# Two-Handed Building

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Up until this point, the process of building with both hands was flawed by major bugs. Whenever the user picked up a brick, it would be registered in a global variable for use in different functions and classes. This global variable was then accessed wherever necessary, which does not constitute best practice and is also unable to support picking up multiple bricks. This was not the only problem, however.
The line renderers needed to be moved to the location of the brick corners to display the desired preview lines. Therefore, four line renderers are not enough for previewing two bricks simultaneously. It was, consequently, necessary to rework the preview system when picking up and letting go of bricks.

As a first step, the usage of the line renderers was reworked. Since working with eight line renderers for two bricks is quite cumbersome and leads to large code blocks, reducing code readability and clarity. Therefore, a new class was created to house four line renderers at once. This class was called BrickLineRenderer since it takes care of rendering all lines for a single brick. The newly created renderer was fitted with functions to attach it to a brick, and the brick also gained new fields to allow for easy access to the renderer when needed.
Whenever the user picks up a brick, a free renderer is attached to it. Therefore, only two BrickLineRenderers are needed for all preview lines. These are stored inside an array within the main system.

Next was the overhaul of the brick preview system. Here similar issues were to be solved. Only one global game object existed that changed its model whenever the user picked up a brick. Whenever the user grabbed the second brick, the preview model was thusly overridden. On top of that, all necessary calculations for displaying the preview were handled within the main system's Update function. Within this function, only the last grabbed brick was used to determine the location and model of the preview. Adding necessary fields and functions for attaching the preview to the grabbed brick was a perfect solution to this problem.

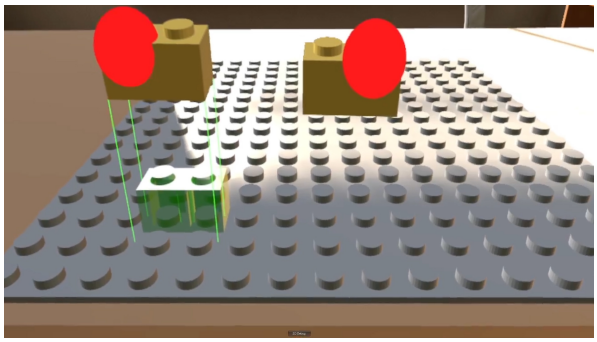

**Figure 1:** Two grabbed bricks with only one preview

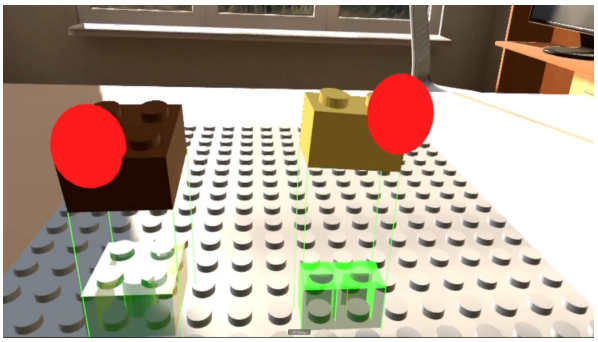

**Figure 2:** Grabbed bricks with correct previews

This addition made it possible to move all preview calculations from the main system to a dedicated function within the brick, resulting in more readable and better-structured code.
Finally, the two preview instances needed, are stored within an array inside the main system, just like the BrickLineRenderers. Whenever the player picks up a brick, a free preview is chosen from the array and then attached to that brick.

Making the described additions to the software fixed all issues with two-handed building and resulted in a much more natural experience when using the prototype.