Chapter 1

Exploring CINEMA 4D S24 Interface

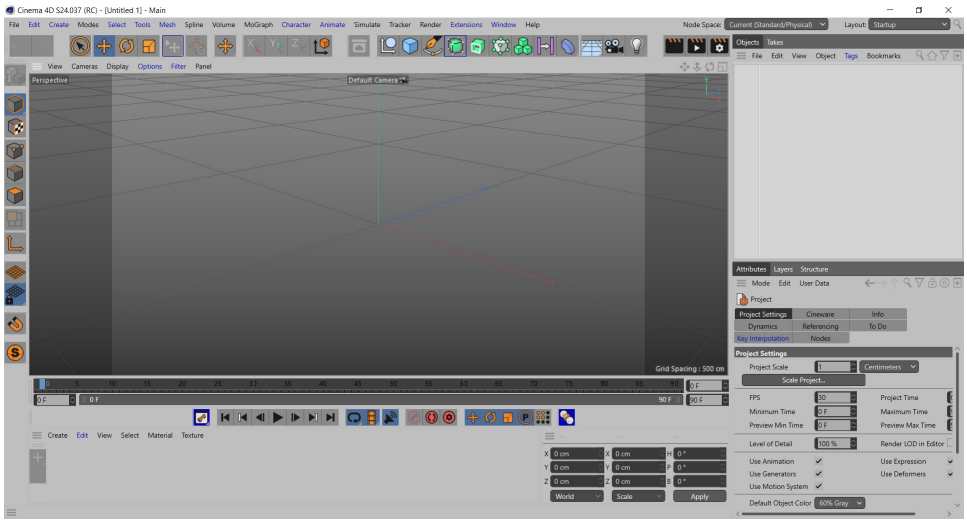

Figure 1-1 *The default interface of CINEMA 4D S24*

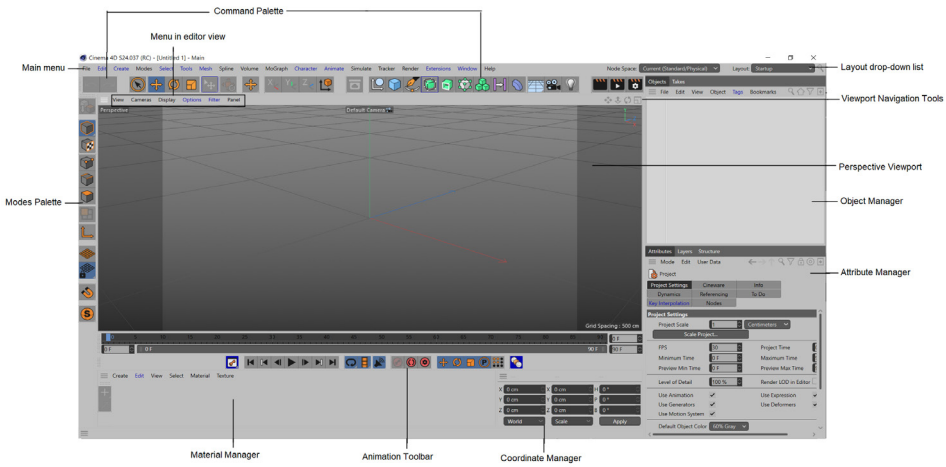

Figure 1-2 *Various components of CINEMA 4D S24 interface*

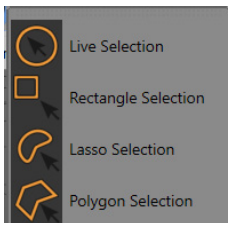

Figure 1-3 *The flyout displayed*

Figure 1-4 *The flyout displayed*

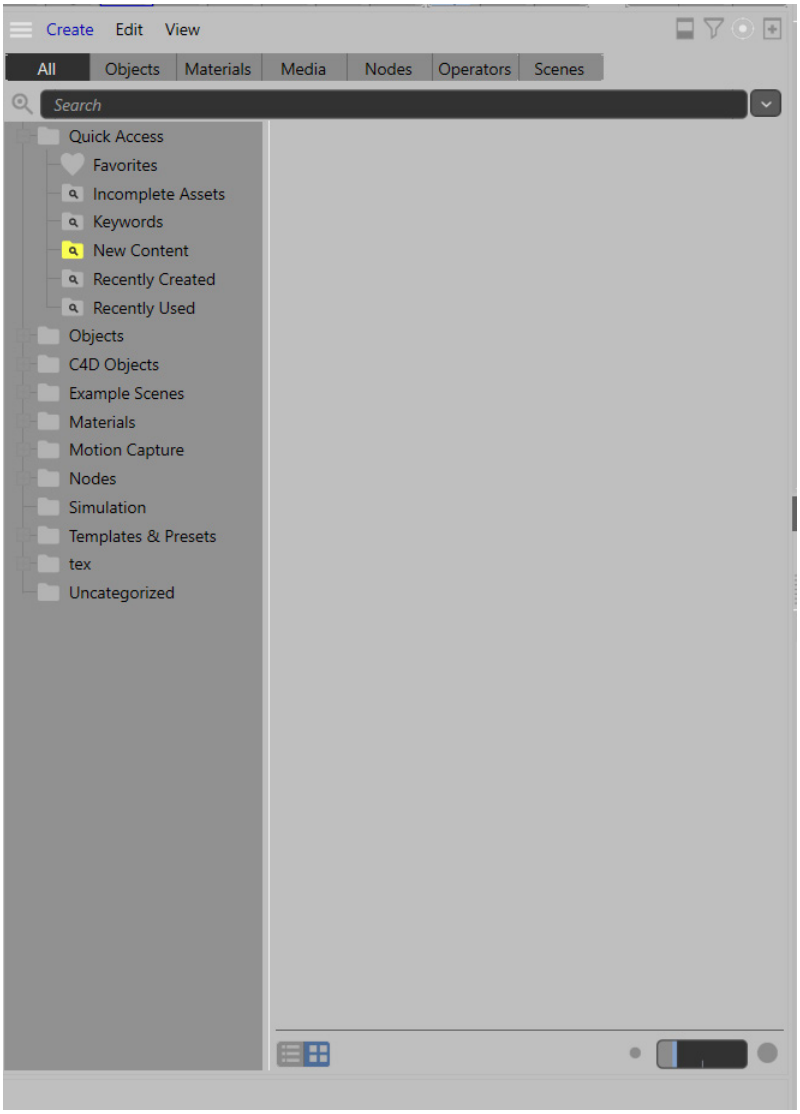

Figure 1-5 *The Asset Browser displayed*

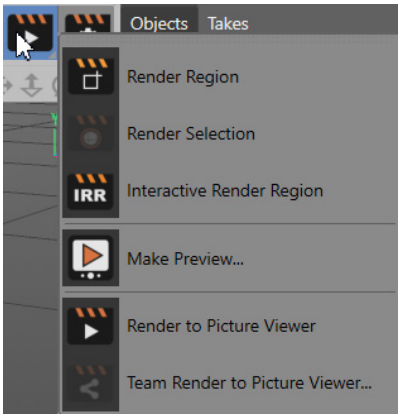

Figure 1-6 *The rendering options displayed in the flyout*

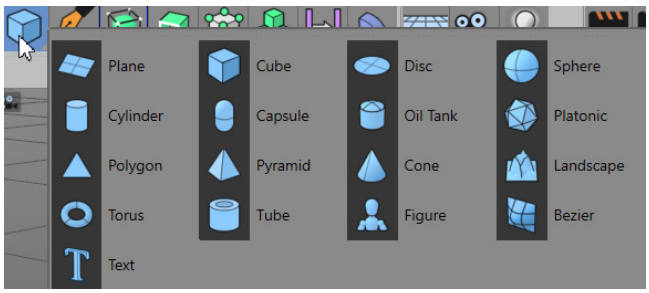

Figure 1-7 *The tools to create the parametric objects displayed in the flyout*

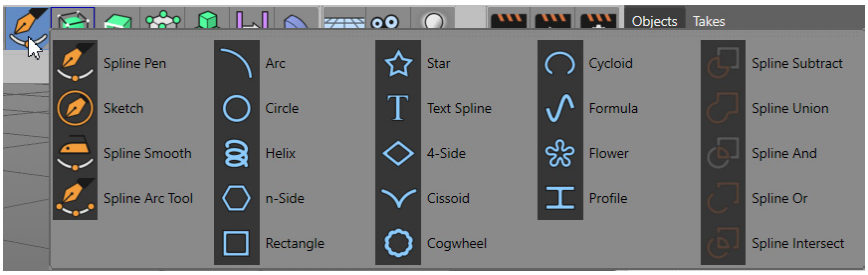

Figure 1-8 *The spline modeling tools displayed in the flyout*

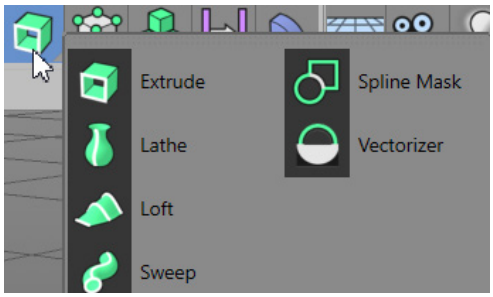

Figure 1-9 *The generators displayed in the flyout*

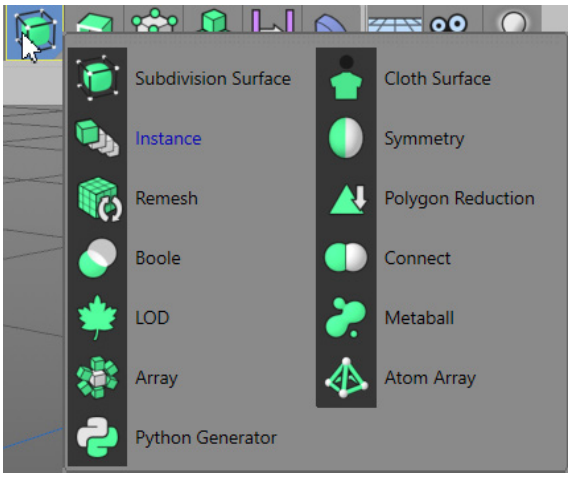

Figure 1-10 *Various generators displayed in the flyout*

Figure 1-11 *Various cloners displayed in the flyout*

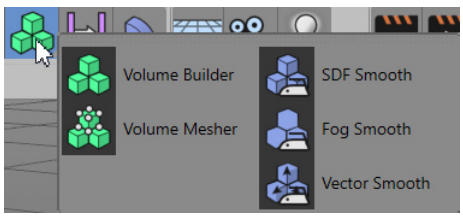

Figure 1-12 *Various tools displayed in the flyout*

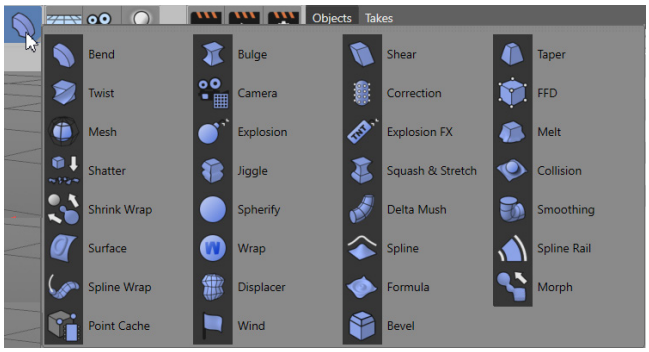

Figure 1-13 *Various deforming tools displayed in the flyout*

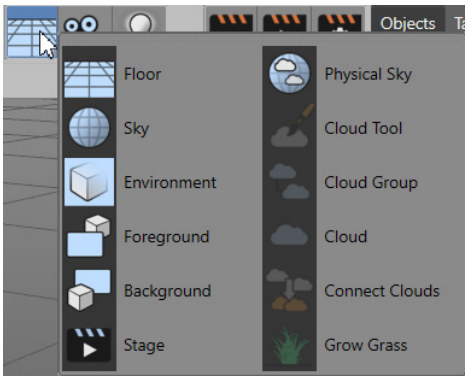

Figure 1-14 *Various tools displayed in the flyout*

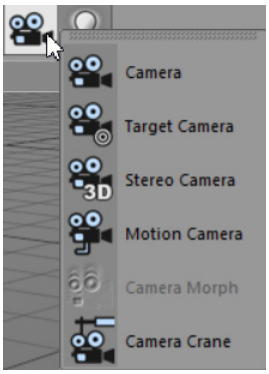

Figure 1-15 *Various camera tools displayed in the flyout*

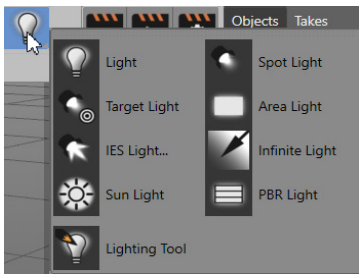

Figure 1-16 *Various light tools displayed in the flyout*

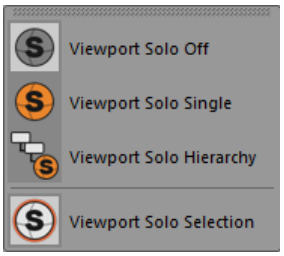

Figure 1-17 *Various options displayed in the flyout*

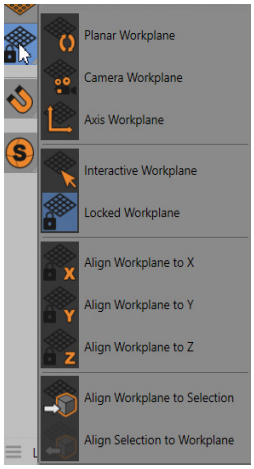

Figure 1-18 *Flyout displayed on choosing the* ***Locked Workplane*** *tool*

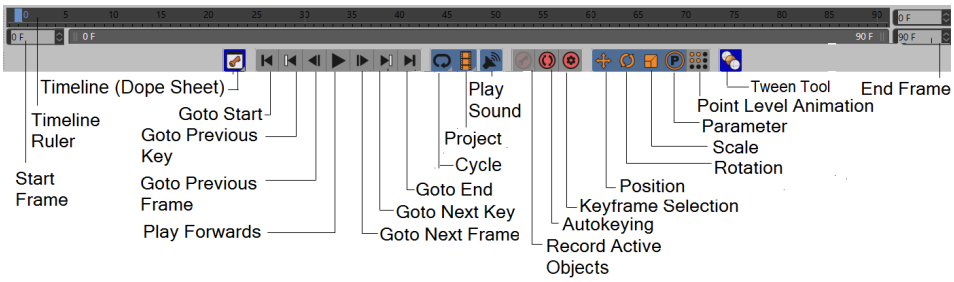

Figure 1-19 *The Animation toolbar*

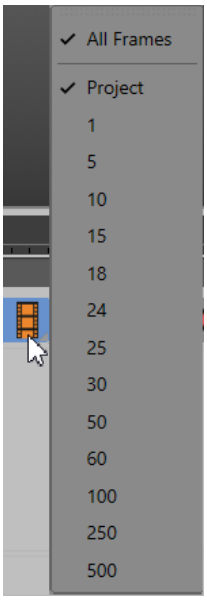

Figure 1-20 *The flyout displayed on choosing the* ***Project*** *button*

Figure 1-21 *The Material Manager*

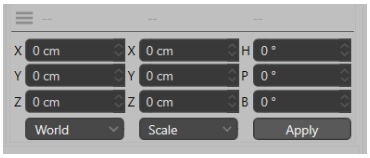

Figure 1-22 *The Coordinate Manager*

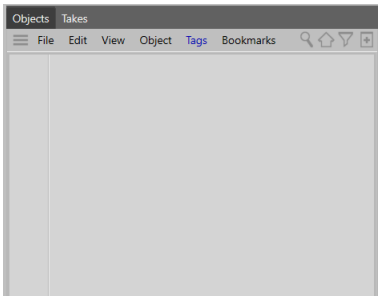

Figure 1-23 *The Object Manager*

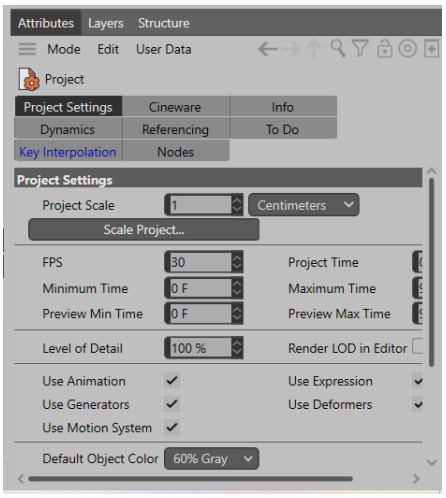

Figure 1-24 *The Attribute Manager*

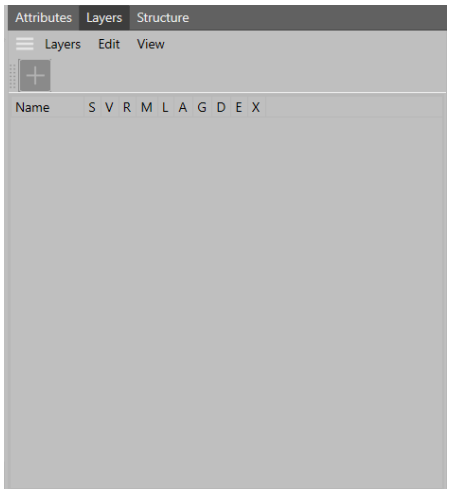

Figure 1-25 *The Layers Manager*

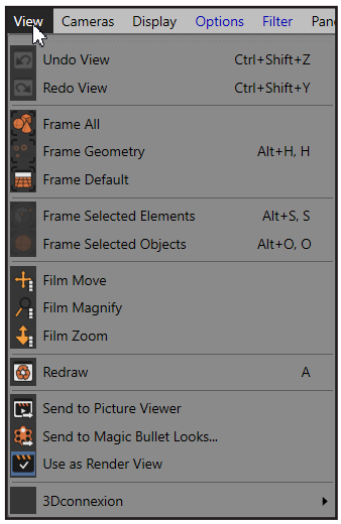

Figure 1-26 *The flyout displayed on choosing the* ***View*** *menu*

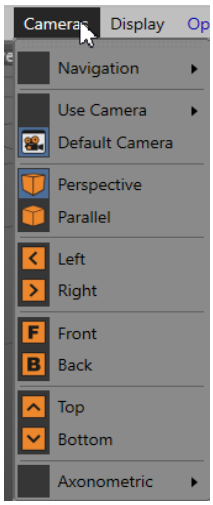

Figure 1-27 *The flyout displayed on choosing the* ***Cameras*** *menu*

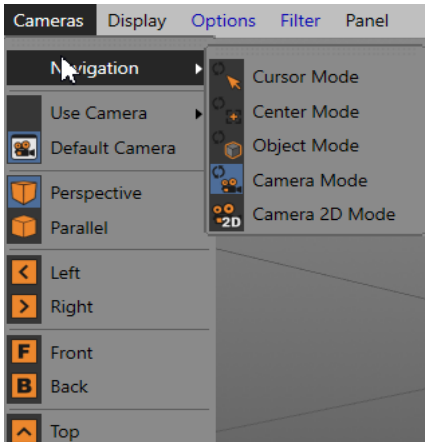

Figure 1-28 *The cascading menu displayed on choosing the* ***Navigation*** *option from the* ***Cameras*** *menu*

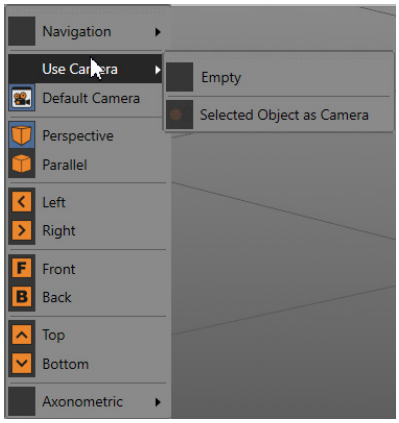

Figure 1-29 *The cascading menu displayed on choosing the* ***Use Camera*** *option*

Figure 1-30 *The perspective camera projection mode*

Figure 1-31 *The parallel camera projection mode*

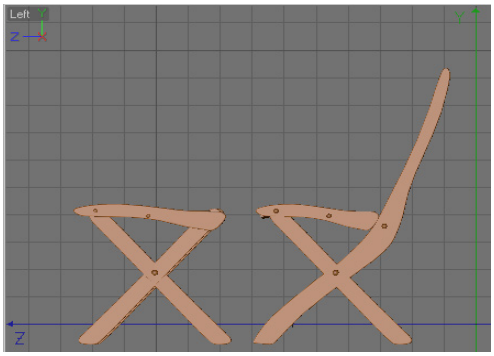

Figure 1-32 *The left camera projection*

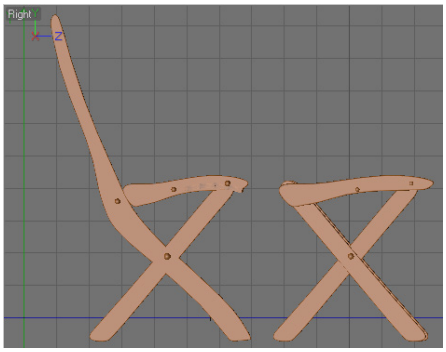

Figure 1-33 *The right camera projection*

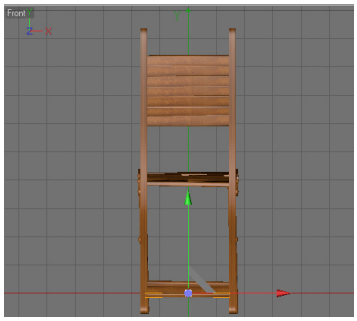

Figure 1-34 *The front camera projection*

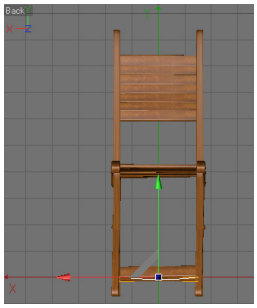

Figure 1-35 *The back camera projection*

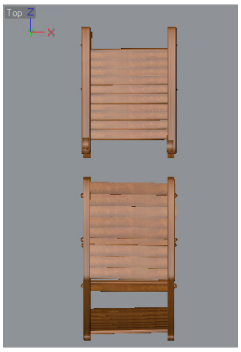

Figure 1-36 *The top camera projection*

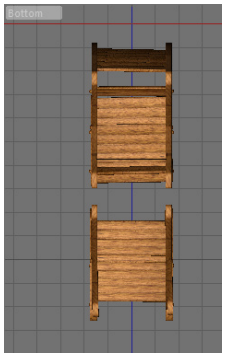

Figure 1-37 *The bottom camera projection*

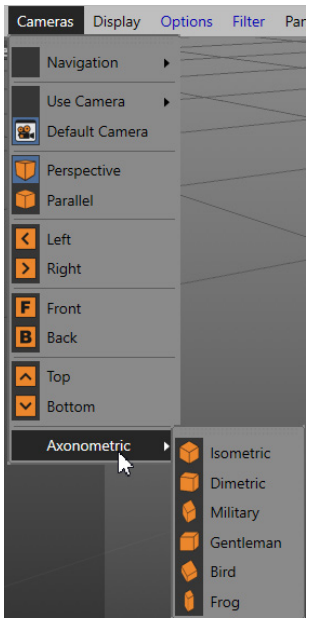

Figure 1-38 *The cascading menu displayed on choosing the* ***Axonometric*** *option from the* ***Cameras*** *menu*

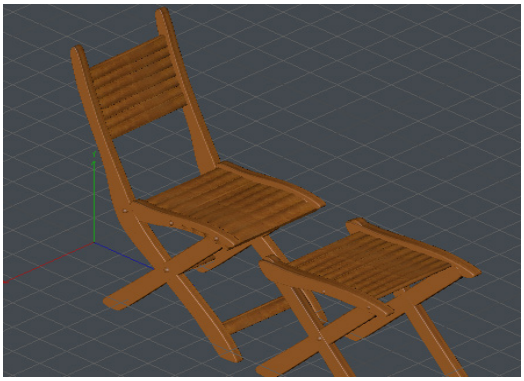

Figure 1-39 *The isometric camera projection*

Figure 1-40 *The dimetric camera projection*

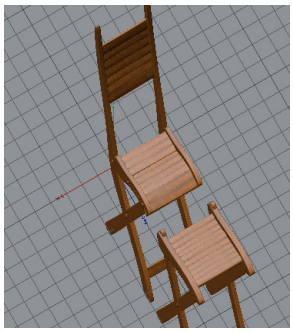

Figure 1-41 *The military camera projection*

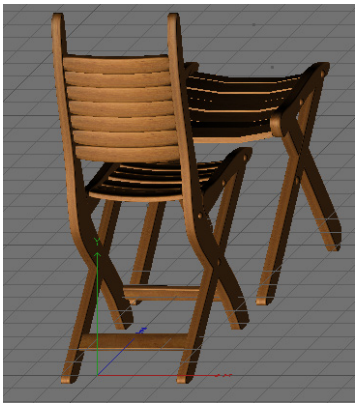

Figure 1-42 *The gentleman camera projection*

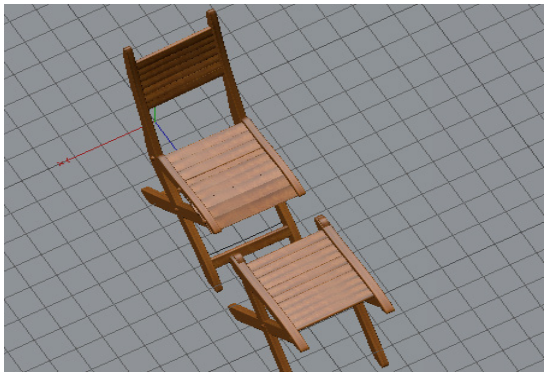

Figure 1-43 *The bird camera projection*

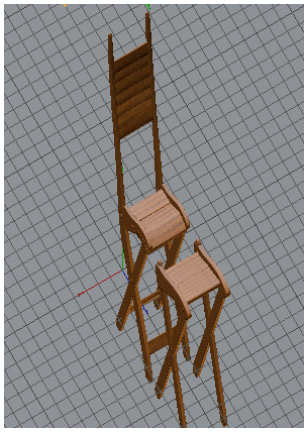

Figure 1-44 *The frog camera projection*

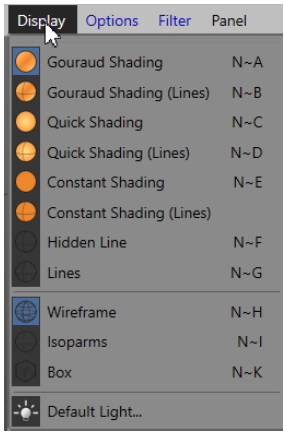

Figure 1-45 *The flyout displayed on choosing the* ***Display*** *menu*

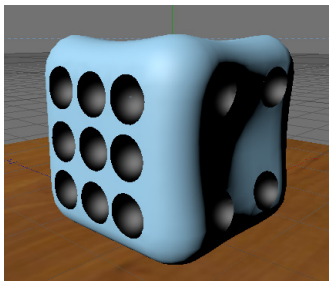

Figure 1-46 *The object displayed in the viewport on choosing the* ***Gouraud Shading*** *option*

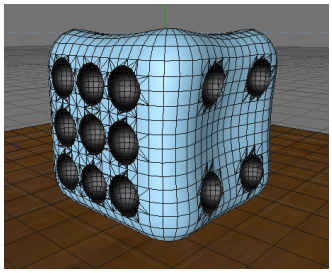

Figure 1-47 *The object displayed in the viewport on choosing the* ***Gouraud Shading (Lines)*** *option*

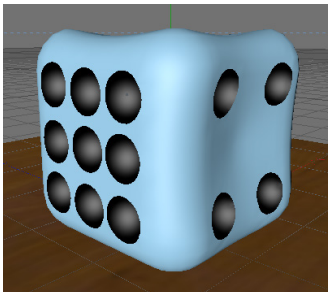

Figure 1-48 *The object displayed in the viewport on choosing the* ***Quick Shading*** *option*

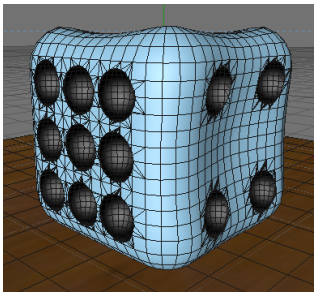

Figure 1-49 *The object displayed in the viewport on choosing the* ***Quick Shading (Lines)*** *option*

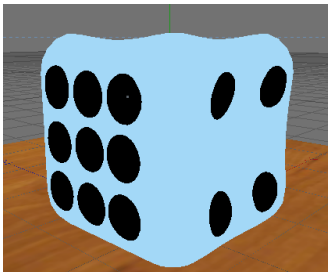

Figure 1-50 *The object displayed in the viewport on choosing the* ***Constant Shading*** *option*

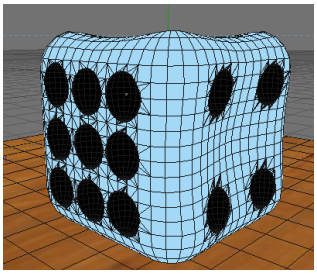

Figure 1-51 *The object displayed in the viewport on choosing the* ***Constant Shading (Lines)*** *option*

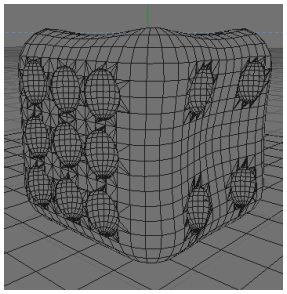

Figure 1-52 *The object displayed in the viewport on choosing the* ***Hidden Line*** *option*

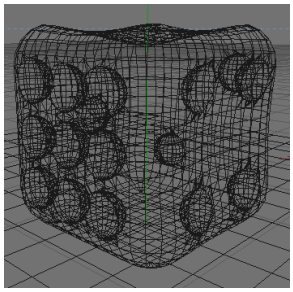

Figure 1-53 *The object displayed in the viewport on choosing the* ***Lines*** *option*

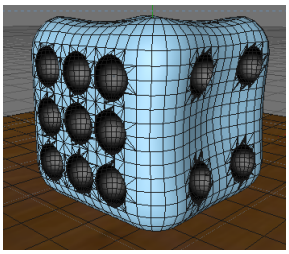

Figure 1-54 *The object displayed in the* ***Wireframe*** *and* ***Quick Shading (Lines)*** *shading modes*

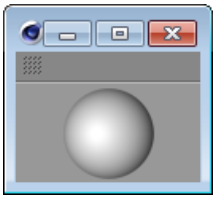

Figure 1-55 *The* ***Default Light*** *window*

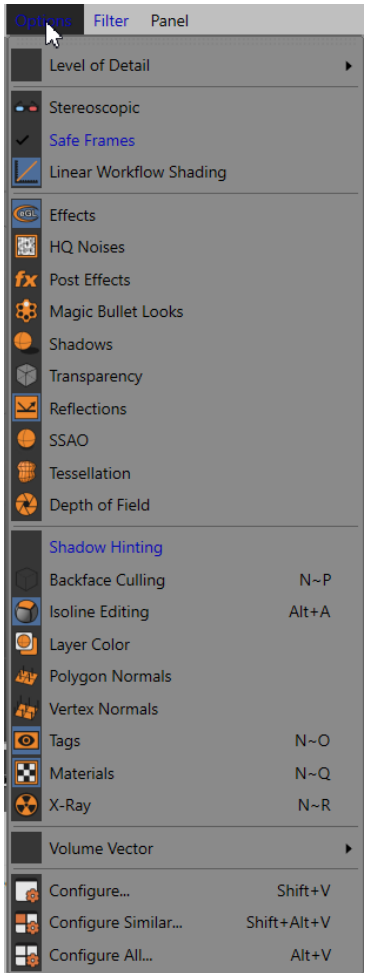

Figure 1-56 *The partial view of the flyout displayed on choosing the* ***Options*** *menu*

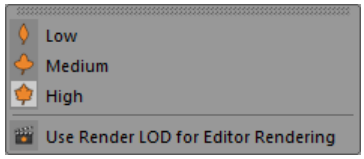

Figure 1-57 *The cascading menu displayed on placing the cursor on the* ***Level of Detail*** *option*

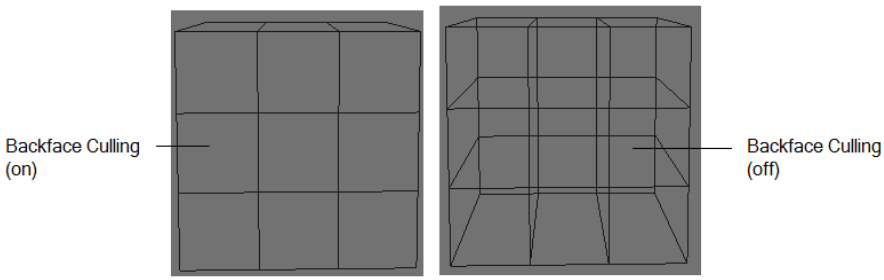

Figure 1-58 *The object displayed with the* ***Backface Culling*** *option on and off*

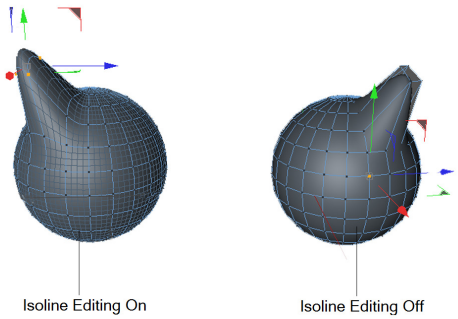

Figure 1-59 *The object displayed with the* ***Isoline Editing*** *option on and off*

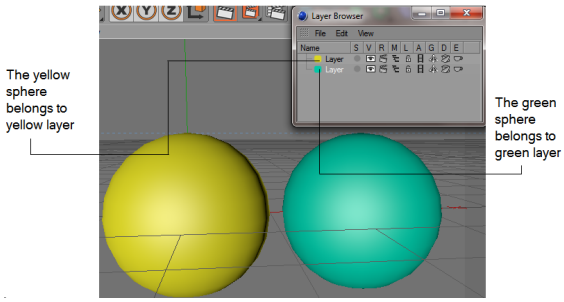

Figure 1-60 *The color of the objects displayed same as the color of layers on choosing the* ***Layer Color*** *option*

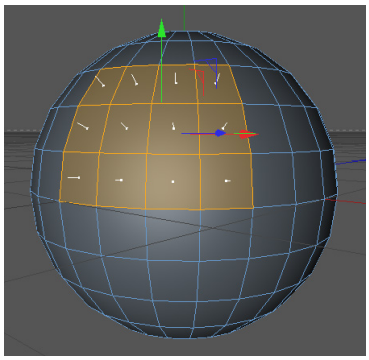

Figure 1-61 *Displaying the normals of the selected polygons*

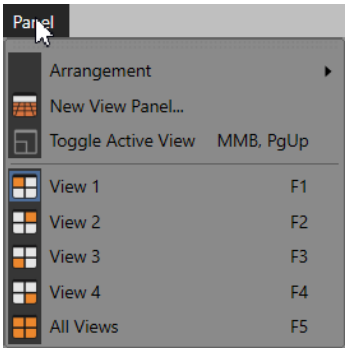

Figure 1-62 *The flyout displayed on choosing the* ***Panel*** *menu*

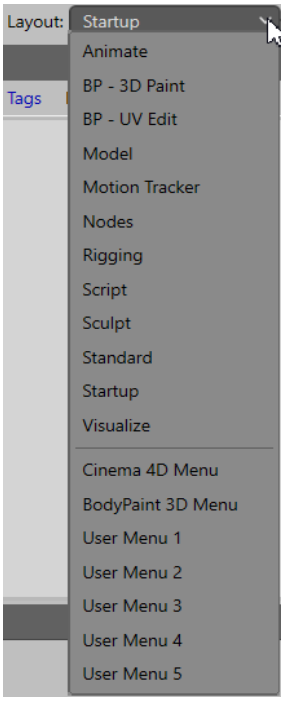

Figure 1-63 *The* ***Layout*** *drop-down list*

Chapter 2

Working with Splines

Figure 2-1 *The model of door lock system*

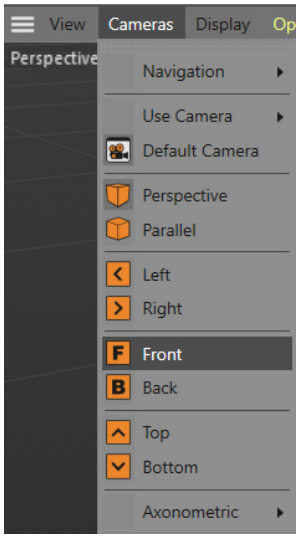

Figure 2-2 *Choosing the* ***Front*** *option from the Menu in editor view*

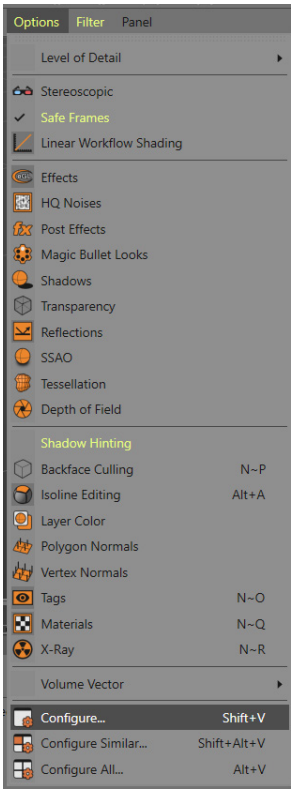

Figure 2-3 *Choosing the* ***Configure*** *option from the Menu in editor view*

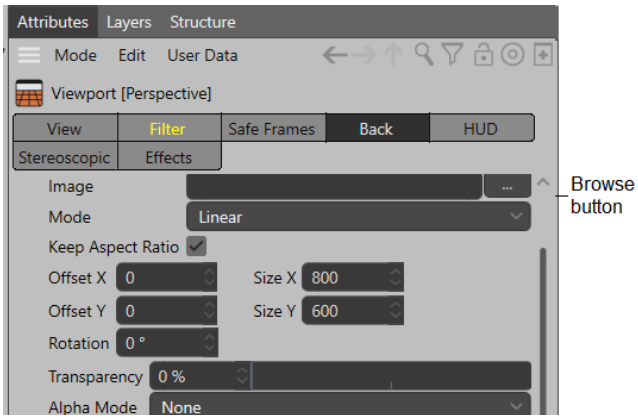

Figure 2-4 *Choosing the browse button next to the* ***Image*** *text box*

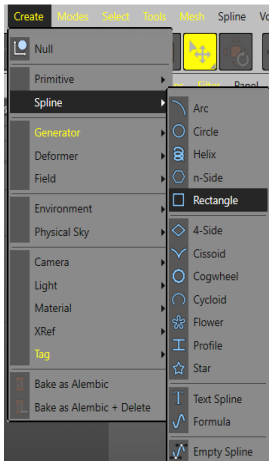

Figure 2-5 *Choosing* ***Rectangle*** *from the* ***Create*** *menu*

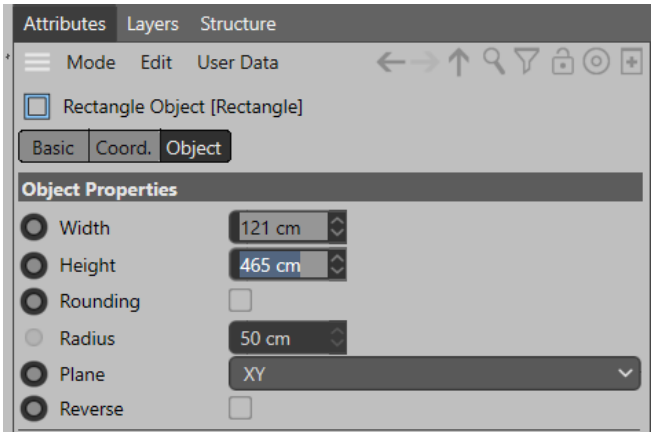

Figure 2-6 *Setting the width and height of the rectangle*

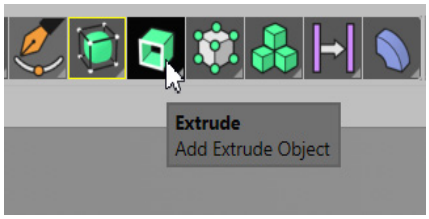

Figure 2-7 *Choosing* ***Extrude*** *from the flyout*

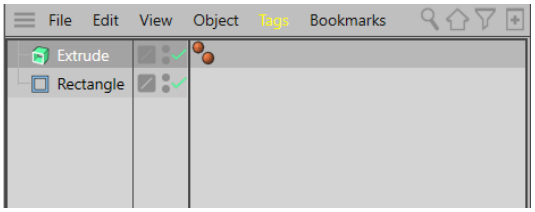

Figure 2-8 *Extrude added to the Object Manager*

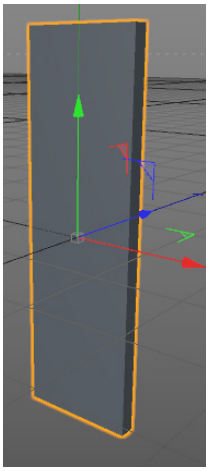

Figure 2-9 *Rectangle extruded in the Perspective viewport*

Figure 2-10 *Choosing* ***Spline Pen*** *from the Command Palette*

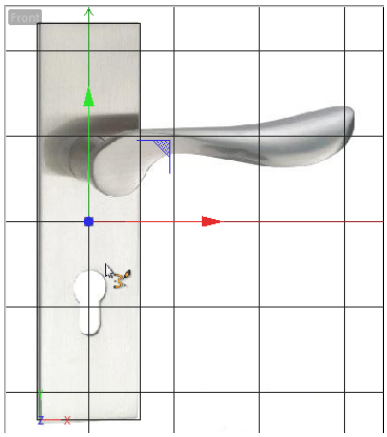

Figure 2-11 *The changed shape of the cursor*

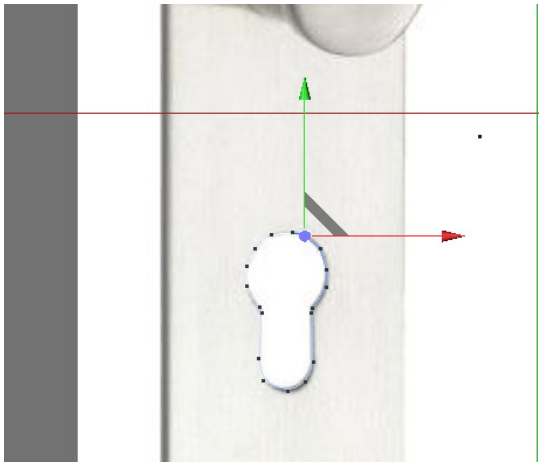

Figure 2-12 *Shape of the keyhole*

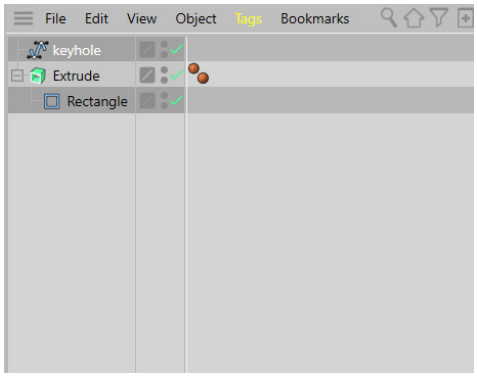

Figure 2-13 *Spline renamed as keyhole*

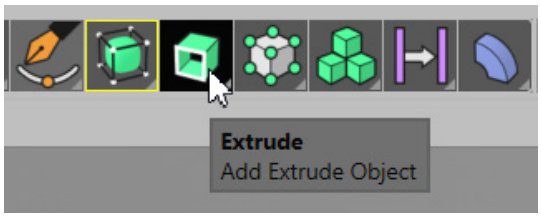

Figure 2-14 *Choosing* ***Extrude*** *from the Command Palette*

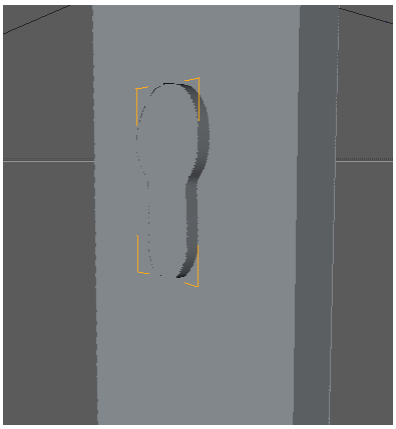

Figure 2-15 *keyhole extruded in the Perspective viewport*

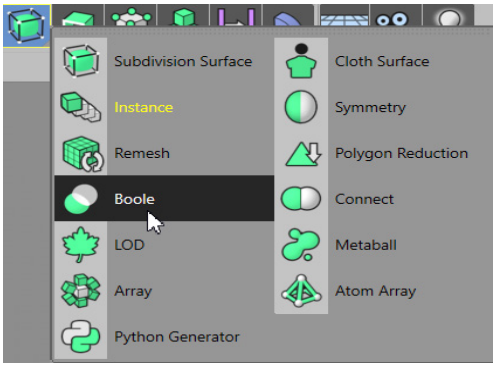

Figure 2-16 *Choosing* ***Boole*** *from the flyout*

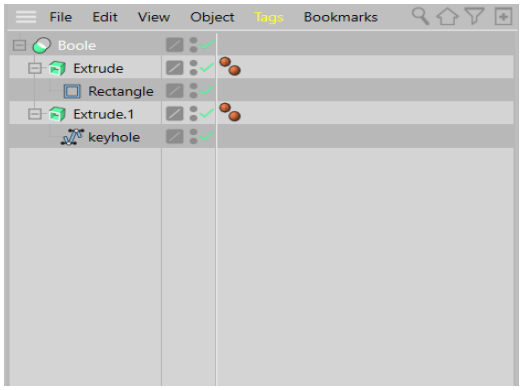

Figure 2-17 *Extrude connected to Boole*

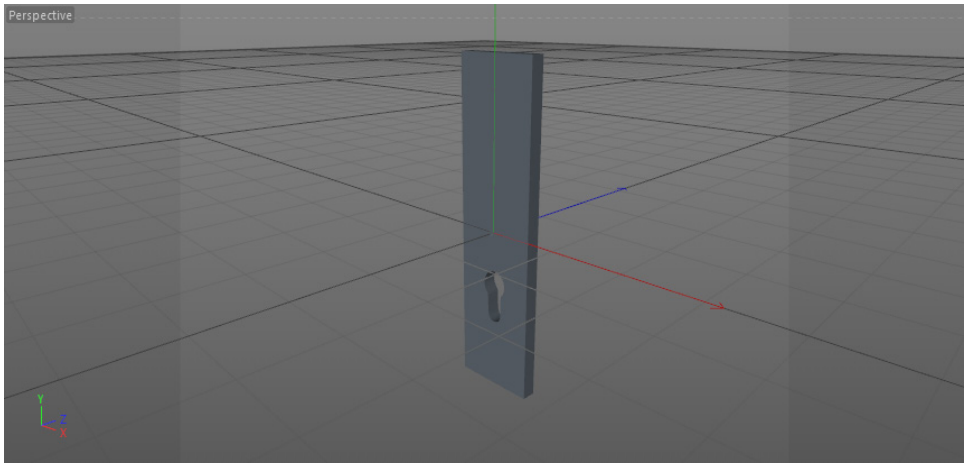

Figure 2-18 *The hole created in the Perspective viewport*

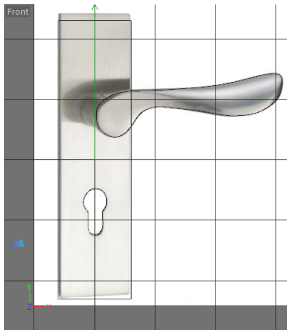

Figure 2-19 *Handle placed in the front viewport*

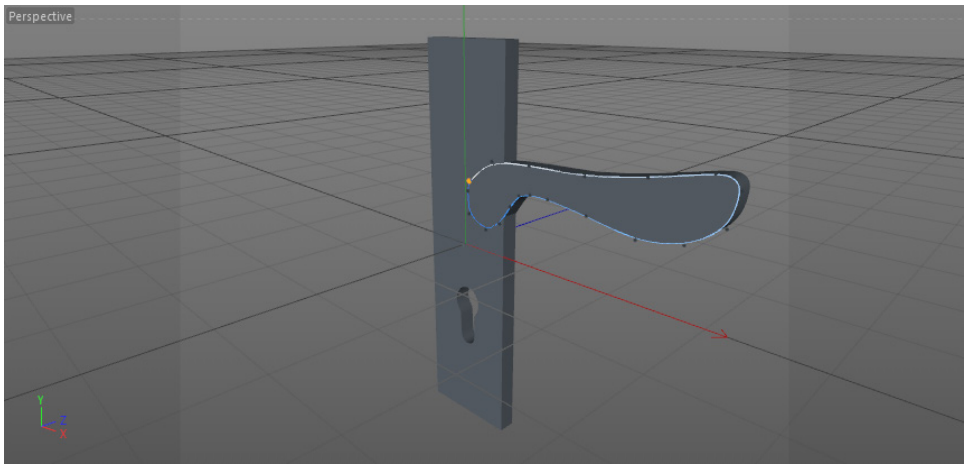

Figure 2-20 *Handle extruded in the Perspective viewport*

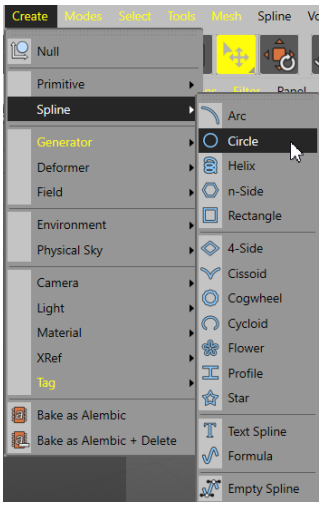

Figure 2-21 *Choosing* ***Circle*** *from the main menu*

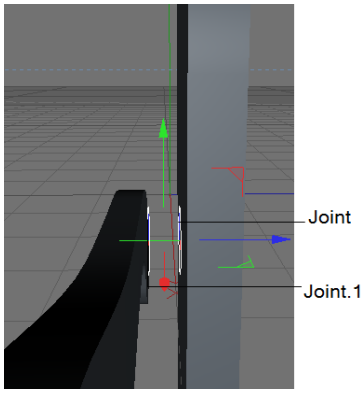

Figure 2-22 *The position of Joint and Joint.1 displayed in the Perspective viewport*

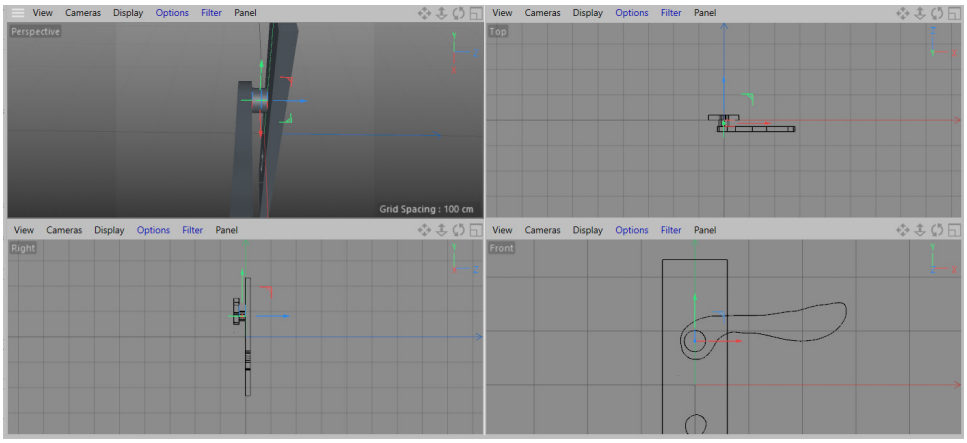

Figure 2-23 *Joint and Joint.1 lofted to create a surface*

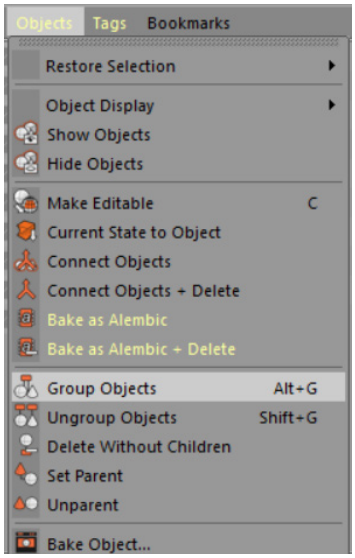

Figure 2-24 *Choosing* ***Group Objects*** *from the* ***Object*** *menu*

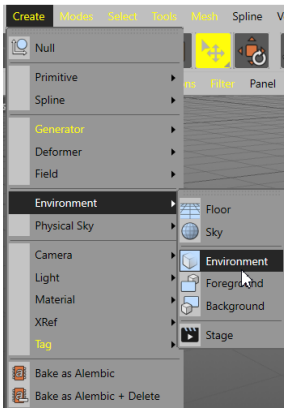

Figure 2-25 *Choosing the* ***Background*** *option from the main menu*

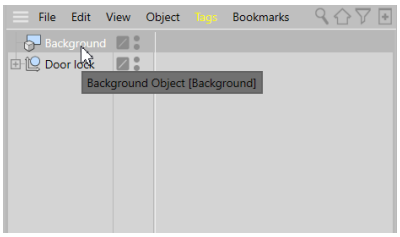

Figure 2-26 *The* ***Background*** *Object selected in the Object Manager*

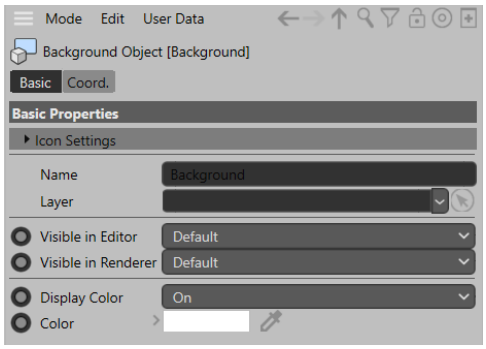

Figure 2-27 *The* ***Display Color*** *parameter activated*

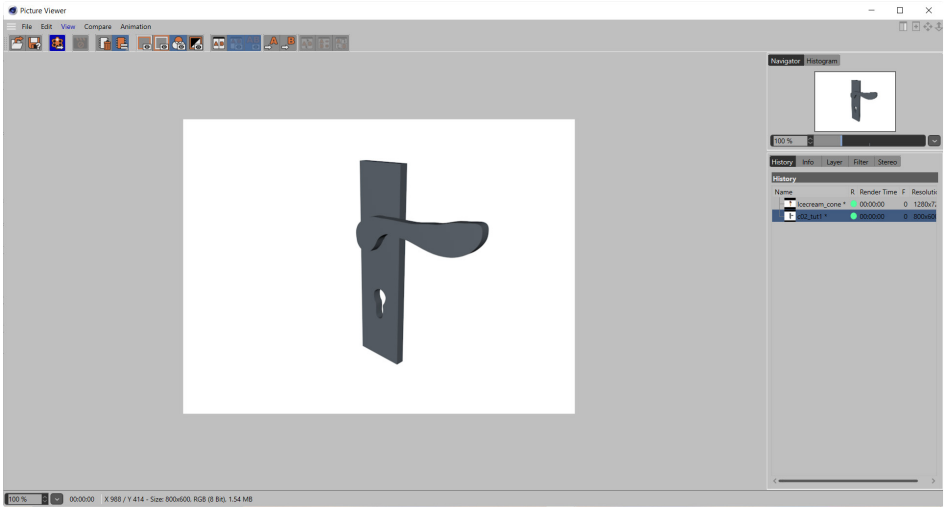

Figure 2-28 *The* ***Picture Viewer*** *window*

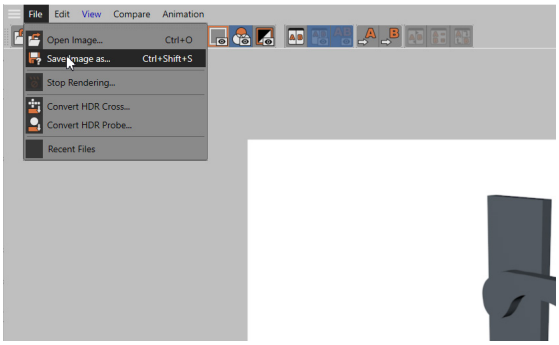

Figure 2-29 *Choosing the* ***Save as*** *option from the* ***File*** *menu*

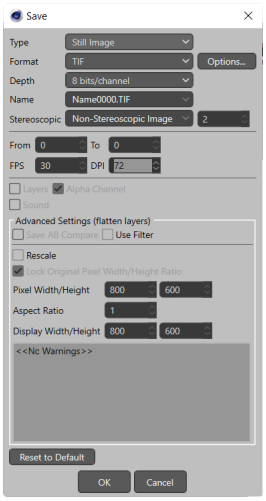

Figure 2-30 *The* ***Save*** *dialog box*

Figure 2-31 *The model of a hand bag*

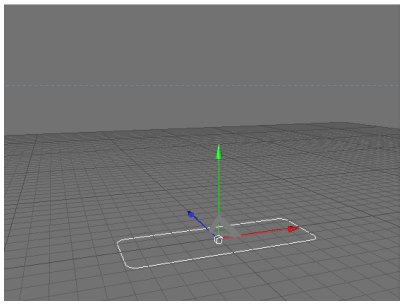

Figure 2-32 *Rectangle placed in the Perspective viewport*

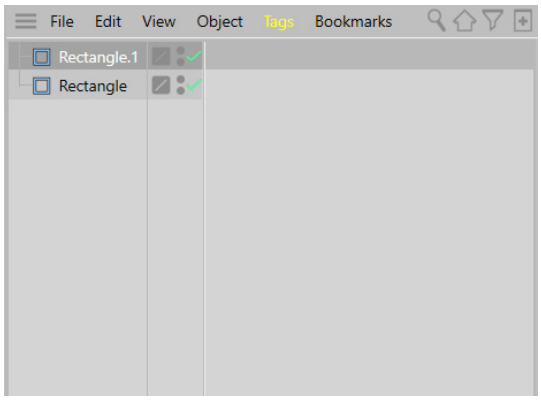

Figure 2-33 *Rectangle.1 added to the Object Manager*

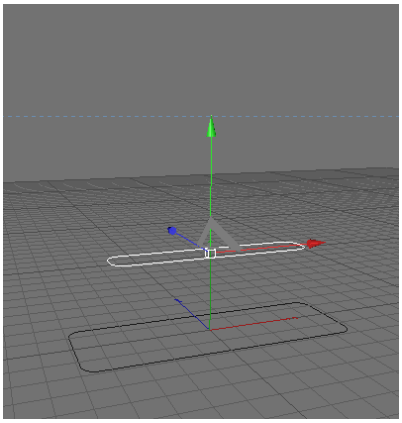

Figure 2-34 *Rectangle.1 placed in the Perspective viewport*

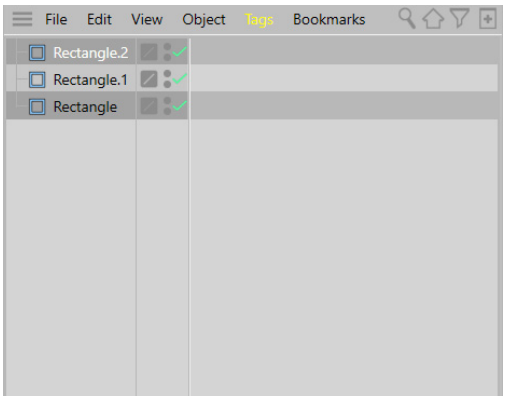

Figure 2-35 *Rectangle.2 added to the Object Manager*

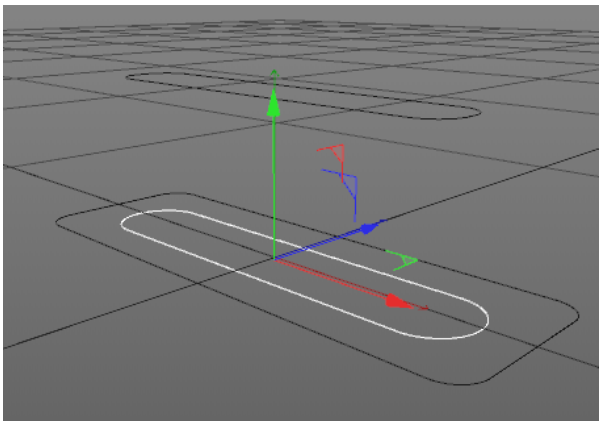

Figure 2-36 *Rectangle.2 placed in the Perspective viewport*

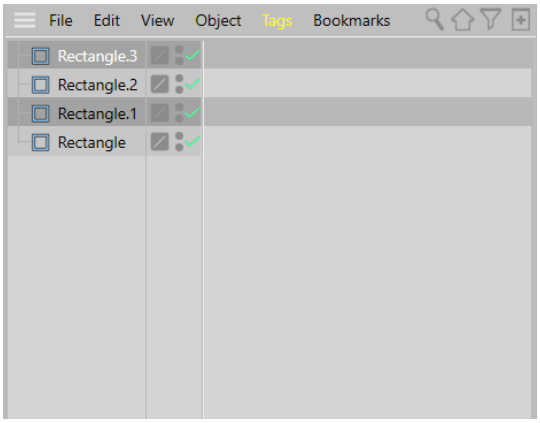

Figure 2-37 *Rectangle.3 added to the Object Manager*

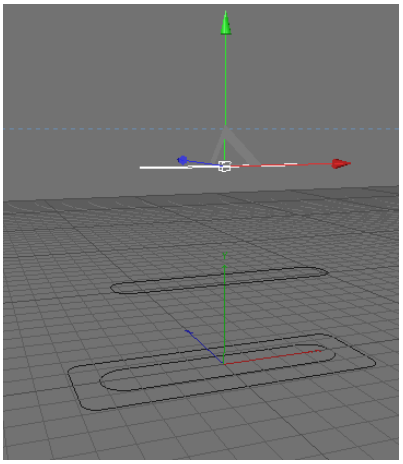

Figure 2-38 *Rectangle.3 placed in the Perspective viewport*

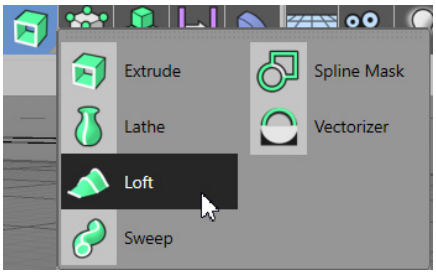

Figure 2-39 *Choosing* ***Loft*** *from the flyout*

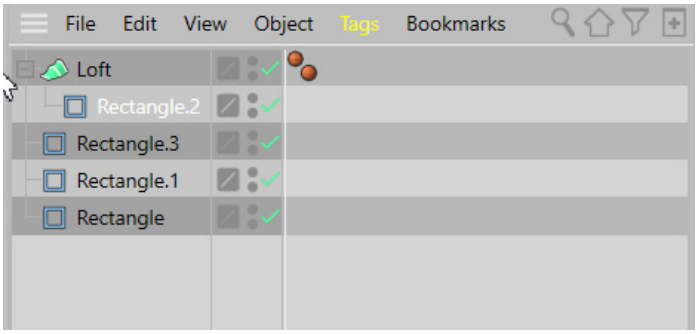

Figure 2-40 *Rectangle.2 connected to Loft in the Object Manager*

Figure 2-41 *Rectangle, Rectangle.1, and Rectangle.3 connected to Loft*

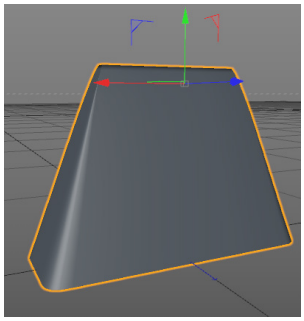

Figure 2-42 *All rectangles lofted in the Perspective viewport*

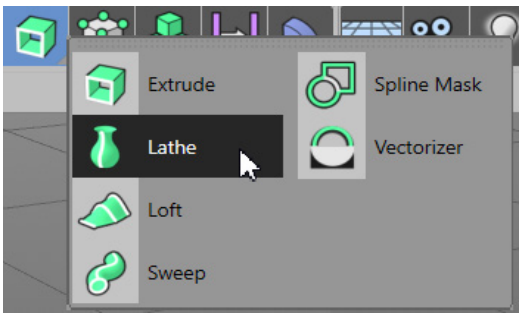

Figure 2-43 *Choosing* ***Lathe*** *from the flyout*

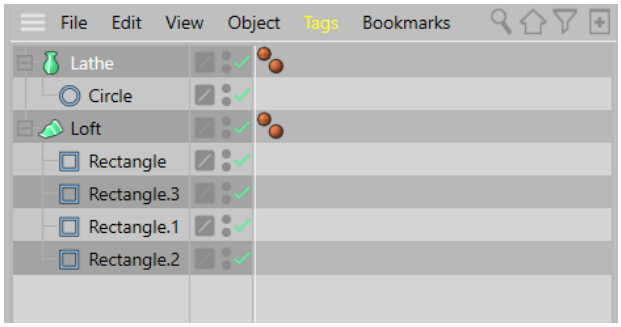

Figure 2-44 *Circle connected to Lathe in the Object Manager*

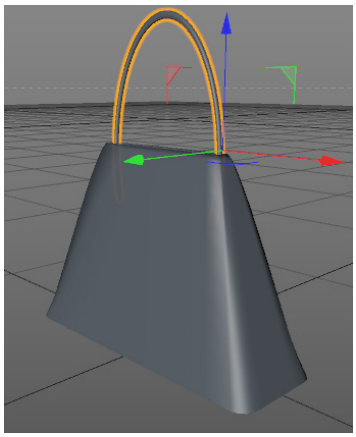

Figure 2-45 *The handle of the hand bag created*

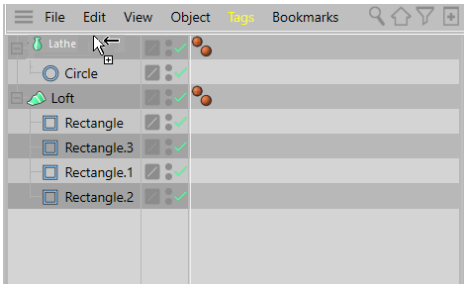

Figure 2-46 *The changed shape of the cursor in the Object Manager*

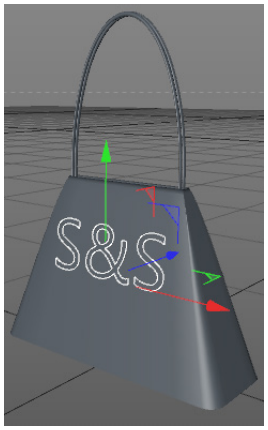

Figure 2-47 *The text placed in the Perspective viewport*

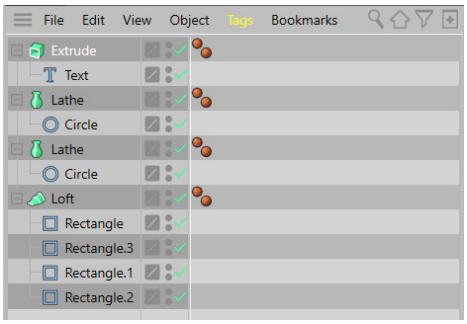

Figure 2-48 *Text connected to Extrude in the Object Manager*

Figure 2-49 *The extruded text on the hand bag*

Figure 2-50 *The model of the cigar pipe*

Figure 2-51 *Ellipse displayed in the Front viewport*

Figure 2-52 *Ellipse.1 displayed in the Front viewport*

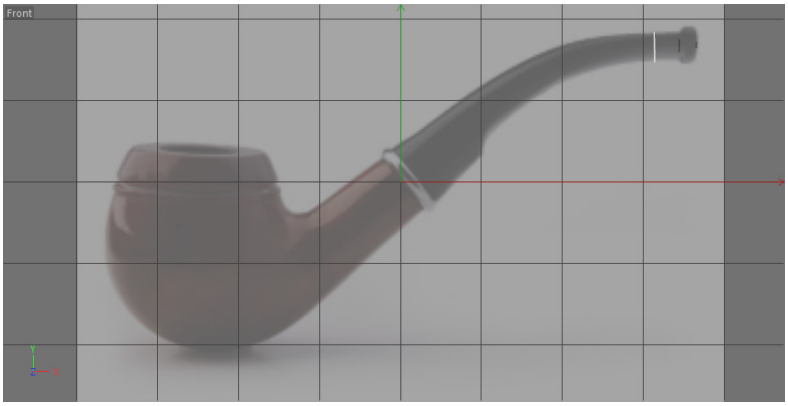

Figure 2-53 *Circle displayed in the Front viewport*

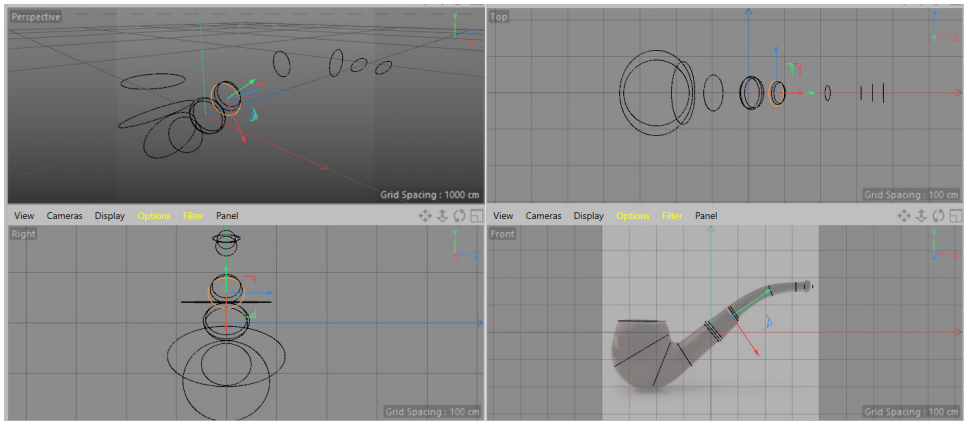

Figure 2-54 *The profile of the pipe displayed*

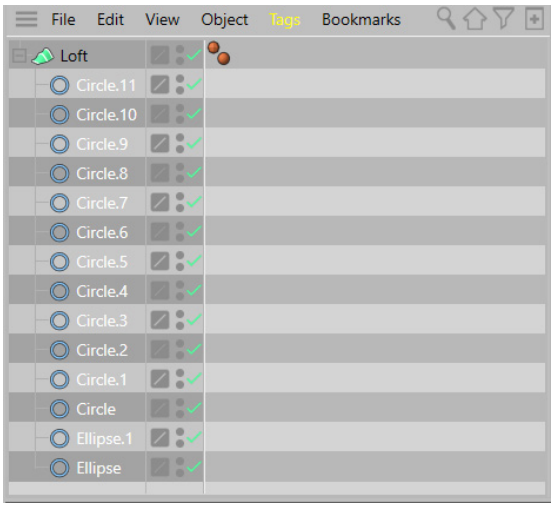

Figure 2-55 *The splines connected with Loft*

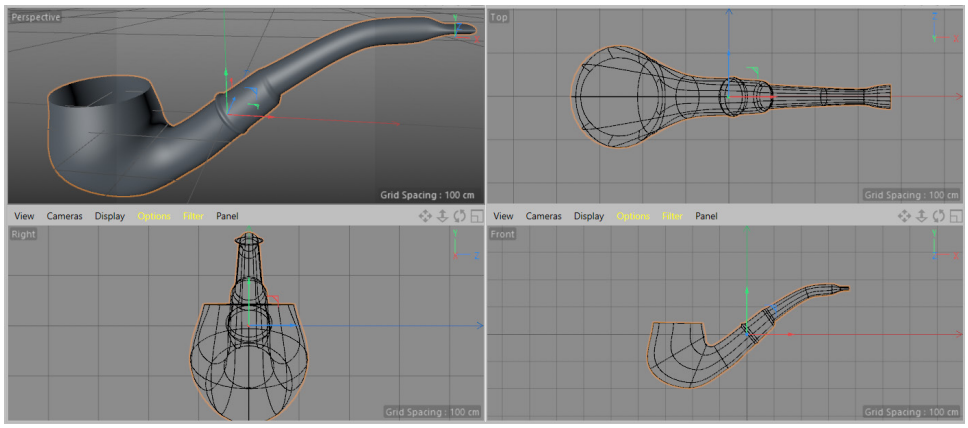

Figure 2-56 *The shape of the pipe displayed*

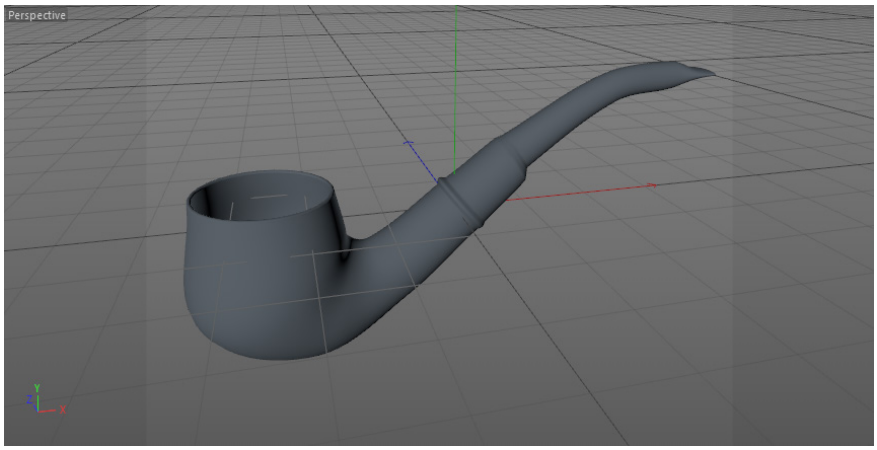

Figure 2-57 *The pipe with the fillet caps displayed*

Figure 2-58 *The model of a chair*

Figure 2-59 *The model of a table clock*

Chapter 3

Introduction to Polygon Modeling

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

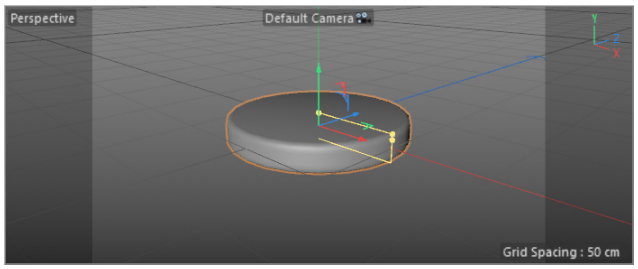

Figure 3-2 *The base displayed in the Perspective viewport*

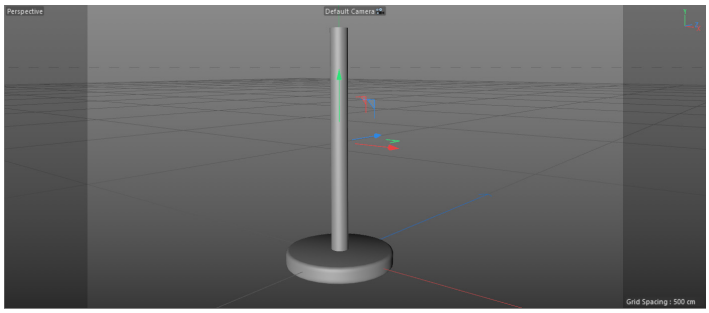

Figure 3-3 *The body moved on the top of base*

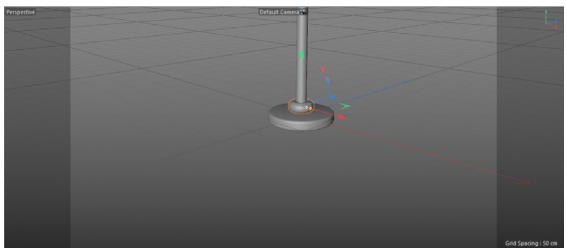

Figure 3-4 *bodydesign1 displayed in the Perspective viewport*

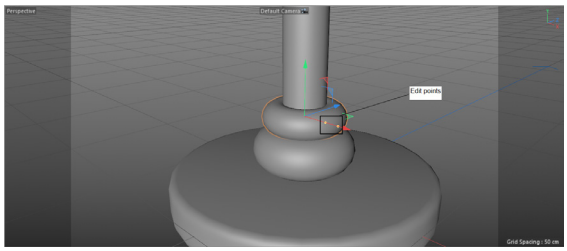

Figure 3-5 *Edit points of bodydesign1.1 moved*

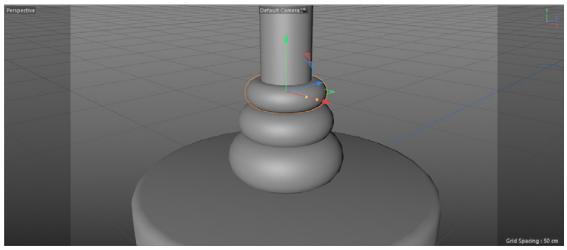

Figure 3-6 *Edit points of bodydesign1.2 moved*

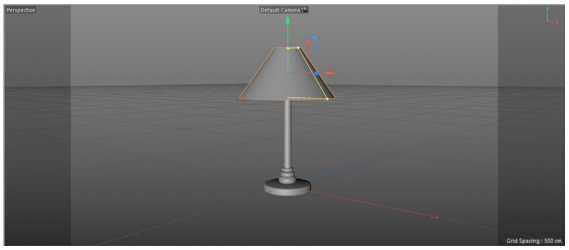

Figure 3-7(a) *The shade moved on the top of body*

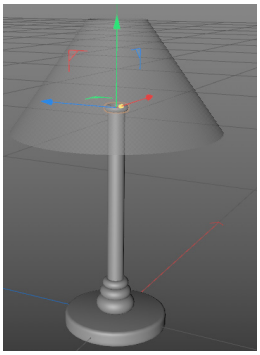

Figure 3-7(b) *The bodyconnect1 moved on the top of body*

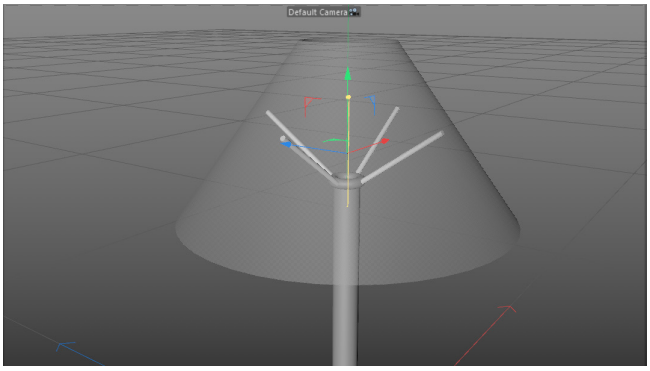

Figure 3-8(a) *cloner placed on bodyconnect1*

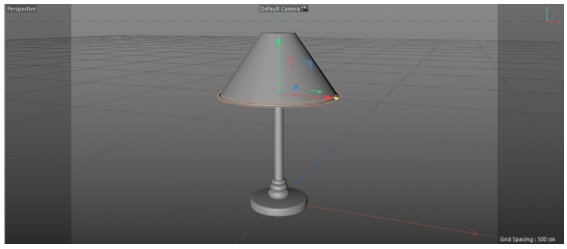

Figure 3-8(b) *Placing shadedesign1 on shade*

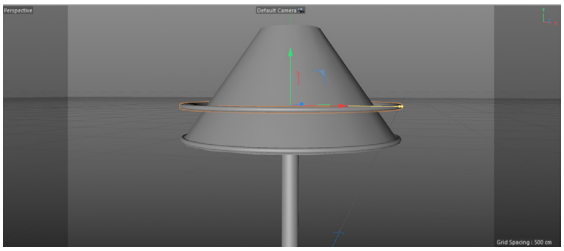

Figure 3-9 *placing shadedesign1.1 on shade*

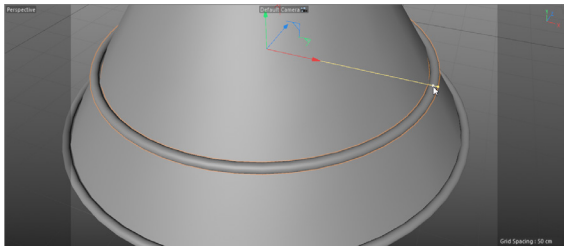

Figure 3-10 *Moving inner edit point of shapedesign1.1*

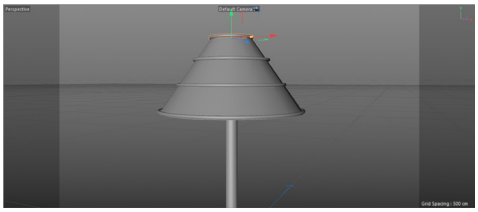

Figure 3-11 *Copies of Shapedesign1.1 placed*

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

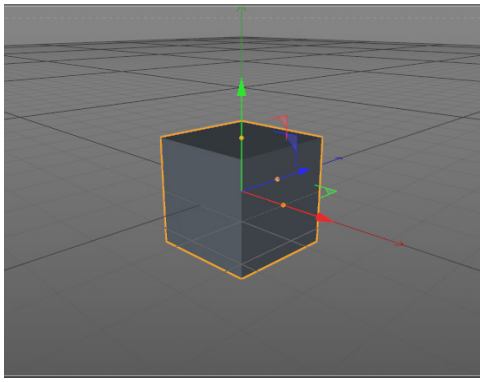

Figure 3-13 *Cube created in the Perspective viewport*

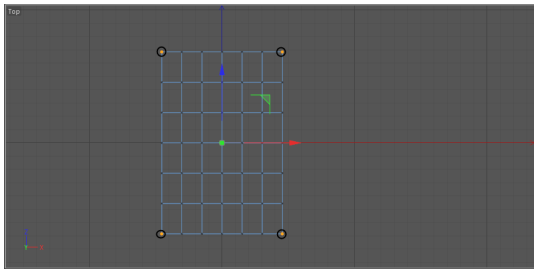

Figure 3-14 *The corner points of Computer mouse to be selected*

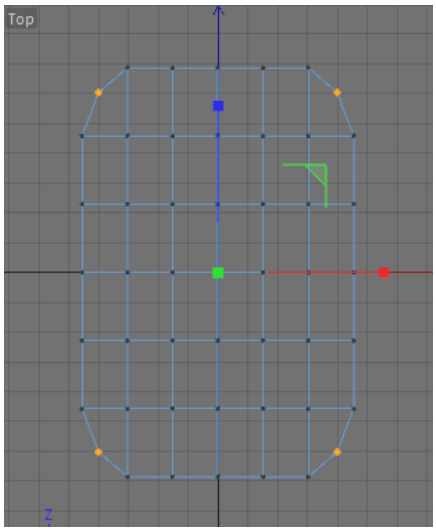

Figure 3-15 *Scaling the selected points of Computer mouse*

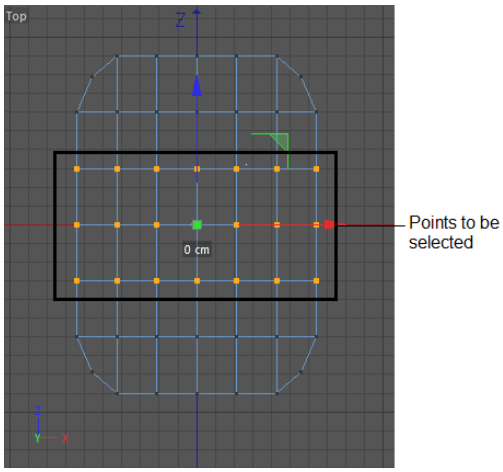

Figure 3-16 *The points to be selected*

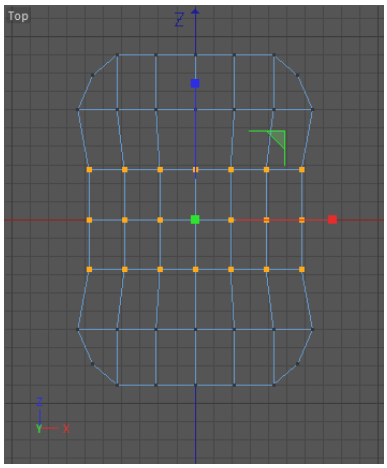

Figure 3-17 *Scaling the selected points of Computer mouse*

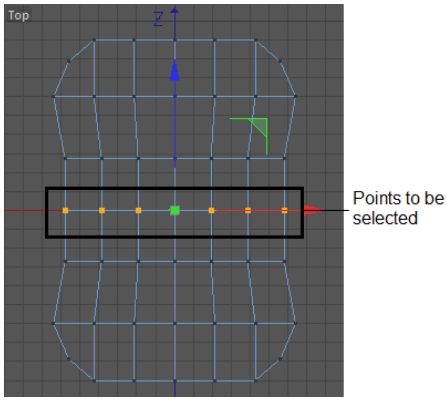

Figure 3-18 *The center points to be selected*

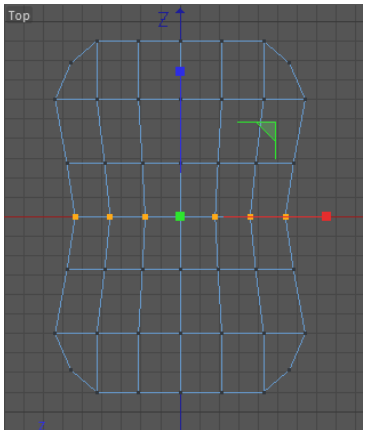

Figure 3-19 *Scaling the selected points of Computer mouse*

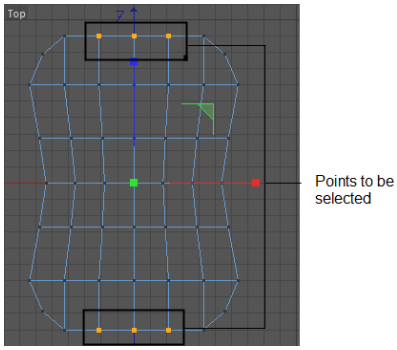

Figure 3-20 *The selected points of Computer mouse*

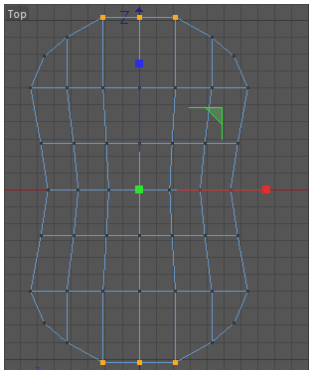

Figure 3-21 *Scaling the selected points of Computer mouse*

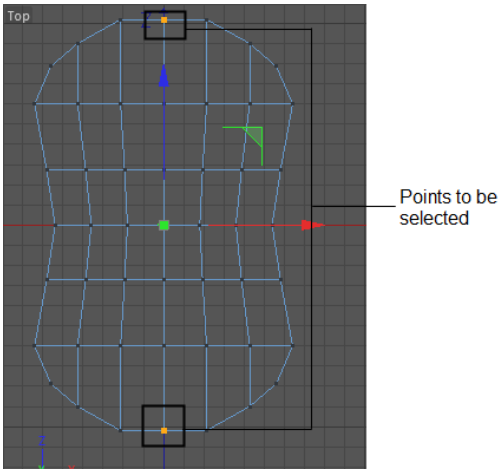

Figure 3-22 *The top and bottom center points of Computer mouse selected*

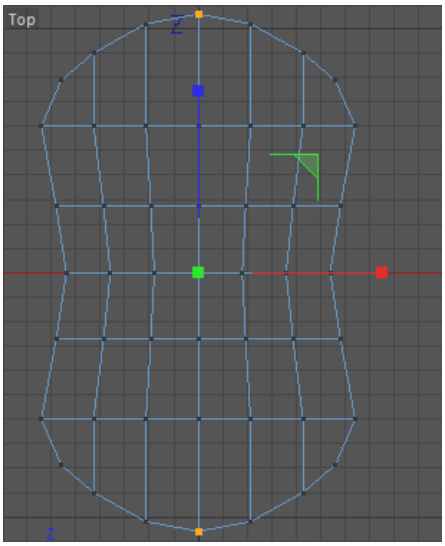

Figure 3-23 *Scaling the selected points of Computer mouse*

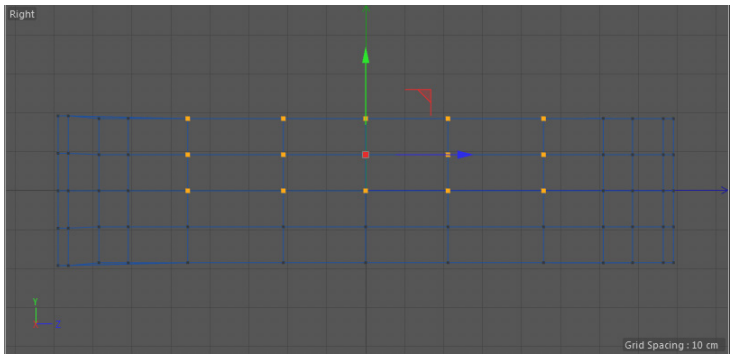

Figure 3-24 *The points to be selected*

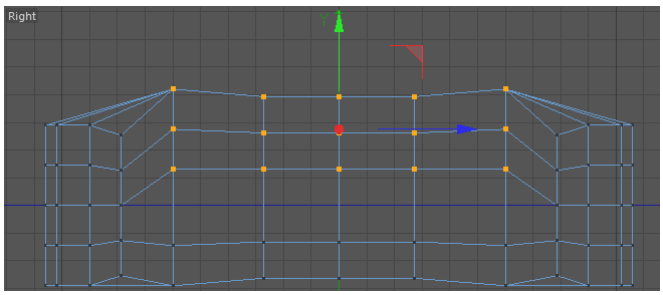

Figure 3-25 *Moving the selected points of Computer mouse*

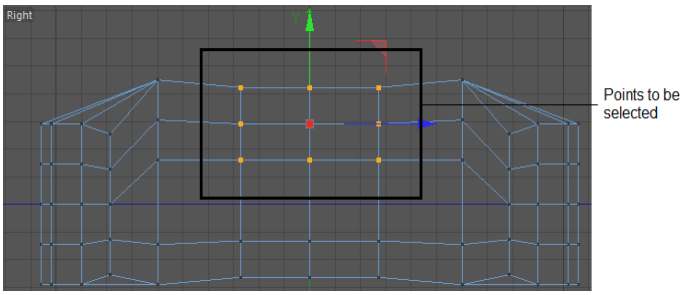

Figure 3-26 *The selected points of Computer mouse*

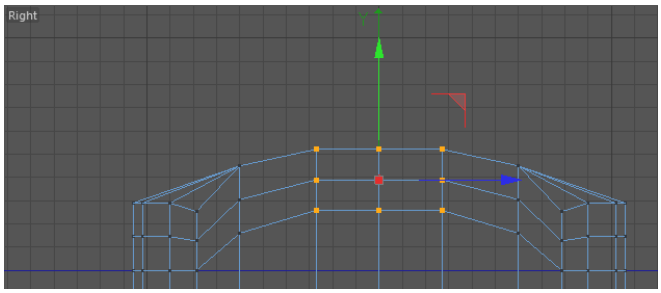

Figure 3-27 *Moving the selected points of Computer mouse*

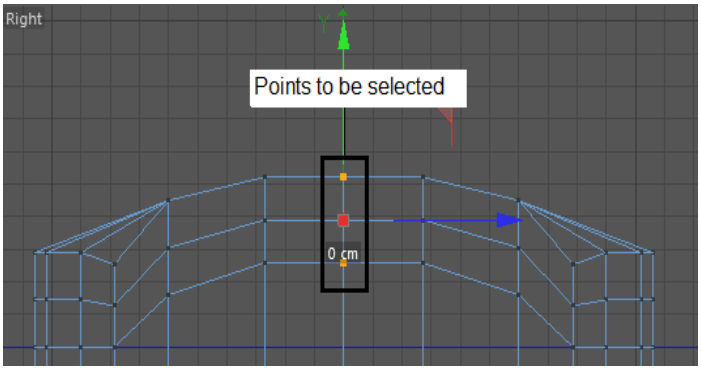

Figure 3-28 *The top center points of Computer mouse selected*

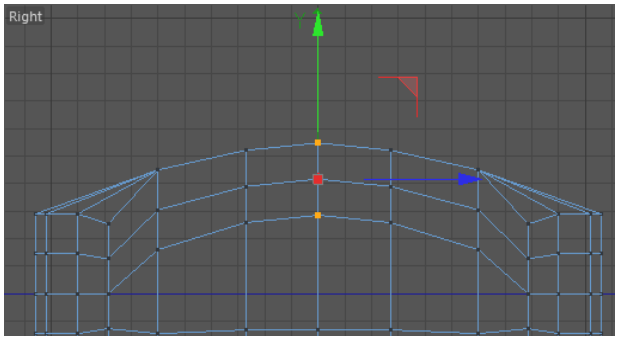

Figure 3-29 *Moving the selected points of Computer mouse*

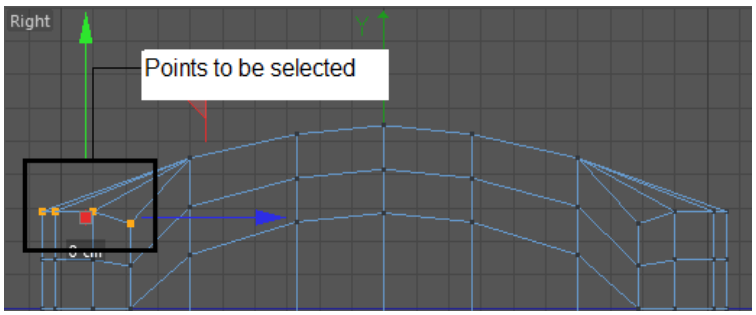

Figure 3-30 *The points to be selected*

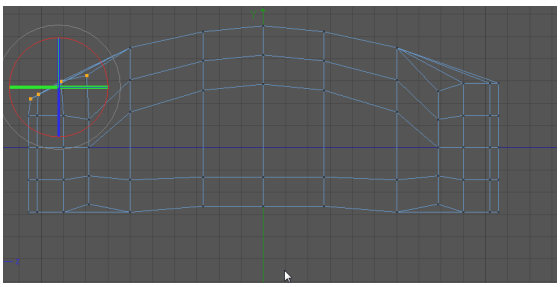

Figure 3-31 *Rotating the selected points of Computer mouse*

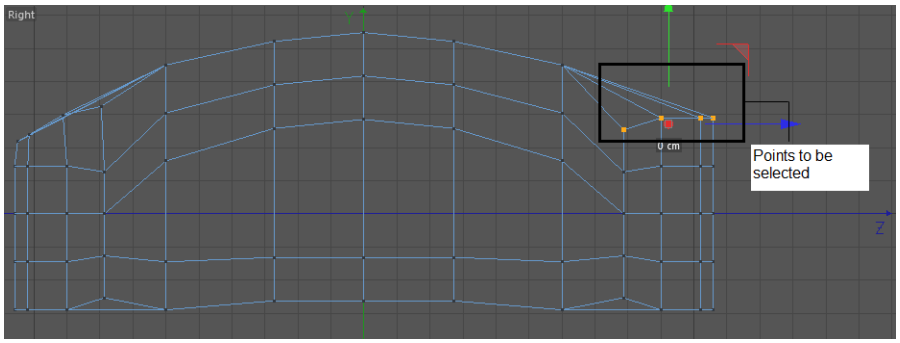

Figure 3-32 *The points to be selected*

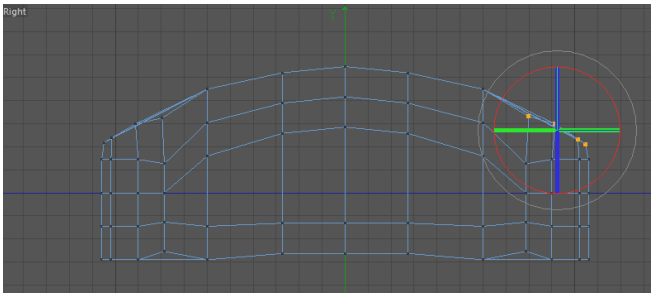

Figure 3-33 *Rotating the selected points of Computer mouse*

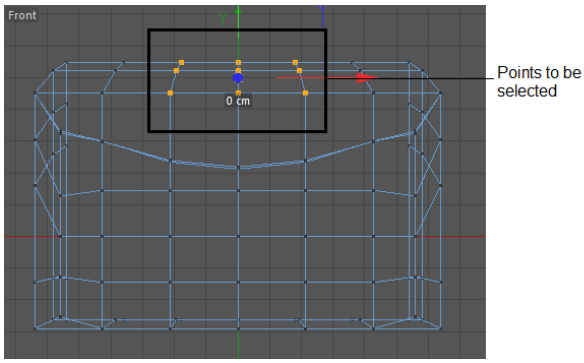

Figure 3-34 *The points to be selected*

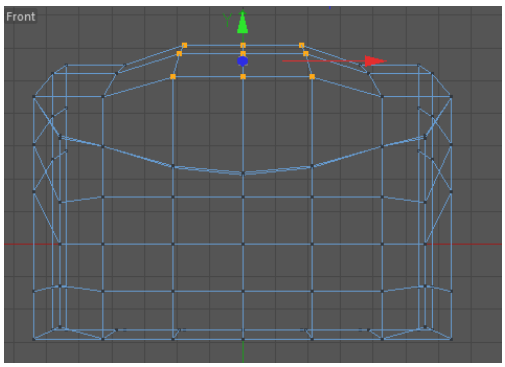

Figure 3-35 *Moving the selected points upward*

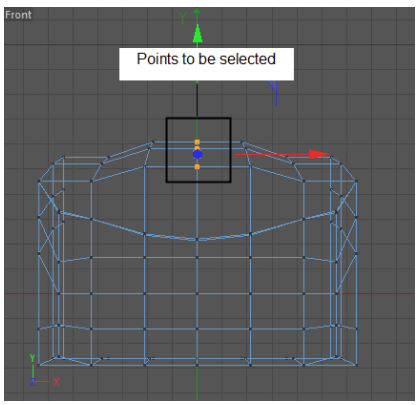

Figure 3-36 *The selected points of Computer mouse*

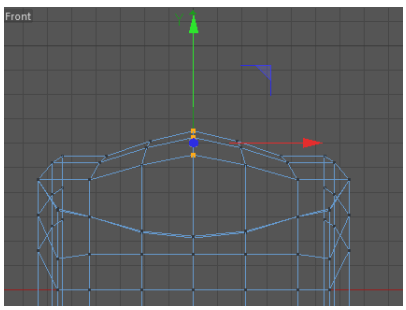

Figure 3-37 *Moving the selected points of Computer mouse*

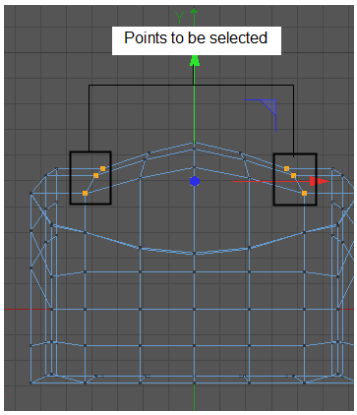

Figure 3-38 *The points to be selected*

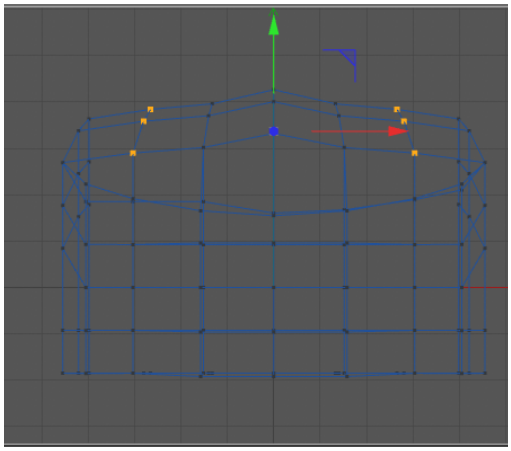

Figure 3-39 *Moving the selected points of Computer mouse*

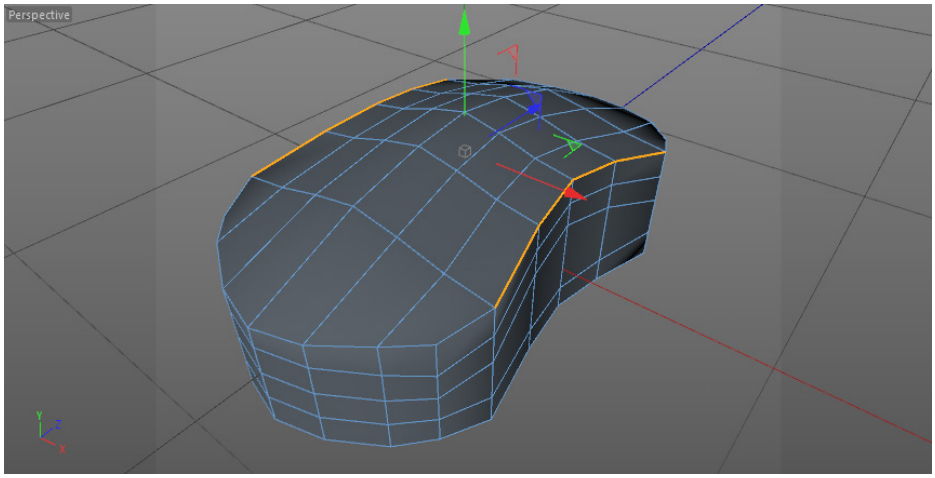

Figure 3-40 *The selected edges in the Perspective viewport*

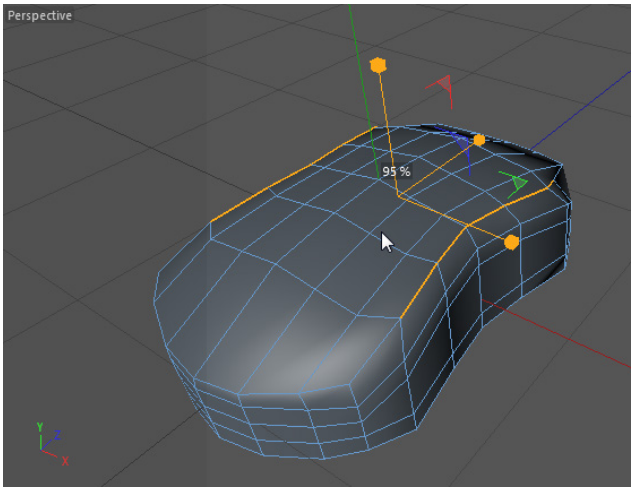

Figure 3-41 *Scaling down the edges of Computer mouse in the Perspective viewport*

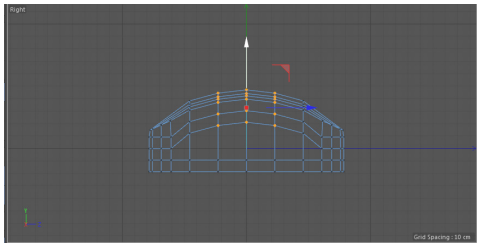

Figure 3-42 *The points to be selected*

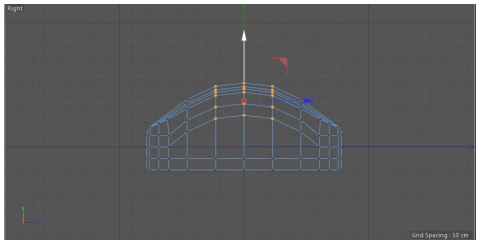

Figure 3-43 *Moving the selected points of Computer mouse*

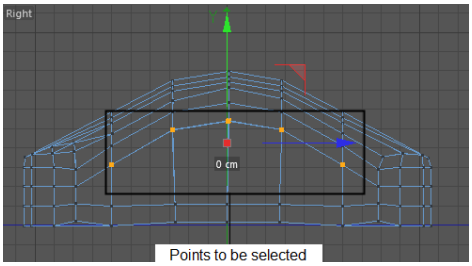

Figure 3-44 *The points to be selected*

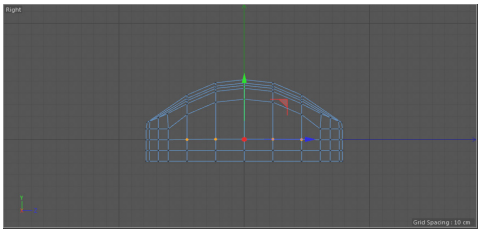

Figure 3-45 *Scaling and moving the points of Computer mouse*

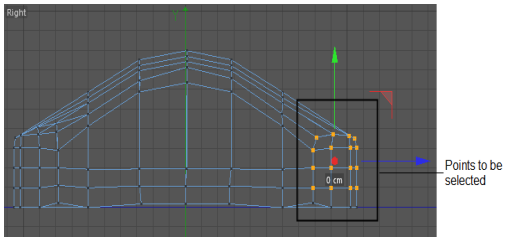

Figure 3-46 *The points of Computer mouse to be selected*

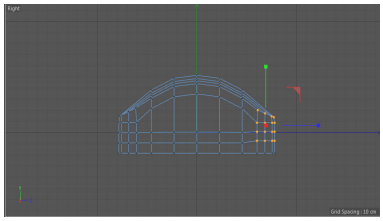

Figure 3-47 *Scaling the points of Computer mouse*

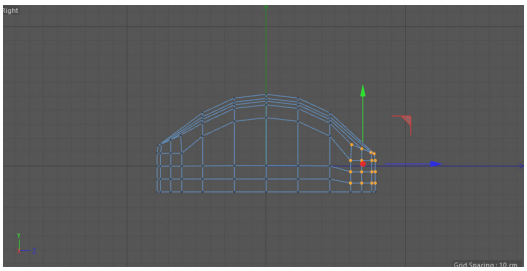

Figure 3-48 *Moving the selected points in the Right viewport*

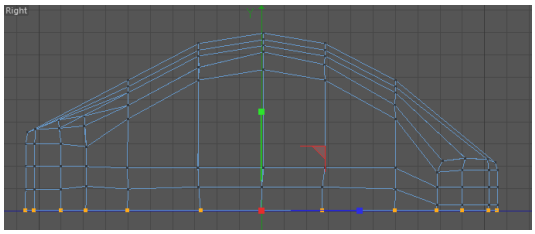

Figure 3-49 *Scaling the points of Computer mouse*

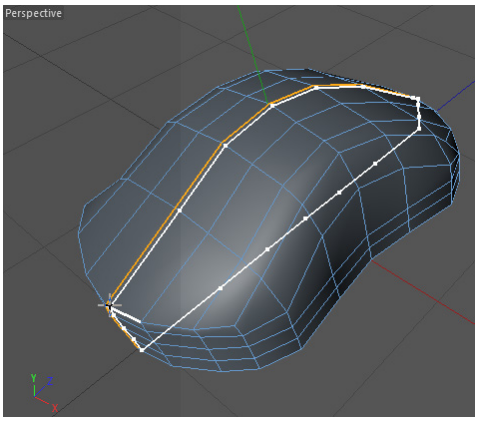

Figure 3-50 *Clicking on the right of the middle edge loop*

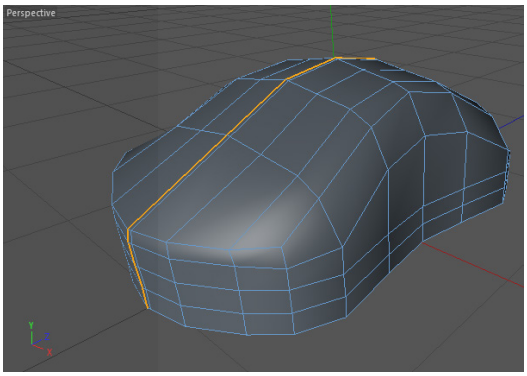

Figure 3-51 *A new edge loop added to the Computer mouse*

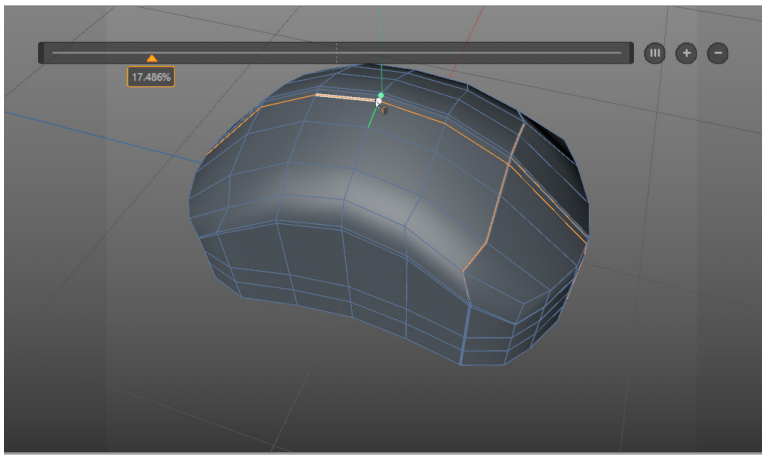

Figure 3-52 *The slider displayed at the top of the viewport*

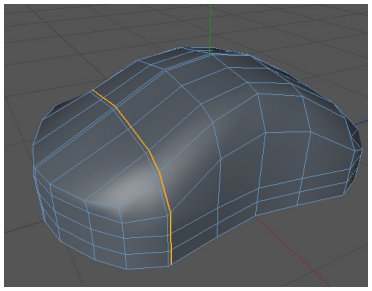

Figure 3-53 *A new edge added to Computer mouse*

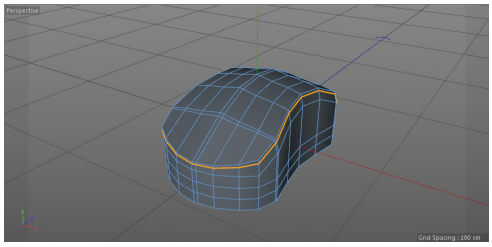

Figure 3-54 *A new edge added to Computer mouse*

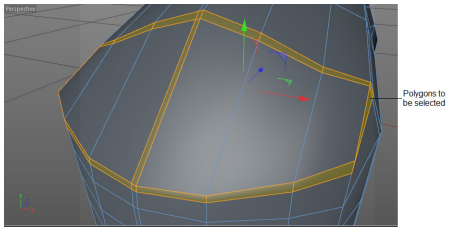

Figure 3-55 *The polygons selected*

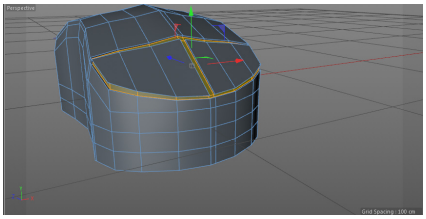

Figure 3-56 *The extruded polygons of Computer mouse*

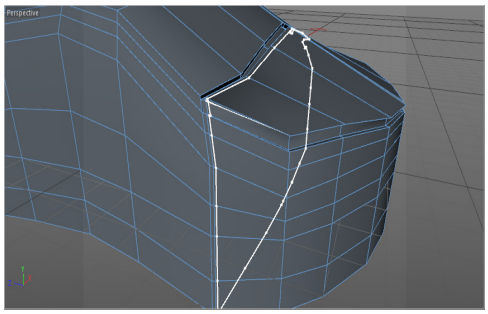

Figure 3-57 *An edge loop added to Computer mouse*

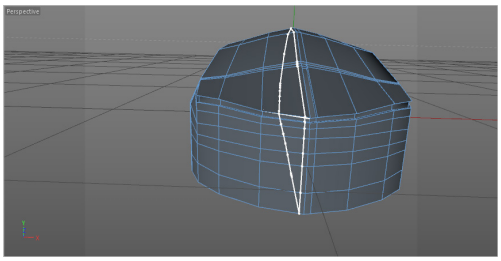

Figure 3-58 *An edge loop added to Computer mouse*

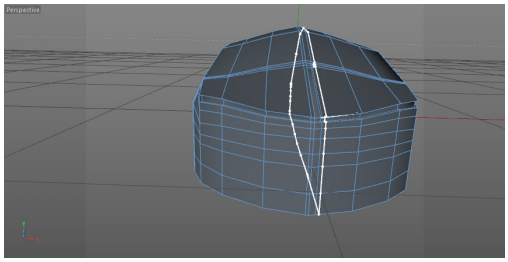

Figure 3-59 *An edge loop added to Computer mouse*

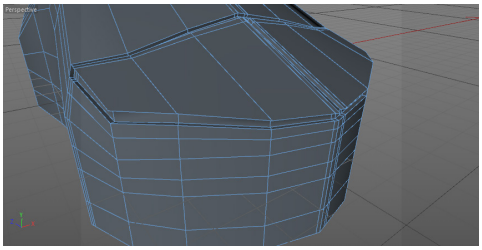

Figure 3-60 *The edges added to Computer mouse*

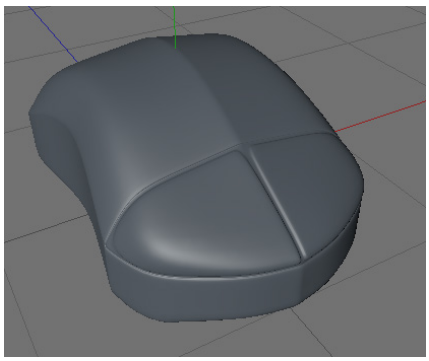

Figure 3-61 *The smoothened Computer mouse*

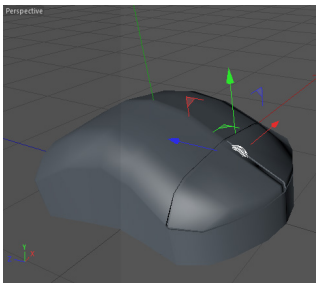

Figure 3-62 *The Scroll wheel placed on Computer mouse*

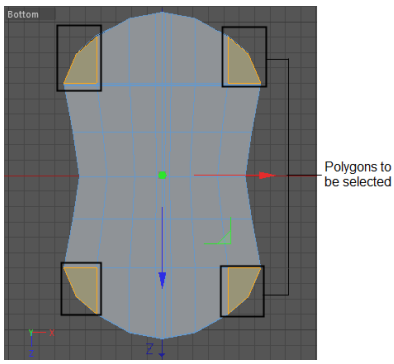

Figure 3-63 *The selected polygons of Computer mouse*

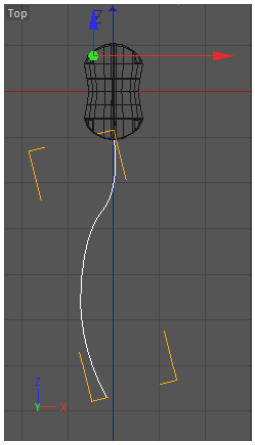

Figure 3-64 *Spline created in the Top viewport*

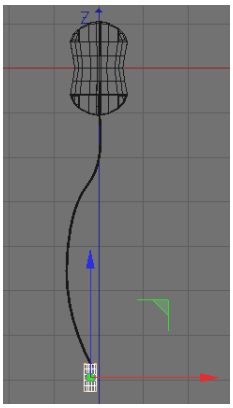

Figure 3-65 *Cube placed in the Top viewport*

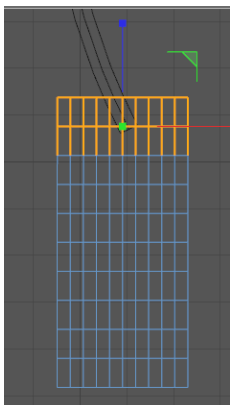

Figure 3-66 *The edges to be selected in the Top viewport*

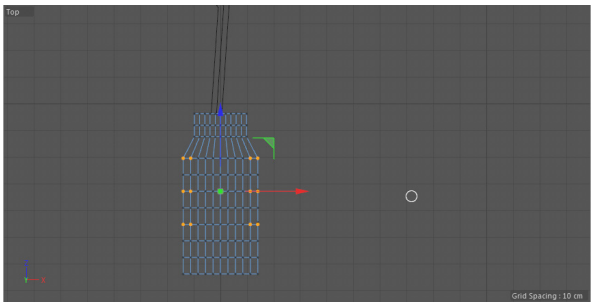

Figure 3-67 The points to be selected

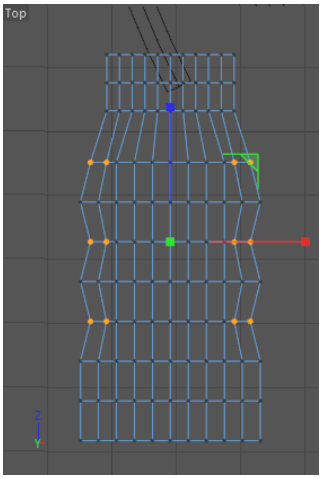

Figure 3-68 Scaling the selected points

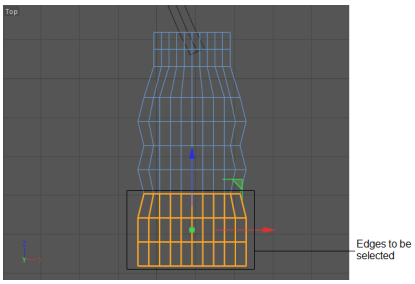

Figure 3-69 The edges selected

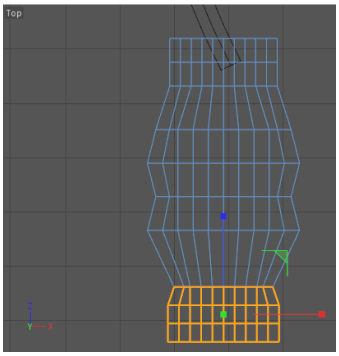

Figure 3-70 Scaling the selected edges

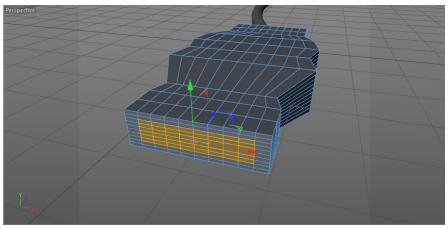

Figure 3-71 The polygons to be selected

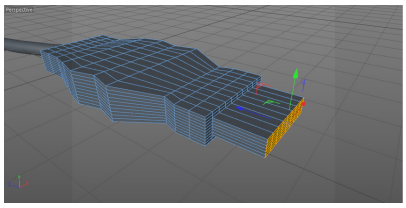

Figure 3-72 The extruded edge loop

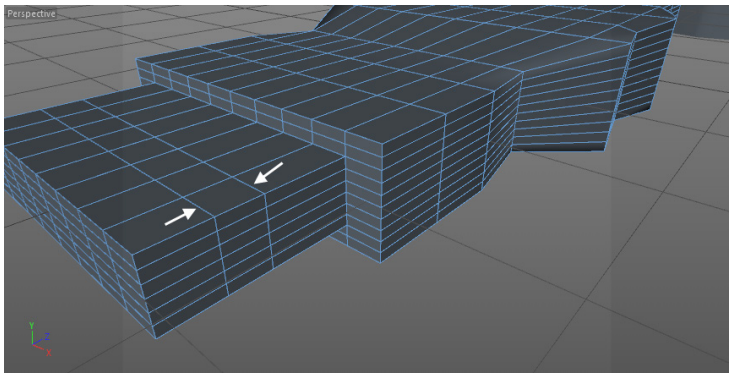

Figure 3-73 *The edges to be added*

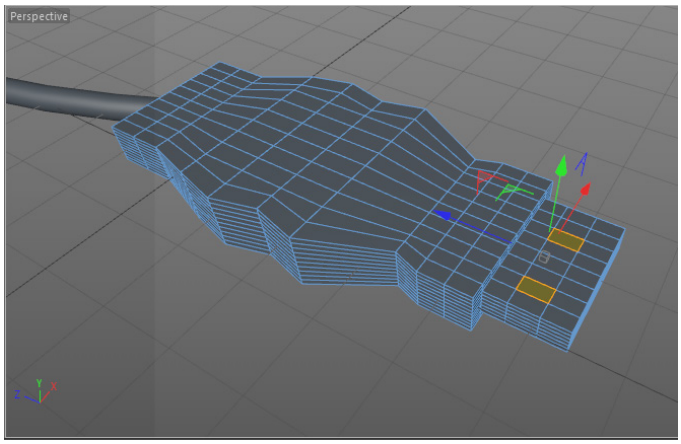

Figure 3-74 *The polygons to be selected*

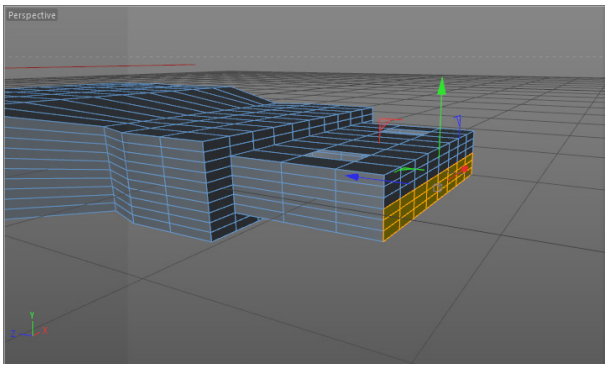

Figure 3-75 *The selected polygons*

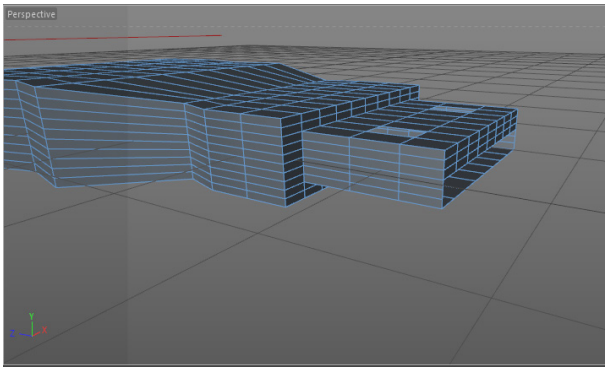

Figure 3-76 *The deleted polygons*

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Figure 3-77 *The model of computer table*

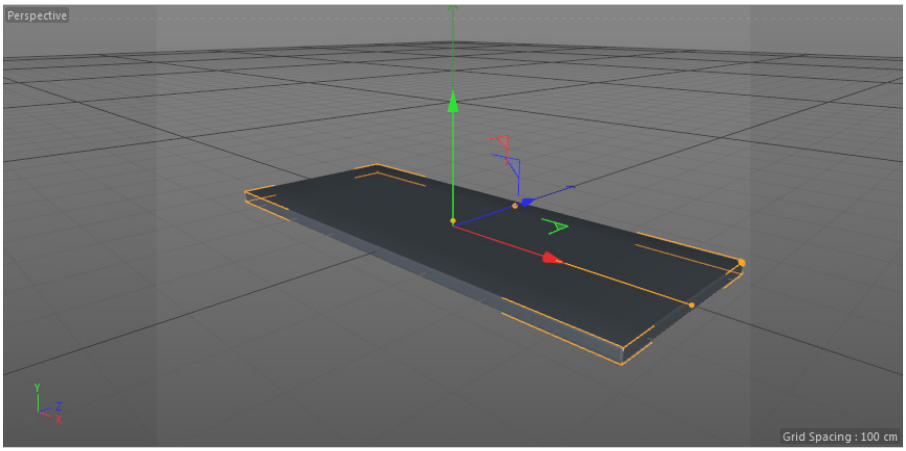

Figure 3-78 *The Computer table in the Perspective viewport*

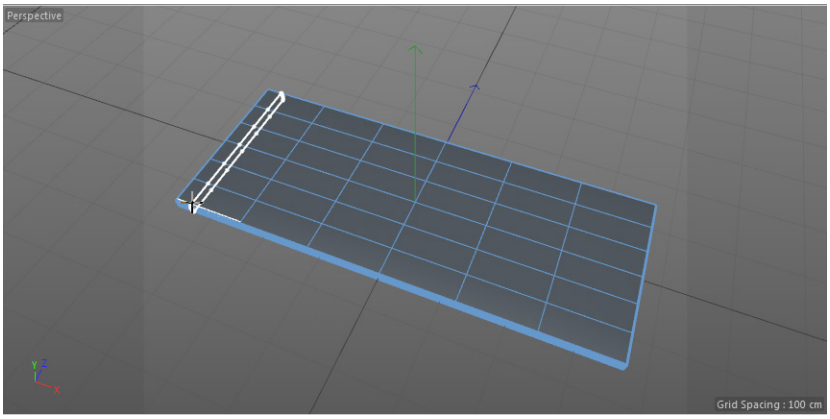

Figure 3-79 *Adding an edge loop*

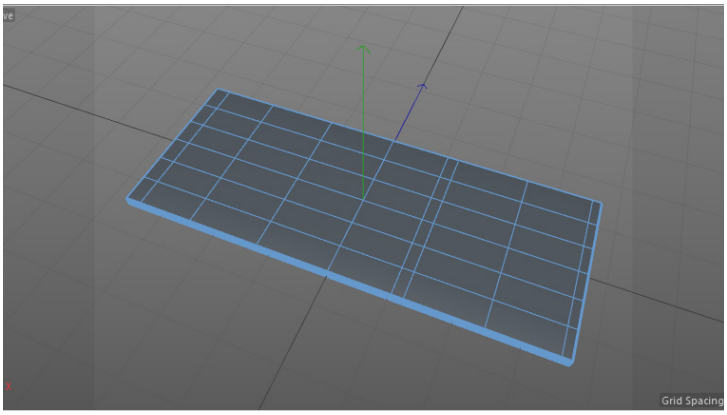

Figure 3-80 *The edge loops added*

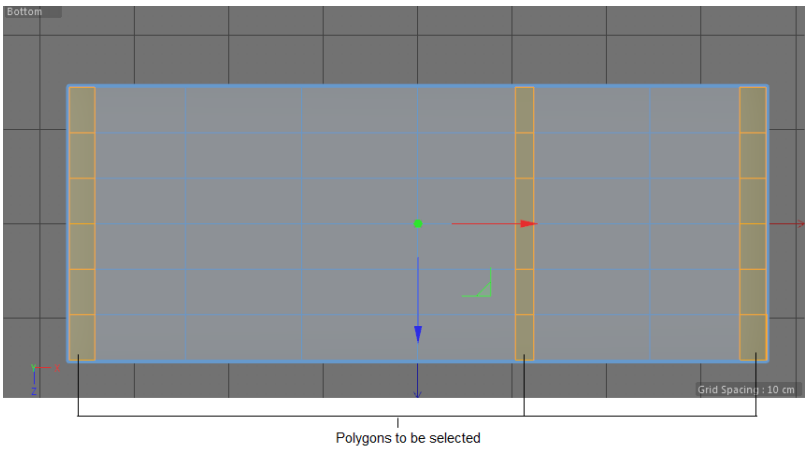

Figure 3-81 *The selected polygons of Computer table*

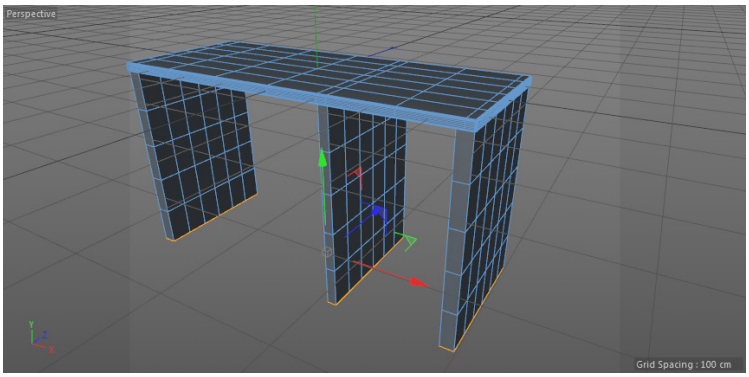

Figure 3-82 *The selected polygons extruded in the Perspective viewport*

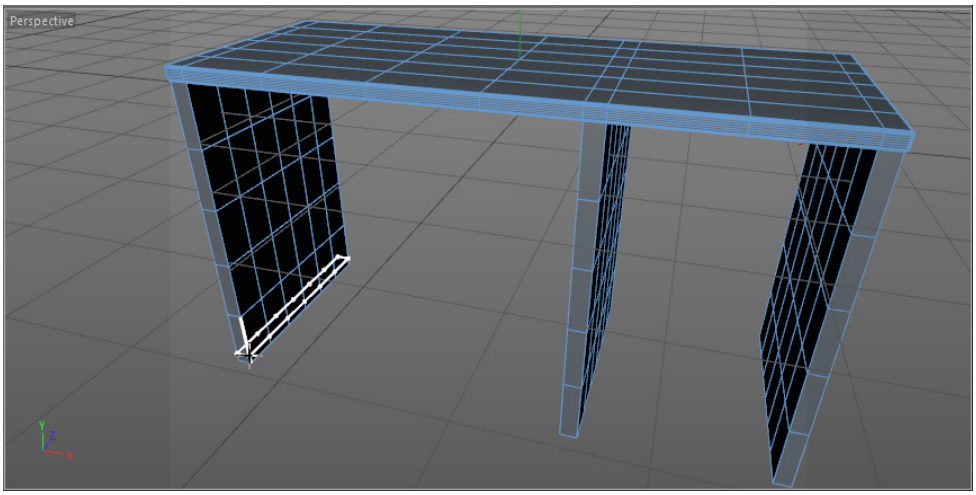

Figure 3-83 *Clicking on edge to create a new edge loop*

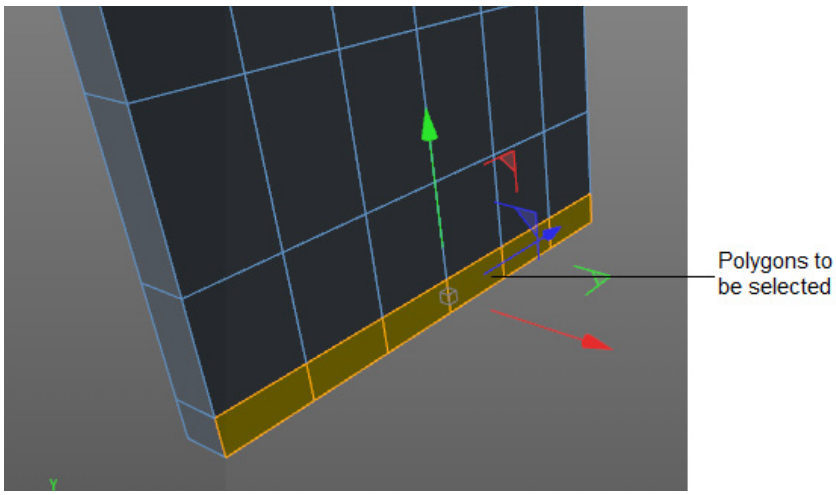

Figure 3-84 *The selected polygons of Computer table*

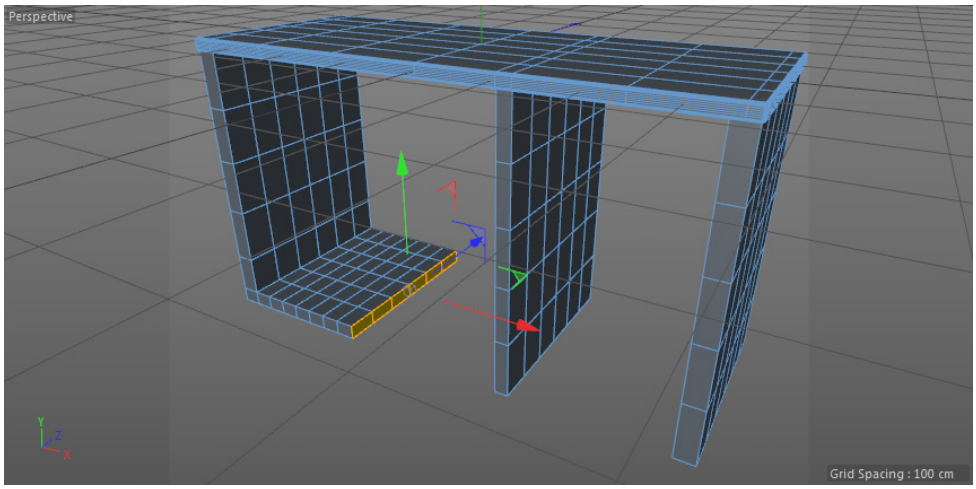

Figure 3-85 *The selected polygons extruded in the Perspective viewport*

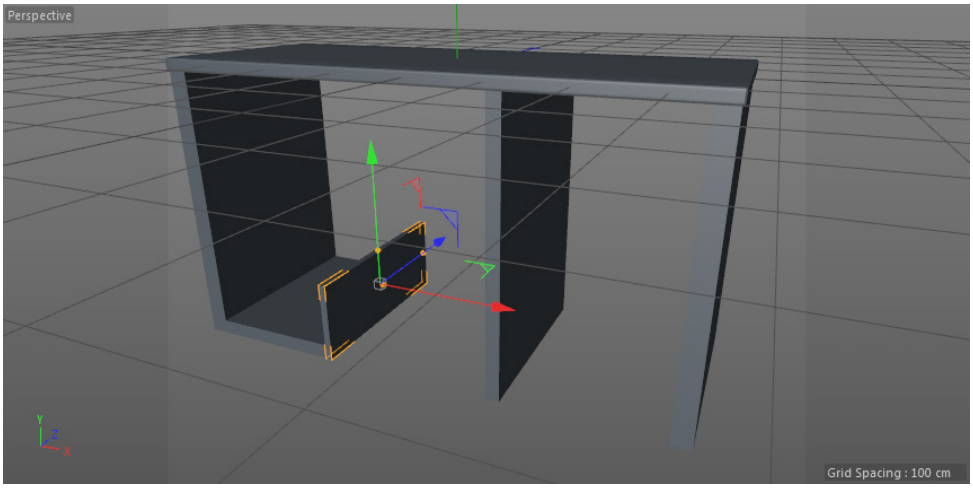

Figure 3-86 *Cube aligned in the Perspective viewport*

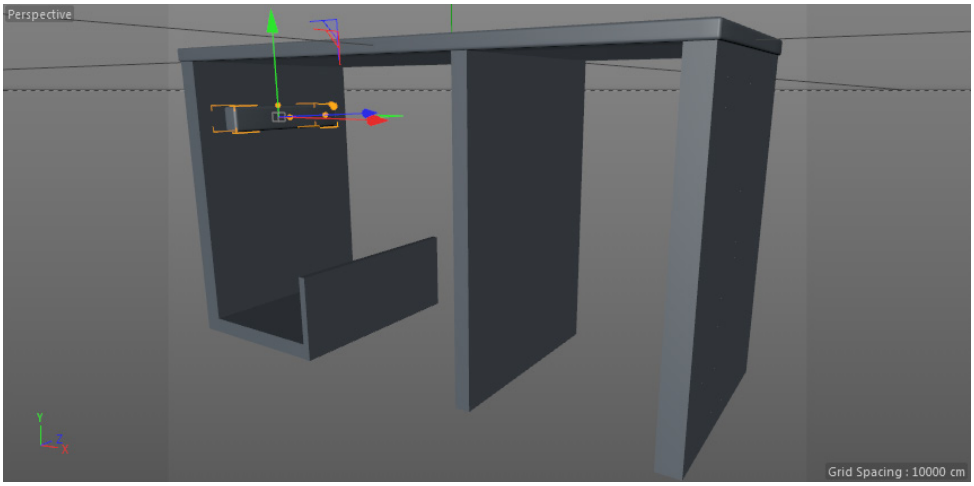

Figure 3-87 *Cube.1 positioned in the Perspective viewport*

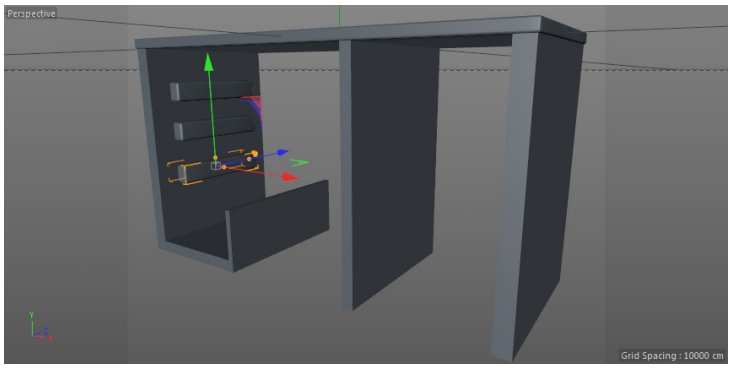

Figure 3-88 *Left side positioned in the Perspective viewport*

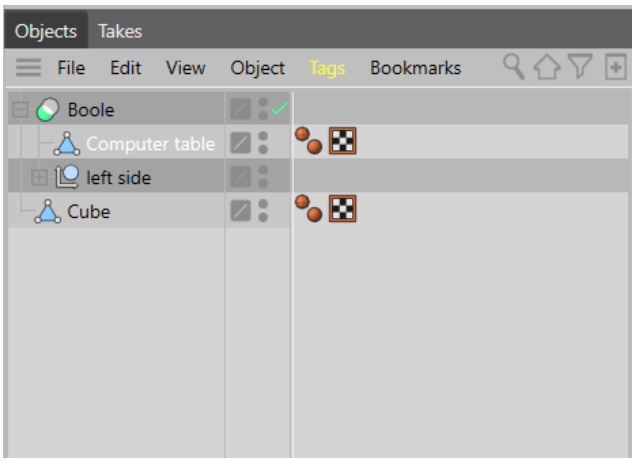

Figure 3-89 *Boole connected to Computer table*

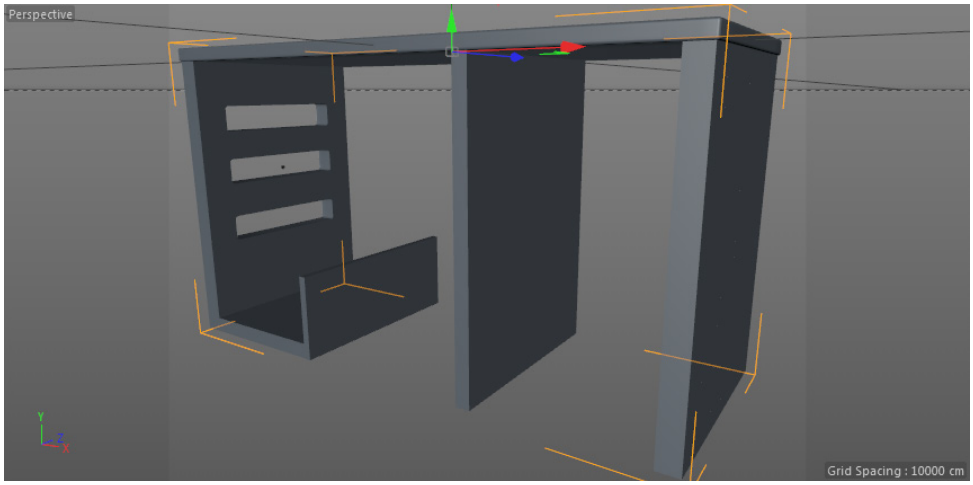

Figure 3-90 *The holes created in the side support of the Computer table*

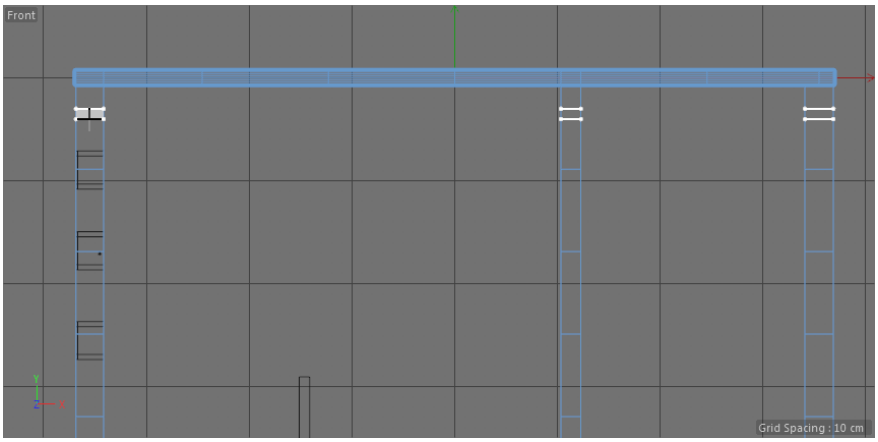

Figure 3-91 *Creating an edge using the* ***Plane Cut*** *tool*

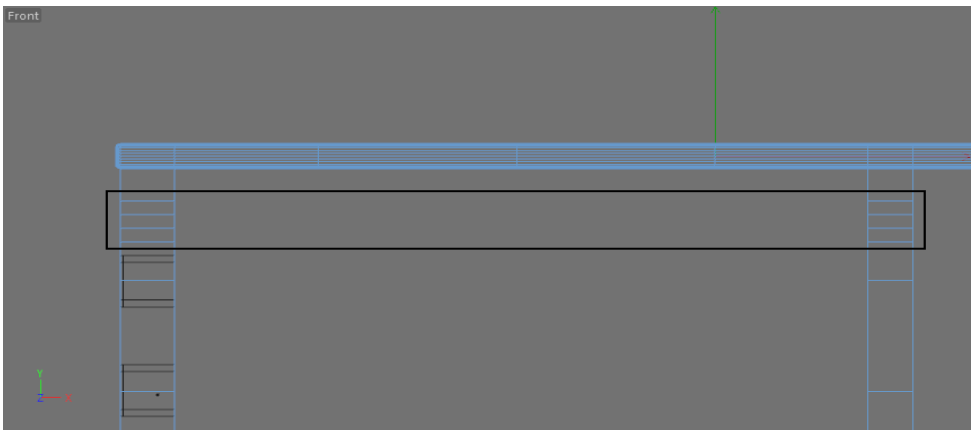

Figure 3-92 *Four new edge loops added to the Computer table*

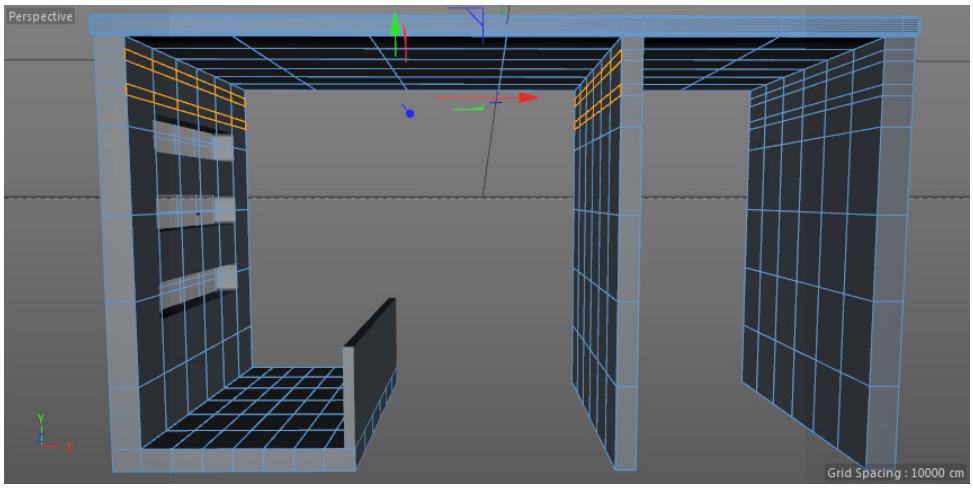

Figure 3-93 *The selected polygons of Computer table*

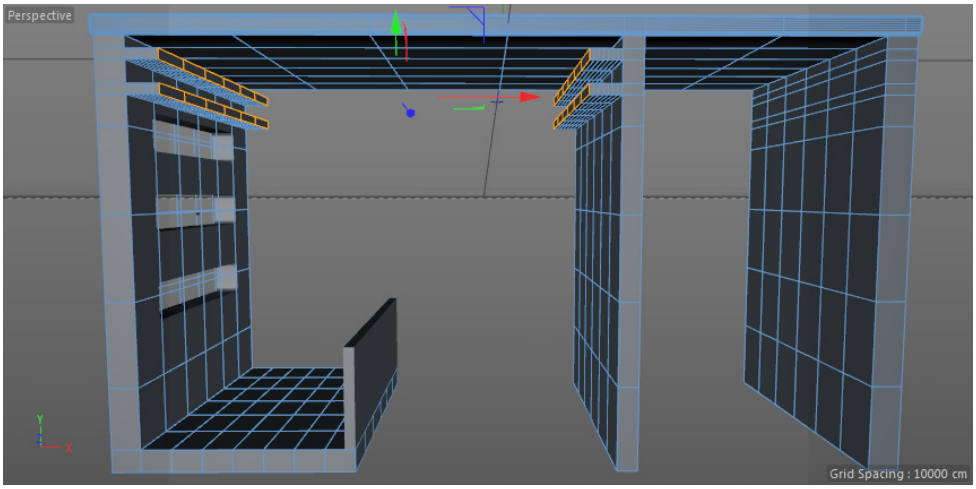

Figure 3-94 *The selected polygons extruded in the Perspective viewport*

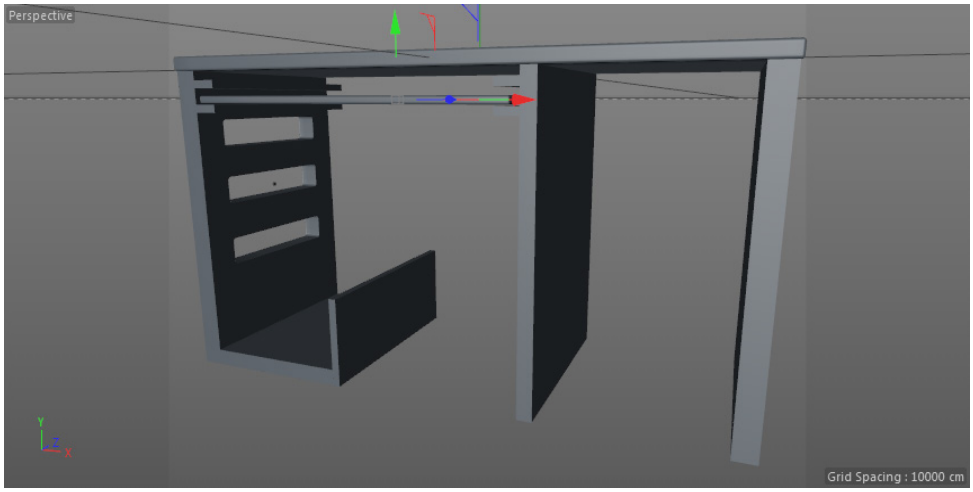

Figure 3-95 *The Keyboard support of Computer table*

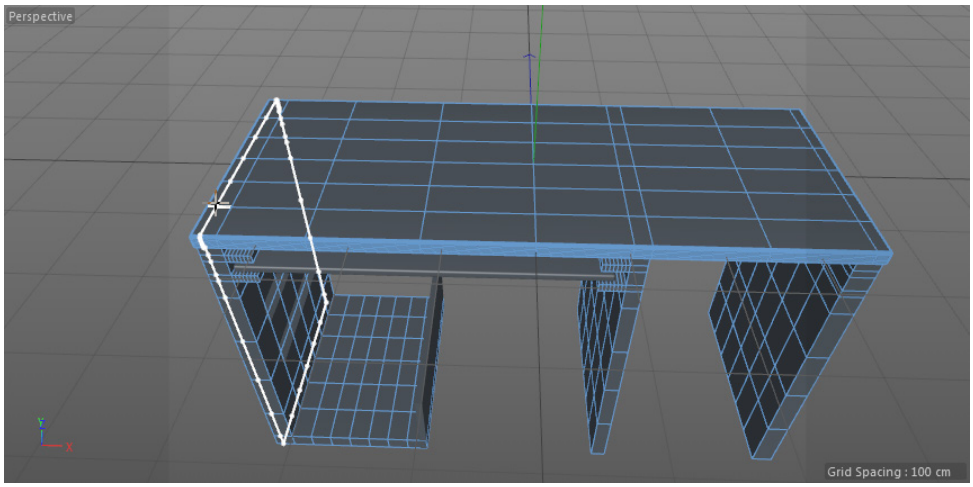

Figure 3-96 *New edge loop created*

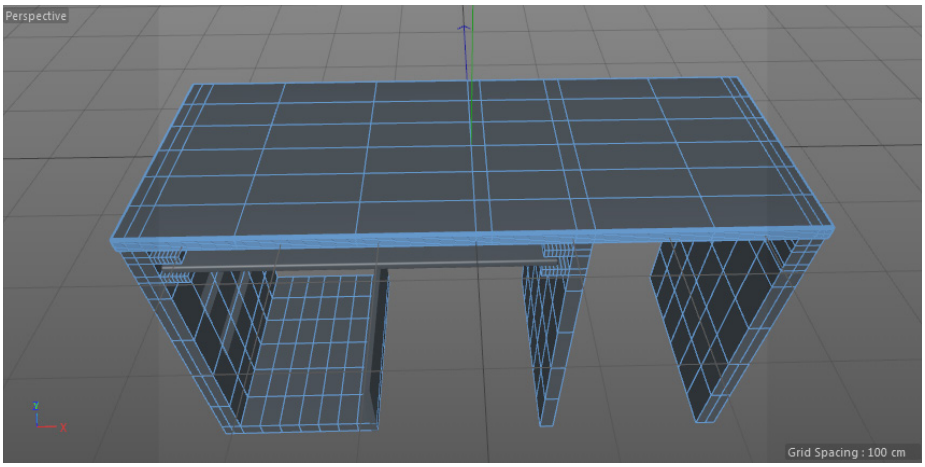

Figure 3-97 *Another edge loop added to the Computer table*

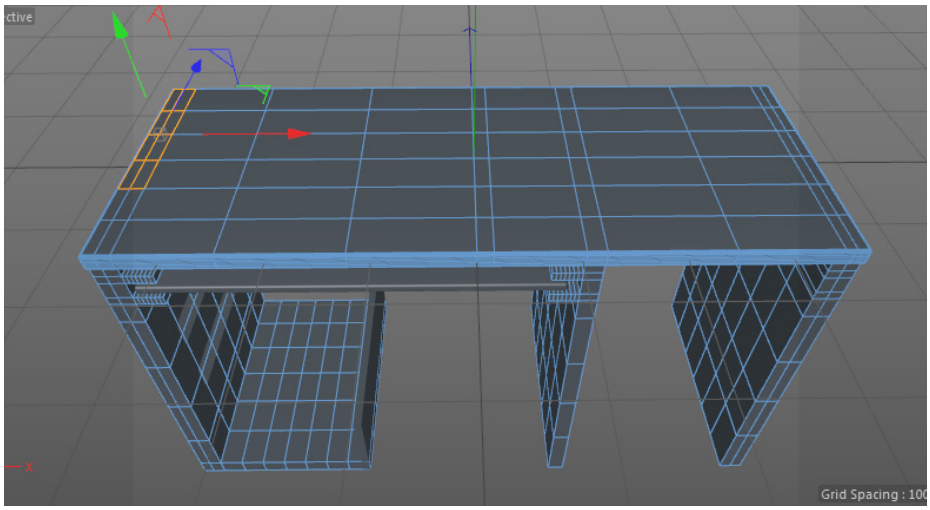

Figure 3-98 *The selected polygons of Computer table*

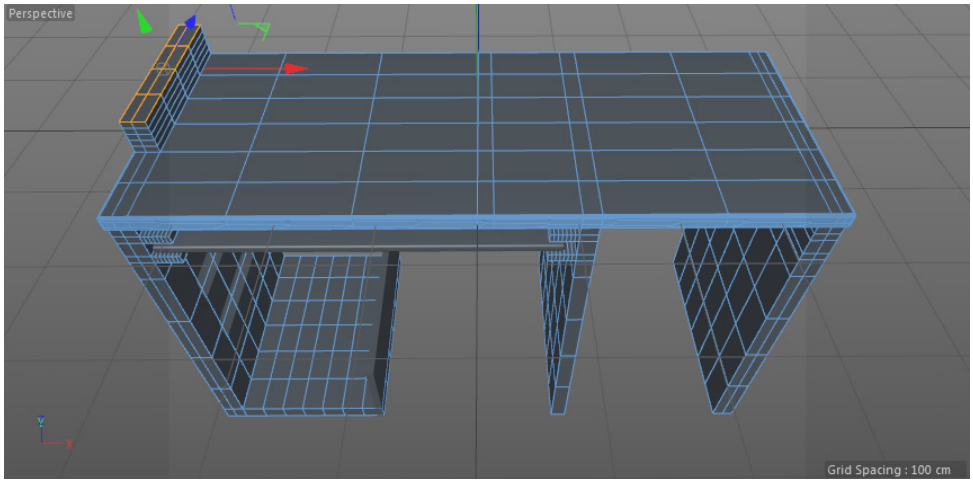

Figure 3-99 *The selected polygons extruded in the Perspective viewport*

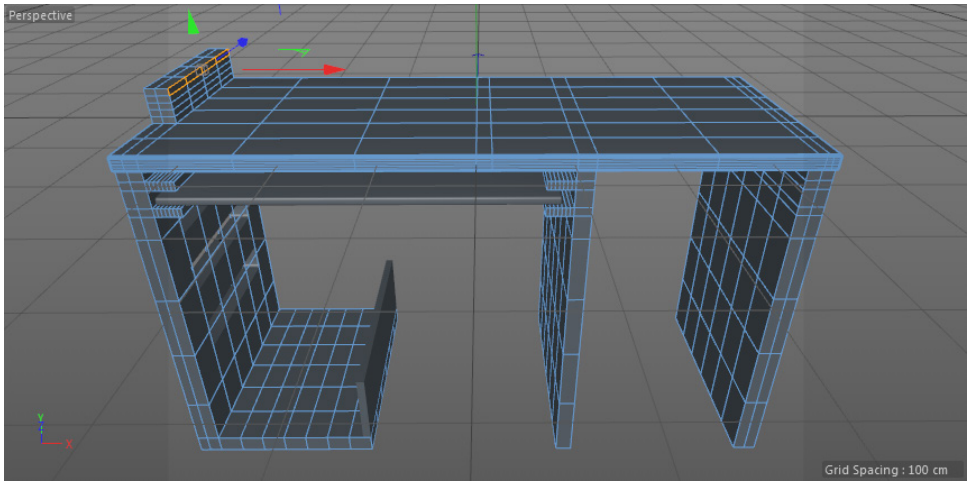

Figure 3-100 *The selected polygons of Computer table*

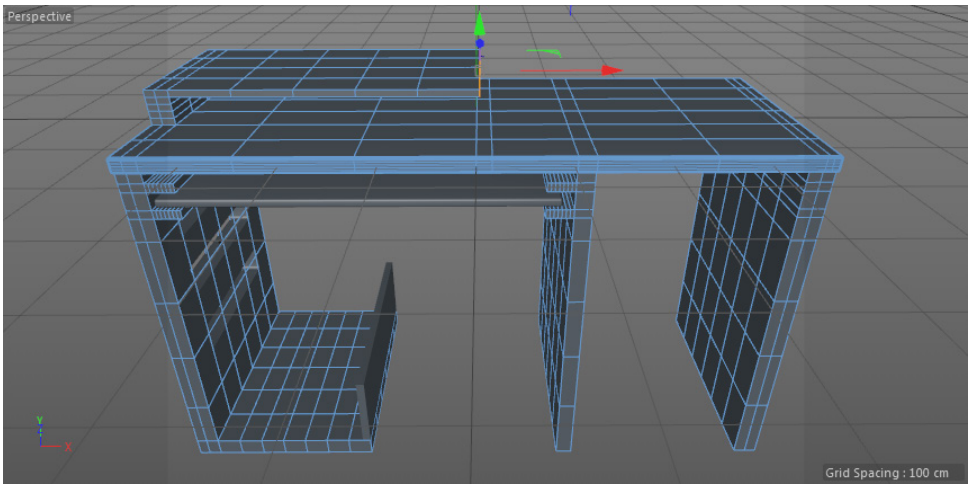

Figure 3-101 *The selected polygons extruded in the Perspective viewport*

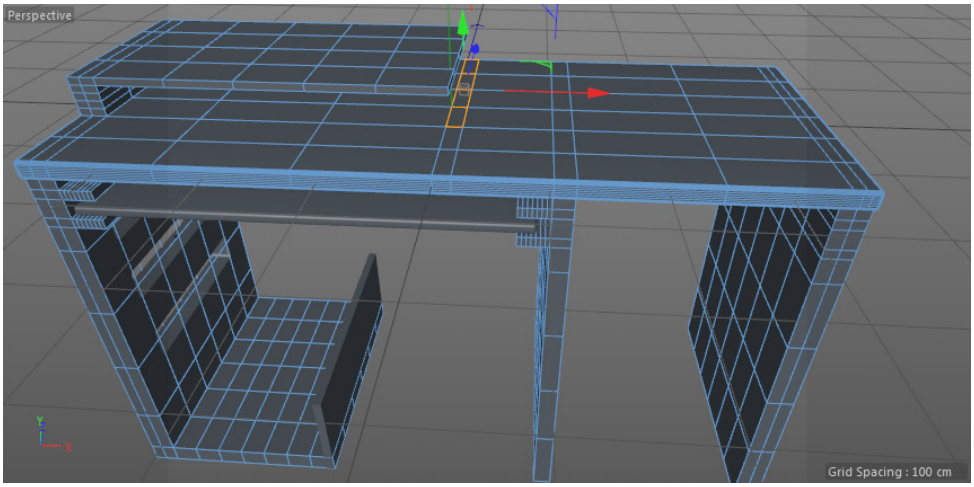

Figure 3-102 *The selected polygons of Computer table*

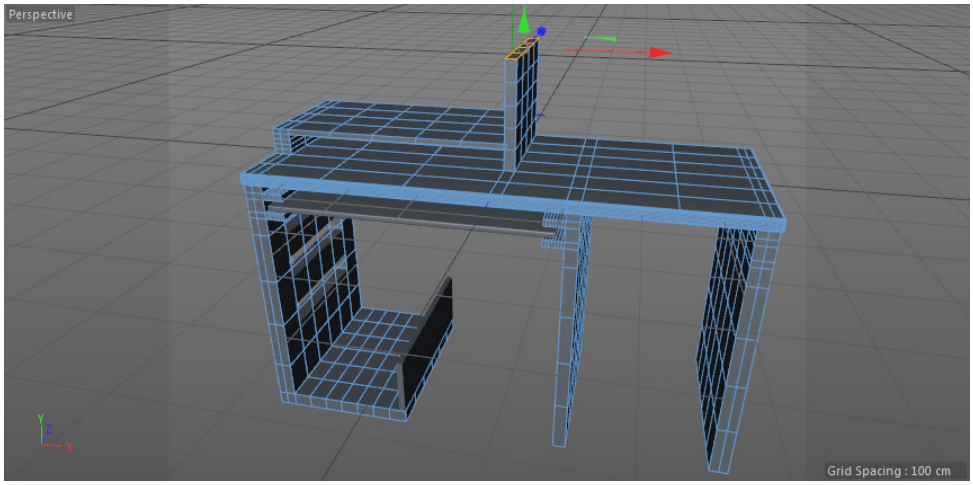

Figure 3-103 *The selected polygons extruded in the Perspective viewport*

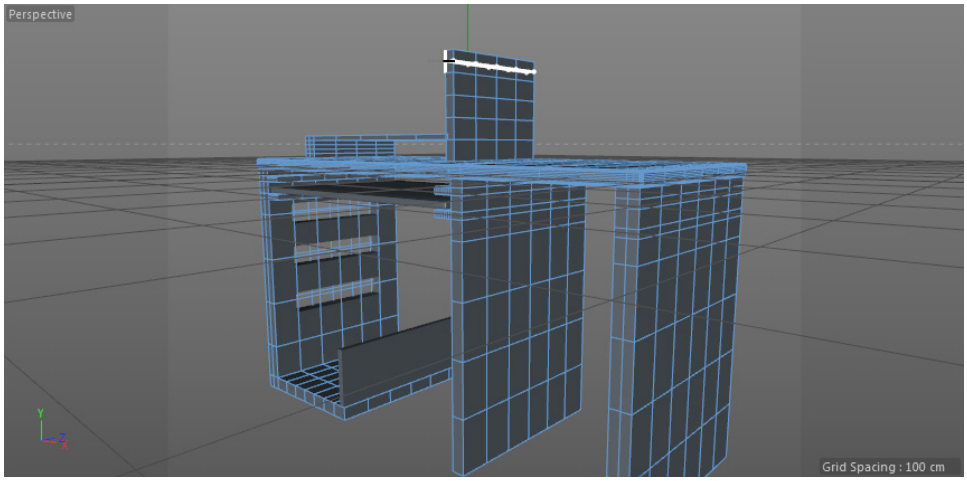

Figure 3-104 *Clicking on edge to create a new edge loop*

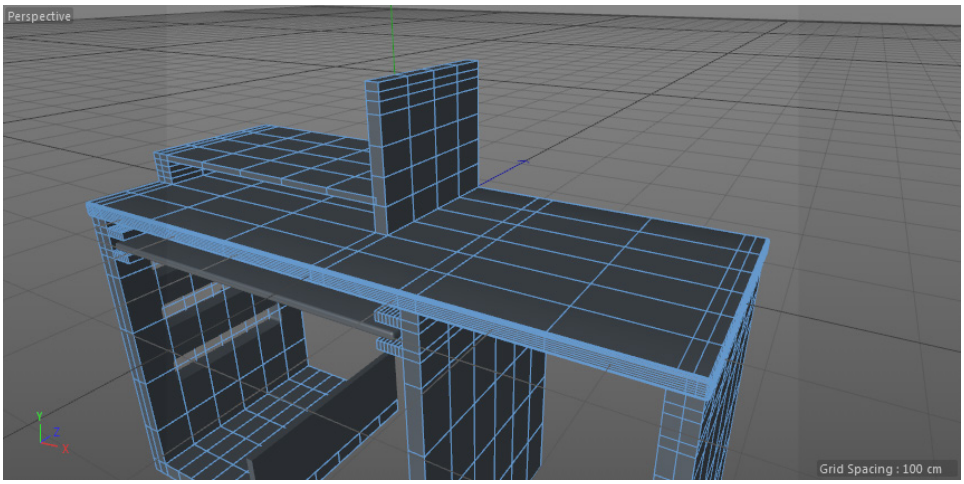

Figure 3-105 *Two new edge loops added to the Computer table*

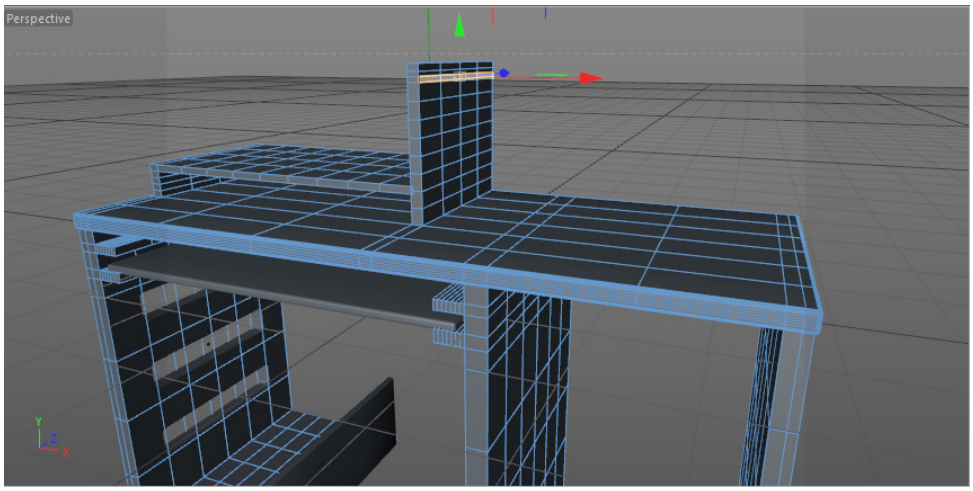

Figure 3-106 *The selected polygons of Computer table*

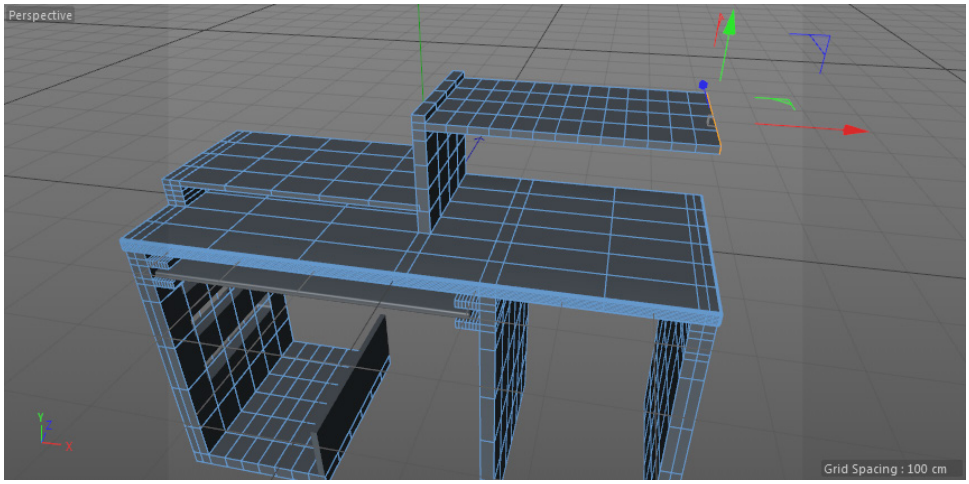

Figure 3-107 *The selected polygons extruded in the Perspective viewport*

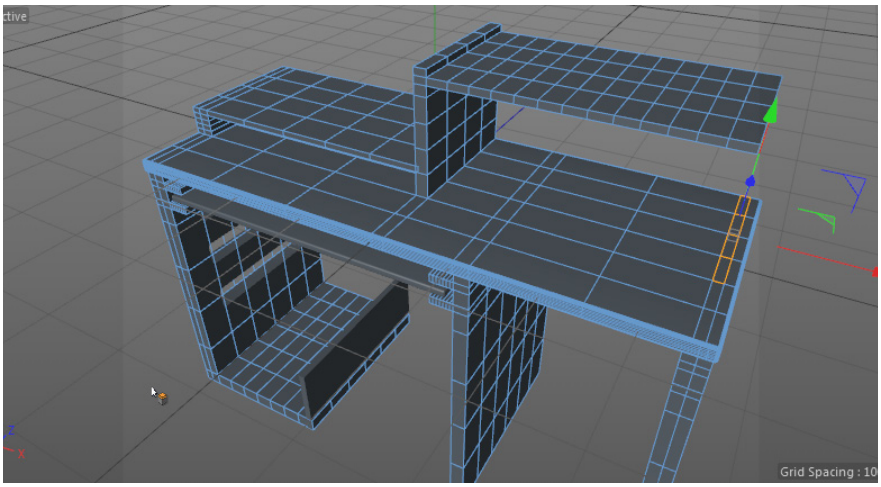

Figure 3-108 *The selected polygons of Computer table*

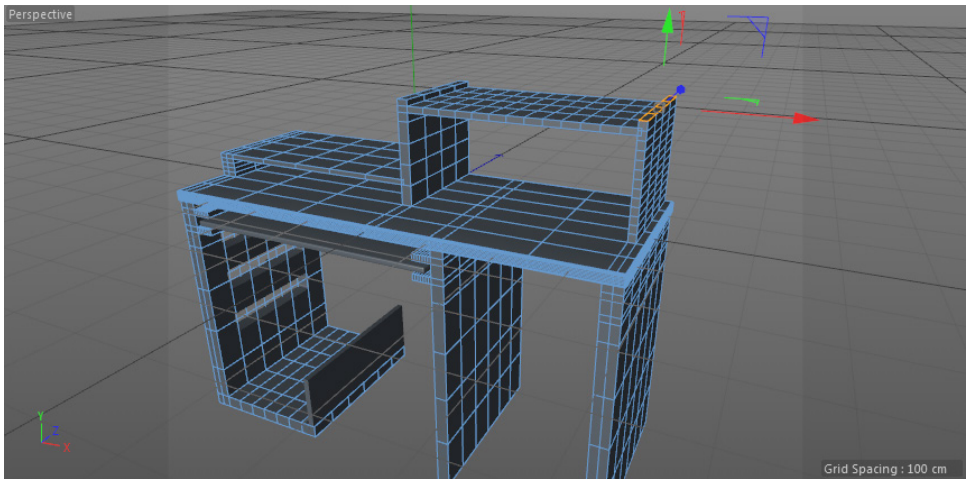

Figure 3-109 *The selected polygons extruded in the Perspective viewport*

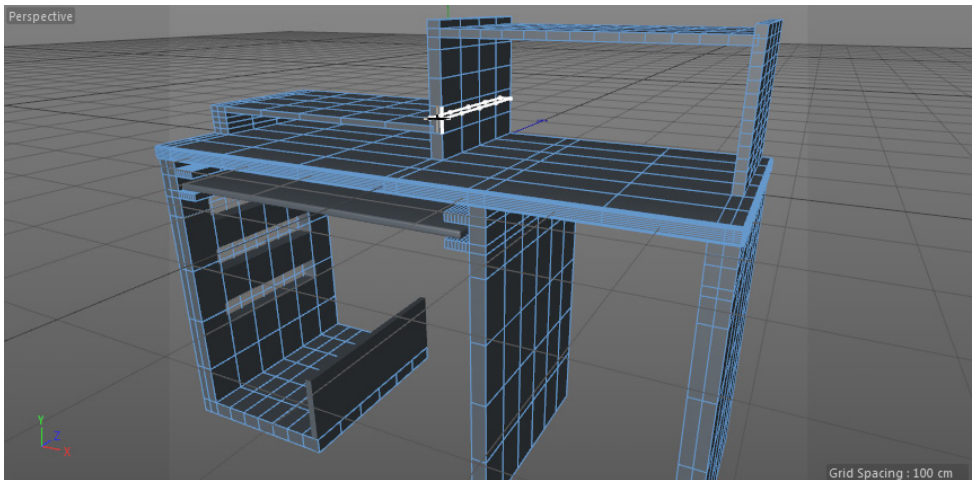

Figure 3-110 *Clicking on edge to create a new edge loop*

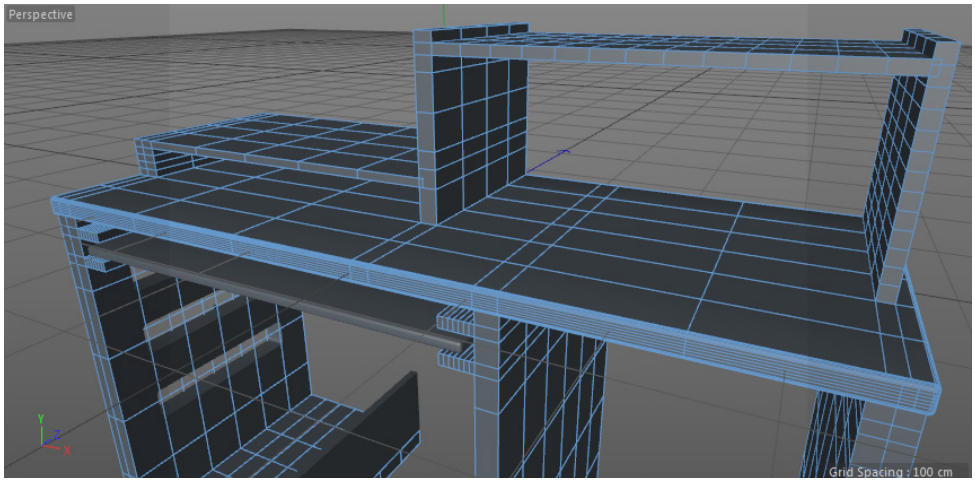

Figure 3-111 *The new edge loop added to the Computer table*

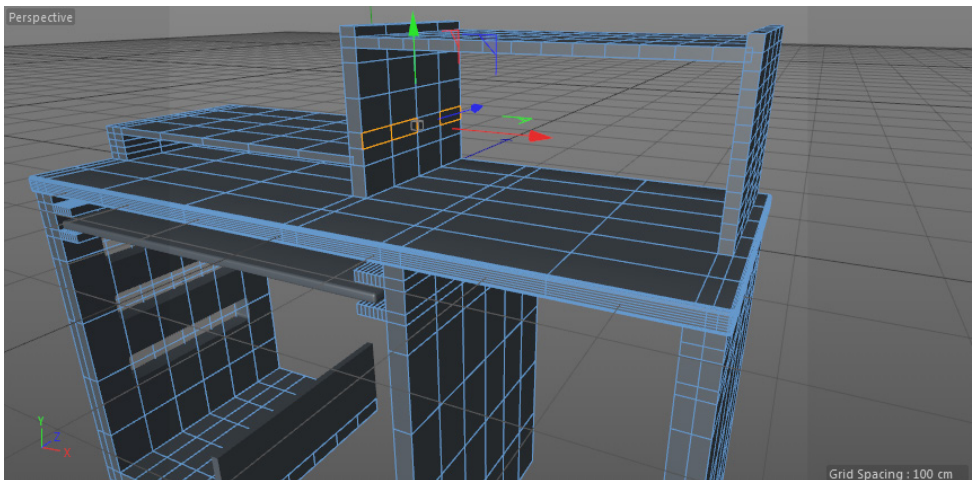

Figure 3-112 *The selected polygons of Computer table*

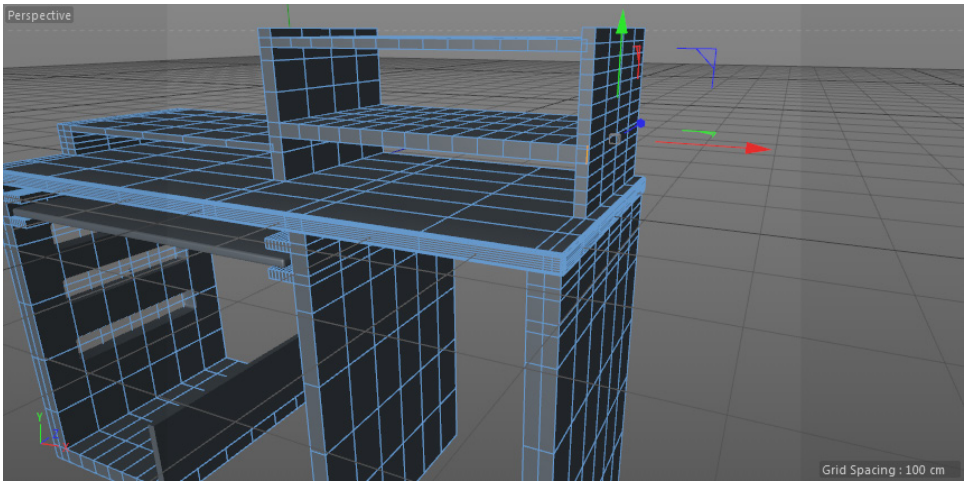

Figure 3-113 *The selected polygons extruded in the Perspective viewport*

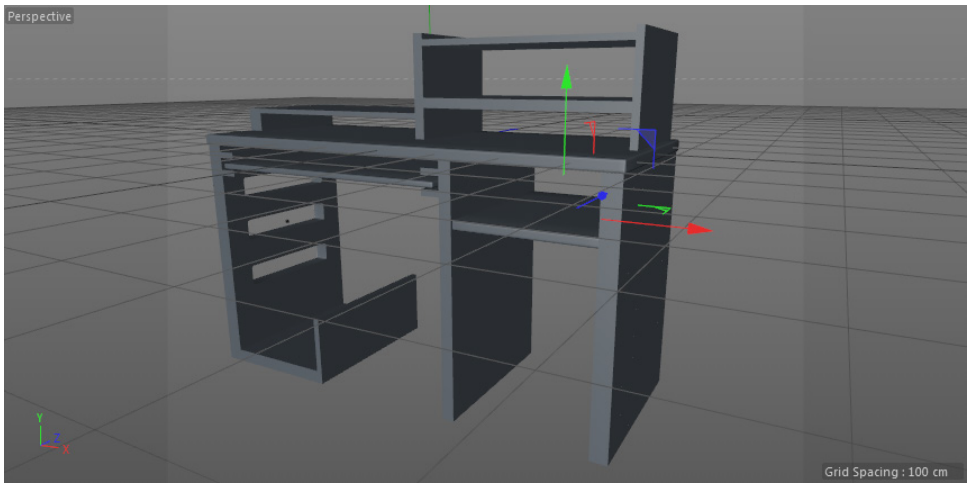

Figure 3-114 *Shelf1 positioned in the Perspective viewport*

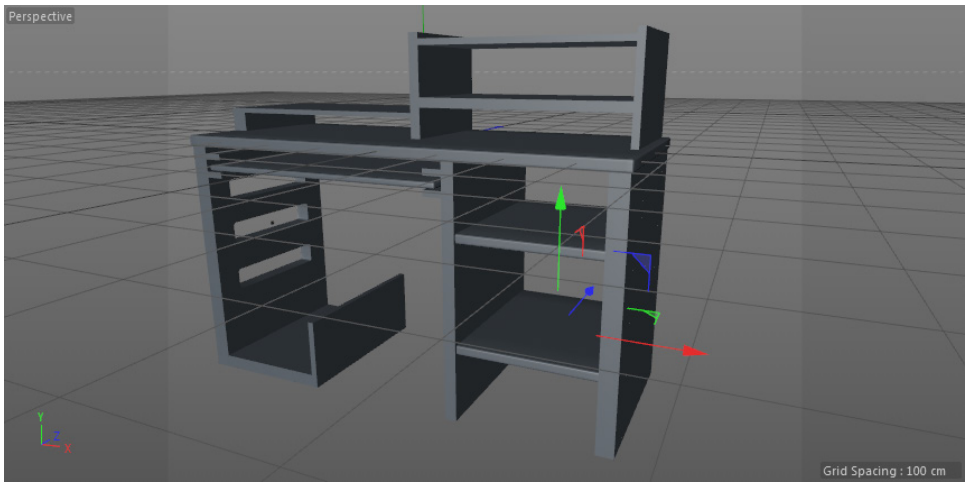

Figure 3-115 *Shelf1.1 positioned in the Perspective viewport*

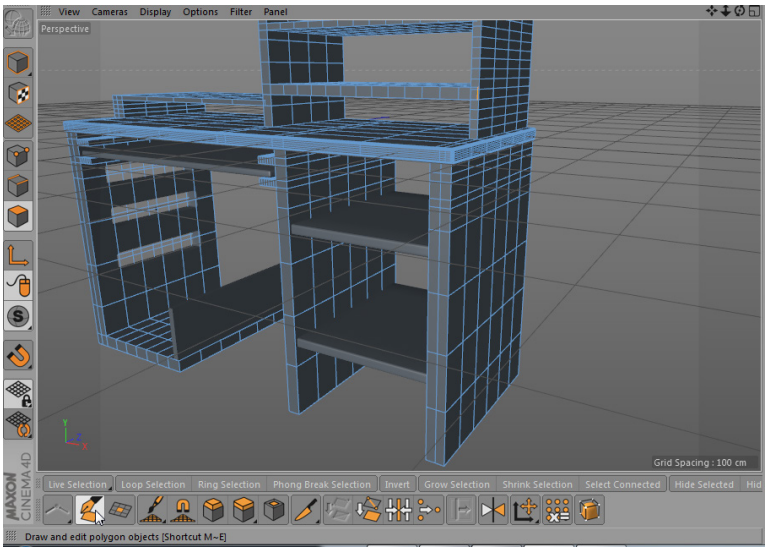

Figure 3-116 *Choosing the* ***Polygon Pen*** *tool from the Modeling Tool Palette*

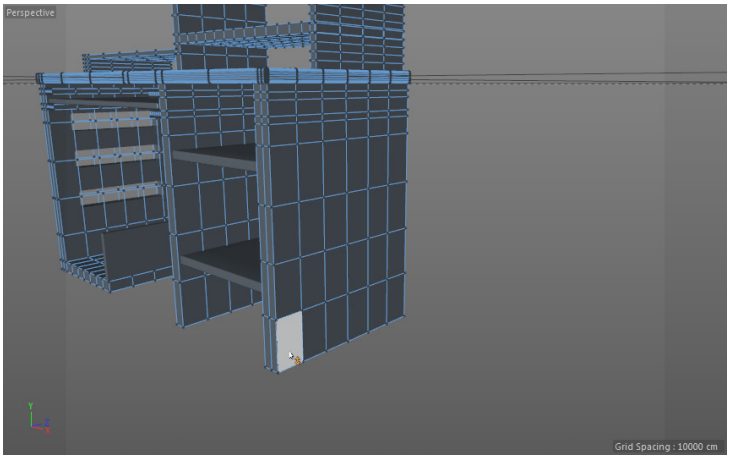

Figure 3-117 *The highlighted polygon*

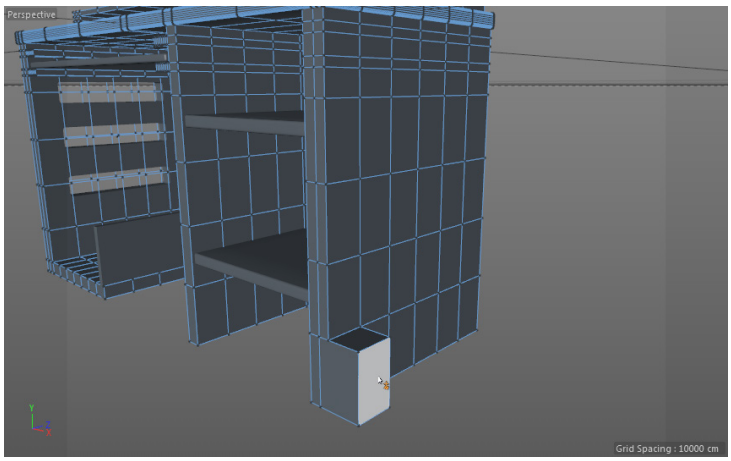

Figure 3-118 *Dragging the highlighted polygon*

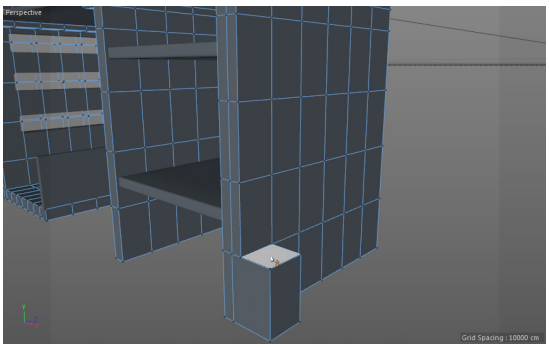

Figure 3-119 *The highlighted polygon of magazine stand*

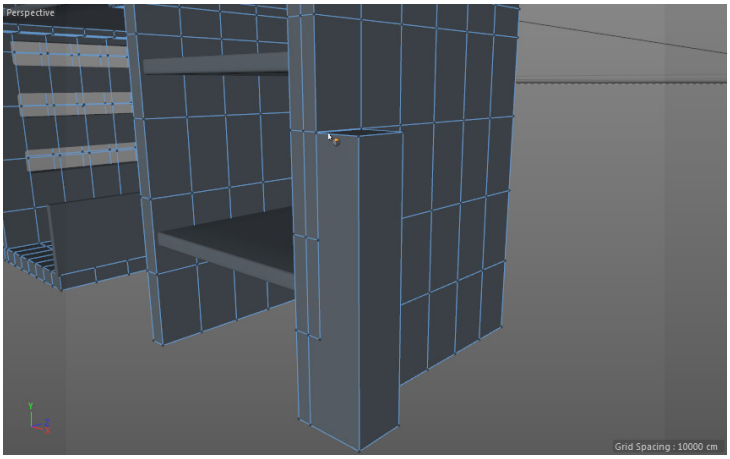

Figure 3-120 *Dragging the highlighted polygon*

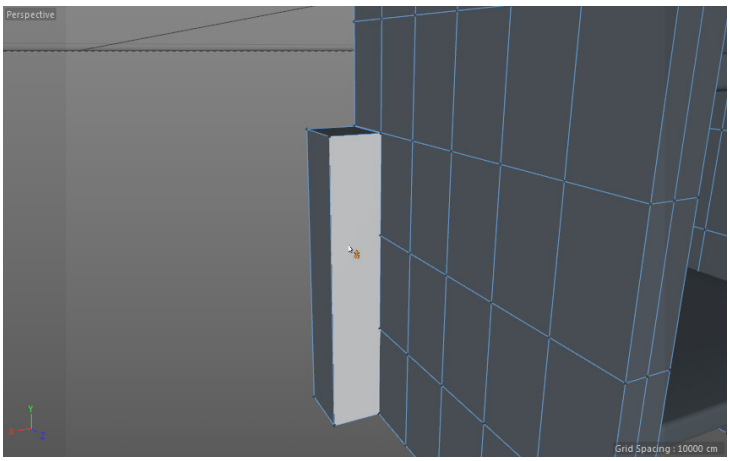

Figure 3-121 *Highlighted polygon*

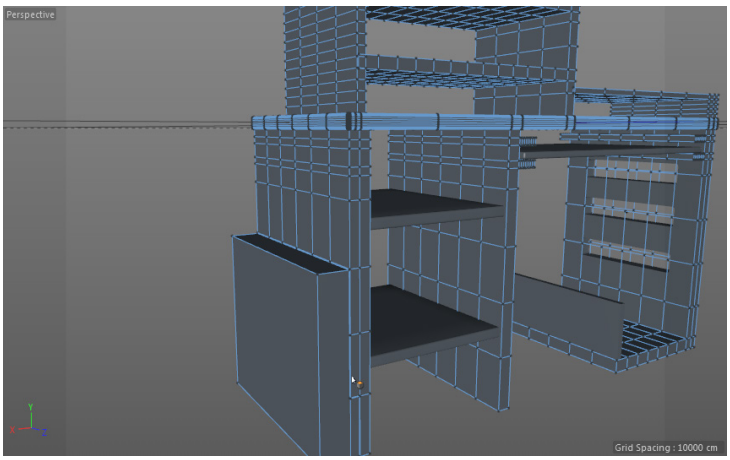

Figure 3-122 *Dragging the highlighted polygon*

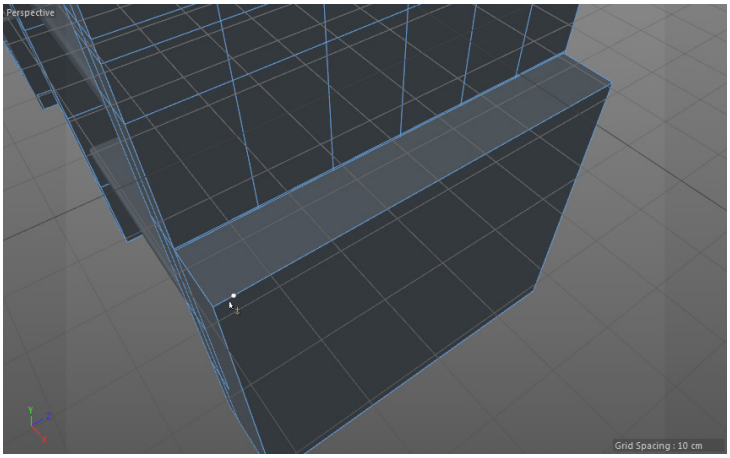

Figure 3-123 *Clicking on an edge*

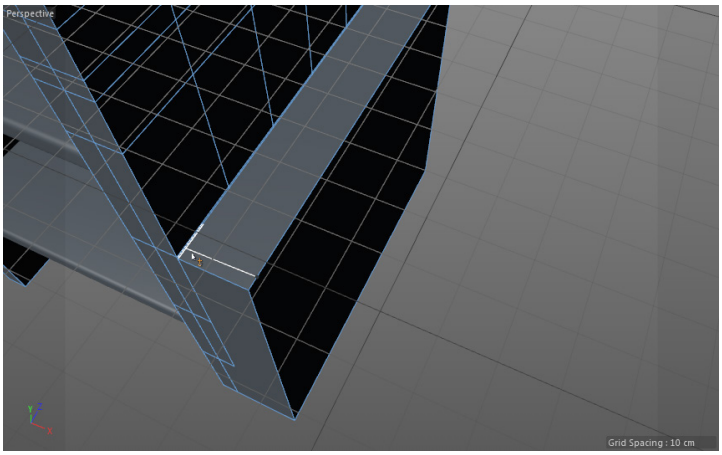

Figure 3-124 *Clicking on second edge to create a new edge*

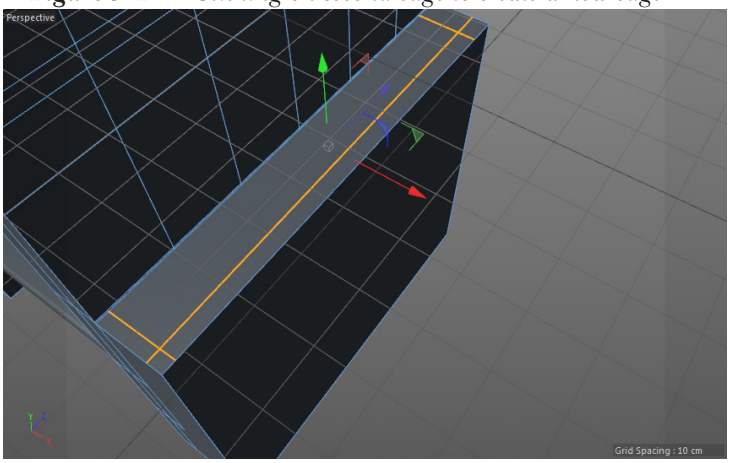

Figure 3-125 *Three new edges added to the magazine stand*

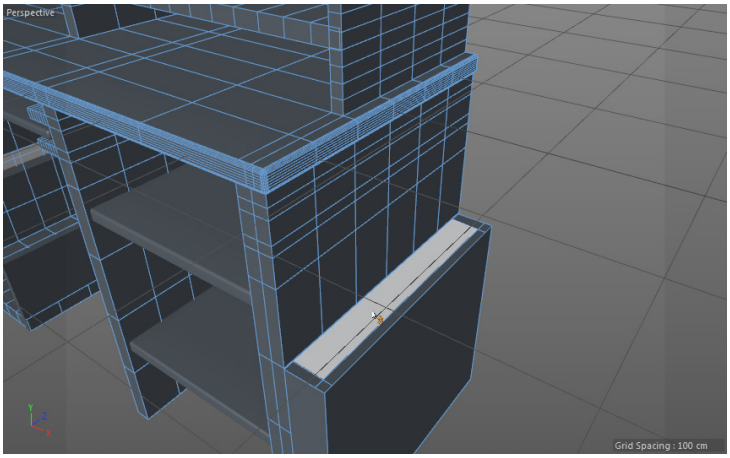

Figure 3-126 *Highlighted polygon*

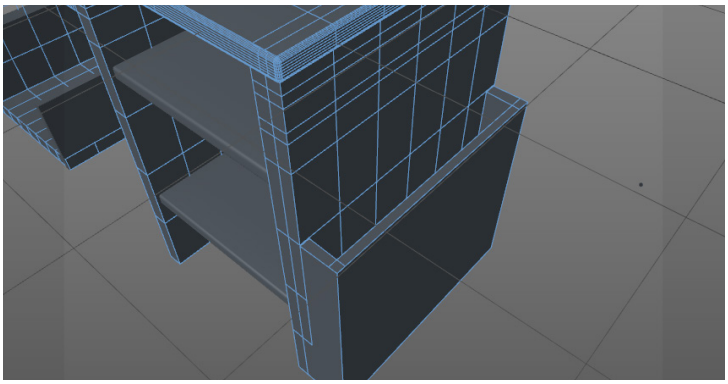

Figure 3-127 *Dragging the highlighted polygon downward*

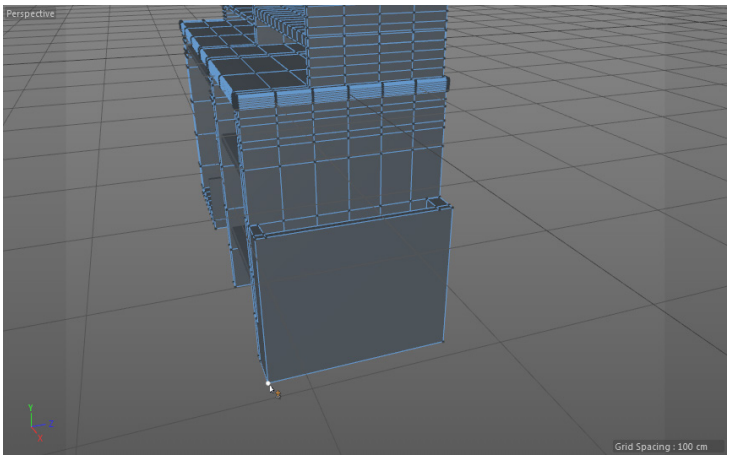

Figure 3-128 *Clicking on the corner point*

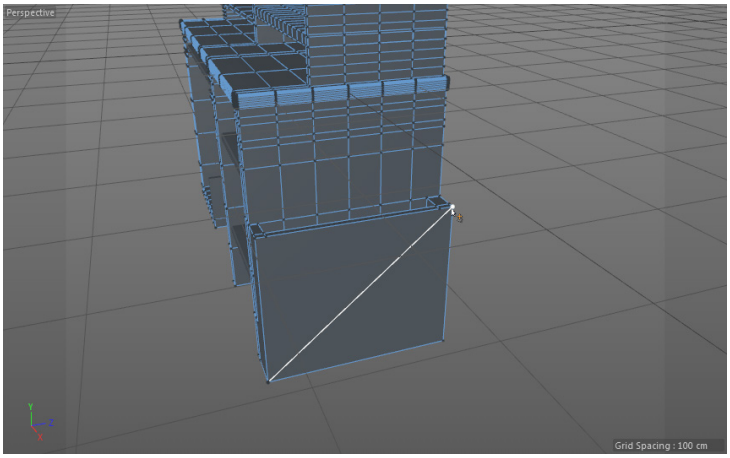

Figure 3-129 *The new edge created*

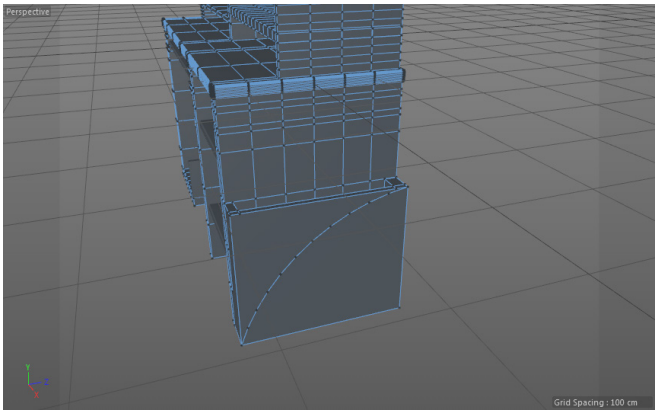

Figure 3-130 *The edge converted to an arc shape*

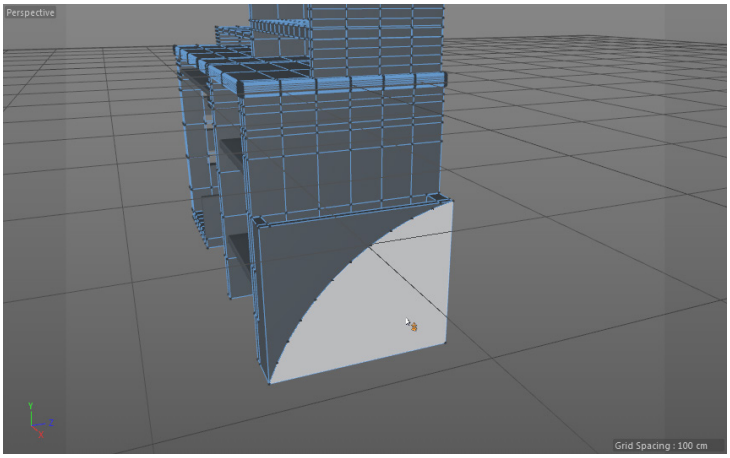

Figure 3-131 *Highlighted polygon*

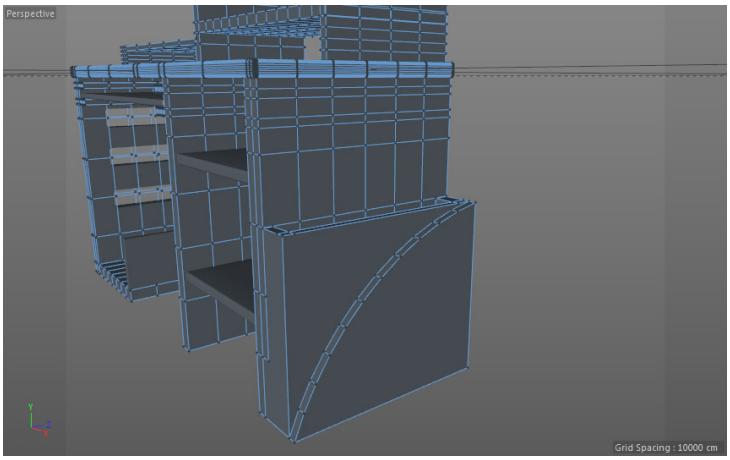

Figure 3-132 *The extruded polygon*

Figure 3-133 *Model of a vase*

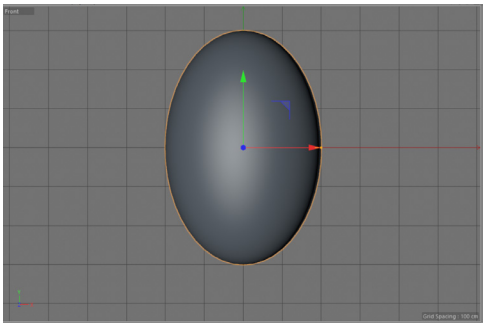

Figure 3-134 *vase displayed in the Front viewport*

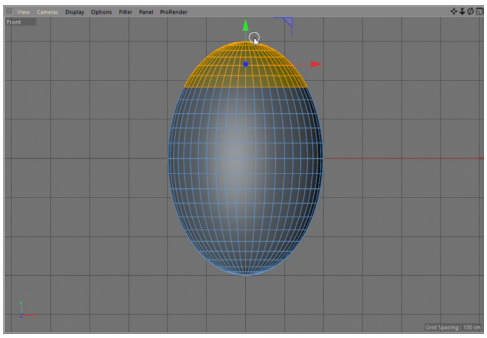

Figure 3-135 *Selected Polygons*

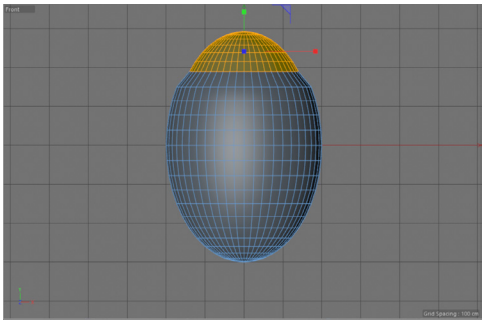

Figure 3-136 *Selected polygons scaled uniformly*

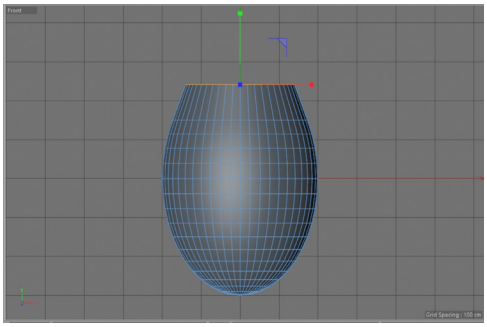

Figure 3-137 *Selected Polygons scaled along Y-axis*

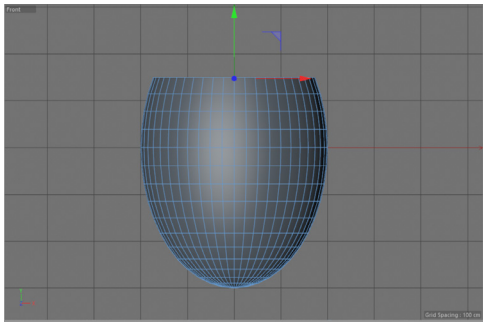

Figure 3-138 *Selected polygons moved downward*

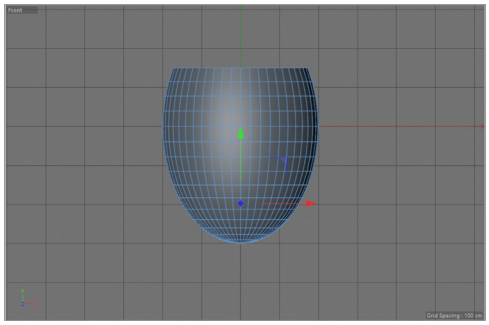

Figure 3-139 *Selected Polygons Extruded*

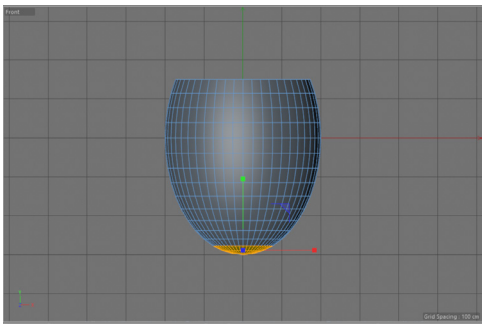

Figure 3-140 *Bottommost polygons selected*

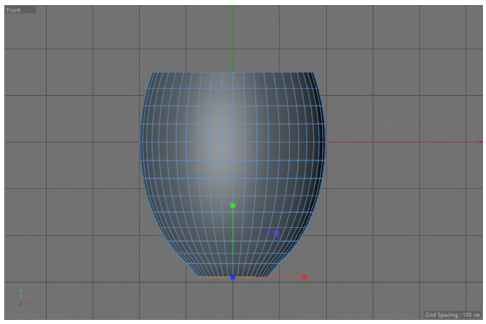

Figure 3-141 *Selected polygons scaled along y-axis*

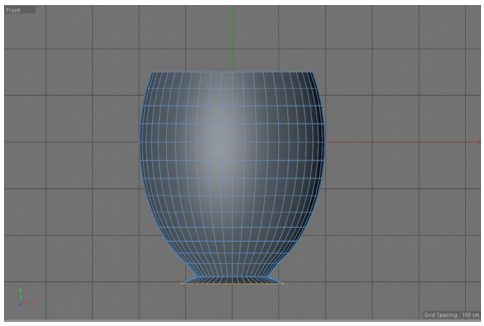

Figure 3-142 *Selected polygons beveled*

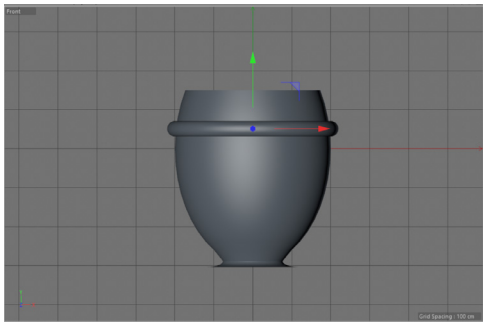

Figure 3-143 *Torus moved upward*

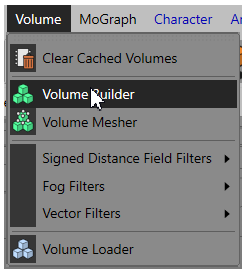

Figure 3-144 *Choosing* ***Volume Builder*** *from the* ***Volume*** *menu*

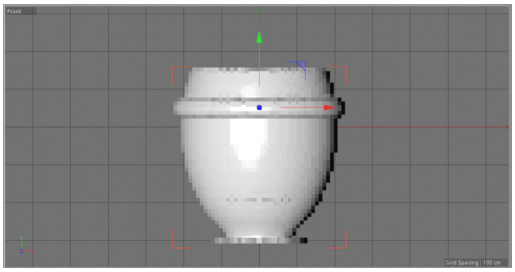

Figure 3-145 *Voxel objects displayed*

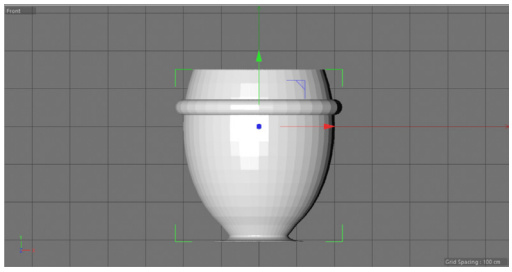

Figure 3-146 *Voxel objects smoothened*

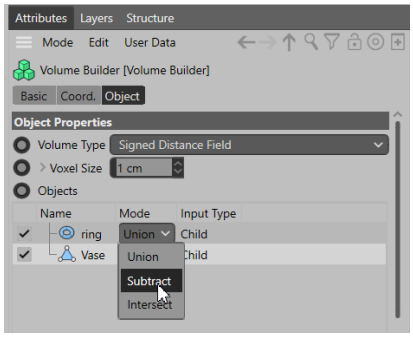

Figure 3-147 *Choosing* ***Subtract*** *from the* ***Mode*** *drop-down list*

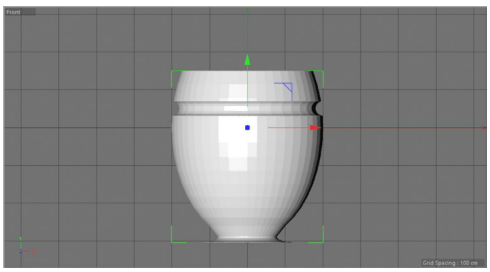

Figure 3-148 *Groove created on vase*

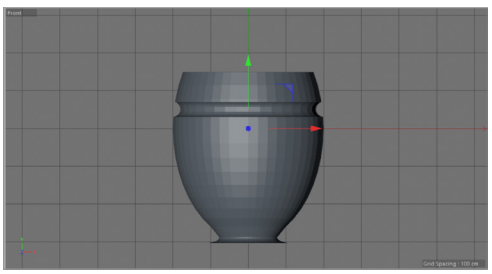

Figure 3-149 *vase turns dark grey*

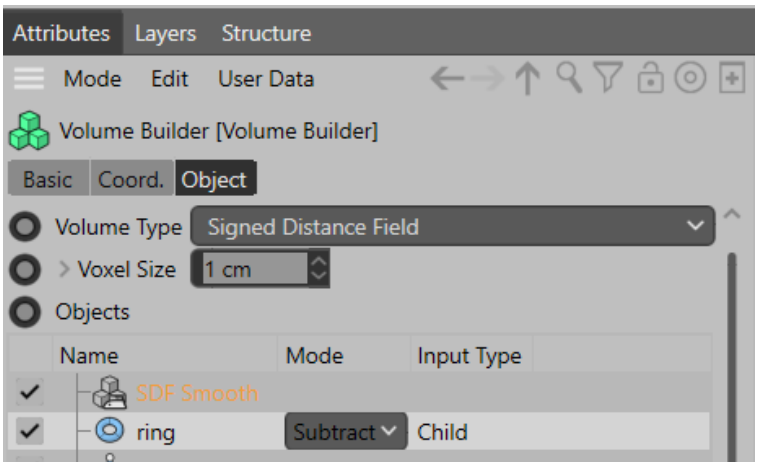

Figure 3-150 *The* ***SDF Smooth*** *layer added to the* ***ObjectProperties*** *area*

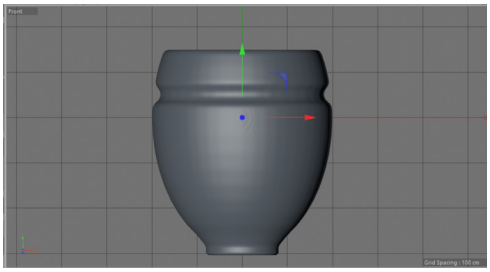

Figure 3-151 *vase smoothened*

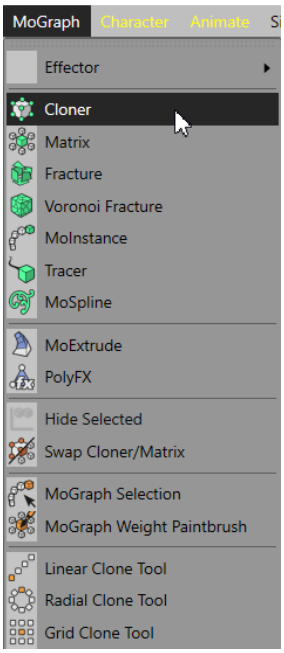

Figure 3-152 *Choosing* ***Cloner*** *from the* ***MoGraph*** *menu*

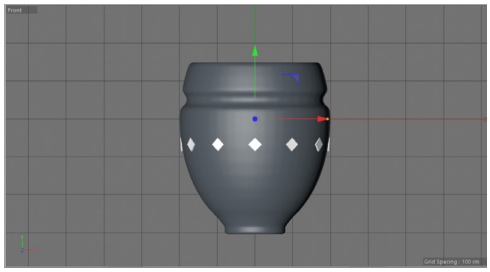

Figure 3-153 *Cloner placed on vase*

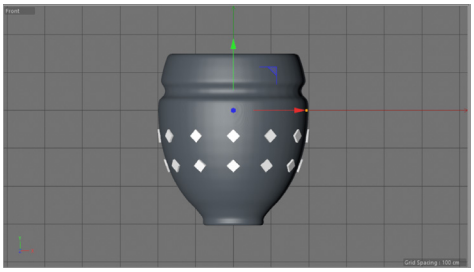

Figure 3-154 *Cloner.1 placed on vase*

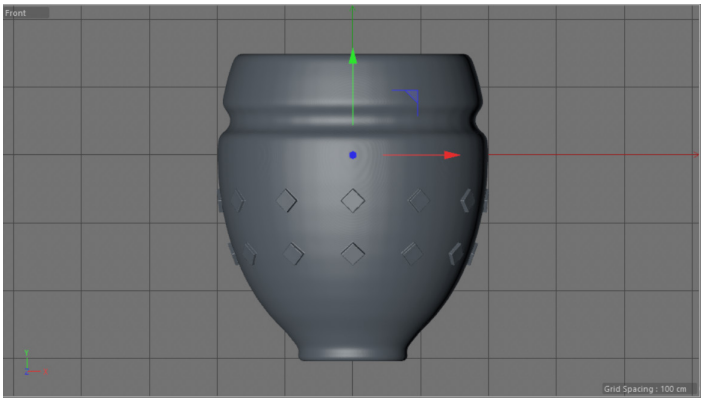

Figure 3-155 *vase displayed in the viewport*

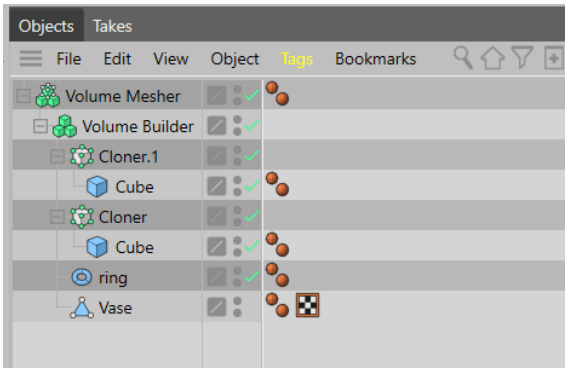

Figure 3-156 *List of all the objects in the Object Manager*

Figure 3-157 *The model of a chair*

Chapter 4

Sculpting

Figure 4-1 *The model of a candle*

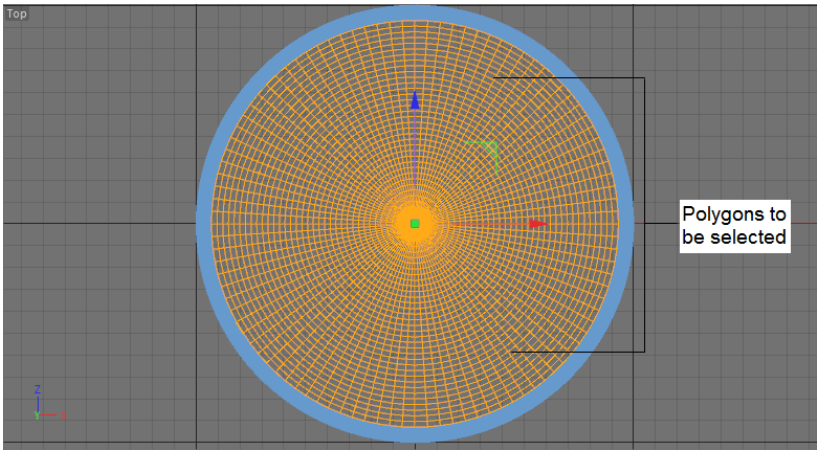

Figure 4-2 *The polygons to be selected*

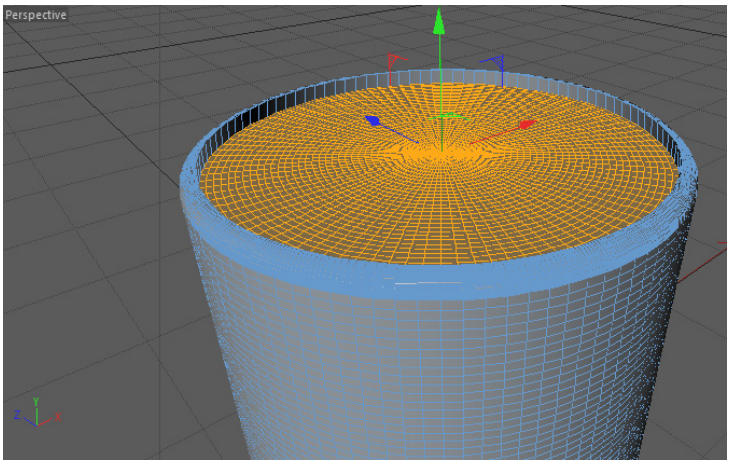

Figure 4-3 *Moving the polygons of the Candle downward*

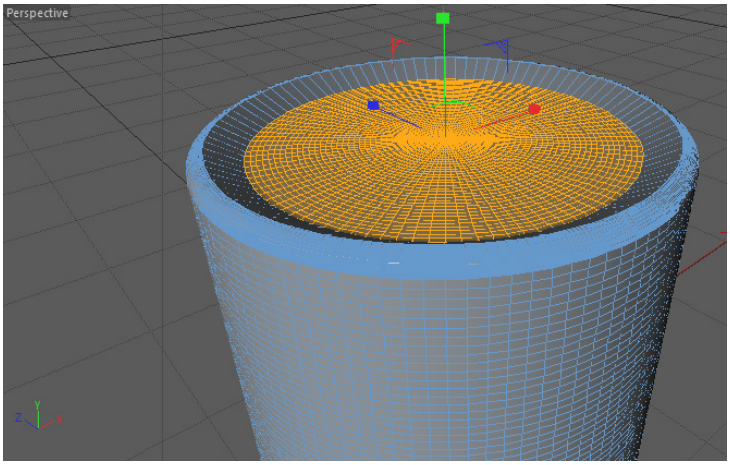

Figure 4-4 *Scaling down the polygons of Candle*

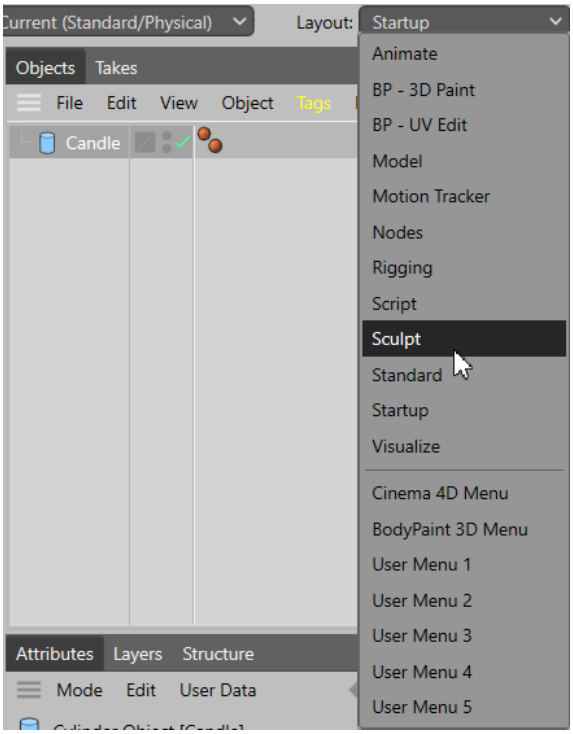

Figure 4-5 *Selecting* ***Sculpt*** *from the* ***Layout*** *drop-down list*

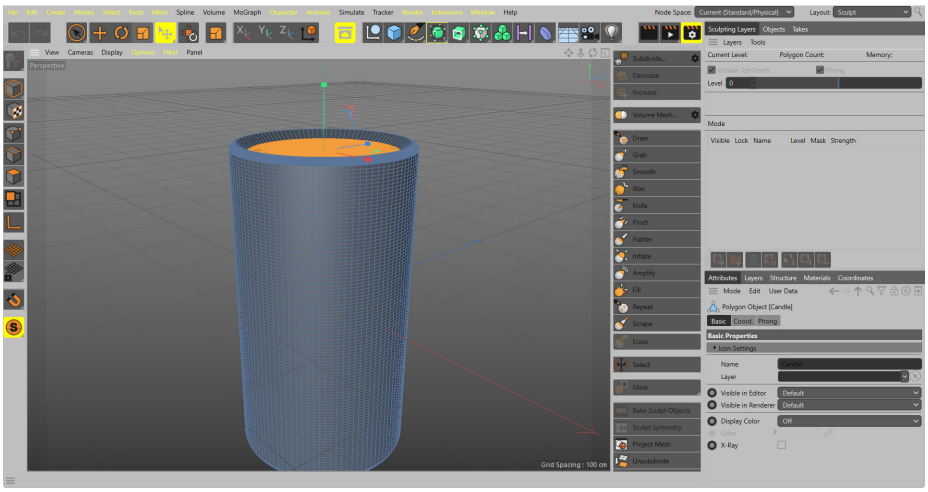

Figure 4-6 *The* ***Sculpt*** *layout*

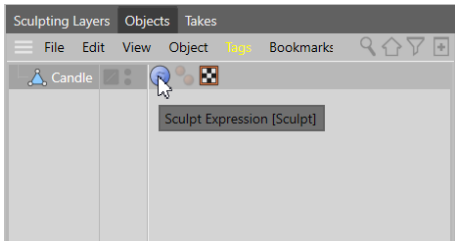

Figure 4-7 *The* ***Sculpt Expression [Sculpt]*** *tag added to the Object Manager*

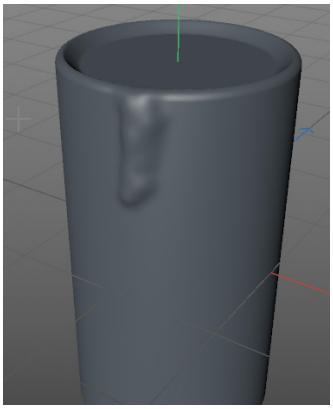

Figure 4-8 *The strokes added*

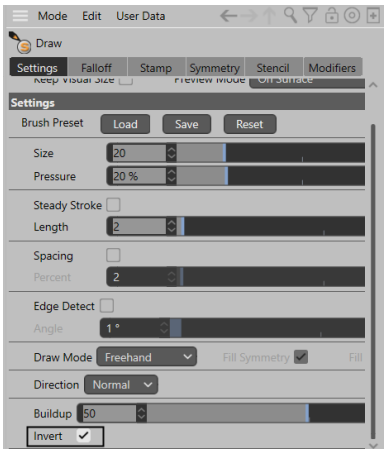

Figure 4-9 *The* ***Invert*** *check box selected in the* ***Settings*** *area in the Attribute Manager*

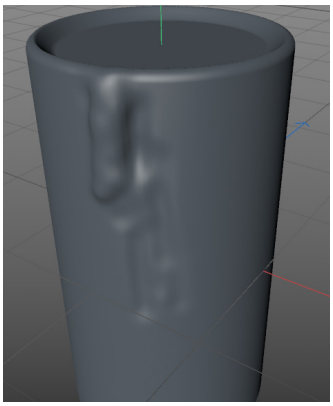

Figure 4-10 *Strokes added to the Candle*

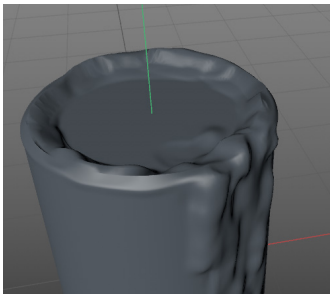

Figure 4-11 *Strokes added on the top of Candle*

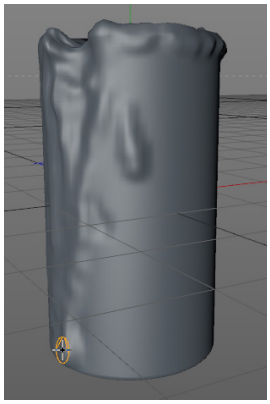

Figure 4-12 *Adding strokes to the bottom of the Candle*

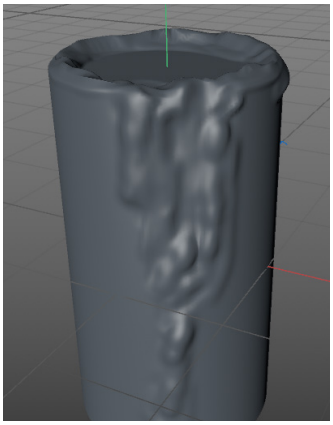

Figure 4-13 *More strokes added to the bottom of the Candle*

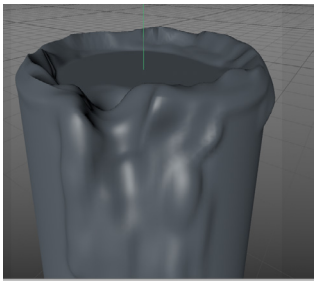

Figure 4-14 *Adding strokes to the top of Candle*

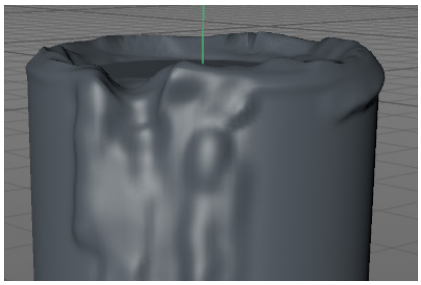

Figure 4-15 *The smoothened surface of Candle*

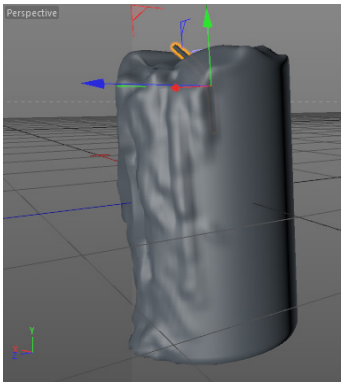

Figure 4-16 *The Wick of the Candle*

Figure 4-17 *The ice cream cone*

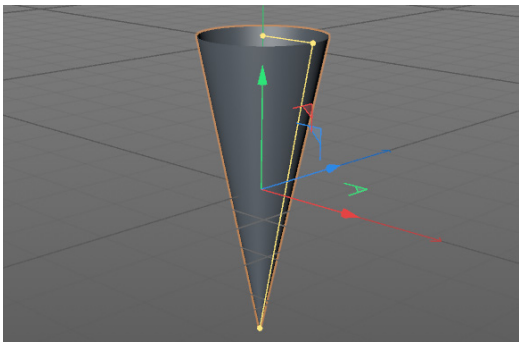

Figure 4-18 *The Cone displayed in the Perspective viewport*

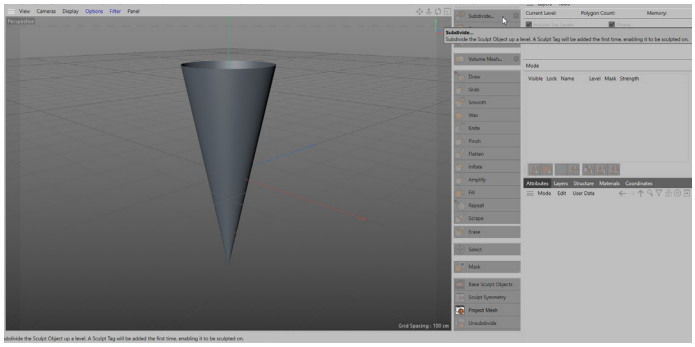

Figure 4-19 *Choosing the* ***Subdivide*** *tool from the* ***Sculpting*** *menu*

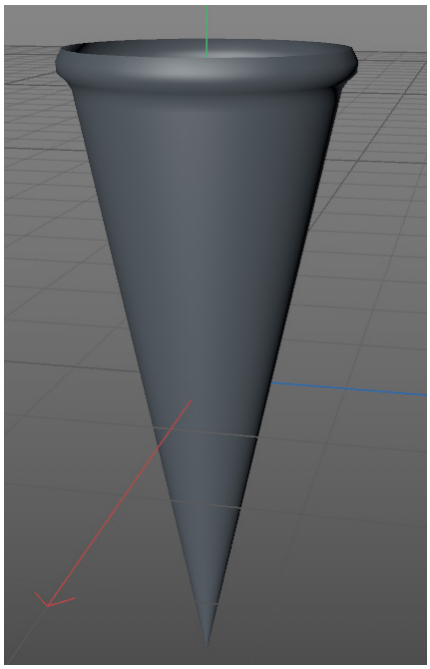

Figure 4-20 *Applying strokes on the top of the Cone*

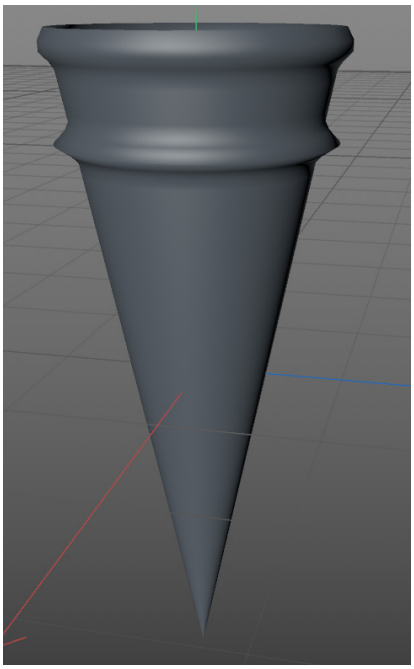

Figure 4-21 *The strokes added*

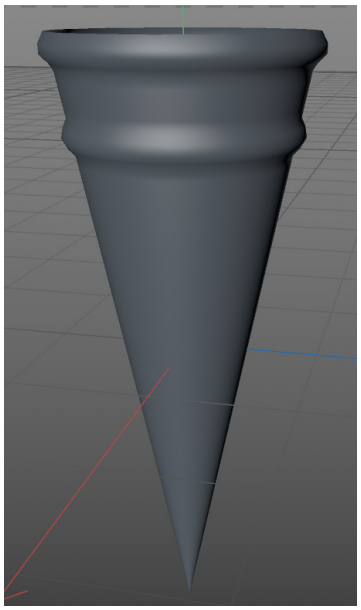

Figure 4-22 *Cone smoothened using the* ***Smooth*** *tool*

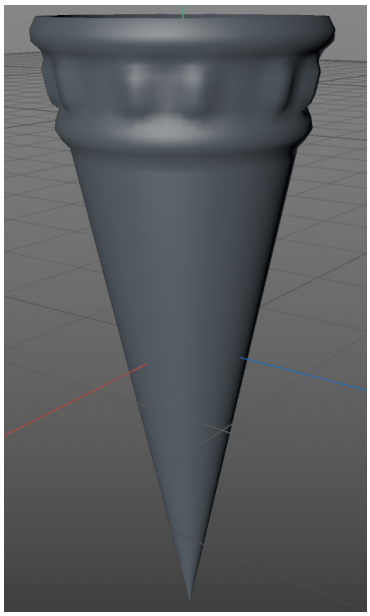

Figure 4-23 *Creating a pattern on Cone in the Perspective viewport*

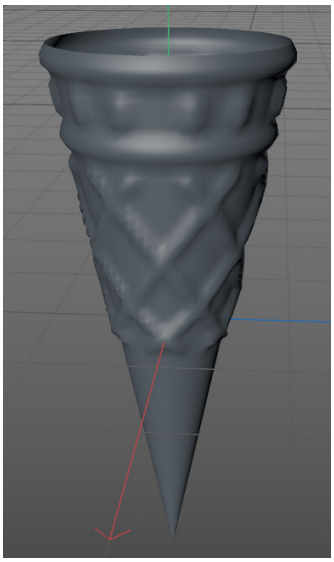

Figure 4-24 *Creating a pattern on Cone using the* ***Inflate*** *tool*

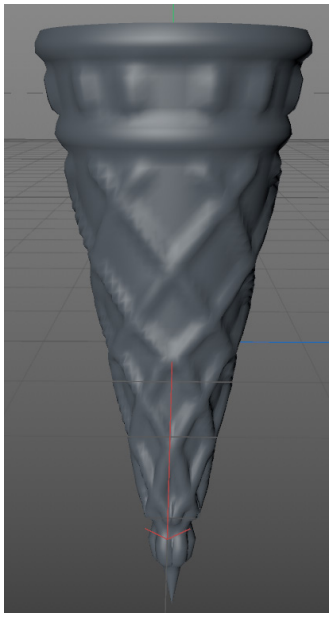

Figure 4-25 *The pattern displayed on Cone*

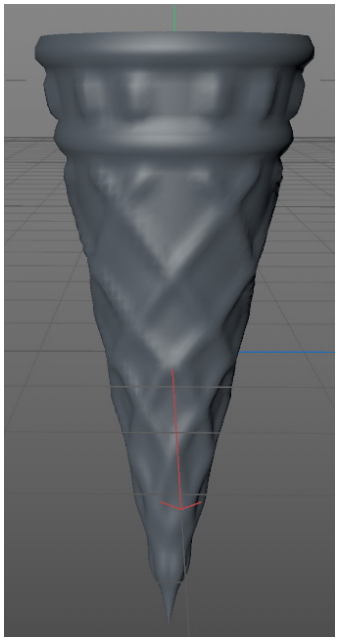

Figure 4-26 *Smoothening the surface of Cone using the* ***Smooth*** *tool*

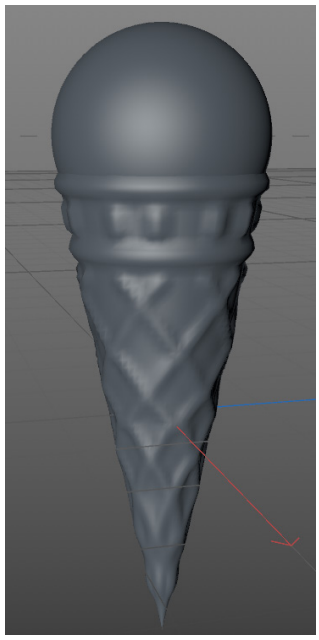

Figure 4-27 *The Scoop displayed in the Perspective viewport*

Figure 4-28 *Adding strokes on the Scoop in the Perspective viewport*

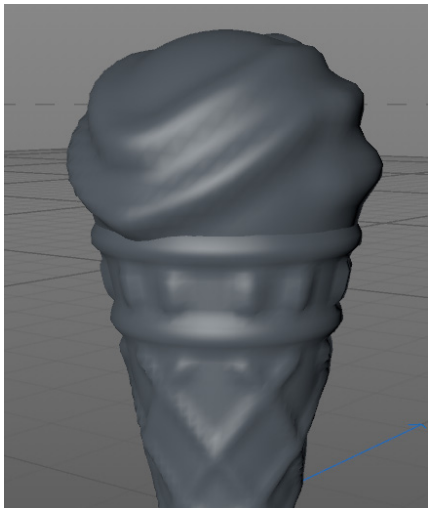

Figure 4-29 *Adding stroke on Scoop using the* ***Pull*** *tool*

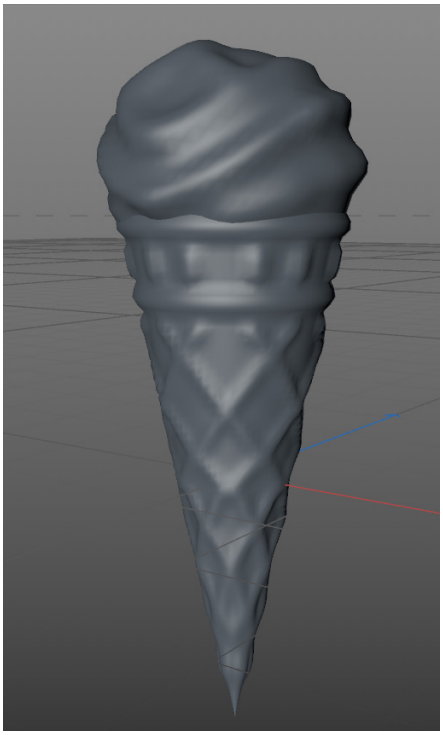

Figure 4-30 *Creating the pattern on Scoop in the Perspective viewport*

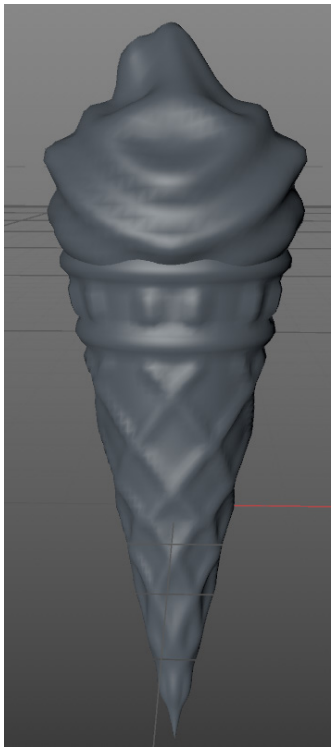

Figure 4-31 *The peak of Scoop created*

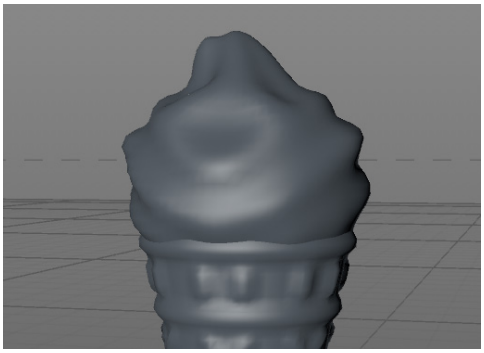

Figure 4-32 *The smooth peak of the Scoop in the Perspective viewport*

Figure 4-33 *The sculpted vase*

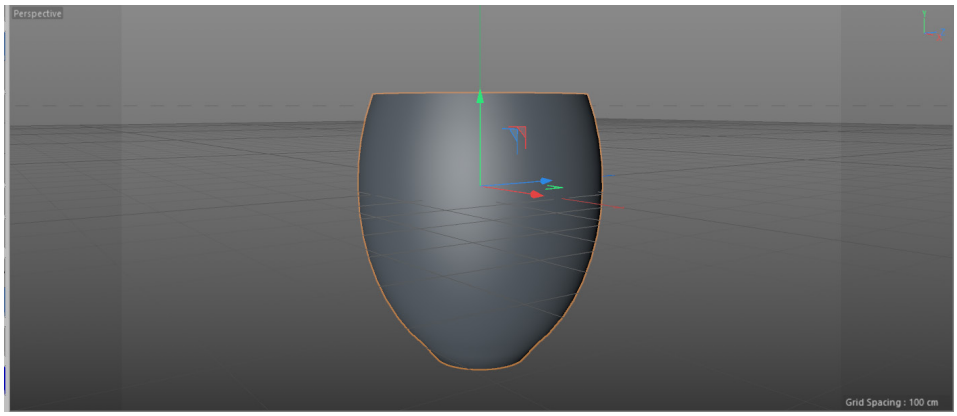

Figure 4-34 *The c04_tut3_start.c4d file*

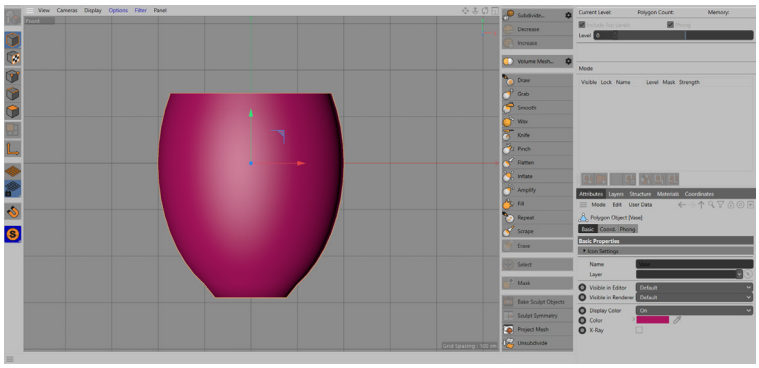

Figure 4-35 *The* ***Sculpting*** *menu displayed*

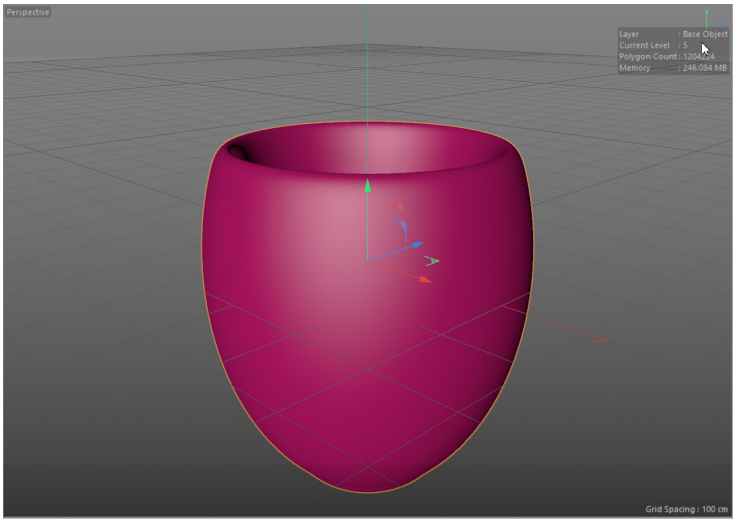

Figure 4-36 *The sculpting level and polygon count displayed*

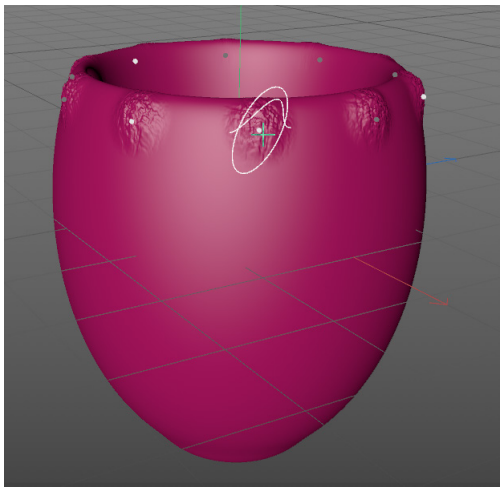

Figure 4-37 *Strokes applied on the upper part of Vase*

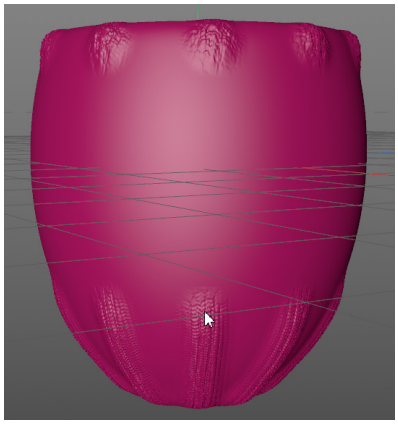

Figure 4-38 *Vertical strokes applied on the upper part of Vase*

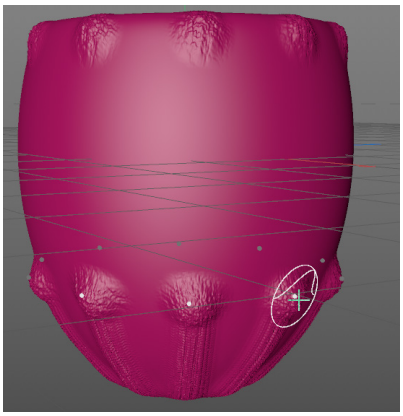

Figure 4-39 *Strokes applied on the top of vertical strokes*

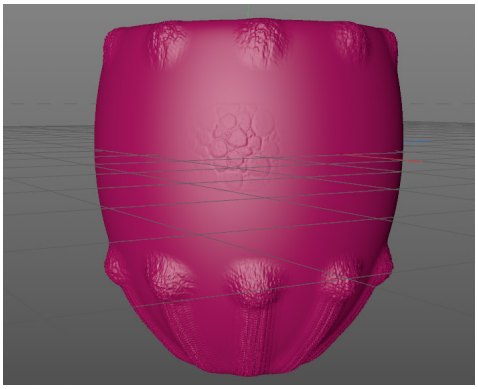

Figure 4-40 *Strokes applied on the remaining part of Vase*

Figure 4-41 *A barrel with cracks*

Chapter 5

Texturing

Figure 5-1 *The textured model of a dice*

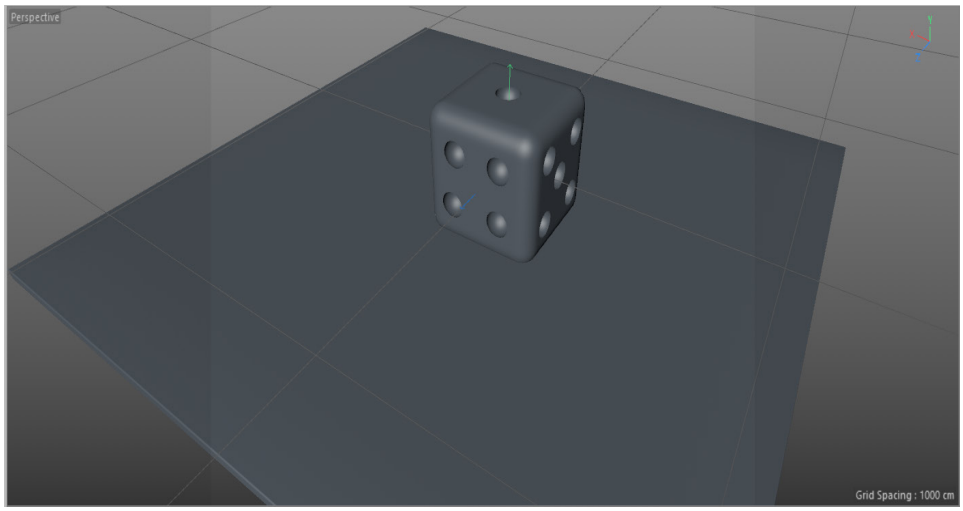

Figure 5-2 *The c05_tut1_start.c4d file*

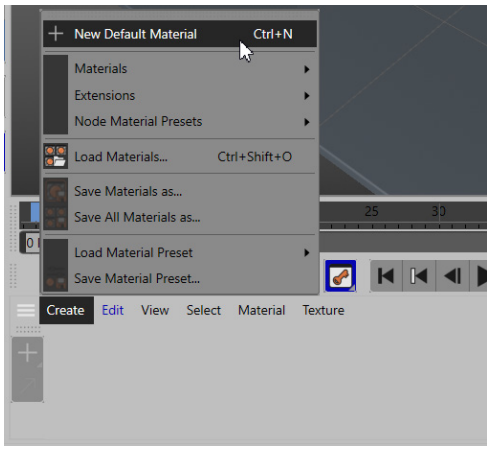

Figure 5-3 *Choosing* ***New Default Material*** *from the Material Manager menu*

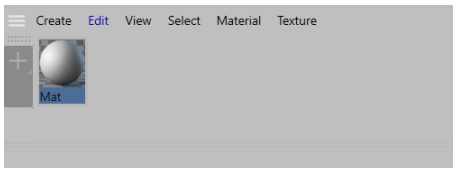

Figure 5-4 *Displaying the material slot in the Material Manager*

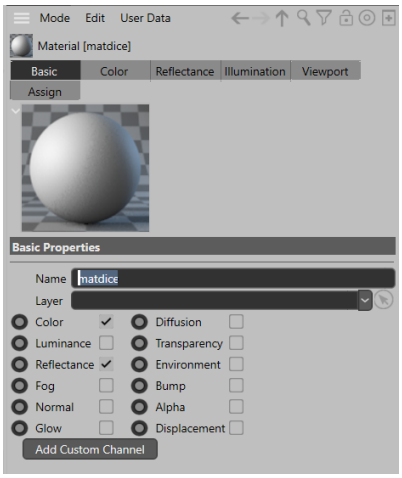

Figure 5-5 *The* ***Reflectance*** *check box selected*

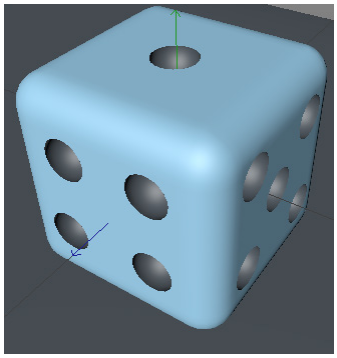

Figure 5-6 *The matDice material applied to Cube*

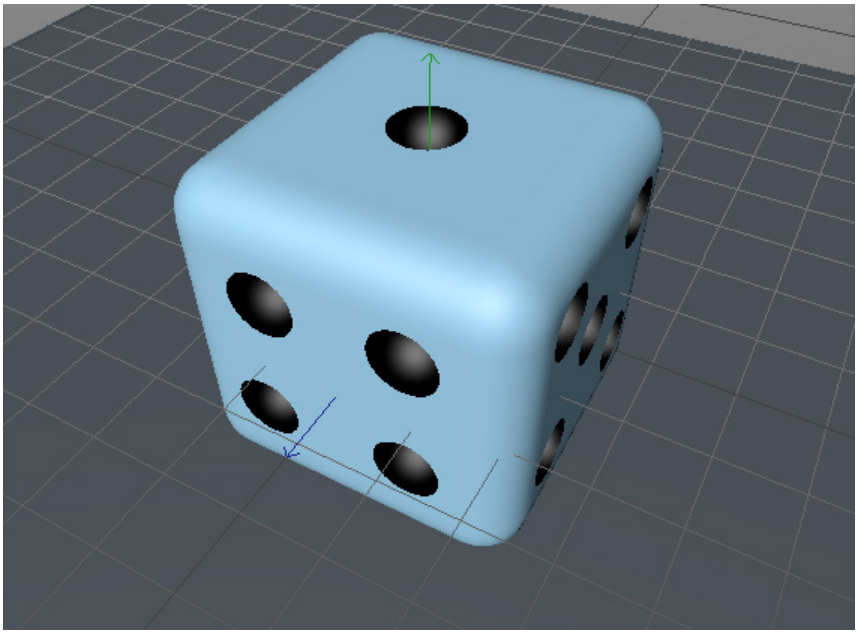

Figure 5-7 *The Dot material applied to dots of the Cube*

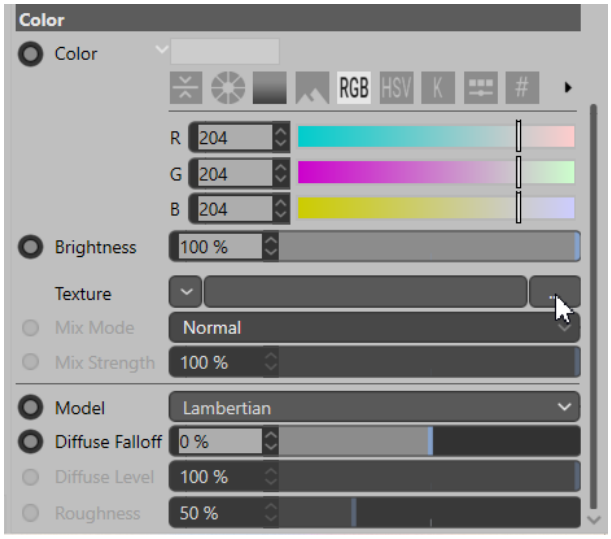

Figure 5-8 *Choosing the browse button*

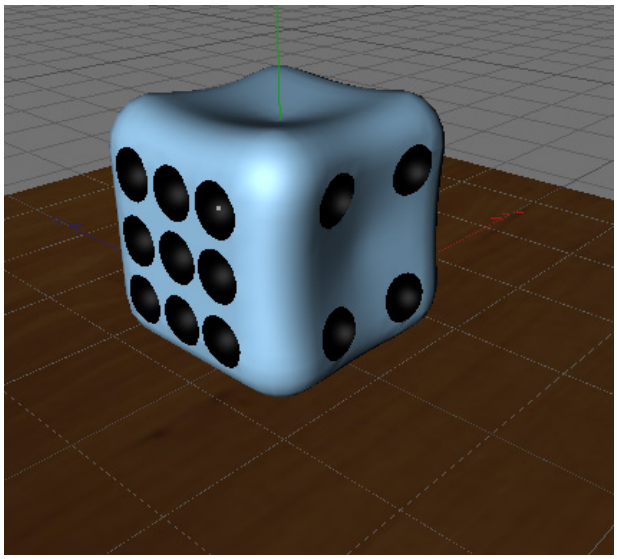

Figure 5-9 *The matFloor applied to Floor*

Figure 5-10 *The textured dining table set*

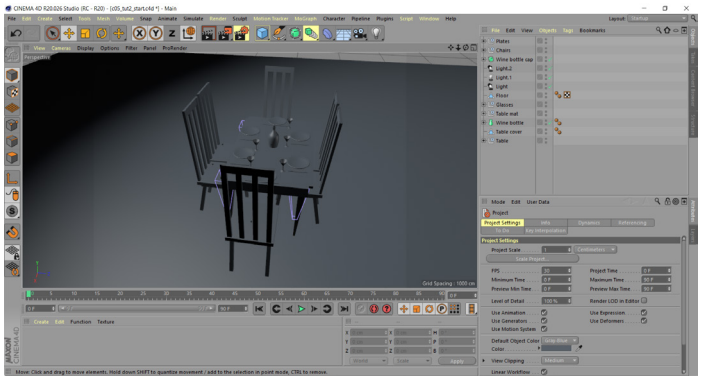

Figure 5-11 *The c05_tut2_start.c4d file*

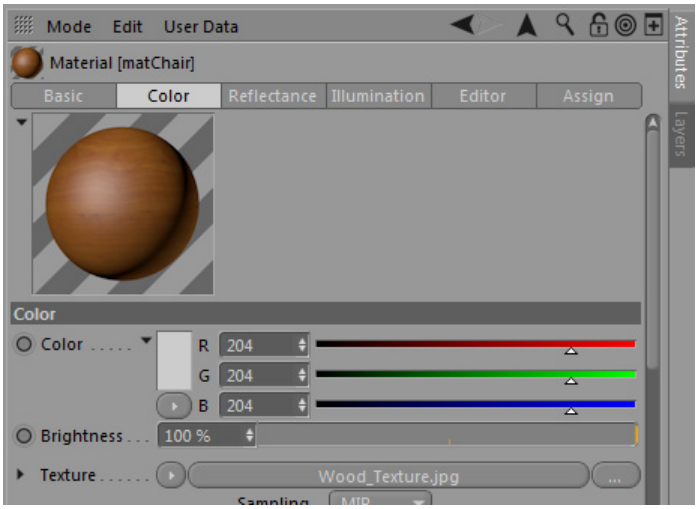

Figure 5-12 *The Wood_Texture.jpg added to the* ***Color*** *area of Attribute Manager*

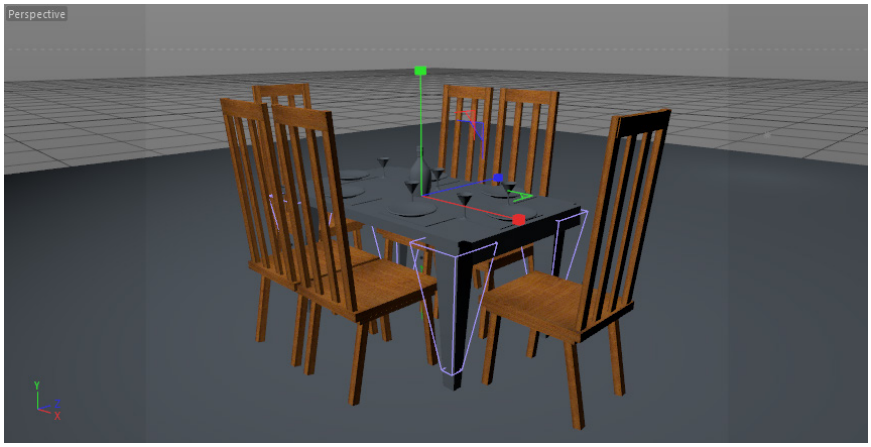

Figure 5-13 *The matChair applied to the chairs*

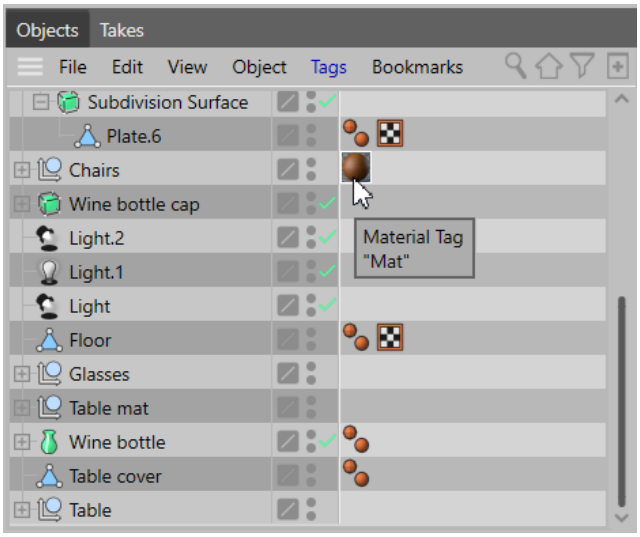

Figure 5-14 *The* ***Material Tag "matChair"*** *in the Object Manager*

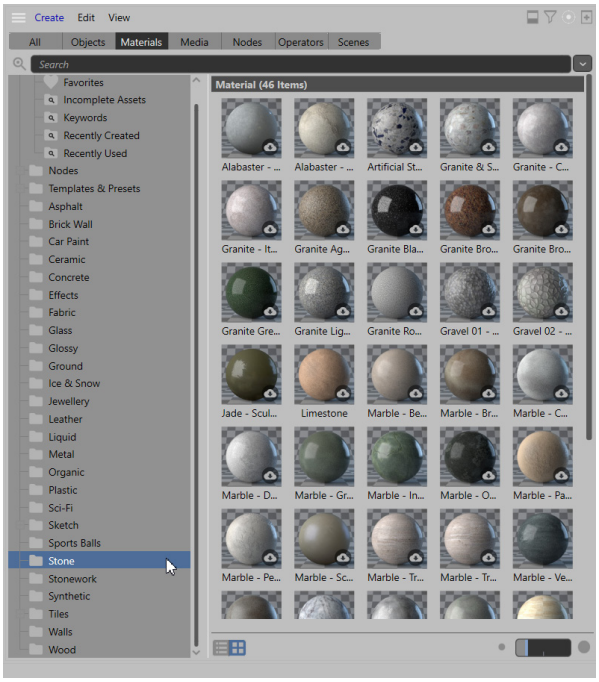

Figure 5-15 *Various stone materials displayed in the Asset Browser*

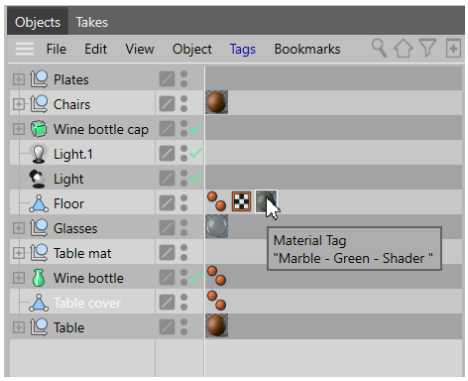

Figure 5-16 *The* ***Material Tag "Marble - Green - Shader"*** *selected in the Object Manager*

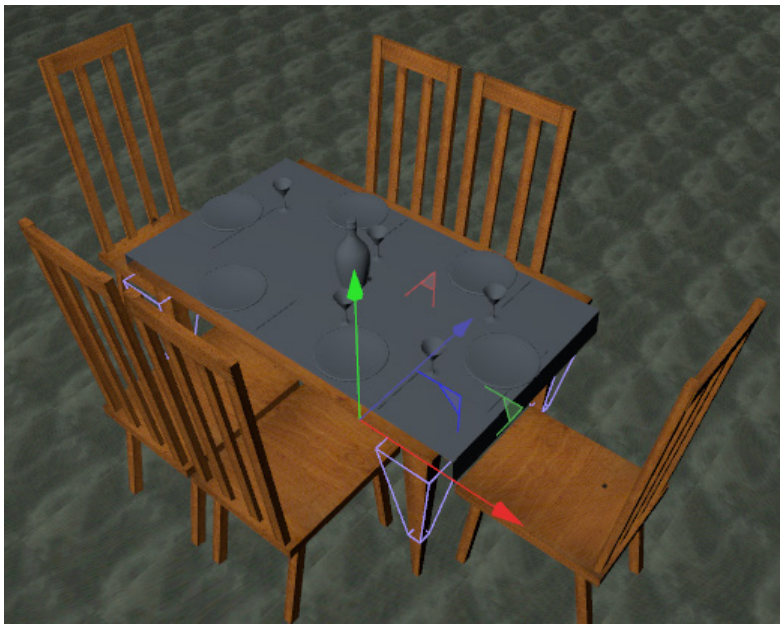

Figure 5-17 *The Marble - Green - Shader texture uniformly projected on the Floor*

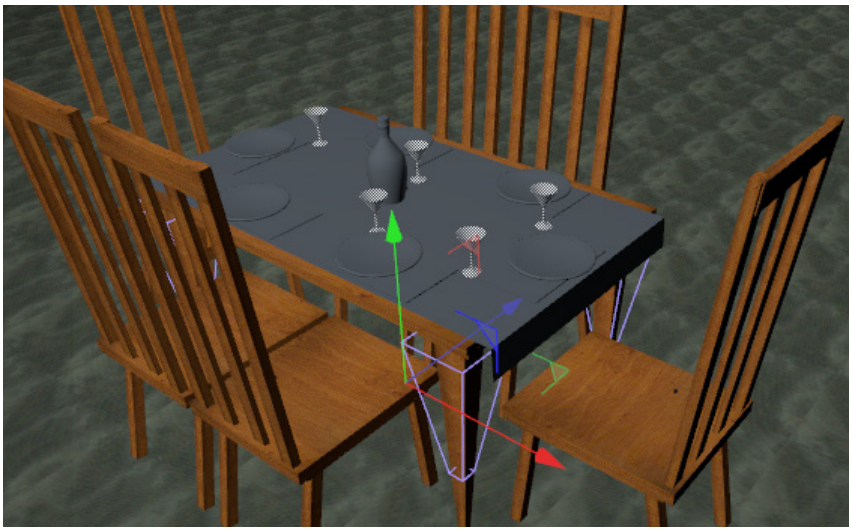

Figure 5-18 *The matGlass material applied to the Glasses*

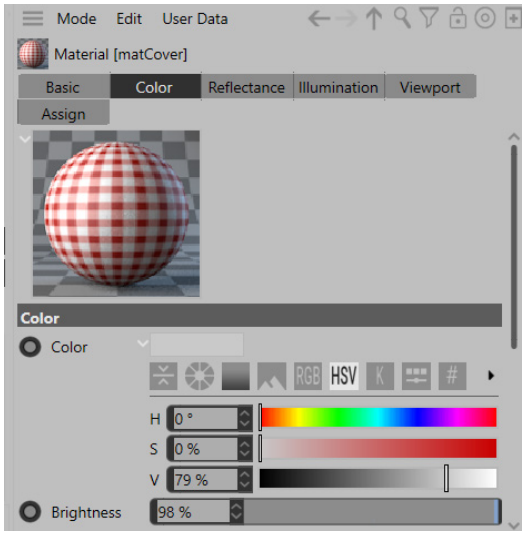

Figure 5-19 *The matCover material applied to the material slot*

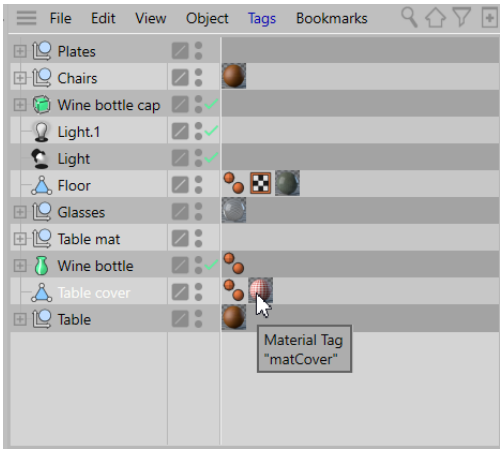

Figure 5-20 *The* ***Material Tag "matCover"*** *selected in the Object Manager*

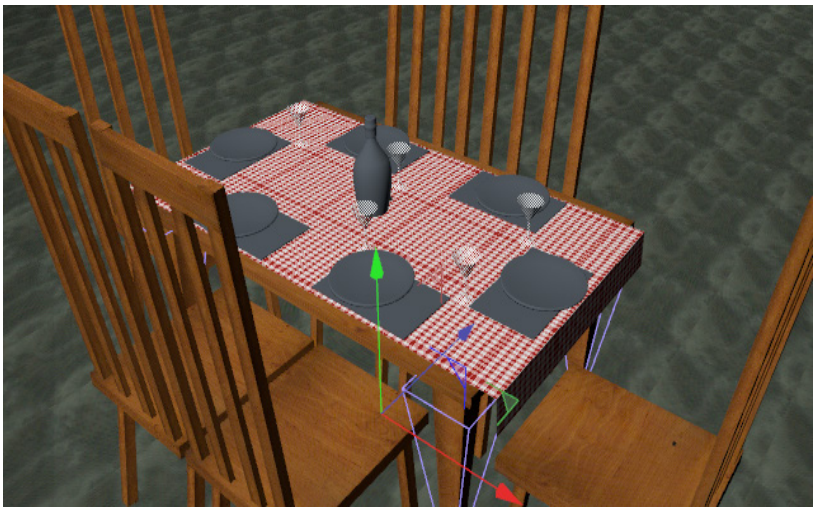

Figure 5-21 *The matCover material applied to Table cover*

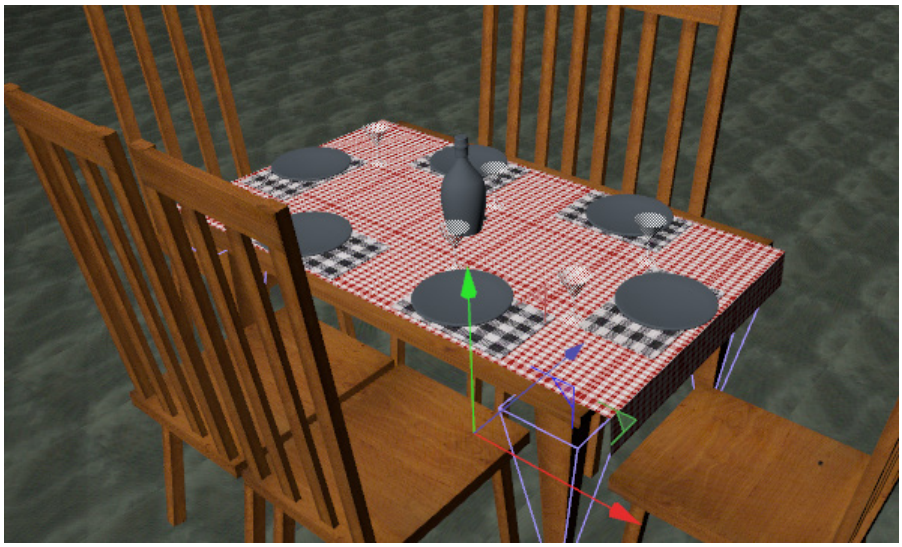

Figure 5-22 *The matTableMats material applied to the Table mat group*

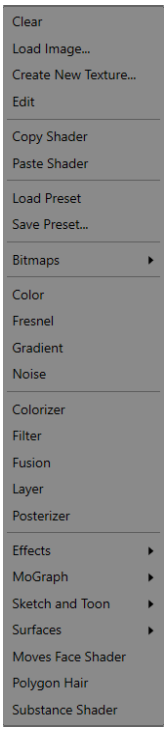

Figure 5-23 *The flyout displayed on choosing the triangle button next to the* ***Texture*** *parameter*

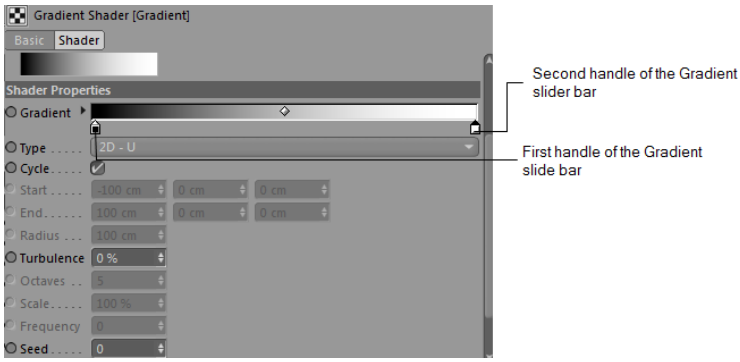

Figure 5-24 *The* ***Shader Properties*** *area in the Attribute Manager*

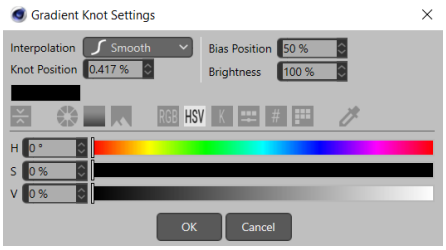

Figure 5-25 *The* ***Gradient Knot Settings*** *dialog box*

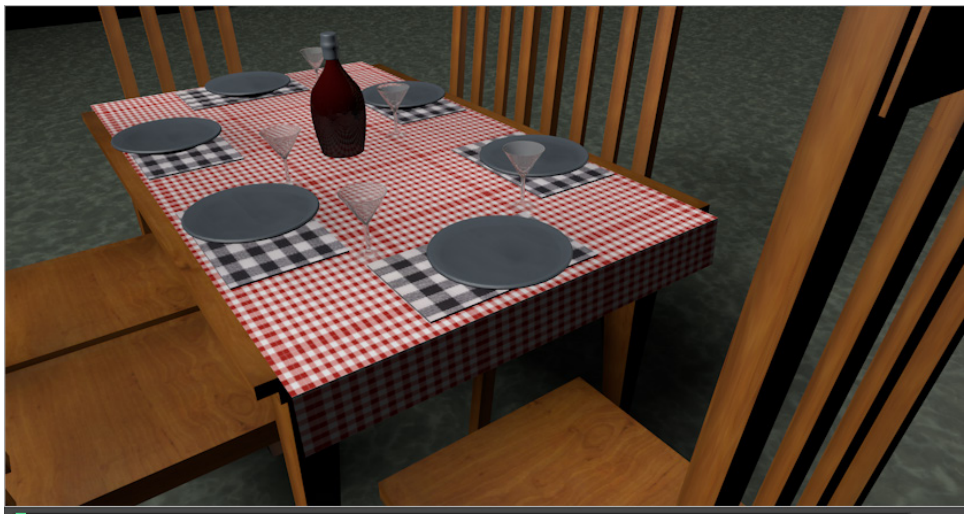

Figure 5-26 *The matWine material applied to Wine bottle*

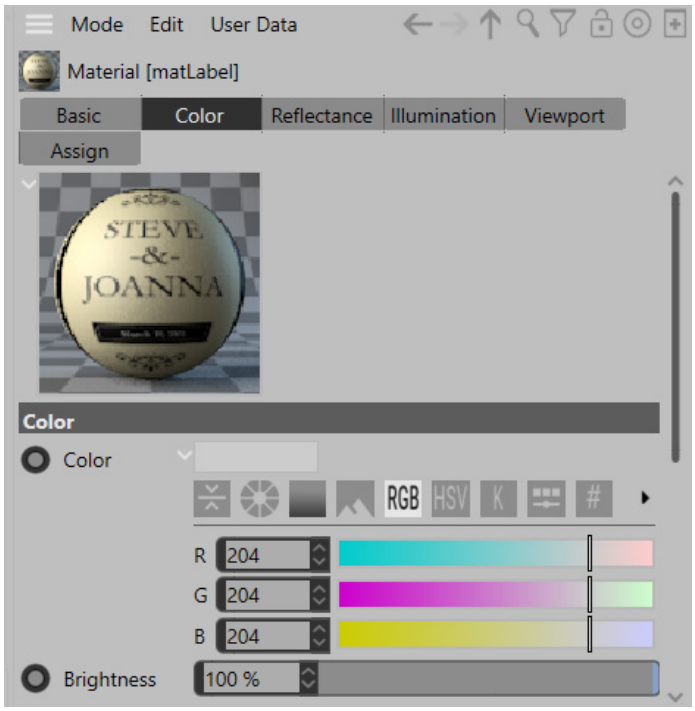

Figure 5-27 *The matLabel texture displayed in the* ***Color*** *area of Material Manager*

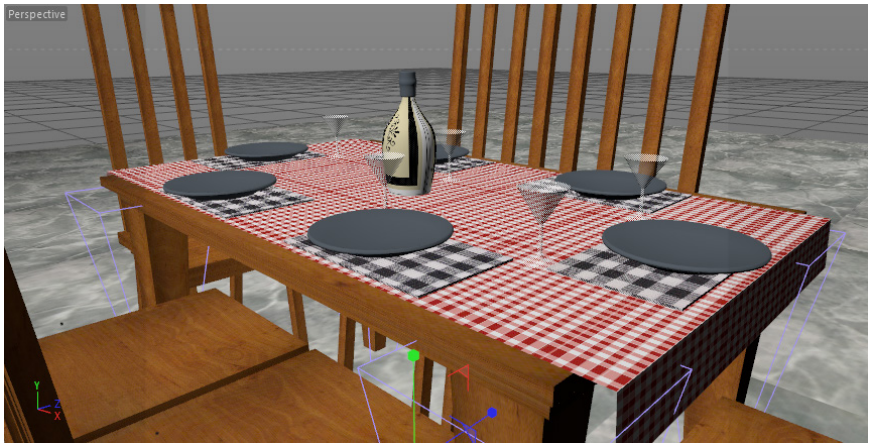

Figure 5-28 *The matLabel texture applied to Wine bottle*

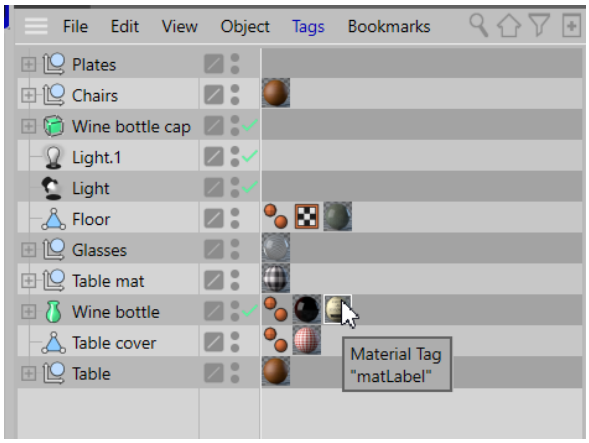

Figure 5-29 *Selecting the* ***Material Tag*** *"****matLabel****" in the Object Manager*

Figure 5-30 *The matLabel material projected properly on the wine bottle in the Perspective viewport*

Figure 5-31 *The matCap material applied to the Wine bottle cap*

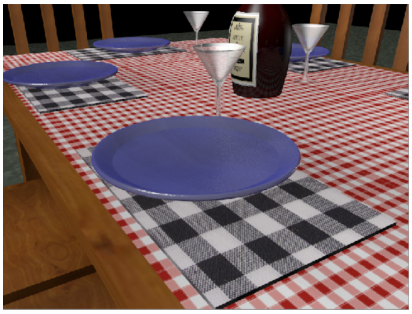

Figure 5-32 *The matplate material applied to the plates*

Figure 5-33 *The exterior scene with the materials applied*

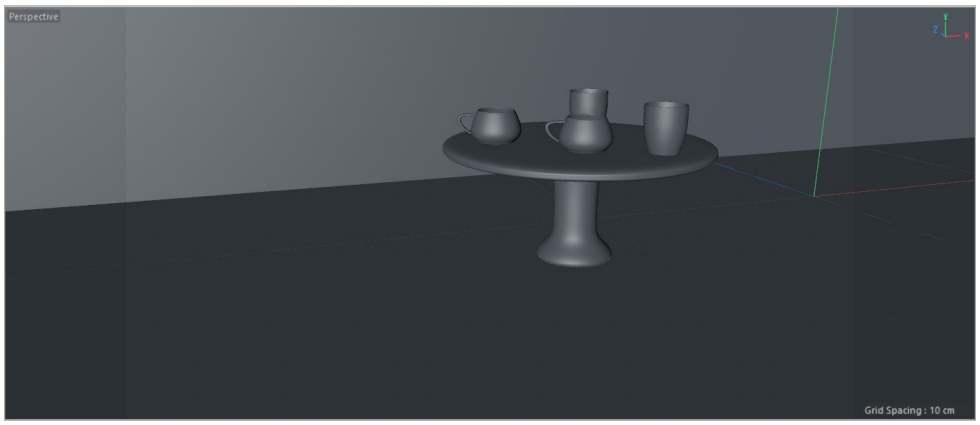

Figure 5-34 *The c05_tut3_start.c4d file*

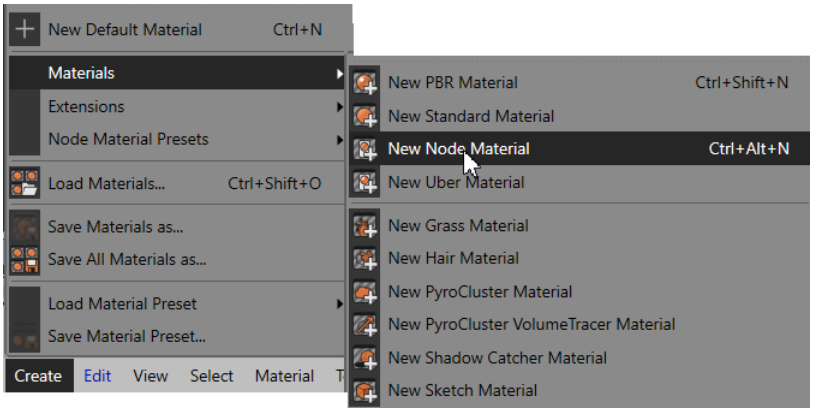

Figure 5-35 *Choosing* ***New Node Material*** *from the* ***Create*** *menu*

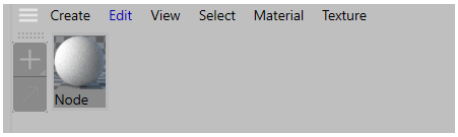

Figure 5-36 *New node material created in the Material Manager*

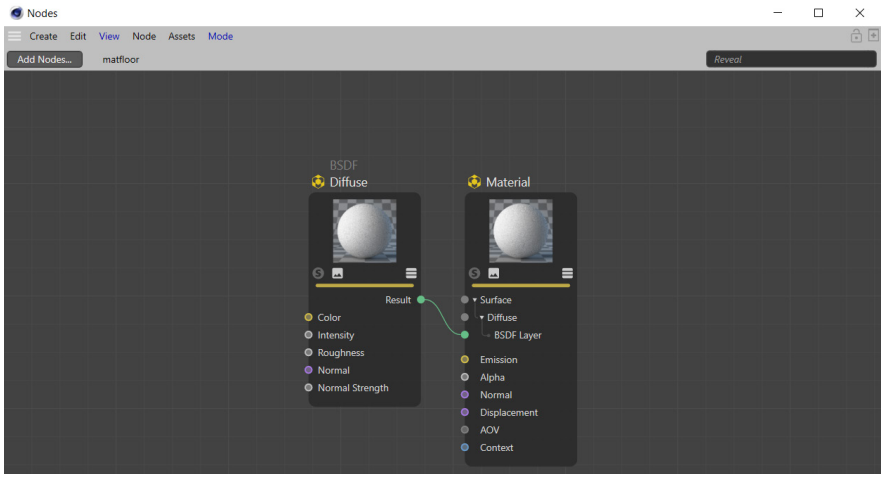

Figure 5-37 *The* ***Nodes*** *window*

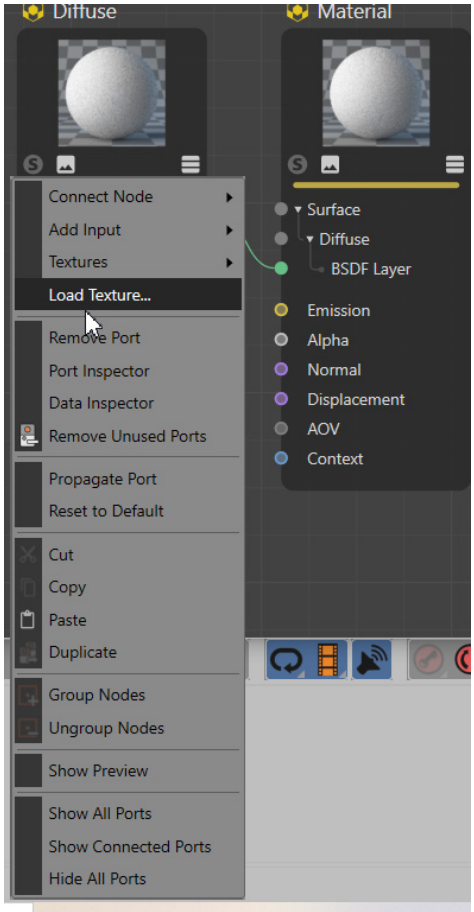

Figure 5-38 *Choosing* ***Load Texture*** *from the shortcut menu*

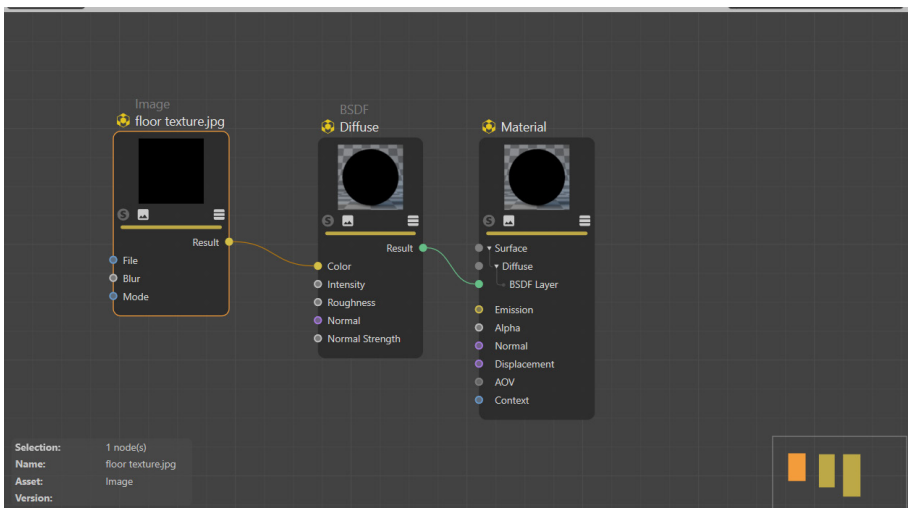

Figure 5-39 *The* ***floor texture.jpg*** *node added to the* ***Color*** *input of the* ***Diffuse.1*** *node*

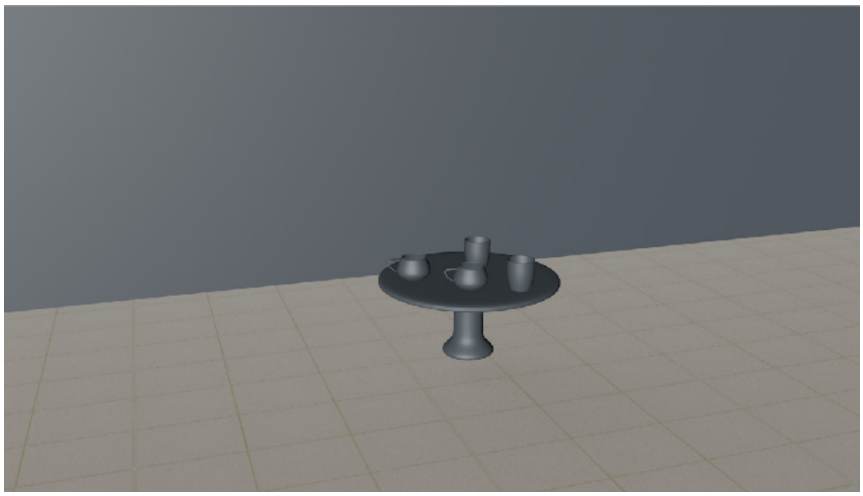

Figure 5-40 *The floor material displayed*

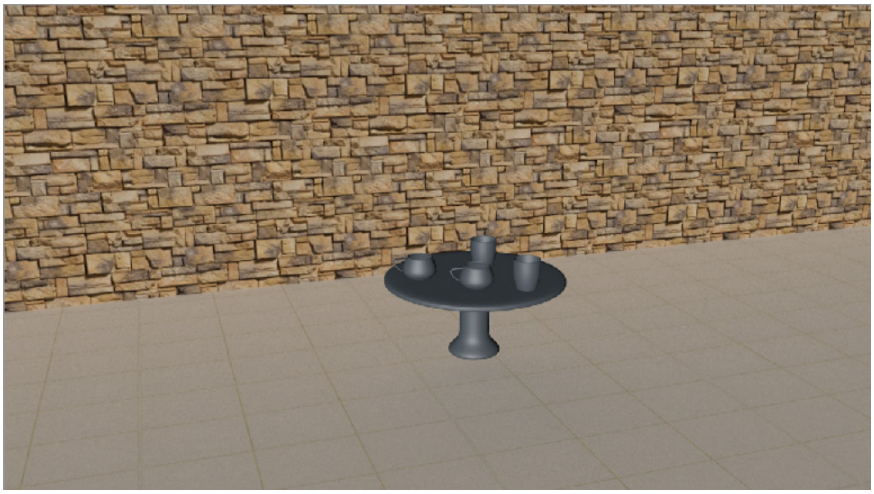

Figure 5-41 *The wall material displayed*

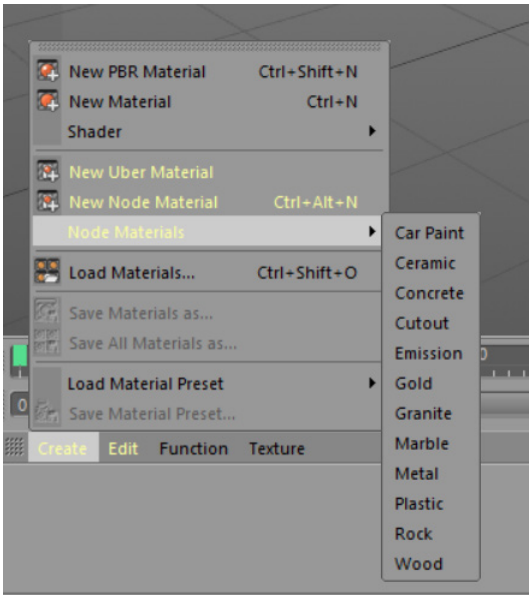

Figure 5-42 *The cascading menu displayed*

Figure 5-43 *The mattable material displayed*

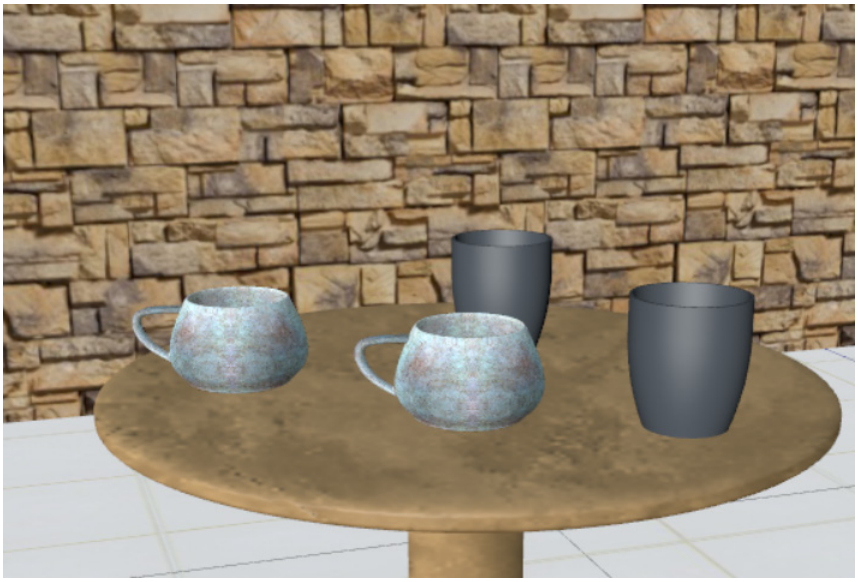

Figure 5-44 *The matcup material displayed*

Figure 5-45 *The matglass material displayed*

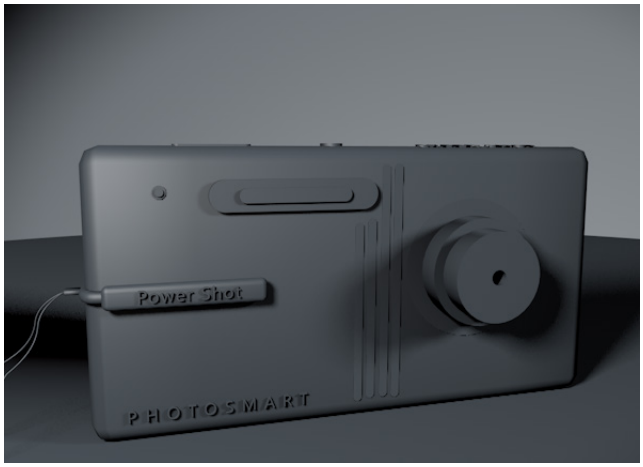

Figure 5-46 *The camera model*

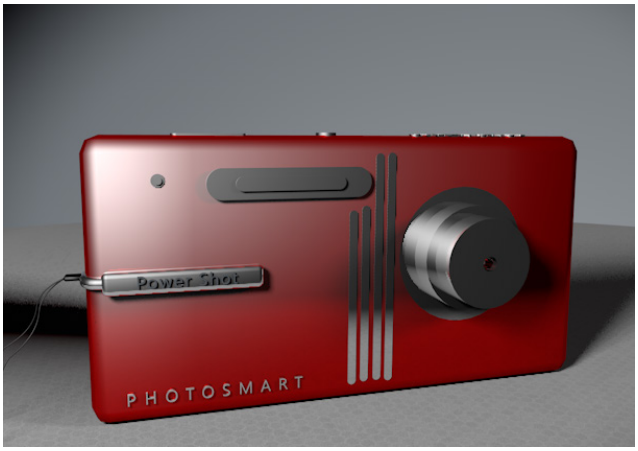

Figure 5-47 *The final output*

Chapter 6

Lighting

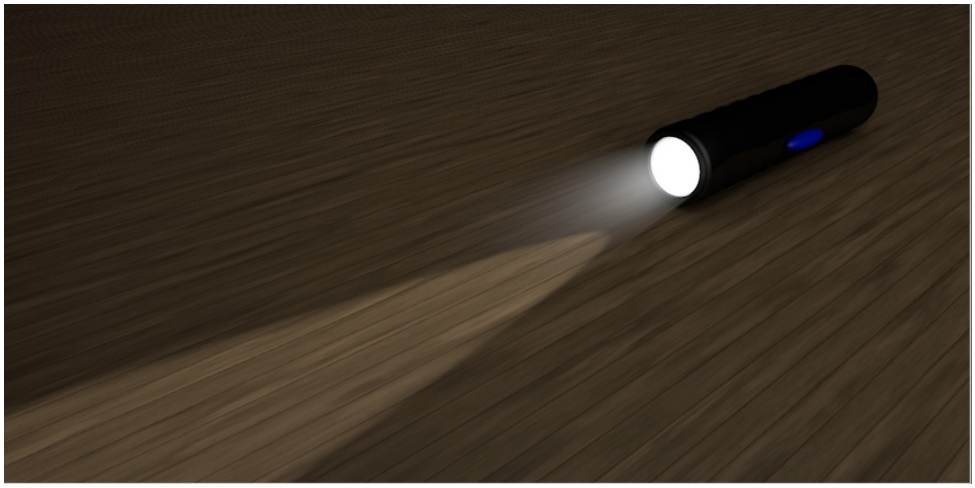

Figure 6-1 *The torch light*

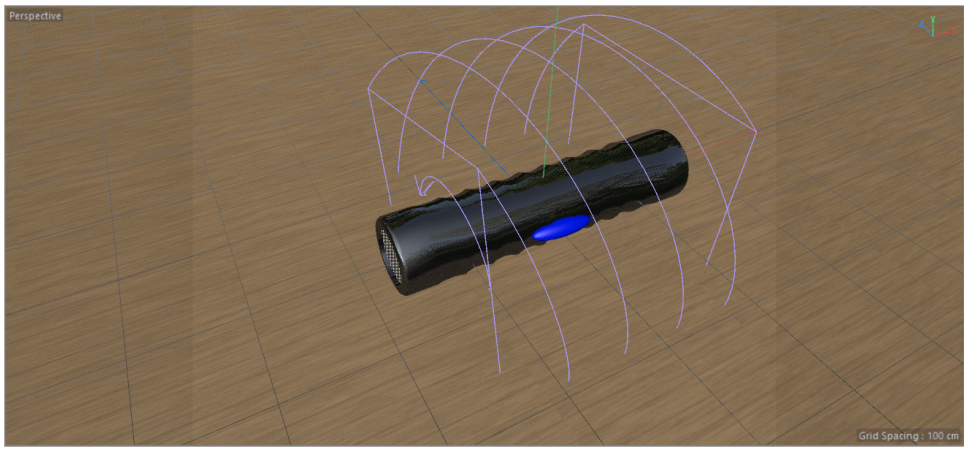

Figure 6-2 *The c06_tut1_start.c4d file*

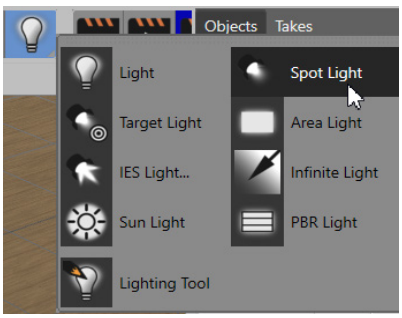

Figure 6-3 *The flyout displayed with various tools*

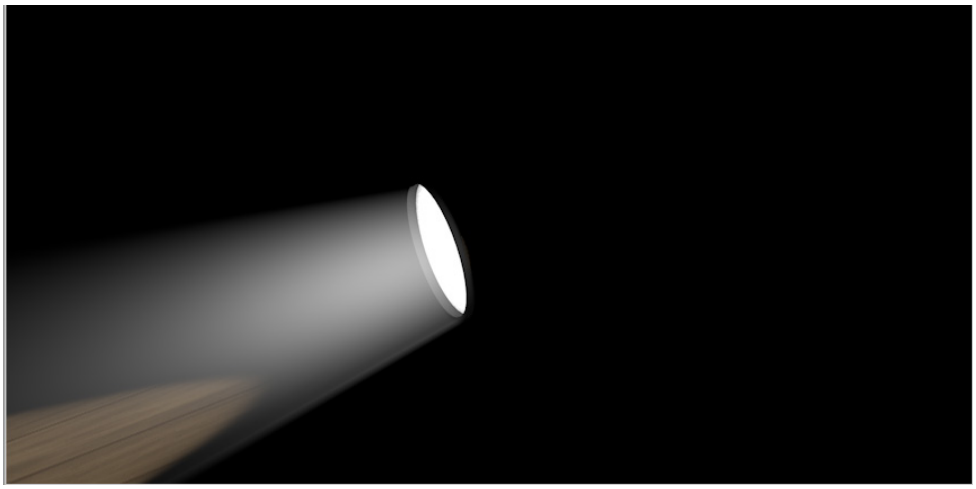

Figure 6-4 *The rendered view of the Perspective viewport*

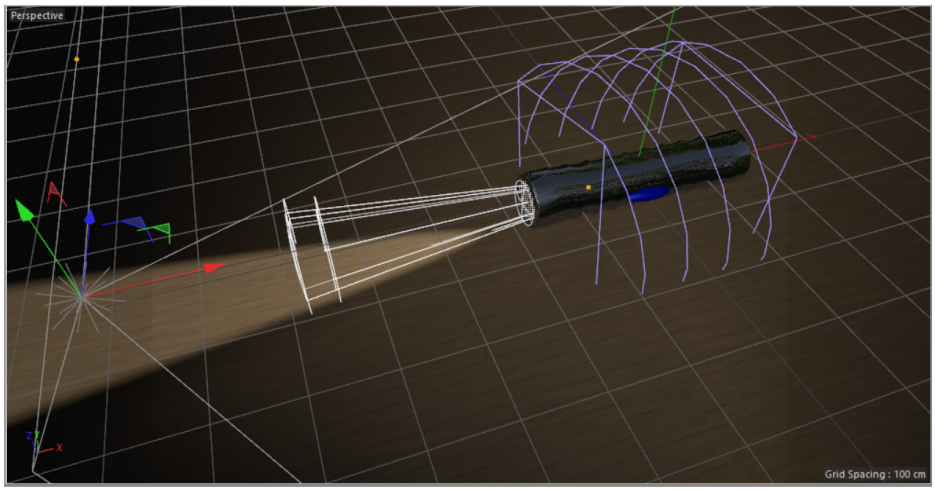

Figure 6-5 *Light.1 displayed in the Perspective viewport*

Figure 6-6 *The illuminated night scene*

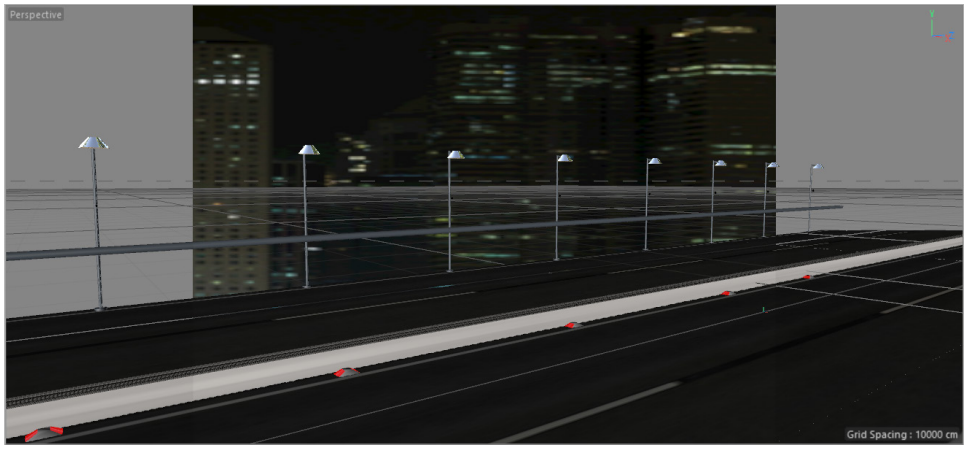

Figure 6-7 *The c06_tut2_start.c4d file*

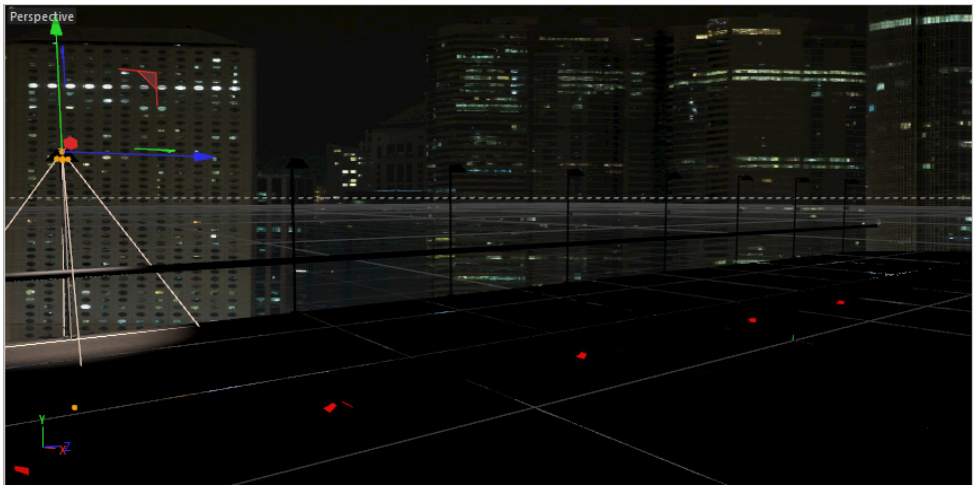

Figure 6-8 *Light positioned in the scene*

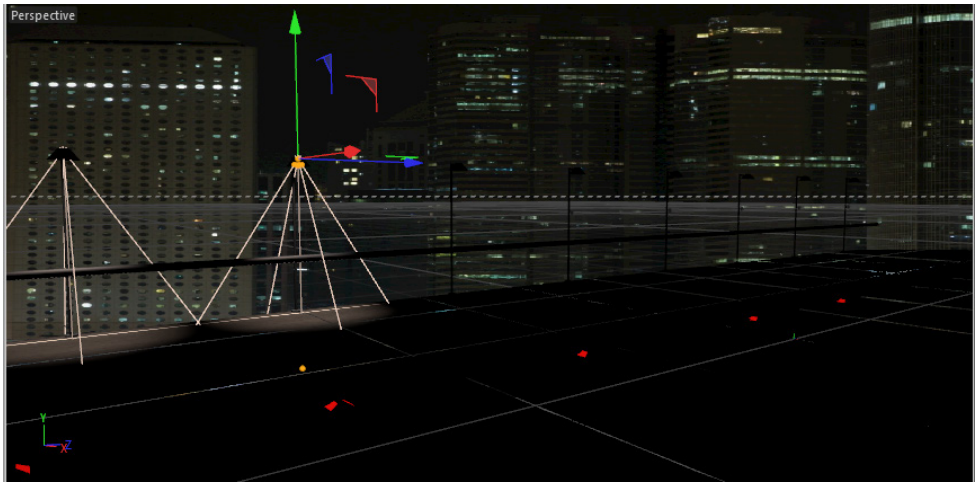

Figure 6-9 *Light.1 positioned in the scene*

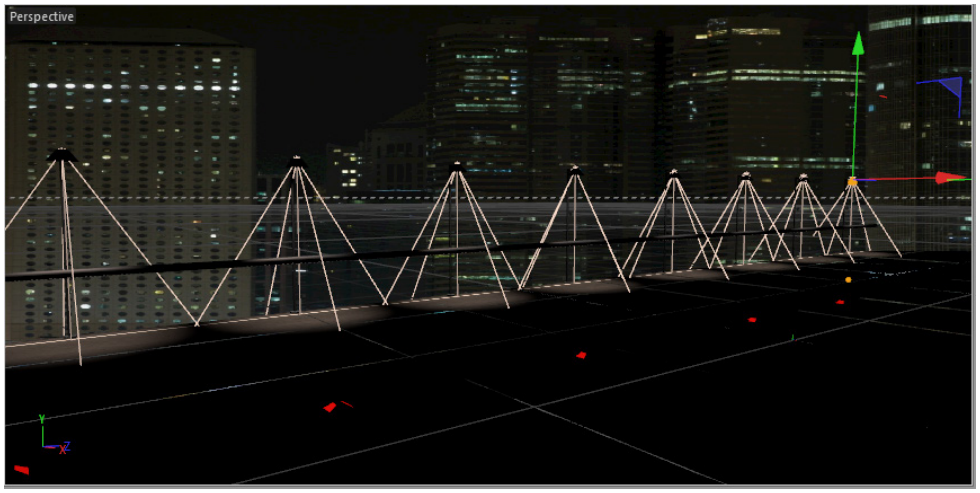

Figure 6-10 *Lights positioned in the Perspective viewport*

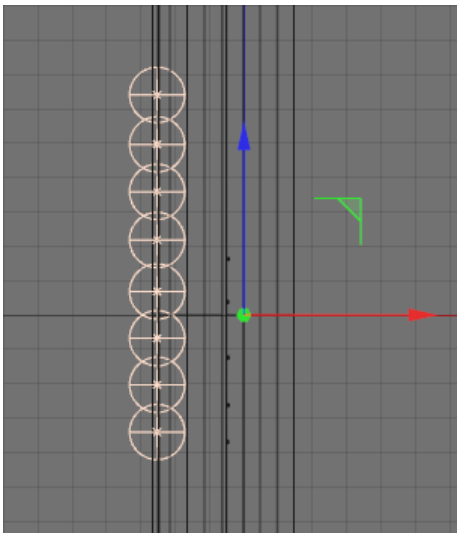

Figure 6-11 *Light.8 created in the Top viewport*

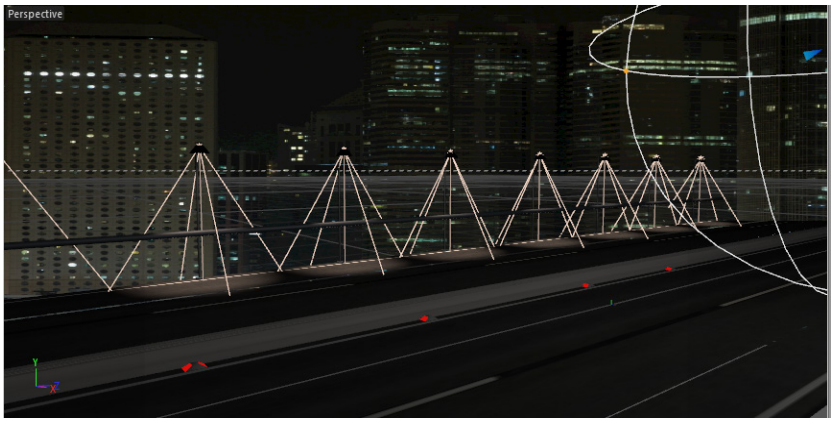

Figure 6-12 *Light.8 positioned in the scene*

Figure 6-13 *The light house*

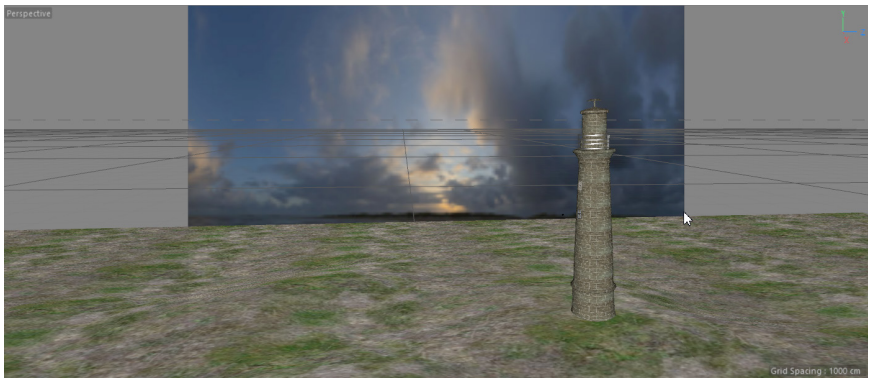

Figure 6-14 *The c06_tut3_start.c4d file*

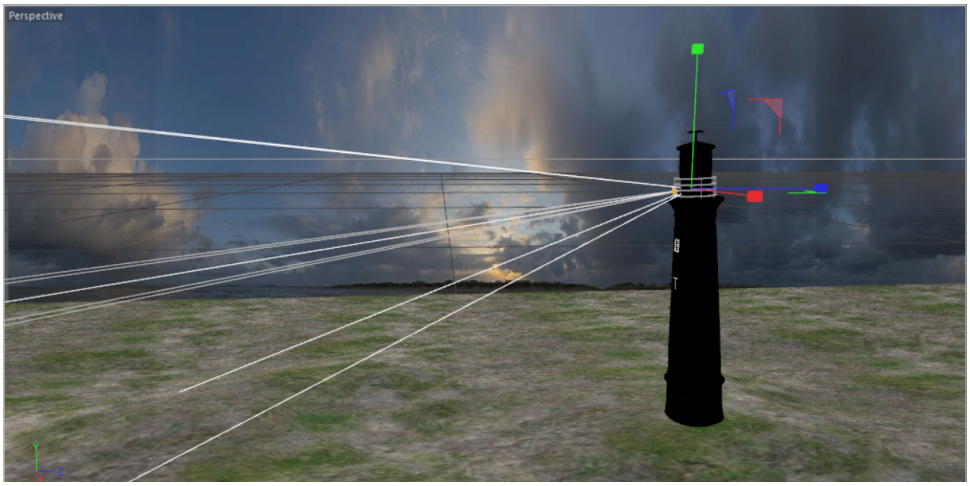

Figure 6-15 *The spot light positioned in the Perspective viewport*

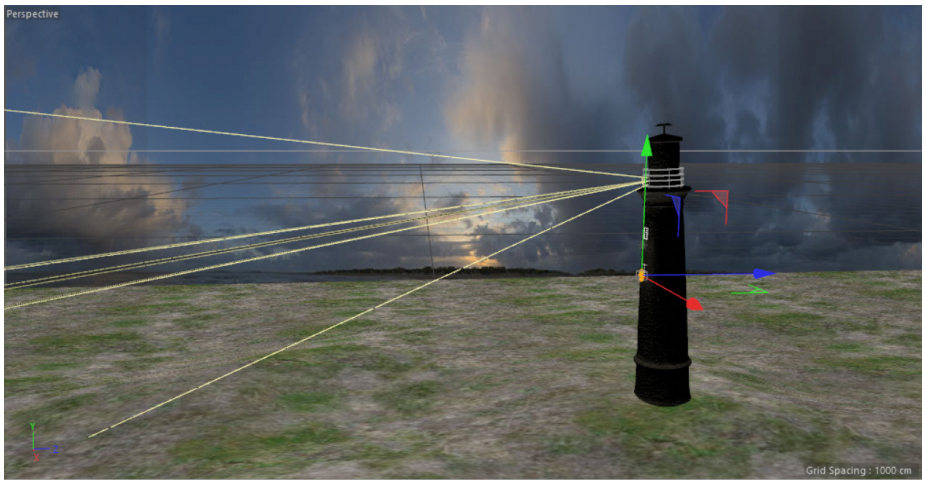

Figure 6-16 *The Area lights positioned in the Perspective viewport*

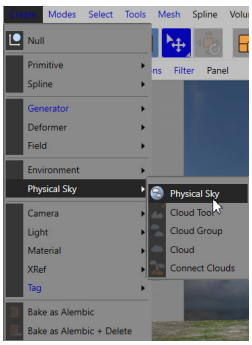

Figure 6-17 *Choosing* ***Physical Sky*** *from the main menu*

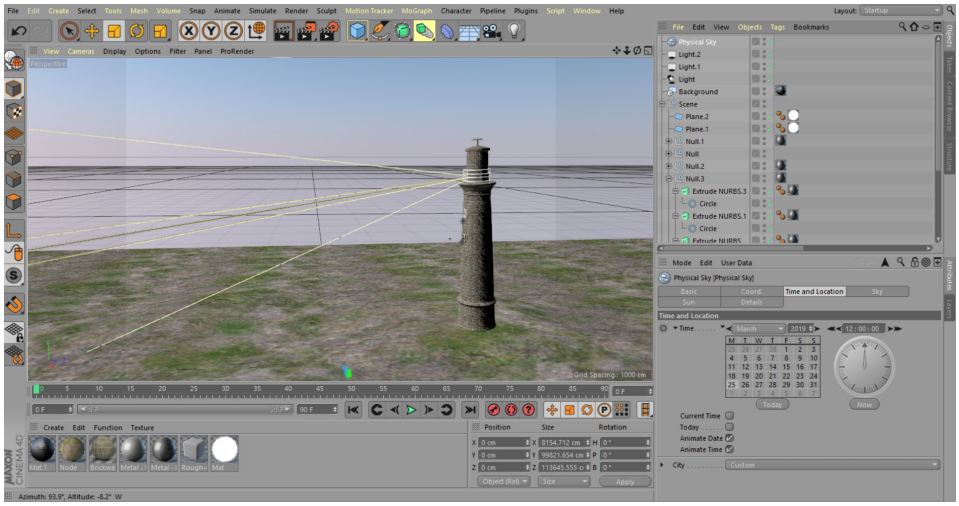

Figure 6-18 *Physical Sky added to the Object Manager*

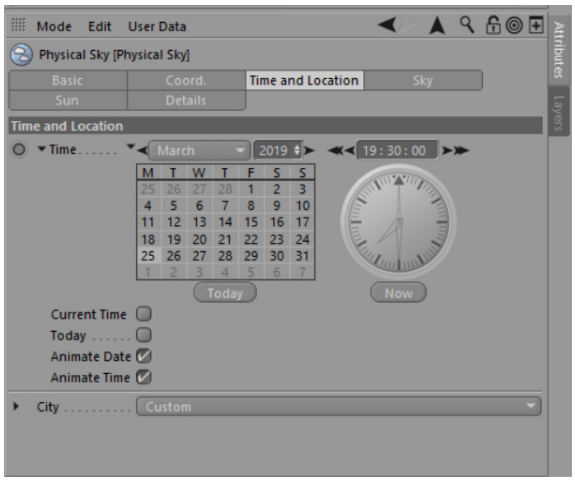

Figure 6-19 *The* ***Time and Location*** *area*

Figure 6-20 *The living room scene*

Figure 6-21 *The scene after adding lights to it*

Chapter 7

Rigging

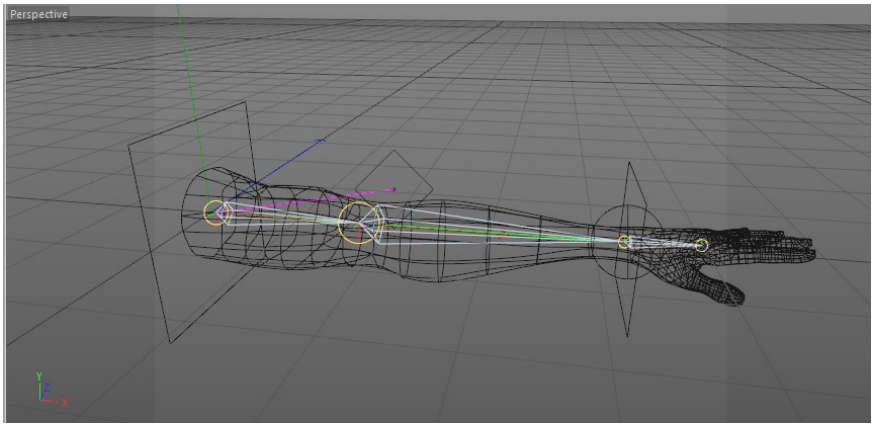

Figure 7-1 *The rig of the hand*

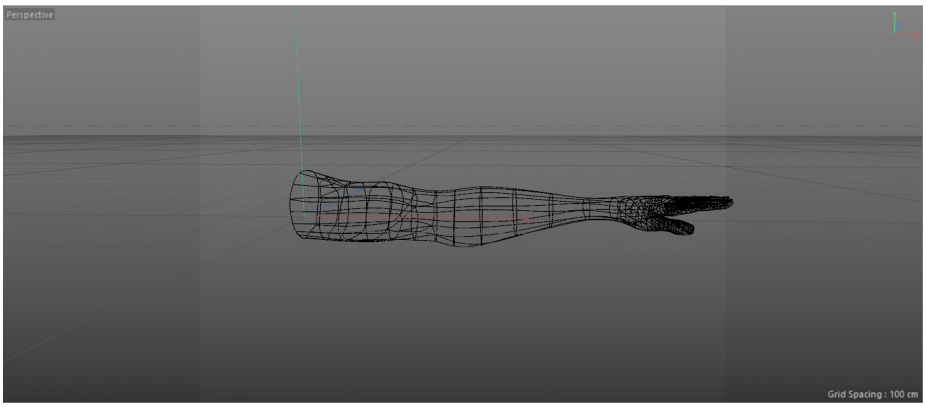

Figure 7-2 *The c07_tut1_start file*

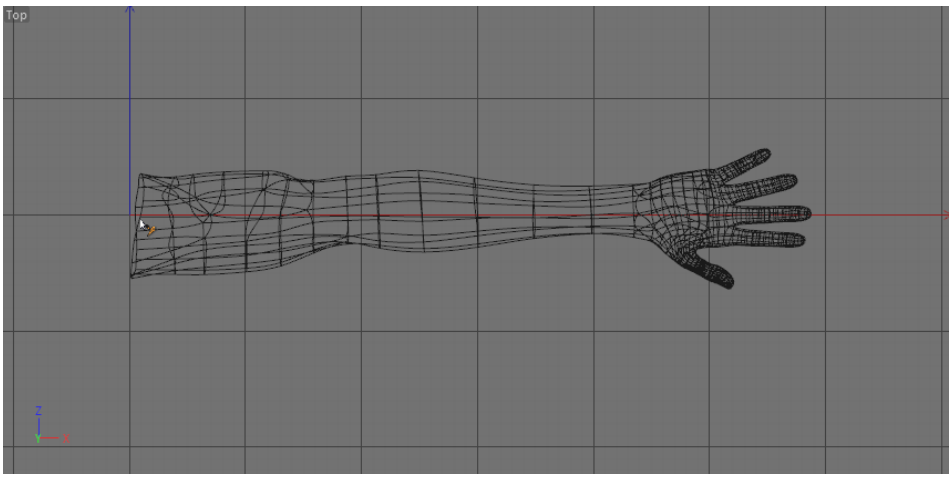

Figure 7-3 *Clicking on the shoulder joint of the hand*

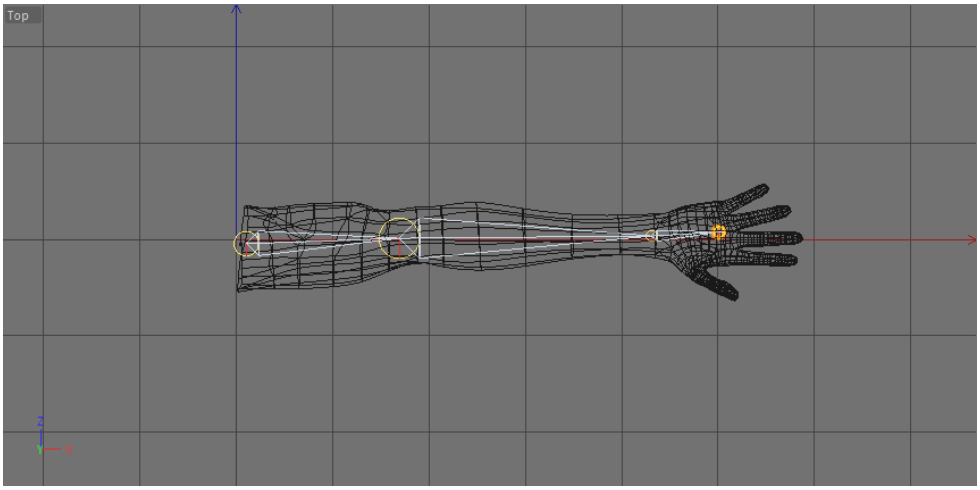

Figure 7-4 *Bone structure created*

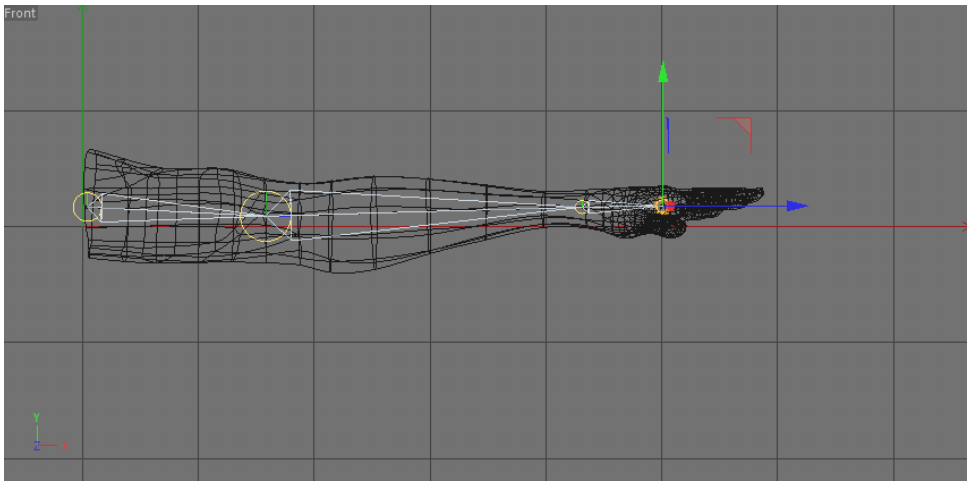

Figure 7-5 *All joints aligned in the Front viewport*

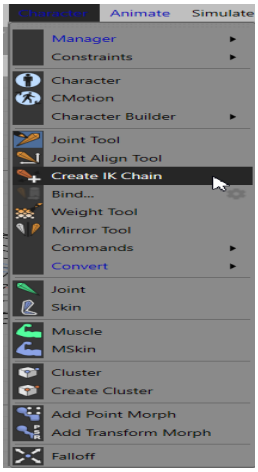

Figure 7-6 *Choosing the* ***Create IK Chain*** *from the main menu*

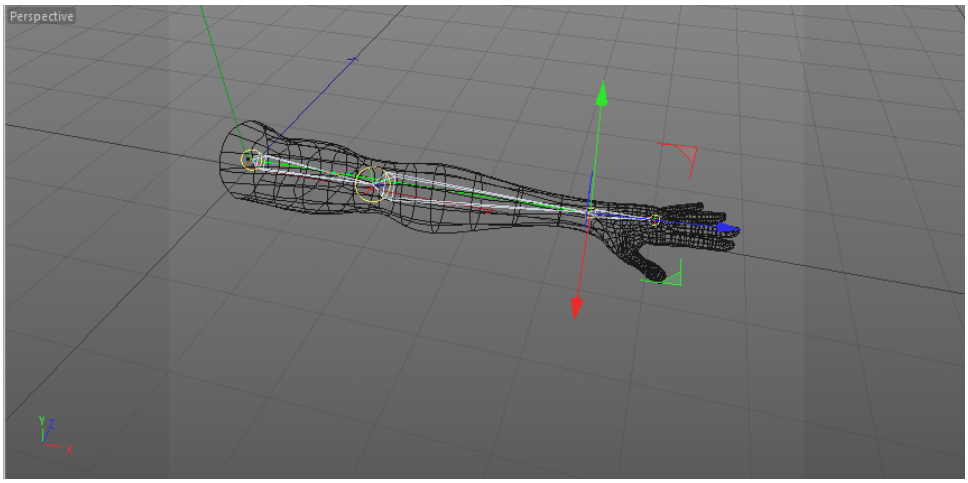

Figure 7-7 *The IK chain created in the Perspective viewport*

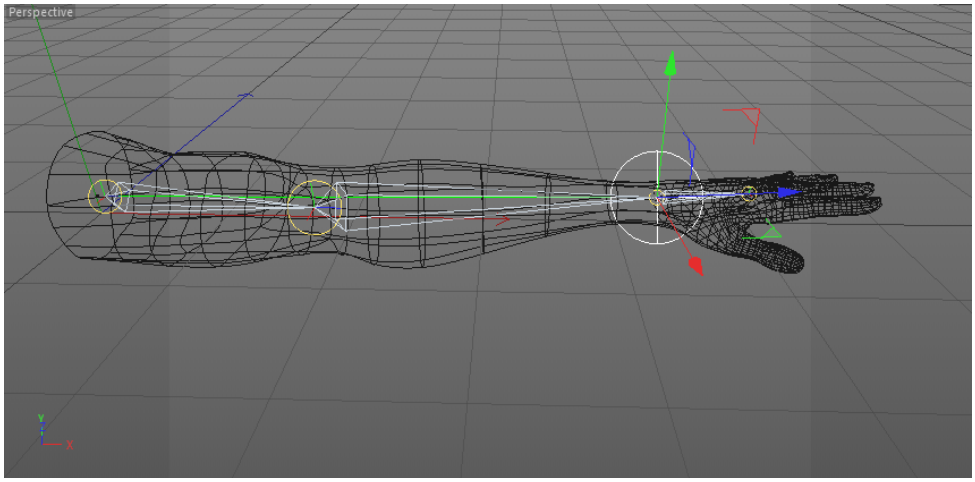

Figure 7-8 *The changed icon of wrist_joint.Goal*

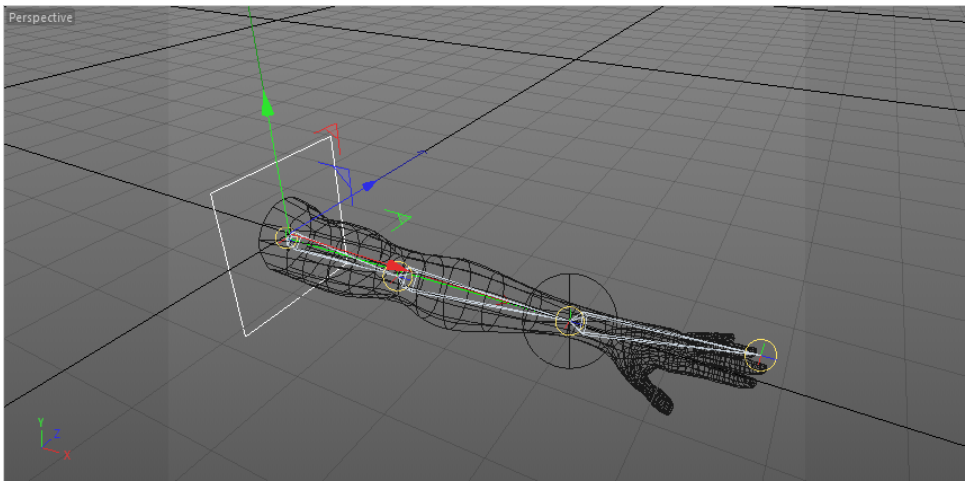

Figure 7-9 *The shoulder control in the Perspective viewport*

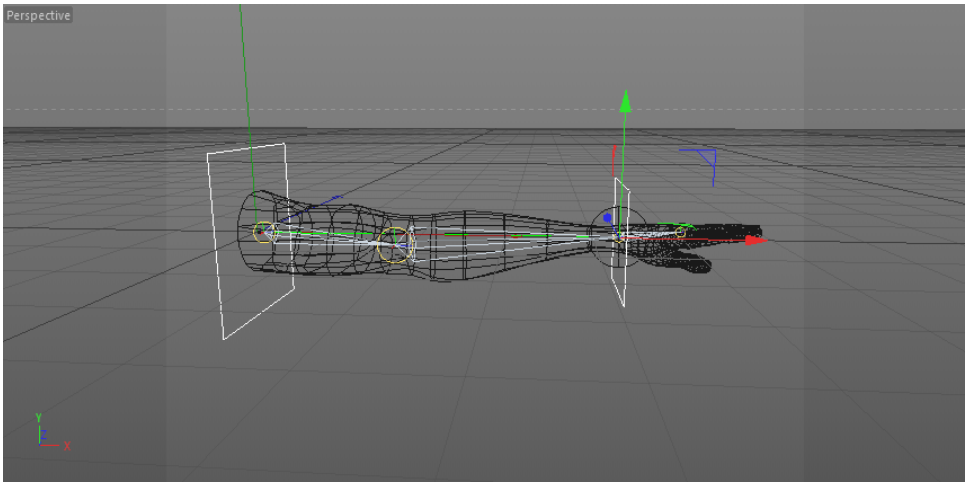

Figure 7-10 *Displaying the controllers of hand*

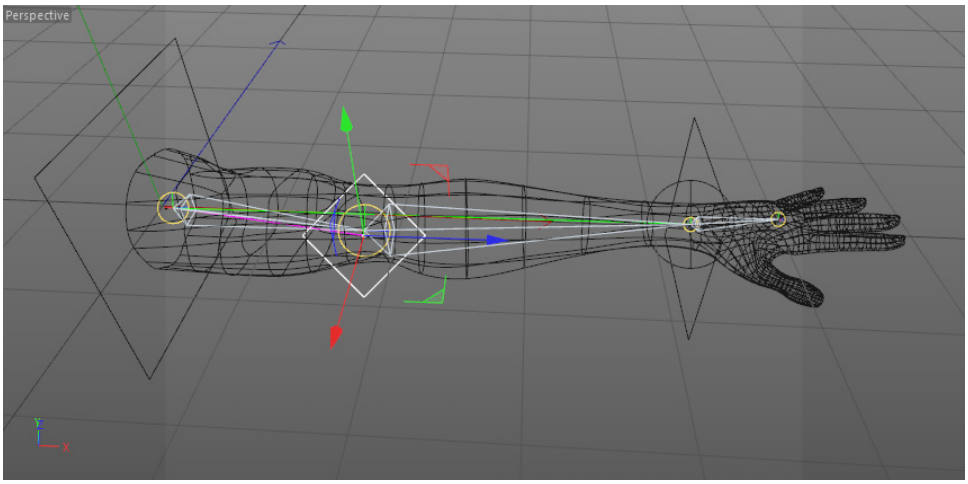

Figure 7-11 *The changed icon of shoulder_joint.Pole*

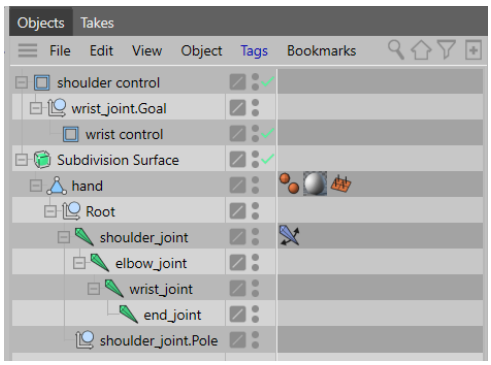

Figure 7-12 *Hierarchy for controls in the Object Manager*

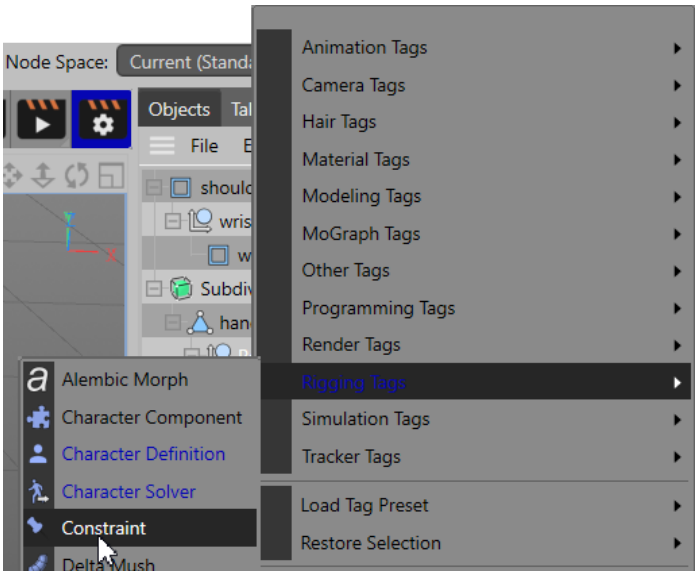

Figure 7-13 *Choosing* ***Constraint*** *from the shortcut menu*

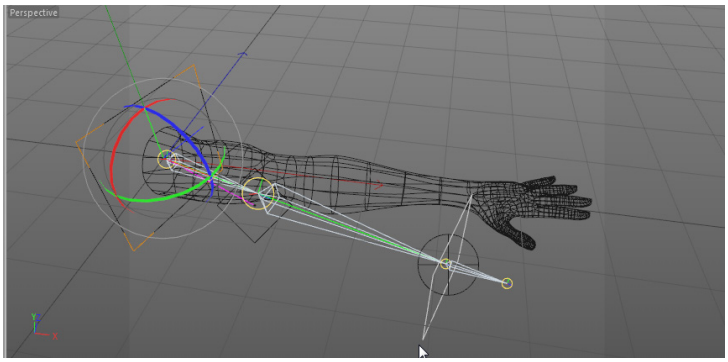

Figure 7-14 *All joints and controls rotating along with shoulder control in the Perspective viewport*

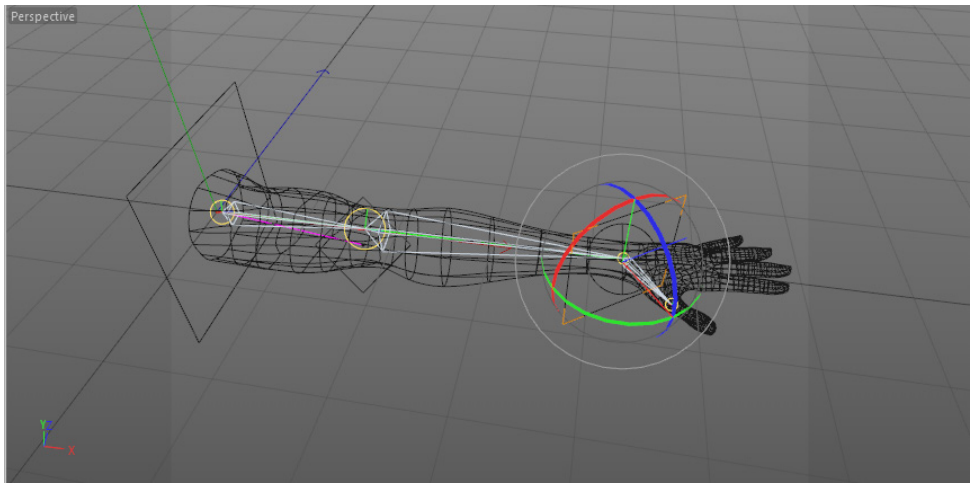

Figure 7-15 *The wrist_joint and end_joint rotating along with wrist control*

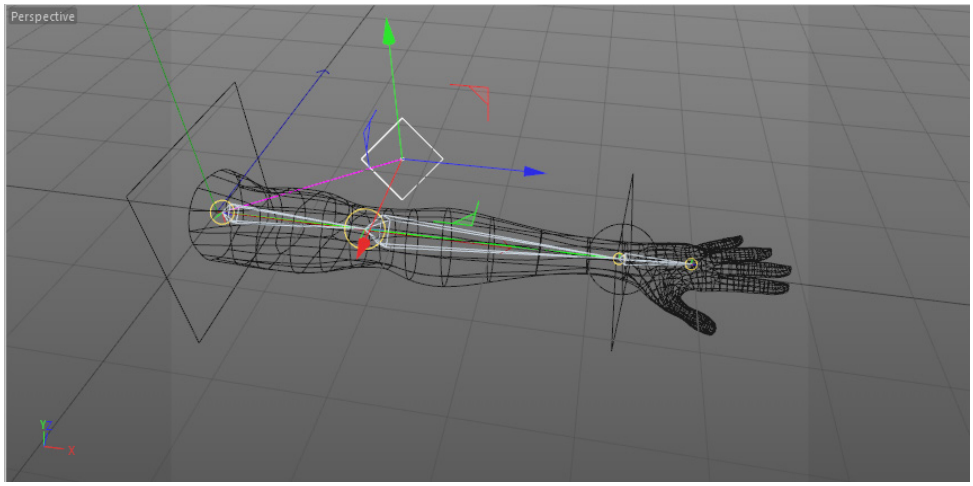

Figure 7-16 *Position of shoulder_joint.Pole changed*

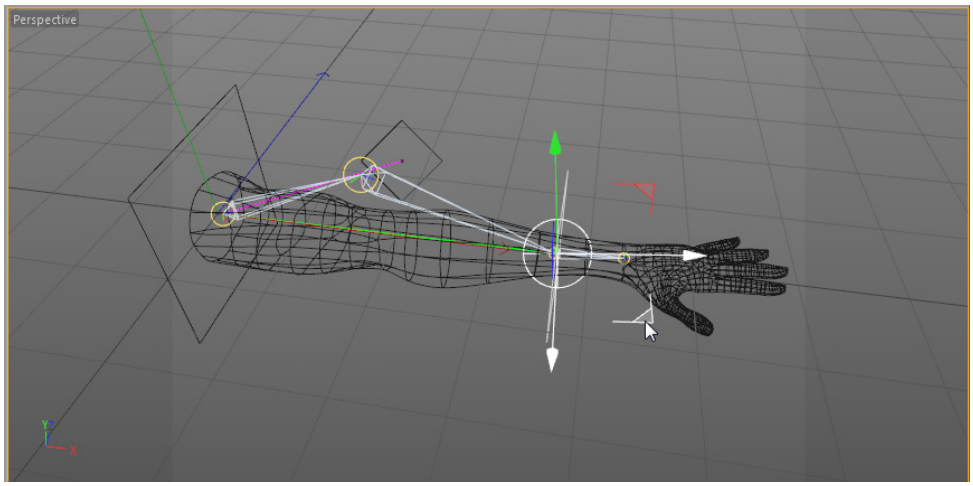

Figure 7-17 *Elbow movement controlled by wrist_joint.Goal*

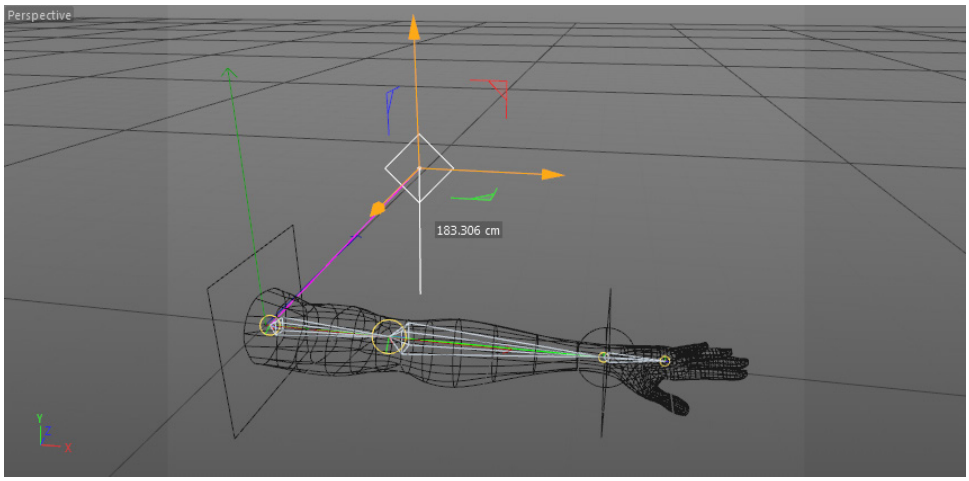

Figure 7-18 *Elbow rotation controlled by shoulder_joint.Pole*

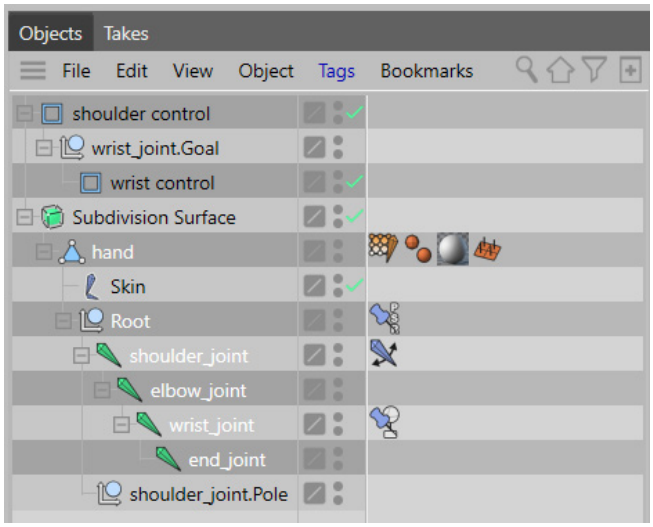

Figure 7-19 *Skin added to the Object Manager*

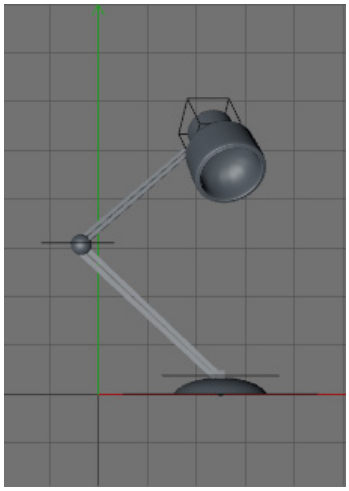

Figure 7-20 *Rig for a table lamp*

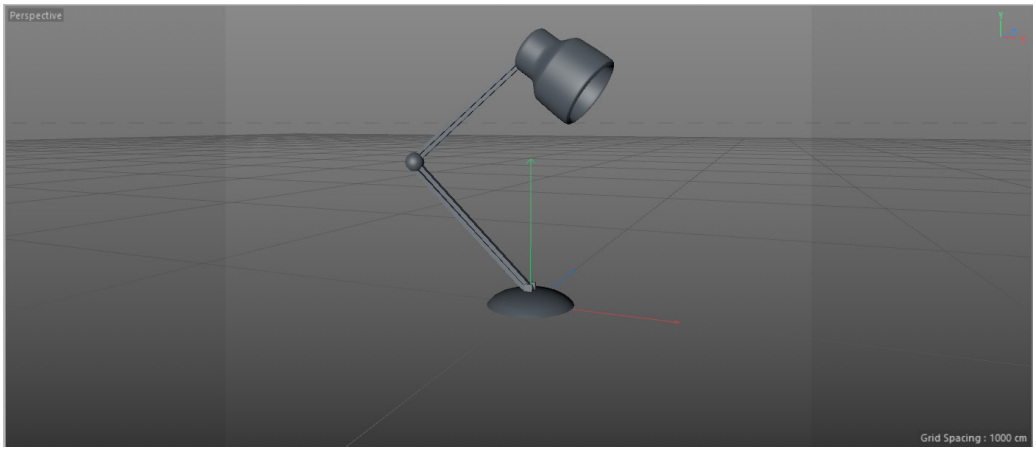

Figure 7-21 *The c07_tut2_start file*

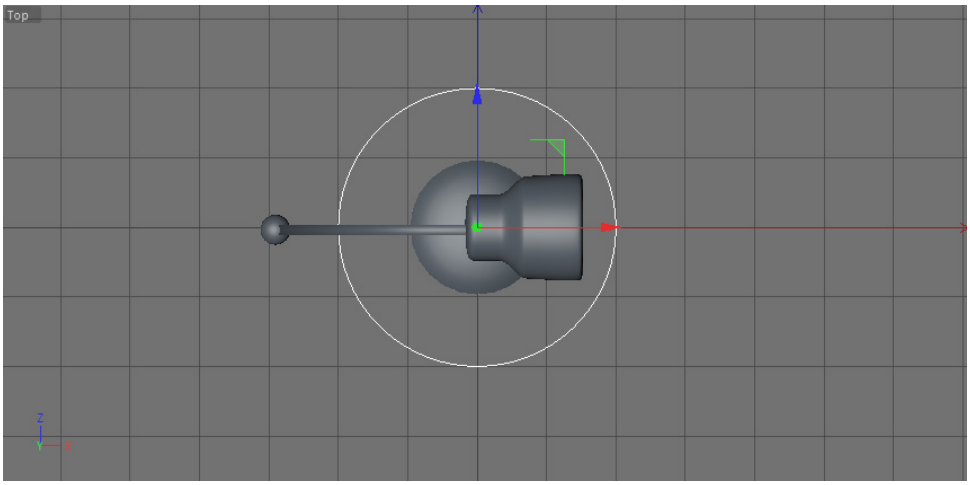

Figure 7-22 *The main control in the Top viewport*

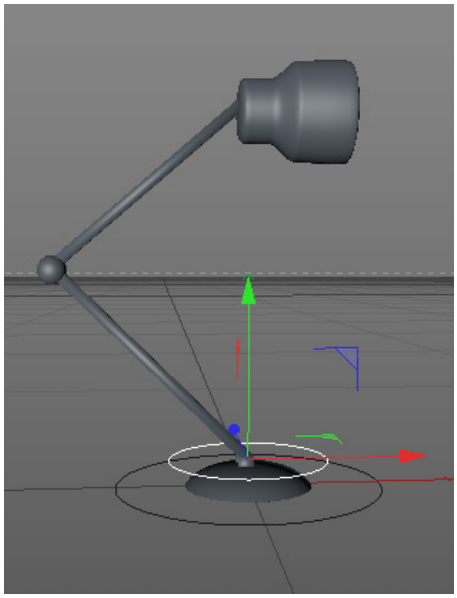

Figure 7-23 *The support control in the Perspective viewport*

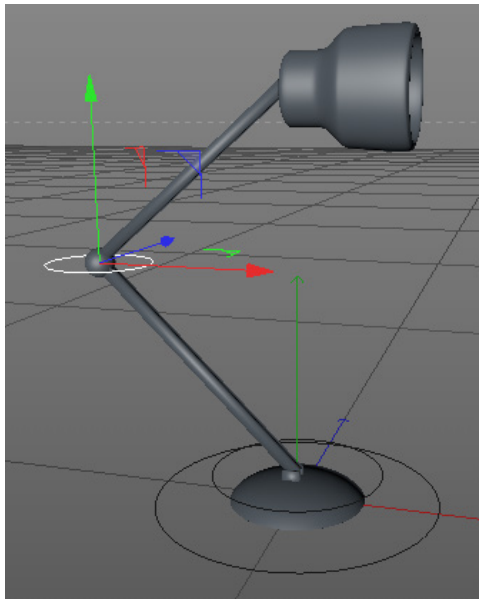

Figure 7-24 *The center control in the Perspective viewport*

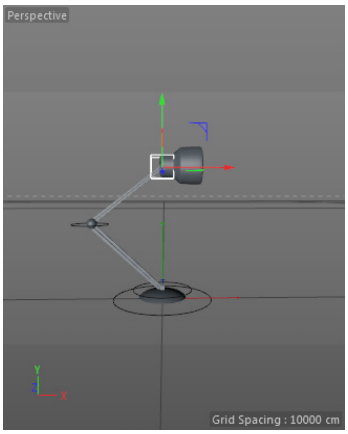

Figure 7-25 *The lamp control in the Perspective viewport*

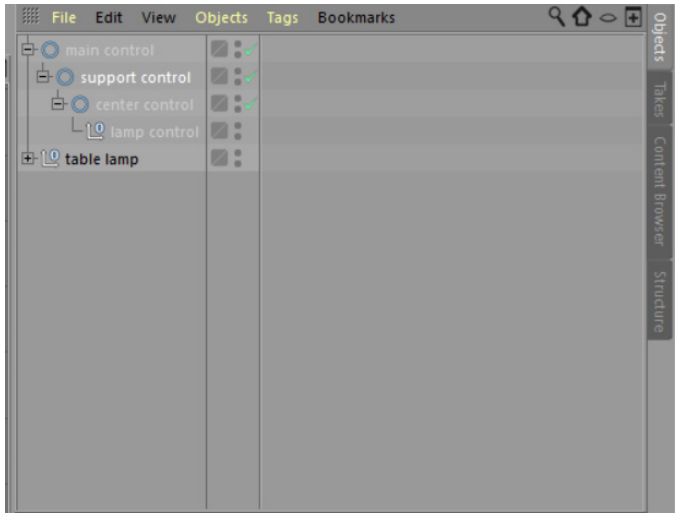

Figure 7-26 *All controls connected in the Object Manager*

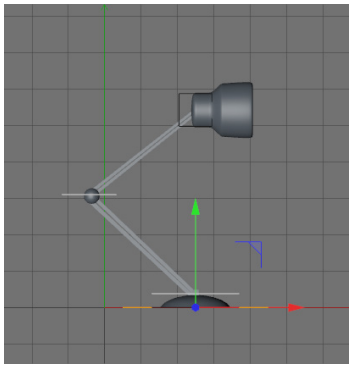

Figure 7-27 *The table lamp moving along with main control*

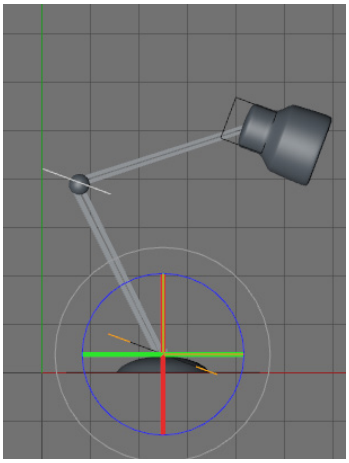

Figure 7-28 *Supports and lamp shade rotating along with support control*

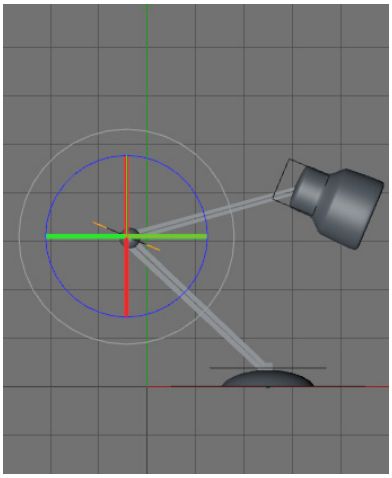

Figure 7-29 *The support2 and lamp shade rotating along with center control*

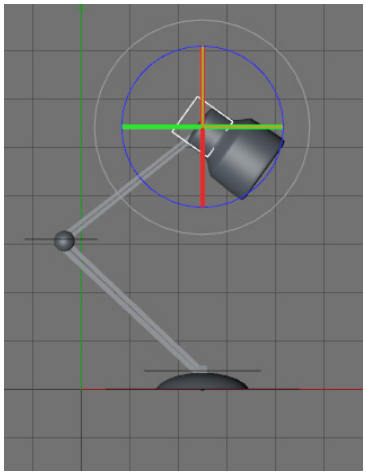

Figure 7-30 *The lamp shade rotating along with lamp control*

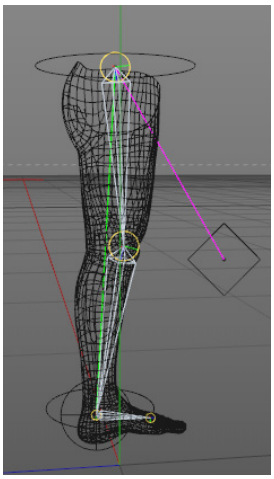

Figure 7-31 *Rig for a human leg*

Chapter 8

Animation

Figure 8-1 *The animated logo at frame 65*

Figure 8-2 *The c08_tut1_start.c4d file*

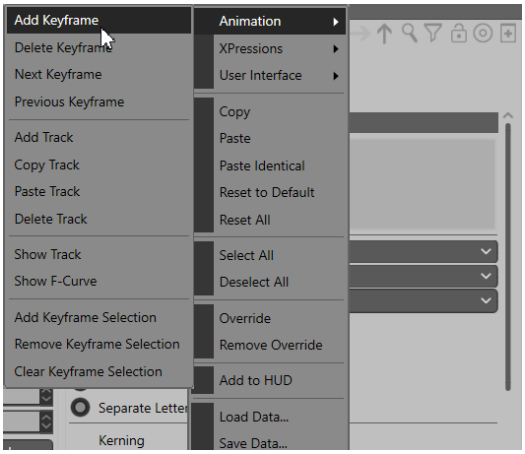

Figure 8-3 *Choosing the* ***Add Keyframe*** *option from the shortcut menu*

Figure 8-4 *Timeslider set to frame 20*

Figure 8-5 *The space added between the text*

Figure 8-6 *The CADCIM text at frame 65*

Figure 8-7 *The CADCIM text at frame 75*

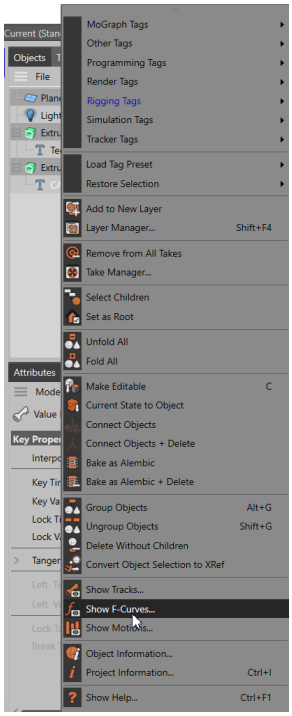

Figure 8-8 *Choosing* ***Show FCurves*** *from the shortcut menu*

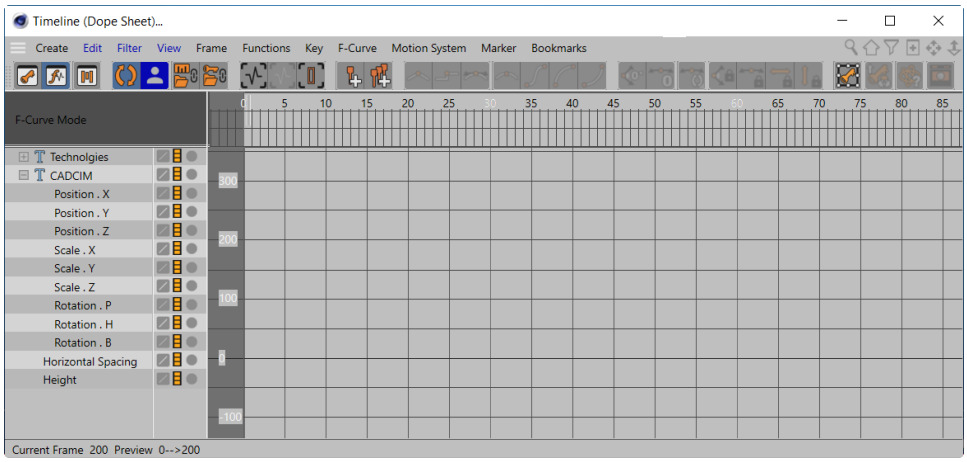

Figure 8-9 *The* ***Timeline (Dope Sheet)*** *window*

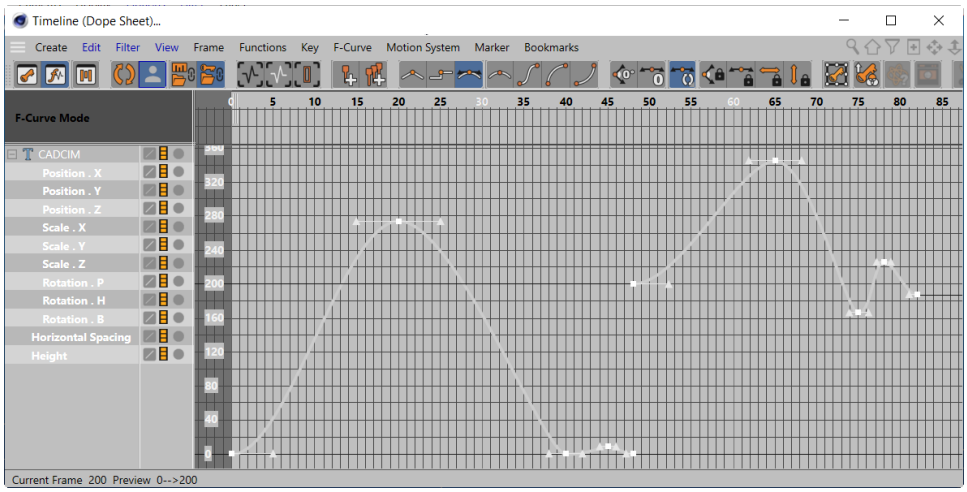

Figure 8-10 *Selecting all the keys in the* ***Timeline (Dope Sheet)*** *window*

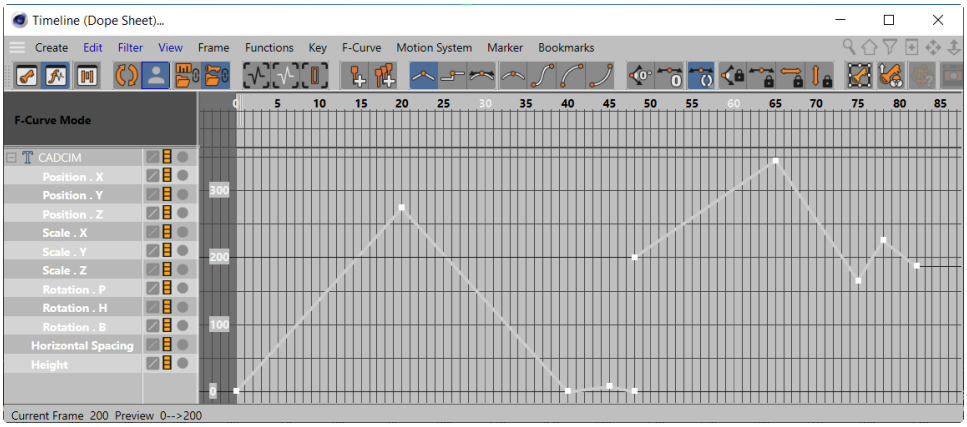

Figure 8-11 *Displaying the linear shape of curves*

Figure 8-12 *The basket ball at frame 66*

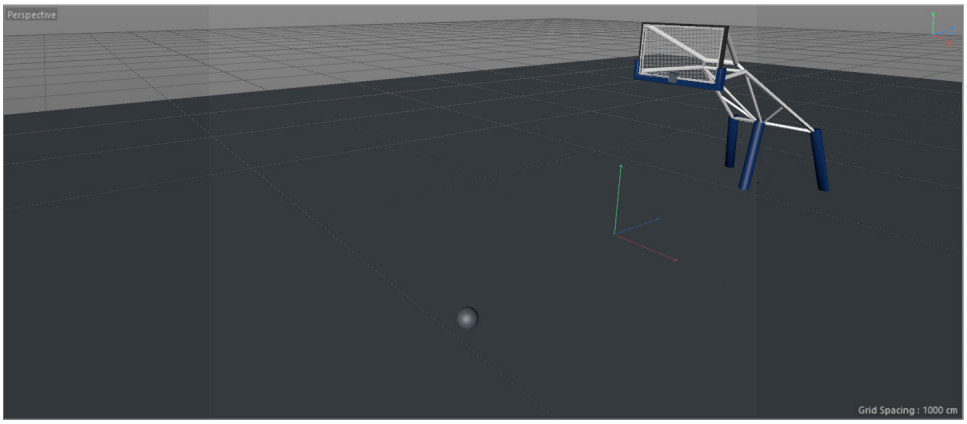

Figure 8-13 *The c08_tut2_start.c4d file*

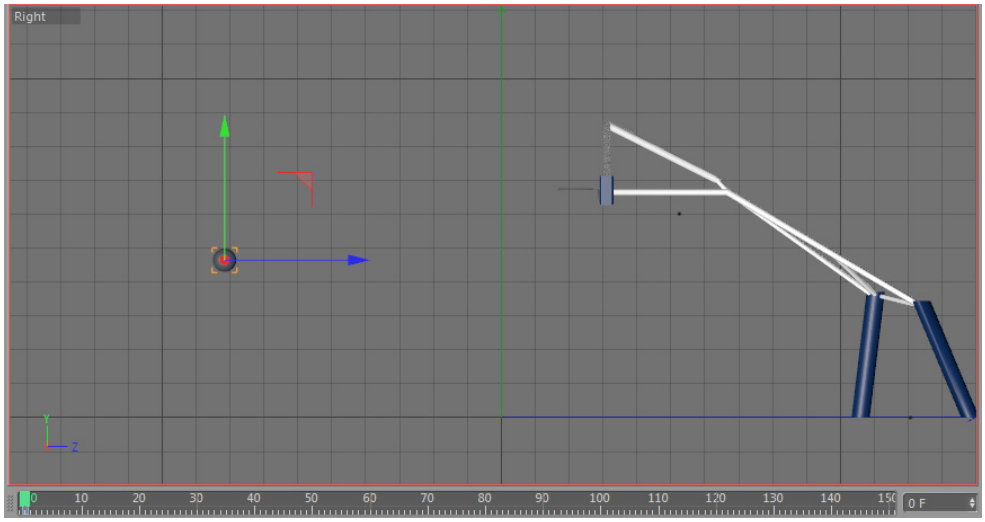

Figure 8-14 *The basketball at frame 0*

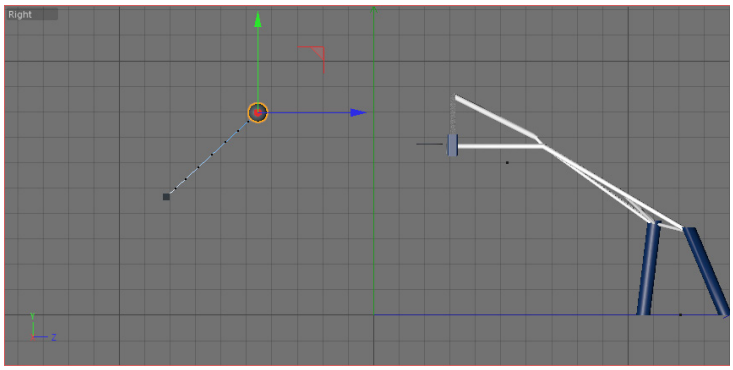

Figure 8-15 *The basketball at frame 10*

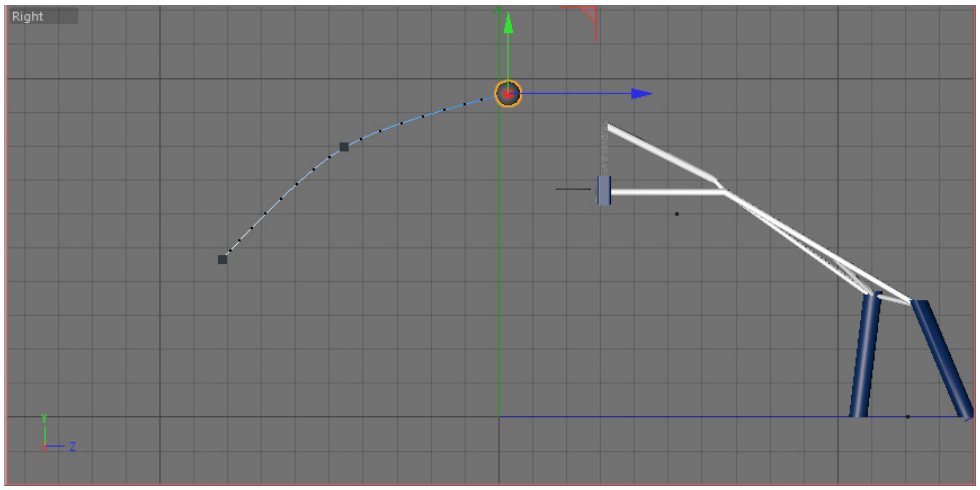

Figure 8-16 *The basketball at frame 20*

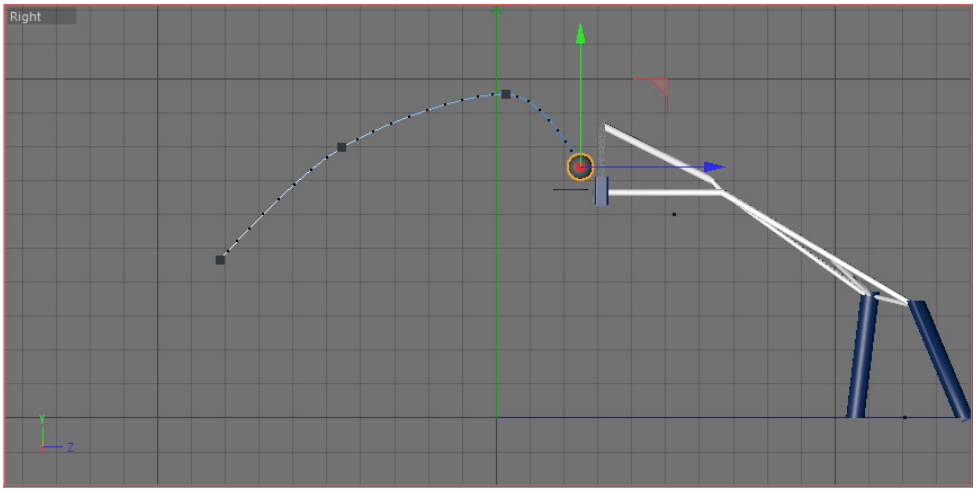

Figure 8-17 *The basketball at frame 30*

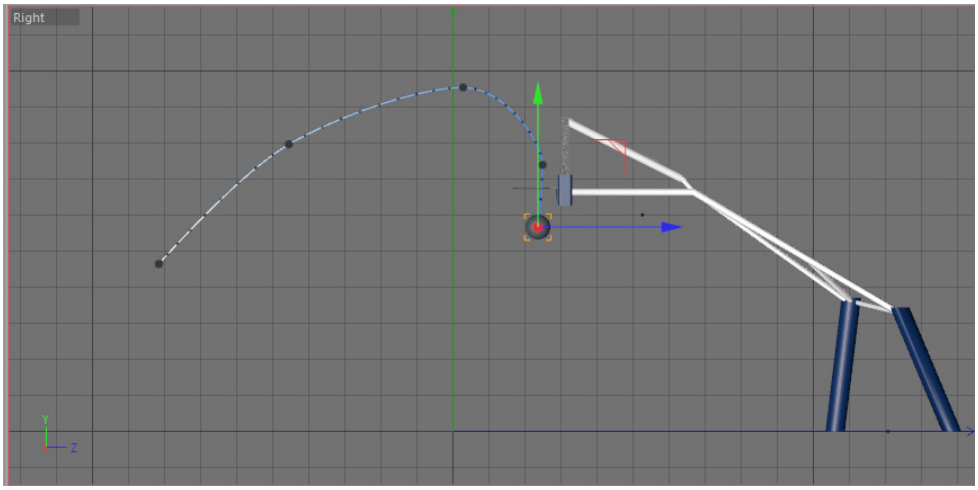

Figure 8-18 *The basketball at frame 34*

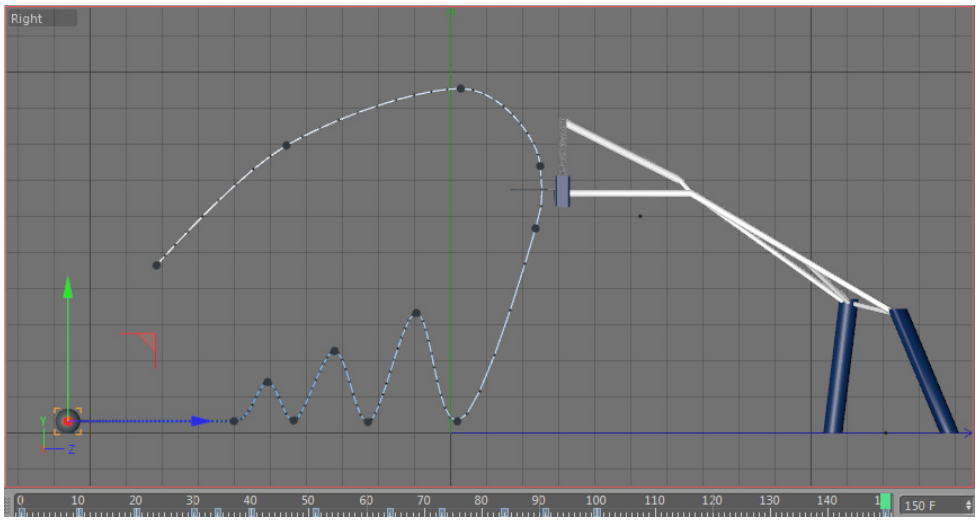

Figure 8-19 *The basketball at frame 150*

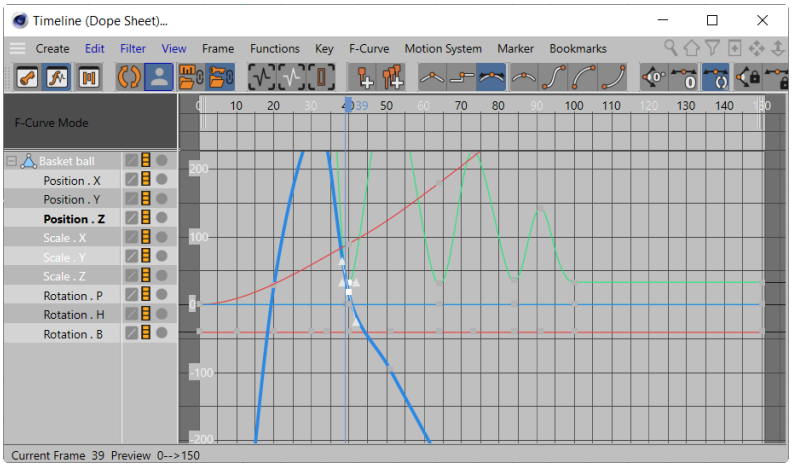

Figure 8-20 *Selecting the keyframe from the* ***Timeline (Dope Sheet)*** *window*

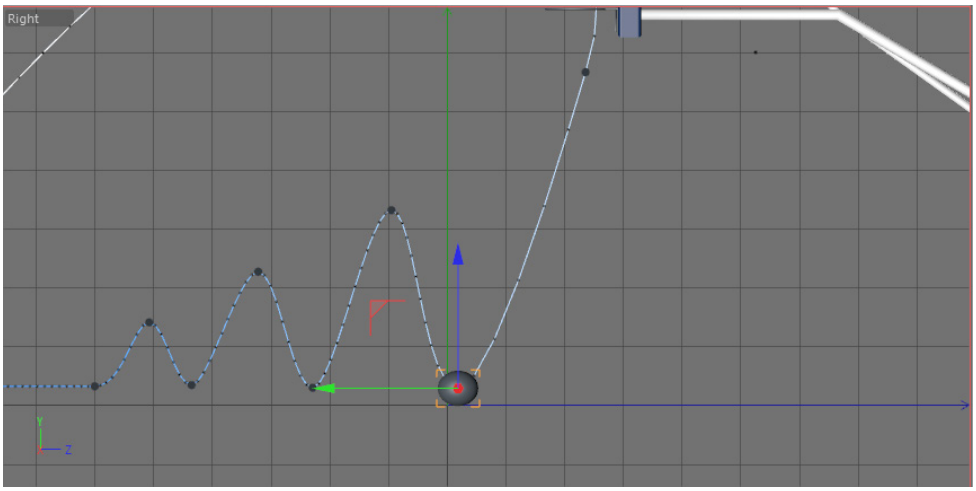

Figure 8-21 *Squashed basketball at frame 40*

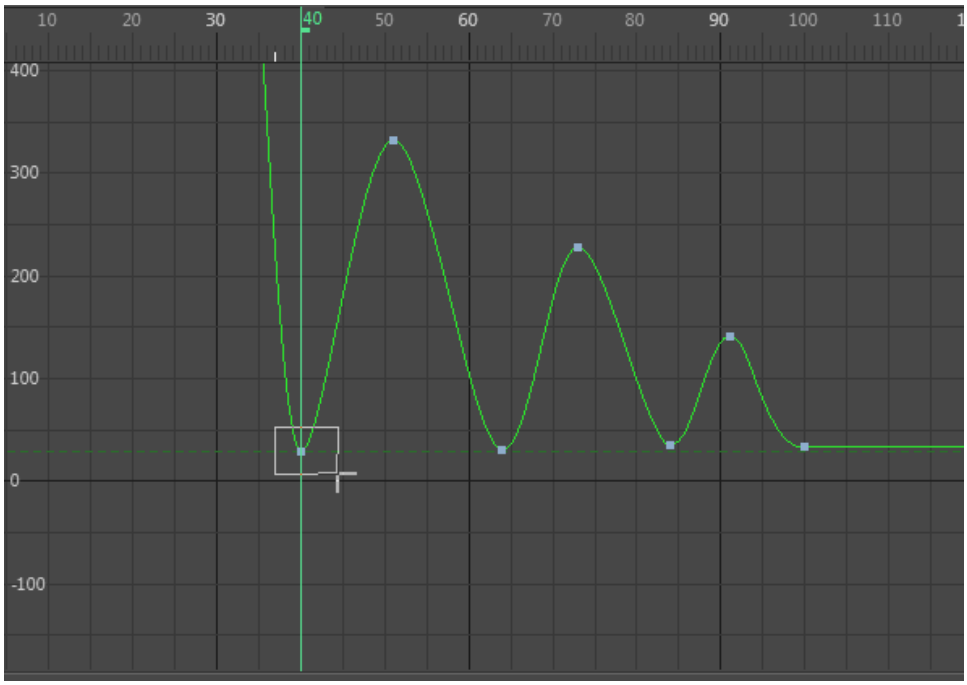

Figure 8-22 *Selecting the keyframe from the* ***Timeline (Dope Sheet)*** *window*

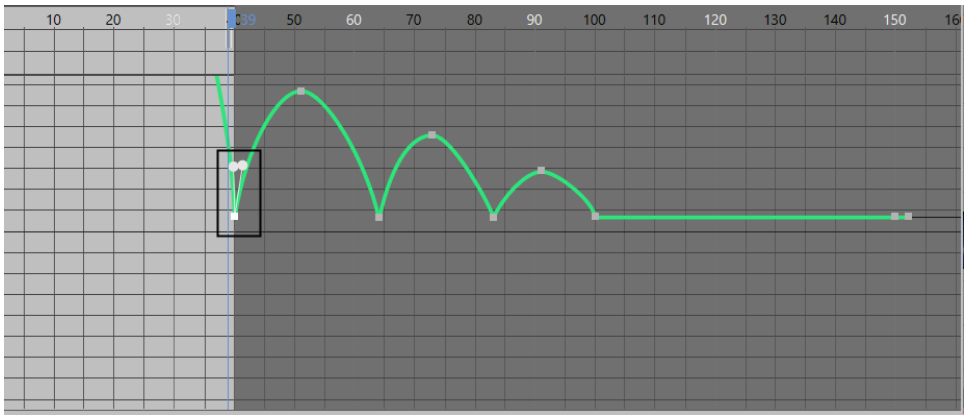

Figure 8-23 *Moving the tangents in the* ***Timeline (Dope Sheet)*** *window*

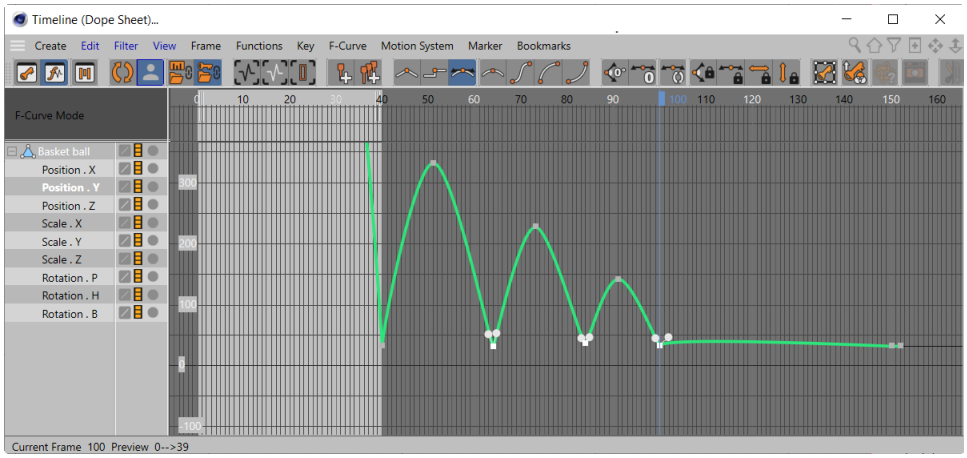

Figure 8-24 *Moving the tangents at other frames*

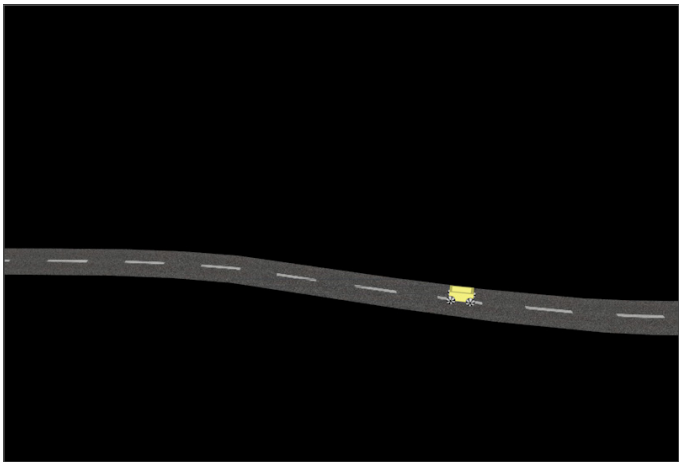

Figure 8-25 *Moving cart at frame 45*

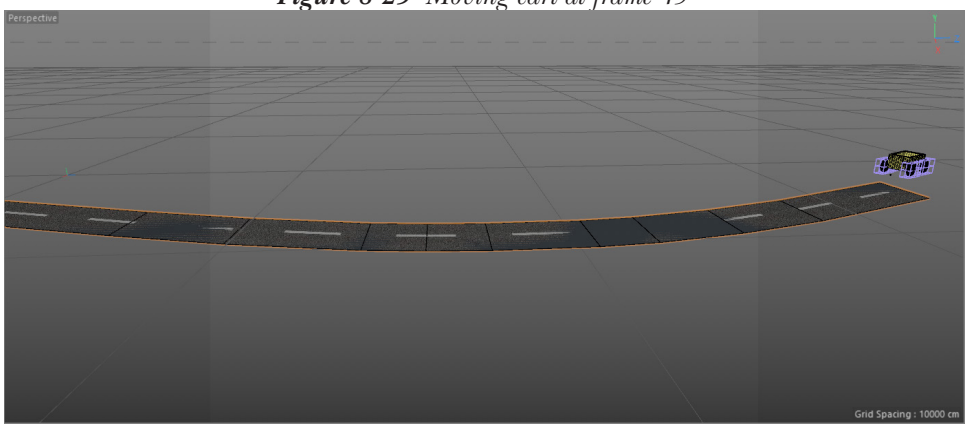

Figure 8-26 *The c08_tut3_start file*

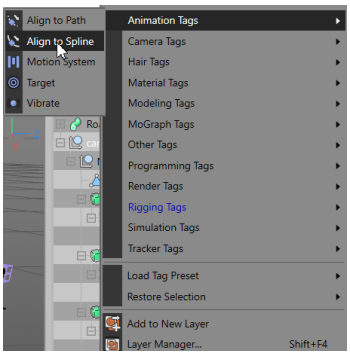

Figure 8-27 *Choosing* ***Align to Spline*** *from the shortcut menu*

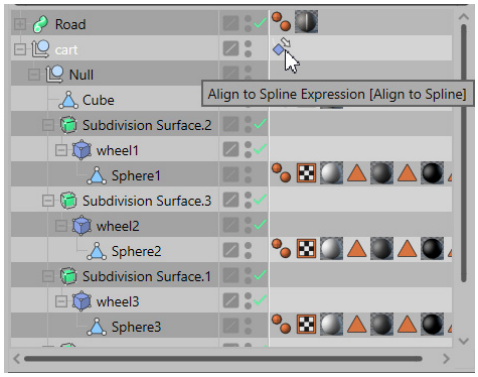

Figure 8-28 *The* ***Align to Spline Expression [Align to Spline]*** *tag in the Object Manager*

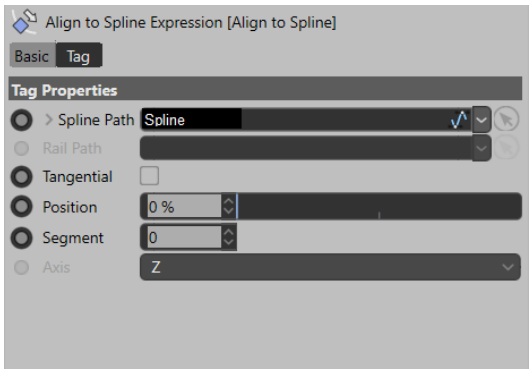

Figure 8-29 *Spline displayed in the* ***Spline Path*** *edit box*

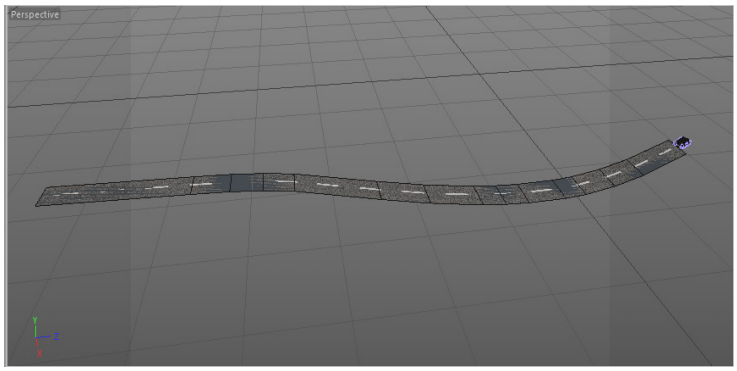

Figure 8-30 *cart aligned with Road*

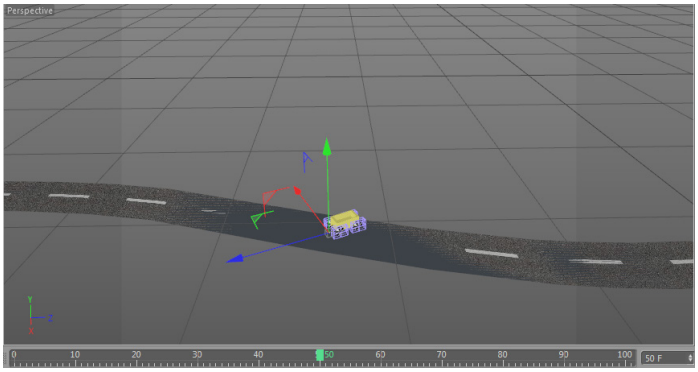

Figure 8-31 *cart at frame 50*

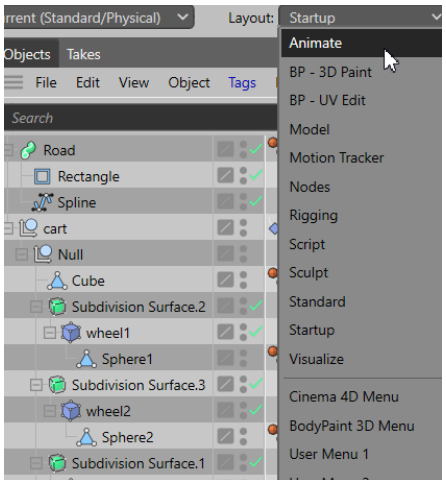

Figure 8-32 *Selecting* ***Animate*** *from the* ***Layout*** *drop-down list*

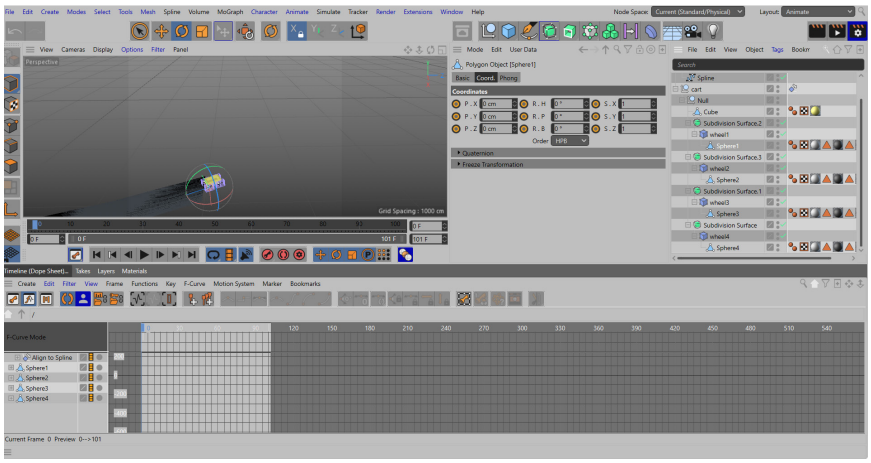

Figure 8-33 *The Animation layout displayed*

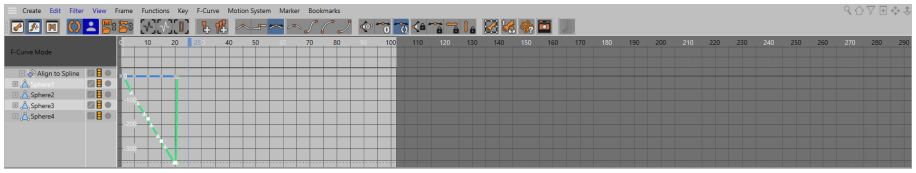

Figure 8-34 *The modified size of the Timeline panel*

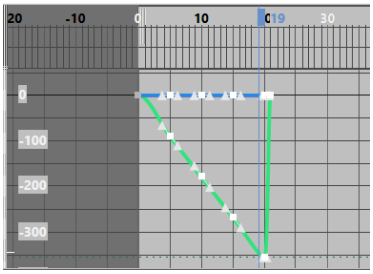

Figure 8-35 *Selecting all keyframes*

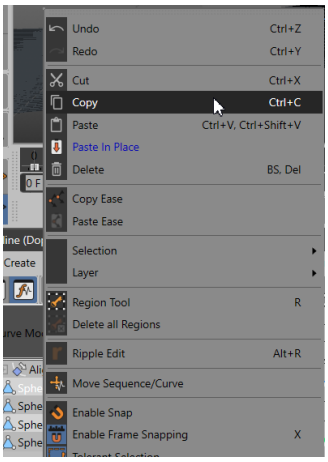

Figure 8-36 *Choosing* ***Copy*** *from the* ***Edit*** *menu*

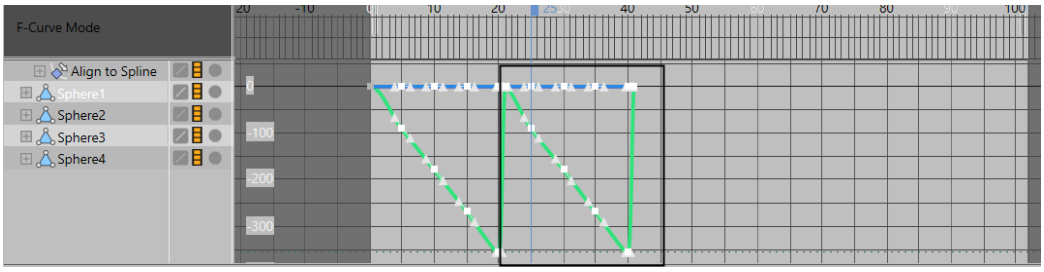

Figure 8-37 *Copied keyframes*

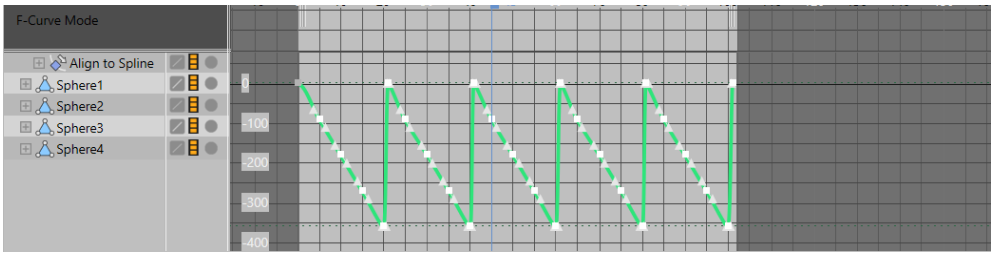

Figure 8-38 *All keyframes for Sphere1*

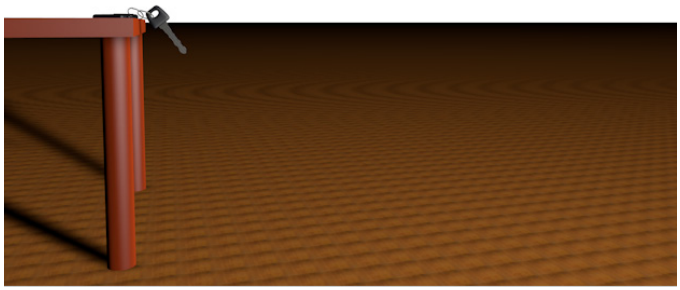

Figure 8-39 *The c08_exr01_start file*

Chapter 9

Introduction to UV Mapping

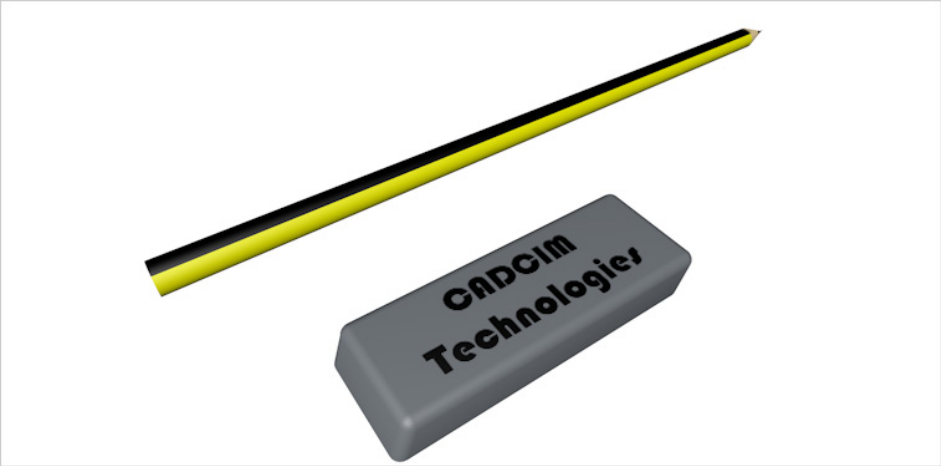

Figure 9-1 *The final output*

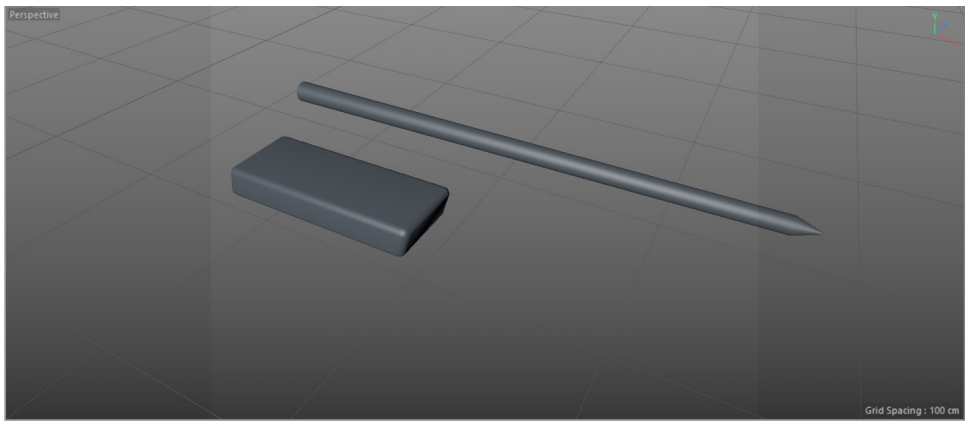

Figure 9-2 *The c09_tut1_start.c4d file*

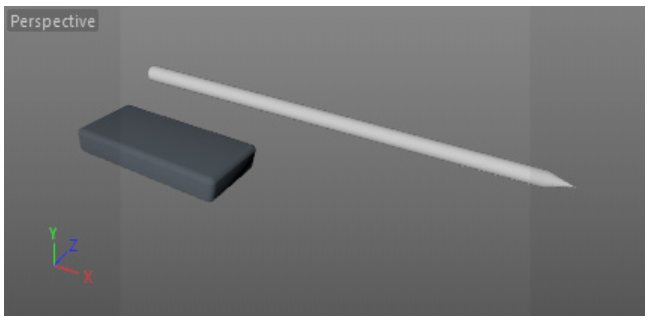

Figure 9-3 *The material applied to Pencil*

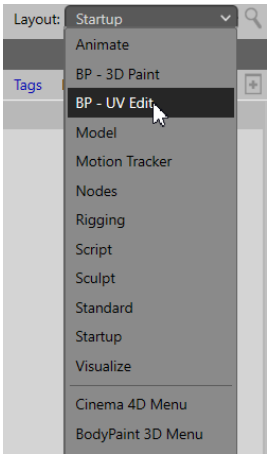

Figure 9-4 *The* ***Layout*** *drop-down list*

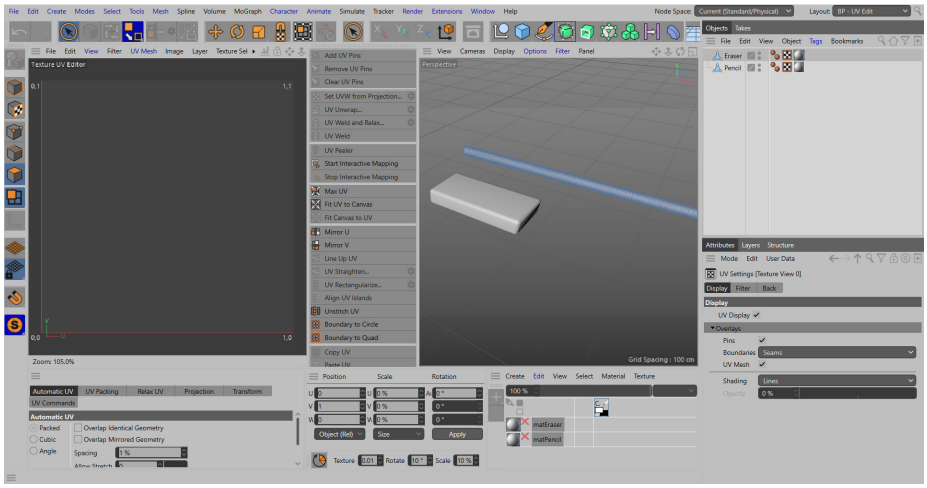

Figure 9-5 The ***BP UV Edit*** *layout*

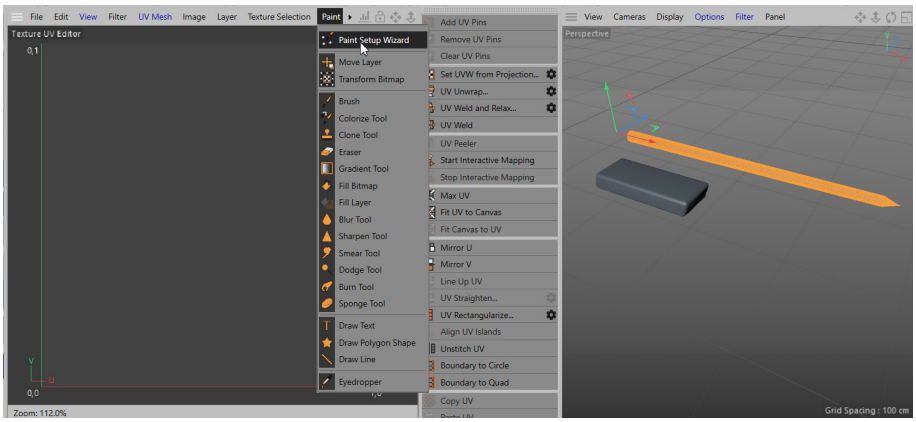

Figure 9-6 Choosing the ***Paint Setup Wizard*** *tool*

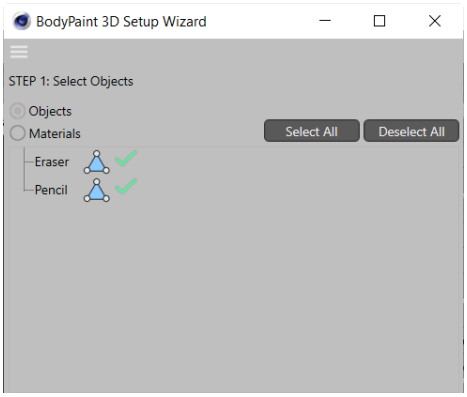

Figure 9-7 The ***BodyPaint 3D Setup Wizard*** *dialog box*

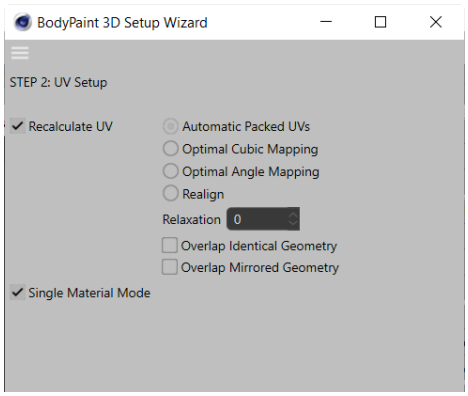

Figure 9-8 The ***STEP 2: UV Setup*** *area*

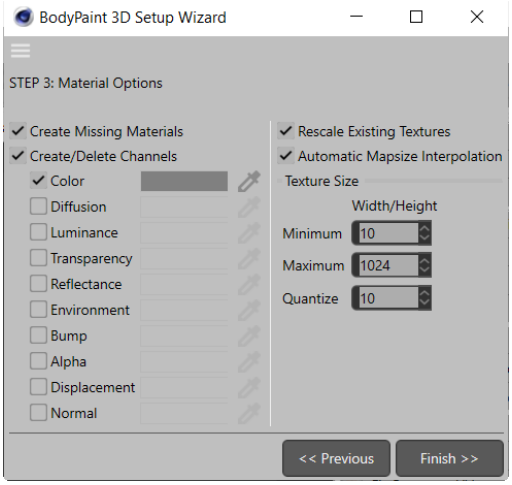

Figure 9-9 *The* ***Material Options*** *area in the* ***BodyPaint 3D Setup Wizard*** *dialog box*

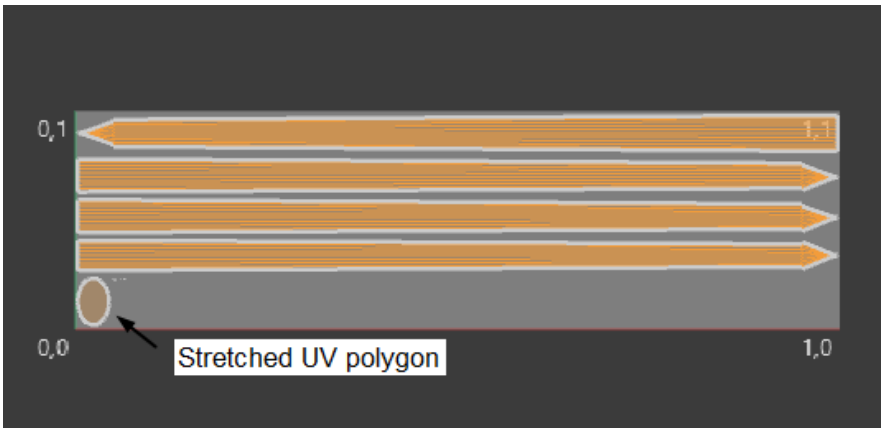

Figure 9-10(a) *The modified UV Mesh of Pencil*

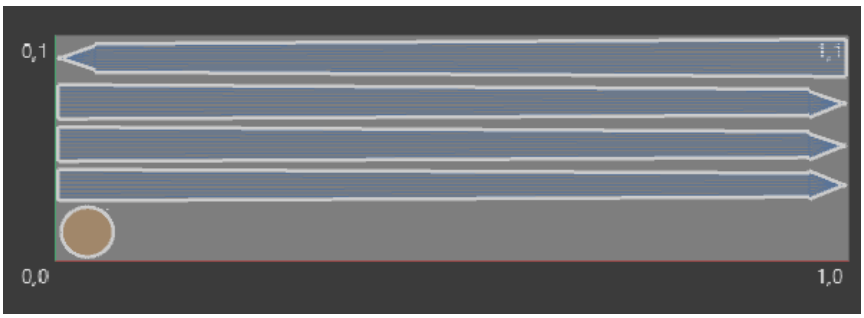

Figure 9-10(b) *Scaled UV polygon of Pencil*

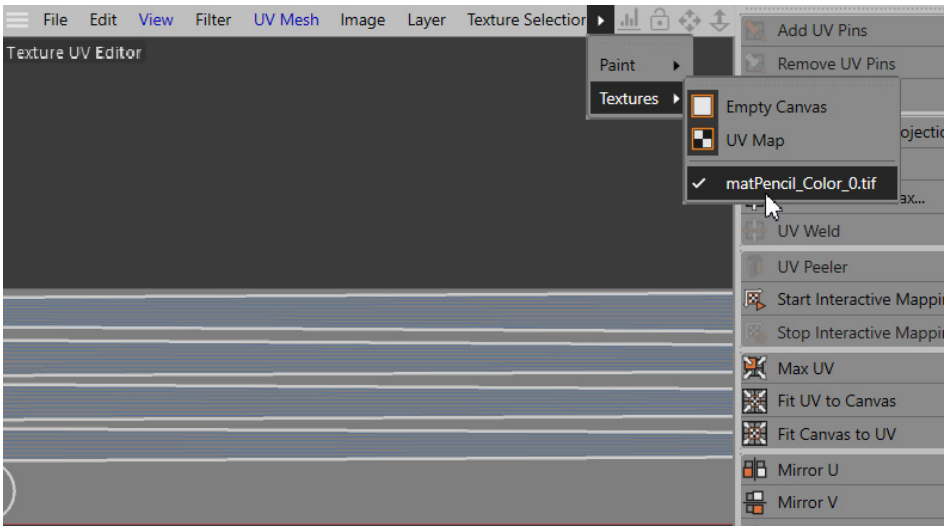

Figure 9-11 *The matPencil_Color.tif option chosen from the* ***Textures*** *menu*

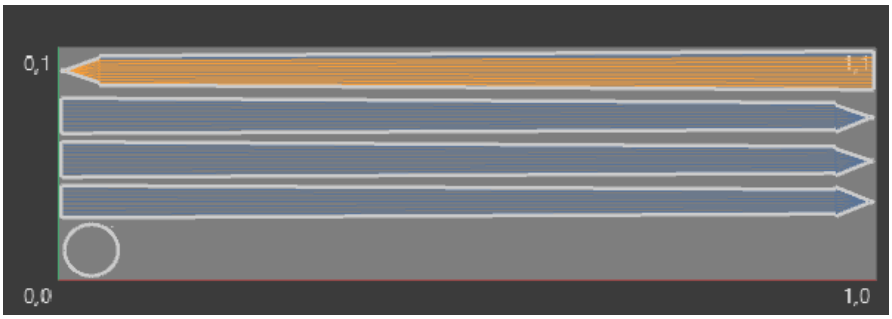

Figure 9-12 *The selected polygons of Pencil*

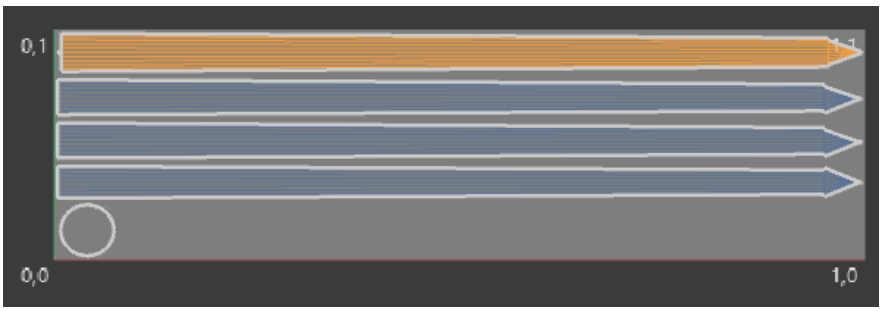

Figure 9-13 *The mirrored polygons*

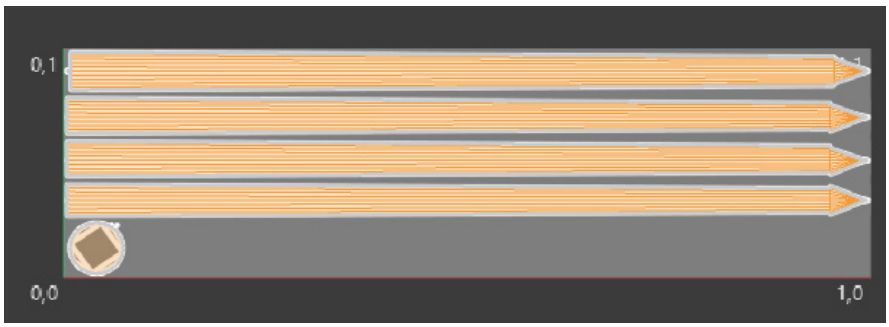

Figure 9-14 *The outlined polygons*

Figure 9-15 *The yellow color in the selected area of the canvas*

Figure 9-16 *The black color in the selected area of the canvas*

Figure 9-17 *Color filled in the remaining parts of pencil*

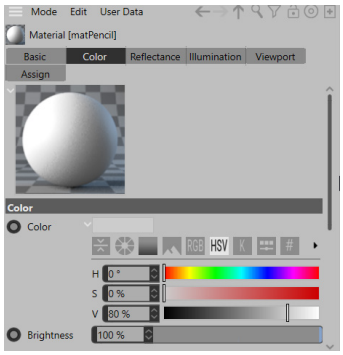

Figure 9-18 *Choosing the browse button in the Attribute Manager*

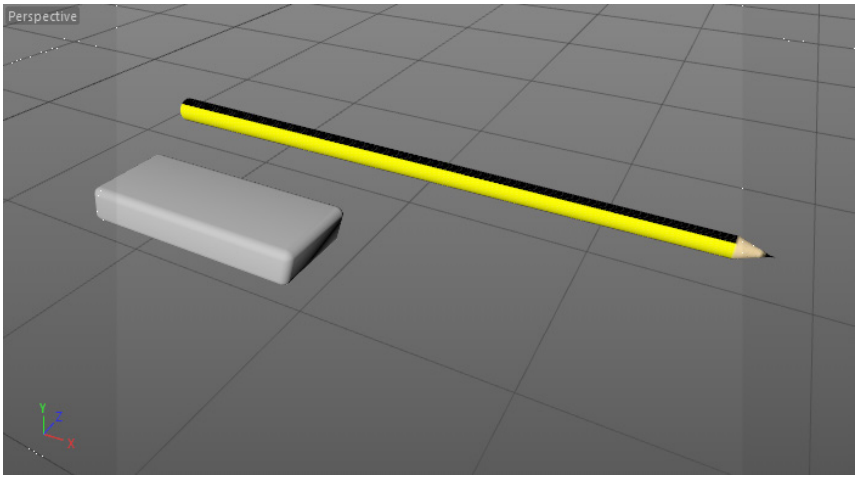

Figure 9-19 *The texture applied to Pencil*

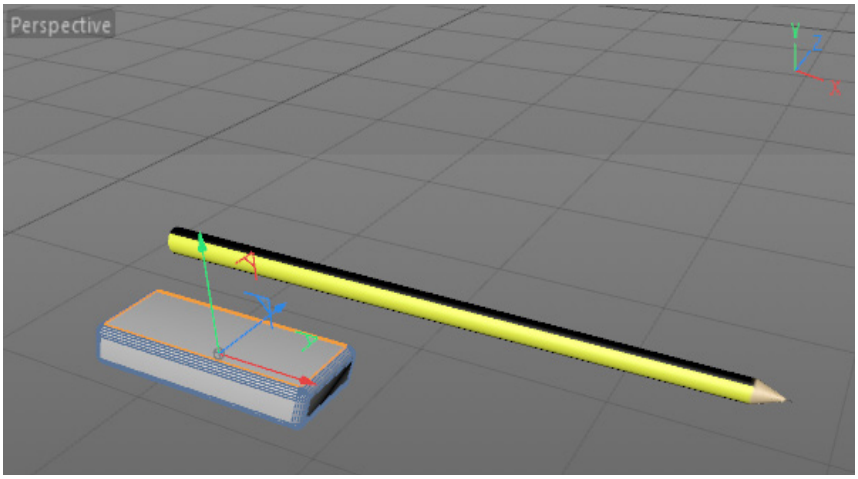

Figure 9-20 *The top polygon of the Eraser selected*

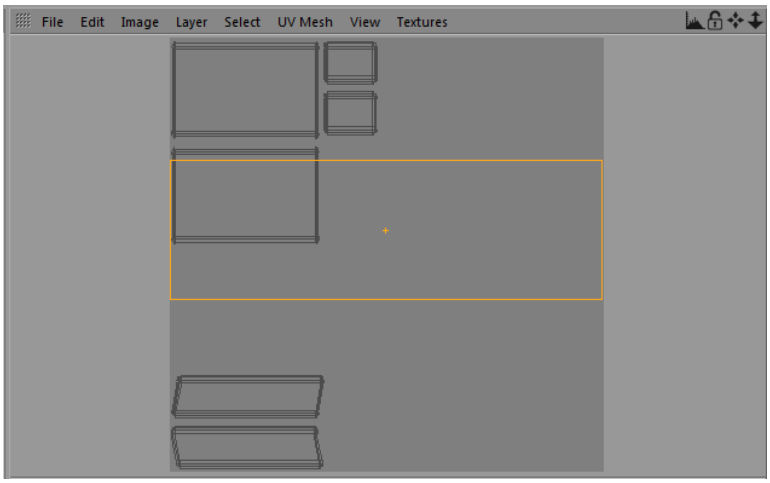

Figure 9-21 *The top polygon aligned in the Texture View*

Figure 9-22 *The text placed inside the white outline*

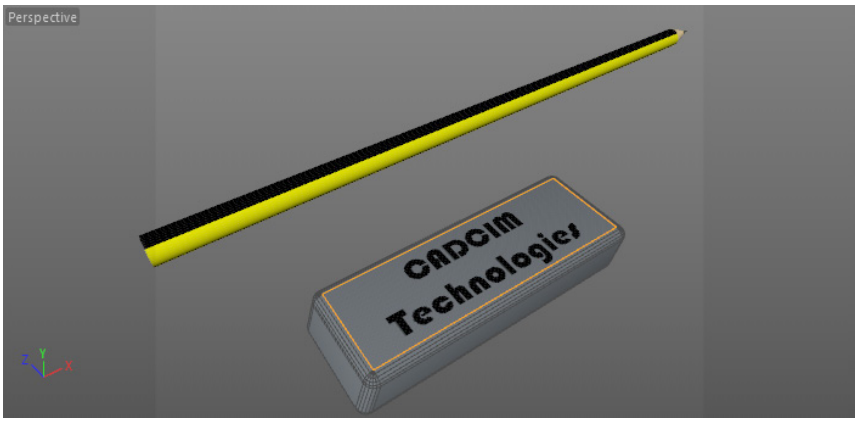

Figure 9-23 *The texture applied to Eraser*

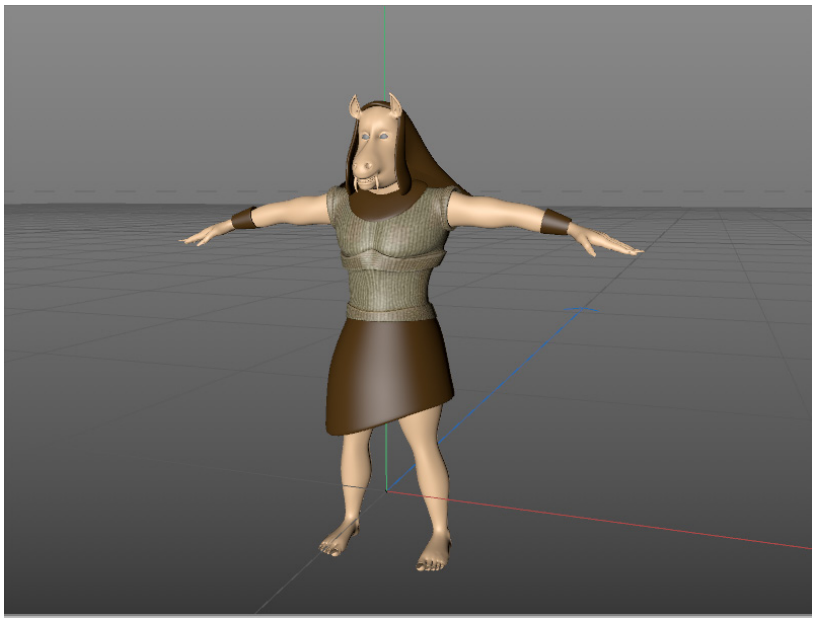

Figure 9-24 *The 3D model after applying body paint*

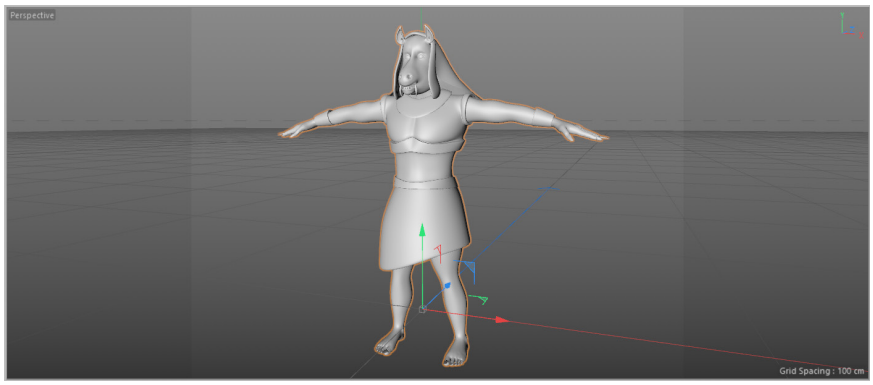

Figure 9-25 *The c09_tut2_start.c4d file*

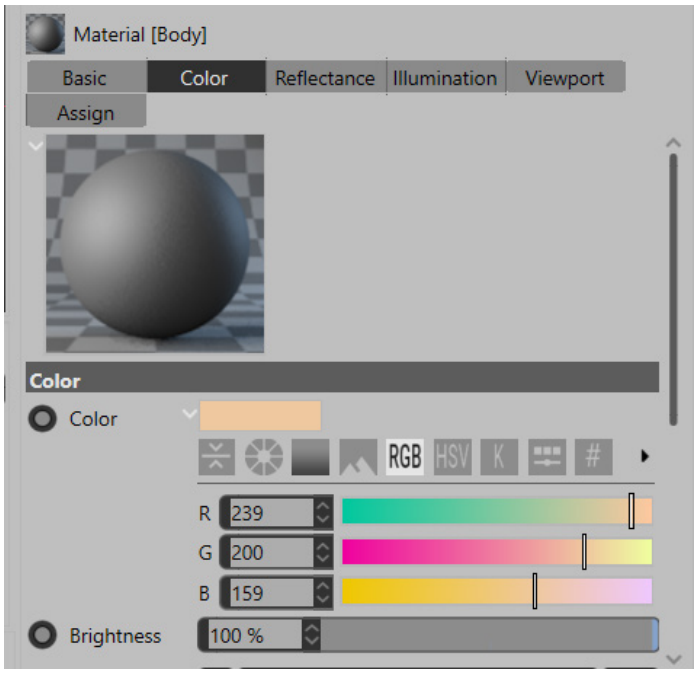

Figure 9-26 *The* ***Color*** *area displayed*

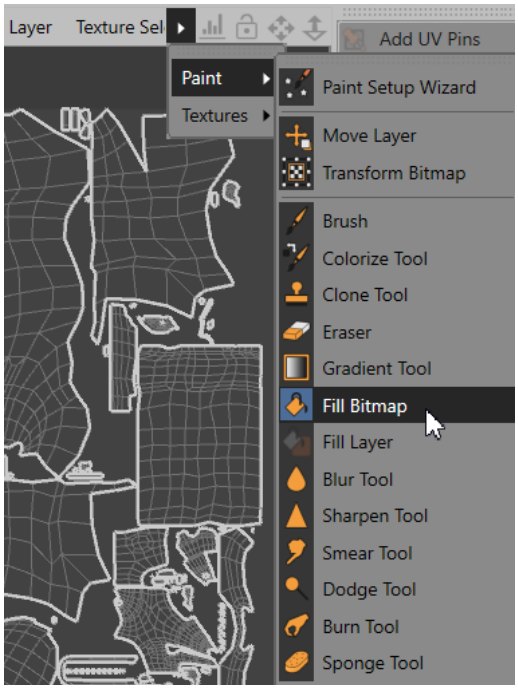

Figure 9-27 *Choosing* ***Paint > Fill Bitmap*** *tool from the Texture UV Editor menu*

Figure 9-28 *The model filled with the selected color in the Perspective viewport*

Figure 9-29 *The texture applied to chest of the model*

Figure 9-30 *The clothes painted using the* ***Brush*** *tool in the Texture View*

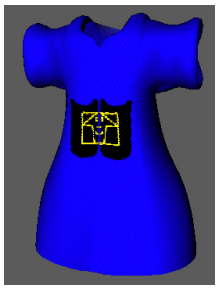

Figure 9-31 *The final output*

Chapter 10

Compositing 3D Objects

Figure 10-1 *The final composition*

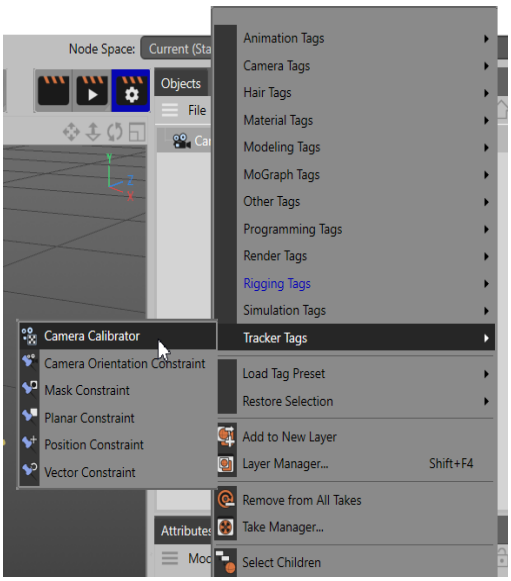

Figure 10-2 *Choosing* ***Camera Calibrator*** *from the shortcut menu*

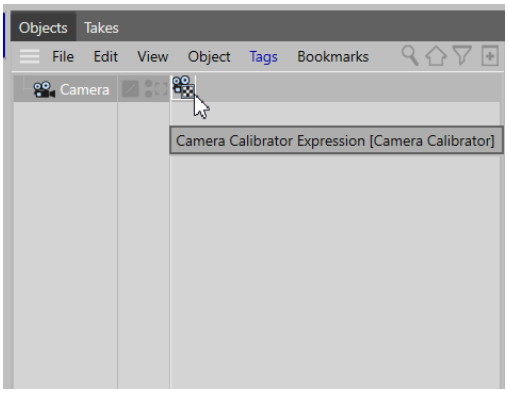

Figure 10-3 *The* ***Camera Calibrator*** *tag added to the Object Manager*

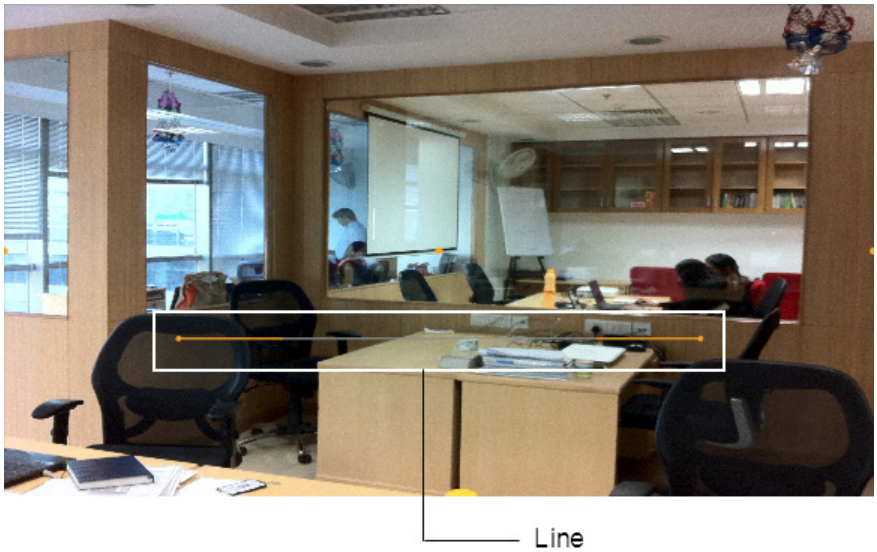

Figure 10-4 *The line created in the Perspective viewport*

Figure 10-5 *The position of first line in the Perspective viewport*

Figure 10-6 *The position of second line in the Perspective viewport*

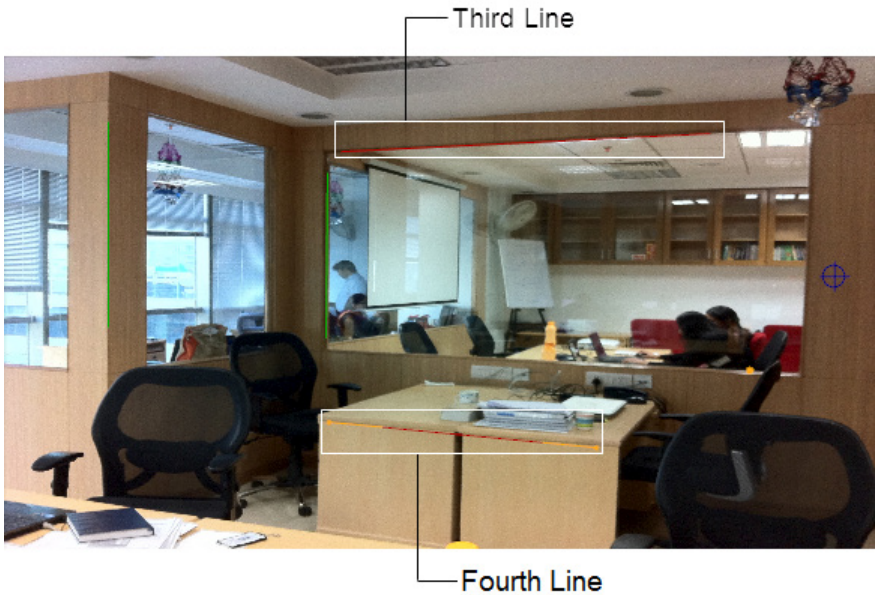

Figure 10-7 *The two red lines representing the X-axis*

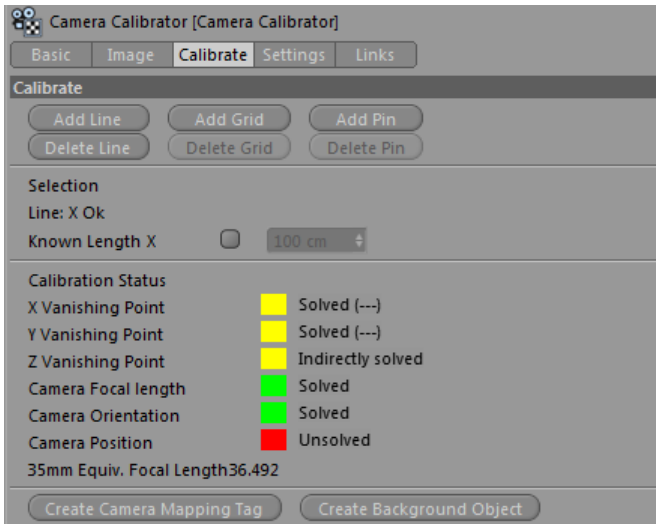

Figure 10-8 *The focal length of the camera solved*

Figure 10-9 *The pin snapped to the fourth line in the scene*

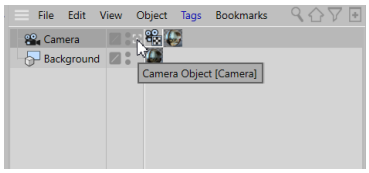

Figure 10-10 *The Camera Object[Camera] button*

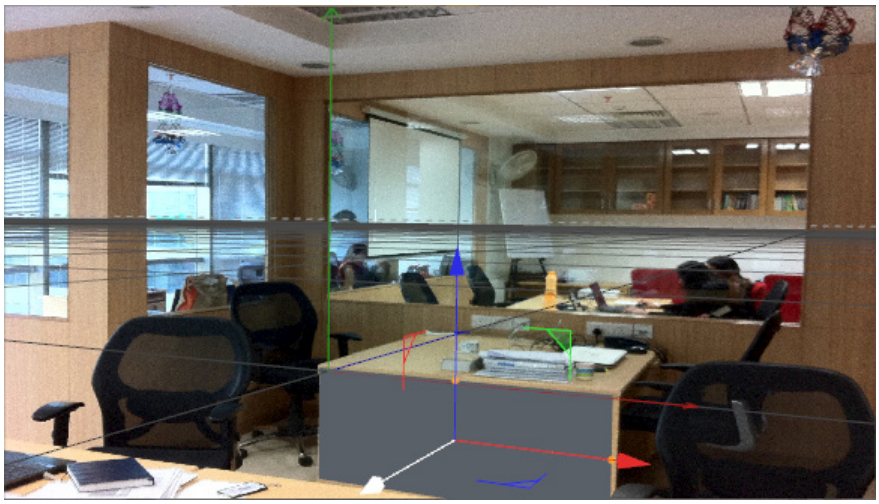

Figure 10-11 *The plane positioned in the scene*

Figure 10-12 *Text displayed in the scene*

Figure 10-13 *The rendered scene*

Figure 10-14 *All objects in the Perspective viewport*

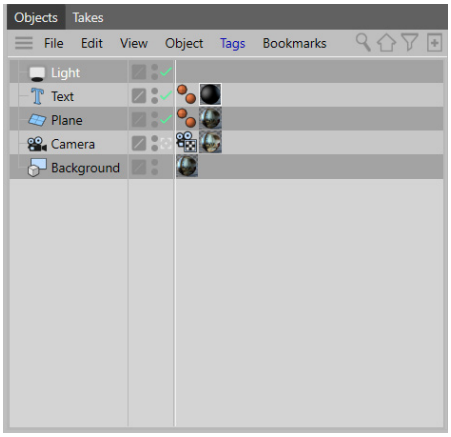

Figure 10-15 *All objects in the Object Manager*

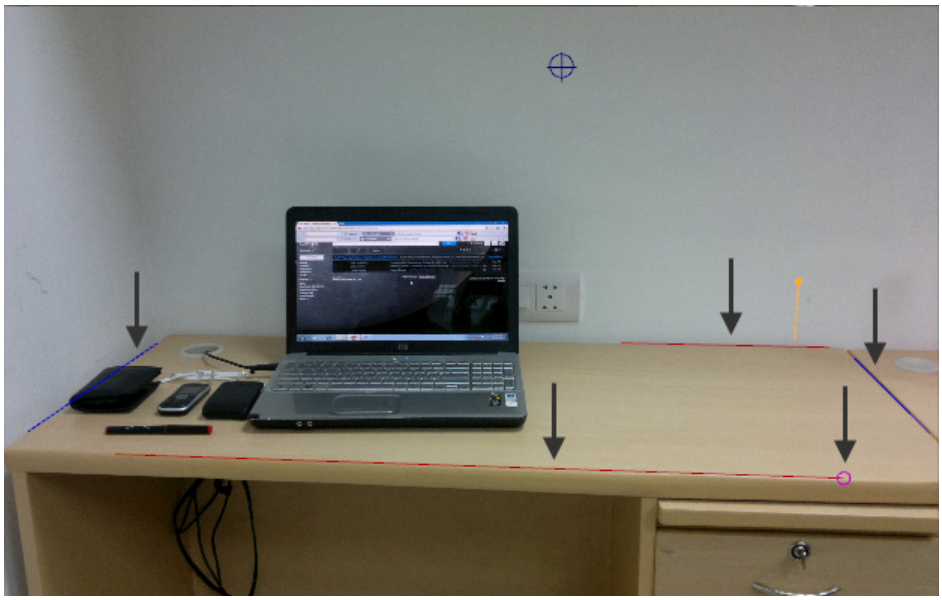

Figure 10-16 *The lines and pin in the scene*

Figure 10-17 *The 3D elements composited in the scene*

Chapter 11

Rendering

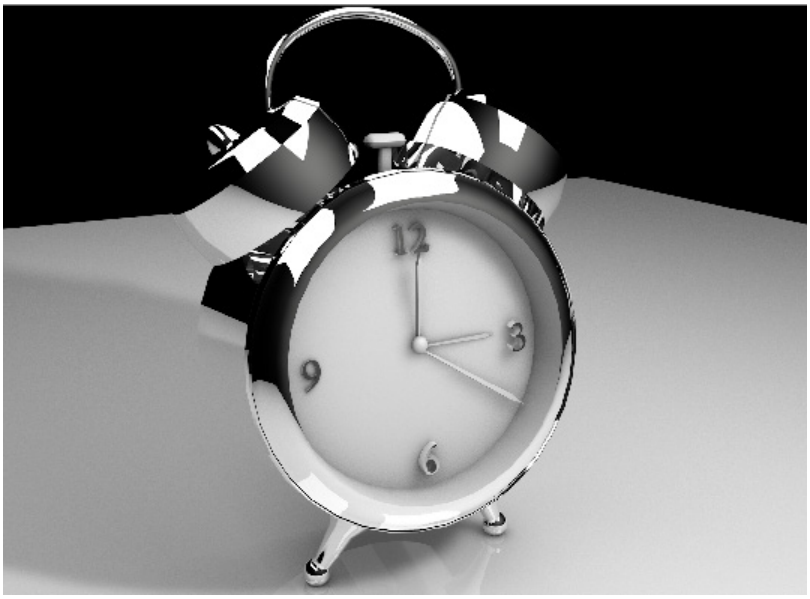

Figure 11-1 *The final rendered table clock*

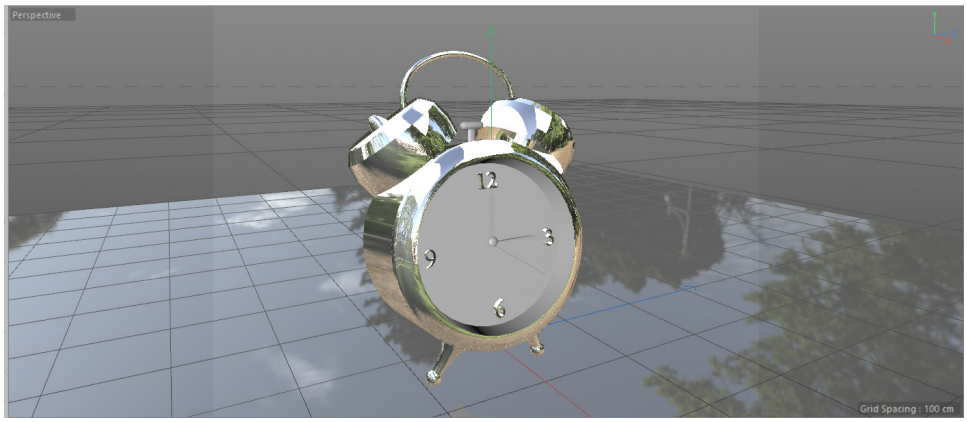

Figure 11-2 *The c11_tut1_start.c4d file*

Figure 11-3 *Displaying the rendered view*

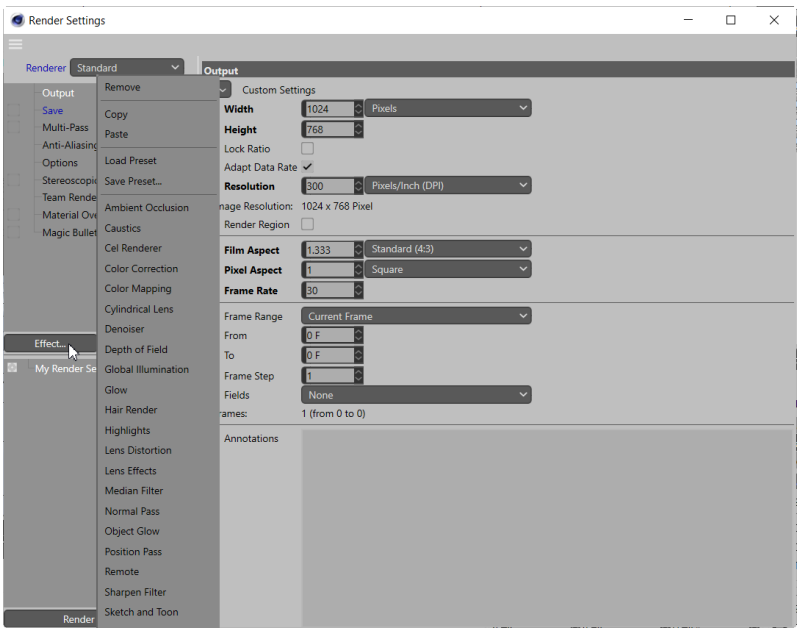

Figure 11-4 *The flyout displayed on choosing the* ***Effect*** *button*

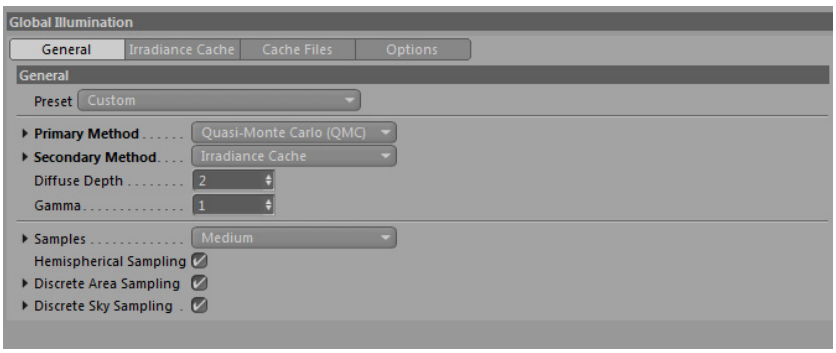

Figure 11-5 *The* ***Global Illumination*** *area*

Figure 11-6 *The rendered clock*

Figure 11-7 *The rendered clock*

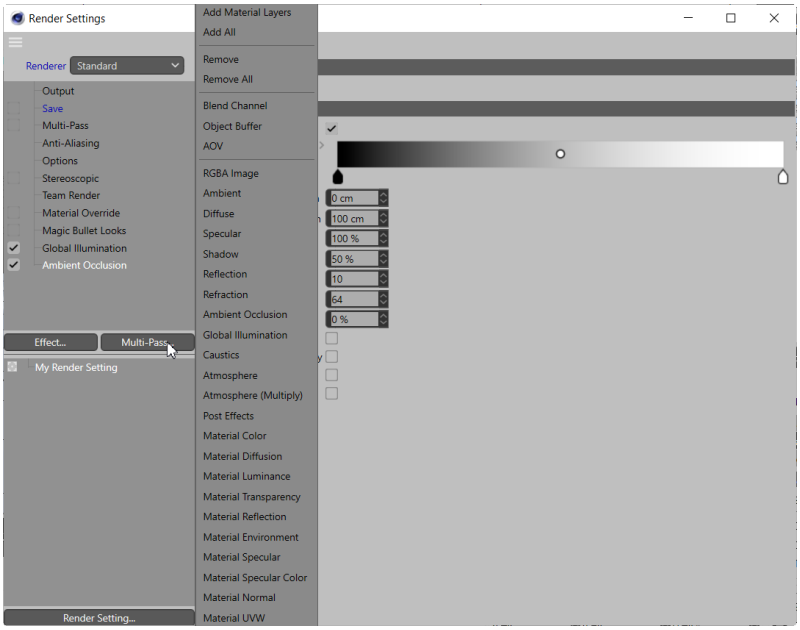

Figure 11-8 *The flyout displayed on choosing the* ***Multi-Pass*** *button*

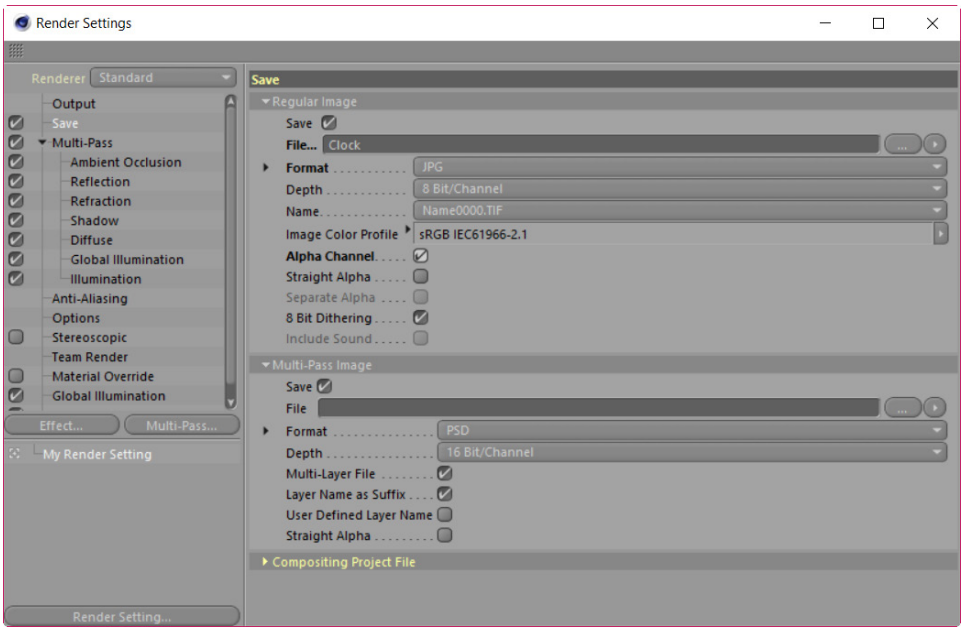

Figure 11-9 *Selecting the* ***Alpha Channel*** *check box in the* ***Render Settings*** *window*

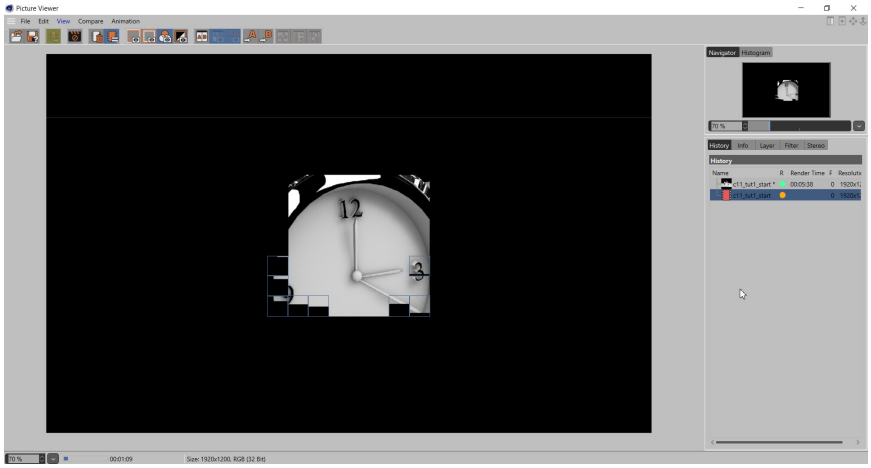

Figure 11-10 *The rendering process in the* ***Picture Viewer*** *window*

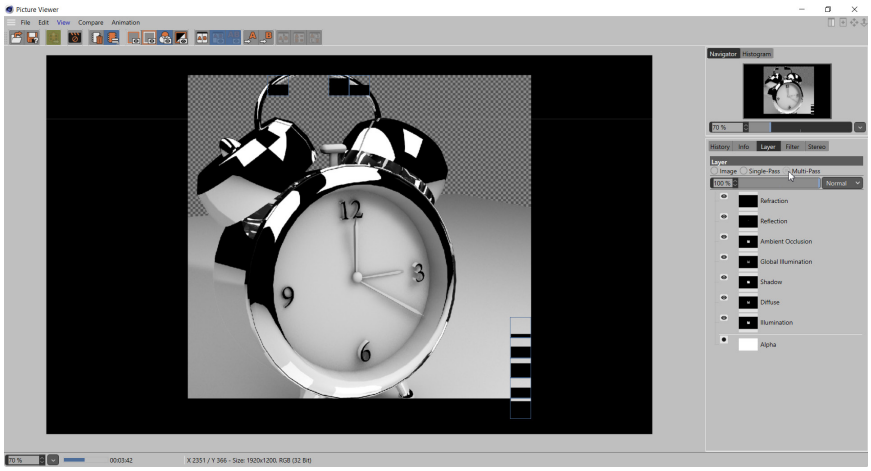

Figure 11-11 *The render passes displayed in the* ***Picture Viewer*** *window*

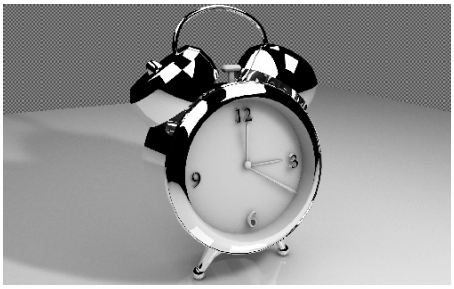

Figure 11-12 *Displaying the* ***Alpha*** *pass in the* ***Picture Viewer*** *window*

Figure 11-13 *The* ***Ambient Occlusion*** *pass displayed in the* ***Picture Viewer*** *window*

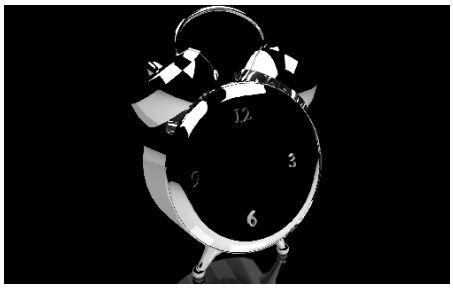

Figure 11-14 *The* ***Reflection*** *pass displayed in the* ***Picture Viewer*** *window*

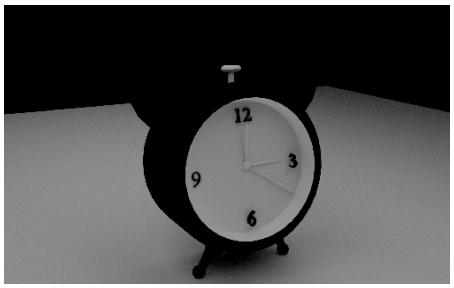

Figure 11-15 *The* ***Global Illumination*** *pass displayed in the* ***Picture Viewer*** *window*

Figure 11-16 *The* ***Shadow*** *pass displayed in the* ***Picture Viewer*** *window*

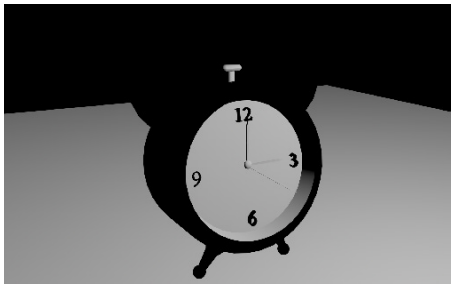

Figure 11-17 *The* ***Diffuse*** *pass displayed in the* ***Picture Viewer*** *window*

Figure 11-18 *The render of the beer mug*

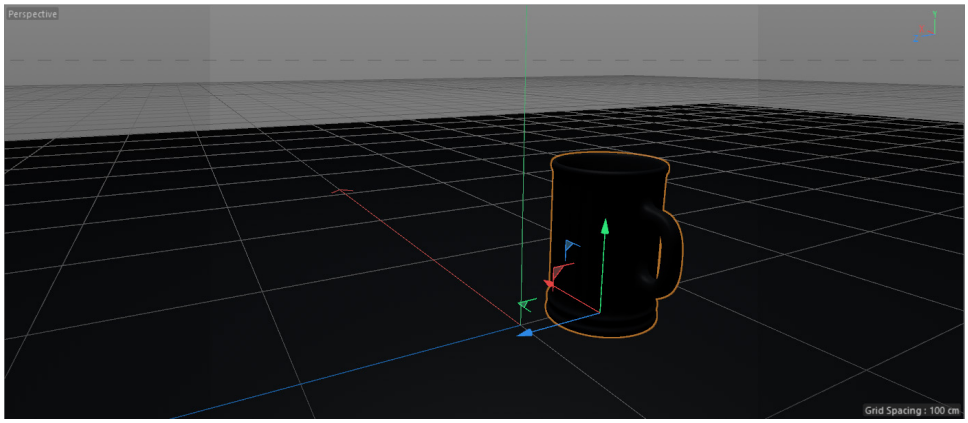

Figure 11-19 *The c11_tut2_start.c4d file*

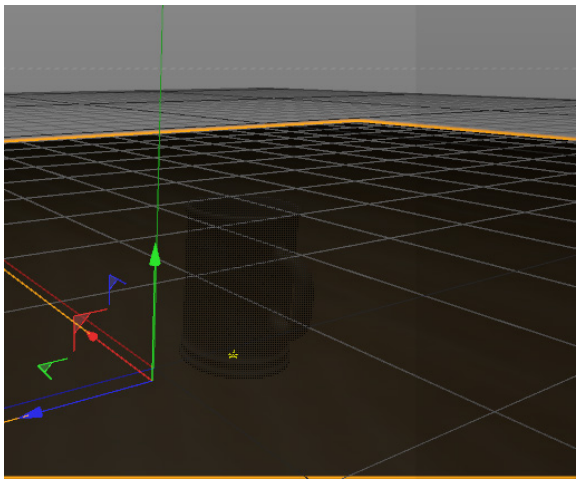

Figure 11-20 *The floor texture applied*

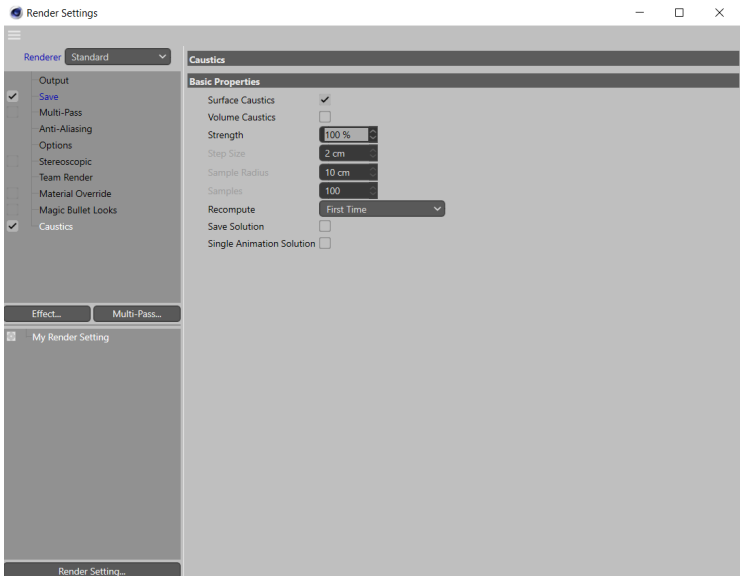

Figure 11-21 *The* ***Caustics*** *area in the* ***Render Settings*** *window*

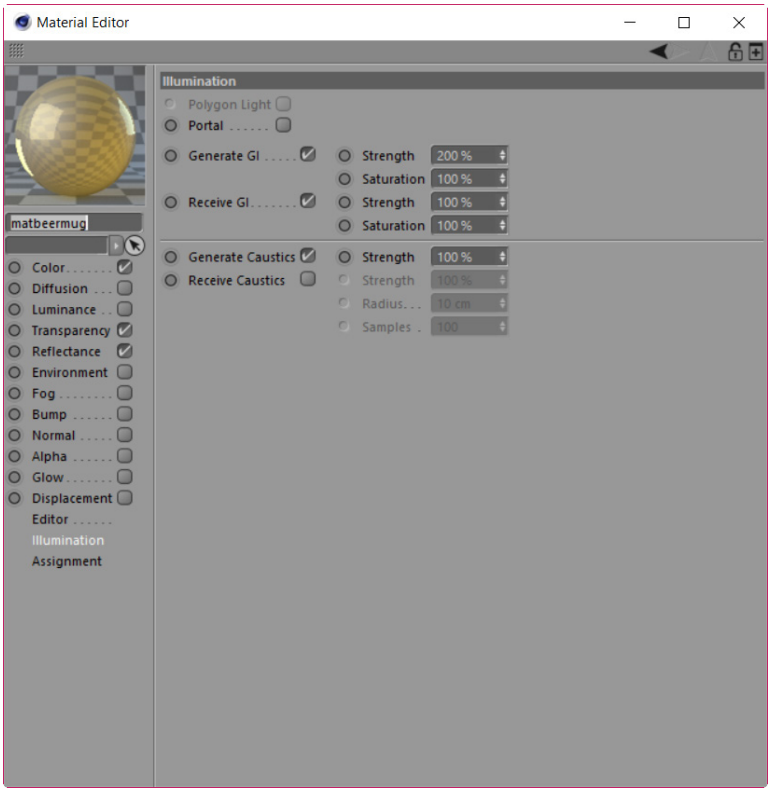

Figure 11-22 *The* ***Illumination*** *area displayed in the* ***Material Editor*** *window*

Figure 11-23 *Scene after rendering*

Chapter 12

MoGraph

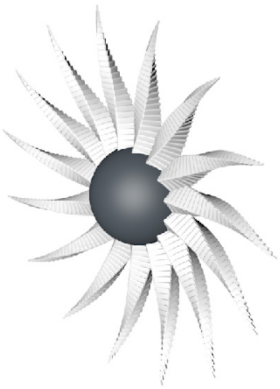

Figure 12-1 *The abstract model to be created*

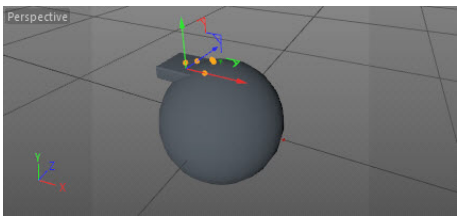

Figure 12-2 *Cube positioned in the Perspective viewport*

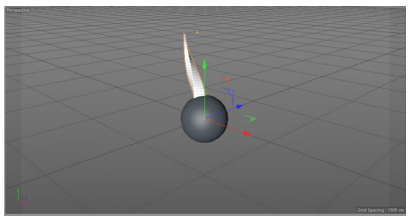

Figure 12-3 *Cloner displayed in the Perspective viewport*

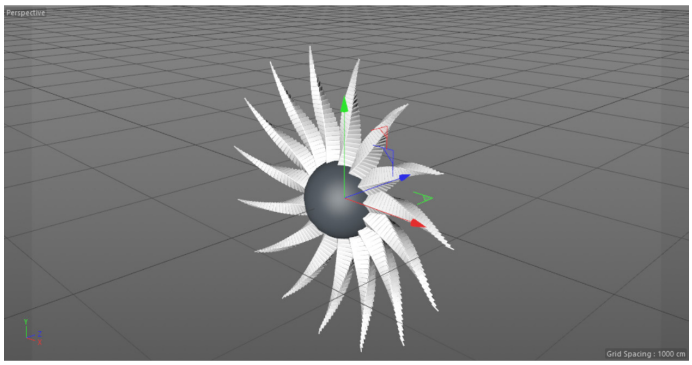

Figure 12-4 *Cloner.1 displayed in the Perspective viewport*

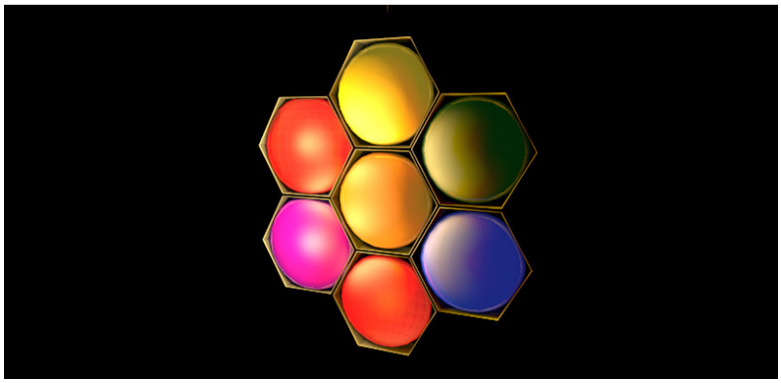

Figure 12-5 *The disco light effect at frame 60*

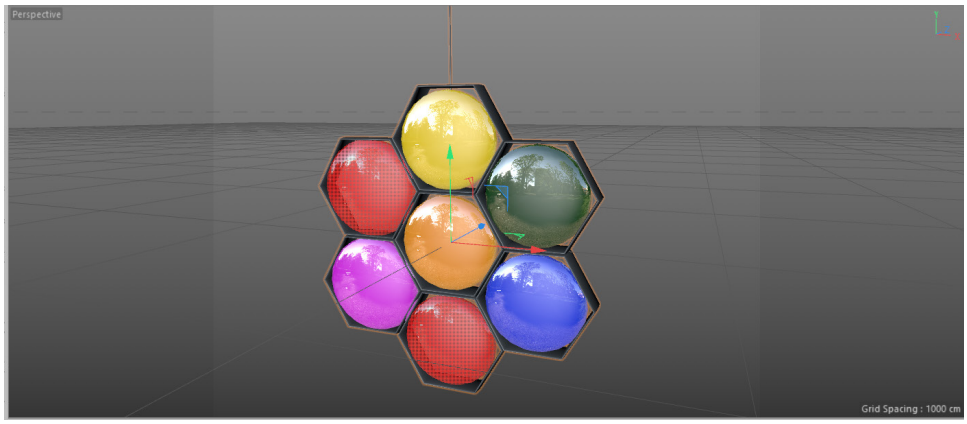

Figure 12-6 *The c12_tut2_start.c4d file*

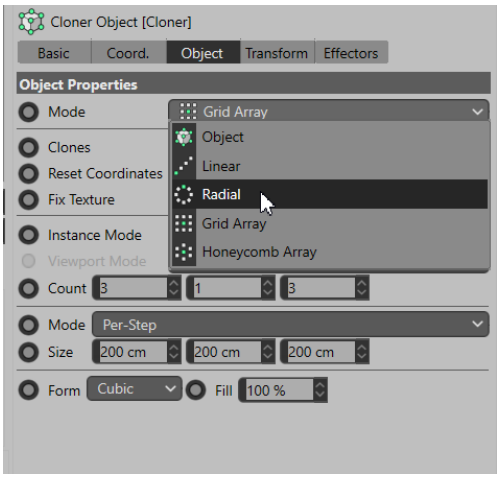

Figure 12-7 *Selecting* ***Radial*** *from the* ***Mode*** *drop-down list*

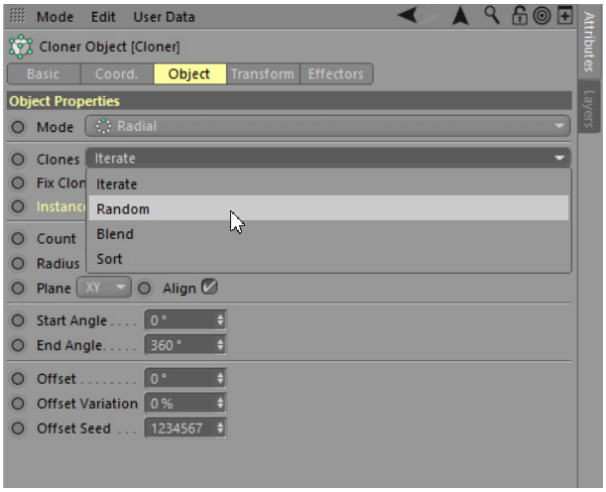

Figure 12-8 *Selecting* ***Random*** *from the* ***Clones*** *drop-down list*

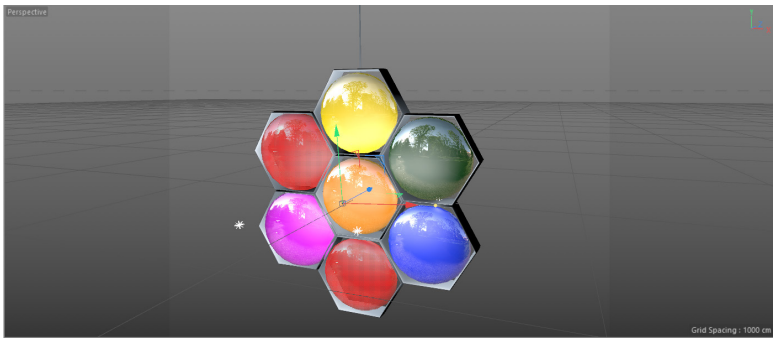

Figure 12-9 *The clones of Light displayed in the Perspective viewport*

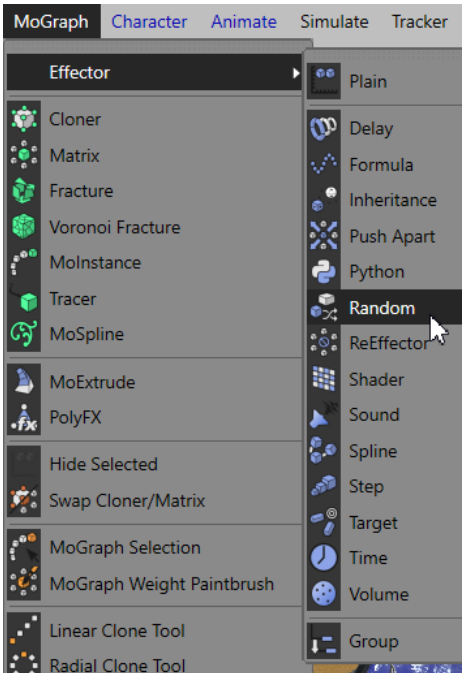

Figure 12-10 *Choosing* ***Random*** *from the cascading menu*

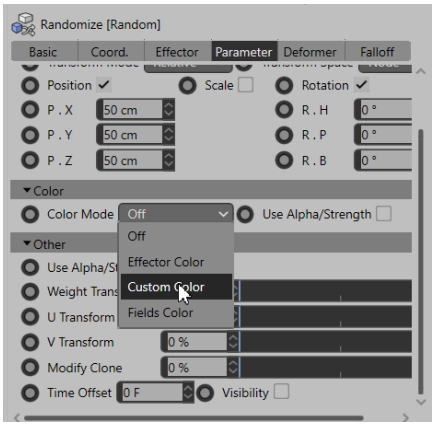

Figure 12-11 *The* ***Custom Color*** *option from the* ***Color Mode*** *drop-down list*

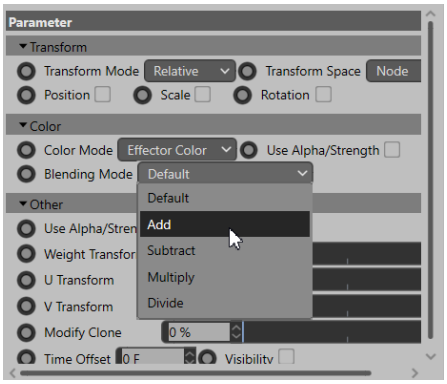

Figure 12-12 *Selecting the* ***Add*** *option from the* ***Blending Mode*** *drop-down list*

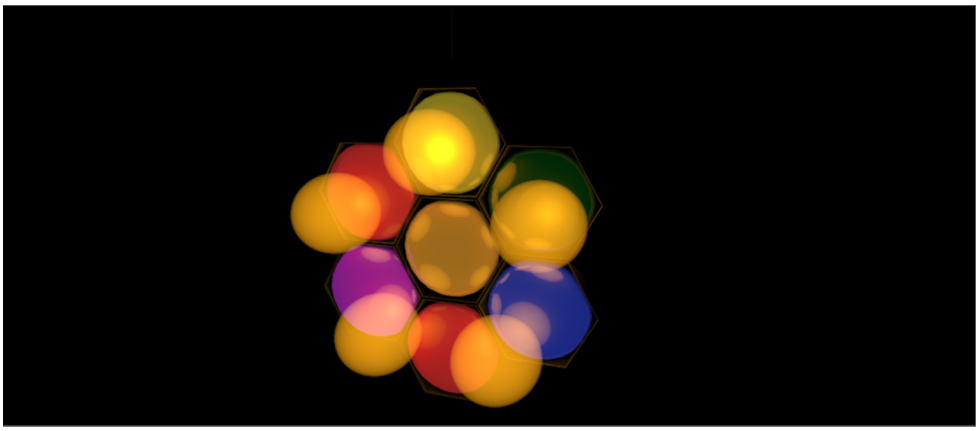

Figure 12-13 *The rendered view at the current frame*

Figure 12-14 *The shattering effect at frame 81*

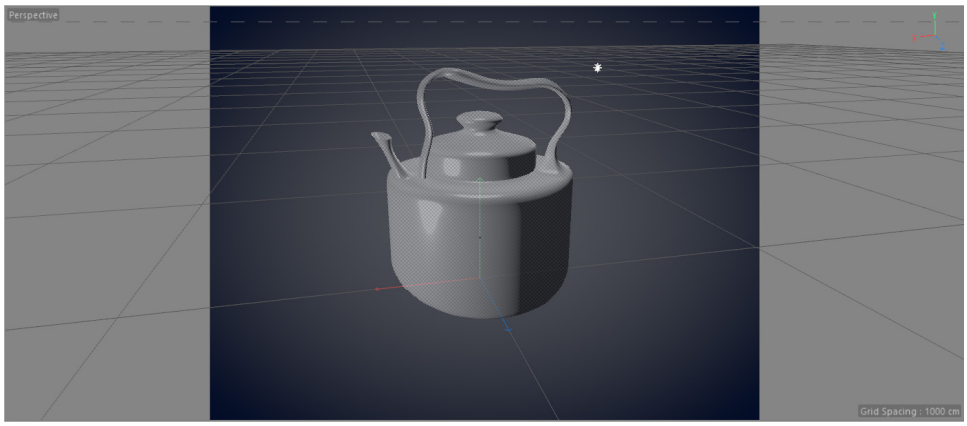

Figure 12-15 *The c12_tut3_start.c4d file*

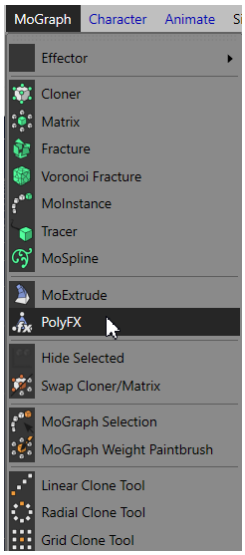

Figure 12-16 *Choosing* ***PolyFX*** *from the main menu*

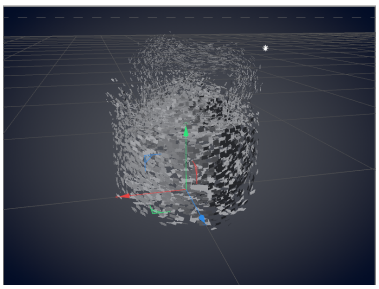

Figure 12-17 *The fragmented Kettle in the Perspective viewport*

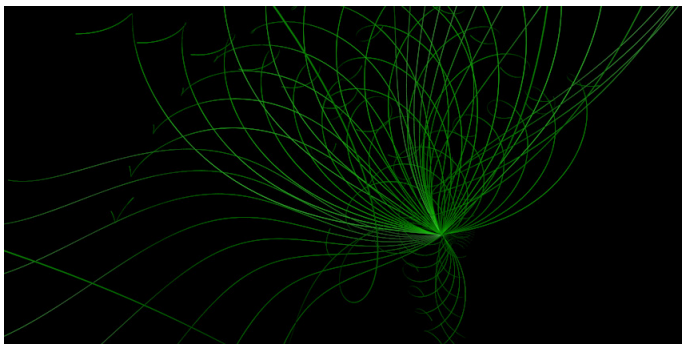

Figure 12-18 *The abstract animation at frame 0*

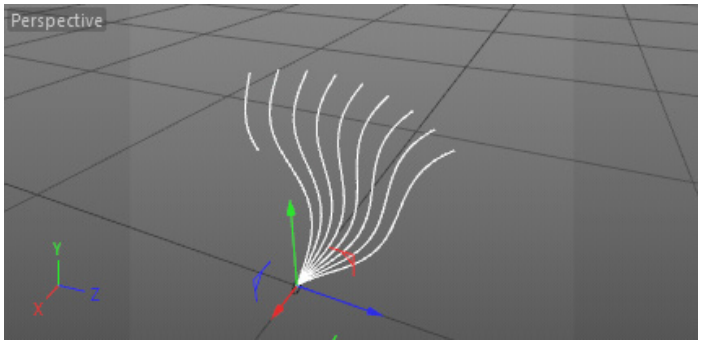

Figure 12-19 *The MoSpline displayed in the Perspective viewport*

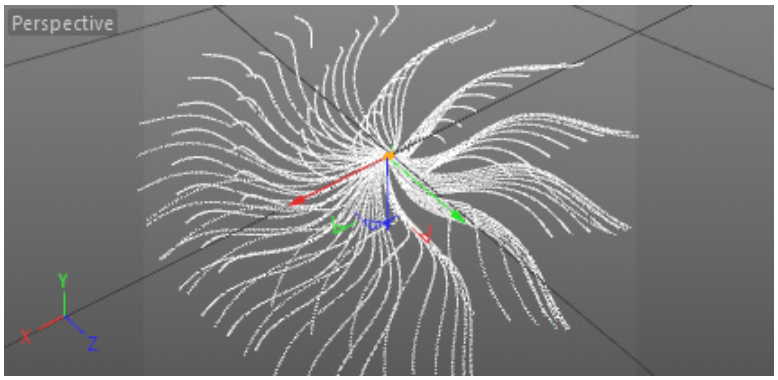

Figure 12-20 *The clones displayed in the Perspective viewport*

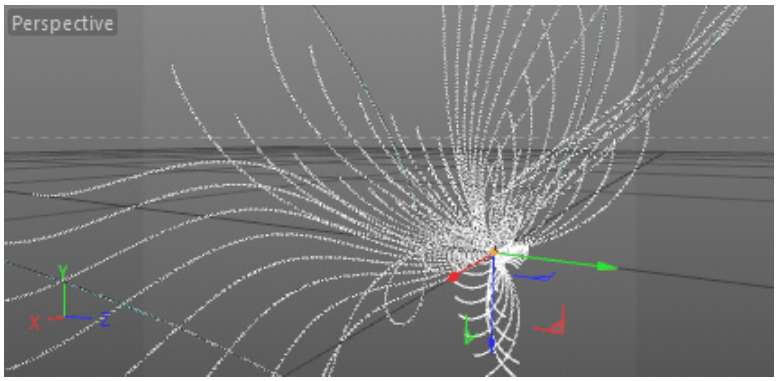

Figure 12-21 *The clones displayed in the viewport*

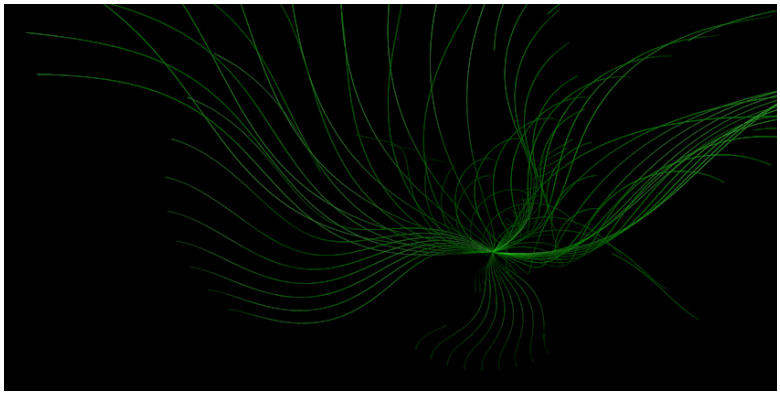

Figure 12-22 *The rendered image at frame 48*

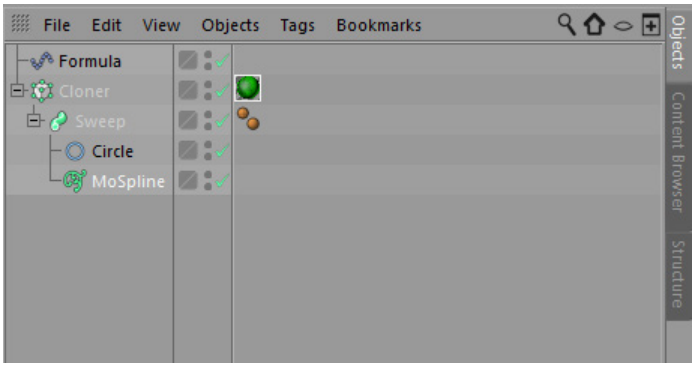

Figure 12-23 *The objects in the Object Manager*

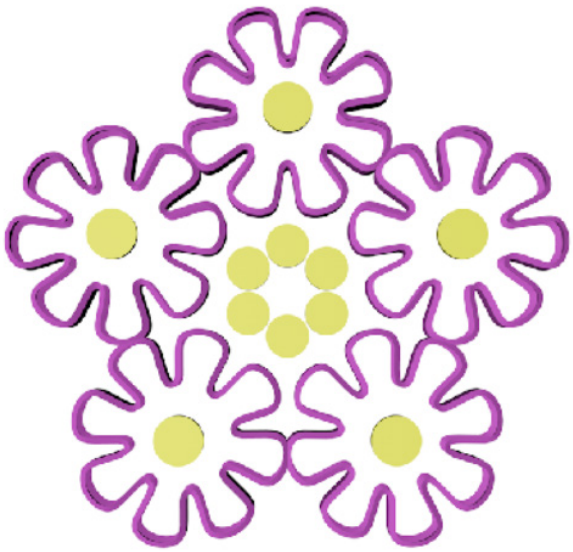

Figure 12-24 *The abstract model*

Chapter 13

Working with XPresso

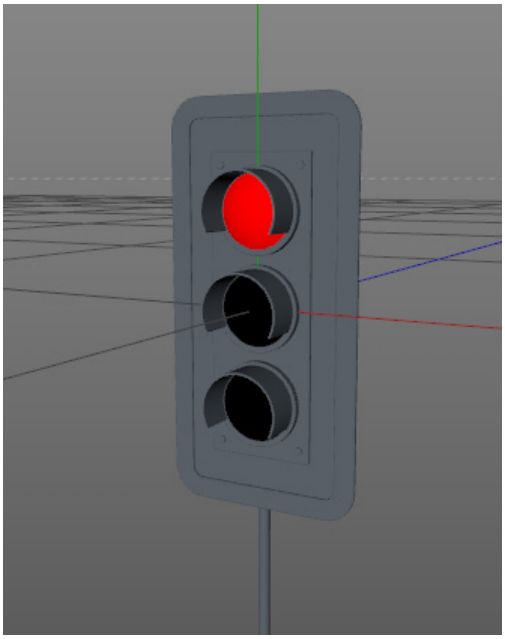

Figure 13-1 *The traffic signal with the red light on*

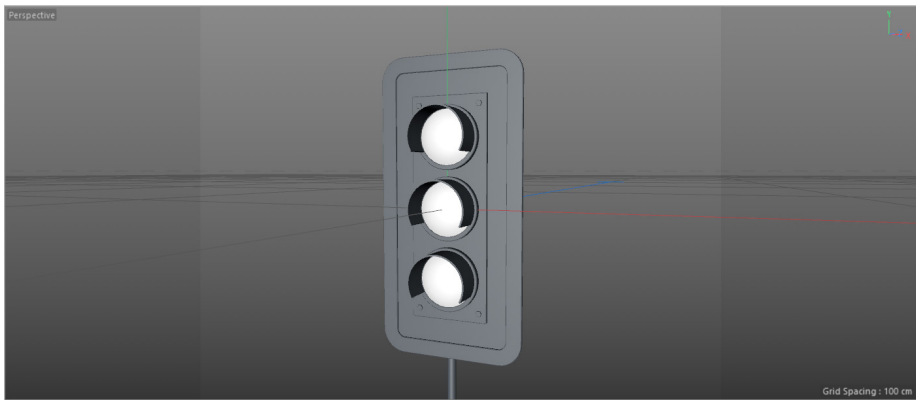

Figure 13-2 *The c13_tut1_start.c4d file*

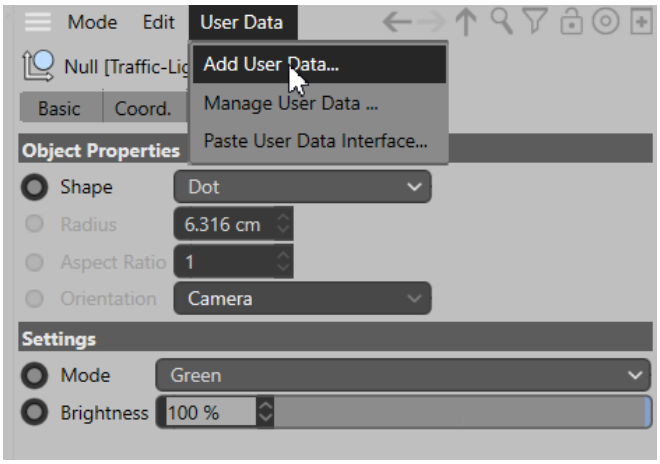

Figure 13-3 Choosing **Add User Data** from the menu in the Attribute Manager

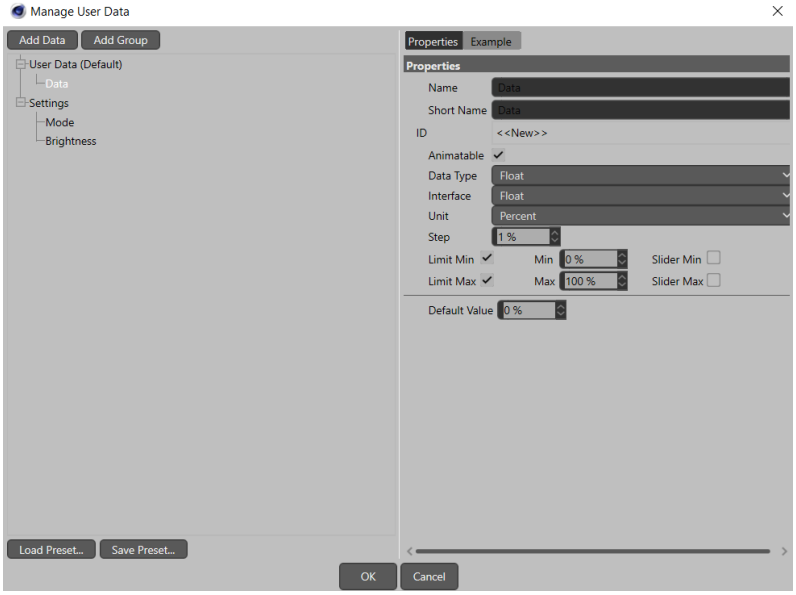

Figure 13-4 The **Manage User Data** dialog box

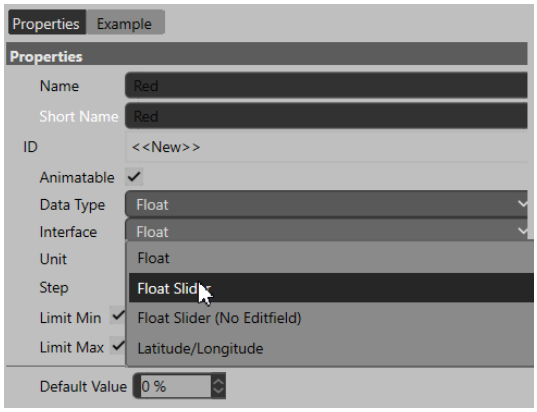

Figure 13-5 *Selecting* ***Float Slider*** *from the* ***Interface*** *drop-down list*

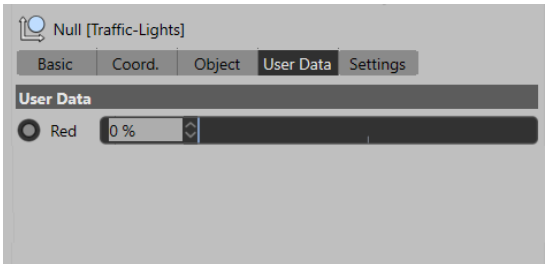

Figure 13-6 *The* ***Red*** *spinner added to the* ***User Data*** *area in the Attribute Manager*

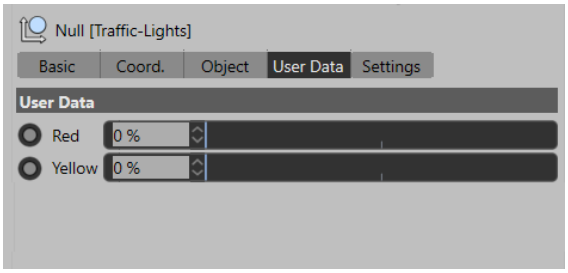

Figure 13-7 *The* ***Yellow*** *spinner added to the* ***User Data*** *area in the Attribute Manager*

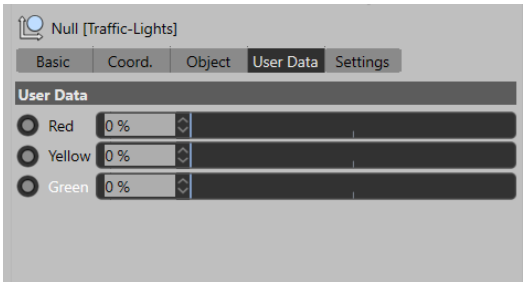

Figure 13-8 *The* ***Green*** *spinner added to the* ***User Data*** *area in the Attribute Manager*

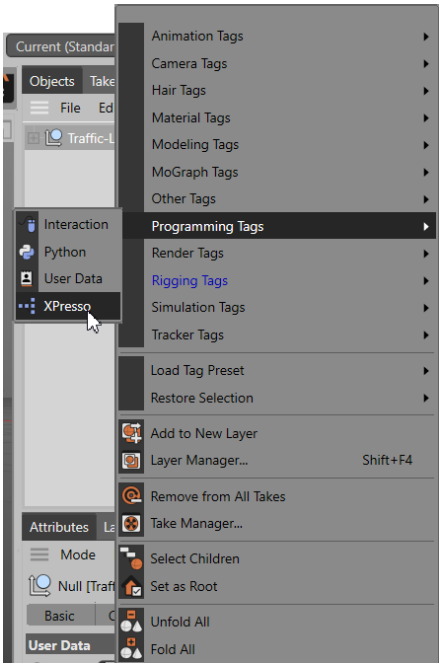

Figure 13-9 *Choosing* ***XPresso*** *from the shortcut menu*

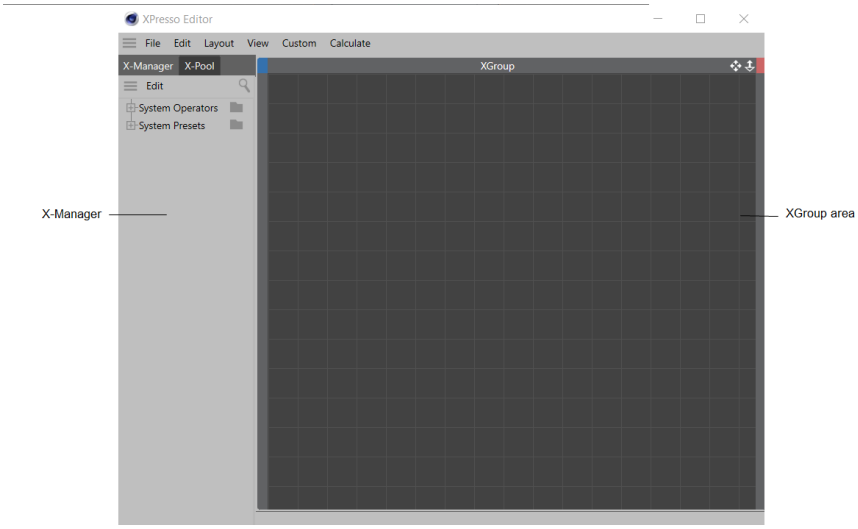

Figure 13-10 *The* ***XPresso Editor***

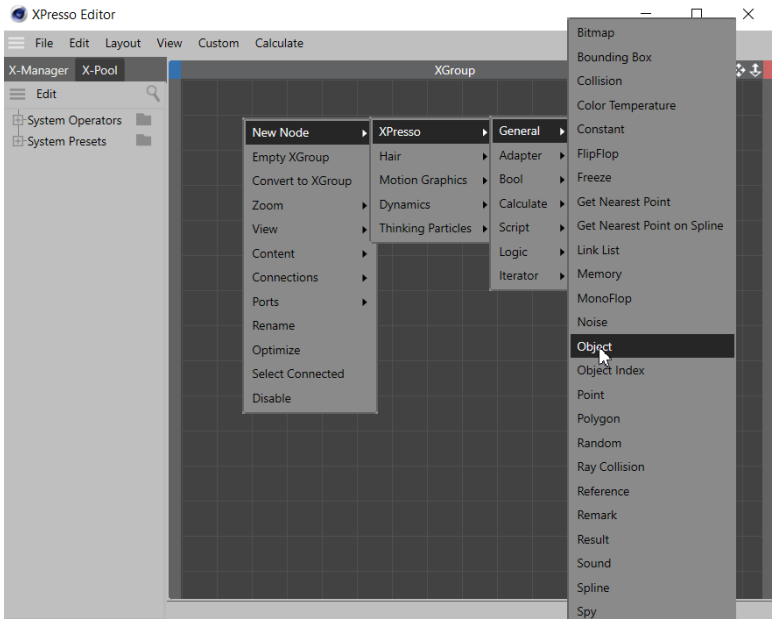

Figure 13-11 *Choosing* ***Object*** *from the shortcut menu*

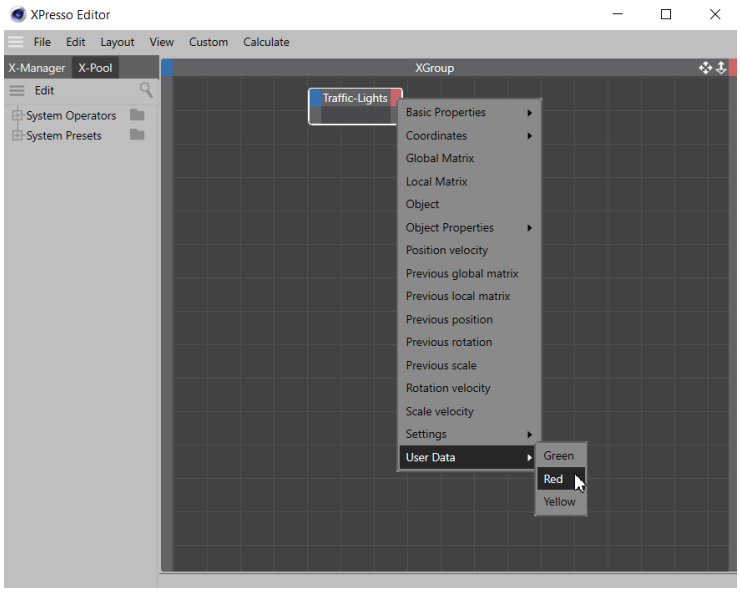

Figure 13-12 *Choosing* ***Red*** *from the flyout in the* ***XPresso Editor***

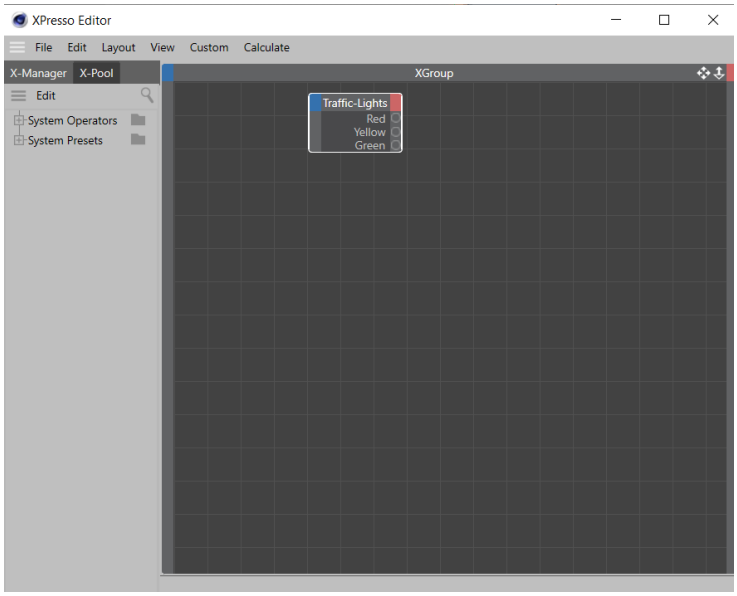

Figure 13-13 *The* ***Red****,* ***Yellow****, and* ***Green*** *output ports added to the* ***Traffic-Lights*** *node*

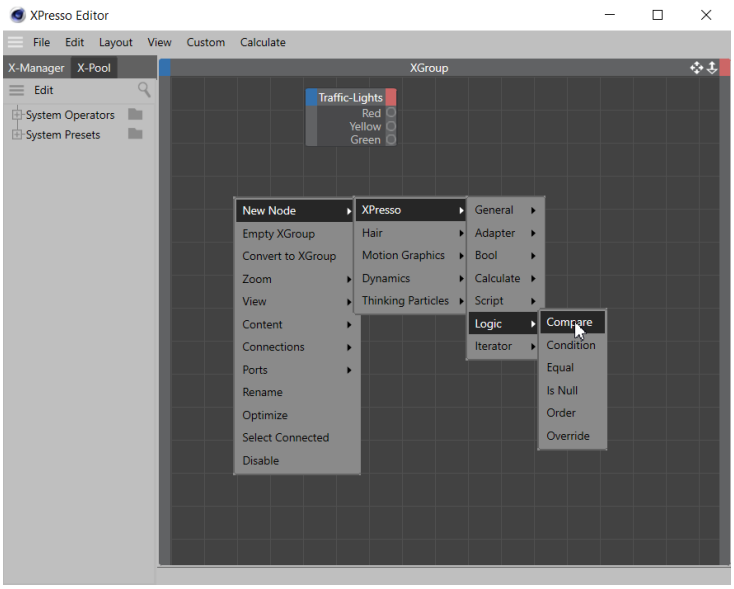

Figure 13-14 *Choosing the* ***Compare*** *option from the shortcut menu in the* ***XPresso Editor***

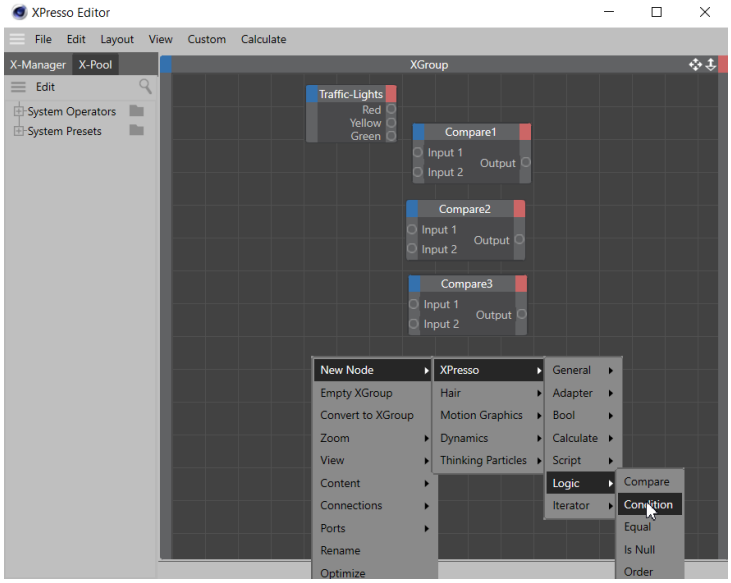

Figure 13-15 *Choosing the* ***Condition*** *option from the shortcut menu in the* ***XPresso Editor***

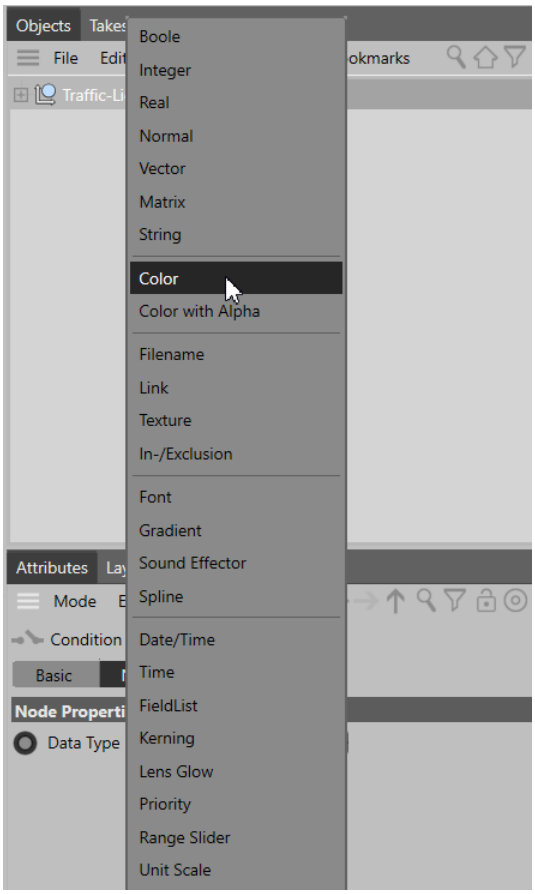

Figure 13-16 *Selecting* ***Color*** *from the* ***Data Type*** *drop-down list in the* ***Node Properties*** *area*

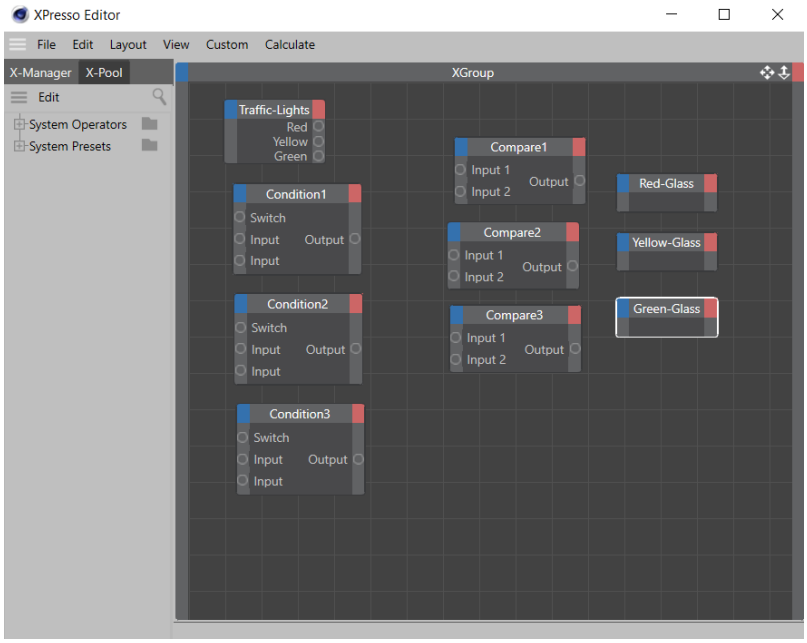

Figure 13-17 *The* ***Red-Glass****,* ***Yellow-Glass****, and* ***Green-Glass*** *nodes added in the* ***XPresso Editor***

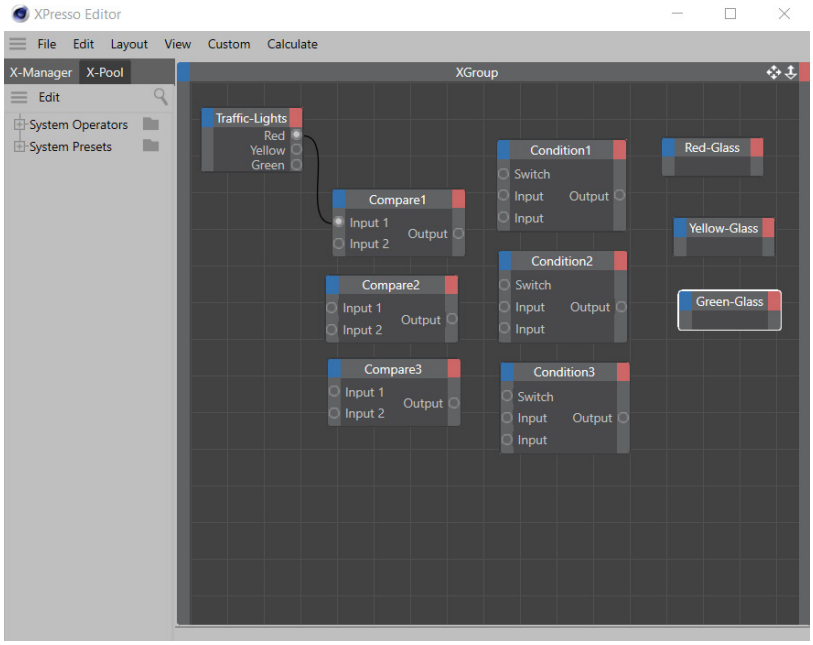

Figure 13-18 *Connection established between the* ***Red*** *output port of the* ***Traffic-Lights*** *and* ***Compare 1*** *nodes*

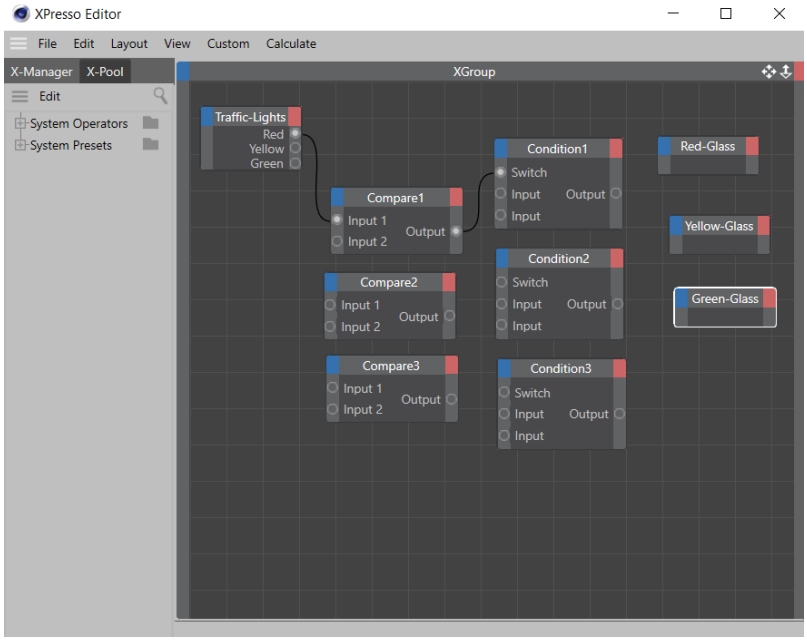

Figure 13-19 *Connection established between the* ***Compare 1*** *and* ***Condition 1*** *nodes*

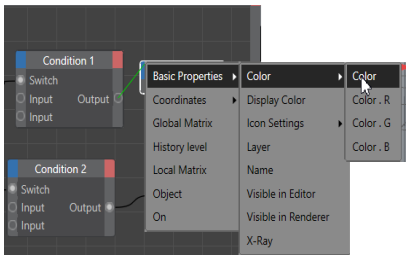

Figure 13-20 *Choosing* ***Color*** *from the flyout in the* ***XPresso Editor***

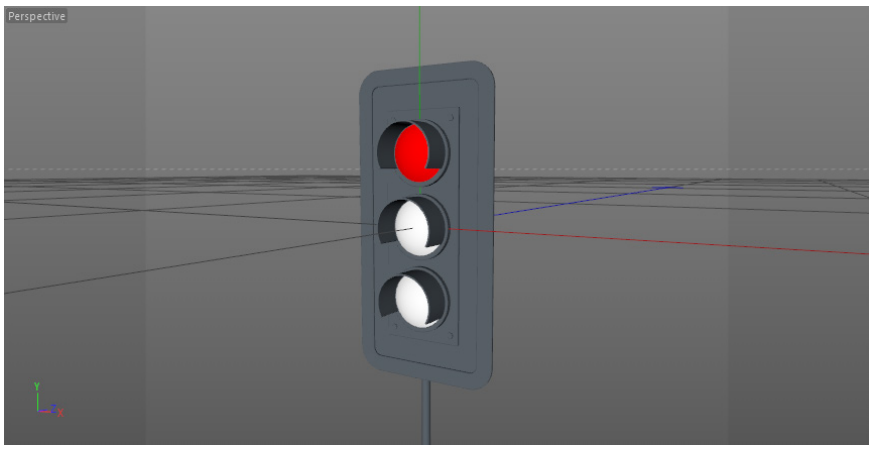

Figure 13-21 *The red light activated in the Perspective viewport*

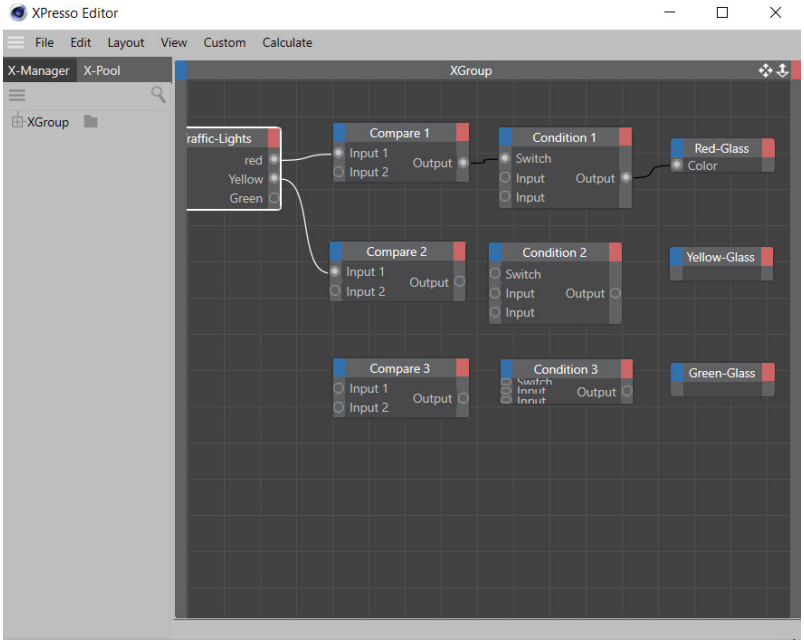

Figure 13-22 *Connection established between the* ***Yellow*** *output port of the* ***Traffic -Lights*** *and* ***Compare 2*** *nodes*

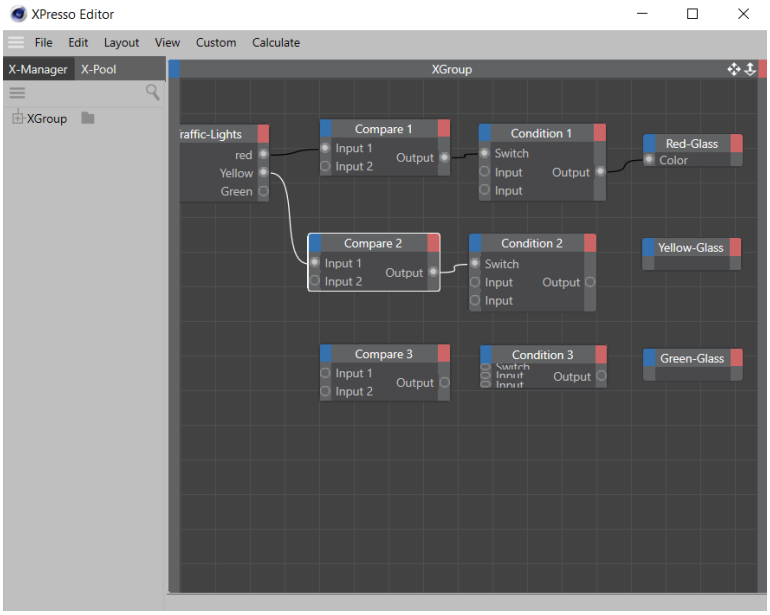

Figure 13-23 *Connection established between the* ***Compare 2*** *and* ***Condition 2*** *nodes*

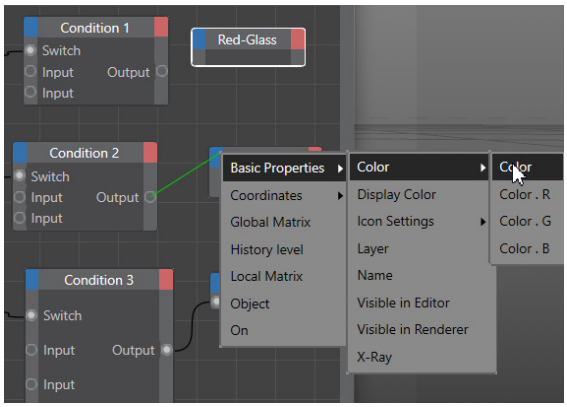

Figure 13-24 *Choosing* ***Color*** *from the flyout in the* ***XPresso Editor***

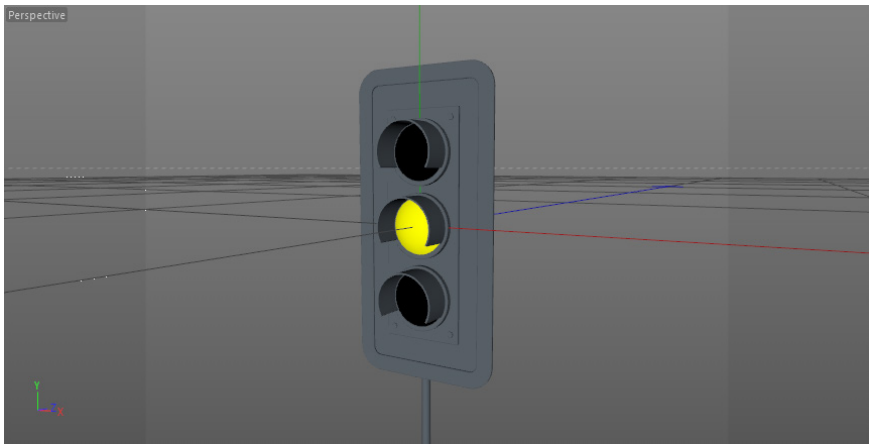

Figure 13-25 *The yellow light activated in the Perspective viewport*

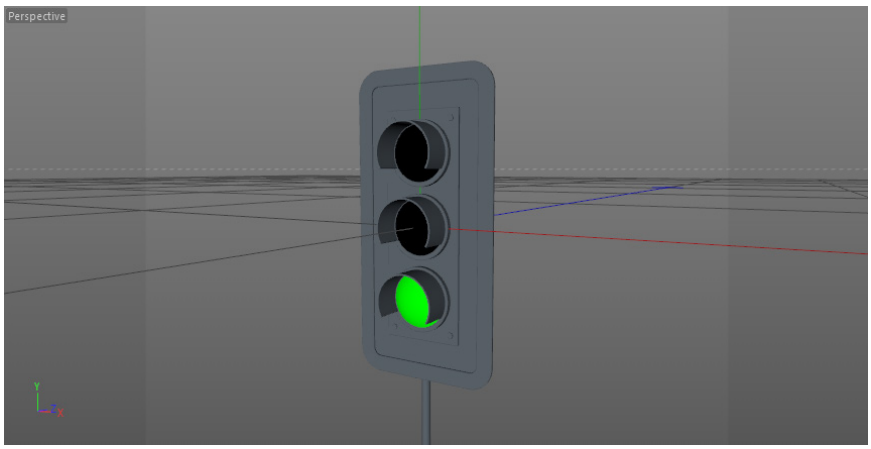

Figure 13-26 *The green light activated in the Perspective viewport*

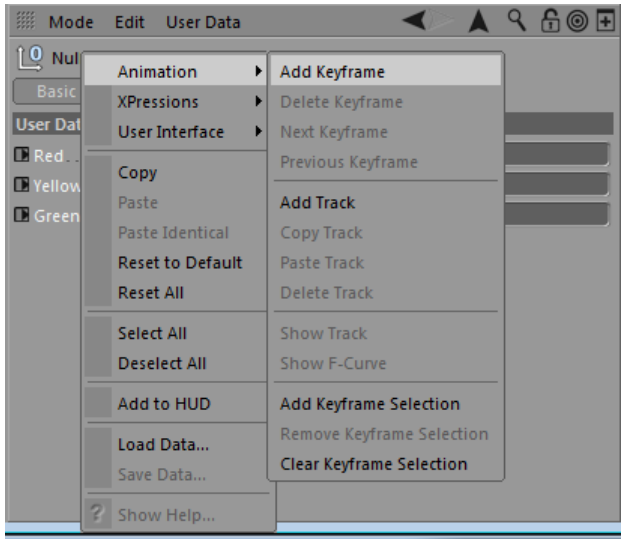

Figure 13-27 *The shortcut menu displayed on right-clicking in the* ***User Data*** *area*

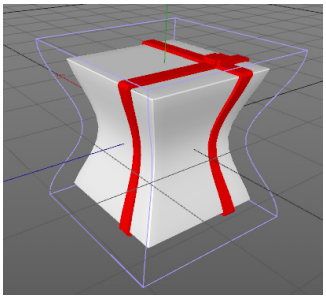

Figure 13-28 *The deformed object*

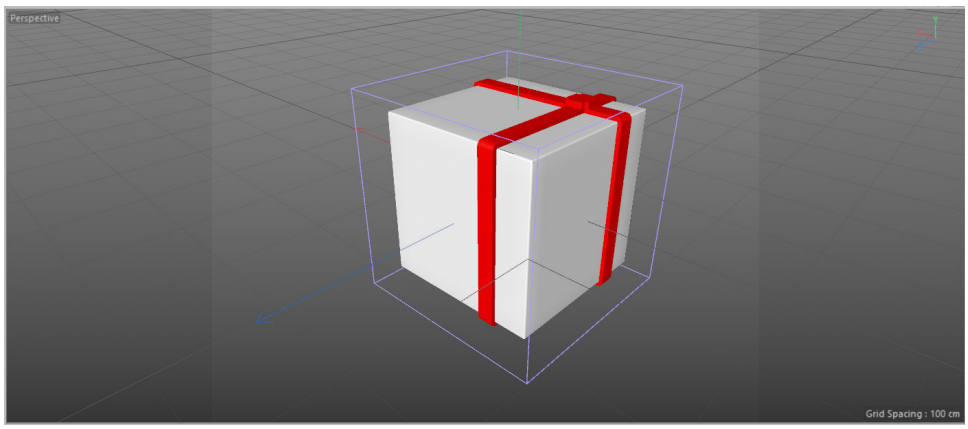

Figure 13-29 *The c13_tut2_start.c4d file*

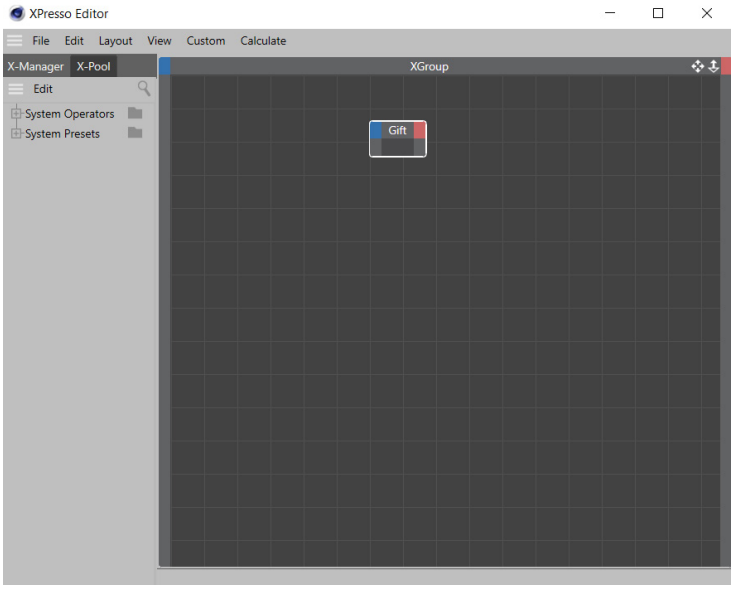

Figure 13-30 The ***Gift*** *node added in the* ***XPresso Editor***

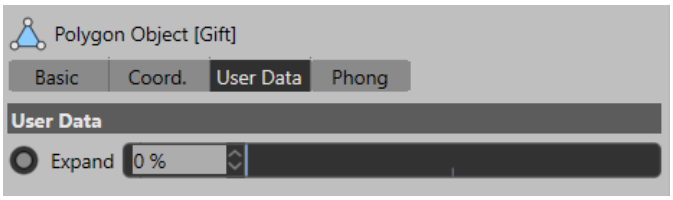

Figure 13-31 The ***Expand*** *spinner in the Attribute Manager*

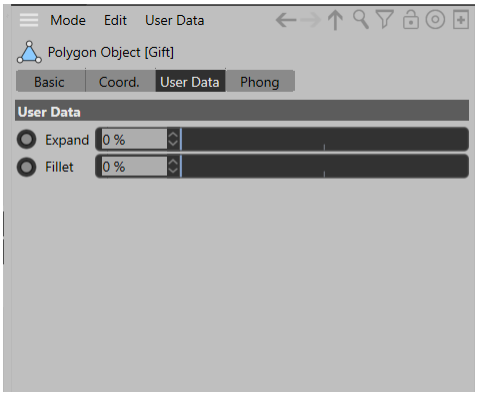

Figure 13-32 The ***Fillet*** *spinner added to the Attribute Manager*

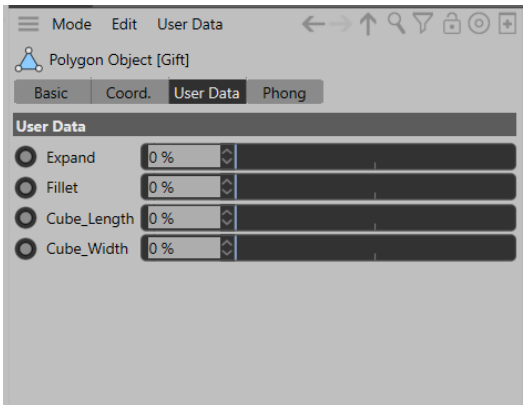

Figure 13-33 *The* ***Cube_Length*** *and* ***Cube_Width*** *spinners added to the Attribute Manager*

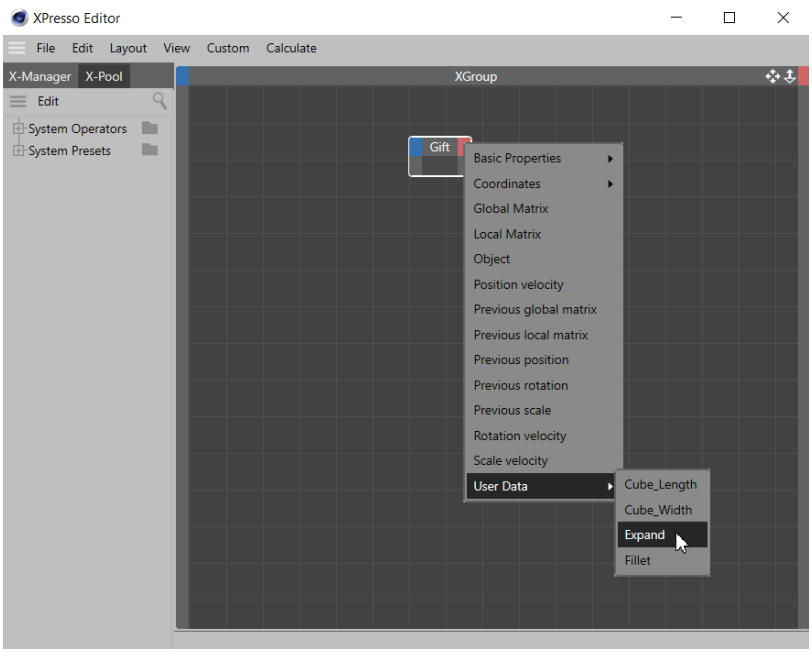

Figure 13-34 *Choosing* ***Expand*** *from the flyout in the* ***XGroup*** *area*

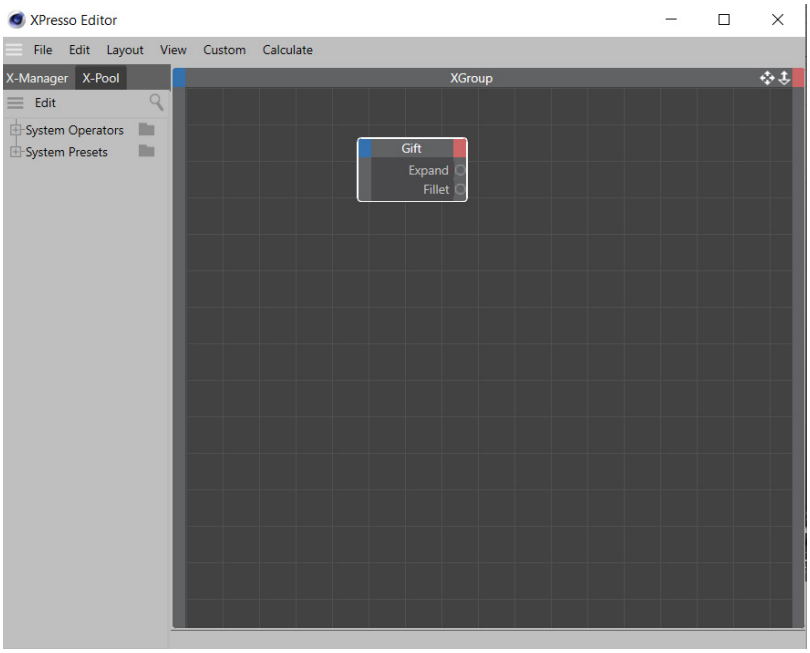

Figure 13-35 *The* ***Fillet*** *output port added to the* ***Gift*** *node*

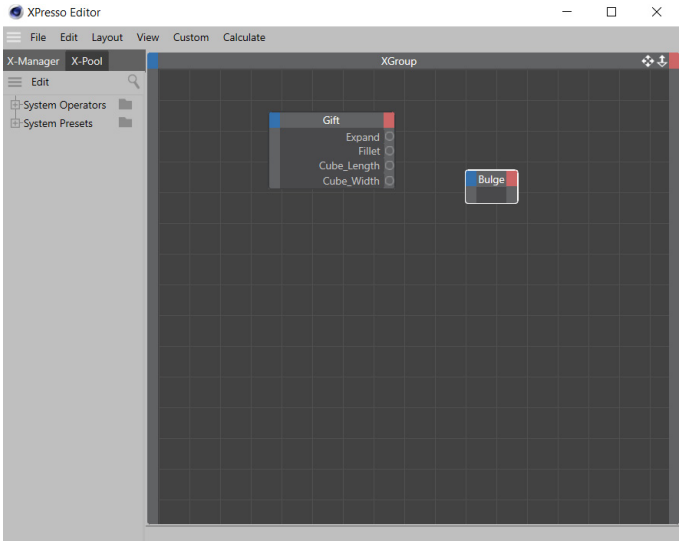

Figure 13-36 *The* ***Bulge*** *node in the* ***XGroup*** *area*

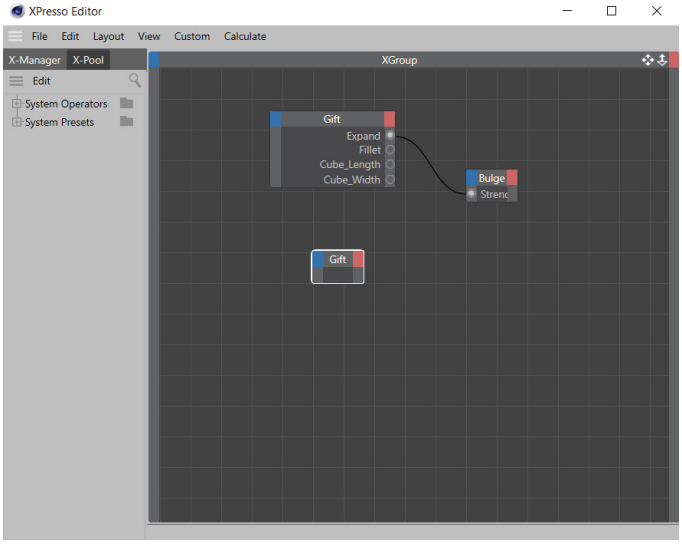

Figure 13-37 *Connection established between the* ***Gift*** *and* ***Bulge*** *nodes*

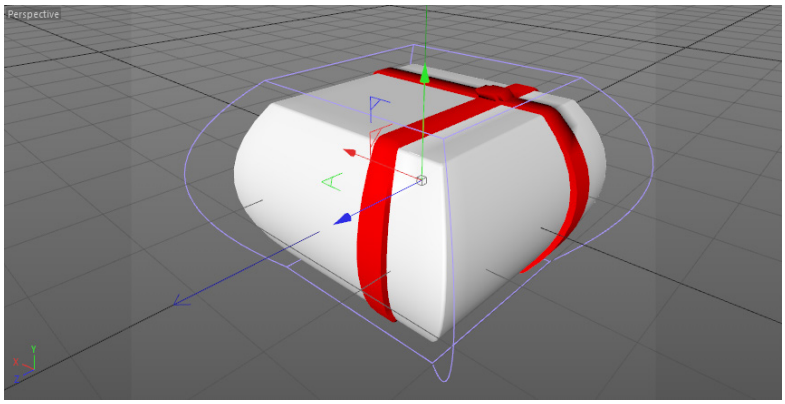

Figure 13-38 *Gift expanded in the Perspective viewport*

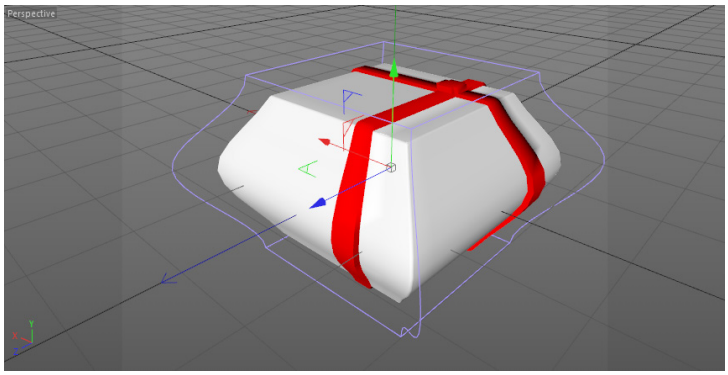

Figure 13-39 *The deformation of the Gift softened in the Perspective viewport*

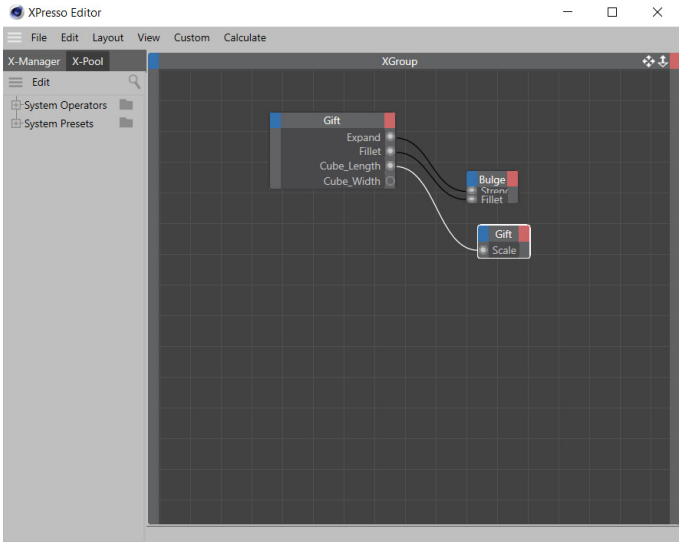

Figure 13-40 *The two* ***Gift*** *nodes connected with each other*

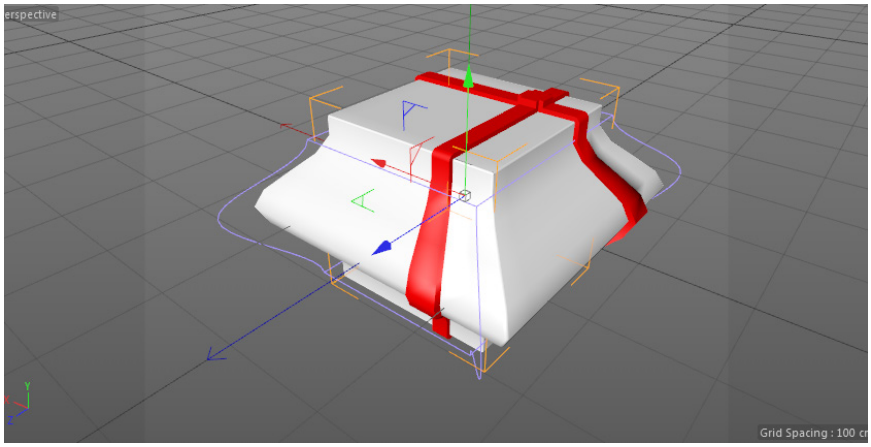

Figure 13-41 *The Gift scaled in the Perspective viewport*

Figure 13-42 *The logo at frame 49*

Project 1

Creating an Indoor Scene

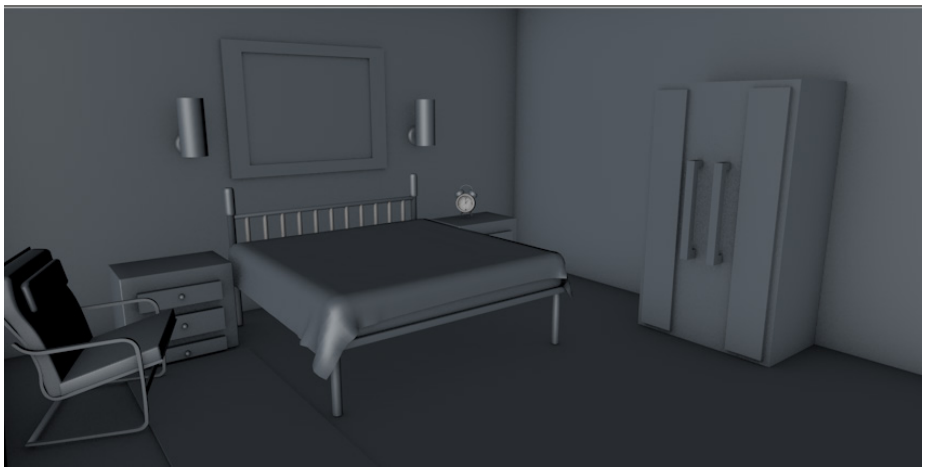

Figure P1-1 *The final output*

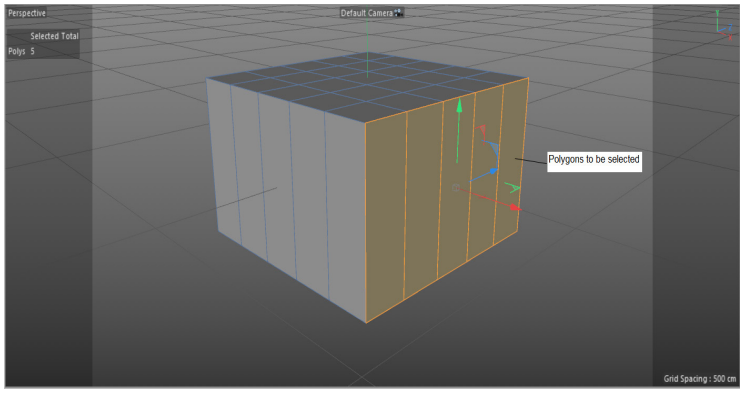

Figure P1-2 *The selected polygons displayed*

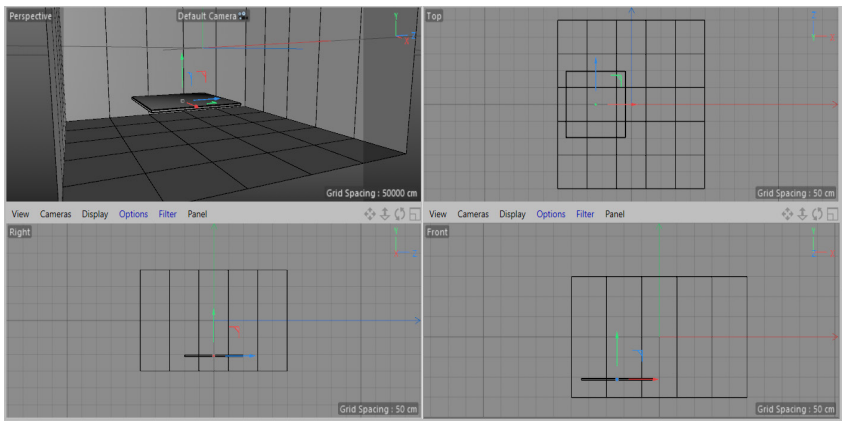

Figure P1-3 *The Base displayed in all viewports*

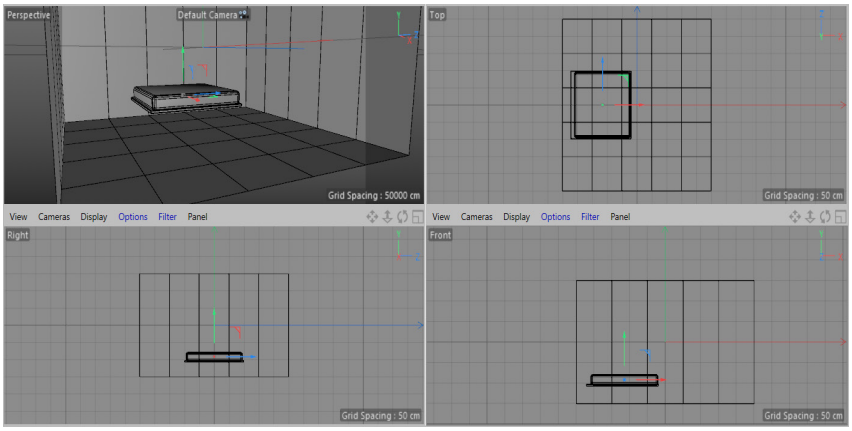

Figure P1-4 *Mattress aligned in all viewports*

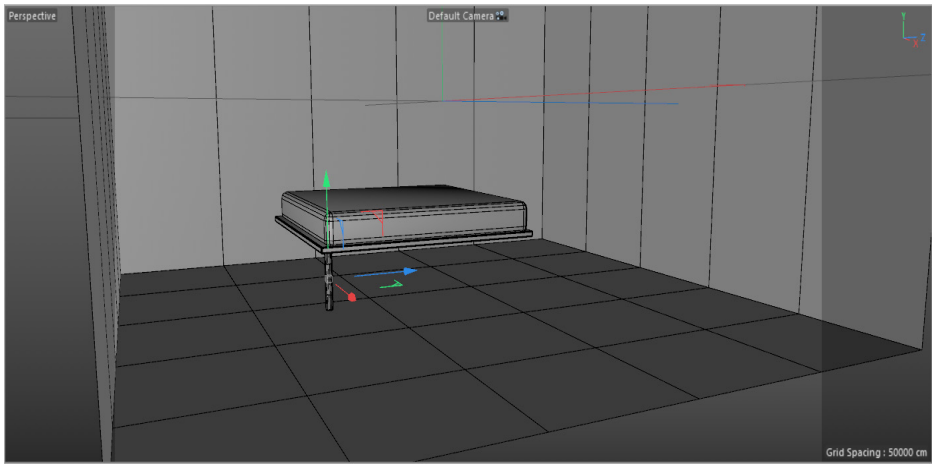

Figure P1-5 *The Leg1 displayed in the Perspective viewport*

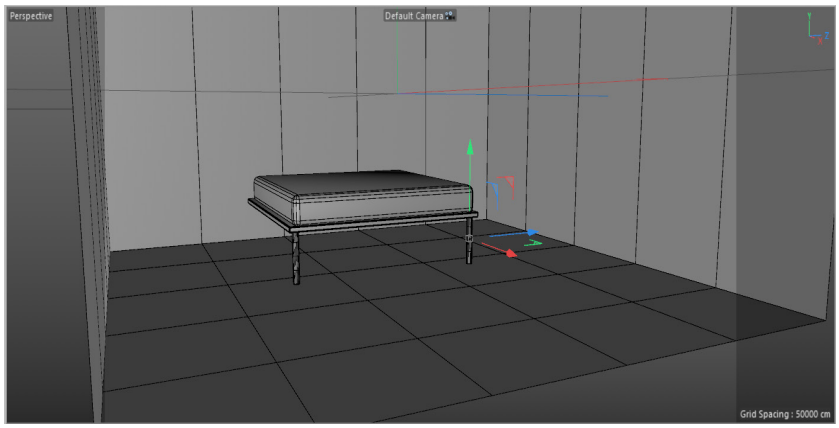

Figure P1-6 *Two legs displayed in the Perspective viewport*

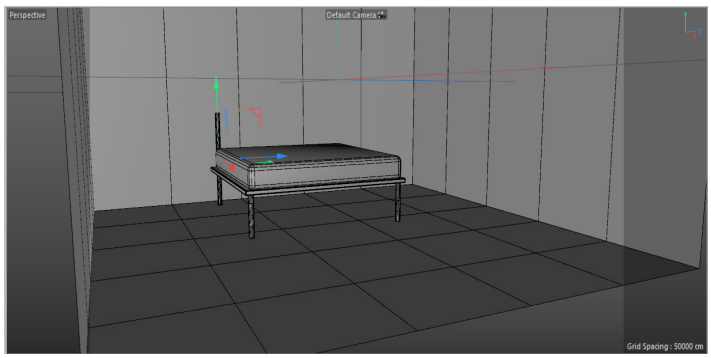

Figure P1-7 *The Leg1.2 displayed in the Perspective viewport*

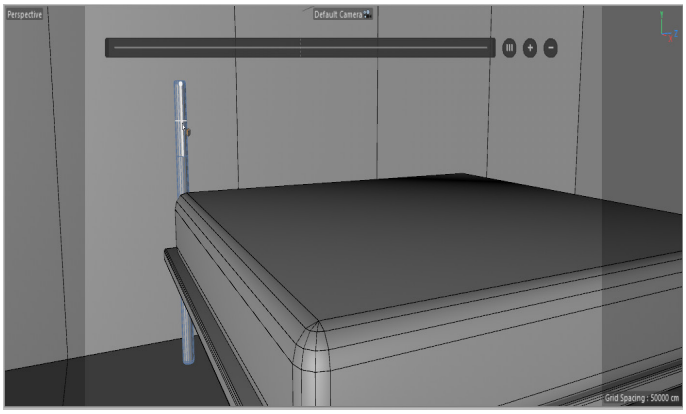

Figure P1-8 *Clicking on an edge*

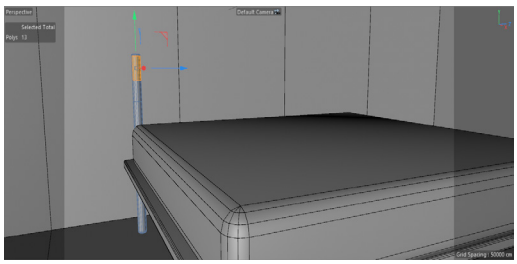

Figure P1-9 *The selected polygons*

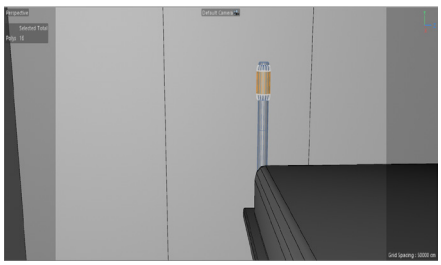

Figure P1-10 *The selected polygons bevelled*

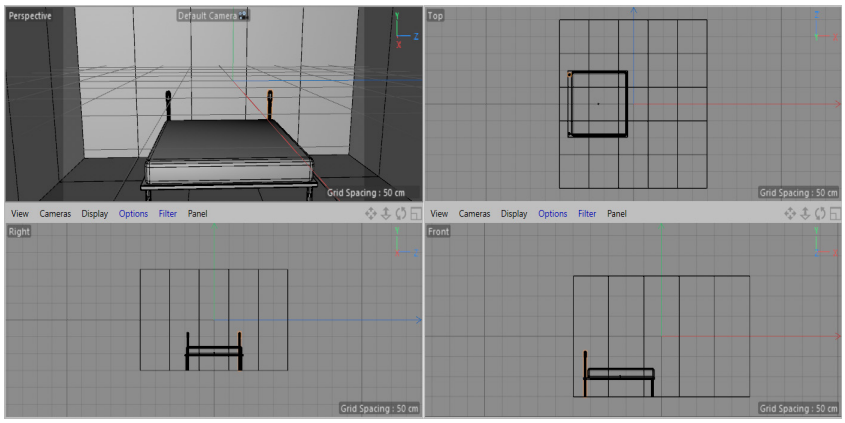

Figure P1-11 *The Leg1.3 aligned in all viewports*

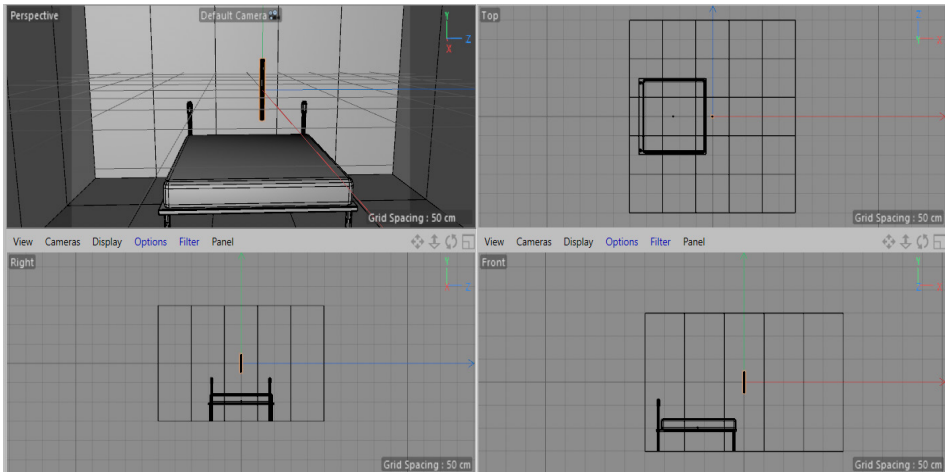

Figure P1-12 *The Support1 displayed in all viewports*

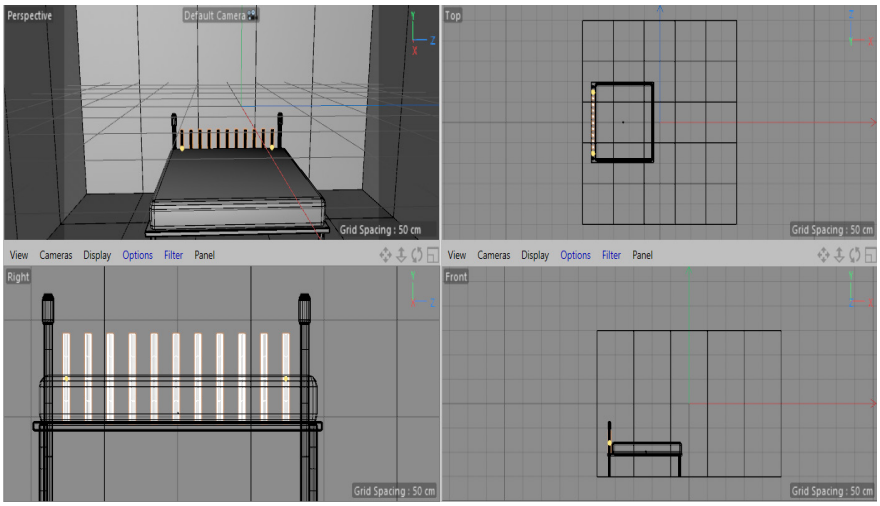

Figure P1-13 *The Support aligned in all viewports*

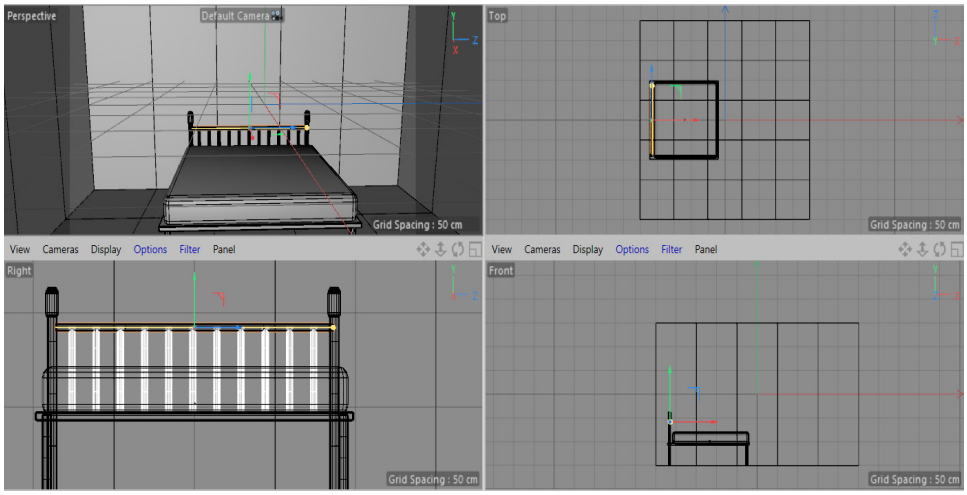

Figure P1-14 *The Rod aligned in all viewports*

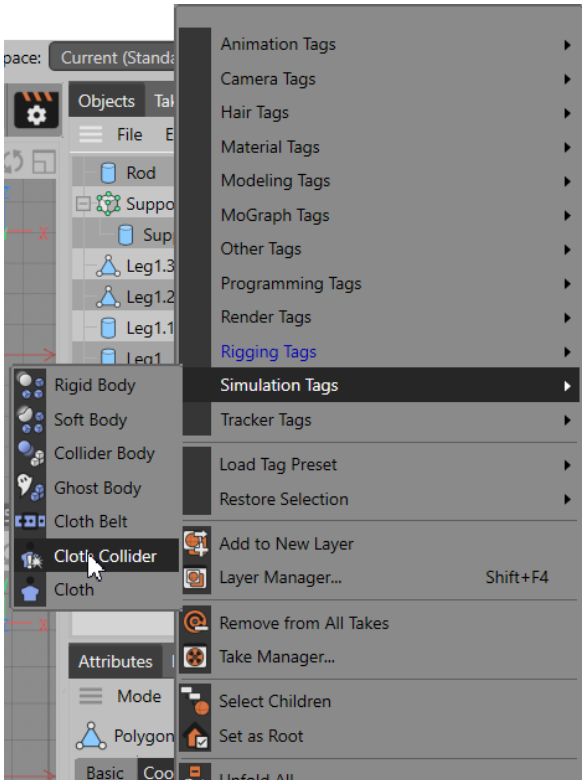

Figure P1-15 *Choosing* ***Cloth Collider*** *from the shortcut menu*

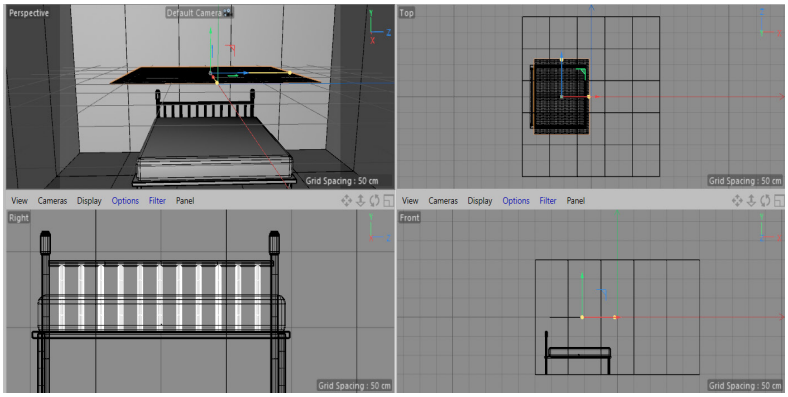

Figure P1-16 *Bedsheet aligned in all viewports*

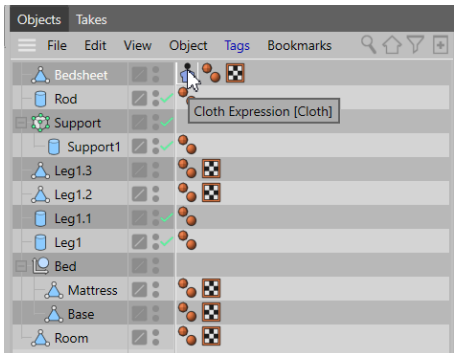

Figure P1-17 *The* ***Cloth Expression [Cloth]*** *tag added to the Object Manager*

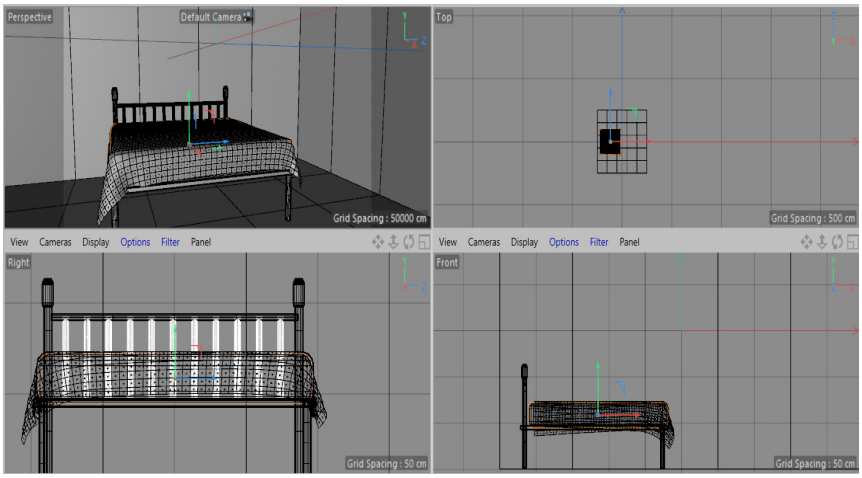

Figure P1-18 *The bedsheet aligned on Mattress*

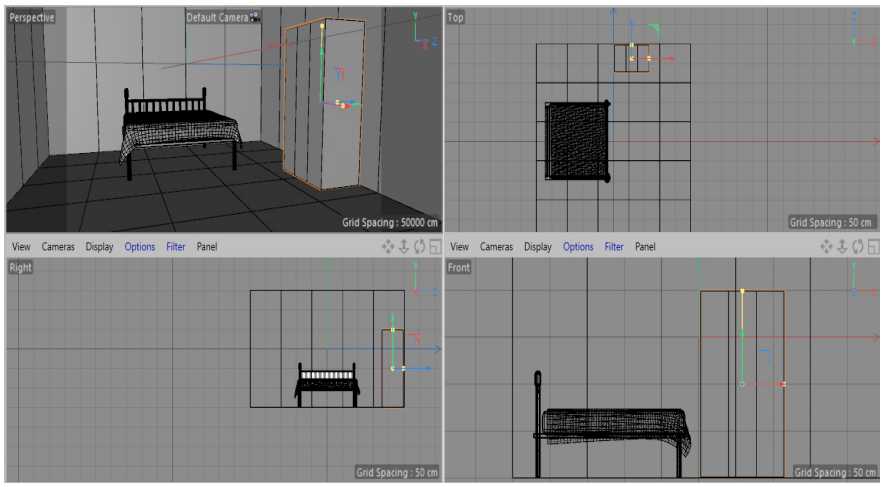

Figure P1-19 *The Wardrobe aligned in all viewports*

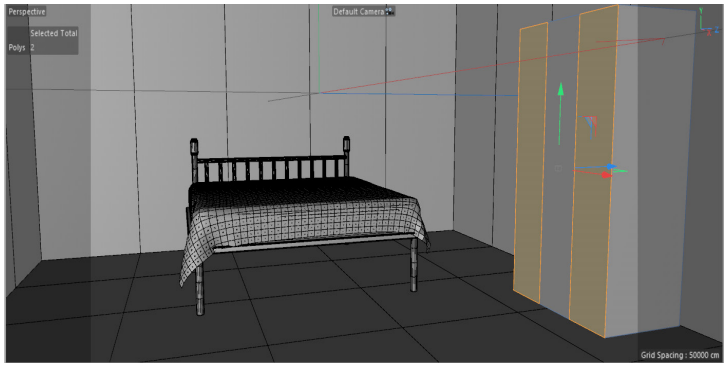

Figure P1-20 *The selected polygons displayed*

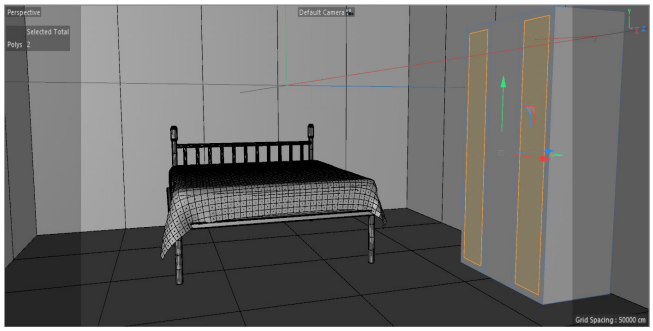

Figure P1-21 *The selected polygons extruded*

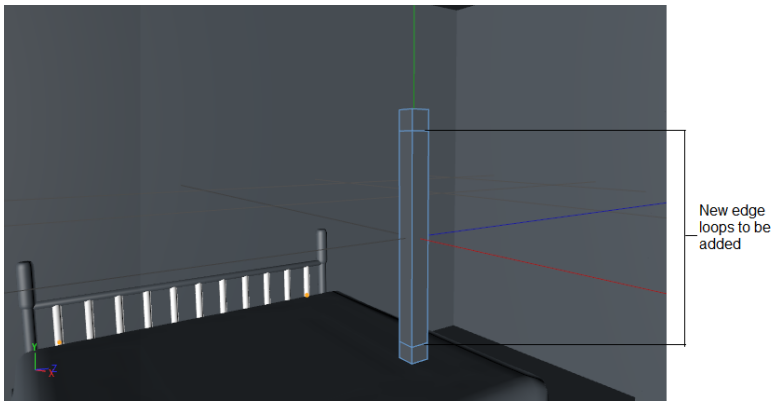

Figure P1-22 *The newly added edges displayed*

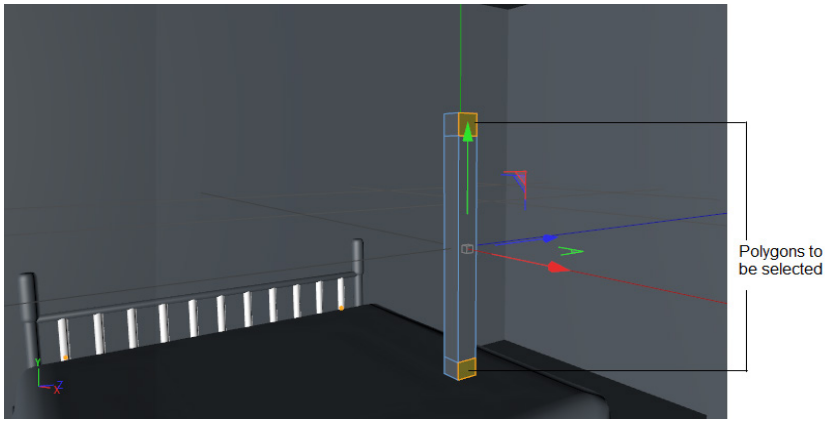

Figure P1-23 *The selected polygons*

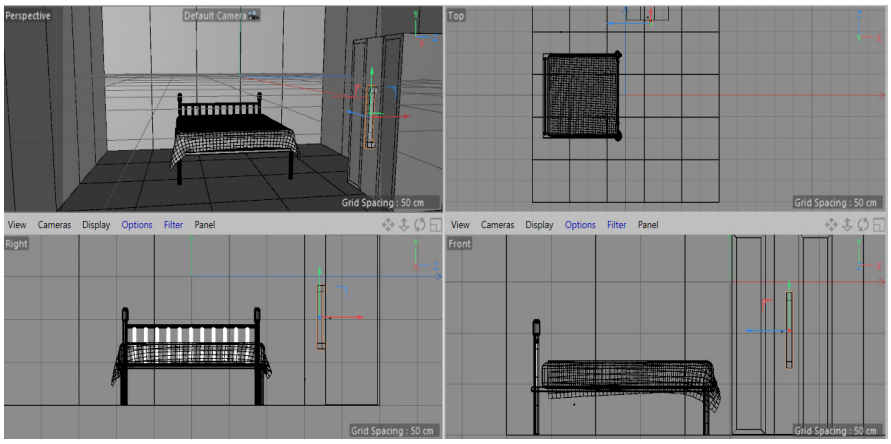

Figure P1-24 *The Handle aligned in all viewports*

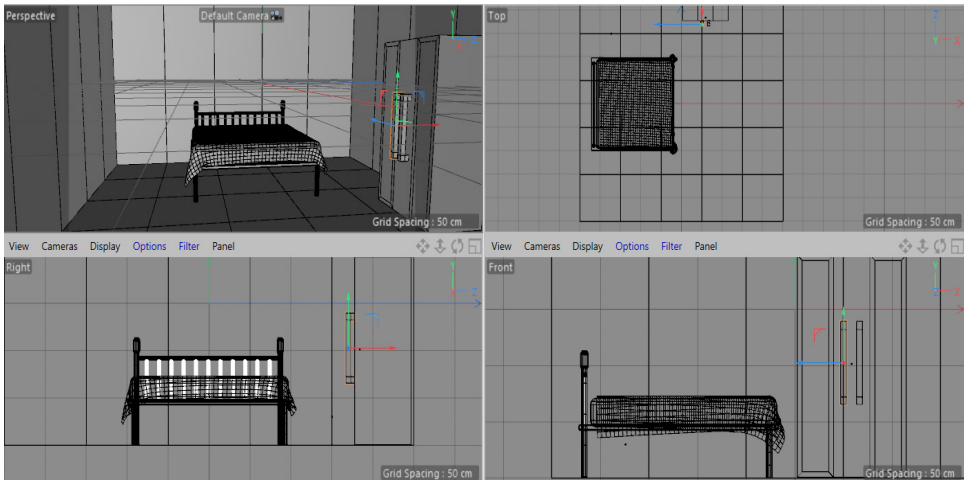

Figure P1-25 *The Handle.1 aligned in all viewports*

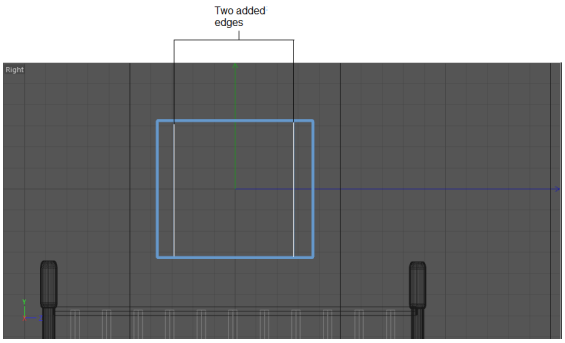

Figure P1-26 *Two vertical edge loops added*

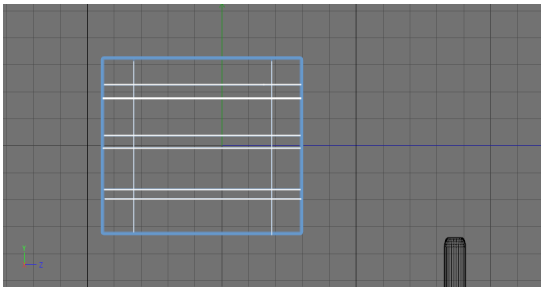

Figure P1-27 *Six horizontal edge loops added*

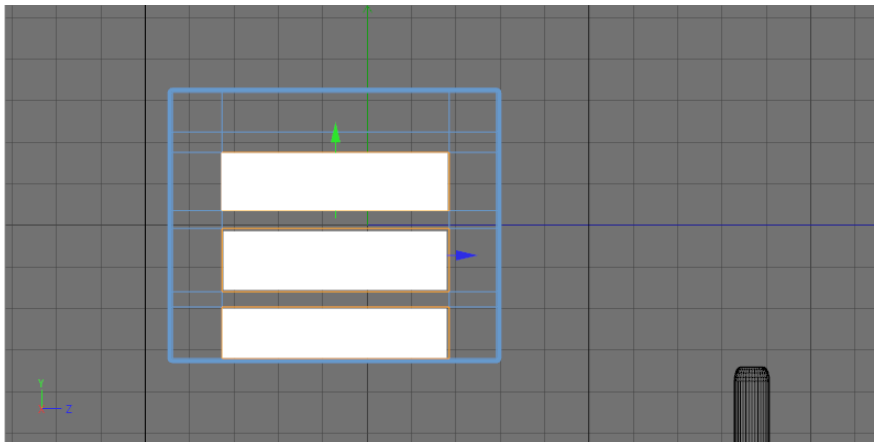

Figure P1-28 *The selected polygons*

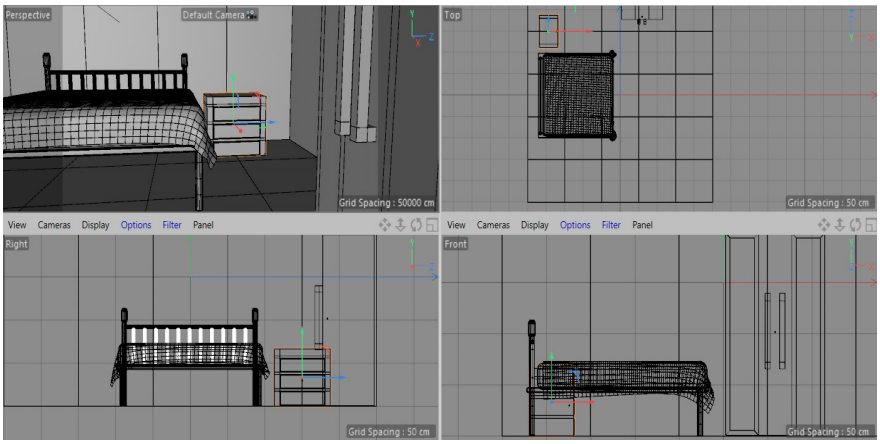

Figure P1-29 *Drawer 1 aligned in all viewports*

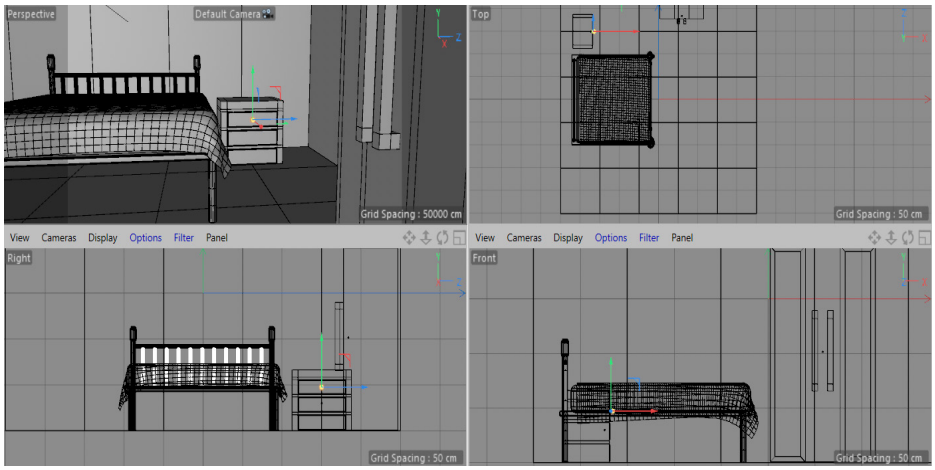

Figure P1-30 *Knob 1 positioned in all viewports*

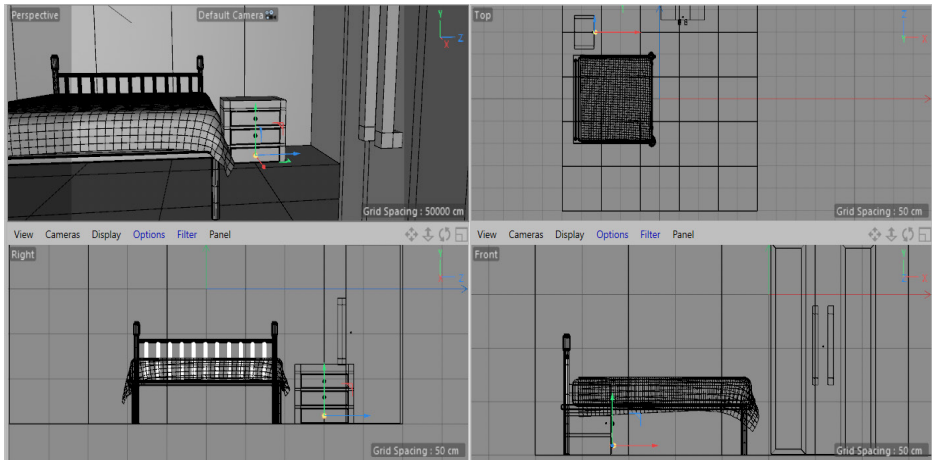

Figure P1-31 *The Knob 1, Knob 1.1, and Knob 1.2 displayed*

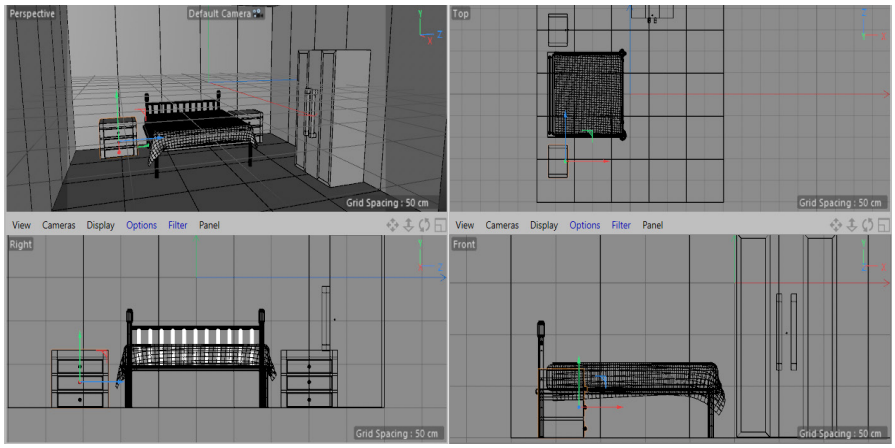

Figure P1-32 *The Drawers.1 aligned in all viewports*

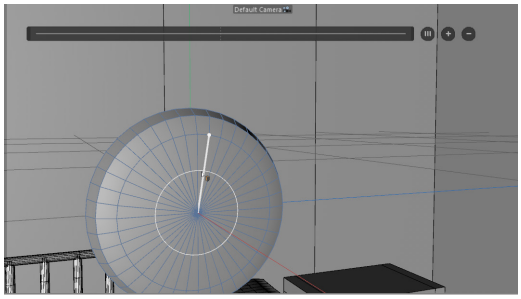

Figure P1-33 *The added edge loop displayed*

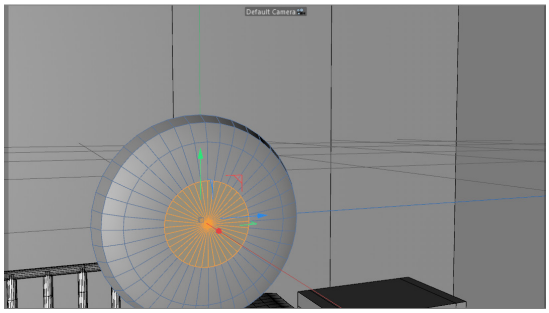

Figure P1-34 *The polygons selected*

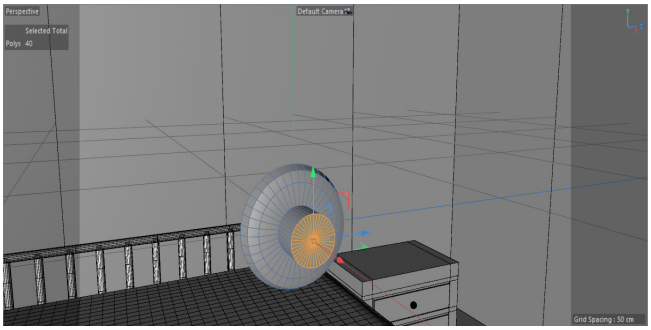

Figure P1-35 *The selected polygons extruded*

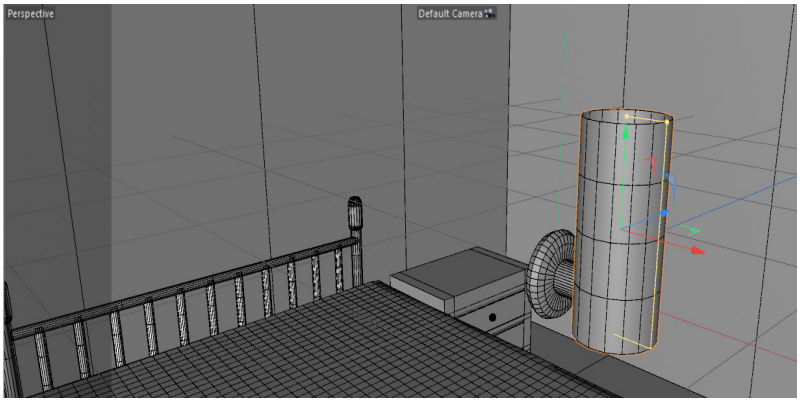

Figure P1-36 *Cover1 displayed in the Perspective viewport*

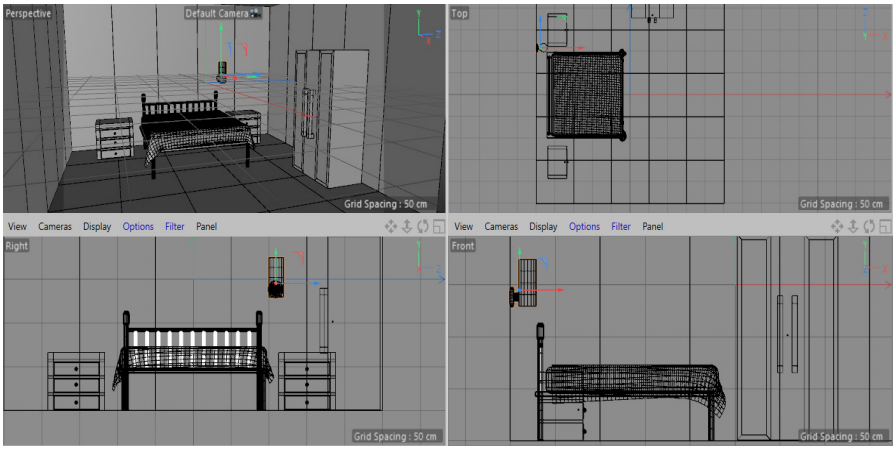

Figure P1-37 *The Lights displayed in all viewports*

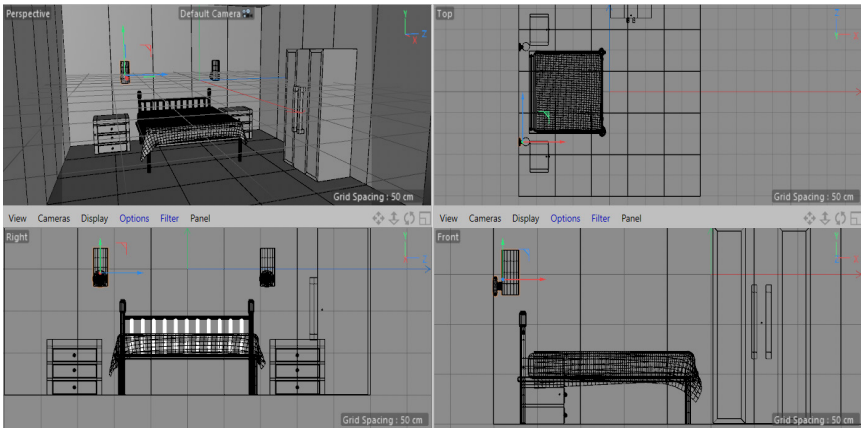

Figure P1-38 *The Lights.1 aligned in all viewports*

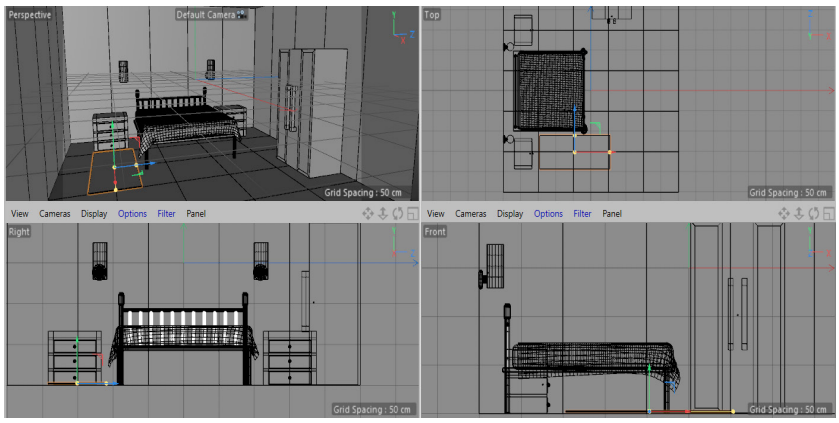

Figure P1-39 *The Mat aligned in all viewports*

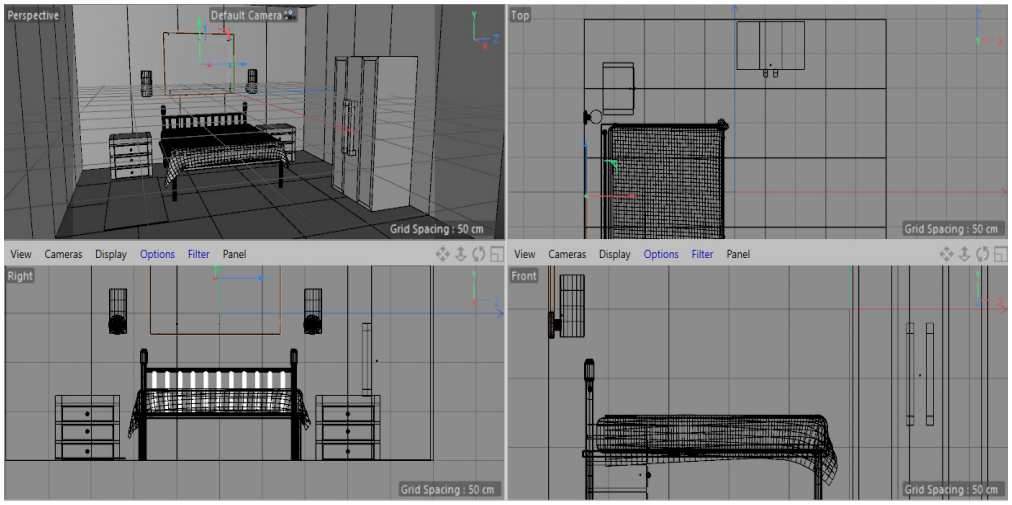

Figure P1-40 *The Wooden Frame aligned in all viewports*

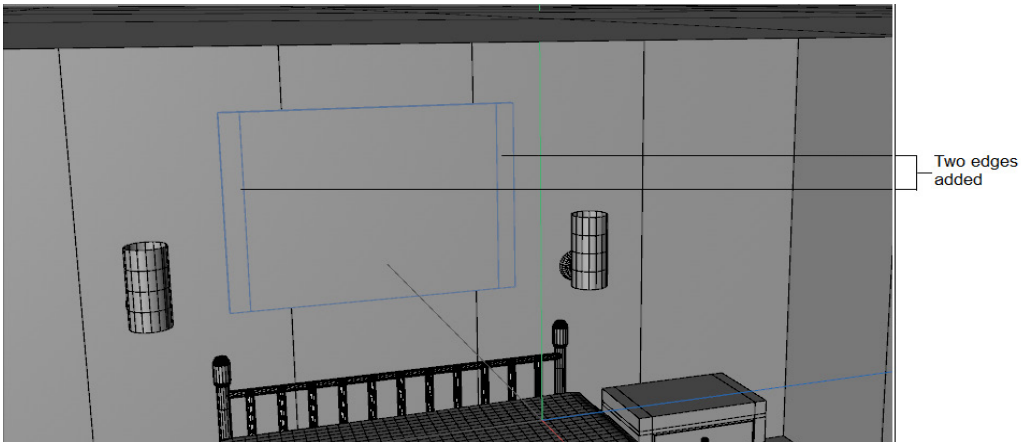

Figure P1-41 *The added vertical edges displayed*

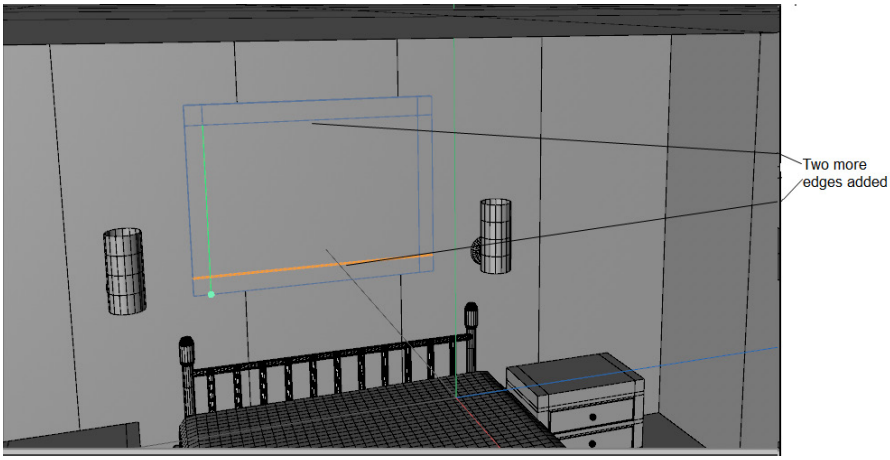

Figure P1-42 *The horizontal added edges displayed*

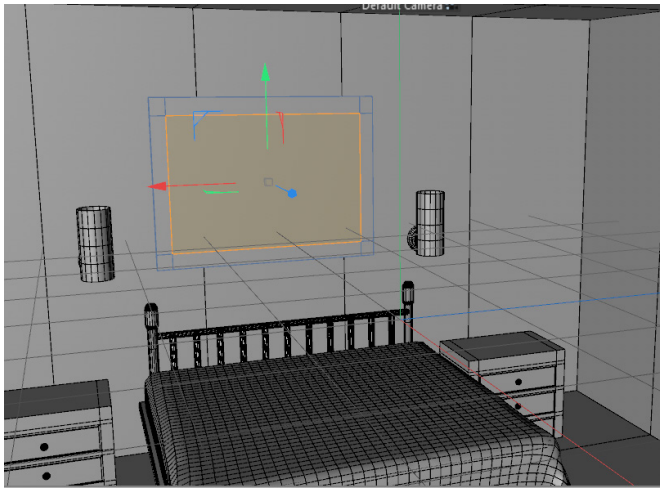

Figure P1-43 *The polygon selected*

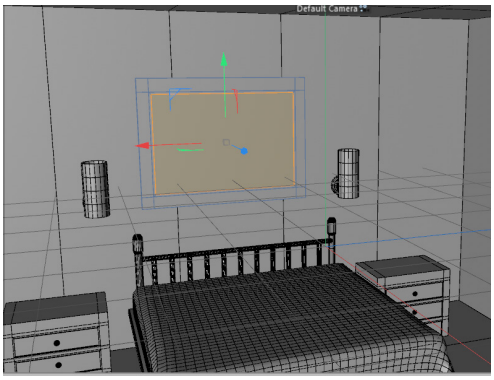

Figure P1-44 *The Wooden Frame extruded in the Perspective viewport*

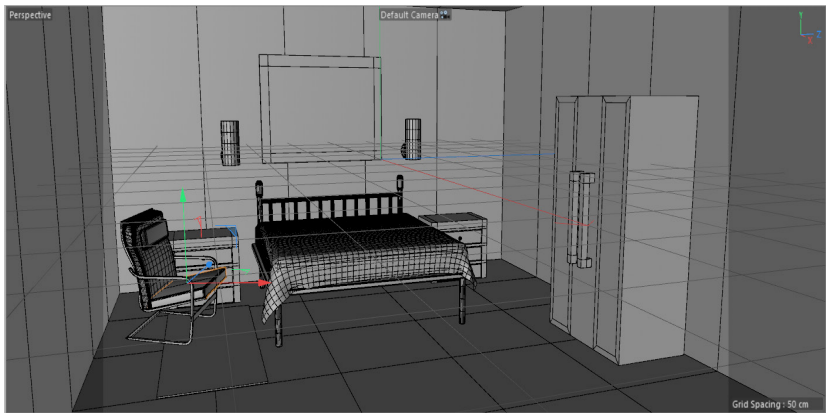

Figure P1-45 *Displaying the Chair positioned in the Perspective viewport*

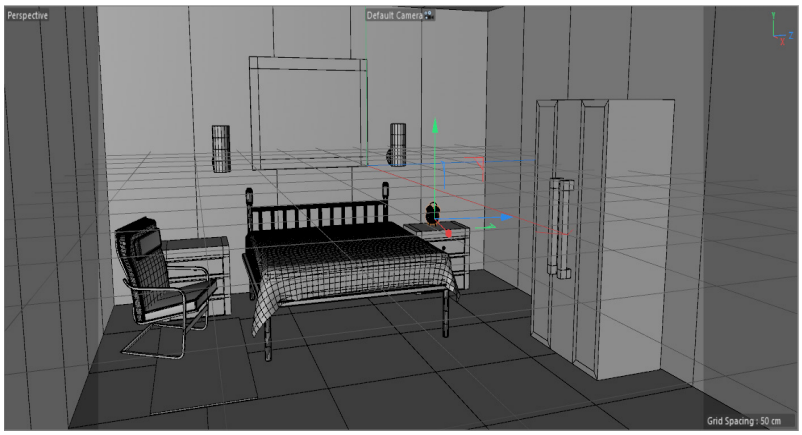

Figure P1-46 *The Clock positioned in the Perspective viewport*

Project 2

Texturing an Indoor Scene

Figure P2-1 *The final output*

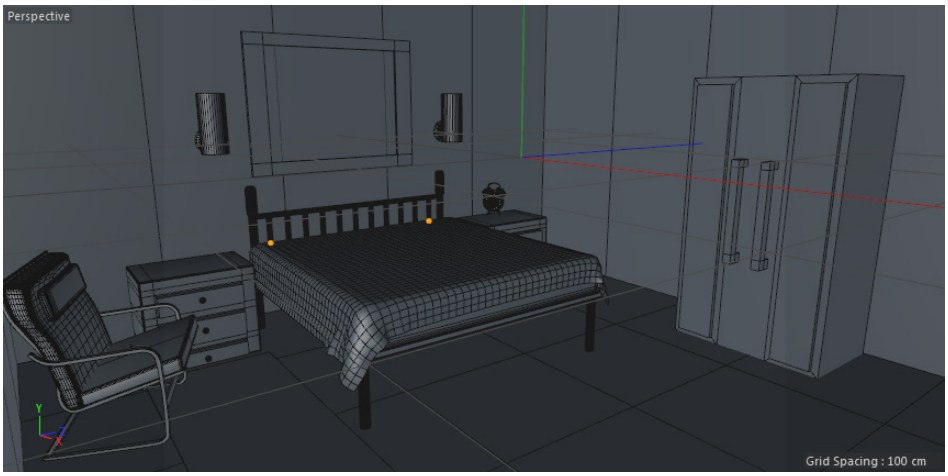

Figure P2-2 *The Project2_start.c4d file*

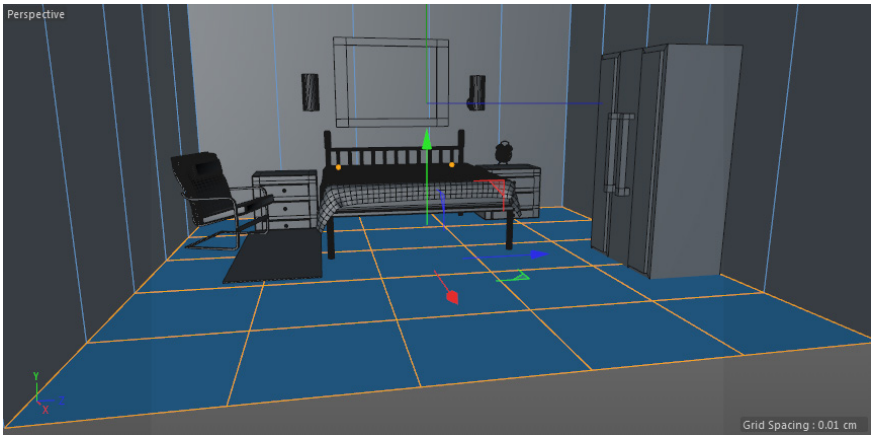

Figure P2-3 *The bottom polygons of Room selected*

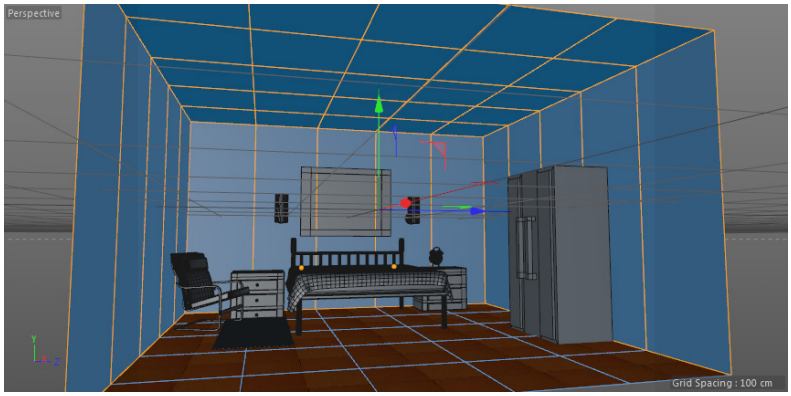

Figure P2-4 *The polygons of the walls and roof selected*

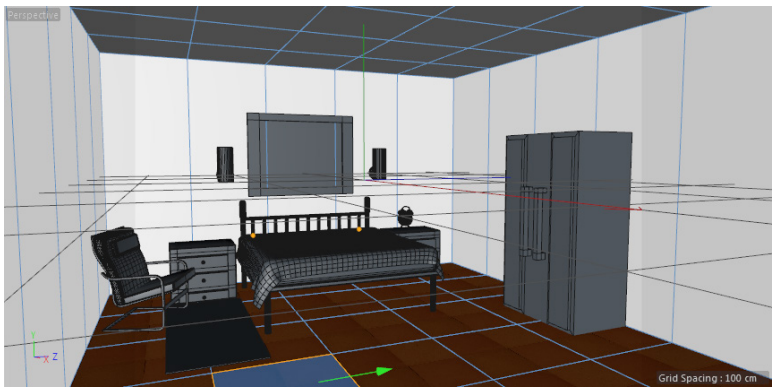

Figure P2-5 *The Wall material assigned to walls of the Room*

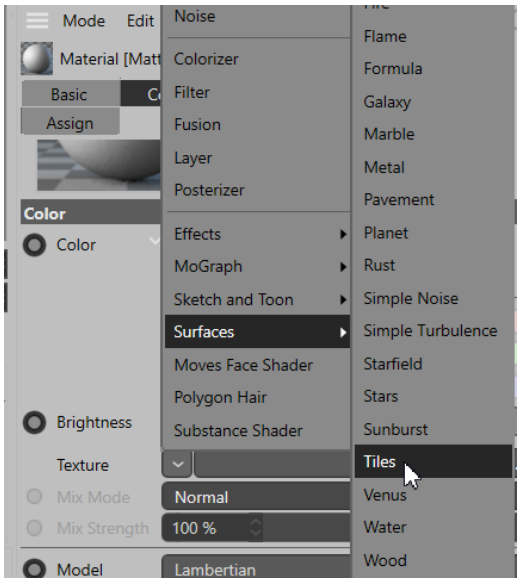

Figure P2-6 *Choosing* ***Surfaces > Tiles*** *from the flyout*

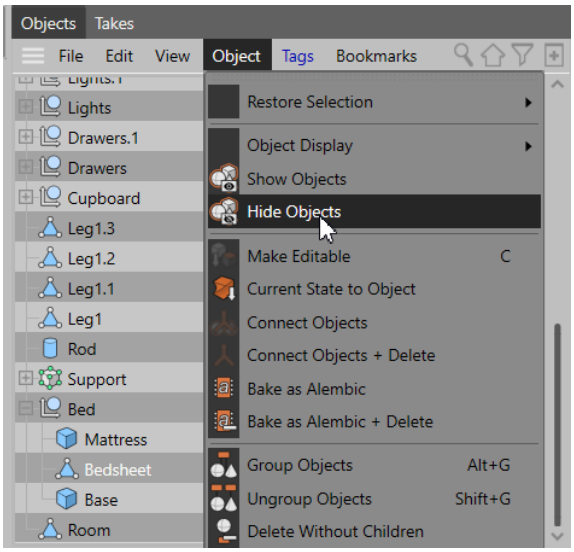

Figure P2-7 *Choosing* ***Hide Objects*** *from the main menu in the Object Manager*

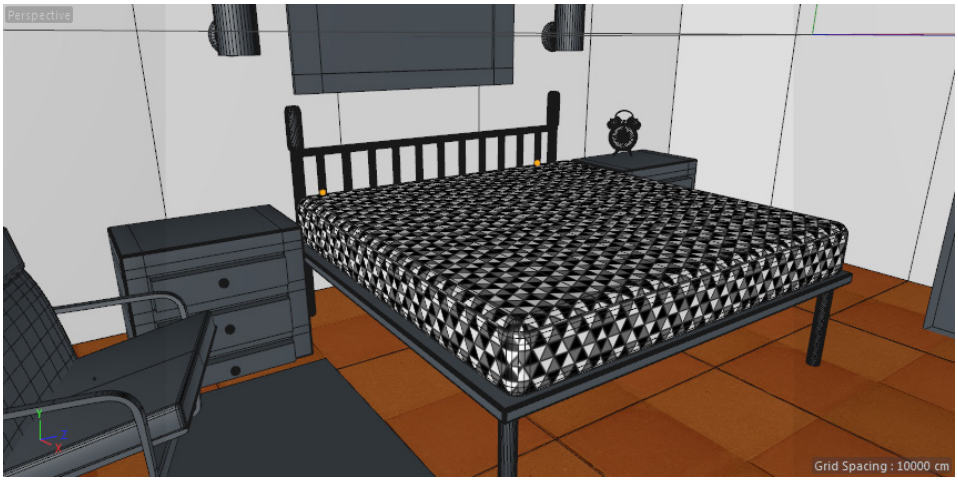

Figure P2-8 *The Mattress material displayed*

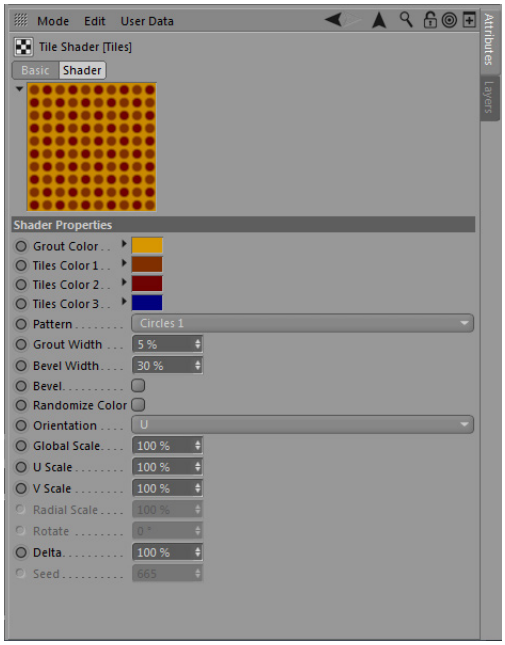

Figure P2-9 *The Bedsheet texture created in the* ***Shader Properties*** *area*

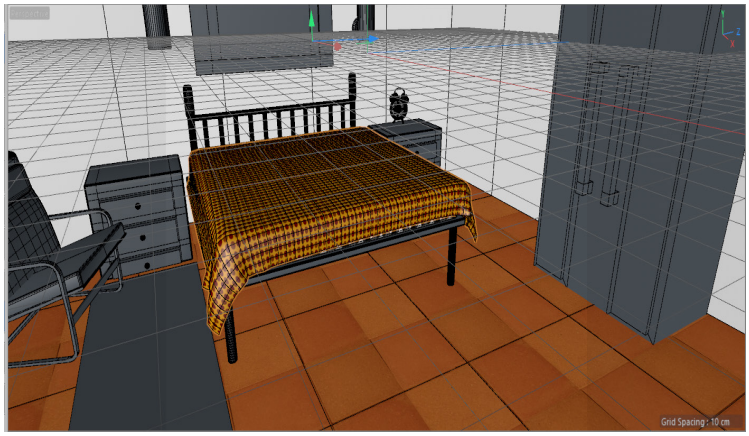

Figure P2-10 *The Bedsheet material displayed*

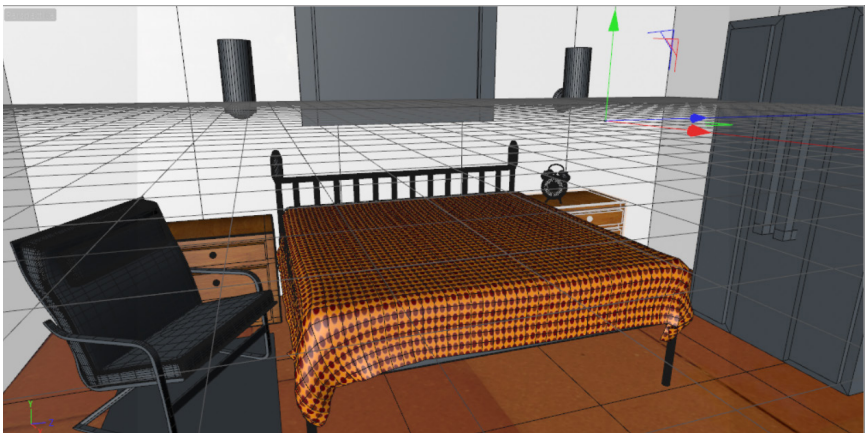

Figure P2-11 *The Drawer mat material applied to drawers*

Figure P2-12 *The selected polygons of Wardrobe*

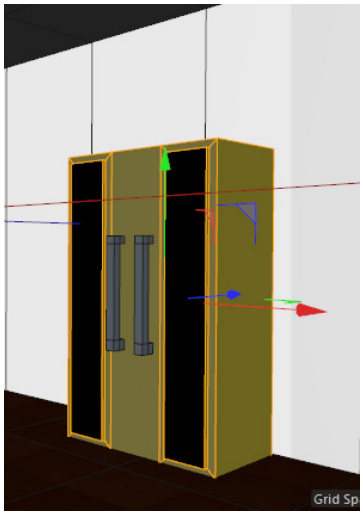

Figure P2-13 *Selecting the rest of the polygons*

Figure P2-14 *The Almirah and Mirror materials applied to Wardrobe in the rendered scene*

Figure P2-15 *The Chair mat material applied*

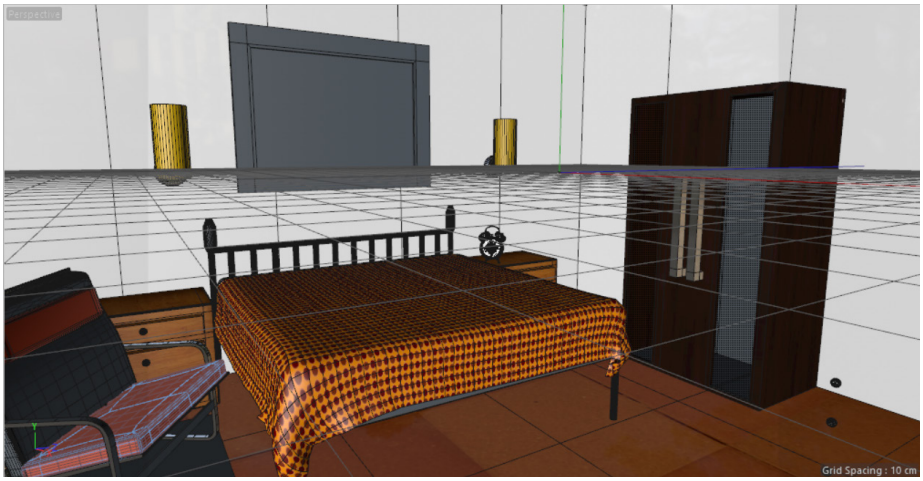

Figure P2-16 *The materials applied to Lights and Light.1 groups*

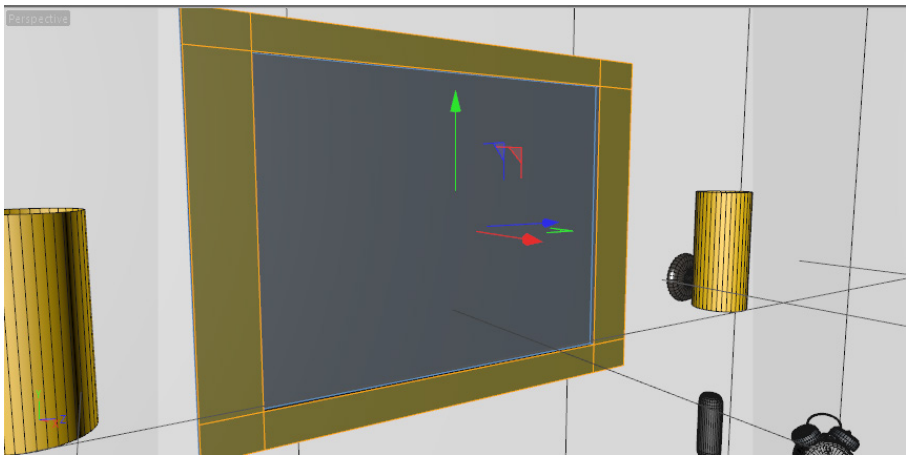

Figure P2-17 *The selected polygons of Wooden Frame*

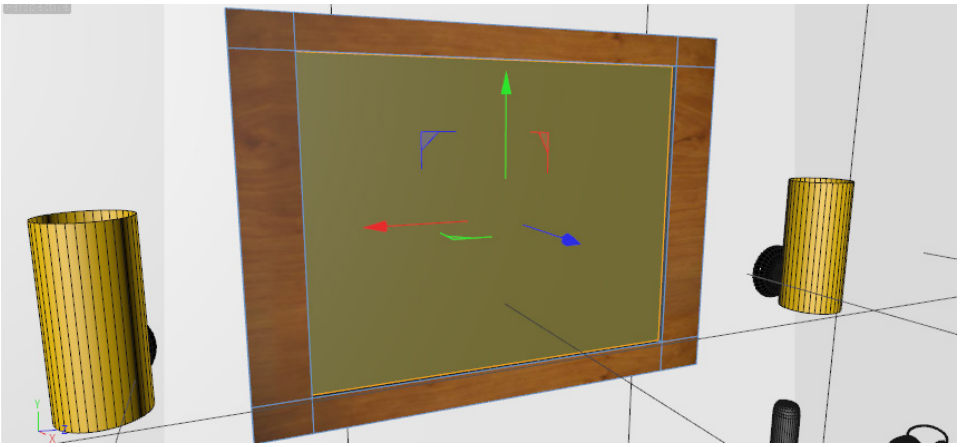

Figure P2-18 *The selected polygon of Wooden Frame*

Figure P2-19 *The Painting material mapped to Wooden Frame*

Figure P2-20 *The final rendered scene*

Project 3

Creating an Exterior Scene

Figure P3-1 *The final output*

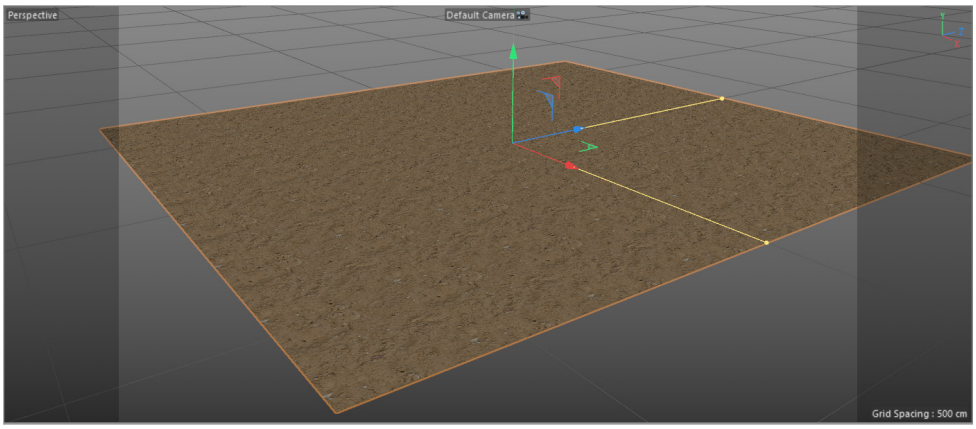

Figure P3-2 *The material displayed on ground*

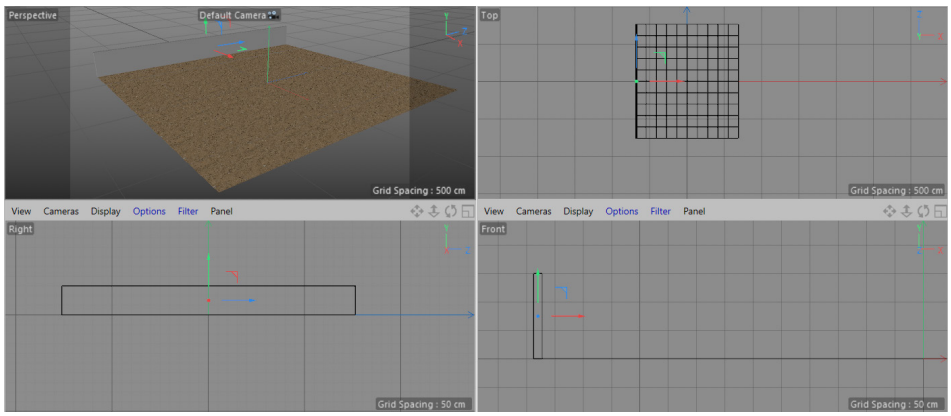

Figure P3-3 *The wall aligned in all viewports*

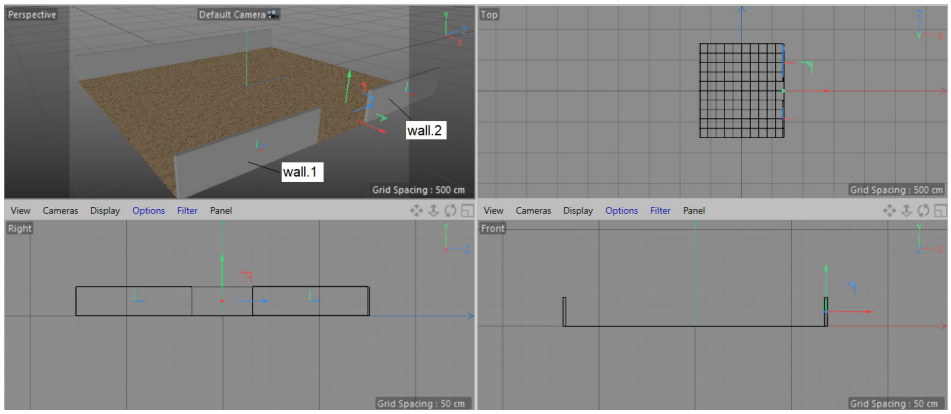

Figure P3-4 *The wall.1 and wall.2 aligned in all viewports*

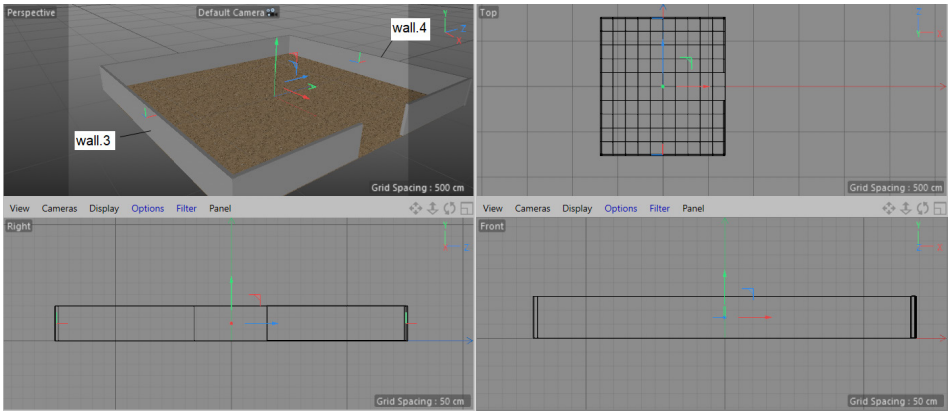

Figure P3-5 *The wall.3 and wall.4 aligned in all viewports*

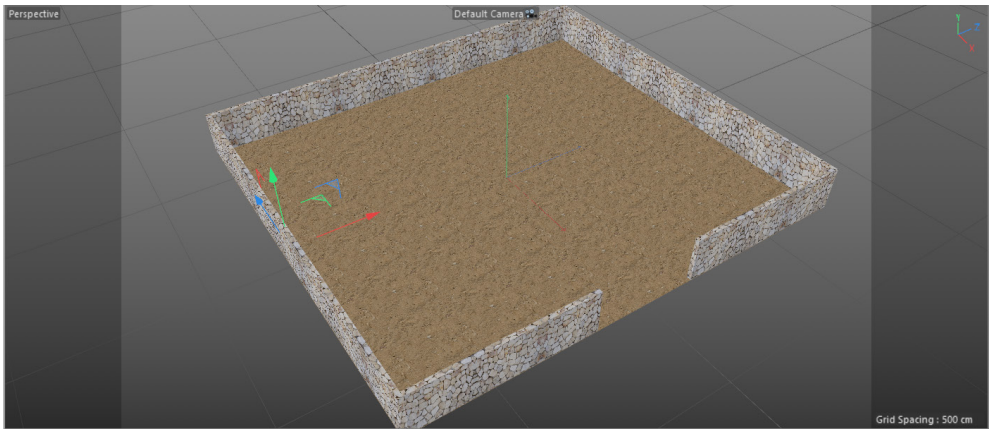

Figure P3-6 *The material displayed on wall*

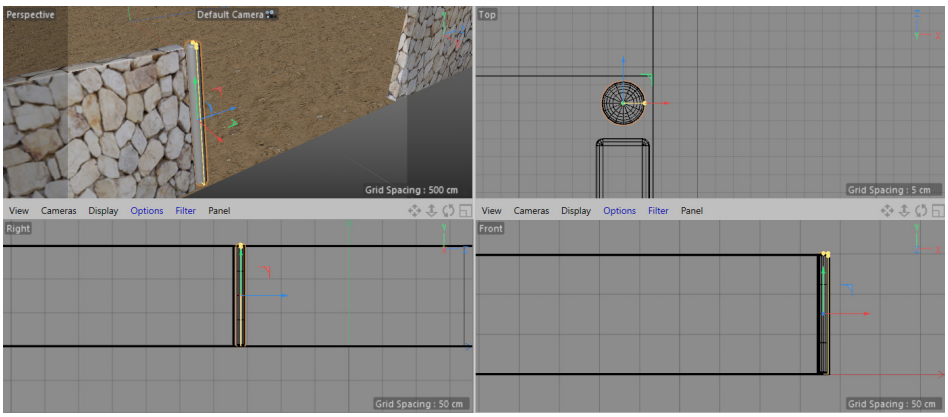

Figure P3-7 *The rod aligned in all viewports*

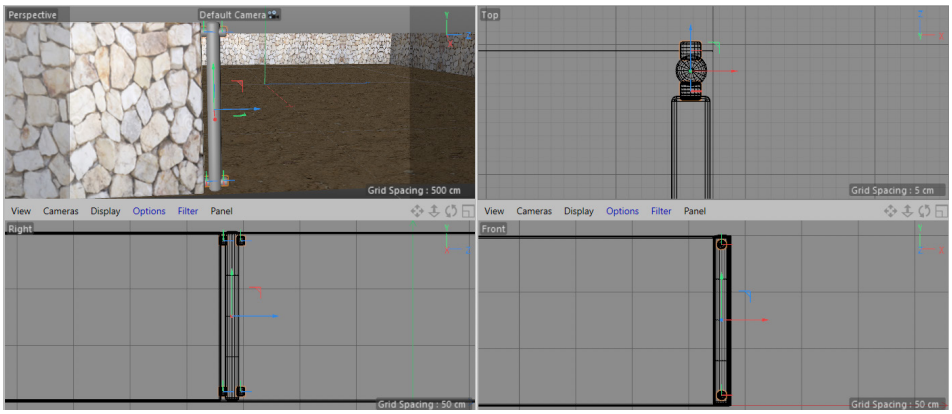

Figure P3-8 *The support and its copies aligned in all viewports*

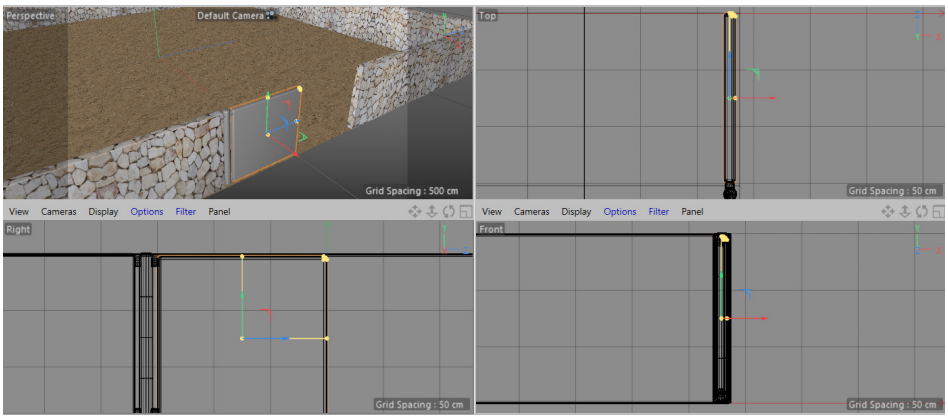

Figure P3-9 *The door.1 aligned in all viewports*

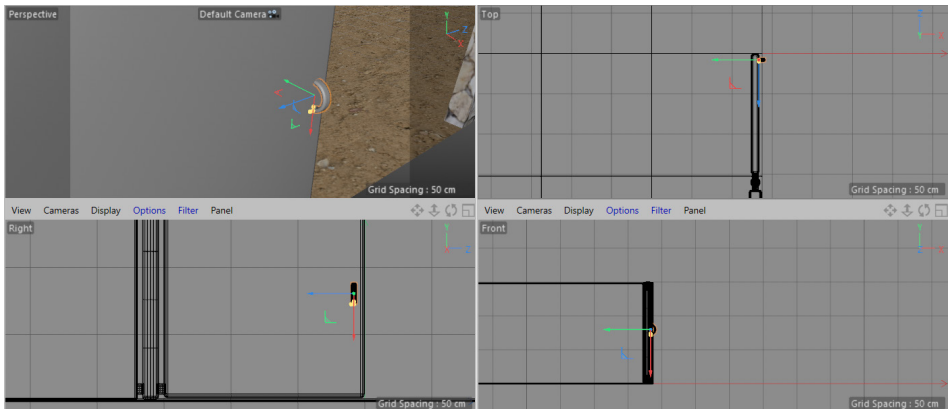

Figure P3-10 *The handle1 aligned in all viewports*

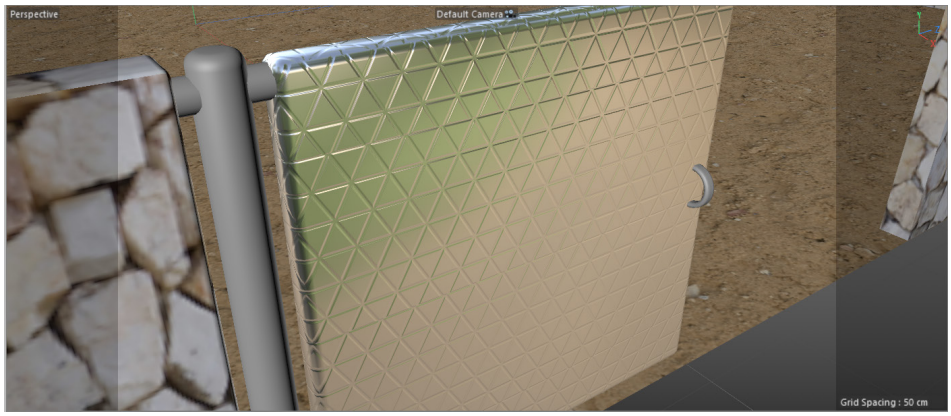

Figure P3-11 *The material displayed on door1*

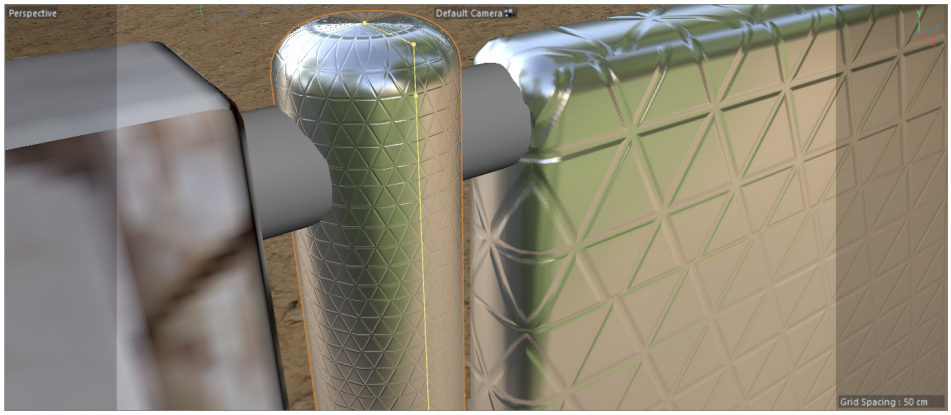

Figure P3-12 *The material displayed on rod*

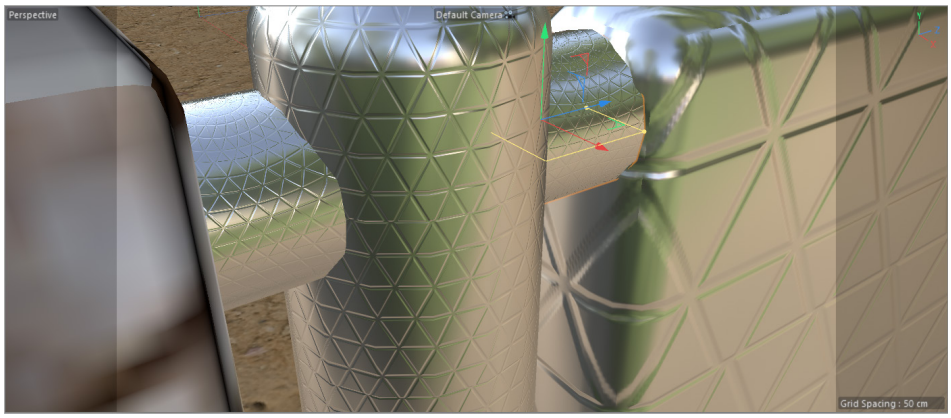

Figure P3-13 *The material displayed on all the supports*

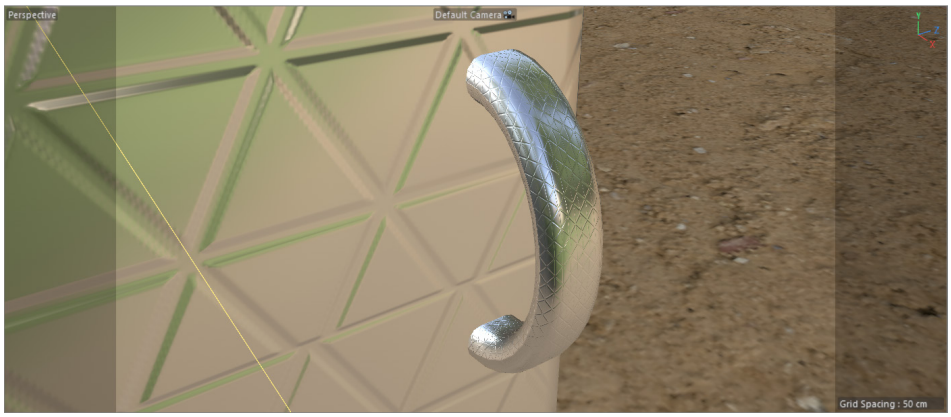

Figure P3-14 *The material displayed on handle1*

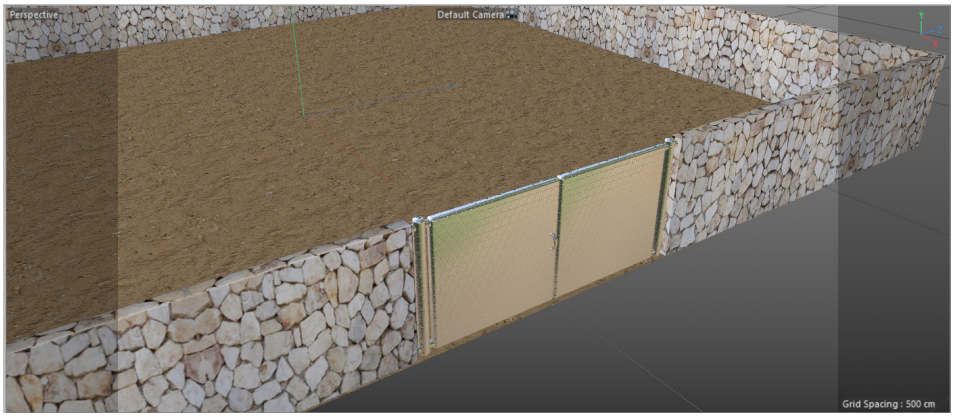

Figure P3-15 *The gate2 displayed in the Perspective viewport*

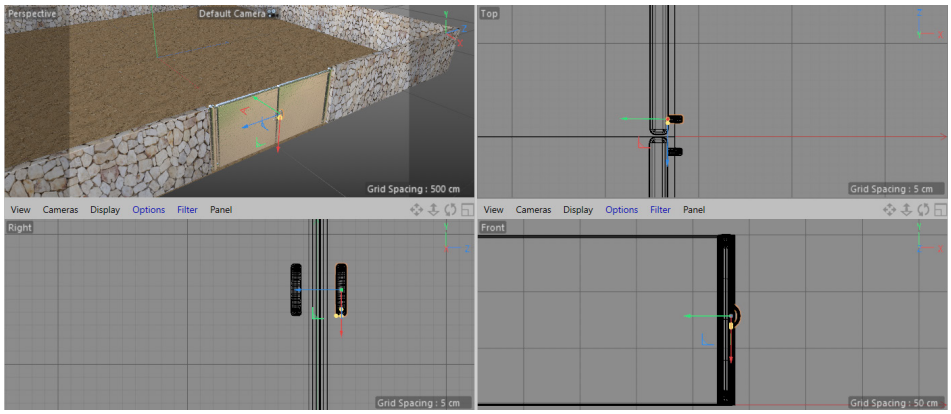

Figure P3-16 *The handle2 aligned in all viewports*

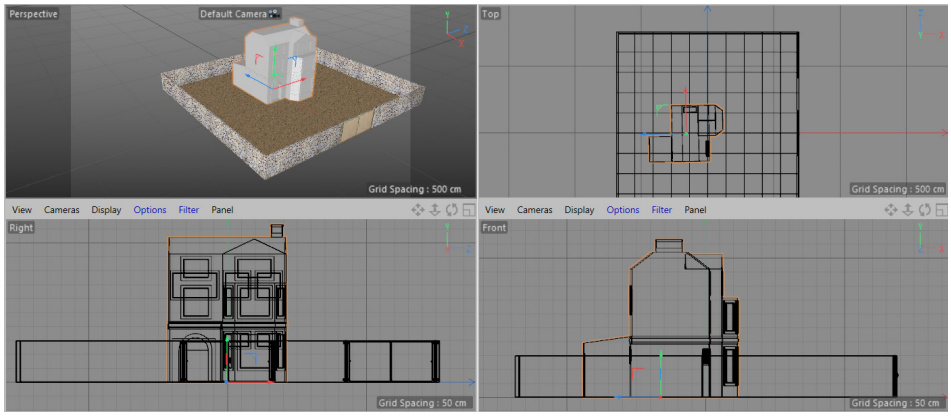

Figure P3-17 *The House01 aligned in all viewports*

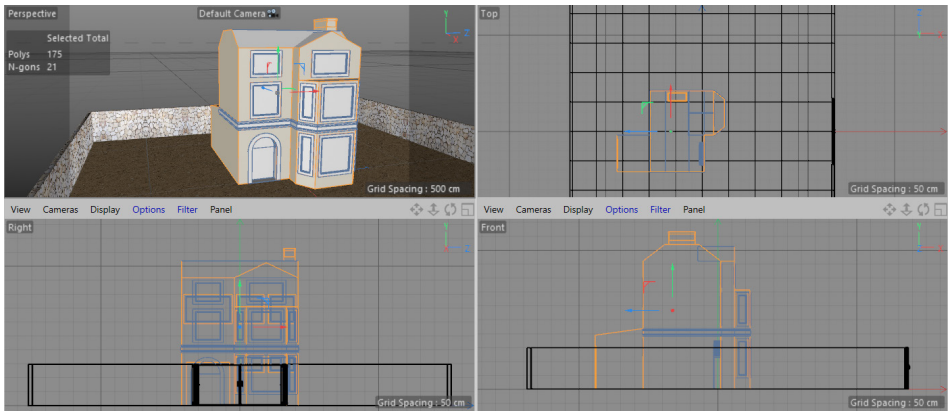

Figure P3-18 *Selected polygons of House01*

Figure P3-19 *The mathousewall material displayed on all selected polygons*

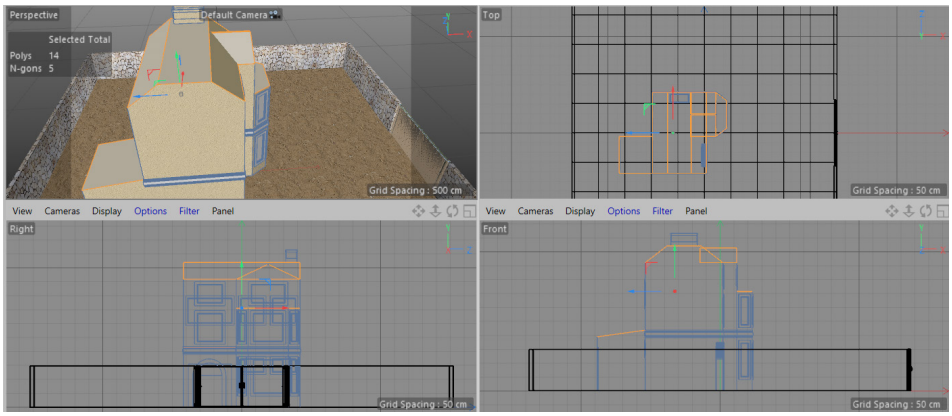

Figure P3-20 *Roof polygons of House01 selected*

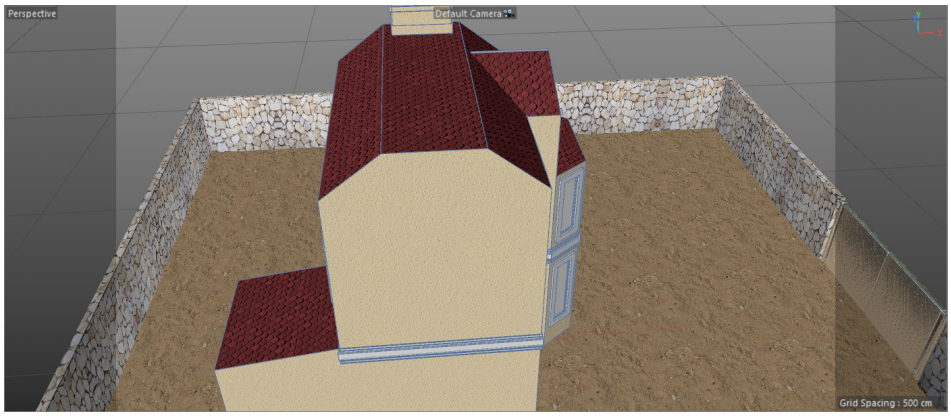

Figure P3-21 *The matroof material displayed on all selected polygons*

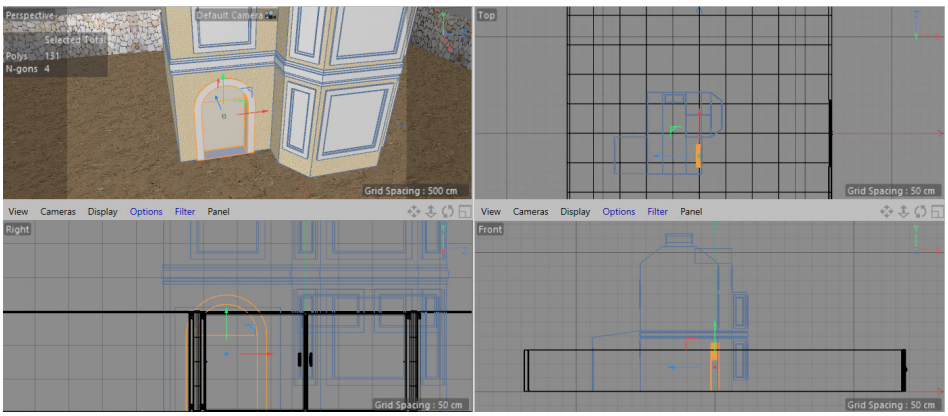

Figure P3-22 *Door polygons of House01 selected*

Figure P3-23 *The matwood material displayed on all selected polygons*

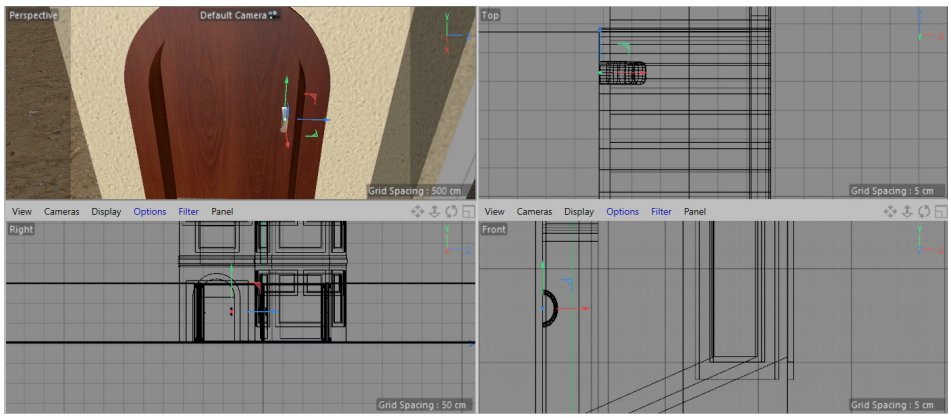

Figure P3-24 *The door_handle aligned in all viewports*

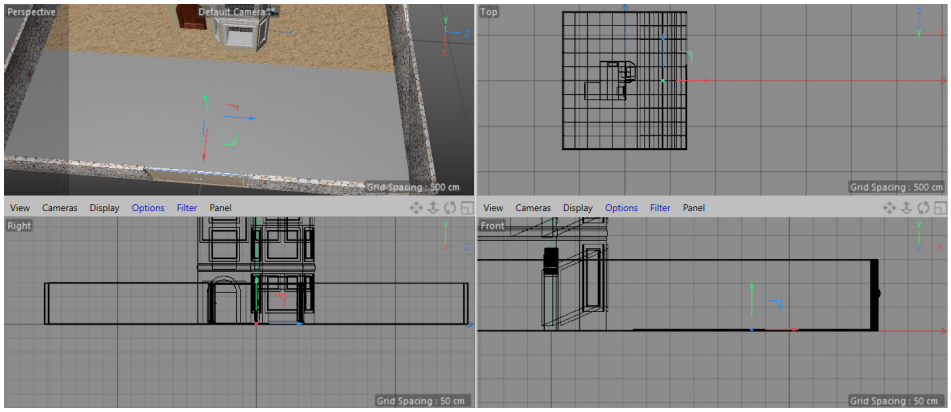

Figure P3-25 *The flooring1 aligned in all viewports*

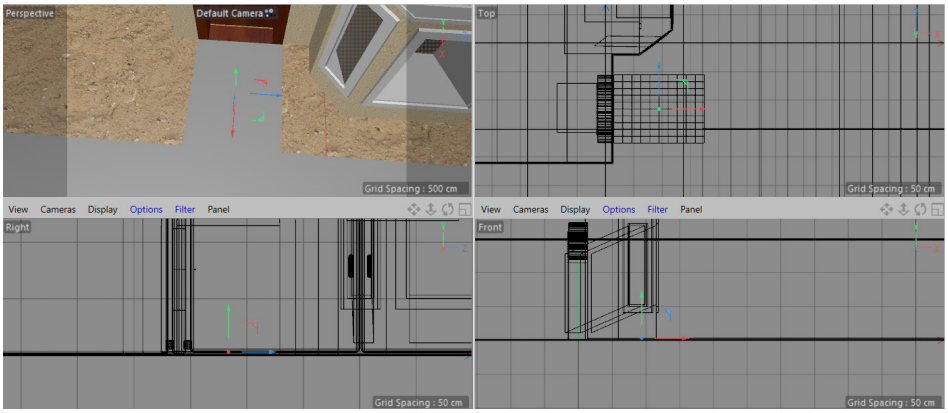

Figure P3-26 *The flooring2 aligned in all viewports*

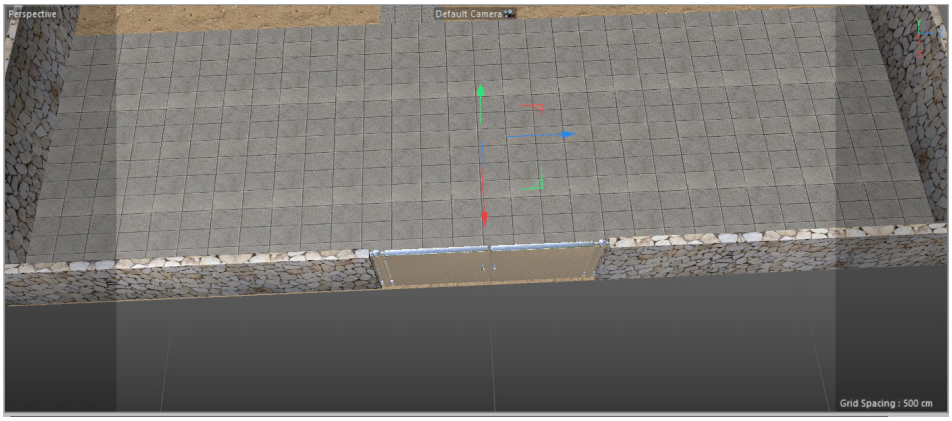

Figure P3-27 *The matflooring material displayed on flooring1*

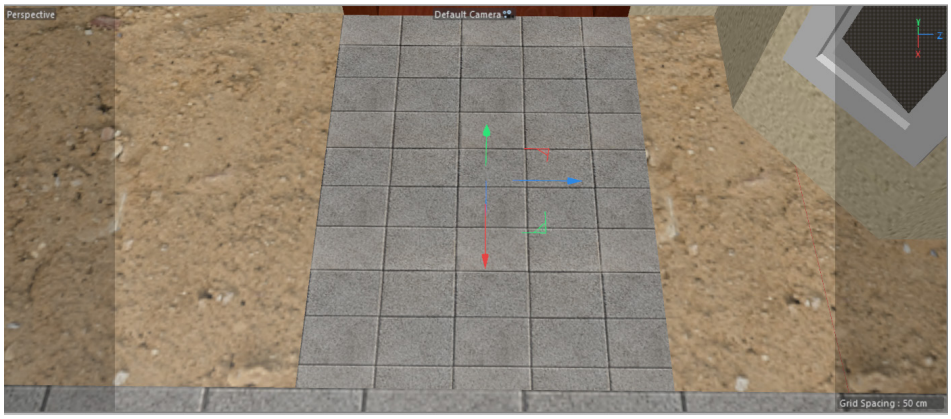

Figure P3-28 *The matflooring material displayed on flooring2*

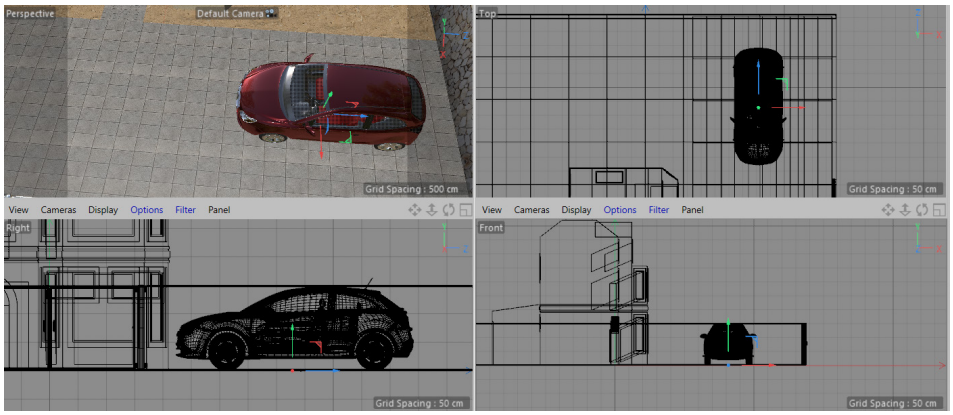

Figure P3-29 *The car aligned in all viewports*

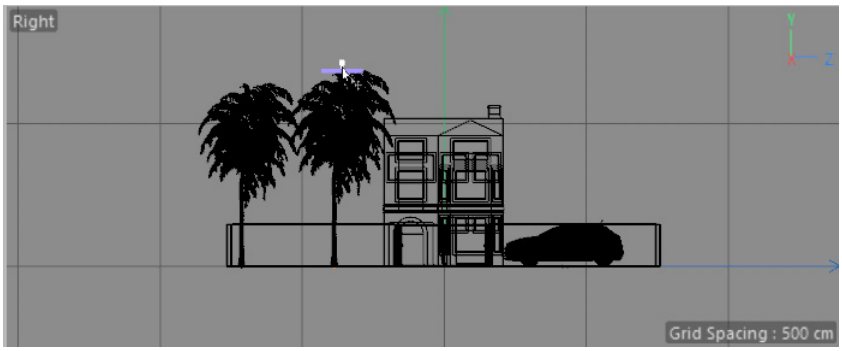

Figure P3-30 *Copy of tree scaled and placed*

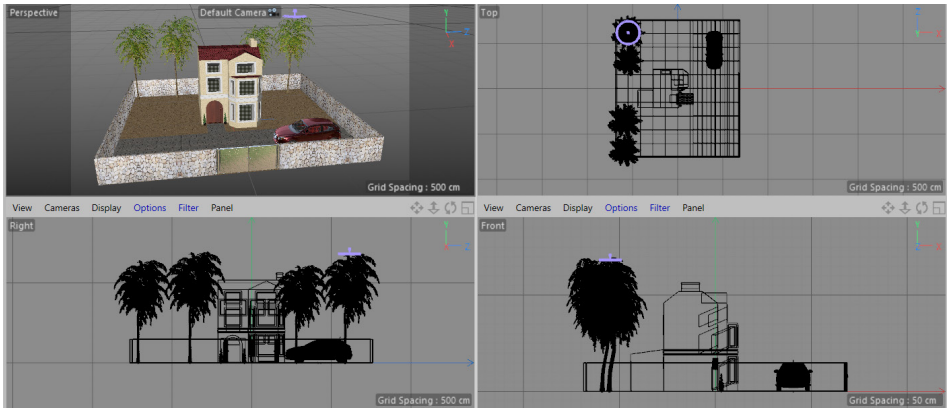

Figure P3-31 *Trees aligned in all viewports*

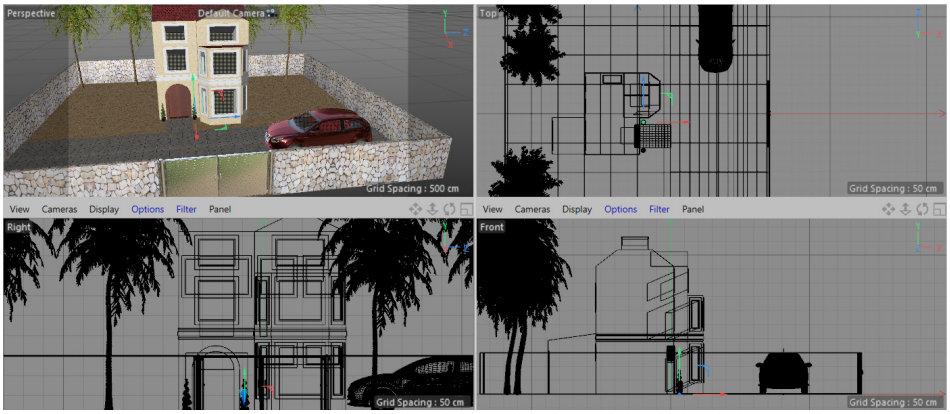

Figure P3-32 *Pots aligned in all viewports*

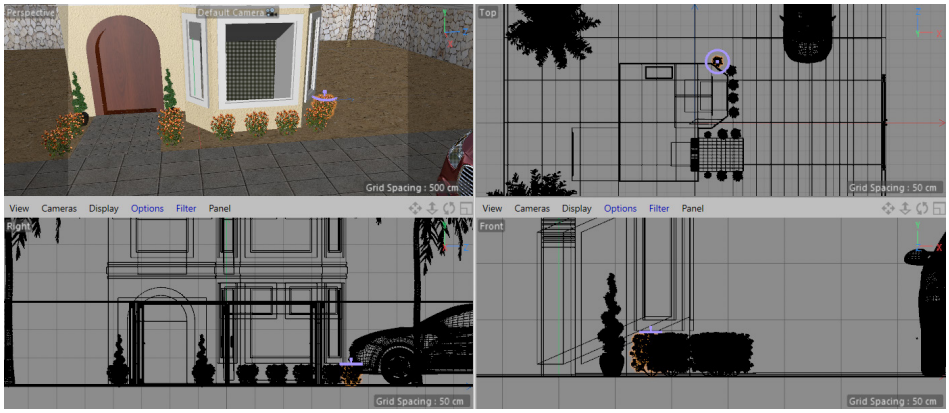

Figure P3-33 *Plants aligned in all viewports*

Figure P3-34 *Applying strokes on the ground*

Figure P3-35 *Grass spread all over the ground*