CreateAccess

Learning Guide
Build Illuminated Displays for 3D Models in Unreal Editor for Fortnite

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Video Learning Guide for this Lesson
youtube.com/watch?v=V7KC1RM3f1k

Introduction

In this Guide, you will learn how to build displays for 3D models in a Fortnite experience and add light features to them. By the end of this lesson, you should have the skills to:

- add display assets, such as bases and pillars, from the Fab Marketplace
- import your own 3D models
- position 3D models on displays with precision
- add light features to illuminate displays

Prior Knowledge Check

To successfully complete this lesson, you should:	Resources:
☐ be familiar with the basics of the UEFN User Interface and moving around in UEFN ☐ have at least one 3D model that you would like to showcase on a display saved to your computer	• *Unreal Editor for Fortnite User Interface Basics* • *Create a 3D Model Using Polycam*

Getting started

Launch UEFN and access a new or existing project where you'd like to build your displays. Navigate to the general location on the island where you'd like to begin building. Note the location on your computer of one or more 3D models that you would like to display.

Step 1: Enable Surface Snapping

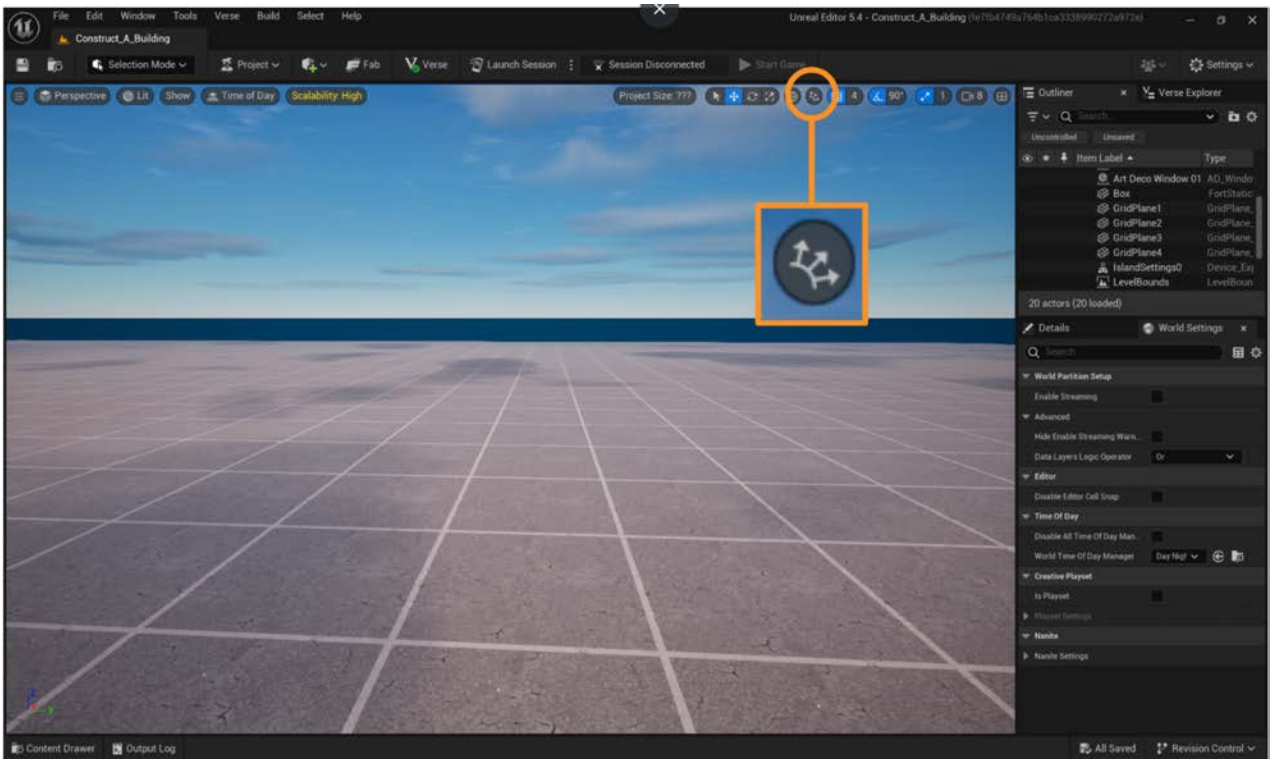
Preview

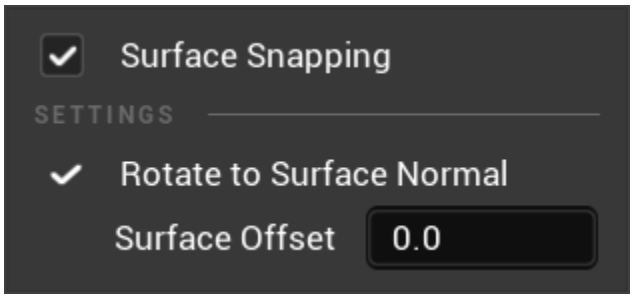
To make it easier to line up your displays the way you want, it's a good idea to enable Surface Snapping. Surface Snapping forces assets to be placed directly on a surface. You'll most likely want to rest your displays flat on the floor of a building or on the ground. With Surface Snapping enabled, an asset will automatically snap to the ground as you move it toward the ground. Without Surface Snapping enabled, your asset can move below the ground, which can cause your display to appear crooked.

Explore

ENABLE SURFACE SNAPPING

To enable Surface Snapping, click the circular button with three arrows in the toolbar near the top right of the Viewport. A dropdown menu should appear. In the dropdown, check "Surface Snapping" if it is not checked already. Leave the Surface Offset value at 0.0, or set it to 0.0 if it is set to some other value. This will position the asset so it is touching the ground. Changing this value to a higher number will cause the asset to hover over the ground at the height specified by the value you choose.

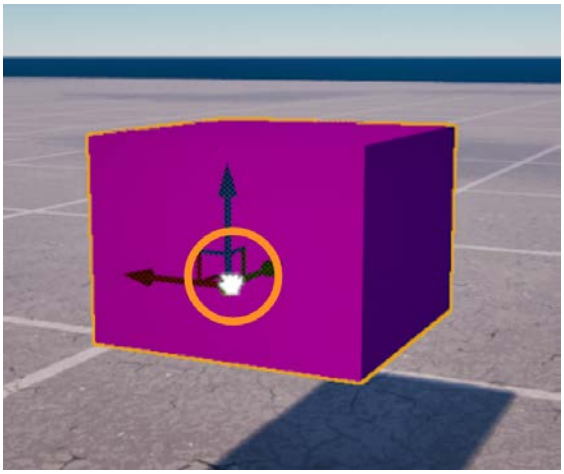




TEST SURFACE SNAPPING WITH THE TRANSLATE GIZMO

With Surface Snapping enabled, you can use the Translate gizmo to position assets on the ground, and they should snap to the ground. Move the asset by clicking and holding the mouse cursor at the intersection of the three arrows on the Translate gizmo. You should see a small hand icon appear. Surface Snapping will not work if you simply click and drag any of the arrows.

To get familiar with how this works, try it with any asset on your island, or add one that you can delete later. For example, you can access “Modeling Mode” in the Selection Dropdown menu, click “Create,” and then choose a test shape (such as a box) to add to your island. By clicking, holding, and dragging the white sphere at the intersection of the Translate gizmo, you should be able to move the asset in any direction, but it should remain at or above ground level.



Self Check

When you tested Surface Snapping, did your test object remain at or above ground level when you moved it in all directions?

Step 2: Add display assets to your island

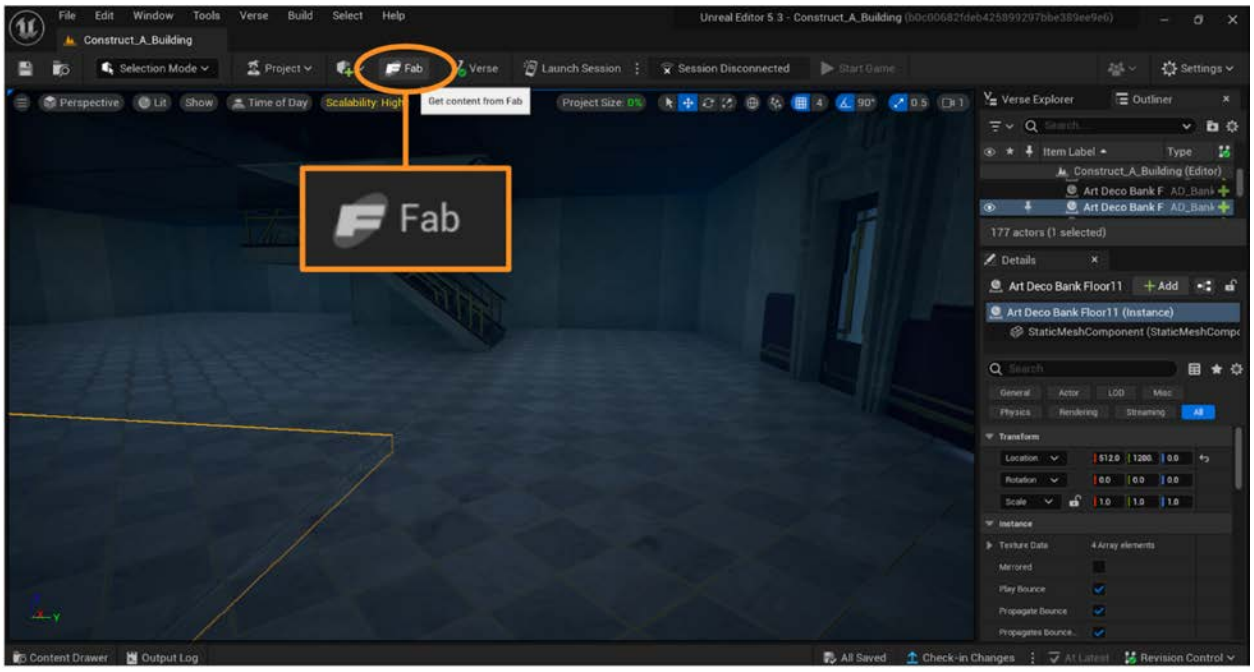
Preview

Now you're ready to begin building your displays. You can access many ready-made assets that can serve as display bases - including plinths, pillars, and tables - through the Fab Marketplace available within UEFN. You can also access display assets in the Fortnite library, or import your own. Be creative in your choice of display! For example, a boulder could be an interesting display base for a nature-themed display. In this Guide, display assets will be selected from the Fab Marketplace.

Explore

ACCESS THE FAB MARKETPLACE

To access the Fab Marketplace, click on the "Fab" button in the toolbar near the top of your screen. The Marketplace should pop up in a new window.


File Edit Window Tools Verse Build Select Help
Construct_A_Building
Selection Mode
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Launch Session
Session Disconnected
Start Game
Settings
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Get content from Fab
Project Size: 0%
Fab
Verse Explorer
Outliner
Item Label
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Construct_A_Building (Editor)
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177 actors (1 selected)
Details
Art Deco Bank Floor11
Add
Art Deco Bank Floor11 (Instance)
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LOD
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Rendering
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All
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Location
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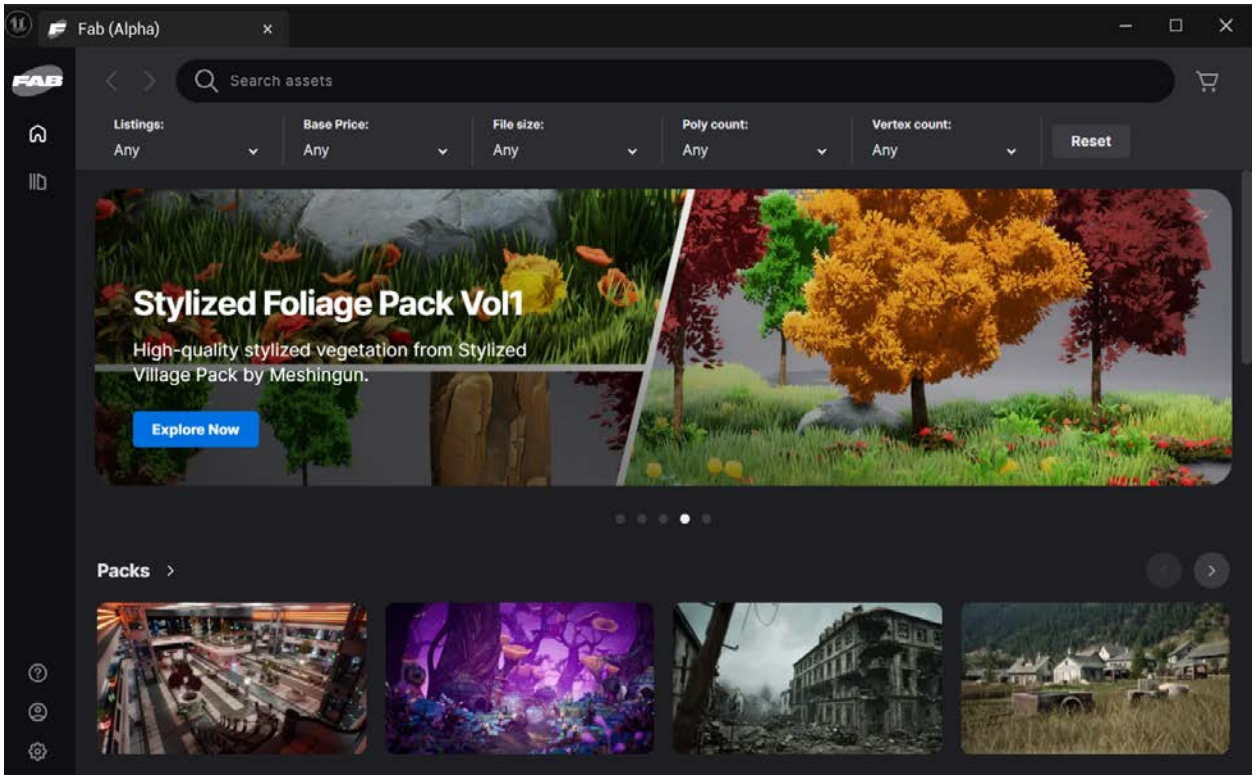
Content Drawer
Output Log
All Saved
Check-in Changes
At Latest
Revision Control


Fab (Alpha)
FAB
Search assets
Listings:
Any
Base Price:
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File size:
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Poly count:
Any
Vertex count:
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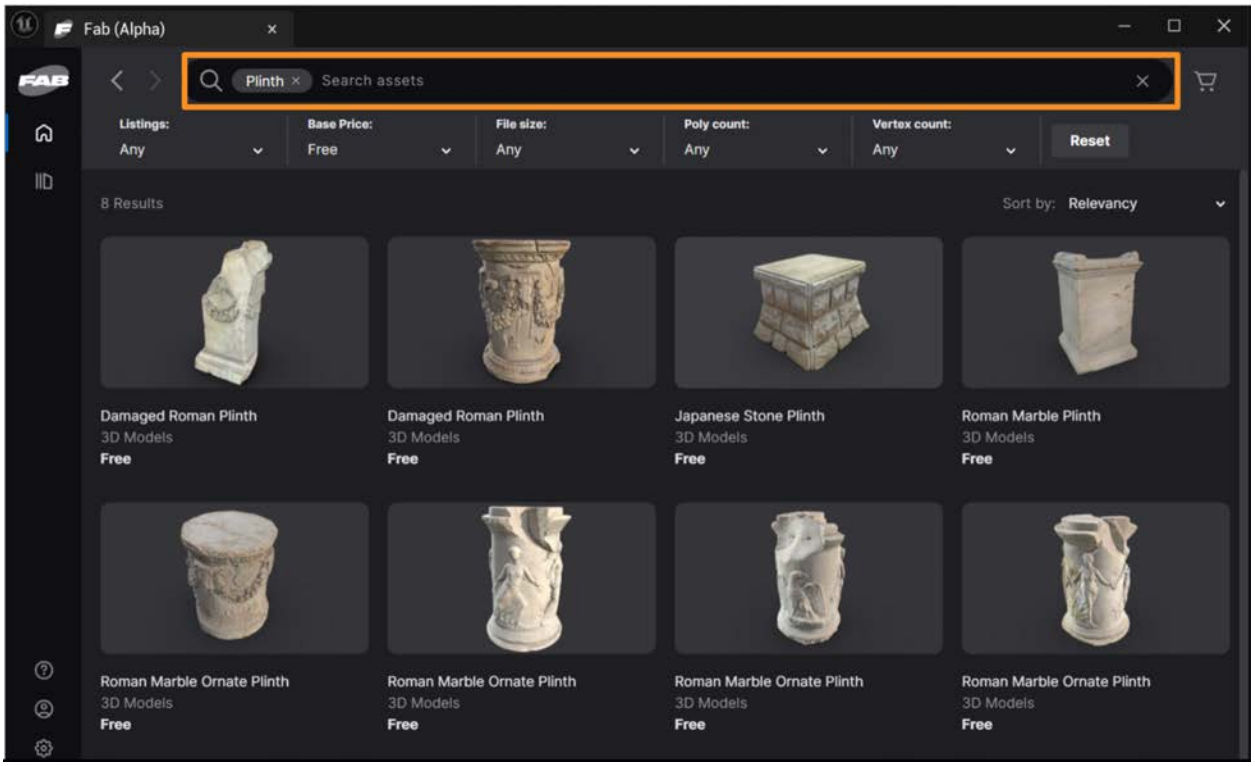
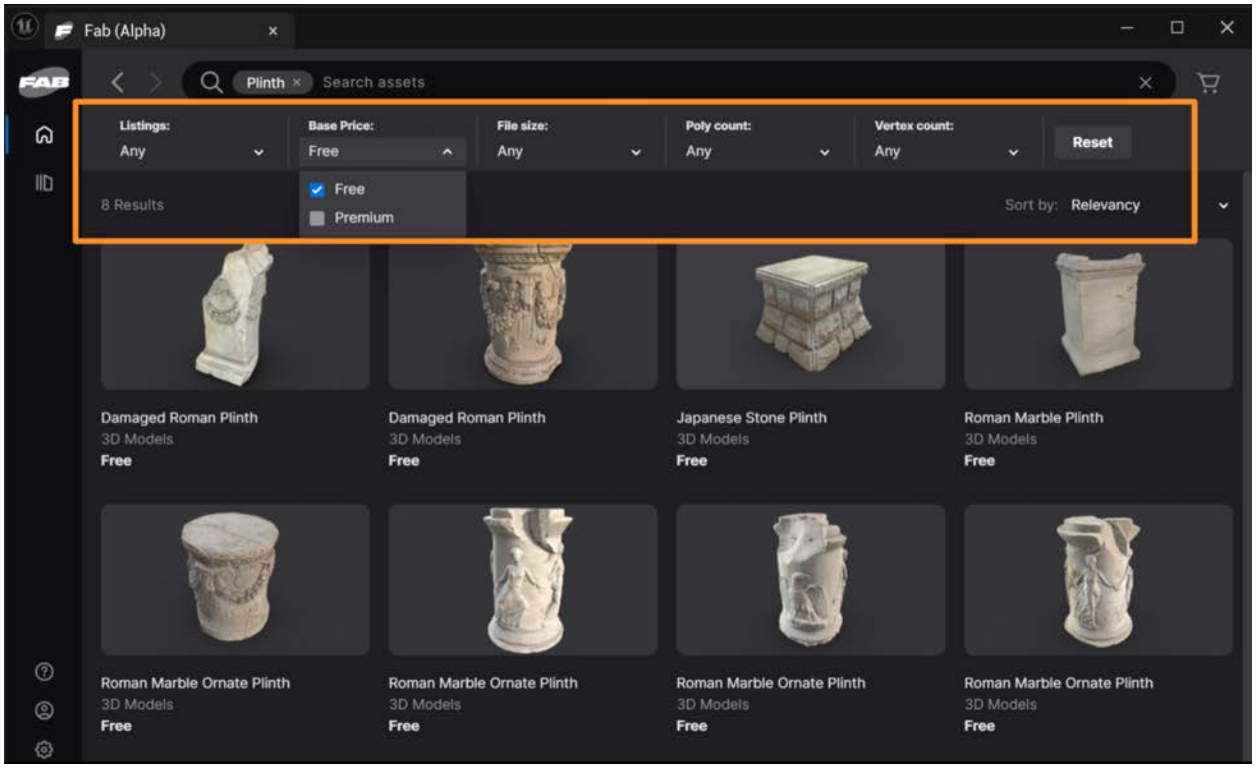
Reset
Stylized Foliage Pack Vol1
High-quality stylized vegetation from Stylized Village Pack by Meshingun.
Explore Now
Packs

CHOOSE ASSETS TO ADD TO YOUR ISLAND WITH SEARCH TERMS AND FILTERS

At the top of the resulting screen, you should see a search bar and a variety of filters. Use the search bar to search for the type of display asset you're looking for (for example, pillar, plinth, or table). The results of your search should appear below the search bar.



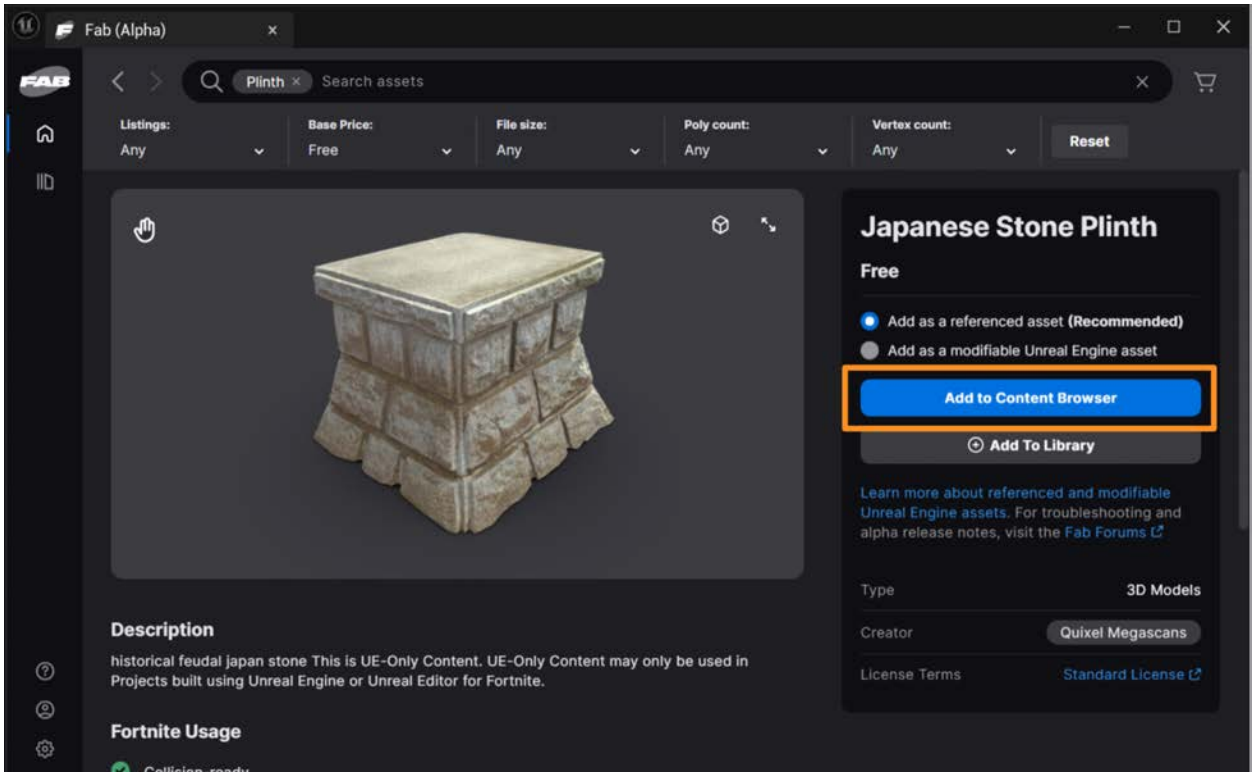
Use the filters to narrow the results if you want to. For example, you may wish to see only assets that are available to you for free. In this case, access the "Base Price" filter and select the "Free" option.



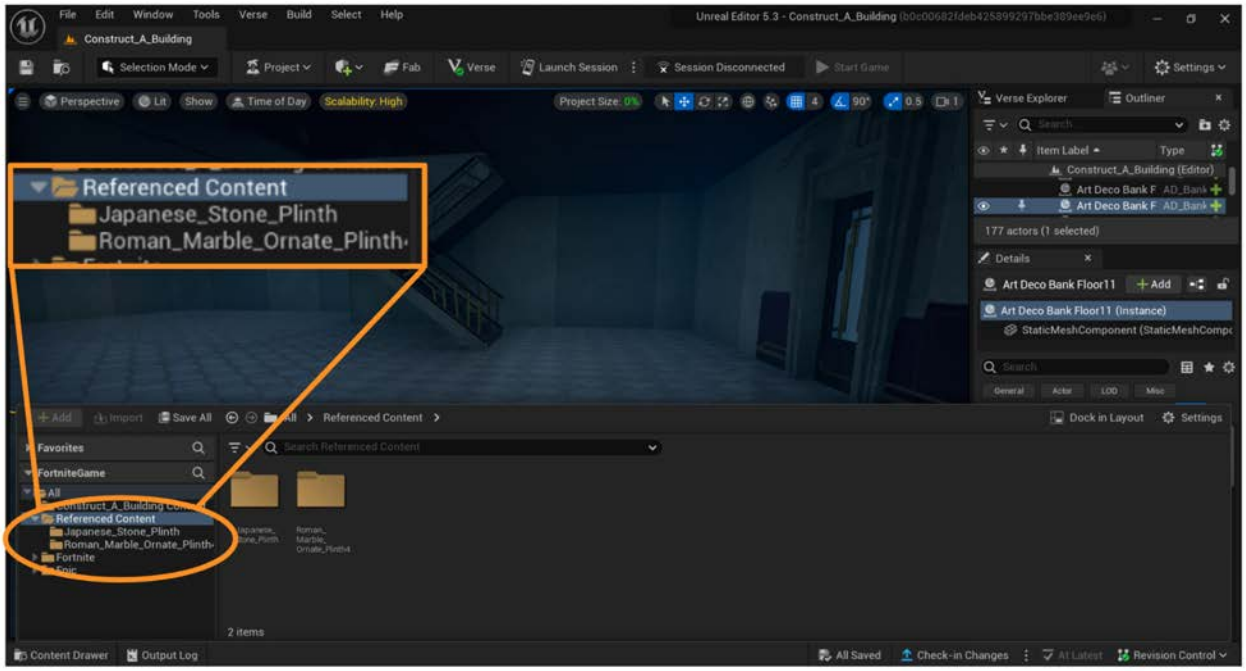
Explore the assets until you find some that you'd like to use for your displays. Try new search terms and filters as needed.

ADD SELECTED ASSETS TO YOUR CONTENT BROWSER

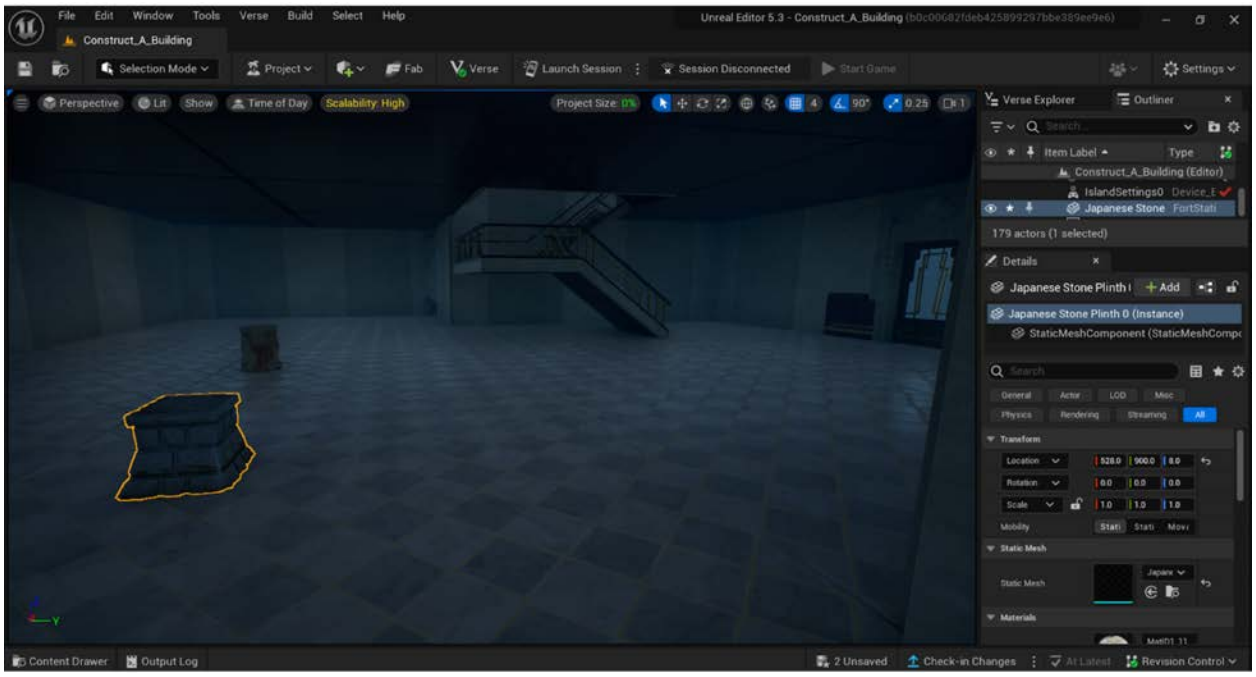
Once you find an asset you'd like to use, click on it and then click the blue "Add to Content Browser" button on the resulting screen. Repeat this procedure for all the different assets you'd like to use for your displays. Note that you only need to add each unique asset once - you can replicate assets back on your island.



Close the Fab Marketplace by clicking the “X” at the top of the Fab window. On your island in the Content Drawer, you should now see a “Referenced Content” folder. Expand the folder by clicking the arrow next to the folder’s name. You should see a subfolder for each of the assets that you selected from the Fab Marketplace.



Click on the subfolder for an asset, and then click and drag the thumbnail in the subfolder to bring the asset onto your island. Add each asset to your island as many times as you want in the general location you'd like it to be. You'll learn how to make more precise adjustments shortly. You can click and drag each asset from your Content Drawer multiple times, or you can replicate an asset by selecting the asset, accessing the Translate gizmo, and then holding the <Alt> key and clicking and dragging one of the arrow handles of the Translate gizmo to create a copy.



Self Check

Could you find display assets that you want to use on your island and add them to your island?

Step 3: Translate, rotate, and scale assets

Preview

The assets you imported may not be sized or positioned the way you want them to be when you first bring them onto your island from the Content Drawer. You can change the location, orientation, and relative size of assets by using the Translate, Rotate, and Scale gizmos, or by using the Transform functions in the Outliner.

Explore

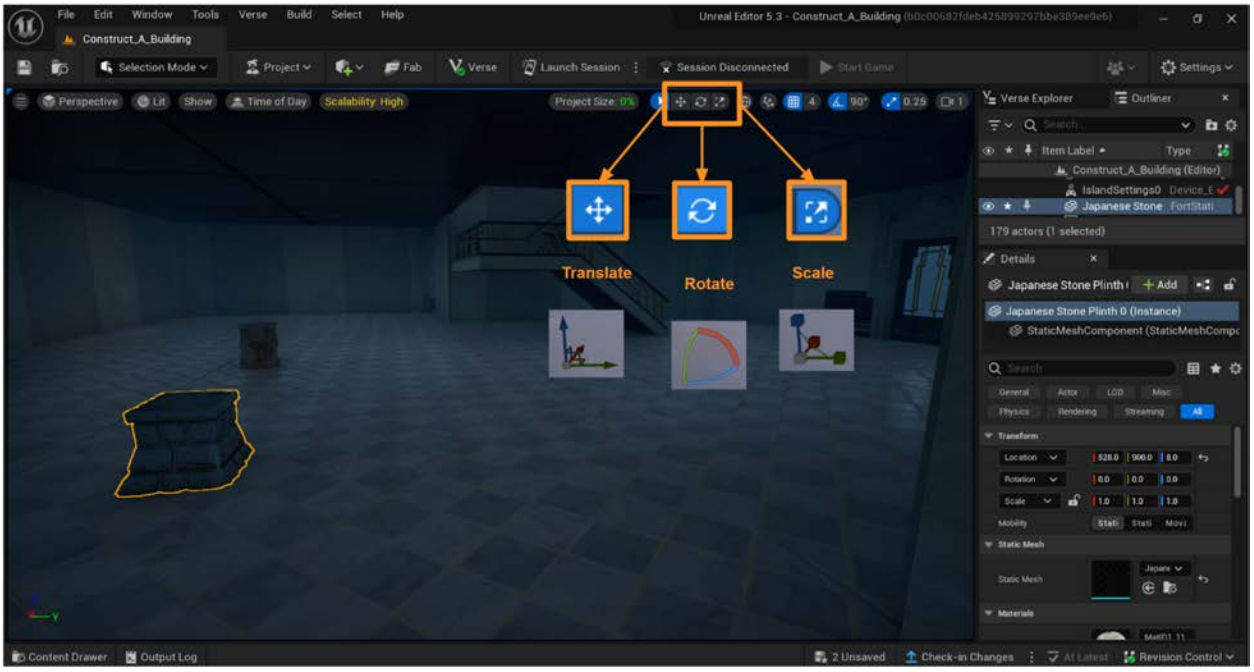
USE THE TRANSLATE, ROTATE, AND SCALE GIZMOS TO ADJUST DISPLAY ASSETS

The **Translate gizmo** moves an asset along the X, Y, or Z axis, and is used to change the location of an asset in space.

The **Rotate gizmo** changes an asset's rotation relative to the ground.

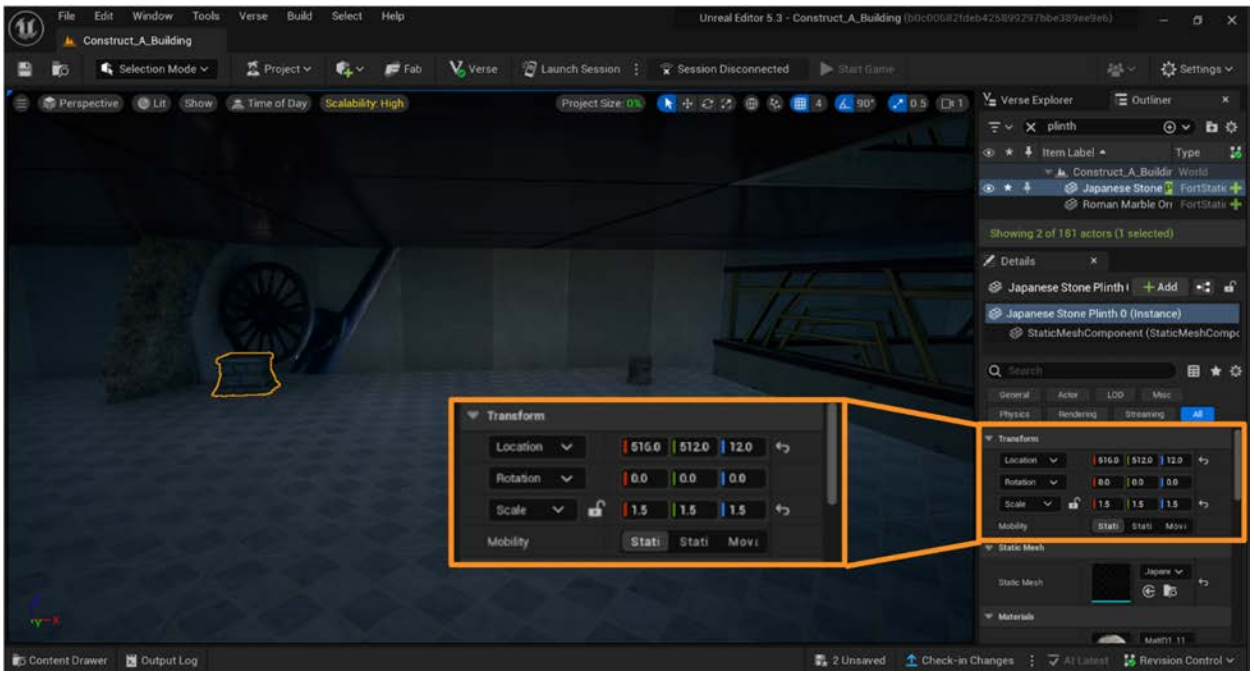
The **Scale gizmo** changes an asset's relative size.

Click and drag the handles on the Translate, Rotate, and Scale gizmos to see how they change your display asset's location, orientation, and size. Note that, when using the Scale gizmo, you can change the scale of an asset and maintain its proportions by clicking the white cube in the center of the gizmo and dragging with your mouse. If you click an individual handle on the gizmo, you will only change your asset's relative size in one dimension - for example, making it taller or wider.



USE THE “TRANSFORM” FUNCTIONS IN THE OUTLINER TO ADJUST DISPLAY ASSETS

Another approach to changing an asset’s position, orientation, and size is to use the “Transform” functions in the Details Panel below the Outliner. The Outliner is the area to the right of the Viewport that contains a list of all assets on your island. Select the asset you’d like to adjust by clicking on it in the Viewport, or clicking on its name in the Outliner. Just below the Outliner, locate the Details panel. This is where you can see and change the settings for your selected asset. Note that there is a drop down entitled “Transform” that contains values for Location, Rotation, and Scale. You can change these values by typing new ones into the appropriate boxes. Experiment with changing the values of each to see how the position, orientation, and size of your display assets change.



Self Check

Were you able to adjust the position, orientation, and size of your display assets in the way you wanted to?

Step 4: Use orthographic views to refine placement of display assets

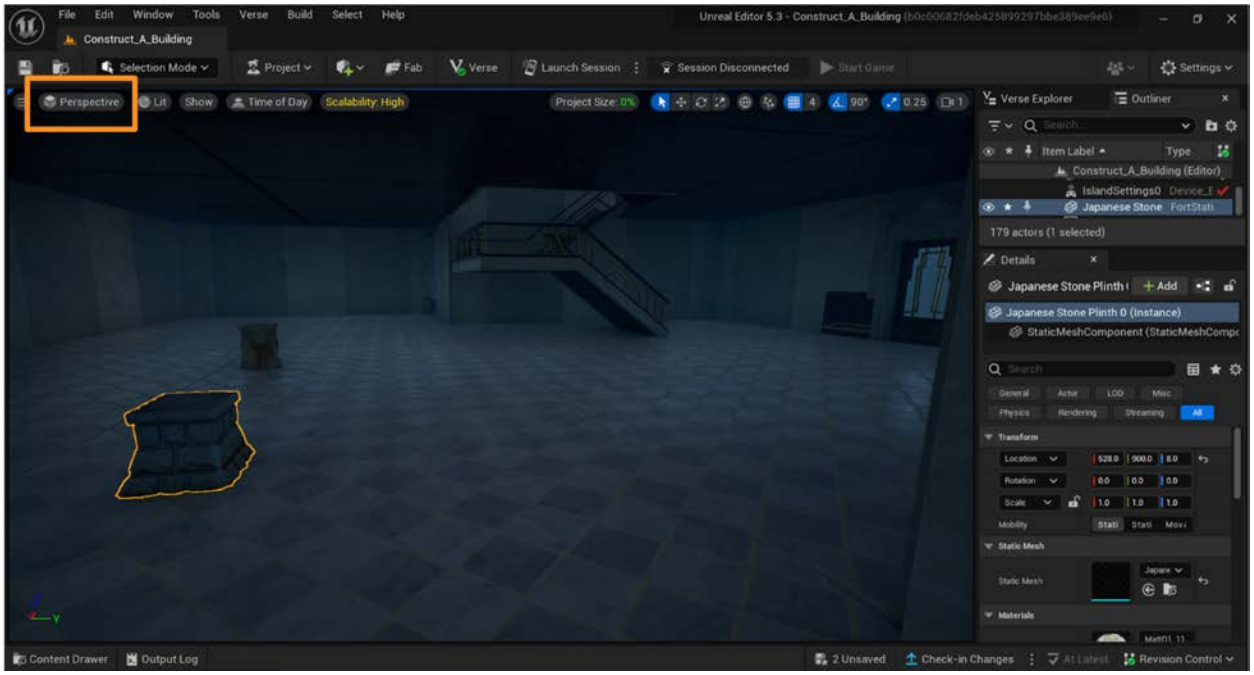
Preview

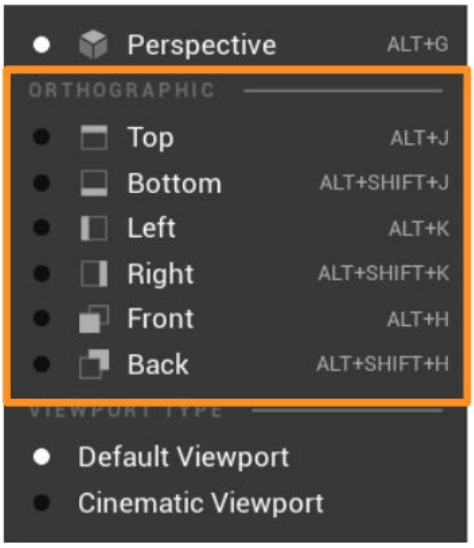
Using orthographic views is a helpful way to easily and precisely place 3D assets where you want them. Orthographic views are two-dimensional views that represent a 3D object the way it would look when viewed directly from different perspectives, including the front, the back, the right, the left, or the top. These views show the outlines of the asset on a grid. Using an orthographic view, you can make finer movements than you might be able to do in 3D space, as the objects are locked to a single plane. You may also be more easily able to visualize the placement of each asset relative to others when using an orthographic view.

Explore

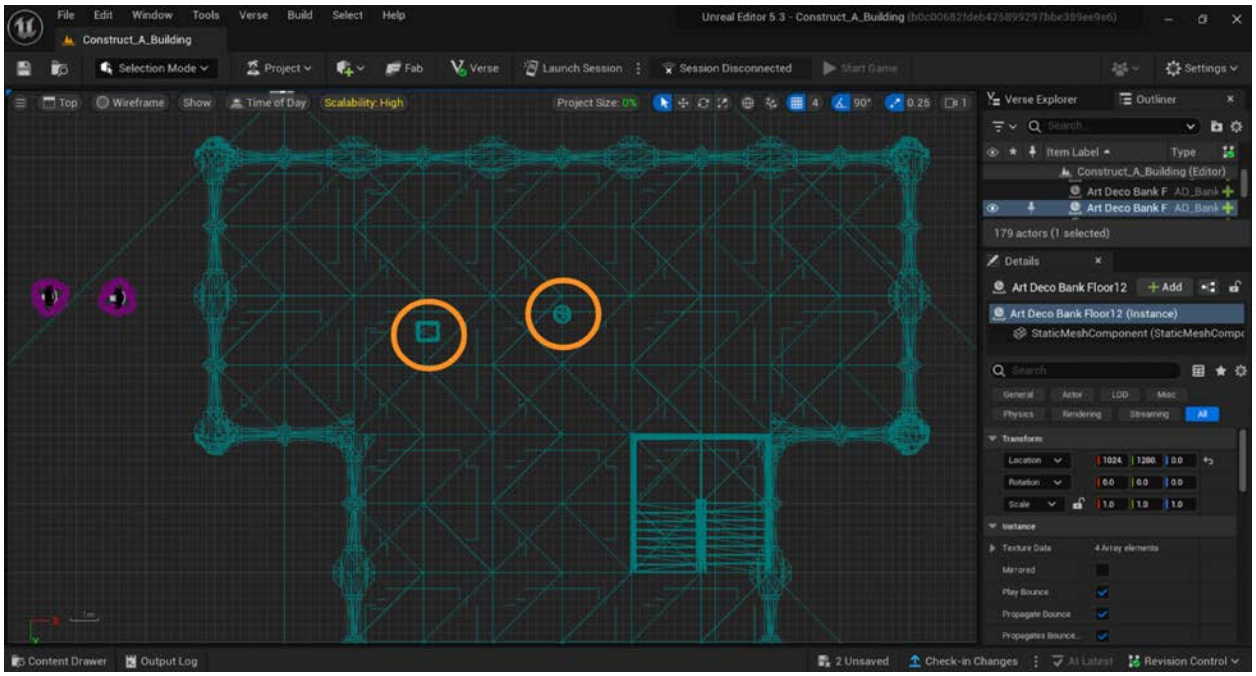
SWITCH TO AN ORTHOGRAPHIC VIEW AND BEGIN MOVING DISPLAY ASSETS

To switch between the Perspective view - the default view in the Viewport - and an orthographic view, navigate to the Perspective button in the top left corner of the Viewport, and choose your preferred view. It may be helpful to start by using the “Top” orthographic view.



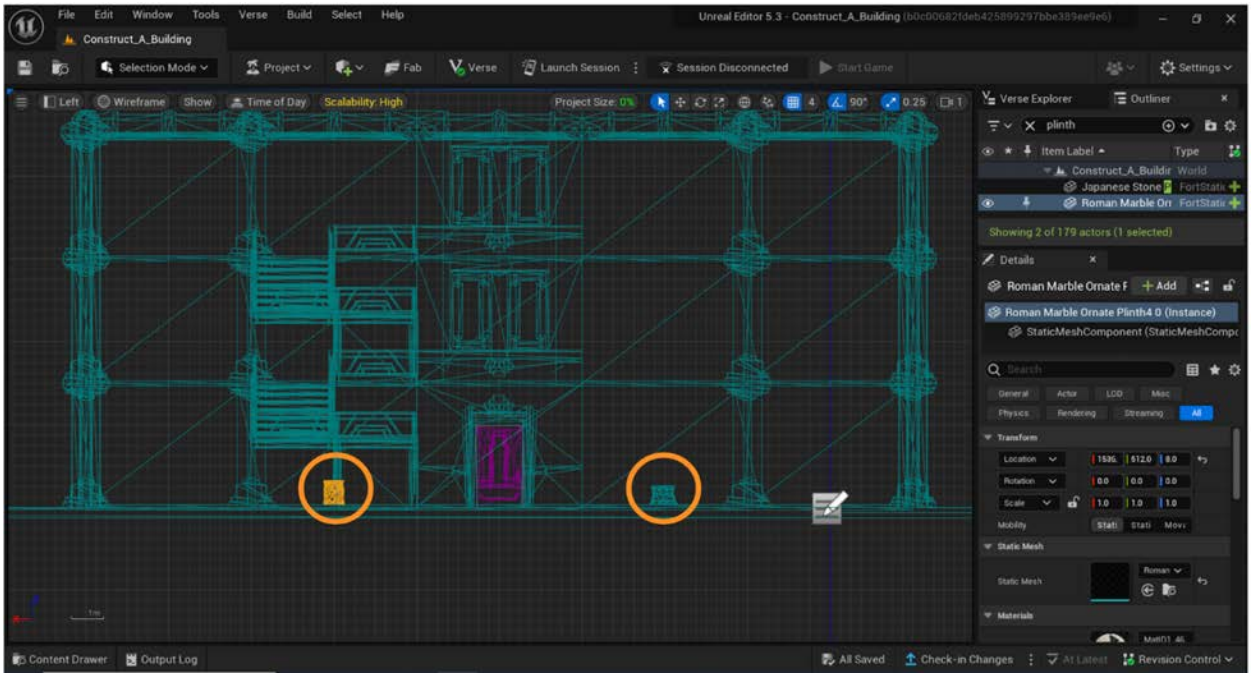


In this example, switching to the Top orthographic view provides a “bird’s eye” view of the building. The imported display assets - the plinths - are inside the orange circles.

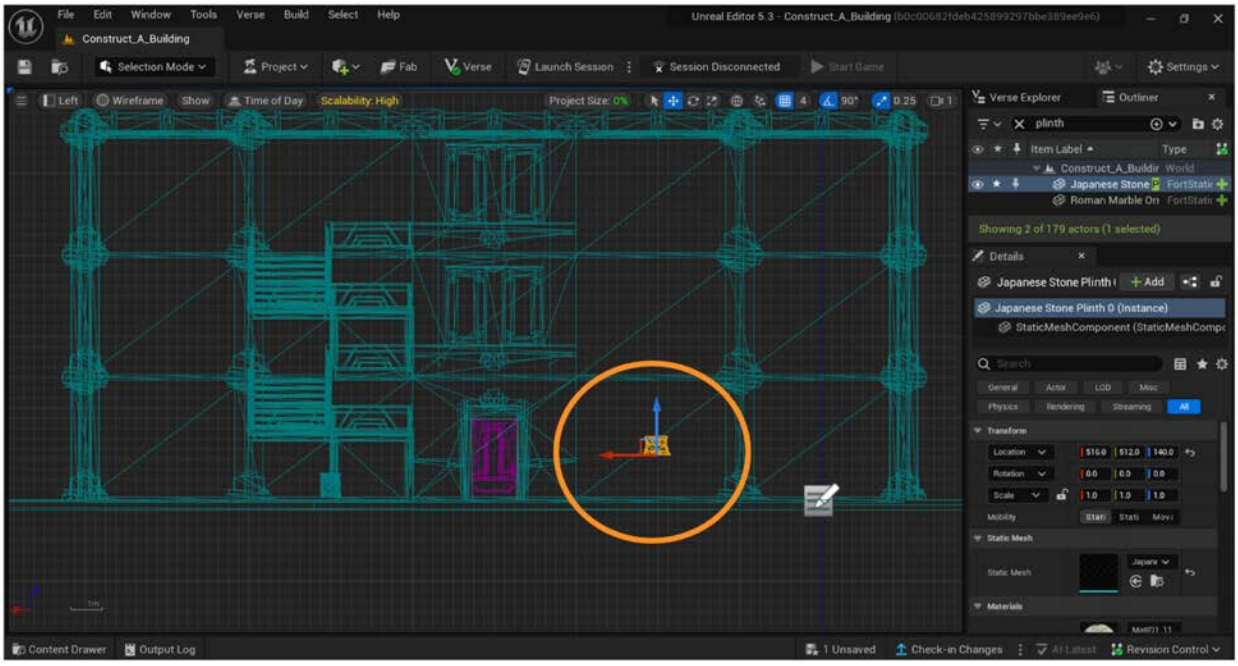


As in Perspective view, you can select an asset by clicking on it in the Viewport, or by clicking its name in the Outliner. Once selected, you can use the Translate and Rotate gizmos to move and rotate it. Note that your movement options are limited by the orthographic view you’re using. In Top view, you can only move assets to the left and right, or from front to back. If you want to move an asset up or down, you need to use a front, back, left, or right orthographic view.

Here are the same display plinths in the Left orthographic view.



In this view, the plinths can be moved up or down in space using the Translate gizmo.

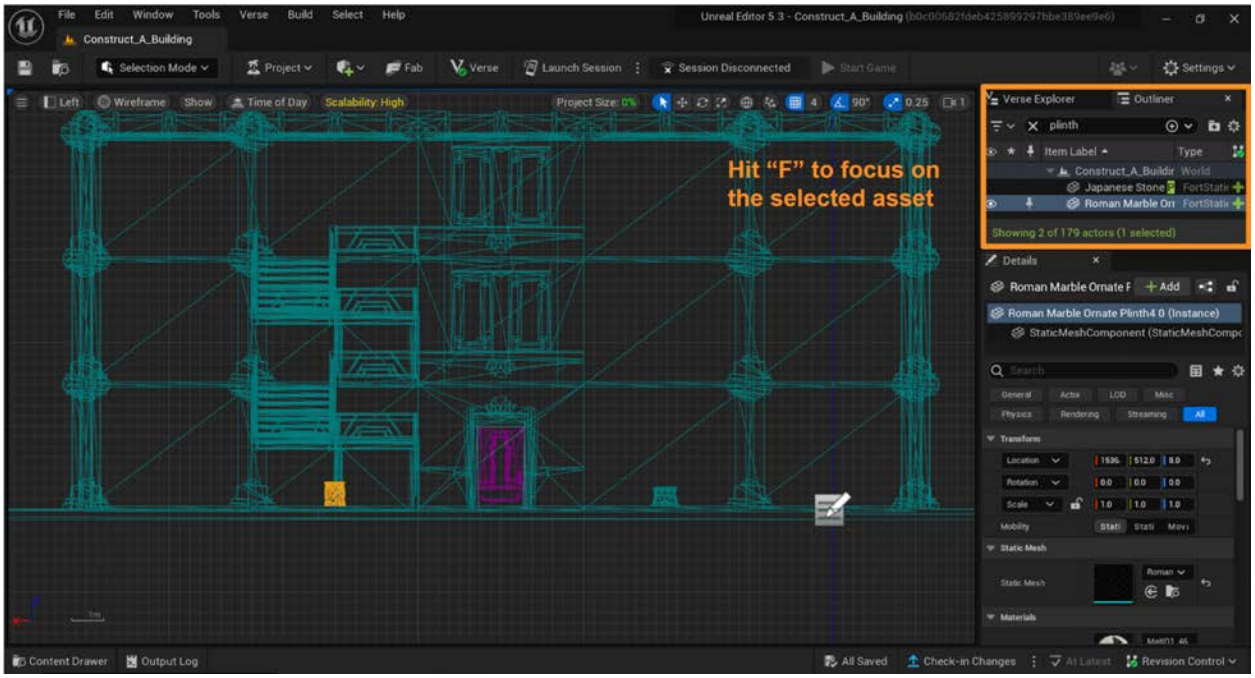


Choose the view or views that allow you to see and move the display assets as you wish, and experiment until you get the view and placement you want. Check your work by returning to Perspective view, and seeing if your display assets are placed where you want them to be. If not, keep experimenting with different orthographic views and different placements until you achieve the outcome you want.

USE THE “FOCUS” FUNCTION TO HELP YOU LOCATE AND PLACE ASSETS

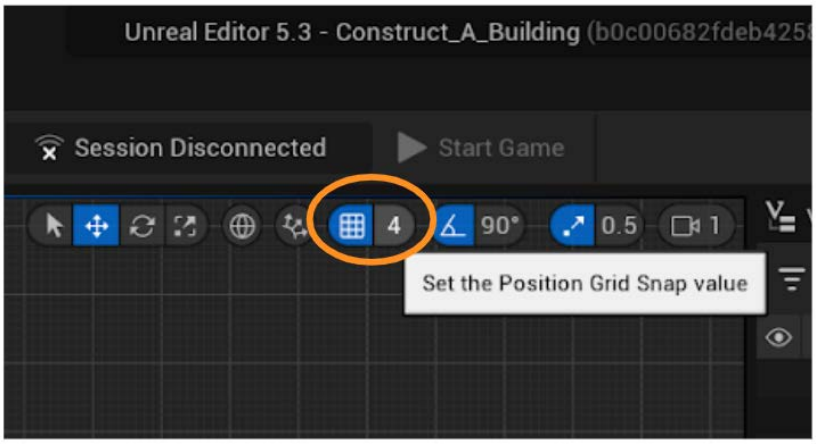
A useful trick that can make orthographic views a bit easier to navigate is called the “Focus” function. “Focus” allows you to immediately snap to any asset on your island regardless of the view you’re using, rather than trying to locate the asset by navigating through your island. This is especially helpful as you add more assets to your island.

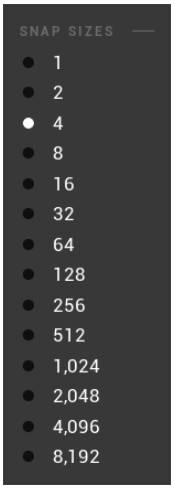
To use Focus, access the Outliner on the right side of your screen. You will see a list of every asset that exists on your island. If, for example, you want to navigate to a plinth asset, you can type “plinth” in the search box. This will generate a list of all plinth assets on your island. You can also scroll through the list of assets until you find the one you want. Click on the name of the asset in the Outliner that you want to snap to, and then hit the “F” key on your keyboard to be brought to the asset immediately in the Viewport. This is a good trick to keep in mind any time you are trying to locate a specific asset.



ADJUST THE SNAP SIZE TO GET MORE PRECISE PLACEMENTS

You can change the degree of precision in your asset placement, or how much an asset moves for each step you move it, by adjusting the snap size. Click on the number to the right of the grid icon toward the top right of the Viewport. Changing this value controls the precision that you will have when moving and placing your assets. In this example, the increment is set to 4. Clicking on this number brings up a dropdown that allows you to select a different value. A larger number increases the distance that the asset moves for each step you move it. The most precise movement control is achieved by using smaller numbers.





Self Check

Could you place your display assets exactly as you wanted to, using a variety of functions and approaches if needed?

Step 5: Import your own models

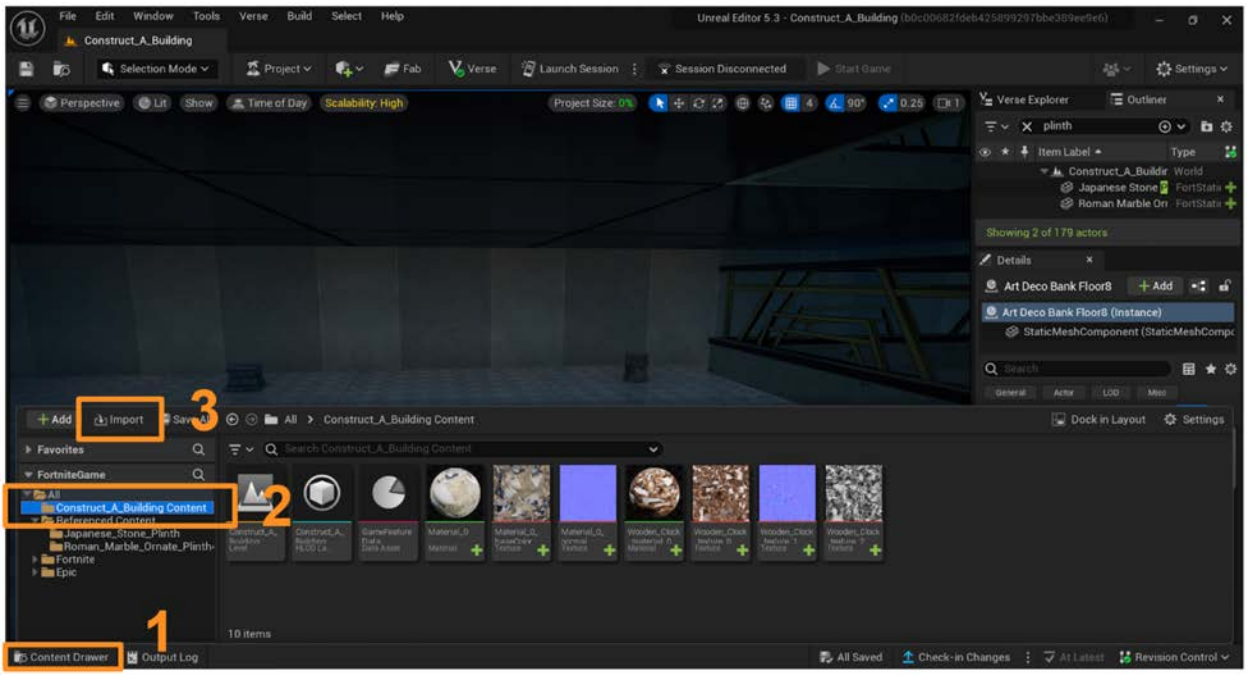
Preview

You can add objects to display by importing custom assets and placing them on your display assets. This procedure assumes that you have one or more 3D model files, such as photogrammetry models, stored on your computer as .glb/glTF files.

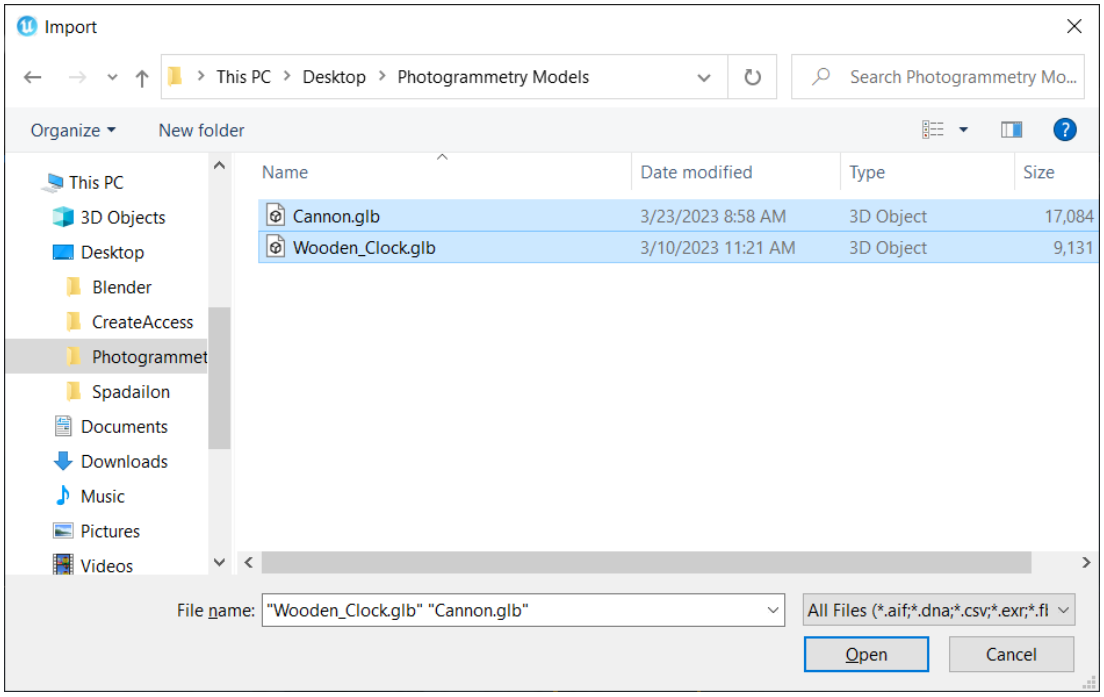
Explore

IMPORT MODELS INTO THE CONTENT DRAWER

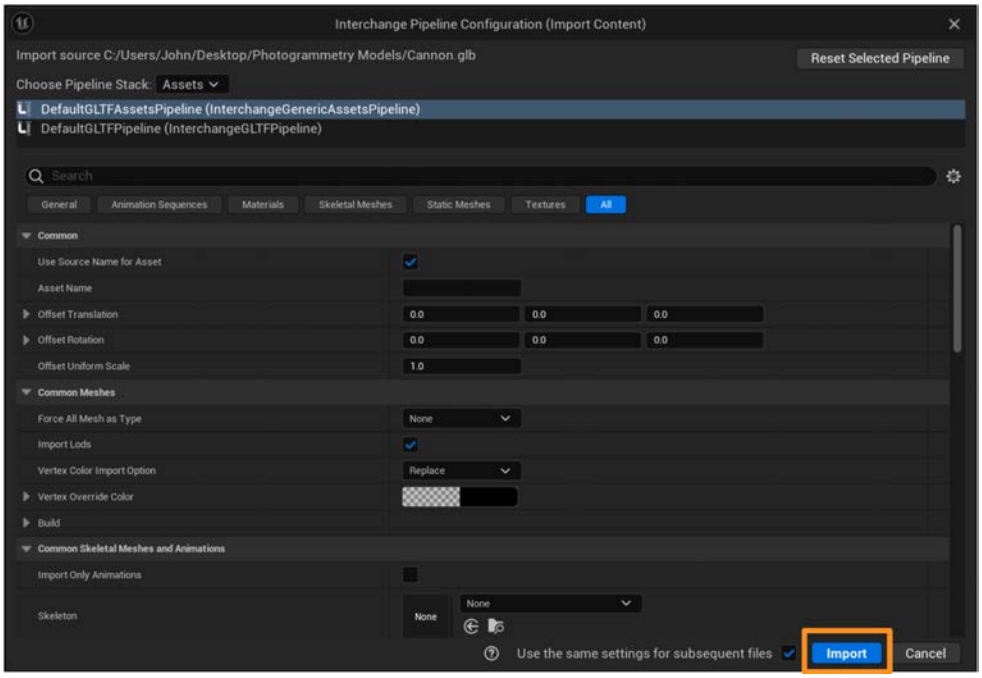
Click on the **Content Drawer** (1) to open it, and click on the **folder** that includes your project's name (2). This is the folder where your imported content will be stored. You can create subfolders within this folder to keep your imported content organized if you wish. Click the Import button (3) to open a file dialog box.



Navigate to the folder on your computer that contains your 3D models. Select your models one at a time and then click "Open" to import them, or hold down the <Ctrl> key and click on the file names one at a time to select as many as you want. When you have selected the desired file or files, click "Open."

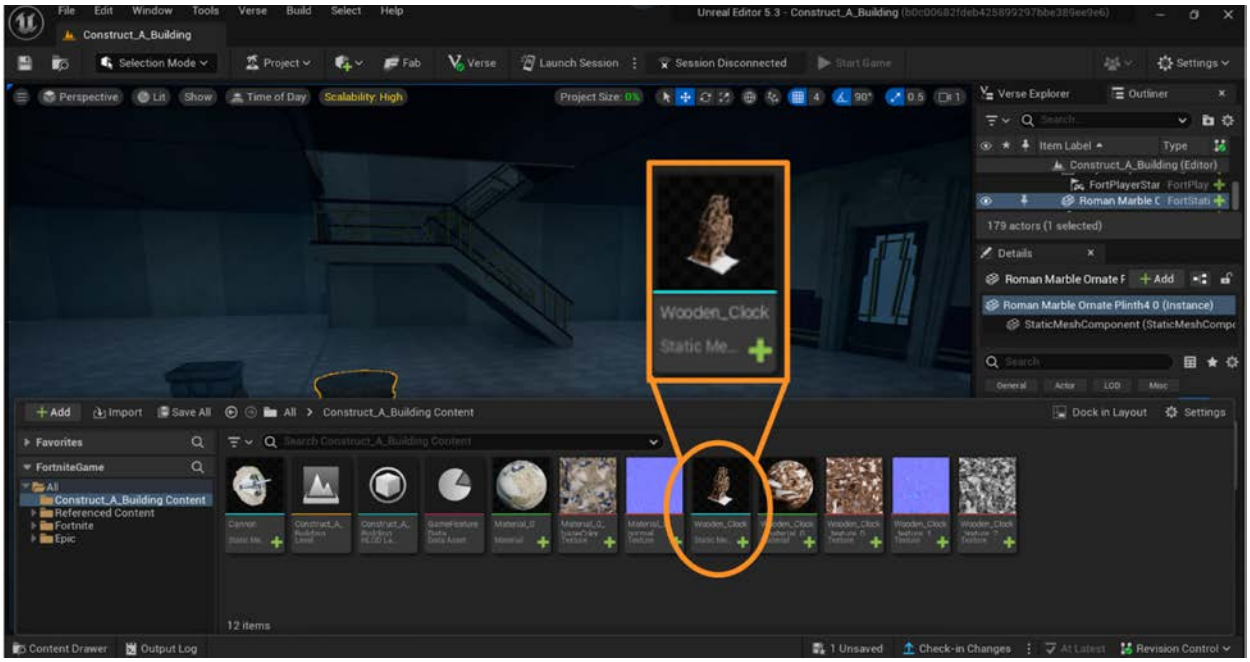


Click the blue “Import” button on the resulting screen. The default settings should work for this purpose. It will take a moment to import the assets and process them.



LOCATE MODELS AND BRING THEM ONTO YOUR ISLAND

Once your models have been imported, they should appear as available assets in your project's folder (or the subfolder you created) in the Content Drawer. Locate the "Static Mesh" thumbnail for each asset you wish to bring onto your island. The Static Mesh thumbnail should look like a complete version of your model and include a subheading indicating that it is a static mesh.



Click and drag the thumbnail to bring each model onto your island. You may wish to change the overall position, orientation, and/or size of your models. You can do this by selecting the asset by clicking on it, and then using the Translate, Rotate, and Scale gizmos discussed above in Step 3. The next step will discuss making refined adjustments that allow you to place your models precisely on display assets.

Self Check

Could you import a model of your choice and place it on your island, adjusting its location, orientation, and size as you wanted to?

Step 6: Place models on display assets

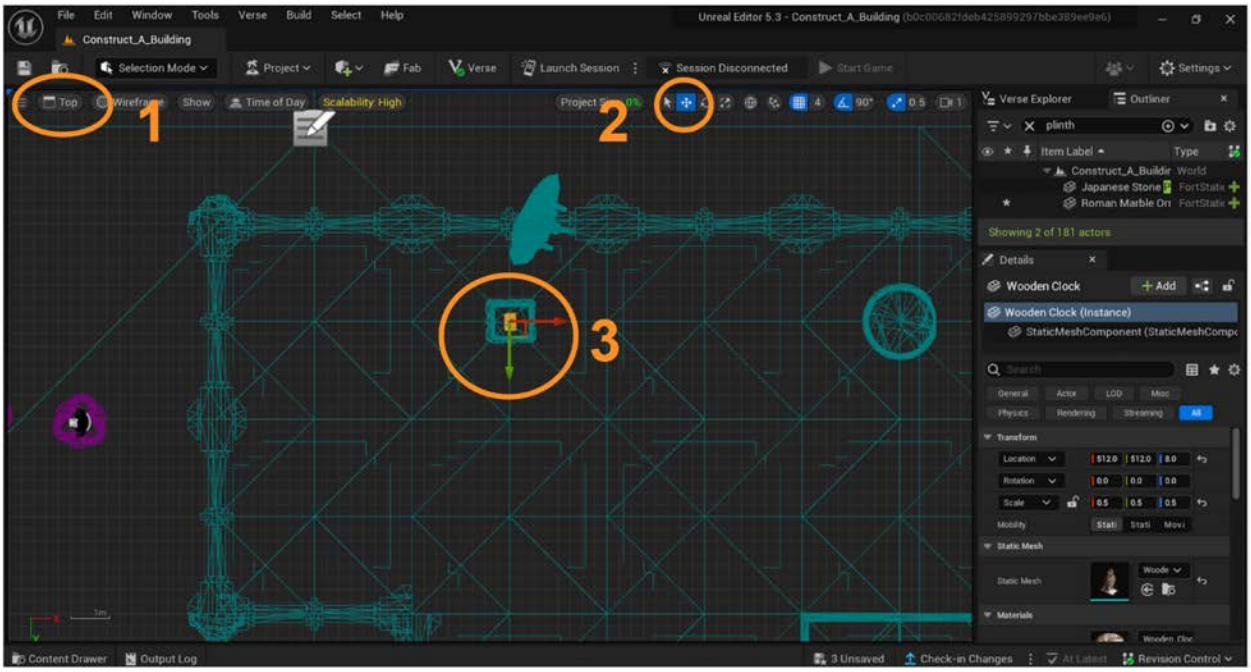
Preview

Photogrammetry models do not generally have the same regular geometry that other assets have. Orthographic views, as discussed above, can be very helpful in allowing you to place photogrammetry models, as well as other types of models, on displays with precision.

Explore

PLACE A MODEL ON TOP OF A DISPLAY ASSET

Switch to the Top orthographic view by clicking the “Perspective” button in the top left of the Viewport and selecting “Top” (1). Select your model by clicking on it. Access the Translate gizmo (2), and click and drag the handles (3) to move the model on top of the display asset.

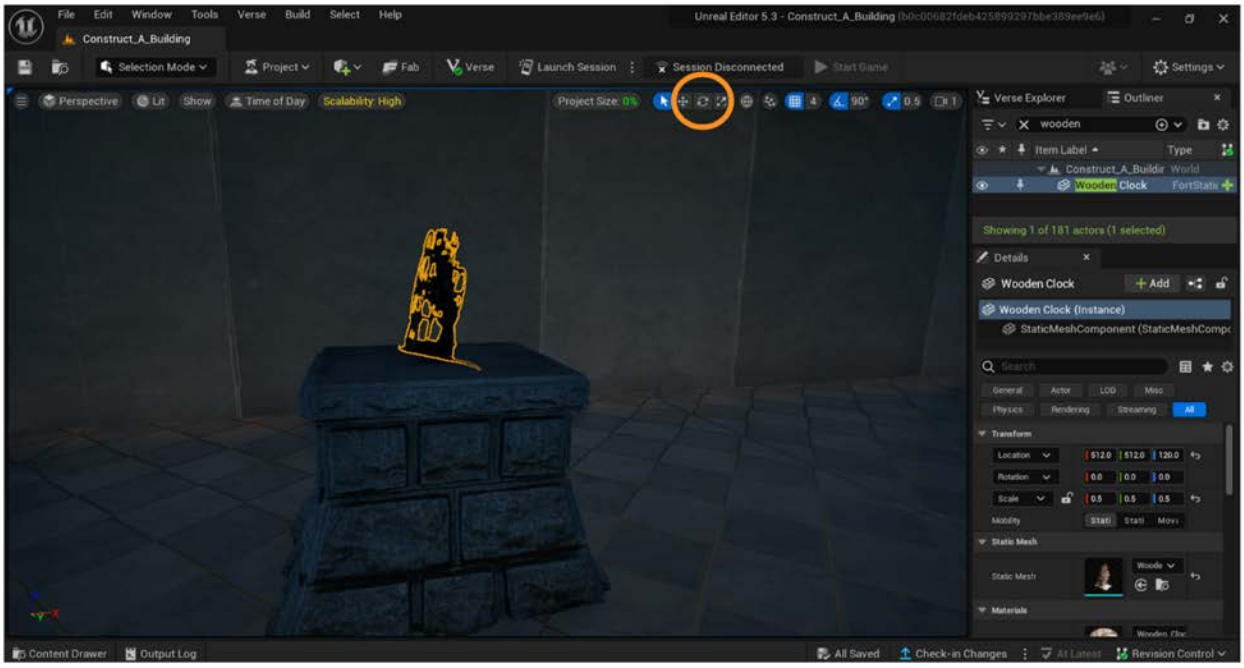


At this point, it’s possible that your model may not be sitting precisely on top of the display. Switch to a left or right orthographic view to view your model’s position on the display from the side. Use the Translate gizmo to adjust the position of the model up or down.

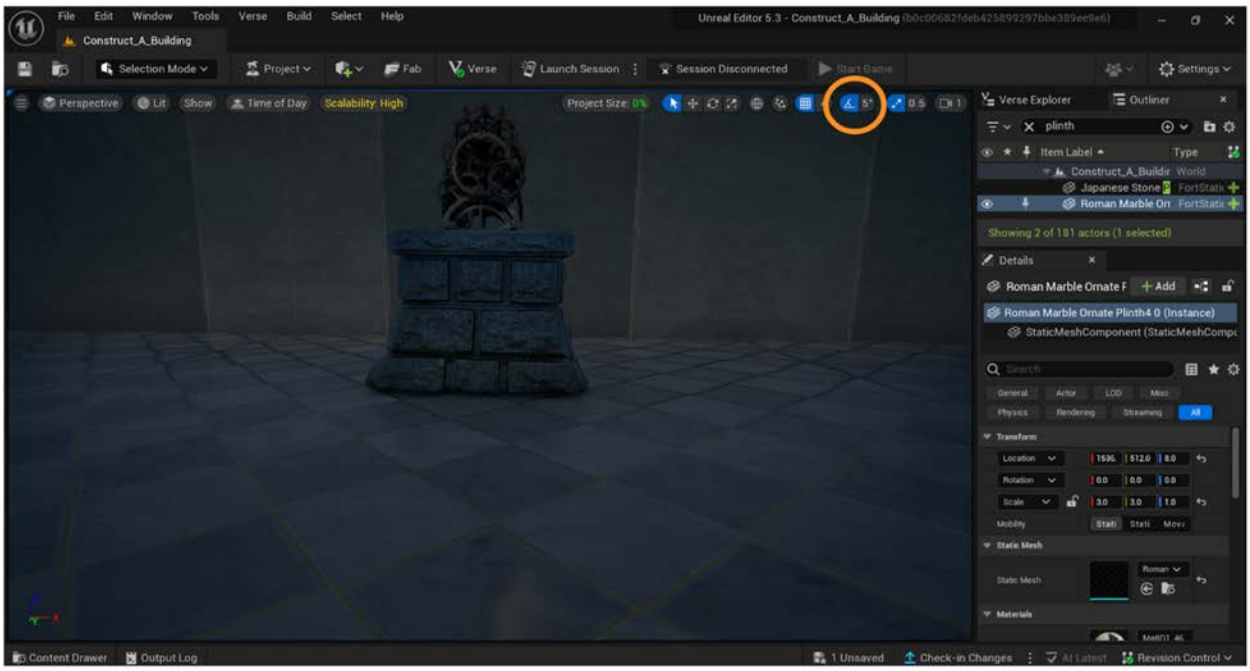
Check your work by returning to Perspective view and viewing your model and display asset in 3D.

REFINE THE POSITION OF THE MODEL AS NEEDED

In addition to changing the position of your model, you may wish to change its orientation. Use the Rotate gizmo to change your model’s orientation.



To make finer adjustments to the rotation, you may want to adjust the Rotation Grid Snap value, which defaults to 90 degrees. Locate the small angle measurement tool in the toolbar at the top right of the Viewport. Click on the angle icon to access a dropdown menu, and change the angle increment to a smaller number. This will allow you to rotate your model in smaller increments to achieve more precise positioning.



Switch between views and use different tools, as needed, to accomplish the positioning you wish. It may take several tries - just keep experimenting!

Self Check

Could you position your models on your display assets exactly as you wanted to?

Step 7: Add lighting

Preview

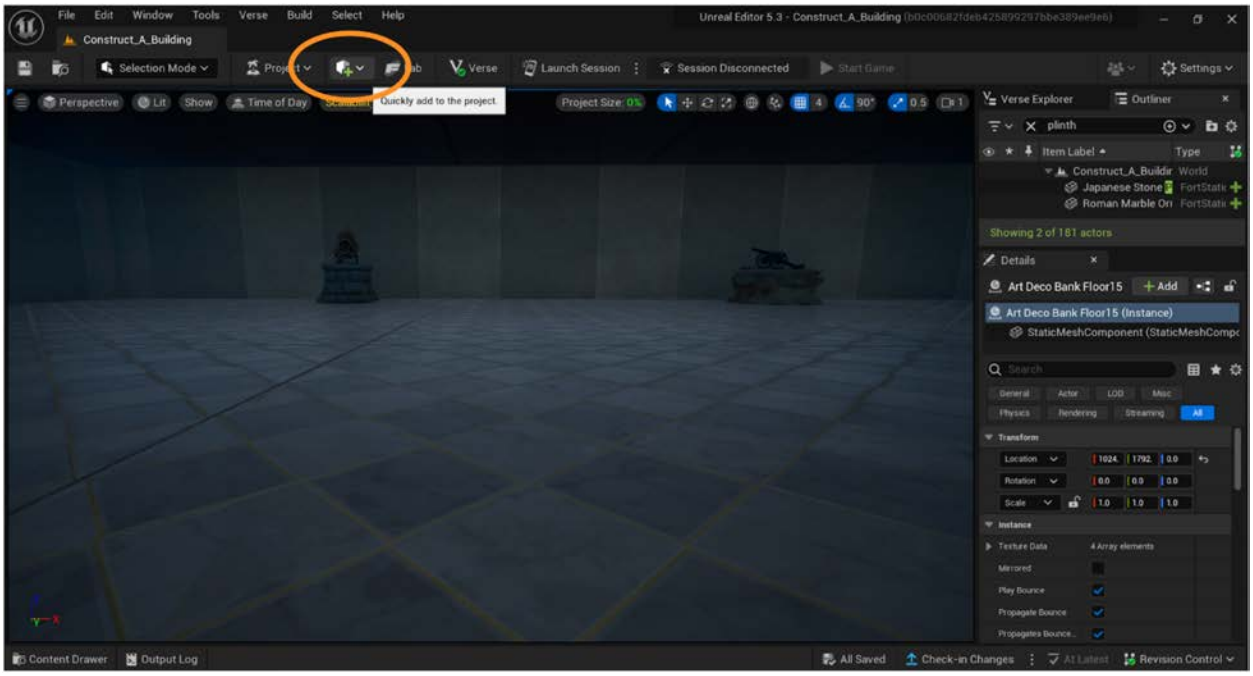
Light features can help make a 3D environment more dynamic and interesting, and help you better showcase your 3D models. UEFN permits multiple types of lighting to be added to your island, including Environmental Lights, Directional Lights, and Point Lights. This section will introduce you to these lighting types, with an emphasis on Point Lights, as this will be the type of lighting you will most likely want to use to illuminate your displays.

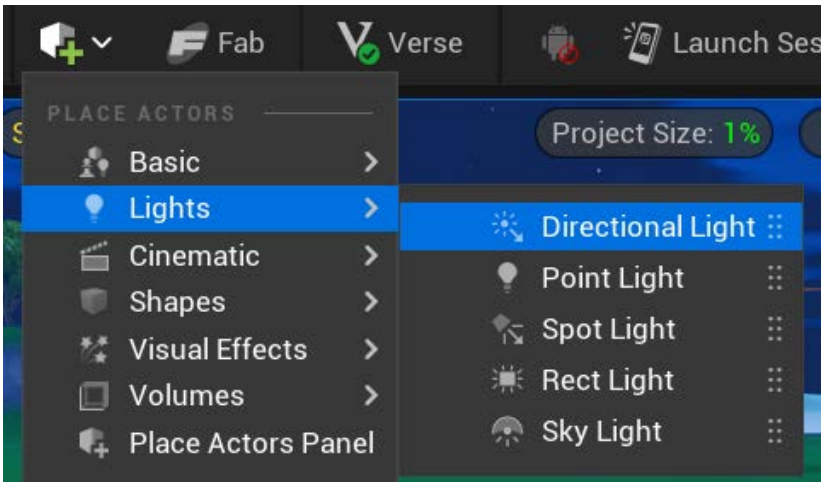
Explore

EXPLORE ENVIRONMENTAL AND DIRECTIONAL LIGHTS

Environmental Lights change the overall lighting theme on your entire island. You can implement different types of Environmental Lights by opening the Content Drawer, navigating to the Fortnite → Lighting → PostProcess folder, and dragging a theme onto your island.

Directional Lights provide a sun-like light source. They can illuminate large areas from a specific distance and direction. To use them, navigate to the quick add button on the toolbar and click it. A dropdown will appear from which you can select various types of lighting. Here you can select a Directional Light. You can also use the Time of Day setting to see what effect the hour of the day has on the lighting.

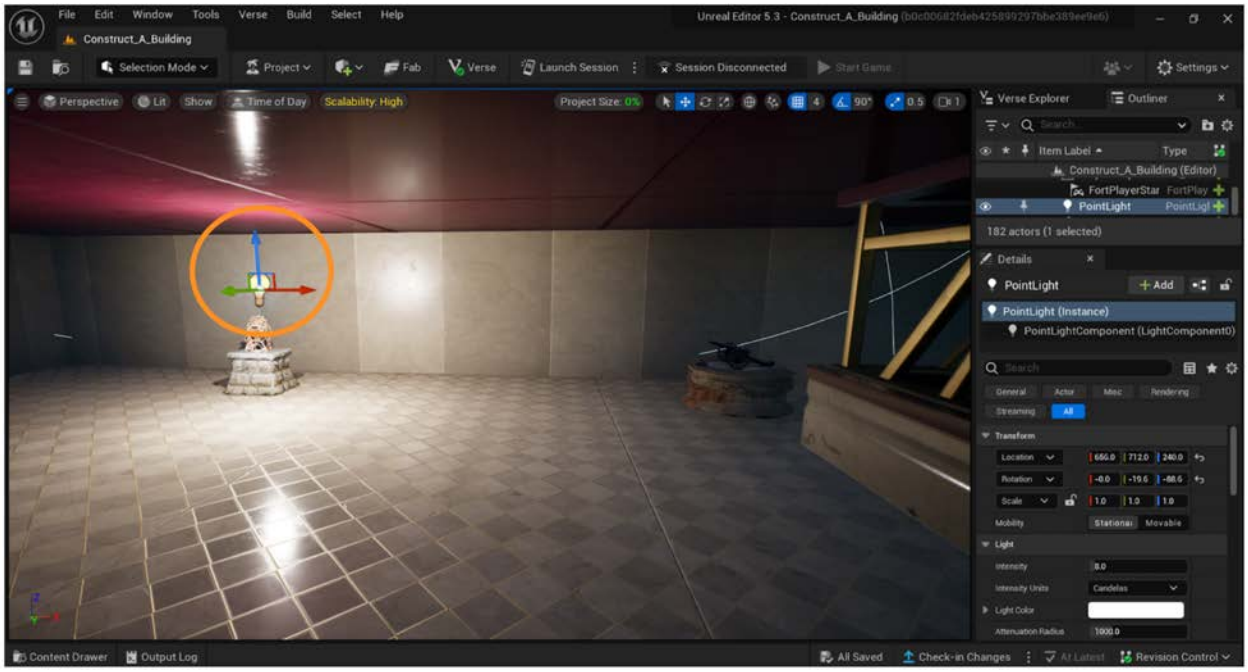

File Edit Window Tools Verse Build Select Help
Construct_A_Building
Selection Mode
Launch Session
Session Disconnected
Start Game
Settings
Perspective
Lit
Show
Time of Day
Quickly add to the project
Project Size: 0%
Verse Explorer
Outliner
plinth
Item Label
Type
Showing 2 of 181 actors
Details
Art Deco Bank Floor15
Add
Art Deco Bank Floor15 (Instance)
Transform
Location
Rotation
Scale
Instance
Content Drawer
Output Log
All Saved
Check-in Changes
Revision Control


Fab
Verse
Launch Ses
PLACE ACTORS
Basic
Lights
Cinematic
Shapes
Visual Effects
Volumes
Place Actors Panel
Project Size: 1%
Directional Light
Point Light
Spot Light
Rect Light
Sky Light

Time of Day
Scalability: Low
PREVIEW
Time
0.0

ADD POINT LIGHTS TO YOUR DISPLAYS

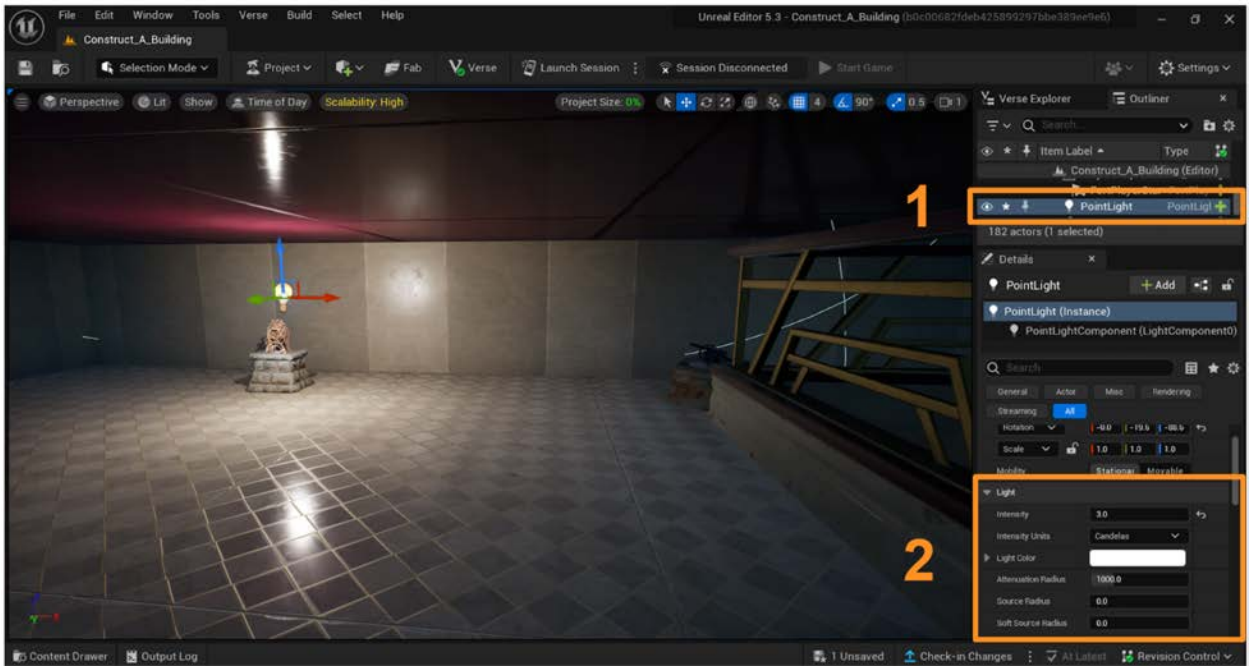
Point Lights are emitted from a single point and are best used to illuminate small areas. You can add Point Lights to your displays to illuminate them. To add a Point Light into your island, navigate to the Quick Add button, find the Point Light in the dropdown, and click it, as you did for Directional Light. The Point Light will appear as a small light bulb. You can move the Point Light with the Translate gizmo.



When you add a Point Light to your island, you will see that it illuminates a relatively small area. If you are adding multiple types of lights to the same island, you may want to disable any previously-added Directional Lights, since their intensity may overshadow the Point Lights. You can do this easily by selecting the light source in the Outliner and clicking the small “eye” symbol to the left of its name. This toggles the light between hidden and visible.

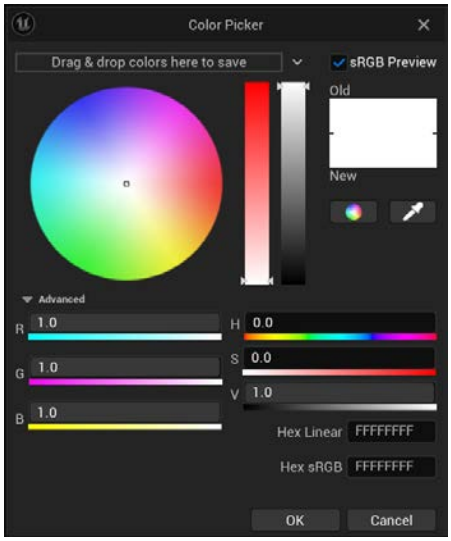
ADJUST THE PROPERTIES OF POINT LIGHTS

There are numerous properties of Point Lights that can be adjusted in the Details Panel. A few of the more important ones are Intensity, Color, and Attenuation Radius. Intensity sets how bright the light appears. Color sets the light’s color. Attenuation Radius determines the bounds of the light’s influence, or how close an object needs to be to be affected by the light. Make sure the Point Light is selected in the Outliner (1) to access these functions. All of these properties can be adjusted in the Details Panel (2) below the Outliner.



To adjust the Point Light's intensity, you can adjust the "Intensity" number in the Details Panel to a higher number to make the light more intense, and a lower number to make it less intense.

To change the color of the light, click on the white bar next to "Light Color." This will bring up a Color Picker, which allows you to select your desired color from a color wheel.



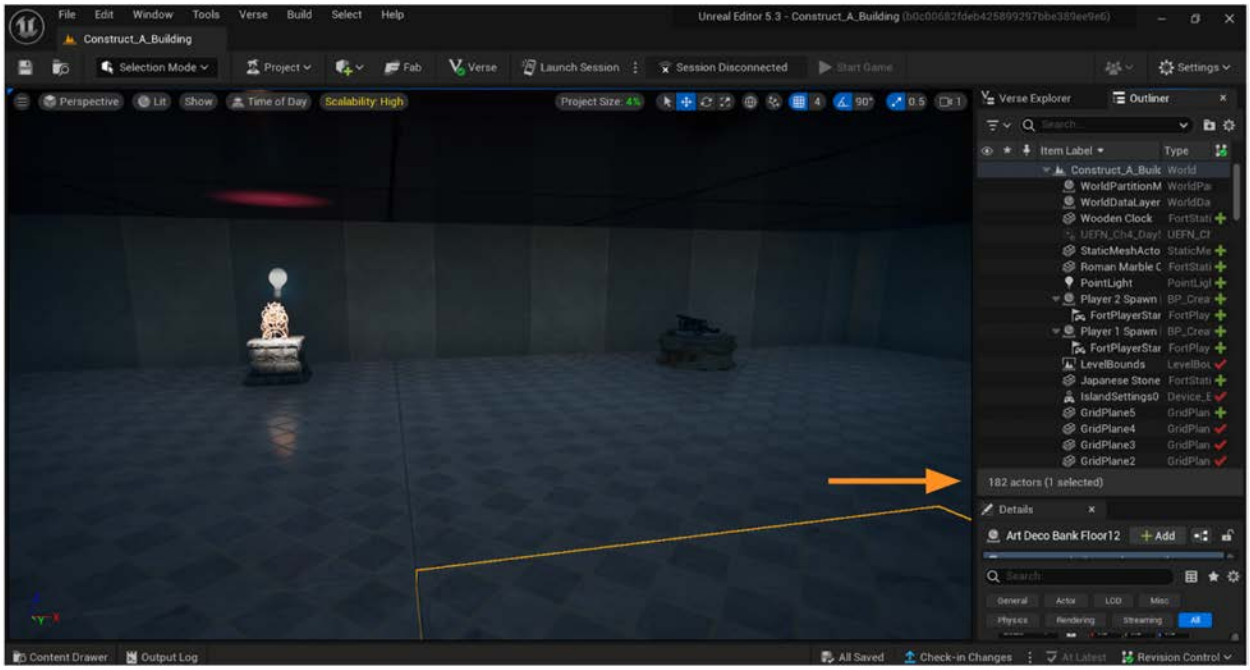
To adjust the Attenuation Radius, change the number next to "Attenuation Radius" in the Details Panel. A larger number will expand the light's "sphere of influence," and a smaller number will shrink it.

Experiment with these features until you achieve the desired effect.

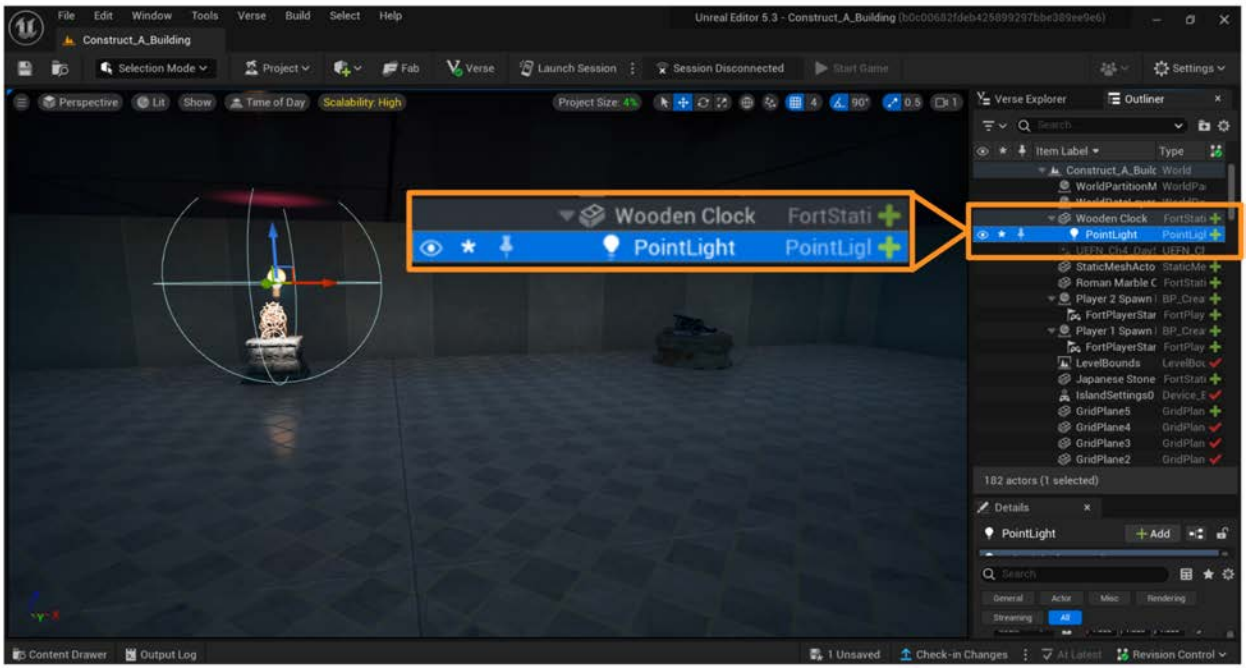
ATTACH THE POINT LIGHTS TO YOUR MODELS

By attaching the Point Lights to your models, the Point Light will move when you move the associated model. This makes it easier to keep your related assets together and helps you avoid the need to move each component individually. Attaching assets has many potentially useful applications within UEFN.

To attach a Point Light to a model, locate both the Point Light and the model in the Outliner. All assets on your island are listed in the Outliner, but it may be difficult to see them all together. To make it easier, locate the area in the Outliner where the number of actors (assets) is listed. Use the mouse to drag down the border so that more assets are visible.



Click on the Point Light in the Outliner, and then drag it on top of the name of your model in the list. You should see the Point Light listed below your model in a hierarchical fashion.



The Point Light should now be attached to the model, such that if you move the model, the Point Light will follow along. Note that the reverse is not true - if you move the Point Light, the model will not follow. Test this by selecting your model and moving it with the Translate gizmo - the Point Light should move with it.

Lesson Closure

Demonstration of Learning

You built displays for 3D models with connected light features because you learned about importing 3D assets from the Fab Marketplace and your own asset library; techniques for placing assets precisely; and adding, configuring, and attaching lights.

Exploration Opportunities

The creative possibilities using the tools and processes outlined in this Guide are nearly limitless. You can build displays to showcase nearly anything - your artwork, objects that are meaningful to you, artifacts in nature, and many more. You can also connect audio files and Pop-Up Dialog Devices to displays, such that they will activate a pop-up billboard when a player approaches the display, or add animations to your models. Explore the features in UEFN to learn more about these and other functions that can help you create a dynamic 3D experience.