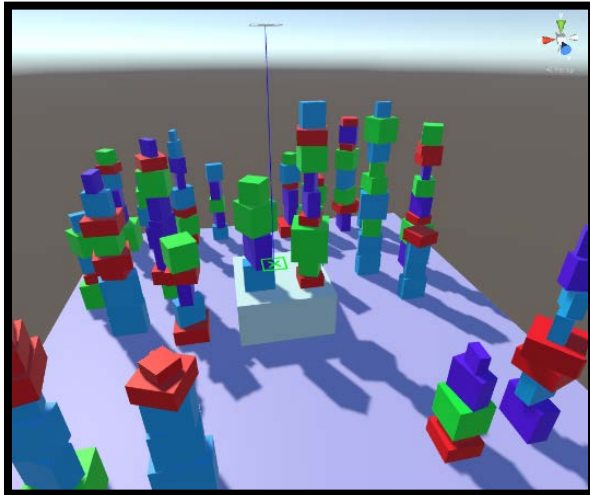


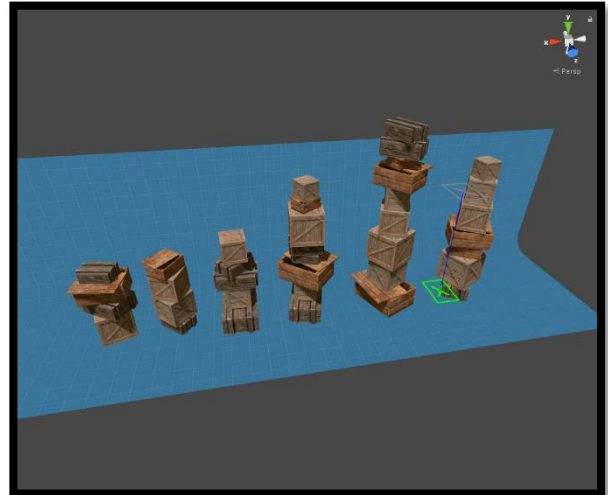
Stacking tools v1.0 (Copyright 2018 Inner Drive Studios)

Overview

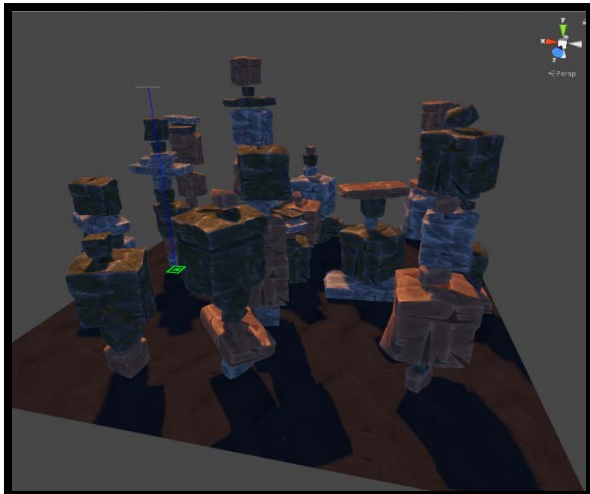
This stacking tools package allows you to quickly place randomized stacks of objects such as books, crates, rocks and other 'squarish' objects.



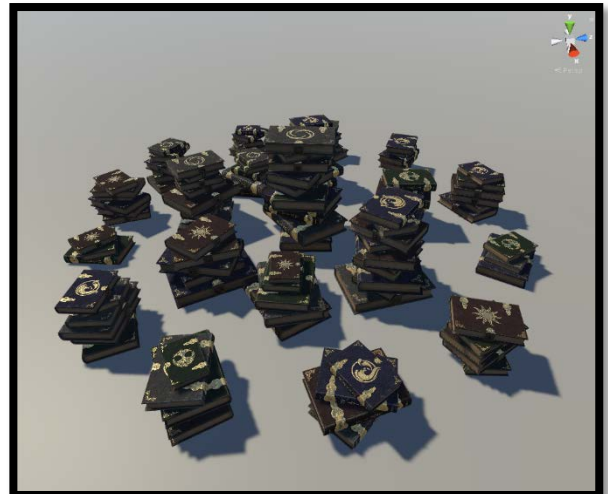
Sample prefabs included with StackingTools



Stacks created using free crate assets from the asset store (<http://u3d.as/7bH>)



Stacks created using free rocks assets from the asset store (<http://u3d.as/Ho7>)



Stacks created using our Elemental Tomes assets from the asset store (<http://u3d.as/16Av>)

The stacking tools can be used in two ways, either directly from the Unity Editor or through script. The tools can be used both in edit and build/playmode. Both options are explained in detail below. Although for general usage not required, the fully documented source code is included with the package.

Getting started with the 'TutorialScene'

This section provides a quick getting started tutorial based on the provided 'TutorialScene'.

1. In the Project window, open the scene '**TutorialScene**'
(Found at InnerDriveStudios/StackingTools/Scenes/TutorialScene).
Amongst others, you should see a plane, a cube and the StackCreator gameobject.
By default the StackCreator gameobject is represented by a gray square with a cross in it, a blue line downwards and a green square with a cross in it located at the position where the blue line hits the floor.
2. In the Hierarchy, select this '**StackCreator**' object.
3. In the Inspector, under the StackCreator script settings, click the button '**Create new stack**' at the bottom of the StackCreator inspector.
4. In the Scene view, grab the StackCreator gameobject and move it away from the center cube until it is above the plane. You see as you move the StackCreator around the scene that the green square moves up and down depending on where the blue ray hits the ground. Press '[' as you are moving the StackCreator around the scene to place stacks quickly on the surface direct below it.
5. In the Scene view, grab the StackCreator gameobject and move it away so that it is no longer above either the center cube or plane. As you move the StackCreator off the plane you see the icon turns red and you can no longer place stacks. To force the StackCreator to place stacks where the icon is, uncheck '**Keep grounded**' in the inspector so it turns green and click 'Create new stack' again.

Congratulations, you have just created your first stacks of objects! For more information, move your mouse over each parameter in the StackCreator inspector to get a better idea of what each parameter does or read the rest of this document for a detailed overview of all parameters and their influence. Happy stacking !!

StackCreator settings

This section provides a quick overview of all parameters for the StackCreator.

Parameter	Description												
Placement settings													
New parent name	<p>If empty, all objects created as part of the stack will be placed directly in the scene, with the bottom object starting at the position of the green marker.</p> <p>If not empty (default), an empty GameObject with the given name will be created at the position of the green marker and all objects created as part of the stack will be nested under it.</p>												
Keep grounded	<p>If checked, a ray will be cast down from the position of the StackCreator to find the first position below it where this ray hits a collider. This allows you to move the StackCreator around the scene, creating stacks that are automatically created at ground level.</p> <p>The StackCreator display changes based on this flag and whether a collider is found:</p> <table><tr><th>Checked</th><th>Collider found</th><th>Display</th></tr><tr><td>yes</td><td>yes</td><td>StackCreator position: grey icon Collision position: green icon <i>Stack will be created at green icon</i></td></tr><tr><td>yes</td><td>no</td><td>StackCreator position: red icon <i>Stack cannot be created</i></td></tr><tr><td>no</td><td>N/A</td><td>StackCreator position: green icon <i>Stack will be created at green icon</i> <i>Collision position, if found, is displayed by a grey icon and has no other function than to help the user orient in 3d space.</i></td></tr></table>	Checked	Collider found	Display	yes	yes	StackCreator position: grey icon Collision position: green icon <i>Stack will be created at green icon</i>	yes	no	StackCreator position: red icon <i>Stack cannot be created</i>	no	N/A	StackCreator position: green icon <i>Stack will be created at green icon</i> <i>Collision position, if found, is displayed by a grey icon and has no other function than to help the user orient in 3d space.</i>
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Ground mask	Layer Mask for the ray that is cast down if 'Keep Grounded' is checked. The ray will only hit those objects that are on a layer which matches this Layer mask. By default it will hit "Everything".												
Prefab settings													
Stack prefabs	The list of prefabs that will be used to actually create the random stack of objects. If you would like some objects to occur more often than other objects, simply drag them into the list multiple times.												

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Stacksize settings	
Min Stack Size	The minimum number of objects in the created stack
Max Stack Size	The maximum number of objects in the created stack
Scale settings	
Bottom object scale	The scale multiplier for the bottom object in the stack. All scales are interpolated from 'bottom object scale' to 'top object scale' for each object in the stack, this interpolated scale is the 'base' scale for that object.
Top object scale	The scale multiplier for the top object in the stack. All scales are interpolated from 'bottom object scale' to 'top object scale' for each object in the stack, this interpolated scale is the 'base' scale for that object.
Scale variation	The variation in scale for all the objects in the stack. The actual scale will be between $(1 - \text{variation}) * \text{the base scale}$ and $(1 + \text{variation}) * \text{the base scale}$. For example, if based on the bottom and top scale, the interpolated base scale for a specific object is 2, and the scale variation is 0.5, then the actual scale for that object will lie between 1 and 3.
Position settings	
Random position offset	A slight random offset in world space to make the stacks look more messy / less organized.
Rotation settings	
Start rotation variance	By default the created stack is oriented the same way as the StackCreator. This setting allows you to add some variance to that orientation. For example if the StackCreator's y rotation is 60 degrees and the start rotation variance is 20, then the orientation of the created stack will lie between 40 and 80.
Object rotation variance	Random cumulative +- rotation added to each object in the stack.
Object rotation offset	Fixed cumulative +- rotation added to each object in the stack.
Collider settings	
Compound capsule collider	If checked and 'New Parent Name' is not empty, a compound capsule collider matching the stack as closely as possible is added to the created stack parent node.

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Other	
Y Offset	Allows you to tweak the y padding between the created objects. This might come in handy when your prefabs contain rigidbodies that don't play well with too much interpenetration.
Placement key	Allows you to specify the key which allows you to create stacks while you are dragging the StackCreator object through the scene.
Replacement key	Allows you to specify the key which allows you to recreate the last stack you created while you are dragging the StackCreator object through the scene. The idea behind this is that you might be experimenting, tweaking values, trying to suit the way your stacks look to your liking. While using this key (or the 'Replace last' button) you can easily tweak values and see how your new stacks look without constantly having to remove the previous stacks.
Buttons	
Create new stack	Create new stack at the position of the green icon
Replace last	Replaces the last created stack with the newly created stack
Delete last	Deletes the last created stack

StackCreator setup and using the StackCreator from code

The StackCreator set up layered like this:

StackCreator editor : StackCreator class + StackCreatorEditor class
StackCreator settings : StackCreator class + StackCreator gameobject
Stack creation utility code : StackUtility class

If you want to create stacks from code directly, or write your own placement script (eg place stacks in a circle for example) you can call the static public methods from the StackCreator directly:

- CreateStack - Create a stack with the given parameters
- FindBounds - Helper method to find the bounds for a given hierarchy
- FindStackPositionBelow - Helper method to find a collision position below a given position

Please refer to the source code for a detailed description of all parameters.

The scene 'ThroughCodeScene' contains a demo of this principle.

For more info, inspect the 'CreateStacksFromCode' script on the Camera object.

FEP (Frequently Encountered Problems) / FAQ (Frequently asked questions)

When I press the '[' key no stack is being created, what might be the problem?

Make sure the scene view is active and the StackCreator is selected, either by dragging it around while pressing the '[' key or by locking it's selection.

I see a red icon and cannot create stacks.

This means that you are trying to place stacks on the 'ground' while the ray being cast downwards from the StackCreator is not intersecting with any geometry. This can have multiple causes:

- the StackCreator is not above any geometry
- the underlying geometry does not have a collider attached to it
- the underlying geometry is on a layer that does not match the 'Ground Mask' setting

The provided ranges do not match the requirements for my stacks.

No worries, the utility comes with the full source code. Just open the StackCreator script and adjust the ranges to your liking. If you break anything, just undo your edits or re-download the asset from the asset store.

How can I add colliders, rigidbodies, both or any other component to my stack objects?

Simply add all components you want your objects to have to your prefabs and start stacking!

This did not answer my question

Drop me a line at info@innerdrivestudios.com