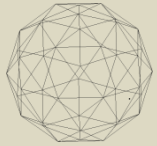


Ball animation

Dr. Sameer Sahasrabudhe
Nitin Ayer and Sneha Sanglikar

IIT Bombay

Outline

IIT BOMBAY

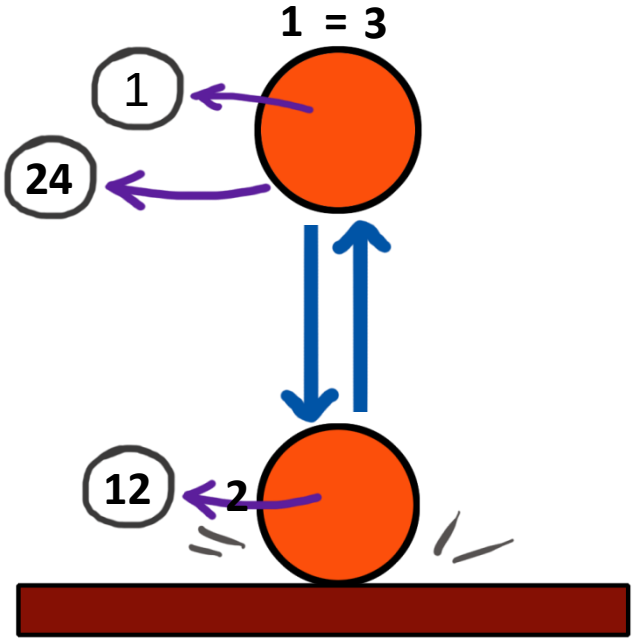
- Animation timing
- Adding objects
- Adding transformations (key frames)
  - Setup key frames position
- Reviewing animation
- Rendering
- File saving

IIT BOMBAY

Animation timing

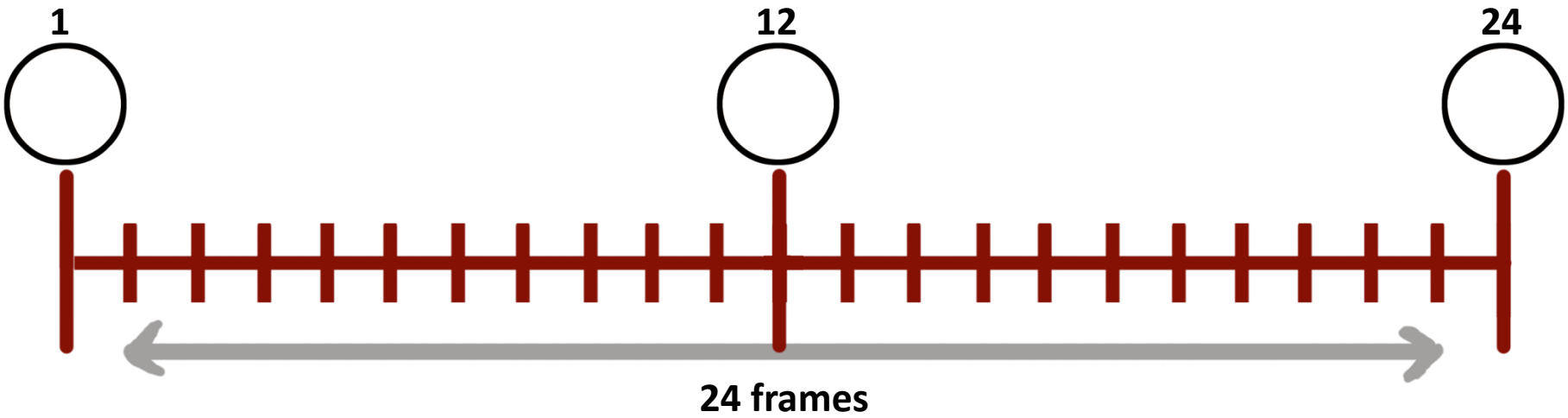
Animation planning:

IIT BOMBAY



Animation planning: Timeline

IIT BOMBAY



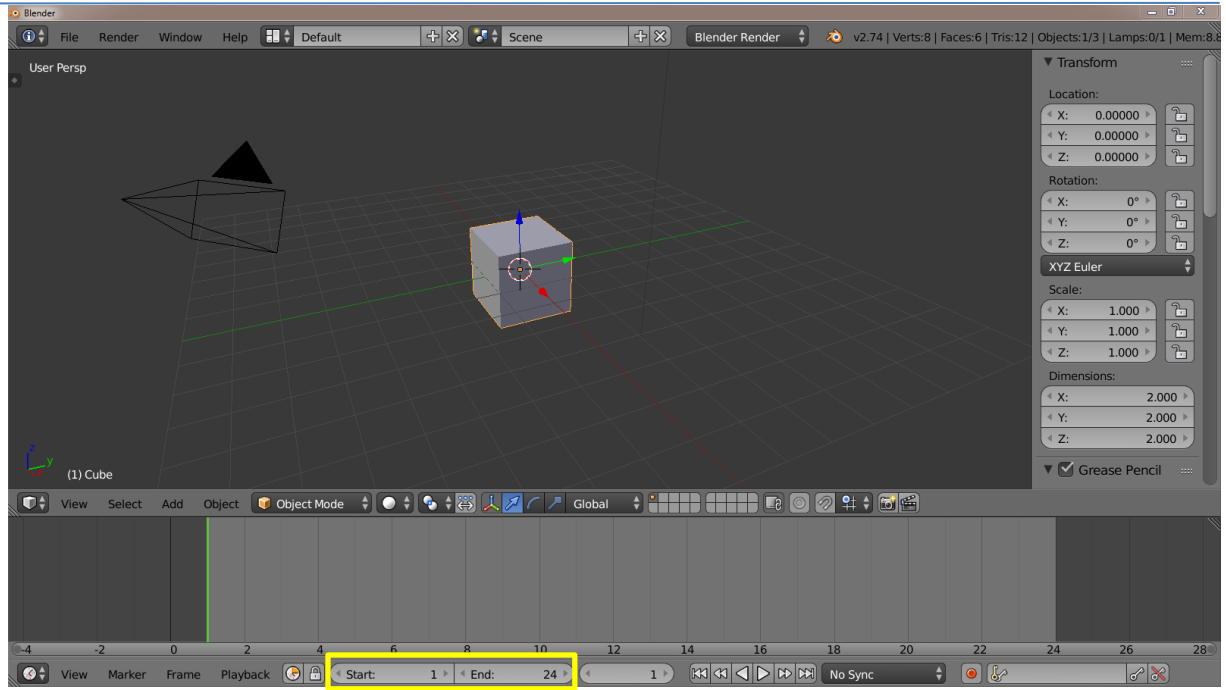
Change default duration

IIT BOMBAY

Total duration of animation is 24 frames. Default duration is 250 frames.

To change the duration:

- Set start frame as 1 and end frame as 24



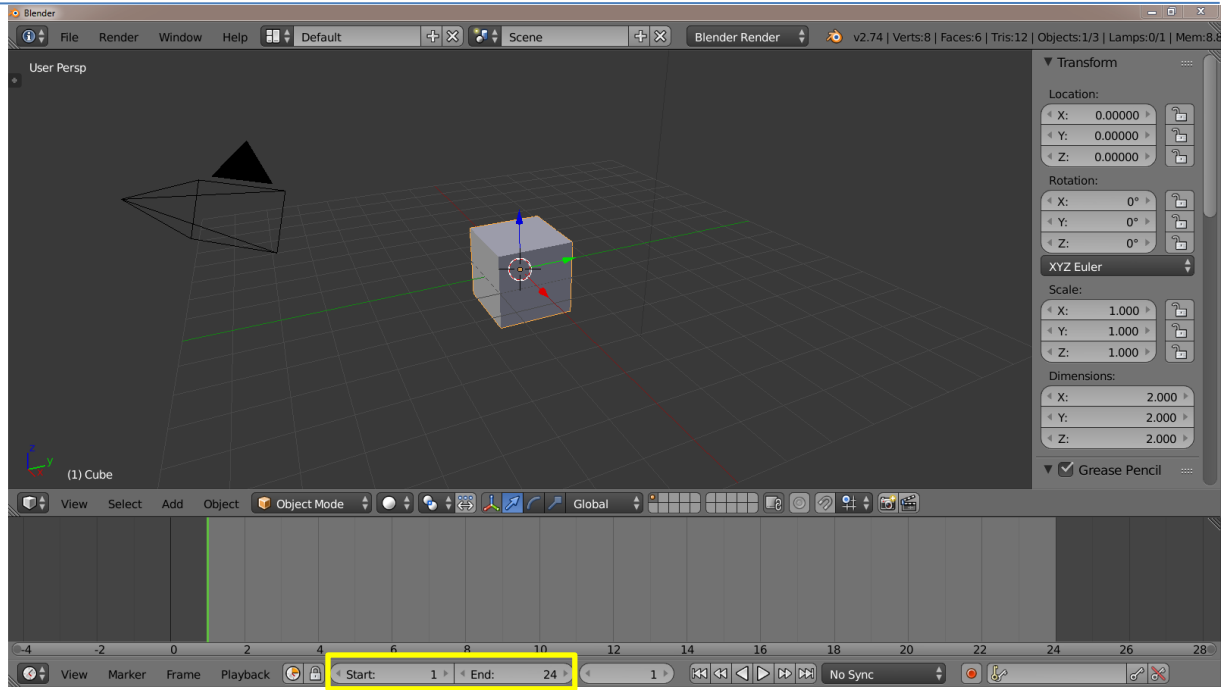
* Keyboard and mouse shortcuts are written in (blue)

Change default duration

IIT BOMBAY

In timeline window:

- To zoom in: Scroll up
- To pan: Press and drag scroll button
- To zoom out: Scroll down



* Keyboard and mouse shortcuts are written in (blue)

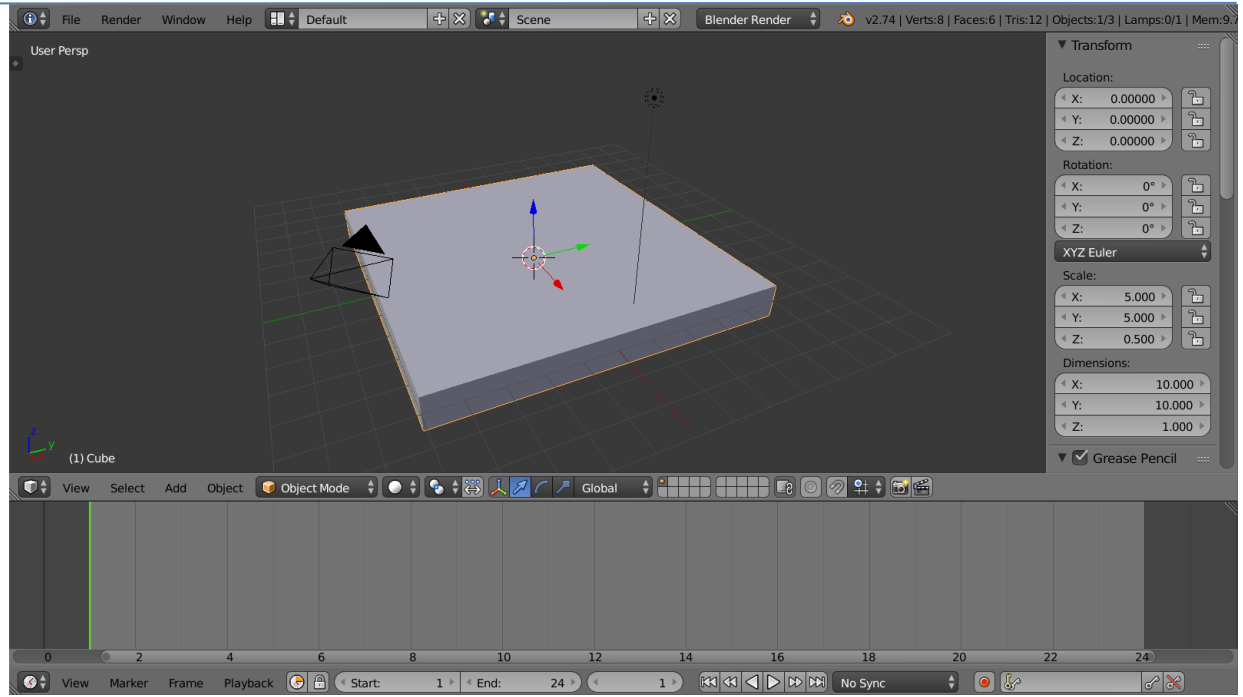
Adding objects

Create a surface

IIT BOMBAY

Convert the default cube into a surface, for ball to bounce upon:

- Scale the cube four times (S + 5)
- Scale down the cube (S + Z + 0.1)



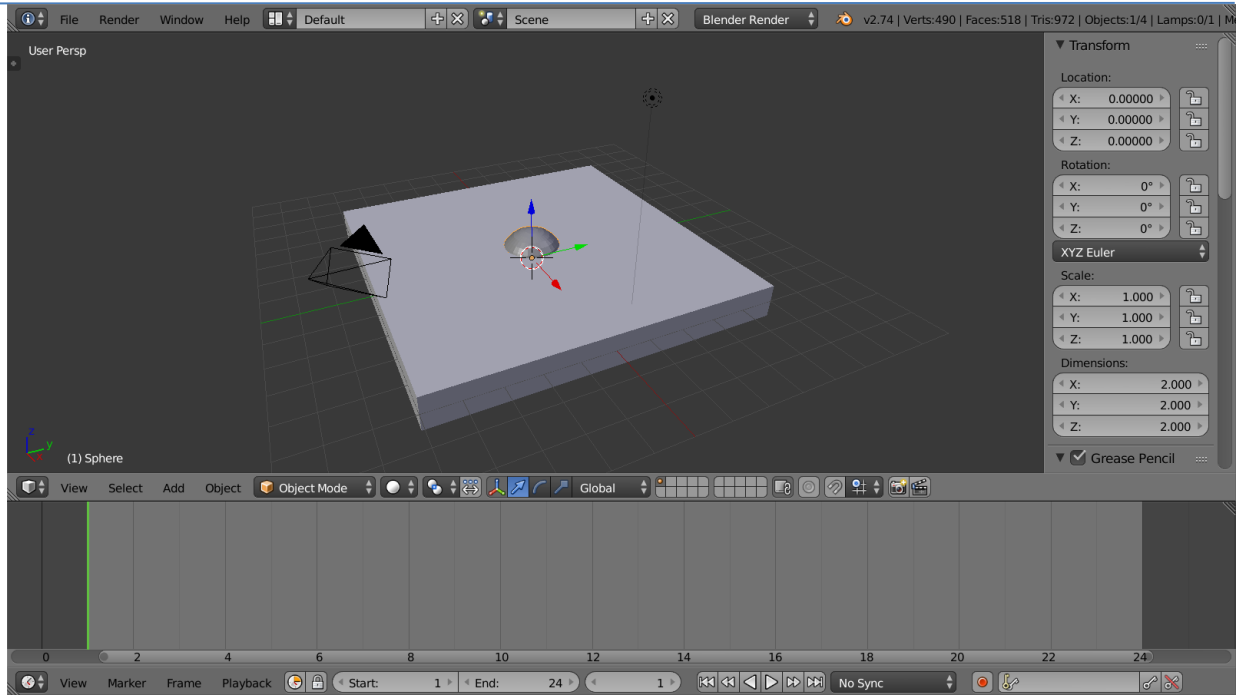
* Keyboard and mouse inputs are written in (blue)

Add UV Sphere

IIT BOMBAY

UV sphere will act as ball

- Add UV Sphere (Shift + A)



* Keyboard and mouse inputs are written in (blue)

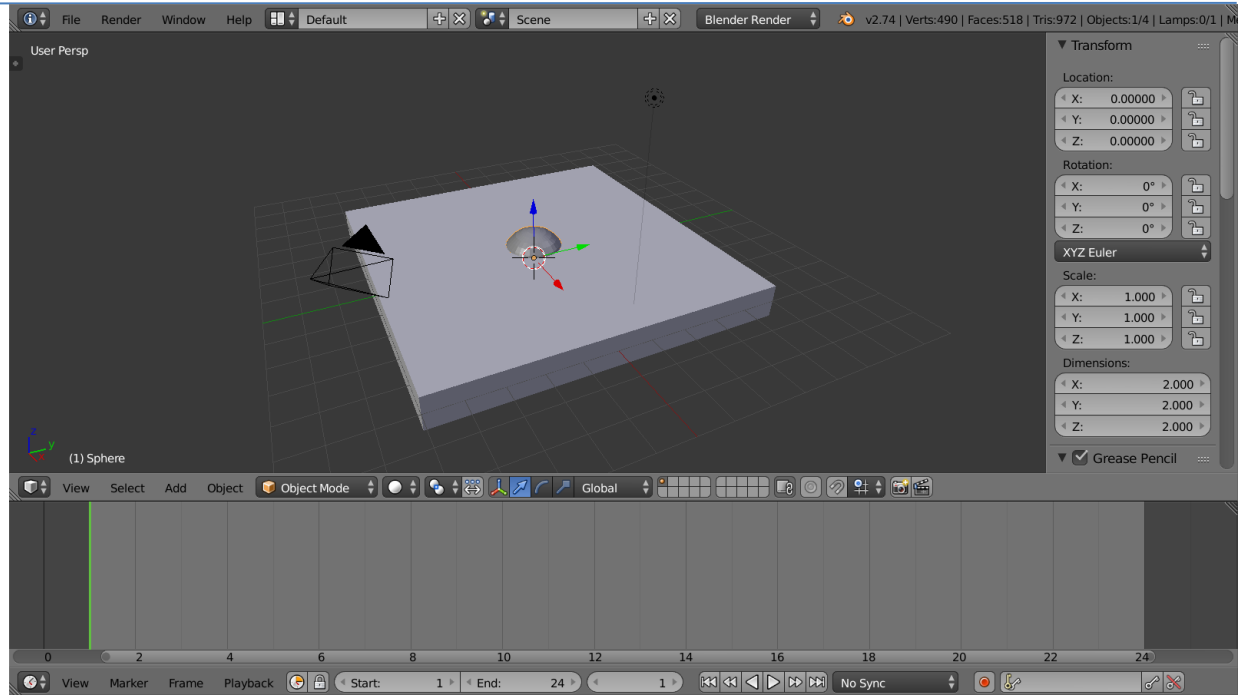
Add UV Sphere

IIT BOMBAY

Tip -

Check the position of the 3D cursor, it should be at origin

- Move 3D cursor to origin (Shift + C)



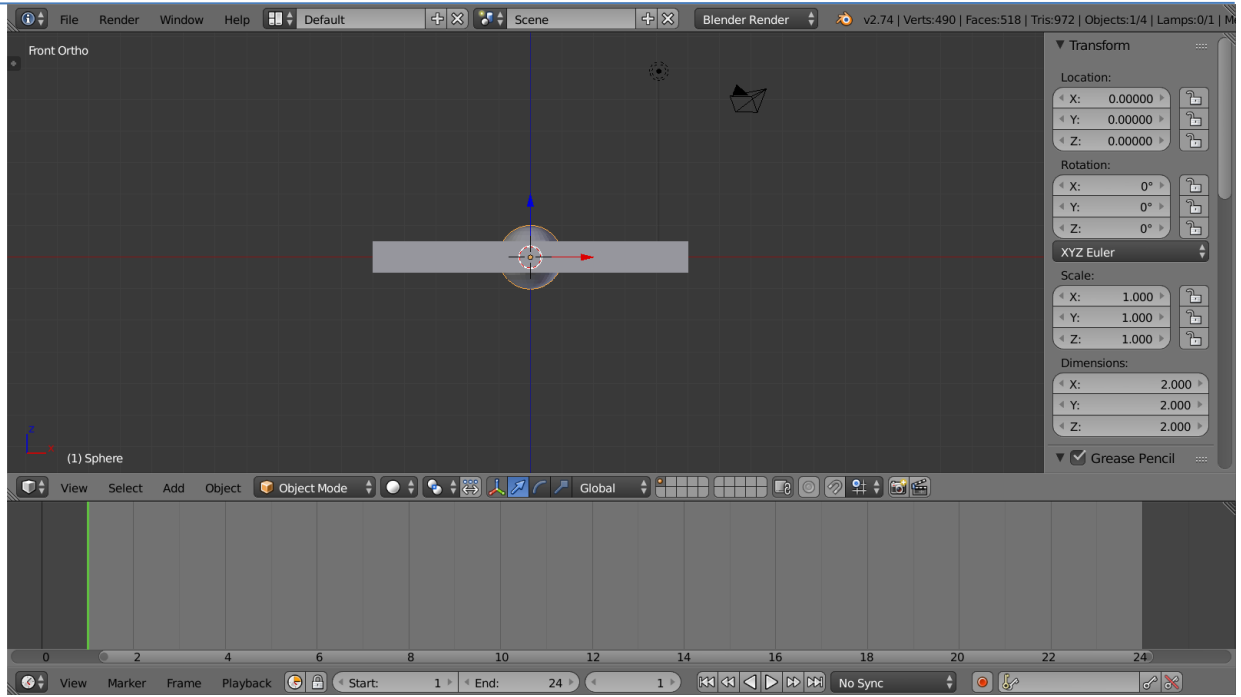
* Keyboard and mouse inputs are written in (blue)

Change view

IIT BOMBAY

For better view of the sphere, switch to front orthographic view port

- Front Ortho view (NUM1 + NUM5)



* Keyboard and mouse inputs are written in (blue)

IIT BOMBAY

Adding transformations (key frames)

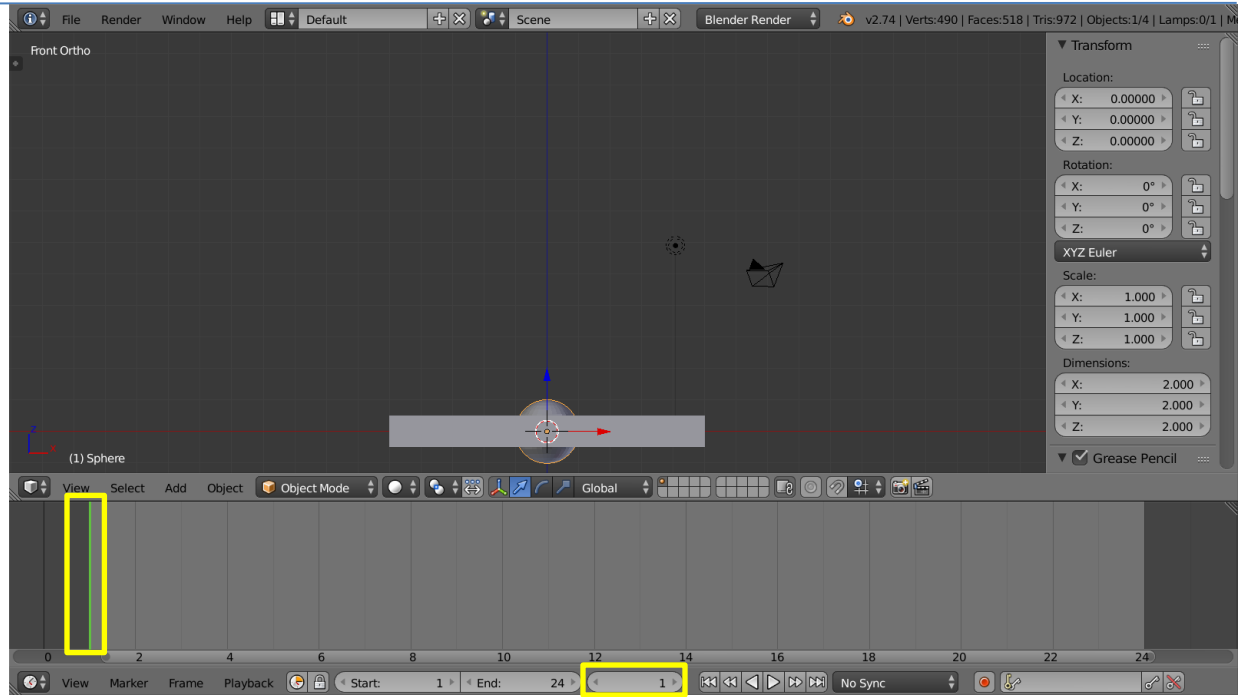
Setup key frame position, Stretch and Squash

Set current frame (Initial position)

IIT BOMBAY

Animation will start from frame 1

- Set current frame as frame 1 (Enter 1 in current frame box)



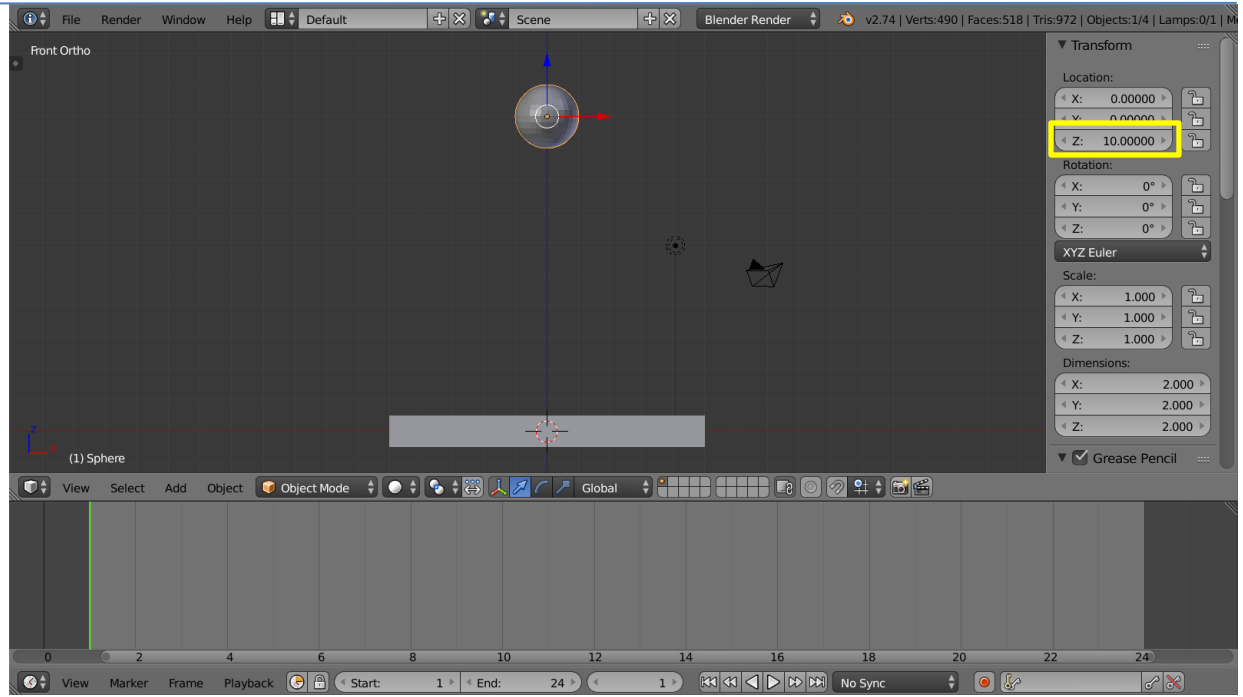
* Keyboard and mouse inputs are written in (blue)

Set initial state of the object

IIT BOMBAY

The ball will be dropped from some height

- Move UV Sphere up in Z axis (G+ Z).



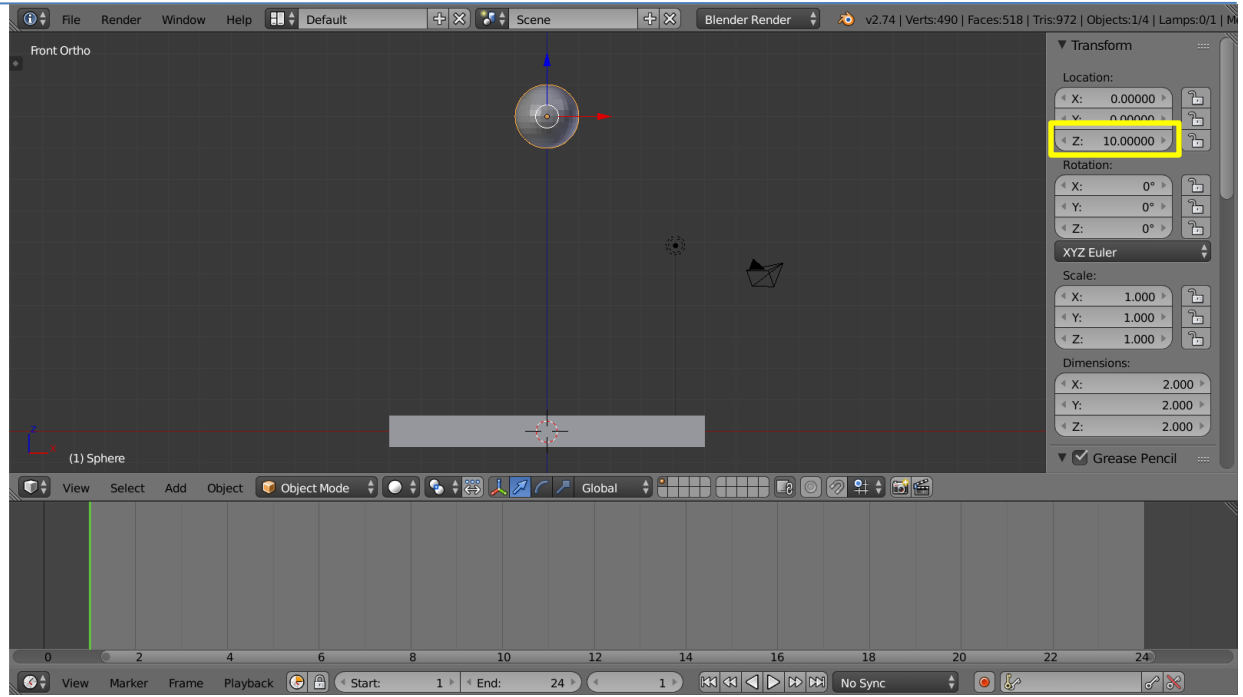
* Keyboard and mouse inputs are written in (blue)

Set initial state of the object

IIT BOMBAY

For accuracy use transform panel

- Insert Z axis value (ex.: 10) in location tab in transform panel.



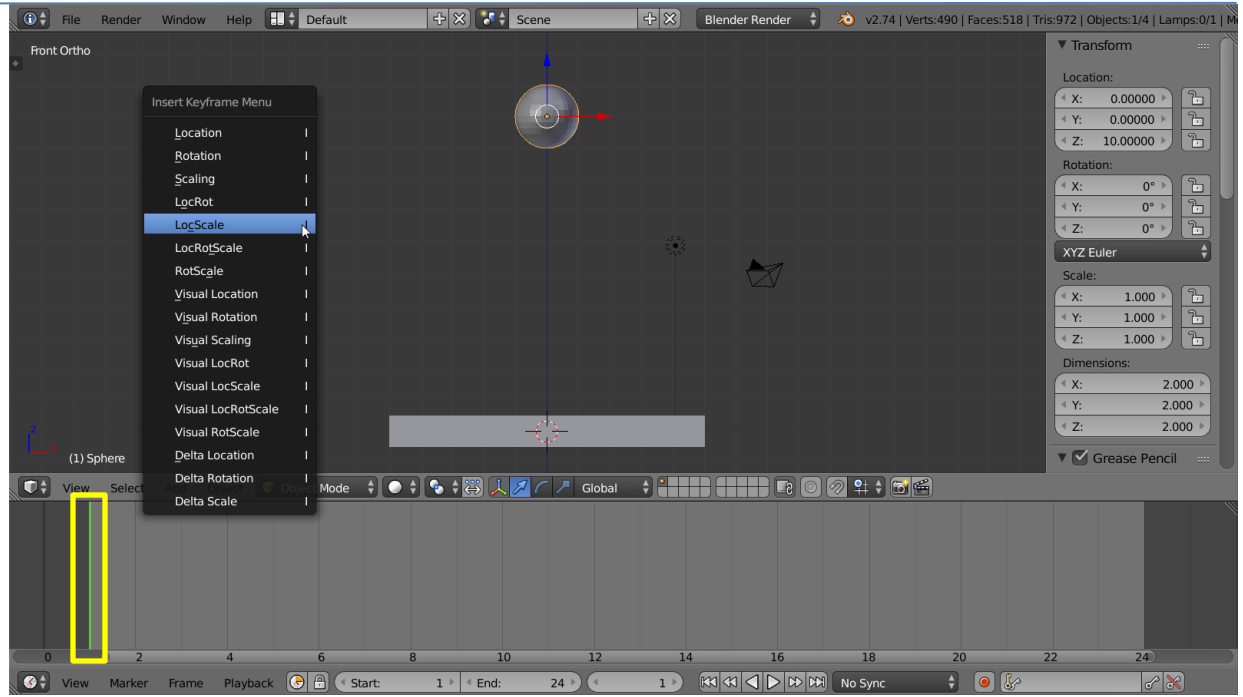
* Keyboard and mouse inputs are written in (blue)

Add key frame (Initial position)

IIT BOMBAY

Make this as initial position of the UV Sphere

- Add key frame in location and scale (I)



* Keyboard and mouse inputs are written in (blue)

Transform panel

IIT BOMBAY

- When a key frame is added the transform panel data turns yellow in colour
- Ex: Image 1 shows location and scale data in yellow colour as location and scale key frame has been added for sphere

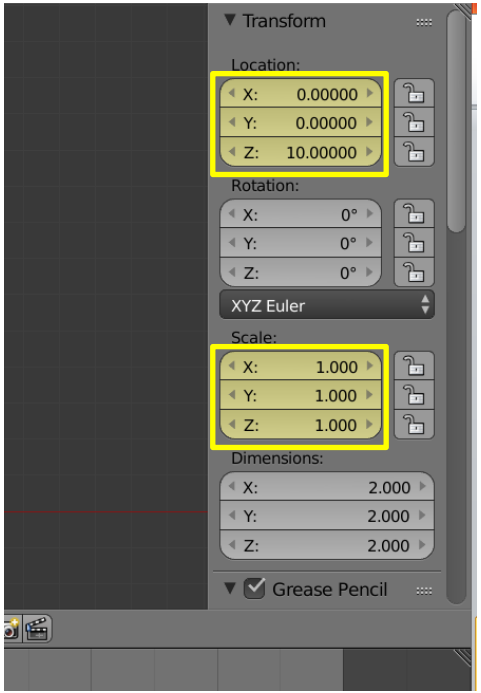


Image 1

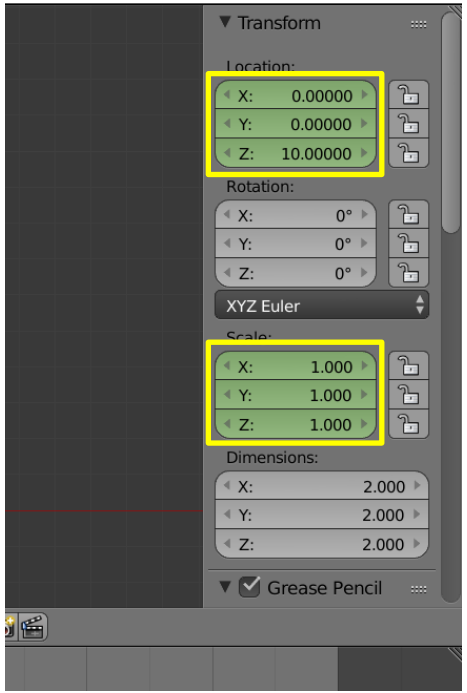


Image 2

Transform panel

IIT BOMBAY

- In-between frames data is shown in green colour
- Ex: Image 2 shows location and scale data in green for in-between frames

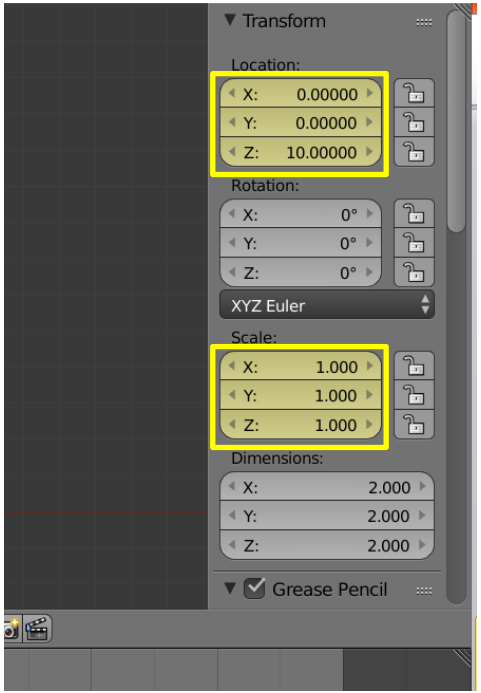


Image 1

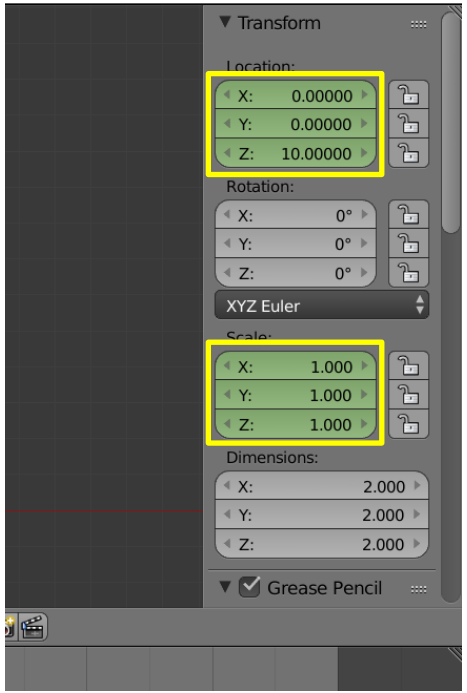


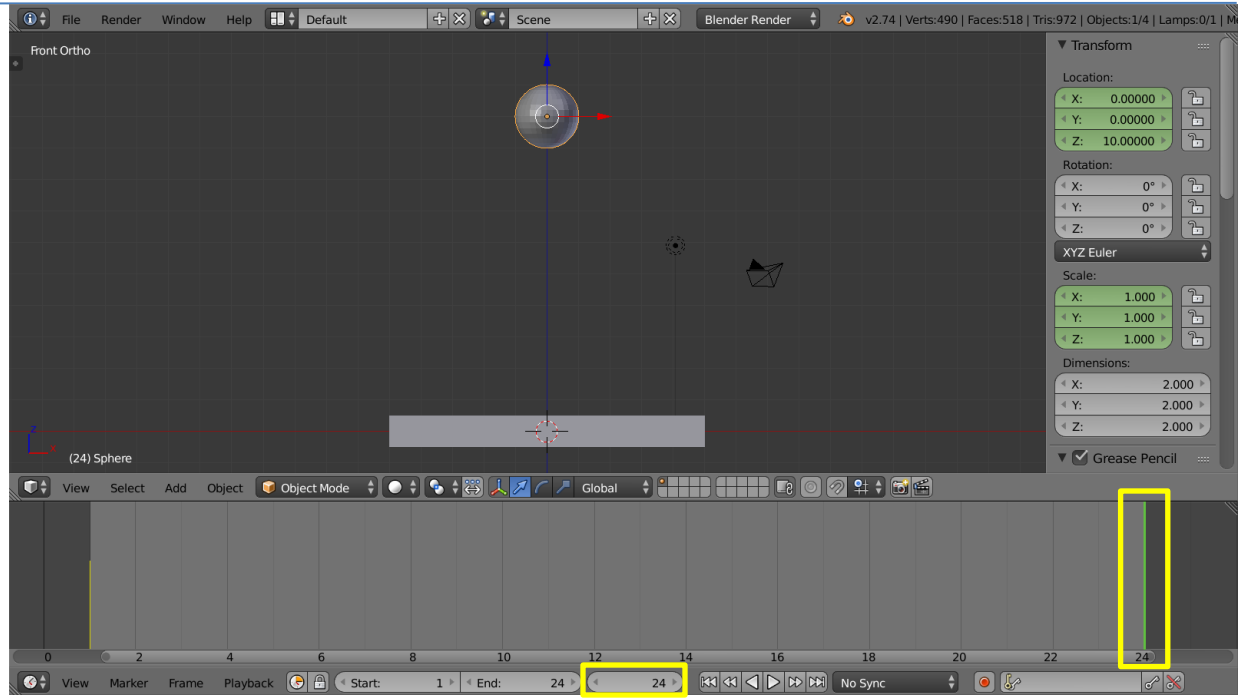
Image 2

Change current frame (end position)

IIT BOMBAY

The ball will take 24 frames to go back to the initial position.
(24 frames to complete one bounce)

- Set current frame as frame 24 (Enter 24 in current frame box)



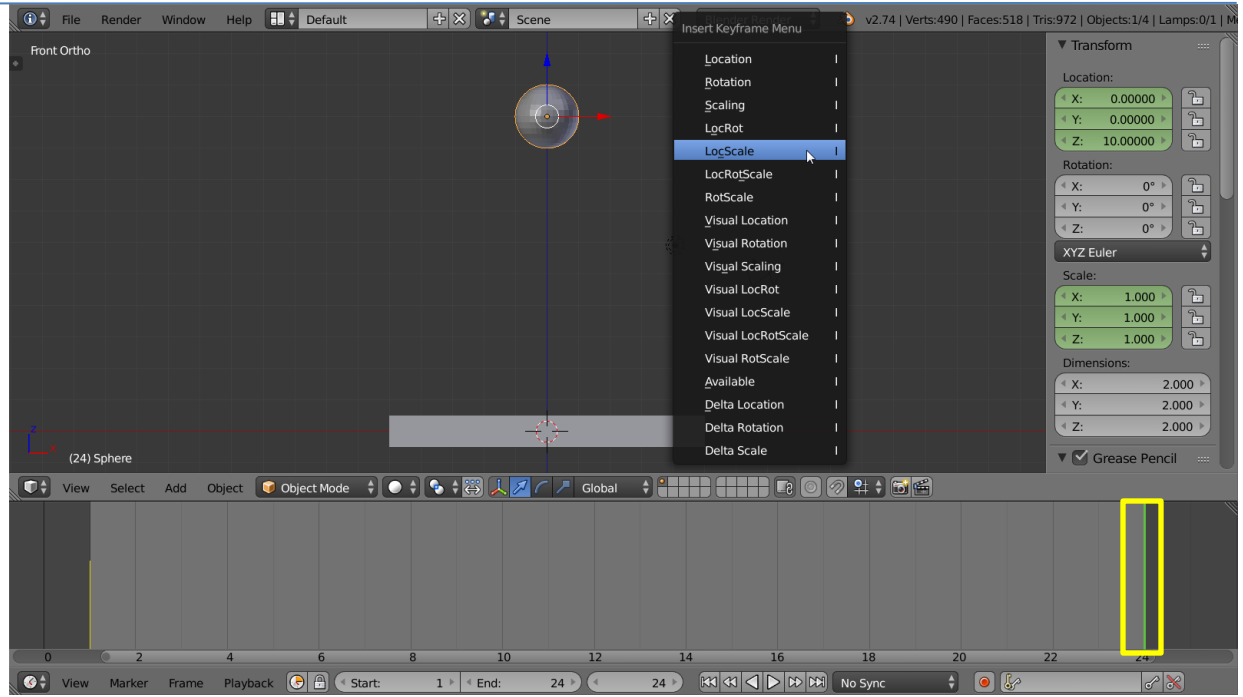
* Keyboard and mouse inputs are written in (blue)

Add key frame (end position)

IIT BOMBAY

Lock position of the UV Sphere

- Add key frame in location and scale (I)



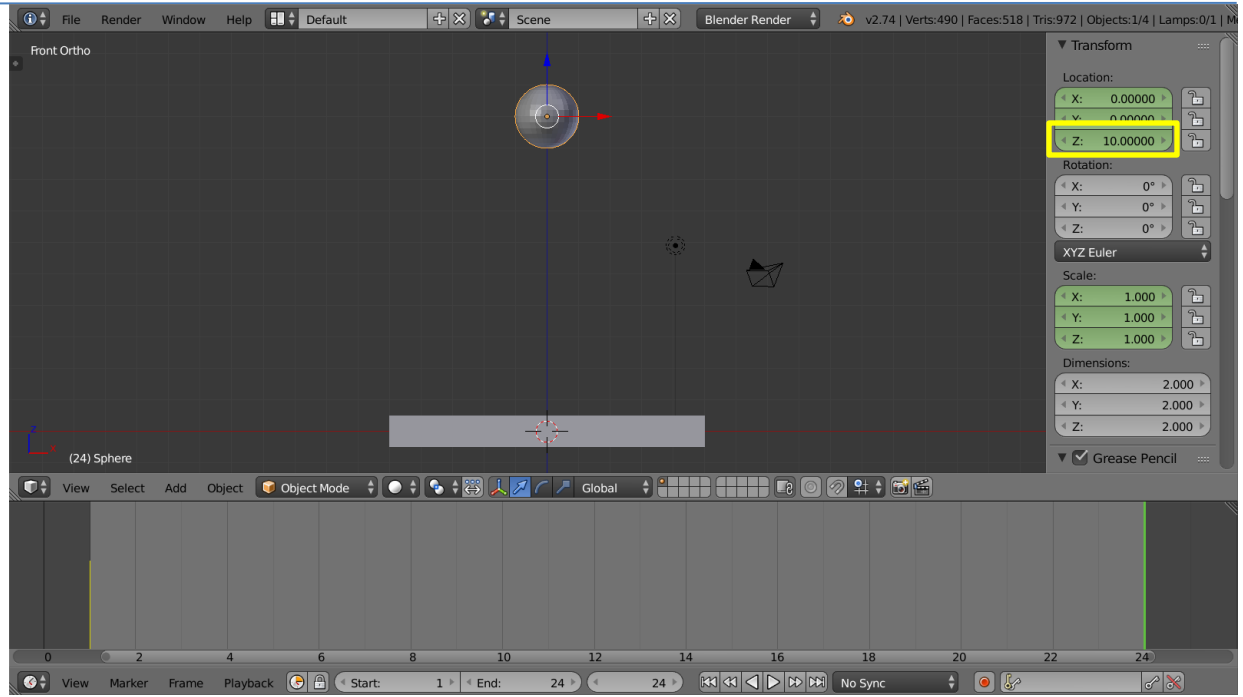
* Keyboard and mouse inputs are written in (blue)

Set the end frame

IIT BOMBAY

Initial position and end position is same

- No need to move the sphere

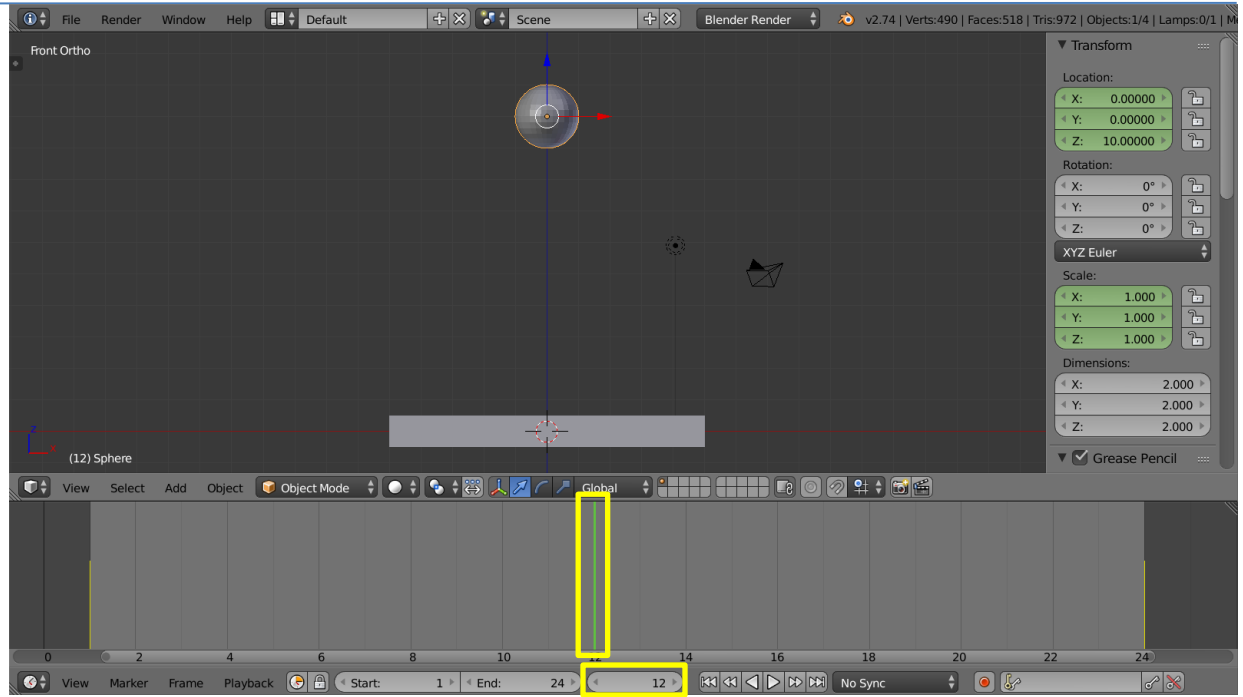


Change current frame (ball at surface)

IIT BOMBAY

The ball will touch the surface on frame 12

- Set current frame as frame 12 (Enter 12 in current frame box)



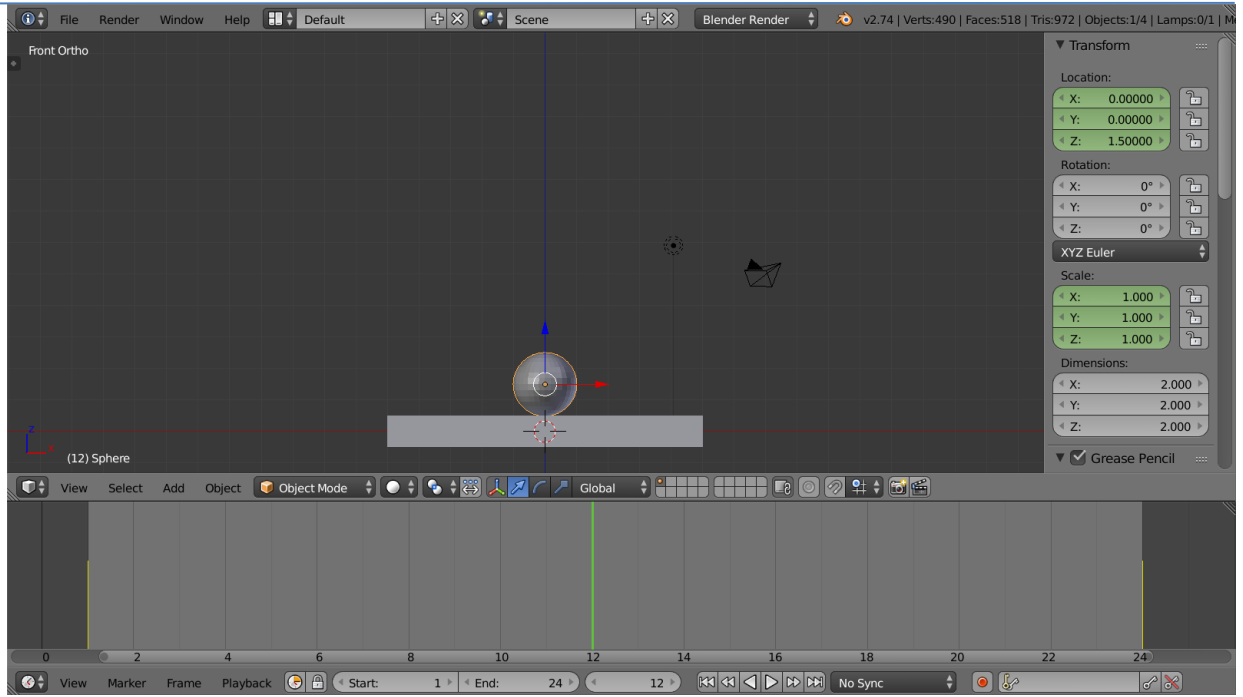
* Keyboard and mouse inputs are written in (blue)

Apply transformation (ball at surface)

IIT BOMBAY

The ball touches the surface

- Move UV Sphere down in Z axis, so that it touches the surface (G)



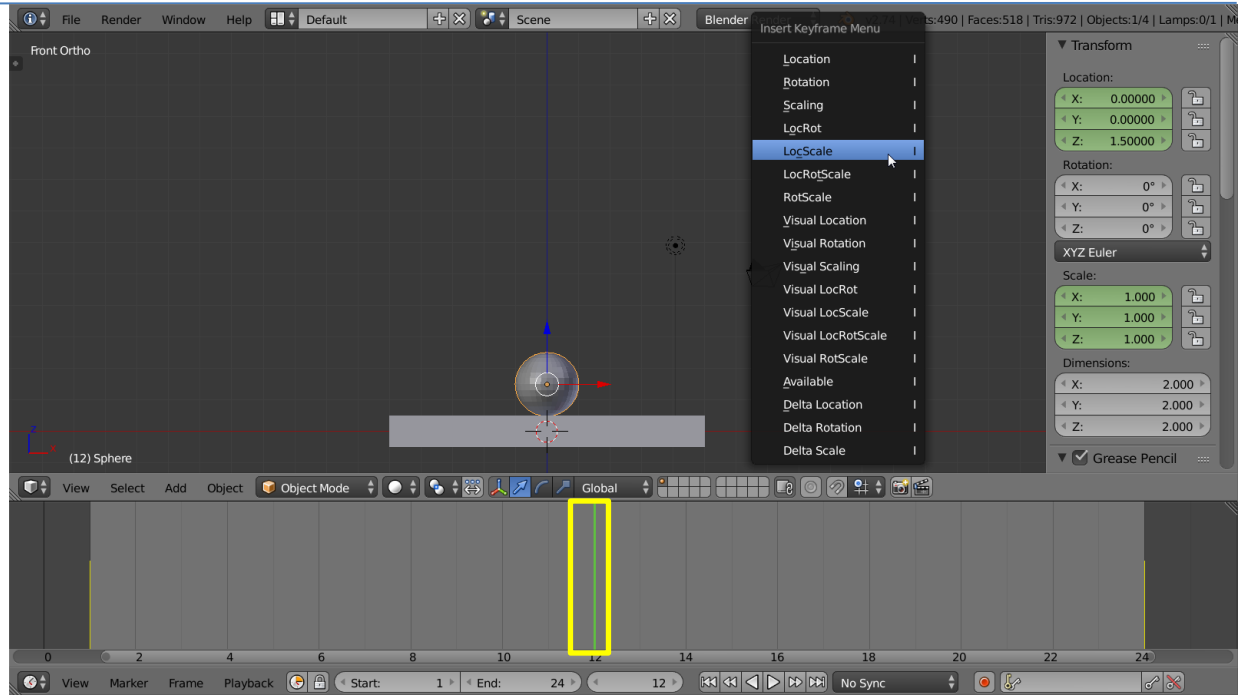
* Keyboard and mouse inputs are written in (blue)

Add key frame (ball at surface)

IIT BOMBAY

Lock position of the UV Sphere

- Add key frame in location and scale (I)



* Keyboard and mouse inputs are written in (blue)

IIT BOMBAY

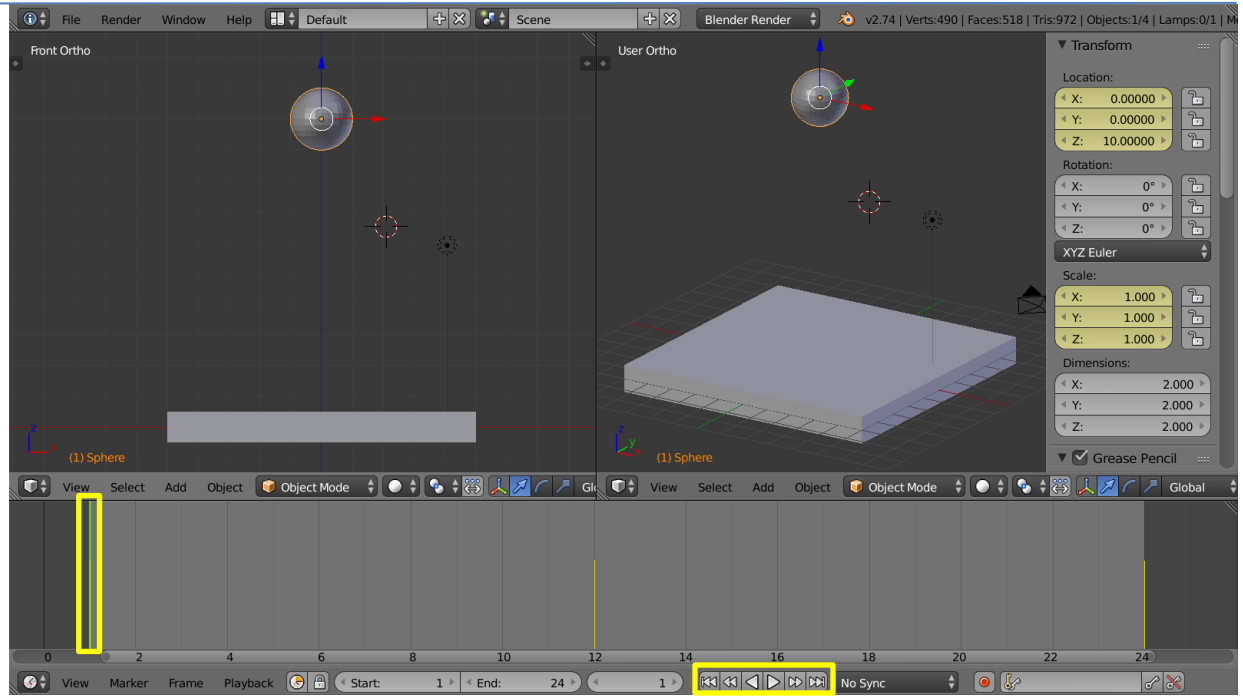
Reviewing animation

Play animation

IIT BOMBAY

Review animation

- Move time cursor back to the first frame
- Play the animation (Alt + A OR Play button in the Timeline window)



* Keyboard and mouse shortcuts are written in (blue)

IIT BOMBAY

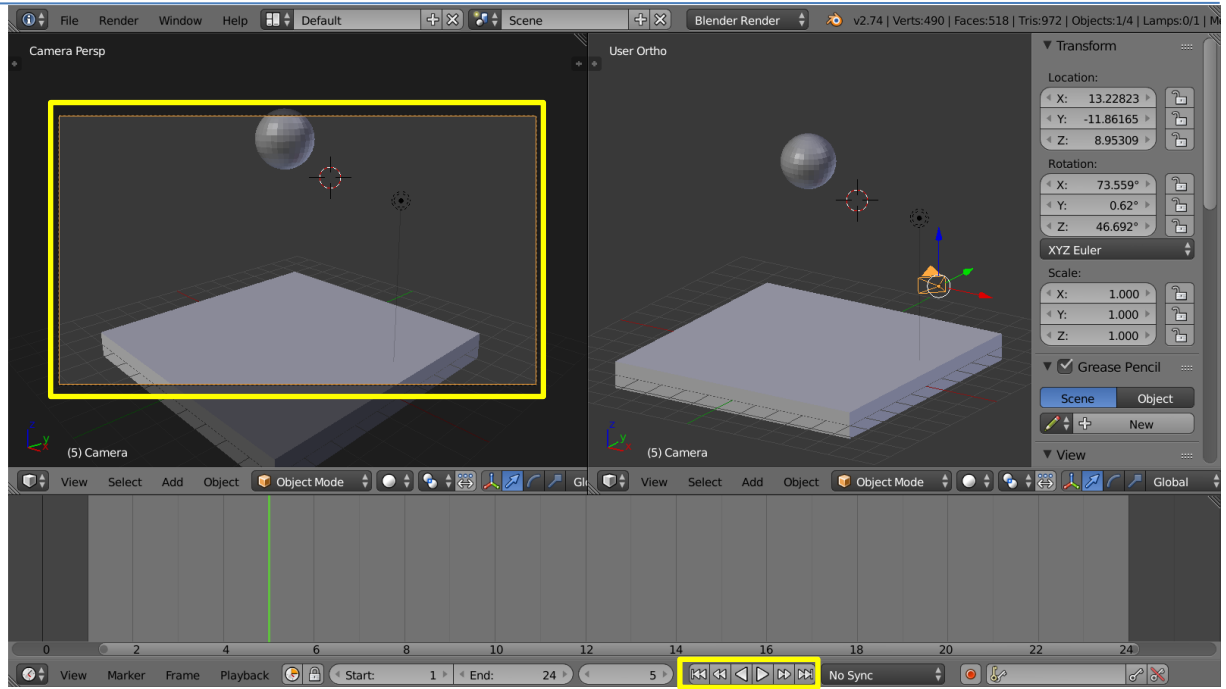
Rendering

Camera mode

IIT BOMBAY

Before rendering the animation, check if camera frame covers the entire animation or not

- Go to camera view (NUM 0)
- Play the animation (Alt + A OR Play button in the Timeline window)

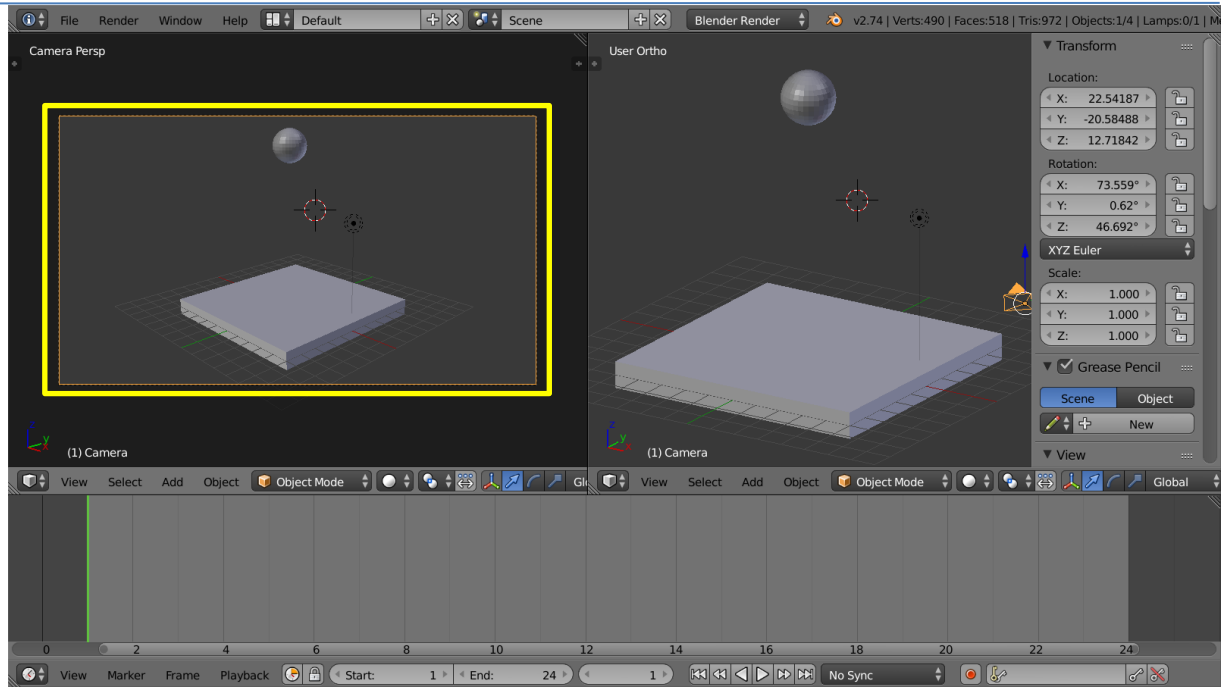


Set camera

IIT BOMBAY

Set the camera:

- Select camera (right click)
- Fine adjustment (G and R + mouse movement)
- Camera as active view (Ctrl + Alt + 0)



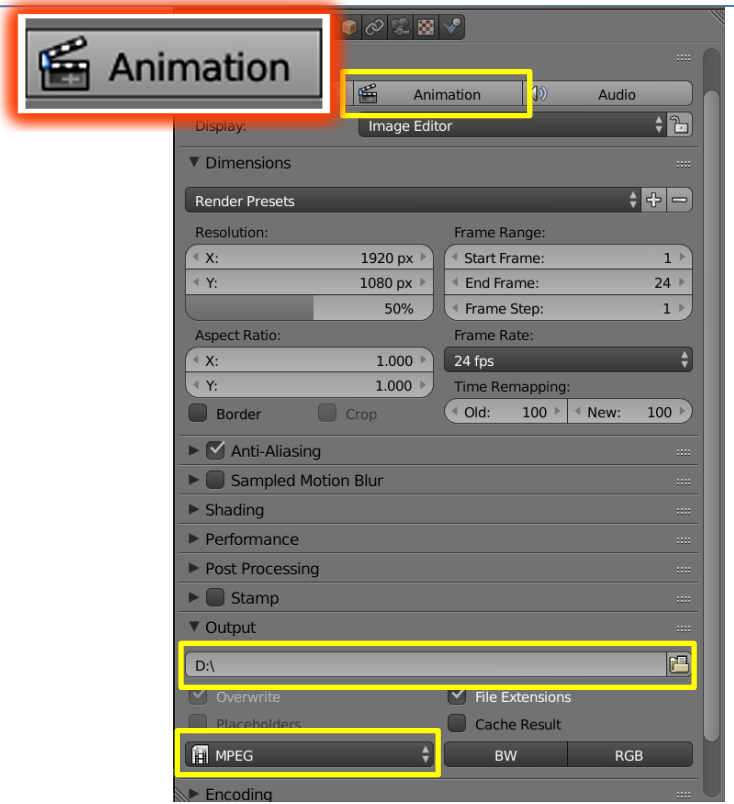
Render animation

IIT BOMBAY

Render settings :

- Output : set file path
- File format : MPEG
- Render animation :

  (Ctrl + F12 OR Animation button in Properties window)

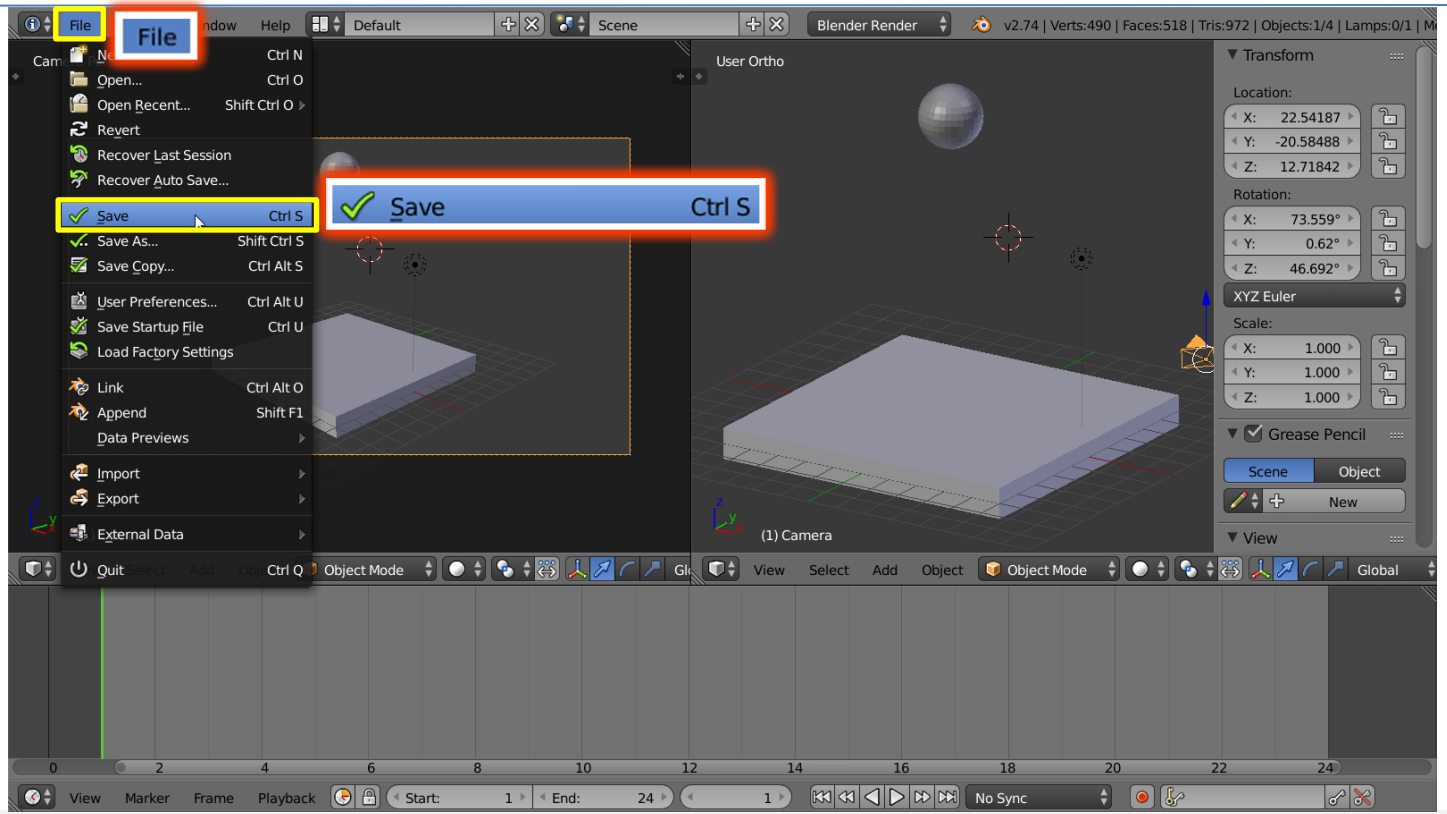


IIT BOMBAY

File saving

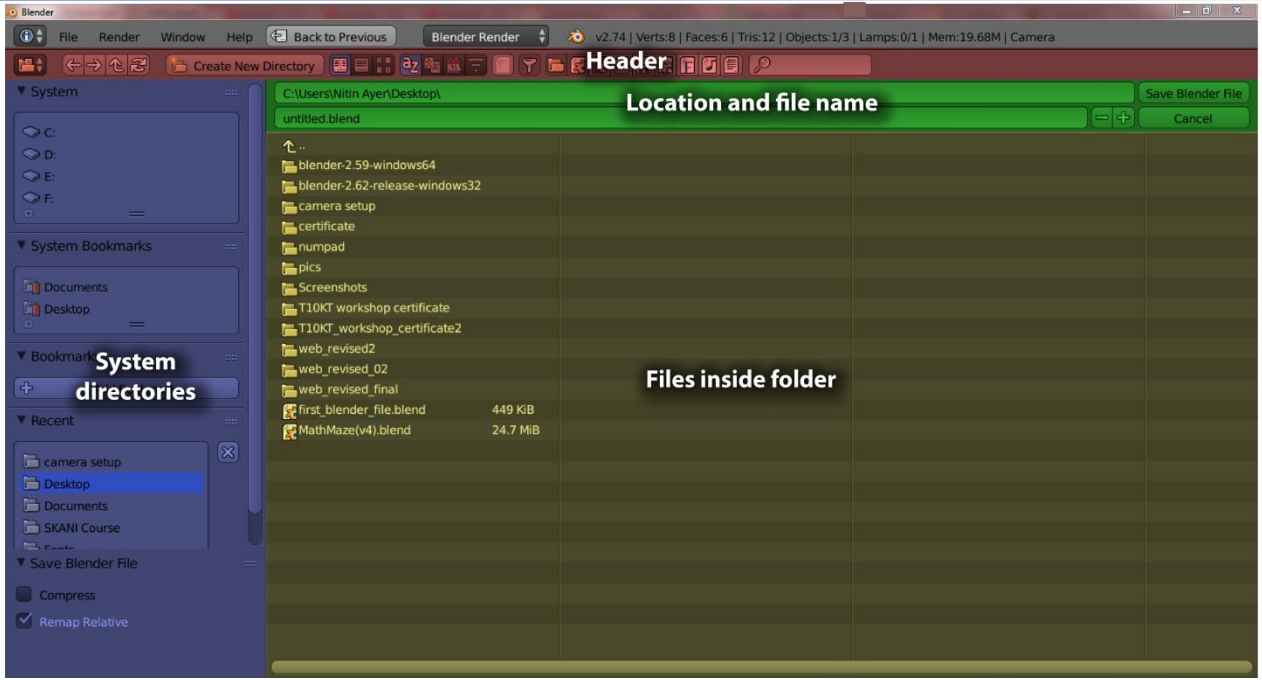
Saving Blender file

IIT BOMBAY



Select file path and name

IIT BOMBAY



Header

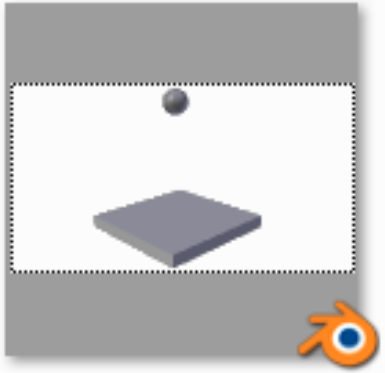
System directories

Location and file name

Files inside folder

Blender file .blend extension

IIT BOMBAY



Ball bounce

IIT BOMBAY

Next session

Assignment