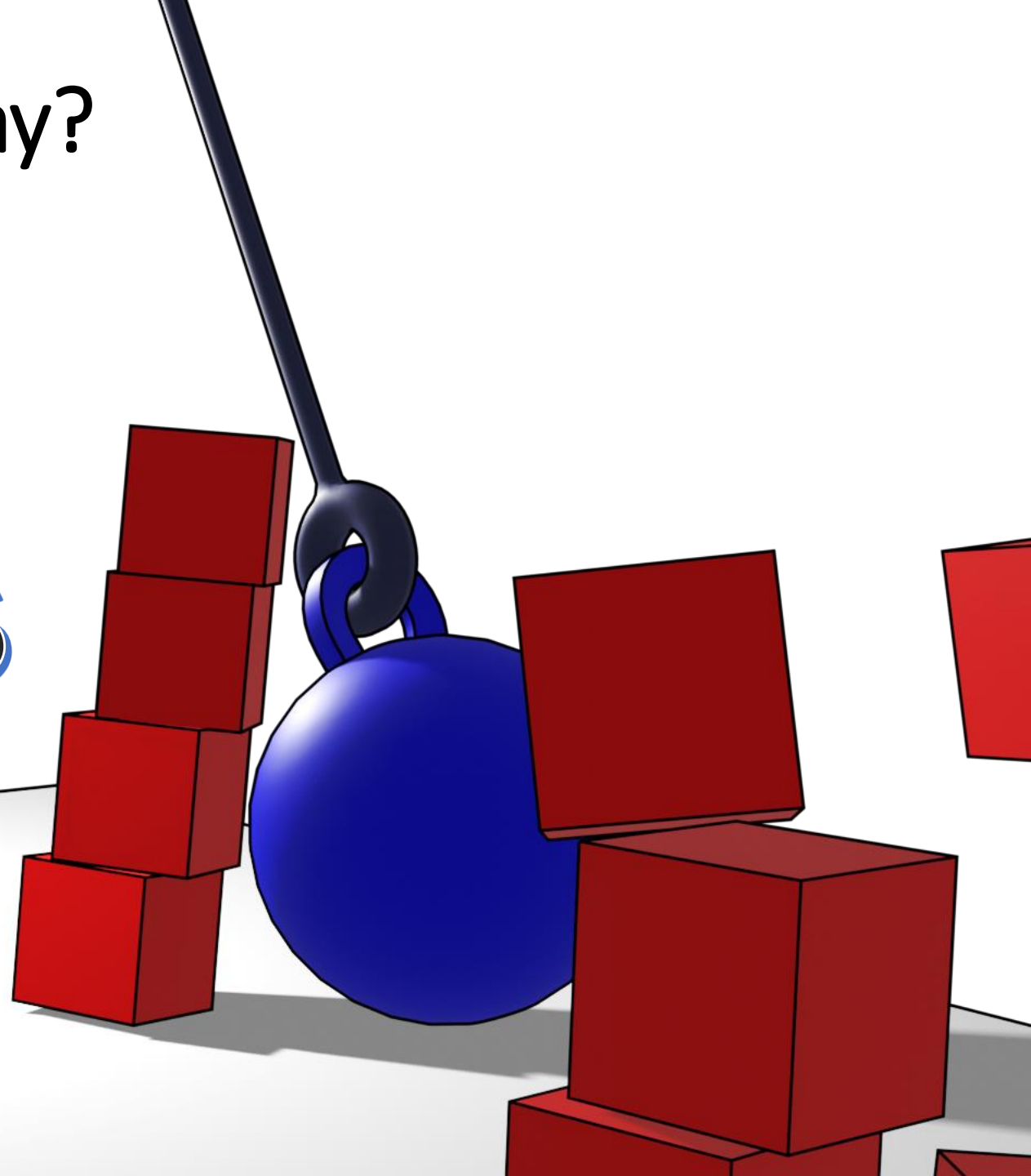


PV272

Cv 09

What do we create today?

Basics of collisions



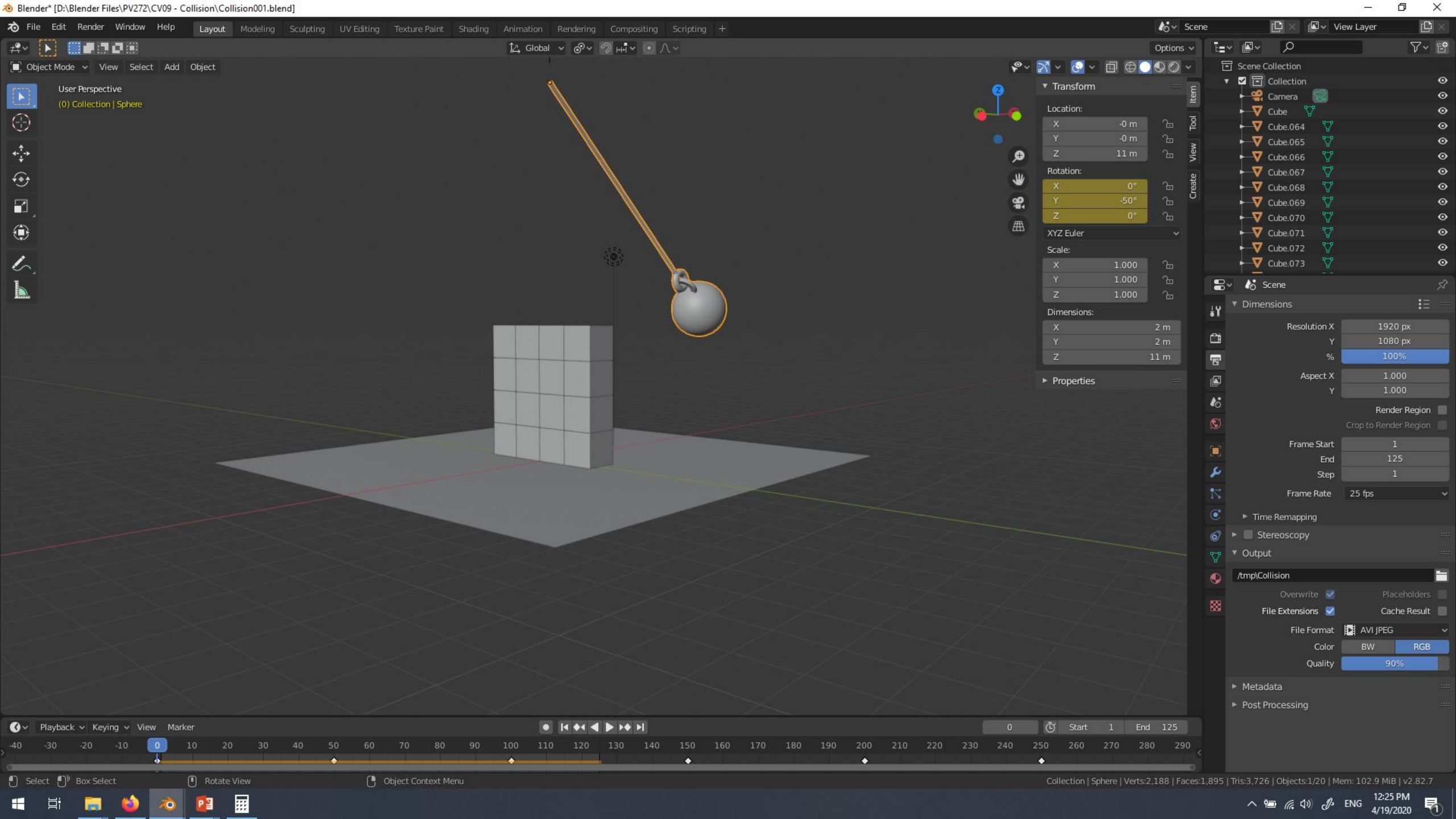
How do we create it?

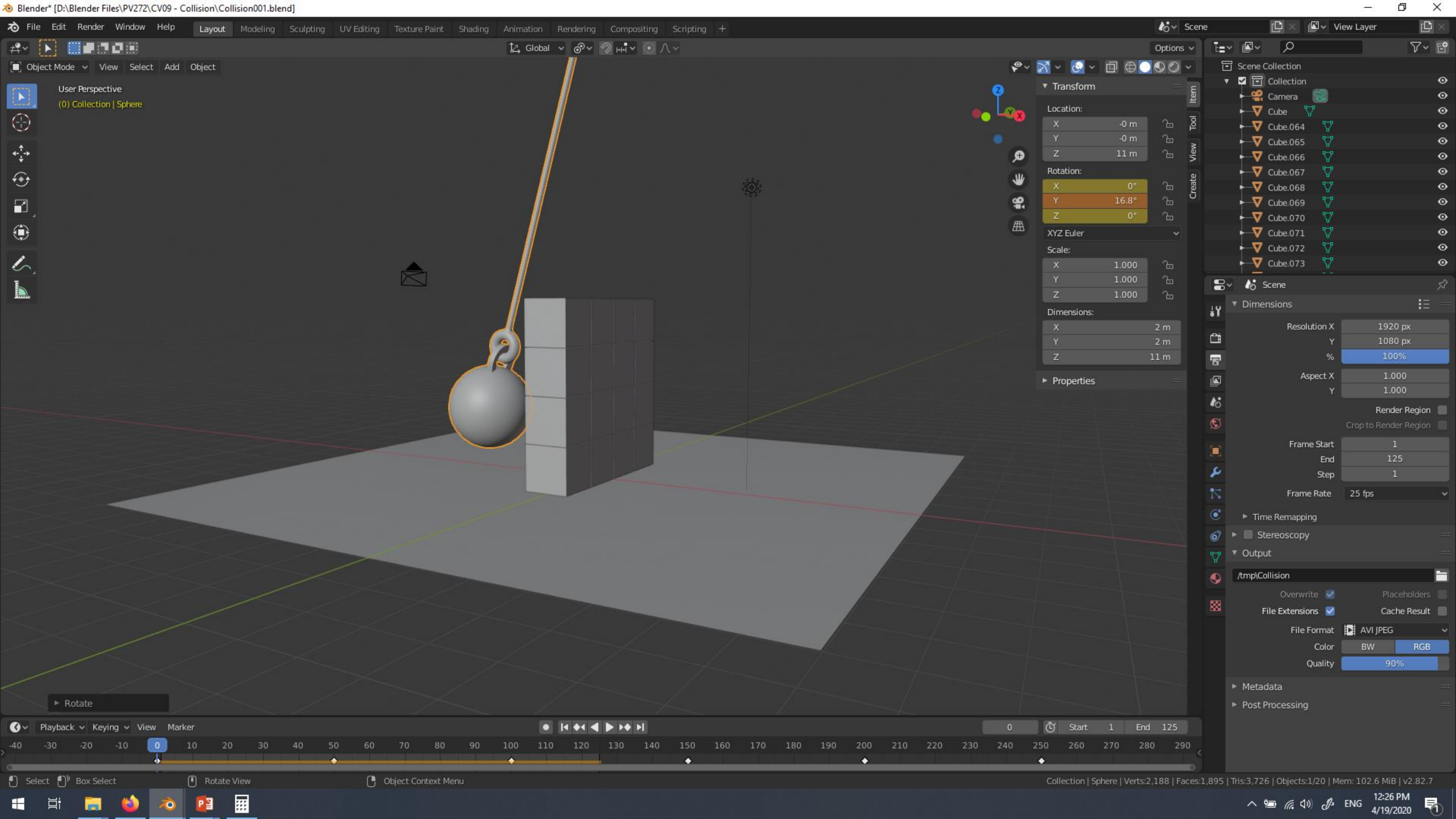
- Sometimes we want to simulate physics, such as objects hitting each other
- We are going to be simulating a wrecking ball hitting a bunch of boxes
- Watch the finished result in the video in the zip.

RIGID BODIES

Model the scene

- Add a plane in the scene, it will serve as the floor
- Model a wrecking ball
 - Add a Sphere into the scene
 - Extrude its top in order to make the “rope”
 - You can get as creative as you wish when modeling the wrecking ball and its attachment to the rope
 - Move the cursor to the top of the rope – Shift + RMB
 - Move the origin of the wrecking ball object to the cursor
 - Object -> Set origin -> Origin to 3D cursor
 - This will be a center of rotation of the wrecking ball
- Add a bunch of boxes to the scene so they are in the way of the “swing” of the ball
 - Make sure the boxes do not touch each other or the floor so there are very small spaces between them



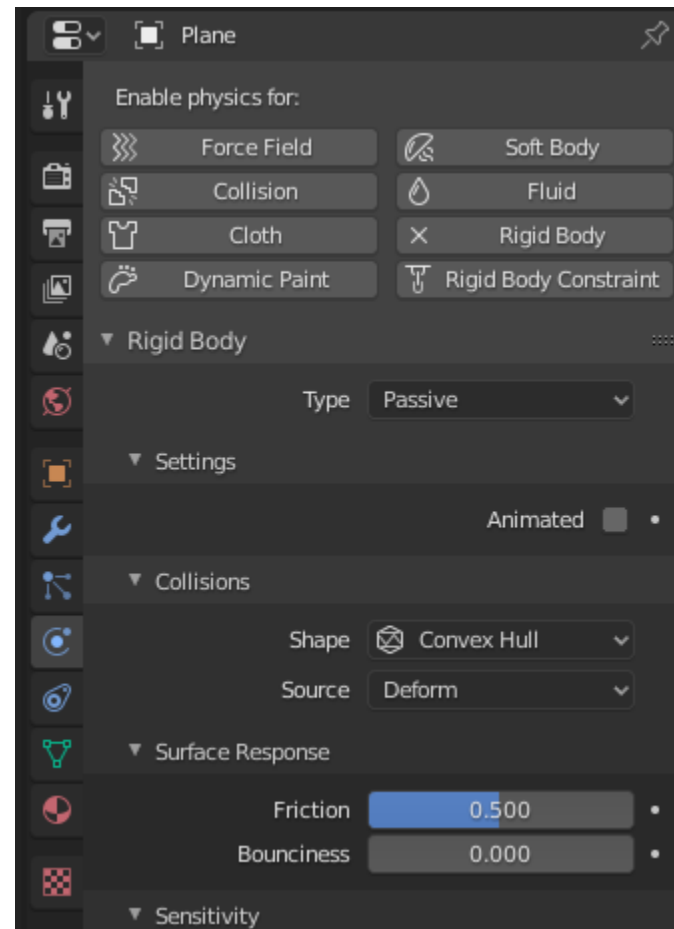
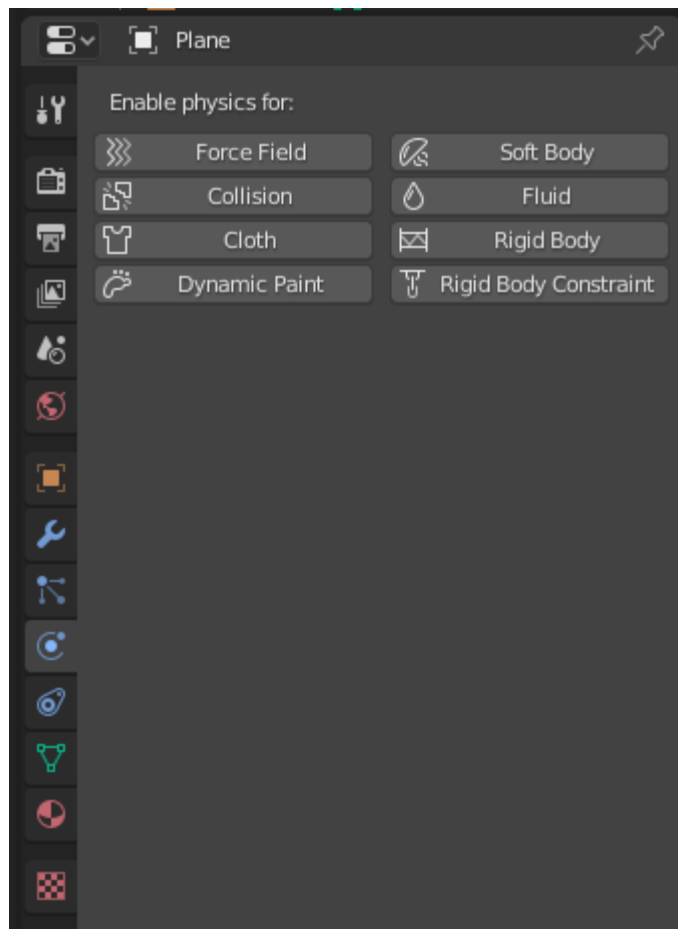


Animate the wrecking ball

- Go to frame 1 and rotate the wrecking ball around Y-axis about +50 degrees and keyframe the rotation
 - Hit I -> Rotation
- Go to frame 50 and rotate the wrecking ball around Y-axis about -90 degrees and keyframe the rotation
 - Hit I -> Rotation
- Go to frame 100 and rotate the wrecking ball around Y-axis about +70 degrees and keyframe the rotation
 - Hit I -> Rotation
- Now we have the basic animation of the wrecking ball

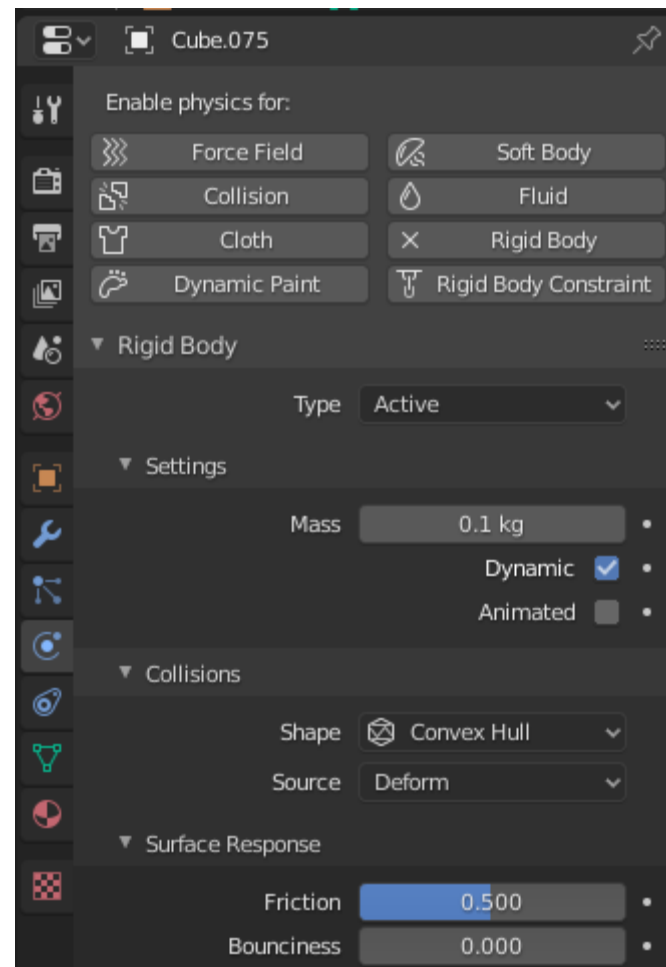
Set the physics

- We need to set a few physics settings
- Ground
 - Ground is a passive object, it is not influenced by gravity, it just needs to act as the support of the boxes
 - Select the ground, go to Physics Properties tab, activate Rigid Body and set the type to passive



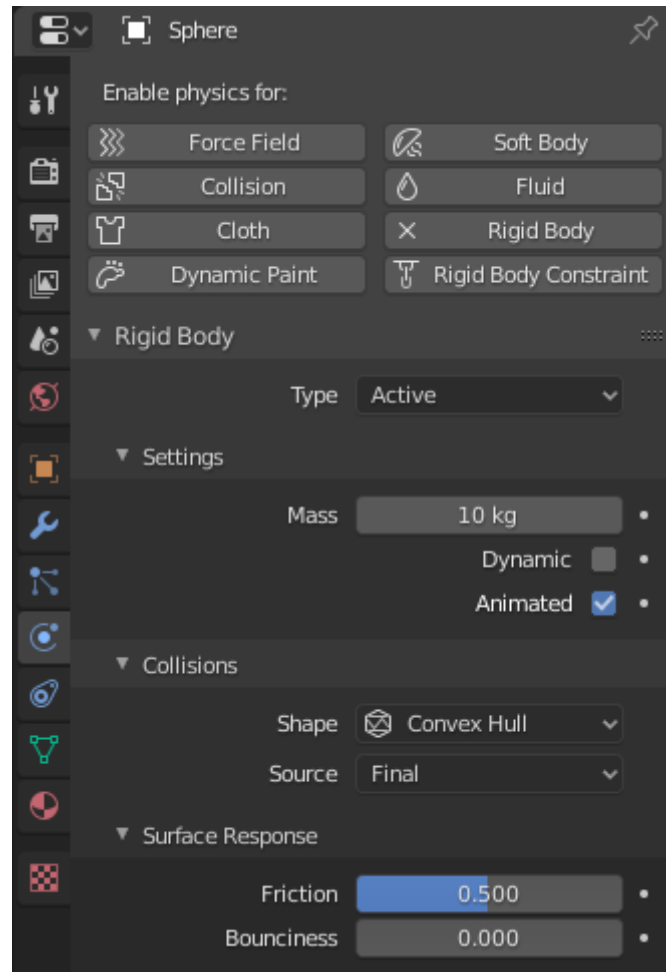
Set the physics

- Boxes
 - Boxes are active objects, which are influenced by gravity, but not by animation system, only the wrecking ball is influenced by that
 - We need to go once again to the Physics Properties tab, activate Rigid Body and set the type to active
 - The mass of the box can be set to something small, like 0.1 kg



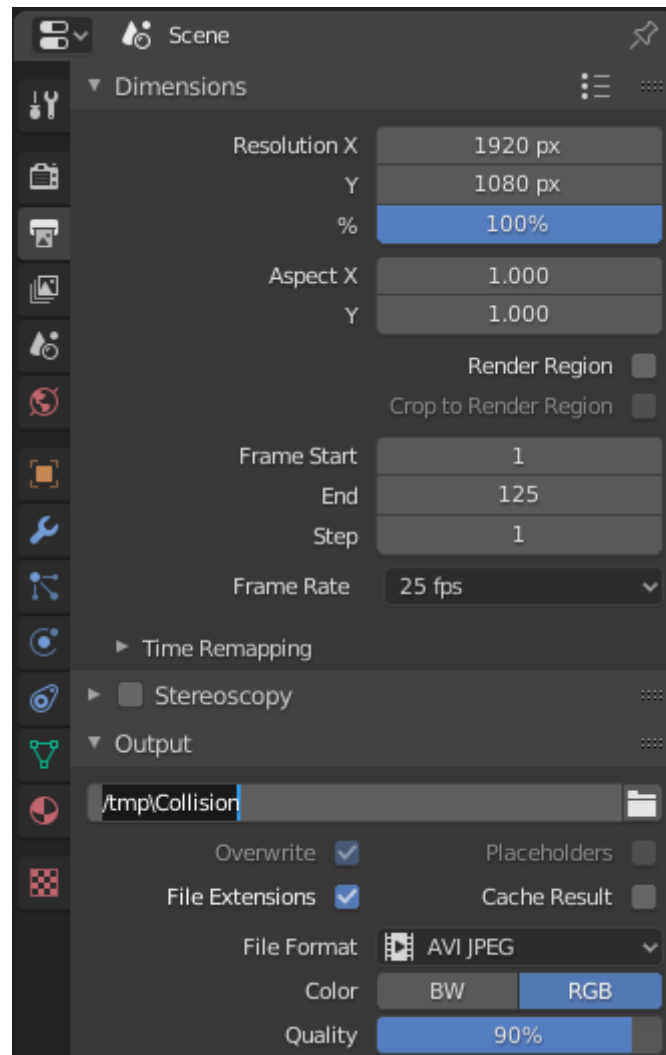
Set the physics

- Wrecking ball
 - Wrecking ball is also an active object but not influenced by gravity, instead it is influenced by the animation system
 - In order to accomodate for this, uncheck “Dynamic” and check “Animated”
 - The mass of the object is higher than the boxes’, for example 10kg
 - Also, the Collision -> Source must be set to “Final” in order for the simulation to work correctly



Watch the simulation and render it

- Go to frame 0, hit Shift+Space and watch the simulation.
- You can play around with the settings to see how they influence the simulation
- Add some materials and lights to the scene
- Render the animation
 - Set the start and end frame in the Output Properties
 - Set the path of the Output, mine is called “/tmp\Collision”, this renders the result to C:\tmp folder
 - Set the File format to AVI JPEG
 - Hit Ctrl+F12 to render the animation



Homework

- Create the simulation animate it and upload the video to IS
- Until 27.4.