How to Create a Bouncing Ball Animation in Blender 3.4 from Scratch

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Introduction

3D modeling is the transition to turning imagination into something visualizable and obtainable. This tutorial introduces you to 3D modeling using Blender, a free and open source 3D creation suite. It supports modeling, rigging, animation, simulation, rendering, compositing, motion tracking, video editing and game creation. However, this instruction manual will only help you familiarize Blender with the basics of modeling and animation. Therefore, no prior knowledge or experience with 3D modeling is required.

First, we need a laptop and a stable Internet connection to download Blender. By the way, Blender runs on Windows, MacOS and Linux, so you do not have to buy another computer. Happy Blendering!

Requirements

Recommended:

- ☐ 64-bit eight core CPU
- ☐ 32 GB RAM
- ☐ 2560×1440 display
- ☐ Three button mouse or pen+tablet
- ☐ Graphics card with 8 GB RAM

Minimum:

- ☐ 64-bit quad core CPU with SSE2 support
- ☐ 8 GB RAM
- ☐ Full HD display
- ☐ Mouse, trackpad or pen+tablet
- ☐ Graphics card with 2 GB RAM, OpenGL 4.3
- ☐ Less than 10 year old

Instructions

1. Download Blender

1.1. Go to [Blender download] to get the newest version of Blender for free!

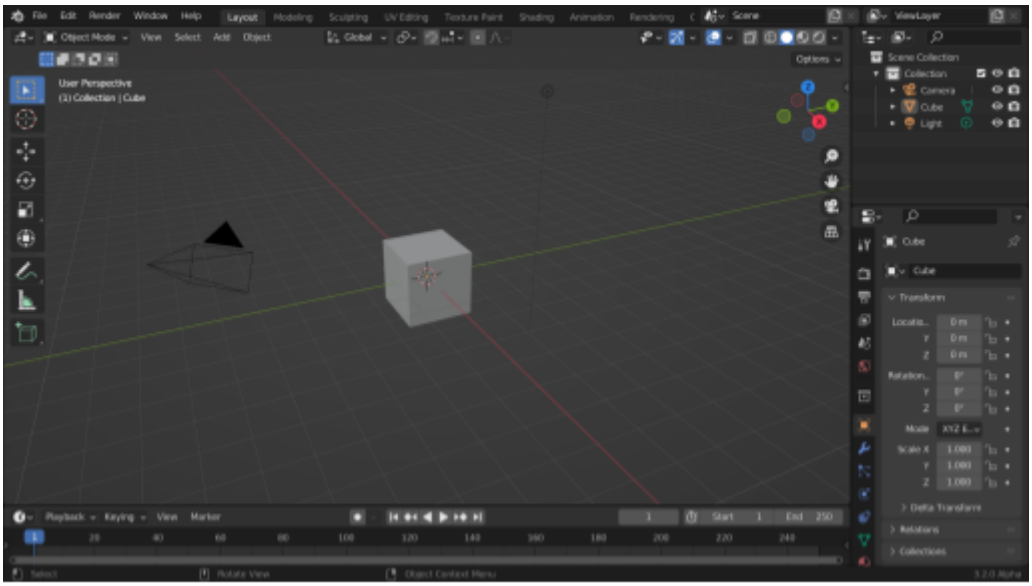
1.2. On the drop-down menu, select the compatible version with your device.

Image screenshot from the Blender website

1.3. Click on the blue tab to download.

1.4. Follow the instructions from Blender installation, and you are ready.

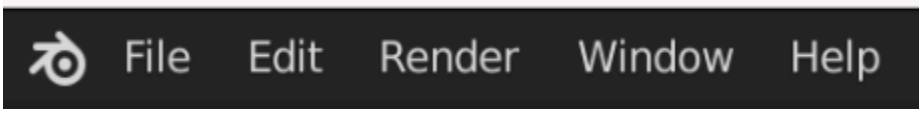
2. Interface



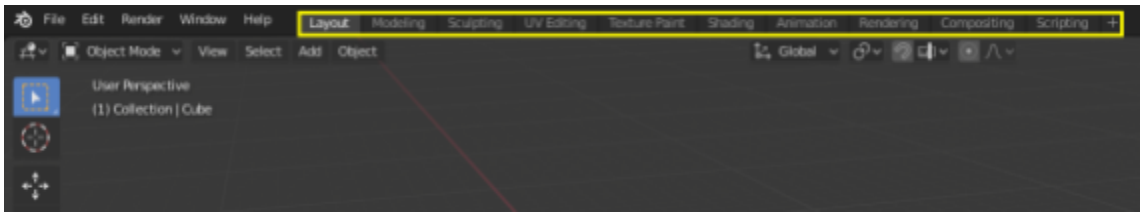
https://docs.blender.org/manual/en/latest/_images/...ce_window-system_introduction_default-startup.png

2.1. Open Blender and close the splash screen. You will see a window like the one above.

2.2. The topbar is the menu for Blender where you can work with the software itself.



2.3. The workplace menu offers a variety of functions you can use within Blender. You can stay on **“Layout”** for this tutorial.



2.4. The left bar shows you the different selection tools in the current mode.

2.5. The right side of the window allows you to pick different functional panels you want to use. The default one at the top contains all the existing objects.

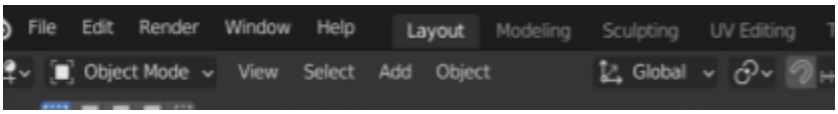
2.6. The bottom play bar is used for inserting keyframes for animation.

3. Creating a Sphere

[Note] Save your progress constantly with "`crl + s`" or "`cmd + s`".

3.1. Select the default cube by right-clicking on it. Press "`x`" on the keyboard and select **"Delete"** to delete the cube.

3.2. Click on **"Add"** on the top-left menu bar and select **"Mesh"** → **"UV Sphere"**.



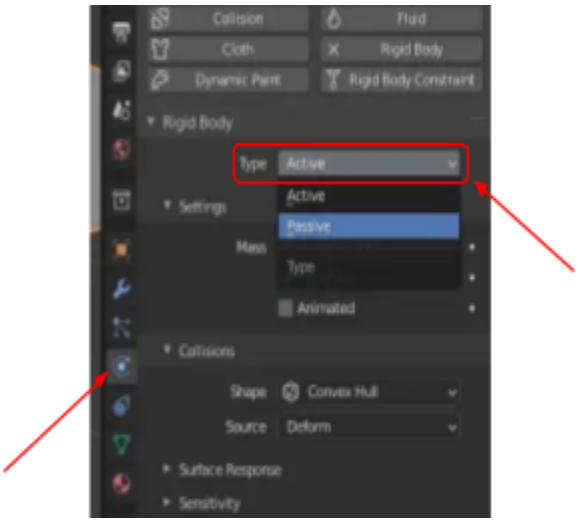
3.3. The sphere is automatically selected after creation, simply press "`s`" to scale the sphere to the desired size. On the bottom left, there is a setting tab for other properties.

3.4. [Optional] You can add a flat plane to represent the ground, instead of "UV Sphere", select **"Plane"**.

4. Assigning Properties

4.1. Select the sphere and select **"Physics Properties"** (the icon that looks like planet revolution) in the Properties panel.

4.2. In the **"Physical Properties"** tab, select **"Rigid Body"** and set the **"Type"** to **"Active"**. This enables realistic physics on the sphere.



4.3. [Optional] Select the plane and do the same but set the **"Type"** to **"Passive"** .

5. Animating

5.1. Move the sphere to the starting position for the bouncing animation.
[Optional] Move the plane below the sphere to act as solid ground.

5.2. Press "`i`" and select **"Location"** to add a keyframe for the sphere's position at the starting frame of the animation.

5.3. Go to a later frame in the timeline and move the sphere up to the height you want it to bounce to.

Top: Current frame is a keyframe for Cube. Bottom: Current frame isn't a keyframe.

5.4. Repeat steps 5.2 and 5.3 until you are satisfied with the smoothness.

5.5. Play the animation.

[Note] Press play and check the result constantly for satisfaction.

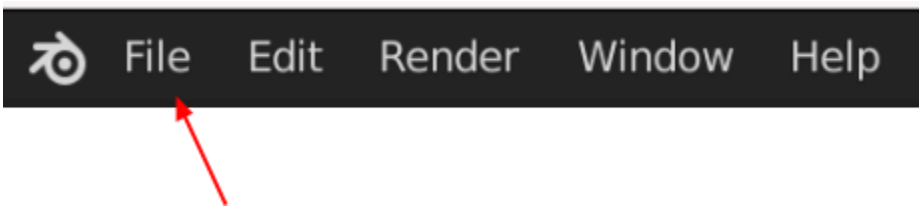
[Note] If you decide to have a plane, it is stationary the whole time.

[Optional] You may also render the animation and export it as a short clip.

[Optional] Adjust the physics properties of the sphere to change its behavior and experiment with different animation techniques to create more complex animations.

6. Saving the Animation

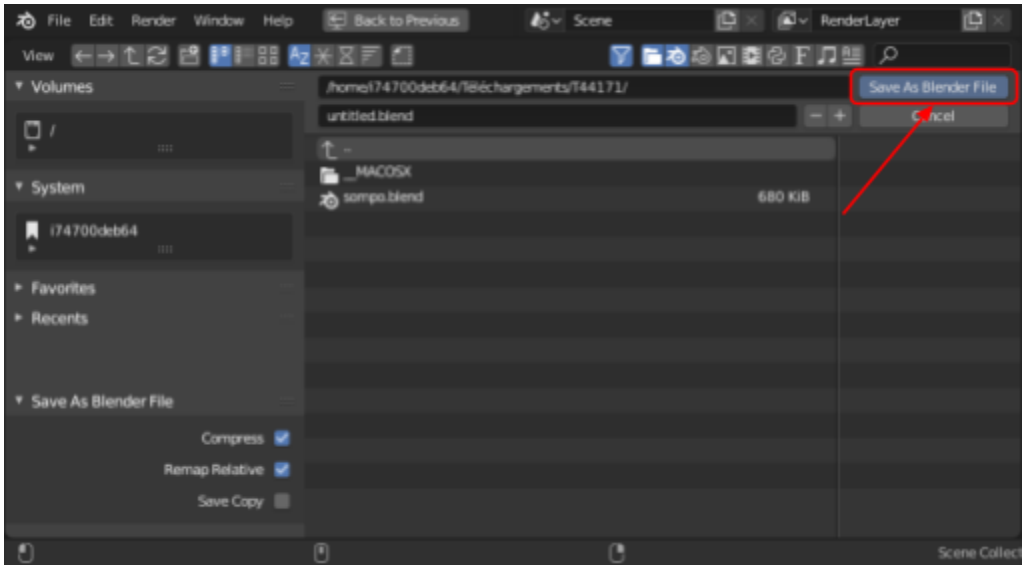
6.1. Go to **“File”** in the top left corner of the topbar.



6.2. Click **“Save”** or **“Save As”** if you already have the existing file.

6.3. If you choose **“Save As”**, select the folder where you want to save the file and give it a name. It should save as a blender file (.blend).

6.4. Click **“Save as Blender Files”**.



Conclusion

In this tutorial, you have learned how to use Blender for 3D modeling as a complete beginner by making a bouncing ball. Don’t feel stressed if you are overwhelmed by all the possibilities that Blender offers. The best way to learn Blender or 3D modeling is to practice. If you think this is too easy for you, no worry, just head on to explore rigging, physical simulation and even cinematography. Keep working and improving! Always remember to have fun!

Works Cited

https://www.blender.org/about/

https://www.blender.org/download/

https://docs.blender.org/manual/en/latest/index.html

All images are essentially screenshots from Blender with some editings and croppings.