

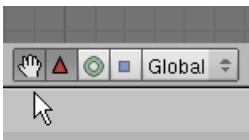
Course: 3D Design
Title: Mesh Modeling – Snowman Animation
Dropbox File: SnowmanAnimation.zip
Blender: Version 2.41
Level: Beginning
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Mesh Modeling – Snowman Animation



In this tutorial we will animate the model snowman which we created in the previous Snowman tutorial. Open your copy of the Snowman.blend file. (If you do not have one you can open the SnowmanAnimation.blend file located in the SnowmanAnimation.zip file. This is a finished copy of the Snowman tutorial.

Make sure that the Transform Widget system is turned on.



We want our animation to proceed as follows:

Frame 1 to Frame 50: (We see only the Ground Plane)

Frame 50 to Frame 100 (The Snowman Base comes in from the right)

Frame 100 to Frame 150 (The Snowman Middle and Arms comes in from the left)

Frame 150 to Frame 200 (The Snowman Head and Hat comes down from the top)

Frame 200 to Frame 250) (The Trees grow out of the ground)

Frame 250 to frame 300) (The Eyes, Nose and Mouth come out of the head)

Frame 300 to Frame 325 (We see the whole scene).

To do this there are a number of things we need to do in preparation. Switch to front view and zoom in a bit. Select the Arm object. Hold the SHIFT KEY and select the Snowman Middle object. Press CTRL-P (Parent) and Make Parent.



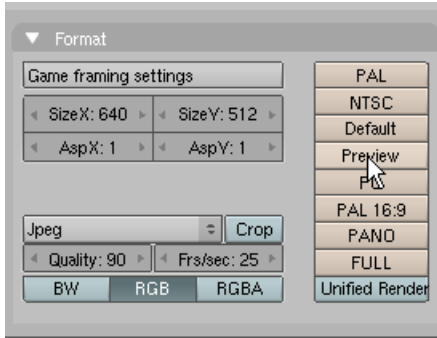
The Snowman Middle is now the Parent of the Arm.

Select the Tree on the Right. Hold down the SHIFT KEY and select the center Tree (adding to the selection). Hold the SHIFT KEY down and select the Tree on the left (adding to the selection). Press CTRL-P (Parent) and Make Parent. The Left Tree is now the Parent of the center Tree and the right Tree.

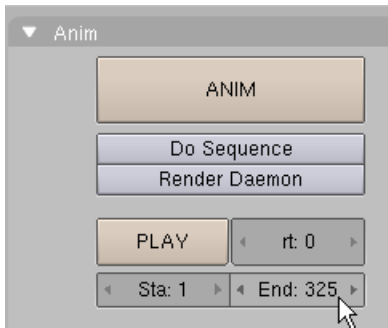
Select the Hat. Hold the SHIFT KEY down and select the Left Eye (adding to the selection). Hold the SHIFT KEY down and select the Right Eye (adding to the selection). Hold the SHIFT KEY down and select the Mouth (adding to the selection). Hold the SHIFT KEY down and select the Nose (adding to the selection). Hold the SHIFT KEY down and select the Head (adding to the selection).

Press CTRL-P (Parent) and Make Parent. The Head is now a parent to the Hat, Left Eye, Right Eye, Mouth and Nose. (This also effectively eliminates the Left Eye / Right Eye parent relationship)

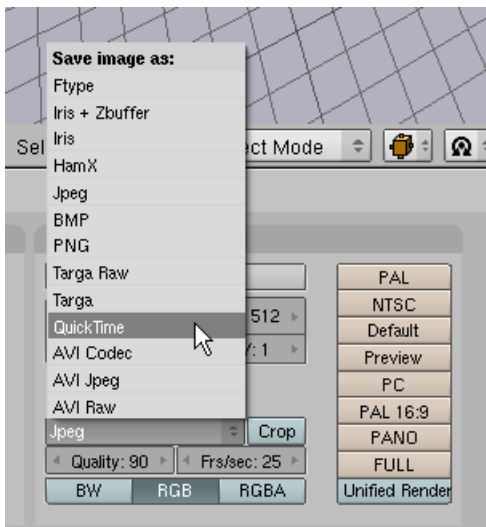
Press F10 (Scene). In the Format Panel press the Preview preset button. This sets the size of the output file to 340 x 256 pixels (50% of 640 x 512).



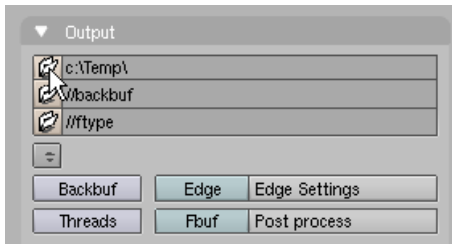
In the Animation Panel set the end frame to 325.



Our animation will result in a video file. In the Format Panel change the file type from JPEG to QuickTime. Accept the default QuickTime settings

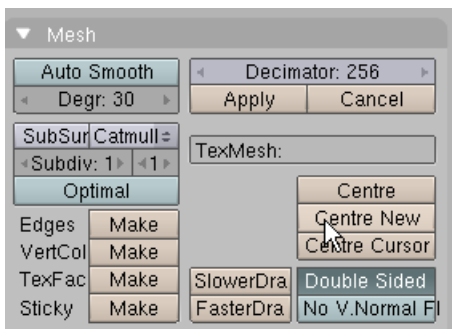


In the Output Panel, press on the icon to the left of the first output box.



Select the directory in which you would like the QuickTime video rendering to be placed. Here I have chosen C:\Temp\. After selecting the directory press the Select Output Pictures button. Our QuickTime video of the animation will be placed in that directory.

Switch to Top View. Press the BKEY (Box Select) and box select all of the objects (Except the camera, Ground and the 2 lamps). Note: You can use the box select a number of times adding to the selection. Make sure everything is selected. Press F9 (Editing). In the Mesh Panel press the Center New button (finalizing the position of all of the centers).

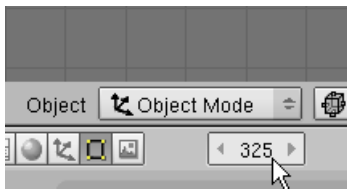


Save your file CTRL-W

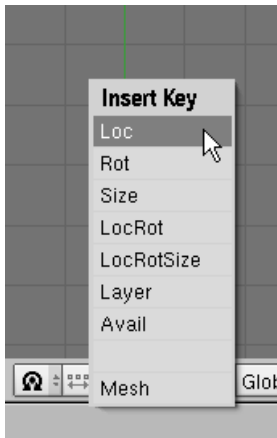
Blender records animation information in a series of “Keyframes”; then interpolates (fills in) the information between the keyframes. The animation of each object is interpreted as a series of curved Bezier lines with its vertices acting as keyframes. We will see this later in viewing the IPO (Interpolation) curve editor.

The scene is currently constructed as we want it to look in the final frame (Frame 325). Therefore we will animate our scene backwards, setting keyframes as we go along.

Set the current frame marker at 325.

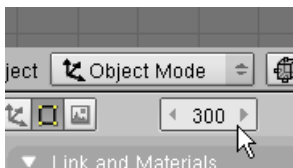


With all of the objects still selected (except the lamps and camera), press the IKEY (Insert keyframe). Choose the LOC (Location Keyframe).



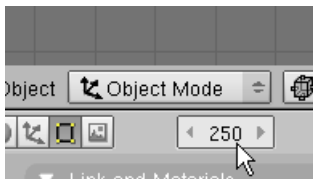
This records the location of all of the selected objects in frame 325.

Set the current frame marker to 300.

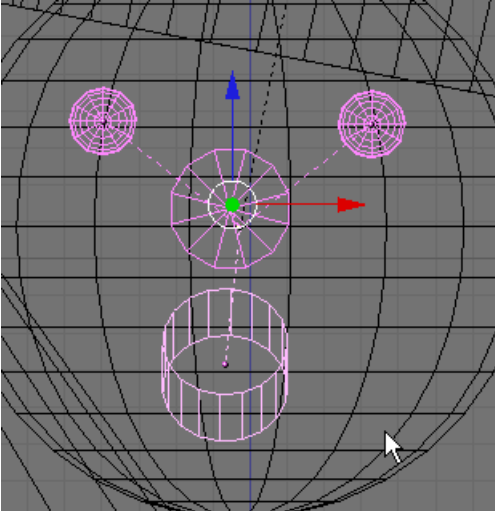


With all of the objects still selected (except the lamps, ground and camera), press the IKEY (Insert keyframe). Choose the LOC (Location Keyframe). This records the location of all the selected objects in frame 300.

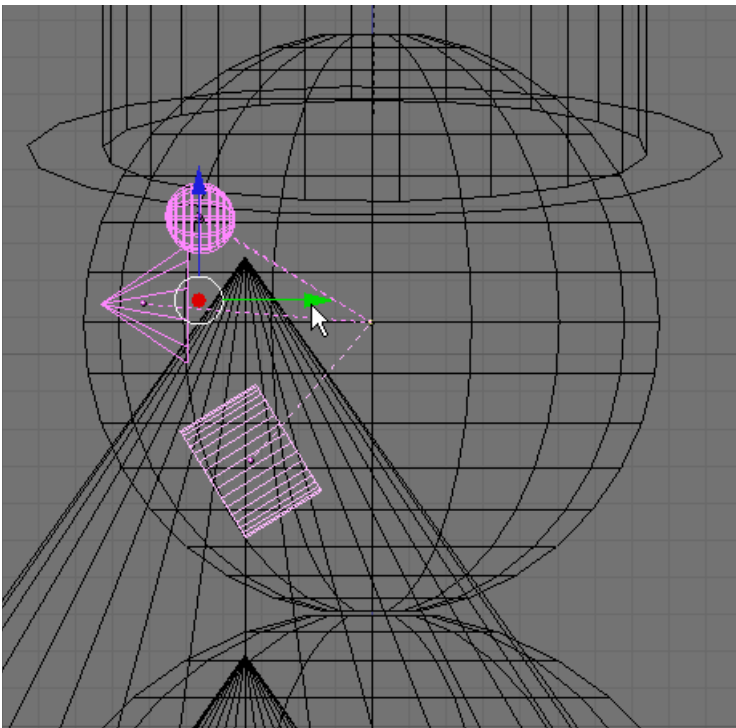
Set the current frame marker to 250.



Switch to Front view and zoom in on the head. Select the Mouth. Hold the SHIFT KEY down and add the Nose to the selection. Hold the SHIFT Key down and add the Right Eye to the selection. Hold the SHIFT KEY down and add the Left Eye to the selection.



Switch to side view and zoom in a bit to the head. Use the Green Transform Widget Arrow and move the Mouth, Right and Left Eye and Nose back into the head so they are hidden.



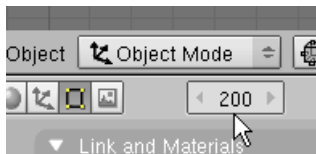
Note that the Left Eye, Right Eye, Mouth and Nose are children of the Head. A child can move independently of the parent but when the parent moves, the child move along with the parent (just like in real life).

Switch to Top View. Press the BKEY (Box Select) and box select all of the objects (Except the camera, ground and the 2 lamps). Note: You can use the box select a number of times adding to the selection. Make sure everything is selected. Press the IKEY. (Insert

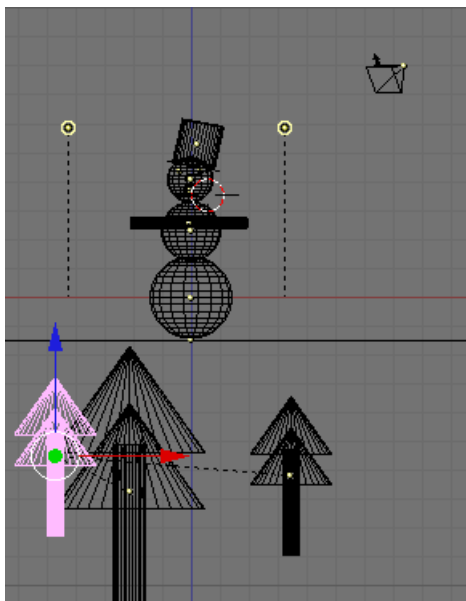
keyframe). Choose the LOC (Location Keyframe). This records the location of all the selected objects in frame 250.

You can use your arrow buttons to step through the frames from 250 to 300. As the frames progress the eyes, mouth and nose come out of the snowman's head.

Set the current frame to 200.



Switch to Front view. Select the left parent tree. Use the Blue Transform arrow to move it down below the ground plane so we cannot see any of the trees in the camera view.



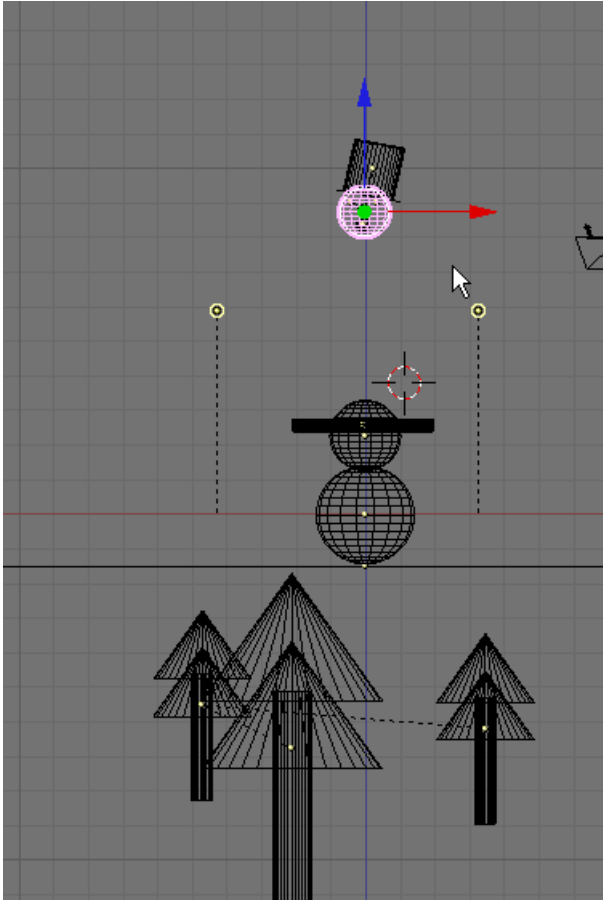
Press the BKEY (Box Select) and box select all of the objects (Except the camera, ground and the 2 lamps). Note: You can use the box select a number of times adding to the selection. Make sure everything is selected. Press the IKEY. (Insert keyframe). Choose the LOC (Location Keyframe). This records the location of all the selected objects in frame 200.

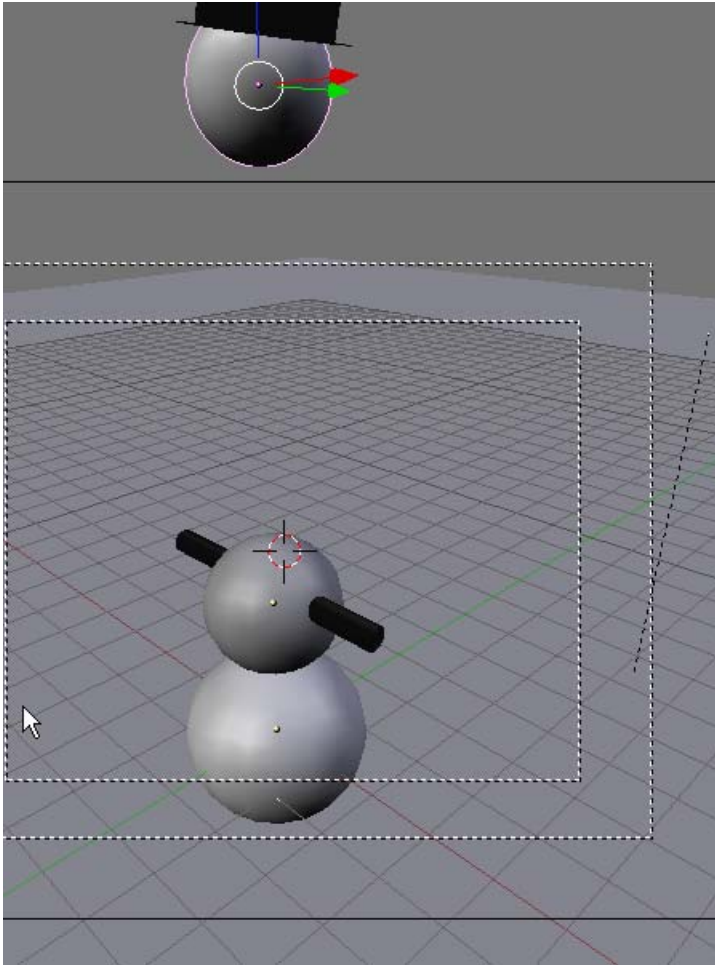
You can use your arrow buttons to step through the frames from 200 to 250. As the frames progress the trees rise out of the ground.

Set the current frame to 150.



Select the Head (Remember this is a parent to the Hat, Left Eye, Right Eye, Mouth and Nose.). Use the Blue Transform Widget arrow to move the Head up until it can no longer be seen in the camera.

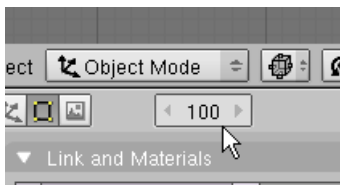




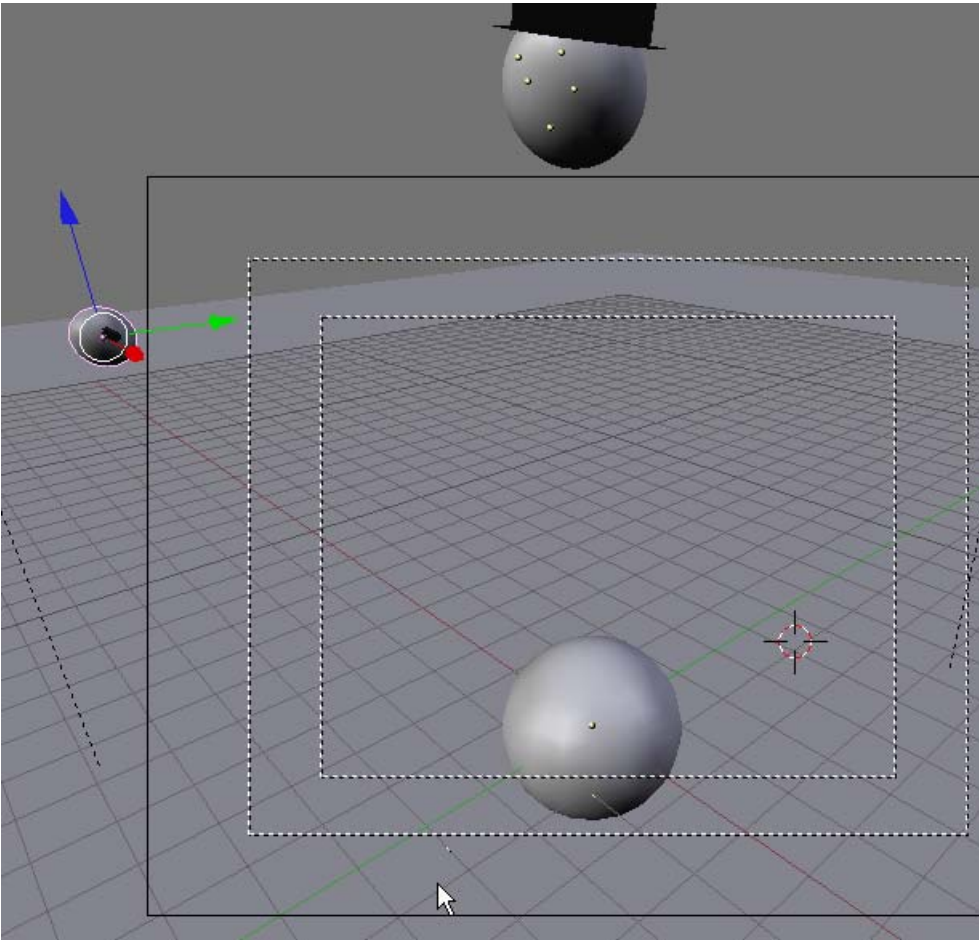
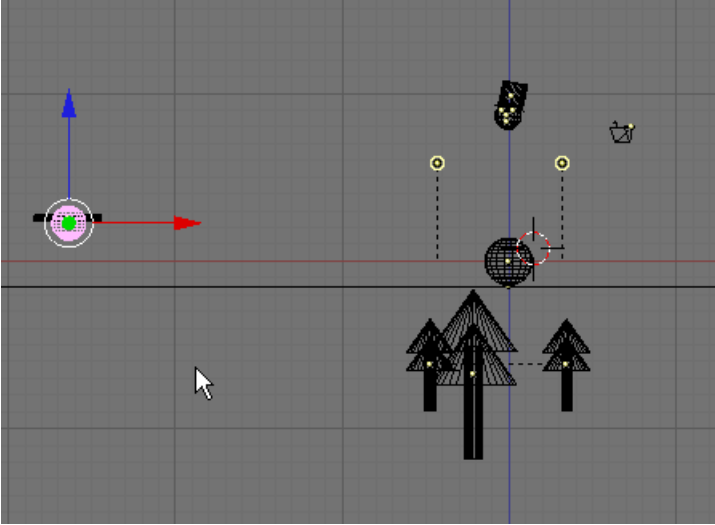
Press the BKEY (Box Select) and box select all of the objects (Except the camera, ground and the 2 lamps). Note: You can use the box select a number of times adding to the selection. Make sure everything is selected. Press the IKEY. (Insert keyframe). Choose the LOC (Location Keyframe). This records the location of all the selected objects in frame 150.

You can use your arrow buttons to step through the frames from 150 to 200. As the frames progress the Head (and all of its children) move in from the top.

Set the current frame to 100.



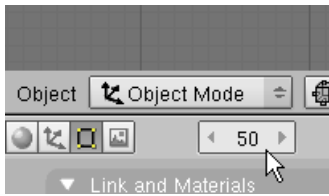
Switch to front View. Select the Snowman Middle. LMB click the Red Transform Widget Arrow and move the Snowman Middle (and its child the Arms) far off to the left out of the view of the camera.



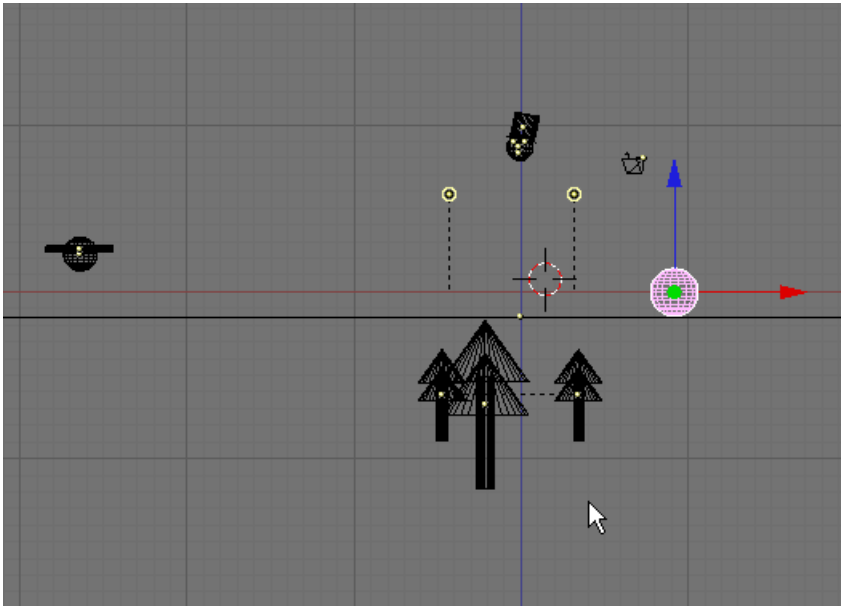
Switch to top view. Press the BKEY (Box Select) and box select all of the objects (Except the camera, ground and the 2 lamps). Note: You can use the box select a number of times adding to the selection. Make sure everything is selected. Press the IKEY. (Insert keyframe). Choose the LOC (Location Keyframe). This records the location of all the selected objects in frame 100.

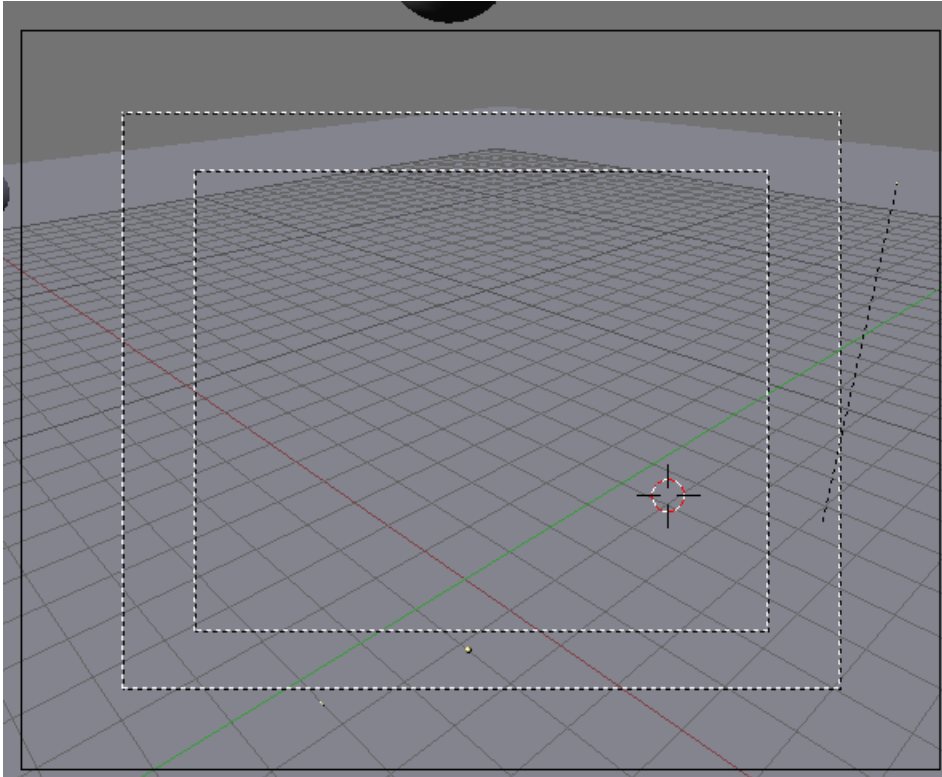
You can use your arrow buttons to step through the frames from 100 to 150. As the frames progress the Snowman Middle and Arms move in from the left.

Set the current frame to 50.



Switch to front View. Select the Snowman Base. LMB click the Red Transform Widget Arrow and move the Snowman Base off to the right out of the view of the camera.

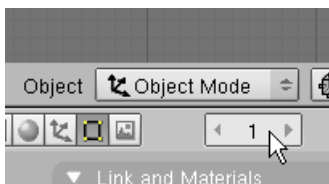




Switch to top view. Press the BKEY (Box Select) and box select all of the objects (Except the camera, ground and the 2 lamps). Note: You can use the box select a number of times adding to the selection. Make sure everything is selected. Press the IKEY. (Insert keyframe). Choose the LOC (Location Keyframe). This records the location of all the selected objects in frame 50.

You can use your arrow buttons to step through the frames from 50 to 100. As the frames progress the Snowman Base moves in from the right.

Set the current frame to 1.



With all of the objects still selected, press the IKEY. (Insert keyframe). Choose the LOC (Location Keyframe). This records the location of all the selected objects in frame 1.

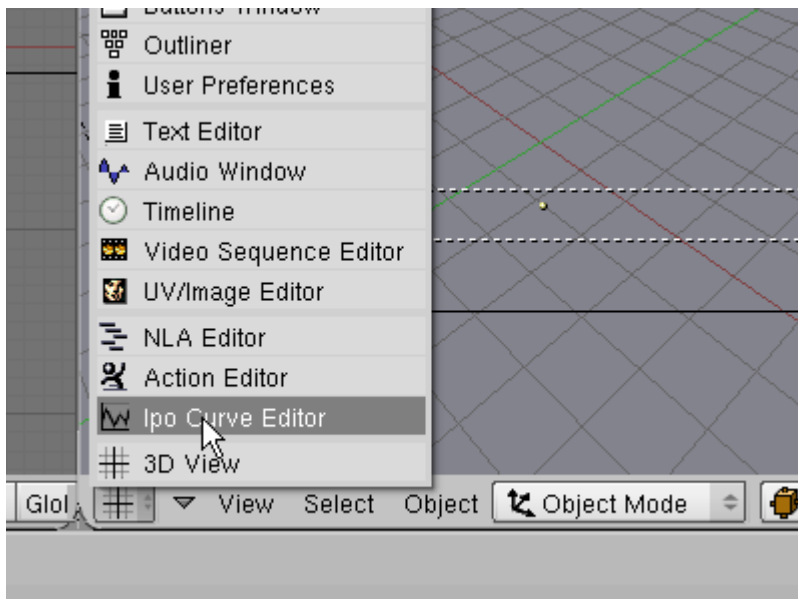
You can use your arrow buttons to step through the frames from 1 to 325. As the frames progress the Snowman comes together.

Place your cursor in the camera view. Press ALT-A (Play Animation). The animation will play in your camera view. Press ESC to stop.

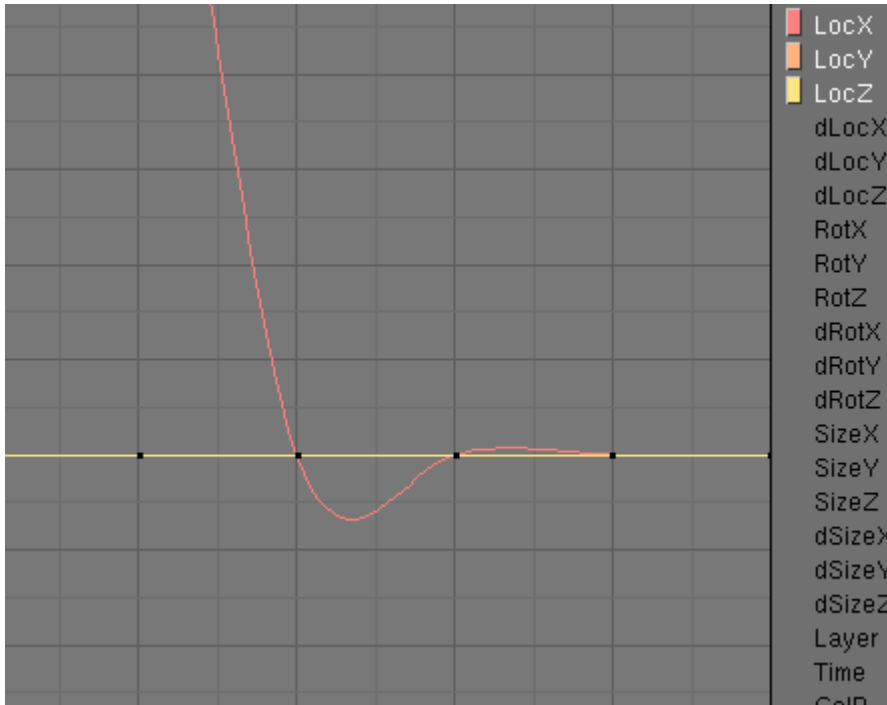
Save your file F2.

Note that each object moves beyond its stopping point then slowly moves into its proper position. This is because the animation of each object is recorded as a series of curved Bezier lines in the Interpolation Editor and those curves need to be adjusted to resemble straight lines.

Change the Camera 3D viewport window to the IPO Curve Editor window by clicking on the Window Type button (first on the Menu Header) and choosing IPO Curve Editor.



This displays the IPO Curve Editor.



In the Front 3D Viewport select the Snowman Base (if not already selected). Click in the IPO Viewport and zoom out a bit (MMB Track Wheel). You will see the animation curves for the LOC X, LOCY and LOCZ. (Note: the LOCY and LOCZ curves are straight lines (one on top of the other) so you only see one. They are straight lines because we have not moved the Snowman Base in the Y or Z directions.

The vertical line is the playback head. You can grab this with your LMB and drag it left and right displaying the animation movement in the 3D viewport.

Not that from frame 1 to 50 the Snowman Base stays in place (straight line). From frame 50 to 100 it moves toward the minus direction and reaches its destination at frame 100. From frame 100 to 150 (and a bit beyond) it overshoots the mark and curves back to finally reach its desired destination.

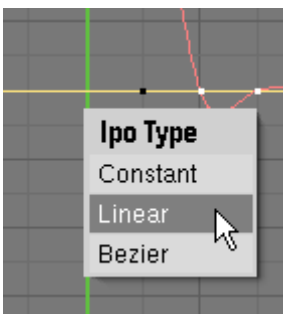


We need to edit this LOCX curve so that the line is straight between frame 50 and 100 and straight between frame 100 and the end (frame 325).

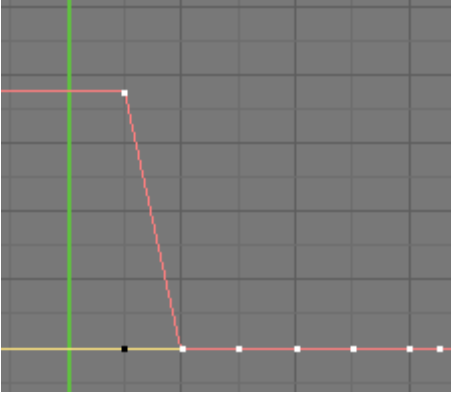
RMB select the LOCX curve. The vertices should appear as white boxes. (Note: you may have to first press the AKEY to deselect all of the vertices)



With the curve selected press the TKEY (IPO Type). Choose Linear.

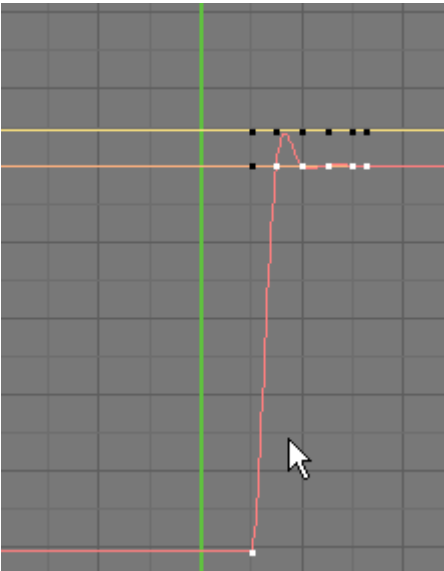


This transforms the curve from a Bezier curve to a Linear (straight line) curve.



The Snowman base object now moves directly from one point to the other without overshooting the mark. In animation terms this is known as assigning a “Constant Speed” to the object as it moves the same amount of distance in every frame.

In the front view, select the Snowman Middle object (remember this is a parent to the arm object). Zoom out in the IPO window. Note we have the same problem with this curve. Select the LOCX curve.



Press the TKEY (IPO Type) and choose Linear. The LOCX curve is now a straight line.



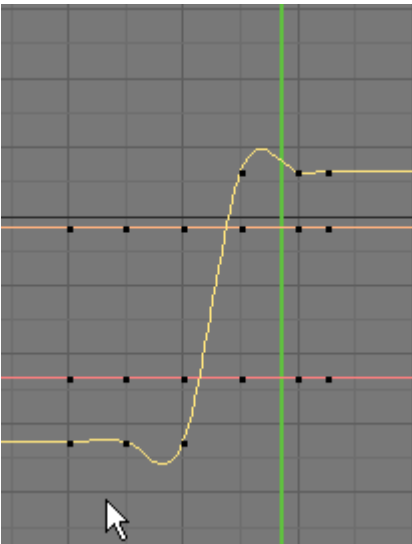
In the front view, select the Snowman Head object (Remember this is a parent to the hat, right eye, left eye, nose and mouth objects). Note that the LOCY line is a Bezier curve.



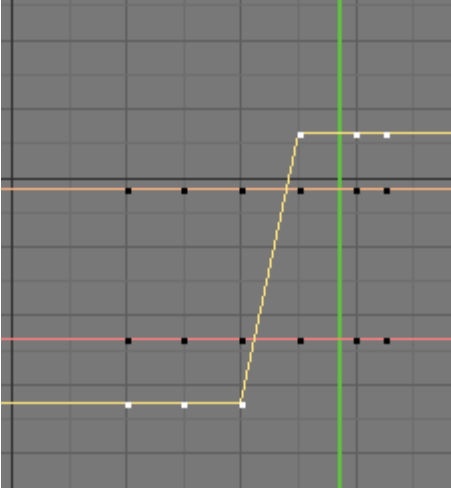
Select the curve, press the TKEY (IPO Type) and set it to linear.



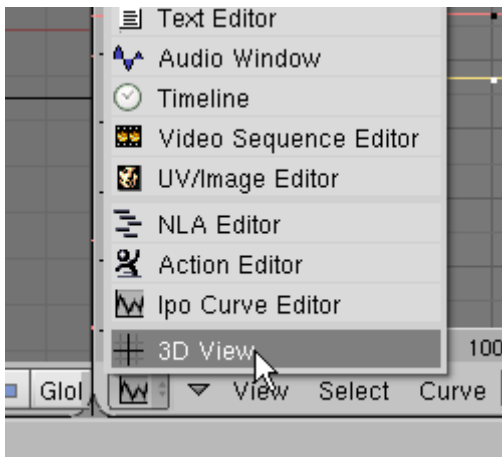
In the front view, select the left Tree object (Remember that this is a parent to the other two tree objects). Note that the LOCY line is a Bezier curve.



Select the curve, press the TKEY (IPO Type) and set it to linear.



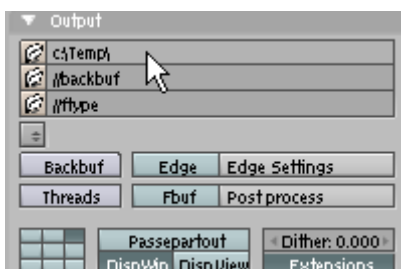
Switch the IPO Curve Editor Window back to 3D Viewport Camera View.



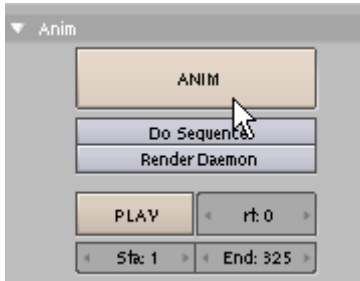
Place your cursor anywhere in the Camera view. Press ALT-A (Play Animation). The object move directly to their mark as animated. Press ESC to stop.

Save your file CTRL-W.

Press F10 (Scene). In the Output Panel note the location of the output file in the top box (we set this earlier – Mine is C:\Temp\). Our animation (QuickTime Movie) file will be placed in this directory. We do not have to name the file. Blender will automatically name the file 0001_0325.mov.



In the Animation Panel press the Animate button. Blender will render each frame of the animation in the display buffer. (Depending on the speed of your computer this may take some time). (You can stop the rendering anytime by pressing the ESC button on your keyboard).



When the rendering is finished you can play the animation in Blender by pressing the Play button. You can also view the animation by opening up your QuickTime Player and viewing the 0001_0325.mov file located in the output directory.

A completed copy of this tutorial named SnowmanAnimationComplete.blend is located in the SnowmanAnimation.zip file.