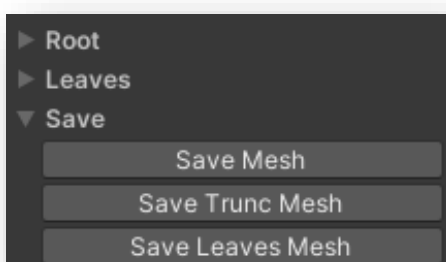
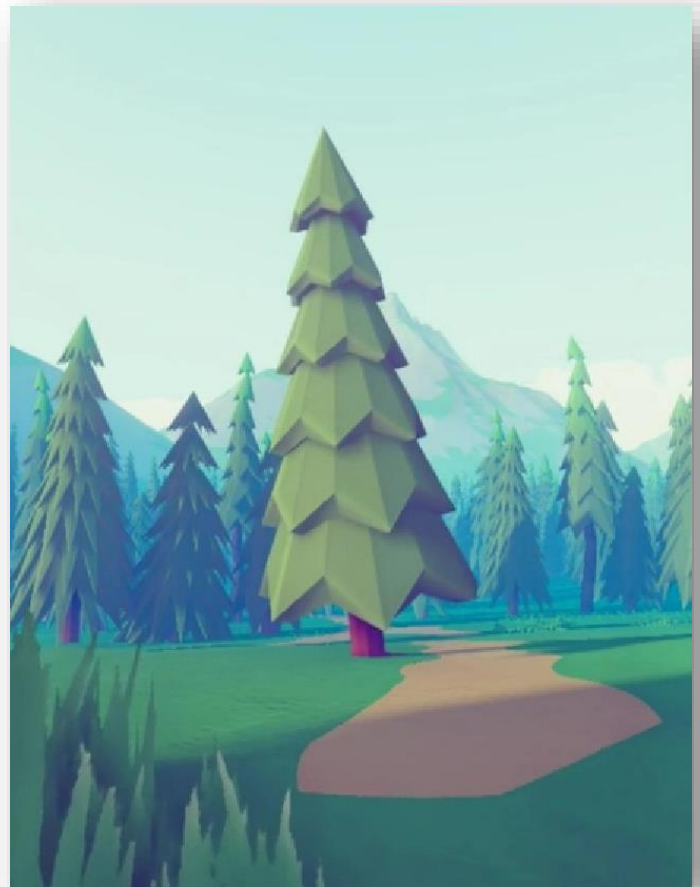
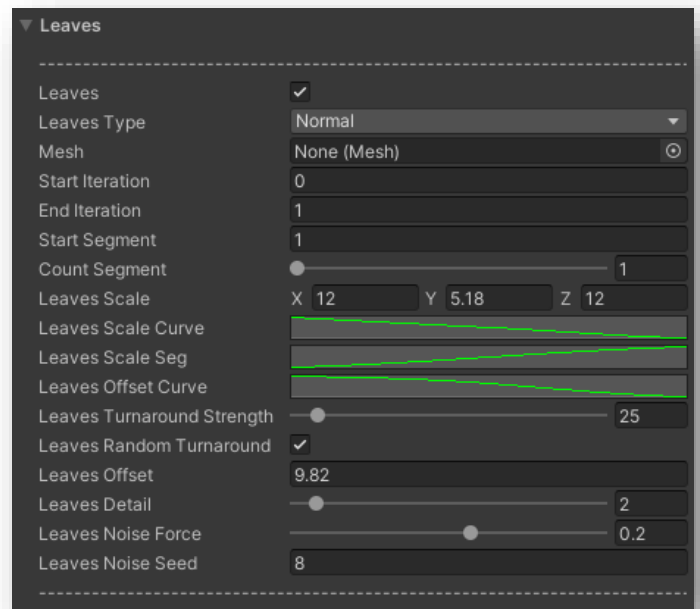
Leaves Noise Seed - the seed distribution of the noise leaves.

## Save

Save Mesh - saving the generated mesh (leaves + trunk).

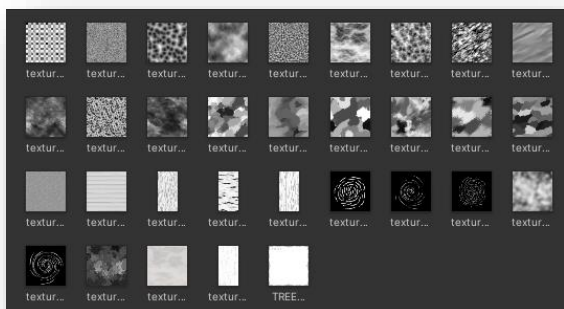
Save Trunk Mesh - saving the generated trunk mesh.

Save Leaves Mesh - saving the generated leaves mesh.



## TREEGEN Shaders

Use TREEGEN shaders: stem shader and leaf shader (made with Amplify Shader Editor). The folder additionally has 30 textures + 1 Prototype floor texture.



## Mesh Editor Tool

This is an auxiliary tool with which you can correct the generated models. To access the tool, select Windows -> TREEGEN -> Mesh Editor Tool. After that, you need to select a GameObject from the scene or create a new one using the "Create Empty" button. Now you can start editing using the button "Edit selected". If the model does not have the desired grid, select it from the field "Object Mesh Filter" or button "Open Asset". If you want to leave the old mesh, use "Save Asset" to save to another file, because the current one will be automatically changed.

### Selection

You can edit the grid using different base elements:

Vertex - are the vertices of the grid.

Edge - are the edges of triangles.

Face - are triangles.

Elements - operates on whole objects.

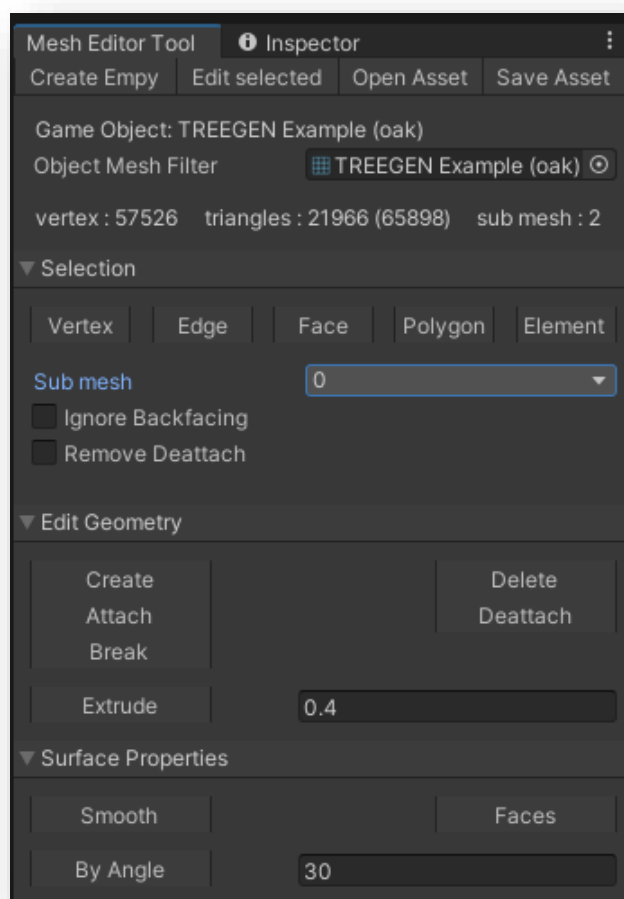
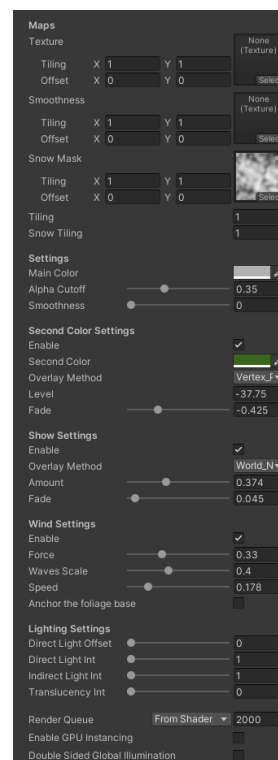
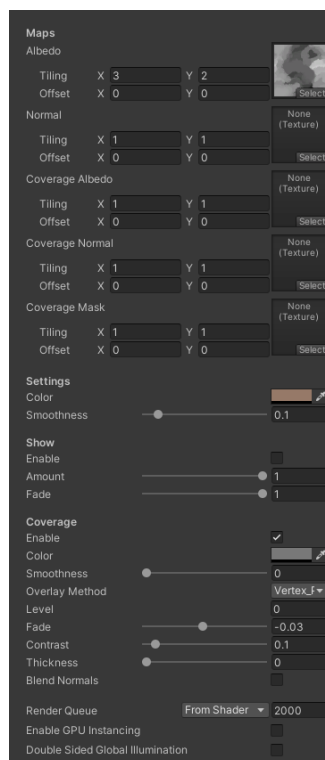
To select different items, hold Shift. To edit the selected elements, you can use the basic tool Unity move, rotating and scale.

Additional options will allow you to manage specific actions:

Sub Mesh - used when creating or adding parts of a mesh.

Ignore BackFacing - does not allow you to select elements located on the back of the mesh.

Remove Deattach - removes the mesh detail when it was cut off, otherwise a copy is created.





## Edit Geometry

Depending on the type of items being edited, there may be a different set of tools that allows you to modify the mesh.

Create - this button turns on and off the triangle creation mode. A new triangle will be created by three clicks on the scene, depending on whether it will be an empty space or the vertex will be created new or used by the selected one. A triangle will be added to the selected sub mesh or a new one is added.

Delete - removes the selected item, depending on the type of element, several neighboring triangles can be deleted or only selected ones.

Attach – This allows you to add another mesh of the game object. The mesh will be added completely to the selected sub mesh or the new sub meshes created will be the same.

Deattach - the selected elements will be created as a separate game object. If "Remove Deattach" was set, then in the current mesh they will be deleted.

Collapse - all selected elements will be deleted and united one vertex.

Turn - rotates the selected edge between two adjacent triangles.

Divide - allows you to split an edge into two parts creating additional triangles.

Extrude - Extrudes the selected face at the specified height.

Break - Separates the selected face from the surface.

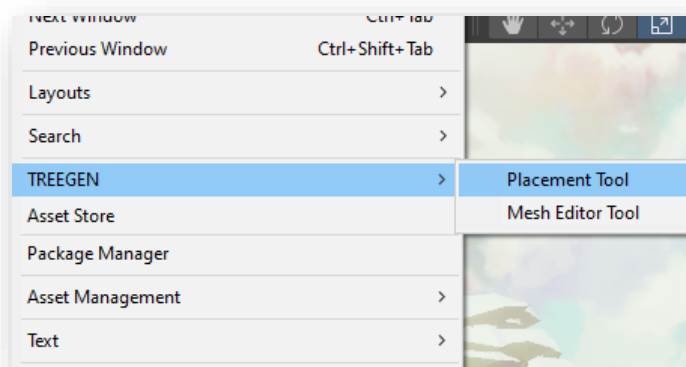
## Surface Properties

After you edit or create a ready-made mesh model, you may need to edit the smoothing of the normals between faces. This works only when faces, polygons, or elements are selected.

Smooth - the normal of the edges between the selected faces will be unified, and the faces will be merged into polygons.

Faces - normal edges between the selected faces will have separate lighting, and all polygons will be divided into triangles.

By angle - The normals will be divided or unified, depending on the angle between the faces. The faces with an angle less than the indicated are merged, the others are divided into triangles.



## Placement Tool

This is an auxiliary tool with which you can conveniently and quickly distribute tree prefabs in your world.

To access the tool, select Window-> TREEGEN -> Placement Tool.

## Tool Buttons

Placement - place objects tool. Drag to placement.

Shift+Drag to precise place. Hold Ctrl to snap angle.

Erase - erase objects tool.

Settings - settings panel.

## Preset Window

Drag prefabs here.

Shift+Drag relink prefab.

## Preset Settings

Preset Name - name of preset. Also used in object grouping.

Brush Size - object placing radius.

Brush Spacing - placing density.

## Position

Offset from surface.

## Orientation

Placed object orientation .

## Scale

Randomize object size.

## Common Settings

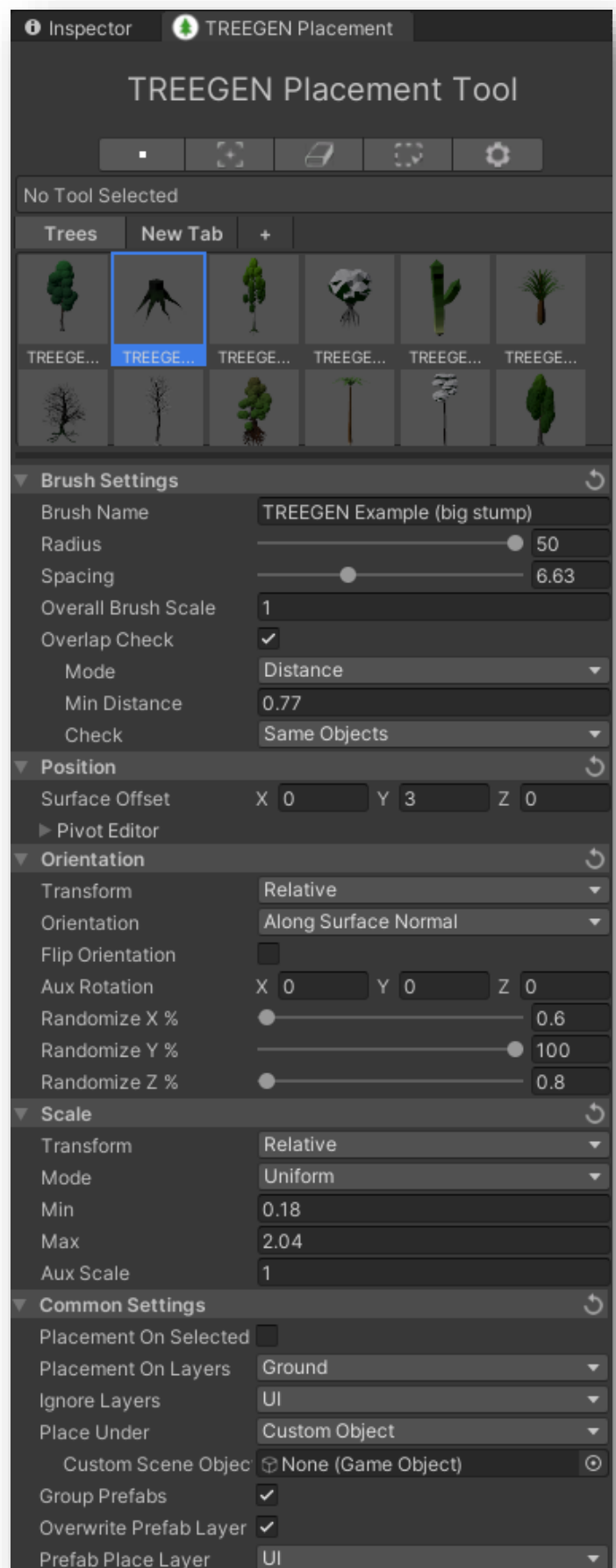
Placement On Selected - Restrict to paint to selected objects.

Paint On Layers - Restrict to paint to selected layers.

Place Under - where object be placed.

Group Prefabs - group placed objects by name.

Overwrite Prefab Layer - assing custom layer settings to placed objects.



If you have no previews in example project - right click on prefab folder and click reimport.

## Using Tree Presets in TREEGEN 2023

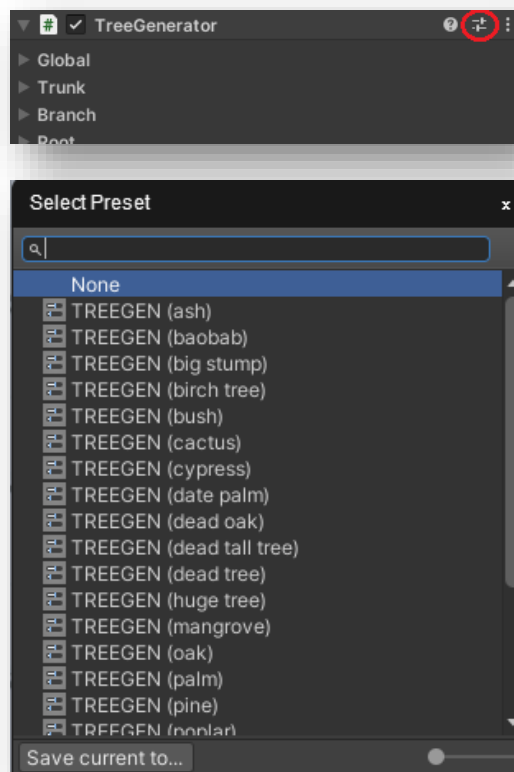
Click on the presets icon: To access the presets in TREEGEN 2023, first, you need to click on the presets icon located in the TreeGenerator component's header.

Select a preset: After clicking on the presets icon, you will see a list of 25 presets that come pre-installed with TREEGEN 2023. You can browse through the list and select a preset that suits your needs.

Alternatively, if you want to save a custom preset, you can make changes to the tree settings until you get the desired result and then click on the "Save current to..." button located on the preset panel. This will save your preset for later use.

Using presets in TREEGEN 2023 is a simple and convenient way to create trees quickly and easily.

Whether you need a specific type of tree or just want to experiment with different settings, the presets offer a wide range of options to choose from.



## Using LODs in TREEGEN 2023

Add the "LODGeneratorHelper" component to the tree.

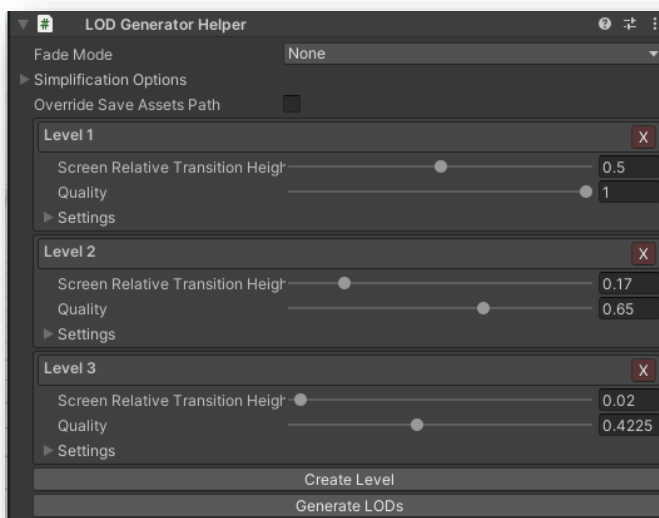
Configure the parameters in the component.

Click "Generate LODs".

Your models of different quality are saved in a separate project folder.

Remove the "TreeGenerator" component from the tree.

*That's it!*



## Using TREEGEN 2023 in Unity's Universal Render Pipeline (URP)

If you're looking to use TREEGEN 2023 in Unity's Universal Render Pipeline (URP), it's actually really simple! All you need to do is navigate to the "TREEGEN 2023 - procedural tree generator" folder and locate the "URP Shaders" package. Unzip the package and it will automatically replace all of the shaders in TREEGEN 2023 to be compatible with URP. That's it!

*If you have any suggestions or ideas for updates or future releases, share your thoughts via email:*

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