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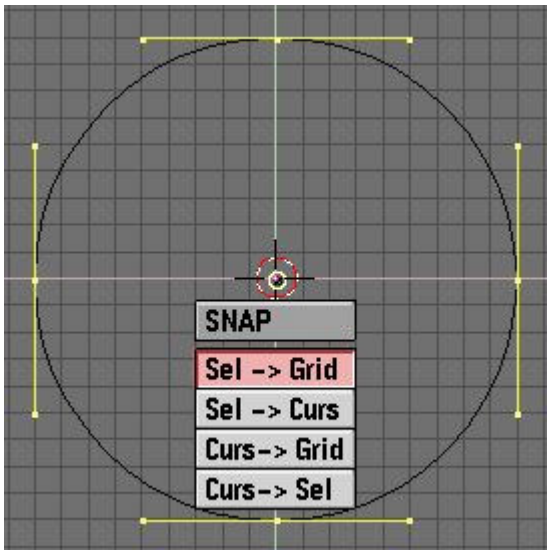
Blender Tutorials

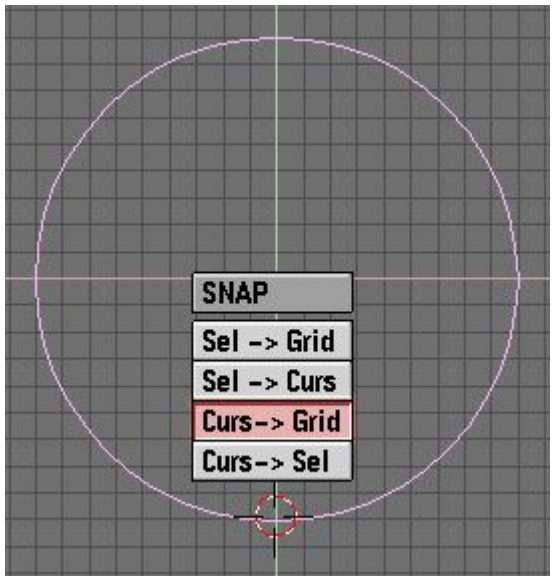
Solar Systems for Beginners
by Geno Ruffalo

In this tutorial we will study 2 important aspects of animating with Blender, Object IPO's and Hierarchies. Start off Blender in top view and delete the default plane. With the 3D cursor at the center position (0,0,0) add a lamp by pressing the spacebar and clicking on 'Lamp'. Now add a Bezier Circle by pressing on the spacebar and clicking on Curve-BezierCircle.

Press the 's' key to enlarge the Circle's radius to 9 grid units.
While still in edit mode bring up the 'SNAP' menu by pressing SHIFT+S and click on on 'Sel->Grid'.

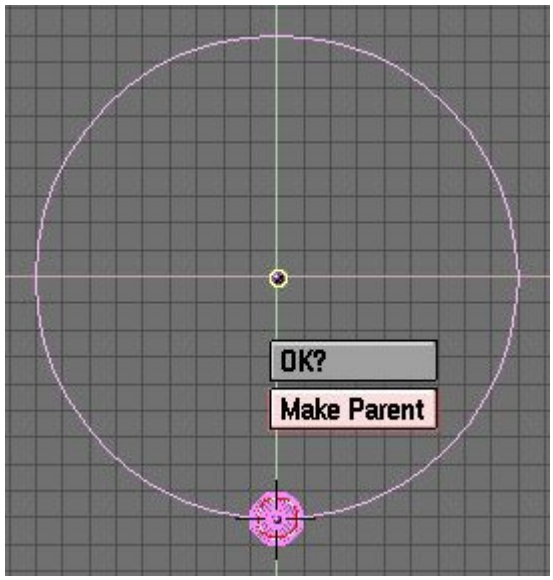


Place the 3D Cursor at positon (0,0,9) as in the picture below.
Line it up by recalling the SNAP menu and clicking on Curs->Grid.



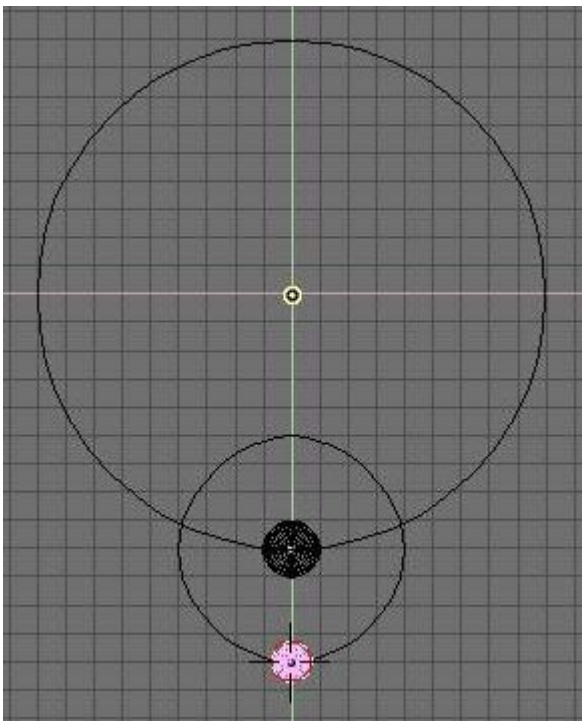
Add a shpere at this location to represent the Earth.
I used the default UVSphere by clicking Mesh->UVSphere.
Tab out of edit mode and SHIFT+RM click on the Bezier Circle.

Now press CTRL+P and press enter to 'Make Parent'. Now the Earth is the child of the Circle, which will act as the Earth's Orbiting Path.



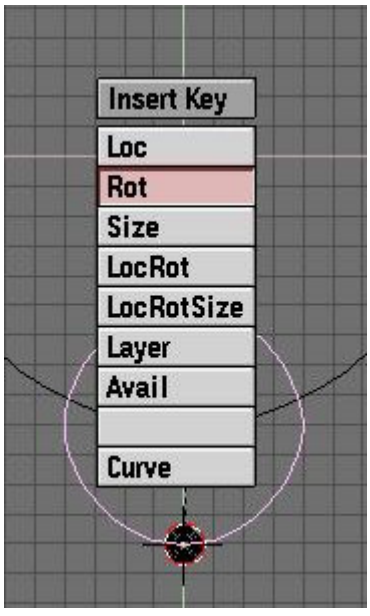
With the 3D cursor still at the center of the Earth add another Bezier Circle and increase it's radius to 4 grid units. Line up the handles the same way as we did with the first Circle by using the SNAP

menu. Place the 3D cursor at (0,0,13) and add another Sphere to represent the Moon, scaling it down a bit. Tab out of edit mode and make the Moon the child of the new Circle exactly like we did with the Earth. We now have one last Child-Parent relationship to establish. Select the Moon's Circle, then SHIFT+RM click the Earth's Circle. Now CTRL+P to make the Moon's Path a Child of the Earth's Path. We have just began our first Hierarchy and it is time to animate them.



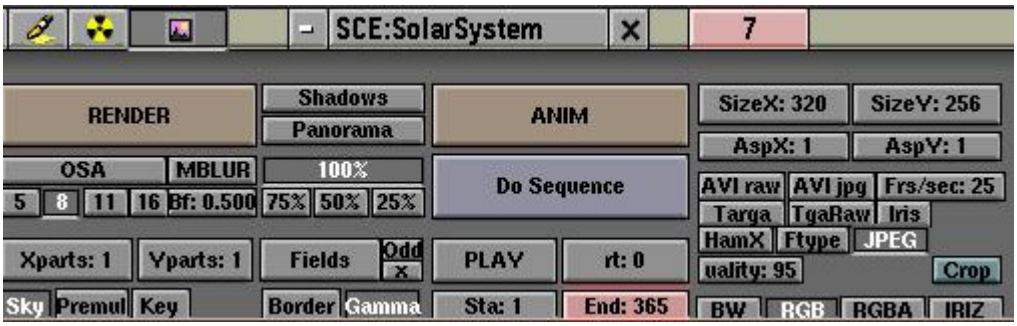
Press SHIFT+ the left arrow on your keyboard to make sure we are

at frame 1. Select the Moon's Path and press the 'i' key on the keyboard to call up the 'Insert Key' menu. Click on 'Rot' and repeat the same for the Earth's path.

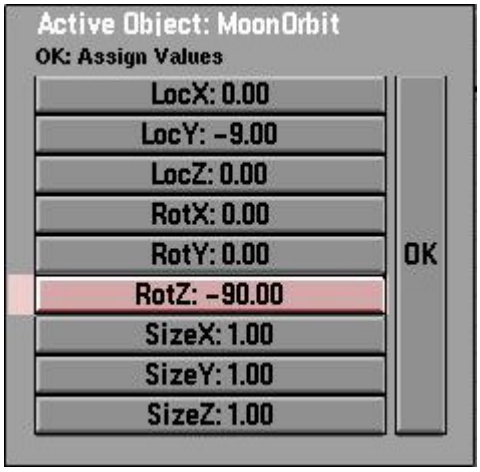


Press F10 to show the Display Edit Buttons. We want to do 2 things here.

First change the value of the End Frame to 365 by SHIFT+LM clicking the button 'End:250'. Next enter '7' for the current frame.

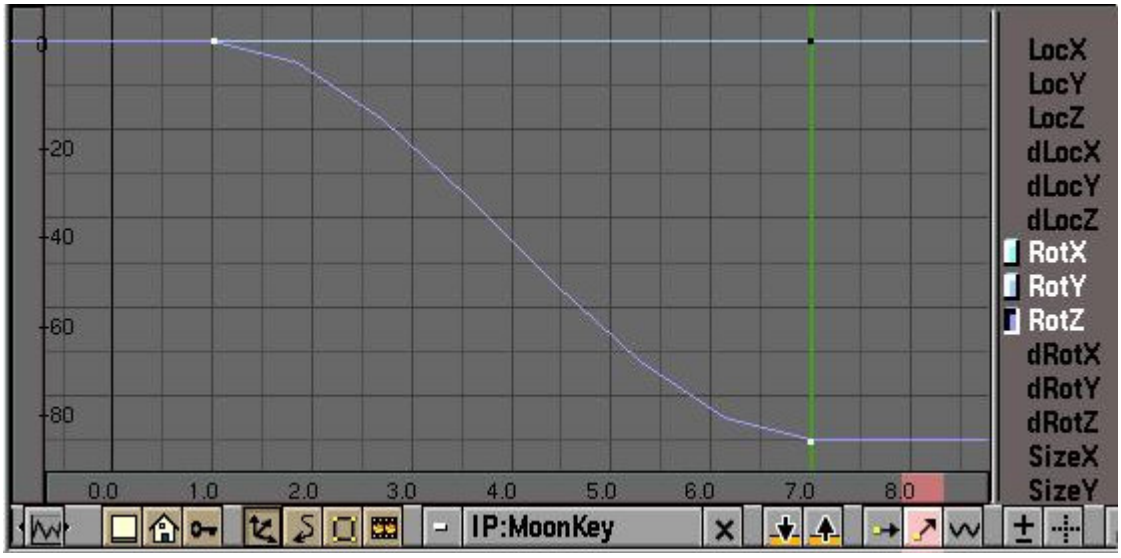


Select the Moon's Path and press the 'n' key on your keyboard.
your keyboard. In the 'RotZ:' field enter a value of '-90'.
Press the 'i' key to insert another 'Rot' Key. This will rotate
the Moon 90 degrees in 7 frames, or for a total of 360 degrees
in 28 frames representing a Lunar cycle. (Or at least it will be after the next step).



To complete the cycle press SHIFT+F6 to display the IPO Window
With the new Key Curve selected press the button with the icon of
the upward pointing arrow setting the curve's extend mode direction.

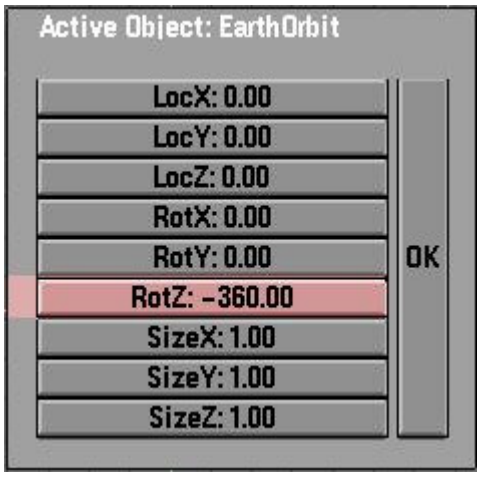
This will make our Moon continue to orbit throughout the animation.



Now we are going to animate the Earth's Orbit Cycle. Enter a value of 366

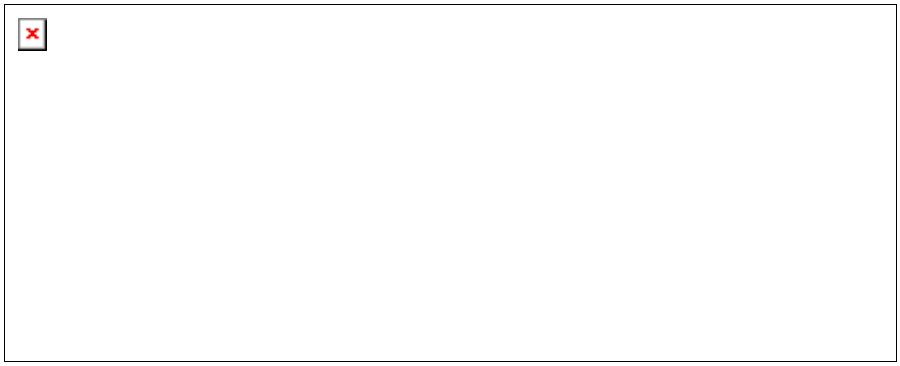
for the current frame. (Even though we have an End frame of 365 Blender still

let's us do this). Select the Earth's Bezier Curve and press the 'n' key.
Enter a value of '-360' in the 'RotZ:' field, and insert another 'Rot' key.
Set the curve extend mode to direction as we did with the Moon in case you want to add frames to the animation later.



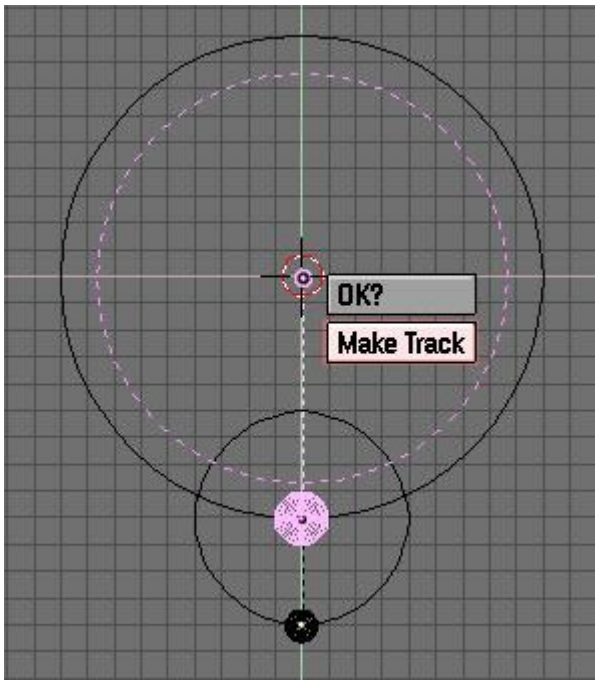
Return to the 3D window and Select the lamp. The lamp is going to

act as the Sun's light output so we are going to have to make it a spot light if we want to cast shadows. Press 'F4' to display the Lamp Edit Buttons. Press the 'Spot' button in.



We want our spotlight to always shine on the Earth, so select the lamp then SHIFT+RM click the Sphere representing

the Earth. Press 'CTRL+T' and ENTER to 'Make Track'.



Now it is time to see if we did everything correctly. With the mouse in the

3D Window press 'alt+a' on the keyboard to start a wireframe preview of our animation so far. the Moon should rotate around the Earth every 28 frames and it should take the entire 365 frames for the Earth to complete it's rotation. I've used up my 12 steps in this tutorial so it is up to you to add cameras, textures, or even a particle emitting comet! Just remember to lay out your aninamtion hierarchies like we did here, starting with the smallest parts first. You would turn a race cars tires before you raced the car around the track. Use your imagination, but take your time or you could get unexpected results.