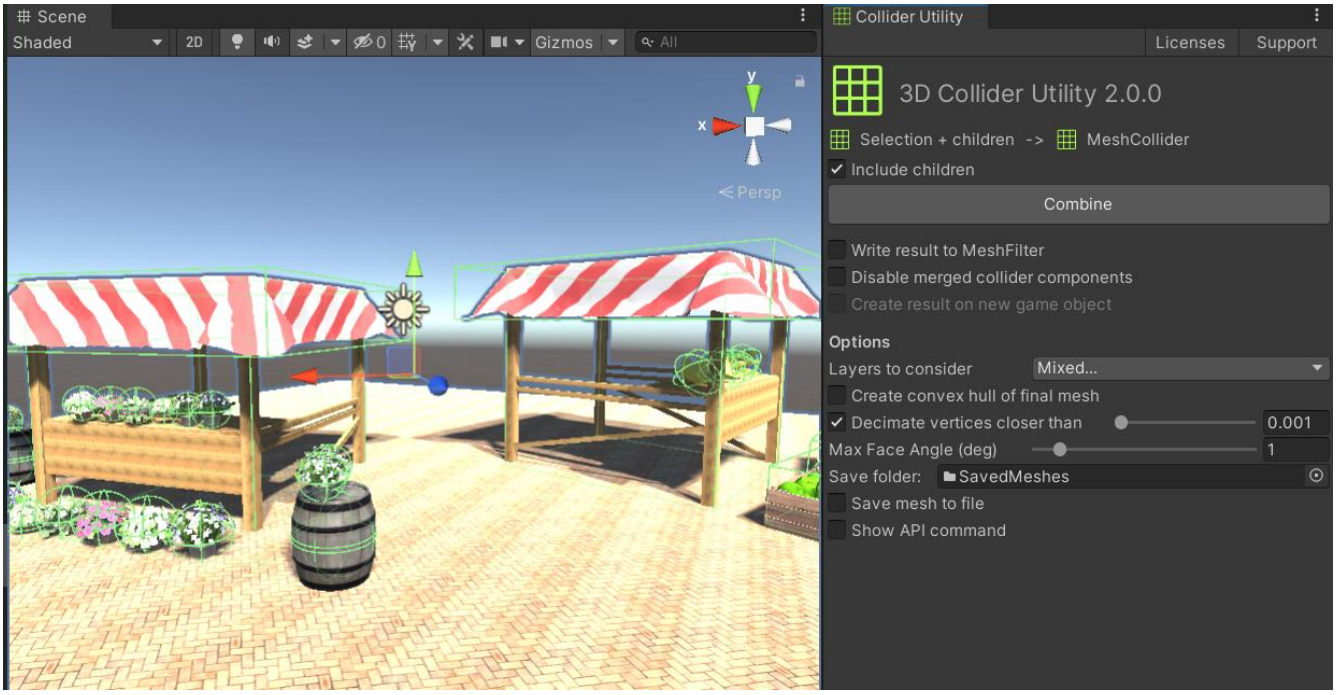
3D Collider Utility



Version 2.0.1

Table Of Contents

Introduction

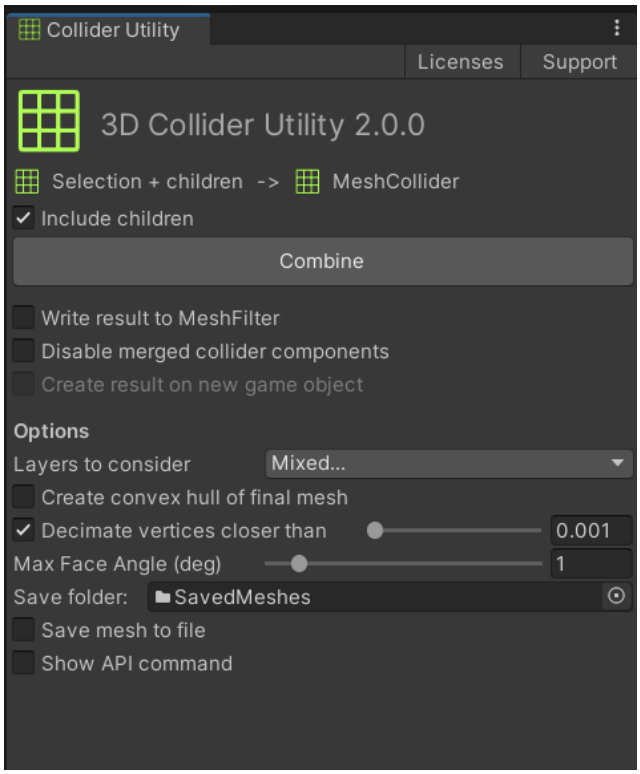
This tool simply creates a merged collider of the entire hierarchy with a single click. It was developed in for Unity 2020.1 but is downwards compatible down to Unity 2017.3. The code also runs just in runtime but can also be removed once it has been used in editor.

Support all kinds of collider types:

- box collider
- sphere collider
- capsule collider
- wheel collider
  to use WheelColliders comment in `#define UNITY_MODULE_VEHICLES` *in ColliderUtility.cs*
- terrain collider
  creates simplified version of your terrain through vertex decimation algorithm while preserving edges
- mesh collider
  support for convex mesh colliders due to convex hull algorithm

How to use the tool

1) Select from the menu *Tools > Colliders > Collider Utility...*
2) Select in hierarchy a game object to merge the colliders of
3) Pick from the Collider Utility window e.g. Colliders > Mesh collider (recursive)



Options

Include children

If activated all children of the selected game object will be included in the combine process. If deactivated just the game object's colliders itself will be considered without the children.

Write result to MeshFilter

This will not add a MeshCollider but a MeshFilter holding the merged result.

Disable merged collider components

If activated the combined source collider components will be disabled.

Create result on new game object

This will spawn a game object next to your selected one which will receive the MeshFilter instead of the selected game object.

Save folder

Specify one to save the merged mesh to disk otherwise it will be stored along with the scene the MeshCollider is part of.

Create convex hull of final mesh

The created merged mesh will be surrounded by a hull reducing the mesh to a minimal shape. This will drastically reduce the complexity of the collider but it will also cover up holes in the mesh. (Concave vs. convex)

Layers to consider

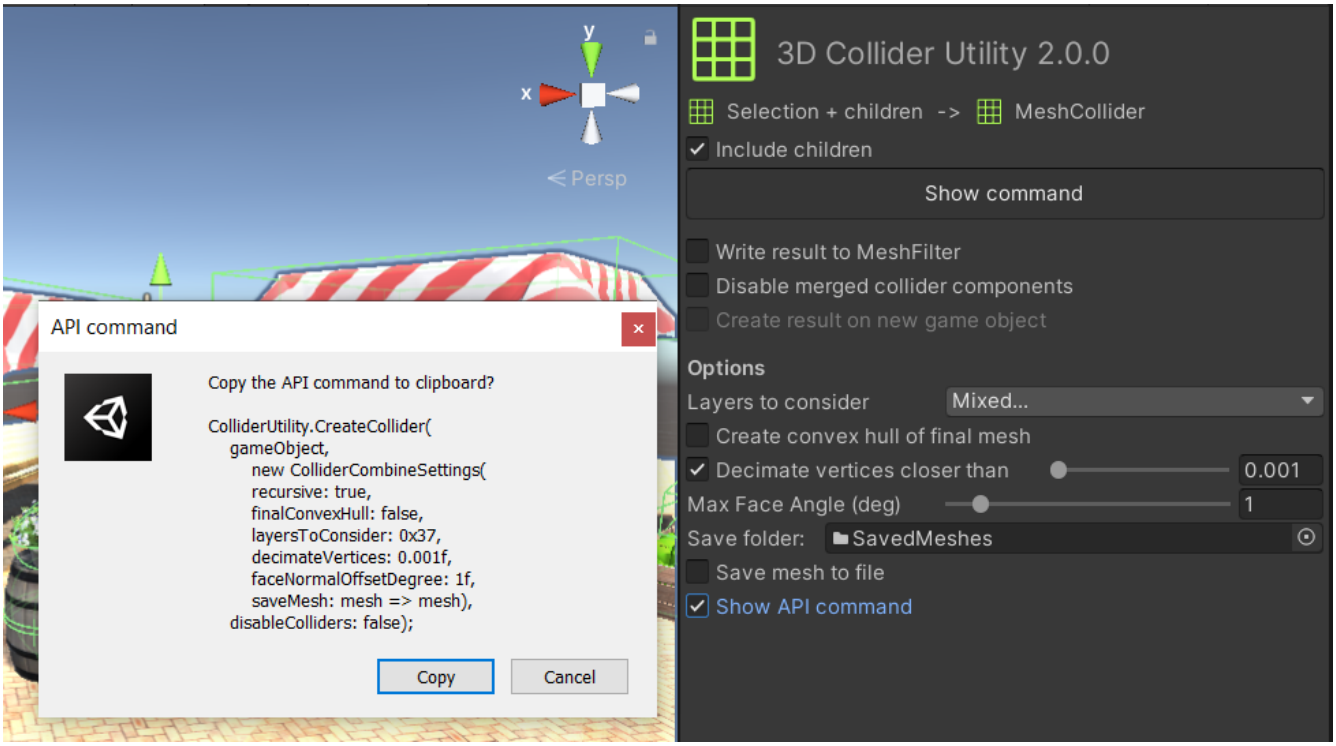
Select a layer mask which will be used to filter your gameobject selection. If the gameobject on the leaf (parent layer is ignored) is part of the given mask it will be part of the merge process. Default value is 0.

Decimate vertices & face angle derivation

When activating this optimization an algorithm will merge vertices which are very close to each other within the set threshold. After this all neighboring faces will be inspected if they can be merged without loosing any details. Here face normals are compared for an offset in degrees and the respective faces are merged if the condition is met.

Show API command

Activate this to show a dialog with the command being performed instead of actually combining the colliders and allow to copy the command to the clipboard.



API

Besides the tool window you can merge the colliders of a game object by calling:

```
Mesh ColliderUtility.CreateCollider(
        gameObjectToMerge,
        new ColliderCombineSettings(
             isRecursive,
             finalConvexHull,
             layersToConsider,
             decimateVertices,
             faceNormalOffsetDegree,
             saveMeshCallback),
        disableOriginalColliders,
        );
```

isRecursive	Set to true to merge all children of the given gameobject. Default is true.
finalConvexHull	Set to true to build an enclosing hull around all colliders being merged. Default is false.
layersToConsider	This is a layer mask defining which colliders should be merged. The gameobject which contains the collider must be part of this layer mask. Use -1 to consider all colliders.
decimateVertices	Activates an optimization algorithm to reduce the count of vertices. Default is 0 and deactivates the optimization. To activate the algorithm a value of 0.001f is a good choice.
faceNormalOffsetDegree	This value is considered if decimateVertices is larger than 0. If the normals of two neighboring faces are almost similar, then those faces are merged. Set this value to e.g. 1 degree to merge two faces whose normals derivate at a maximum of 1 degree.
saveMeshCallback	Define a method here which receives the in-memory mesh. By default, this is null.
disableOriginalColliders	If set to true the colliders, which got merged, will be disabled. By default, this is false.

Support

If you experience a bug, please create a ticket here or write an e-mail with detailed description to support@justassets.de. Please provide the tools version, a stack-trace in case of an exception and steps to reproduce. Please attach a minimal example if it is required to reproduce the problem.

Change log

Version 2.0.1

- Fixes issue which prevented creating builds

Version 2.0.0

- New algorithm to optimize and reduce the vertex and face count of merged mesh
- Adds option to show statement of merge command when using editor UI

Version 1.3.x

- Show a warning if no layer is selected and set a proper default
- Code cleanup and minor fixes

Version 1.2.1

- Updates support link and email address.

Version 1.2.0

- Adds support for creating a convex hull of the final mesh
- Adds support for filtering merging by layer
- Adds support link to tool