Computer Animation Lab: 02

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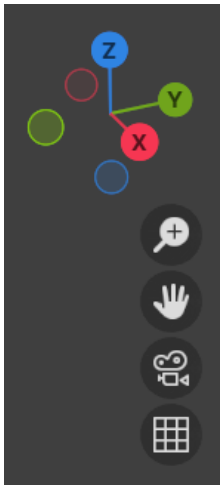
Navigation

The navigation gizmo can be found in the top right of the editor.



- The Orbit gizmo at the top shows the current orientation of the view.
- Dragging it with LMB will orbit the view. Clicking any of the axis labels will align the view to that axis. Clicking the same axis again switches to the opposite side of that same axis.

The four buttons below the orbit gizmo do the following:

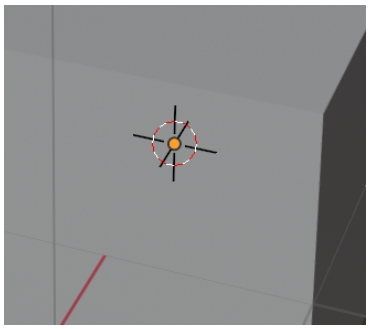
- Zoom the 3D Viewport
- Pan the 3D Viewport
- Toggle the Camera View
- Toggle the Projection / Toggle Lock Camera to View (in camera view)

Orbit: Rotate the view around the point of interest by clicking and dragging MMB on the viewport's area.

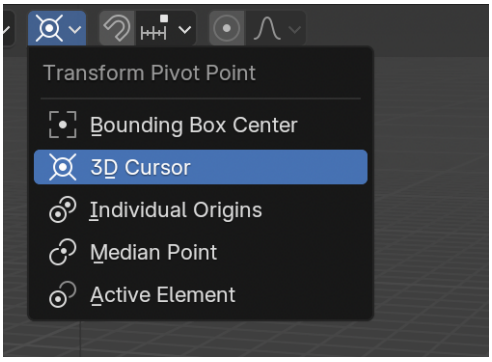
Pan: Moves the view up, down, left and right. To pan the view, hold down Shift and drag MMB in the 3D Viewport.

Zoom: Moves the view closer to, or further away from, the point of interest. You can zoom in and out by rolling the Wheel.

3D cursor: It defines where newly added objects are placed and can also be used to manually position and orient the transform gizmo (see Pivot Point and Transform Orientation).



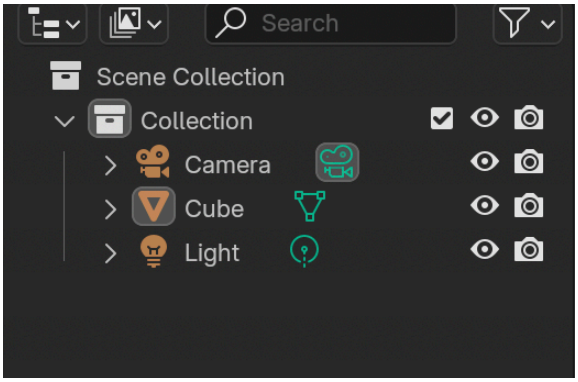
To change the 3D cursor, Transform Pivot Point → 3D cursor.



Selection and basic transformations

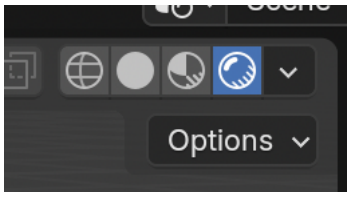
- If you long press on the selection button (or any other button with little arrow on down-right corner), you will see a sub menu for different types of selections.

Outliner: Current objects in the scene.



- To hide an object from the scene, click on the eye icon.
- To disable in renders, click on the camera icon.

Viewport shading



From left to right:

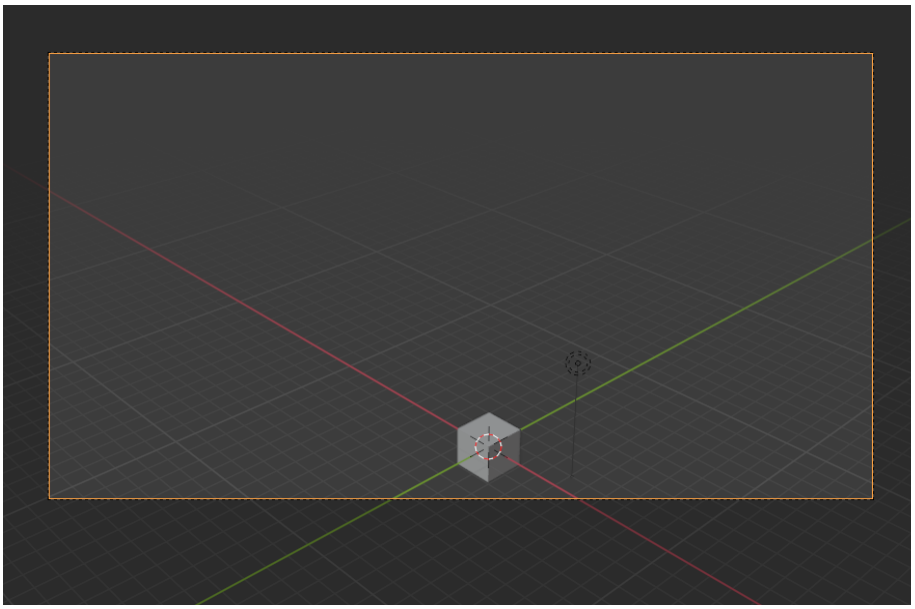
- Show the object as wires.
- Show the object in solid mode.
- Show the object in material preview mode. This mode is particularly suited for previewing materials and painting textures.
- Show the object in render mode. This gives you a preview of the final result, including scene lighting effects.

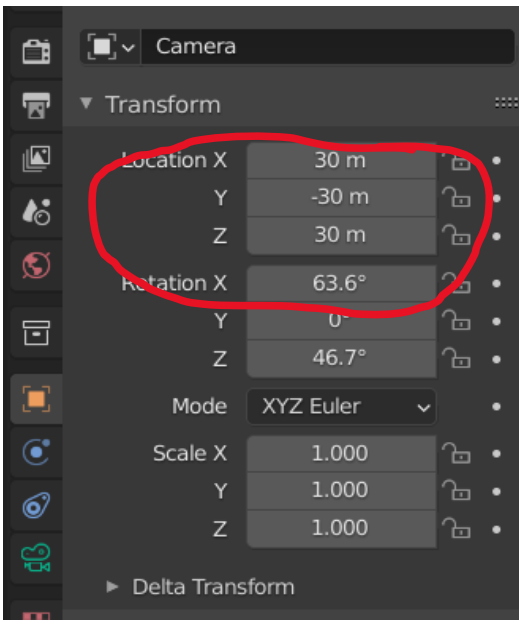
Simple Cube Animation

In this exercise, we will animate a simple cube around camera bounds.

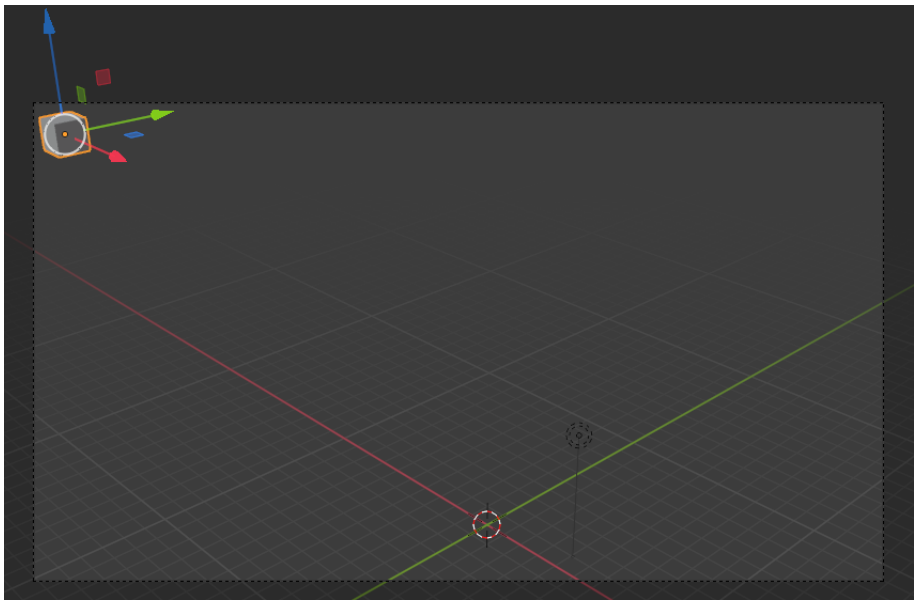
Steps

1. Change the location (x, y, z) of the camera to increase the size of the scene.
    a. Set x = 30, y = -30, z = 30.

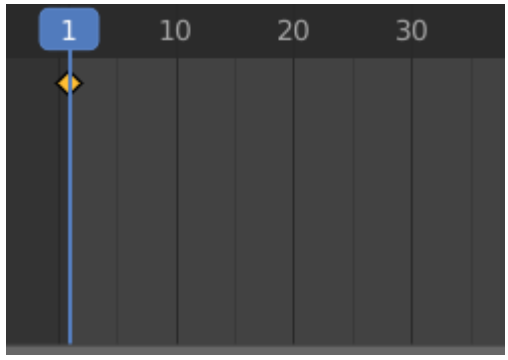




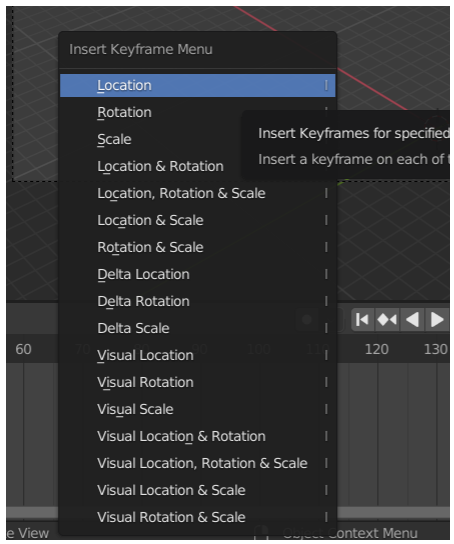
2. Bring the cube to the top left corner of the camera.
    a. Select the cube, then select move option, or press G.



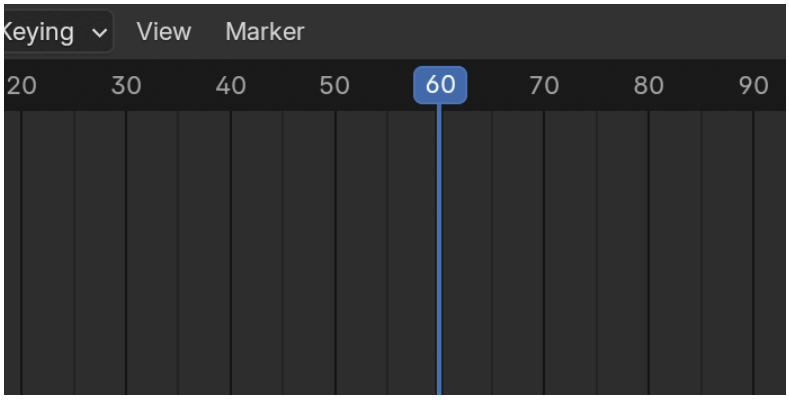
3. While selecting the cube, press i to insert a keyframe.



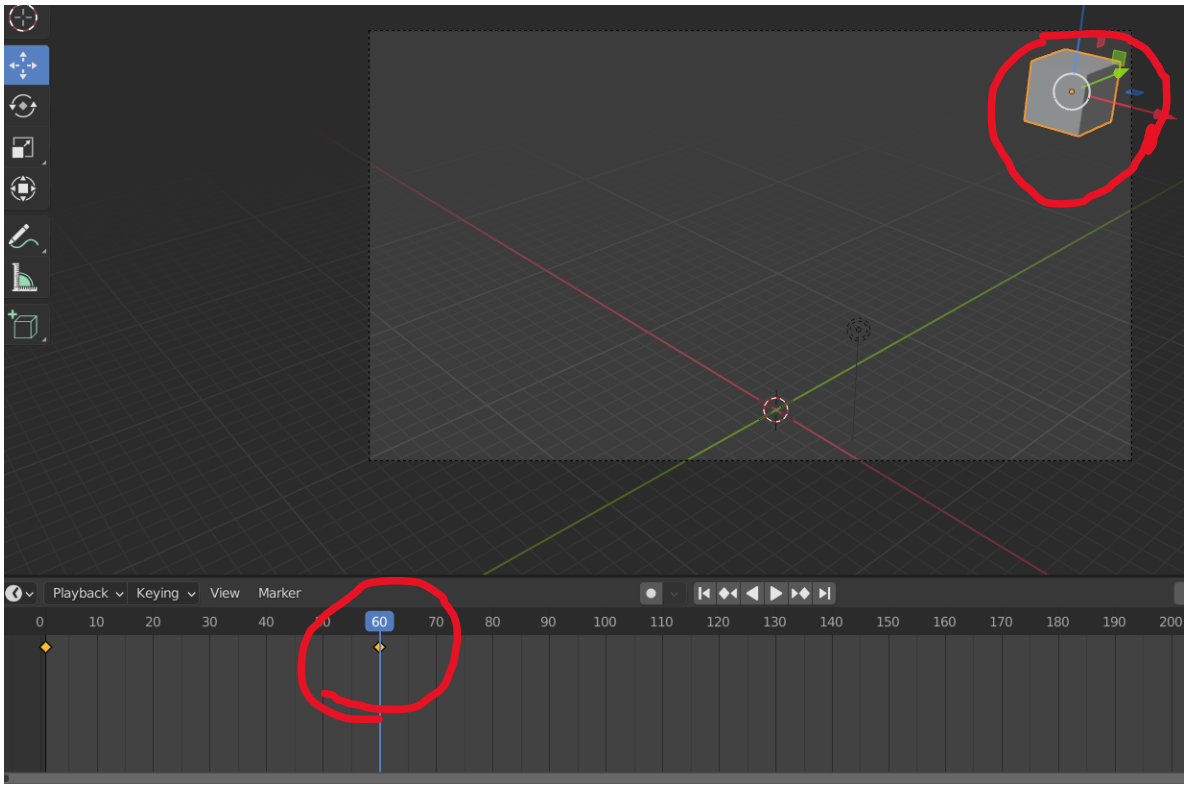
4. Select Location option.



5. Set next keyframe to 60.



6. Move the cube to the top right bound of the camera.



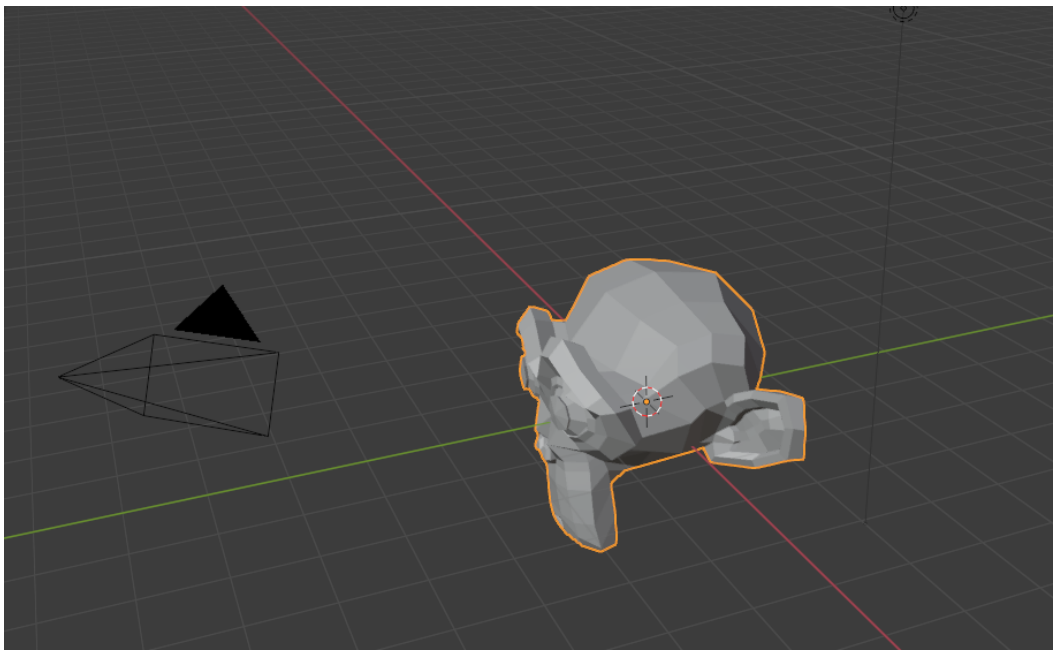
7. Repeat the process to the other corners.

Orbit

In this task, we will make the camera move around a monkey.

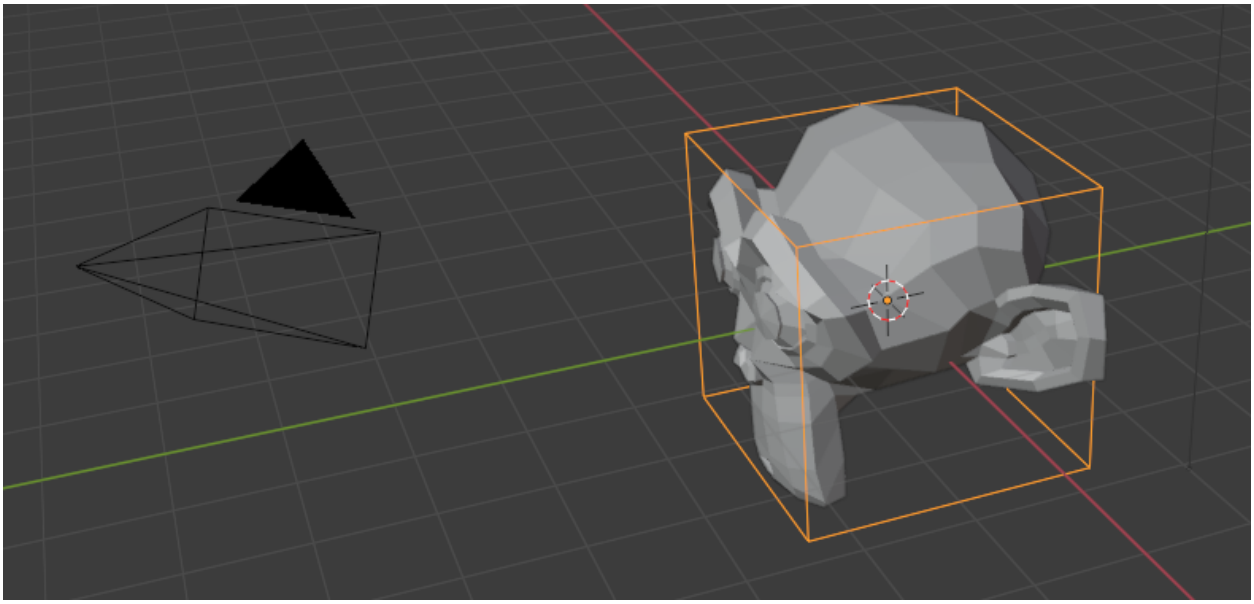
Steps:

1. Delete the cube.
2. Go to Add menu, or press $shift + A$.
3. Select Mesh → Monkey.
4. Select Scale option, or press S, enlarge the monkey.

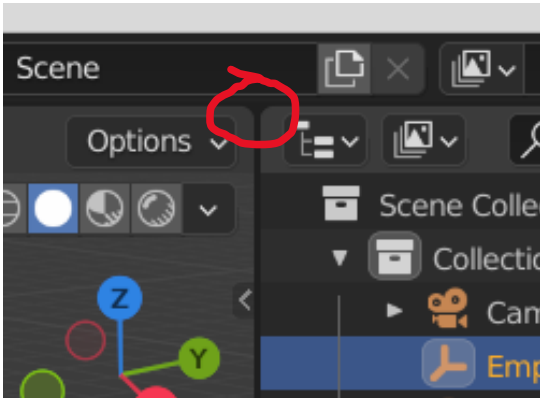


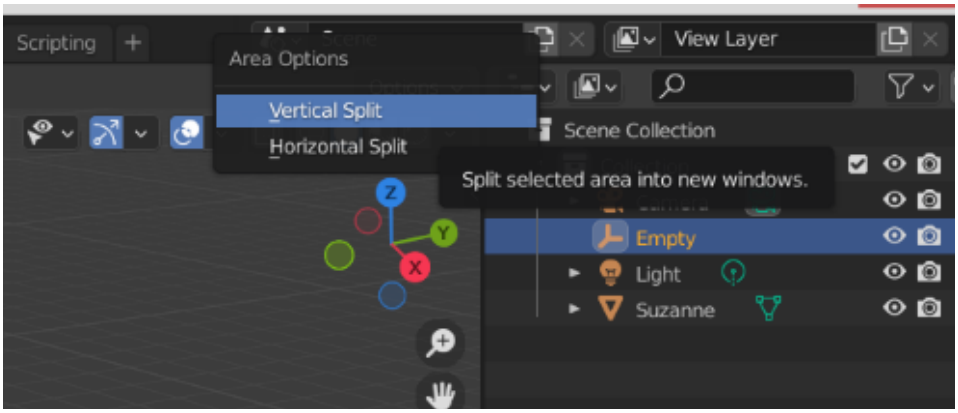
To allow the camera to move around an object, we need to link the camera to another object. That another object will be rotated and in turn rotates the camera.

5. From Add menu, select Empty → cube.
6. Press S, enlarge the cube.

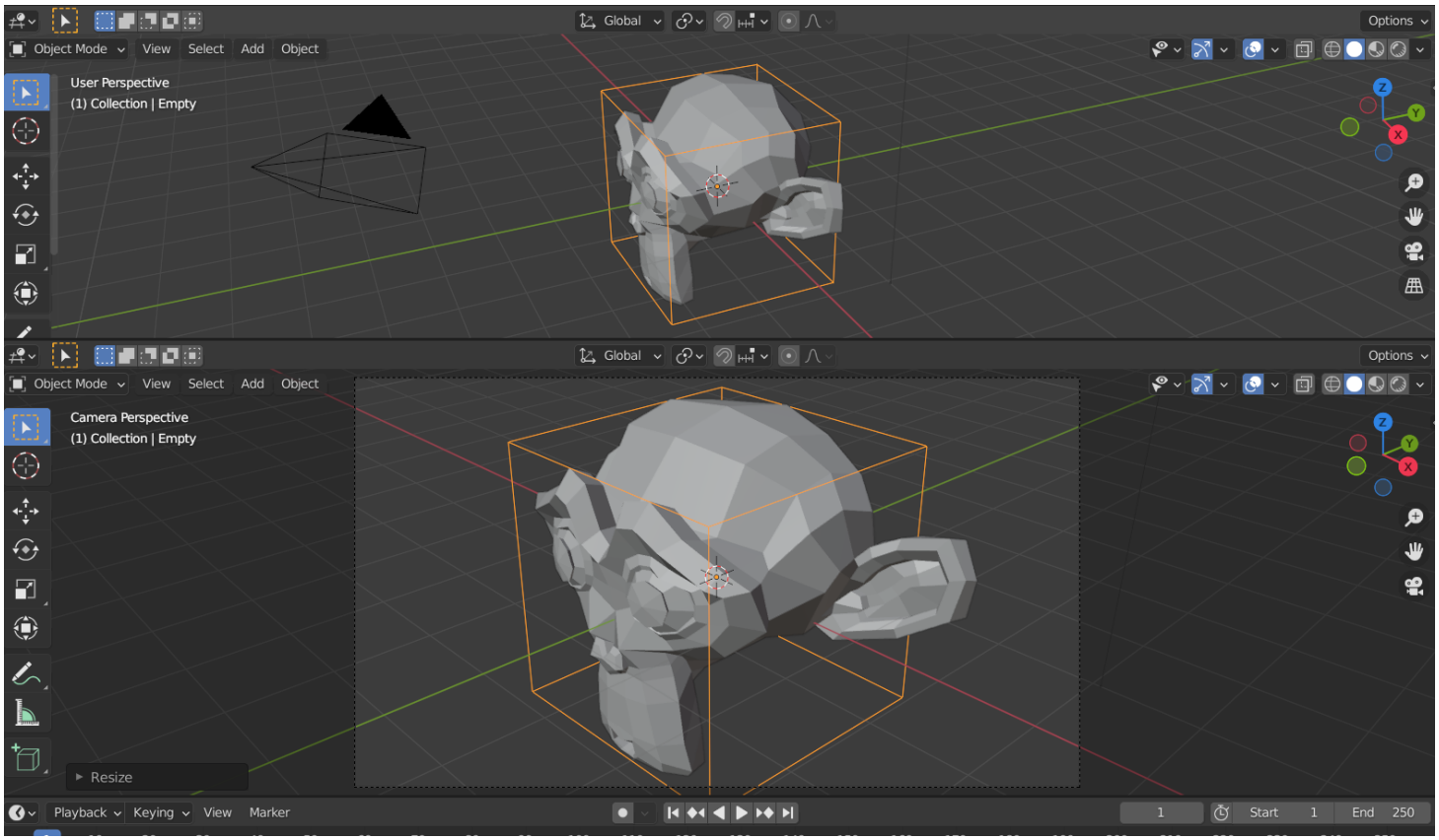


7. Go to top corner of the current area, right-click, select horizontal split.

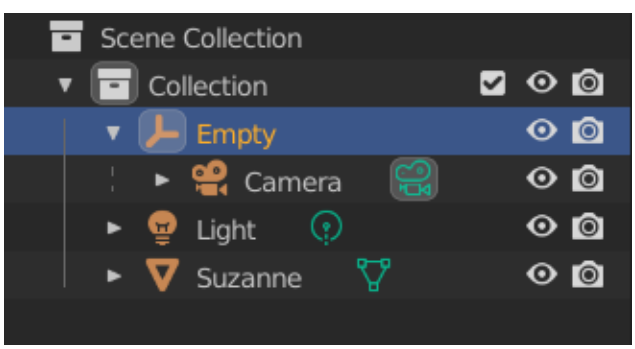




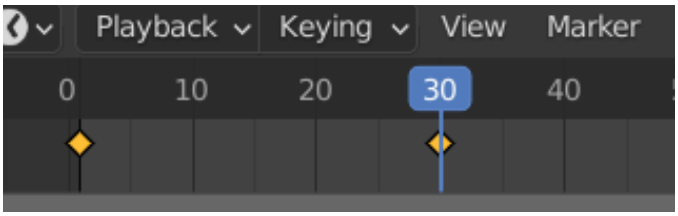
8. In the bottom area select the camera view.

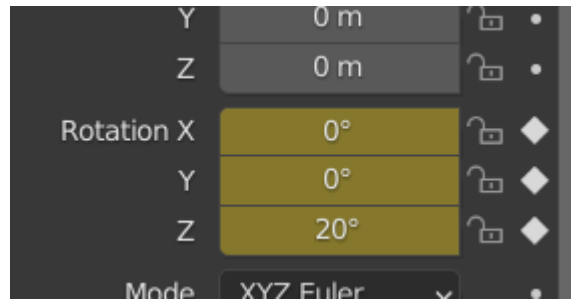


9. Select the empty, **THEN** select the camera.
10. Right click and select object → parent → object, or press $CTRL + P$.
    a. Notice how they are linked in the outliner.



11. Select the cube, then select rotation option.
12. Insert a keyframe.
    a. Press i, then select rotation.
13. Rotate the empty cube around z-axis by 20 degrees for 30 frames.

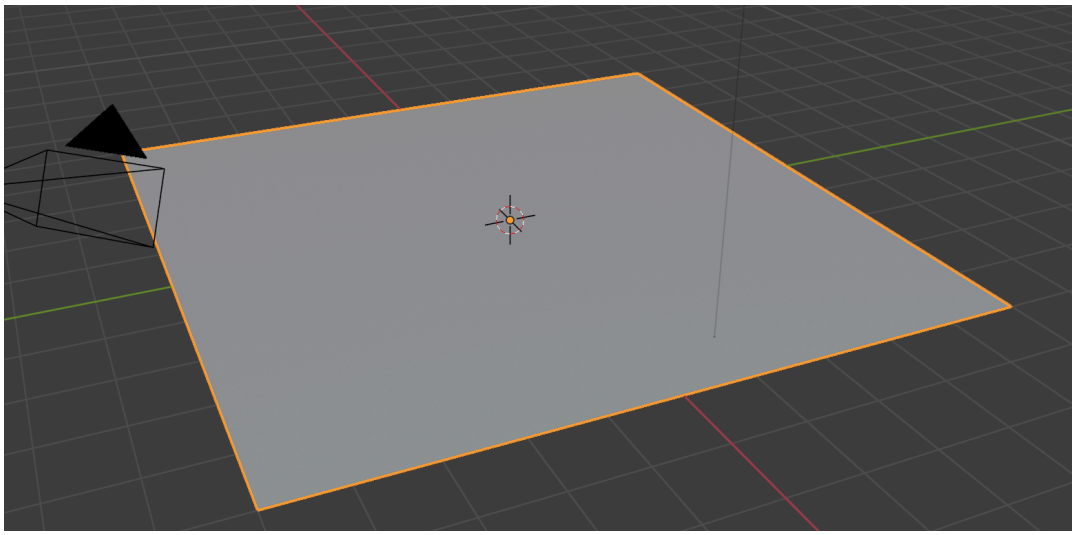




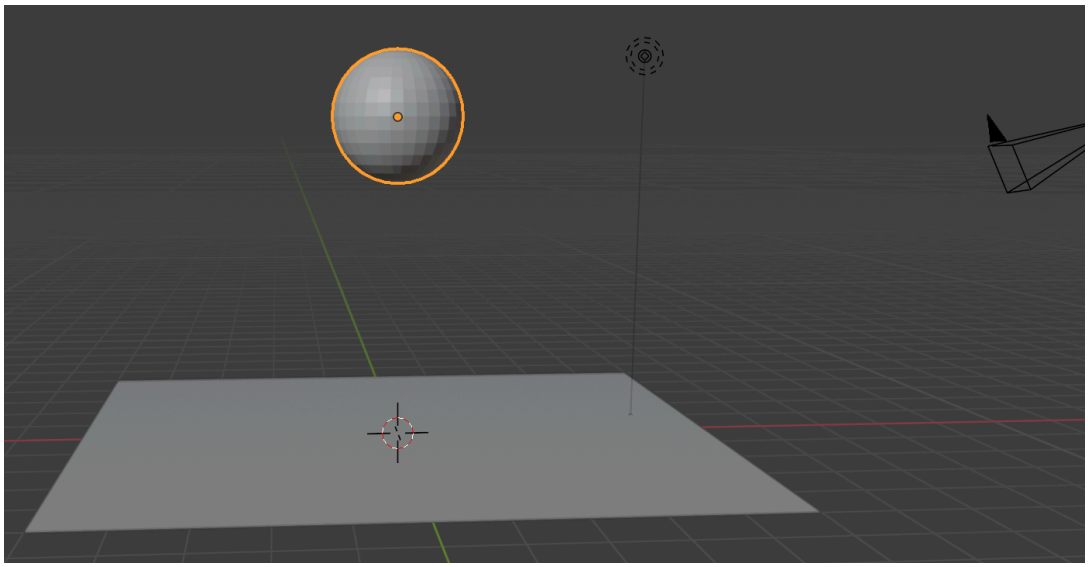
14. Repeat the process by increasing rotation angle 20 degree for every 30 frames.
    a. Continue until we reach 360 degrees.

Bouncing Ball

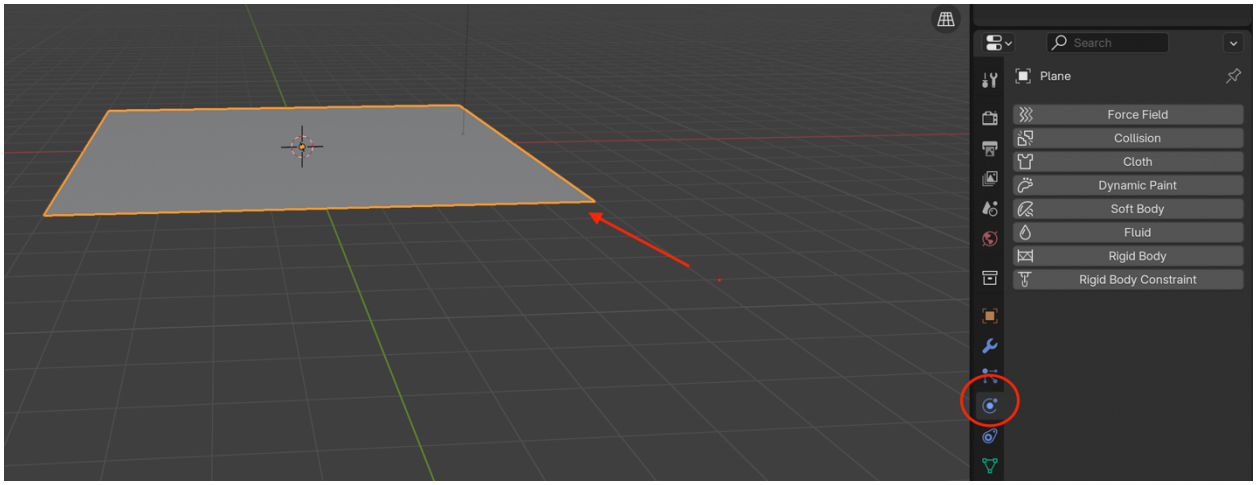
1. Open a new General scene.
2. Delete the cube.
3. Add → Mesh → Plane (or shift + A)
4. Scale the plane (Press S, then 5)



5. Add → Mesh → UV Sphere

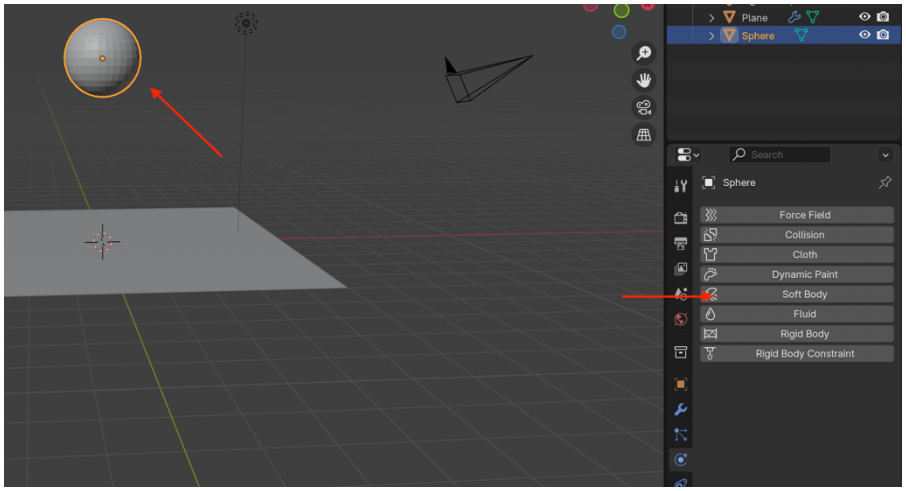


6. Select the plane, then go the physics tab.

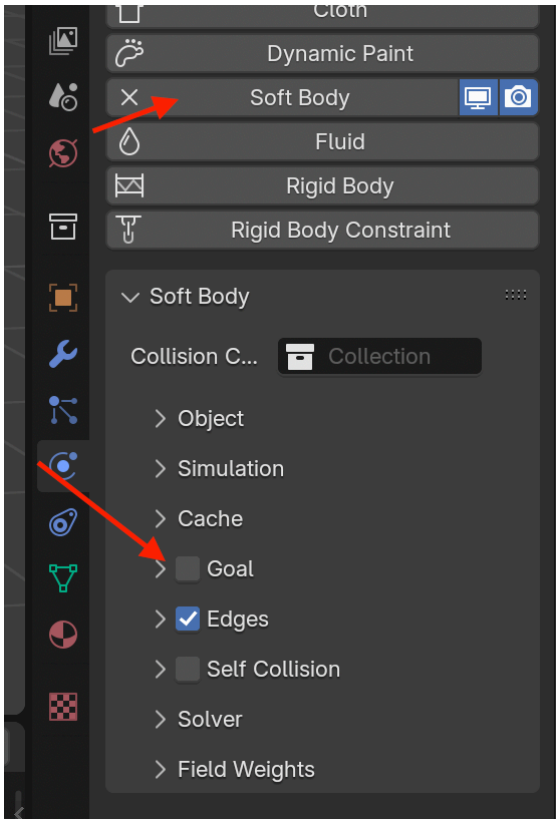


7. In the physics tab, select Collision, then in the softbody and cloth section, set the **friction** to 7.

8. Select the UV-Sphere, then in the physics tab, select soft body.

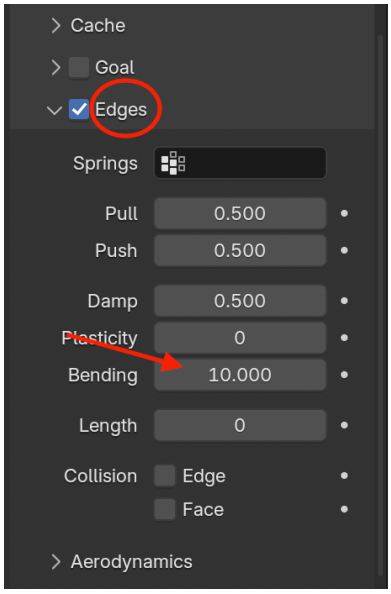


9. If you play the animation, you see that the UV-sphere is bouncing in the air.
10. To remove that effect, uncheck the Goal property.



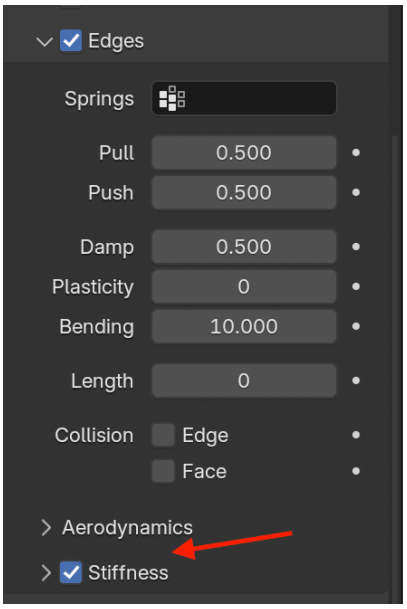
11. If you play the animation, you will see that the sphere falls on the plane and gets destroyed.

12. Open the Edges sub menu and set Bending to 10.

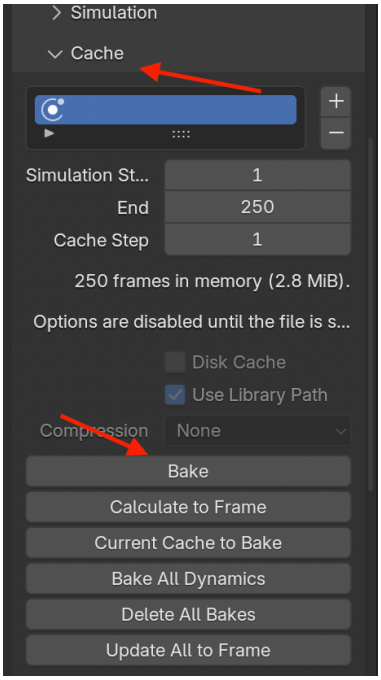


13. Play the animation and see the difference.

14. In the same Edges sub menu, click on Stiffness to enable it.

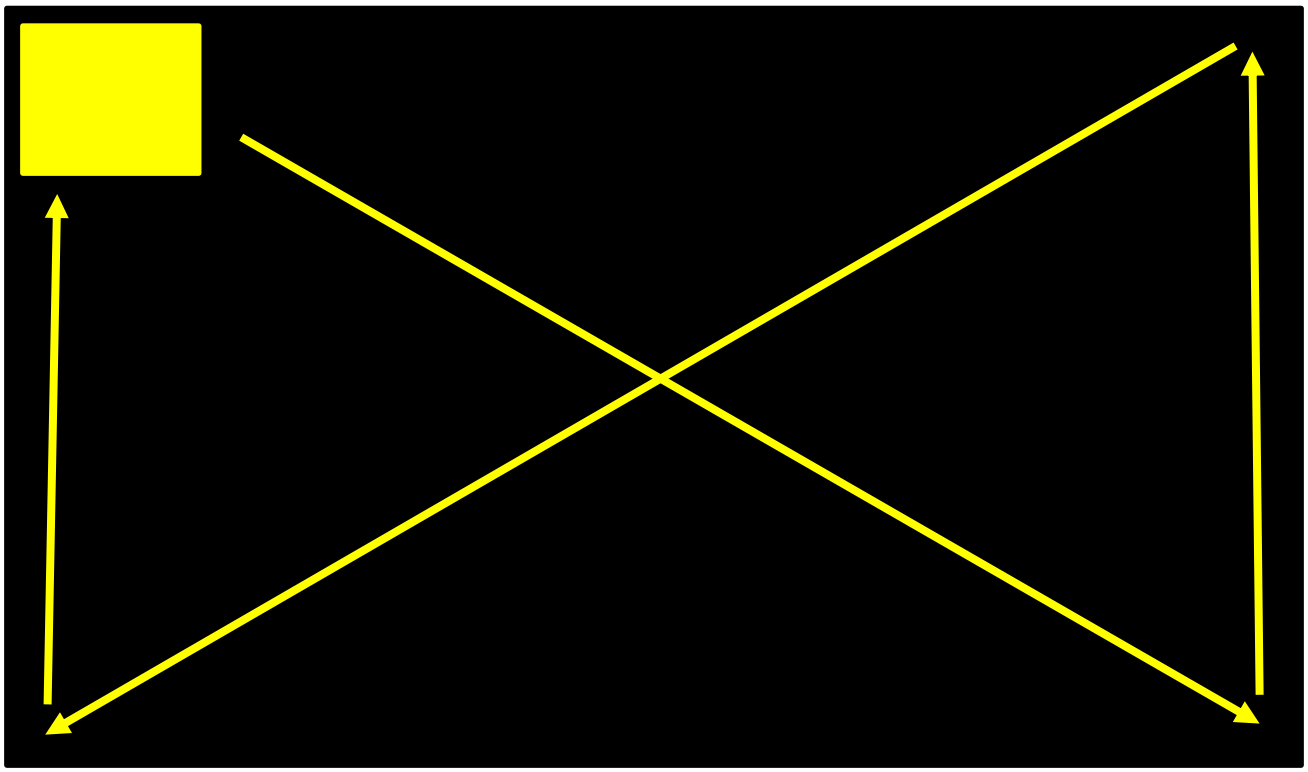
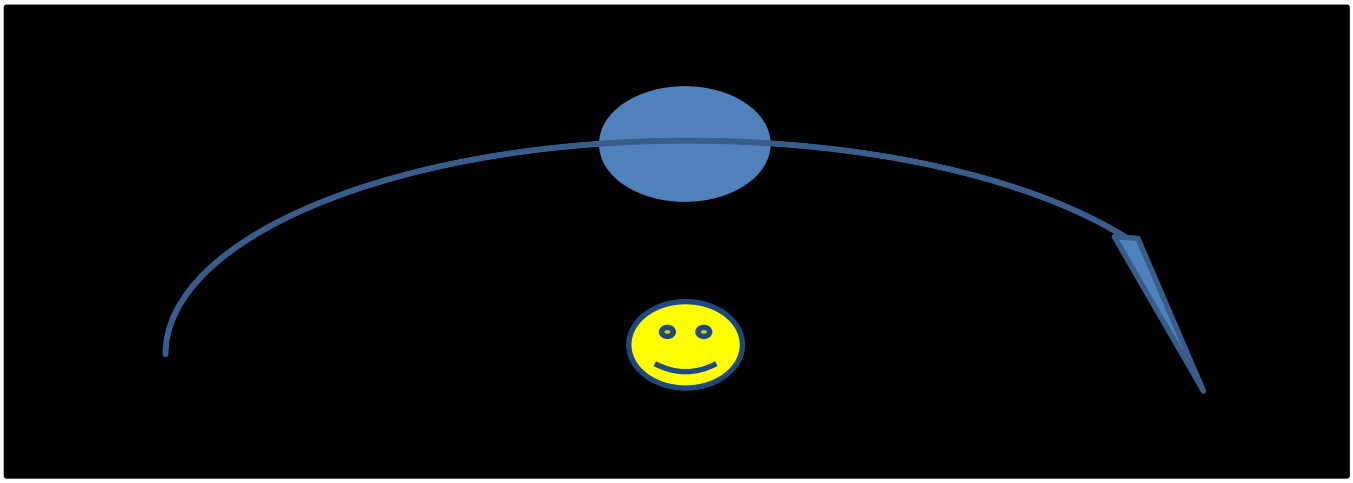


15. To finish your physics settings, click on Cache menu, then click on Bake.



Exercise

1. Create a cube animation that moves around the camera in diagonal. Set the keyframe to 80.



2. Rotate around a monkey in half circle.