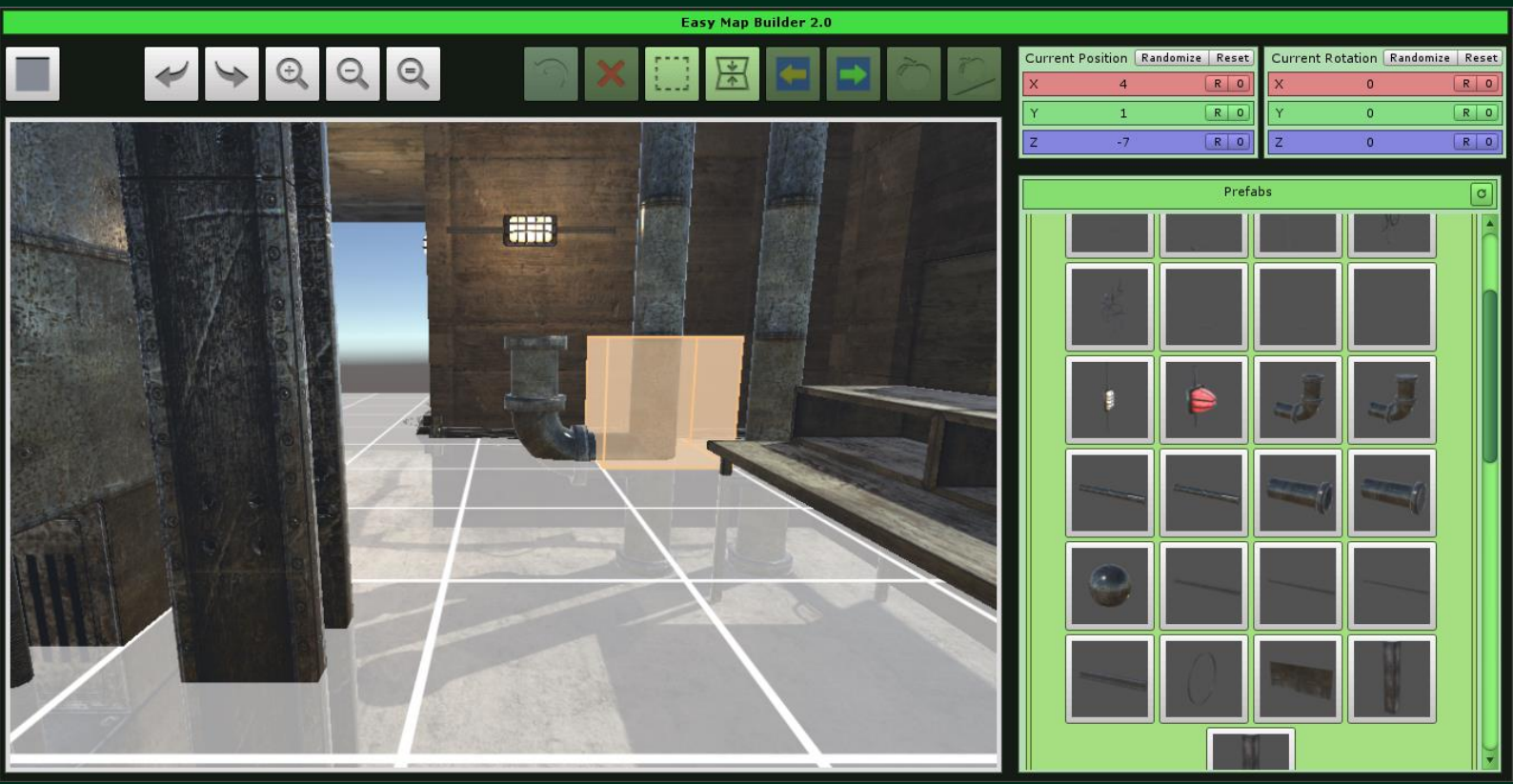
Easy Map Builder

Ten Quanta



EMB Manual – Contents

1. What's inside the package ?

First of all, thank you for purchasing Easy Map Builder. I'm really happy to provide you an easy solution to map designing, specially created for modular environments.

If you purchased EMB at its first version, here you'll find a huge update of what you've been using. I hope that you'll find it better and that it will fulfill all your desires.

In this package you'll find a custom editor extension that will make you gain a good amount of time while creating your own maps for your game. It was designed to be easy to handle (that's why this PDF is short), comfortable to work with and to allow mass building in less time that it would take to cook pancakes. Although it is preferred for building square-like maps, cities, interiors or Minecraft-like games, it is tweakable enough to allow precision on object placing, thus becoming useful for any kind of mapping. Once you've played enough with the parameters and you've been preparing your environment well enough, you'll be able to build in seconds.

Because of its custom building grid, EMB works perfectly fine with modular assets, like those you can find on Unity's asset store. During our journey through this manual, we'll be using one package from the store, which is **Bunker** by Arthur G. **THIS PACKAGE IS NOT INCLUDED.**

For a complete showcase, please see the video provided on the asset page on the Unity Asset Store. But right now, let's see in details what EMB allows you to do !

2. Using Easy Map Builder

As EMB was designed to fit almost any modular environment, we can divide its use into 2 steps : preparing and editing.

Preparing an environment to be used with EMB is quick. Any good modular environment should have unit standards according to floor, walls and ceiling sizes. Your work would be only to find out and write down those sizes inside EMB's parameters.

The other thing that needs to be done before editing your map with EMB is to have a proper prefab folder, with a good hierarchy, providing all assets used in the map. This is also generally dealt with by the modular environment. Some minor changes may need to be executed but we'll see that in the next pages.

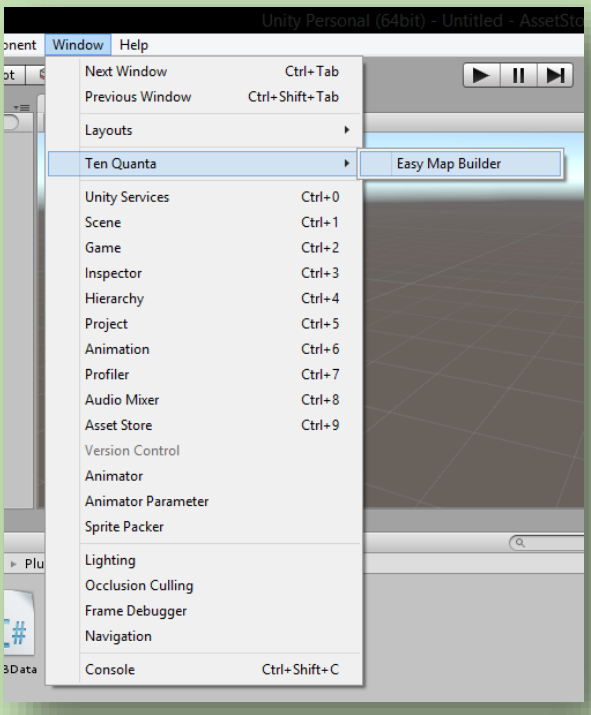
Editing your map with EMB has been made as simple as possible, in a screen-wide Unity window, allowing grid precision as well as randomization. There is also a very useful feature that will drop your current created GameObjects to the nearest ground, thus creating stairs, crate stacks, ground decals, trees, rocks etc... All features will be detailed in the next part.

But enough teasing ! Let's go through all of it !

2.1. Tweaking parameters

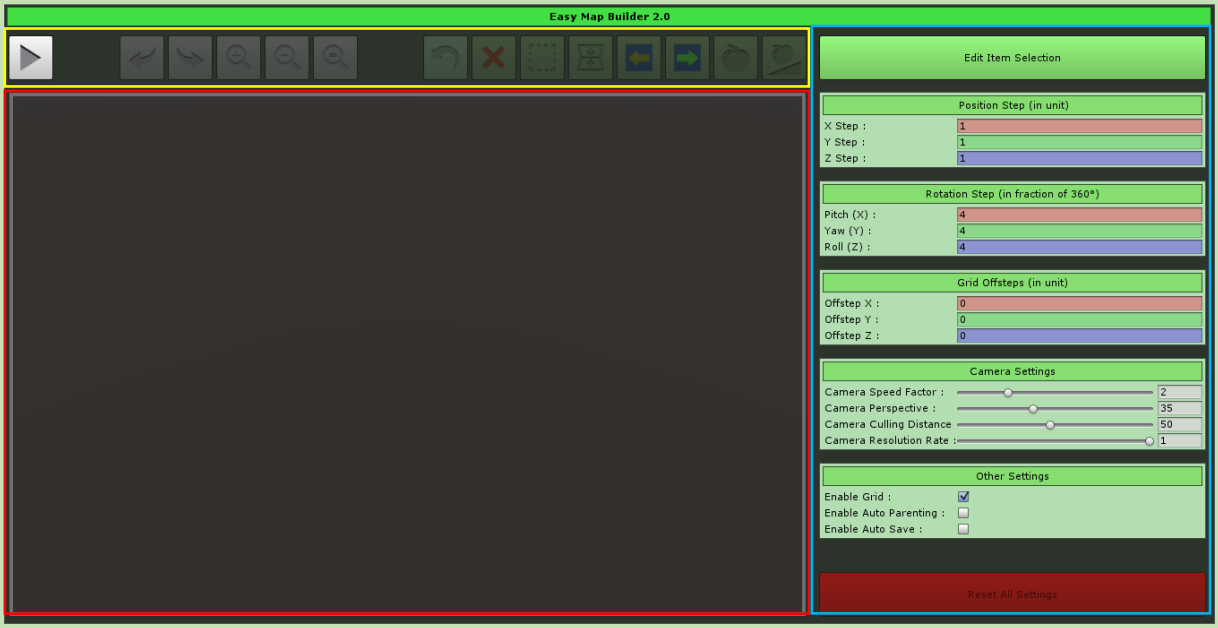
First of all, make sure your environment is there and that you have a proper prefab folder. “Proper prefab folder” means that you have a matching hierarchy and no useless prefabs. When using the prefab folder to edit your map, EMB will keep the hierarchy and import all prefabs located in the root folder you’ve selected.

Open up the “Easy Map Builder” window, located at “Window/Ten Quanta/Easy Map Builder”.



You should now have a screen-wide window opening above your regular Unity window. In order to make it as comfortable as possible for your eyes, I made the general theme darker. You can change any GUI color right inside the scripts provided.

EMB’s window is divided in 3 useful areas, as stated below :

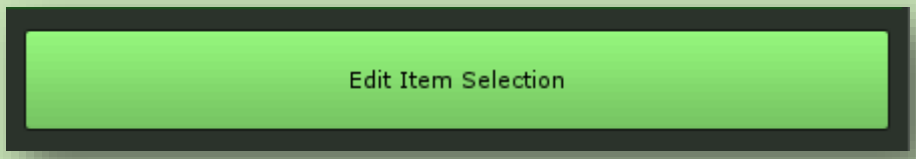


The yellow area contains all features concerning the edit mode, that's why you can't press any of them when not editing (except the "Play" button, which will enter edit mode immediately). We'll see all of these in the next part of chapter 2.

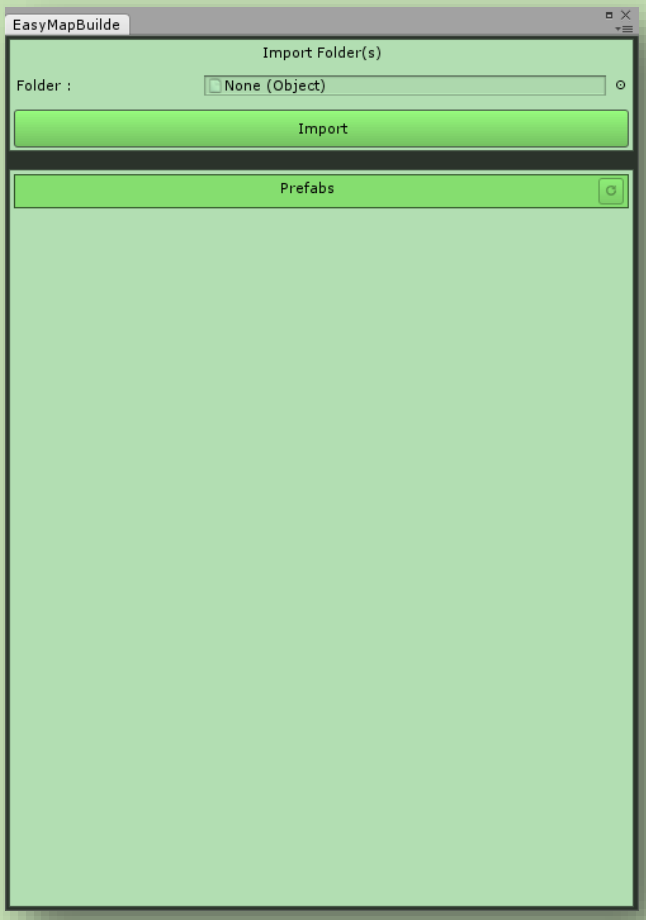
The red area displays what the edit camera, created and destroyed along with EMB's window, renders in the scene. Here on the picture, as there is nothing yet in the scene, it renders the bottom of the default skybox, which is grey.

The cyan area all tweakable parameters before entering edit mode. This includes the prefab import, the grid steps, some camera settings as well as a few other minor features.

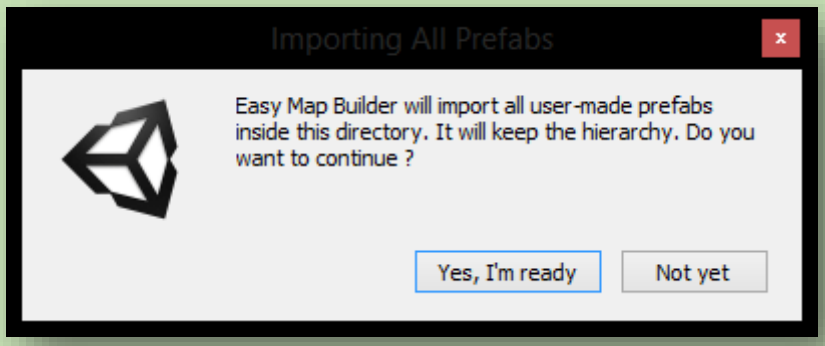
First, let's import our prefabs. To do such an accomplishment, press the big green "Edit Item Selection" button in the cyan area.



There should now be a window opened up in the left side of your screen :



Simply select a folder and click “Import”. In my case, I’ll select the “Prefab” folder from the Industrial District package. A quick reminder should popup when clicking on “Import” :

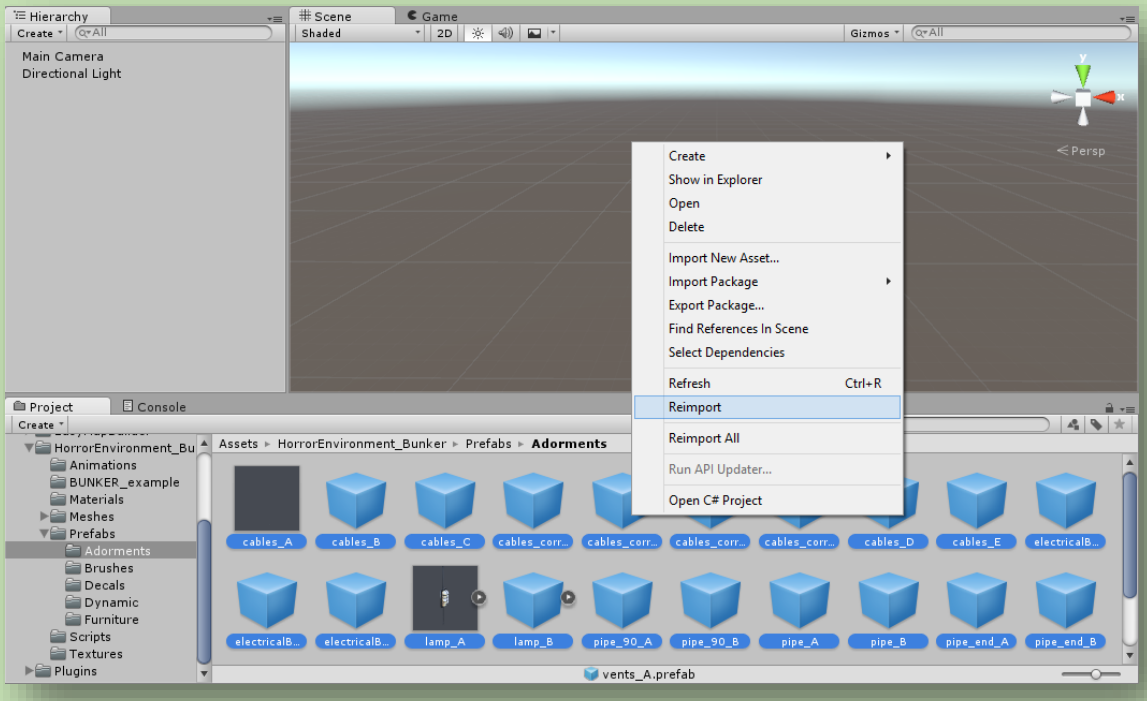


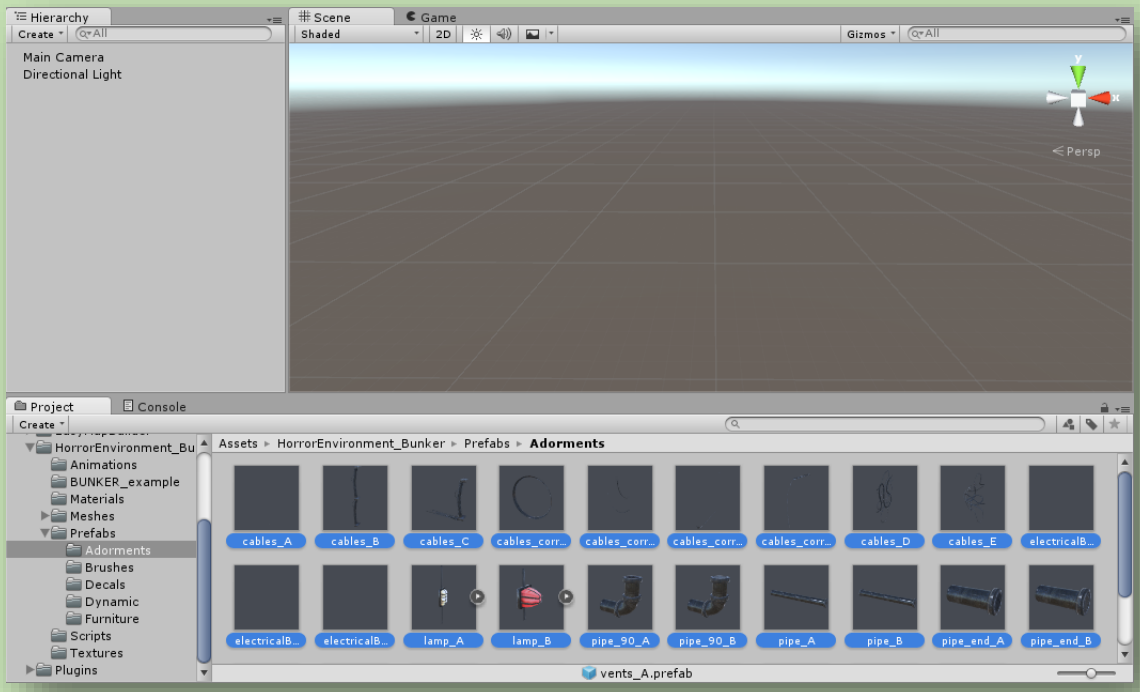
When you're sure this is the right folder, press "Yes, I'm ready". After some time (a few seconds), you should see your whole library inside the window. Note that the following may happen :

As the small thumbnails are created from the asset preview inside the project window (though not the same), it may be null in case you don't have any in the inspector ; that means, if you have this :

Instead of this :

To fix this, simply right click on all messed up prefabs and hit “Reimport”. You should then have a nice preview for all of them.

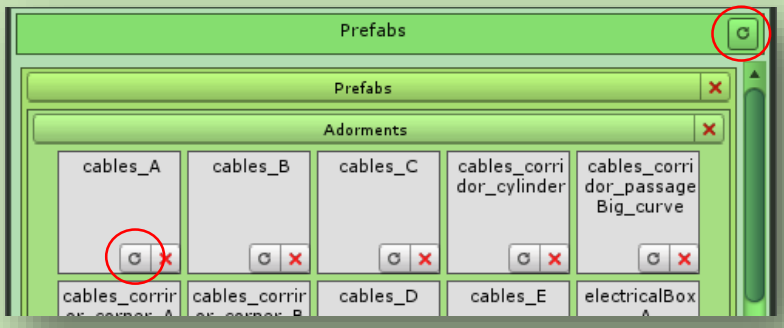




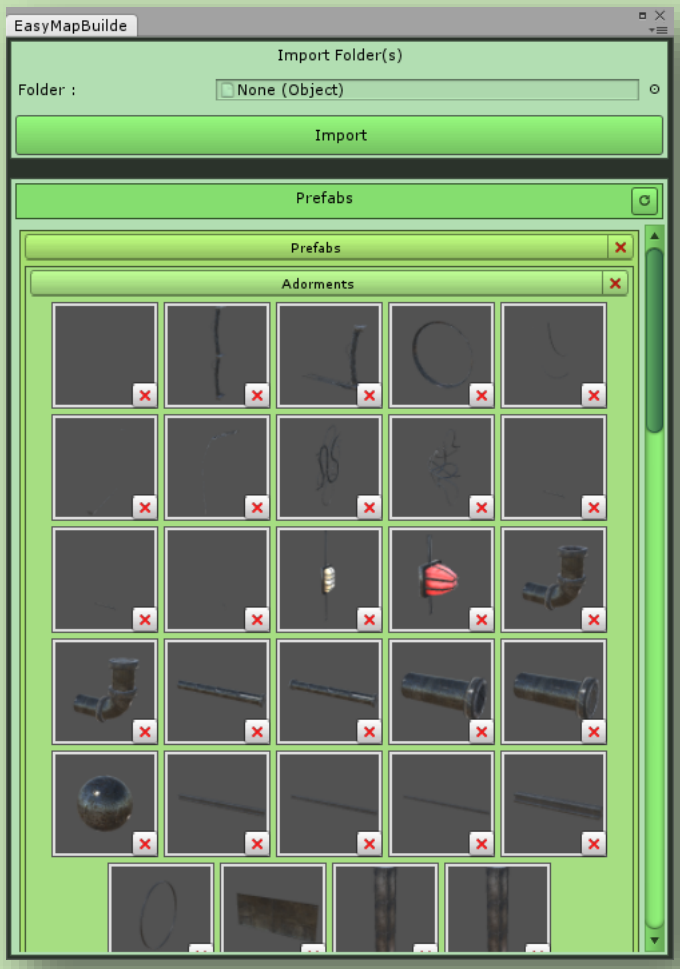
I agree this may seem laborious, but this is required in order to have a proper icon for the prefab when building using EMB. Note that the prefab name will always occur instead of the preview if this one is null.

Also note that if the prefab faces forward and gives an empty preview (because the preview camera doesn't render back faces), EMB will automatically find a suitable preview by rotating it, getting a preview and finally set it back to its original rotation.

After doing this nasty work, let's get back to our prefabs window. You'll notice that the previews are still not here, but that's only a matter of seconds :



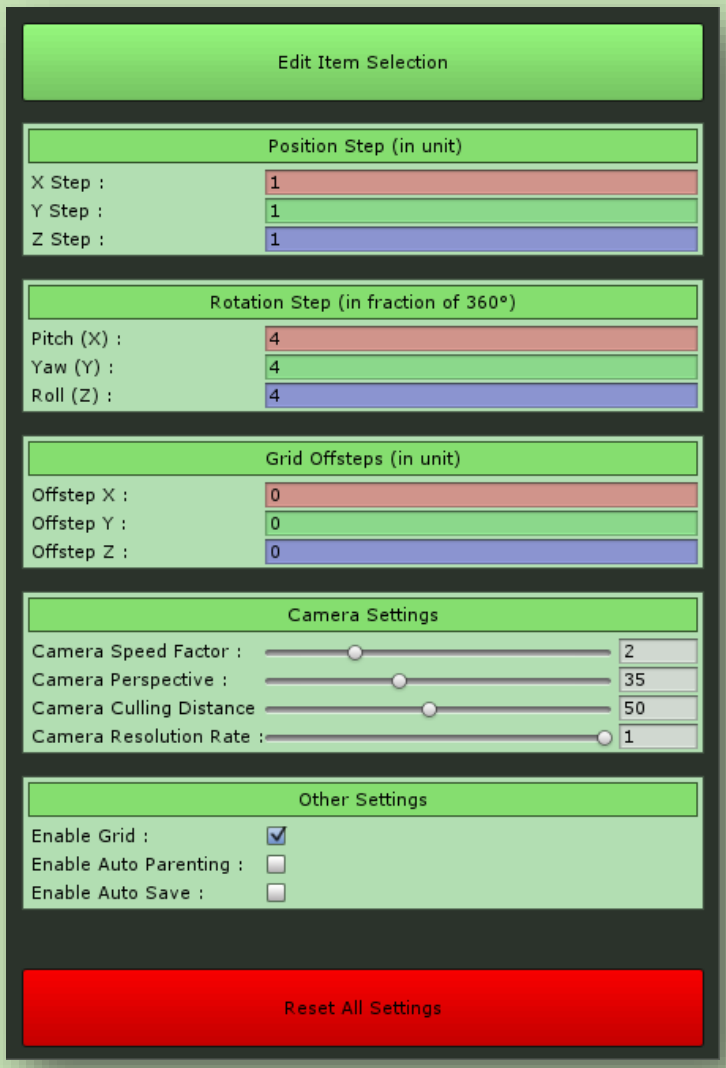
To refresh the prefab previews, simply hit the little circle arrow button, on a single prefab (it will refresh the preview of this prefab only) or at the right side of the “Prefabs” box (it will refresh all missing previews). Note that it may need a few hits before actually finding a proper preview, so don’t hesitate to hit the “Refresh all” one several times. At the end, this is what you should have in your window :



You can delete any prefab (from your list, it will not delete it from your project) by pressing the little cross button on any of it, or simply remove a whole folder of prefab by hitting the one at the right side of the folder name.

To show / hide a folder in the hierarchy, you can also simply hit the name of that folder. This will be very useful for editing the map.

All right ! Now that your prefab list is set up, let's focus on the parameters you'll be using while editing your map !



Right below stand the effects of all parameters :

- **Position Step** : the grid steps on every 3 coordinates. This means that your objects dropped will stick to a discrete coordinates system, thus allowing perfect match between them. For example for the Unity "Cube" primitive, a grid step of (1, 1, 1) will ensure that cubes will stack perfectly.

- **Rotation Step** : the rotation steps for your objects. This means that every time you try to rotate an object around a specific axis before dropping it, it will rotate by 360 degrees divided by the step you've set up for this axis. For example, a step of 8 for the Y axis means that you'll have to press 8 times the "rotate" key to make it a full 360 degrees. It will rotate by 45 degrees on every hit.

- **Grid Offsteps** : gives you the ability to have an offset in any direction, in case your map doesn't start at the absolute origin or if you have any nasty junction. Note that these values will always be smaller than the "Position step" ones.

- **Camera Speed Factor** : the camera's speed relative to your current view settings. It's a factor, because its true speed relies on the current zoom factor, and the grid steps.

- **Camera Perspective** : the camera's angle relative to the ground. A value of 0 will have the camera facing the horizon, and a value of 90 will have it face down.

- **Camera Culling Distance** : useful for performance purposes. It won't render anything that lies farer than this distance, relative to the zoom factor and the grid steps.

- **Camera Resolution Rate** : useful for performance purposes. By dropping it, you also drop the camera window resolution.

- **Enable Grid** : enables the horizontal white grid that shows the position steps as well as offsets. Disable it if it bothers you or if you need to see what's under it while editing.

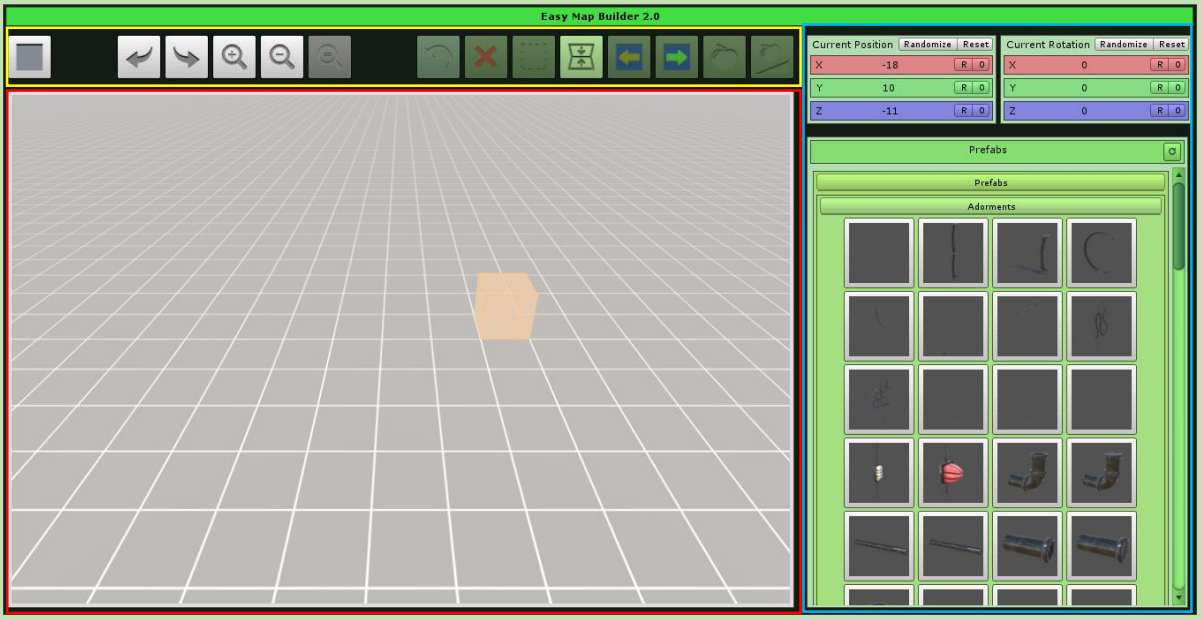
- **Enable Auto Parenting :** By enabling this, you'll have a hierarchy of gameObjects matching your prefab list hierarchy, thus organizing your map in the inspector. When enabled, there will be a text field to name your currently edited map.

- **Enable Auto Save :** When enabled, this feature will automatically save your scene every time you quit the edit mode.

When you've set up all the proper values for those parameters, simply hit the "Play" button at the upper left corner of the window to enter edit mode.

2.2. Edit Mode

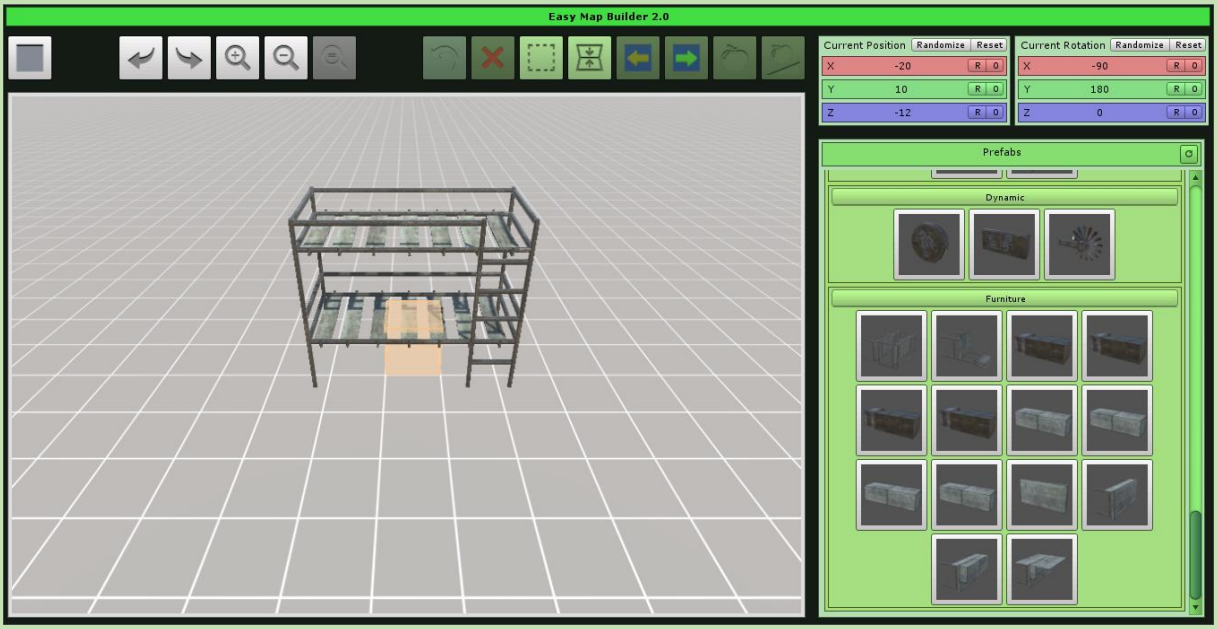
Right below stands the edit mode window :



You'll notice that your prefab list now stands right inside the cyan area, but instead of having just prefab previews and cross icons, you have buttons. However, it is still possible to refresh the previews using the circle arrow button. You can also show / hide a folder by clicking its name.

So let me just explain how any of this works. To drop a prefab, simply click on the corresponding button in the prefab list. Then hover the red area with your mouse : you should see the matching prefab inside the orange box. Note that the orange box will not overlap the prefab, it is only showing the size of your grid steps.

Then, simply press the left mouse button to drop your prefab. That's as simple as that.



Although I designed EMB to be as easy to handle as possible, there are still a lot of features that will help you navigate and dropping your prefabs. First, let's go through all the key controls :

- Navigation :
  - Put your mouse at the very borders of your computer screen to move in the desired horizontal direction. For example, the upper left corner will make your camera move forward and left.
  - Use the mouse wheel to move up / down

- Dropping :
  - Left mouse button will drop the current prefab
  - To rotate your prefab, use the right mouse button (along Y axis), the "left" and "right" arrows (along X axis) and the "up" and "down" arrows (along Z axis)

The other features are fully accessible from the toolbar (yellow area) and the two upper boxes in the cyan area :

 : Exits edit mode

 : Rotates the camera left

 : Rotates the camera right

 : Zooms in

 : Zooms out

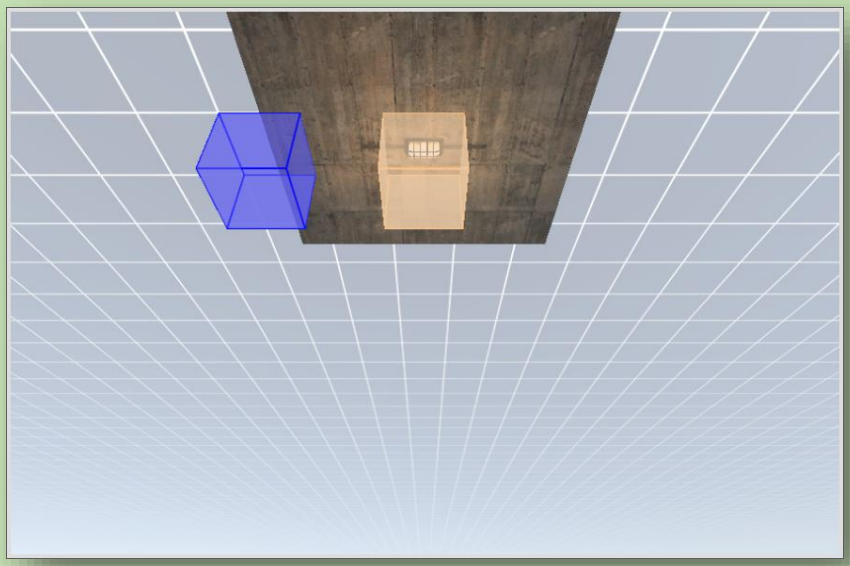
 : Resets the zoom to its default value

 : Undoes the last prefab drop

 : Deletes the current prefab drop selected (which is indicated by a blue box)

 : Clears the prefab selection

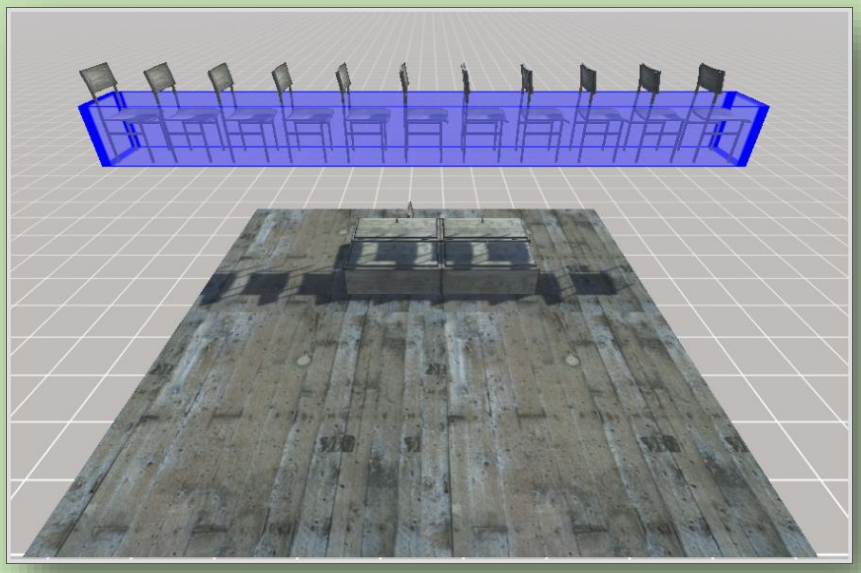
 : Mirrors the camera position relative to the grid (useful to build ceilings, see below)

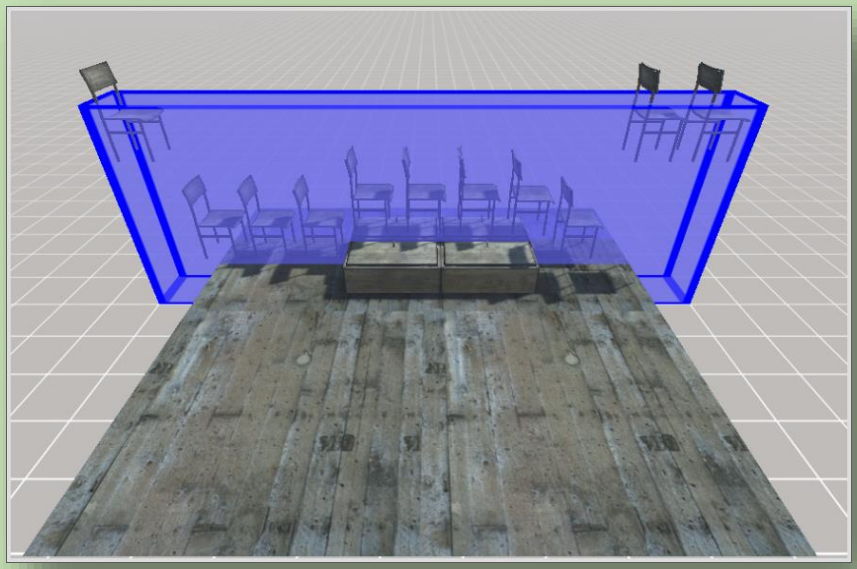


: Selects previous prefab drop

: Selects next prefab drop

: Grounds the current prefab drop, e.g. all prefabs from the drop will be grounded to the nearest collider below (useful for stacking)

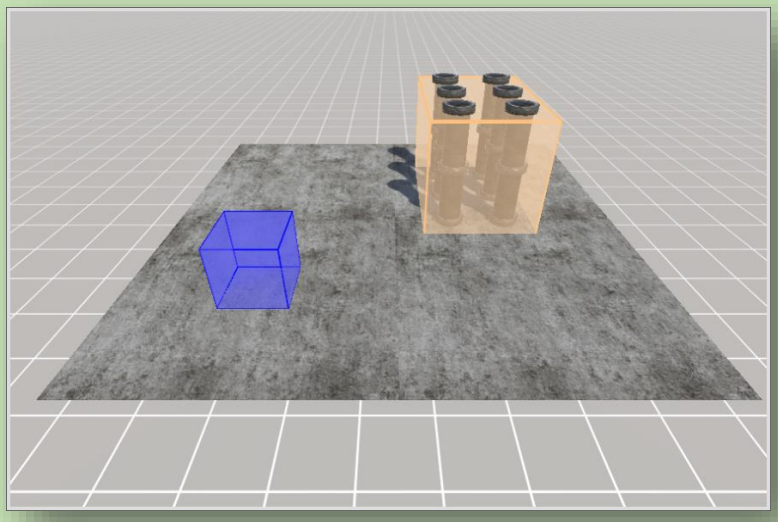




: Grounds the current prefab drop and align all prefabs along the ground normal

EMB allows you also to drop multiple prefabs at once, as well as randomizing them a bit.

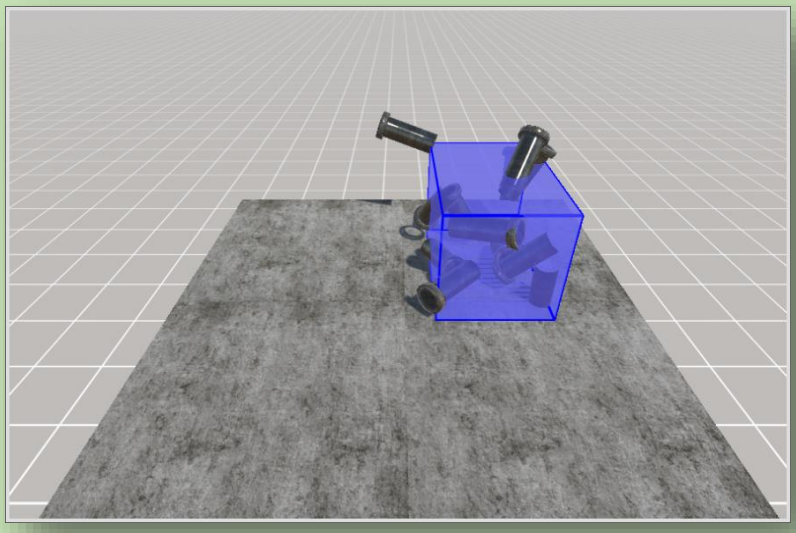
To drop multiple prefabs, click and drag / scroll the wheel to move the camera. The orange box will expand and be filled with the selected prefab.



On the upper right corner of EMB's window, you can see two boxes, showing the current position and rotation of the orange box (and thus, the prefab you're about to drop).

Each "R" button randomizes the matching coordinate (position or rotation). Note that the random position will be limited by a bounding cube the shape of the grid steps. The "0" button will reset it to the center of the bounding cube (the initial position when dropping).

You can also randomize the whole position or the whole rotation at once with the top buttons, as well as resetting it.



3. Tips and tricks for best use

Here are a few advices or warnings I can give you to use EMB properly :

- Never ever hesitate to quit/enter building mode a few thousand times per seconds. It doesn't take any time to change the mode, so if you need to delete a misplaced wall (you can use the « Undo » but whatever) or if you have any problem with the parameters, immediately change it. You have also the ability to dynamically change your item selection.

- Pay attention not to build the same item twice at the same place. You'll mostly notice it anyway. I chose to avoid dealing with this to keep more flexibility in the building system, in case you'd merge two different walls or simply put a frame on a wall etc…

- Prepare a good prefab folder if you don't have already one. Importing one folder is better than importing many, and if you reset all settings it will also reset your prefabs list.

- Always prefer high position steps for building structures and small for placing props.

- You can combine the randomizer with the stacker (apple button) to create random pile of crates or rocks. Randomize the Y position then press the apple button.

4. Change log

- **Version 1.1 :**
    - Fixed a glitch where the help plane / build box would stick to the scene due to quitting or saving scene while in edit mode
    - Added Reset Height Button
    - Added a piece of code to reset all game objects hidden in hierarchy if the glitch still persists
- **Version 2.0 :**
    - Independent window instead of scene view + custom window
    - Unique script is not scattered into 3 for clarity purposes
    - Changes are saved between closes
    - Prefab list now shows image previews instead of just names
    - UI has been completely reworked
    - Added a custom toolbar with icons
    - Removed Reset Height Button
    - Removed Reset Rotation Button
    - Removed the ability to hide the build box

- Removed the ability to change the grid material
- Added position randomizer
- Added rotation randomizer
- Added drag field to drop multiple prefabs at once
- Added camera rotation feature
- Added zoom feature
- Added prefab drop selection
- Added prefab drop deleting feature
- Added camera mirroring
- Added grounding feature

- **Version 2.1 :**
  - Fixed wrong folder path for utility scripts causing errors at build
  - Fixed obsolete save scene call