

# Your Creative Studio

Preview Panel and Scene Hierarchy Panel

## Learning Objectives

1. Describe the different sections of the Lens Studio Dashboard
2. Identify two ways to preview your lens in the Lens Studio Dashboard
3. Understand how the order of objects in the Scene Hierarchy impacts how objects will be seen in your AR experience.

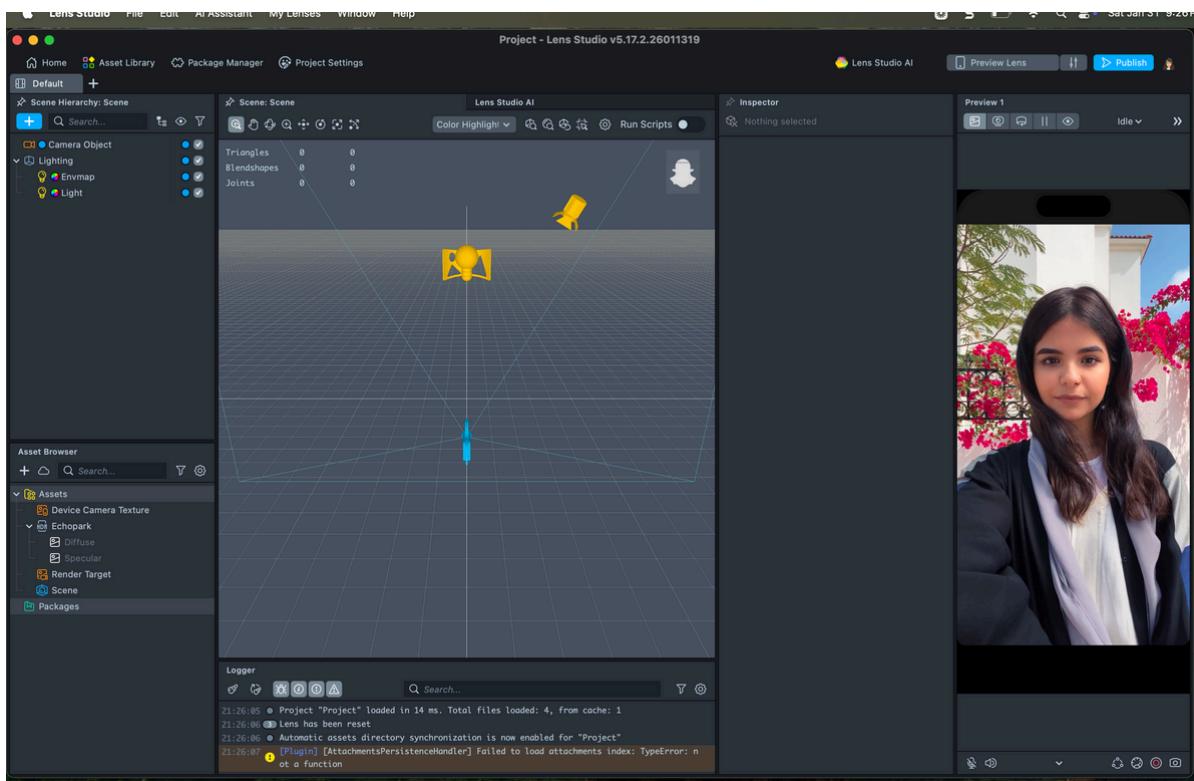
## Welcome to Your Creative Studio!

Now that you've opened your first project, you are looking at the Lens Studio Dashboard. The Lens Studio Dashboard is the centralized, cloud-based management portal where creators manage their published projects and track their digital impact. When you first open it, you'll see it is organized into five main sections.

## The 6 Main Sections

Before we start clicking, let's identify the parts of your screen:

- *Objects Panel (Top Left)*: This is your Scene Hierarchy. It's a list of everything currently "living" in your AR experience.
- *Asset Browser (Bottom Left)*: This is your Storage Closet. It holds all the images, sounds, and 3D files you might want to use.
- *Logger (Bottom Center)*: This is your Communication Hub. It is a text window that tells you if your Lens is working correctly or if there is an error in your logic.
- *Scene Panel (Center)*: This is your 3D Stage. This is where you move objects around in 3D space to see how they look.
- *Inspector (Right)*: This is your Settings Menu. It's where you'll change colors, sizes, and "superpowers" for your objects.
- *Preview Panel (Far Right)*: This is your Magic Mirror. It shows you exactly what your Lens will look like on a real phone!



## The Preview Panel: Your Magic Mirror

The Preview Panel shows you exactly what your Lens will look like on a smartphone. It's like having a real-time "Magic Mirror" inside your computer.

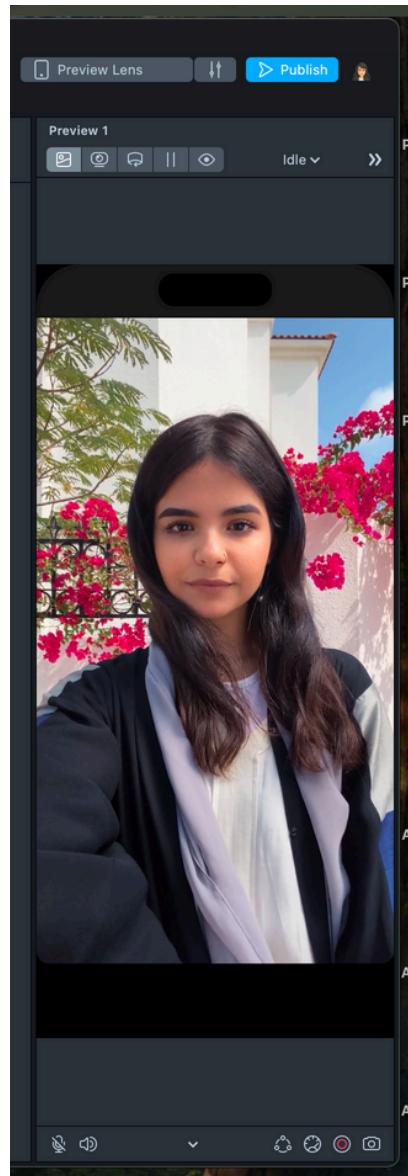
### Testing Your Lens

Since AR is meant to be used by people in the real world, you need to test how your Lens reacts to different faces and movements.

- *The Live Person:* By default, Lens Studio provides a video of a person (like the girl in your screenshot) so you can see how a face mask or hat might look.
- *The "Idle" Menu:* See that little button that says Idle above the video? You can click that to change what the person is doing—like smiling, raising eyebrows, or tilting their head.
- *Device Toggle:* You can switch between different phone shapes (like an iPhone or an Android) to make sure your art doesn't get cut off on different screens.

### Pro-Tip: Use Your Own Face!

If your computer has a webcam, you can click the Camera Icon at the top of the Preview Panel. This switches the "Magic Mirror" to you! Now you can see your AR creation on your own face in real-time.



Before a car company builds thousands of cars, they build one Prototype and put it on a Test Track. They want to see how it handles a curve or how the headlights look in the dark before it ever hits a real road.

### The Preview Panel is the "Test Track" for your Lens.

- *Real-Time Testing:* You don't have to wait until your Lens is finished to see if it works. Every time you change a color or move an object the Preview Panel updates instantly.
- *The "User" Simulation:* You can switch between different "actors" in the panel (like someone smiling, walking, or just a static room) to see how your art reacts to different people and environments.
- *Catching "Crashes":* It's the place where you find mistakes—like a sticker being too big or a light being too bright—before your friends ever see it on their phones.

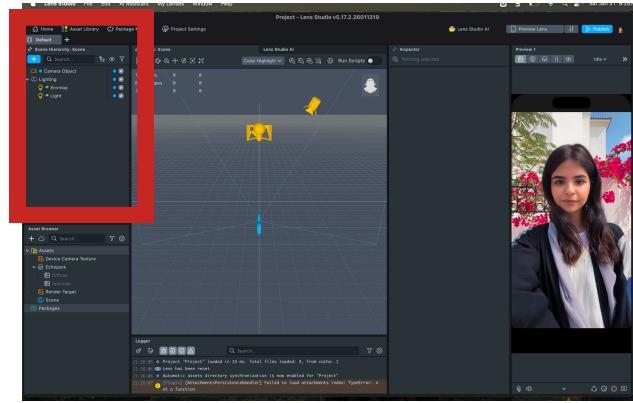
## The Objects Panel: Your Scene Hierarchy

Think of the Objects Panel as the Table of Contents for your Lens. Every single thing in your AR experience—from a 3D hat to a sound effect—must be listed here.

### The Family Tree

The Objects Panel uses a Hierarchy.

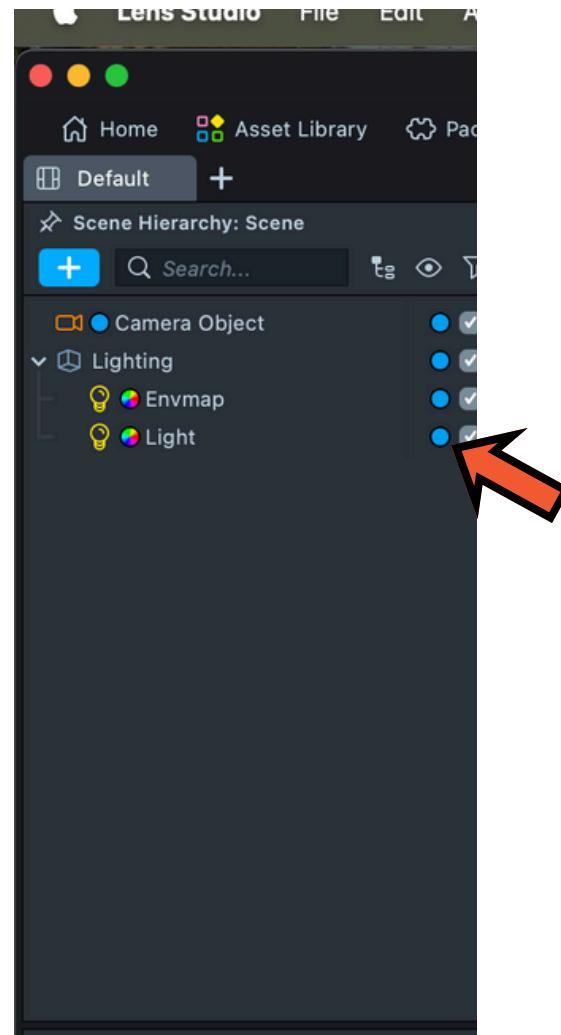
- **Parent Objects:** If you move a Parent object, everything inside it (the Children) moves too!
- **Child Objects:** These are tucked underneath a Parent object. They follow their Parent wherever they go, but they can still have their own tiny movements.



### Visibility & Order

The Objects Panel also controls what the user can see

- *The Checkbox:* Next to each object is a small checkbox. Uncheck it, and your object "disappears" from the Lens. This is great for hiding things until you're ready for them!
- *Layering:* The order of objects here can determine which things appear "in front" of others.



# Unplugged Activity: Layering and Hierarchy

## The Setup

Small scraps of paper (index cards work great).

Scissors and Markers.

## The Exercise

In Lens Studio, the Objects Panel is like a stack of papers. The items at the top of the list are the ones closest to your face!

### Create Your Assets:

1. Cut out three different shapes from your paper:
  - The Background: A large square (like a building).
  - The Hero: A person or a character.
  - The Object: A shape with the word “POW” or “ZAP” on it.
2. The "Top-Down" Rule:
  - a. Lay the Background on your desk first.
  - b. Now, place the Hero on top of it.
  - c. Finally, place the Object on top of the Hero.

### The Hierarchy Challenge:

- Move to Front: Pick up the Background and put it on the very top. What happened? (The character and the Object disappeared!)
- Send to Back: Move the Background back to the bottom of the pile. Now what do you see?

## The Lesson

In your code, the order of the list matters. If your Object is tucked under your Background in the Objects Panel, it will be invisible in your Lens. To fix it, you have to "drag it to the top of the sandwich."

# Knowledge Check

## Studio Fundamentals

**Instructions: Choose the best answer or write your response in the space provided.**

**1. The Digital "Brain"**

You are working on your project and notice a small window at the bottom of the screen with scrolling text. One of the lines is red and says "Error." Which section are you looking at?

- A. The Asset Browser
- B. The Logger
- C. The Scene Panel
- D. The Preview Panel

**2. Previewing Your Work**

You want to see how your AR experience looks on a person who is walking through a park, but you are currently sitting in your classroom. How can you test this without leaving your desk?

Answer: \_\_\_\_\_

(Hint: Think about the different "actors" or "environments" available in the Preview Panel.)

**3. The Hidden Foundation**

When you look at the Objects Panel, you see a list of items that were already there when you opened the template. Why does Lens Studio include a Camera and Lights by default?

- A. So you can take photos of your friends.
- B. Because digital objects need a "Target" to be seen and "Light" to have shape.
- C. To make the file size larger and more complex.
- D. To prevent you from adding your own images.

**4. Understanding the Hierarchy**

If you have two objects in your Objects Panel list, the one at the top of the list will appear:

- A. Behind the object at the bottom.
- B. On top of (in front of) the object at the bottom.
- C. Only when you tap the screen.
- D. In the Logger as an error.

# **Your Creative Studio**

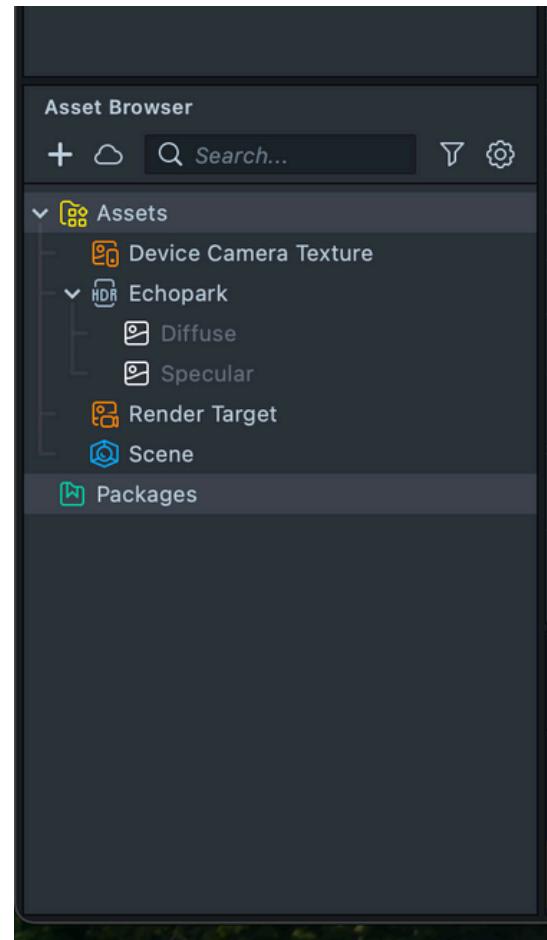
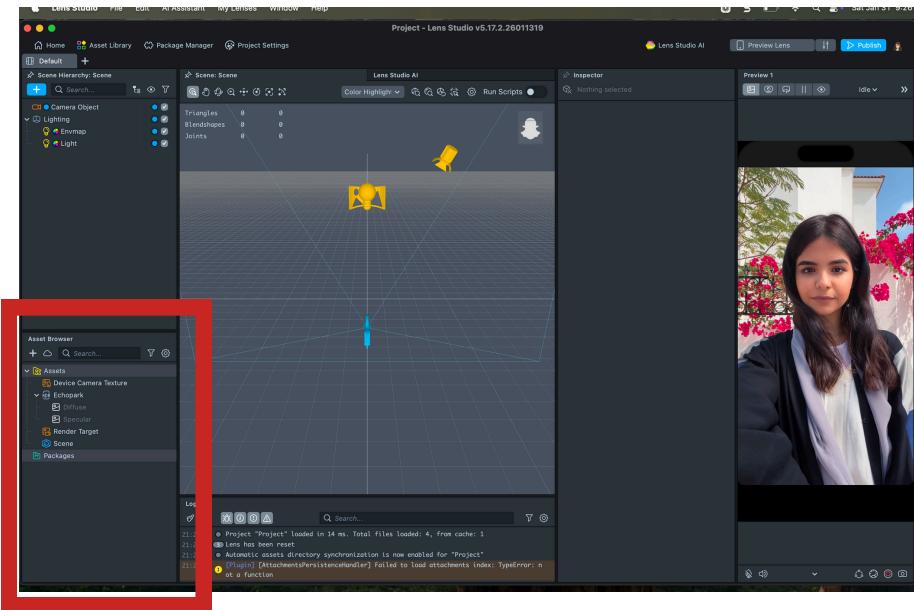
Asset Panel, Inspector Panel, Scene Panel

## **Learning Objectives**

1. Identify 4 examples of assets in the asset panel.
2. Describe what the Inspector panel in Lens Studio.
3. Understand what the Scene Panel is.
4. Describe the value of the logger in development.

## The Asset Browser

Before an object or image can appear in your AR world, it has to be imported here first. This panel holds all your 3D models, textures, sounds, and scripts.



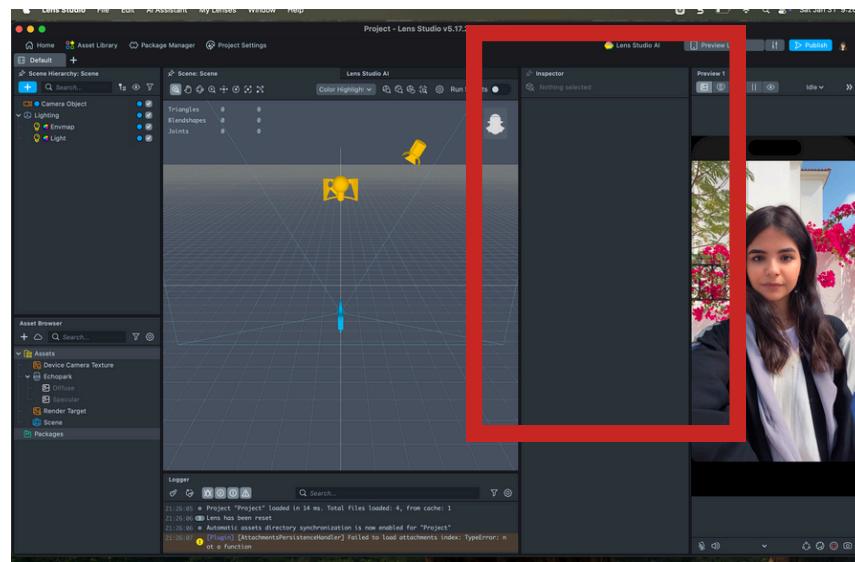
## Examples of Assets

- **Textures:** The 2D images or "skins" that wrap around your 3D objects.
- **Materials:** Tells an object how to look (Is it shiny? Is it bumpy? Is it see-through?).
- **Prefabs:** Pre-built items that are ready to go.
- **Audio:** The sound effects or music for your Lens.

## The Inspector: The "Details" Menu

If you look at the Inspector Panel right now, it's probably blank. Don't worry—nothing is broken!

The Inspector is a contextual panel. That means it only shows information when you have something selected.



## What's Inside?

Every object has different settings, but almost all of them have these three main sections:

- **Transform:** This is the math section. You can type in exact numbers to change an object's Position (where it is), Rotation (how it's tilted), and Scale (how big it is).
- **Components:** These are like "Apps" for your object. A Light has a Light component; a 3D Model has a Render Mesh Visual component. This is what tells the object how to behave.
- **The Enable Checkbox:** At the very top, next to the object's name, is a small box. Unchecking this is like flipping the power switch to turn

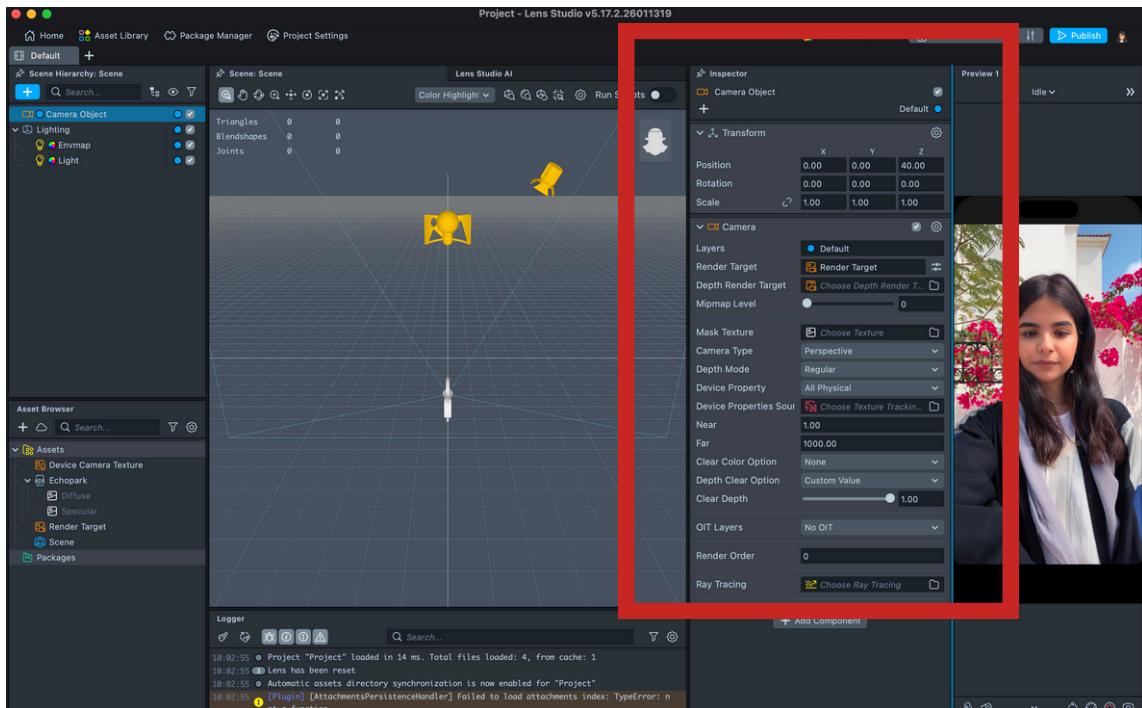


## Explore the Inspector

Go to your Objects Panel and click on the Camera or Light.

Suddenly, the Inspector will fill up with buttons, sliders, and numbers! This is where you find the "hidden knobs and dials" for whatever you have selected.

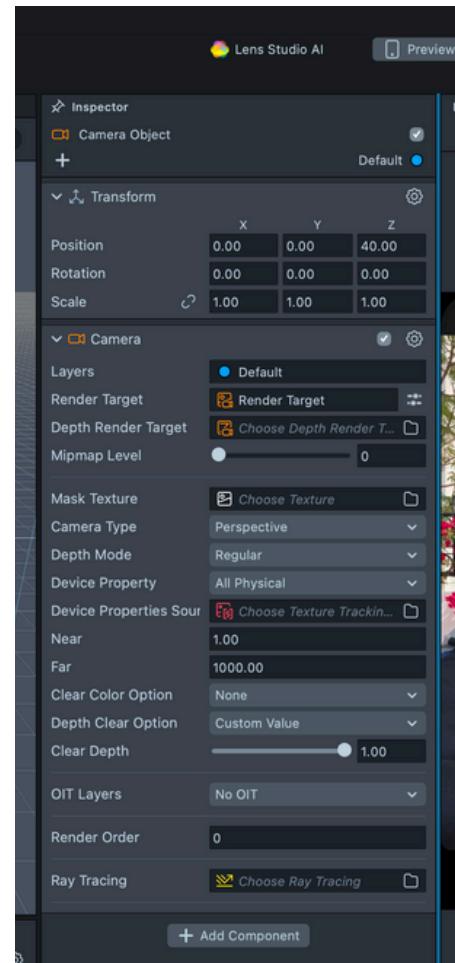
Select the Camera object and see what options are available in the Inspector panel



## What's Inside?

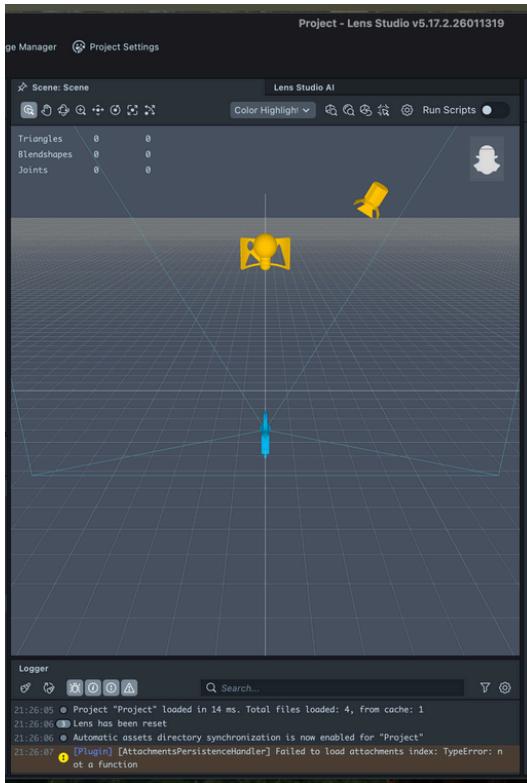
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- Transform:** This is the math section. You can type in exact numbers to change an object's Position (where it is), Rotation (how it's tilted), and Scale (how big it is).
- Components:** These are like "Apps" for your object. A Light has a Light component; a 3D Model has a Render Mesh Visual component. This is what tells the object how to behave.
- The Enable Checkbox:** At the very top, next to the object's name, is a small box. Unchecking this is like "flipping the power switch" to turn



## The Scene Panel: Your 3D Workspace

The Scene Panel is the large area in the middle of your screen with the gray grid lines. Think of this as your digital workshop. Even though your final Lens will be seen on a flat phone screen, you build it inside this 3D space.



### 💡 Understanding the Grid

The floor of your workshop is covered in a Grid.

- **The Origin:** The spot where the two darkest lines cross in the middle is called 0, 0, 0. In the math world, we call this the Origin.
- **3D Space:** In a normal drawing, you have Width (X-axis) and Height (Y-axis). In AR, we add Depth (Z-axis). This allows you to place objects far away or right up close to the user's face.

### What are those yellow icons?

We see bright yellow icons floating in the grid. These represent things that are "invisible" in the final Lens but important for the creator:

- **The Camera Icon:** This shows you exactly where the "user" is standing.
- **The Light Icon:** This shows you where your "digital sun" is located. You can move this icon to change where the shadows fall!

## Key Concepts in AR Depth

### 1. Scale and Distance (The "Z-Axis" Walk)

As you move an object further away from the camera along the Z-Axis (forward/backward), it appears to get smaller.

- STEAM Connection: The object's actual digital size hasn't changed, but Lens Studio uses Perspective to trick the human eye into thinking it is far away.

### 2. Occlusion

Occlusion is the ability of one object to hide another.

- Layering Logic: Depth sensing allows Lens Studio to understand which object is "closer" to the camera.

### 3. The Starting Star (User-Centric Origin)

In Lens Studio, the moment you open your Lens, your phone's initial position is treated as the Origin Point (0,0,0).

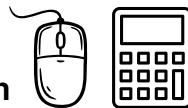
### 4. Immersion (World-Scale Stories)

#### Depth

- Allows you to choose the scale of your story.

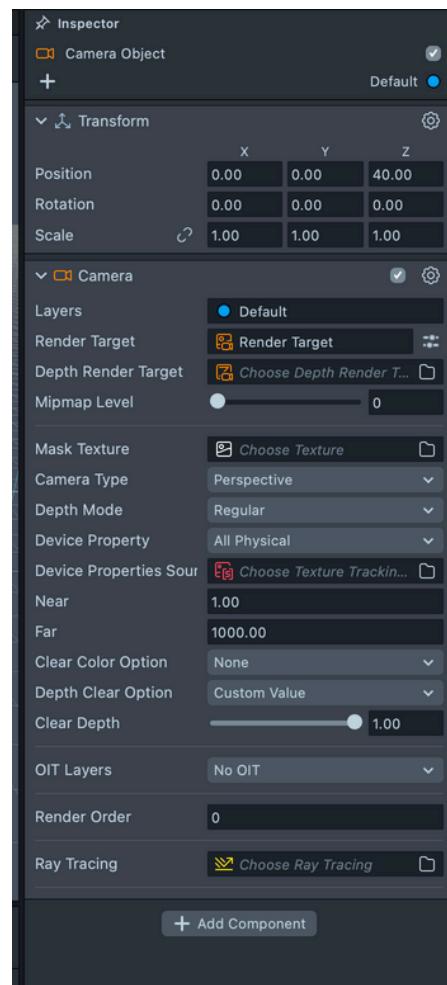
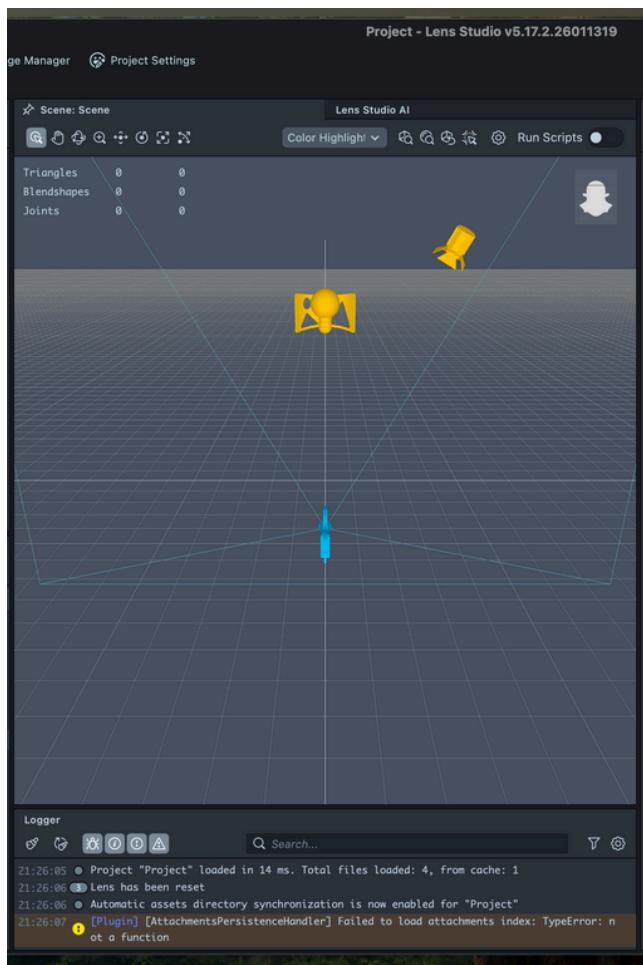


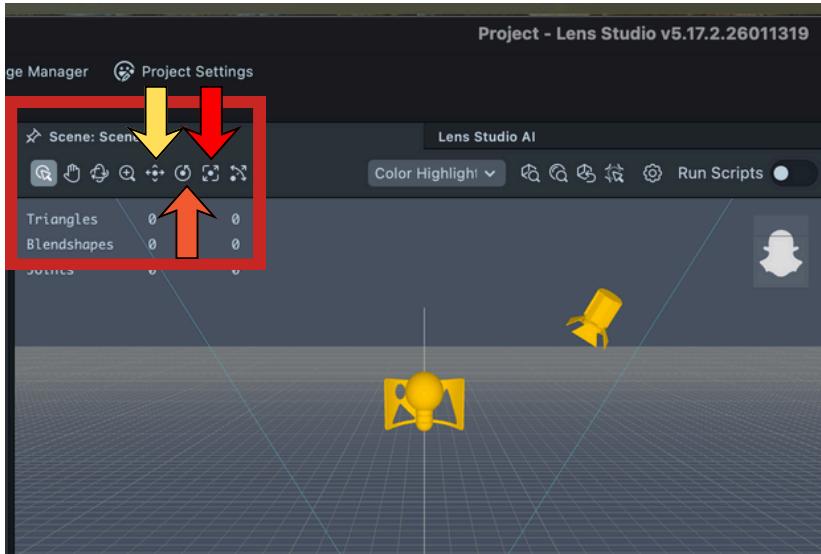
## Pro-Tip: Mouse vs. Math



You have two ways to be a creator! You can use your mouse in the Scene Grid to "hand-sculpt" your world, or you can use math in the Inspector to be perfectly precise.

- **The Scene Grid is for SPEED:** Click and drag the colorful arrows (called **Gizmos**) to move things until they look right to your eye.
- **The Inspector is for PRECISION:** If you want something perfectly centered or exactly double the size, type the numbers in yourself!





### Pro-Tip: Keyboard Shortcuts

Want to work like a pro? Keep your left hand on the W, E, and R keys. You can switch tools instantly without having to move your mouse to the top of the screen every time!

## Your 3D Tool Belt

At the very top of the Scene Panel, you'll find a row of icons. These are your primary tools for changing how objects look and act on your stage.

### The Big Three

Most of the time, you will switch between these three tools:

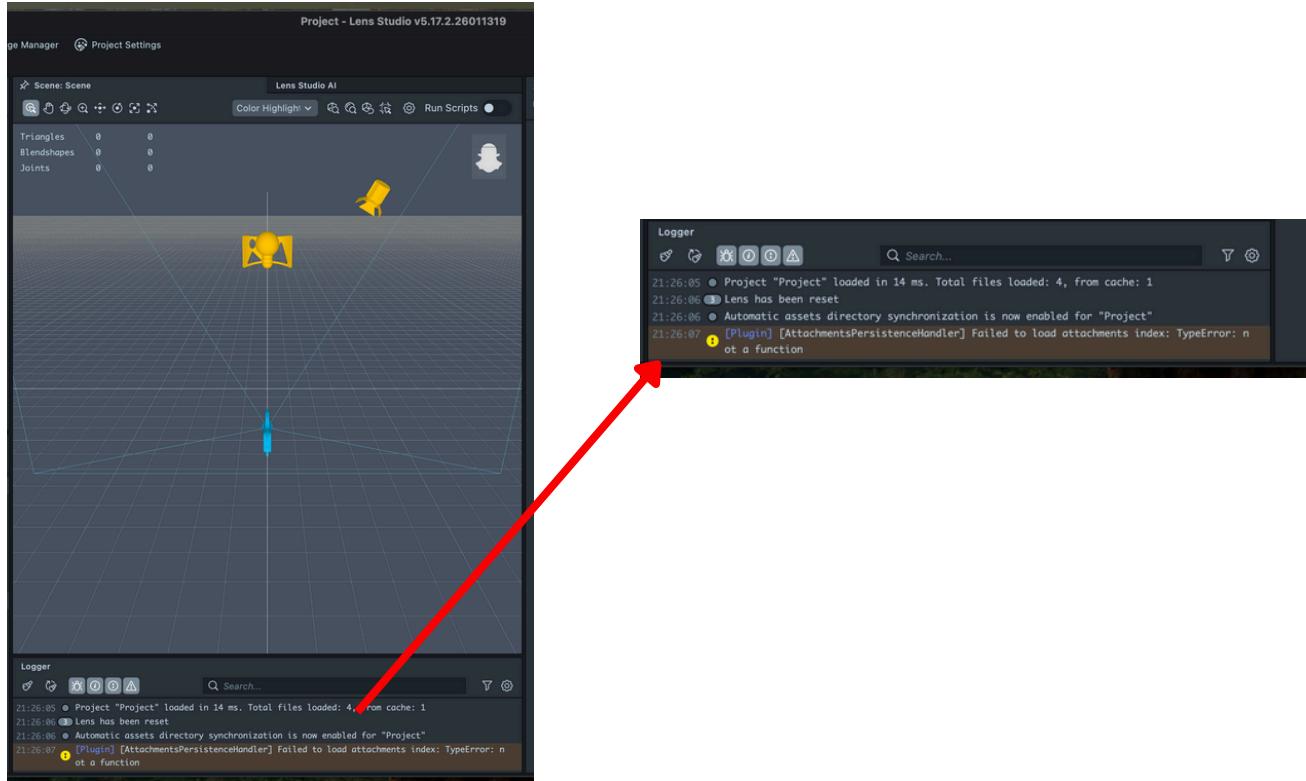
- ➡ Move (Shortcut: W): Shows the arrows so you can slide objects around.
- ➡ Rotate (Shortcut: E): Shows the circles so you can tilt or spin objects.
- ➡ Scale (Shortcut: R): Shows the squares so you can make objects bigger or smaller.



Using the Toolbar is like being a Digital Giant. You can reach into your world to pick things up (Move), turn them around (Rotate), or stretch them out (Scale) until they fit perfectly.

## The Logger Panel: Your 3D Workspace

The Scene Panel is the large area in the middle of your screen with the gray grid lines. Think of this as your digital workshop. Even though your final Lens will be seen on a flat phone screen, you build it inside this 3D space.



When you are building your Lens, you might run into a moment where your code doesn't work, or an object disappears. Instead of getting frustrated, professional engineers use a secret weapon: Rubber Duck Debugging (RDD).

## How the Logger Helps

In Lens Studio, the Logger acts as your "Duck's Voice." It is the software's way of talking back to you.

- *The Error Report:* If you write a script that has a typo, the Logger won't just stay silent. It will bark a message in Red Text.
- *The Status Update:* Sometimes the Logger just wants to tell you that it successfully completed a task. It uses White or Grey Text for these friendly updates.

# Rubber Duck Debugging

## What is Rubber Duck Debugging?

Popularized by the famous book “The Pragmatic Programmer”, this technique is used by software engineers at companies like Google and Snap. The idea is simple: you explain your code, line by line, to an inanimate object—traditionally a rubber duck.

## How it Works: The Psychology of Talking it Out

The "Magic" of the duck isn't in the toy; it's in your voice.

- *The Perspective Shift:* When you explain what your code should do versus what it actually does, you are forced to look at your project from a different perspective.
- *The Slow Down:* Verbalizing your logic forces your brain to slow down. You stop "skimming" and start scrutinizing every tiny assumption you made.
- *The "Aha!" Moment:* Usually, halfway through explaining a problem to the duck, you will realize exactly where the logical flaw is.

## The "Duck" Can Be Anything!

While the name comes from a rubber toy, Rubber Duck Debugging is about the conversation, not the object. If you don't have a duck, you can use any "Listener" in your room to help you solve the mystery in your Logger.

## Choose Your Debugging Partner

Professional developers have been known to "talk it out" with all sorts of things:

- *The Desktop Guardian:* A favorite action figure, a Lego person, or a plushie.
- *The Green Listener:* A house plant or a succulent on your desk.
- *The Sticky Note Buddy:* If you don't have a toy, draw a "Debugging Buddy" (like a robot or a cat) on a sticky note and keep it next to your monitor. This gives your buddy a "home" right where the action is!
- *The Silent Teammate:* You can even explain your code to a friend or a family member. Just tell them: "I don't need you to fix it; I just need you to listen while I explain it to myself!"



# Set Up for Success

## Recruit Your Partner

Before we dive into the deep end of AR development, we need to ensure your "support system" is in place. In the world of professional engineering, having a reliable listener can be the difference between a project that works and one that stays broken.

### The Mission

Your goal is to choose a Debugging Partner who will listen to you explain your logic when the Logger reports a problem.

#### *Step 1: Identify Your Partner*

Look around your workspace. Who is going to be your dedicated listener for this workbook?

- Is it a desk guardian like Darth Vader?
- A "Sticky Note Buddy" you just drew?
- A house plant?

My Debugging Partner is: \_\_\_\_\_

#### *Step 2: The Perspective Shift*

The next time you see Red Text in the Logger, don't just stare at the screen. Stop, turn your chair, and look your partner in the eye (or the leaf, or the sticky note).

#### *Step 3: The "Aha!" Moment*

Speak out loud to your partner using this template:

"Okay [Partner Name], here is what my code is supposed to do:  
\_\_\_\_\_."

"And here is what the Logger says is actually happening:  
\_\_\_\_\_."



### Why This Sets You Up for Success

- *Engineering (E)*: You are practicing Scrutiny. By talking to your partner, you stop assuming your code is perfect and start looking for the "gap" in your logic.
- *Technology (T)*: You are learning to treat the Logger as a witness in a trial. You provide the evidence to your partner to find the truth.

***By choosing a partner that fits your personality, you are creating a workspace where you feel comfortable making and fixing mistakes.***

# Unplugged Activity: The AR Floor Map

## STEAM Concept: Mapping the "Ground"

### The Setup

- Graph Paper and a Pencil.

### The Exercise

In AR, the computer first has to find the Floor. Your graph paper is that floor. You are the "Director" deciding where your comic stickers will appear in the room.

1. The Starting Mark: Put a star in the center of your paper. This is where YOU are standing with your phone.
2. Side-to-Side (X): From your star, count squares to the Left or Right.
3. Distance (Z): From that spot, count squares Forward (up the page) or Backward (down the page).
4. The Spawn Point: Draw your sticker (a "POW" or "ZAP") in that final square.

### The Programmer's Challenge

Can you map these "coordinates" on your paper?

- Sticker A: 4 squares Right and 3 squares Forward.
- Sticker B: 2 squares Left and 5 squares Backward.

# Plugged Activity

## Lens Studio Scavenger Hunt

Before we start building, let's make sure you can navigate your new creative studio!

**Instructions:** Complete these five tasks and check them off as you go.

### *Task 1: The Identity Check*

Click on the item named Camera in your Objects Panel.

- Look at the Inspector: Does it show "Camera" at the top?
- Check it off: [ ]

### *Task 2: The "Sun" Shifter*

Select the Light (directional light) in your Objects Panel. Look at your Scene Grid.

- The Action: Press the W key on your keyboard to select the Move Tool.
- The Goal: Use the Red Arrow to slide the light to the left. Did the light icon move?
- Check it off: [ ]

### *Task 3: Changing the Test Subject*

Look at your Preview Panel.

- The Action: Find the button that says "Idle" or the person's name. Click it and select a different person or a different animation (like "Raising Eyebrows").
- Check it off: [ ]

### *Task 4: The Ghost Trick*

Select the Camera again. In the Inspector, find the small blue checkbox at the very top.

- The Action: Uncheck it.
- The Result: Your Preview Panel should go totally black! Now, check it again to bring the world back to life.
- Check it off: [ ]

### *Task 5: Asset Organization*

Go to the Asset Browser (bottom left).

- The Action: Click the + button and select General>Folder or search for Folder
- The Goal: Rename it to My\_Cool\_Stuff.
- Check it off: [ ]

# Knowledge Check

## The Developer's Toolkit

**Instructions:** Answer the following questions to verify your understanding of the Lens Studio workspace.

### 1. *The Asset Browser: Identifying Your Ingredients*

The Asset Browser is your "Storage Closet." Circle four items from the list below that would be considered Assets you might find in this panel:

- A .png image
- A physical pencil on your desk
- A sound effect file
- A 3D model of a superhero cape
- The brightness of the sun outside
- A digital script file that tells an object to rotate
- A rubber duck sitting on your monitor

### 2. *The Scene Panel: Mapping the Stage*

Describe it: In your own words, what is the main purpose of the Scene Panel?

Answer:

(Hint:

Think about where you go to move, rotate, or place your objects in 3D space.)

### 3. *The Inspector: The Control Center*

What is the primary job of the Inspector Panel?

- A. To show you a list of every error in your code.
- B. To display a live preview of your Lens on a phone.
- C. To allow you to change the specific properties (like size, color, or position) of a selected object.
- D. To store all the files you downloaded from the internet.

### 4. *The Logger: Your Debugging Evidence*

Why is the Logger considered one of the most valuable tools during the development process?

- A. It lets you draw new stickers with a digital pen.
- B. It provides a text-based "conversation" that tells you if your logic is working or where an error occurred.
- C. It automatically fixes your mistakes so you don't have to.
- D. It changes the lighting in your 3D scene.