

REU Modeling Course - Part 2

Blender

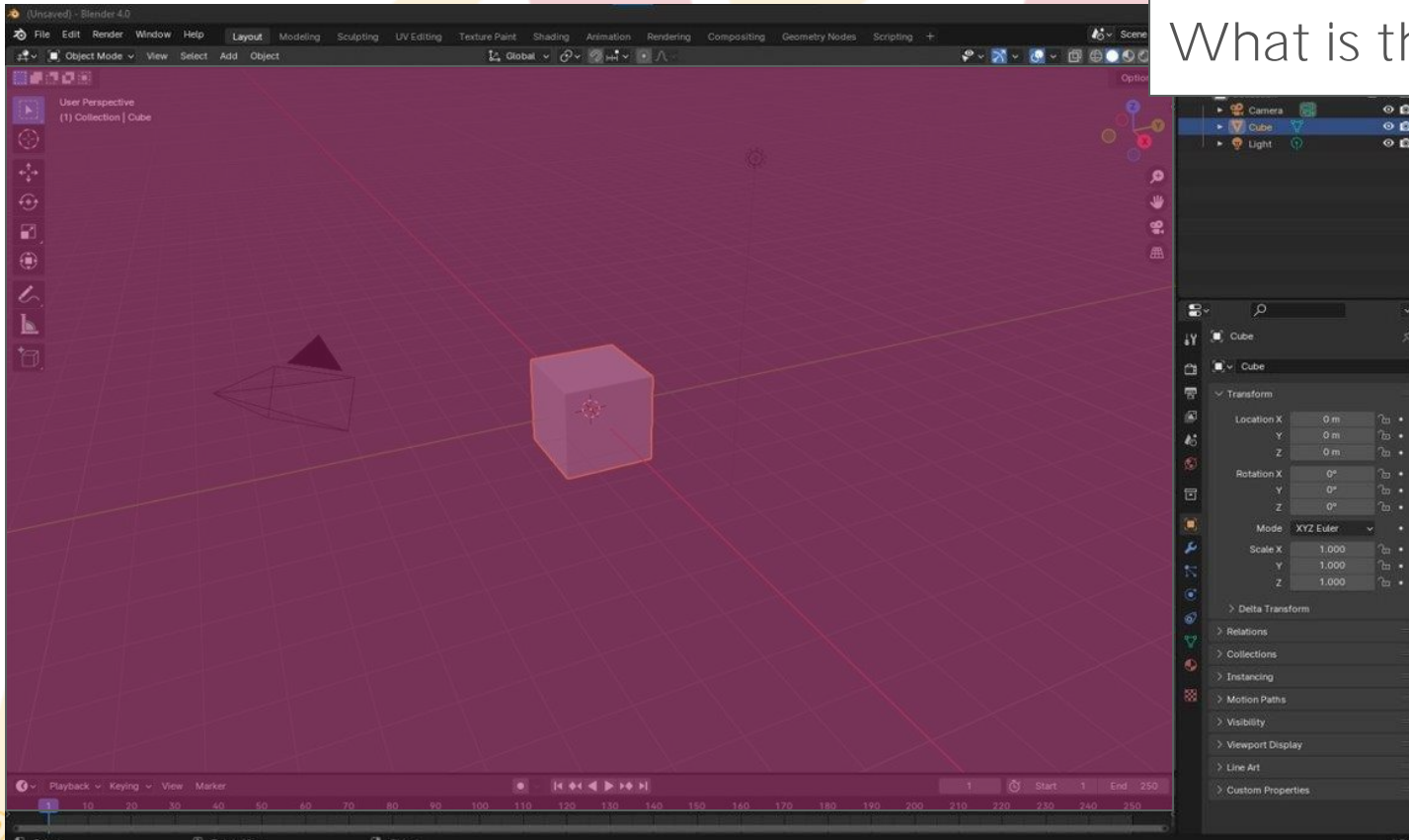
More Modeling

Workshop Workflow

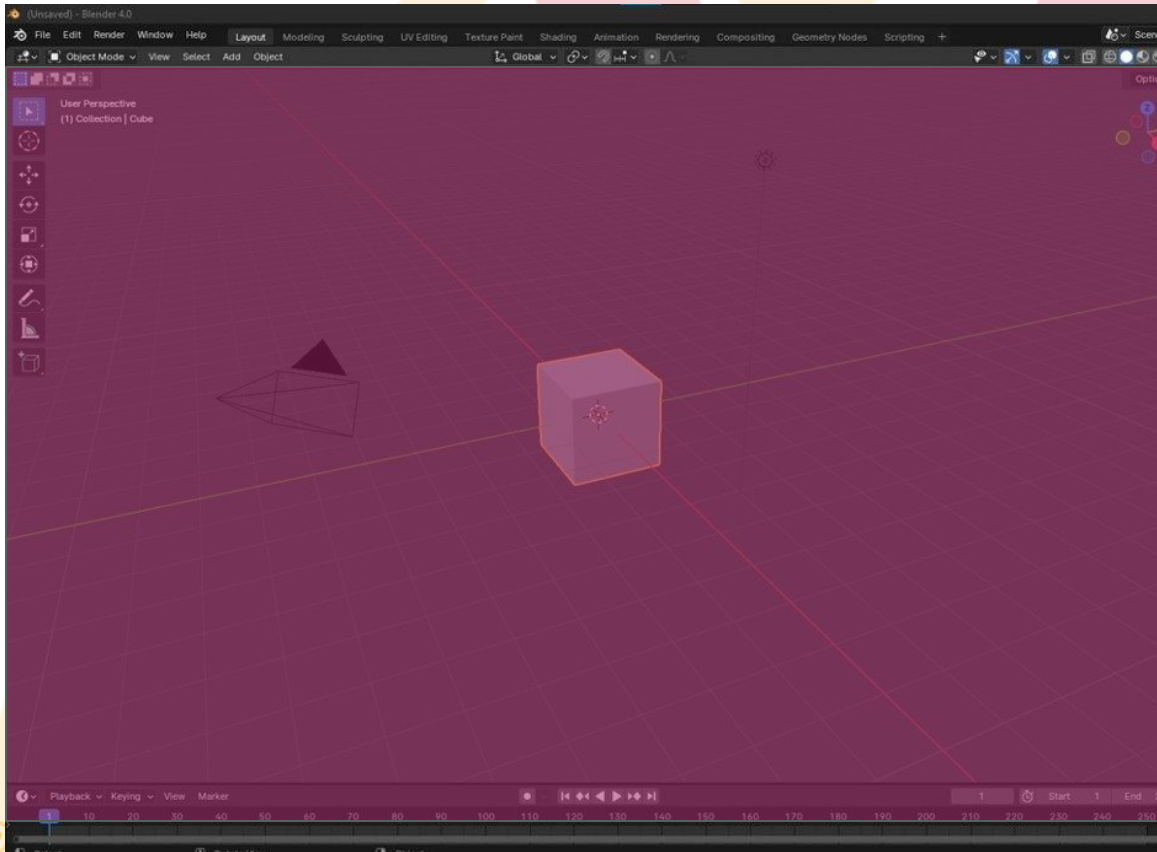
- Review Previous Session
- More Modeling Operations
- Organizing Scenes/Objects in Blender
- **Today's Mini Creation**

Review

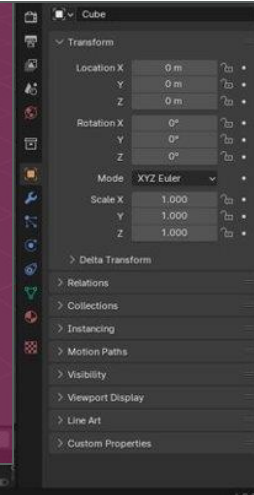
What is this window?



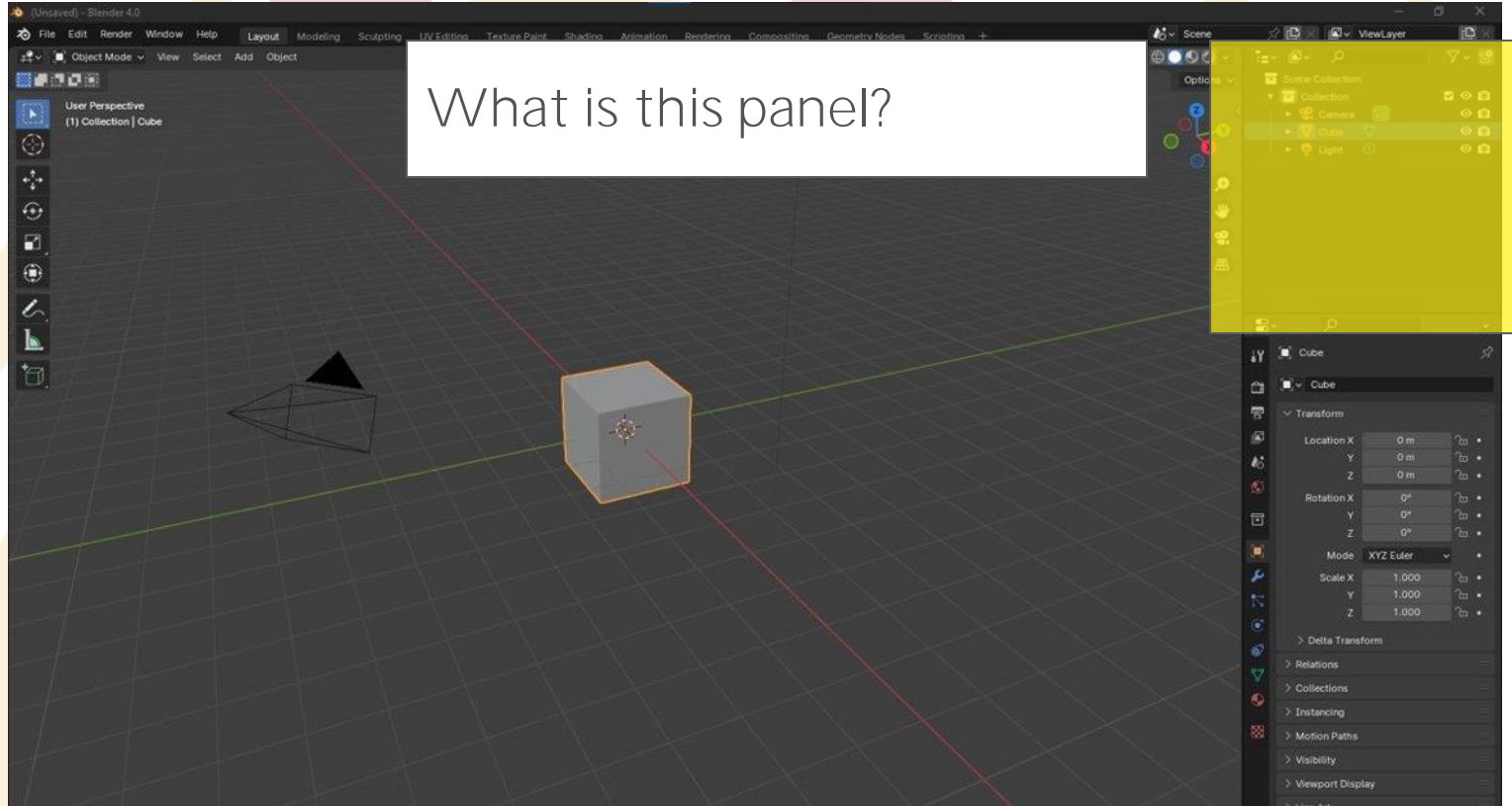
Review



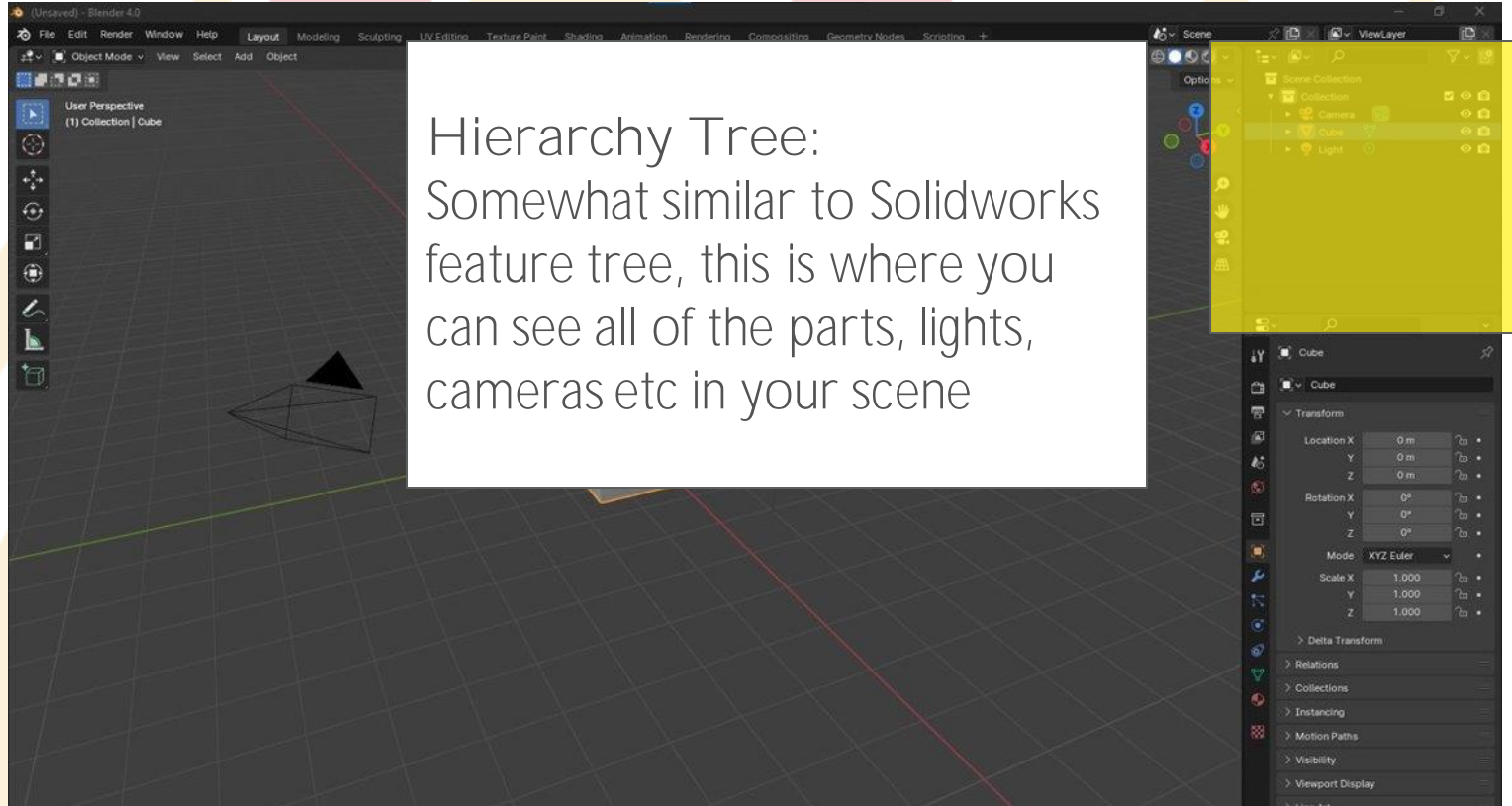
ViewPort:
This is where you can see your scene that you are editing/creating



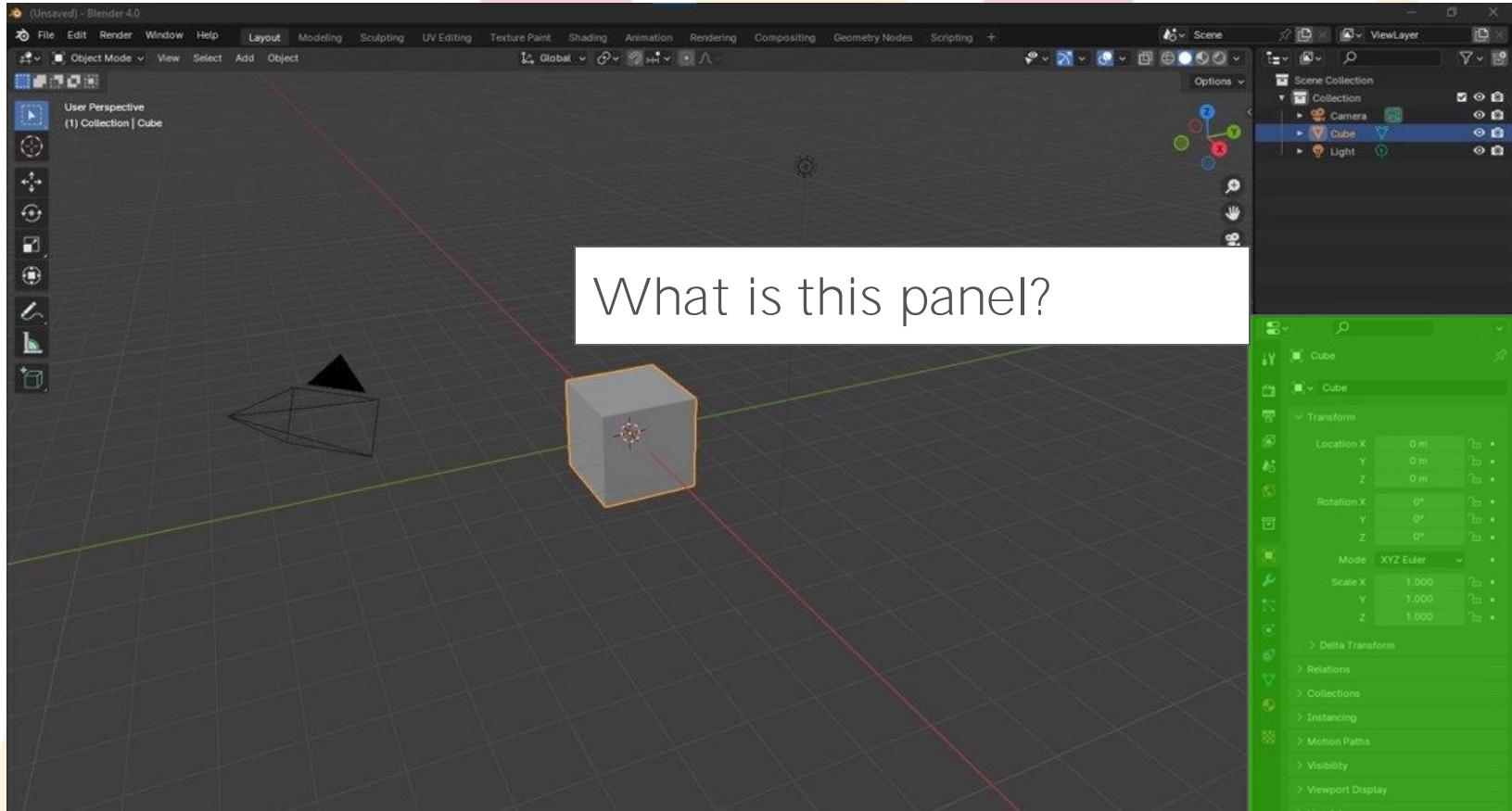
Review



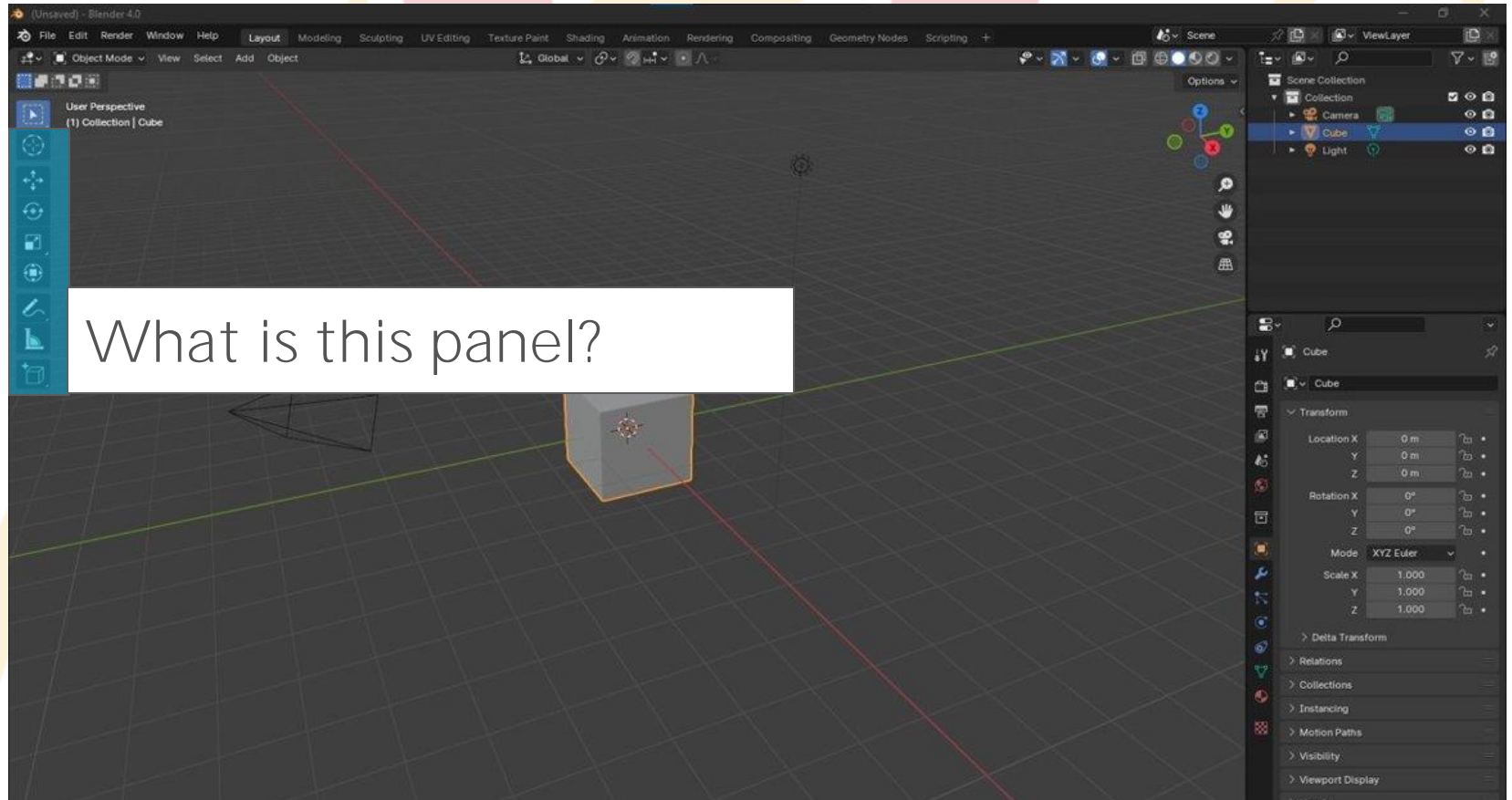
Review



Review

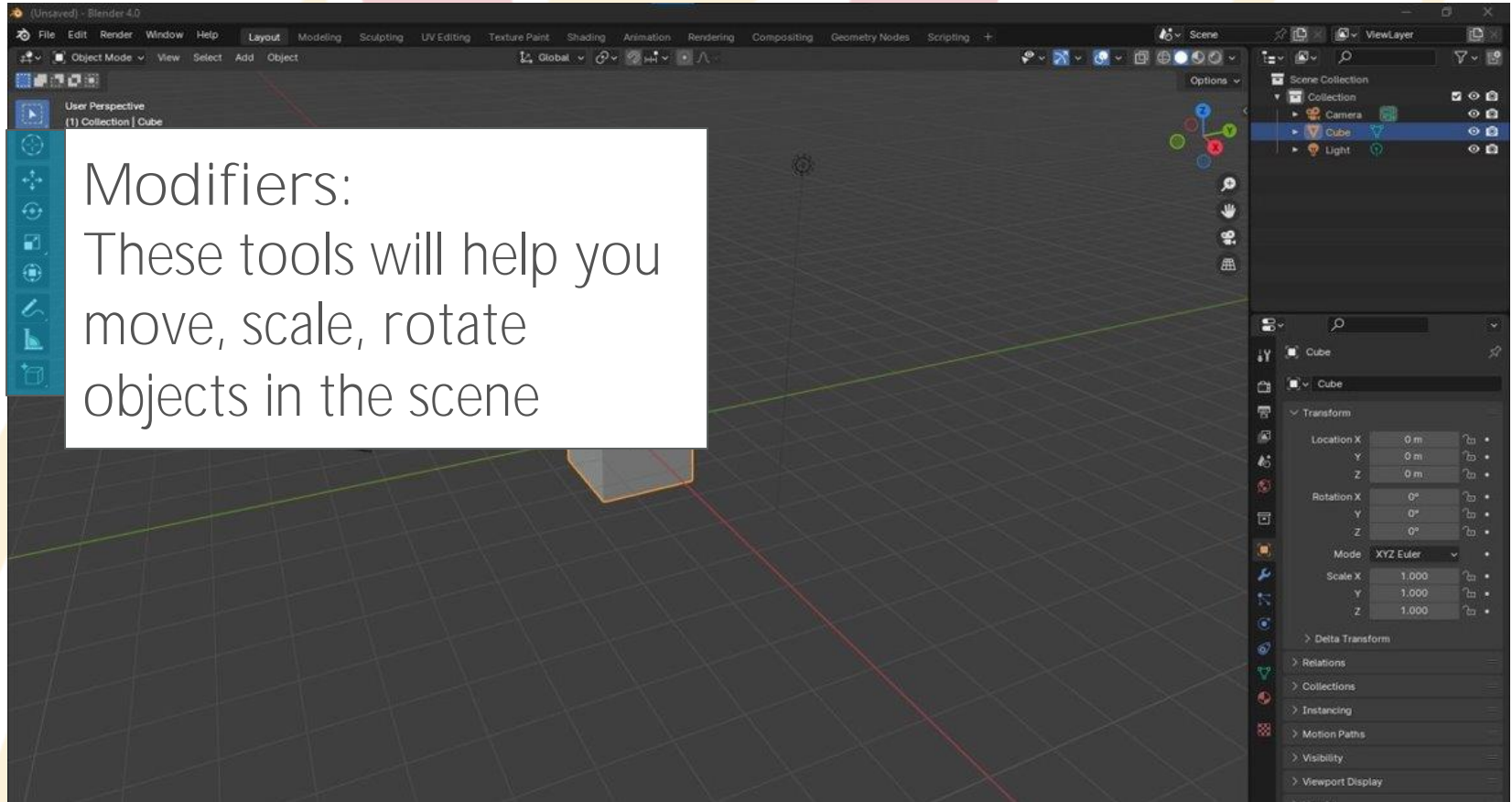


Review

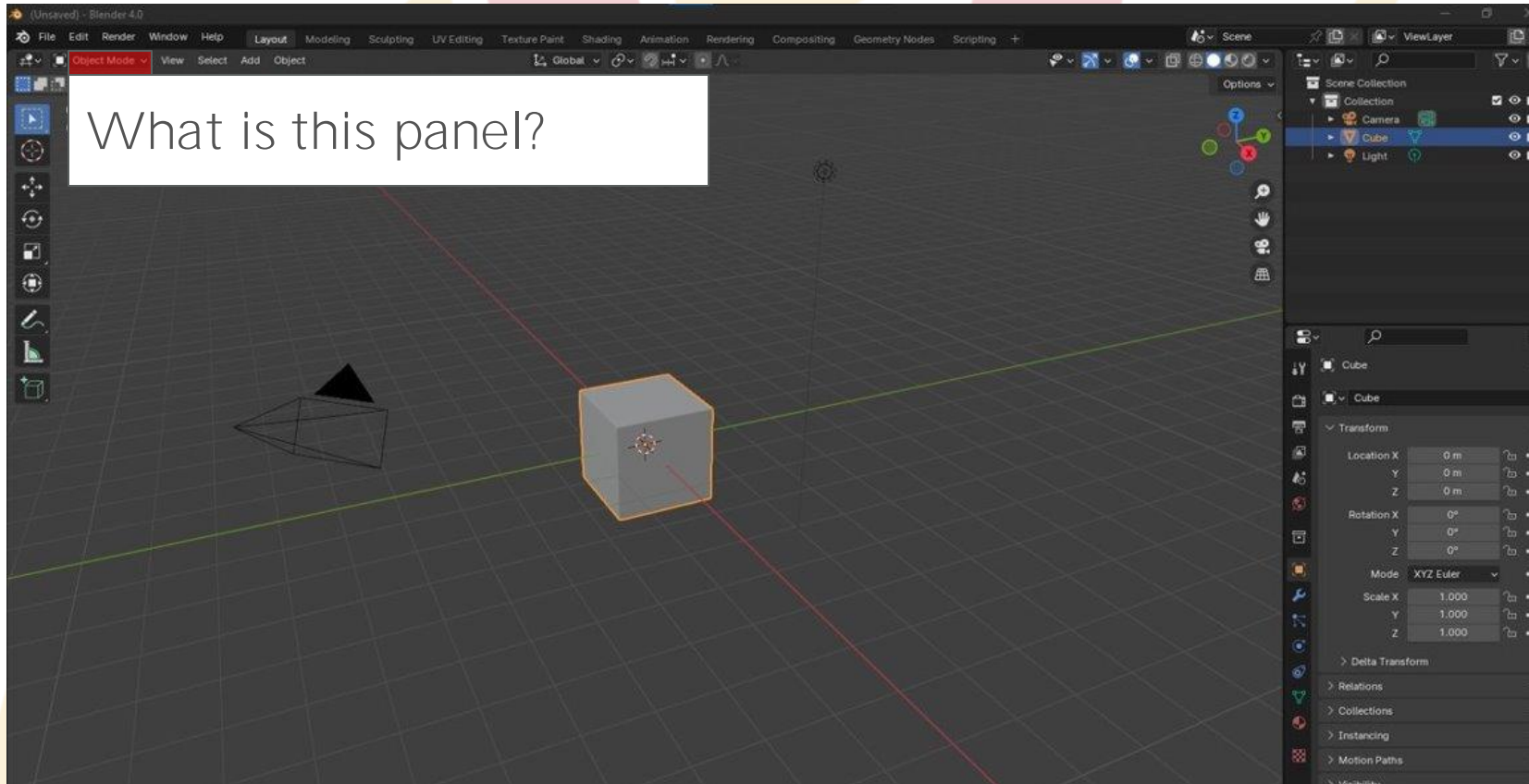


Review

Modifiers:
These tools will help you
move, scale, rotate
objects in the scene

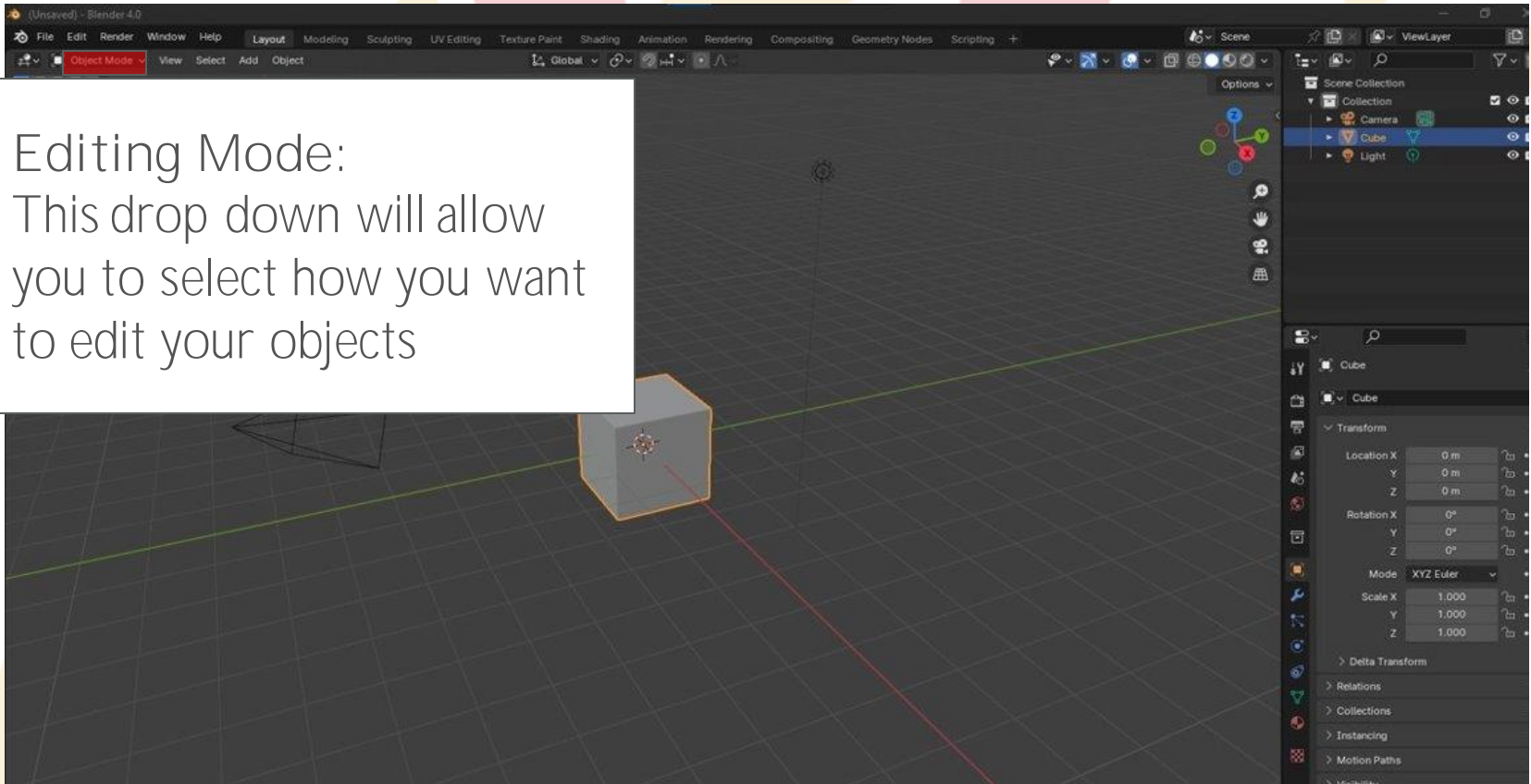


Areas



Review

Editing Mode:
This drop down will allow
you to select how you want
to edit your objects

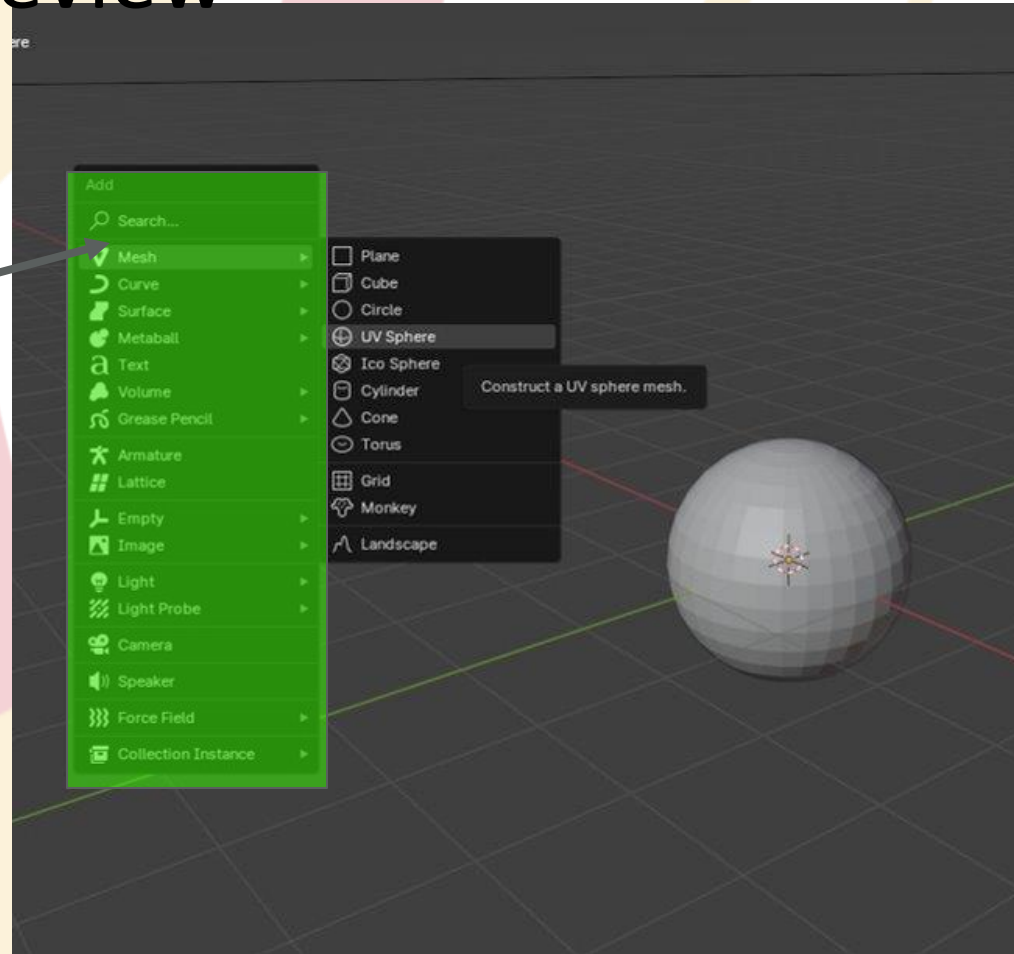


Review

- Shift + A is a crucial hotkey!
- (Open Add Menu) Shift + A
- Add Menu > Mesh > UV Sphere

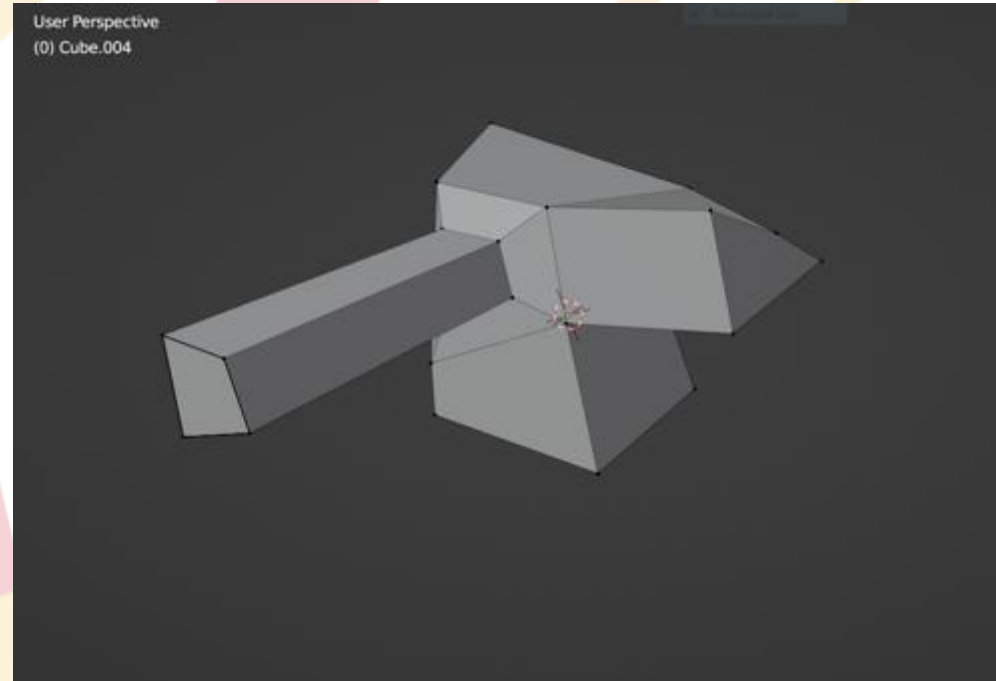
Hotkey Review:

- Move: G
- Scale: S
- Rotate: R
- Switch Editing Mode: Tab



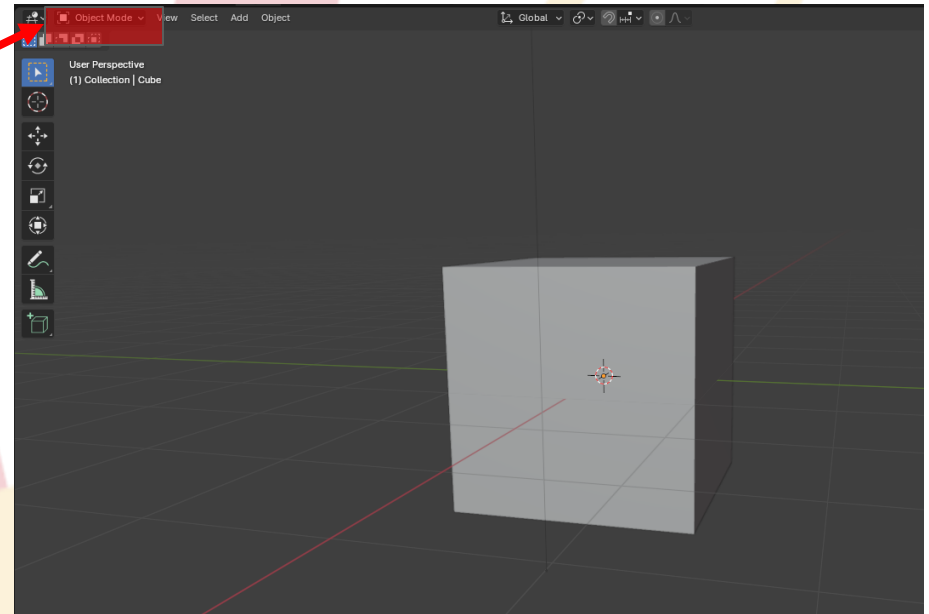
More Vertex Operations

- The following tools were used to make this shape from a simple cube:
 - Extrude
 - Bevel
 - Edge Slide



Vertices: Extrude

- Add a cube to scene
- Enter “Edit Mode”



Vertices: Extrude

The image shows the Blender 4.0.2 interface in Edit Mode. A cube is centered in the 3D viewport. The left sidebar contains the Tools shelf, with two tools highlighted by red arrows: 'Extrude (E)' and 'Bevel (Ctrl+B)'. A white text box at the top left notes that a new menu has appeared on the left. The right sidebar shows the Properties panel for the selected cube, displaying its transform values (Location, Rotation, Scale) and other properties. The bottom status bar shows the current tool is 'Select' and the viewport is rotated.

Notice that a new menu has popped up on the left

Extrude (E)

Bevel (Ctrl+B)

Tip: Clicking and dragging is the best way to select vertices

Scene

Options

Scene Collection

- Collection
- Camera
- Cube
- Light

Cube

Transform

Location X	0 m
Y	0 m
Z	0 m
Rotation X	0°
Y	0°
Z	0°

Mode XYZ Euler

Scale X	1.000
Y	1.000
Z	1.000

Delta Transform

- Relations
- Collections
- Instancing
- Motion Paths
- Visibility
- Viewport Display
- Line Art
- Custom Properties

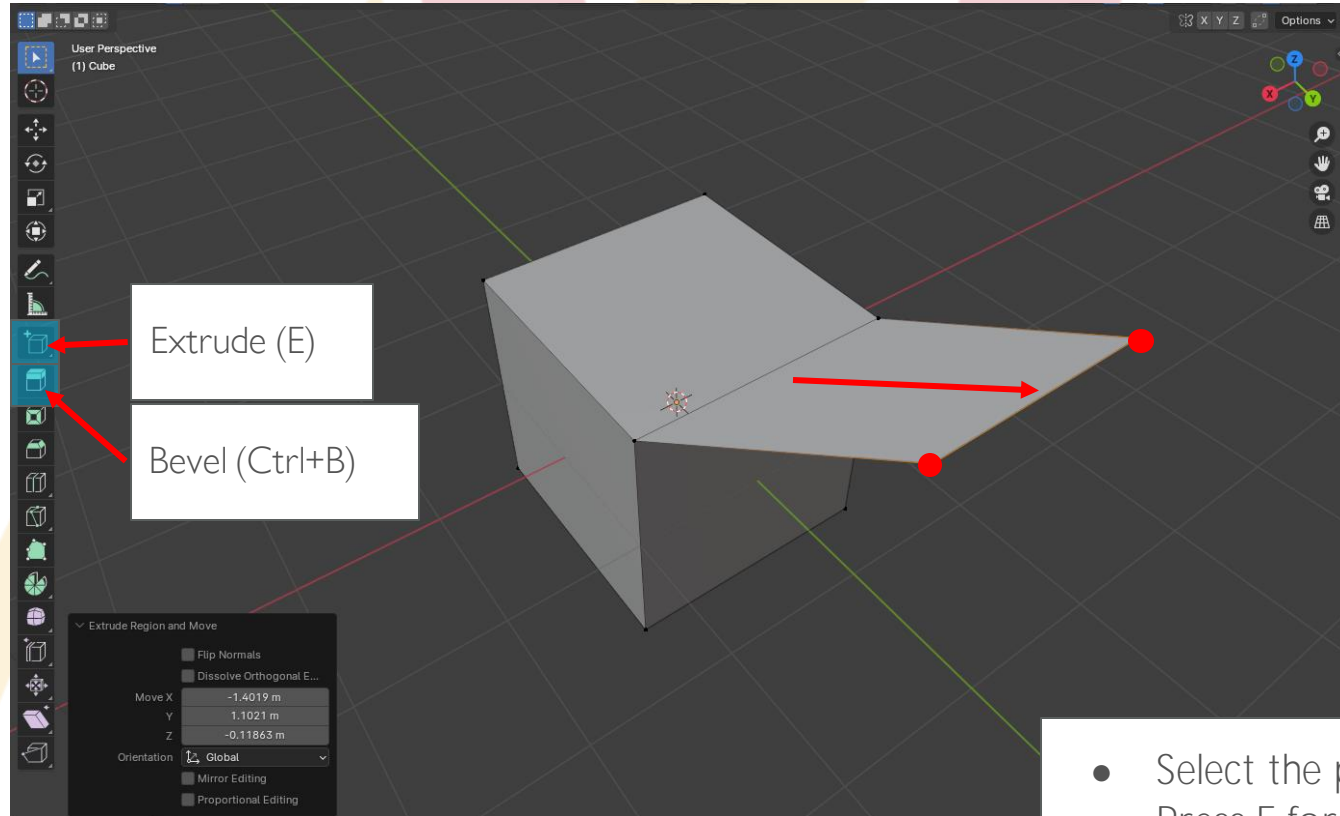
Playback Keying View Marker

1 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250

Select Rotate View Call Menu

4.0.2

Vertices: Extrude

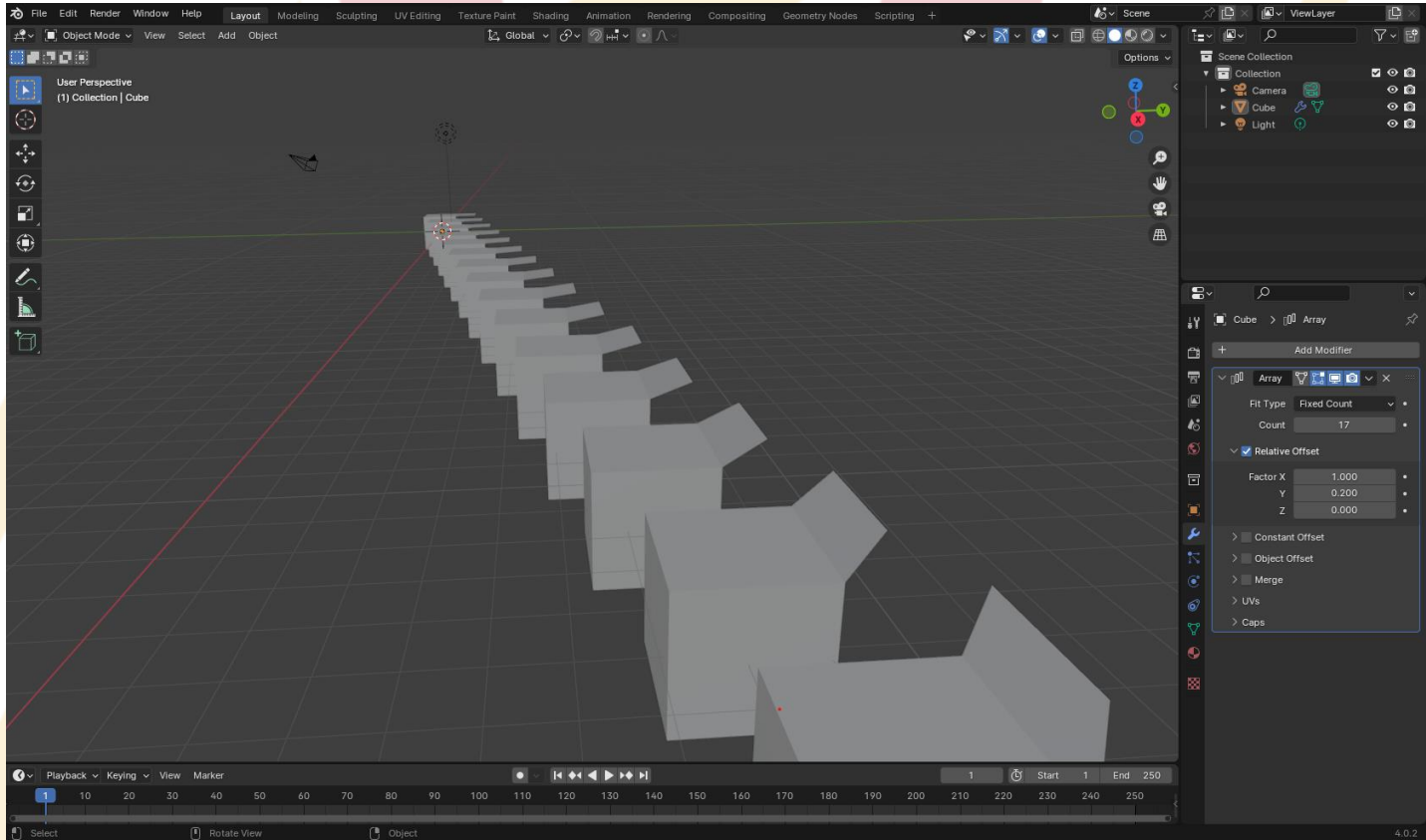


- Select the point(s) to edit
- Press E for extrude
- Move mouse to extrude points
- Now try to add a bevel

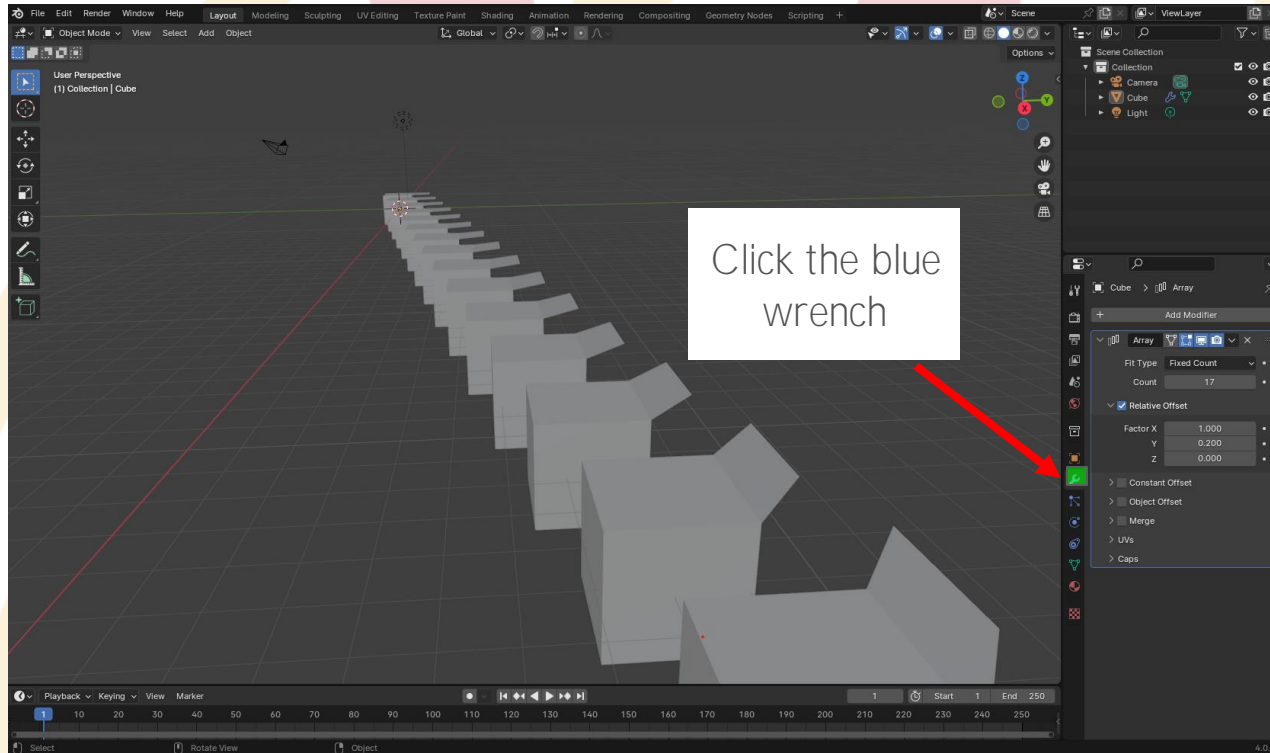
Break Time!



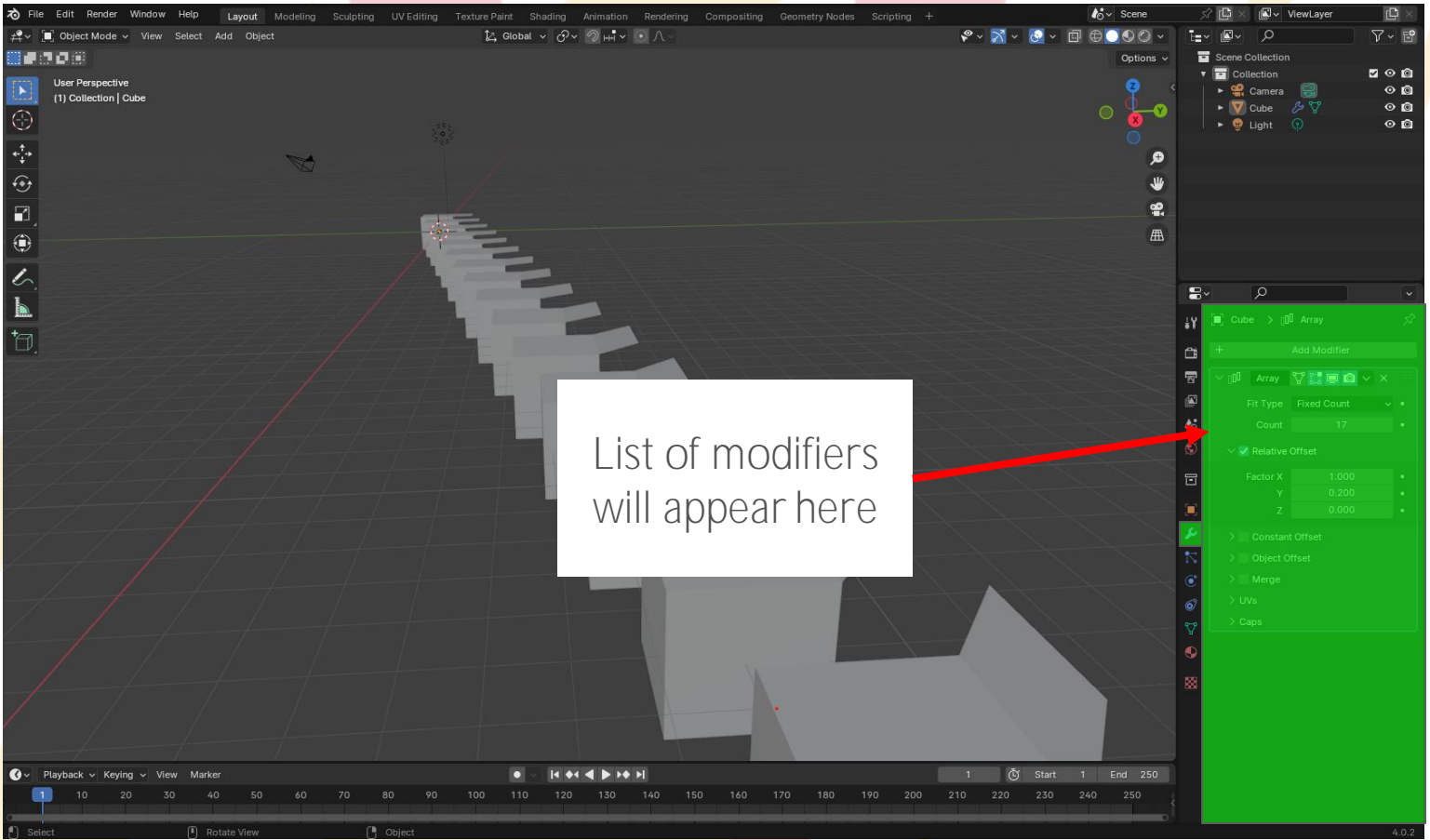
Modifiers!



Modifiers: Menu Introduction



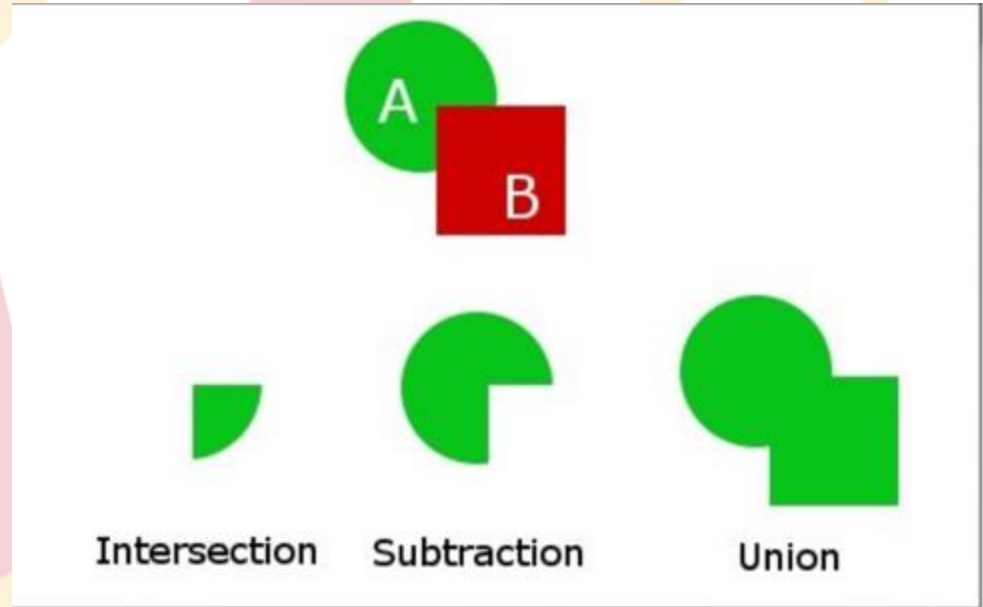
Modifiers: Menu Introduction



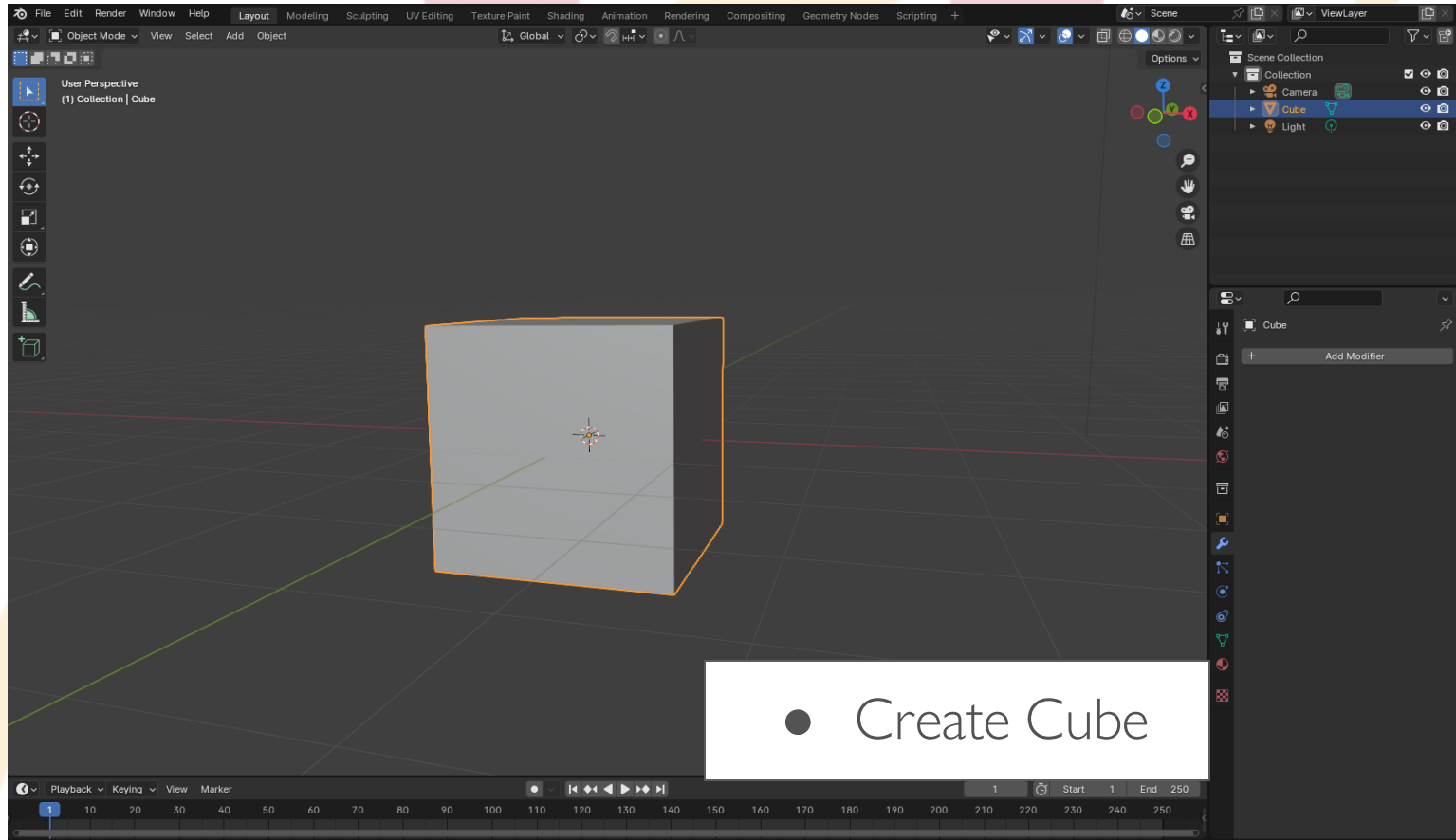
List of modifiers
will appear here

Boolean Modifiers

- Boolean Modifiers
 - Booleans let you subtract, add or intersect an object's geometry onto another object (merging)
 - Usually used for objects that will not be deformed (mechanical)
- Drawbacks:
 - Geometry cannot be deformed

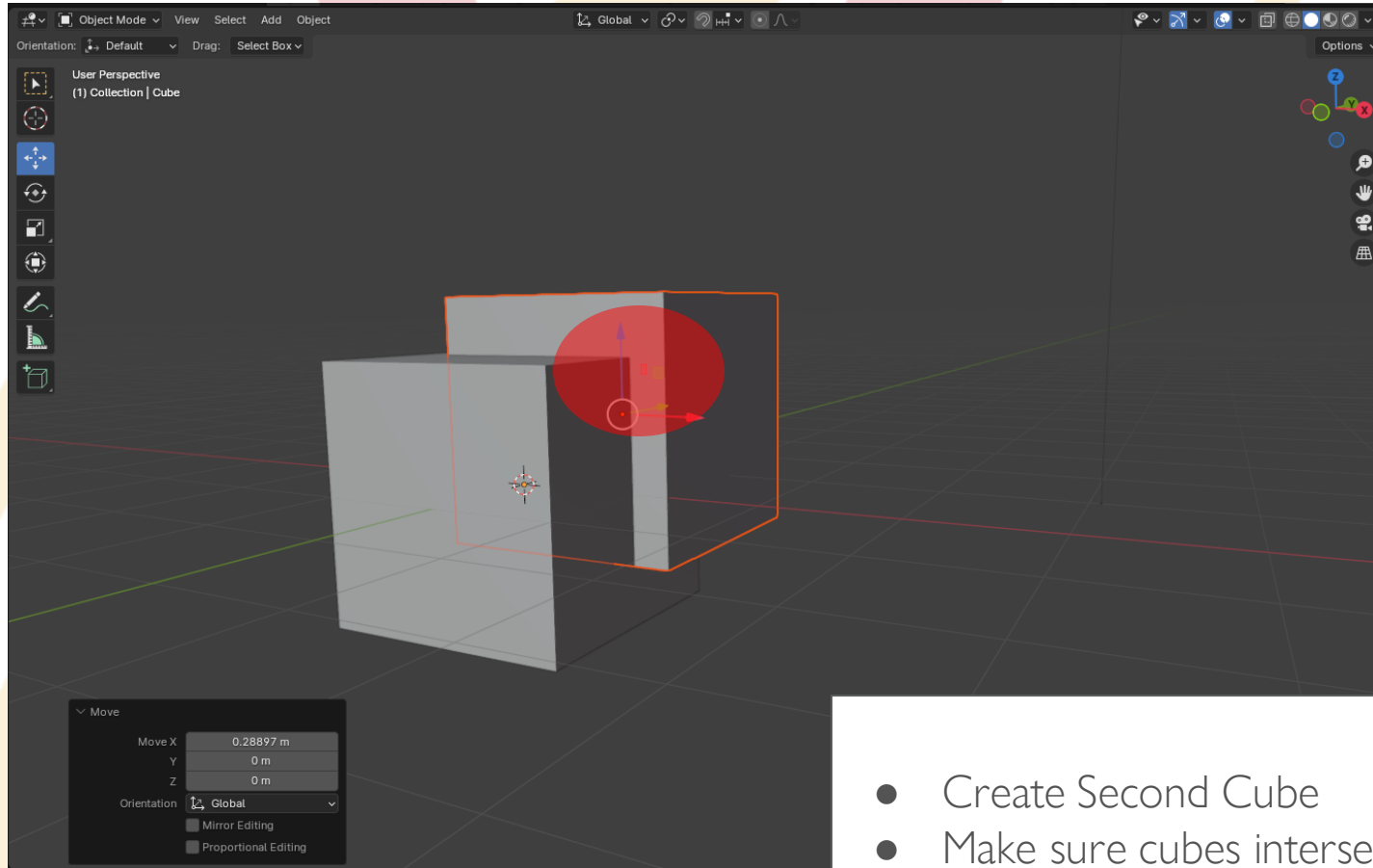


Modifiers: Boolean Difference



- Create Cube

Modifiers: Boolean Difference



- Create Second Cube
- Make sure cubes intersect

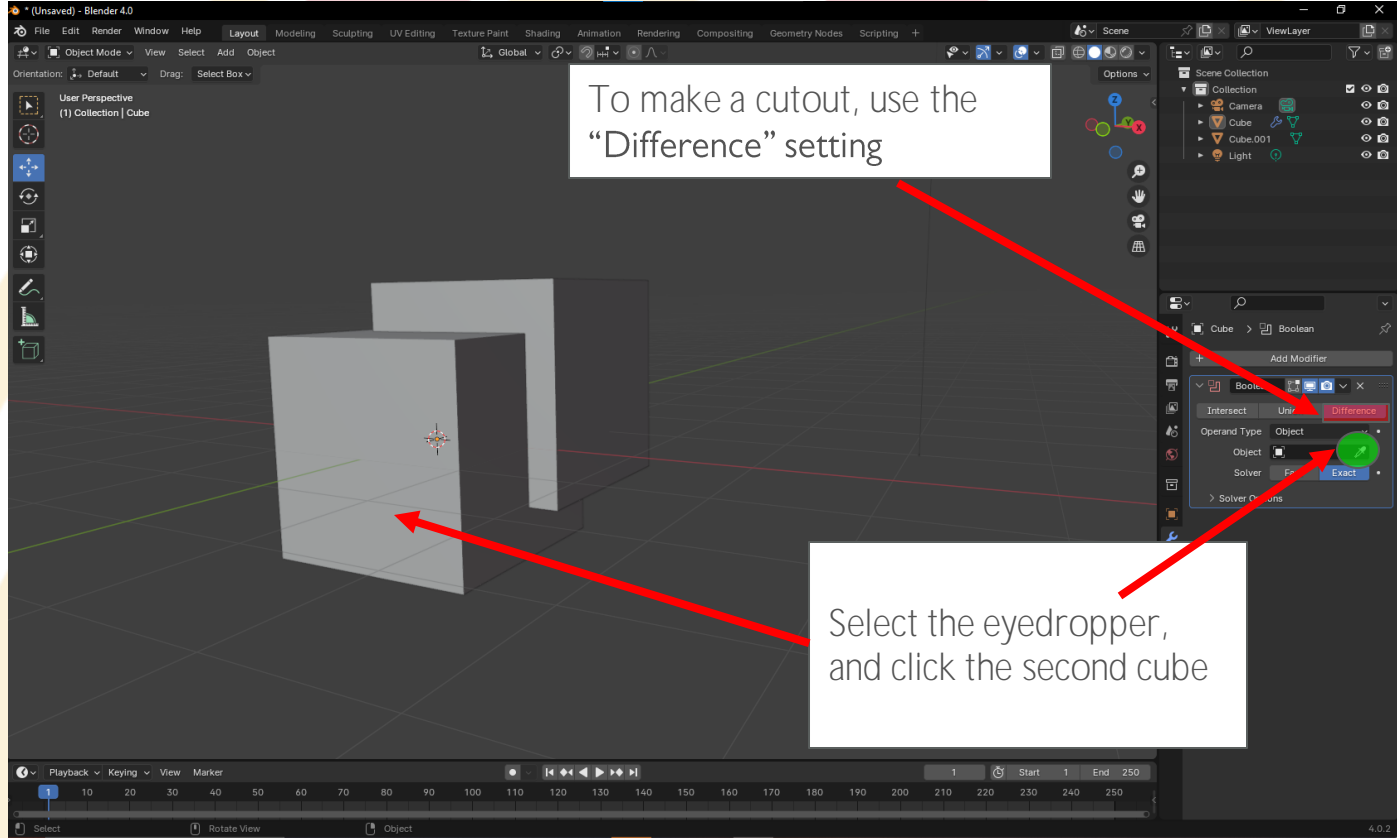
Modifiers: Boolean Difference

The image displays the Blender 4.0.2 interface in Object Mode. A white text box in the upper center contains the following instructions:

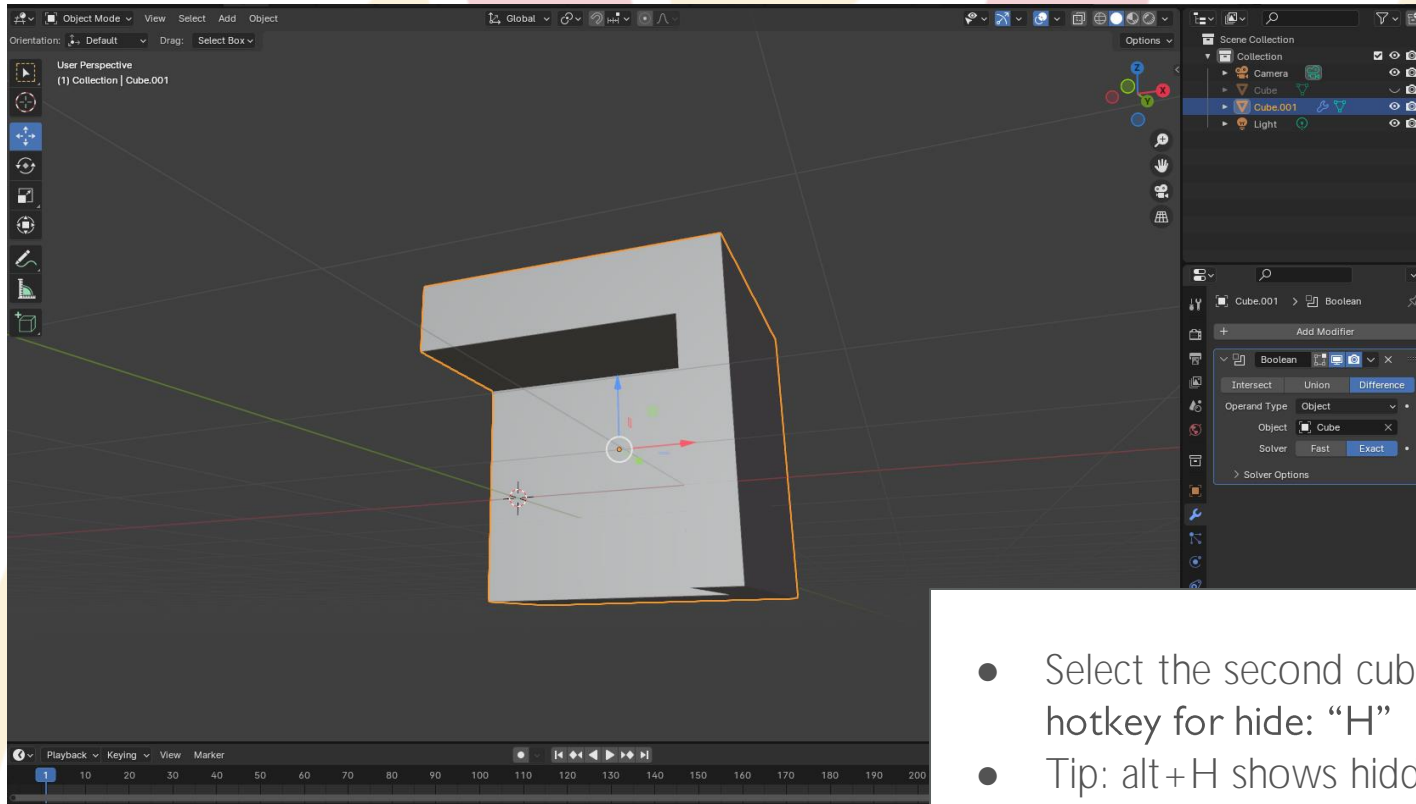
- Select first cube
- Click “Add Modifier”
- Click “Boolean”

Red arrows illustrate the workflow: one arrow points from the text box to the 'Add Modifier' button in the Properties panel, and another points from the 'Boolean' option in the 'Add Modifier' dropdown menu to the 'Boolean' modifier slot in the Properties panel. The 3D viewport shows two cubes, one of which is selected and highlighted with an orange border. The Properties panel on the right shows the 'Add Modifier' dropdown menu open, with 'Boolean' selected. The bottom status bar shows the timeline from 1 to 250 frames.

Modifiers: Boolean Difference



Modifiers: Boolean Difference



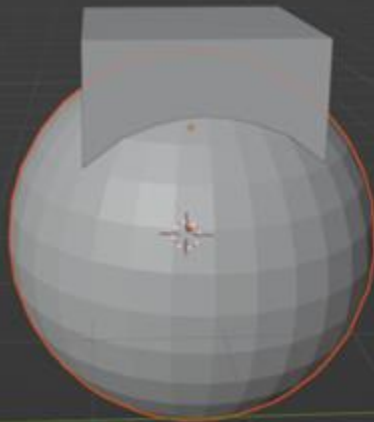
- Select the second cube and press the hotkey for hide: “H”
- Tip: alt+H shows hidden objects in scene

Boolean Modifiers: Intersect Example

1. Add a mesh cube



2. Add a mesh sphere



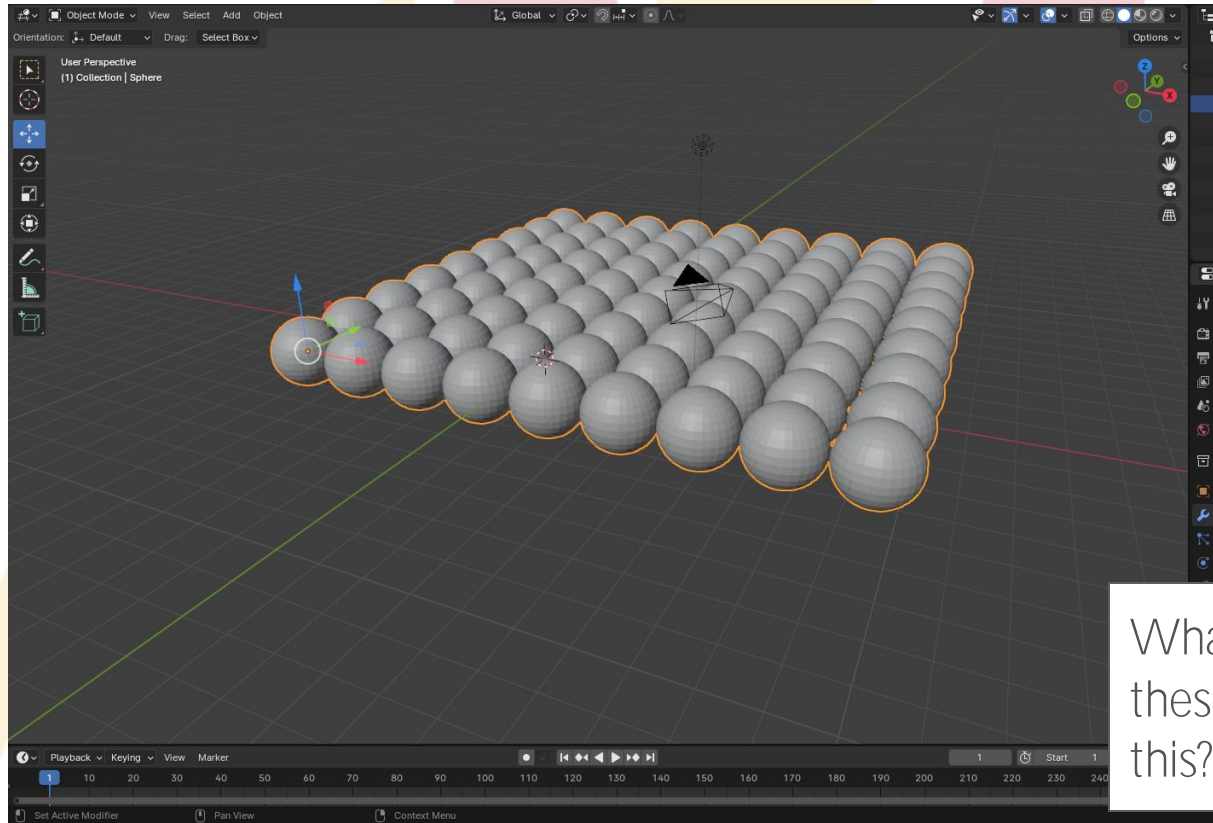
3. Apply the bool modifier to cube



Break Time!

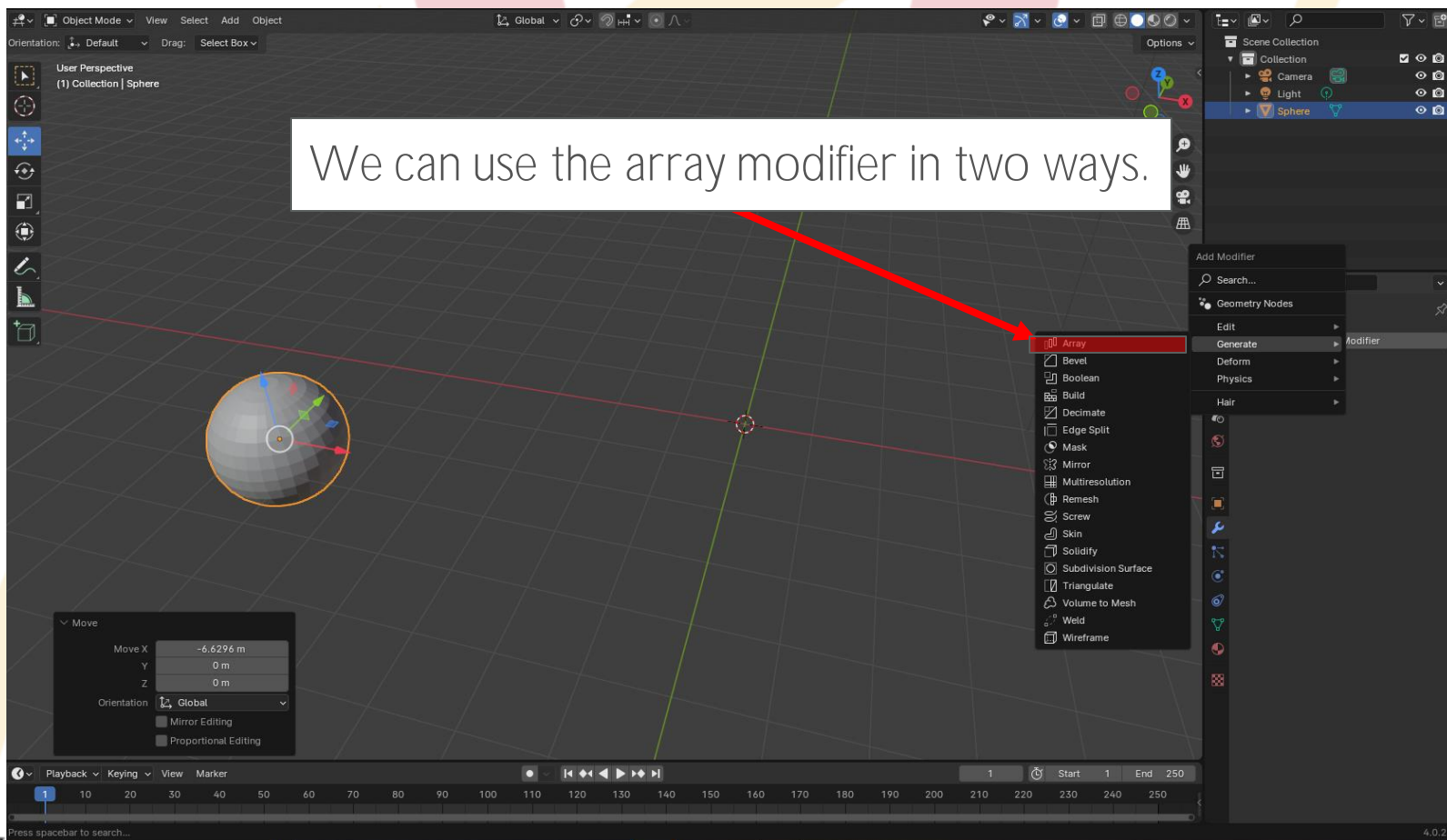


Modifiers: Array



What if we wanted a lot of these spheres in a grid like this?

Modifiers: Array



Modifiers: Array

User Perspective
(1) Collection | Sphere

The first array makes copies along the x axis

Collection
Camera
Light
Sphere

Sphere > Array

Add Modifier

Array

Fit Type Fixed Count

Count 9

Relative Offset

Factor X 1.000

Y 0.000

Z 0.000

Constant Offset

Object Offset

Merge

UVs

Caps

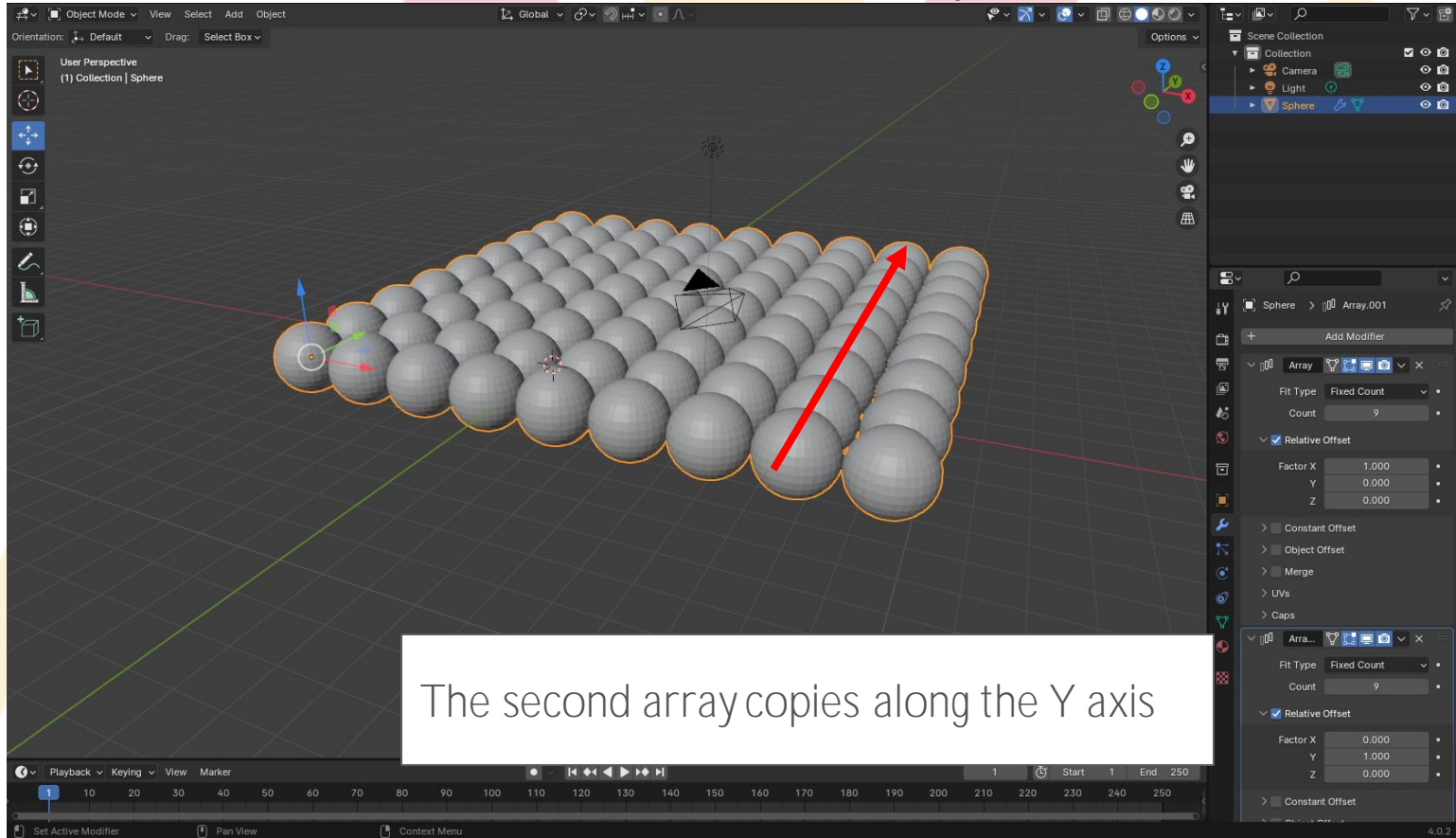
Playback Keying View Marker

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250

Select Rotate View Object

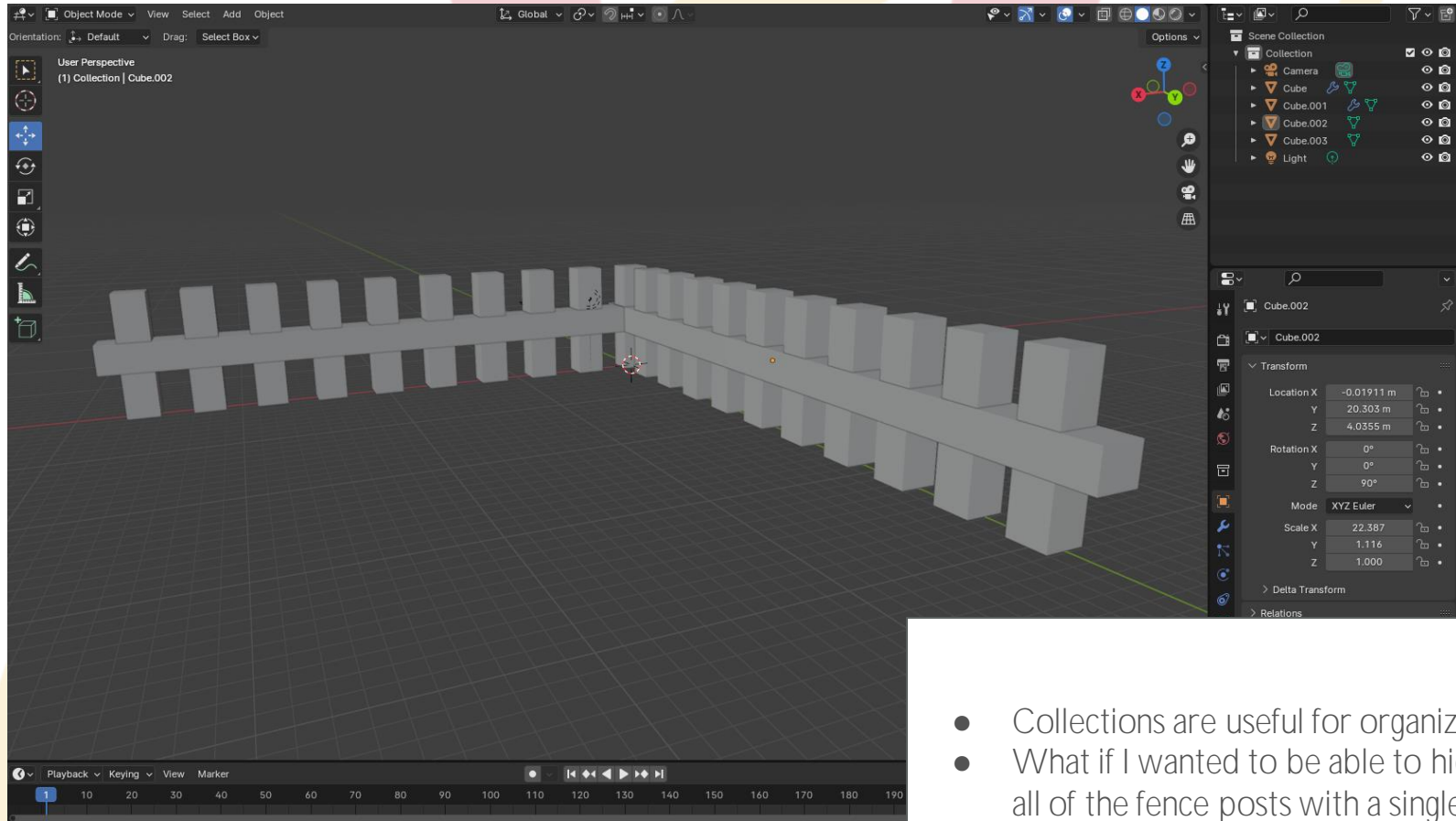
4.0.2

Modifiers: Array



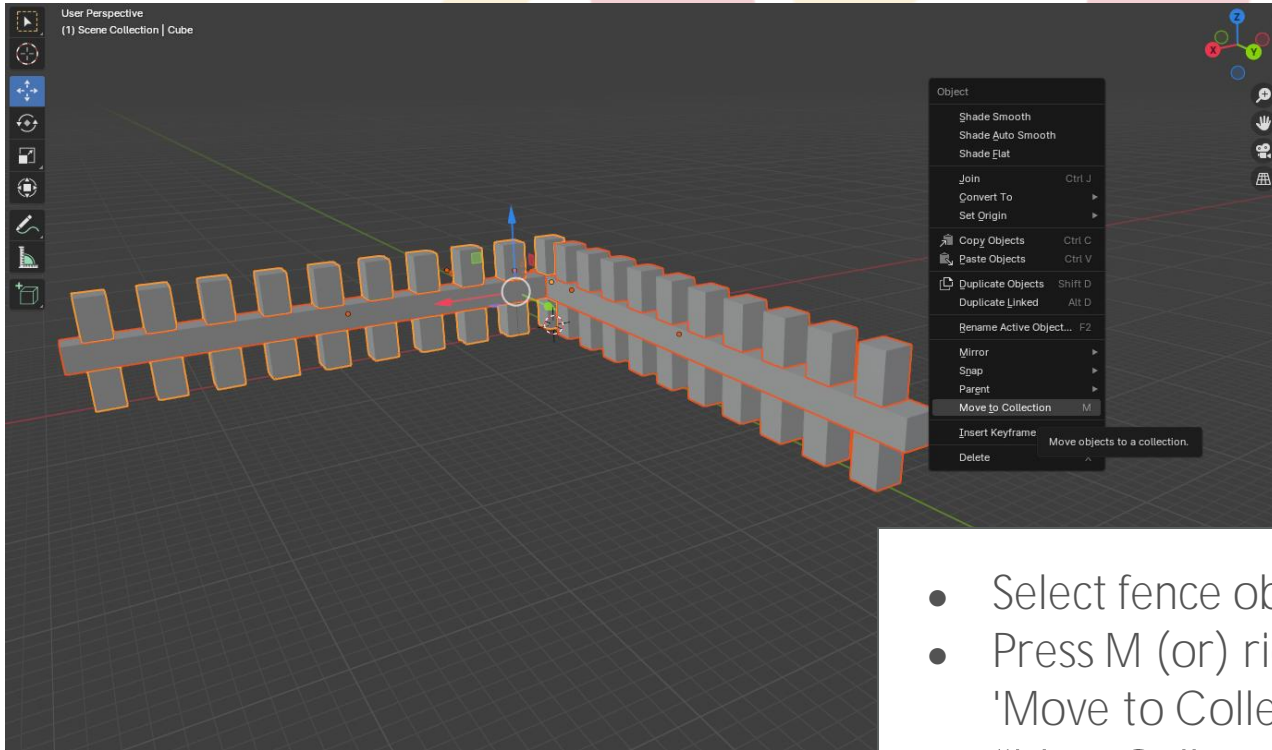
The second array copies along the Y axis

Creating Collections



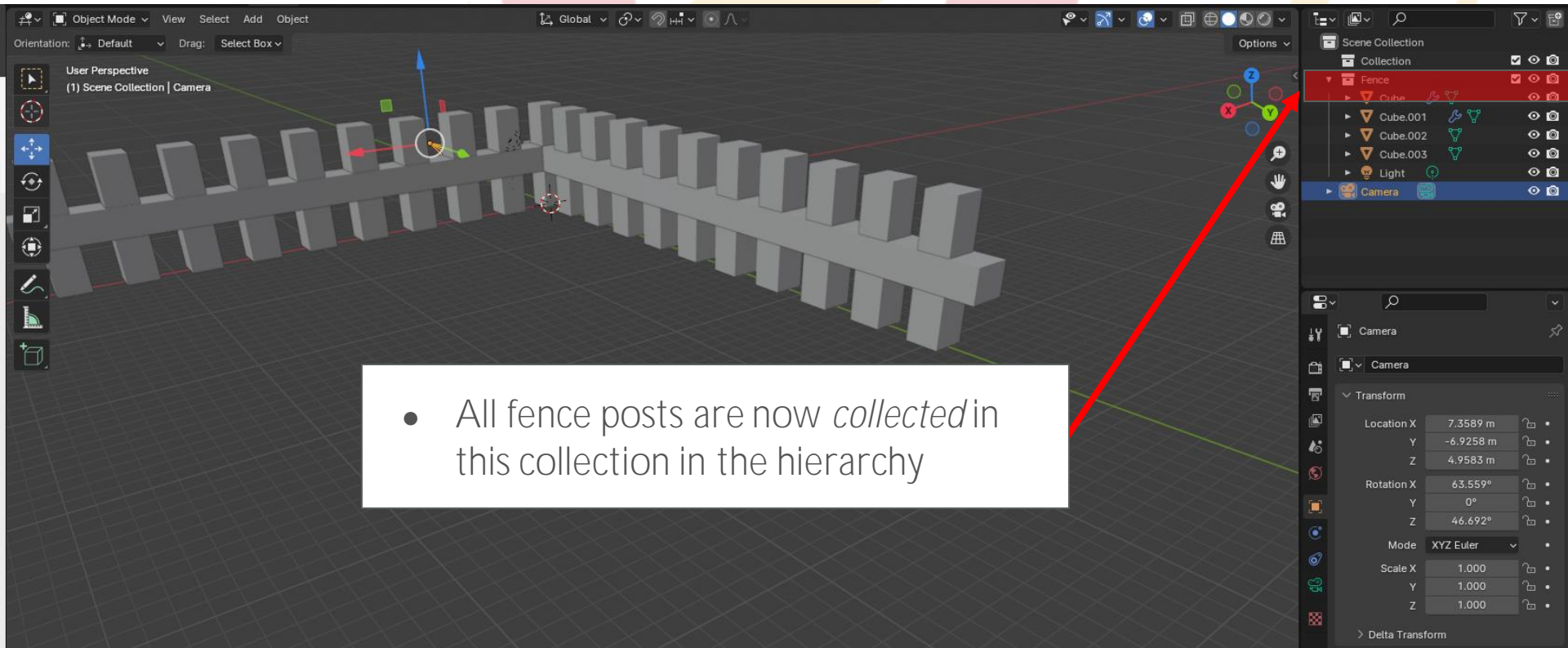
- Collections are useful for organizing a scene
- What if I wanted to be able to hide or show all of the fence posts with a single click?
- Put all the fence posts in a collection.

Creating Collections



- Select fence objects
- Press M (or) right-click & select 'Move to Collection'
- “New Collection”
- Label the collection

Creating Collections



Mini Creation

Keep working on your creation from Session 1. Add more details, or try new techniques from what we talked about today. Try new modifiers, and play around to see what you can create. Use collections to organize your scene



Stage 1: Design

- Make a quick sketch using the materials provided to design and environment with the objects below.
- Confirm design with instructor before modeling



Stage II: 3 Objects

- Create a building
 - House
 - Shed
- Landscape/ground
- Yard feature
 - Wagon
 - Tree/bush



Stage III: 2 Objects

- Landscaping feature
 - Rocks
 - Walking path
- Details to building:
 - Door
 - Roof



Stage IV: 2 Objects

- More details
 - Cow
 - Water well
- Details to building:
 - Windows
 - Chimney

Mini Creation Inspiration



Mini Creation Bonus

- Try animating something in your scene (eg: smoke from chimney, swaying tree)
- Use animation toolset to make the camera fly through your scene
- Try adding colors to the objects in your scene