Chapter 3

Introduction to Polygon Modeling

Learning Objectives

After completing this chapter, you will be able to:

- *Create polygon primitives*
- *Work with various polygon modeling tools*

INTRODUCTION

In the previous chapters, you learned to create 3D objects and shapes using the spline modeling techniques. In CINEMA 4D, primitive objects can be modified at the basic level by editing the edit points and parameters in the Attribute Manager. You can also modify the objects at an advanced level by converting them into editable polygons. The converted objects consist of sub-objects that can be modified using the **Move**, **Rotate**, and **Scale** tools. The sub-objects are points, edges, and polygons. In this chapter, you will learn to modify the objects at basic as well as advanced level by converting them into polygons.

TUTORIALS

Before you start the tutorials of this chapter, you need to download the *c03_cinema4d_R25_tut.zip* file from *www.cadcim.com*. The path of the file is as follows: *Textbooks > Animation and Visual Effects > MAXON CINEMA 4D > MAXON CINEMA 4D R25: A Tutorial Approach*

Next, you need to browse to *\Documents\c4dR25* and create a new folder in it with the name *c03*. Next, extract the contents of the zip file in this folder.

Tutorial 1

In this tutorial, you will create the 3D model of a table lamp, as shown in Figure 3-1, using the edit points and parameters in the Attribute Manager. **(Expected time: 20 min)**



Figure 3-1 *The model of a table lamp*

The following steps are required to complete this tutorial:

a. Create base of the table lamp.
b. Create body of the table lamp.
c. Create shade of the table lamp.
d. Change color of the table lamp.
e. Change the background color of the scene.
f. Save and render the scene.

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Creating Base of the Table Lamp

In this section, you will create base of the table lamp using the **Cylinder** tool.

1. Make sure the Perspective viewport is selected and then choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Cylinder** from it; a cylinder is created in the Front viewport and *Cylinder* is added to the Object Manager. Choose **Display > Gouraud Shading** from the Menu in editor view; a *Cylinder* is displayed in the shading mode.

2. In the Attribute Manager, choose the **Basic** button; the **Basic Properties** area is displayed. In this area, enter **base** in the **Name** text box; *Cylinder* is renamed as *base* in the Object Manager.

3. Make sure *base* is selected in the Object Manager. In the Attribute Manager, choose the **Object** button; the **Object Properties** area is displayed. In the **Object Properties** area, set the parameters as follows:

   Height: **15** Height Segments: **5**
   Rotation Segments: **30**

4. In the Attribute Manager, choose the **Caps** button; the **Caps** area is displayed. In the **Caps** area, make sure the **Caps** check box is selected and then select the **Fillet** check box; fillet is applied to *base*. Figure 3-2 displays *base* in the Perspective viewport.

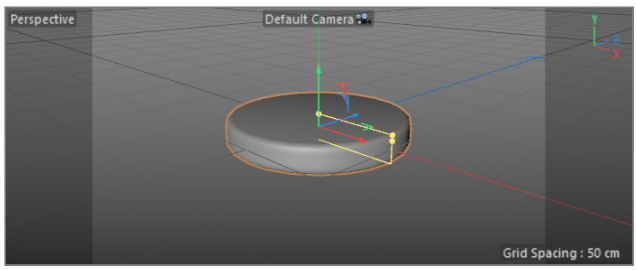

Figure 3-2 *The base displayed in the Perspective viewport*

Creating Body of the Table Lamp

In this section, you will create body of the table lamp using the **Cylinder** and **Torus** tools.

1. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Cylinder** from it; a cylinder is created and *Cylinder* is added to the Object Manager.

2. In the Attribute Manager, choose the **Basic** button; the **Basic Properties** area is displayed. In this area, enter **body** in the **Name** text box; *Cylinder* is renamed as *body* in the Object Manager.

3. Make sure *body* is selected in the Object Manager. In the Attribute Manager, choose the **Object** button; the **Object Properties** area is displayed. In the **Object Properties** area, enter **8** in the **Radius** spinner.

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Note

To make the segments visible on the objects, choose ***Display > Gouraud Shading (Lines)*** *from the Menu in editor view.*

4. In the Attribute Manager, choose the **Coord** button. Next, enter **108.682** in the **P . Y** spinner; *body* is moved on the top of *base,* refer to Figure 3-3.

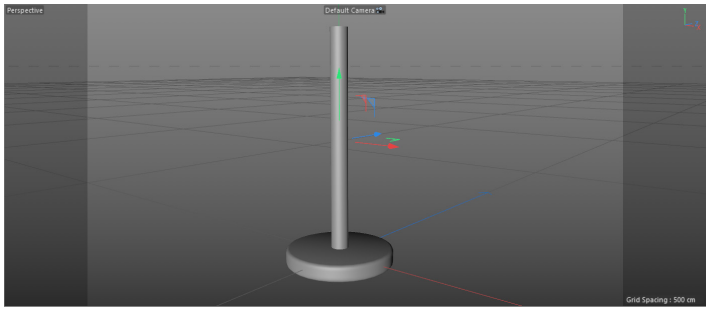

Figure 3-3 *The body moved on the top of base*

Next, you will create design on the body of the table lamp.

5. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Torus** from it; a torus is created and *Torus* is added to the Object Manager.

6. In the Attribute Manager, choose the **Basic** button; the **Basic Properties** area is displayed. In this area, enter **bodydesign1** in the **Name** text box; *Torus* is renamed as *bodydesign1* in the Object Manager.

7. Make sure *bodydesign1* is selected in the Object Manager. In the Attribute Manager, choose the **Object** button; the **Object Properties** area is displayed. In the **Object Properties** area, set the parameters as follows:

Ring Radius: **11** Pipe Radius: **8**

8. Move *bodydesign1* on the top of *base*. Figure 3-4 shows *bodydesign1* in the Perspective viewport.

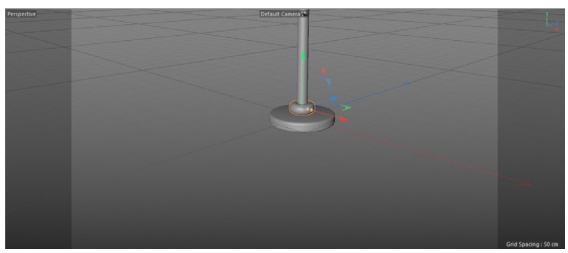

Figure 3-4 *bodydesign1 displayed in the Perspective viewport*

9. Make sure *bodydesign1* is selected in the viewport. Next, press and hold the CTRL key and drag the cursor upward; a copy of *bodydesign1* is created with the name *bodydesign1.1*. Next, place it at the top of *bodydesign1*.

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10. Zoom in on *bodydesign1.1* and move both the edit points of *bodydesign1.1* so that it is scaled down. Next, align *bodydesign1.1,* as shown in Figure 3-5.

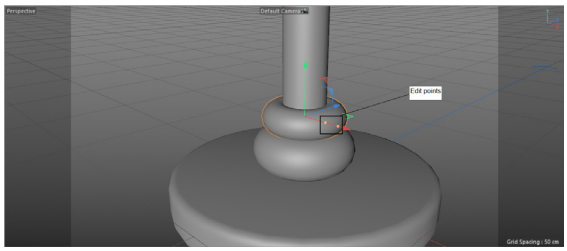

Figure 3-5 *Edit points of bodydesign1.1 moved*

11. Make sure *bodydesign1.1* is selected in the viewport. Next, press and hold the CTRL key and drag the cursor upward; copy of *bodydesign1.1* is created with the name *bodydesign1.2*. Next, place it at the top of *bodydesign1.1*.

12. Zoom in on *bodydesign1.2* and move both its edit points such that it is scaled down. Next, align *bodydesign1.2,* as shown in Figure 3-6.

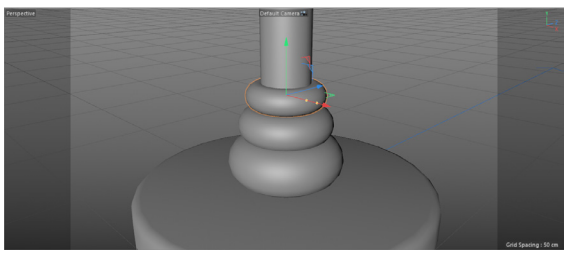

Figure 3-6 *Edit points of bodydesign1.2 moved*

Creating Shade of the Table Lamp

In this section, you will create shade of the table lamp using the **Cone** and **Torus** tools.

1. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Cone** from it; a cone is created and *Cone* is added to the Object Manager.

2. In the Attribute Manager, choose the **Basic** button; the **Basic Properties** area is displayed. In this area, enter **shade** in the **Name** text box; *Cone* is renamed as *shade* in the Object Manager.

3. Make sure *shade* is selected in the Object Manager. In the Attribute Manager, choose the **Object** button; the **Object Properties** area is displayed. In the **Object Properties** area, set the parameters as follows:

Top Radius: **27**	Bottom Radius: **98**
Height: **100**	Rotation Segments: **42**

4. In the Attribute Manager, choose the **Coord.** button. Next, enter **238** in the **P . Y** spinner; *shade* is moved on the top of *body,* refer to Figure 3-7(a).

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5. In the Attribute Manager, choose the **Caps** button. Next, clear the **Caps** check box in the **Caps** area; caps are removed from *shade*.

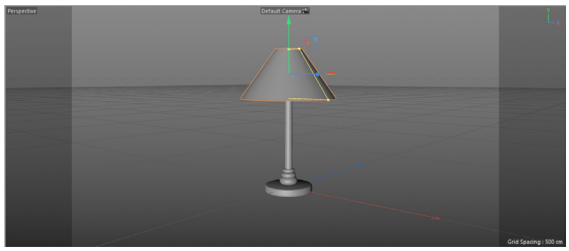

Figure 3-7(a) *The shade moved on the top of body*

Next, you need to connect *body* with *shade*. First, you will convert shade to a transparent mode so that you can create connecting parts easily.

6. Make sure *shade* is selected. In the Attribute Manager, choose the **Basic** button. In the **Basic Properties** area, select the **X-Ray** check box; *shade* is now visible in the transparent mode.

7. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Torus** from it; a torus is created and *Torus* is added to the Object Manager.

8. In the Attribute Manager, choose the **Basic** button; the **Basic Properties** area is displayed. In this area, enter **bodyconnect1** in the **Name** text box; *Torus* is renamed as *bodyconnect1* in the Object Manager.

9. Make sure *bodyconnect1* is selected in the Object Manager. In the Attribute Manager, choose the **Object** button; the **Object Properties** area is displayed. In the **Object Properties** area, set the parameters as follows:

Ring Radius: **8** Pipe Radius: **3**

10. In the Attribute Manager, choose the **Coord** button. Next, enter **209** in the **P . Y** spinner; *bodyconnect1* is moved on the top of *body,* refer to Figure 3-7(b).

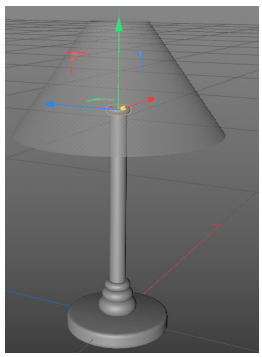

Figure 3-7(b) *The bodyconnect1 moved on the top of body*

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Note

You can also hide shade so that bodyconnect1 is visible properly. To hide shade, you need to click twice on the upper dot available in the Object Manager next to the shade so that the dot turns red. Later, to make it visible again, you need to click on the same dot.

11. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Cylinder** from it; a cylinder is created and *Cylinder* is added to the Object Manager.

12. In the Attribute Manager, choose the **Basic** button; the **Basic Properties** area is displayed. In this area, enter **bodyconnect2** in the **Name** text box; *Cylinder* is renamed as *bodyconnect2* in the Object Manager.

13. Make sure *bodyconnect2* is selected in the Object Manager. In the Attribute Manager, choose the **Object** button; the **Object Properties** area is displayed. In the **Object Properties** area, set the parameters as follows:

    Radius: **1.5** Height: **64**

14. In the Attribute Manager, choose the **Coord.** button. Next, enter **225** in the **P . Y** spinner; *bodyconnect2* is moved on the top of *body*.

15. Choose **MoGraph > Cloner** from the main menu; *Cloner* is added to the Object Manager.

16. Select *bodyconnect2* in the Object Manager. Next, press and hold the left mouse button and then drag it on *Cloner*; *bodyconnect2* is connected to *Cloner*.

17. Select *Cloner* in the Object Manager. In the Attribute Manager, make sure the **Object** button is chosen. In the **Object Properties** area, select **Radial** from the **Mode** drop-down list and **XZ** from the **Plane** drop-down list. Also, enter **4** and **32** in the **Count** and **Radius** spinners, respectively.

18. In the Attribute Manager, choose the **Transform** button and enter **225** in the **P . Y** spinner in the **Transform** area. Next, enter **-55** in the **R . P** spinner. *Cloner* is placed on *bodyconnect1*, as shown in Figure 3-8(a).

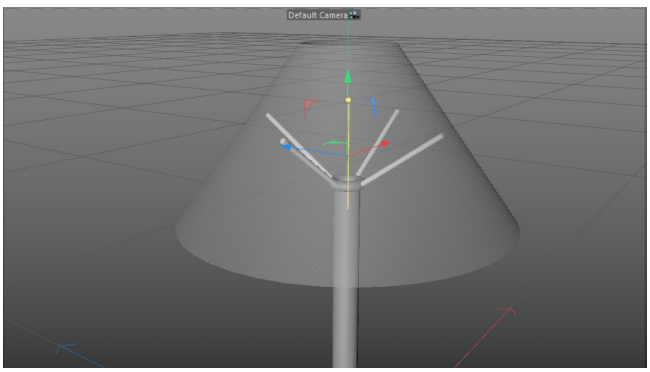

Figure 3-8(a) *cloner placed on bodyconnect1*

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19. Select *shade* in the Object manager; In the Attribute Manager, choose the **Basic** button. In the **Basic Properties** area, clear the **X-Ray** check box; *shade* is now visible in shaded mode.

    Next, you will create design on shade.

20. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Torus** from it; a torus is created and *Torus* is added to the Object Manager.

21. In the Attribute Manager, choose the **Basic** button; the **Basic Properties** area is displayed. In this area, enter **shadedesign1** in the **Name** text box; *Torus* is renamed as *shadedesign1* in the Object Manager.

22. Make sure *shadedesign1* is selected in the Object Manager. In the Attribute Manager, choose the **Object** button; the **Object Properties** area is displayed. In the **Object Properties** area, set the parameters as follows:

    Ring Radius: **97** Pipe Radius: **2**
    Ring Segments: **54** Pipe Segments: **20**

23. Place *Shadedesign1* on *shade*, as shown in Figure 3-8(b).

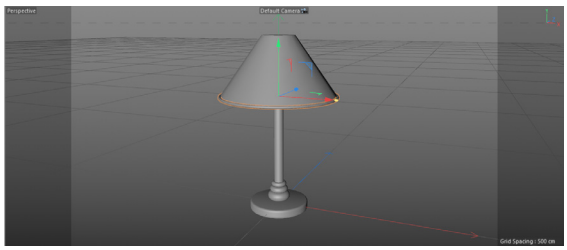

Figure 3-8(b) *Placing shadedesign1 on shade*

24. Make sure *shadedesign1* is selected in the viewport. Next, press and hold the CTRL key and drag the cursor upward; a copy of *shadedesign1* is created with the name *shadedesign1.1*. Next, place it on *shade*, refer to Figure 3-9.

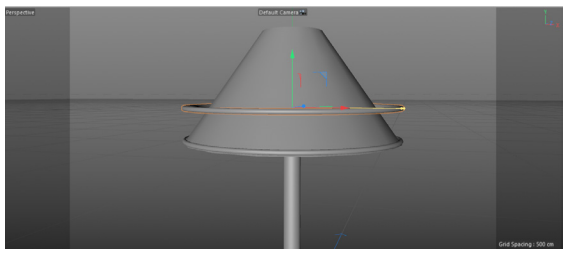

Figure 3-9 *Placing shadedesign1.1 on shade*

25. Zoom in on *shadedesign1.1* and move the inner edit point of *shadedesign1.1* so that it is scaled down and fits on *shade*, refer to Figure 3-10.

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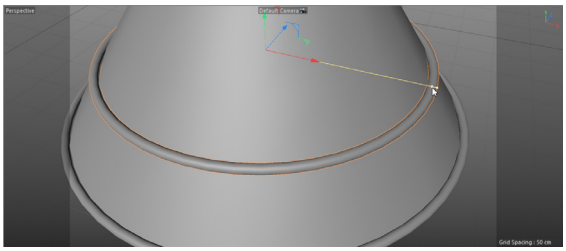

Figure 3-10 *Moving inner edit point of shapedesign1.1*

26. Similarly, create two more copies of *shadedesign1.1,* edit their inner edit points and place them on *shade*, as shown in Figure 3-11. If needed, move the shape designs so that the distance between them remains same.

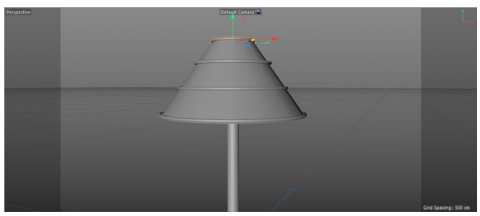

Figure 3-11 *Copies of Shapedesign1.1 placed*

Changing Color of the Table Lamp

In this section, you will change the color of the parts of table lamp using the parameters in the Attribute Manager.

1. Choose *base* from the Object Manager. Next, choose the **Basic** button in the Attribute Manager.

2. Select **On** from the **Display Color** drop-down list; the color swatch below this drop-down list is activated.

3. Click on the Color swatch; the **Color Picker** dialog box is displayed. In this dialog box, set the values as follows and then choose the **OK** button.

   H: **350** S: **90** V: **35**

   Color of *base* is changed.

4. Assign same color as that of *base* to *body, bodyconnect1, shadedeisgn1, shadedesign1.1, shadedesign1.2,* and *shadedesign1.3.*

5. Choose *shade* from the Object Manager. Next, choose the **Basic** button in the Attribute Manager.

6. Select **On** from the **Display Color** drop-down list; the color swatch below this drop-down list is activated.

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7. Click on the Color swatch; the **Color Picker** dialog box is displayed. In this dialog box, set the values as follows and then choose the **OK** button.

   H: **58** S: **22** V: **100**

   Color of *shade* is changed.

8. Assign same color as that of *shade* to *bodydesign1, bodydesign1.1,* and *bodydesign1.2.*

Changing the Background Color of the Scene

To change the background color of the scene to white in the final output, follow the steps given in Tutorial 1 of Chapter 2.

Saving and Rendering the Scene

In this section, you will save and render the scene. You can also view the final render of the scene by downloading the file *c03_cinema4d_R25_rndr.zip* from *www.cadcim.com*. The path of the file is mentioned at the beginning of the chapter.

1. Choose **File > Save Project as** from the main menu; the **Save File** dialog box is displayed. In this dialog box, browse to the location *\Documents\c4dR25\c03*.

2. Enter **c03tut1** in the **File name** text box and then choose the **Save** button.

3. In the Perspective viewport, set the camera angle using the Viewport Navigation Tools. Next, choose the **Render to Picture Viewer** tool from the Command Palette. Alternatively, press SHIFT+R; the **Picture Viewer** window is displayed.

4. In the **Picture Viewer** window, choose **File > Save Image as**; the **Save** dialog box is displayed.

5. In the **Save** dialog box, choose the **OK** button; the **Save Dialog** dialog box is displayed. Next, browse to *\Documents\c4dR25\c03.* In the **File Name** text box, type **c03_tut1_rndr**. Next, choose the **Save** button; the file is saved at the desired location.

   Figure 3-1 displays the final output.

Tutorial 2

In this tutorial, you will create 3D model of a computer mouse, as shown in Figure 3-12, using the polygon modeling techniques. **(Expected time: 40 min)**

The following steps are required to complete this tutorial:

a. Create the body of the computer mouse.
b. Create the left-click and right-click buttons of the mouse.
c. Create the scroll wheel of the mouse.
d. Create the bottom of the mouse.
e. Create the USB cable of the mouse.

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f. Change the background color of the scene.
g. Save and render the scene.



Figure 3-12 *The model of a computer mouse*

Creating the Body of the Computer Mouse

In this section, you will create the body of the computer mouse using the **Cube** tool.

1. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Cube** from it; a cube is created in the Perspective viewport, as shown in Figure 3-13. and *Cube* is added to the Object Manager.

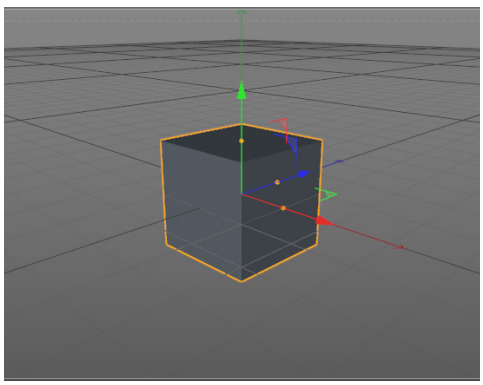

Figure 3-13 *Cube created in the Perspective viewport*

2. In the Attribute Manager, make sure the **Object** button is chosen. In the **Object Properties** area, set the parameters as follows:

Size . X: **91**	Size . Y: **37**	Size . Z: **137**
Segments X: **6**	Segments Y: **4**	Segments Z: **6**

The **Size . X**, **Size . Y**, and **Size . Z** parameters in the **Object Properties** area are used to set width, height, and depth, respectively of the cube.

3. In the Attribute Manager, choose the **Basic** button; the **Basic Properties** area is displayed. In this area, enter **Computer mouse** in the **Name** text box; *Cube* is renamed as *Computer mouse* in the Object Manager.

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4. Make sure *Computer mouse* is selected in the Object Manager and choose the **Make Editable** tool from the Modes Palette; *Computer mouse* is converted into a polygon object.



Note

After converting Computer mouse into a polygon object, you will notice that when you hover the cursor over it in the Object Manager, the name of the Computer mouse changes to ***Polygon Object [Computer mouse]****. Also, the icon of the Cube object changes into a triangle.*

5. Press F2; the Top viewport is maximized. Choose the **Points** tool from the Modes Palette; the *Computer mouse* is displayed in the points mode.

6. Invoke the **Live Selection** tool from the Command Palette. The shape of the cursor changes. To increase or decrease the size of the cursor, press the } or { key, respectively. In the Attribute Manager, make sure the **Options** button is chosen. In the **Options** area, clear the **Visible Only** check box, if not already cleared.

   The **Visible Only** check box is cleared to select the polygons that are behind the visible sub-objects.

7. Using the **Live Selection** tool and the SHIFT key, select the corner points of *Computer mouse*, as shown in Figure 3-14.

8. Invoke the **Scale** tool from the Command Palette and scale the selected points uniformly in the Top viewport, as shown in Figure 3-15.

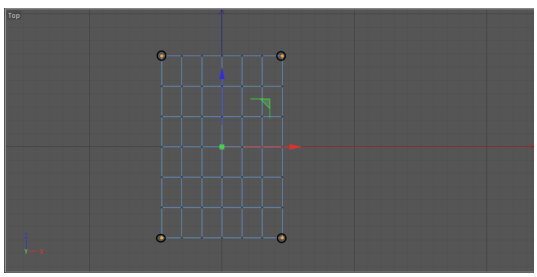

Figure 3-14 *The corner points of Computer mouse to be selected*

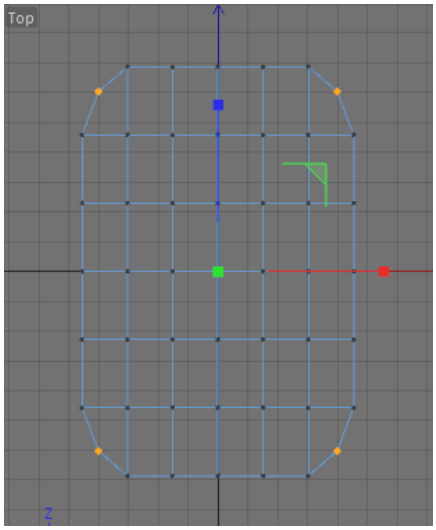

Figure 3-15 *Scaling the selected points of Computer mouse*

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9. Deselect the corner points of *Computer mouse* by clicking on the empty area of the viewport. Invoke the **Live Selection** tool from the Command Palette and select the center points of *Computer mouse* in the Top viewport by dragging the cursor on them, as shown in Figure 3-16.

10. Invoke the **Scale** tool from the Command Palette and scale the selected points in the Top viewport, as shown in Figure 3-17.

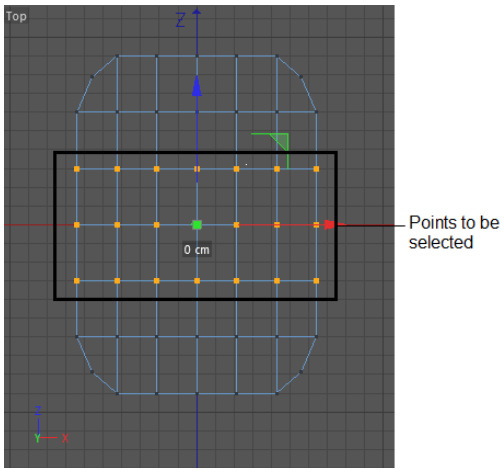

Figure 3-16 *The points to be selected*

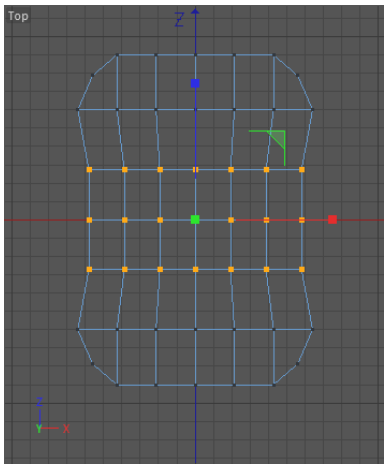

Figure 3-17 *Scaling the selected points of Computer mouse*

11. Press and hold the 9 key on the main keyboard to temporarily invoke the **Live Selection** tool and then select the center points of *Computer mouse* in the Top viewport, as shown in Figure 3-18. Now, release the 9 key.

    On releasing the 9 key, the **Scale** tool is activated which is the last used tool.

12. Scale the selected points inward in the Top viewport, as shown in Figure 3-19.

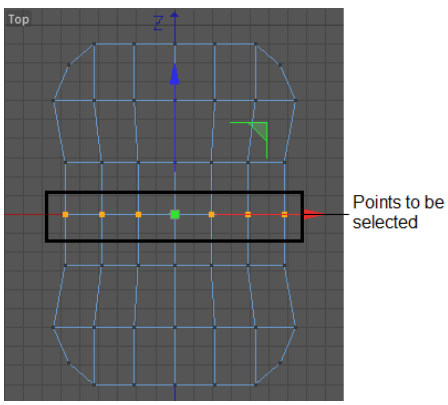

Figure 3-18 *The center points to be selected*

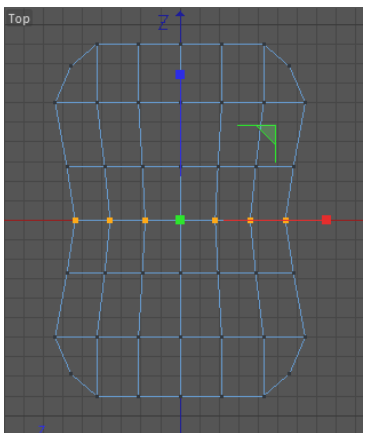

Figure 3-19 *Scaling the selected points of Computer mouse*

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13. Press and hold the 9 key and select the top and bottom points of *Computer mouse* by using the SHIFT key, as shown in Figure 3-20. Next, release the 9 and SHIFT keys. Now, scale the selected points along the Z-axis, as shown in Figure 3-21.

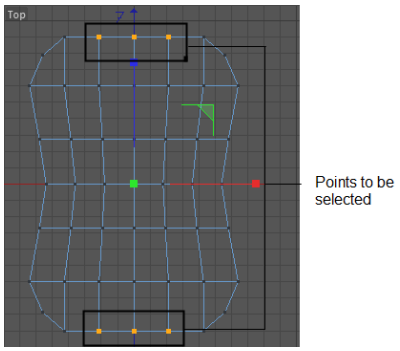

Figure 3-20 *The selected points of Computer mouse*

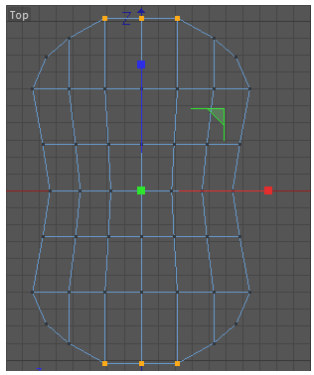

Figure 3-21 *Scaling the selected points of Computer mouse*

14. Press and hold the 9 key and select the top and bottom center points of *Computer mouse* using the SHIFT key, as shown in Figure 3-22.

15. Scale the selected points along the Z-axis in the Top viewport, as shown in Figure 3-23.

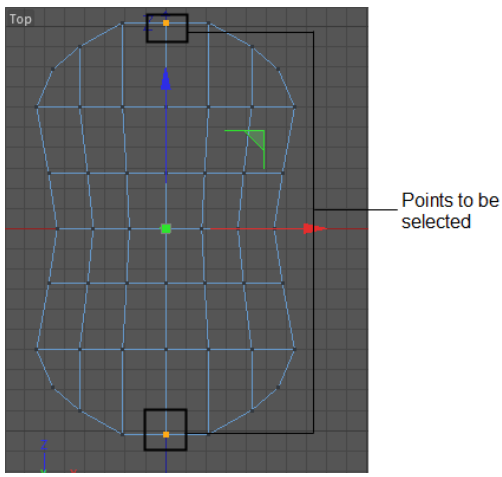

Figure 3-22 *The top and bottom center points of Computer mouse selected*

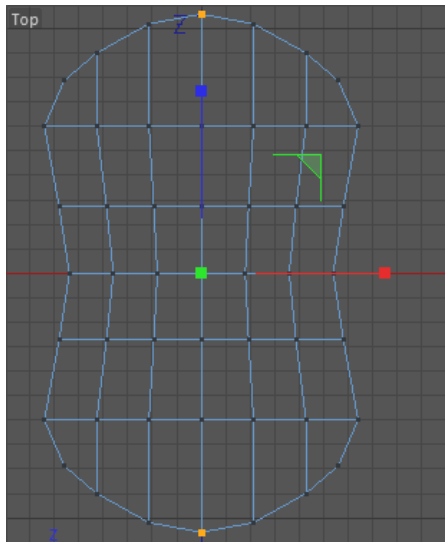

Figure 3-23 *Scaling the selected points of Computer mouse*

16. Press F3; the Right viewport is maximized. Invoke the **Live Selection** tool from the Command Palette. In the Attribute Manager, make sure the **Options** button is chosen. In the **Options** area, make sure that the **Visible Only** check box is cleared.

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17. Using the **Live Selection** tool, select the center points of *Computer mouse* in the Right viewport, as shown in Figure 3-24. Next, move the selected points upward in the Right viewport, as shown in Figure 3-25.

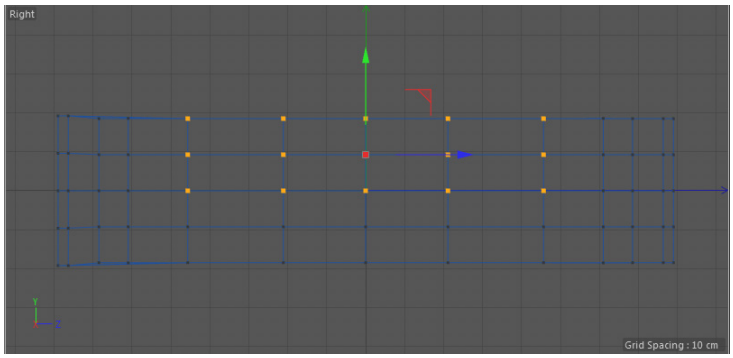

Figure 3-24 *The points to be selected*

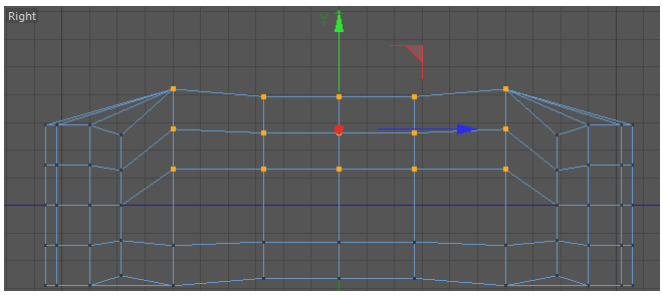

Figure 3-25 *Moving the selected points of Computer mouse*

18. Select the top points of *Computer mouse* in the Right viewport, as shown in Figure 3-26. Next, move the selected points upward in the Right viewport, as shown in Figure 3-27.

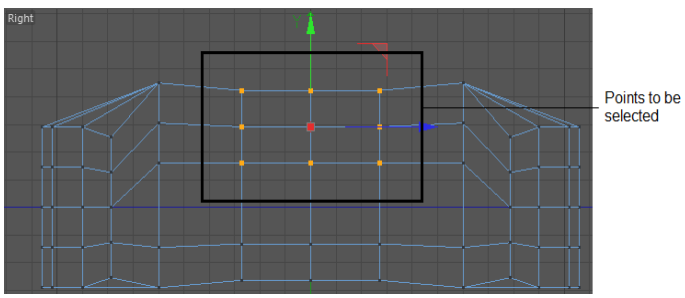

Figure 3-26 *The selected points of Computer mouse*

19. Select the top center points of *Computer mouse*, as shown in Figure 3-28. Move the selected points upward in the Right viewport, as shown in Figure 3-29.

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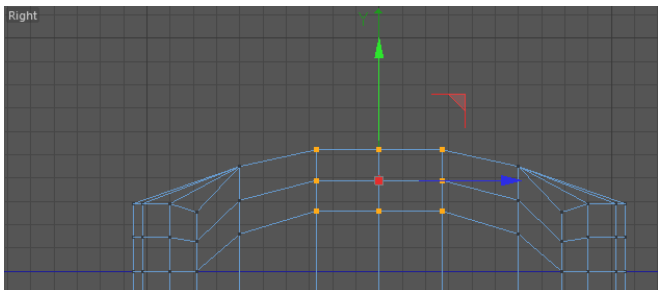

Figure 3-27 *Moving the selected points of Computer mouse*

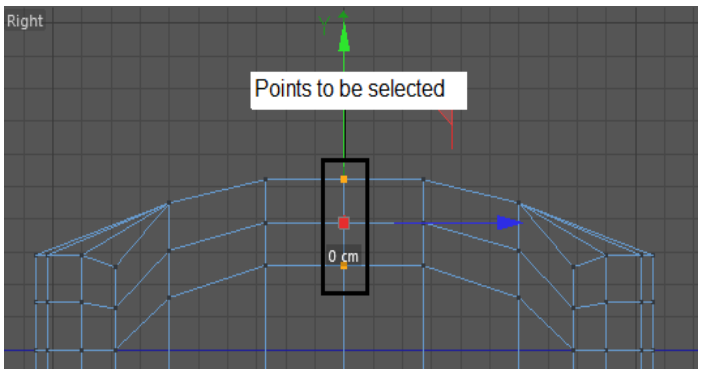

Figure 3-28 *The top center points of Computer mouse selected*

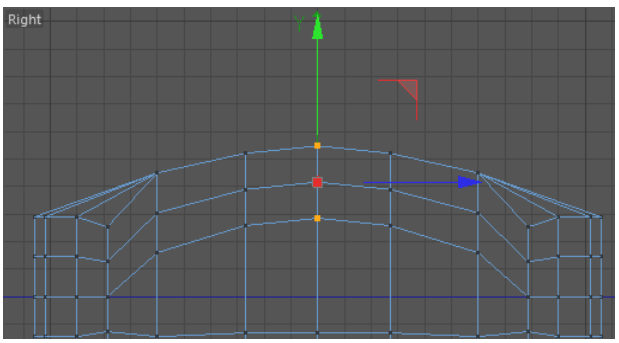

Figure 3-29 *Moving the selected points of Computer mouse*

20. Select the points of *Computer mouse* in the Right viewport, as shown in Figure 3-30.

21. Invoke the **Rotate** tool from the Command Palette and rotate the selected points along the YZ axis in the Right viewport, as shown in Figure 3-31.

22. Select the points of *Computer mouse* in the Right viewport using the 9 key, as shown in Figure 3-32. Next, rotate the selected points along the YZ axis in the Right viewport, as shown in Figure 3-33.

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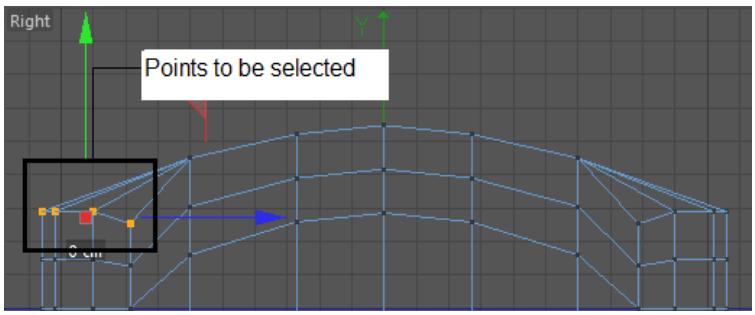

Figure 3-30 *The points to be selected*

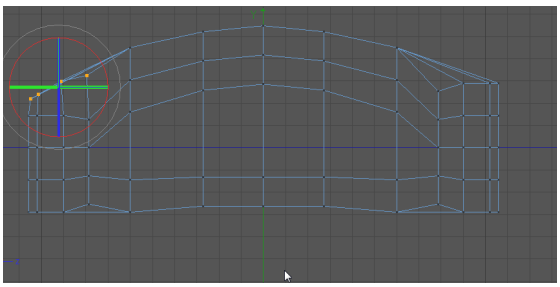

Figure 3-31 *Rotating the selected points of Computer mouse*

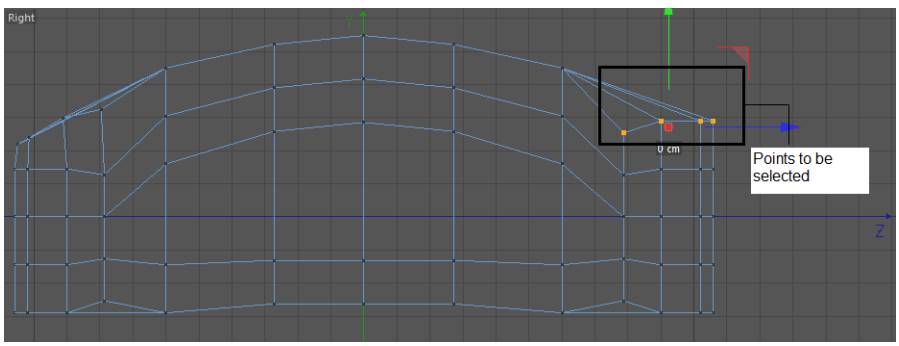

Figure 3-32 *The points to be selected*

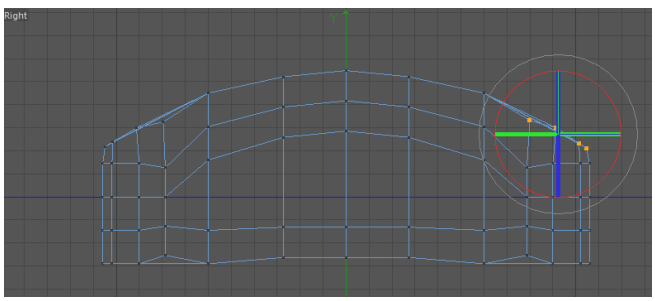

Figure 3-33 *Rotating the selected points of Computer mouse*

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23. Press F4; the Front viewport is maximized. Invoke the **Live Selection** tool from the Command Palette. In the Attribute Manager, make sure the **Options** button is chosen. In the **Options** area, make sure that the **Visible Only** check box is cleared.

24. Select the center points of *Computer mouse* in the Front viewport, as shown in Figure 3-34. Next, move the selected points upward in the Front viewport, as shown in Figure 3-35.

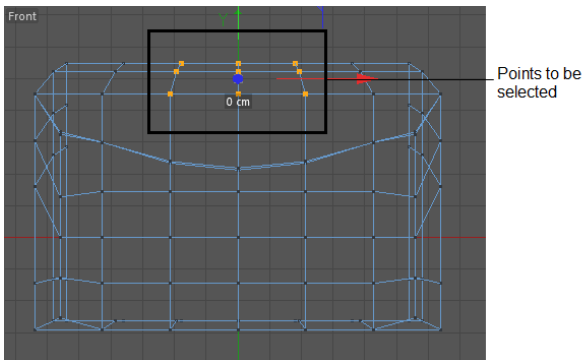

Figure 3-34 *The points to be selected*

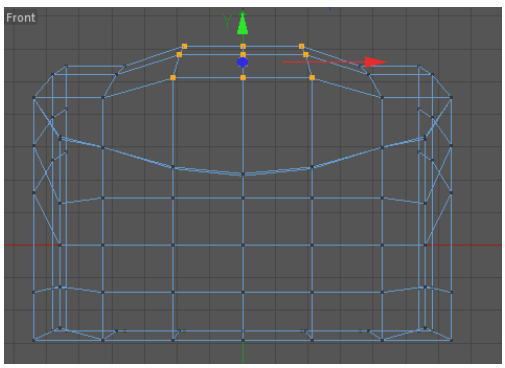

Figure 3-35 *Moving the selected points upward*

25. Select the points of *Computer mouse* using the 9 key, as shown in Figure 3-36. Next, move the selected points upward in the Front viewport, as shown in Figure 3-37.

26. Select the points of *Computer mouse* using the 9 and SHIFT keys, as shown in Figure 3-38. Next, move the selected points upward in the Front viewport, as shown in Figure 3-39.

27. Press F1; the Perspective viewport is maximized. Choose the **Edges** tool from the Modes Palette; *Computer mouse* is displayed in the edge mode.

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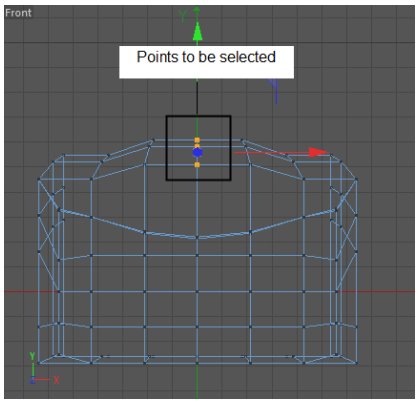

Figure 3-36 *The selected points of Computer mouse*

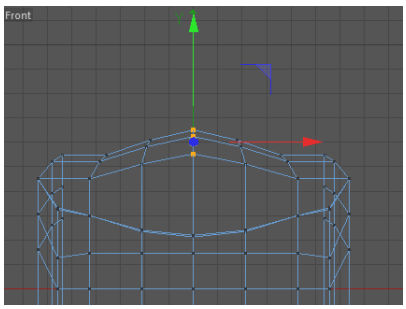

Figure 3-37 *Moving the selected points of Computer mouse*

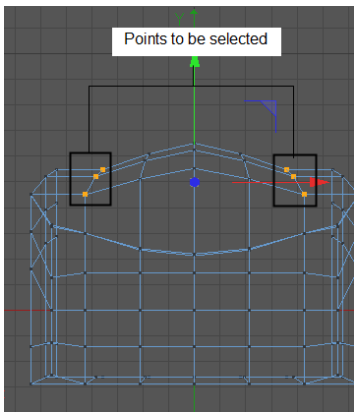

Figure 3-38 *The points to be selected*

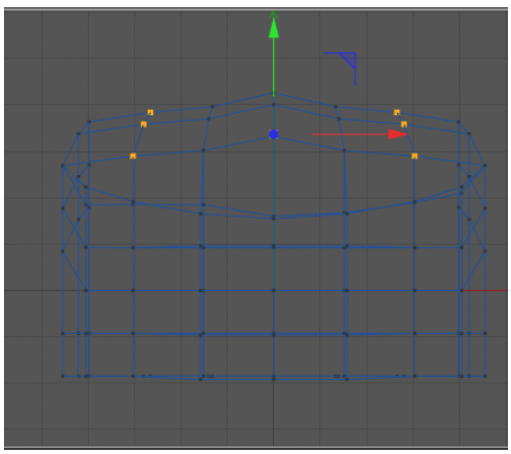

Figure 3-39 *Moving the selected points of Computer mouse*

28. Select the edges of *Computer mouse* in the Top viewport using the 9 and SHIFT keys, as shown in Figure 3-40.

29. Invoke the **Scale** tool from the Command Palette and scale down the selected edges to 95 percent along the x-axis, as shown in Figure 3-41.

30. Press F3; the Right viewport is maximized. Choose the **Points** tool from the Modes Palette; the *Computer mouse* is displayed in the points mode.

31. Select the points of *Computer mouse* in the Right viewport using the 9 key, as shown in Figure 3-42.

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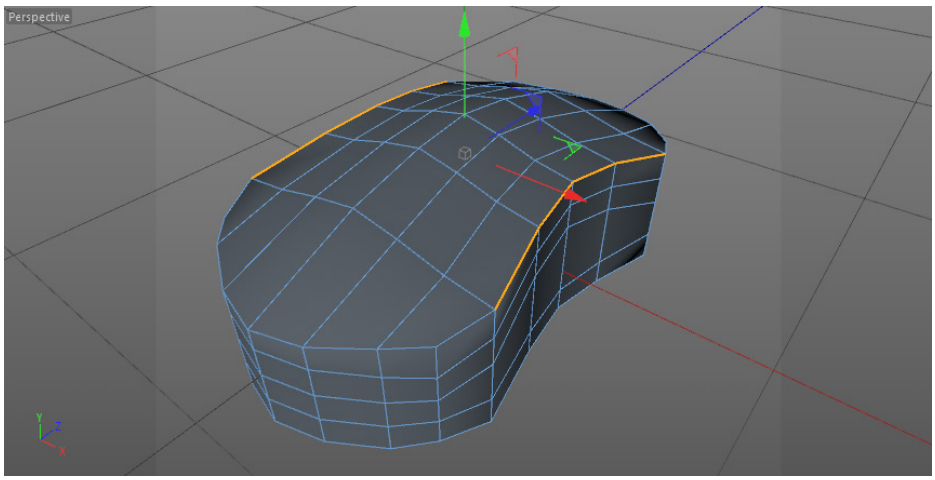

Figure 3-40 *The selected edges in the Perspective viewport*

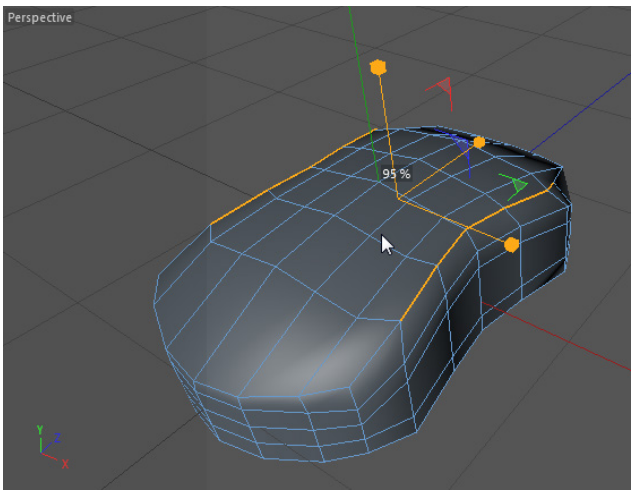

Figure 3-41 *Scaling down the edges of Computer mouse in the Perspective viewport*

32. Invoke the **Move** tool from the Command Palette and move the selected points upward in the Right viewport, as shown in Figure 3-43.

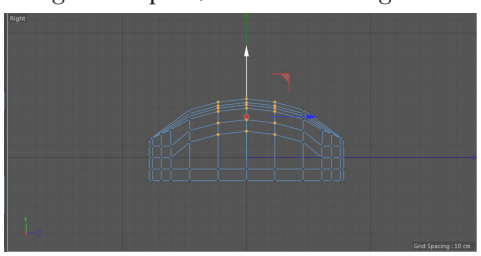

Figure 3-42 *The points to be selected*

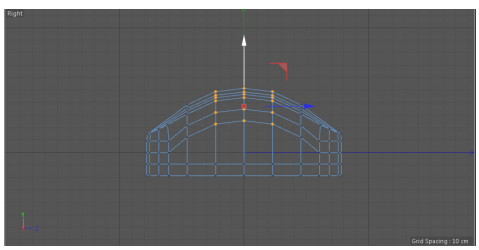

Figure 3-43 *Moving the selected points of Computer mouse*

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33. Select the center points of *Computer mouse* using the 9 key, as shown in Figure 3-44.

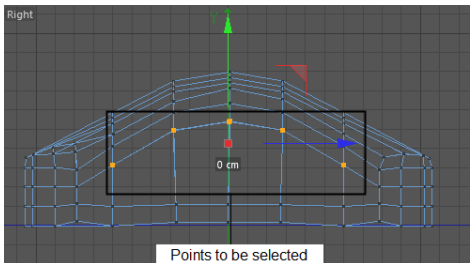

Figure 3-44 *The points to be selected*

34. Invoke the **Scale** tool from the Command Palette. Scale the selected points downward along the Y-axis and then move them downwards to get a straight line in the Right viewport, as shown in Figure 3-45.

35. Select the points of *Computer mouse* using the 9 key, as shown in Figure 3-46. Next, scale the selected points along the Y axis to 87.2 percent in the Right viewport, as shown in Figure 3-47.

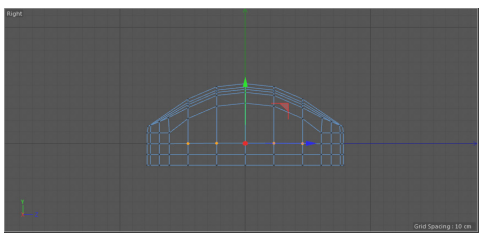

Figure 3-45 *Scaling and moving the points of Computer mouse*

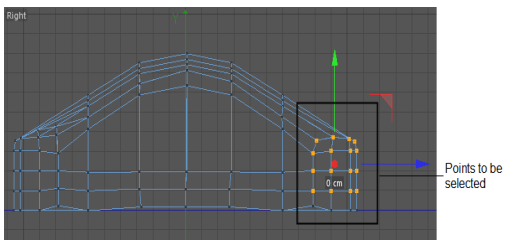

Figure 3-46 *The points of Computer mouse to be selected*

36. Invoke the **Move** tool from the Command Palette and move the selected points downward in the Right viewport, as shown in Figure 3-48.

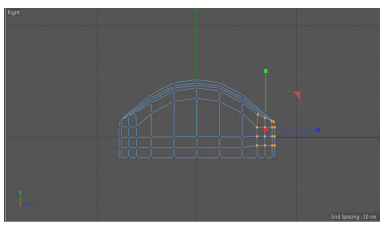

Figure 3-47 *Scaling the points of Computer mouse*

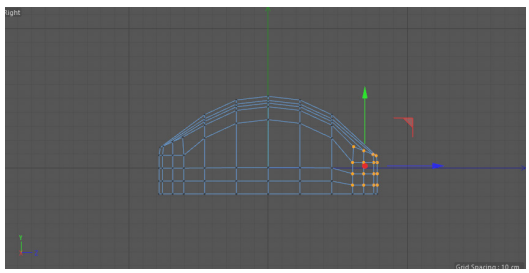

Figure 3-48 *Moving the selected points in the Right viewport*

37. Select the bottom points of *Computer mouse* using the 9 key, refer to Figure 3-49. Next, invoke the **Scale** tool and scale the selected points to get a straight line in the Right viewport, if they are not straight, as shown in Figure 3-49.

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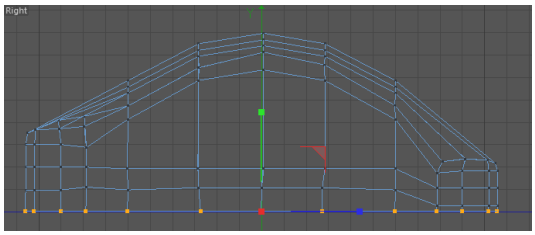

Figure 3-49 *Scaling the points of Computer mouse*

Creating the Left-Click and Right-Click Buttons of the Mouse

In this section, you will create the left-click and the right-click buttons of *Computer mouse*.

1. Press F1; the Perspective viewport is maximized. Choose the **Edges** tool from the Modes Palette; the *Computer mouse* is displayed in the edge mode.

2. Right-click in the empty area of the Perspective viewport; a shortcut menu is displayed. Choose **Loop/Path Cut** from the shortcut menu; the **Loop/Path Cut** tool settings are displayed in the Attribute Manager. In the **Options** area, make sure **Loop** is selected in the **Mode** drop-down list.

3. Make sure the **Enable Snap** tool is deactivated in the Modes Palette. In the **Options** area, make sure the **Restrict to Selection** check box is cleared and then click on the right of the middle edge loop of the *Computer mouse* in the Perspective viewport, as shown in Figure 3-50; a new edge is created next to it, as shown in Figure 3-51.

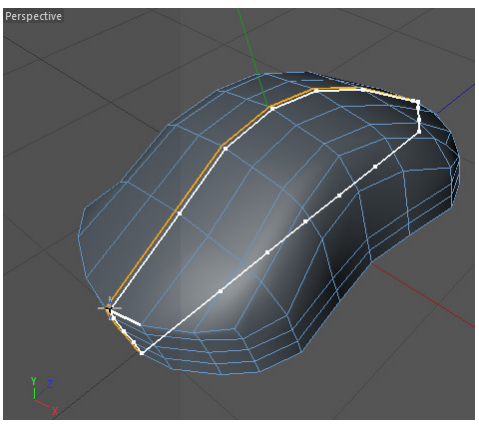

Figure 3-50 *Clicking on the right of the middle edge loop*

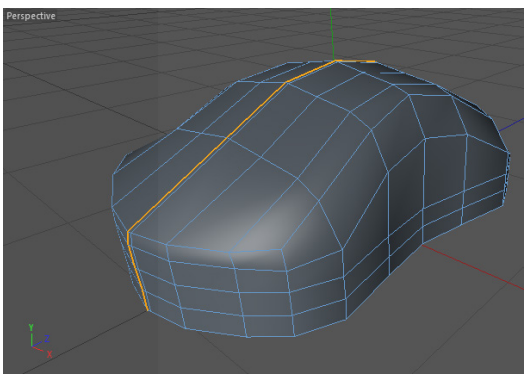

Figure 3-51 *A new edge loop added to the Computer mouse*

When you create an edge loop using the **Loop/Path Cut** tool, you can interactively slide the edge loop using the slider that appears at the top of the viewport, refer to Figure 3-52.

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Note

*1. A green line is displayed when you add an edge using the **Loop/Path Cut** tool. This line has a green dot at its one end.*

*2. The slider has 3 buttons at its right. The first button is used to get the pointer exactly at the center of the slider that allows you to create an edge at the center of the green line, refer to Figure 3-52. The second button is used to add one more edge to the edges created using the **Loop/Path Cut** tool. The third button is used to remove an edge from the edges created using the **Loop/Path Cut** tool.*

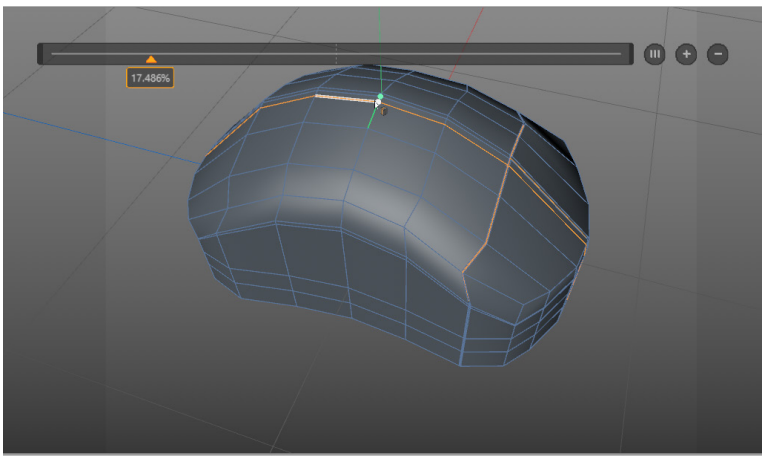

***Figure 3-52** The slider displayed at the top of the viewport*

4. Again, create three new edge loops using the **Loop/Path Cut** tool, refer to Figures 3-53 and 3-54.

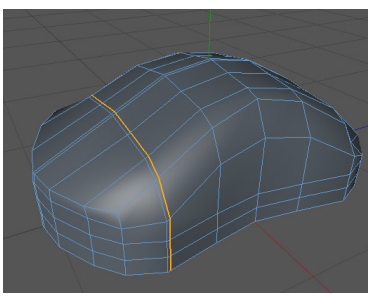

***Figure 3-53** A new edge added to Computer mouse*

5. Choose the **Live Selection** tool from the Command Palette and then choose the **Polygons** tool from the Modes Palette; the *Computer mouse* is displayed in the polygon mode. In the Attribute Manager, choose the **Options** button; the **Options** area is displayed. In this area, select the **Visible Only** check box, if not already selected. Next, using the **Live Selection** tool, select the polygons of *Computer mouse* in the Perspective viewport, as shown in Figure 3-55. If required, decrease the size of the selection cursor.

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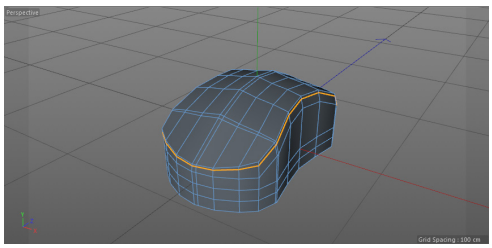

Figure 3-54 *A new edge added to Computer mouse*

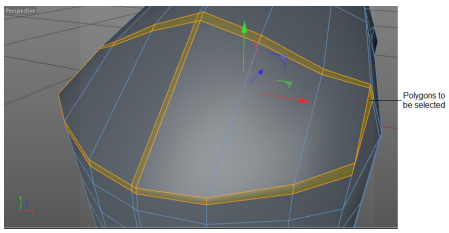

Figure 3-55 *The polygons selected*

6. In the Perspective viewport, right-click on the selected polygons of *Computer mouse*; a shortcut menu is displayed. Choose **Extrude** from the shortcut menu; the **Extrude** tool settings are displayed in the Attribute Manager. Choose the **Options** button; the **Options** area is displayed. Specify the value **-1** in the **Offset** spinner and then press ENTER; the selected polygons of *Computer mouse* are extruded, as shown in Figure 3-56.

7. Right-click on the empty area of the Perspective viewport; a shortcut menu is displayed. Choose **Loop/Path Cut** from the shortcut menu; the **Loop/Path Cut** tool settings are displayed in the Attribute Manager. In the **Options** area, make sure that **Loop** is selected in the **Mode** drop-down list.

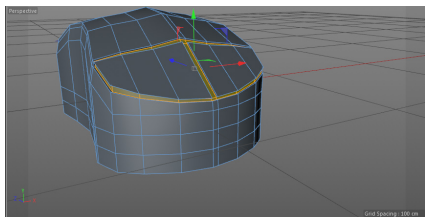

Figure 3-56 *The extruded polygons of Computer mouse*

8. Using the **Loop/Path Cut** tool, create an edge, refer to Figure 3-57.

9. Add two more edges, refer to Figures 3-58 and 3-59. Figure 3-60 shows the edges.

10. To smoothen the surface of the Computer mouse, choose the **Subdivision Surface** tool from the Command Palette; **Subdivision Surface** is added to the Object Manager. Next, select *Computer mouse* in the Object Manager and press and hold the left mouse button and then drag it on the **Subdivision Surface**; the *Computer mouse* is connected to the **Subdivision Surface** and the smoothened result is displayed, as shown in Figure 3-61.

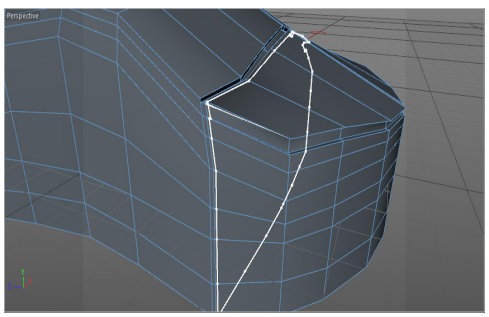

Figure 3-57 *An edge loop added to Computer mouse*

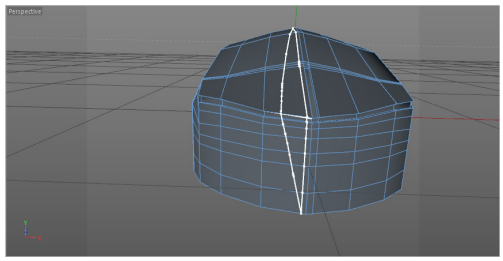

Figure 3-58 *An edge loop added to Computer mouse*

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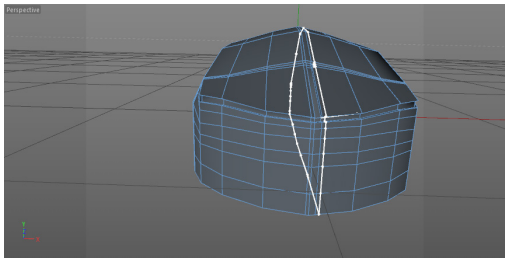

Figure 3-59 *An edge loop added to Computer mouse*

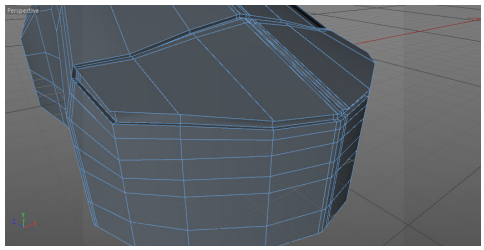

Figure 3-60 *The edges added to Computer mouse*

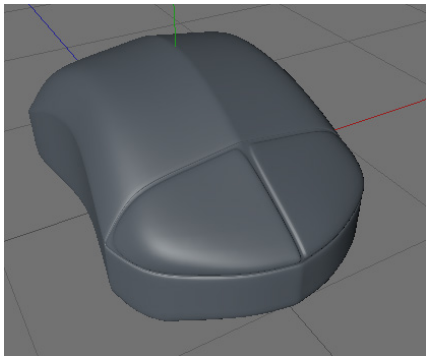

Figure 3-61 *The smoothened Computer mouse*

Creating the Scroll Wheel of the Mouse

In this section, you will create the scroll wheel of the *Computer mouse*.

1. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Torus** from it; a torus is created in the Perspective viewport and *Torus* is added to the Object Manager.

2. In the Attribute Manager, choose the **Basic** button; the **Basic Properties** area is displayed. In this area, enter **Scroll wheel** in the **Name** text box; *Torus* is renamed as *Scroll wheel* in the Object Manager.

3. In the Attribute Manager, choose the **Object** button; the **Object Properties** area is displayed. In this area, set the parameters as follows:

   Ring Radius: **6** Pipe Radius: **2** Pipe Segments: **7**
   Orientation: **-X**

4. Make sure that *Scroll wheel* is selected in the Object Manager. Invoke the **Move** tool from the Command Palette and place *Scroll wheel* on *Computer mouse*, as shown in Figure 3-62.

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Creating the Bottom of the Mouse

In this section, you will create the bottom of *Computer mouse*.

1. Choose **Cameras** in Menu in editor view in the Perspective viewport; a flyout is displayed. Choose **Bottom** from the flyout; the Bottom viewport is displayed.

2. Select the *Computer mouse* in the Object Manager. Make sure the **Polygons** tool is chosen from the Modes Palette; the *Computer mouse* is displayed in the polygon mode. Make sure the **Live Selection** tool is chosen from the Standard palette. In the Attribute Manager, choose the **Options** button; the **Options** area is displayed. In this area, make sure the **Visible Only** check box is selected. Select the polygons of *Computer mouse*, as shown in Figure 3-63.

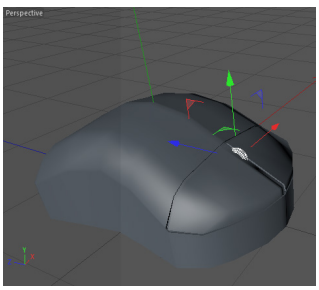

Figure 3-62 *The Scroll wheel placed on Computer mouse*

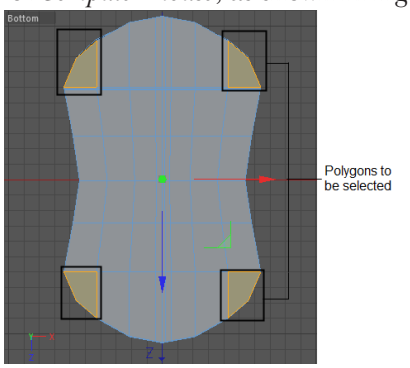

Figure 3-63 *The selected polygons of Computer mouse*

3. In the Bottom viewport, right-click on the selected polygons of *Computer mouse*; a shortcut menu is displayed. Choose **Extrude Inner** from the shortcut menu; the **Extrude Inner** tool settings are displayed in the Attribute Manager. Choose the **Options** button; the **Options** area is displayed. Specify the value **3** in the **Offset** spinner and then press ENTER; the selected polygons of the *Computer mouse* are extruded.

4. In the Perspective viewport, right-click on the selected polygons of *Computer mouse*; a shortcut menu is displayed. Choose **Extrude** from the shortcut menu; the **Extrude** tool settings are displayed in the Attribute Manager. Choose the **Options** button; the **Options** area is displayed. Specify the value **1.5** in the **Offset** spinner and then press ENTER; the selected polygons of the *Computer mouse* are extruded.

5. Choose **Cameras** from the Menu in editor view; a flyout is displayed. Choose **Perspective** from the flyout; the Perspective viewport is maximized.

Creating the USB Cable of the Mouse

In this section, you will create the USB cable of *Computer mouse* using the **Sweep NURBS** tool.

1. Choose **Create > Spline Primitive** from the main menu; a cascading menu is displayed. Next, choose **Circle** from it; a circle is created in the Perspective viewport and *Circle* is added to the Object Manager.

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2. Make sure that *Circle* is selected in the Object Manager. In the Attribute Manager, make sure the **Object** button is chosen. In the **Object Properties** area, enter **2** in the **Radius** spinner.

3. In the Attribute Manager, choose the **Coord** button; the **Coord** area is displayed. In this area, enter **-80** in the **P . Z** spinner; the *Circle* is positioned in the Perspective viewport.

4. Press F2; the Top viewport is maximized. Choose the **Spline Pen** tool from the Command Palette. Next, create a curve in the Top viewport, as shown in Figure 3-64. Press ESC to exit the **Spline Pen** tool.

5. Press and hold the left mouse button on the **Subdivision Surface** tool from the Command Palette; a flyout is displayed. Choose the **Sweep** tool from the flyout; the *Sweep* is added to the Object Manager.

6. In the Object Manager, press and hold the left mouse button on *Spline* and drag it to *Sweep*; the *Spline* is connected to *Sweep*. Next, press and hold the left mouse button on *Circle* and drag it to *Sweep*; *Circle* is connected to *Sweep*. You will notice that a wire is created in the Top viewport.

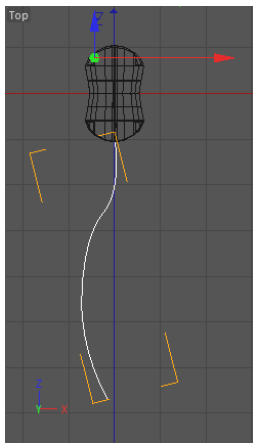

Figure 3-64 *Spline created in the Top viewport*

Next, you will create the USB port of *Computer mouse*.

7. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Cube** from it; a cube is created in the Top viewport and a *Cube* is added to the Object Manager.

8. Make sure that *Cube* is selected in the Object Manager. In the Attribute Manager, choose the **Object** button; the **Object Properties** area is displayed. In this area, set the parameters as follows:

Size . X: **28**	Size . Y: **8**	Size . Z: **62**
Segments X: **10**	Segments Y: **10**	Segments Z: **10**

9. Invoke the **Move** tool from the Command Palette and move *Cube* in the Top viewport to place it, as shown in Figure 3-65.

10. Make sure *Cube* is selected in the Object Manager. Next, choose the **Make Editable** tool from the Modes Palette; the *Cube* is converted into a polygonal object.

11. Choose the **Edges** tool from the Modes Palette; *Cube* is displayed in the edge mode. Choose the **Live Selection** tool from the Command Palette. In the Attribute Manager, make sure the **Visible Only** check box is cleared in the **Options** area. Next, select the edges of *Cube* in the Top viewport, as shown in Figure 3-66.

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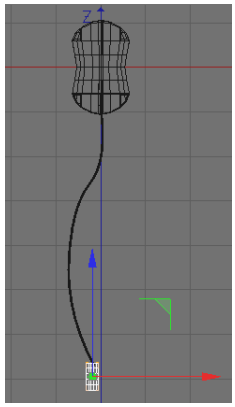

Figure 3-65 *Cube placed in the Top viewport*

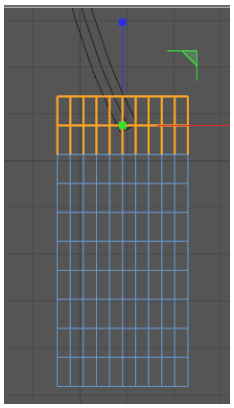

Figure 3-66 *The edges to be selected in the Top viewport*

12. Invoke the **Scale** tool from the Command Palette and scale down the selected edges to 70 percent uniformly.

13. Choose the **Points** tool from the Modes Palette; *Cube* is displayed in the points mode. Select the points of *Cube* using the 9 and SHIFT keys, as shown in Figure 3-67.

14. Scale down the selected points along the X axis to get the shape, as shown in Figure 3-68.

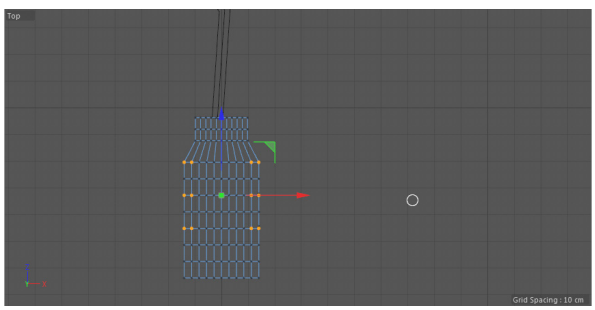

Figure 3-67 *The points to be selected*

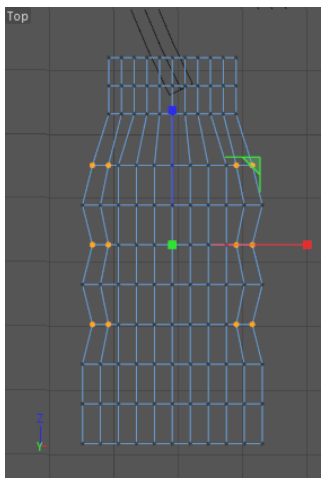

Figure 3-68 *Scaling the selected points*

15. Choose the **Edges** tool from the Modes Palette; *Cube* is displayed in the edge mode. Choose the **Live Selection** tool from the Command Palette. In the Attribute Manager, select the **Visible Only** check box in the **Options** area. Select the edges of *Cube* in the Top viewport, as shown in Figure 3-69.

16. Scale down the selected edges along the X and Y axis to get the shape, as shown in Figure 3-70.

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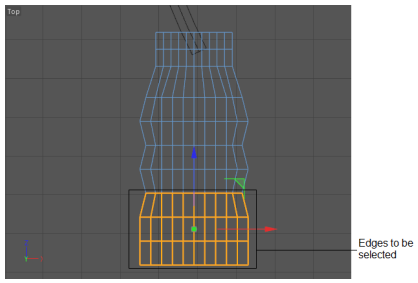

Figure 3-69 *The edges selected*

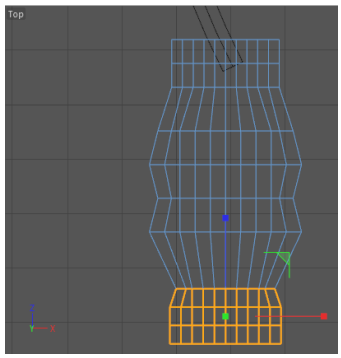

Figure 3-70 *Scaling the selected edges*

17. Press F1; the Perspective viewport is maximized. Choose the **Polygons** tool from the Modes Palette; *Cube* is displayed in the polygon mode. Select the polygons of *Cube* using the 9 key, as shown in Figure 3-71. Make sure the **Only Selected Visible Elements** check box is cleared.

18. Right-click on the selected polygons of *Computer mouse*; a shortcut menu is displayed. Choose **Extrude** from the shortcut menu; the **Extrude** tool settings are displayed in the Attribute Manager. In the **Extrude** tool settings area, specify the value **10** in the **Offset** spinner and then press ENTER; the selected polygons of *Computer mouse* are extruded, as shown in Figure 3-72.

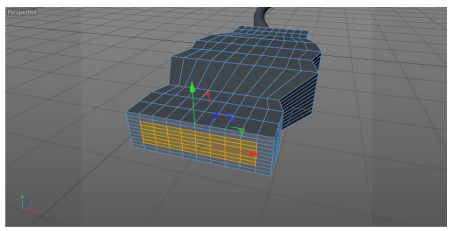

Figure 3-71 *The polygons to be selected*

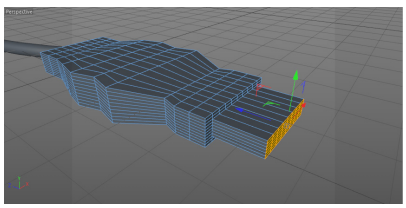

Figure 3-72 *The extruded edge loop*

19. Choose the **Polygons** tool from the Modes Palette. Right-click on the Perspective viewport; a shortcut menu is displayed. Choose **Loop/Path Cut** from the shortcut menu; the **Loop/Path Cut** tool settings are displayed in the Attribute Manager. In the Attribute Manager, make sure **Loop** is selected in the **Mode** drop-down list. Next, add two edges, as shown in Figure 3-73.

20. Choose the **Polygons** tool from the Modes Palette; *Cube* is displayed in the polygon mode. Select the polygons of *Cube* using the **Live Selection** tool, as shown in Figure 3-74. Next, delete the selected polygons of *Cube*, refer to Figure 3-75.

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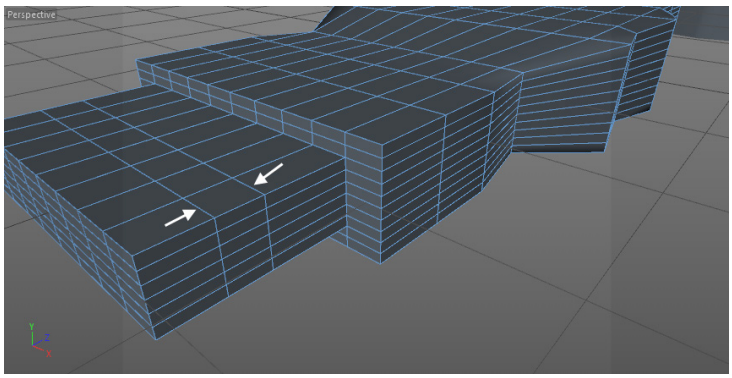

Figure 3-73 *The edges to be added*

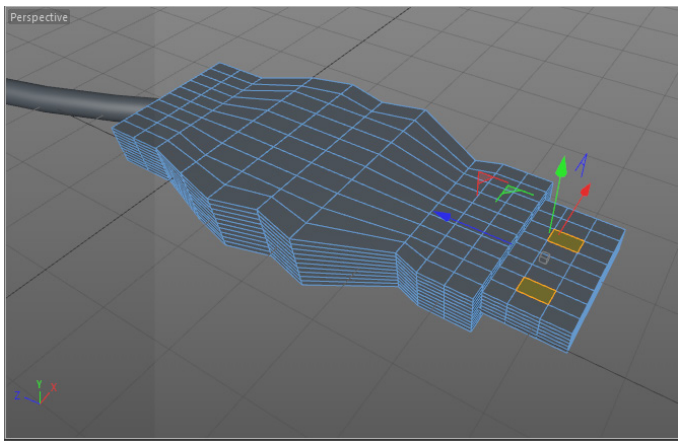

Figure 3-74 *The polygons to be selected*

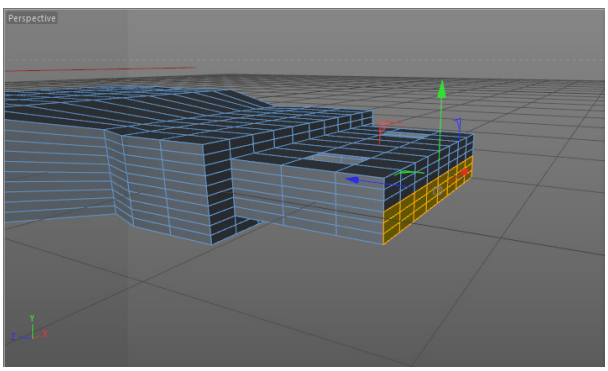

Figure 3-75 *The selected polygons*

21. Again, select the polygons of *Cube* using the **Live Selection tool**, refer to Figure 3-75. Next, delete the selected polygons of *Cube*, refer to Figure 3-76.

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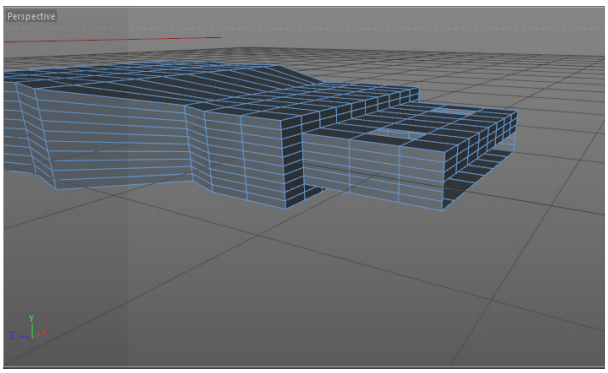

Figure 3-76 *The deleted polygons*

Changing the Background Color of the Scene

To change the background color of the scene to white in the final output, follow the steps given in Tutorial 1 of Chapter 2.

Saving and Rendering the Scene

In this section, you will save and render the scene. You can also view the final render of the scene by downloading the file *c03_cinema4d_R25_rndr.zip* from *www.cadcim.com*. The path of the file is mentioned at the beginning of the chapter.

1. Choose **File > Save Project as** from the main menu; the **Save File** dialog box is displayed. In this dialog box, browse to the location *\Documents\c4dR25\c03*.

2. Enter **c03tut2** in the **File name** text box and then choose the **Save** button.

3. In the Perspective viewport, set the camera angle using the Viewport Navigation Tools. Next, choose the **Render to Picture Viewer** tool from the Command Palette. Alternatively, press SHIFT+R; the **Picture Viewer** window is displayed.

4. In the **Picture Viewer** window, choose **File > Save Image as**; the **Save** dialog box is displayed.

5. In the **Save** dialog box, choose the **OK** button; the **Save Dialog** dialog box is displayed. Next, browse to *\Documents\c4dR25\c03*. In the **File Name** text box, type **c03_tut2_rndr**. Next, choose the **Save** button; the file is saved at the desired location.

   Figure 3-12 displays the final output.

Tutorial 2

In this tutorial, you will create the model of a computer table, as shown in Figure 3-77, using the polygon modeling technique. **(Expected time: 40 min)**

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Figure 3-77 *The model of computer table*

The following steps are required to complete this tutorial:

a. Create the base of the computer table.
b. Create the support for the CPU.
c. Create the support for the keyboard.
d. Create the base for the monitor.
e. Create the top shelves of the computer table.
f. Create the bottom shelf of the computer table.
g. Create the magazine stand.
h. Change the background color of the scene.
i. Save and render the scene.

Creating the Base of the Computer Table

In this section, you will create the base of the computer table.

1. Press F2; the Top viewport is maximized. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Cube** from it; a cube is created in the Top viewport and *Cube* is added to the Object Manager.

2. In the Attribute Manager, choose the **Basic** button; the **Basic Properties** area is displayed. In this area, enter **Computer table** in the **Name** text box; *Cube* is renamed as *Computer table* in the Object Manager.

3. Make sure *Computer table* is selected in the Object Manager. In the Attribute Manager, choose the **Object** button; the **Object Properties** area is displayed. In the **Object Properties** area, set the parameters as follows:

Size . X: **743**	Size . Y: **18**	Size . Z: **295**
Segments X: **6**	Segments Y: **6**	Segments Z: **6**

Select the **Fillet** check box and enter **3** in the **Fillet Radius** spinner.

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4. Press F1; the Perspective area is maximized. Choose the **Make Editable** tool from the Modes Palette; *Computer table* is converted into a polygonal object.

   Figure 3-78 displays *Computer table* in the Perspective viewport.

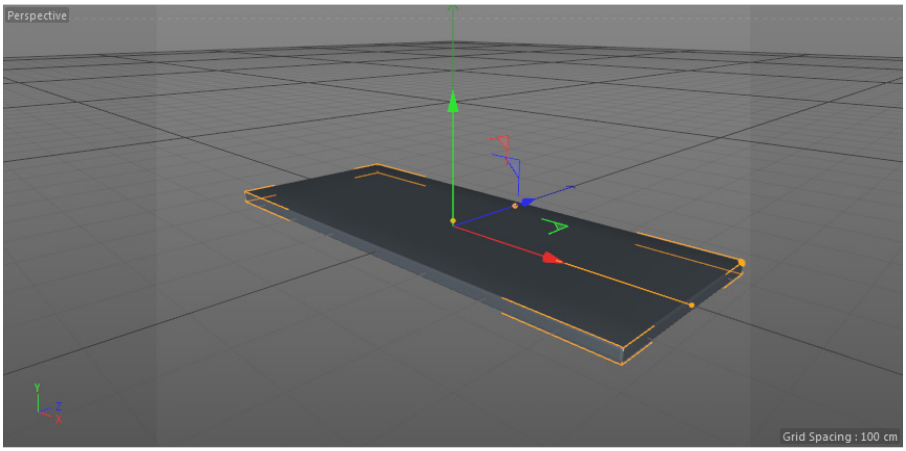

Figure 3-78 *The Computer table in the Perspective viewport*

5. Choose the **Edges** tool from the Modes Palette; the *Computer table* is displayed in the edge mode. Choose **Select > Loop Selection** from the main menu and then right-click in the Perspective viewport; a shortcut menu is displayed. Choose **Loop/Path Cut** from the shortcut menu; the **Loop/Path Cut** tool settings are displayed in the Attribute Manager.

6. Choose the **Enable Snap** tool from the Modes Palette. Next, click on *Computer mouse*, refer to Figure 3-79; an edge loop is added to *Computer table*. Again, create two new edge loops using the **Loop/Path Cut** tool, as shown in Figure 3-80.

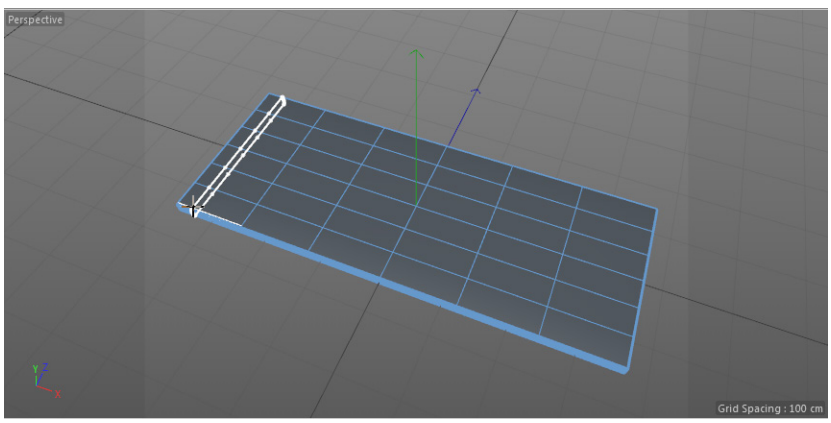

Figure 3-79 *Adding an edge loop*

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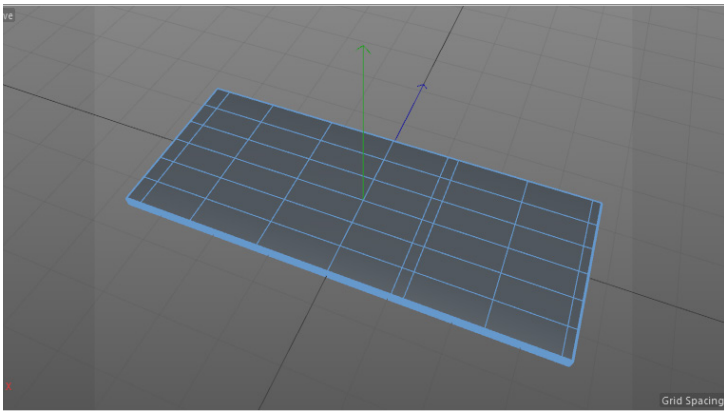

Figure 3-80 *The edge loops added*

Next, you will create the supports for *Computer table*.

7. Choose the **Polygons** tool from the Modes Palette; the *Computer table* is displayed in the polygon mode. Choose **Cameras > Bottom** from the Menu in editor view; the Bottom viewport is maximized. Choose the **Live Selection** tool from the Command Palette and make sure that the **Visible Only** check box is selected. Next, enter **1** in the **Radius** spinner. Now, select the polygons of *Computer table*, as shown in Figure 3-81, using the **Live Selection** tool and the SHIFT key.

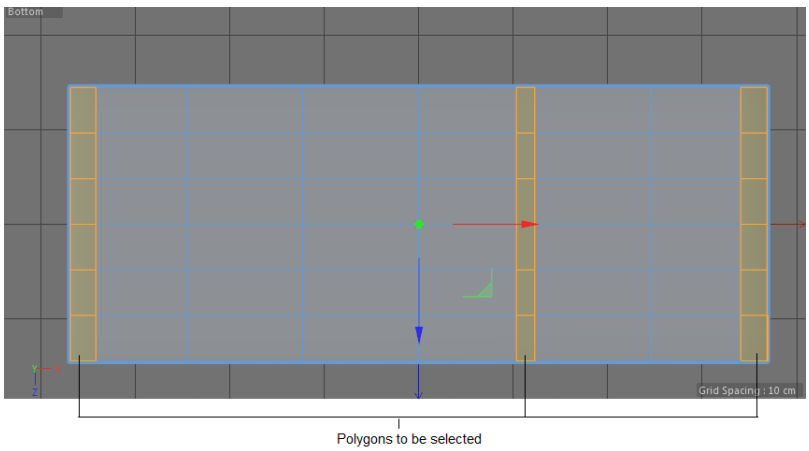

Figure 3-81 *The selected polygons of Computer table*

8. Choose **Cameras > Perspective** from the Menu in editor view; the Perspective viewport is maximized. Right-click in the Perspective viewport; a shortcut menu is displayed. Choose **Extrude** from the shortcut menu; the **Extrude** tool settings are displayed in the Attribute Manager. In the **Extrude** tool settings area, set the value **400** in the **Offset** spinner and then press the ENTER key. Set the value **4** in the **Subdivision** spinner and then press the ENTER key.

After entering the value, the selected polygons are extruded in the Perspective viewport, as shown in Figure 3-82.

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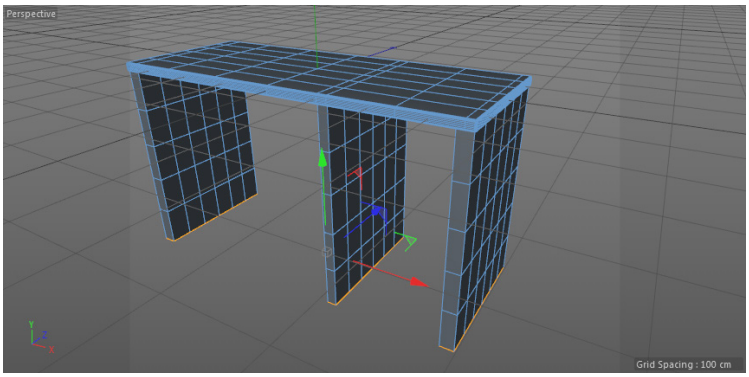

Figure 3-82 *The selected polygons extruded in the Perspective viewport*

Creating the Support for the CPU

In this section, you will create the support for the CPU.

1. Choose the **Edges** tool from the Modes Palette; *Computer table* is displayed in the edge mode. Right-click in the Perspective viewport; a shortcut menu is displayed. Choose **Loop/Path Cut** from the shortcut menu; the **Loop/Path Cut** tool settings are displayed in the Attribute Manager. Make sure **Loop** is selected in the **Mode** drop-down list and the **Restrict to Selection** check box is cleared.

2. Make sure the **Enable Snap** tool is deactivated in the Modes Palette. Next, click at a point, refer to Figure 3-83; a new edge loop is added to *Computer table*.

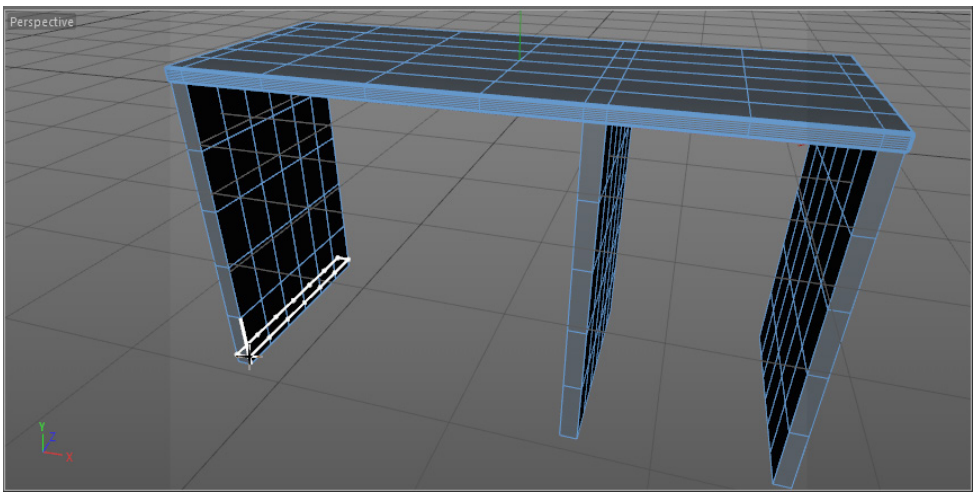

Figure 3-83 *Clicking on edge to create a new edge loop*

3. Choose the **Polygons** tool from the Modes Palette; *Computer table* is displayed in the polygon mode. Choose the **Live Selection** tool from the Command Palette and make sure that the **Visible Only** check box is selected. Now, select the polygons of *Computer table*, as shown in Figure 3-84.

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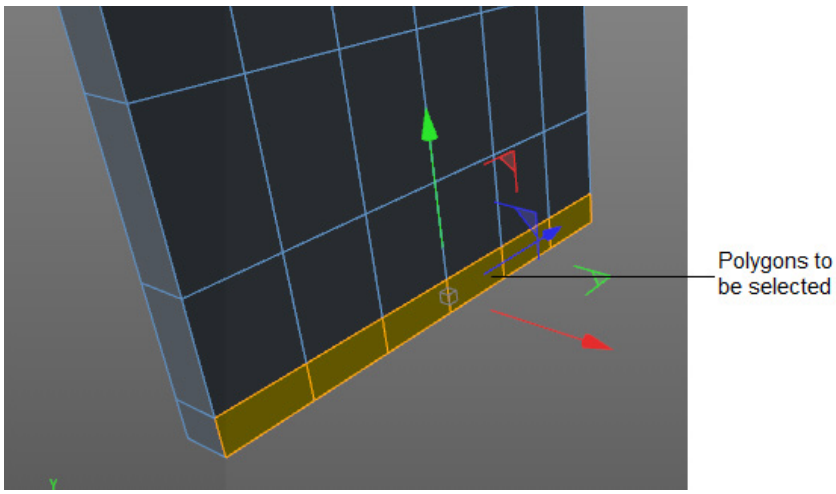

Figure 3-84 *The selected polygons of Computer table*

4. Right-click in the Perspective viewport; a shortcut menu is displayed. Choose **Extrude** from the shortcut menu; the **Extrude** tool settings are displayed in the Attribute Manager. In the Attribute Manager, choose the **Options** button; the **Options** area is displayed. In this area, set the parameters as follows:

Offset: **200** Subdivision: **6**

After entering the values, the selected polygons are extruded in the Perspective viewport, as shown in Figure 3-85.

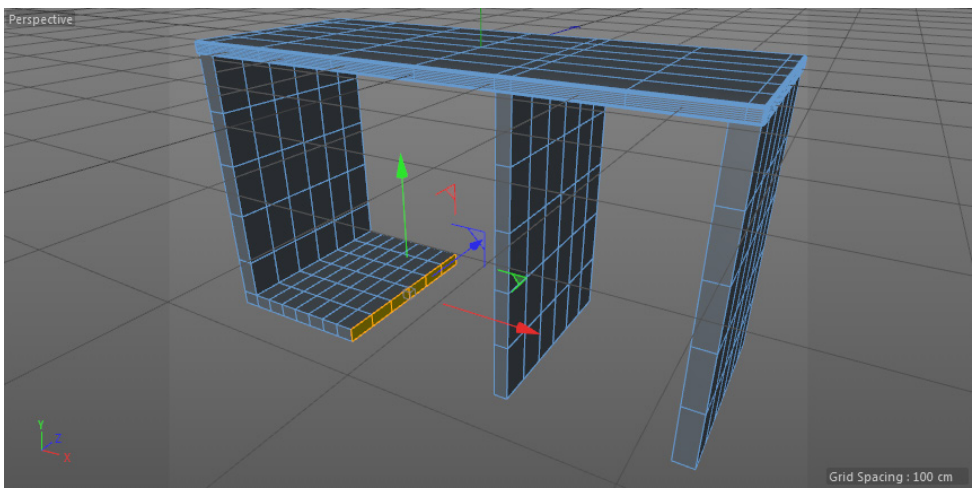

Figure 3-85 *The selected polygons extruded in the Perspective viewport*

5. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Cube** from it; the *Cube* object is added to the Object Manager.

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6. In the Attribute Manager, choose the **Object** button; the **Object Properties** area is displayed. In this area, set the parameters as follows:

   Size . X: **10** Size . Y: **118** Size . Z: **291**

   Segments X: **4** Segments Y: **3** Segments Z: **3**

7. Align *Cube* in the Perspective viewport, as shown in Figure 3-86.

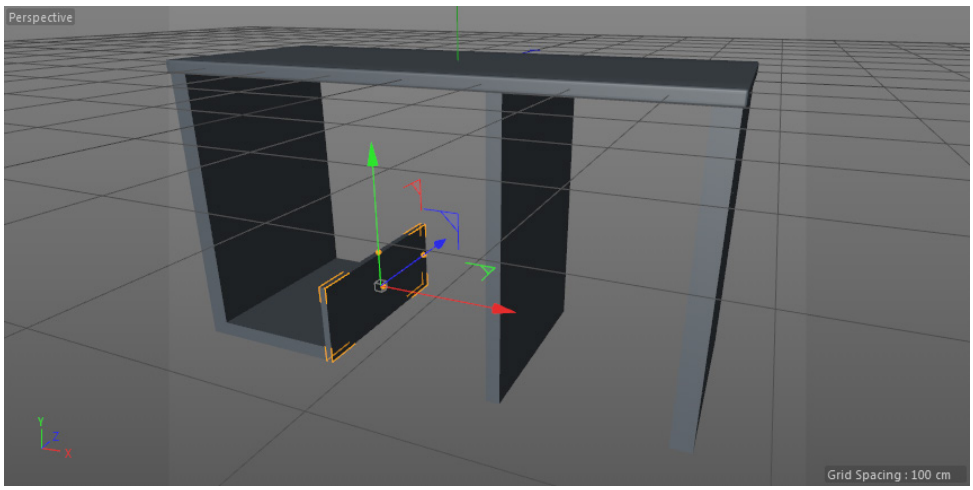

Figure 3-86 *Cube aligned in the Perspective viewport*

Next, you will create design of the side support of *Computer table*.

8. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Cube** from it; a cube is created in the Perspective viewport and the *Cube.1* object is added to the Object Manager.

9. In the Attribute Manager, make sure the **Object** button is chosen. In the **Object Properties** area, set the parameters as follows:

   Size . X: **53** Size . Y: **37**

   Segments X: 5 Segments Y: 3 Segments Z: 3

   Select the **Fillet** check box and enter **5** in the **Fillet Radius** spinner.

10. In the Attribute Manager, choose the **Coord** button; the **Coordinates** area is displayed. In this area, set the parameters as follows:

    P . X: **-345.355** P . Y: **-89.77**

    Figure 3-87 displays *Cube.1* positioned in the Perspective viewport.
    Next, you will create a copy of *Cube.1*.

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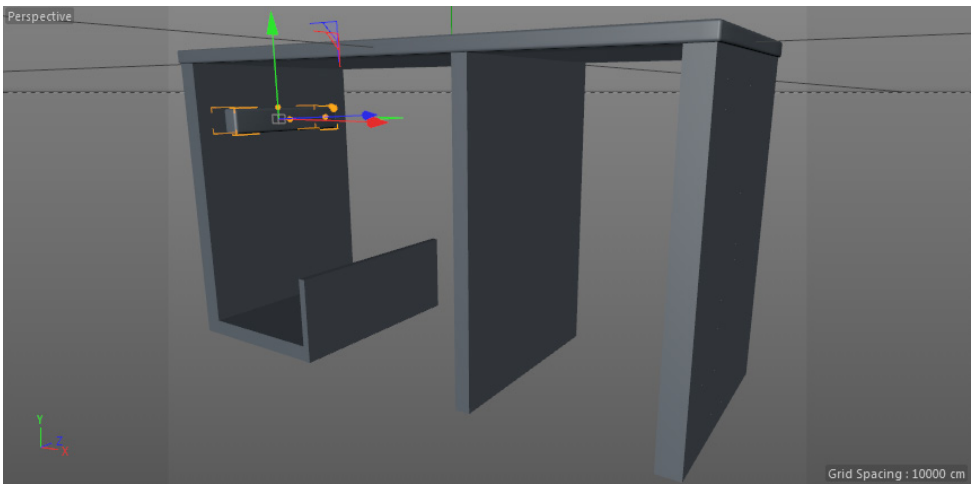

Figure 3-87 *Cube.1 positioned in the Perspective viewport*

11. Make sure the *Cube.1* object is selected in the Object Manager. Press and hold the left mouse button and the CTRL key and then drag the cursor above *Cube.1* in the Object Manager. Next, release the left mouse button; the *Cube.2* object is added to the Object Manager.

12. Make sure *Cube.2* is selected in the Object Manager. In the Attribute Manager, make sure the **Coord** button is chosen. In the **Coordinates** area, enter **-168.162** in the **P . Y** spinner; the *Cube.2* object is positioned in the Perspective viewport.

13. Make sure the *Cube.2* is selected in the Object Manager. Press and hold the left mouse button and the CTRL key and then drag the cursor above *Cube.2* in the Object Manager. Next, release the left mouse button; the *Cube.3* is added in the Object Manager.

14. Make sure *Cube.3* is selected in the Object Manager. In the Attribute Manager, make sure the **Coord** button is chosen. In the **Coordinates** area, enter **-255.253** in the **P . Y** spinner; the *Cube.3* object is positioned in the Perspective viewport.

15. Select *Cube.1*, *Cube.2,* and *Cube.3* using the CTRL key in the Object Manager. Next, press ALT+G; the *Null* object is added to the Object Manager. Rename it as **left side**. Figure 3-88 displays *left side* positioned in the Perspective viewport.

16. Choose **Create > Generator** from the main menu; a cascading menu is displayed. Next, choose **Boole** from it; the *Boole* object is added to the Object Manager.

17. In the Object Manager, press and hold the left mouse button on *left side* and drag it on *Boole*. Now, release the left mouse button; the *left side* is connected to *Boole* in the Object Manager.

18. In the Object Manager, press and hold the left mouse button on *Computer table* and drag it on *Boole*; the *Computer table* is connected to *Boole* in the Object Manager, as shown in Figure 3-89 and holes are created in *Computer table*, as shown in Figure 3-90.

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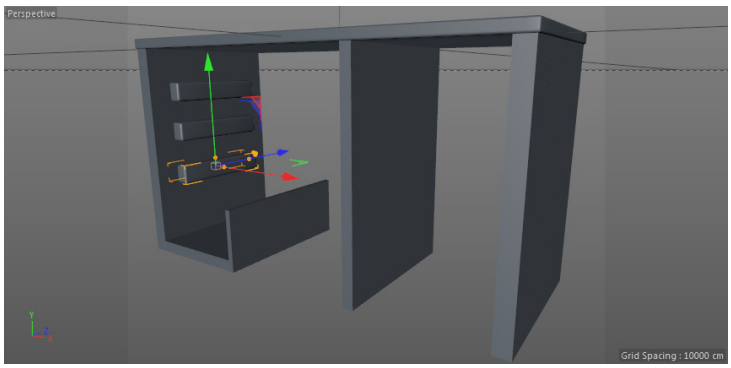

Figure 3-88 *Left side positioned in the Perspective viewport*

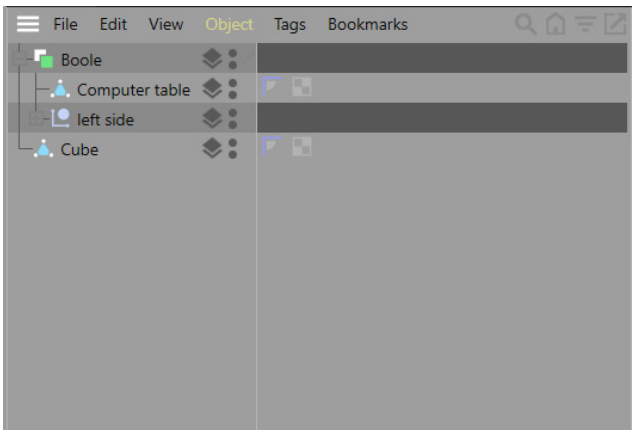

Figure 3-89 *Boole connected to Computer table*

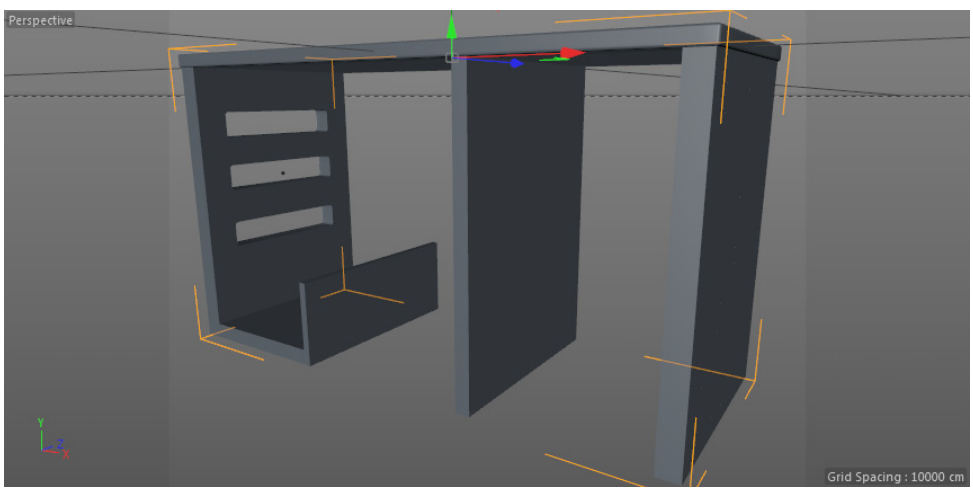

Figure 3-90 *The holes created in the side support of the Computer table*

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Creating the Support for the Keyboard

In this section, you will create support for the keyboard.

1. Press F4; the Front viewport is maximized. Choose the **Edges** tool from the Modes Palette; *Computer table* is displayed in the edges mode.

2. Right-click in the Front viewport; a shortcut menu is displayed. Choose **Plane Cut** from the shortcut menu; the **Plane Cut** tool settings are displayed in the Attribute Manager. In the Front viewport, drag the cursor to create a cut, refer to Figure 3-91.

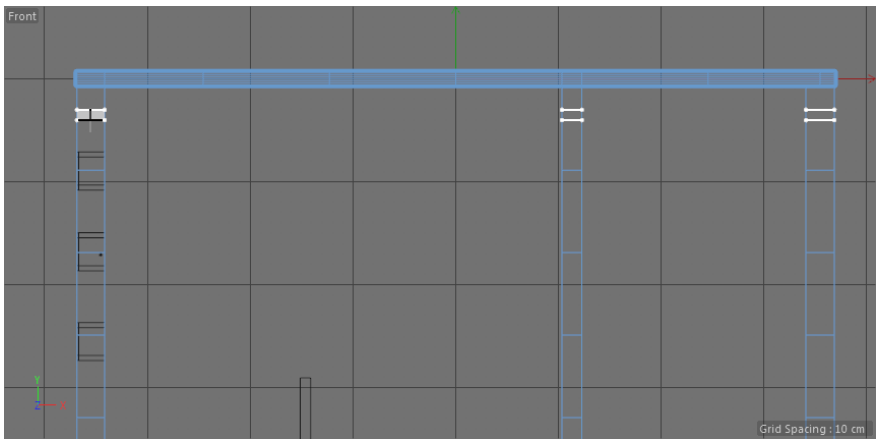

Figure 3-91 *Creating an edge using the* ***Plane Cut*** *tool*

3. Click and drag again to create second cut below the first cut that you created earlier, refer to Figure 3-91; two new edge loops are added to *Computer table*. Similarly, create two more cuts using the **Plane Cut** tool. Figure 3-92 displays four new edge loops added to the *Computer table*.

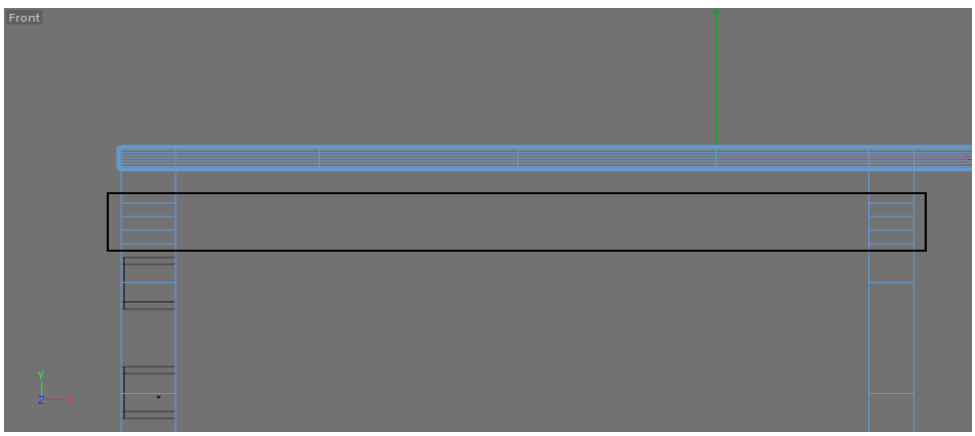

Figure 3-92 *Four new edge loops added to the Computer table*

4. Press F1; the Perspective viewport is maximized. Choose the **Polygons** tool from the Modes Palette; *Computer table* is displayed in the polygon mode. Choose the **Live Selection** tool

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from the Command Palette and make sure that the **Visible Only** check box is selected. Now, select the polygons of both sides of *Computer table*, as shown in Figure 3-93.

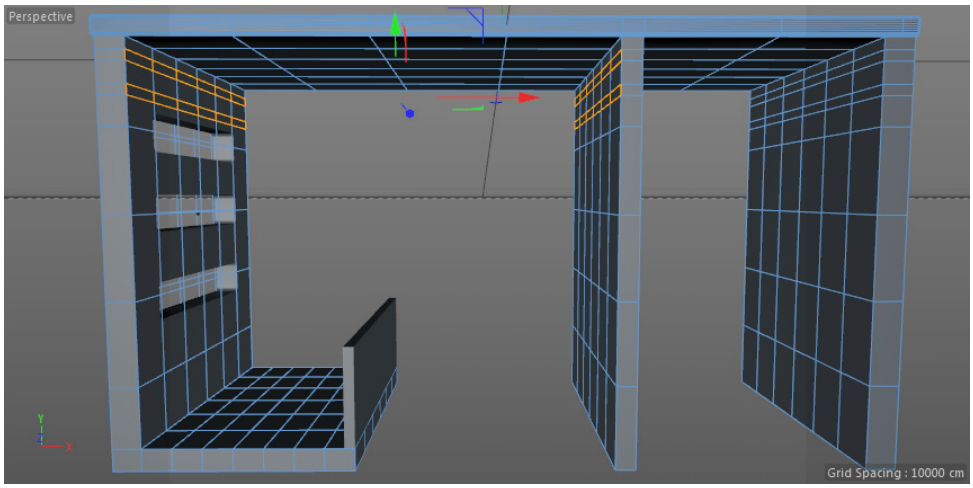

Figure 3-93 *The selected polygons of Computer table*

5. Right-click in the Perspective viewport; a shortcut menu is displayed. Choose **Extrude** from the shortcut menu; the **Extrude** tool settings are displayed in the Attribute Manager. In the Attribute Manager, choose the **Options** button; the **Options** area is displayed. In this area, set the value **30** in the **Offset** slider and then press the ENTER key.

Figure 3-94 displays the selected polygons extruded in the Perspective viewport.

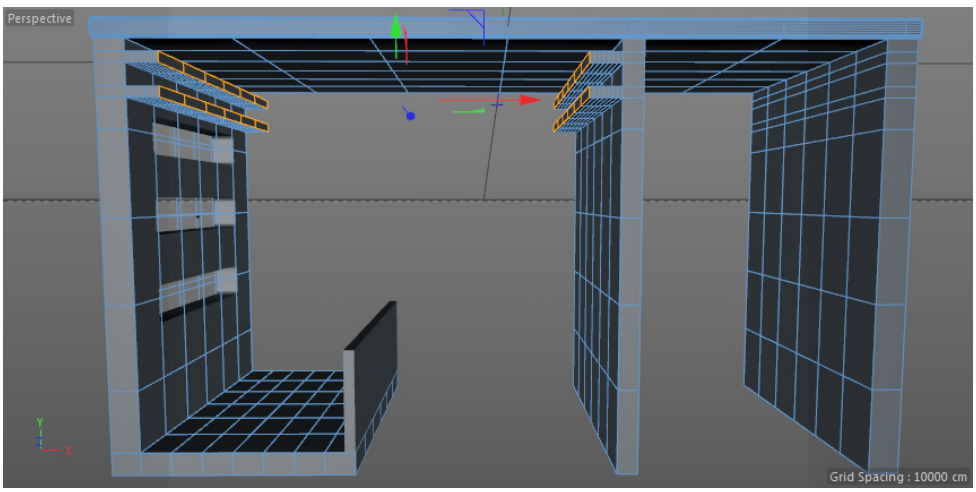

Figure 3-94 *The selected polygons extruded in the Perspective viewport*

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6. Press F2; the Top viewport is maximized. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Cube** from it; a cube is created in the Top viewport and the *Cube.1* object is added to the Object Manager.

7. In the Attribute Manager, choose the **Basic** button; the **Basic Properties** area is displayed. In this area, enter **Keyboard support** in the **Name** text box; *Cube* is renamed as *Keyboard support* in the Object Manager.

8. Make sure *Keyboard support* is selected in the Object Manager. In the Attribute Manager**,** choose the **Object** button; the **Object Properties** area is displayed. In the **Object Properties** area, set the parameters as follows:

Size . X: **429.61** Size . Y: **10** Size . Z: **284**
Segments X: **6** Segments Y: **2** Segments Z: **6**

Select the **Fillet** check box and enter **3** in the **Fillet Radius** spinner.

9. In the Attribute Manager, choose the **Coord** button; the **Coordinates** area is displayed. In this area, set the parameters as follows:

P . X: **-123.684** P . Y: **-44.68** P . Z: **0**

Press F1; the Perspective viewport is maximized. Figure 3-95 displays *Keyboard support* in the Perspective viewport.

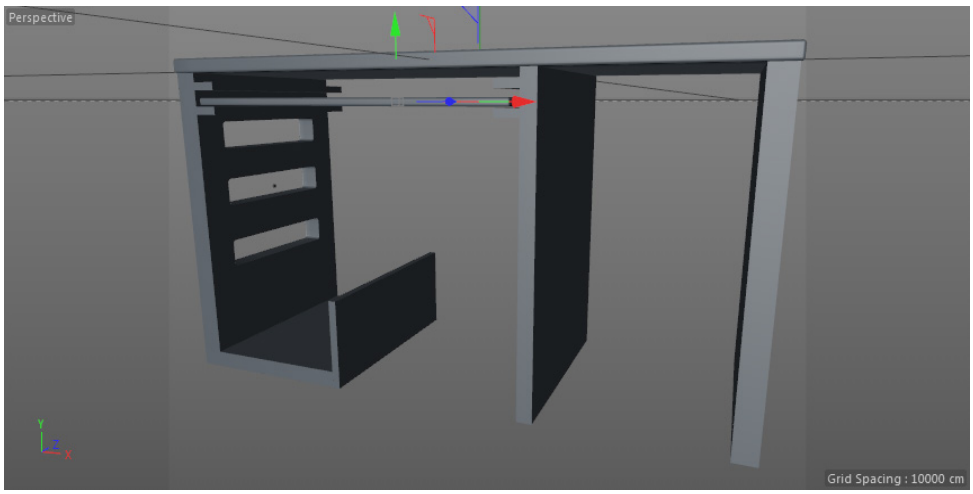

Figure 3-95 *The Keyboard support of Computer table*

Creating the Base for the Monitor

In this section, you will create the base for the monitor.

1. Make sure *Computer table* is selected in the Object Manager. Choose the **Edges** tool from the Modes Palette; *Computer table* is displayed in the edges mode.

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2. Right-click in the Perspective viewport; a shortcut menu is displayed. Choose **Loop/Path Cut** from the shortcut menu; the **Loop/Path Cut** tool settings are displayed in the Attribute Manager.

3. Make sure the **Enable Snap** tool is not chosen in the Modes Palette. Next, click to create a new edge loop, refer to Figure 3-96. Again, create one more edge loop using the **Loop/Path Cut** tool, as shown in Figure 3-97.

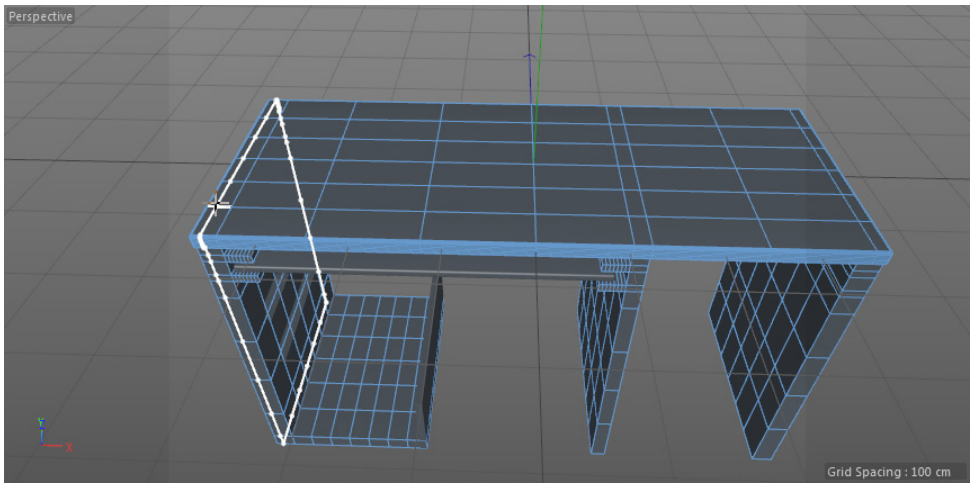

Figure 3-96 *New edge loop created*

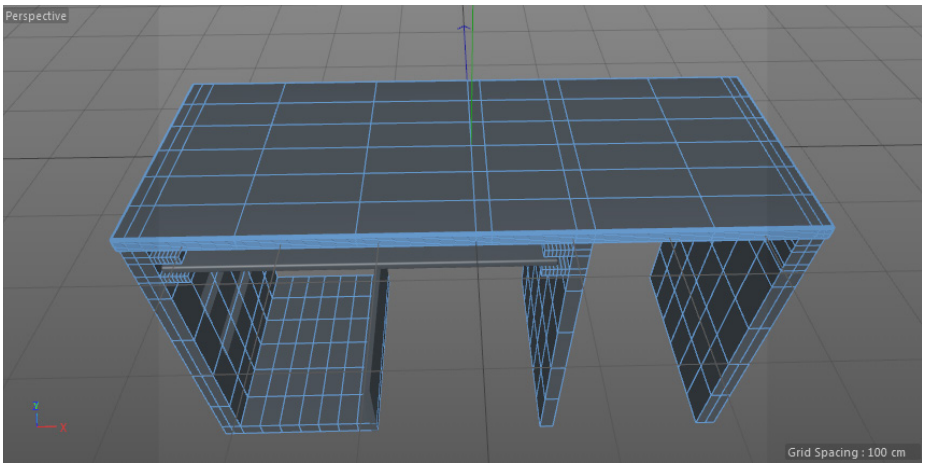

Figure 3-97 *Another edge loop added to the Computer table*

4. Choose the **Polygons** tool from the Modes Palette; the *Computer table* is displayed in the polygon mode. Choose the **Live Selection** tool from the Command Palette and make sure that the **Visible Only** check box is selected. Now, select the polygons of *Computer table*, as shown in Figure 3-98.

5. Right-click in the Perspective viewport; a shortcut menu is displayed. Choose **Extrude** from the shortcut menu; the **Extrude** tool settings are displayed in the Attribute Manager. In the

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Attribute Manager, make sure the **Options** button is chosen. In the **Options** area, set the parameters as follows:

Offset: **40** Subdivision: **4**

Figure 3-99 displays the selected polygons extruded in the Perspective viewport.

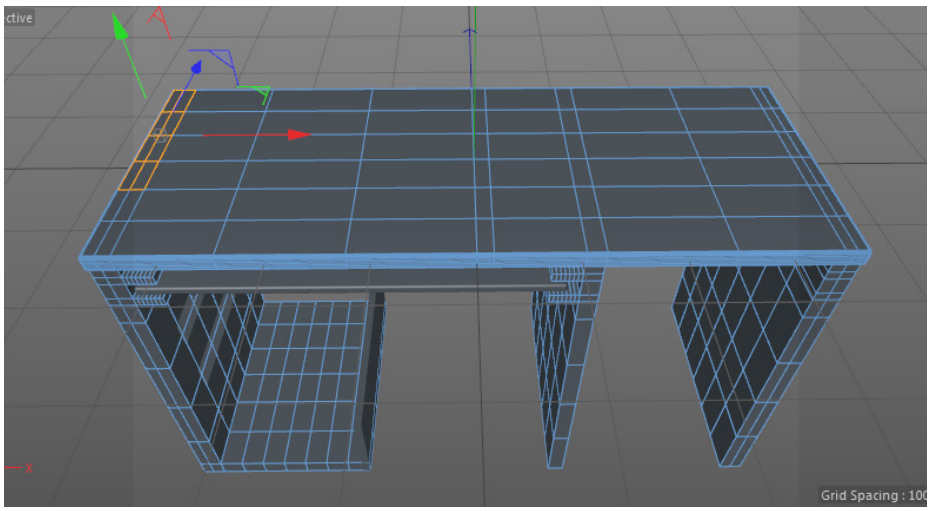

Figure 3-98 *The selected polygons of Computer table*

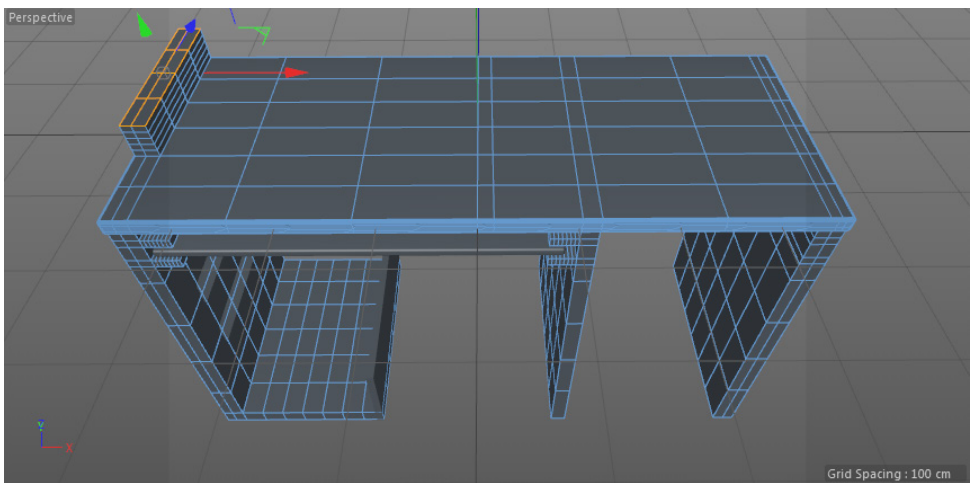

Figure 3-99 *The selected polygons extruded in the Perspective viewport*

6. Choose the **Live Selection** tool from the Command Palette and make sure that the **Visible Only** check box is selected. Now, select the polygons of *Computer table*, as shown in Figure 3-100.

7. Right-click in the Perspective viewport; a shortcut menu is displayed. Choose **Extrude** from the shortcut menu; the **Extrude** tool settings are displayed in the Attribute Manager. In the

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Attribute Manager, choose the **Options** button; the **Options** area is displayed. In this area, set the parameters as follows:

Offset: **345** Subdivision: **8**

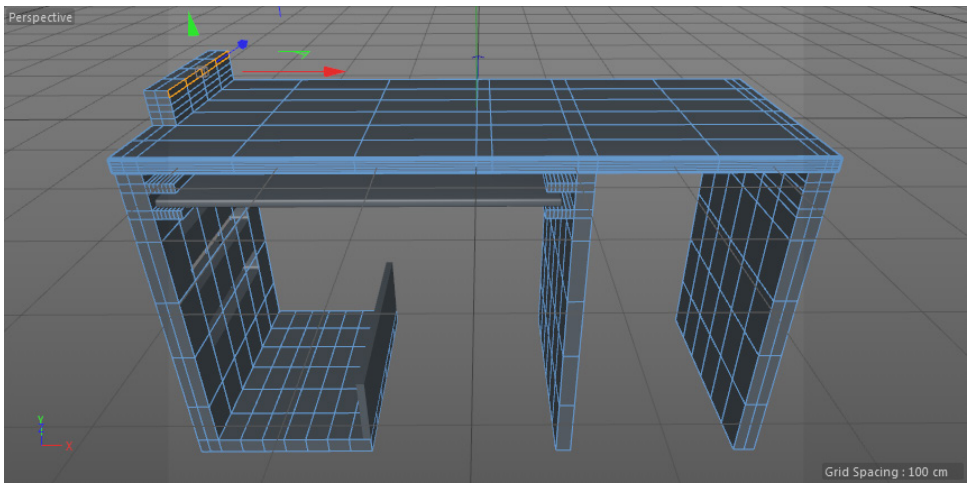

Figure 3-100 *The selected polygons of Computer table*

Figure 3-101 displays the selected polygons extruded in the Perspective viewport.

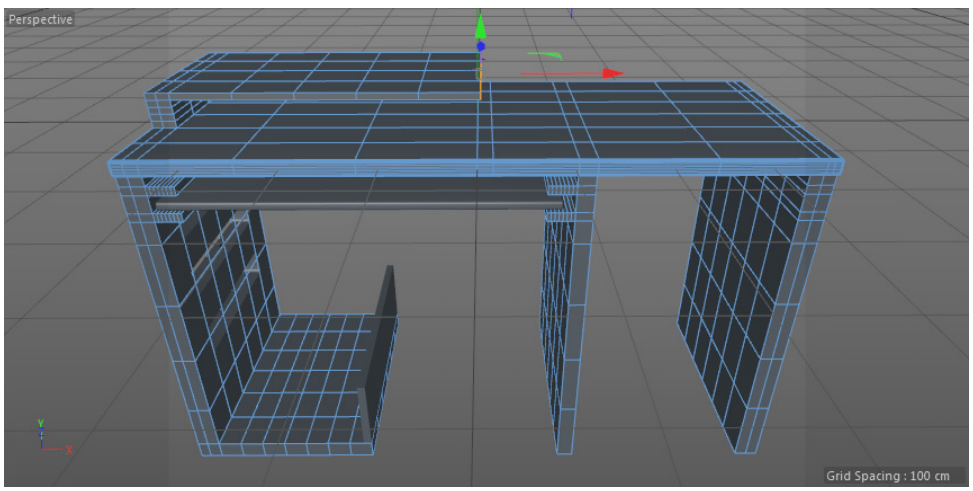

Figure 3-101 *The selected polygons extruded in the Perspective viewport*

Creating the Top Shelves of the Computer Table

In this section, you will create the top shelves of the computer table.

1. Make sure the polygon mode is activated. Choose the **Live Selection** tool from the Command Palette and make sure that the **Visible Only** check box is selected. Now, select the polygons of *Computer table*, as shown in Figure 3-102.

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2. Right-click in the Perspective viewport; a shortcut menu is displayed. Choose **Extrude** from the shortcut menu; the **Extrude** tool settings are displayed in the Attribute Manager. In the Attribute Manager, make sure the **Options** button is chosen. In the **Options** area, enter the value **160** in the **Offset** spinner and then press ENTER.

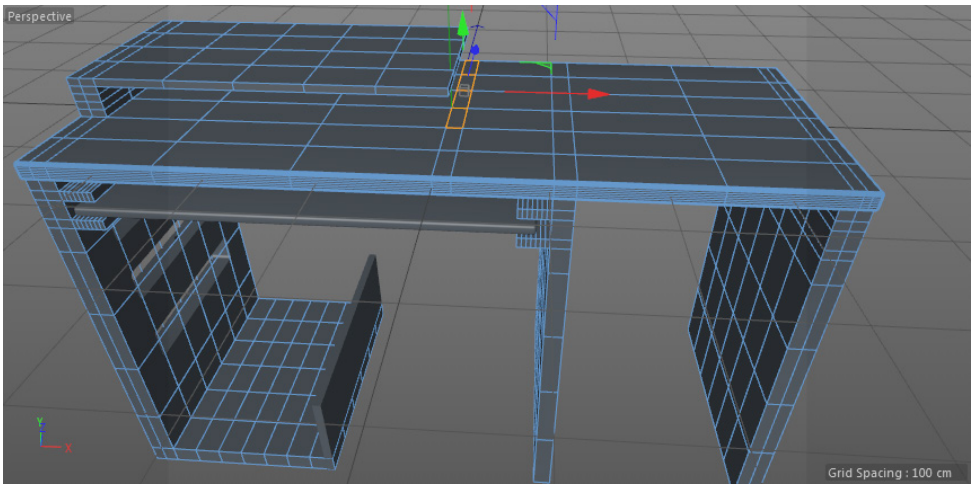

Figure 3-102 *The selected polygons of Computer table*

Figure 3-103 displays the selected polygons extruded in the Perspective viewport.

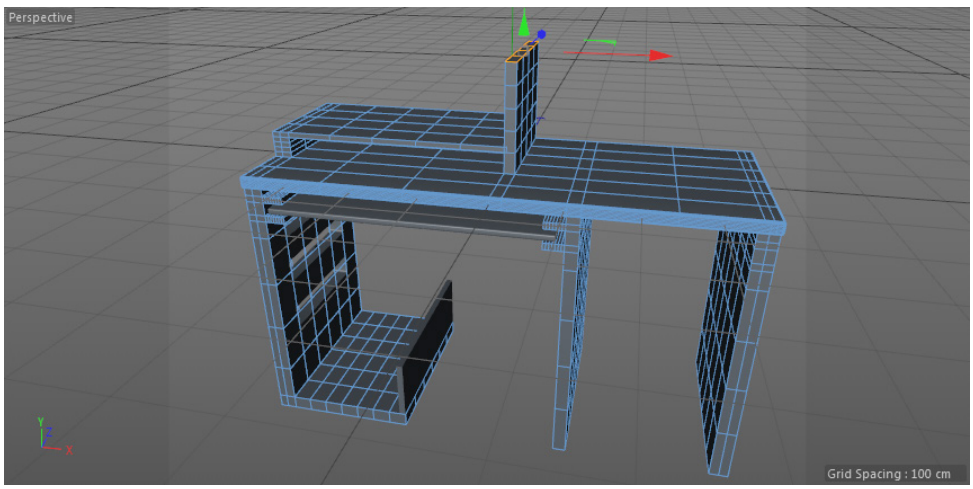

Figure 3-103 *The selected polygons extruded in the Perspective viewport*

3. Choose the **Edges** tool from the Modes Palette; *Computer table* is displayed in the edges mode.

4. Right-click in the Perspective viewport; a shortcut menu is displayed. Choose **Loop/Path Cut** from the shortcut menu; the **Loop/Path Cut** tool settings are displayed in the Attribute Manager.

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5. Make sure the **Enable Snap** tool is deactivated in the Modes Palette. Next, click on the edge, refer to Figure 3-104; a new edge loop is added to *Computer table*. Again, create an edge loop using the **Loop/Path Cut** tool, refer to Figure 3-105.

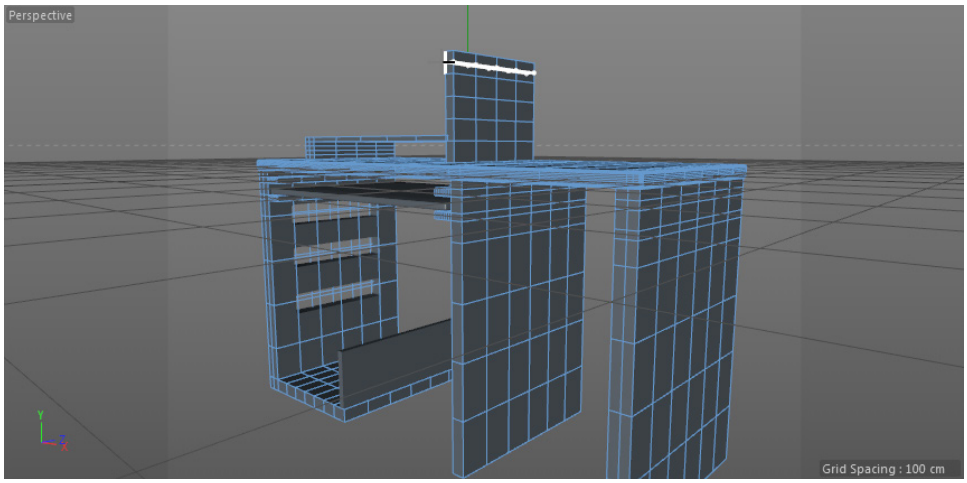

Figure 3-104 *Clicking on edge to create a new edge loop*

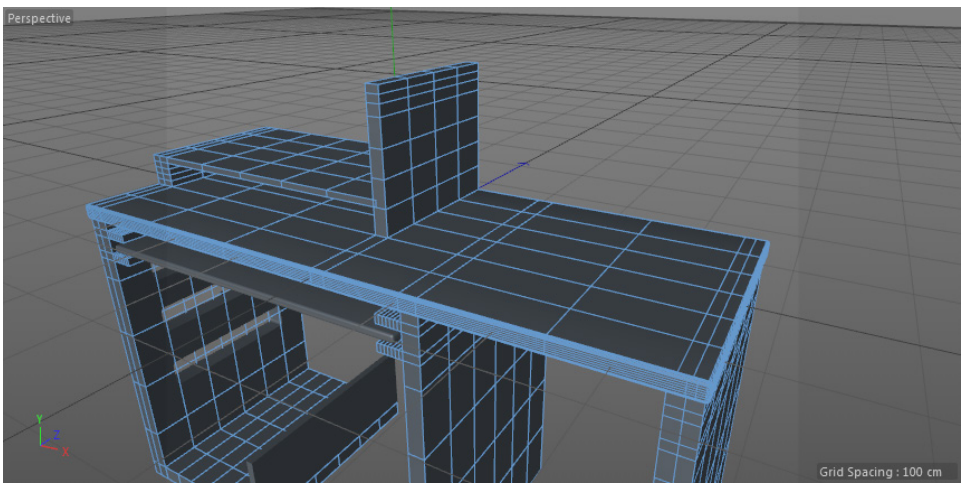

Figure 3-105 *Two new edge loops added to the Computer table*

6. Choose the **Polygons** tool from the Modes Palette; the Computer table is displayed in the polygon mode. Choose the **Live Selection** tool from the Command Palette and make sure that the **Visible Only** check box is selected. Now, select the polygons of Computer table, as shown in Figure 3-106.

7. Right-click in the Perspective viewport; a shortcut menu is displayed. Choose **Extrude** from the shortcut menu; the **Extrude** tool settings are displayed in the Attribute Manager. Make

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sure the **Options** button is chosen in this manager. In the **Options** area, set the parameters as follows:

Offset: **335** Subdivision: **12**

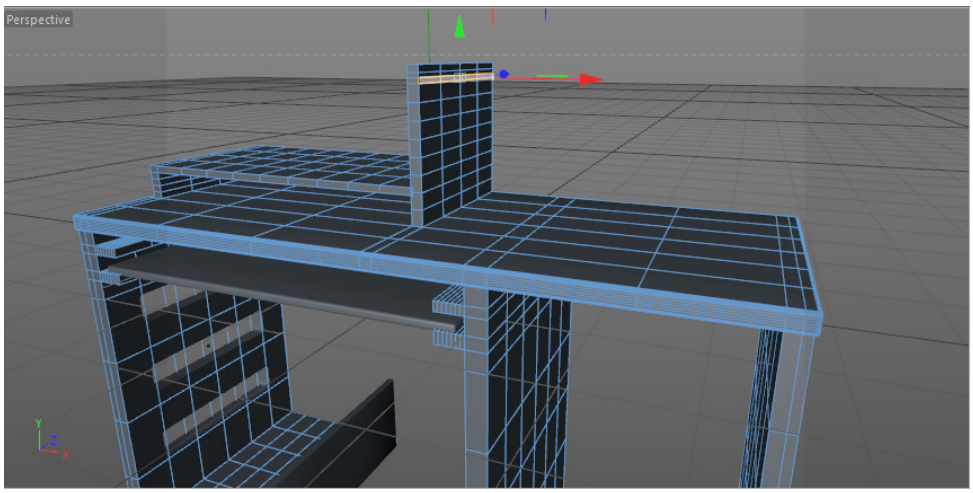

Figure 3-106 *The selected polygons of Computer table*

Figure 3-107 displays the selected polygons extruded in the Perspective viewport.

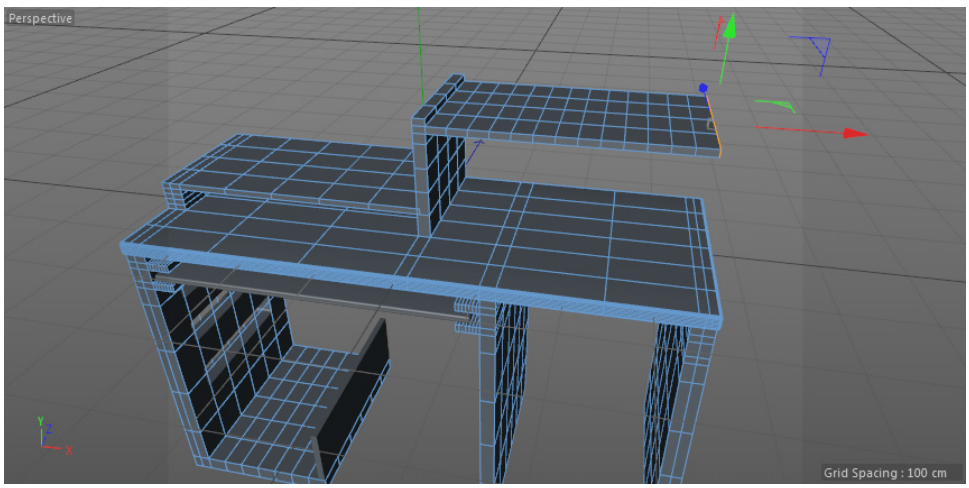

Figure 3-107 *The selected polygons extruded in the Perspective viewport*

8. Make sure the polygon mode is activated. Choose the **Live Selection** tool from the Command Palette and make sure that the **Visible Only** check box is selected. Now, select the four polygons of *Computer table*, as shown in Figure 3-108.

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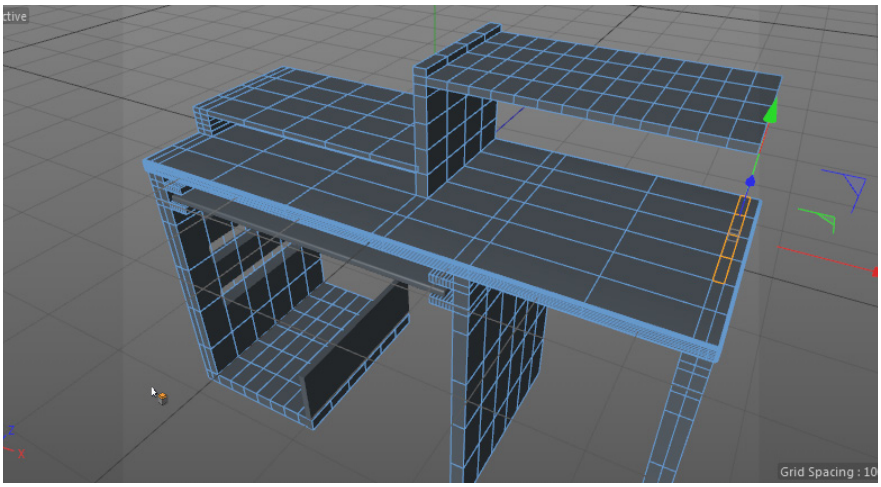

Figure 3-108 *The selected polygons of Computer table*

9. Right-click in the Perspective viewport; a shortcut menu is displayed. Choose **Extrude** from the shortcut menu; the **Extrude** tool settings are displayed in the Attribute Manager. Choose the **Options** button in this manager; the **Options** area is displayed. In this area, enter **160** in the **Offset** spinner.

   Figure 3-109 displays the selected polygons extruded in the Perspective viewport.

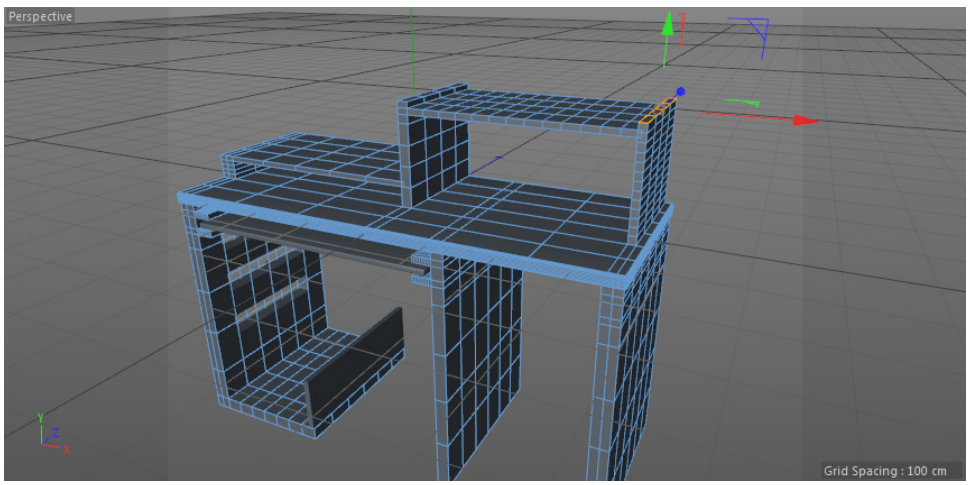

Figure 3-109 *The selected polygons extruded in the Perspective viewport*

10. Choose the **Edges** tool from the Modes Palette; the *Computer table* is displayed in the edges mode.

11. Right-click in the Perspective viewport; a shortcut menu is displayed. Choose **Loop/Path Cut** from the shortcut menu; the **Loop/Path Cut** tool settings are displayed in the Attribute

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Manager. Make sure **Loop** is selected in the **Mode** drop-down list and then clear the **Restrict to Selection** check box.

12. Make sure the **Enable Snap** tool is deactivated in the Modes Palette. Next, click to create an edge loop, refer to Figure 3-110; a new edge loop is added to *Computer table*. Again, create an edge loop using the **Loop/Path Cut** tool, refer to Figure 3-111.

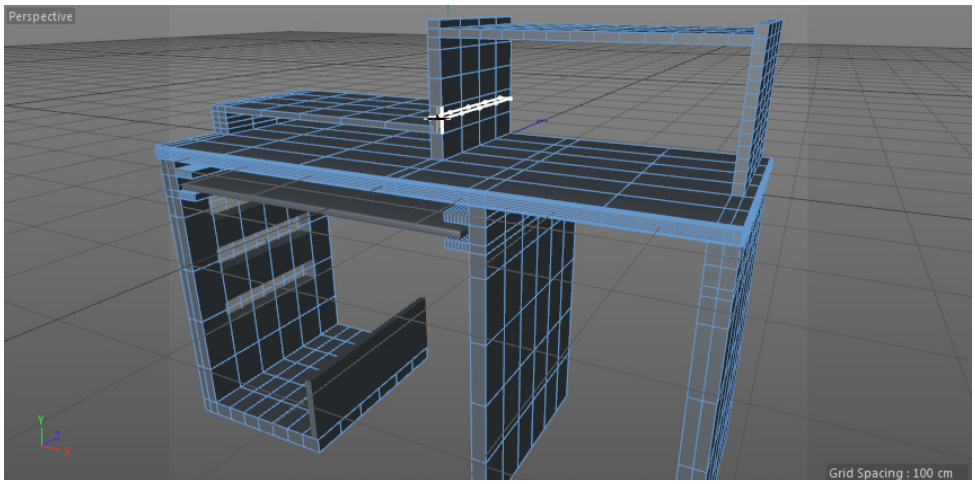

Figure 3-110 *Clicking on edge to create a new edge loop*

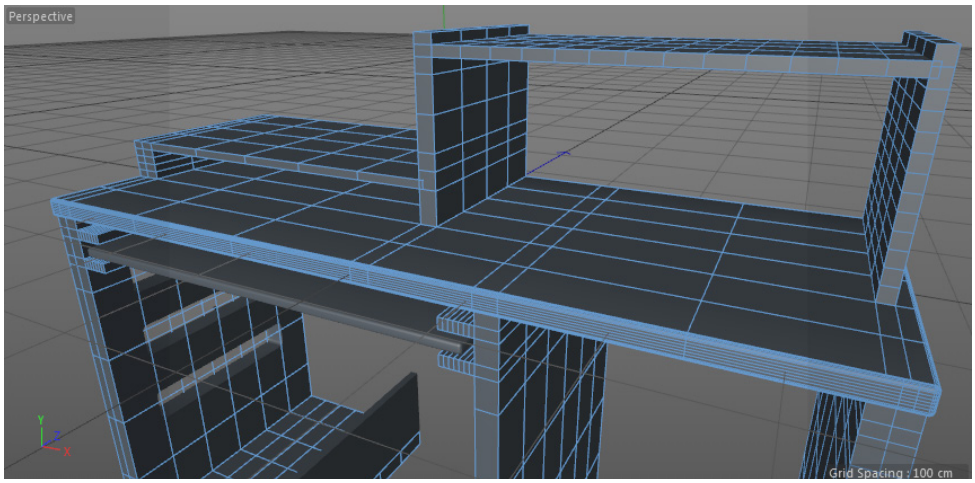

Figure 3-111 *The new edge loop added to the Computer table*

13. Make sure the polygon mode is activated. Choose the **Live Selection** tool from the Command Palette and make sure that the **Visible Only** check box is selected. Now, select the polygons of *Computer table*, as shown in Figure 3-112.

14. Right-click in the Perspective viewport; a shortcut menu is displayed. Choose **Extrude** from the shortcut menu; the **Extrude** tool settings are displayed in the Attribute Manager. Choose

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the **Options** button in this manager; the **Options** area is displayed. In this area, enter **335** in the **Offset** spinner.

Figure 3-113 displays the selected polygons extruded in the Perspective viewport.

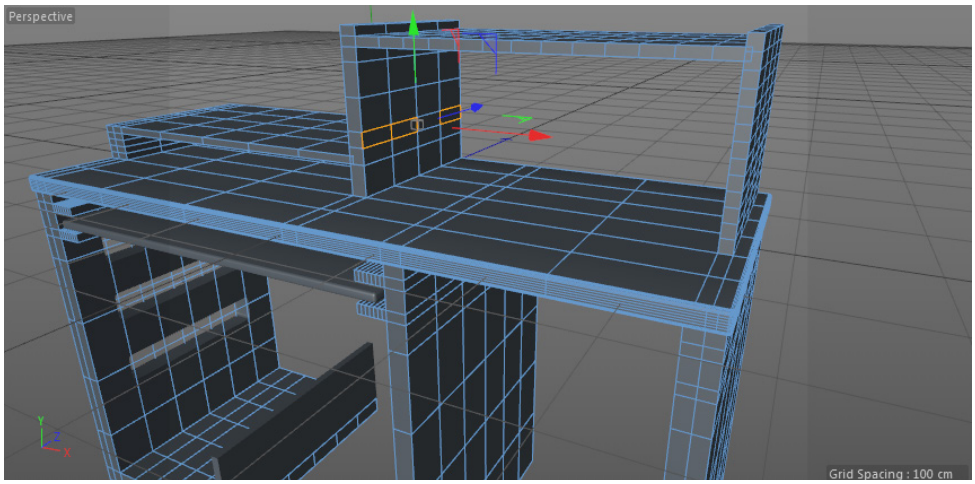

Figure 3-112 *The selected polygons of Computer table*

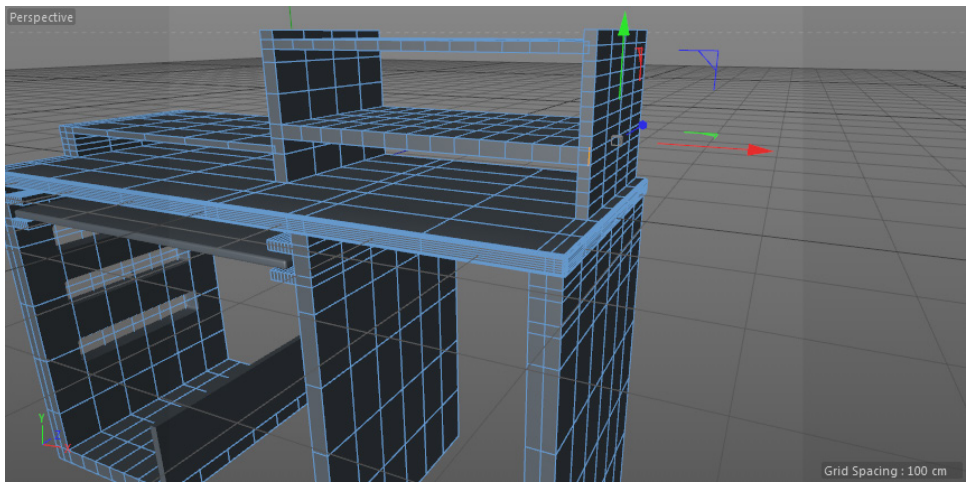

Figure 3-113 *The selected polygons extruded in the Perspective viewport*

Creating the Bottom Shelf of the Computer Table

In this section, you will create the bottom shelf of *Computer table*.

1. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Cube** from it; a cube is created in the Perspective viewport and *Cube* is added to the Object Manager.

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2. In the Attribute Manager, choose the **Basic** button; the **Basic Properties** area is displayed. In this area, enter **Shelf1** in the **Name** text box; *Cube* is renamed as *Shelf1* in the Object Manager.

3. In the Attribute Manager, choose the **Object** button; the **Object Properties** area is displayed. In this area, set the parameters as follows:

Size . X: **254.61** Size . Y: **15** Size . Z: **280**

Segments X: **6** Segments Y: **4** Segments Z: **6**

Select the **Fillet** check box and enter **3** in the **Fillet Radius** spinner.

4. In the Attribute Manager, choose the **Coord** button; the **Coordinates** area is displayed. In this area, set the parameters as follows:

P . X: **234.854** P . Y: **-119.37** P . Z: **0**

Figure 3-114 displays *Shelf1* positioned in the Perspective viewport.

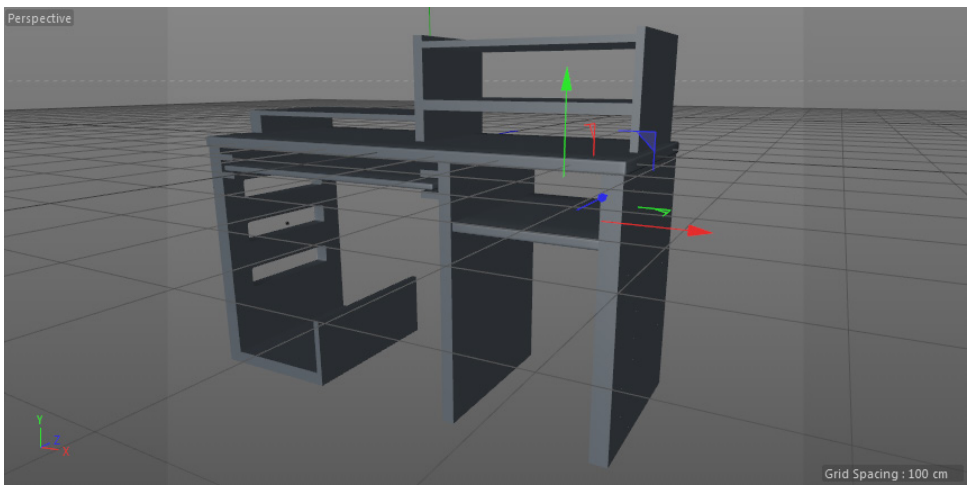

Figure 3-114 *Shelf1 positioned in the Perspective viewport*

5. Make sure the *Shelf1* is selected in the Object Manager. Press and hold the left mouse button and the CTRL key and then drag the cursor above *Shelf1* in the Object Manager. Next, release the left mouse button; the *Shelf1.1* object is added in the Object Manager.

6. Make sure the *Shelf1.1* object is selected in the Object Manager. In the Attribute Manager, make sure the **Coord** button is chosen. In the **Coordinates** area, enter **-291.892** in the **P . Y** spinner; the *Shelf1.1* object is positioned in the Perspective viewport, as shown in Figure 3-115.

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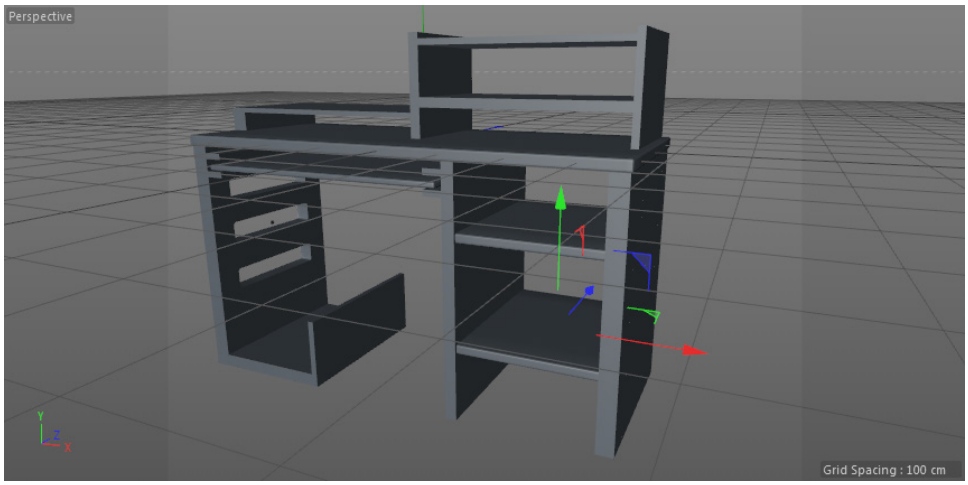

Figure 3-115 *Shelf1.1 positioned in the Perspective viewport*

Creating the Magazine Stand

In this section, you will create the magazine stand of Computer table by using the **Polygon Pen** tool.

1. Choose **Model** from the layout tabs located at the top of the interface; the Model layout is displayed with the Modeling Tool Palette displayed at the lower portion of the interface, refer to Figure 3-116.

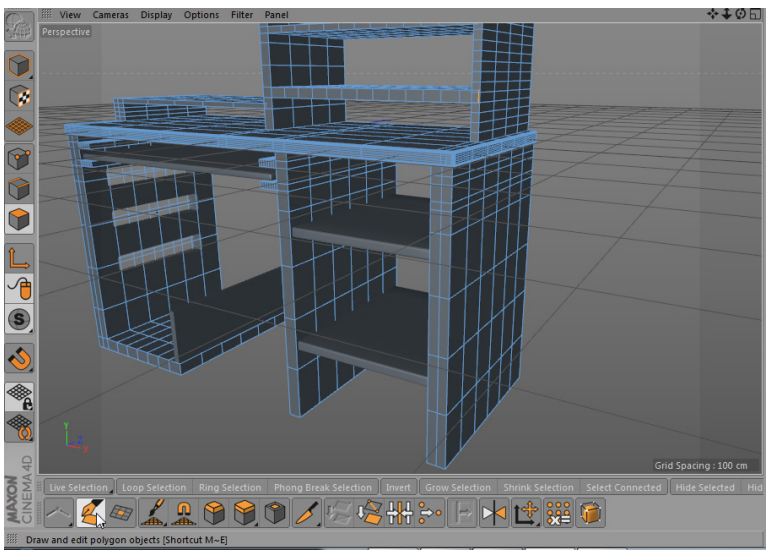

Figure 3-116 *Choosing the* ***Polygon Pen*** *tool from the Modeling Tool Palette*

2. Choose the **Polygon Pen** tool from the Modeling Tool Palette and then hover the cursor on the polygon of the *Computer table*, as shown in Figure 3-117; the highlighted polygon is displayed in the Perspective viewport.

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3. Hold the CTRL key and drag the highlighted polygon, as shown in Figure 3-118.

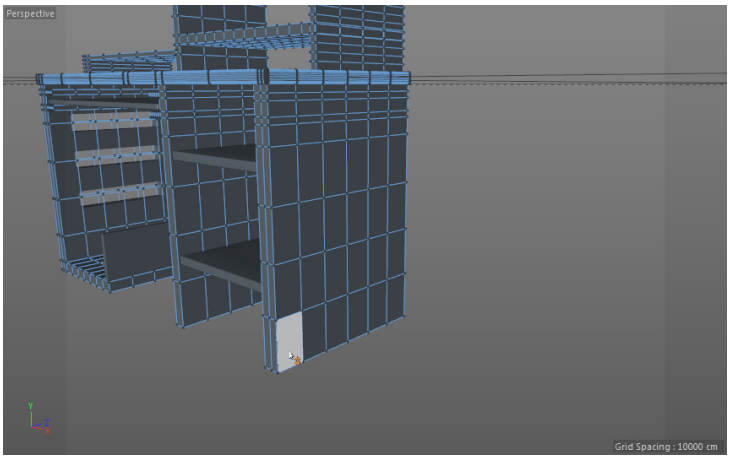

Figure 3-117 *The highlighted polygon*

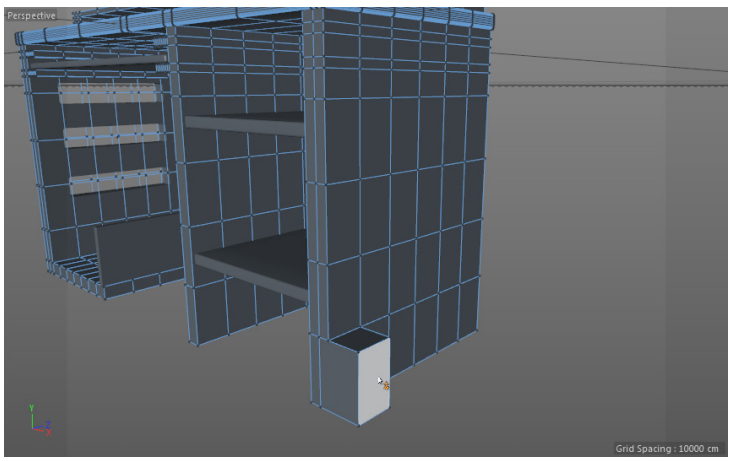

Figure 3-118 *Dragging the highlighted polygon*

4. Hover the cursor on the top polygon; the polygon is highlighted, as shown in Figure 3-119. Next, hold the CTRL key and drag the highlighted polygon, as shown in Figure 3-120.

5. Rotate the viewport using the ALT key and then hover the cursor on the polygon; the polygon is highlighted, as shown in Figure 3-121. Next, hold the CTRL key and drag the highlighted polygon, as shown in Figure 3-122.

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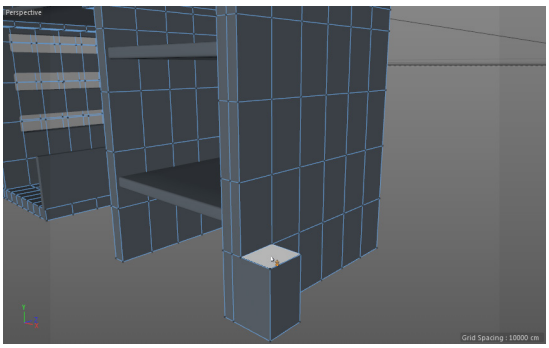

Figure 3-119 *The highlighted polygon of magazine stand*

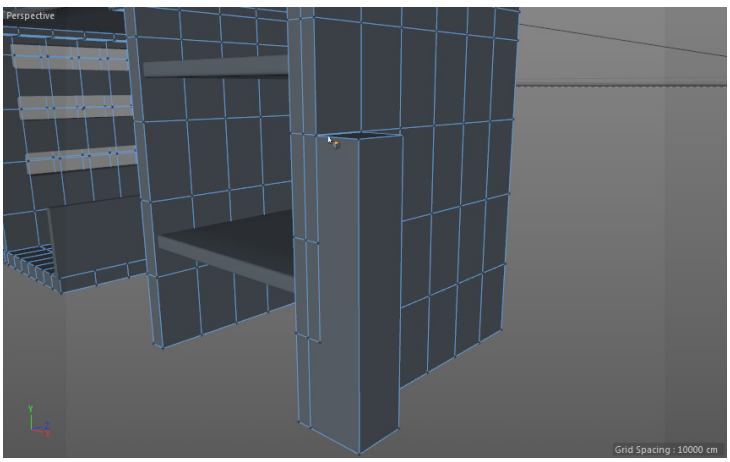

Figure 3-120 *Dragging the highlighted polygon*

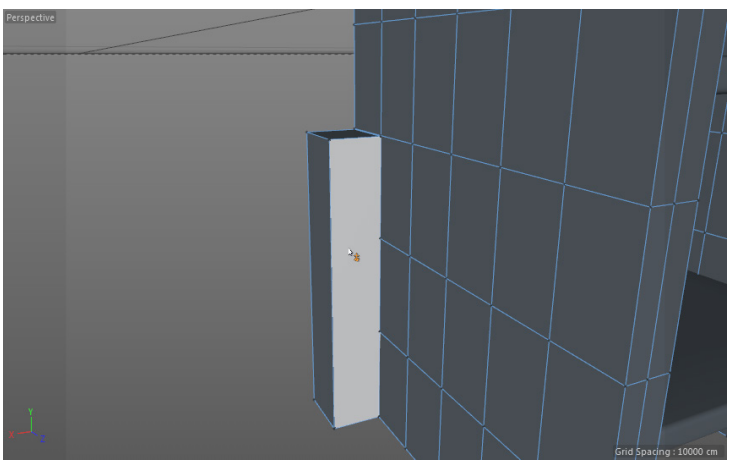

Figure 3-121 *Highlighted polygon*

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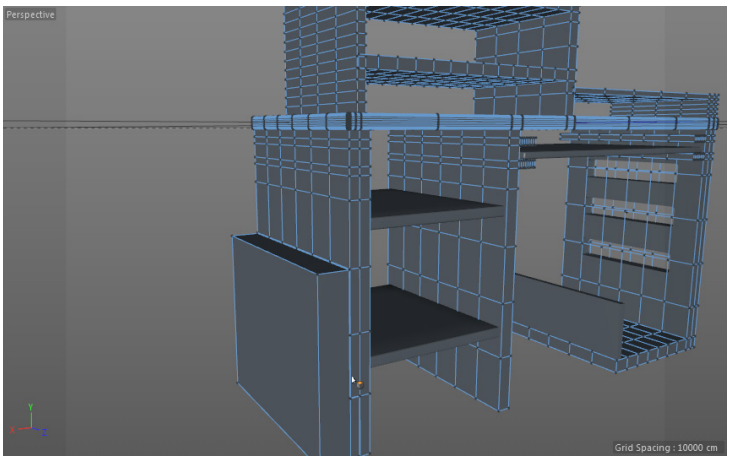

Figure 3-122 *Dragging the highlighted polygon*

Next, you will create the edges on the magazine stand surface.

6. Choose the **Edges** tool in the Mode palette and make sure the **Polygon Pen** tool is chosen in the Modeling Tool Palette. Next, click on an edge, as shown in Figure 3-123 and then click again on another edge; a new edge is created, as shown in Figure 3-124. Similarly, create two more edges, refer to Figure 3-125.

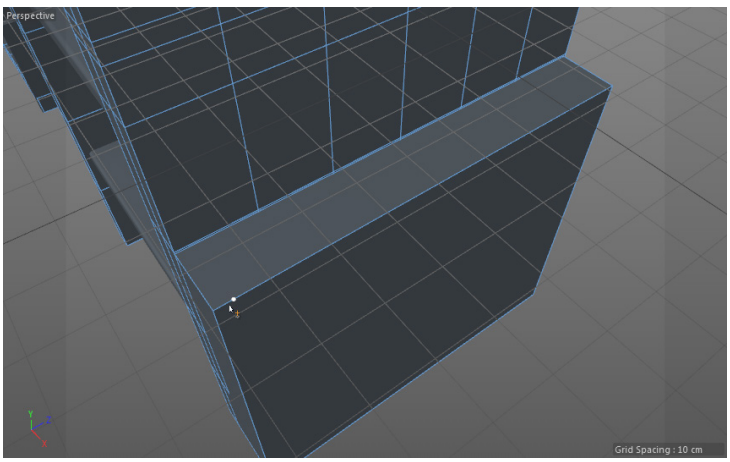

Figure 3-123 *Clicking on an edge*

7. Hover the cursor on the polygon; the polygon is highlighted, as shown in Figure 3-126. Next, hold the CTRL key and drag the highlighted polygon downward, as shown in Figure 3-127.

Next, you will create a design on the magazine support.

8. Choose the **Edges** tool in the Mode palette. Make sure the **Polygon Pen** tool is chosen in the Modeling Tool Palette. Next, click on the bottom-left point, as shown in Figure 3-128 and then click on the top-right corner point; a new edge is created, as shown in Figure 3-129.

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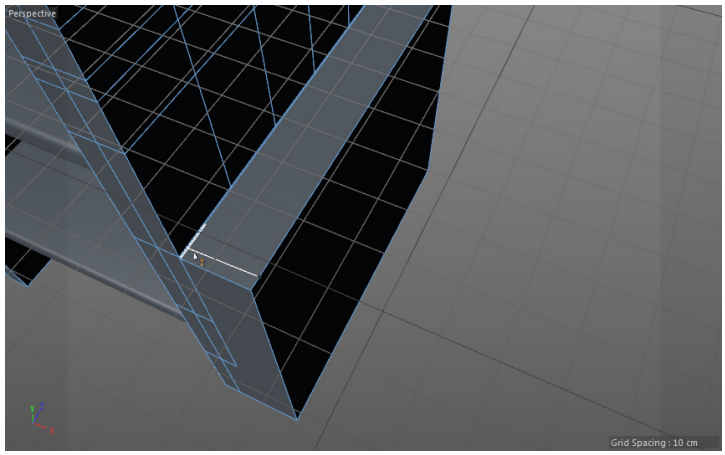

Figure 3-124 *Clicking on second edge to create a new edge*

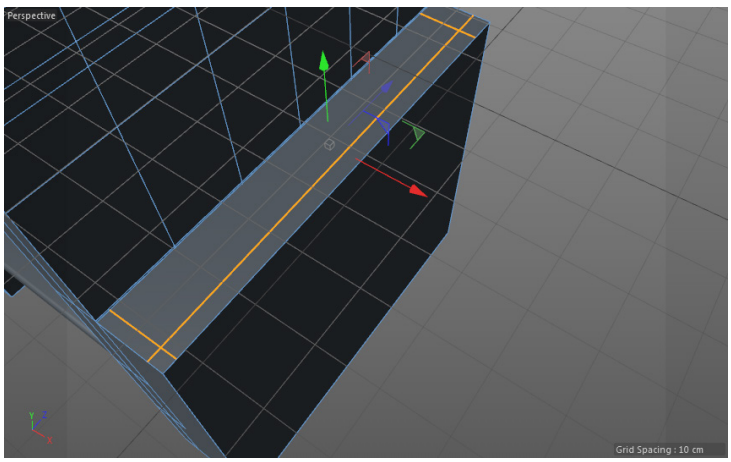

Figure 3-125 *Three new edges added to the magazine stand*

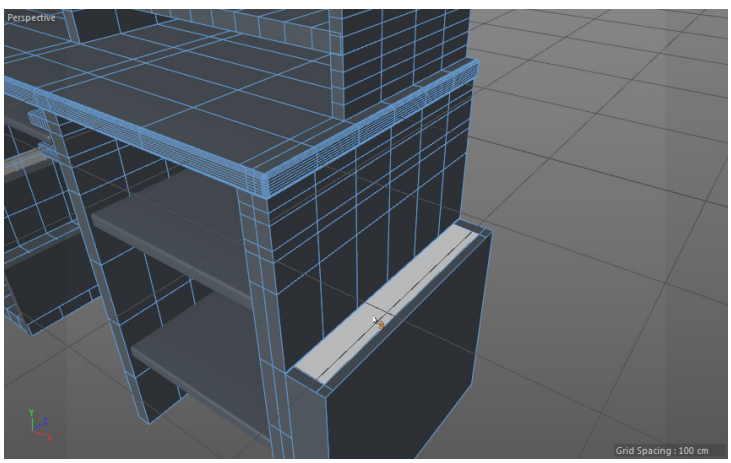

Figure 3-126 *Highlighted polygon*

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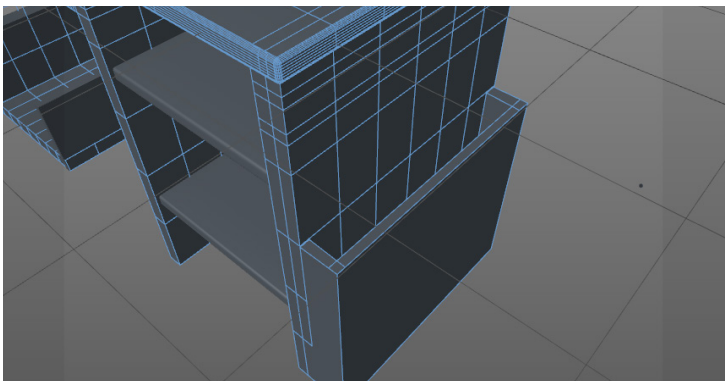

Figure 3-127 *Dragging the highlighted polygon downward*

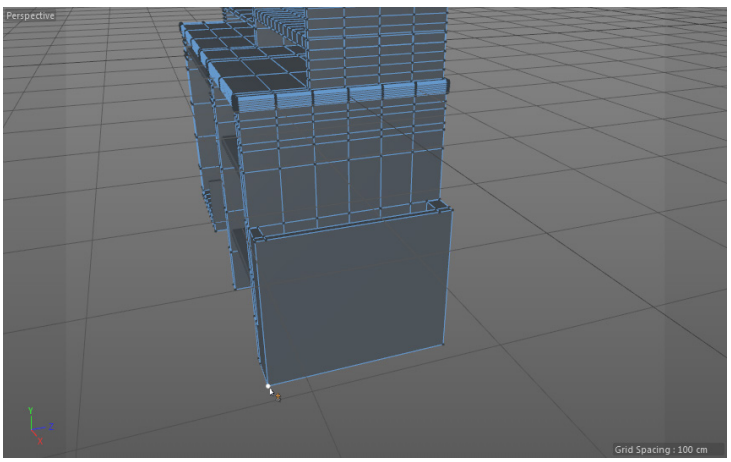

Figure 3-128 *Clicking on the corner point*

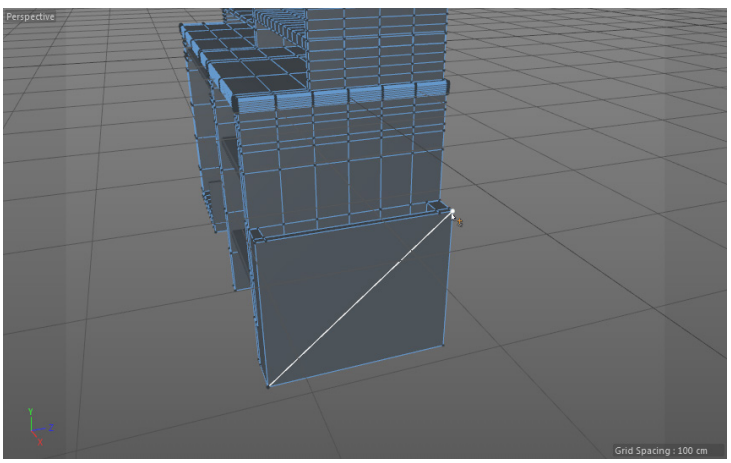

Figure 3-129 *The new edge created*

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9. Hover the cursor over the created edge. Press and hold the CTRL+SHIFT keys and then drag (do not click, just drag); the shape of the edge is changed to an arc shape, refer to Figure 3-130.

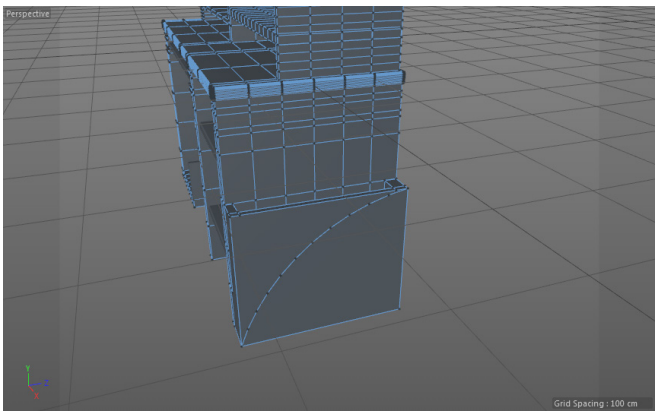

Figure 3-130 *The edge converted to an arc shape*

10. Hover the cursor on the polygon; the polygon is highlighted, as shown in Figure 3-131. Next, hold the CTRL key and drag the highlighted polygon; the selected polygon is extruded, as shown in Figure 3-132.

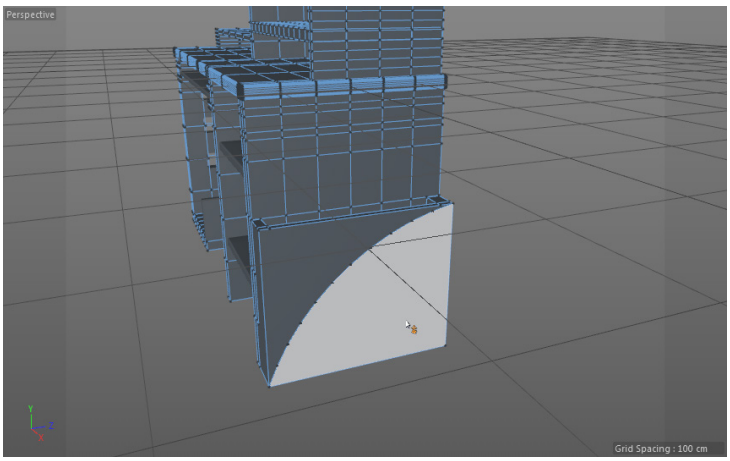

Figure 3-131 *Highlighted polygon*

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com

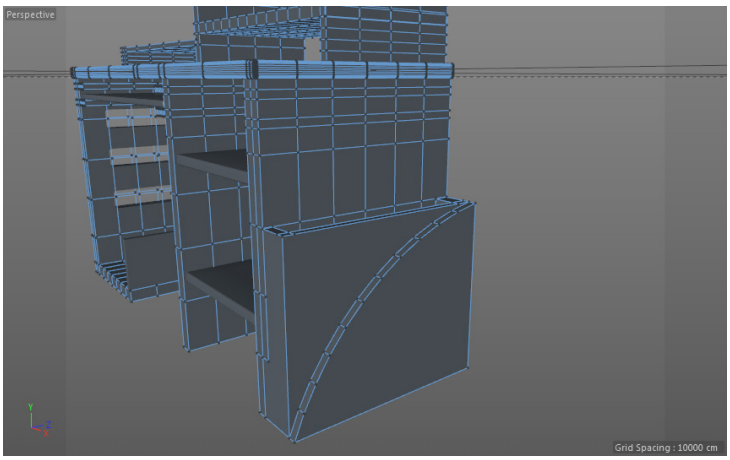

Figure 3-132 *The extruded polygon*

Changing the Background Color of the Scene

To change the background color of the scene to white in the final output, follow the steps given in Tutorial 1 of Chapter 2.

Saving and Rendering the Scene

In this section, you will save and render the scene. You can also view the final render of the model by downloading the file *c03_cinema4d_R25_rndr.zip* from *www.cadcim.com*. The path of the file is mentioned at the beginning of the chapter.

1. Choose **File > Save Project as** from the main menu; the **Save File** dialog box is displayed. In this dialog box, browse to the location *\Documents\c4dR25\c03*.

2. Enter **c03tut3** in the **File name** text box and then choose the **Save** button.

3. In the Perspective viewport, set the camera angle using the Viewport Navigation Tools located at the extreme top right of the Perspective viewport. Next, choose the **Render to Picture Viewer** tool from the Command Palette. Alternatively, press SHIFT+R; the **Picture Viewer** window is displayed.

4. In the **Picture Viewer** window, choose **File > Save Image as**; the **Save** dialog box is displayed.

5. In the **Save** dialog box, choose the **OK** button; the **Save Dialog** dialog box is displayed. Next, browse to *\Documents\c4dR25\c03*. In the **File Name** text box, type **c03_tut3_rndr**. Next, choose the **Save** button; the file is saved at the desired location.

   Figure 3-77 displays the final output.

Tutorial 3

In this tutorial, you will create the model of a vase, as shown in Figure 3-133, using the **Cloner**, **Volume Builder**, and **Volume Mesher** tools. **(Expected time: 20 min)**

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Figure 3-133 *Model of a vase*

The following steps are required to complete this tutorial:

a. Create the vase.
b. Create groove on the vase.
c. Create design on the vase.
d. Change the background color of the scene.
e. Save and render the scene.

Creating the Vase

In this section, you will create vase using the **Sphere** tool.

1. Press F4; the Front viewport is activated. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Sphere** from it; a sphere is created in the Front viewport and *Sphere* is added to the Object Manager. Choose **Display > Gouraud Shading** from the Menu in editor view; *Sphere* is displayed in the shading mode.

2. In the Attribute Manager, choose the **Basic** button; the **Basic Properties** area is displayed. In this area, enter **vase** in the **Name** text box; *Sphere* is renamed as *vase* in the Object Manager.

3. Make sure *vase* is selected in the Object Manager. In the Attribute Manager, choose the **Object** button; the **Object Properties** area is displayed. In the **Object Properties** area, set the parameters as follows:

   Radius: **200** Segments: **48**

4. Choose the **Coord.** button and enter **1.5** in the **S.Y** spinner; *vase* is displayed, as shown in Figure 3-134.

5. Make sure *vase* is selected in the Front viewport. Now, choose the **Make Editable** tool from the Modes Palette; *vase* is converted into a polygonal object.

6. Choose the **Live Selection** tool from the Command Palette and then choose the **Polygons** tool from the Modes Palette; *vase* is displayed in the polygon mode. In the Attribute Manager, make sure the **Options** button is chosen. In the **Options** area, clear the **Visible Only** check

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box. Next, choose the **Live Selection** tool and select the polygons of *vase* in the Front viewport, as shown in Figure 3-135. If required, decrease the size of the cursor for selection.

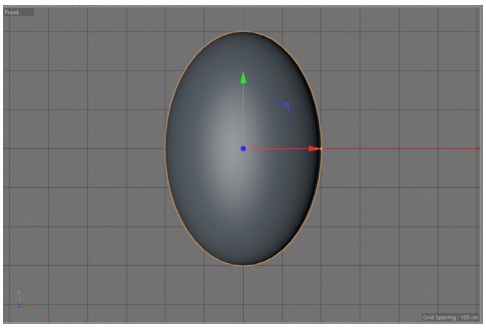

Figure 3-134 *vase displayed in the Front viewport*

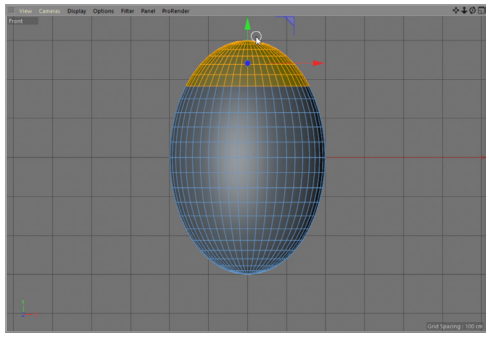

Figure 3-135 *Selected polygons*

7. Scale down the selected polygons uniformly, refer to Figure 3-136. Next scale the polygons only along Y-axis to set them on the upper edge of *vase*, refer to Figure 3-137.

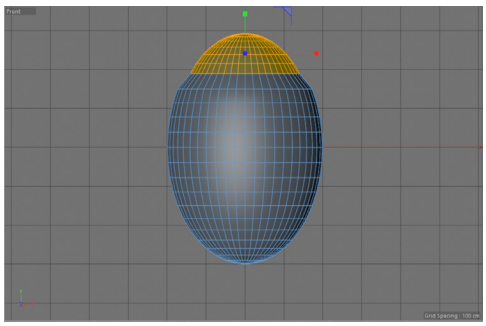

Figure 3-136 *Selected polygons scaled uniformly*

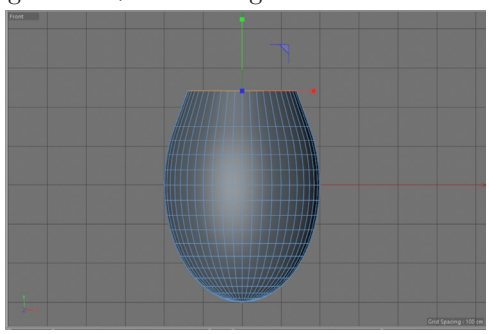

Figure 3-137 *Selected polygons scaled along Y-axis*

8. Choose the **Move** tool from the Command Palette and move the selected polygons downward, as shown in Figure 3-138.

9. Right-click in the Front viewport; a shortcut menu is displayed. Choose **Extrude** from the shortcut menu; the **Extrude** tool settings are displayed in the Attribute Manager. In the **Extrude** tool settings area, make sure the **Options** button is chosen. In the **Options** area, set **-230** as the value in the **Offset** spinner and then press the ENTER key; the selected polygons are extruded in the Perspective viewport, as shown in Figure 3-139.

10. Choose the **Live Selection** tool and select the bottommost polygons of *vase*, as shown in Figure 3-140. Next, activate the **Scale** tool and scale these polygons along Y-axis, as shown in Figure 3-141.

11. Make sure the scaled polygons are selected. Next, right-click in the Front viewport; a shortcut menu is displayed. Choose **Bevel** from the shortcut menu; the **Bevel** tool settings are displayed in the Attribute Manager. In the **Bevel** tool settings area, make sure the **Tool Option** button is chosen. Next, set **-40** in the **Offset** spinner and **4** in the **Subdivision**

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spinner and then press the ENTER key; the selected polygons are beveled in the Perspective viewport, as shown in Figure 3-142.

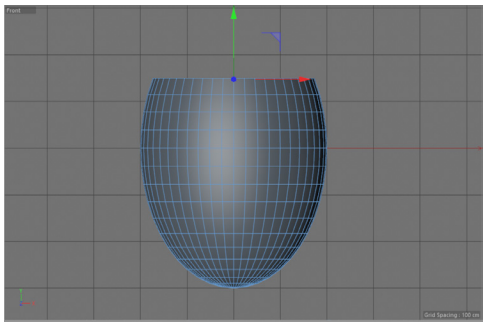

Figure 3-138 *Selected polygons moved downward*

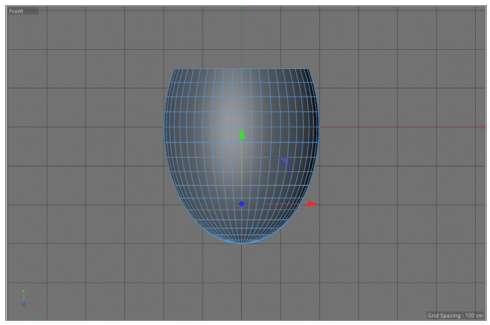

Figure 3-139 *Selected polygons extruded*

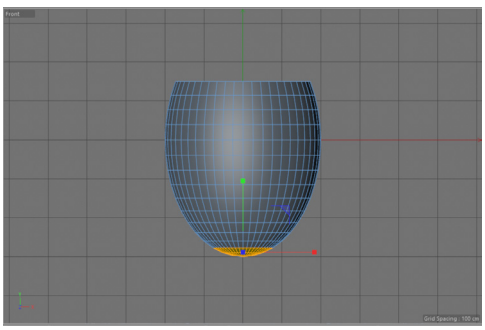

Figure 3-140 *Bottommost polygons selected*

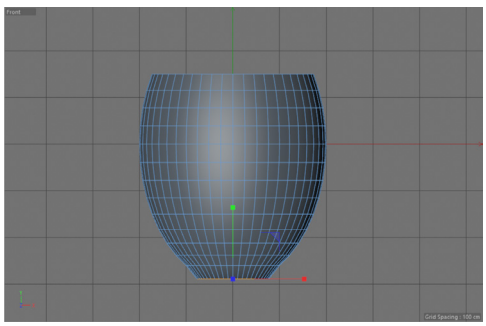

Figure 3-141 *Selected polygons scaled along y-axis*

Creating Groove on the Vase

In this section, you will create groove on vase using the **Torus**, **Volume Builder**, and **Volume Mesher** tools.

1. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Torus** from it; a torus is created in the Front viewport and *Torus* is added to the Object Manager.

2. Double-click on *Torus* in the Object Manager; a text box is displayed. Enter **ring** in the text box; *Torus* is renamed as *ring*.

3. Make sure *ring* is selected in the Object Manager. In the Attribute Manager, choose the **Object** button; the **Object Properties** area is displayed. In the **Object Properties** area, enter **20** in the **Pipe Radius** spinner.

4. Choose the **Coord.** button and enter **51** in the **P.Y** spinner; *Torus* moves upward, as shown in Figure 3-143.

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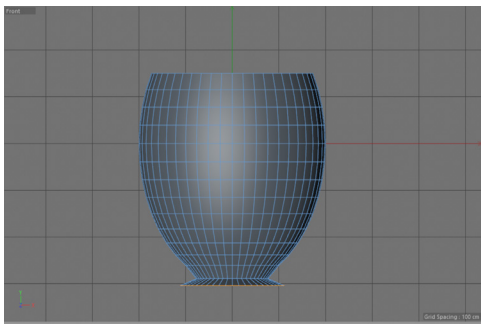

Figure 3-142 *Selected polygons beveled*

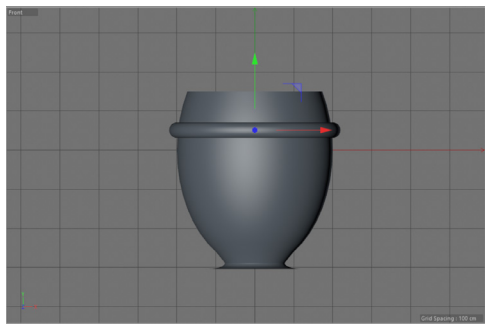

Figure 3-143 *Torus moved upward*

5. Choose **Volume > Volume Builder** from the main menu, as shown in Figure 3-144; *Volume Builder* is added to the Object Manager.

6. Select *vase* in the Object Manager. Next, press and hold the left mouse button and then drag it on *Volume Builder*; *vase* is connected to *Volume Builder*. Next, select *ring* in the Object Manager and press and hold the left mouse button and then drag it on *Volume Builder; ring* is also connected to *Volume Builder.* Notice that *vase* and *ring* turn white and both objects are converted into voxel objects, refer to Figure 3-145.

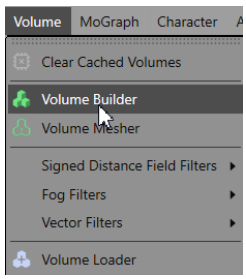

Figure 3-144 *Choosing* ***Volume Builder*** *from the* ***Volume*** *menu*

7. Select *Volume Builder* in the Object Manager. In the Attribute Manager, make sure the **Object** button is chosen. In the **Object Properties** area, enter **1** in the **Voxel Size** spinner; *vase* and *ring* are smoothened, refer to Figure 3-146.

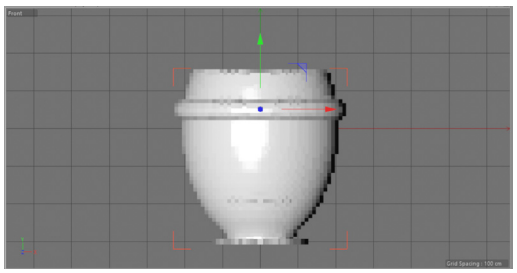

Figure 3-145 *Voxel objects displayed*

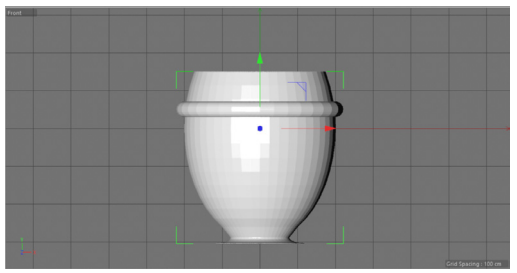

Figure 3-146 *Voxel objects smoothened*

8. Select **Subtract** from the **Mode** drop-down list located next to *ring*, as shown in Figure 3-147; groove is created on *vase*, as shown in Figure 3-148.

9. Choose **Volume > Volume Mesher** from the main menu; *Volume Mesher* is added to the Object Manager.

10. Select *Volume Builder* in the Object Manager. Next, press and hold the left mouse button and then drag *Volume Builder* on *Volume Mesher*; *Volume Builder* is connected to *Volume Mesher*

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and *vase* is converted into a polygon object. Also, notice that the color of *vase* turns dark grey, refer to Figure 3-149.

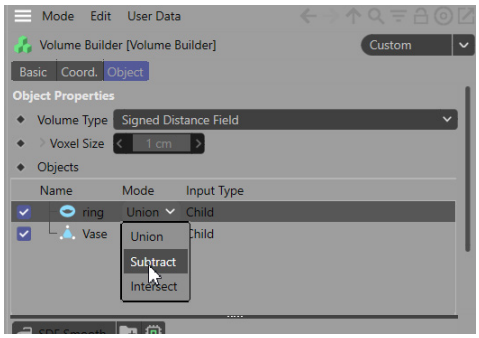

Figure 3-147 *Choosing* ***Subtract*** *from the* ***Mode*** *drop-down list*

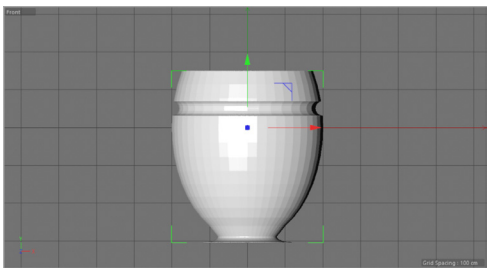

Figure 3-148 *Groove created on vase*

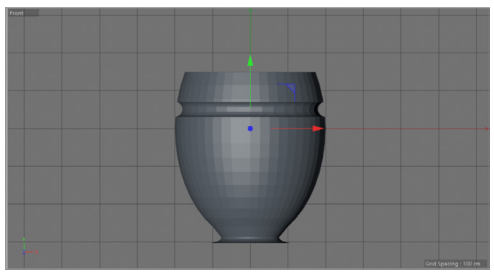

Figure 3-149 *vase turns dark grey*

Next, you will smoothen *vase*.

11. Select *Volume Builder* in the Object Manager. In the Attribute Manager, make sure the **Object** button is chosen. In the **Objects** area, select **ring** from the list displayed and then choose the **SDF Smooth** button; the **SDF Smooth** layer is added to the list in the **Objects** area, as shown in Figure 3-150.

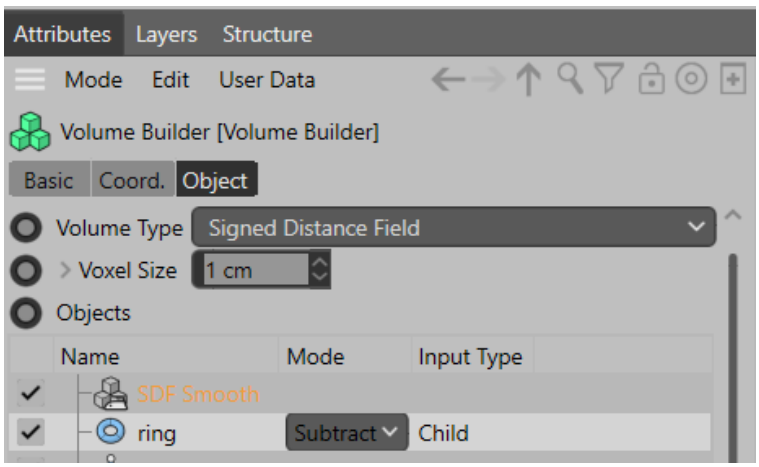

Figure 3-150 *The* ***SDF Smooth*** *layer added to the* ***ObjectProperties*** *area*

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12. In the Attribute Manager, make sure **SDF Smooth** layer is selected in the **Objects** area. In the **Filter** area, enter **4** in the **Voxel Distance** spinner and enter **2** in the **Iterations** spinner; *vase* is smoothened, as shown in Figure 3-151.

Creating Design on the Vase

In this section, you will create design on vase using the **Cloner** and **Volume Builder** tools.

1. Choose **Create > Mesh Primitive** from the main menu; a cascading menu is displayed. Next, choose **Cube** from the cascading menu; a cube is created in the Front viewport and *Cube* is added to the Object Manager.

2. Make sure *Cube* is selected in the Object Manager. In the **Object Properties** area of the Attribute Manager, enter **25** in the **Size.X**, **Size.Y** spinners, and **10** in the **Size.Z** spinner.

3. Choose **MoGraph > Cloner** from the main menu, as shown in Figure 3-152; *Cloner* is added to the Object Manager.

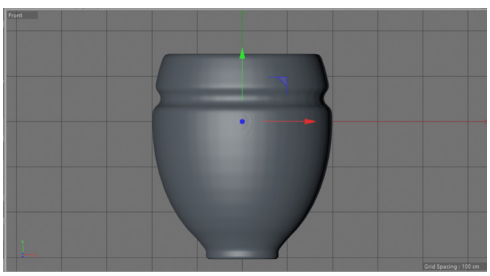

Figure 3-151 *vase smoothened*

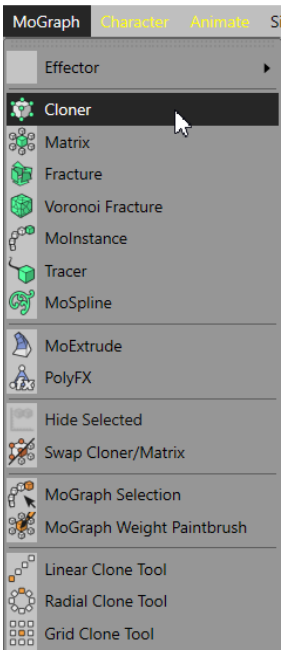

Figure 3-152 *Choosing* ***Cloner*** *from the* ***MoGraph*** *menu*

4. Select *Cube* in the Object Manager. Next, press and hold the left mouse button and then drag it on *Cloner*; *Cube* is connected to *Cloner*.

5. Select *Cloner* in the Object Manager. In the Attribute Manager, make sure the **Object** button is chosen. In the **Object Properties** area, select **Radial** from the **Mode** drop-down list and **XZ** from the **Plane** drop-down list. Also, enter **12** and **194** in the **Count** and **Radius** spinners, respectively.

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6. In the Attribute Manager, choose the **Transform** button and enter **-67** in the **P.Y** spinner in the **Transform** area. Next, enter **-6** and **-45** in the **R.P** and **R.B** spinners, respectively. *Cloner* is placed on *vase,* as shown in Figure 3-153.

7. Make sure that *Cloner* is selected in the Object Manager. Now, create a copy of *Cloner* by pressing both the CTRL key and the left mouse button. Now, drag the cursor and release the left mouse button; a copy of *Cloner* is created in the Object Manager with the name *Cloner.1*.

8. Make sure *Cloner.1* is selected in the Object Manager. In the Attribute Manager, choose the **Object** button. Next, enter **174** in the **Radius** spinner.

9. Choose the **Transform** button and enter **-145** in the **P. Y** spinner. Also, enter **-20** in the **R. P** spinner; *Cloner.1* is placed on *vase,* as shown in Figure 3-154.

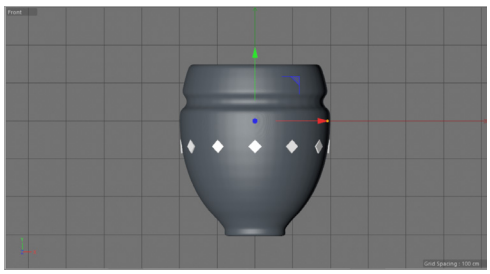

Figure 3-153 *Cloner placed on vase*

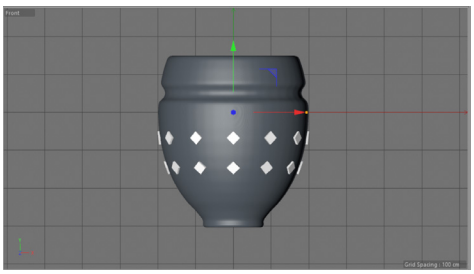

Figure 3-154 *Cloner.1 placed on vase*

10. Select *Cloner* in the Object Manager. Next, press and hold the left mouse button and then drag it on *Volume Builder*; *Cloner* is connected to *Volume Builder*. Next, select *Cloner.1* in the Object Manager and press and hold the left mouse button and then drag it on *Volume Builder; Cloner.1* is also connected to *Volume Builder.* Figure 3-155 shows vase displayed in the viewport and Figure 3-156 shows list of all the objects in the Object Manager.

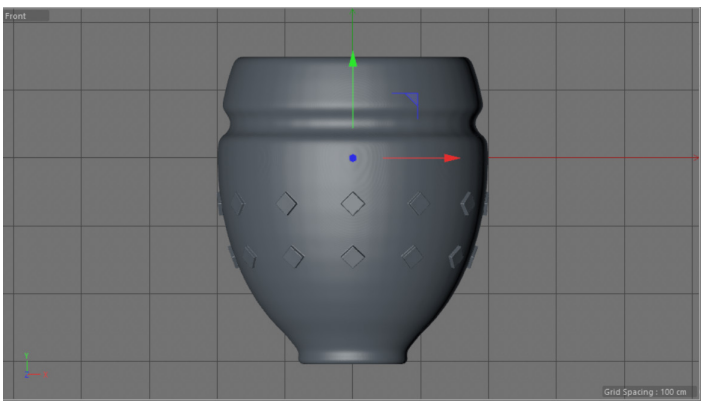

Figure 3-155 *vase displayed in the viewport*

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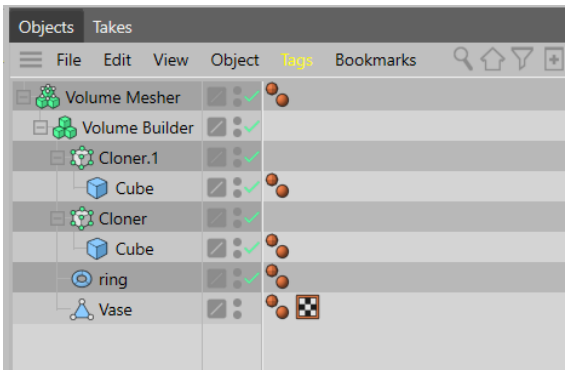

Figure 3-156 *List of all the objects in the Object Manager*

Changing the Background Color of the Scene

To change the background color of the scene to white in the final output, follow the steps given in Tutorial 1 of Chapter 2.

Saving and Rendering the Scene

In this section, you will save and render the scene. You can also view the final render of the model by downloading the file *c03_cinema4d_R25_rndr.zip* from *www.cadcim.com*. The path of the file is mentioned at the beginning of the chapter.

1. Choose **File > Save Project as** from the main menu; the **Save File** dialog box is displayed. In this dialog box, browse to the location *\Documents\c4dR25\c03*.

2. Enter **c03tut3** in the **File name** text box and then choose the **Save** button.

3. In the Perspective viewport, set the camera angle using the Viewport Navigation Tools located at the extreme top right of the Perspective viewport. Next, choose the **Render to Picture Viewer** tool from the Command Palette. Alternatively, press SHIFT+R; the **Picture Viewer** window is displayed.

4. In the **Picture Viewer** window, choose **File > Save Image as**; the **Save** dialog box is displayed.

5. In the **Save** dialog box, choose the **OK** button; the **Save Dialog** dialog box is displayed. Next, browse to *\Documents\c4dR25\c03*. In the **File Name** text box, type **c03_tut3_rndr**. Next, choose the **Save** button; the file is saved at the desired location.

   Figure 3-133 displays the final output.

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Self-Evaluation Test

Answer the following questions and then compare them to those given at the end of this chapter:

1. Which of the following tools in the Command Palette is used to select points, edges, or polygons by creating a rectangular frame around the object?

   (a) **Move** (b) **Rectangle Selection**
   (c) **Use Point Mode** (d) **Live Selection**

2. The _____ tool in the **Select** menu is used to select the edge loop to modify a polygonal object.

3. The _____ tool in the **Select** menu is used to select elements that form a ring shape.

4. The _____ tool is used to cut polygon objects.

5. The _____ layer is used to smoothen the object that is created using the **Volume Builder** and **Volume Mesher** options.

Review Questions

Answer the following questions:

1. Which of the following combinations of shortcut keys is used to display the **Picture Viewer** window?

   (a) CTRL+B (b) SHIFT+ R
   (c) CTRL+C (d) CTRL+V

2. Which of the following functional keys is used to maximize the Perspective viewport?

   (a) F1 (b) F5
   (c) F4 (d) F6

3. The **Loop** option in the **Mode** drop-down list located in the **Loop/Path Cut** tool settings is used to create edge loops in a polygonal object. (T/F)

EXERCISE

The rendered output of the model used in the exercise can be accessed by downloading the *c03_cinema4d_R25_exr.zip* file from *www.cadcim.com*. The path of the file is as follows: *Textbooks > Animation and Visual Effects > MAXON CINEMA 4D > MAXON CINEMA 4D R25: A Tutorial Approach*

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Exercise 1

Using the polygon modeling tools, create the model of the chair, as shown in Figure 3-157.

(Expected time: 30 min)



Figure 3-157 *The model of a chair*

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.Answers to Self-Evaluation Test

1. b, **2. Loop Selection**, **3. Ring Selection**, **4. Loop/Path Cut 5. SDF Smooth**