

Making A Snowman In Maya

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Description

This tutorial will teach you how to model a snowman and animated it using Maya's most basic tools.

Setting up Maya for the Tutorial

Before you begin this tutorial, it is recommended that you reset Maya to its default preferences. Please go to Maya's Main Menu > Window > Settings and Preferences > Preferences. This will open up Maya's Preference Window. In the Preference Window, go to the Edit menu and select "Restore Default Settings".

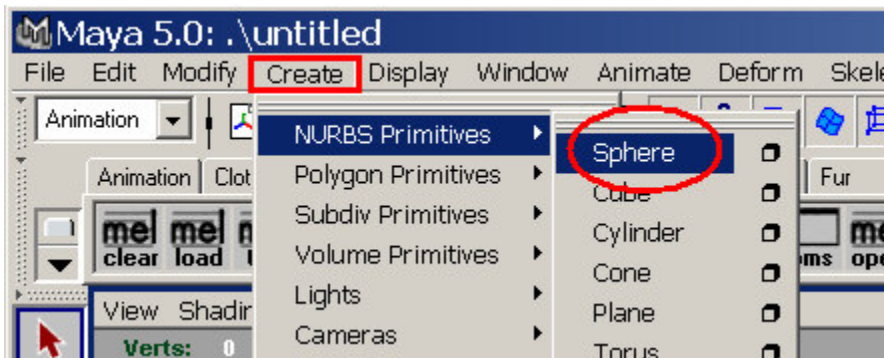
Maya has a "Project" based system which will help you manage your files. It is recommended that you create a new project for this tutorial by going to Maya's Main Menu > File > Project > New. When the Project Window pops up. You will need to name the project, then select the location that the project will be created in. Click the "Use Default" button before pressing "Accept". Maya will automatically manage your files to this project from now on.

Modeling the Snowman

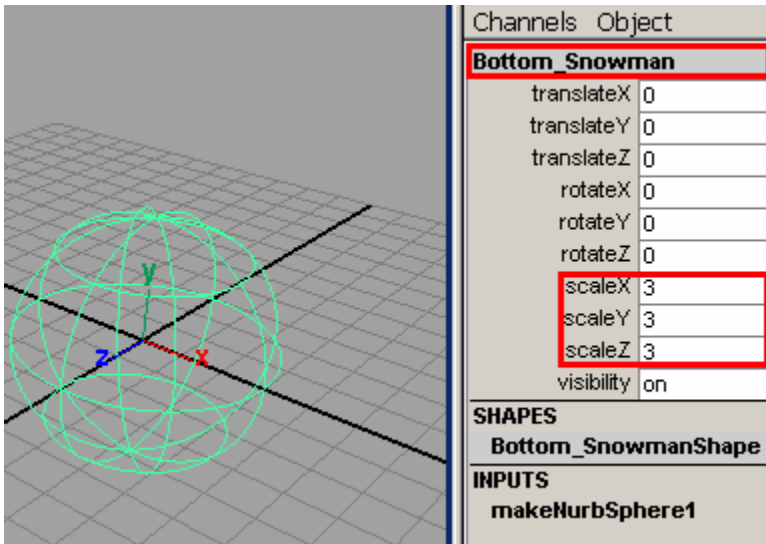
Creating The Body

To create the conventional snowman we will need to start off with 3 spheres. Maya has a list of default shapes that can be used to create the base body of our snowman. These shapes are called “Primitives” and can be located in the “Create” Menu. The following will create the 3 sphere primitives to build the body of our snowman.

1. Go to the Main Menu and click “Create > NURBS Primitives > Sphere”.



2. After the creation of the shape, Maya will automatically select it, then update the Channel Box which will contain the attributes of our object selected. The Channel Box can be used to change the name of a selected object or modify its attributes. To change the name of an object through the Channel Box, simply click on the field that carries the name. Change the name to “Body_Bottom”. Then scale the sphere so that it is 3 units larger in X, Y and Z. To do this, you will have to go to the bottom area of the Channel Box and enter in the value “3” in the fields named “Scale X”, “Scale Y”, and “Scale Z”.

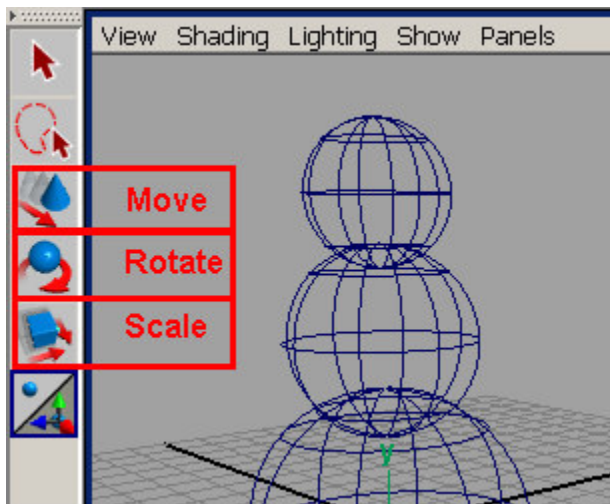


3. Repeat the same step as step 1 to create the second sphere. Rename this sphere to “Body_Mid”. Move the 2nd sphere on top of the 3rd sphere by changing the attribute value of “Translate Y” to 4. Then set its “Scale X, Y and Z” to 2.

4. Repeat the same step again in step 1 to create the last sphere. Rename this sphere to “Body_Top”. Set its “Translate Y” to 7 and its “Scale X, Y and Z” to 1.5. This shape will be our snowman’s face.

Decorating The Snowman

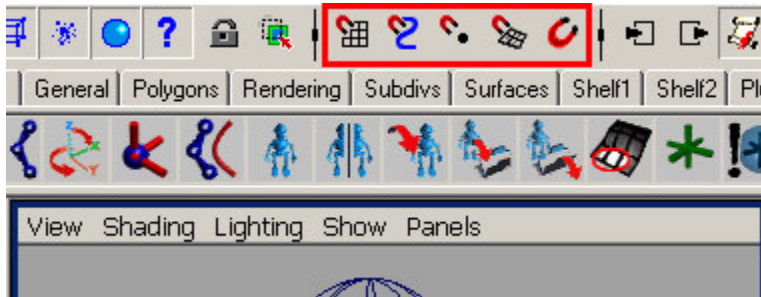
So far we’ve only manipulated objects by setting their attribute values directly through the Channel Box. However, Maya has some helpful tools in its “Tool Bar” that will allow you to set some of these attribute values indirectly. The picture below illustrates where the Tool Bar is and some of its commonly used tools.



1. To create the eyes and nose of the snowman, create 2 NURBS Primitive spheres and 1 NURBS Primitive cone. Select each new shape and try to place them on the snowman’s face by selecting the Move, Rotate and Scale tools from the Tool Bar. You may also want to try pressing the number “4” and “5” on the keyboard to switch between “wireframe” mode and “smooth shade” mode. These modes might make it easier for you to see where your objects are in the scene. Note that the hotkeys (W, E, and R) will also allow you to quick select these tools as well.

2. Experiment with the various primitives to try to create other accessories for the snowman (buttons, ears, stick hands.. etc) . However do not create a hat as that will be covered later.

Maya also has various “snap” toggles that will allow you to snap a selected object to the grid, curve, etc. The following illustrates where these toggles are located.

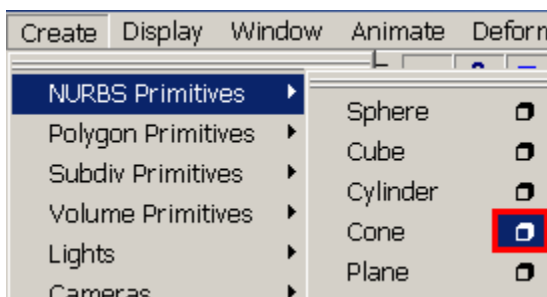


For example, if you have created a button for the snowman, you can snap the button to one of the curves on the snowman’s “Body_Mid” shape. Launch the online help to find more information on how to use these toggles. Do this by going to the Main Menu’s “Help” menu and choosing “Maya Help”. Search for “snap” and you should find a tutorial named “Snap to the grid, a curve, points, or a view plane”.

Modeling A Hat

Modeling with Primitive shapes can only take you so far. Often, you would want to create custom shapes that do not look like any of the Maya Primitives. Maya can do this in numerous ways, however we will only explore one of the simpler workflows for doing this in this tutorial. The next part of this tutorial will demonstrate how to modify an existing shape. Some shapes (for example NURBS) in Maya are created from smaller objects called “components”. We can modify these components in order to customize these certain shapes. The following will illustrate how to build a hat for the snowman using this method.

1. Go to Main Menu’s Create > NURBS Primitives > Cone, however, this time hit the square box located beside the menu item. The picture below illustrates where this square box is.

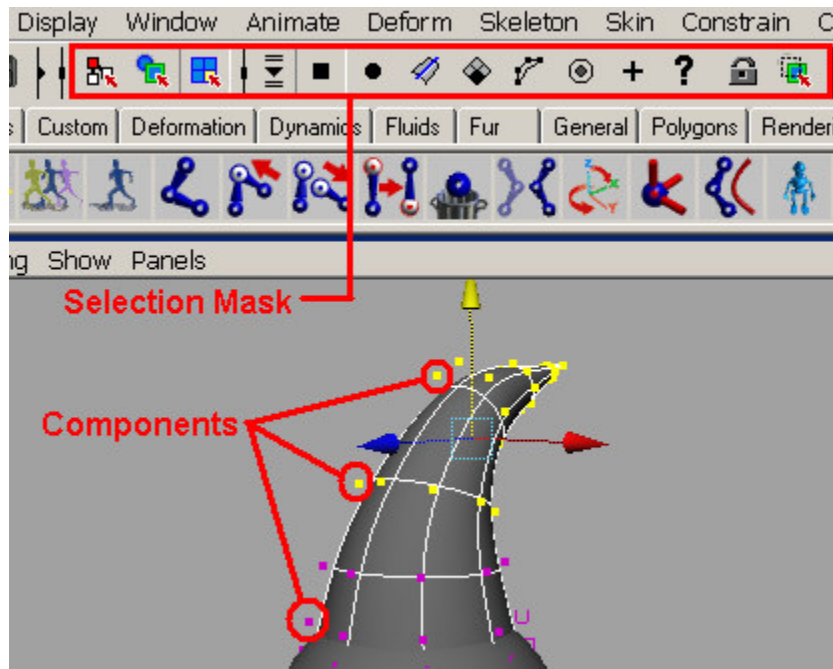


Click on this box to bring up the Cone creation’s “Option Box”. This allows you to change certain properties of the cone before it is created. In the “Option Box”, set the

“Height” to 4 and change the “Number of Spans” to 5 before you hit the “Create” button. Name this shape “Hat”.

2. Using the Move Tool from the Tool Bar, move the cone on top of the snowman’s head.

3. In order to modify the components of Hat shape, we will first need to enter “Component Mode”. Under the Main Menu, there is a section called the “Selection Mask” bar. The following picture, illustrates where this is located in Maya.



The three buttons to the very left will switch between “Hierarchy”, “Object” and “Component” mode. The various buttons to the right of these are filters for the different types of objects that can be selected while in those modes. Click the third button on the left to enter component mode. Select your Hat shape. You will now notice that there are numerous dots surrounding the Hat shape, these are one type of components for NURBS surfaces called “Control Vertices”(short named “CVs”). You can select multiple “CVs” at the same time or you can select them individually. Experiment with manipulating these components using the Move, Rotate or Scale Tools until you achieve the desired shape for your hat. When you are done, click the second button on the left of the “Selection Mask” bar to enter back into “Object” mode.

You can also select any of the existing shapes that you created before and manipulate their components using the same technique.

Animating The Snowman

Preparing The Snowman For Animation

Before we can start animating the snowman, we need to think about how it should move first. That is, will he be able to turn his head? Wiggle his nose? .. etc. This involves thinking about what parts will move together and what animation should be allowed or limited? This part of the tutorial will demonstrate how to use some simple techniques to set up the snowman for animation.

1. Select the Hat, Eyes, Nose and any other accessories that you have added to the head. Then select the “Body_Top” shape last. Go to the Main Menu’s Edit > Parent. This will parent all the previous objects selected to the object named “Body_Top”. If you move the snowman’s head, all it’s children objects will now follow it. Note that for this task, you can use the “Ctrl” and “Shift” hotkeys for different selection modes. The “Shift” modifier when held, will toggle selection. The “Ctrl” modifier when held, will deselect.
2. Do the same for the “Body_Mid” and “Body_Bottom” shape so that all the shapes that are supposed to moved with them are parented to them.
3. Parent the “Body_Top” to the “Body_Mid” shape, then parent the Body_Mid shape to the “Body_Bottom” shape.

You should now be able move all the shapes when you move the “Body_Bottom”; move the torso and up with the “Body_Mid”; and finally the head with the “Body_Top” shape.

Animating the Snowman

Set the Maya Module to “Animation” via the Module drop down menu. The following illustrates where this is located

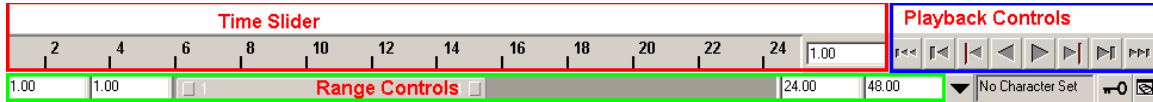


You’ll notice that when you do this, some of the Menu’s will change in the Main Menu Bar.

We will be animating the snowman with a method called Keyframing. When you set a keyframe for an attribute of an object, you are recording the value of that attribute at a

specific time in the scene. This means that when you go back to that specific time, Maya will restore the values you have keyframed for that attribute.

At the bottom of the Maya GUI, you will notice these sections which you will need to use to animate the snowman.

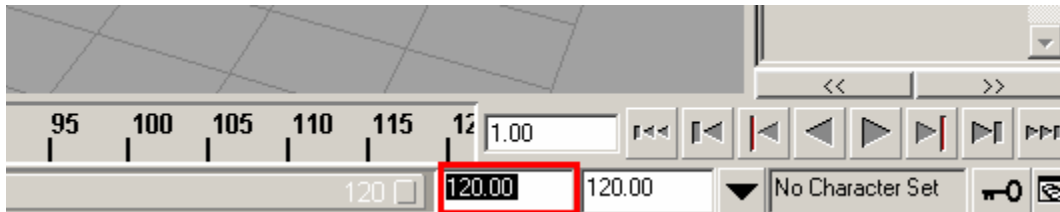


The Time Slider allows you to specify which frame you would like to work on through the timeline of the scene. You simply just click within the Time Slider to bring the scene to that specific time. The numbers represent “frame” numbers on the Time Slider. Depending on what your animation settings are, you may have 30 frames per second, 24 frames per second .. etc. By default, Maya is set to Film settings which is 24 frames per second. The dark grey block on the Time Slider indicates which frame you are currently focused on. You can only focus on one frame at a time.

The Playback Controls allow you to play, rewind or navigate to the next/previous frames or keyframes in the timeline.

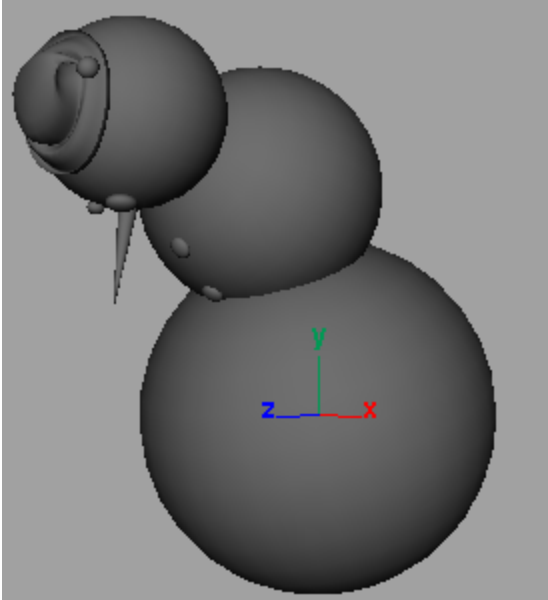
The Range Controls allow you to shorten or expand the available time for the scene or modify the range of the Time Slider’s working space.

1. In the Range Control Section, enter in the value of 120 on the second to right most numerical field to increase the scene’s timeline to 120 frames.



2. Enter the value of 1 on the numerical field to the right of the Time Slider to go to Frame 1. Or you can simply click and drag the mouse within the Time Slider until you see the grey block on frame one.

3. Select the “Body_Top”, “Body_Mid” and “Body_Bottom” at the same time and then go to the Main Menu’s Animate > Set Key. The hotkey for this operation is “s”. This will put a keyframe on our three shapes so that everytime we go to frame 1., the snowman will return to this pose. You will know if you have done this correctly when there is a red tick on the frame that you have set a keyframe for. You can also override keyframes by just setting the keyframe again on the same frame.



4. Go to Frame 60.

5. Rotate only the shapes the “Body_Top”, “Body_Mid” and “Body_Bottom” in such a way that it looks like the snowman is bowing. Then select all three at the same time and go to the Main Menu’s Animate > Set Key.

6. Go to Frame 120.

7. Rotate only the shapes the “Body_Top”, “Body_Mid” and “Body_Bottom” so that the snowman is straight again. Then select all three at the same time and go to the Main Menu’s Animate > Set Key.

8. Hit the “Rewind” then “Play” button on the Playback Controls and you should see your Snowman taking a bow.

9. Set more keyframes and have fun animating!!