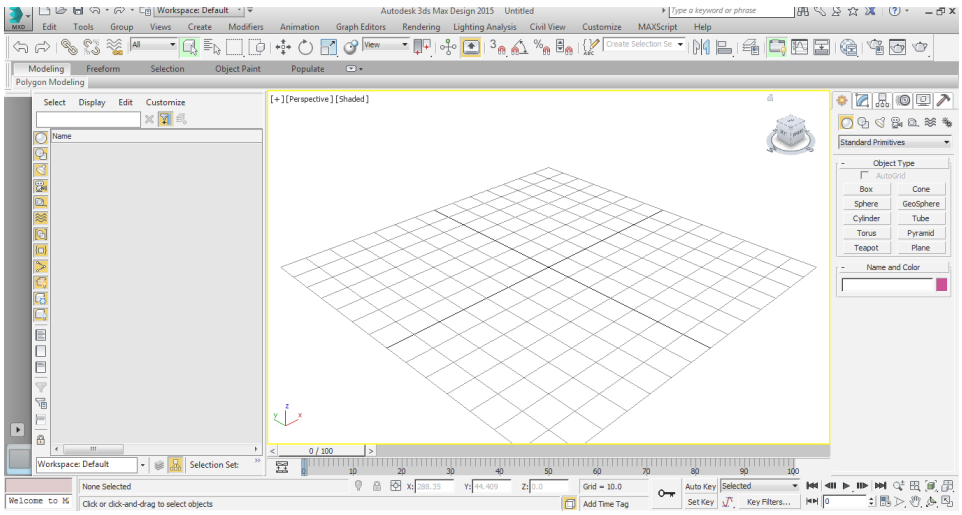
Chapter 1

Introduction to Autodesk 3ds Max Design 2015



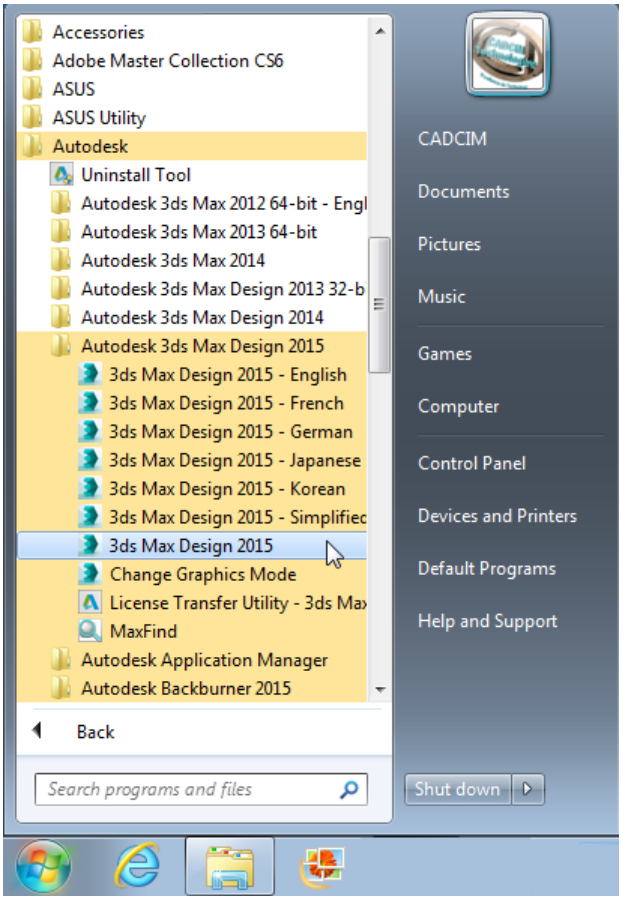


Figure 1-1 *Starting Autodesk 3ds Max Design 2015 from the taskbar*

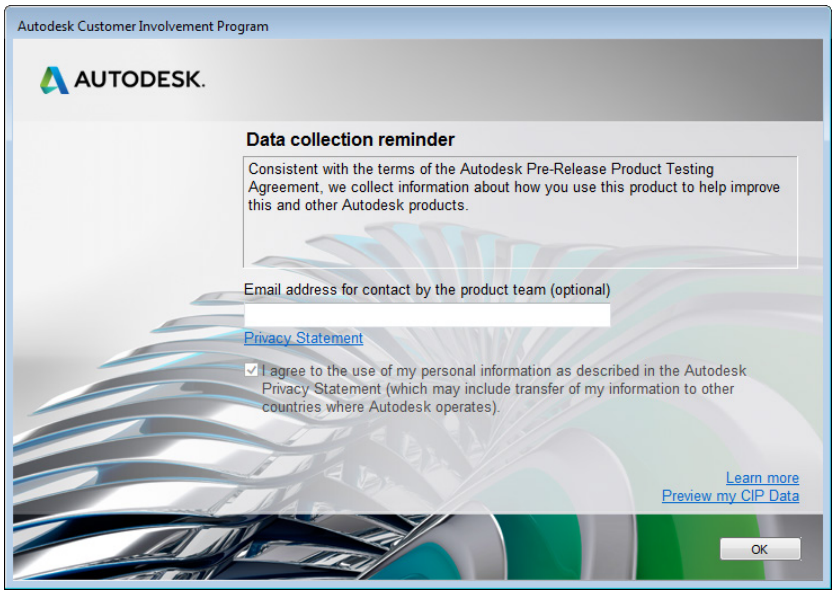


Figure 1-2 The ***Autodesk Customer Involvement Program*** *dialog box*

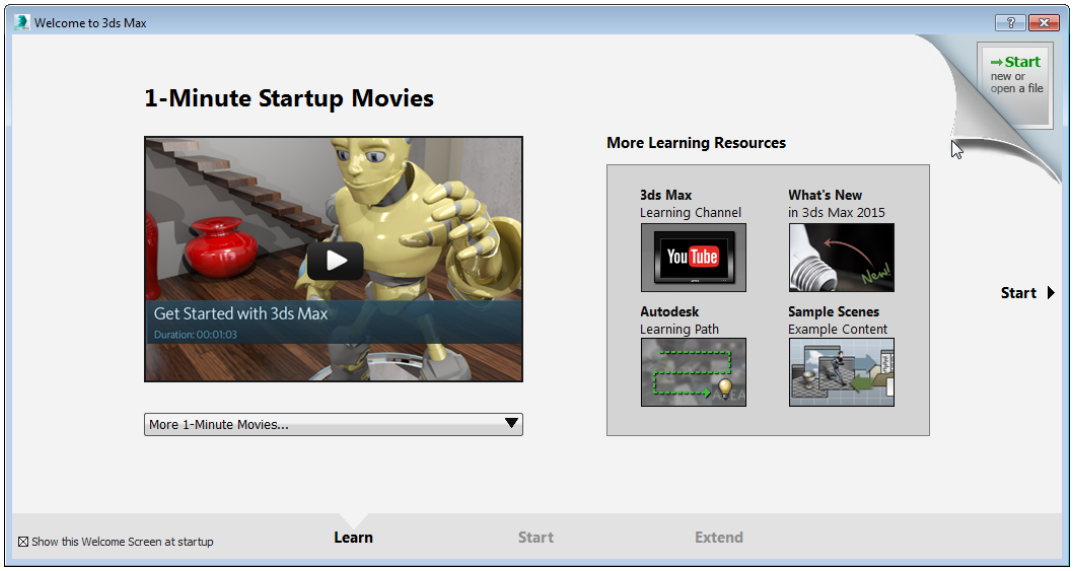


Figure 1-3 The ***Welcome to 3ds Max*** *dialog box*

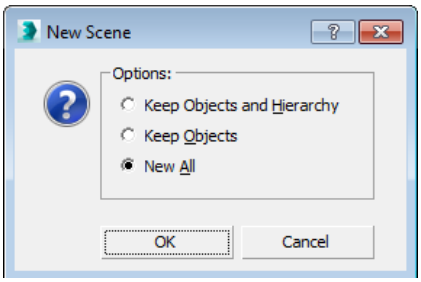


Figure 1-4 *The* ***New Scene*** *dialog box*

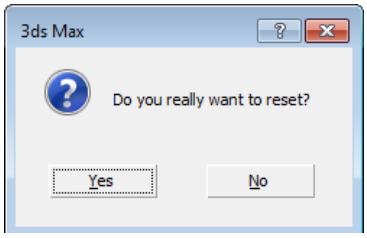


Figure 1-5 *The* ***3ds Max*** *message box*

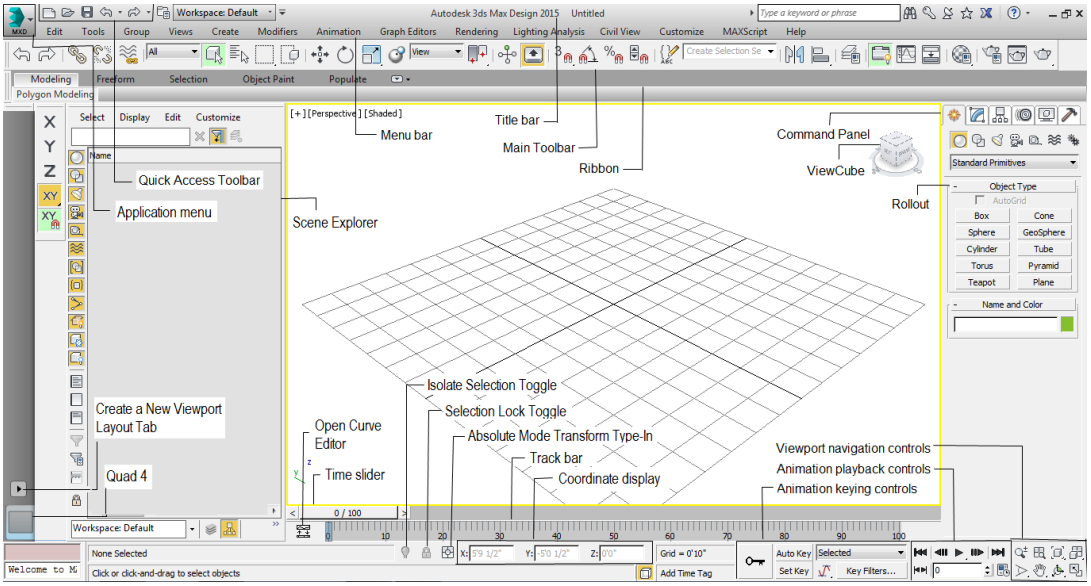


Figure 1-6 *Different screen components of Autodesk 3ds Max Design interface*

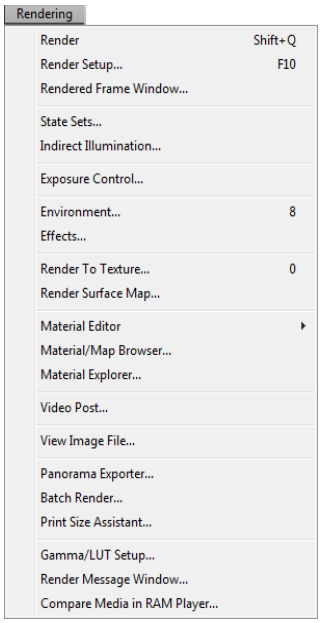


Figure 1-7 *The keyboard shortcuts in the* ***Rendering*** *pull-down menu*

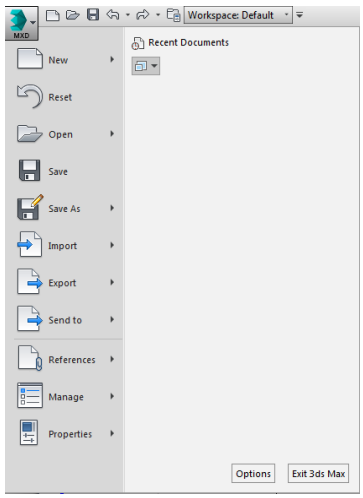


Figure 1-8 *The* ***Application*** *menu*

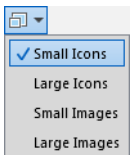


Figure 1-9 *A flyout displayed on choosing the Icon or Image Display button*

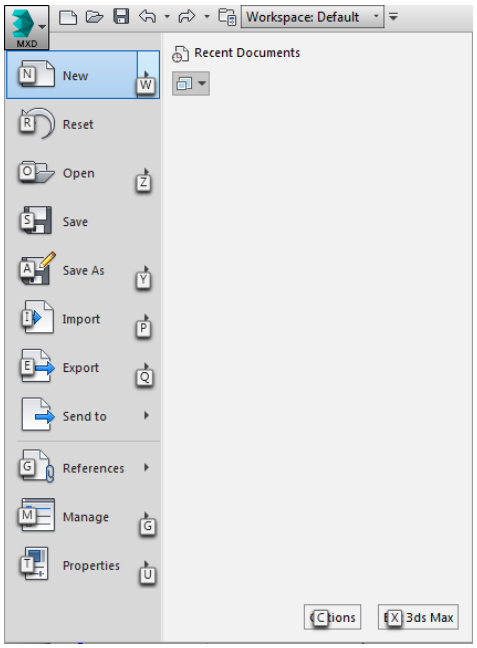


Figure 1-10 *The* ***Application*** *menu with the shortcuts*

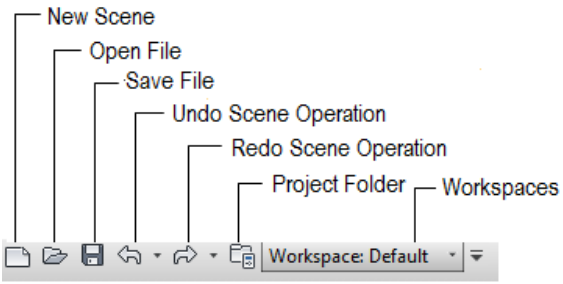


Figure 1-11 *The* ***Quick Access Toolbar***

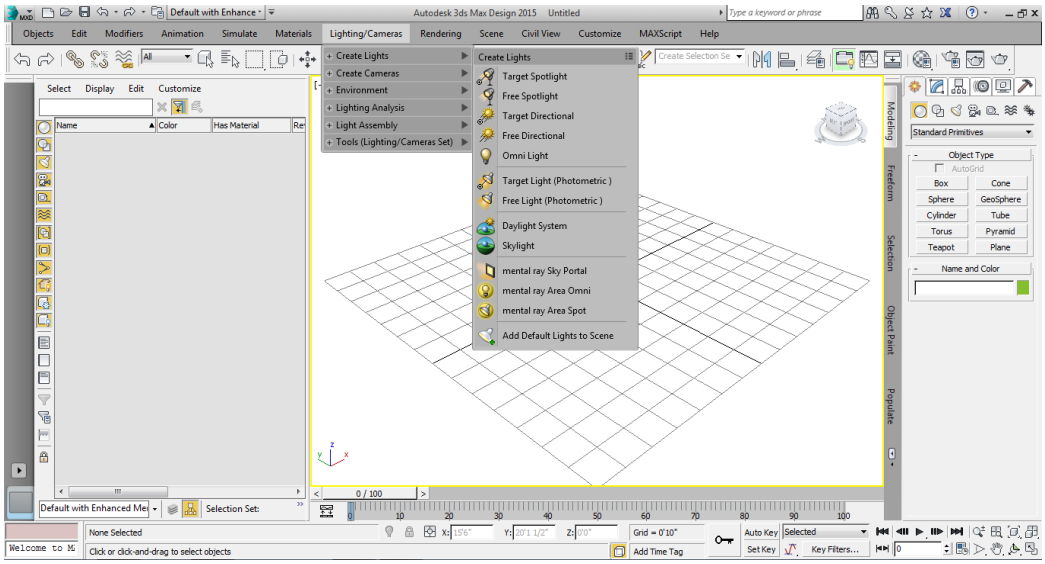


Figure 1-12 *The enhanced* ***Lighting/Cameras*** *pull-down menu displayed*

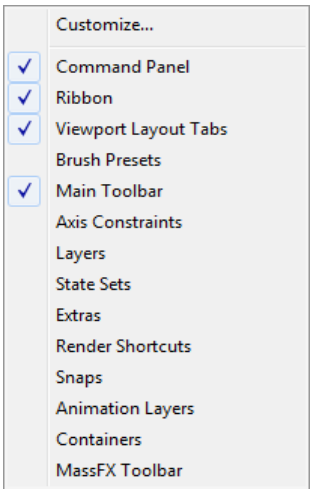


Figure 1-13 *The shortcut menu displayed to view the hidden toolbars*

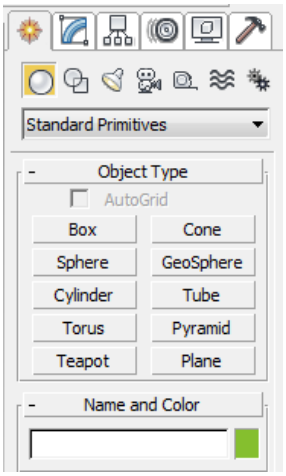


Figure 1-14 *The* ***Command Panel***

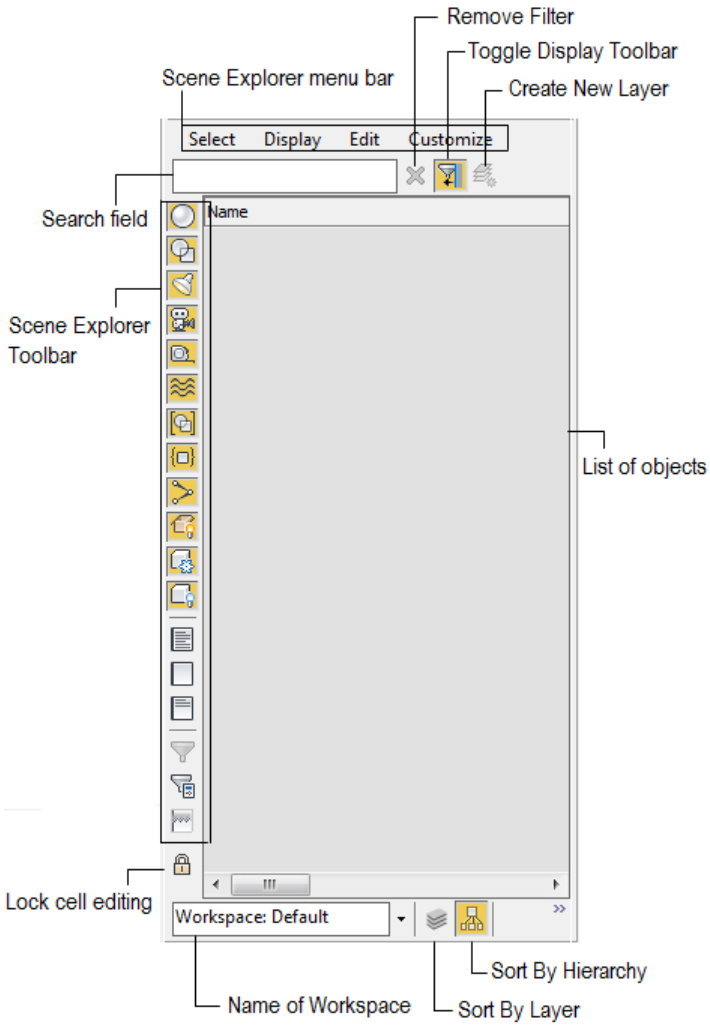


Figure 1-15 The ***Scene Explorer***

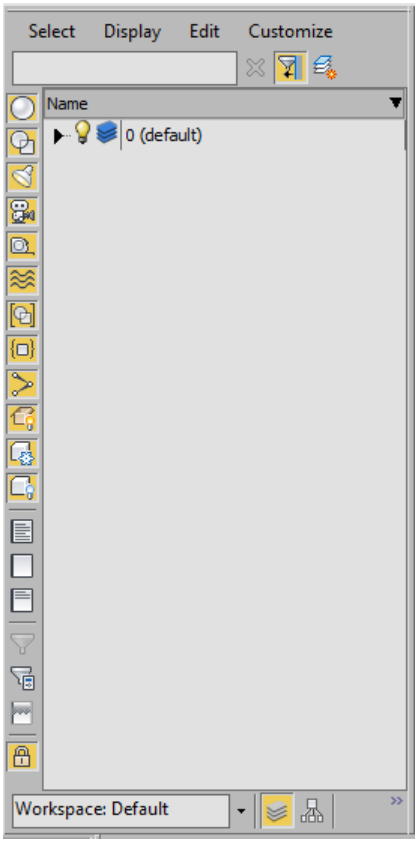


Figure 1-16 *The* ***Layer Explorer***

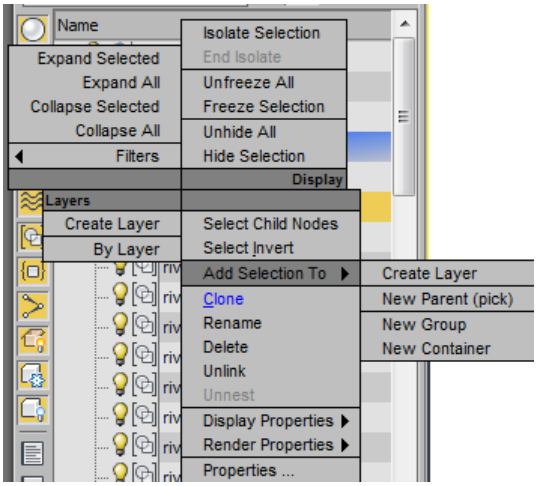


Figure 1-17 *The quad menu*

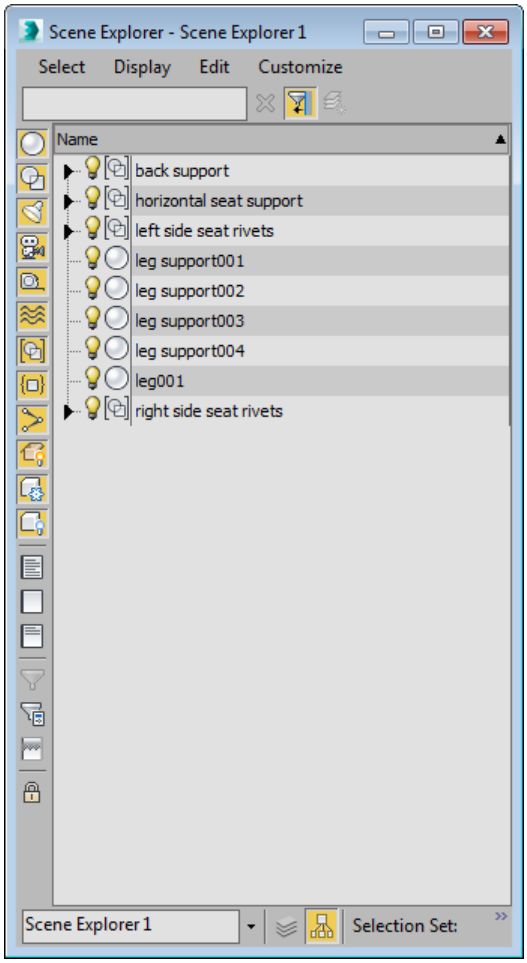


Figure 1-18 *The* ***Scene Explorer - Scene Explorer1*** *window*

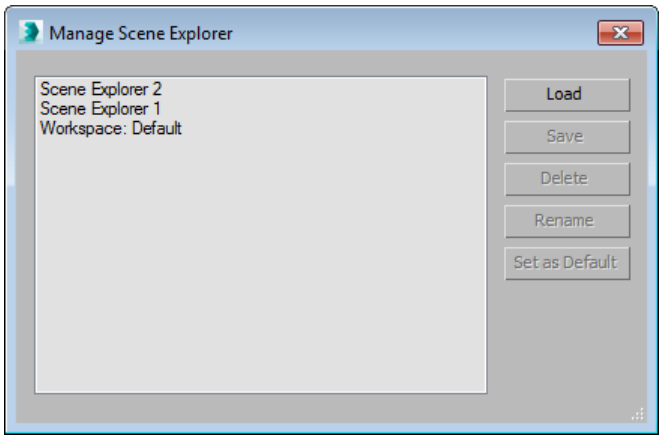


Figure 1-19 *The* ***Manage Scene Explorer*** *dialog box*

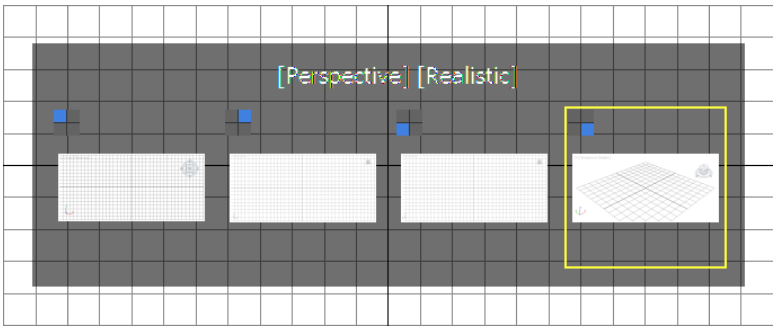


Figure 1-20 *Selecting a viewport to make it active*

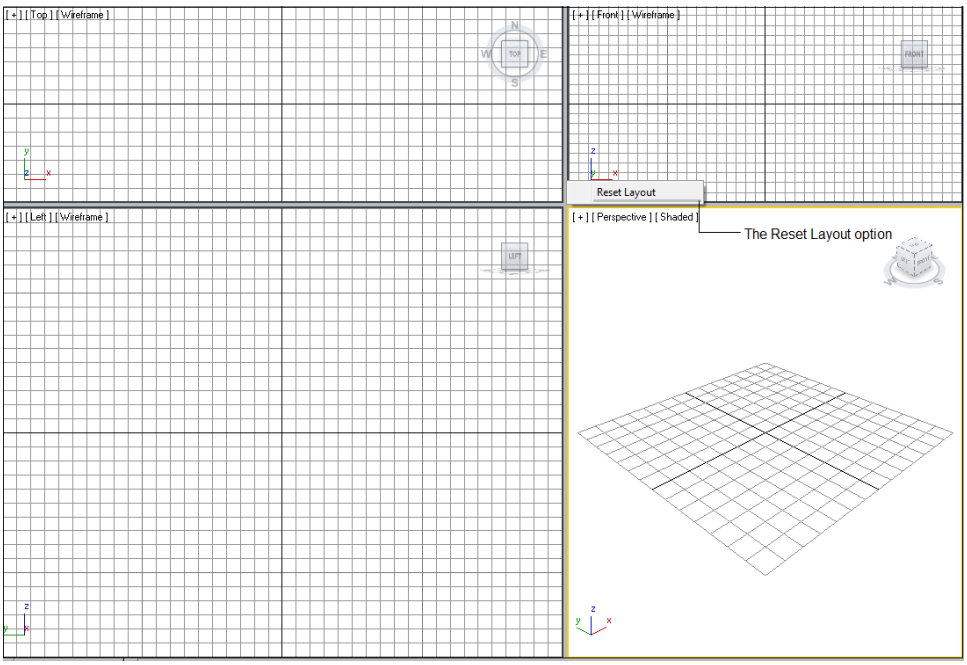


Figure 1-21 *Choosing the* ***Reset Layout*** *option from the shortcut menu*

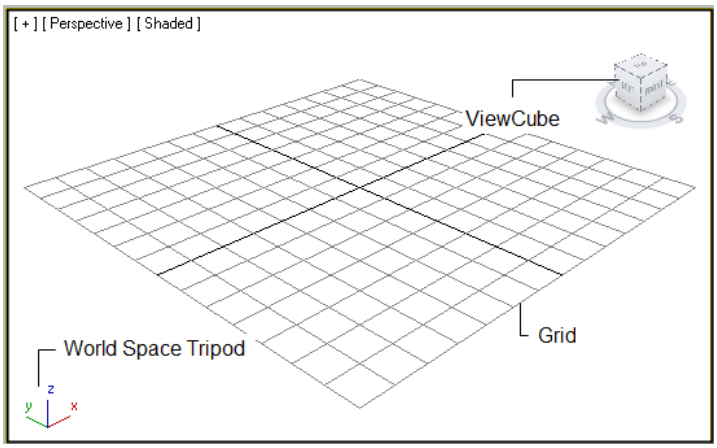


Figure 1-22 *The world space tripod, grid, and ViewCube in the Perspective viewport*

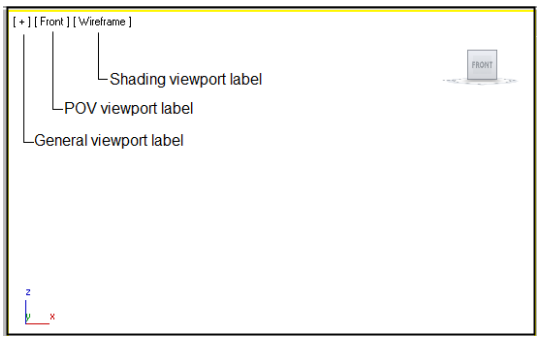


Figure 1-23 *The viewport labels in the Front viewport*

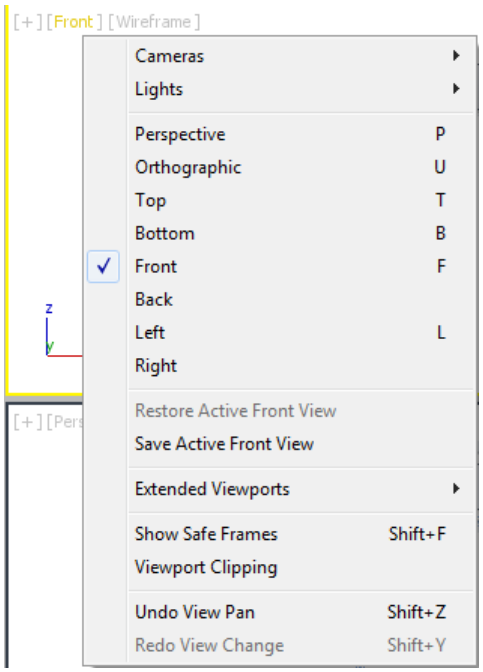


Figure 1-24 *The flyout displayed on clicking the POV viewport label*

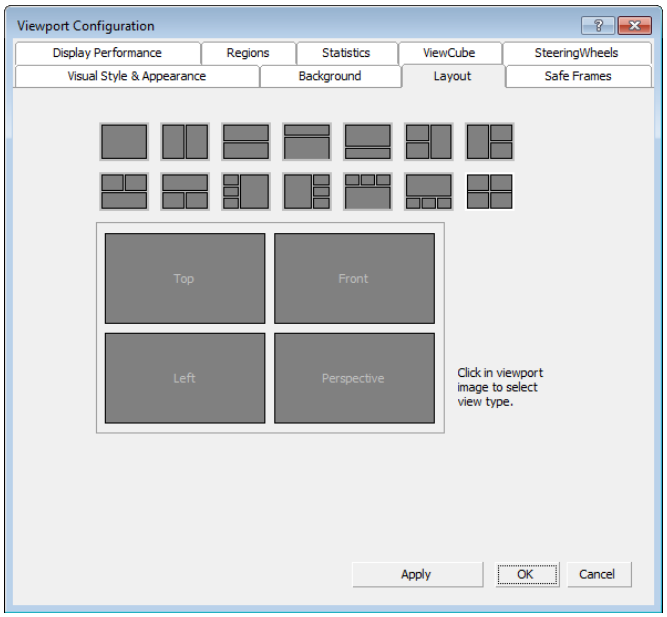


Figure 1-25 *The* ***Layout*** *tab of the* ***Viewport Configuration*** *dialog box*

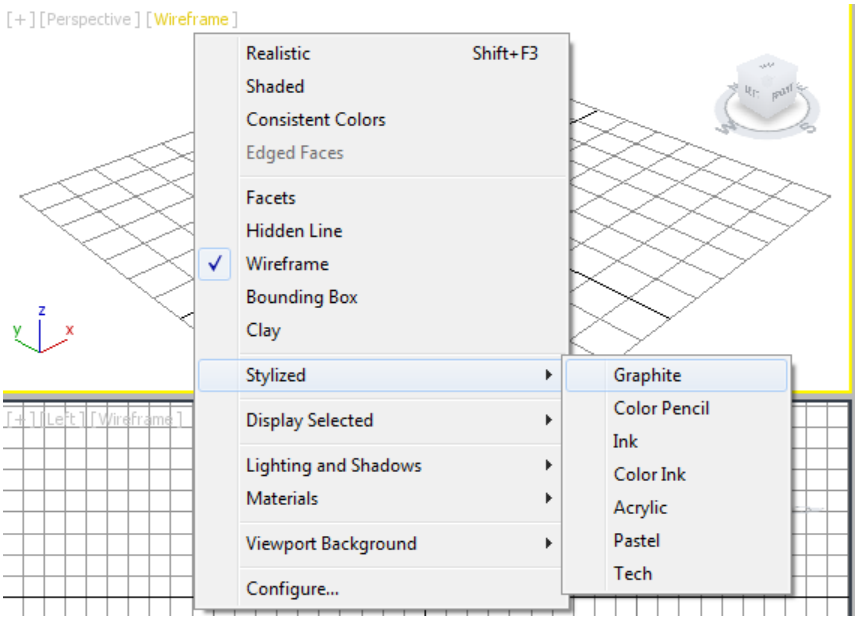


Figure 1-26 *Different shading types in the cascading menu of the* ***Stylized*** *option*

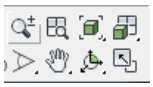


Figure 1-27 The viewport navigation controls

Figure 1-28 The animation playback controls

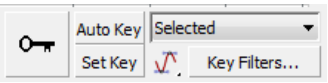


Figure 1-29 The animation keying controls

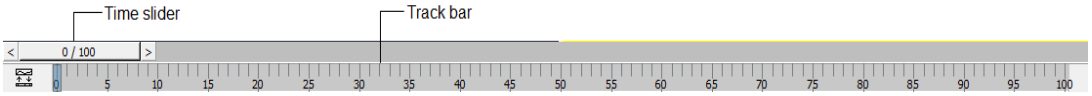


Figure 1-30 The track bar and the time slider

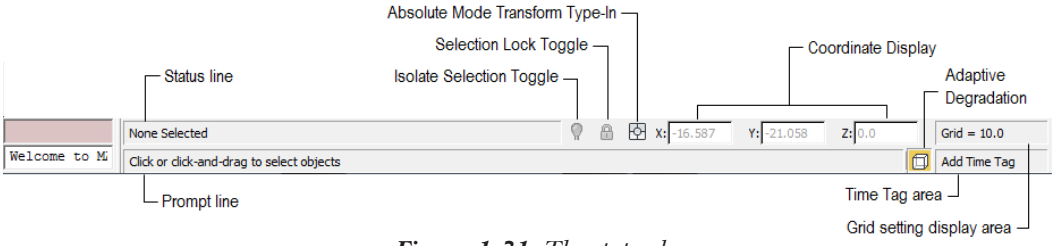


Figure 1-31 The status bar

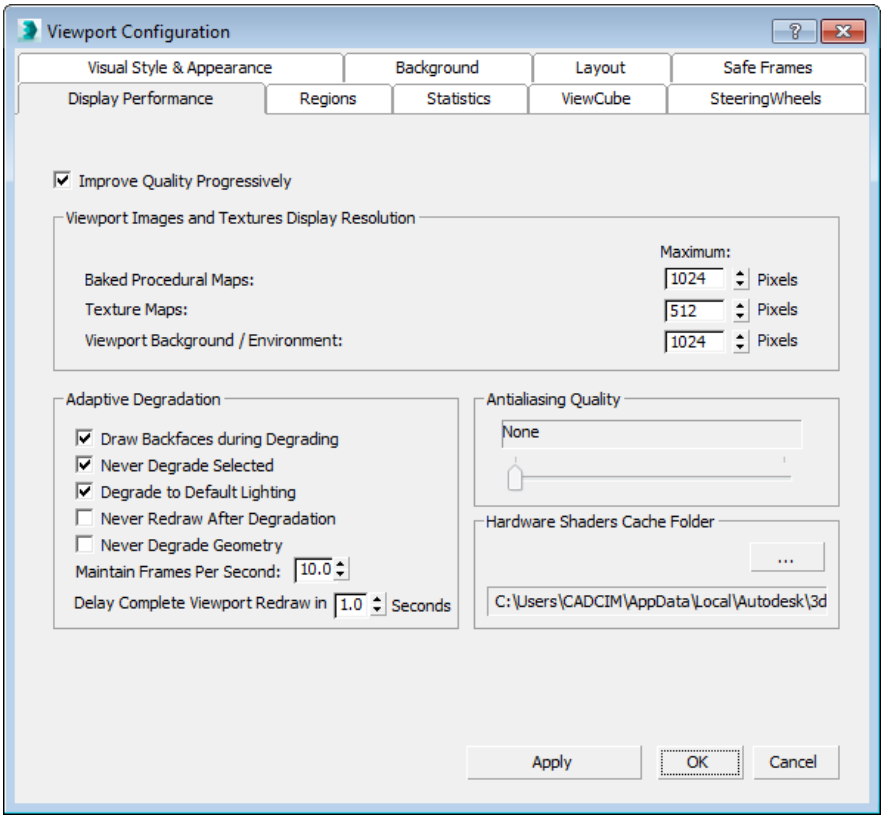


*Figure 1-32 The **Viewport Configuration** dialog box*

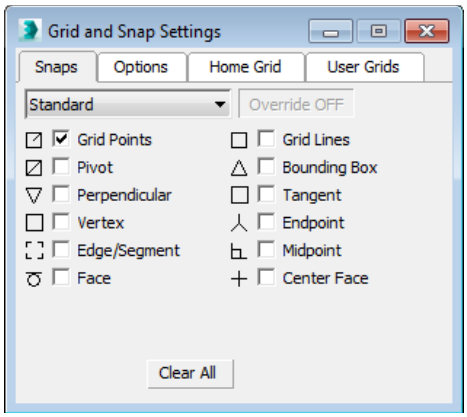


Figure 1-33 The ***Grid and Snap Settings*** *dialog box*

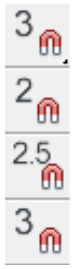


Figure 1-34 The ***Snaps Toggle*** *flyout*

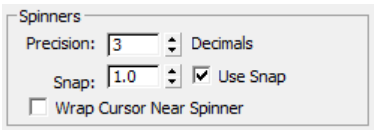


Figure 1-35 The ***Spinners*** *area in the* ***Preference Settings*** *dialog box*

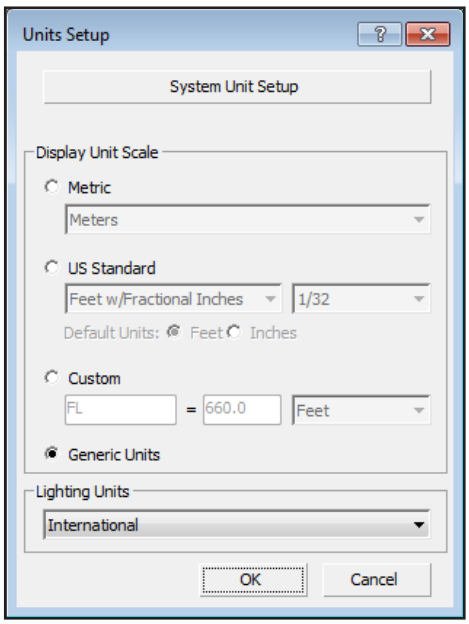


Figure 1-36 The ***Units Setup*** *dialog box*

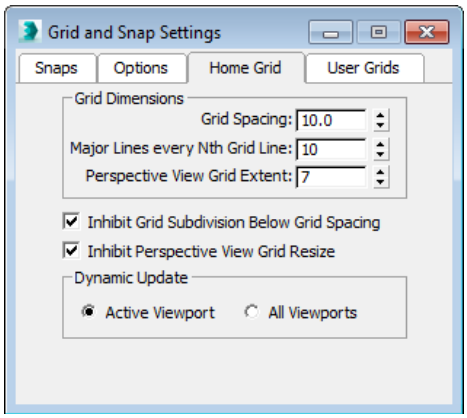


Figure 1-37 The ***Home Grid*** *tab chosen in the* ***Grid and Snap Settings*** *dialog box*

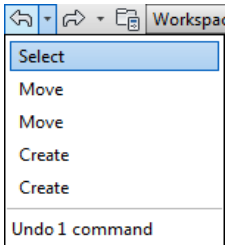


Figure 1-38 The list of actions displayed after choosing the ***Undo Scene Operation*** *tool*

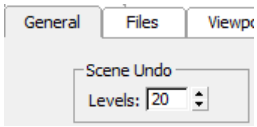


Figure 1-39 The ***Scene Undo*** *area in the* ***Preference Settings*** *dialog box*

Figure 1-40 The ***About to Fetch. OK?*** *message box*

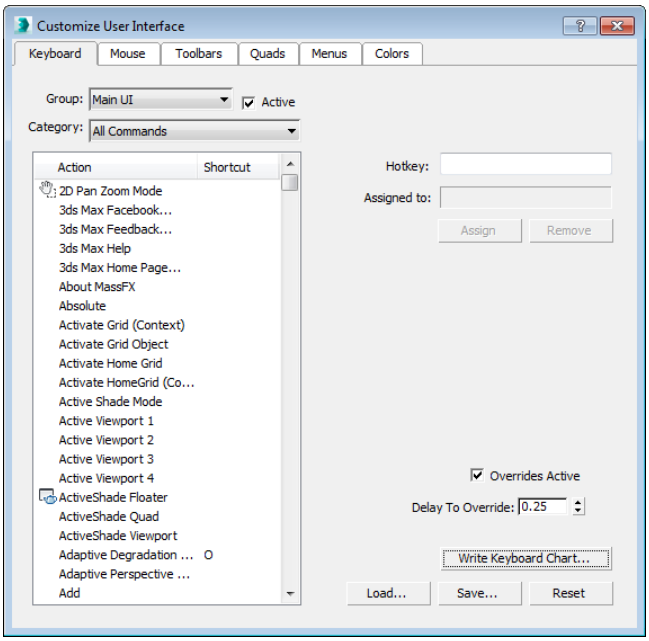


Figure 1-41 The ***Customize User Interface*** *dialog box*

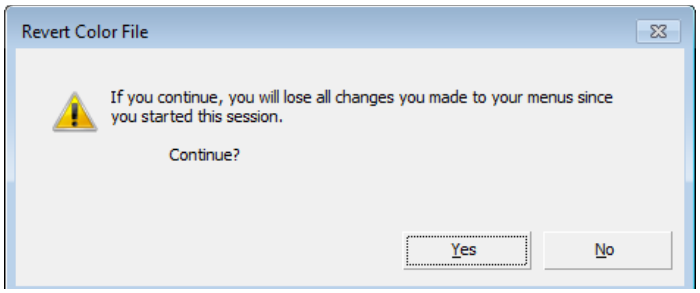


Figure 1-42 *The* ***Revert Color File*** *message box*

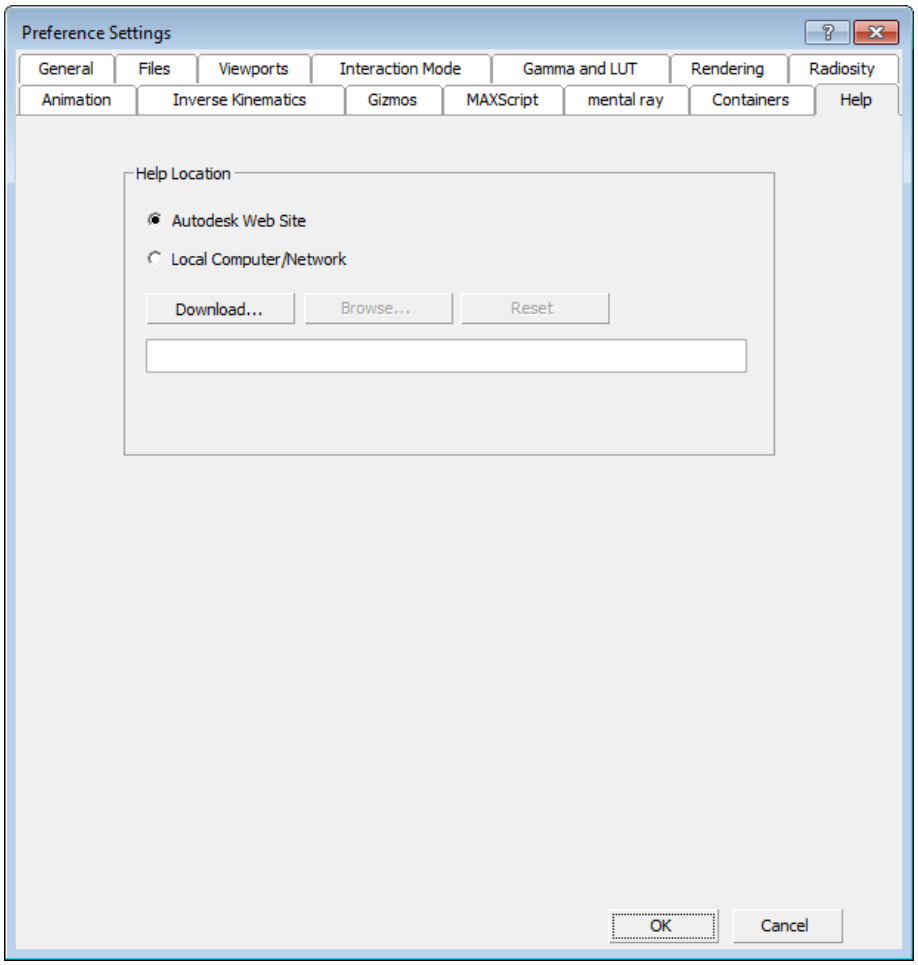


Figure 1-43 *The* ***Help*** *tab chosen in the* ***Preference Settings*** *dialog box*

Figure 1-44 *The search field*

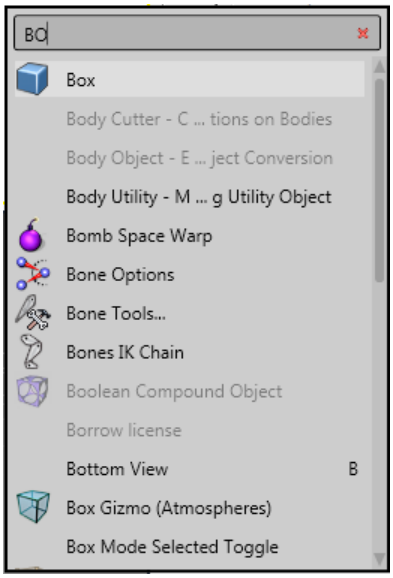


Figure 1-45 *List of commands displayed on entering first few characters*

Chapter 2

Primitive Objects-I

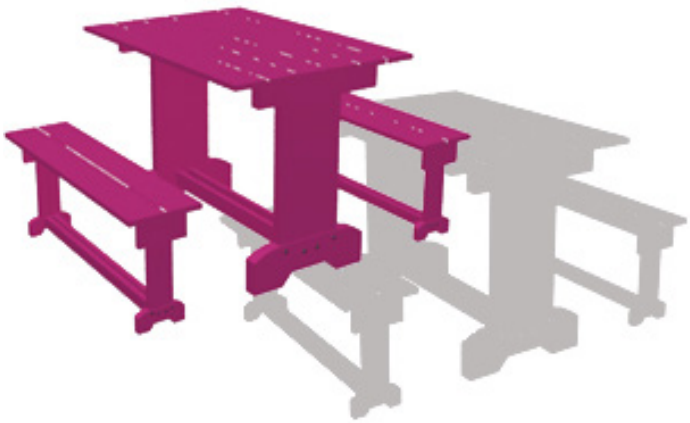


Figure 2-1 *The model of a temple*

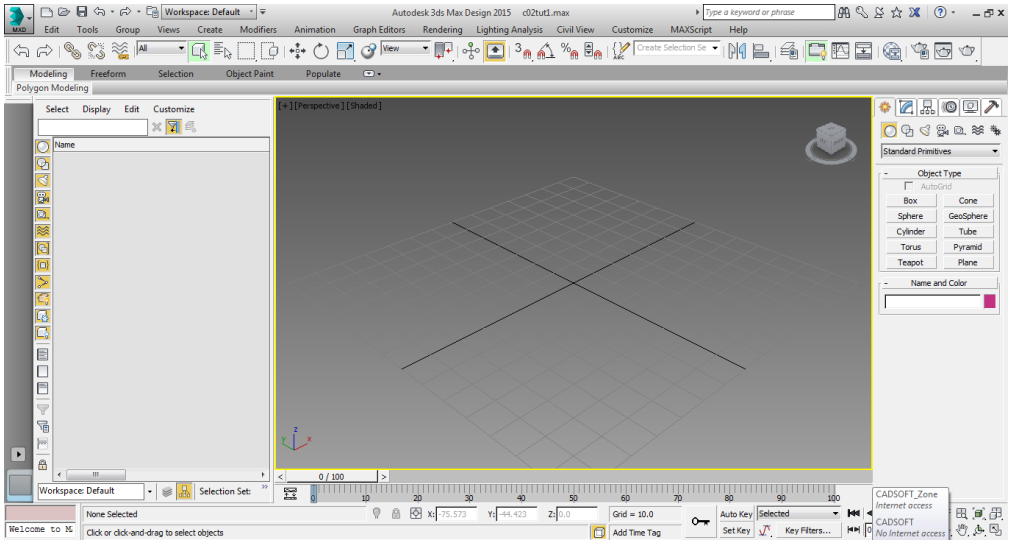


Figure 2-2 *The tools and rollouts in the* ***Command Panel***

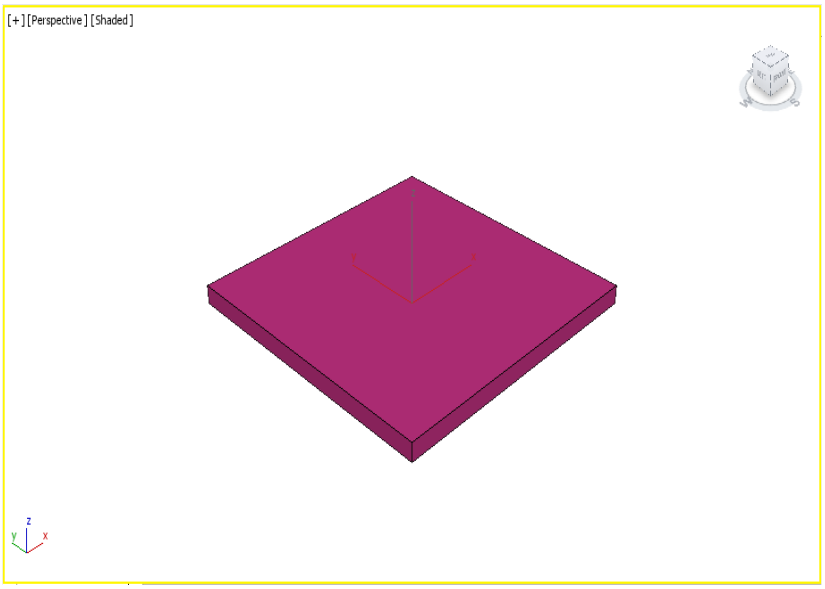


Figure 2-3 *Bottom zoomed to its extents*

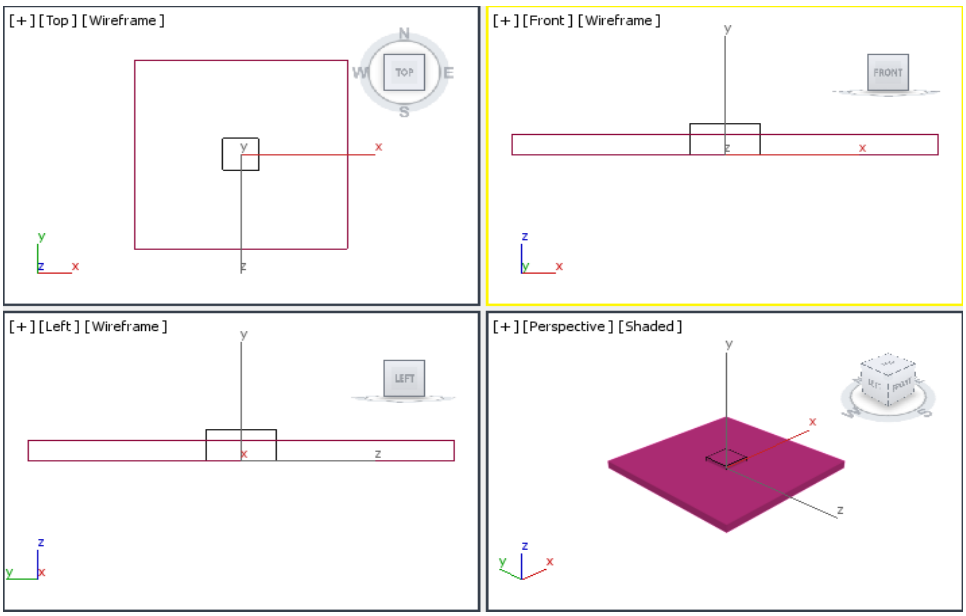


Figure 2-4 *Bottom and Base01 displayed in viewports*

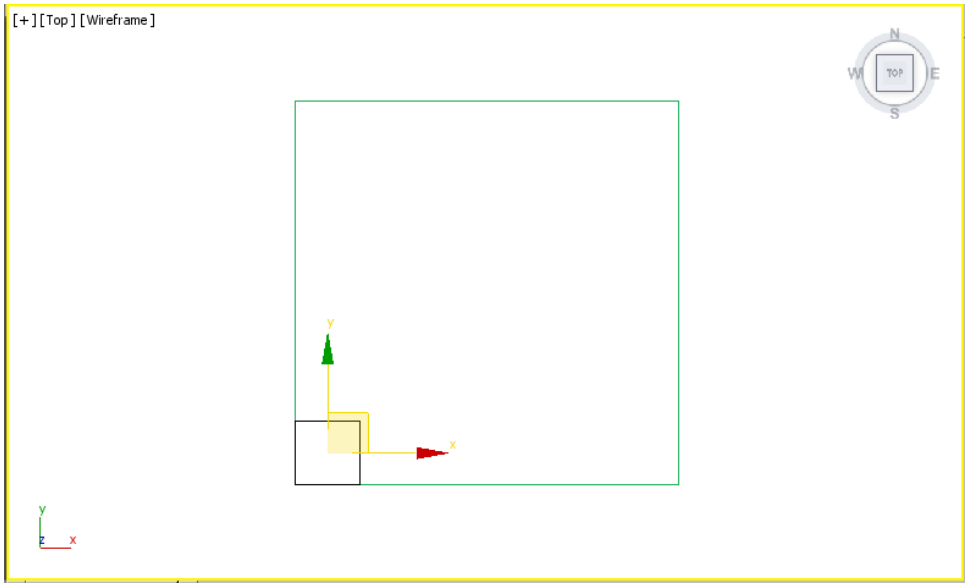


Figure 2-5 *Alignment of Base01 to the lower-left corner of Bottom*

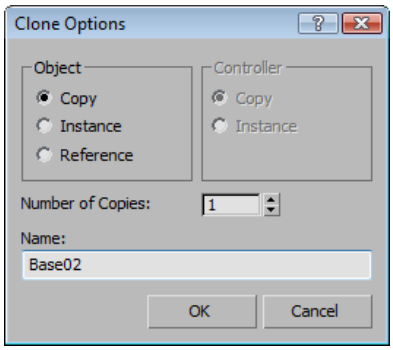


Figure 2-6 *The* ***Clone Options*** *dialog box*

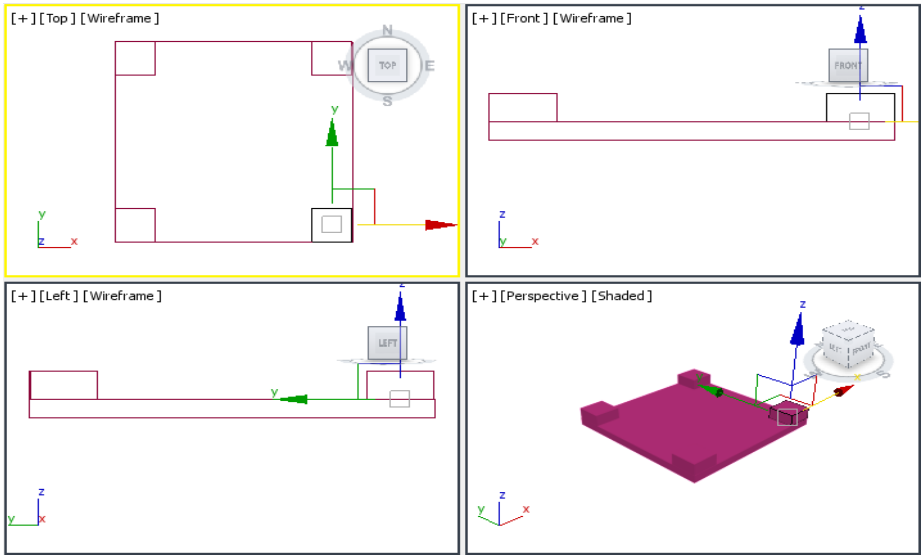


Figure 2-7 *Four bases of the temple*

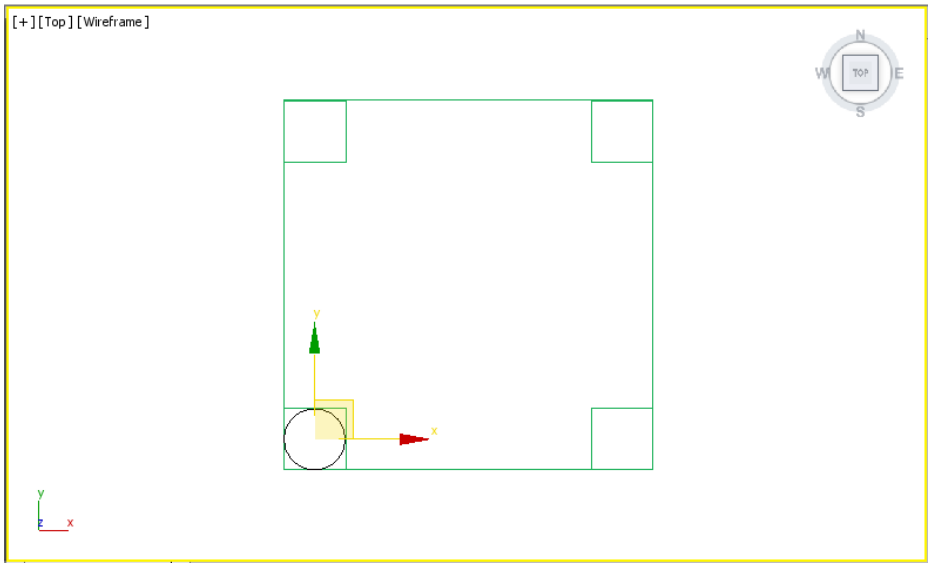


Figure 2-8 *Aligning Pillar01 to Base01 in the Top viewport*

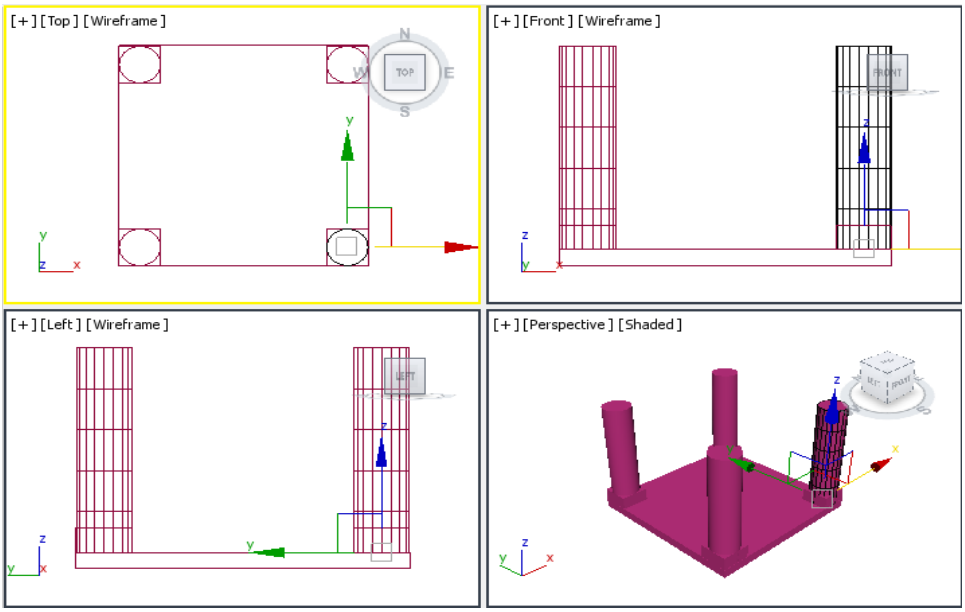


Figure 2-9 *The pillars created for the temple*

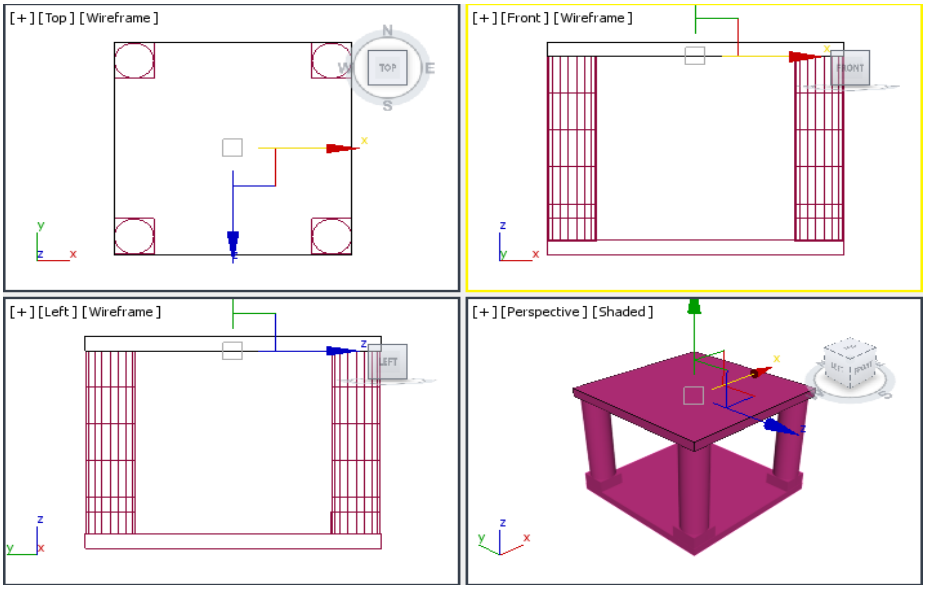


Figure 2-10 *bottom copied to create top*

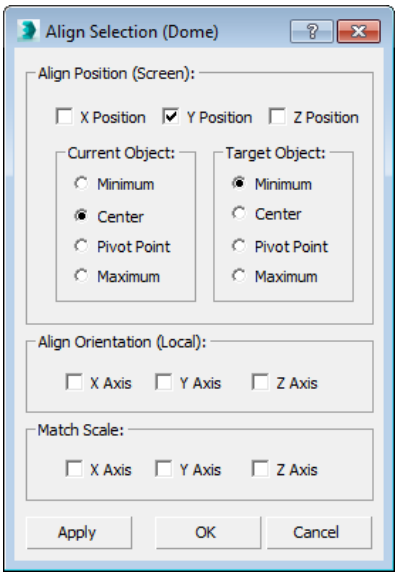


Figure 2-11 *The* ***Align Selection(Dome)*** *dialog box*

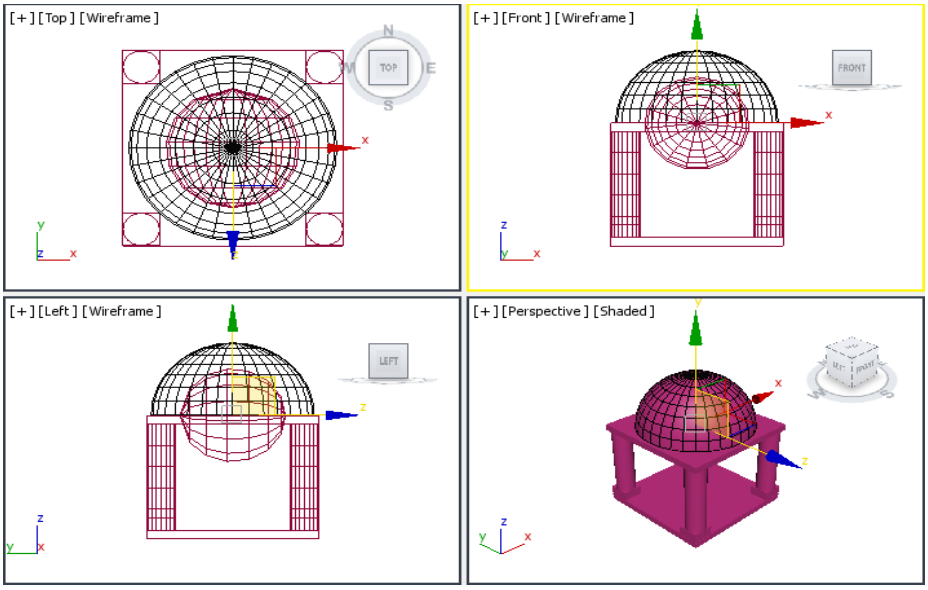


Figure 2-12 *Alignment of Sphere001 with Dome*

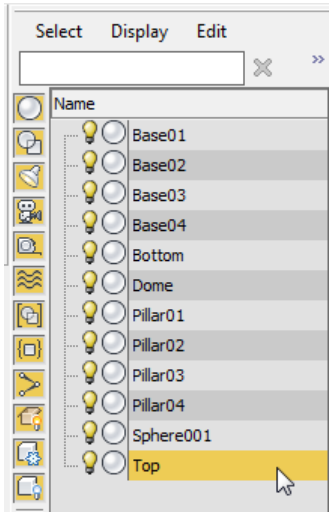


Figure 2-13 *Selecting Top from* ***Scene Explorer***

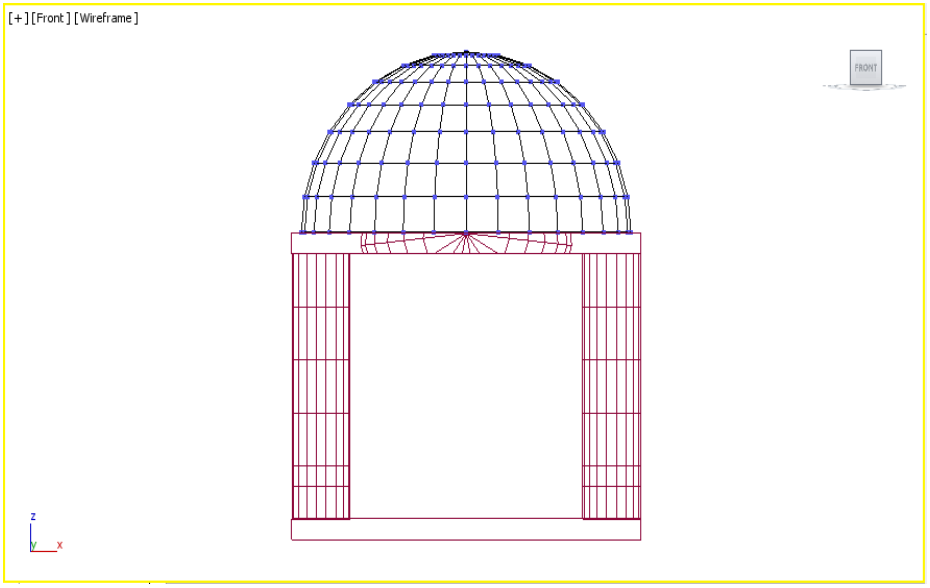


Figure 2-14 *The* ***Edit Mesh*** *modifier assigned to Dome*

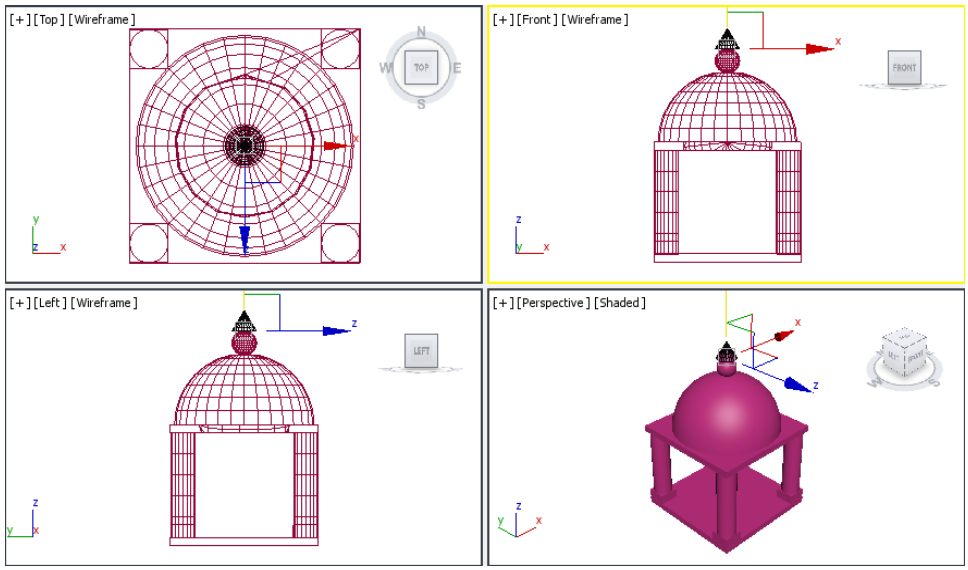


Figure 2-15 *The details added to the top of Dome*

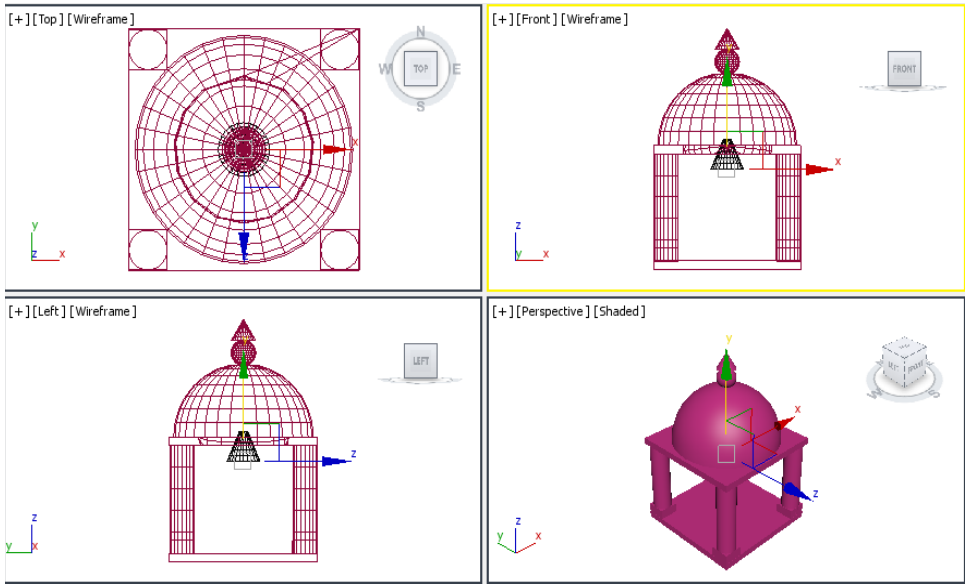


Figure 2-16 *Adjustment of Bell at the center of Dome*

Figure 2-17 *The rendered image*

Figure 2-18 *The table and benches*

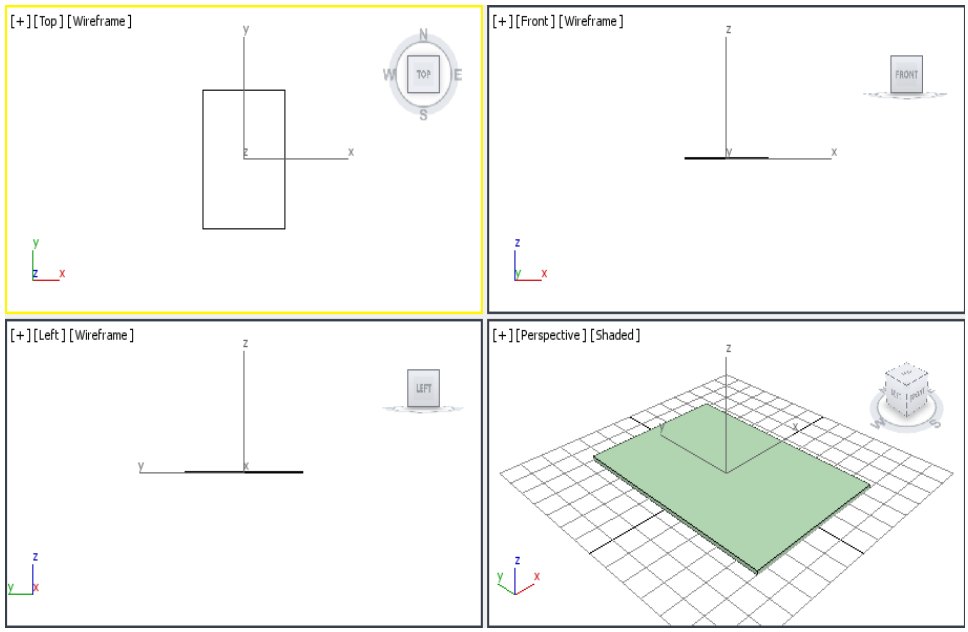


Figure 2-19 *The box created in all viewports*

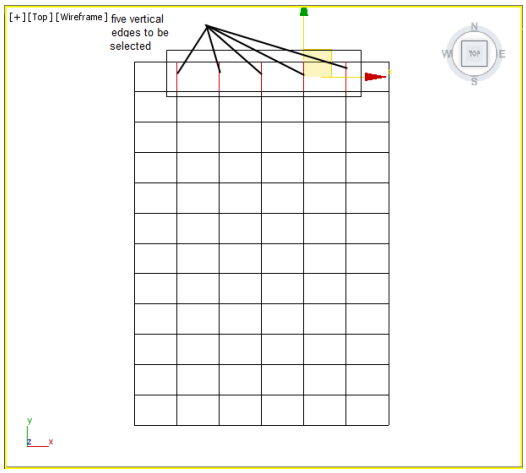


Figure 2-20 *Five vertical edges selected*

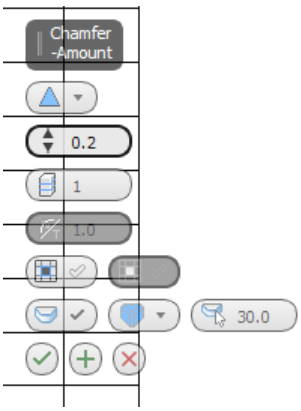


Figure 2-21 *Setting the value in the* ***Chamfer- Amount*** *spinner*

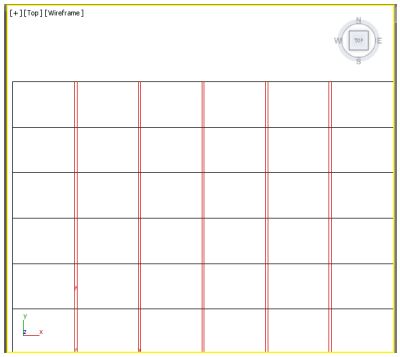


Figure 2-22 *The edges chamfered*

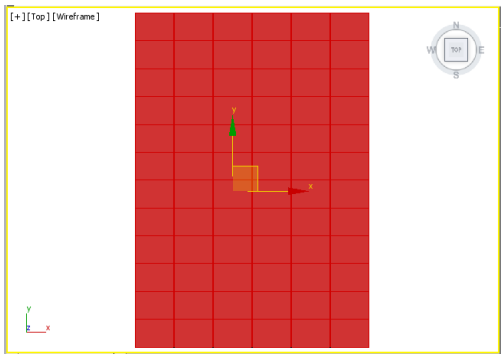


Figure 2-23 *The polygons selected*

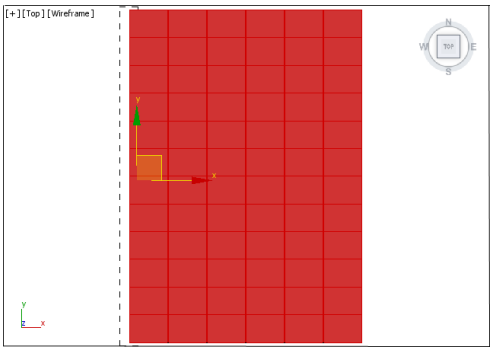


Figure 2-24 *Drawing a cross window around the polygons*

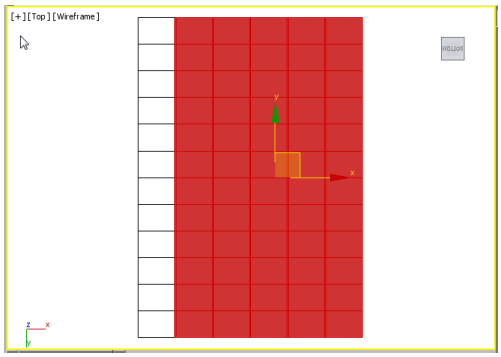


Figure 2-25 *The polygons deselected*

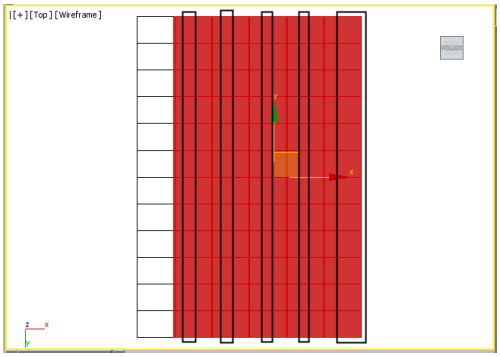


Figure 2-26 *The polygons to be deselected*

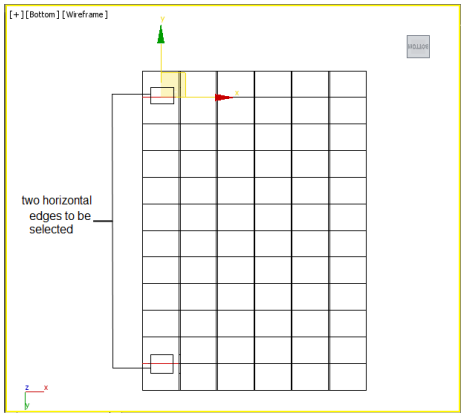


Figure 2-27 *Two horizontal edges selected in the Bottom viewport*

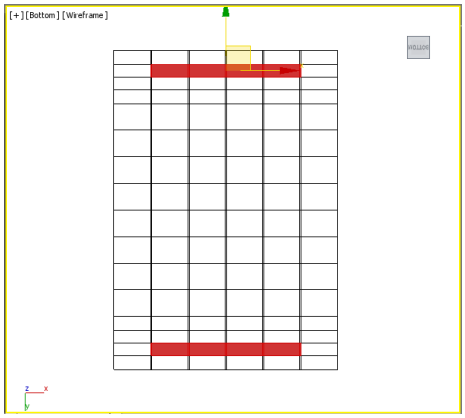


Figure 2-28 *The polygons selected in the Bottom viewport*

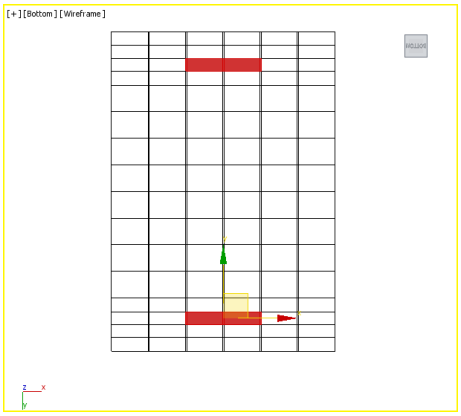


Figure 2-29 *The polygons selected*

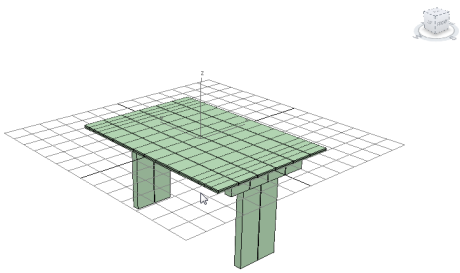


Figure 2-30 *The polygons extruded*

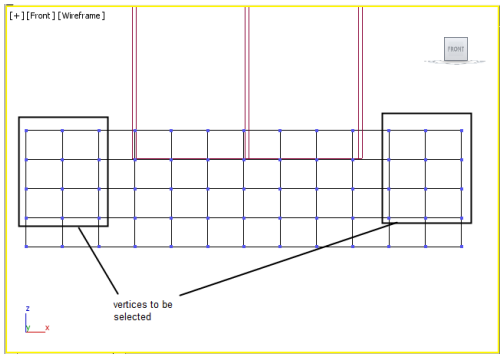


Figure 2-31 *The vertices to be selected*

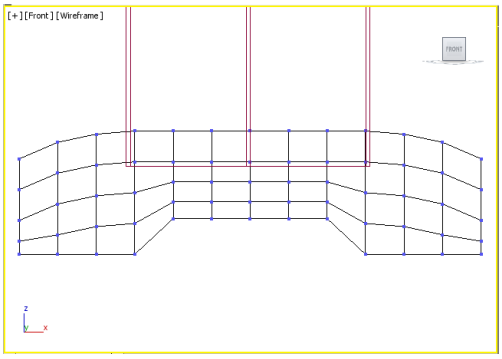


Figure 2-32 *The shape of base1*

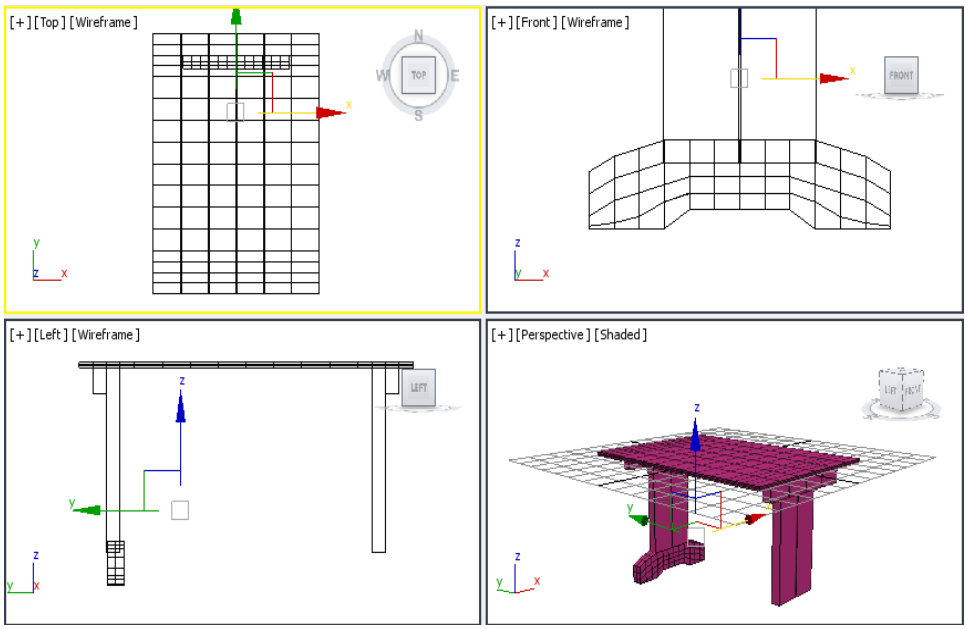


Figure 2-33 *The base1 object aligned in all viewports*

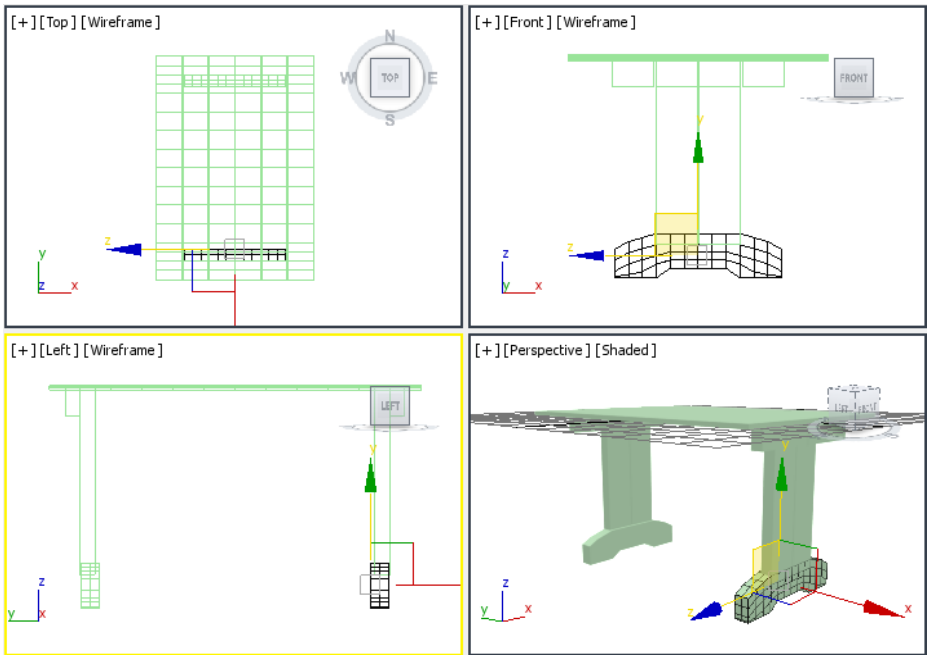


Figure 2-34 *The base 2 object aligned in all viewports*

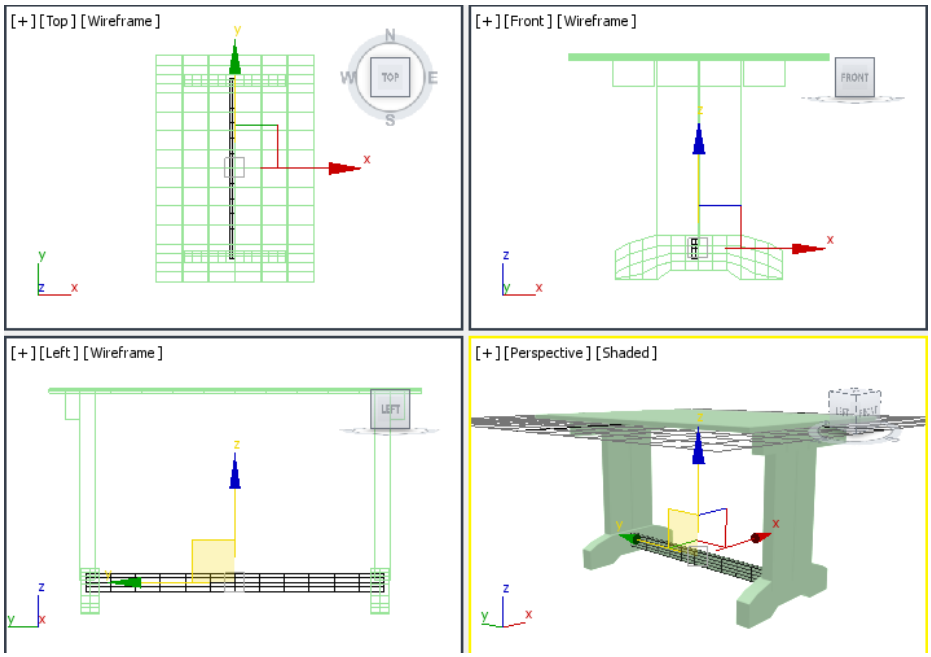


Figure 2-35 *The footrest1 object aligned in all viewports*

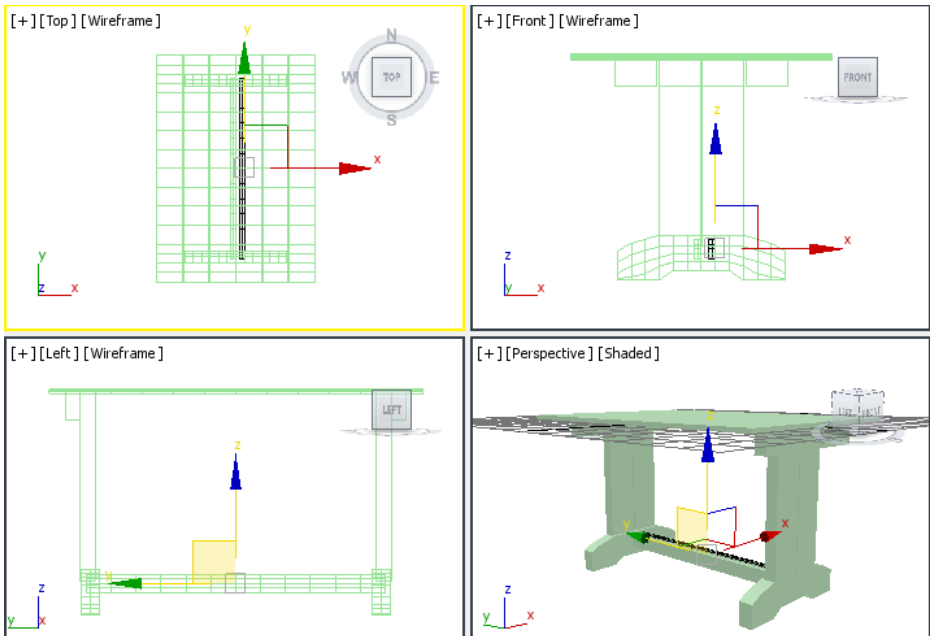


Figure 2-36 *The copy of footrest1 object aligned in all viewports*

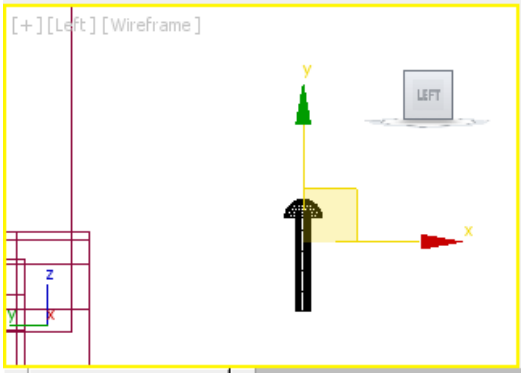


Figure 2-37 *The cap and body objects aligned in all viewports*

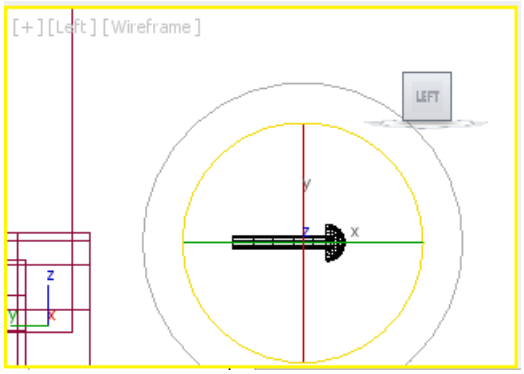


Figure 2-38 *The rivet001 object rotated*

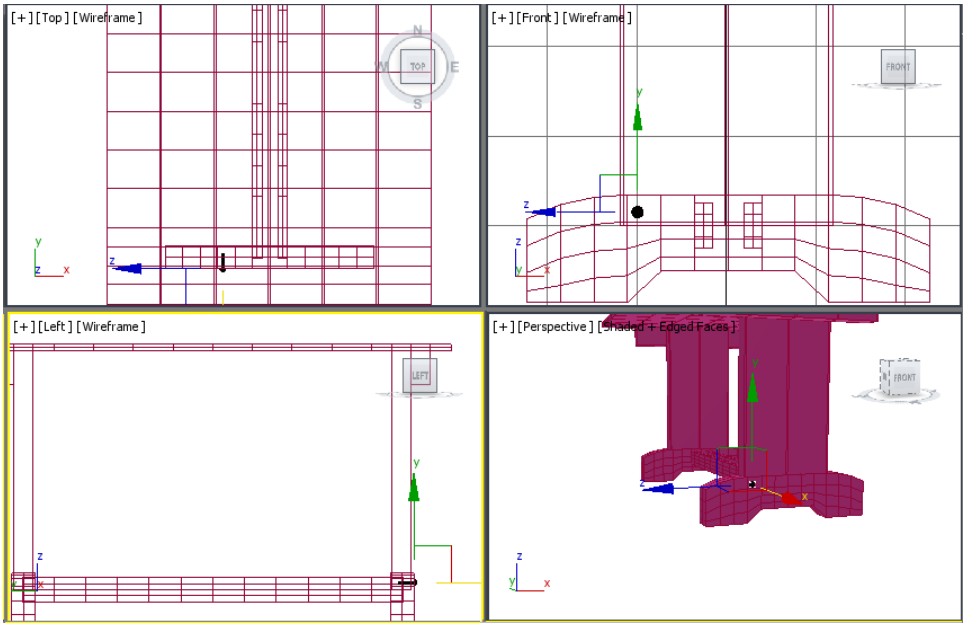


Figure 2-39 *The rivet001 object aligned in all viewports*

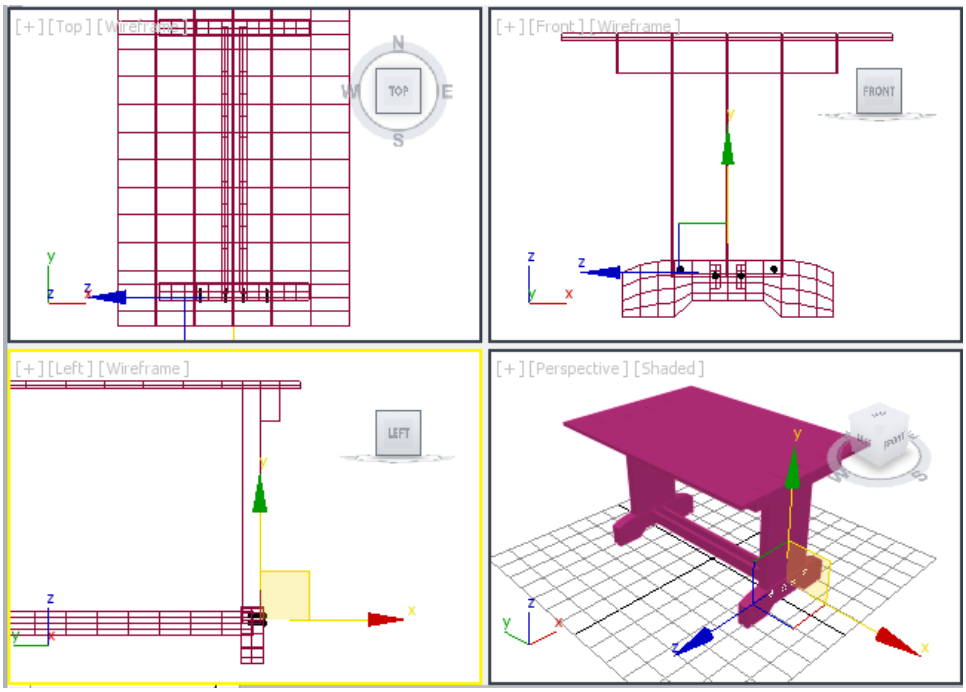


Figure 2-40 *The copies of rivet001 aligned in all viewports*

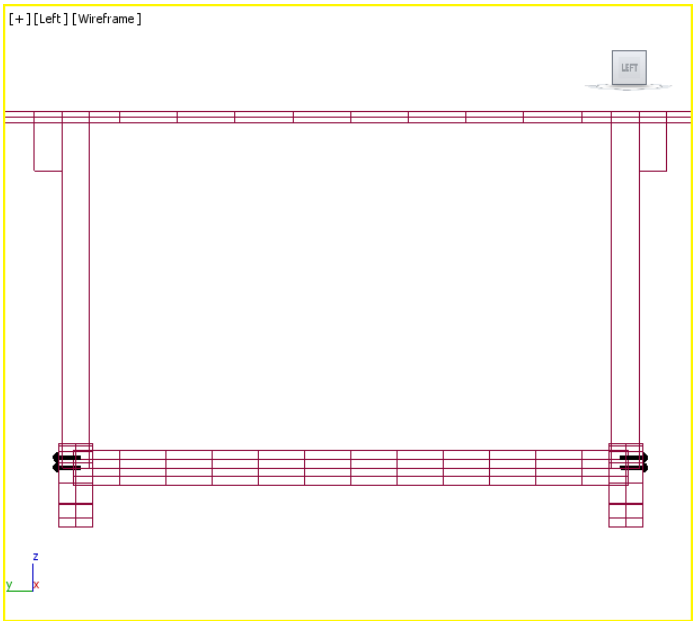


Figure 2-41 *The copy of rivets created*

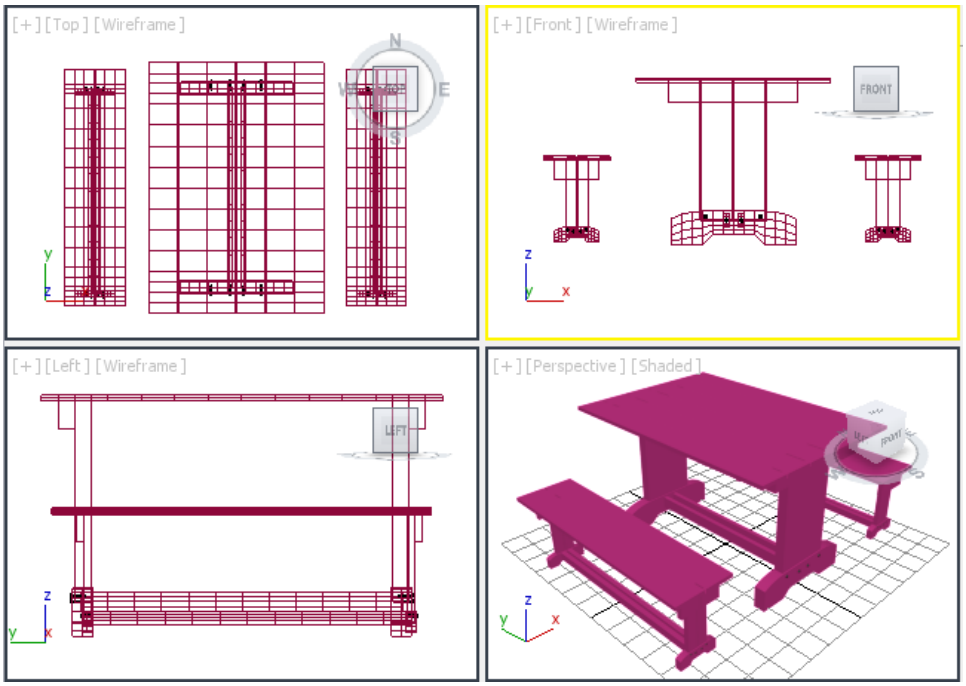


Figure 2-42 *The table and benches objects aligned*

Figure 2-43 *The rendered image*

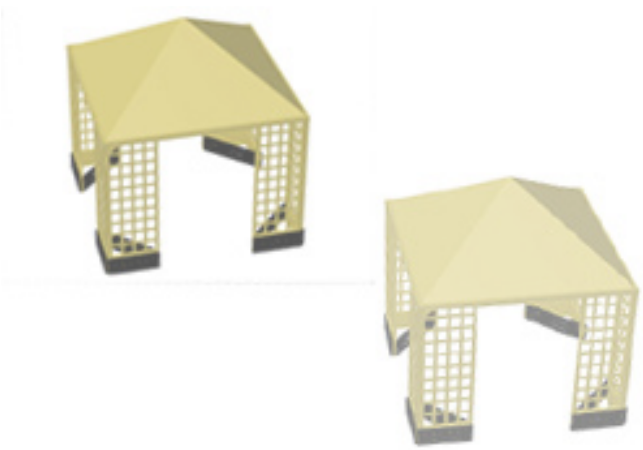
Exercise 1

Create the models of chairs and center table, as shown in Figure 2-44.

Figure 2-44 *The models of chairs and center table*

Chapter 3

Primitive Objects-II



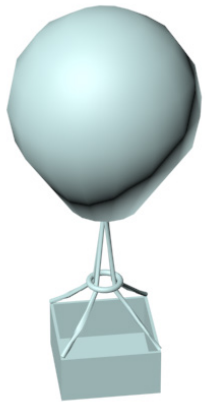


Figure 3-1 *The model of hot air balloon*

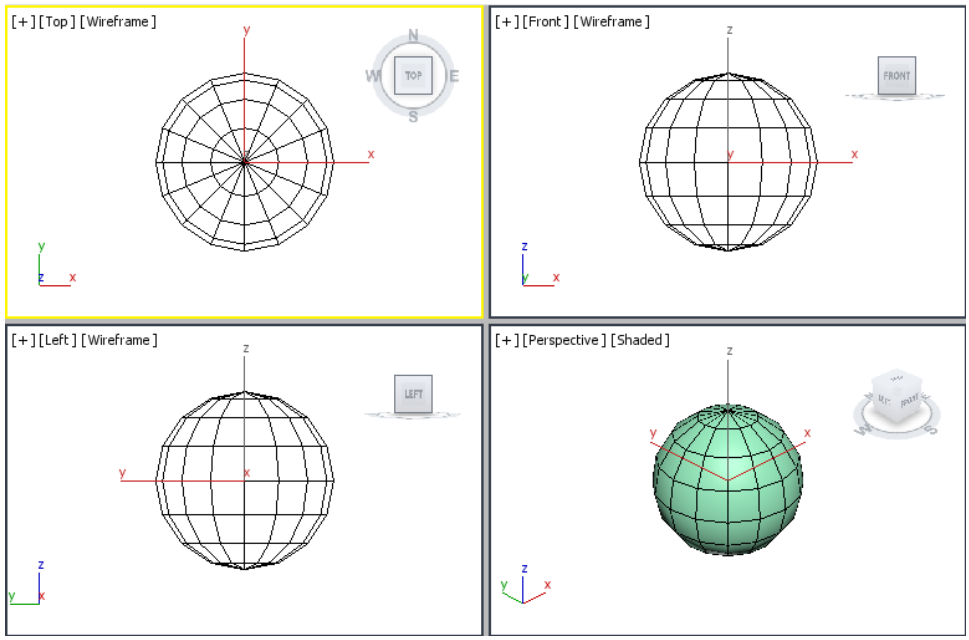


Figure 3-2 *The sphere created and zoomed in all four viewports*

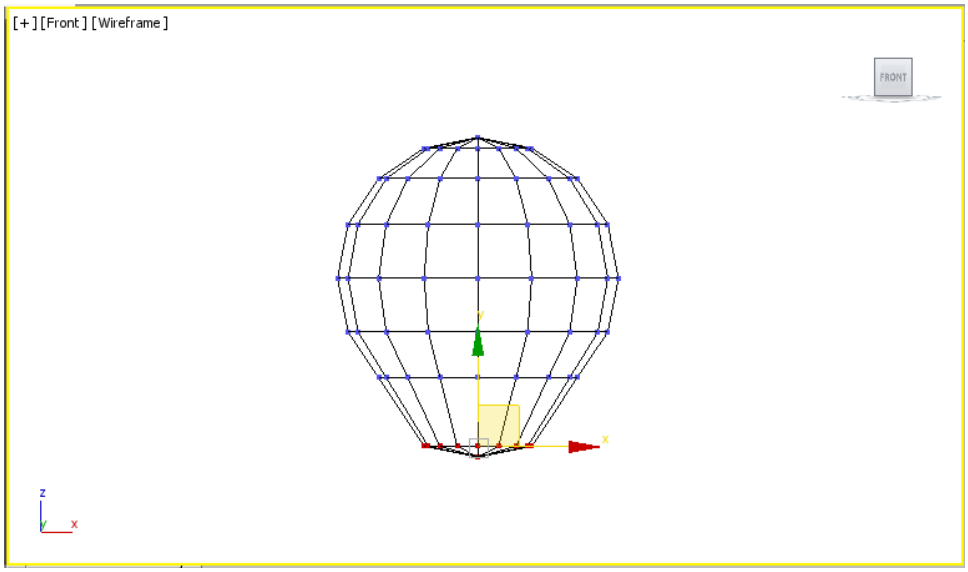


Figure 3-3 *The shape of the sphere changed into a balloon*

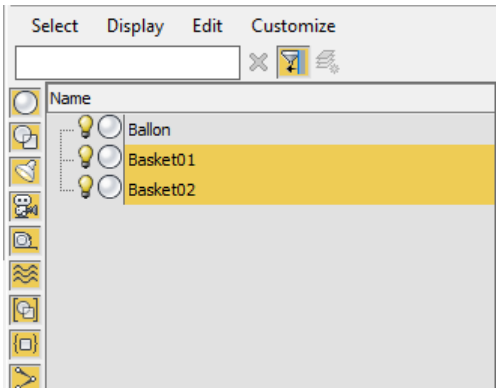


Figure 3-4 *Selecting Basket01 and Basket02 from the* ***Scene Explorer***

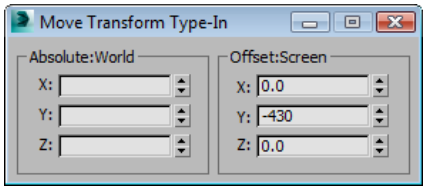


Figure 3-5 *The* ***Move Transform Type-In*** *dialog box*

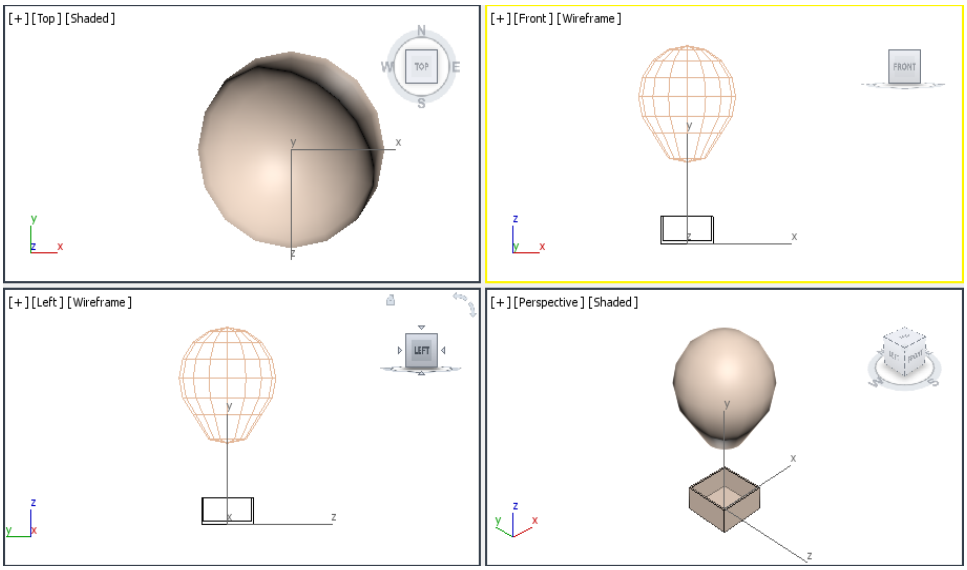


Figure 3-6 *Basket01 after performing the* ***Boolean*** *operation*

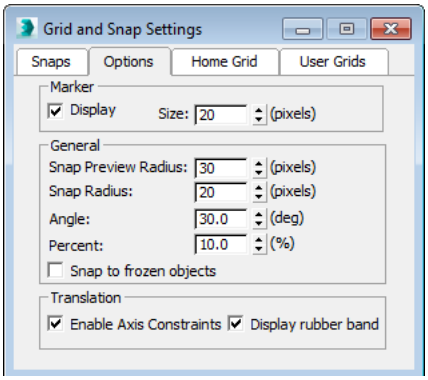


Figure 3-7 *The* ***Grid and Snap Settings*** *dialog box*

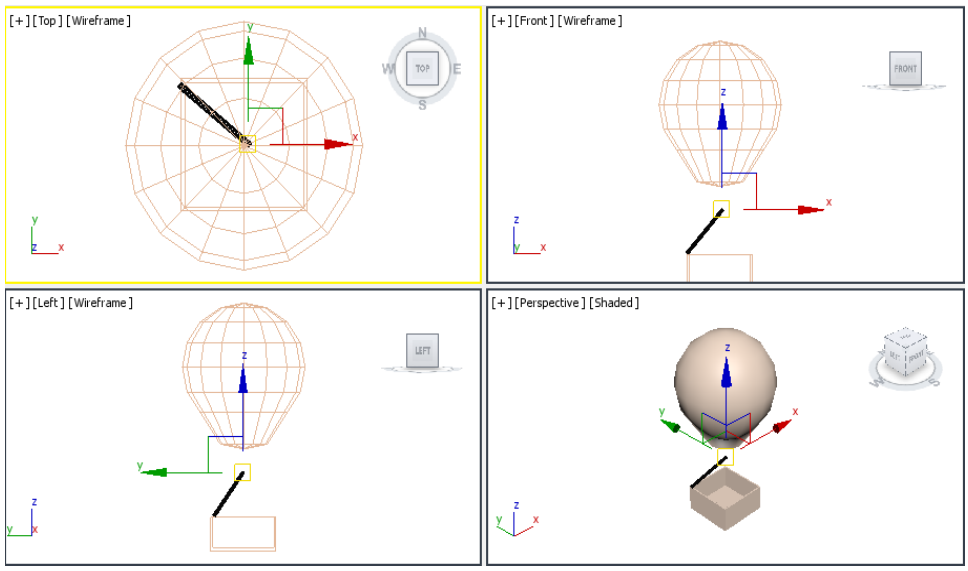


Figure 3-8 *Rope01 in all viewports*

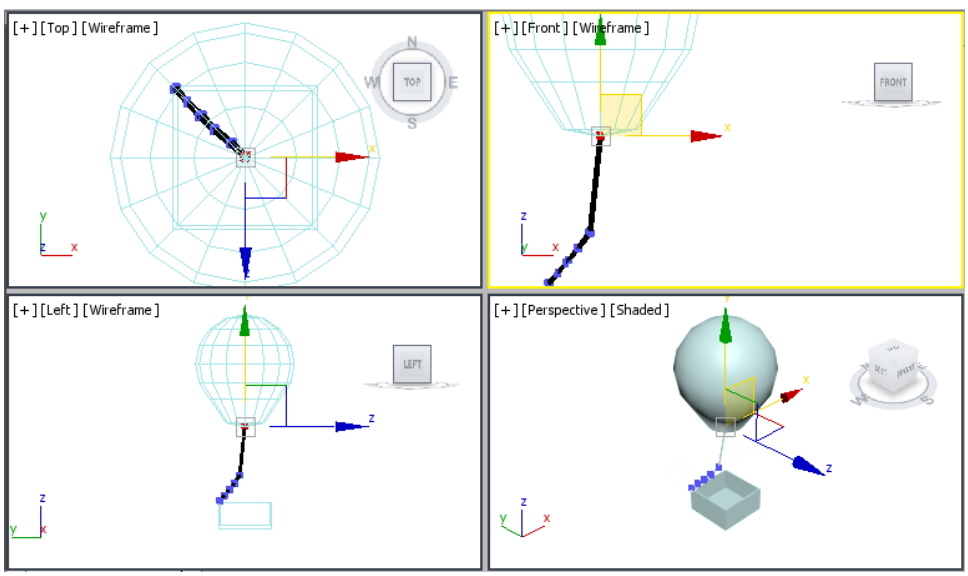


Figure 3-9 *The end vertices of the Rope01 moved to touch the bottom of the balloon*

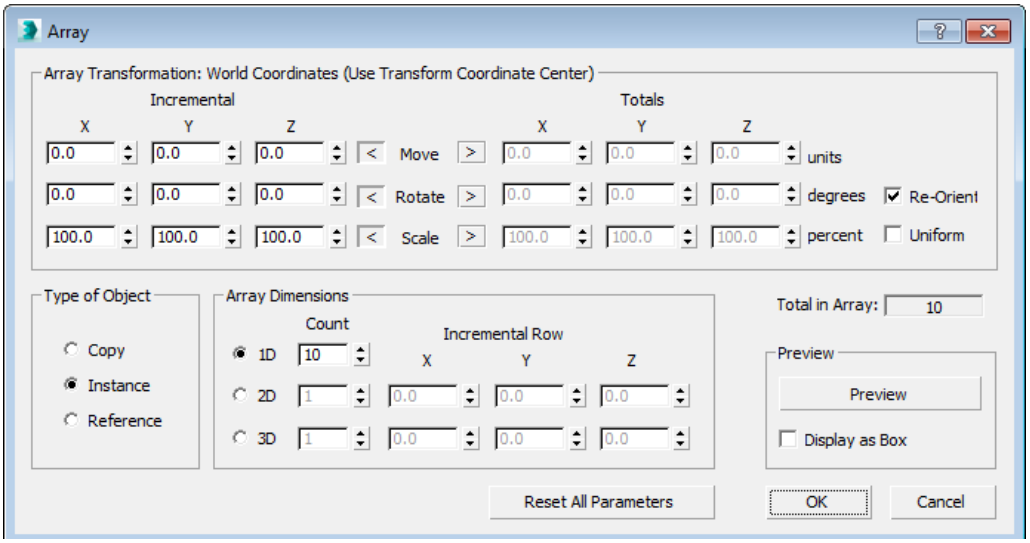


Figure 3-10 *The* ***Array*** *dialog box*

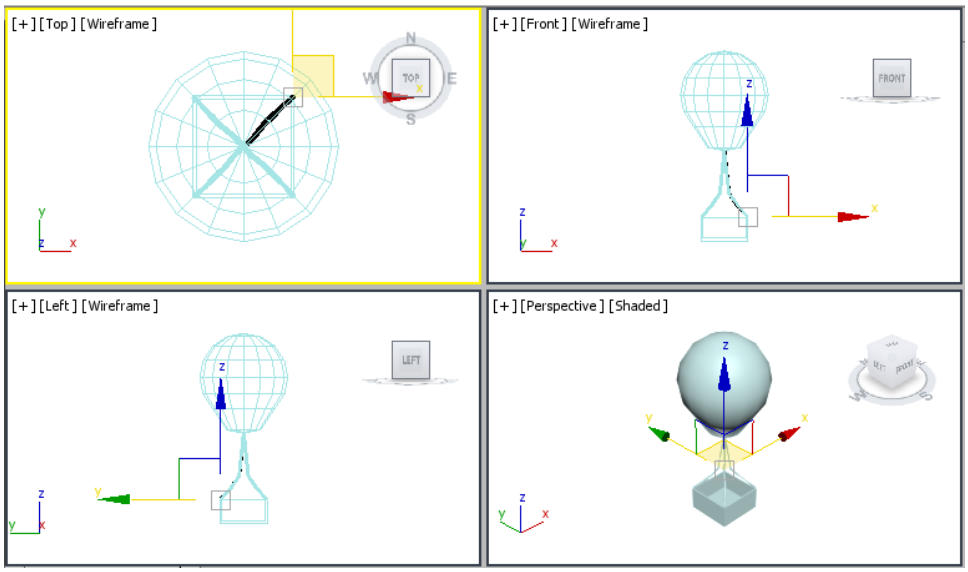


Figure 3-11 *The four ropes placed at the four corners of basket*

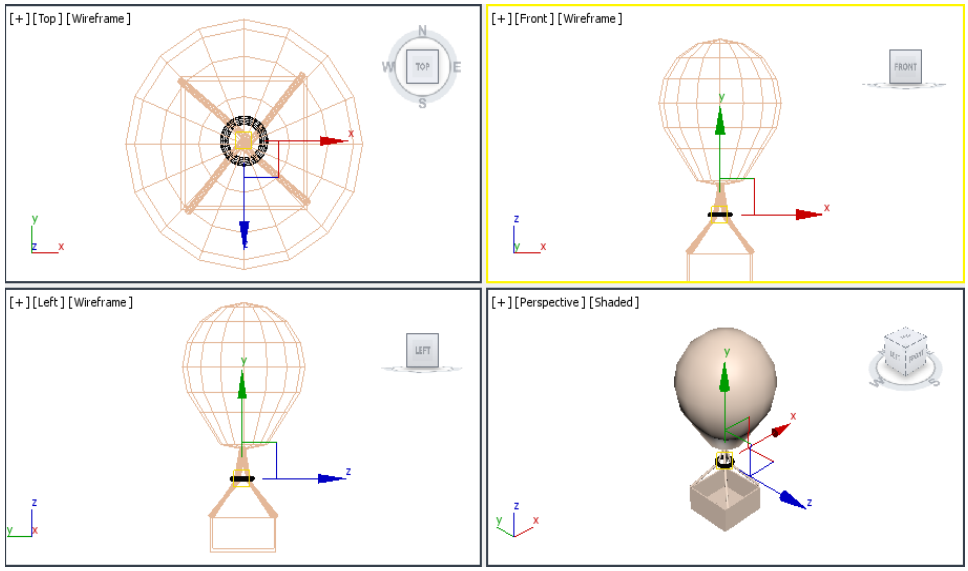


Figure 3-12 *Alignment of collar with the ropes*

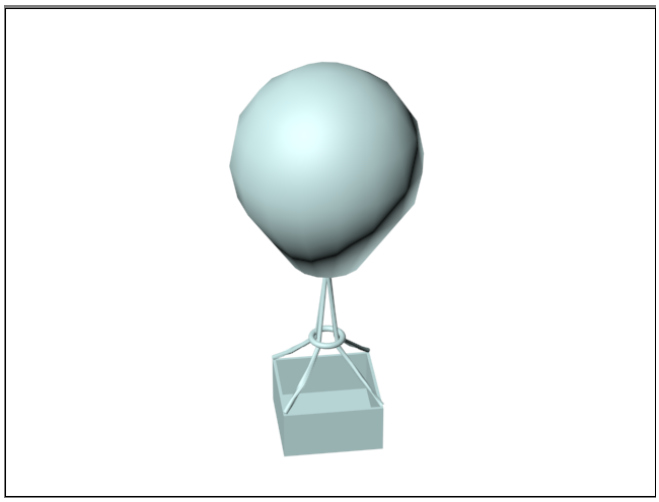


Figure 3-13 *The rendered image*

Figure 3-14 *The model of a shed*

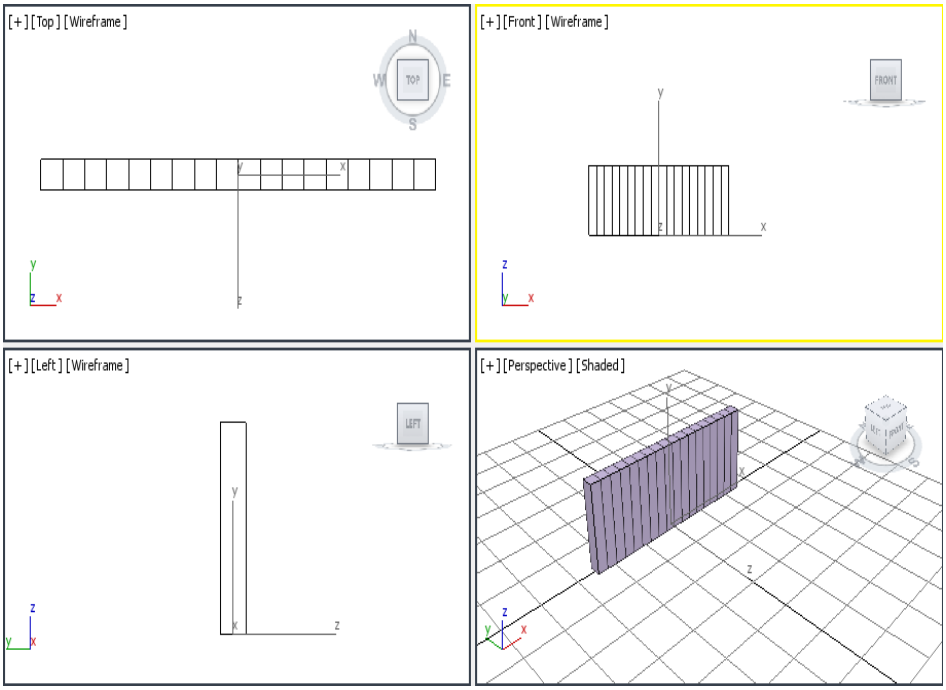


Figure 3-15 *The side 1 displayed in all viewports*

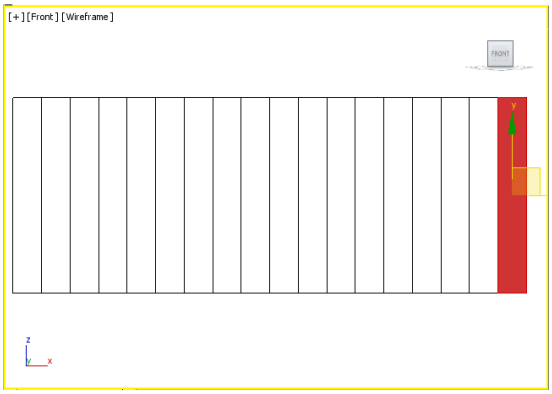


Figure 3-16 *The polygon selected*

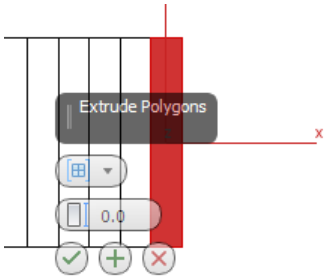


Figure 3-17 *The* ***Extrude Polygons*** *caddy control*

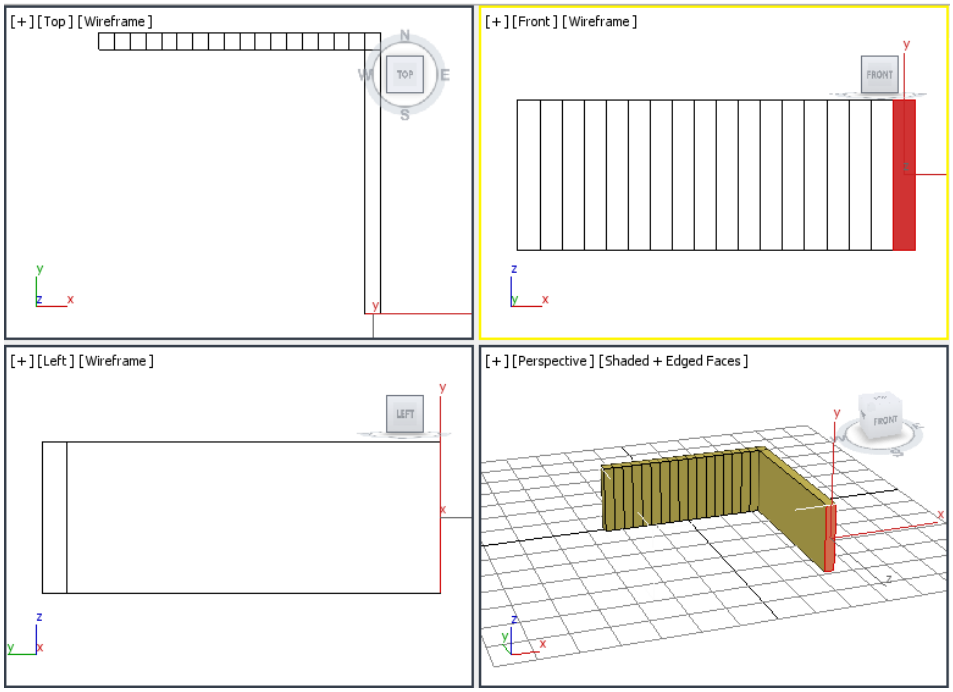


Figure 3-18 *The selected polygon extruded*

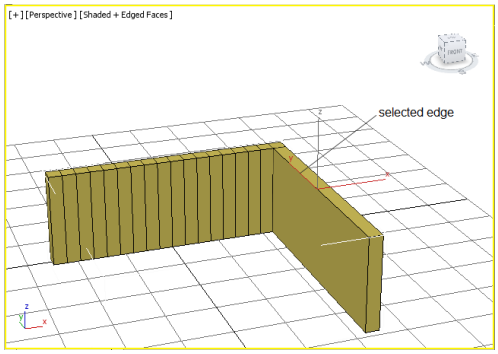


Figure 3-19 *The edge selected*

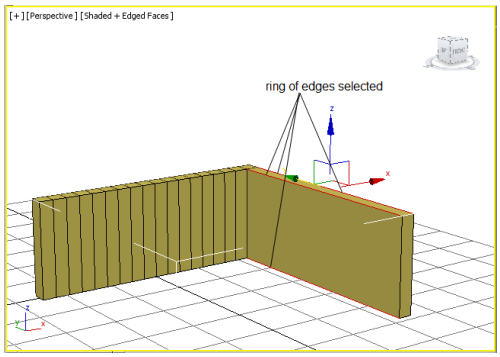


Figure 3-20 *The ring of edges selected*

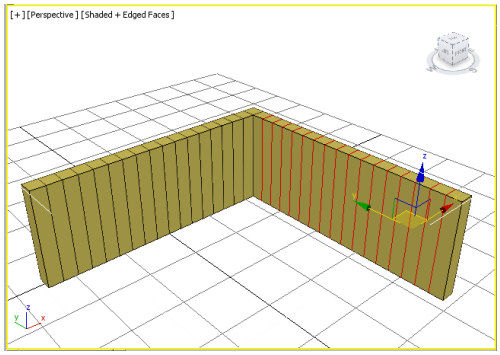


Figure 3-21 *The edge loops added*

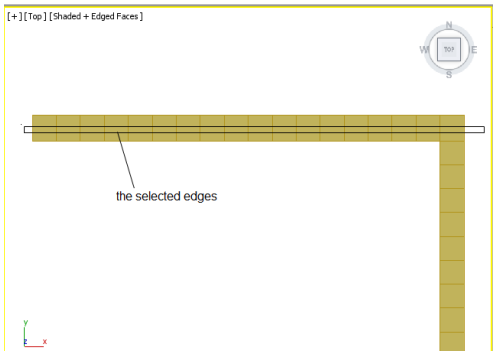


Figure 3-22 *The vertical edges selected*

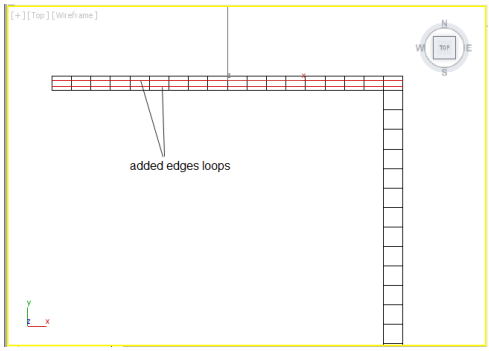


Figure 3-23 *Two edge loops added*

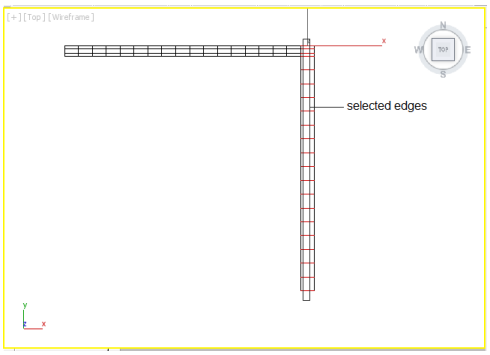


Figure 3-24 *The horizontal edges selected*

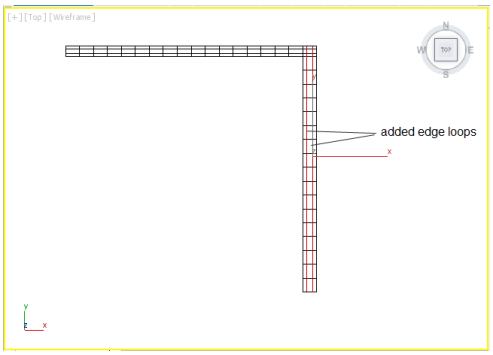


Figure 3-25 *Two edge loops added*

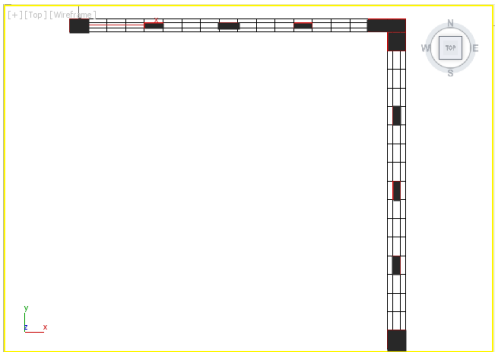


Figure 3-26 *The polygons selected*

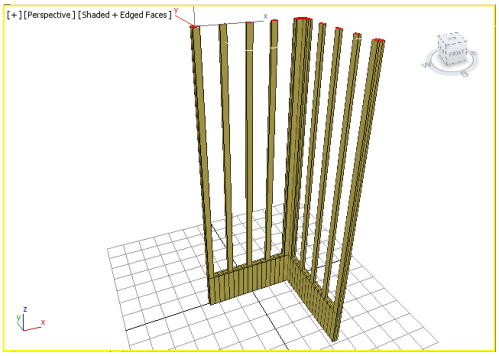


Figure 3-27 *The selected polygons extruded*

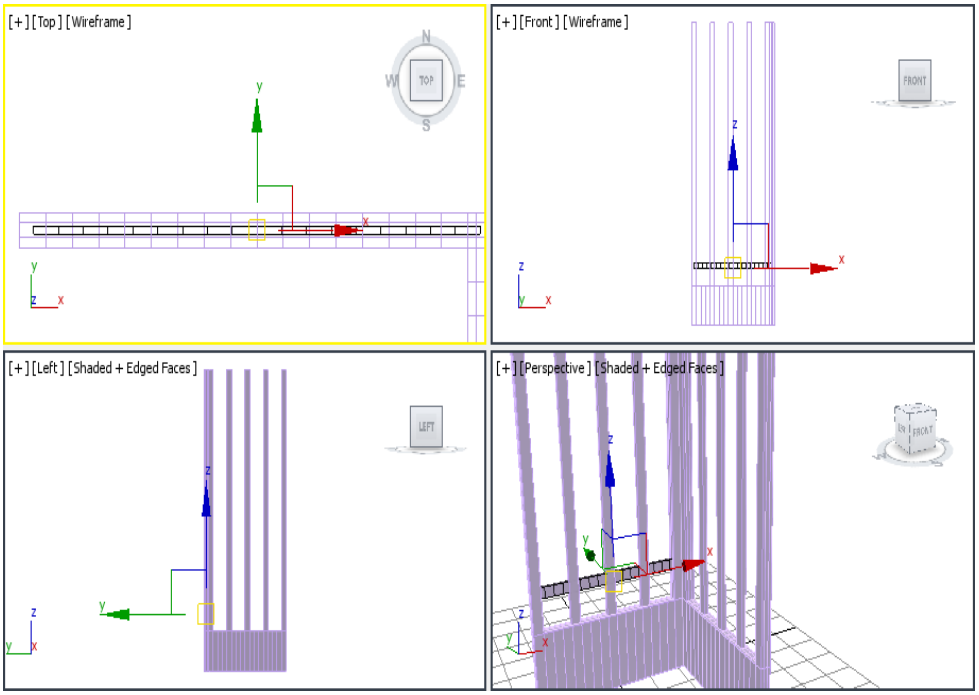


Figure 3-28 *The hozt strip1 aligned*

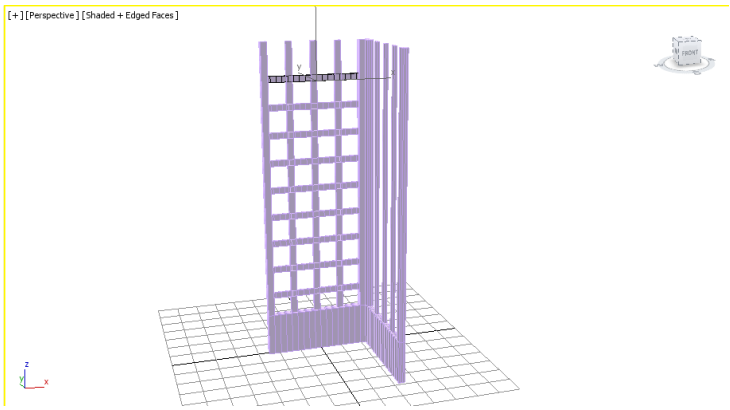


Figure 3-29 *The copies of hozt strip1 created*

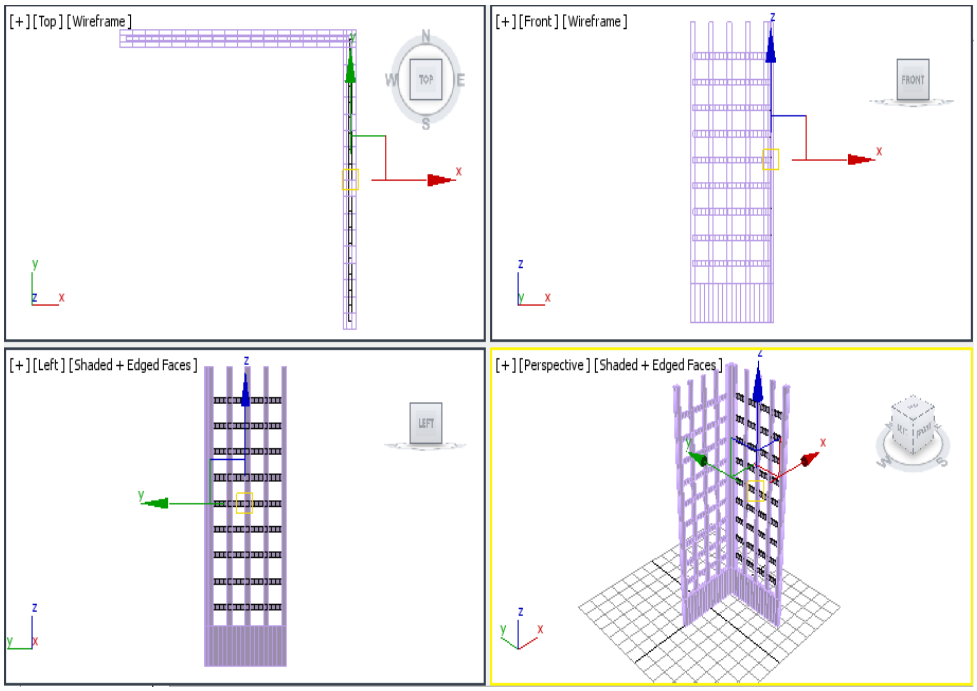


Figure 3-30 *The copies of the horizontal strips created*

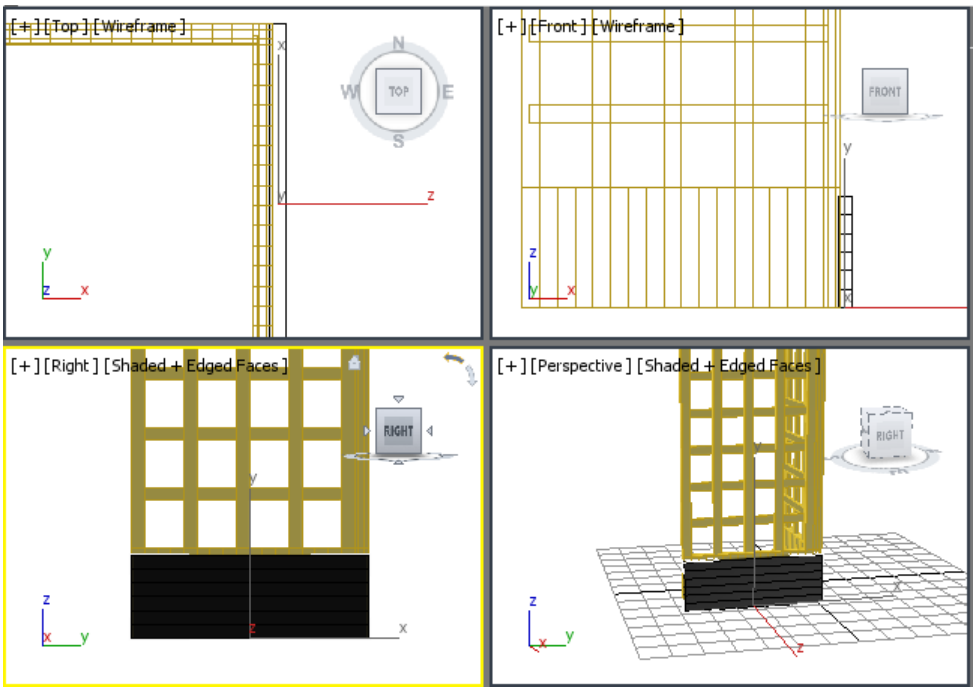


Figure 3-31 *The support1 aligned in all viewports*

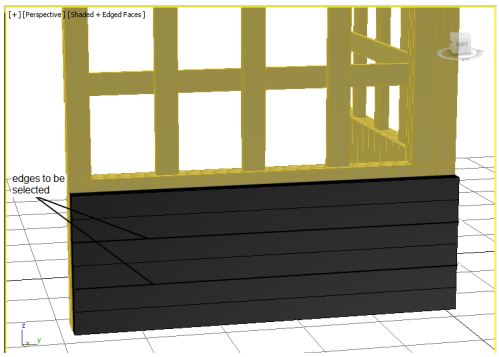


Figure 3-32 *Two edges selected*

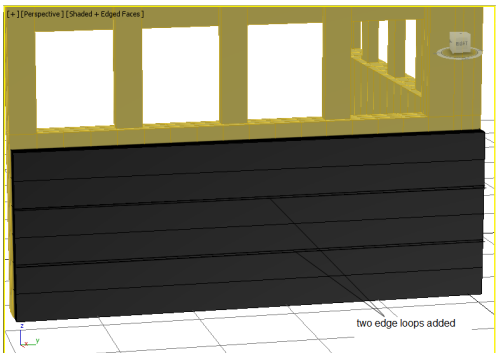


Figure 3-33 *Two edge loops added*

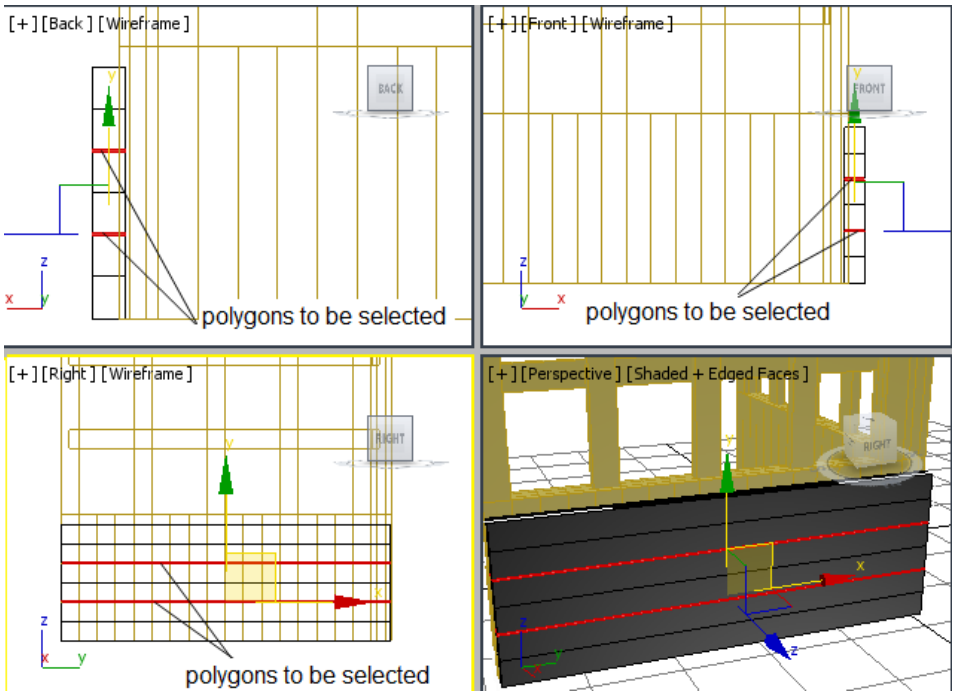


Figure 3-34 *The selected polygons*

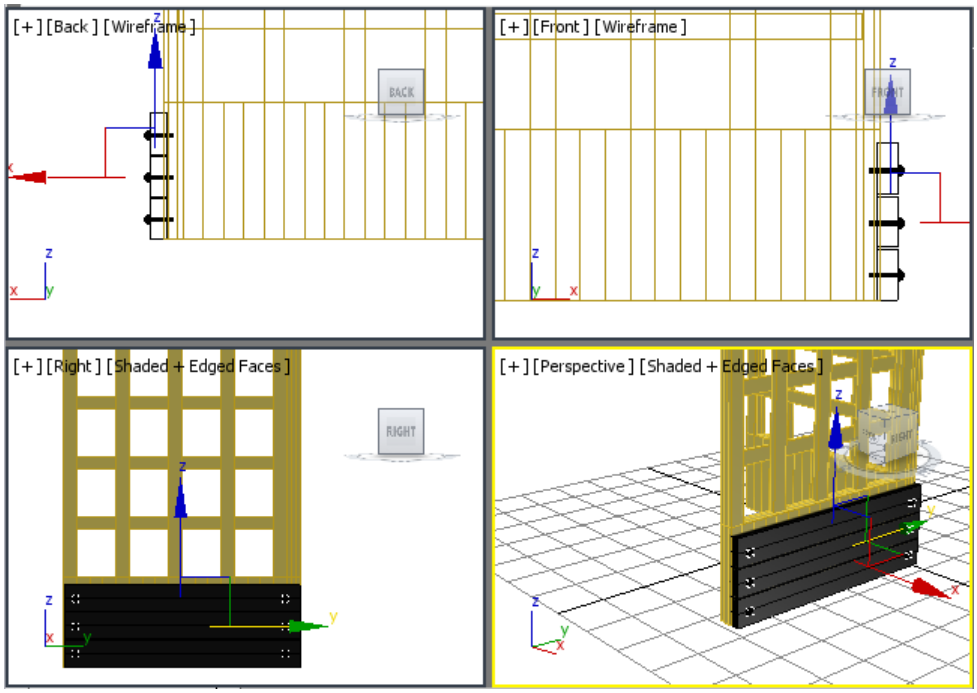


Figure 3-35 *The rivets aligned*

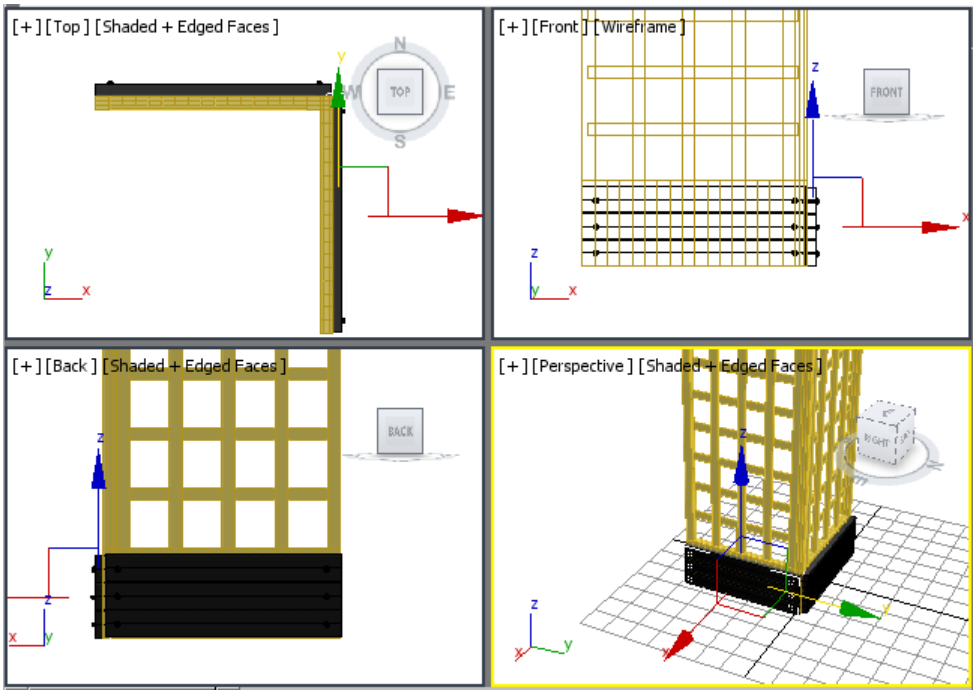


Figure 3-36 *The support02 aligned*

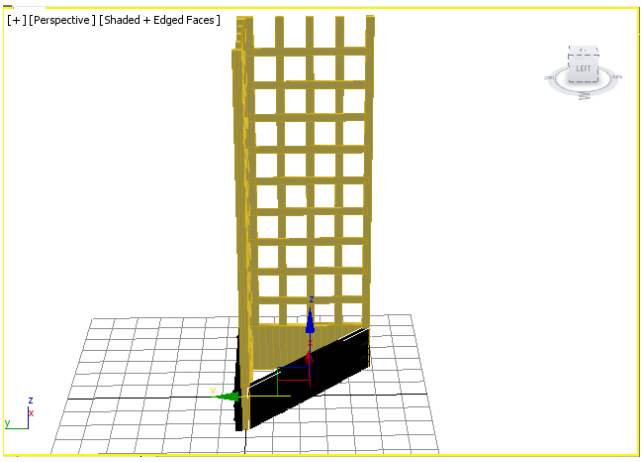


Figure 3-37 *The support03 aligned*

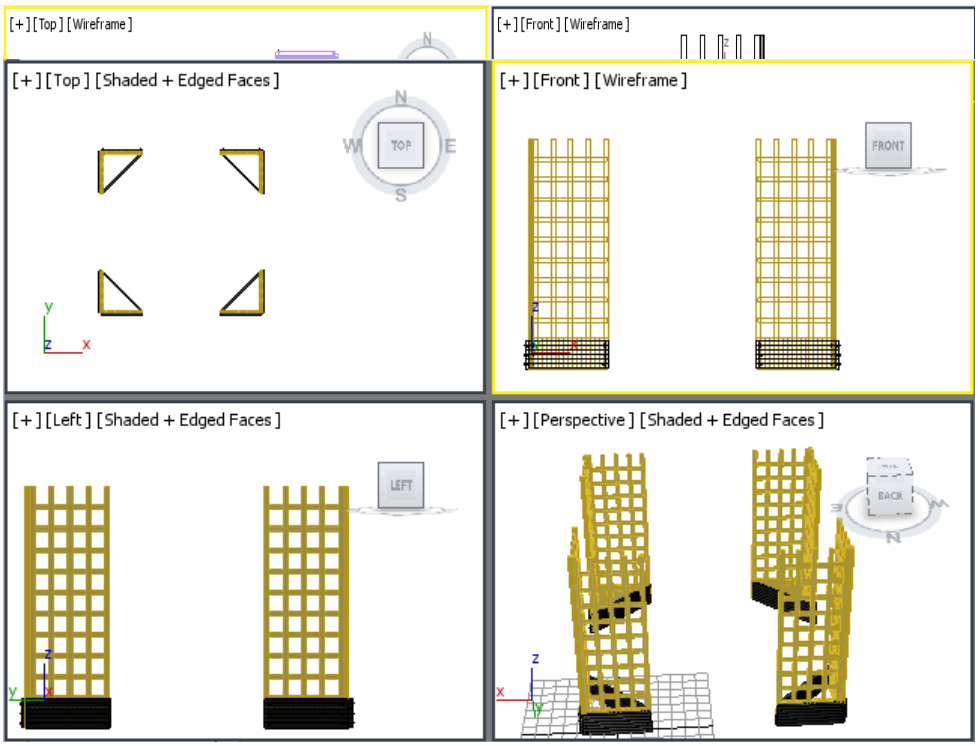


Figure 3-39 *The SIDE003 and SIDE004 positioned*

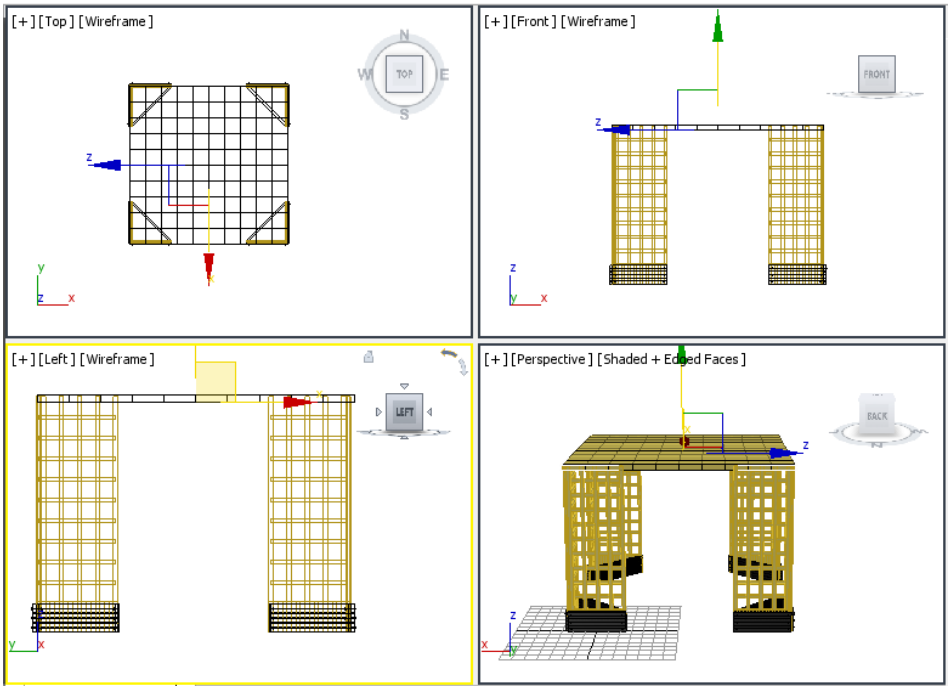


Figure 3-40 *Top 1 aligned in all viewports*

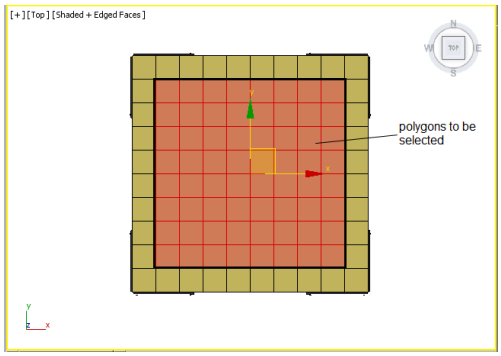


Figure 3-41 *The polygons selected*

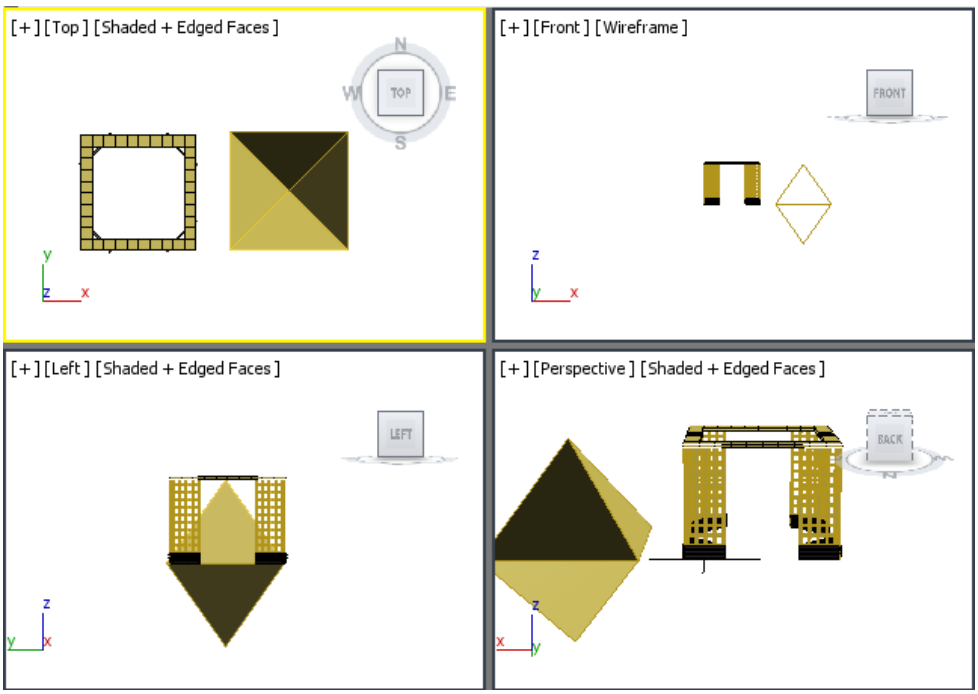


Figure 3-42 *Hedra001 created*

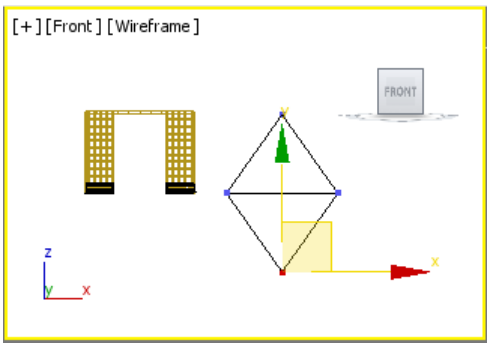


Figure 3-43 *The selected vertex*

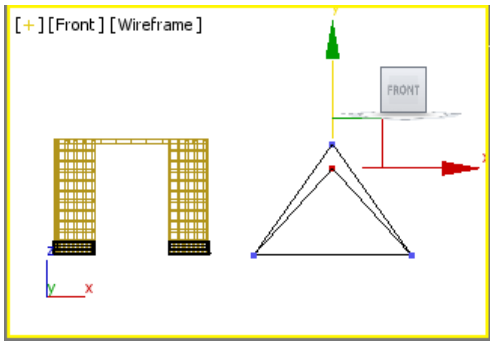


Figure 3-44 *The vertex moved*

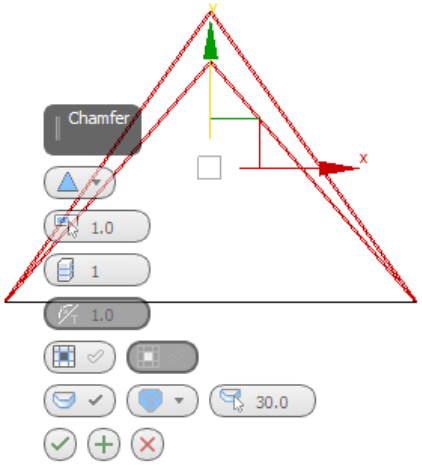


Figure 3-45 *The* ***Chamfer*** *caddy control*

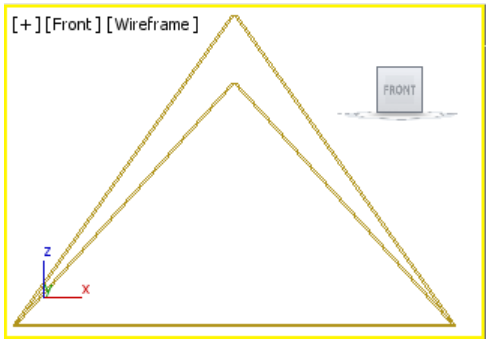


Figure 3-46 *All edges chamfered*

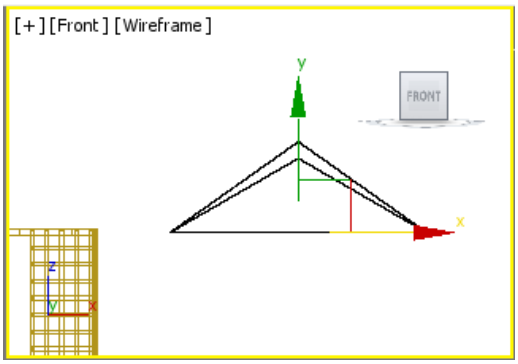


Figure 3-47 *The Top 2 scaled*

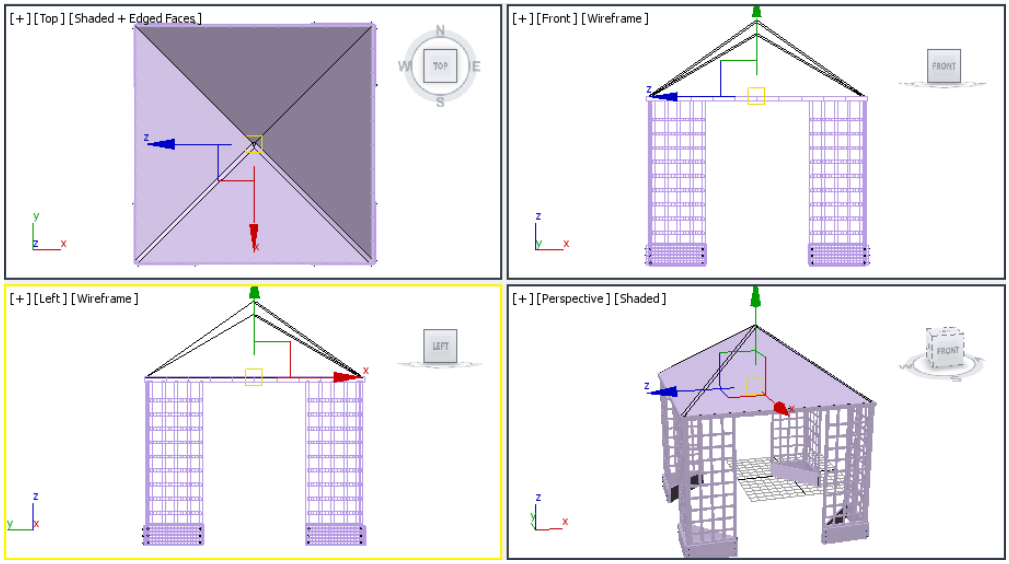


Figure 3-48 *The Top 2 aligned*

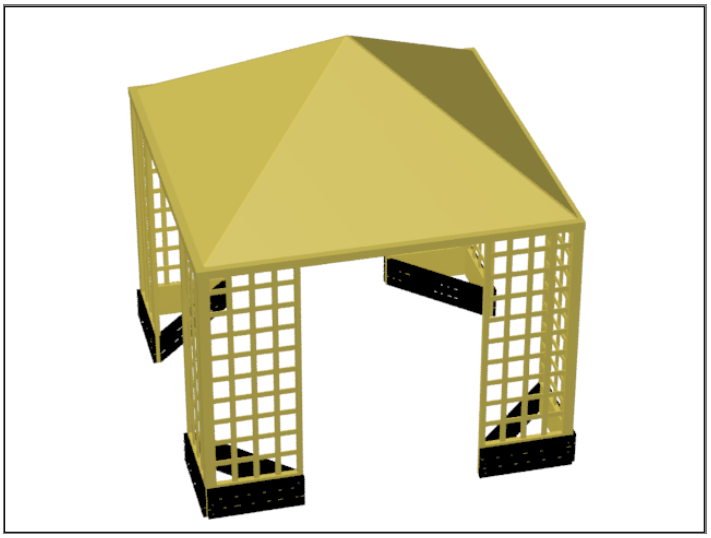


Figure 3-49 *The rendered image*

Exercise 1

Create the scene of a bench umbrella and table on the ground, as shown in Figure 3-50.

Figure 3-50 *The scene of a bench umbrella and a table*

Chapter 4

Working with Splines-I

Toasted Bagel Inc.

Toasted Bagel Inc.

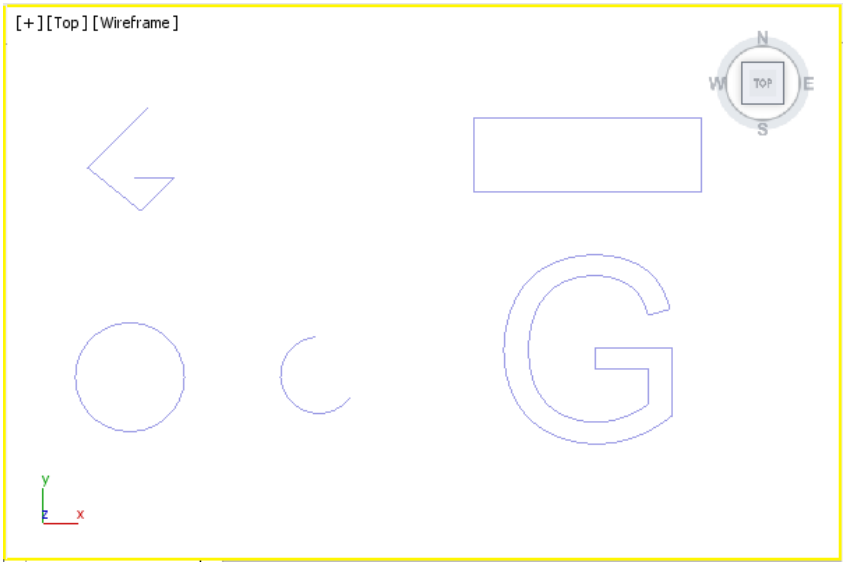


Figure 4-1 *Different spline shapes created in the Top viewport*

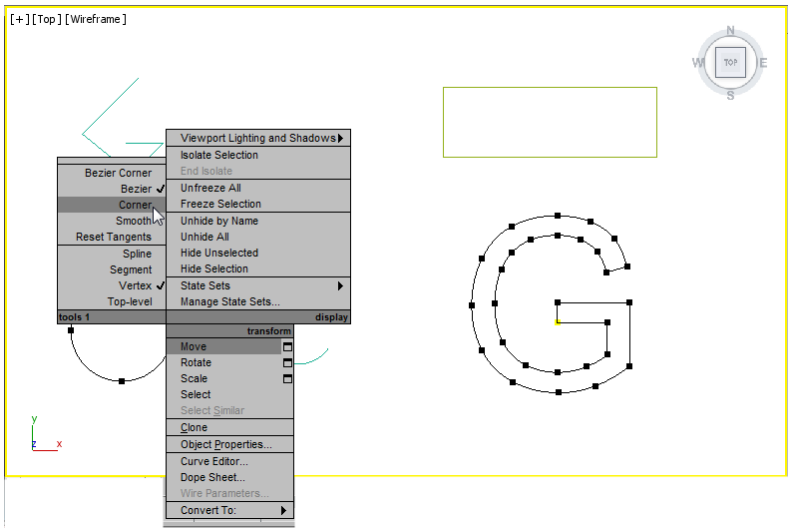


Figure 4-2 *Choosing* ***Corner*** *from the upper-left quadrant of the quad menu*

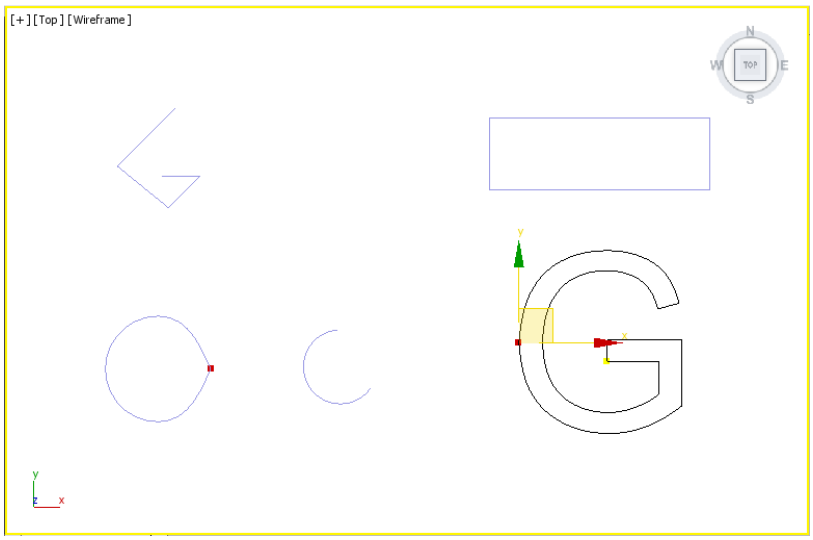


Figure 4-3 *The curved vertices changed to corner*

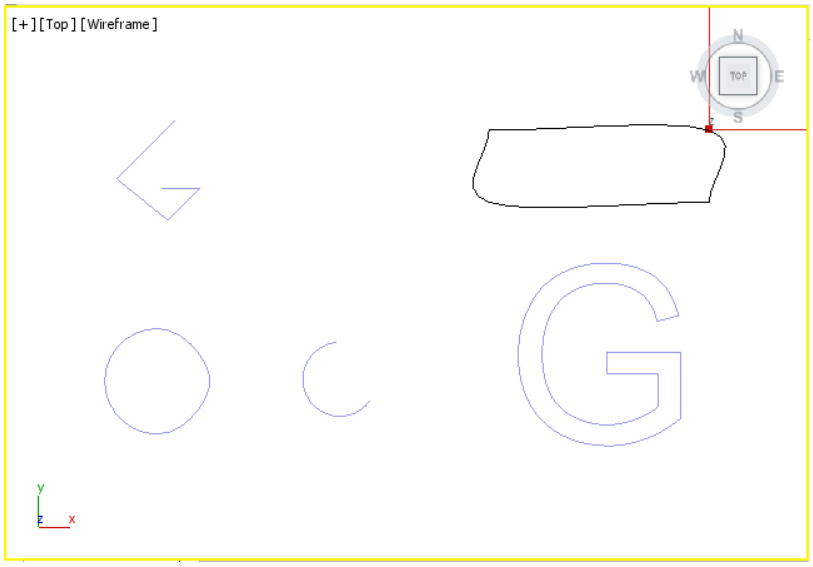


Figure 4-4 *Two corners of the rectangle changed to smooth curves*

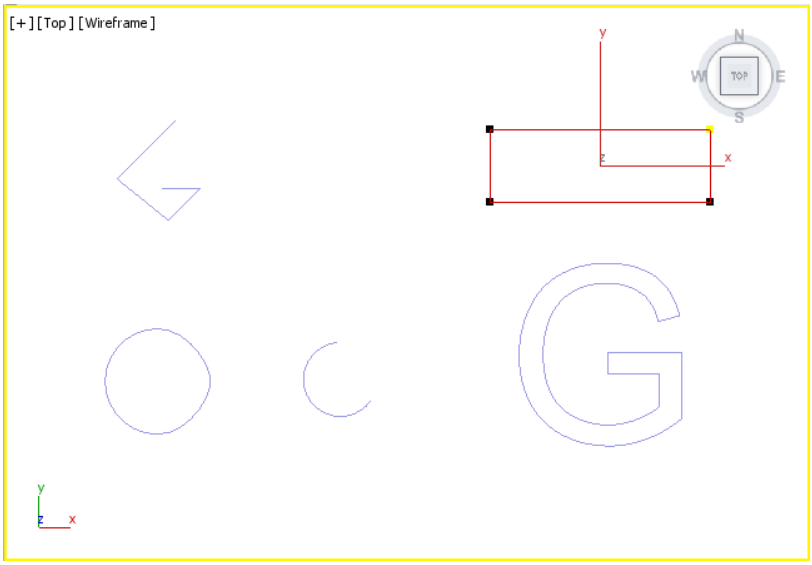


Figure 4-5 *The rectangle restored to its original shape*

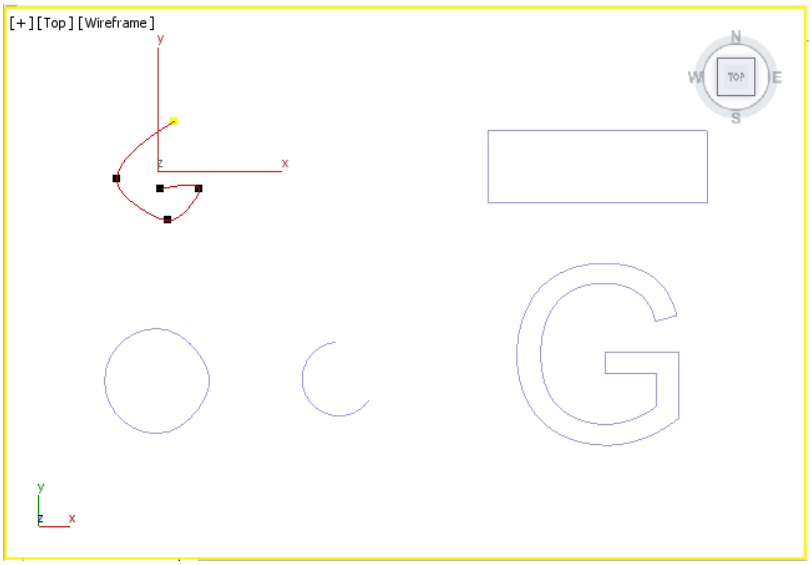


Figure 4-6 *The curved line spline*

Figure 4-7 *The* ***About to Fetch. OK?*** *message box*

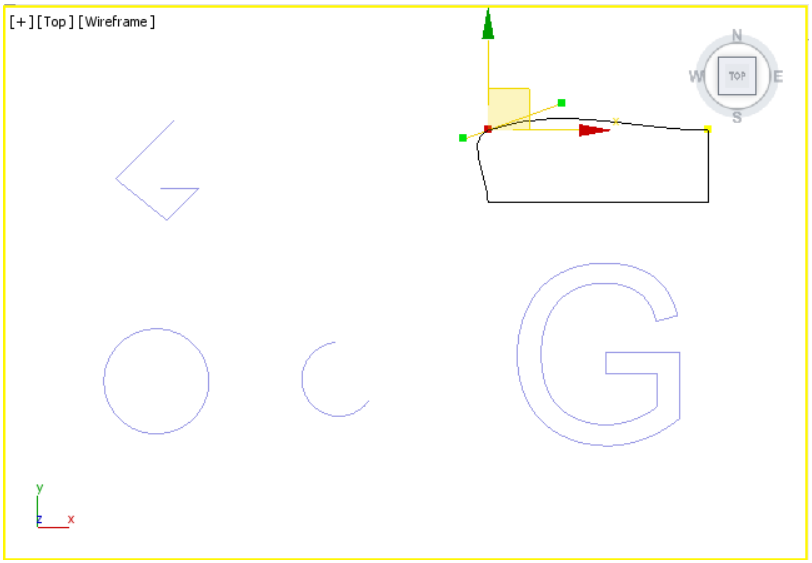


Figure 4-8 *Shape of the rectangle after dragging one of the handles*

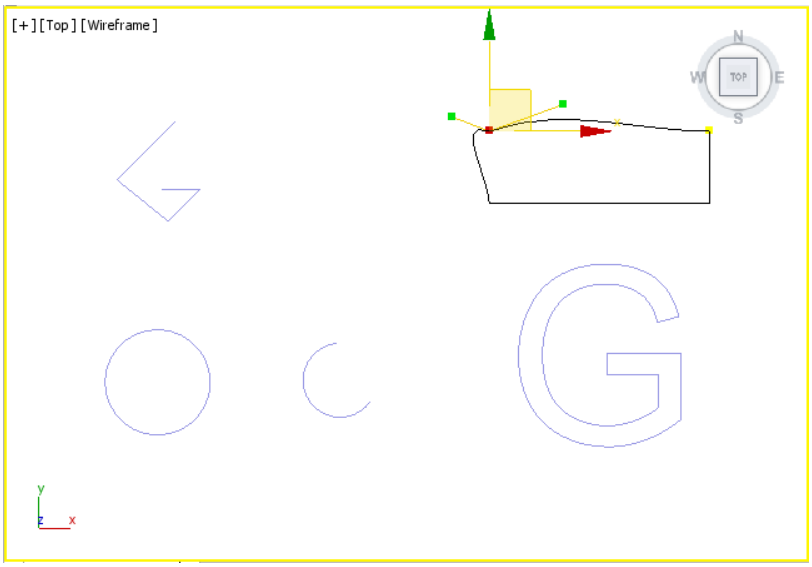


Figure 4-9 *Curved line segments of the spline*

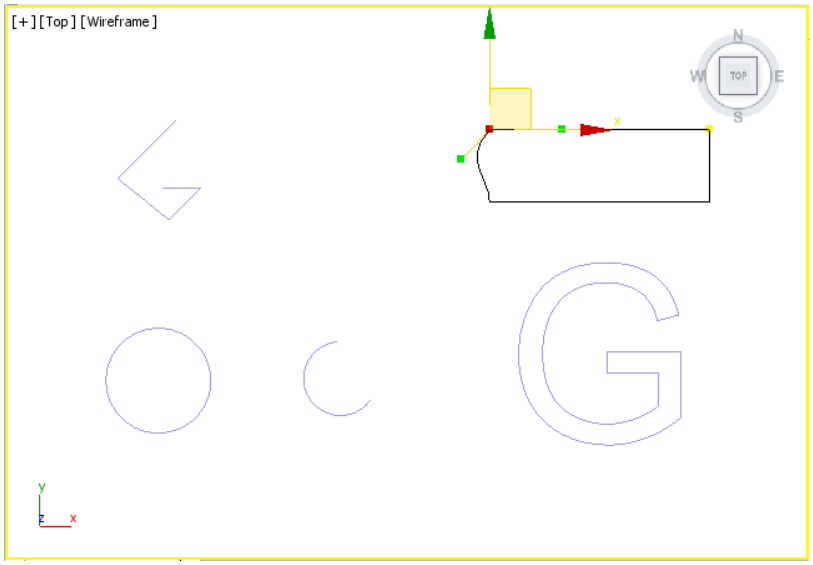


Figure 4-10 *Adjusting the bezier handles*

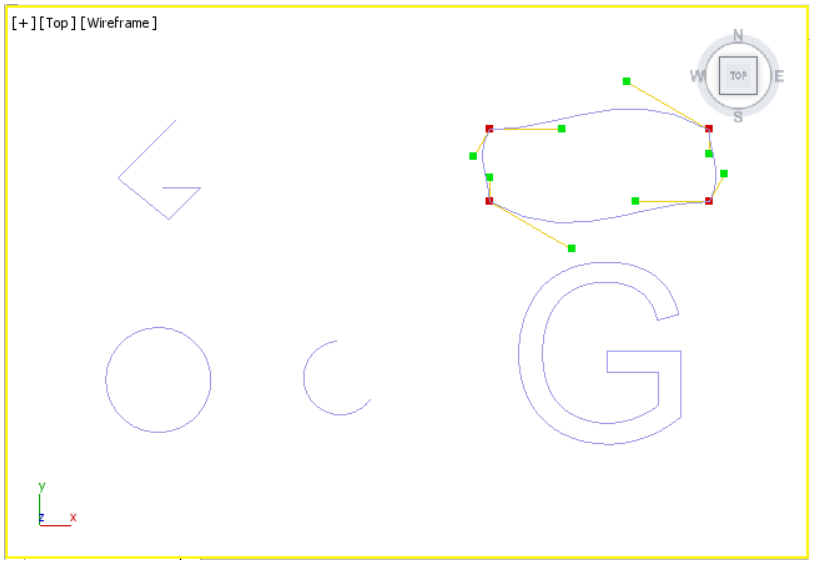


Figure 4-11 *All similar bezier handles affected by the* ***Lock Handles*** *check box and the* ***Alike*** *radio button*

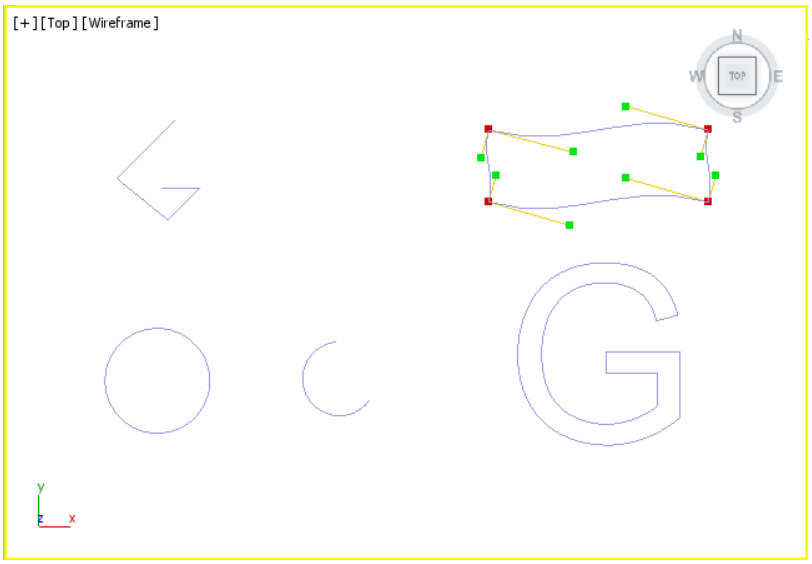


Figure 4-12 *All bezier handles affected on selecting the* ***All*** *radio button*

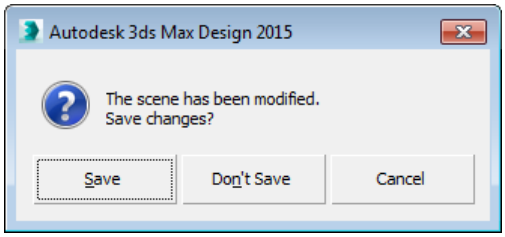


Figure 4-13 *The* ***Autodesk 3ds Max Design 2015*** *message box*

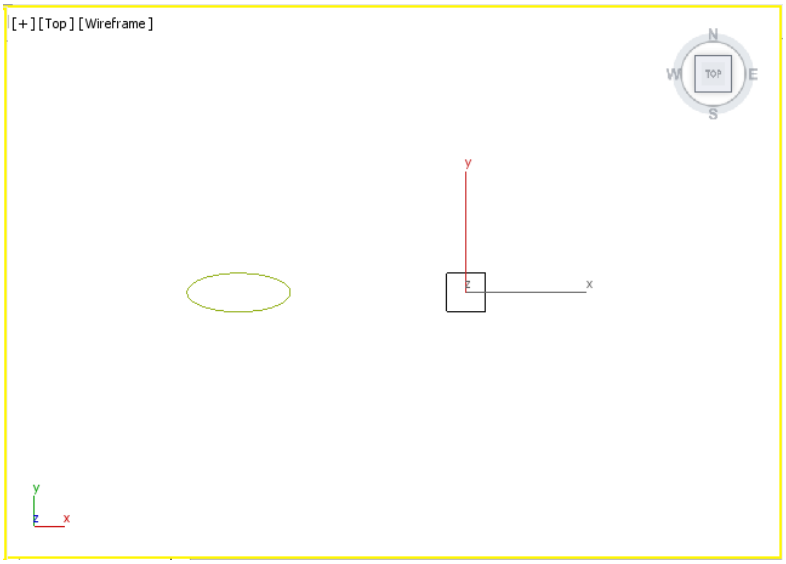


Figure 4-14 *The ellipse and square created in the Top viewport*

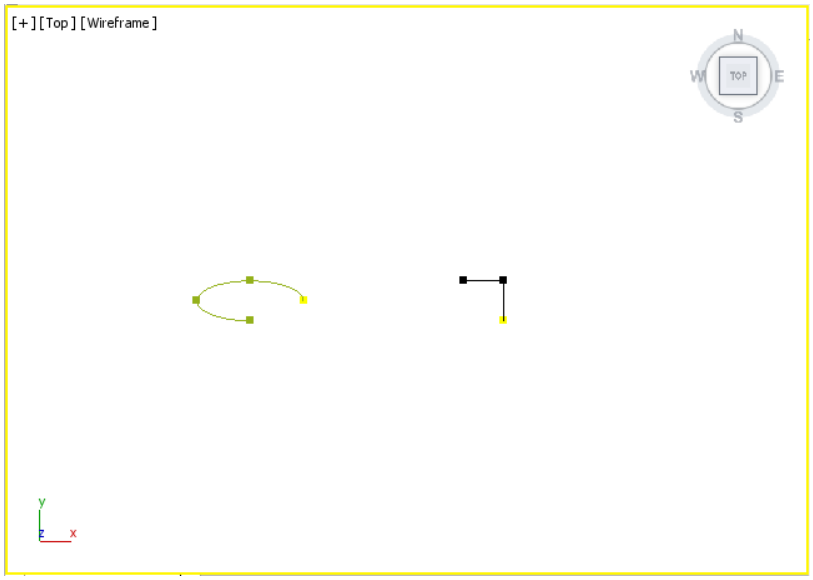


Figure 4-15 *Selected segments deleted from the shapes*

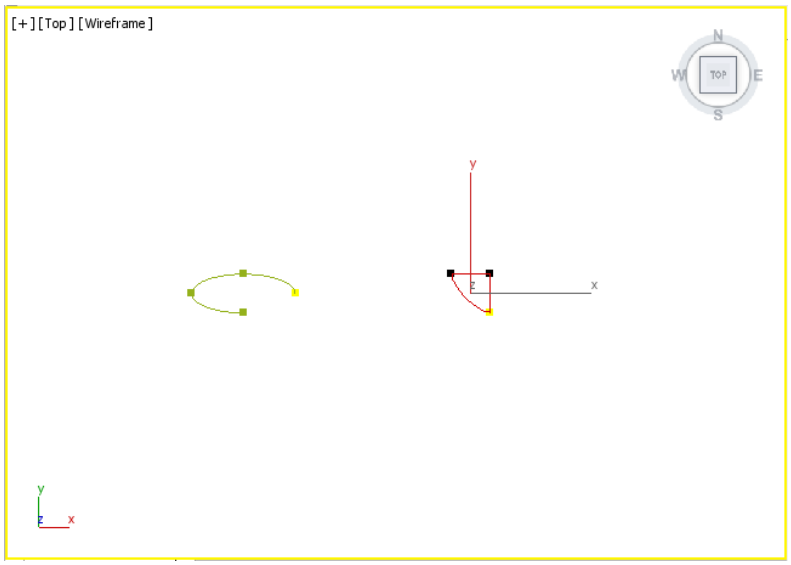


Figure 4-16 *The closed spline*

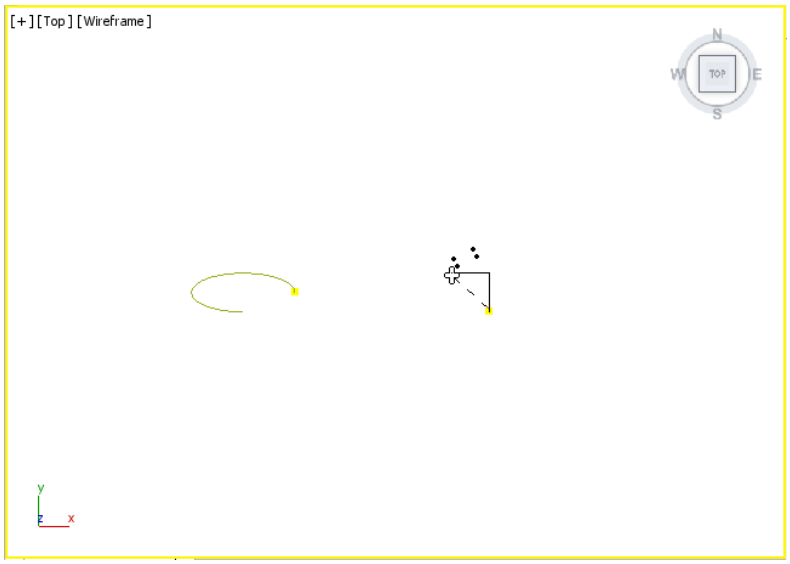


Figure 4-17 *A dashed line attached to the end vertices*

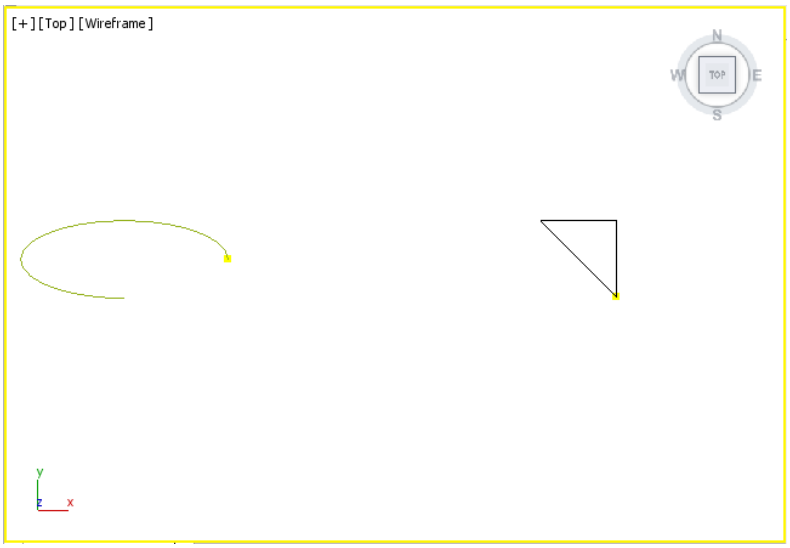


Figure 4-18 *The two vertices joined by a straight segment*

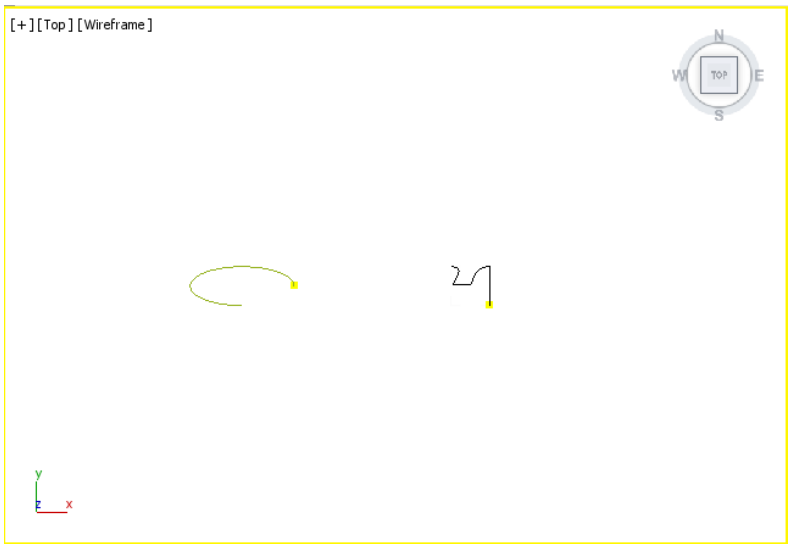


Figure 4-19 *New vertices added to the segment*

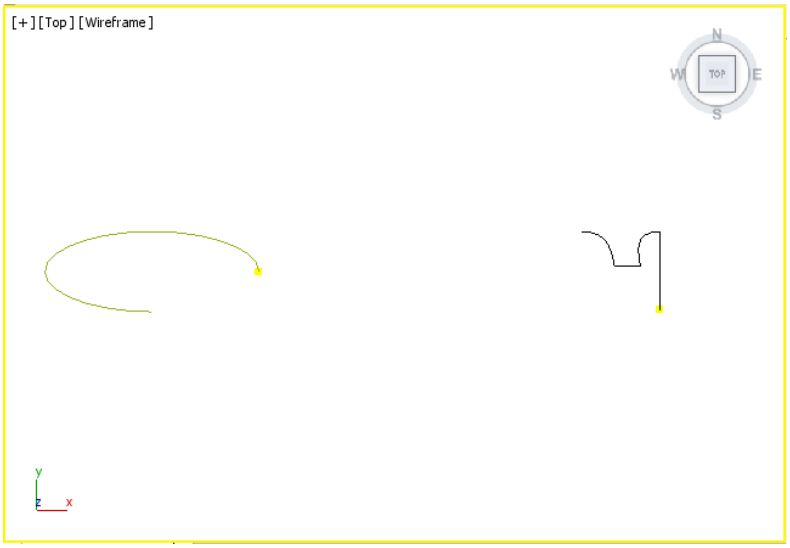


Figure 4-20 *The resulting shape created after changing the direction of the spline*

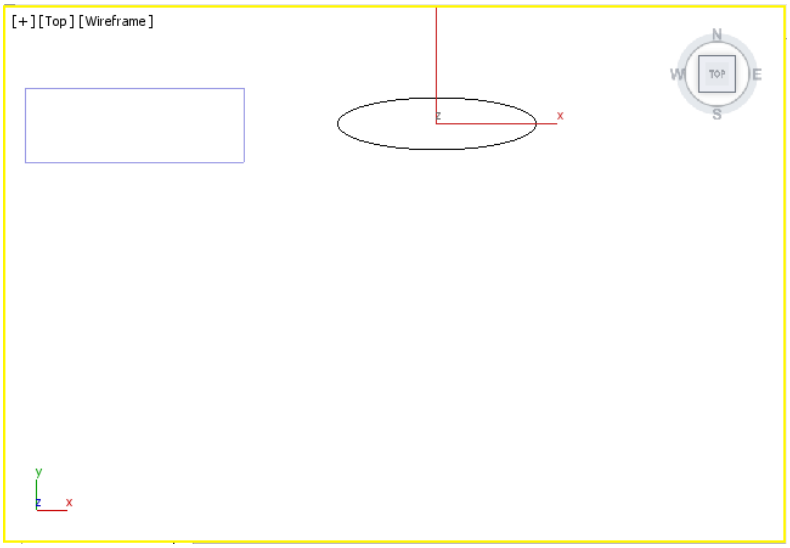


Figure 4-21 *A rectangle and an ellipse*

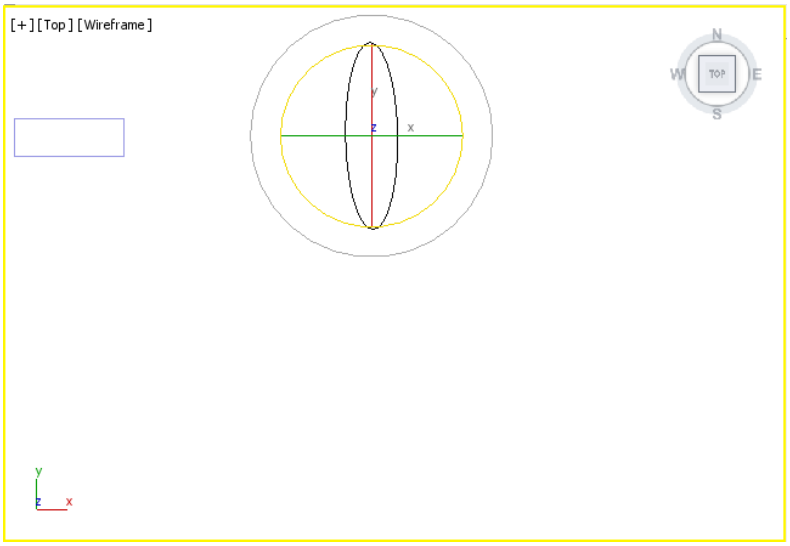


Figure 4-22 *The ellipse rotated*

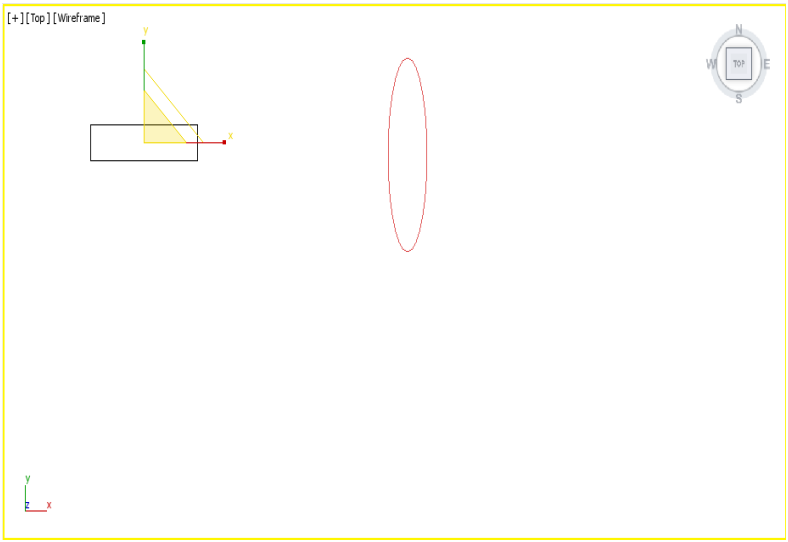


Figure 4-23 *The rectangle scaled to its pivot point*

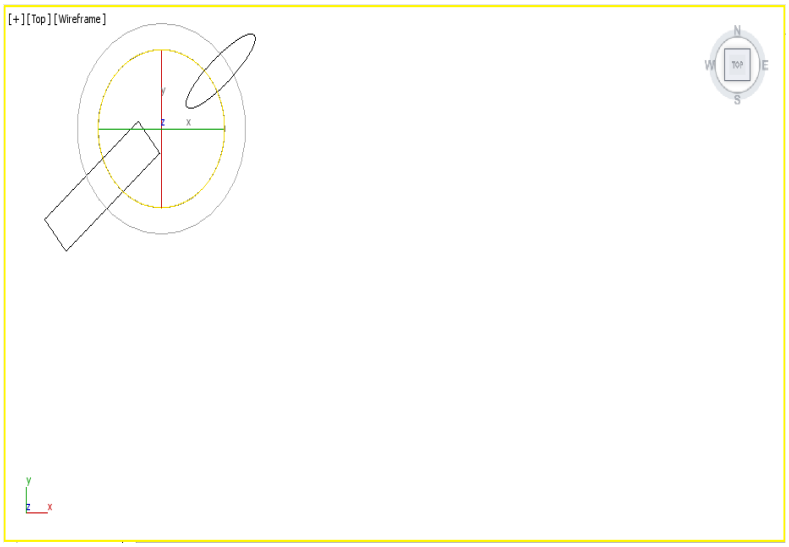


Figure 4-24 *Both objects rotated around the center of their combined center point*

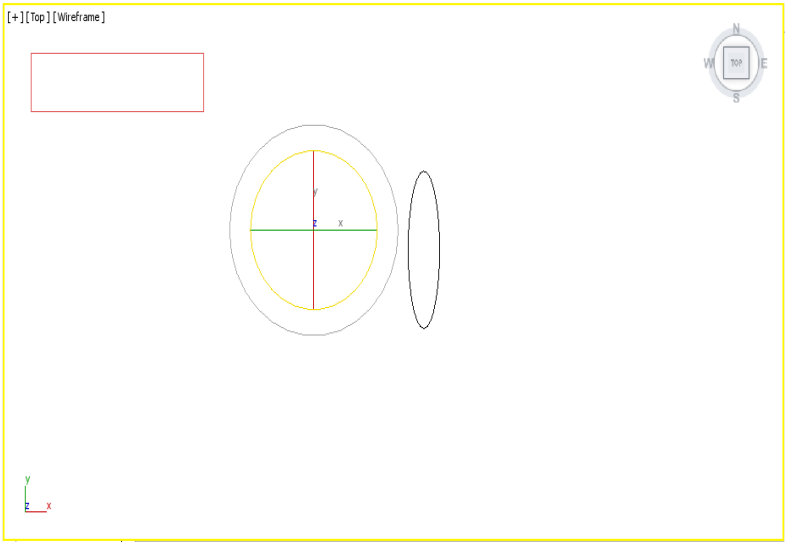


Figure 4-25 *The ellipse rotated after selecting* ***World*** *in the* ***Reference Coordinate System*** *drop-down list*

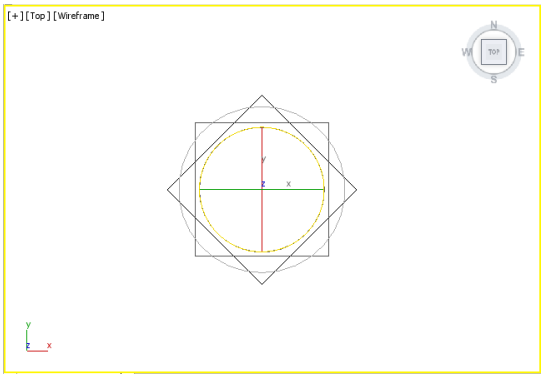


Figure 4-26 *A copy of the square created by rotating it at 45 degrees*

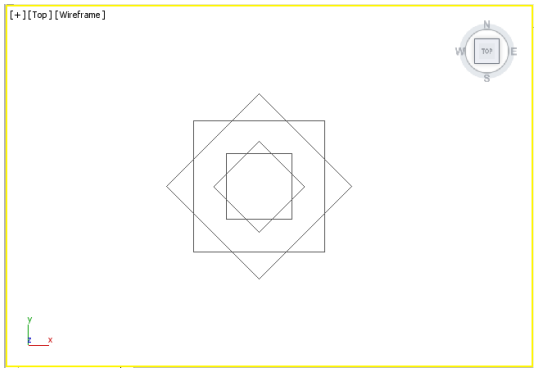


Figure 4-27 *Both squares copied and scaled down to 50 percent of their original size*

Exercise 1

Draw the following shapes by using the dimensions of your choice, refer to Figure 4-28. Make copies and transform them as required. **(Expected time: 20 min)**

Figure 4-28 *Drawing different shapes*

Chapter 5

Working with Splines-II

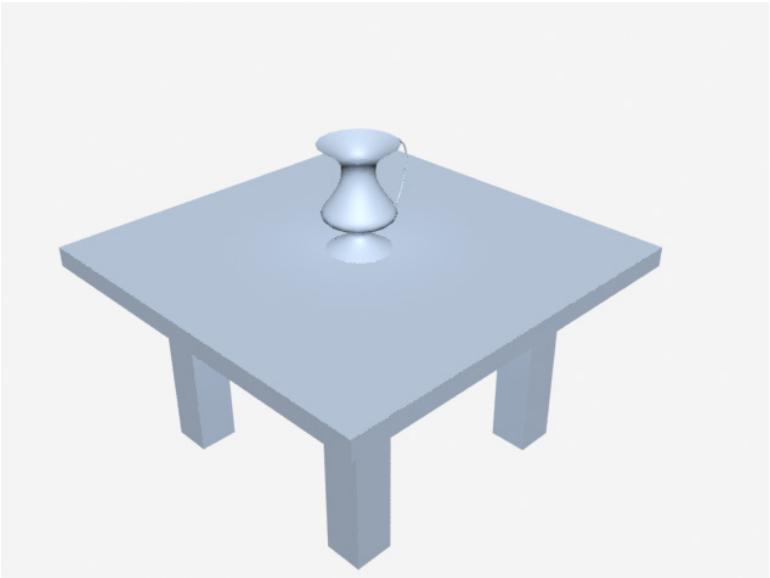


Figure 5-1 *The model of a table and jug*

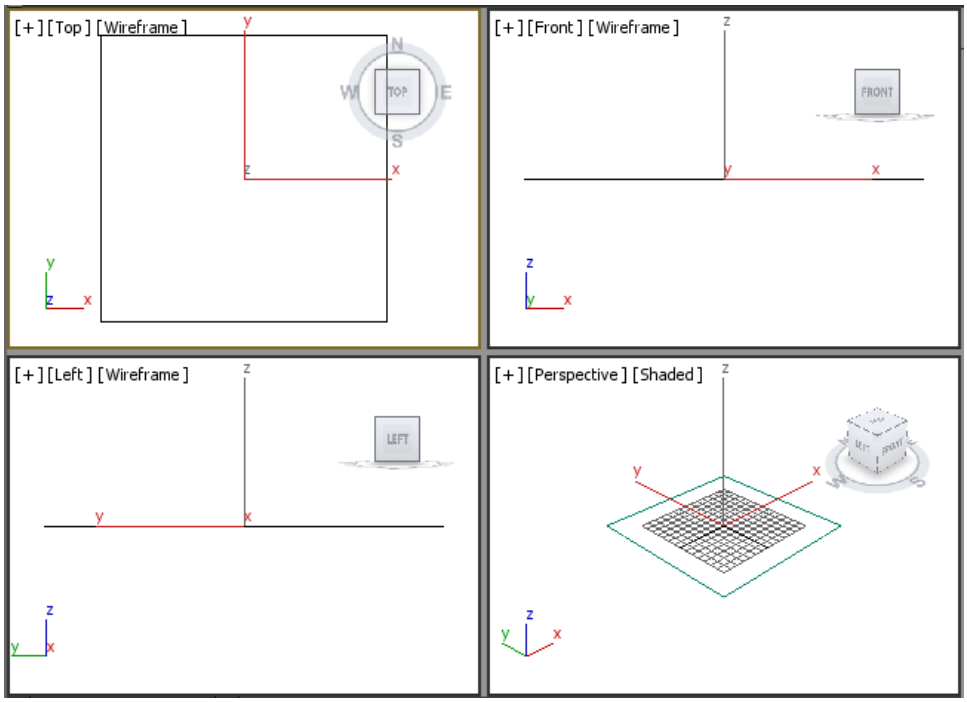


Figure 5-2 *The rectangle created for the table top*

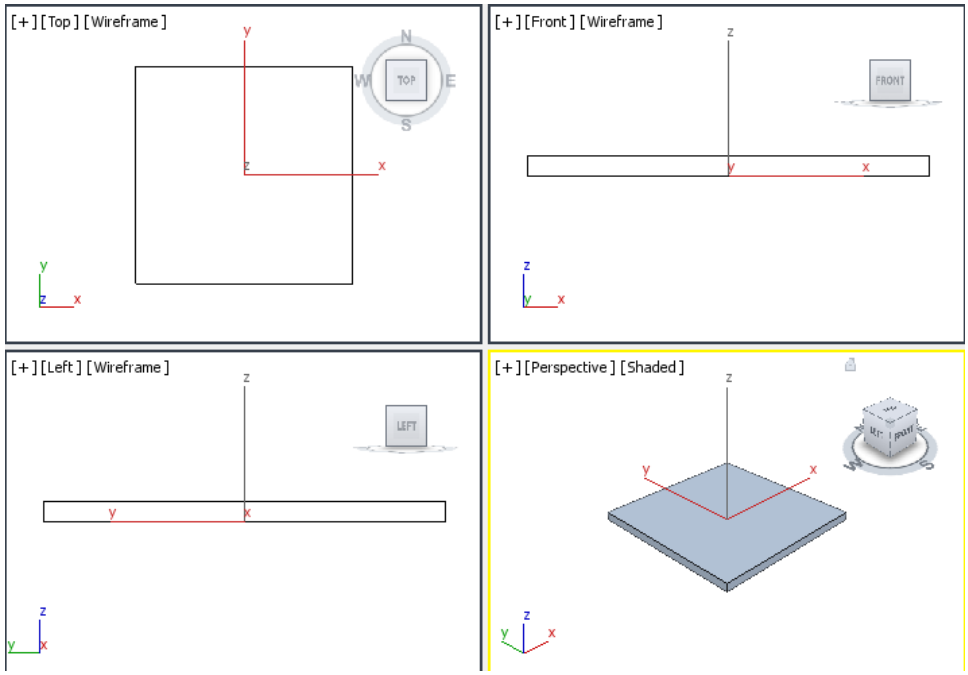


Figure 5-3 *The Top extruded by 10 units*

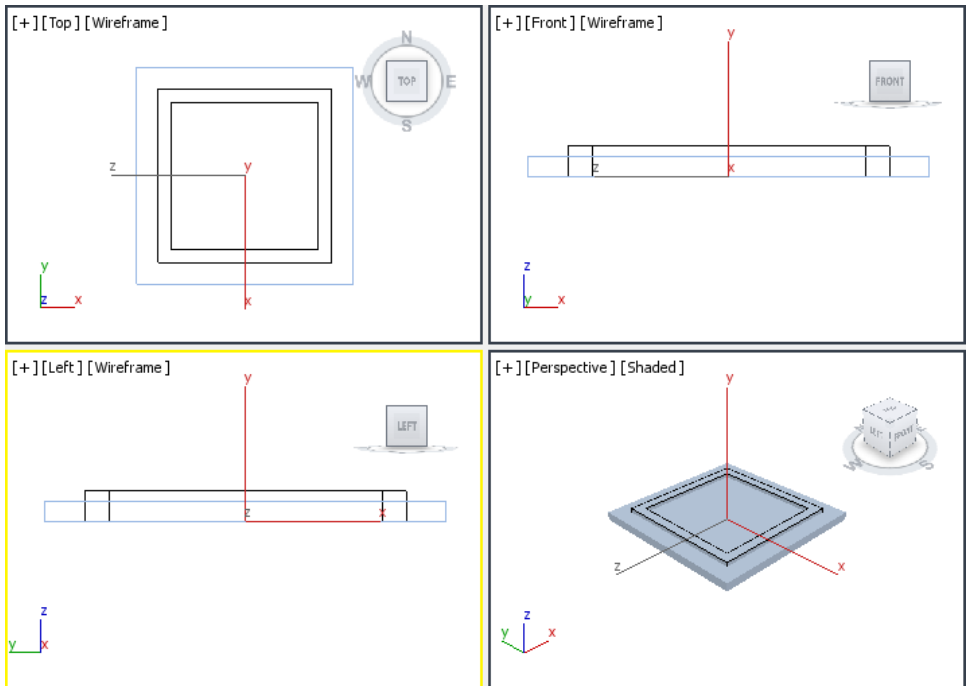


Figure 5-4 *The Frame extruded by 15 units*

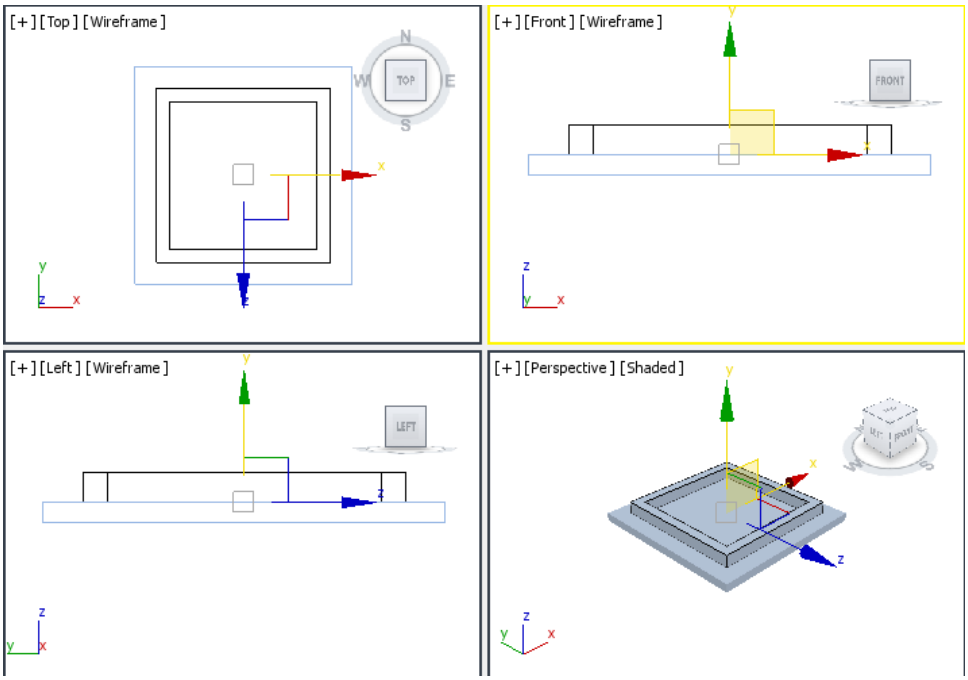


Figure 5-5 *The Frame aligned*

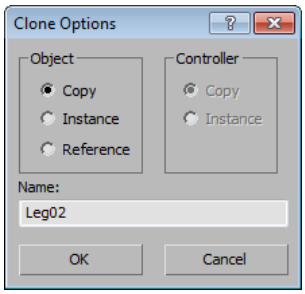


Figure 5-6 *The* ***Clone Options*** *dialog box*

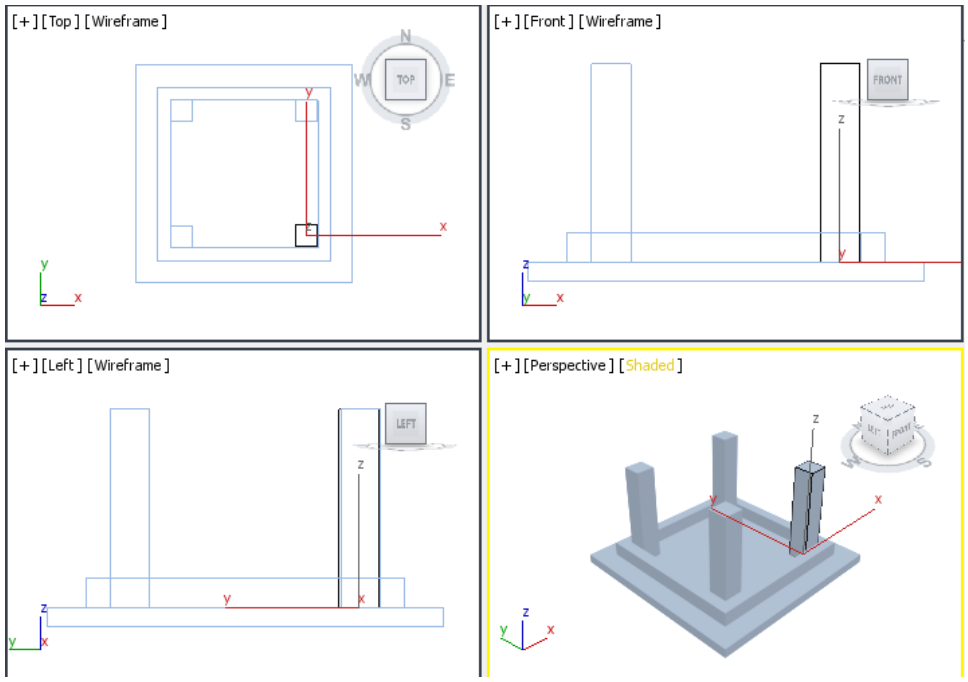


Figure 5-7 *The four legs of the table created and aligned to their correct places*

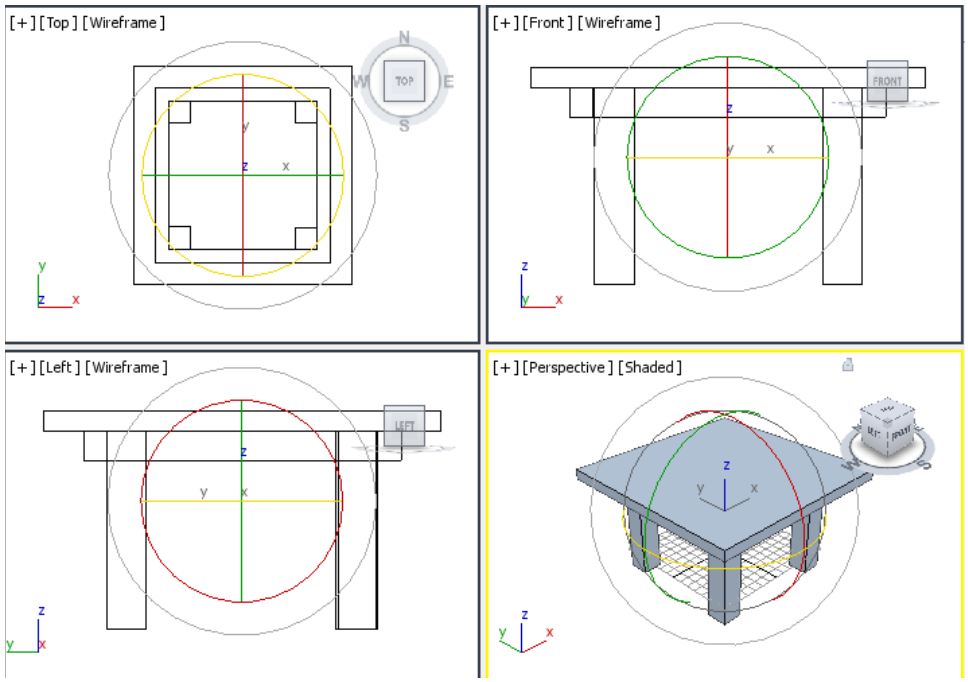


Figure 5-8 *Table rotated upright to stand on its legs*

Figure 5-9 *The center of Table zoomed in the front viewport*

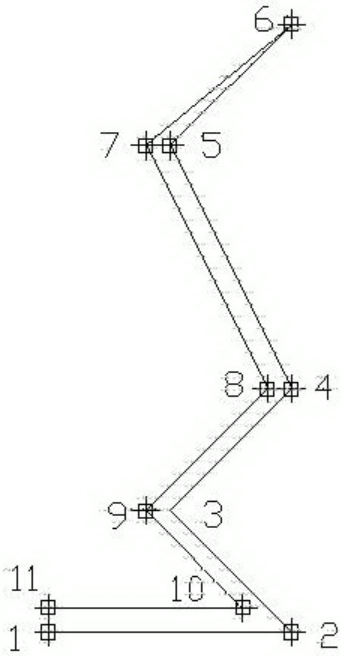


Figure 5-10 *The profile curve of the Jug*

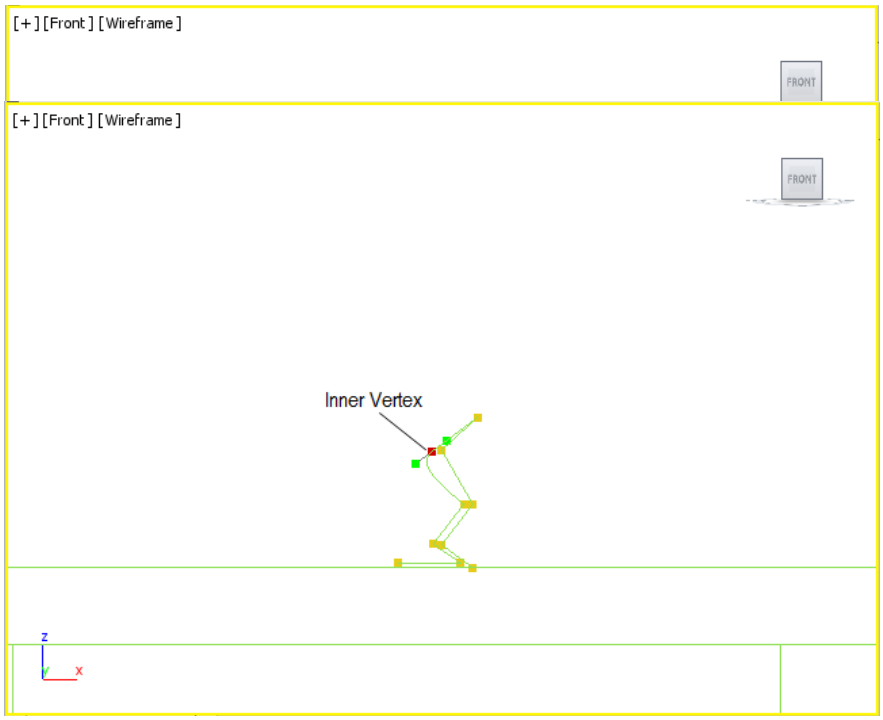


Figure 5-12 *The bezier handles displayed at the vertex*

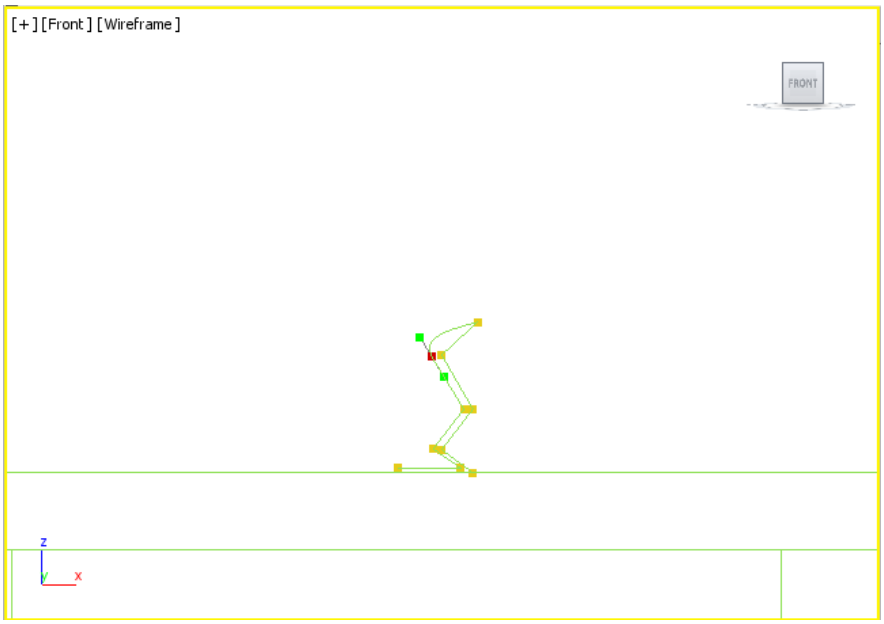


Figure 5-13 *The curve reshaped by dragging the bezier handle*

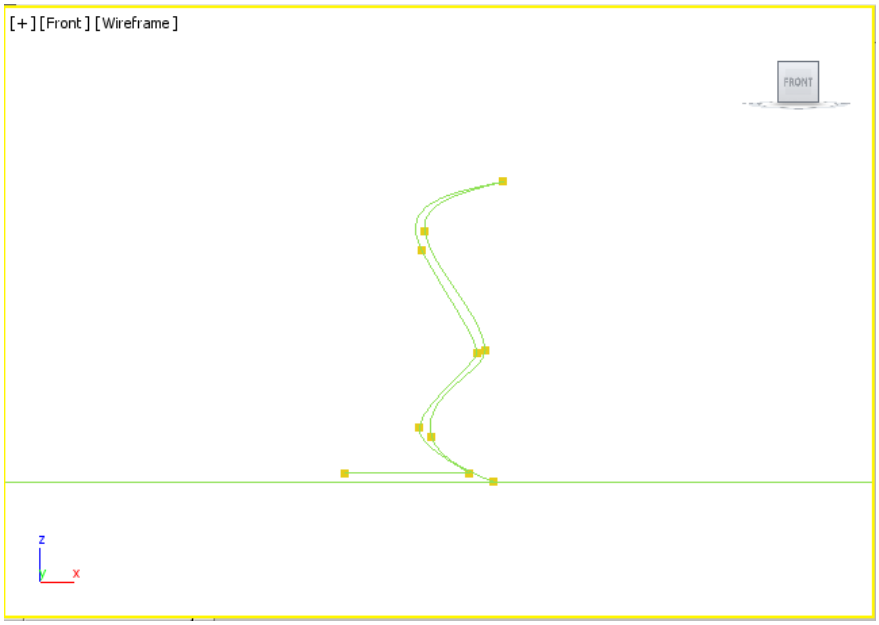


Figure 5-14 *The curve edited by moving the bezier handles of the vertices*

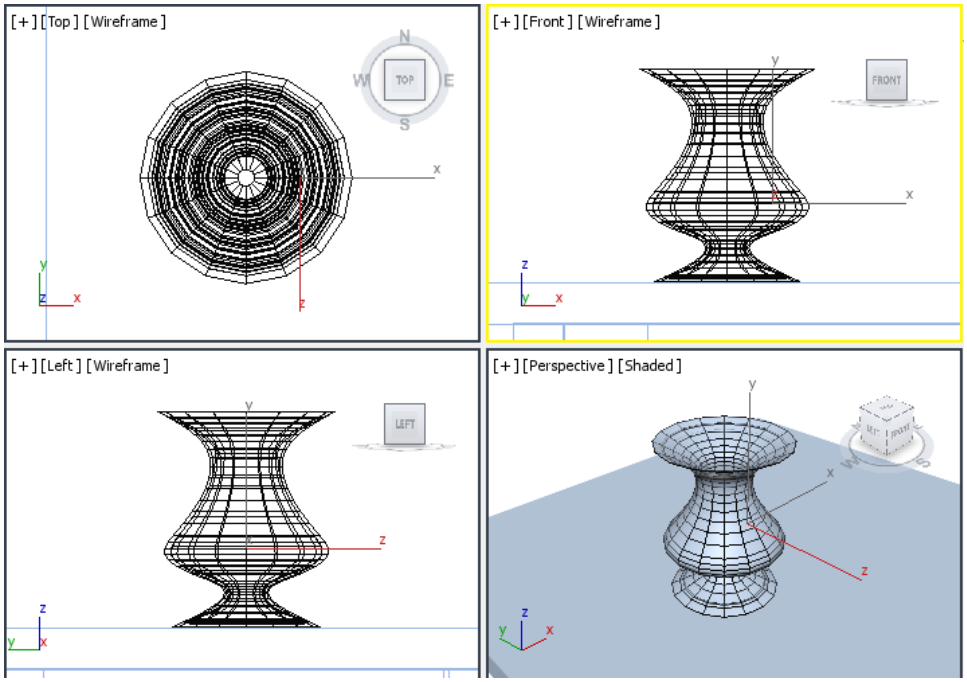


Figure 5-15 *The profile rotated to form the Jug*

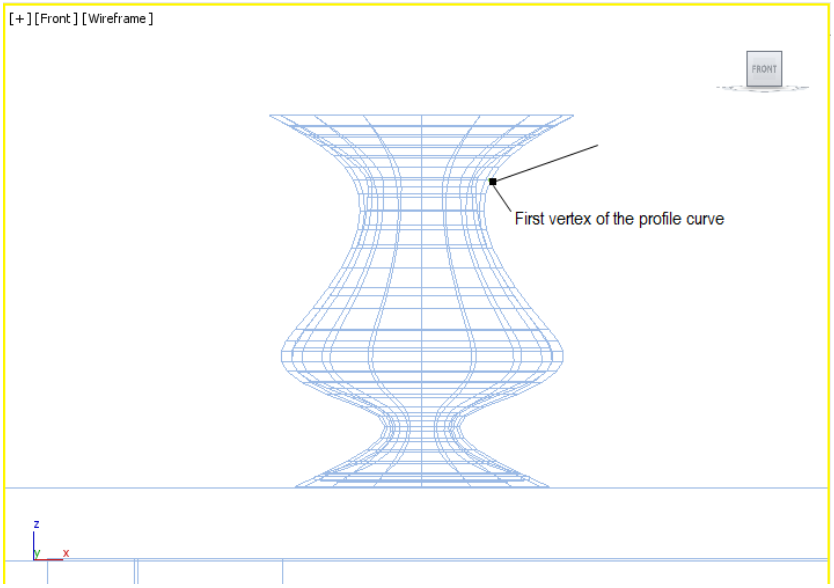


Figure 5-16 *The first vertex placed within the profile*

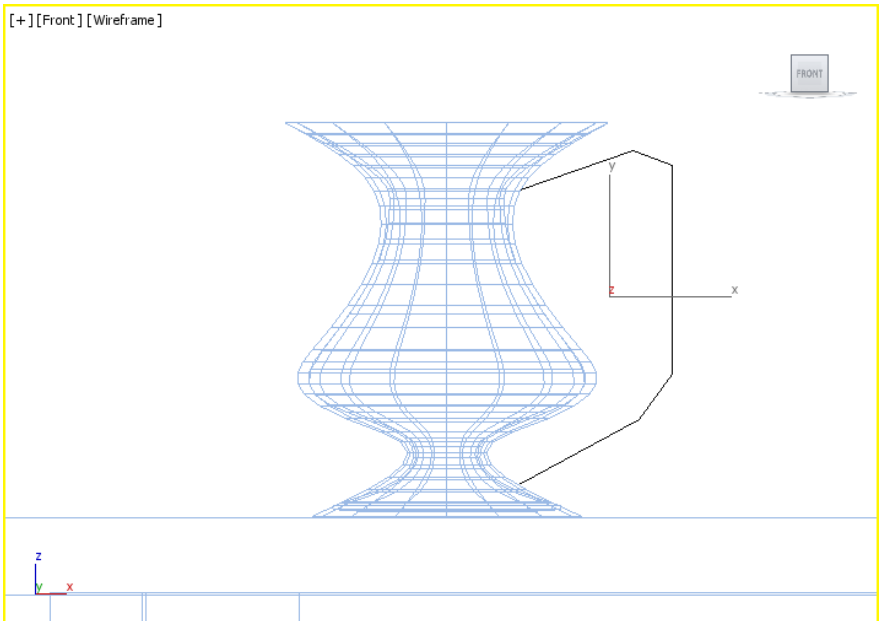


Figure 5-17 *The curve for the handle of the Jug*

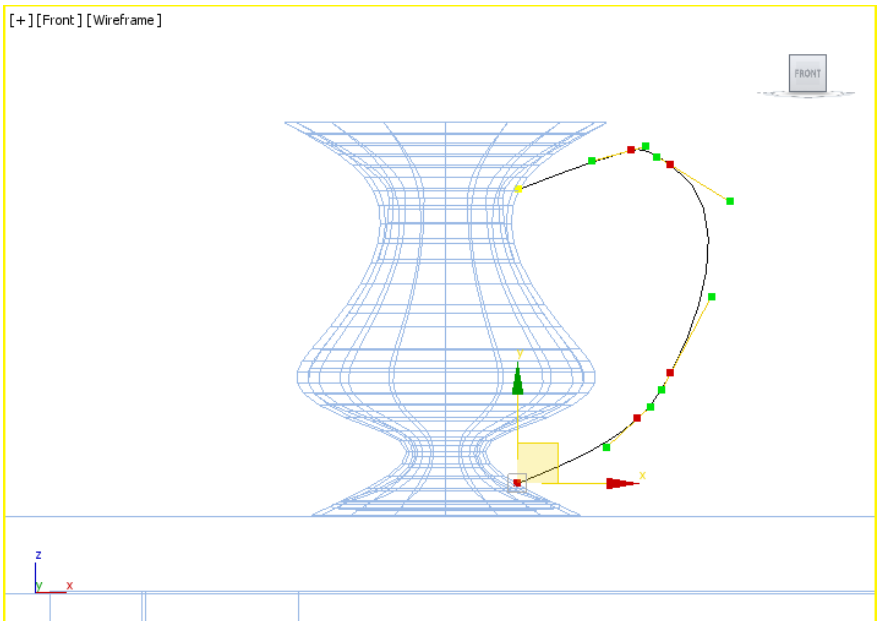


Figure 5-18 *The Handle modified by moving the bezier handles*

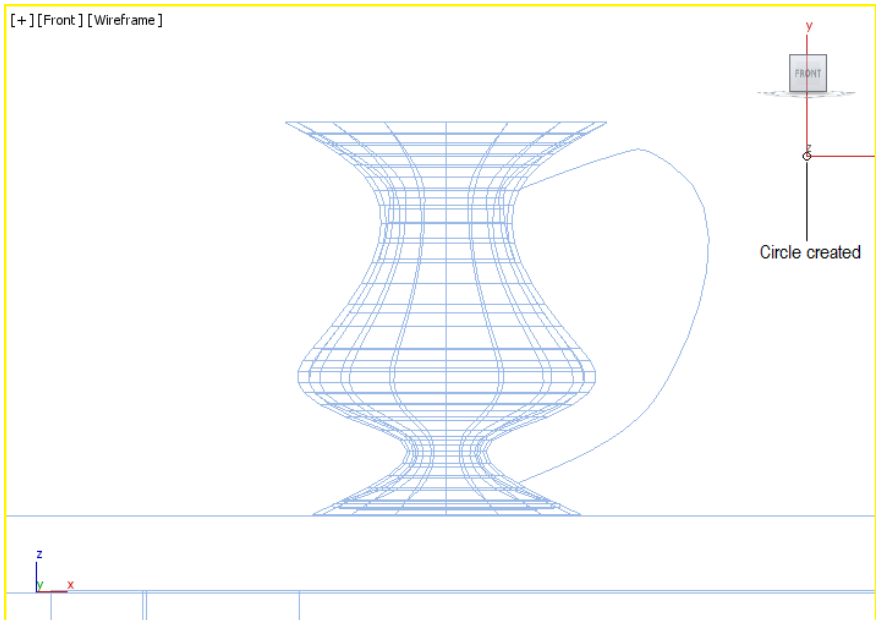


Figure 5-19 *The circle created*

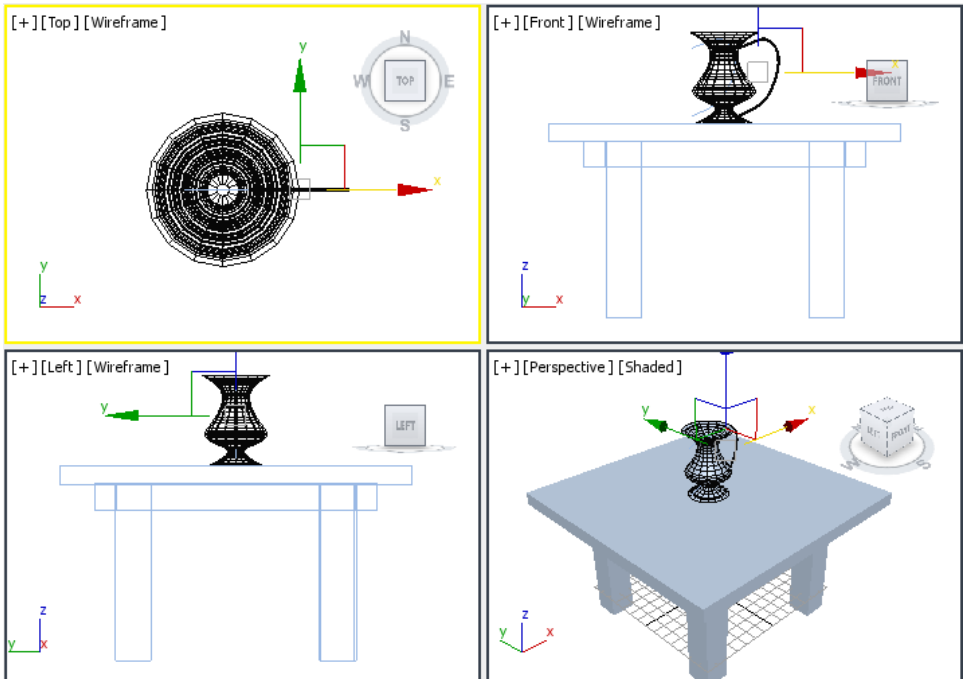


Figure 5-20 *Using the boolean operation to join Handle and Jug*

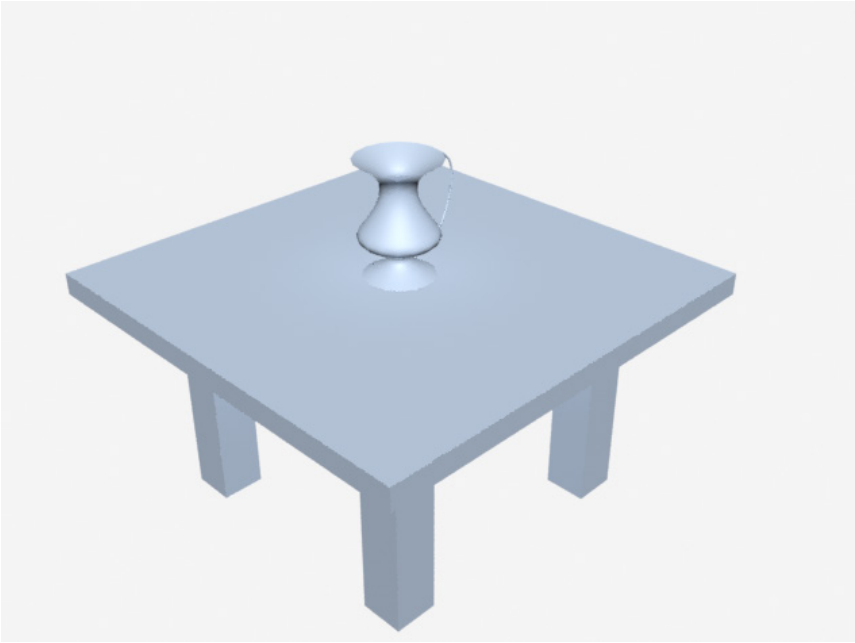


Figure 5-21 *The rendered image*

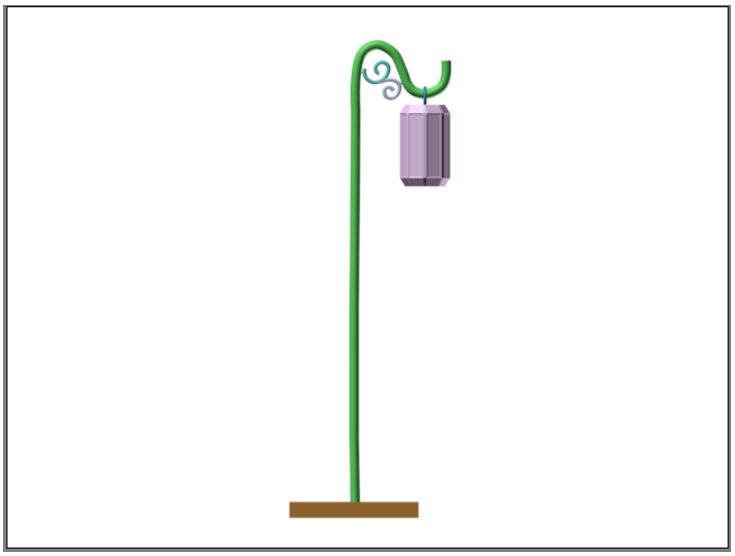


Figure 5-22 *The model of a lamp post*

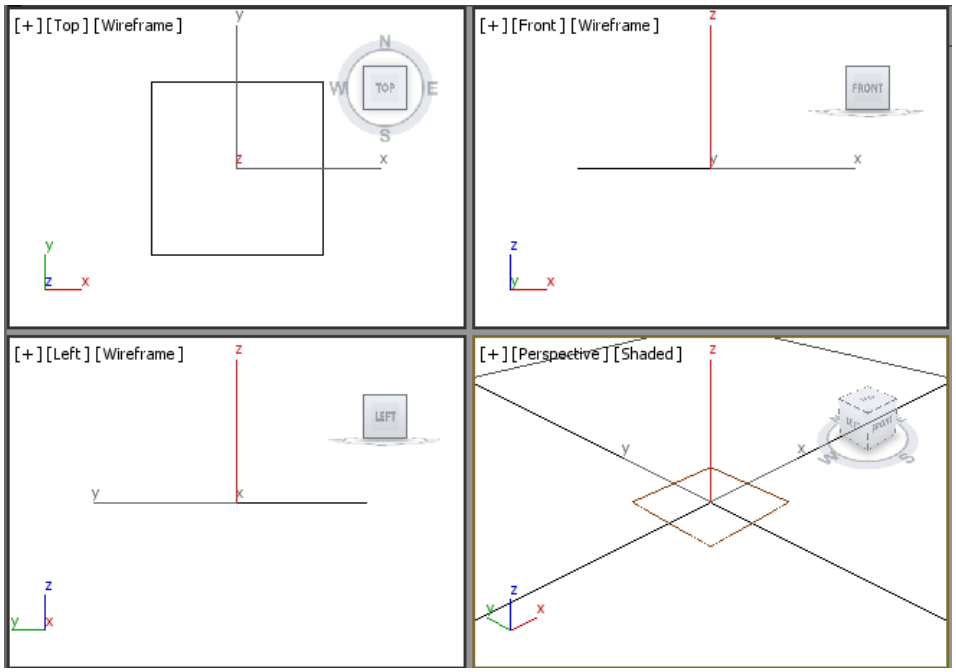


Figure 5-23 *The base zoomed in all viewports*

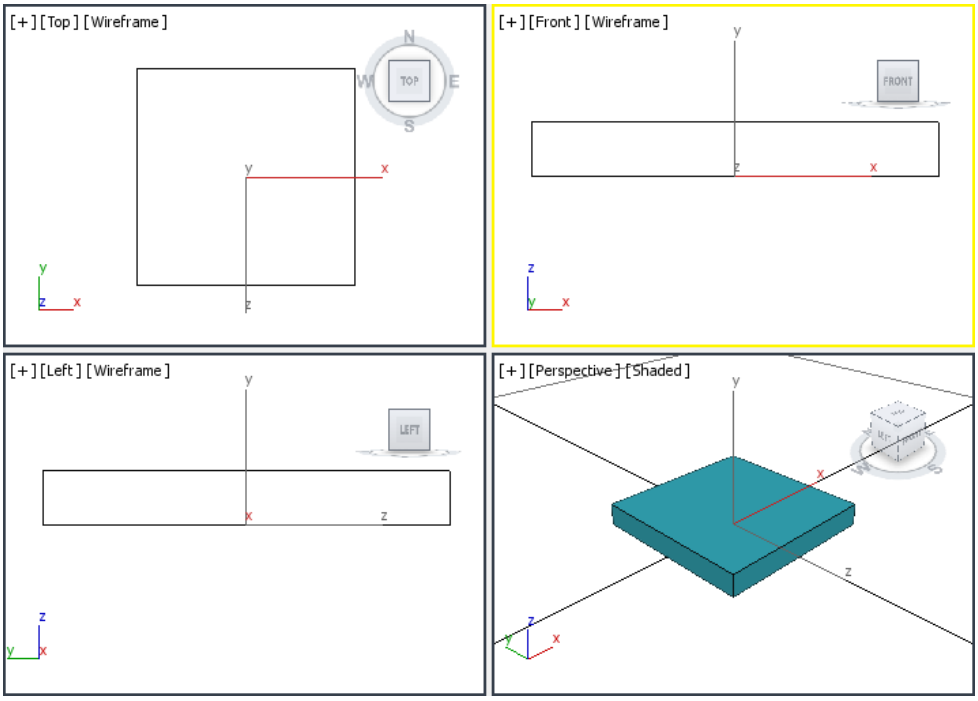


Figure 5-24 *The base extruded in all viewports*

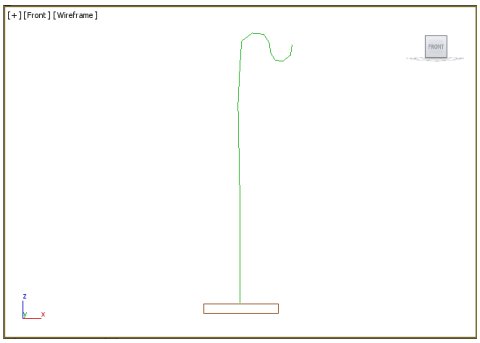


Figure 5-25 *The line created*

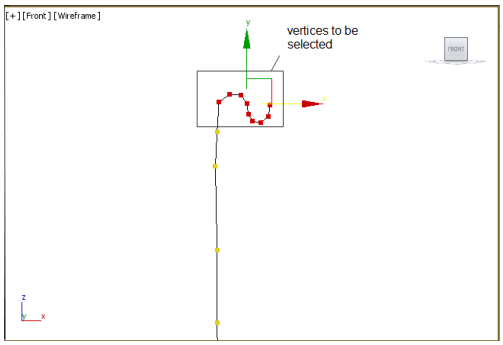


Figure 5-26 *The selected vertices*

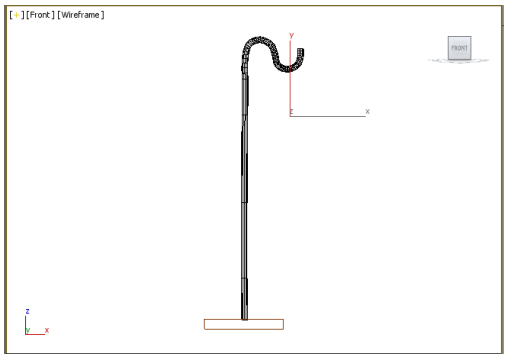


Figure 5-27 *The thickness added to pillar*

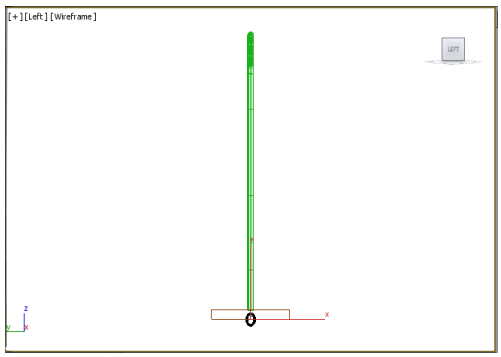


Figure 5-28 *The joint displayed*

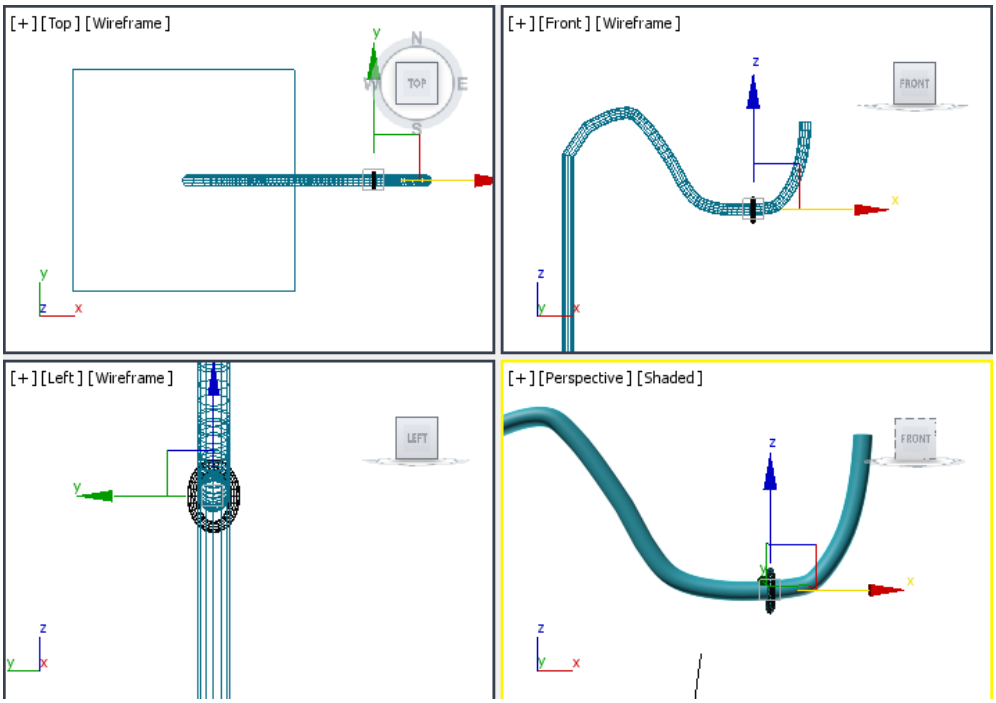


Figure 5-29 *The joint aligned in all viewports*

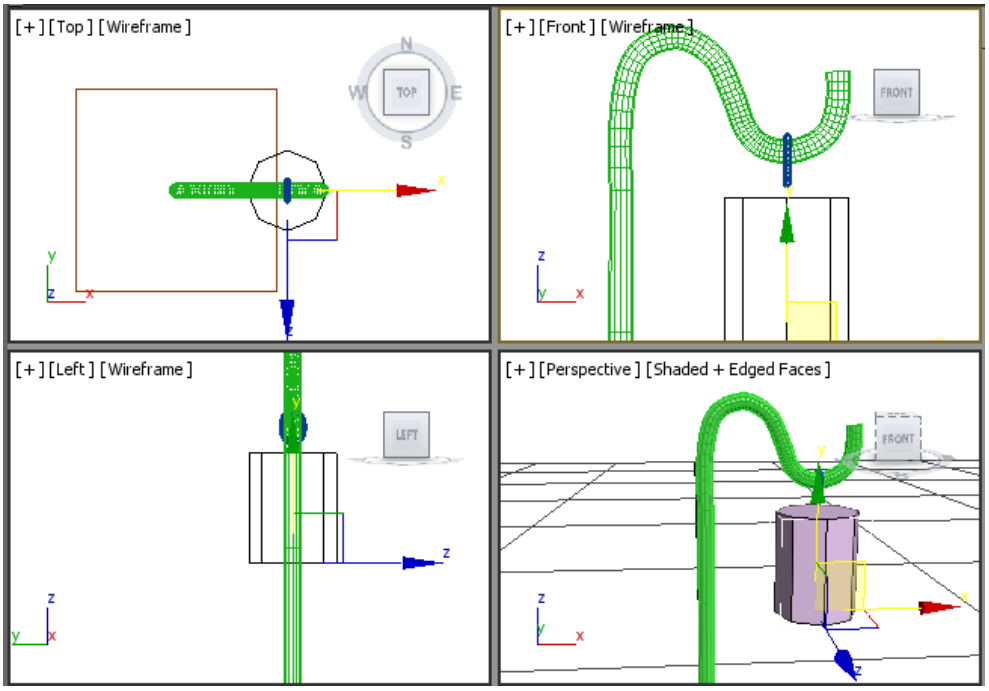


Figure 5-30 *The lamp holder aligned in all viewports*

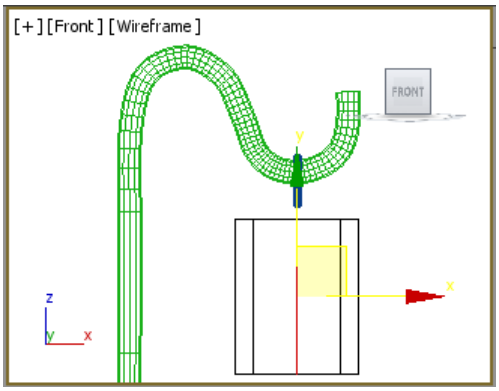


Figure 5-31 *The edge selected*

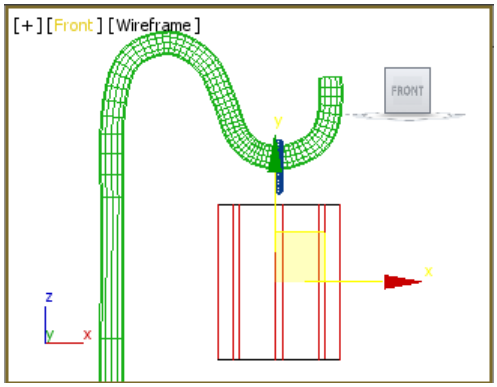


Figure 5-32 *Selected edges chamfered*

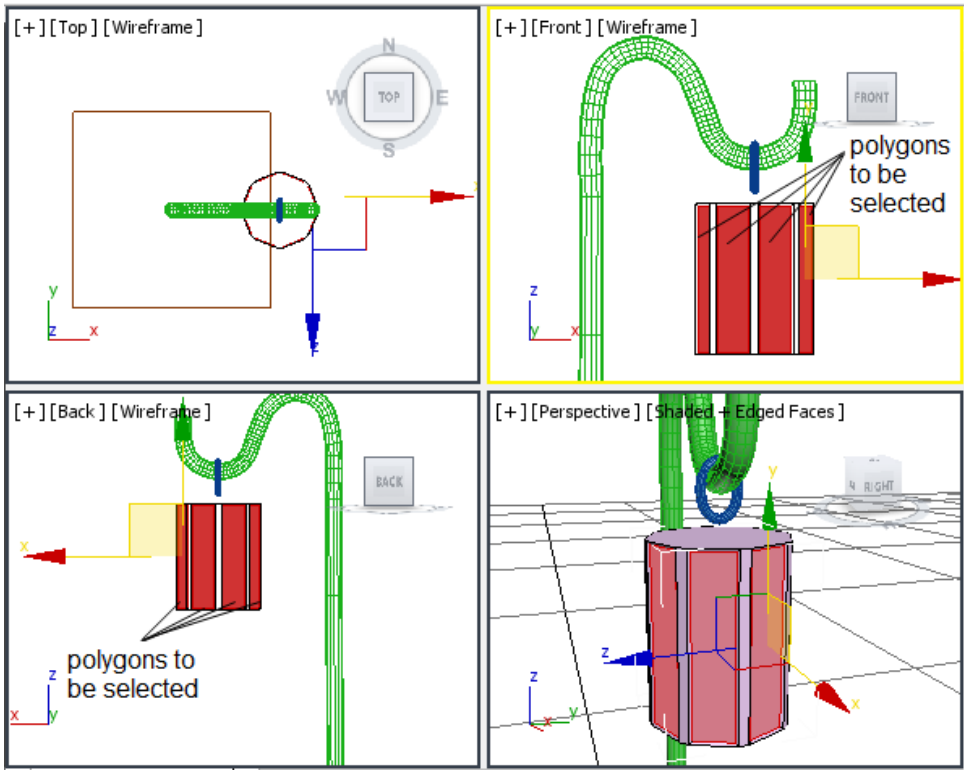


Figure 5-33 *The selected polygons between chamfered edges*

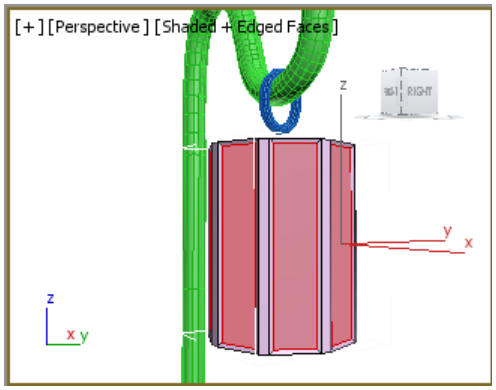


Figure 5-34 *The selected polygons beveled*

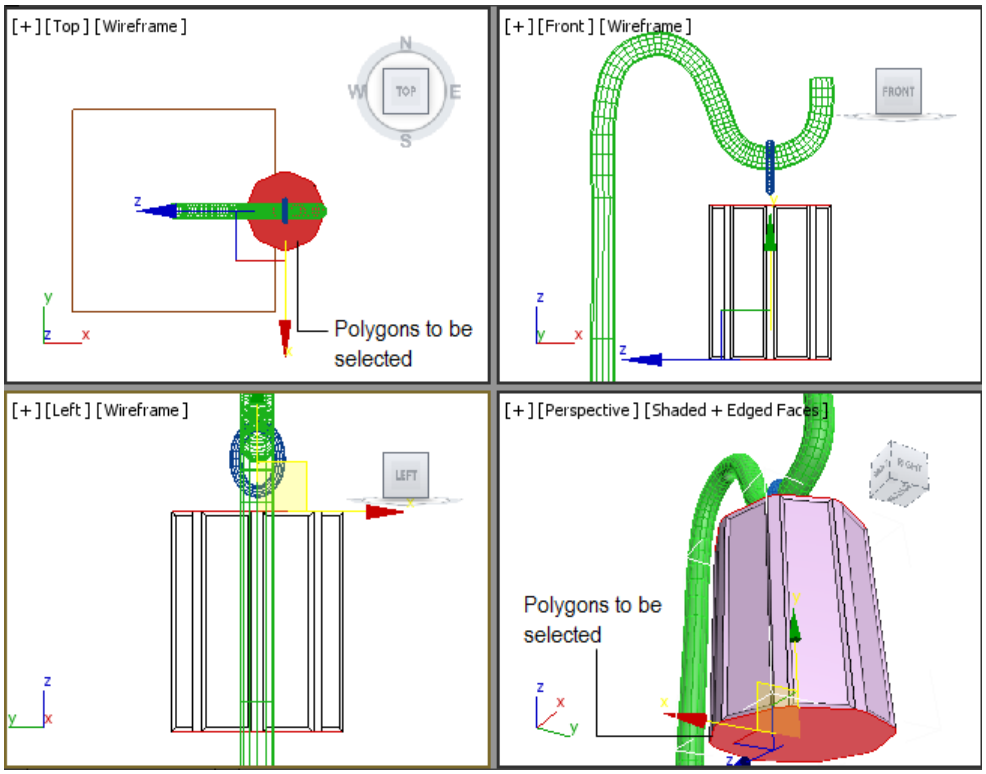


Figure 5-35 *The selected polygons*

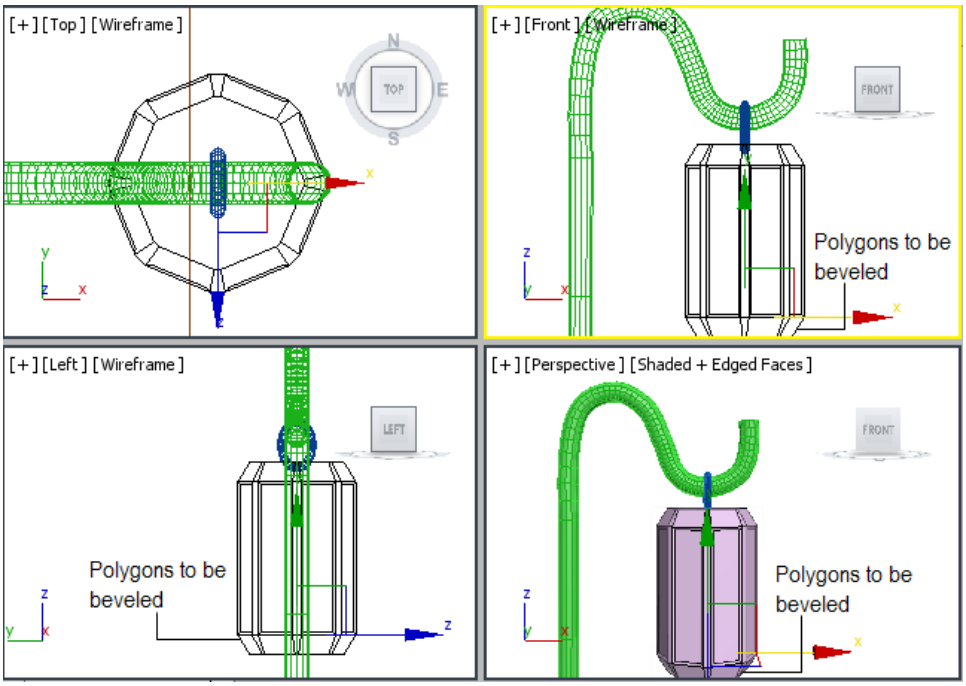


Figure 5-36 *The selected polygons beveled*

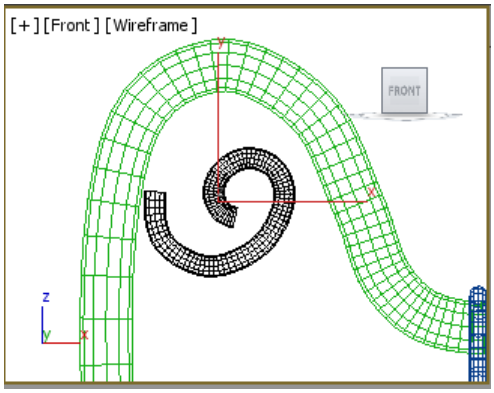


Figure 5-37 *The curve created*

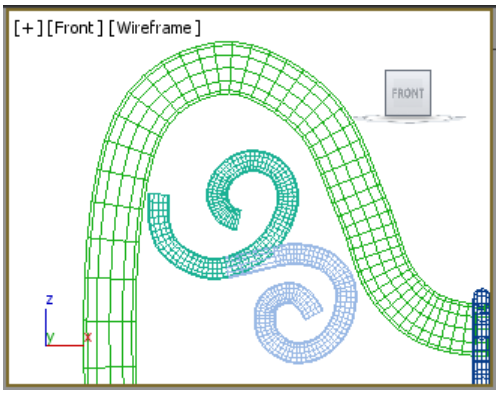


Figure 5-38 *The second curve created*

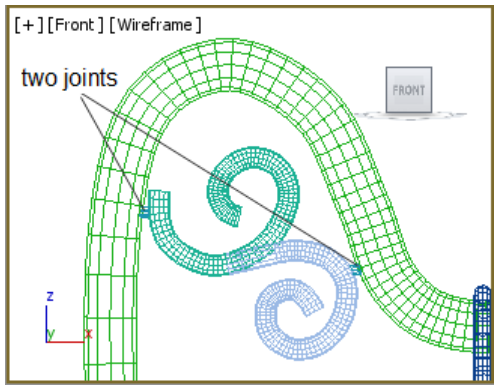


Figure 5-39 *Two joints created*

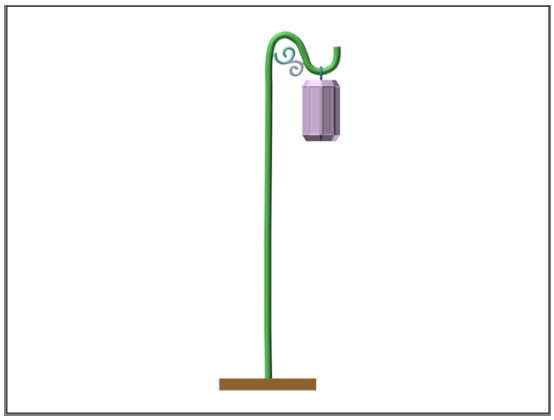


Figure 5-40 *The rendered image*

Exercise 1

Create a cup and a saucer, as shown in Figure 5-41 by using the profile curves shown in Figure 5-42. **(Expected time: 25 min)**

Figure 5-41 *The cup and saucer*

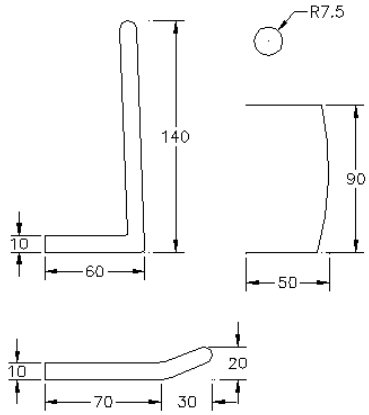
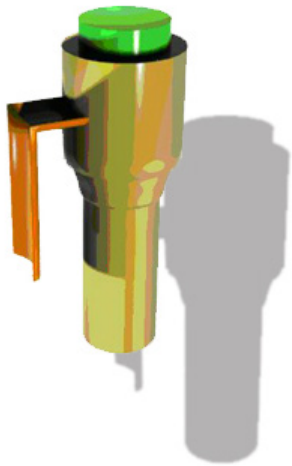


Figure 5-42 *Profile curves of the cup and saucer*

Chapter 6

Lofting, Twisting, and Deforming Objects



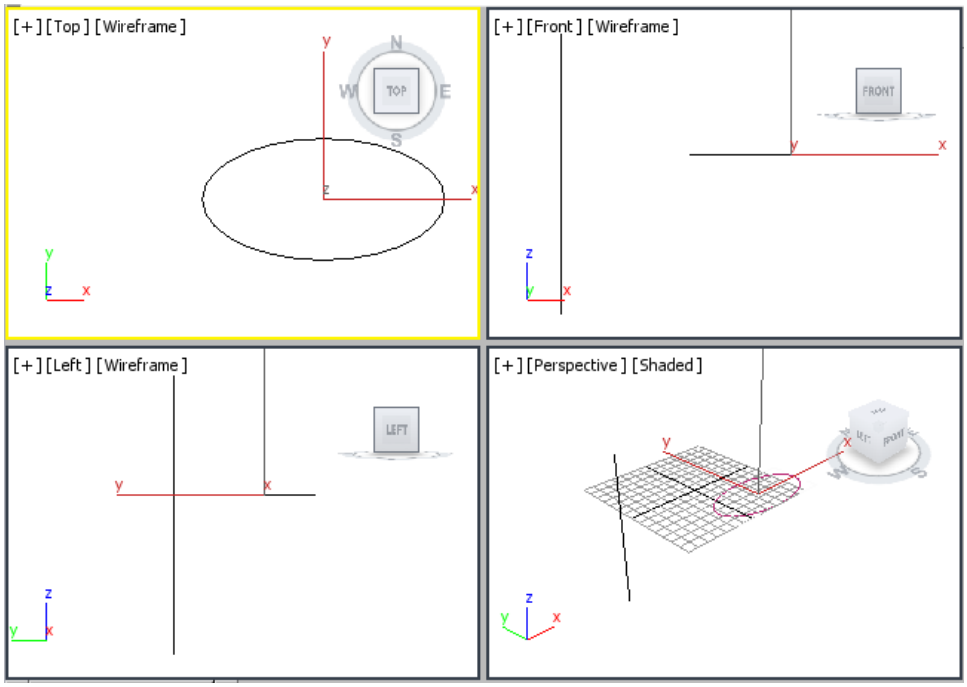


Figure 6-1 *A straight line and an ellipse*

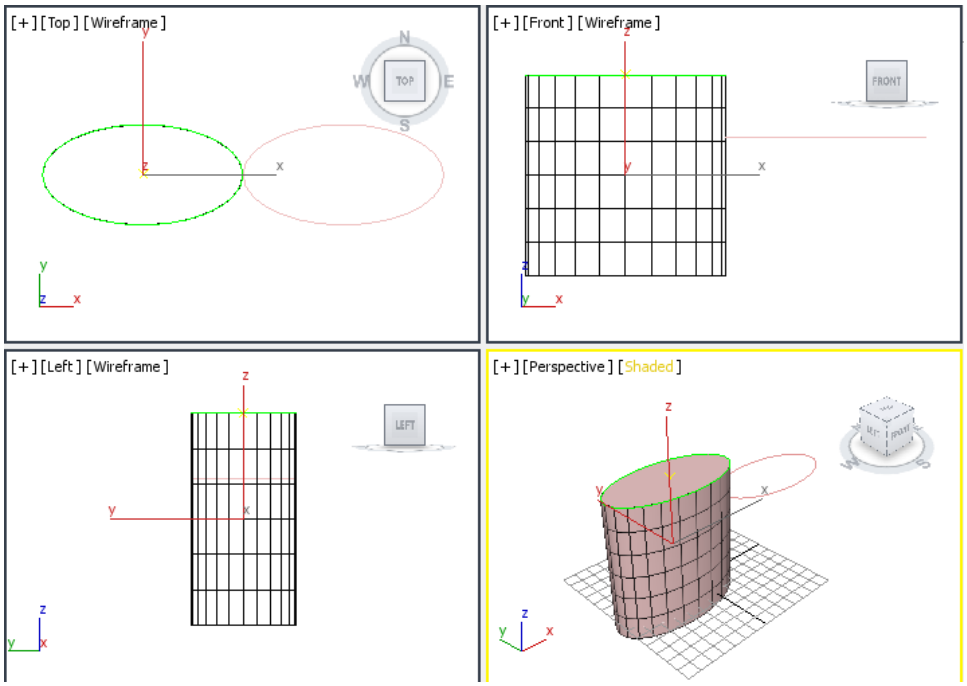


Figure 6-2 *The lofted object zoomed to its extents in all viewports*

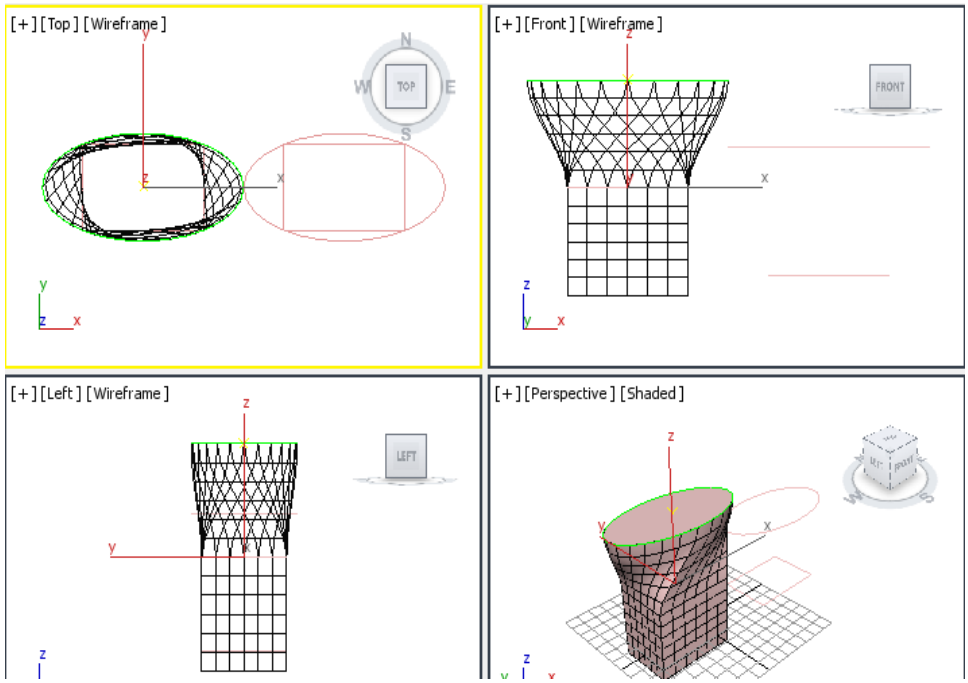


Figure 6-3 *A rectangular section created in the middle of the loft*

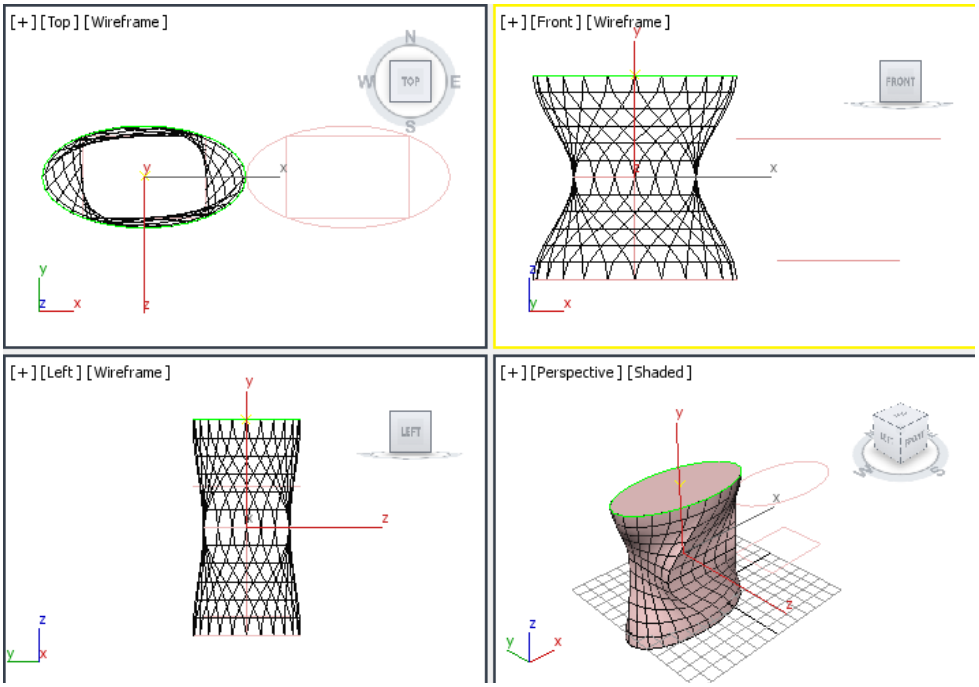


Figure 6-4 *The ellipse added as a shape at the end of the path*

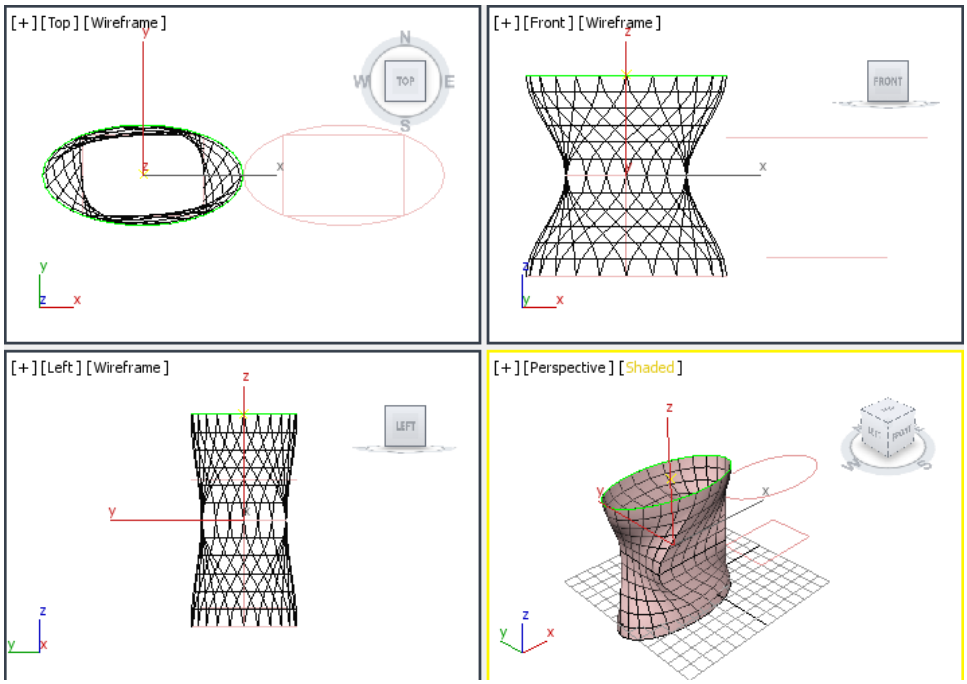


Figure 6-5 *The top end of the loft object opened*

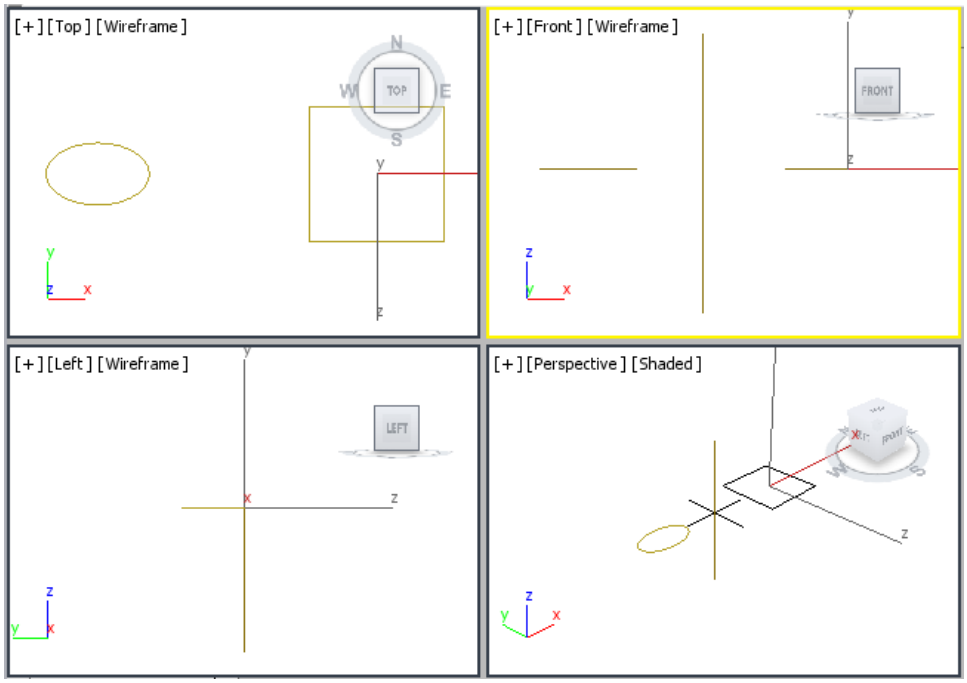


Figure 6-6 *The ellipse, rectangle, and line created*

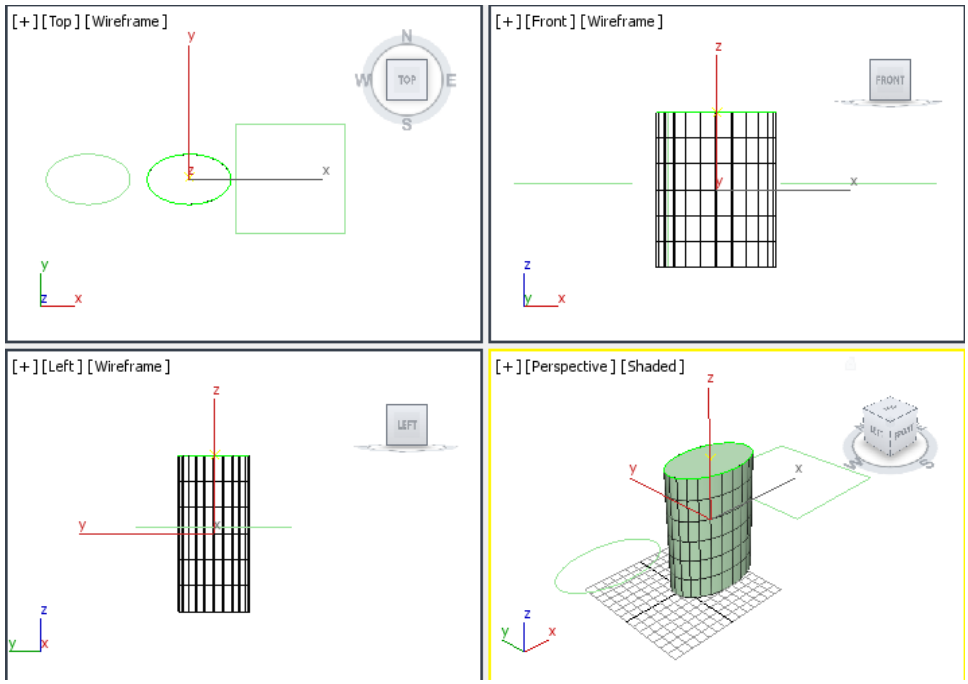


Figure 6-7 *The lofted object and the shapes zoomed to their extents in all viewports*

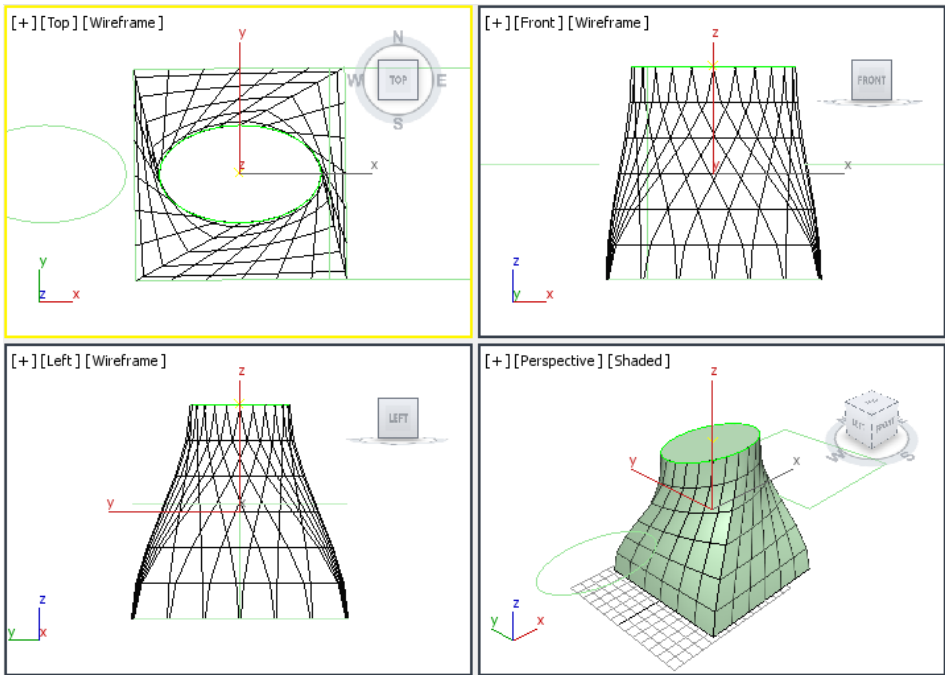


Figure 6-8 *The rectangle used as one of the lofted objects*

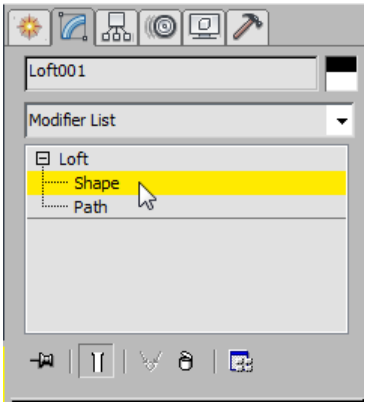


Figure 6-9 *The* ***Shape*** *sub-object level selected in the modifier stack*

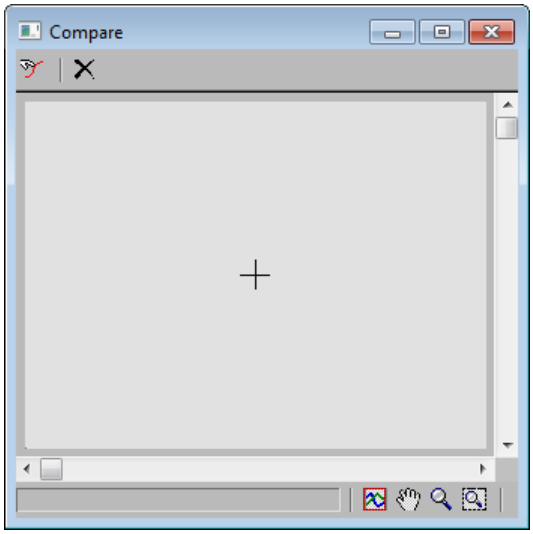


Figure 6-10 *The* ***Compare*** *window*

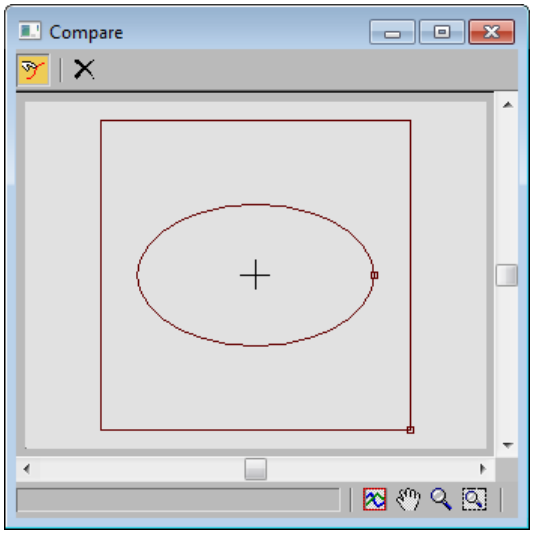


Figure 6-11 *The ellipse and rectangle displayed in the* ***Compare*** *window*

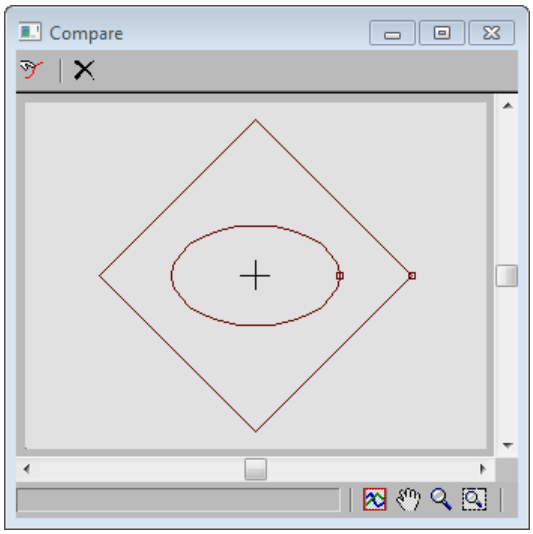


Figure 6-12 *The rectangle rotated to align first vertices of both shapes*

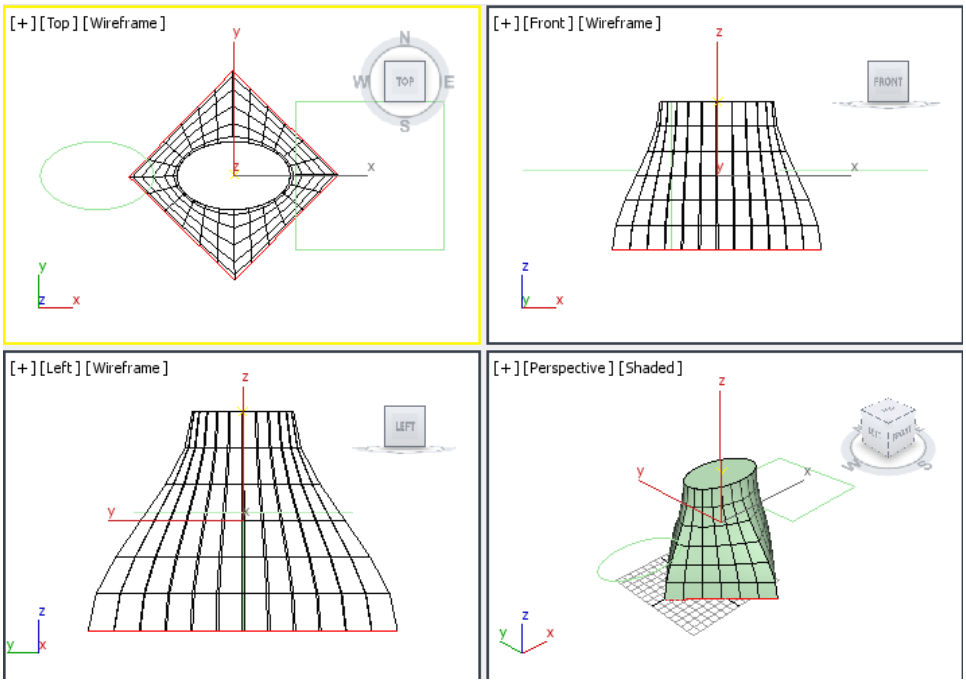


Figure 6-13 *The twist removed from the lofted object by rotating the rectangle shape*

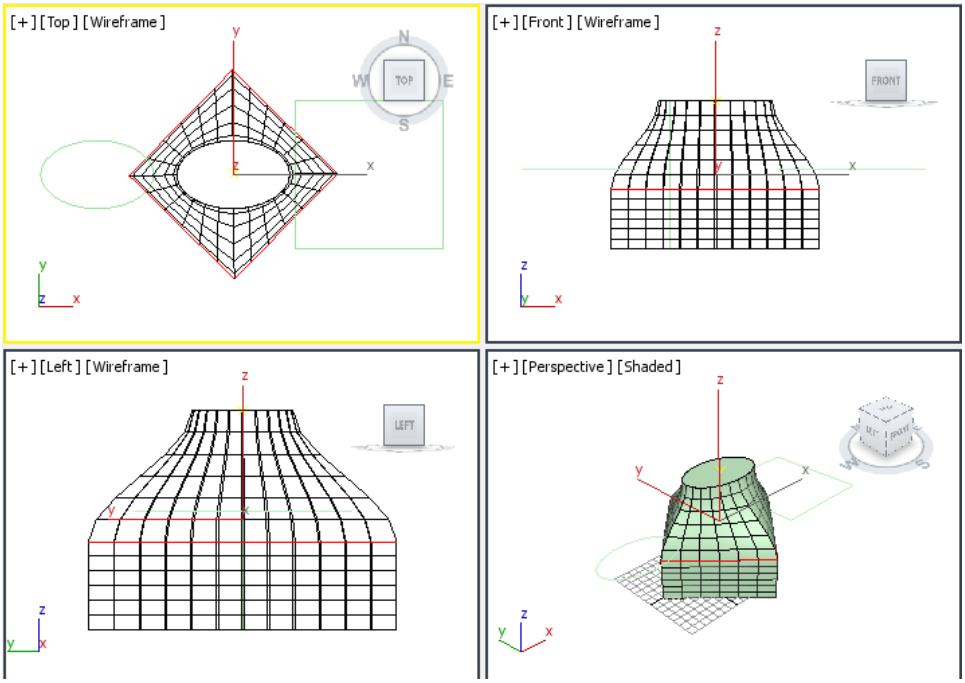


Figure 6-14 *The rectangle shape moved to the 60% position on the path*

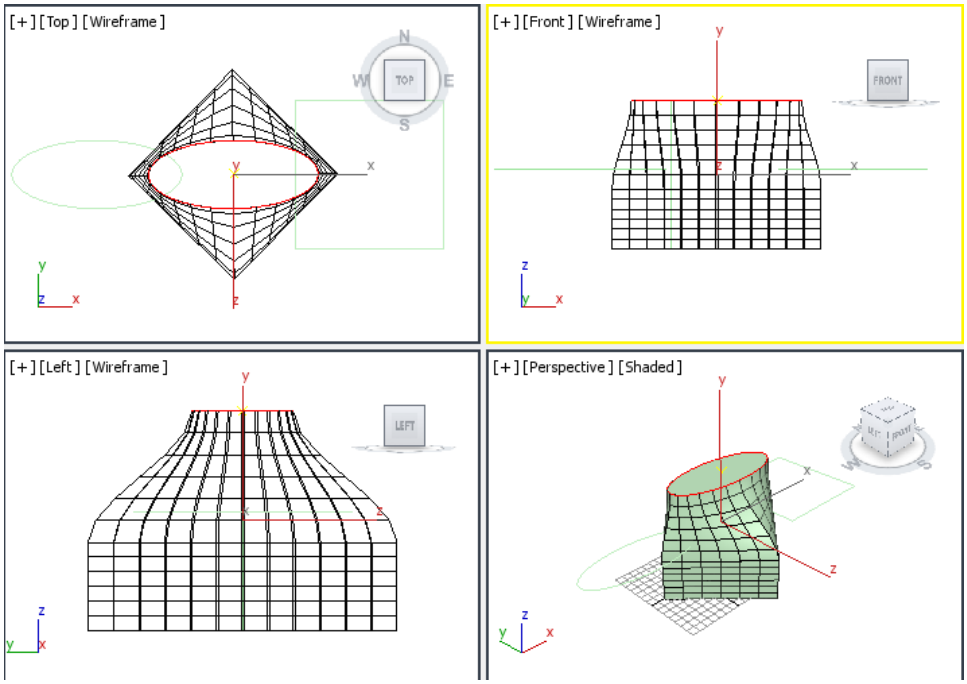


Figure 6-15 *Width of the ellipse increased*

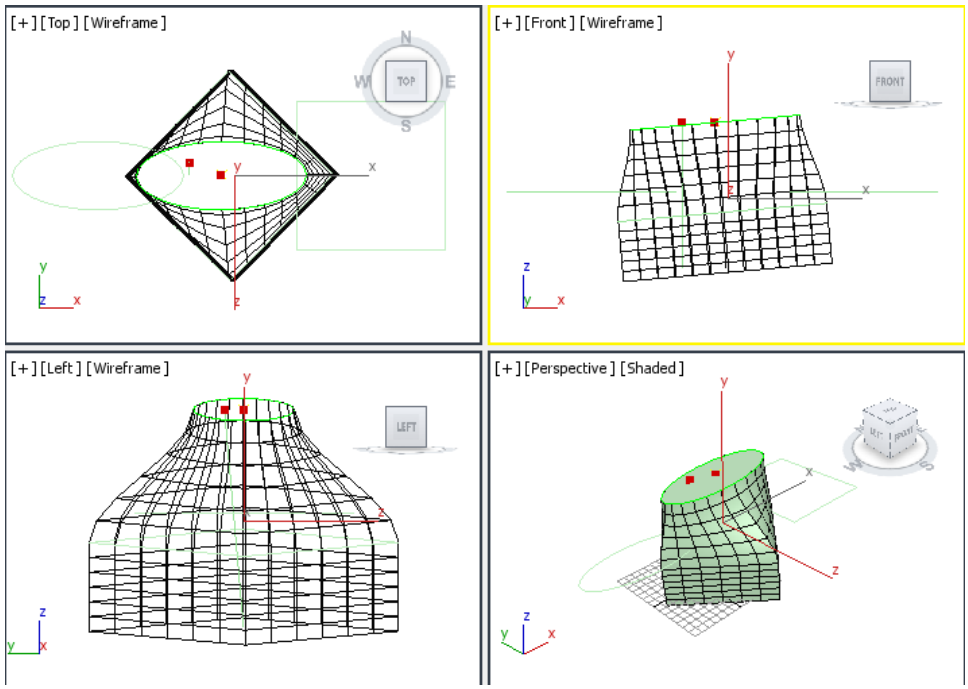


Figure 6-16 *The top vertex of the path moved*

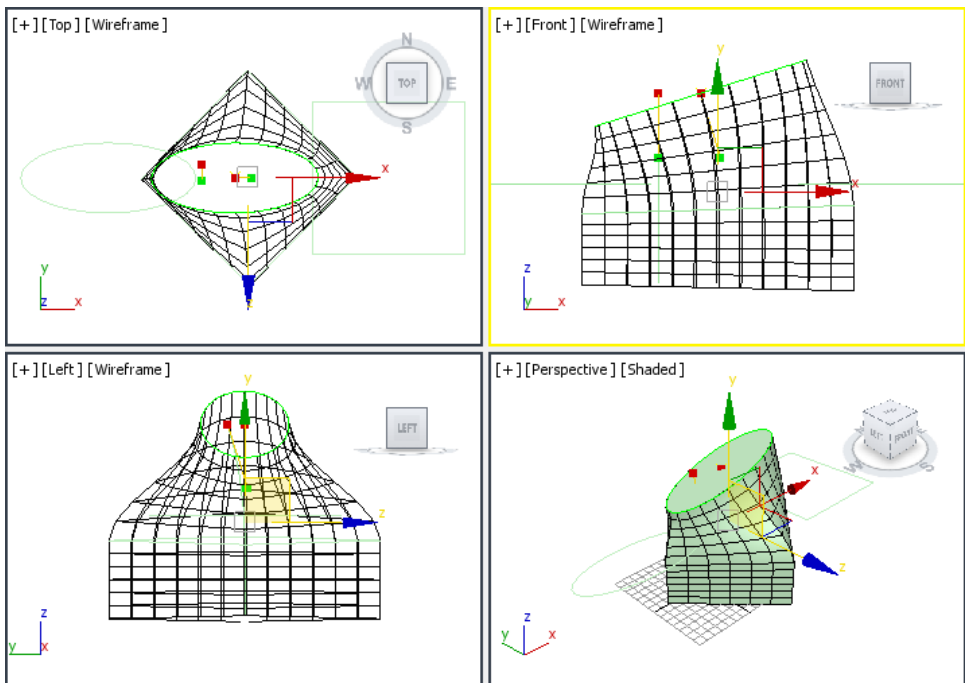


Figure 6-17 *The lofted object curves with the path*

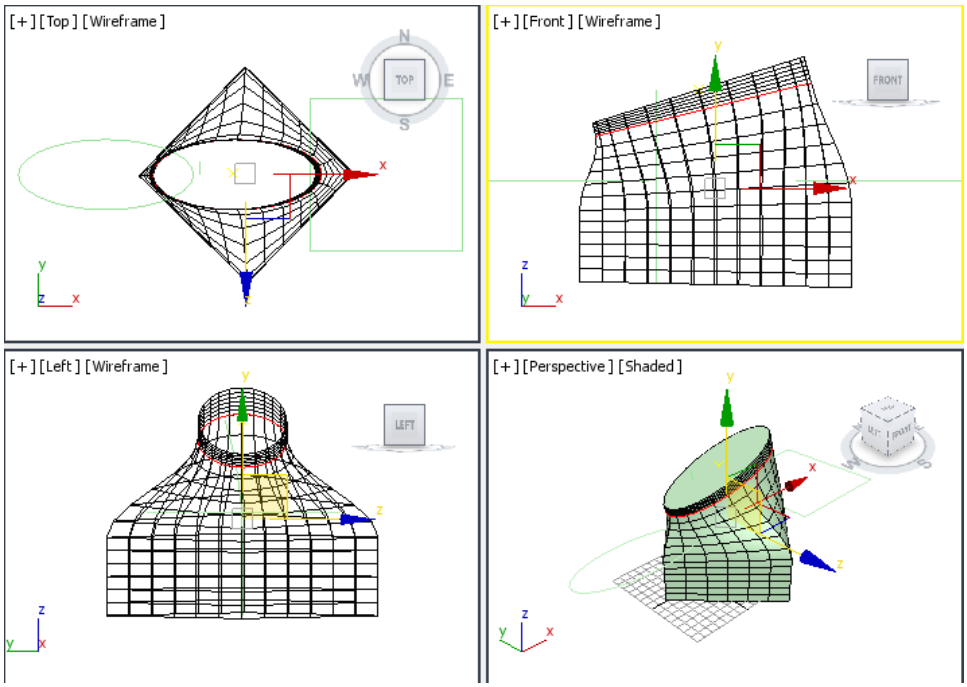


Figure 6-18 *The ellipse moved away from the path (to the right)*

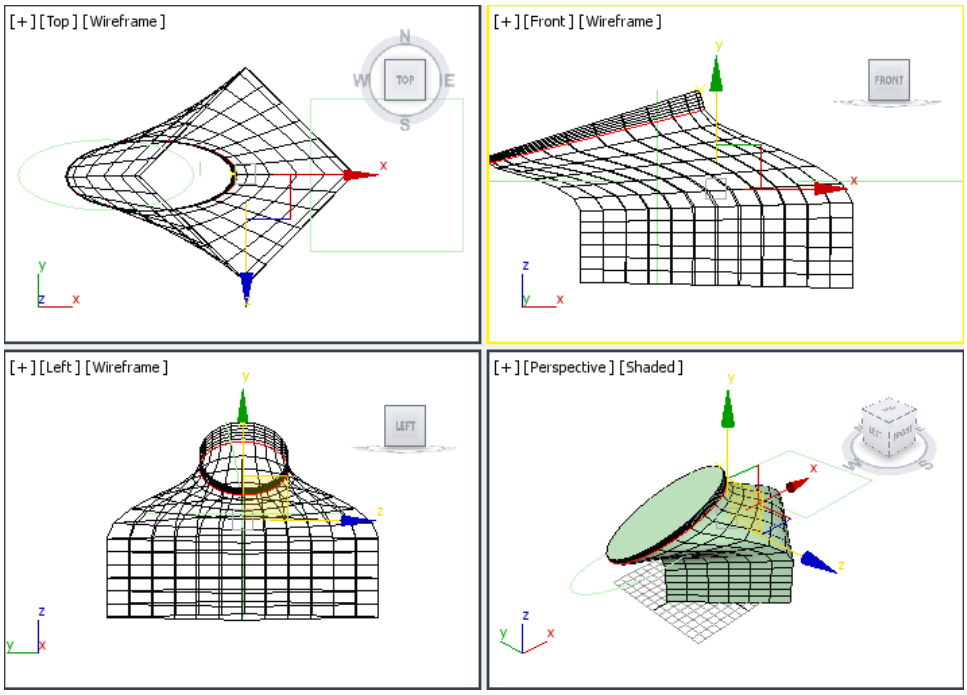


Figure 6-19 *The ellipse aligned on the right by using the* ***Right*** *button*

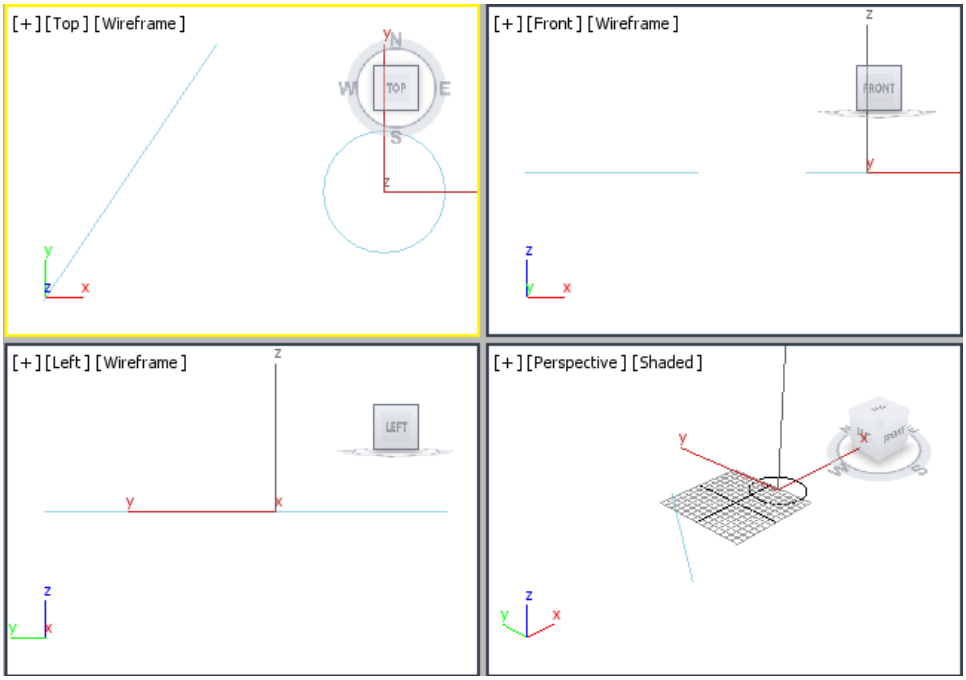


Figure 6-20 *A line and a circle created*

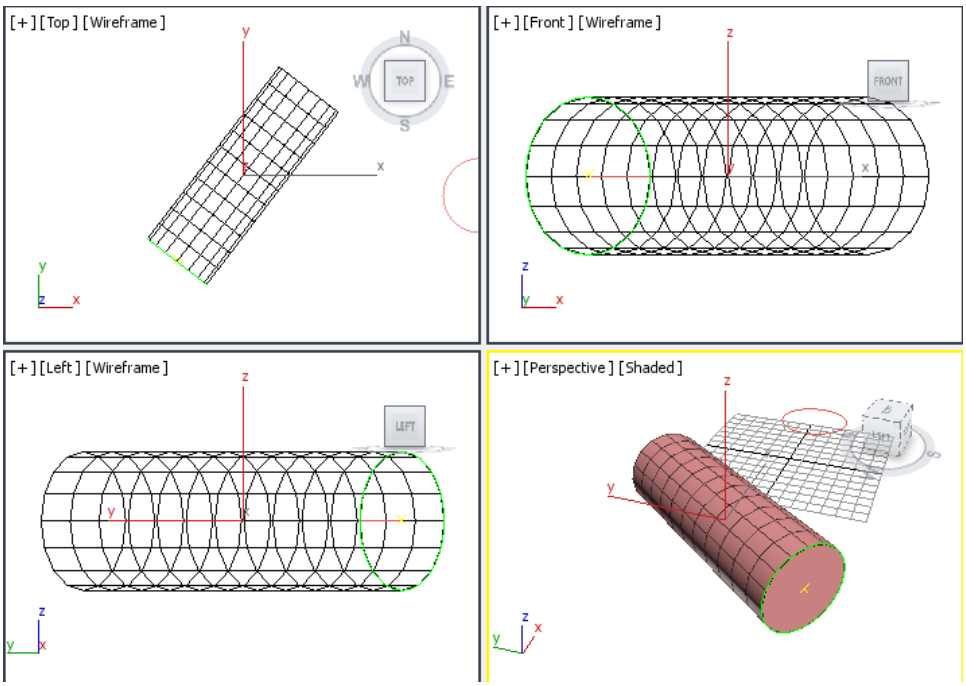


Figure 6-21 *The lofted object zoomed*

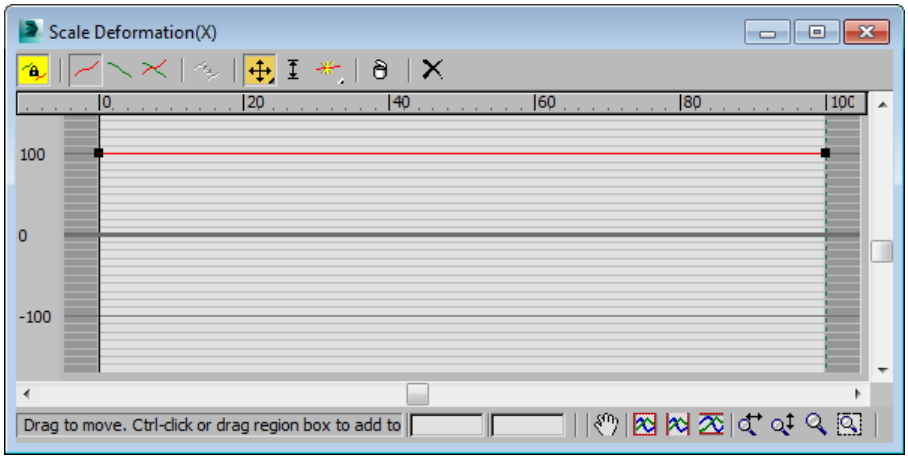


Figure 6-22 *The* ***Scale Deformation(X)*** *dialog box*

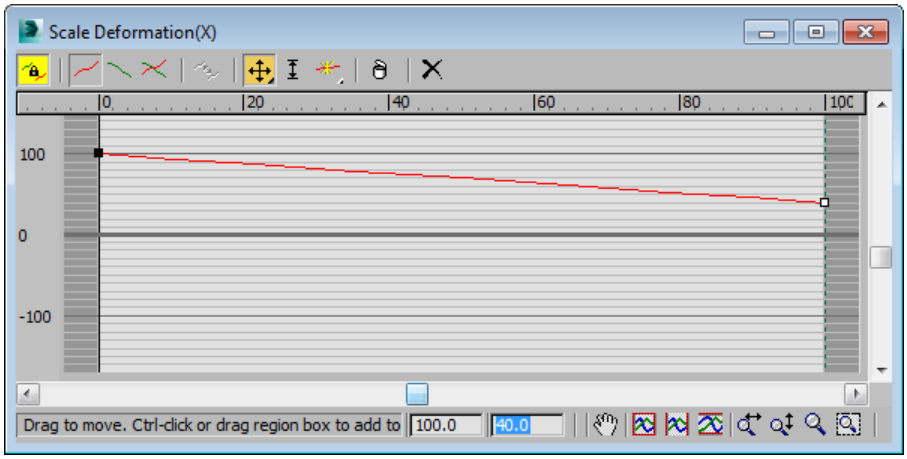


Figure 6-23 *The vertex moved in the* ***Scale Deformation(X)*** *dialog box*

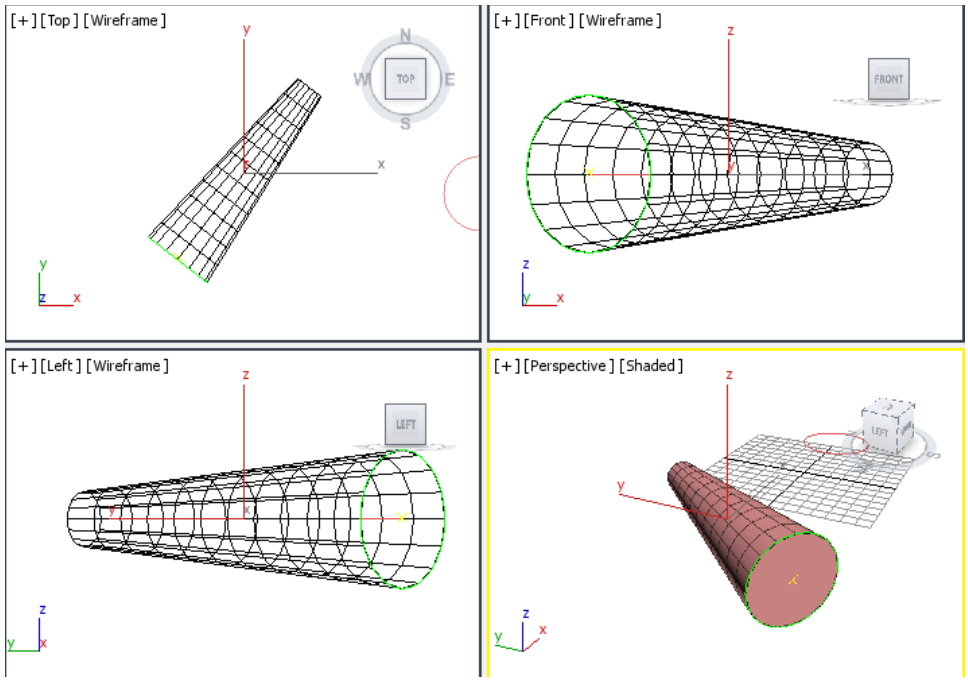


Figure 6-24 *The lofted object tapered after moving the vertex in the* ***Scale Deformation(X)*** *dialog box*

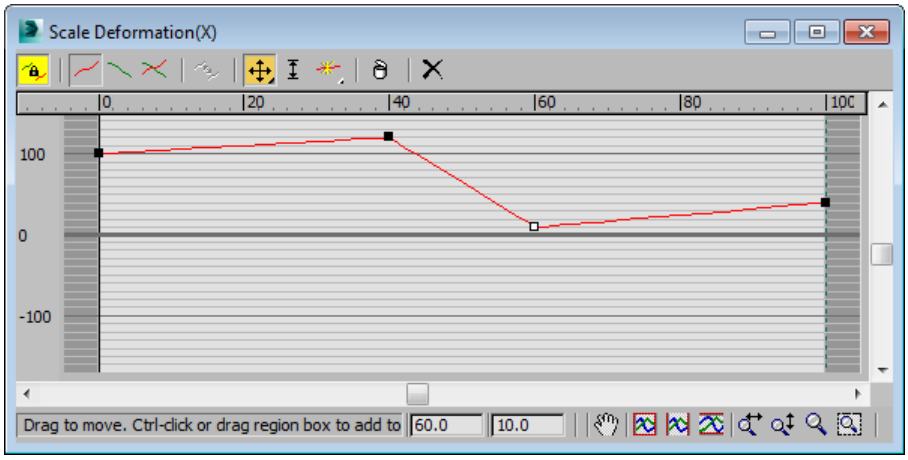


Figure 6-25 *Two vertices added and moved in the* ***Scale Deformation(X)*** *dialog box*

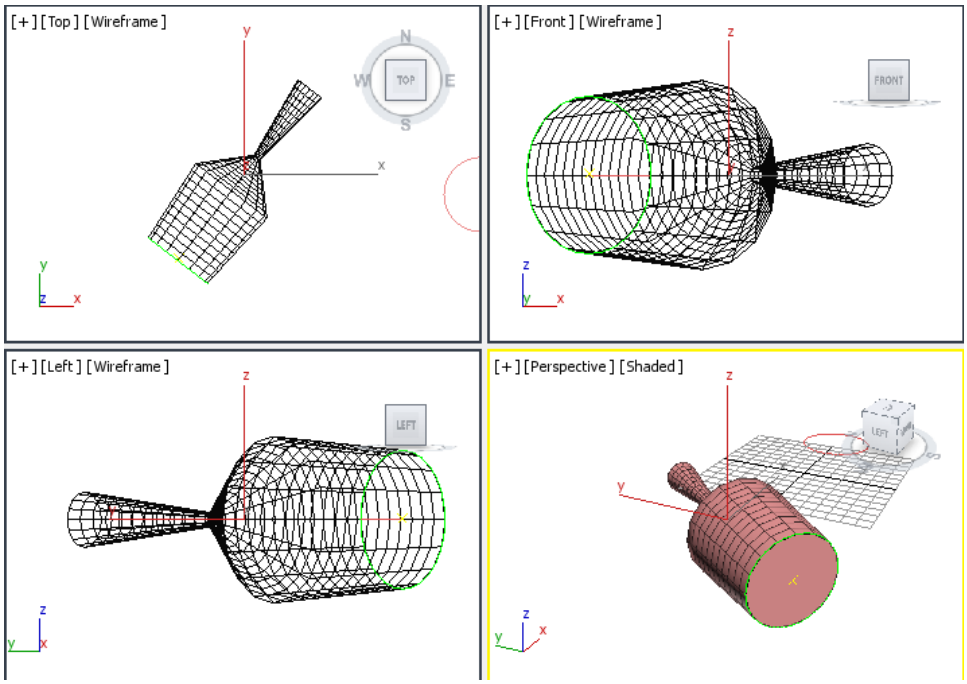


Figure 6-26 *The modified lofted object after adding and moving the vertices*

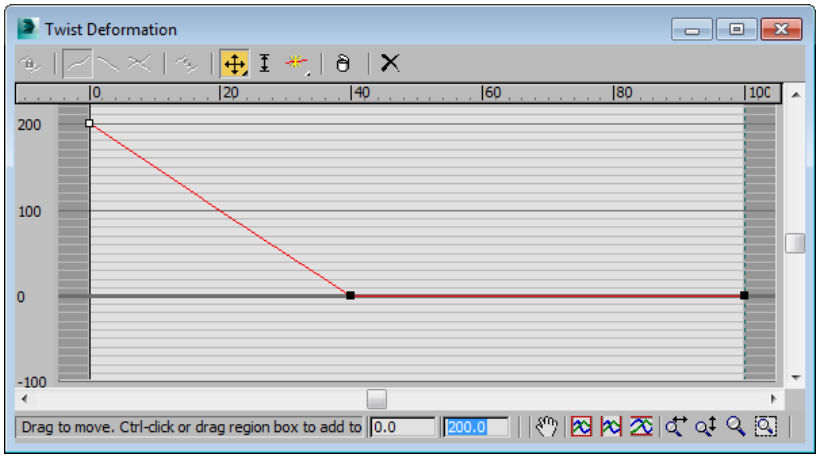


Figure 6-27 *Moving the vertex up to 200 degrees*

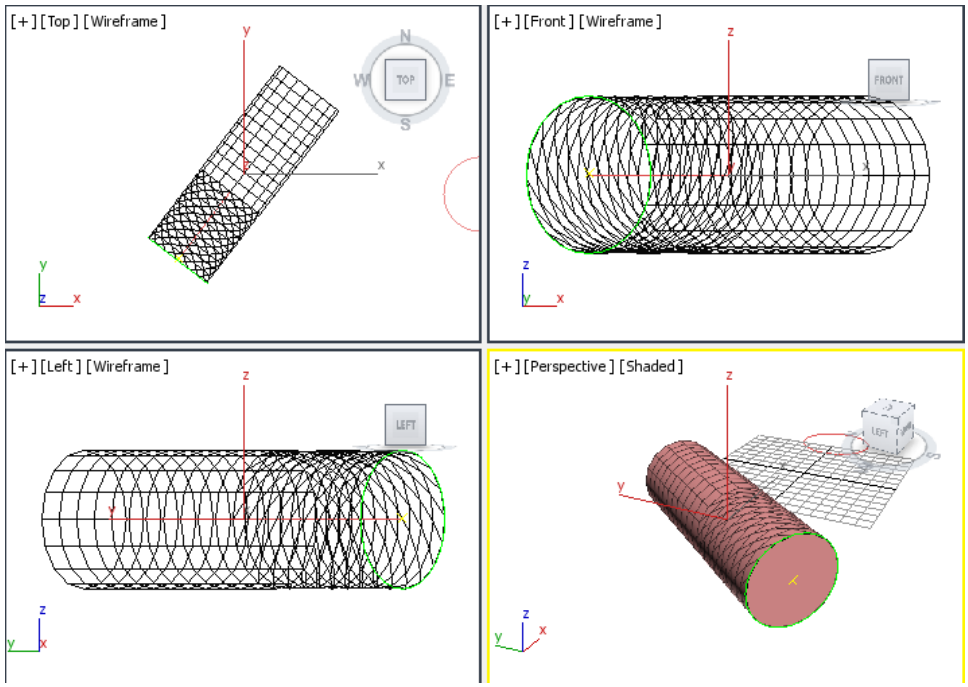


Figure 6-28 *The modified loft object after adding a vertex and moving the left vertex*

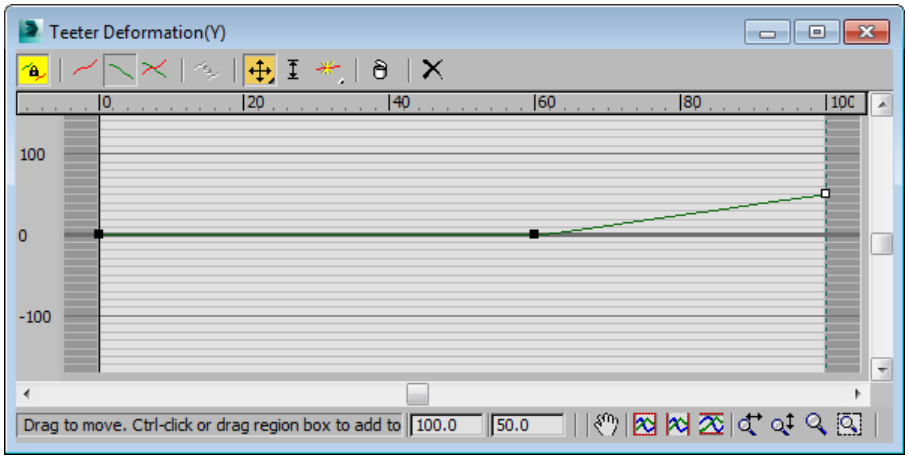


Figure 6-29 *Moving the right-hand vertex up by five lines*

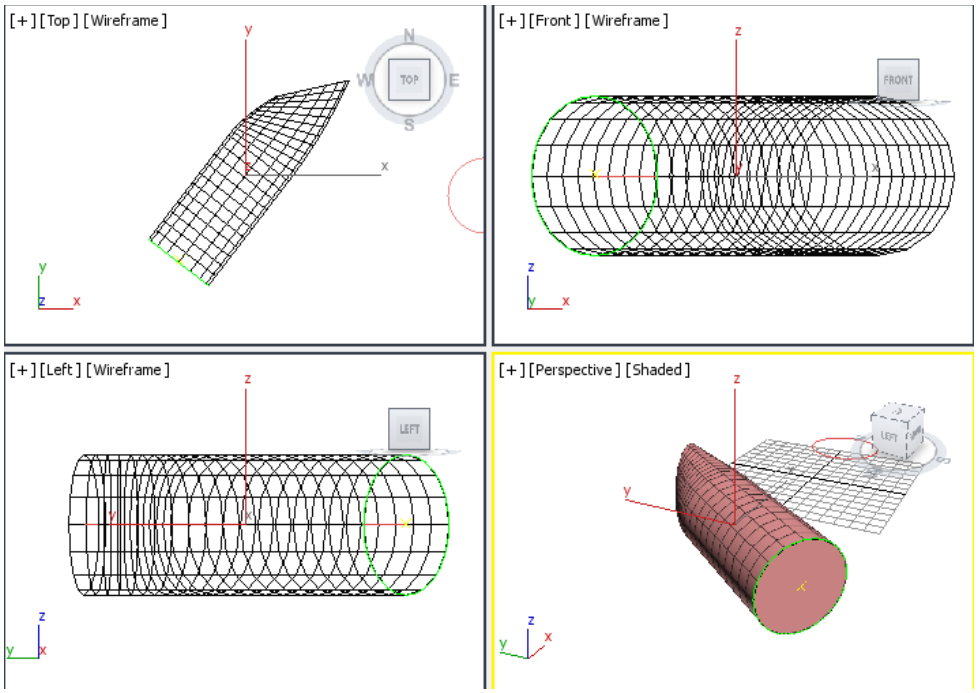


Figure 6-30 *The lofted object tilted along the Y axis*

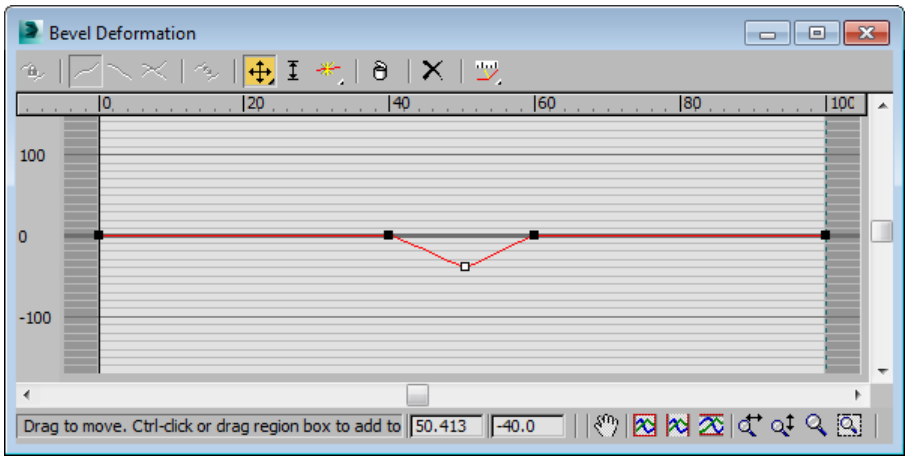


Figure 6-31 *The three vertices added in the* ***Bevel Deformation*** *dialog box and the middle vertex moved down*

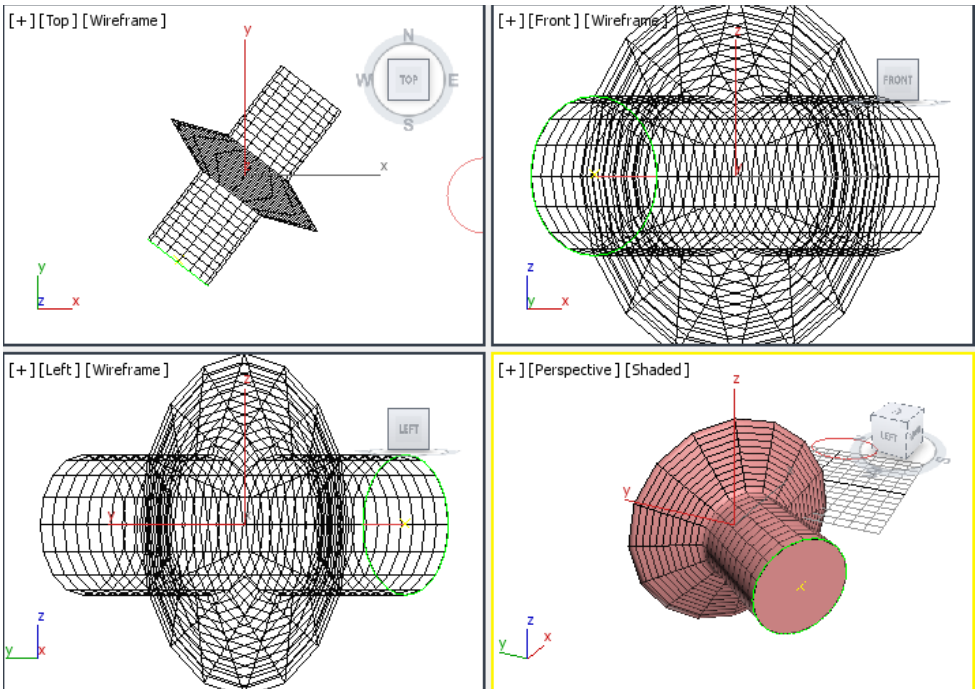


Figure 6-32 *The lofted object beveled after inserting three vertices and moving the middle one*

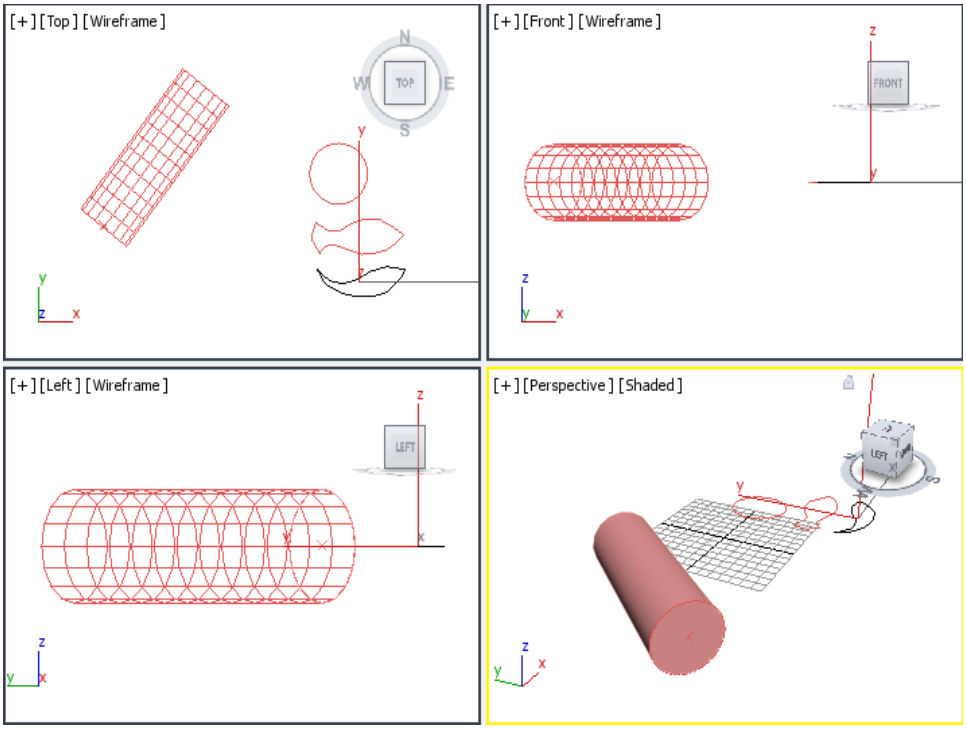


Figure 6-33 *Two closed shapes created in the Top viewport*

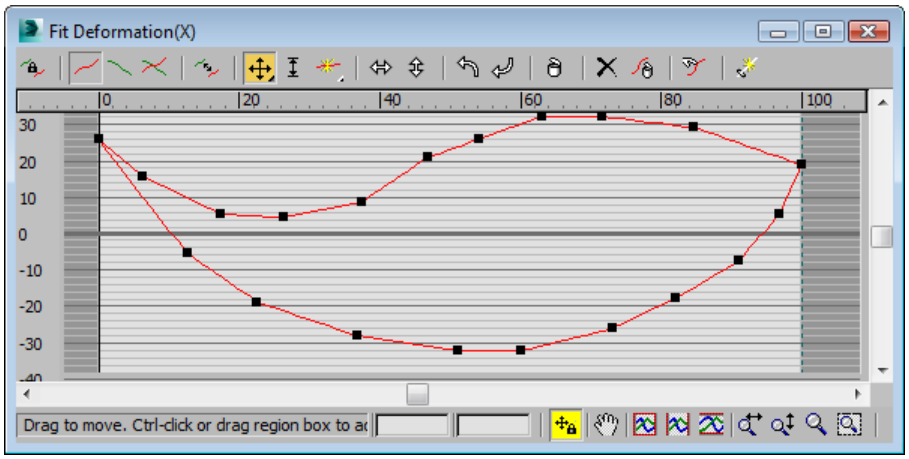


Figure 6-34 *Fit Shape (Top) displayed in the* ***Fit Deformation(X)*** *dialog box*

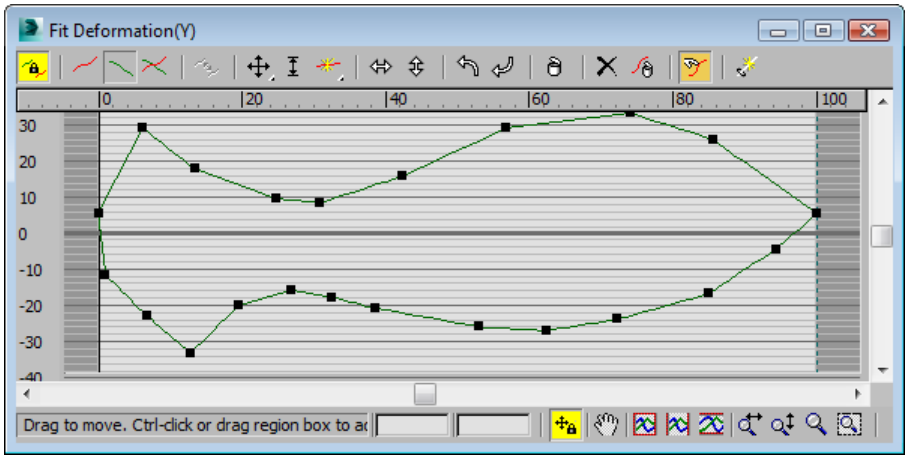


Figure 6-35 *Fit Shape (Side) displayed in the* ***Fit Deformation(Y)*** *dialog box*

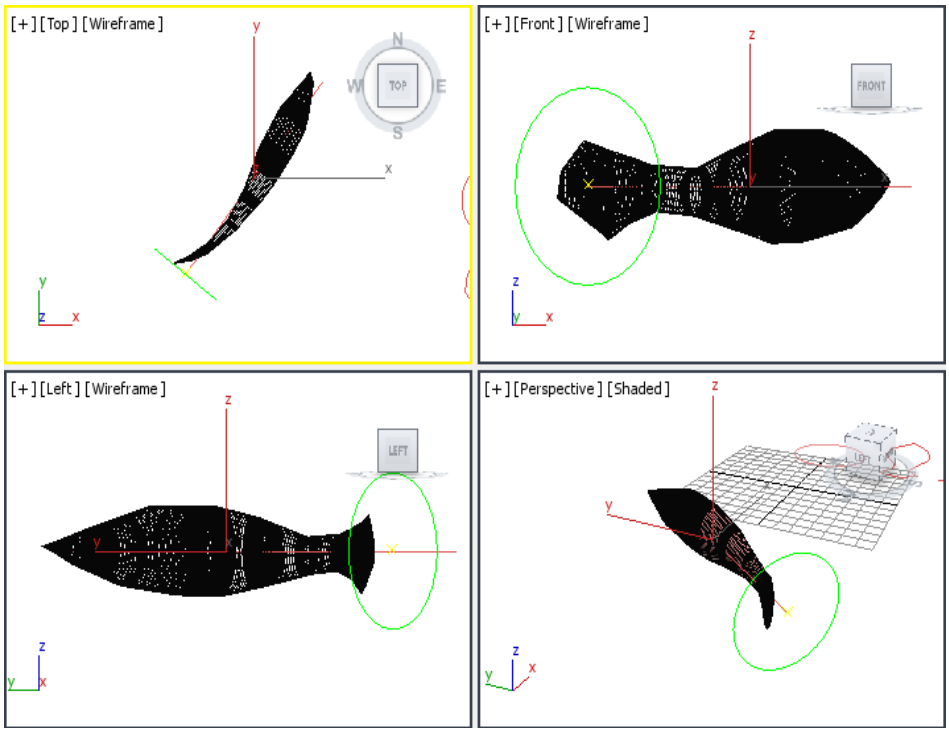


Figure 6-36 *The lofted object showing the effect of fit shapes*

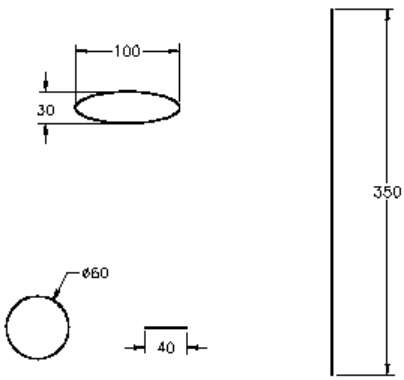


Figure 6-37 *The circular and ellipse shapes*

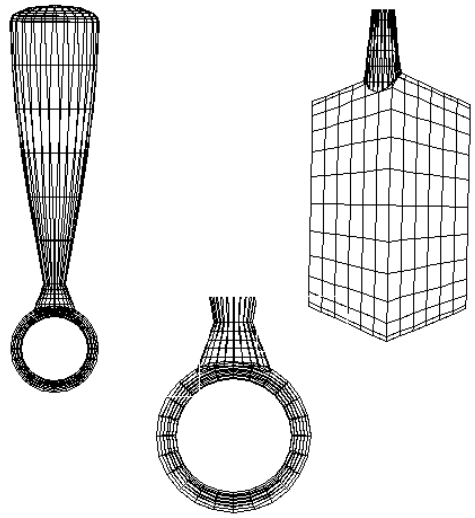


Figure 6-38 *Shapes to be lofted*

Figure 6-39 *The propeller model*

Exercise 2

In this exercise, you will draw shapes and loft them to create the travel mug, as shown in Figures 6-40 and 6-41. The lofted objects must be modified to create the final model. Next, add lights and materials to the objects. **(Expected time: 30 min)**

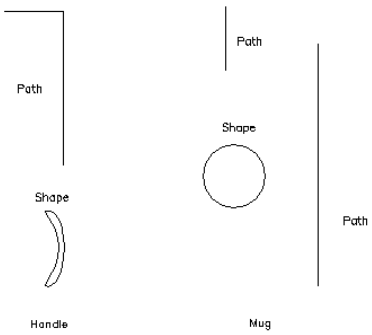


Figure 6-40 *Lofted shapes*

Figure 6-41 *The travel mug*

Chapter 7

Material Editor: Creating Materials

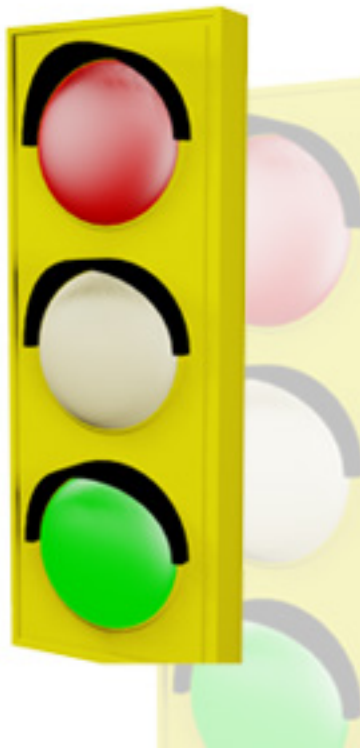


Figure 7-1 *The traffic signal model with materials applied*

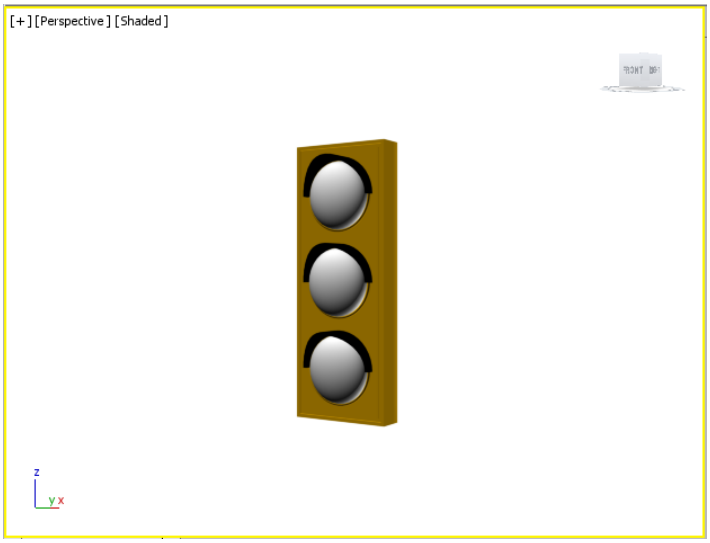


Figure 7-2 *The c07_tut1_start file*

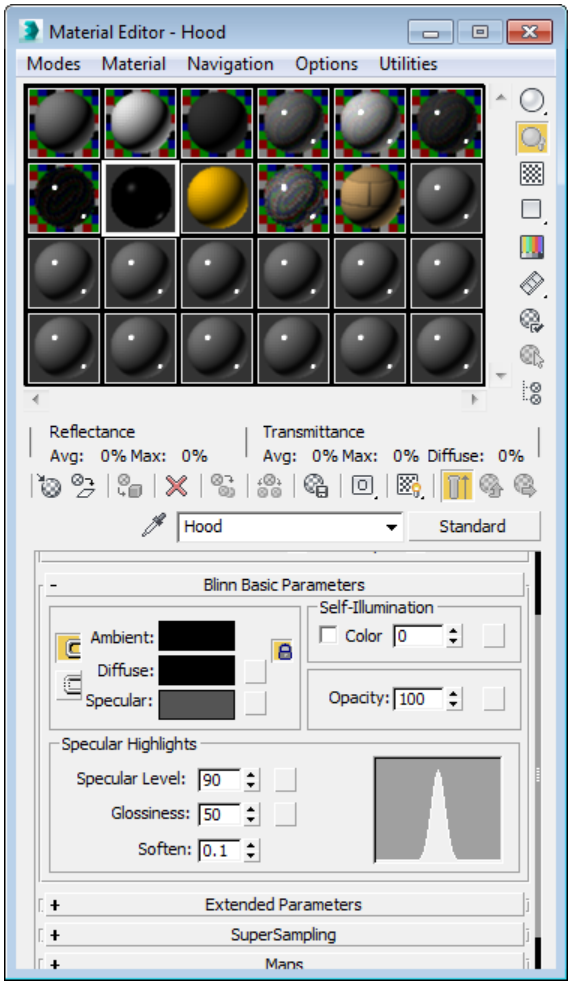


Figure 7-3 The ***Material Editor*** *dialog box*

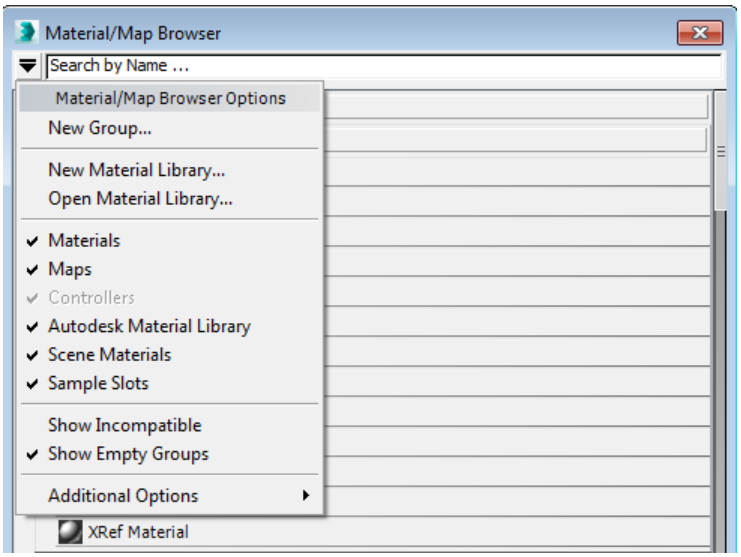


Figure 7-4 *The* ***Material/Map Browser Options*** *drop-down list*

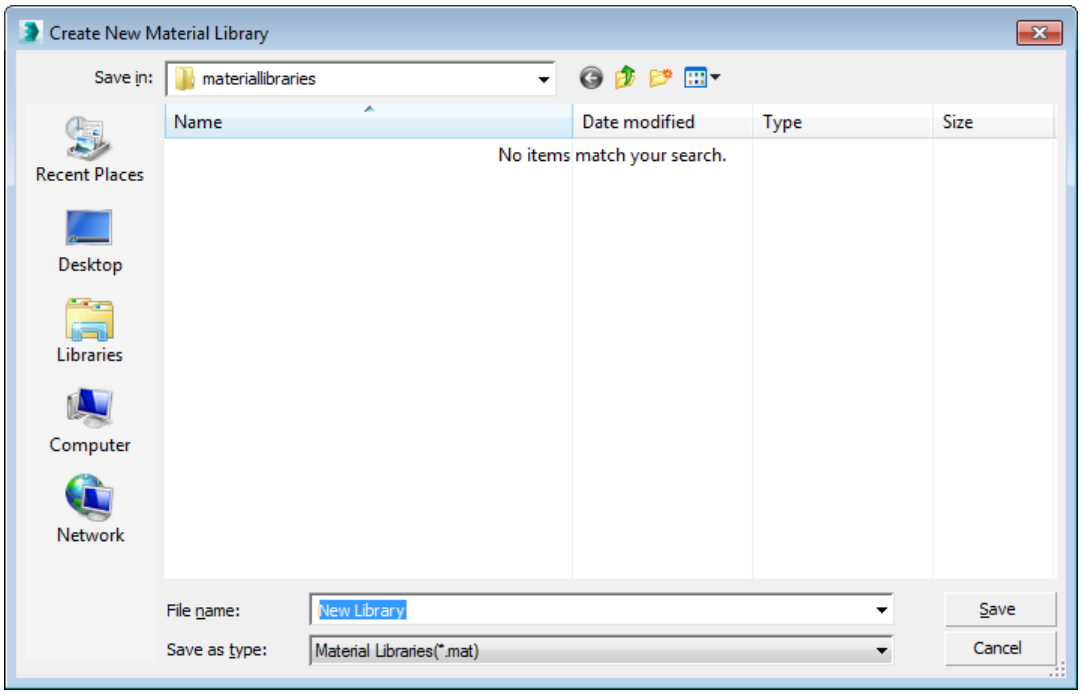


Figure 7-5 *The* ***Create New Material Library*** *dialog box*

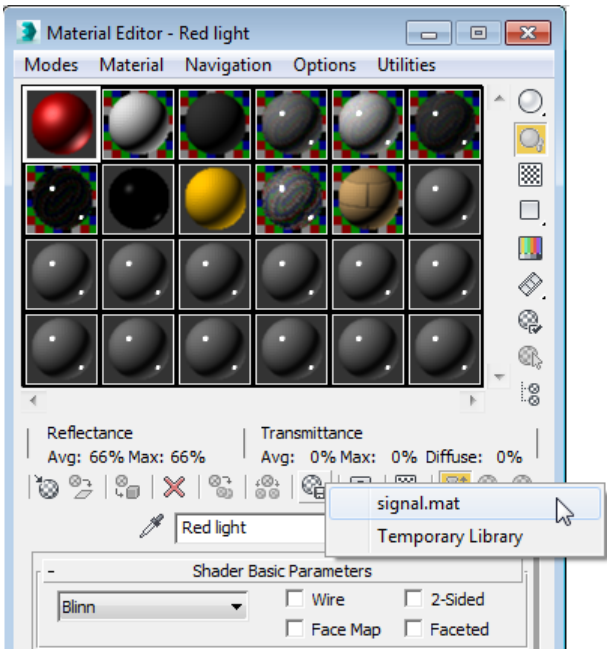


Figure 7-6 *Choosing* ***signal.mat*** *from the flyout*

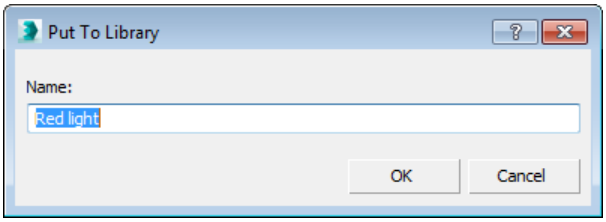


Figure 7-7 *The* ***Put To Library*** *dialog box*

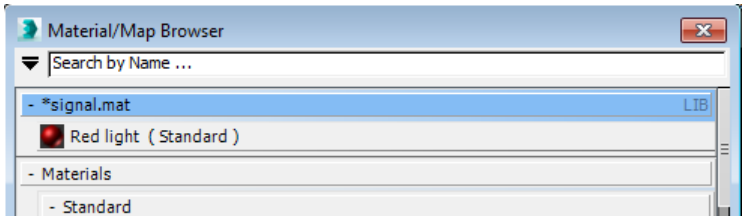


Figure 7-8 *The* ***Red light*** *material added to the material library*

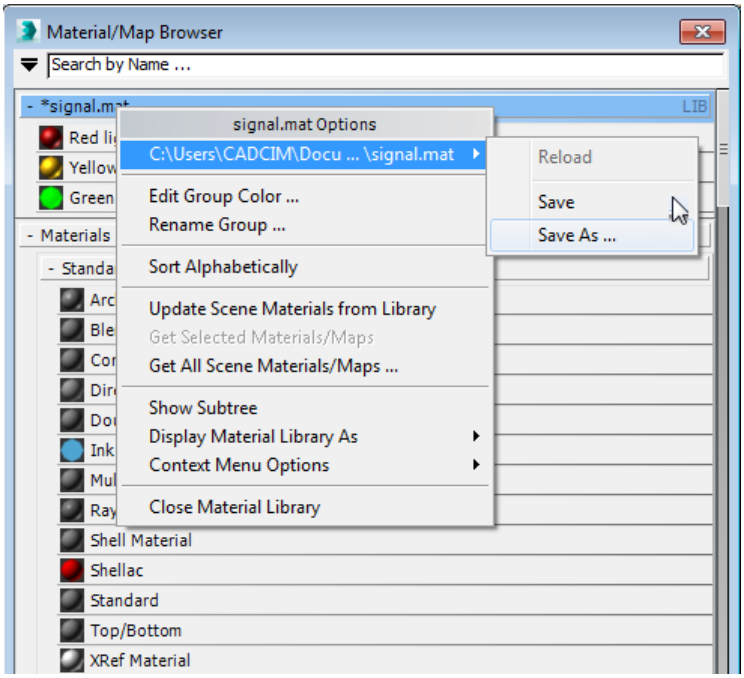


Figure 7-9 *Saving the material library*

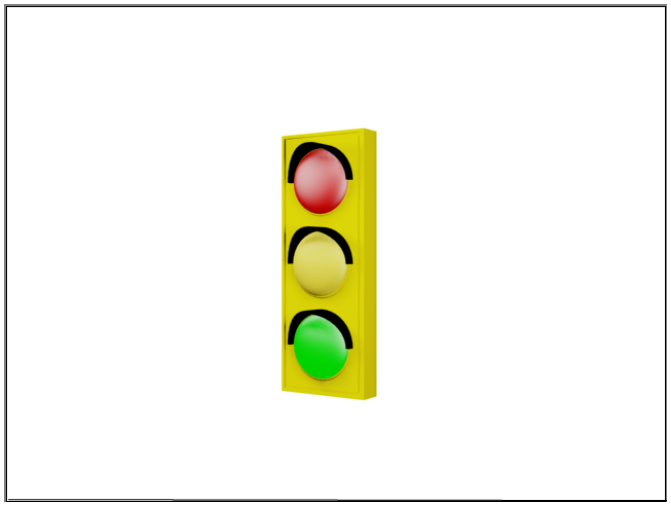


Figure 7-10 *The rendered image*

Exercise 1

Create the materials needed to texture a scene containing five crayons, as shown in Figure 7-11. You will need five colors of your choice for the wrappers of crayons and five shiny colors for the crayons. **(Expected time: 25min)**

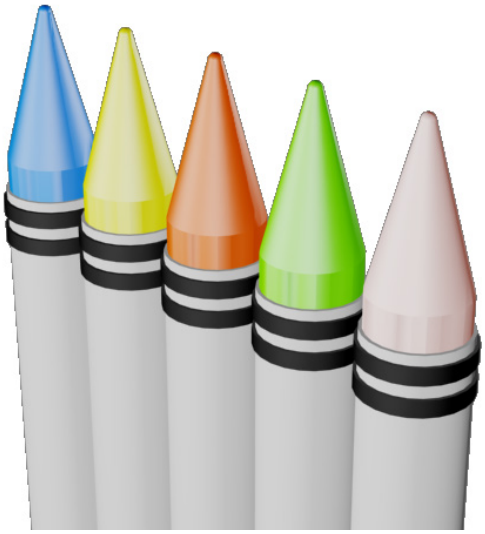


Figure 7-11 *The crayons*

Chapter 8

Material Editor: Texture Maps-I

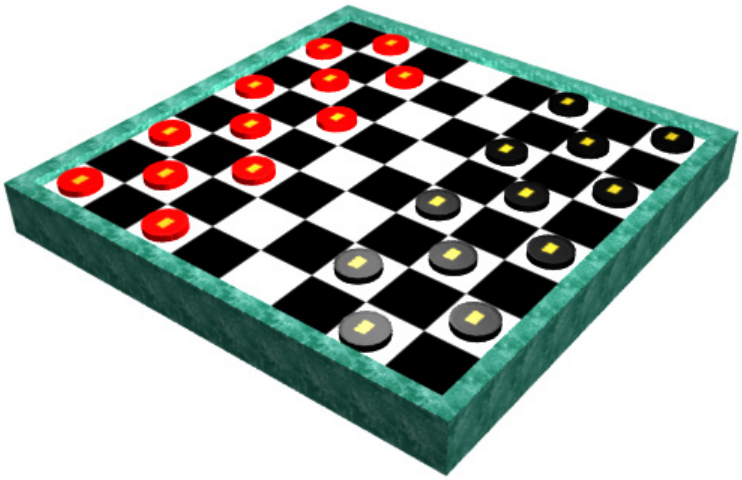


Figure 8-1 *The checkerboard after applying materials*

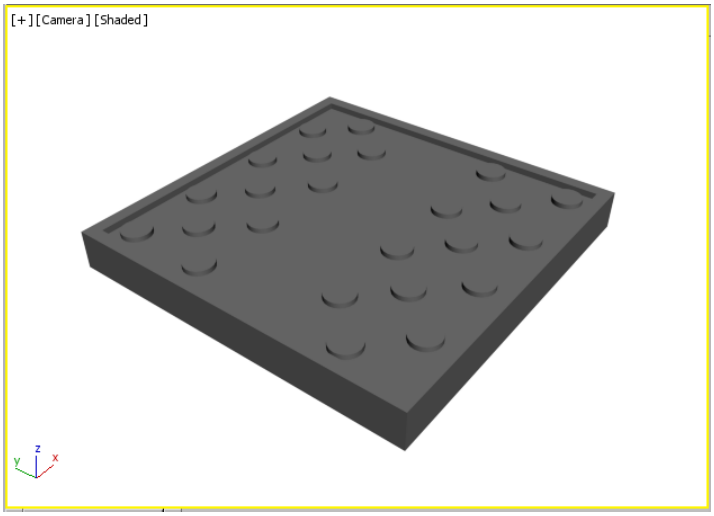


Figure 8-2 *The c08_tut1_start file*

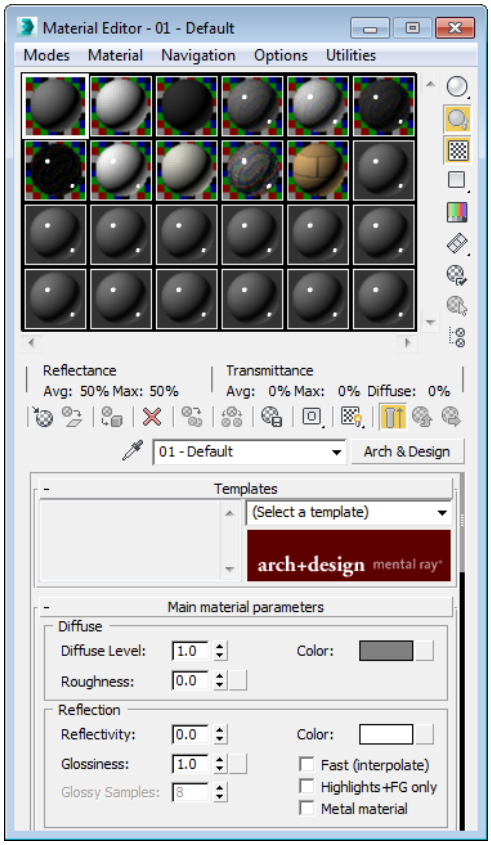


Figure 8-3 *The* ***Material Editor*** *dialog box*

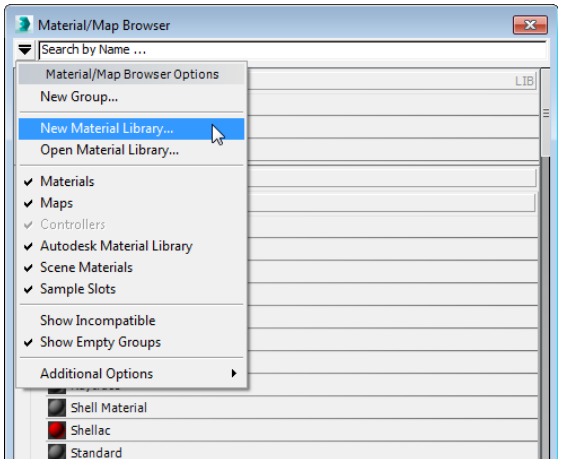


Figure 8-4 *Choosing* ***New Material Library*** *from the flyout*

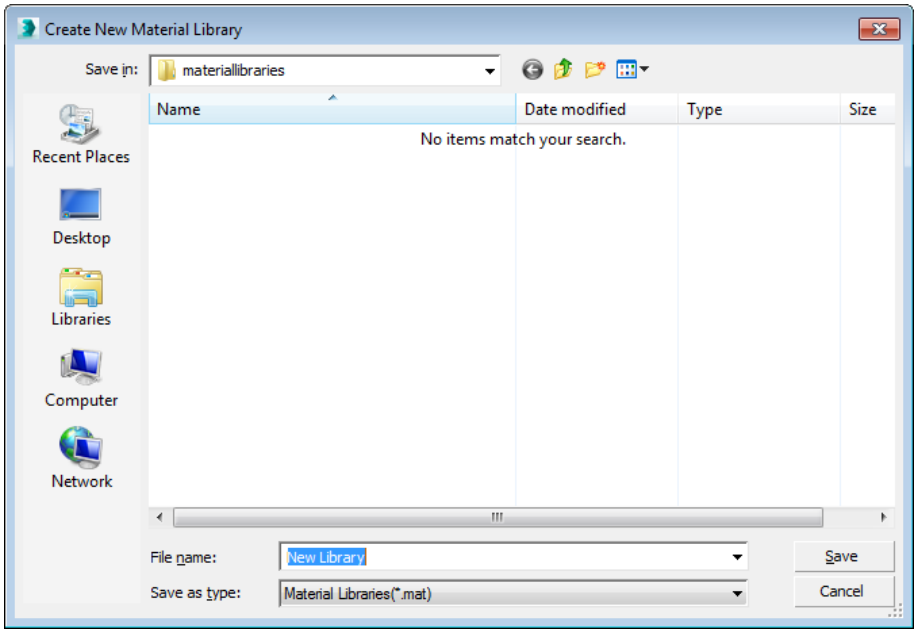


Figure 8-5 *The* ***Create New Material Library*** *dialog box*

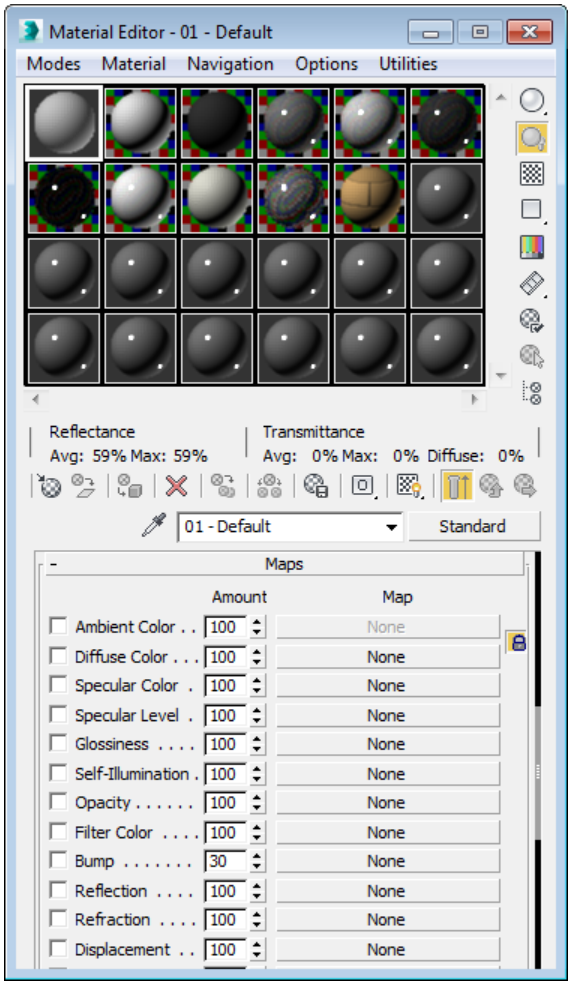


Figure 8-6 *The* ***Maps*** *rollout expanded*

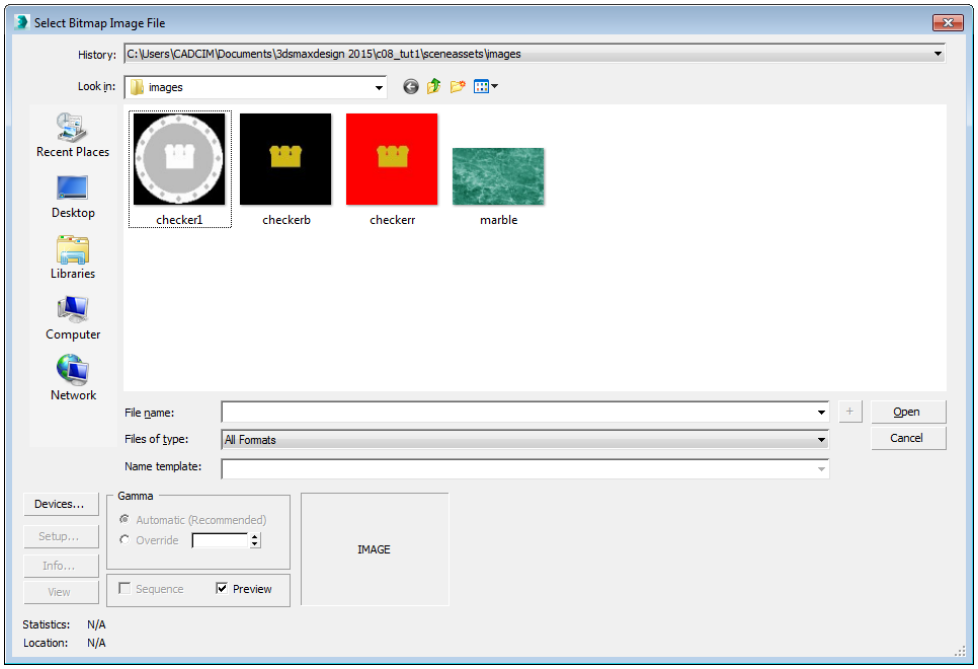


Figure 8-7 *The* ***Select Bitmap Image File*** *dialog box*

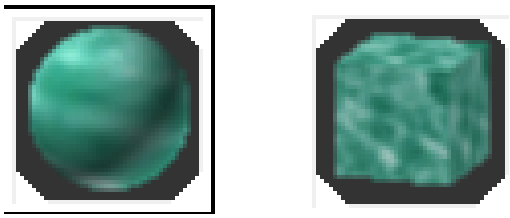


Figure 8-8 *The sample switched from sphere to square in the* ***Material Editor*** *dialog box*

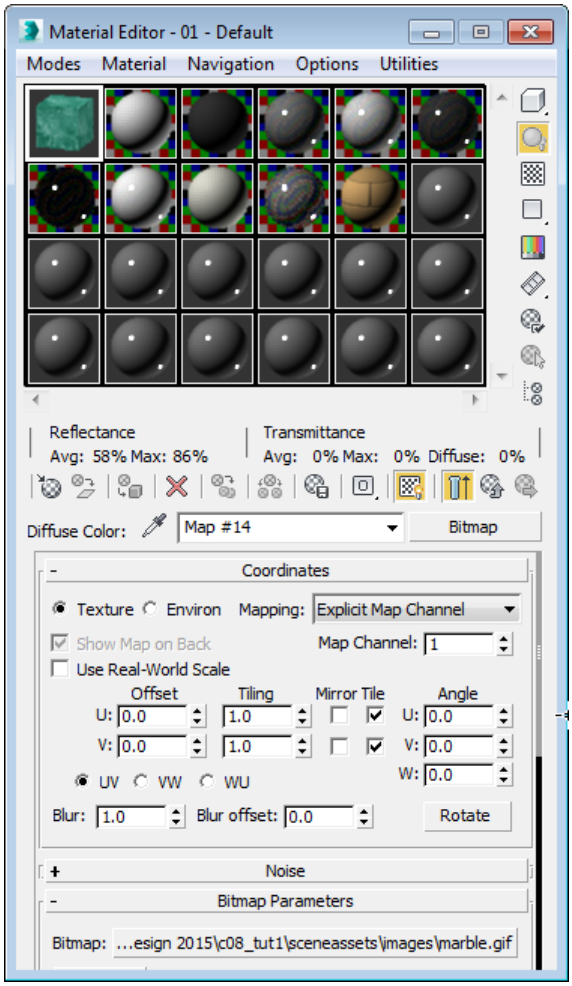


Figure 8-9 *The* ***Coordinates*** *rollout after modifying the parameters*

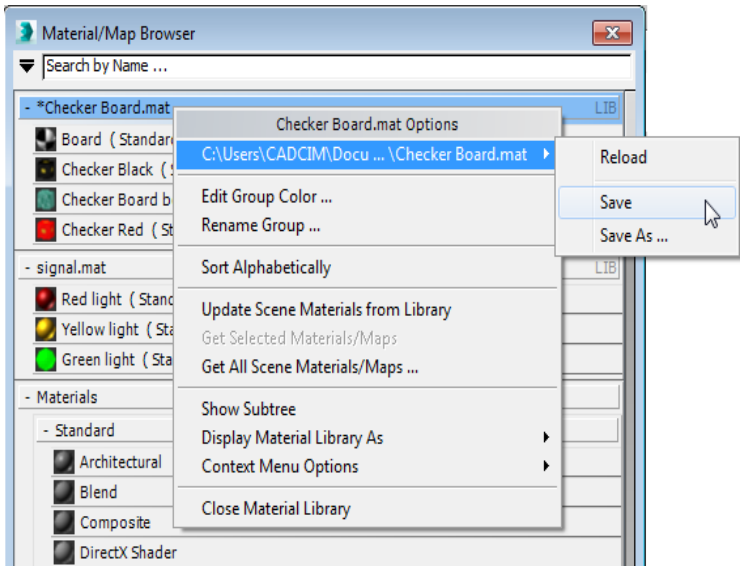


Figure 8-10 *Saving the Material Library*

Figure 8-11 *The rendered scene after assigning materials*

Exercise 1

Extract the contents of the *c08_3dsmaxdesign_2015_exr.zip* and then open the *c08_exr1_start* file from it. Next, create materials and then apply them to a company logo. Figure 8-12 shows the final rendered image of the company logo. **(Expected time: 20 min)**

Figure 8-12 *Company Logo*

Exercise 2

Open the *c08_exr2_start* file. Next, create and apply materials needed for the model of a vise, refer to Figure 8-13. **(Expected time: 25 min)**

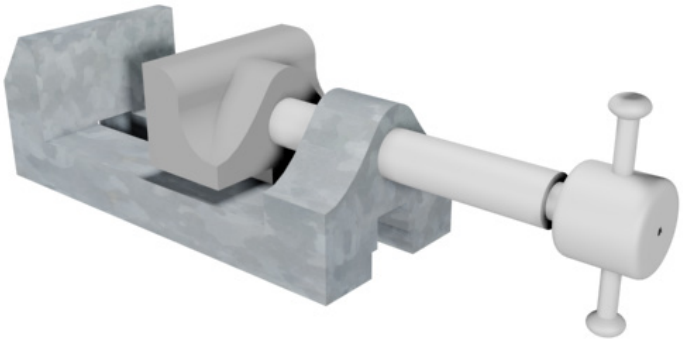


Figure 8-13 *The model of a Vise*

Chapter 9

Material Editor: Texture Maps-II

Figure 9-1 *The vase and flower models*

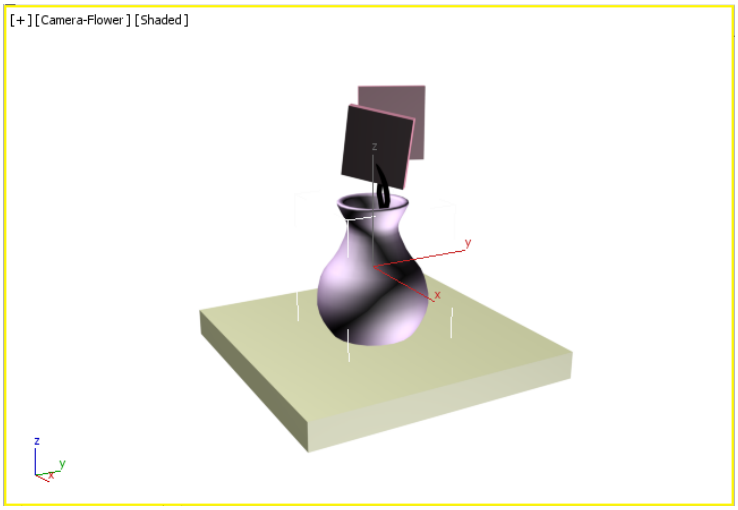


Figure 9-2 *The c09_tut1_start file*

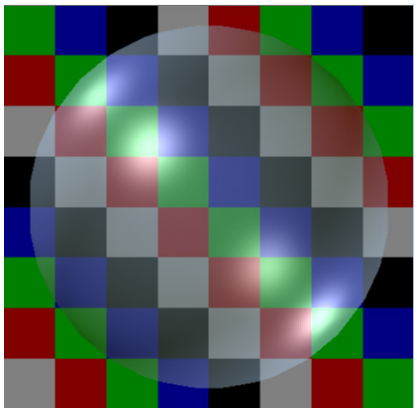


Figure 9-3 *The background displayed in the material sample slot in the* ***Material Editor*** *dialog box*

Figure 9-4 *The material sample slot displayed in the* ***Material Editor*** *dialog box*

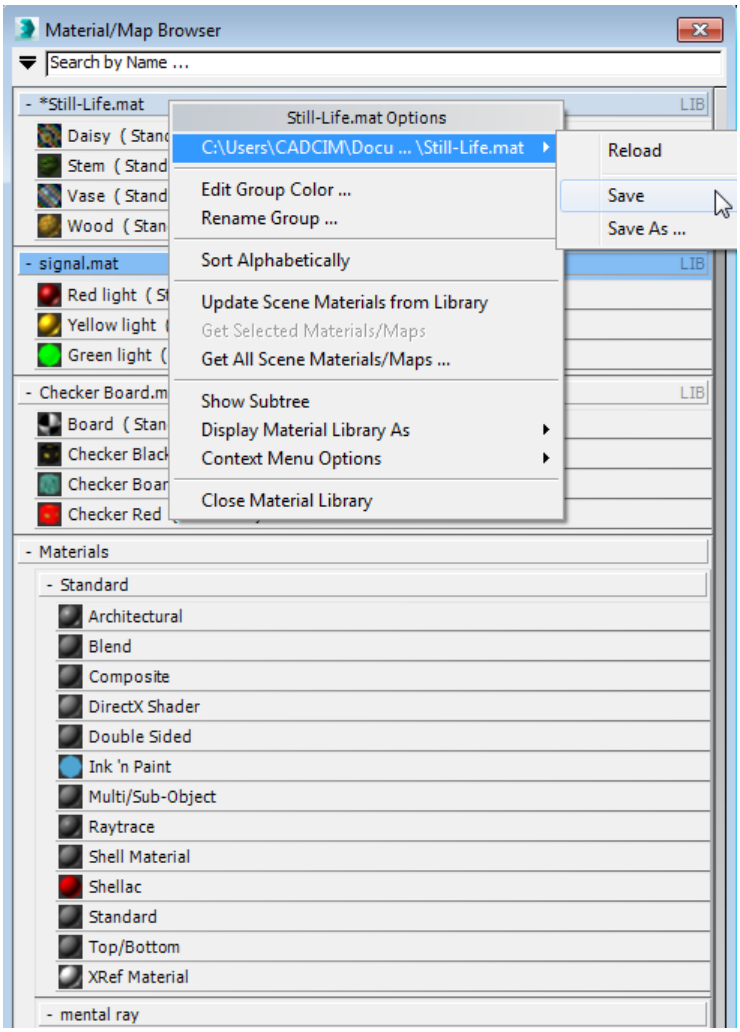


Figure 9-5 *Saving the material library*

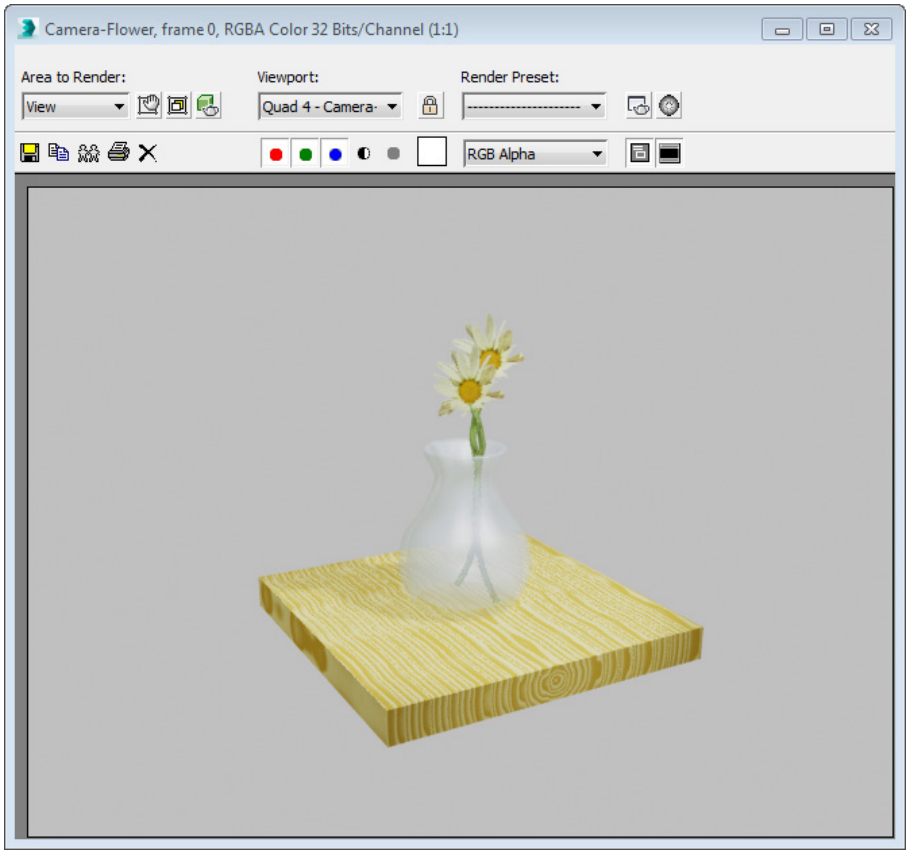


Figure 9-6 *The* ***Rendered Frame*** *window*

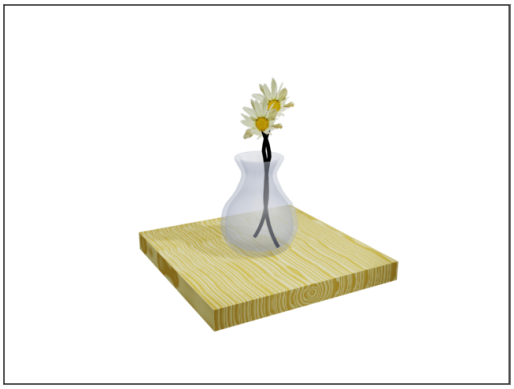


Figure 9-7 *The rendered image with materials assigned to the objects*

Exercise 1

Figure 9-8 *Three glasses with assigned materials*

Exercise 2

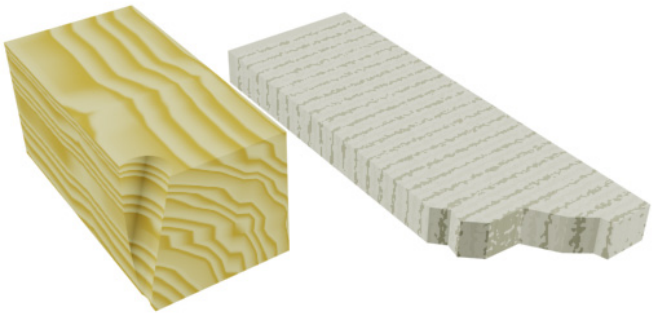


Figure 9-9 *Broken piece of marble and a wooden board*

Chapter 10

Material Editor: Controlling Texture Maps

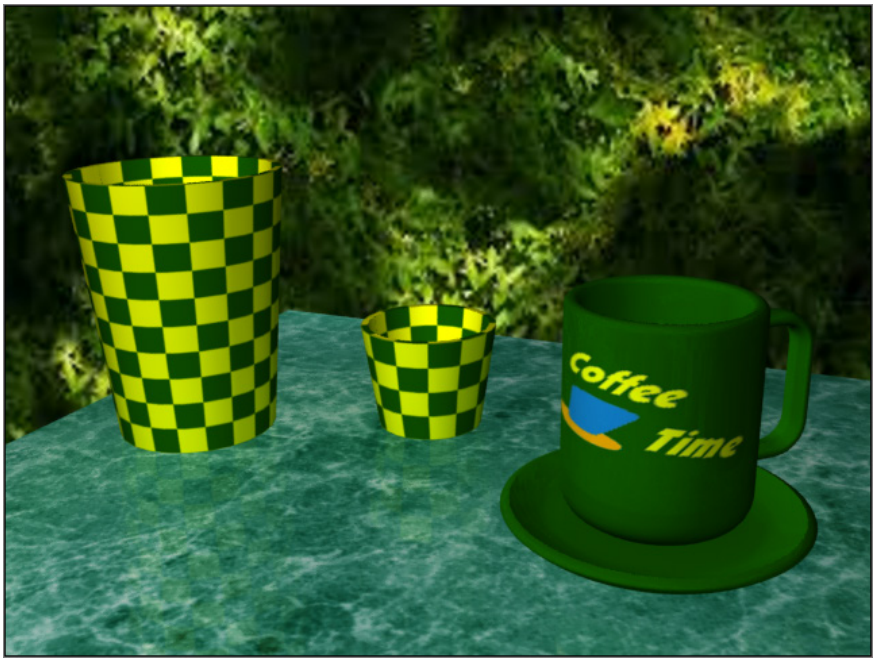


Figure 10-1 *The textured scene*

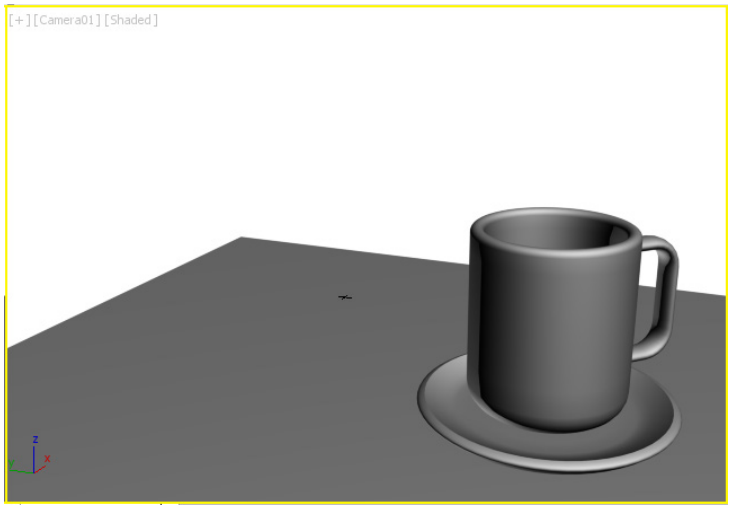


Figure 10-2 *The c10_tut1_start file*

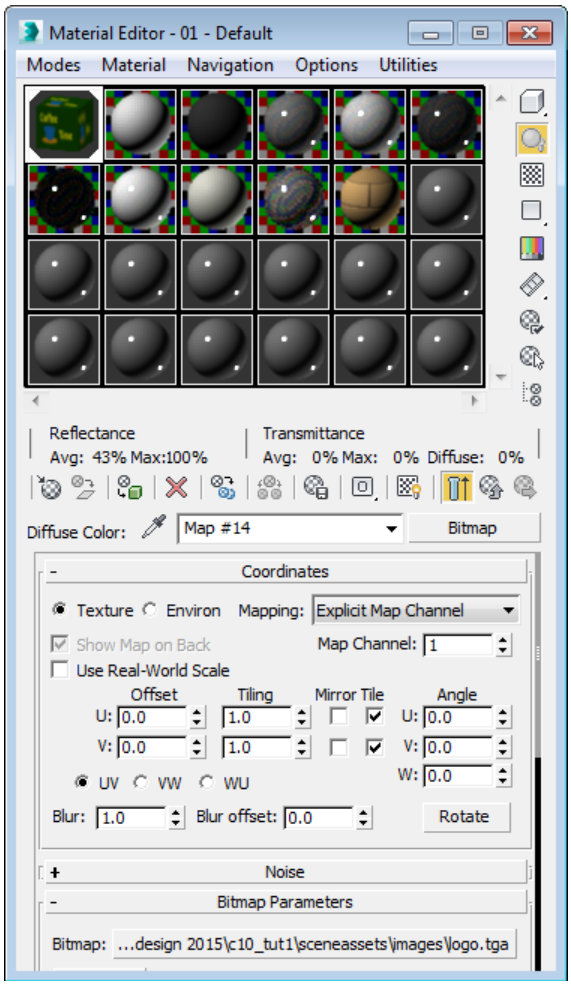


Figure 10-3 *The* ***Coordinates*** *rollout in the* ***Material Editor*** *dialog box*

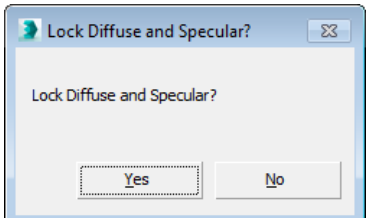


Figure 10-4 *The* ***Lock Diffuse and Specular?*** *message box*

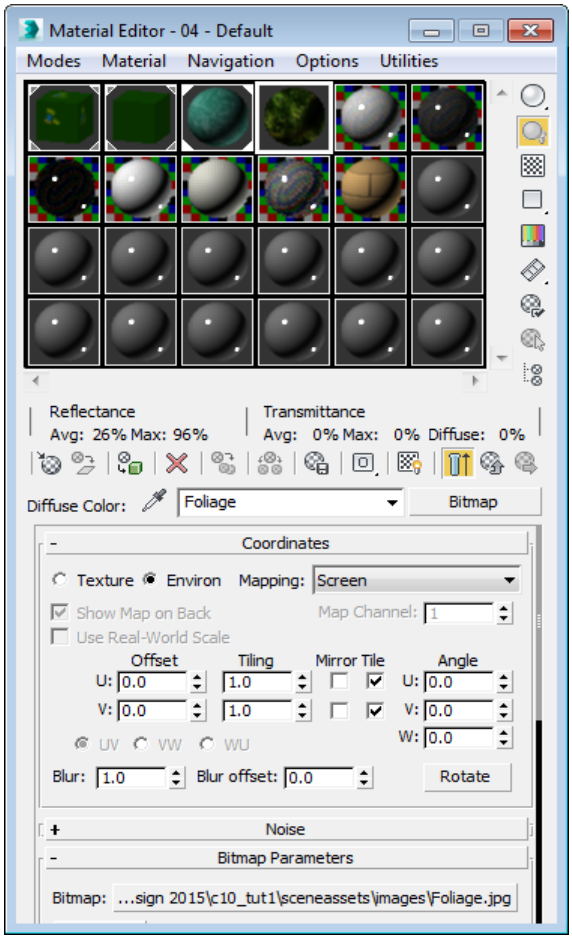


Figure 10-5 *The settings displayed in the* ***Coordinates*** *rollout*

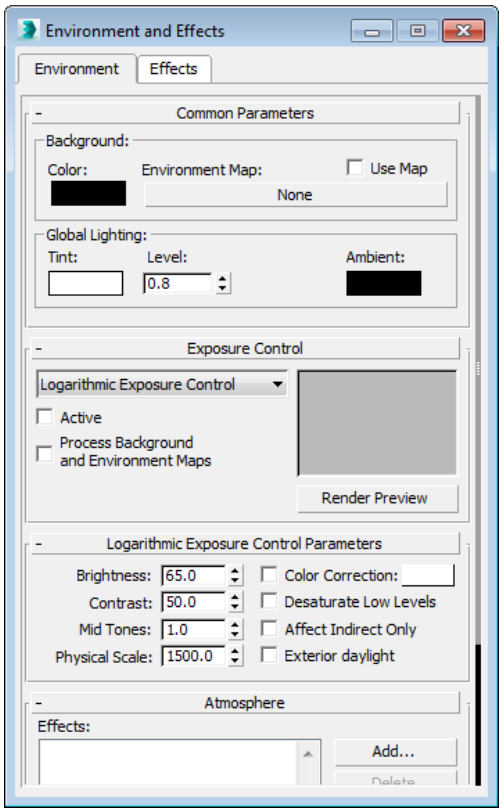


Figure 10-6 *The* ***Environment and Effects*** *dialog box*

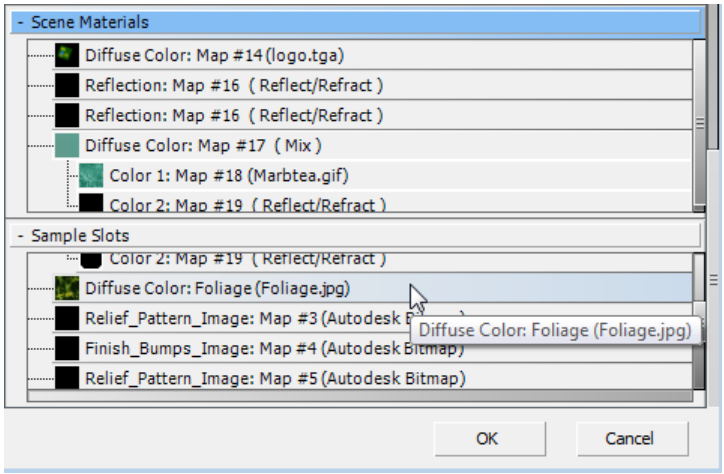


Figure 10-7 *Selecting* ***Diffuse Color: Foliage Map (Foliage.jpg)*** *from the* ***Sample Slots*** *rollout*

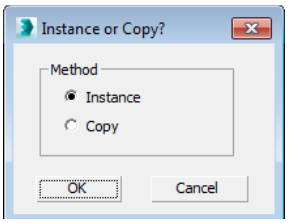


Figure 10-8 *The* ***Instance or Copy?*** *dialog box*

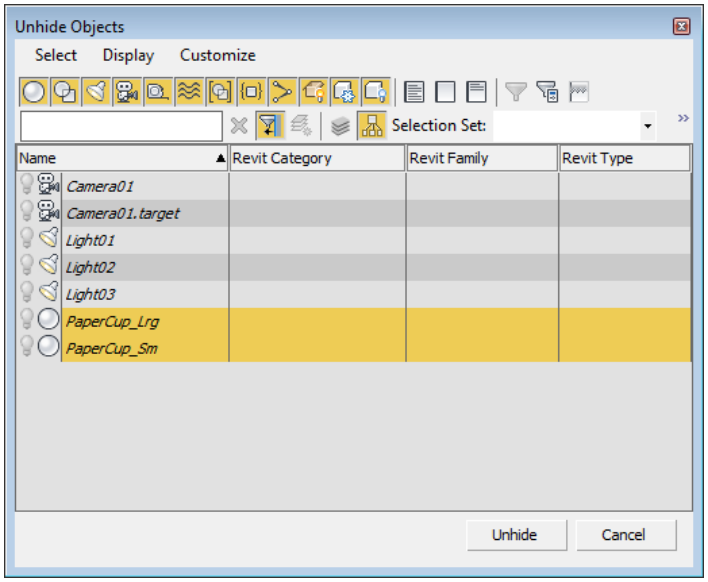


Figure 10-9 *Selecting* ***PaperCup_Lrg*** *and* ***PaperCup_Sm*** *in the* ***Unhide Objects*** *dialog box*

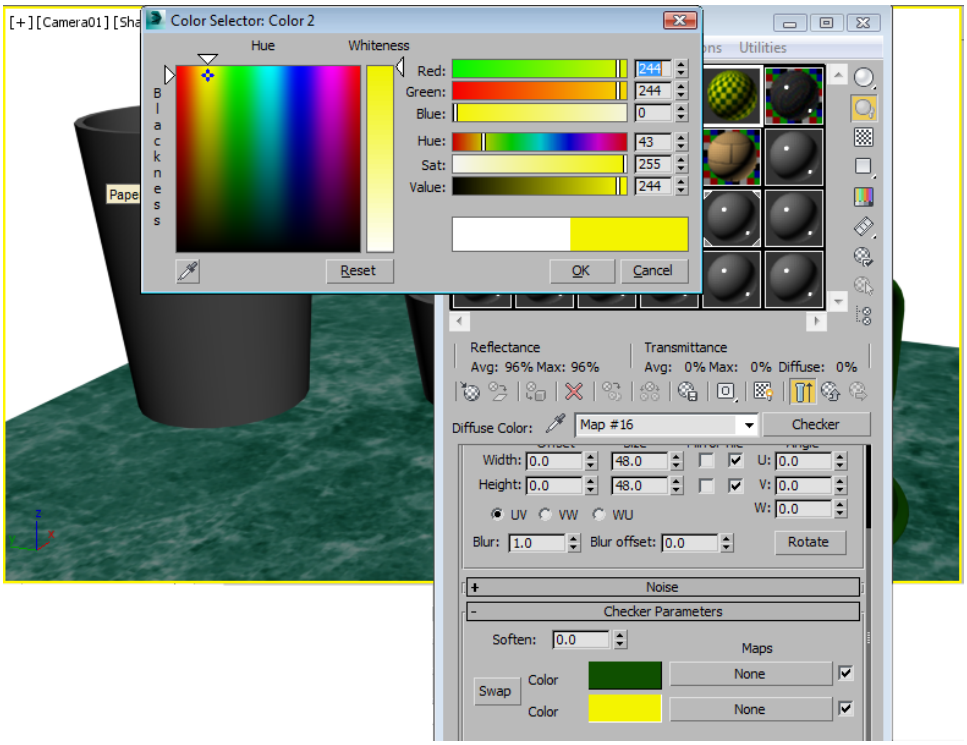


Figure 10-10 *The* ***Color Selector: Color 2*** *dialog box displayed*

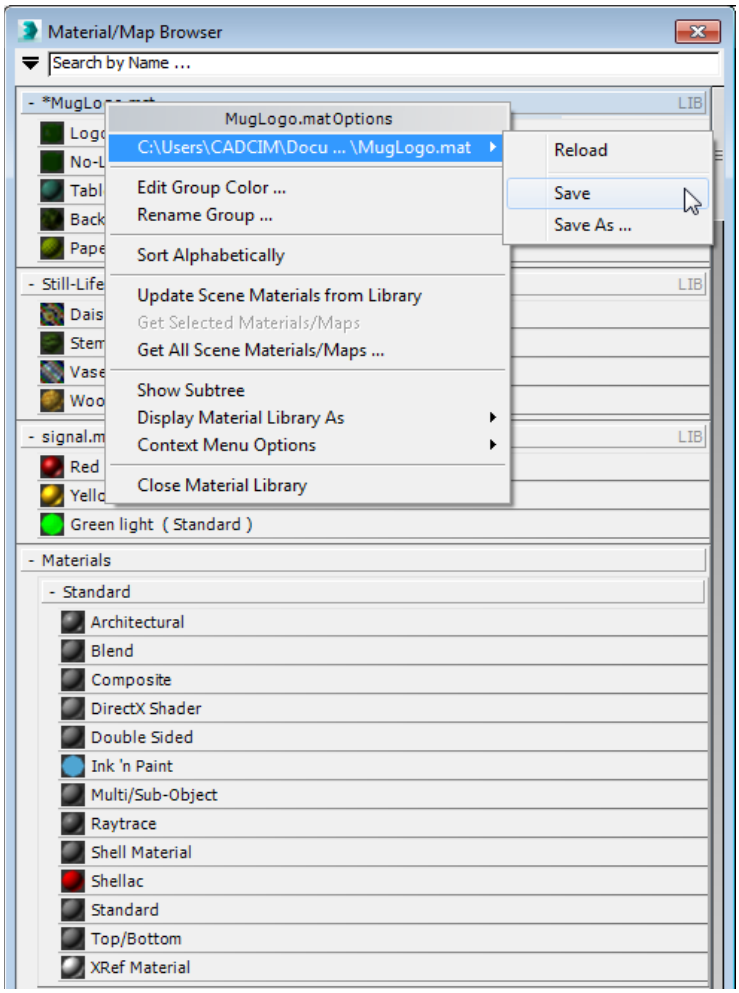


Figure 10-11 *Saving the material library*

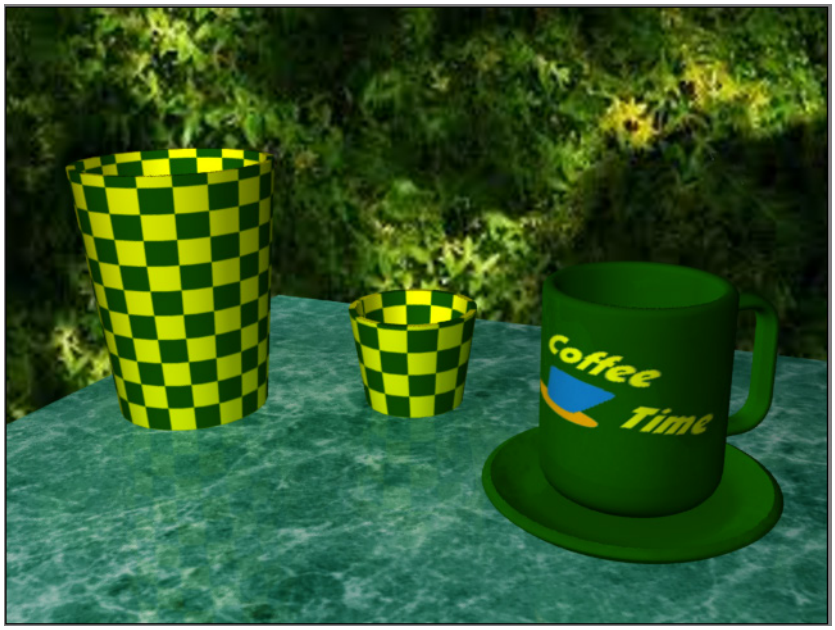


Figure 10-12 *The rendered image*

Exercise 1

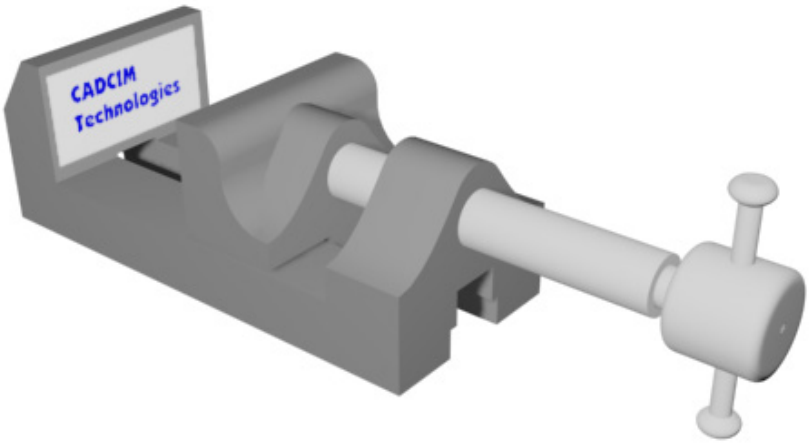


Figure 10-13 *Vise with decal material*

Chapter 11

Material Editor: Miscellaneous Materials

Figure 11-1 *The textured model of the temple*

Figure 11-2 *The c11_tut1_start.max file*

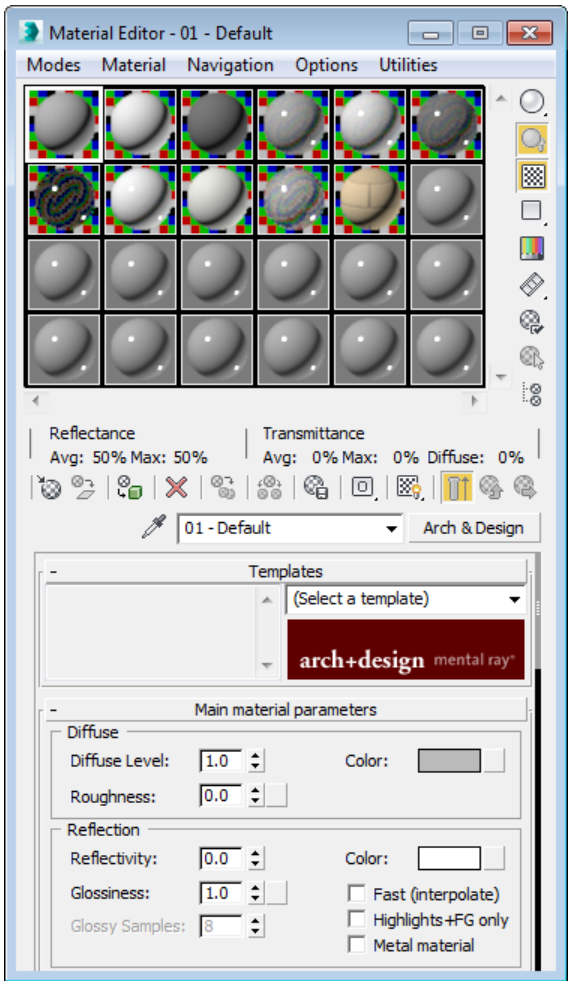


Figure 11-3 The ***Material Editor*** *dialog box*

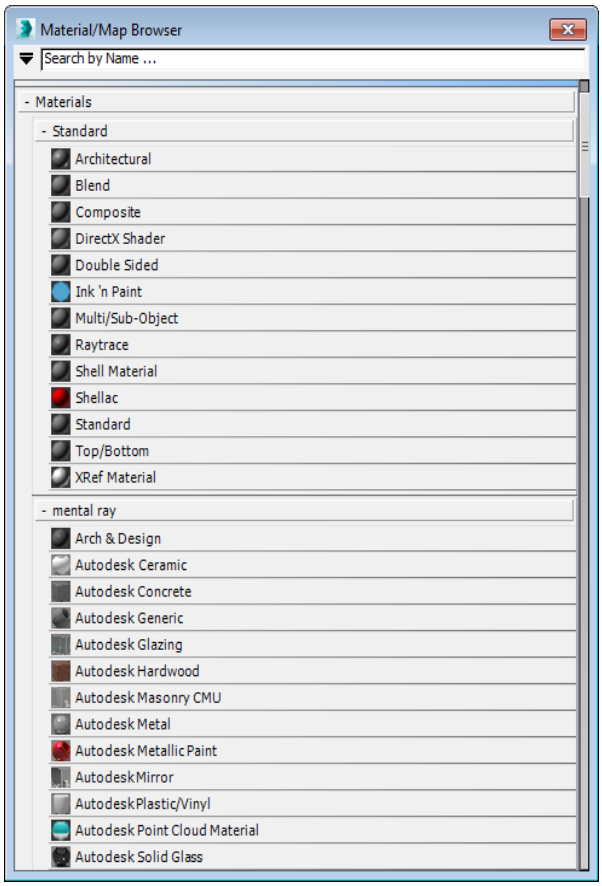


Figure 11-4 *The* ***Material/Map Browser*** *dialog box*

Figure 11-5 *The rendered image*

Figure 11-6 *The textured scene*

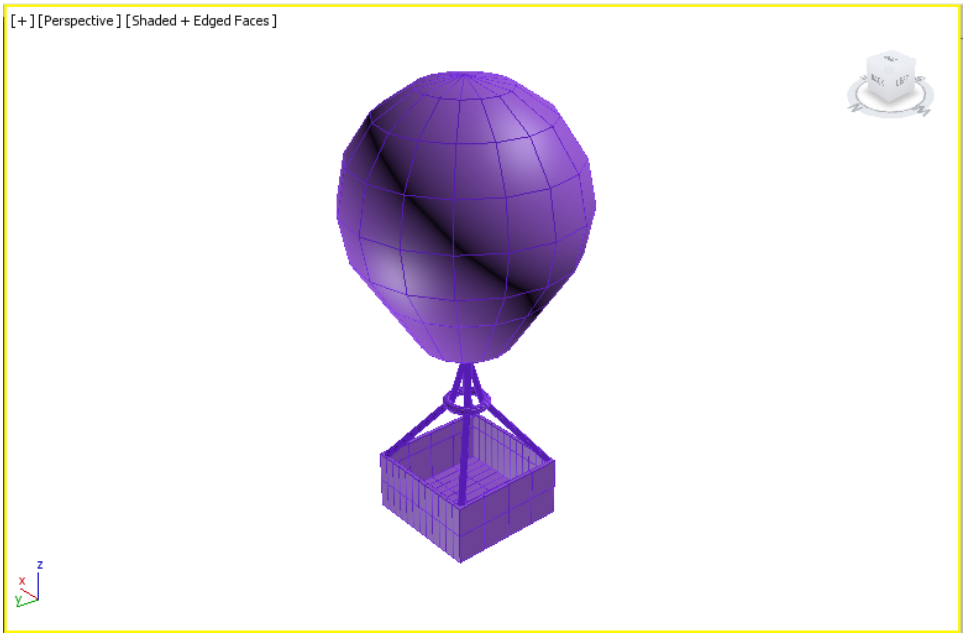


Figure 11-7 *The c11_tut2_start.max file*

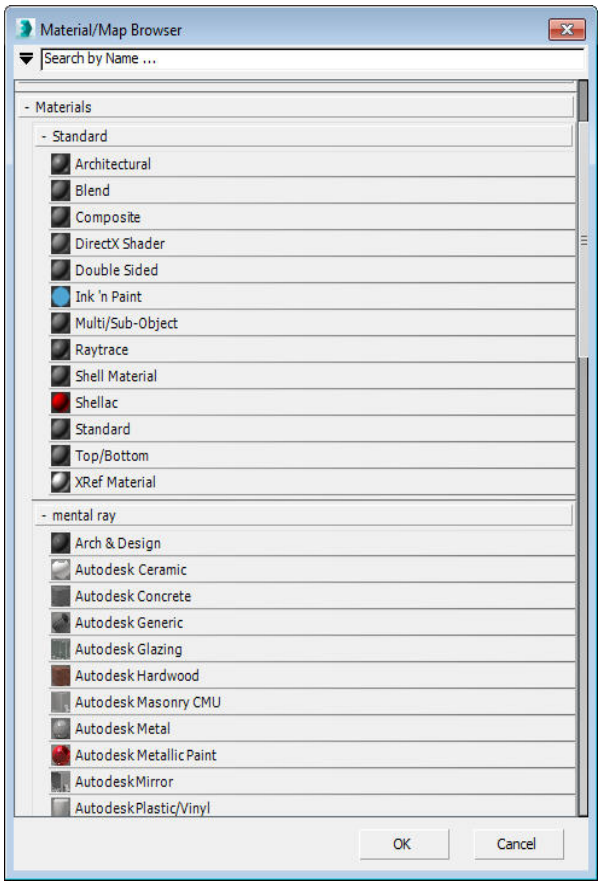


Figure 11-8 *The* ***Material/Map Browser*** *dialog box*

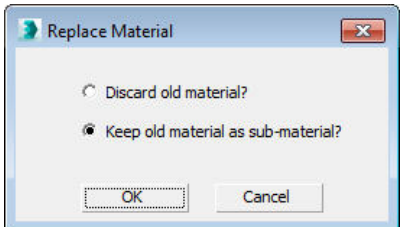


Figure 11-9 *The* ***Replace Material*** *dialog box*

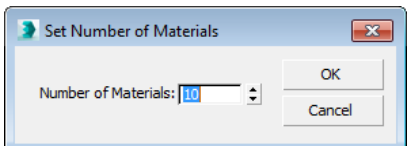


Figure 11-10 *The* ***Set Number of Materials*** *dialog box*

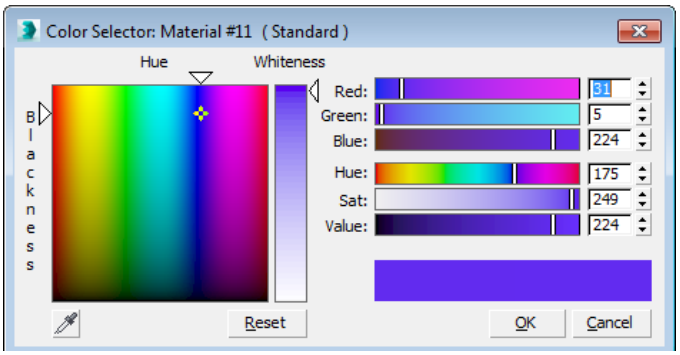


Figure 11-11 *Setting the color of the material to blue using the* ***Color Selector*** *dialog box*

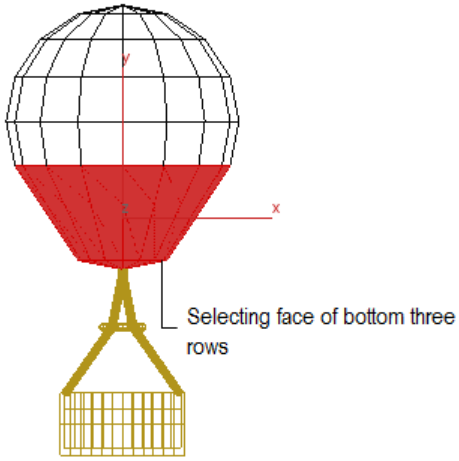


Figure 11-12 *Selecting faces of bottom three rows*

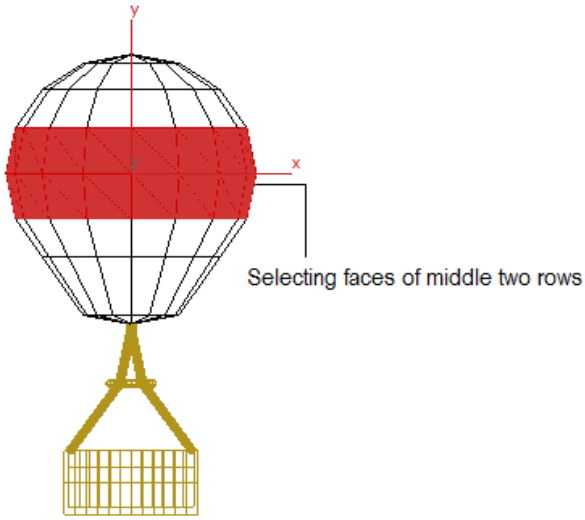


Figure 11-13 *Selecting faces of middle two rows*

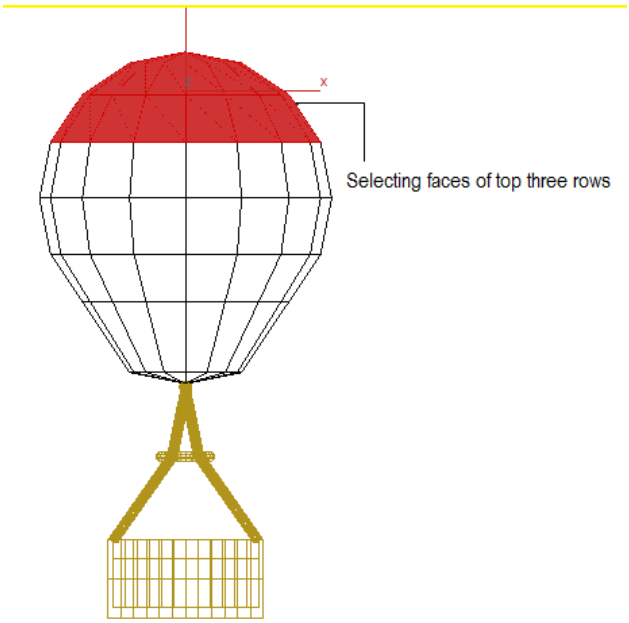


Figure 11-14 *Selecting faces of top three rows*

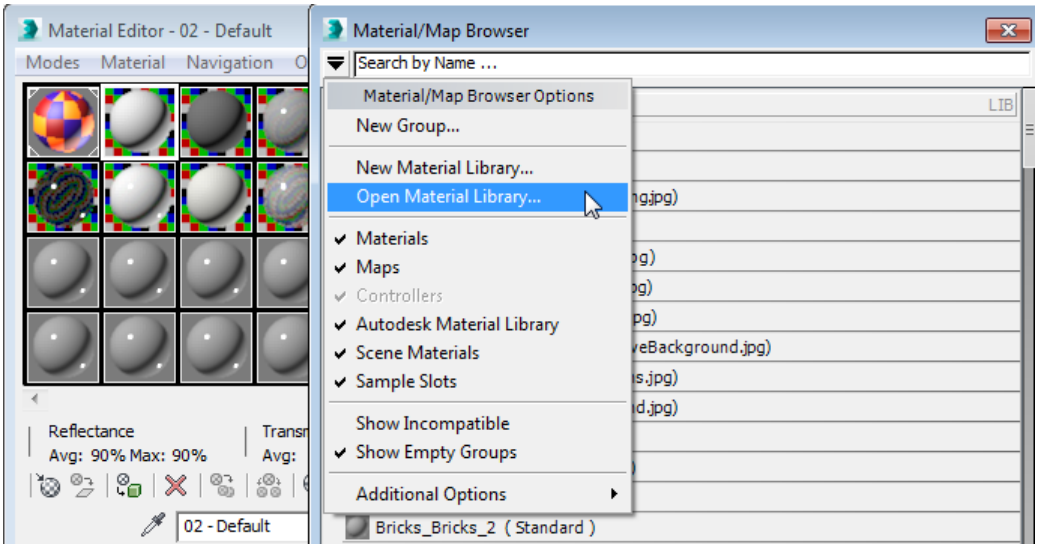


Figure 11-15 *Selecting the* ***Open Material Library*** *option*

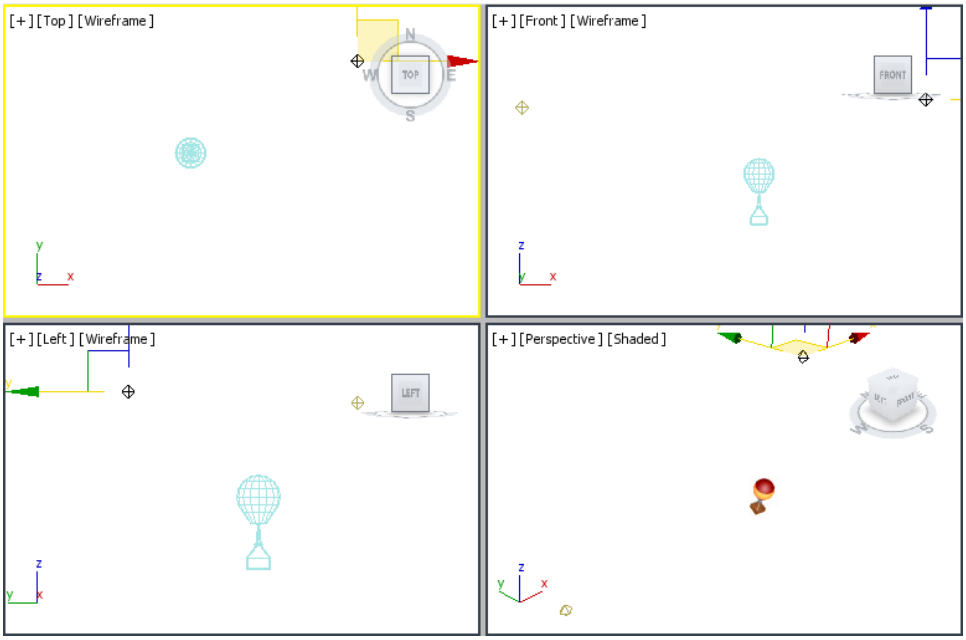


Figure 11-16 *Adjusting Omni001 and Omni002 lights in the scene*

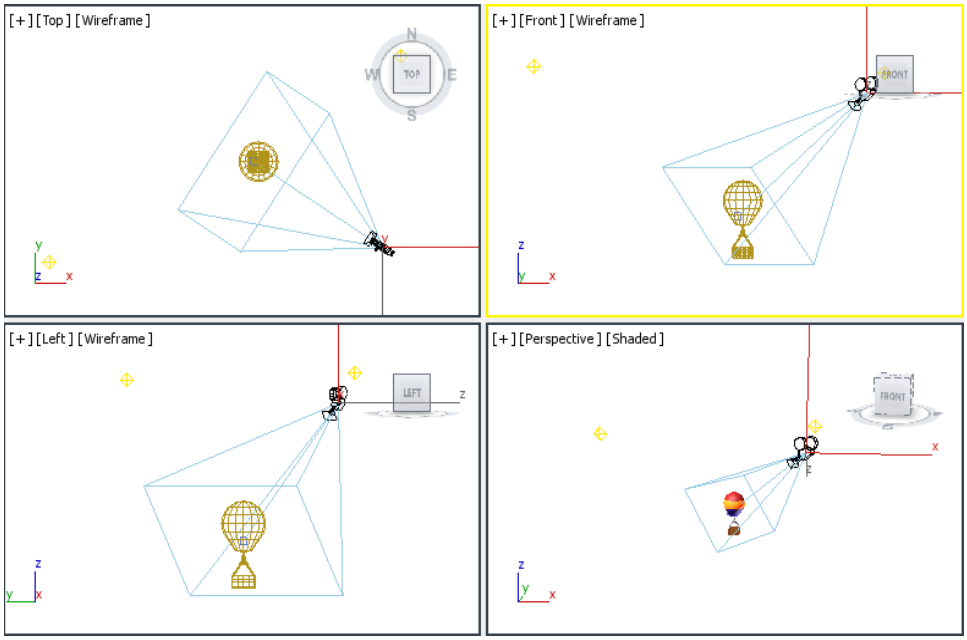


Figure 11-17 *The camera placed and positioned in the Front viewport*

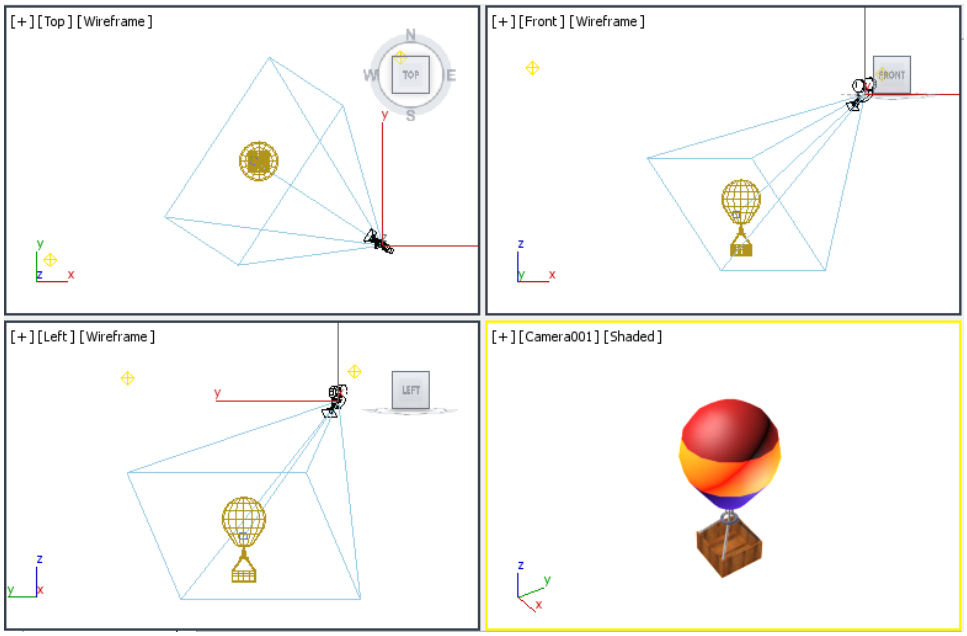


Figure 11-18 *The view adjusted using the* ***Field-of-View*** *tool*

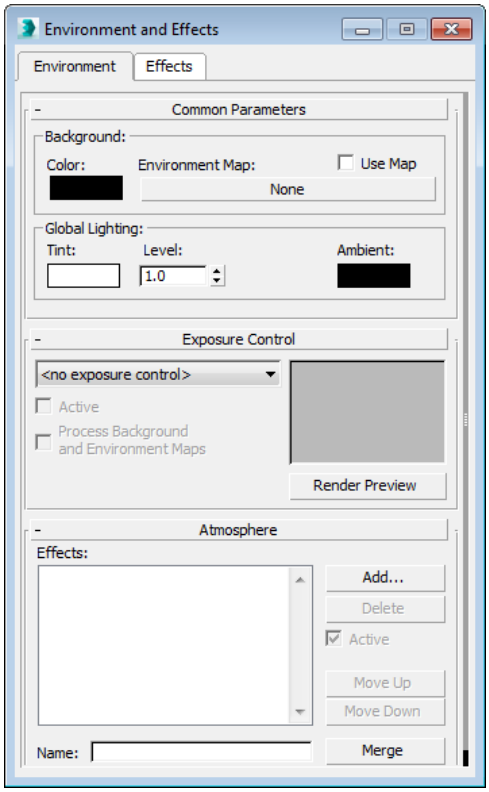


Figure 11-19 The ***Environment and Effects*** *dialog box*

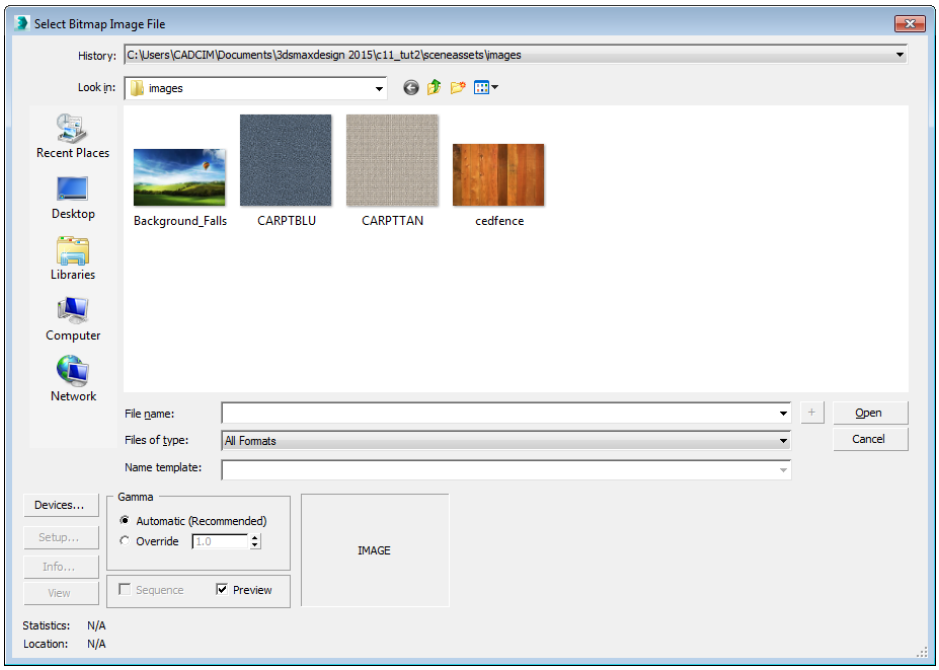


Figure 11-20 The ***Select Bitmap Image File*** *dialog box*

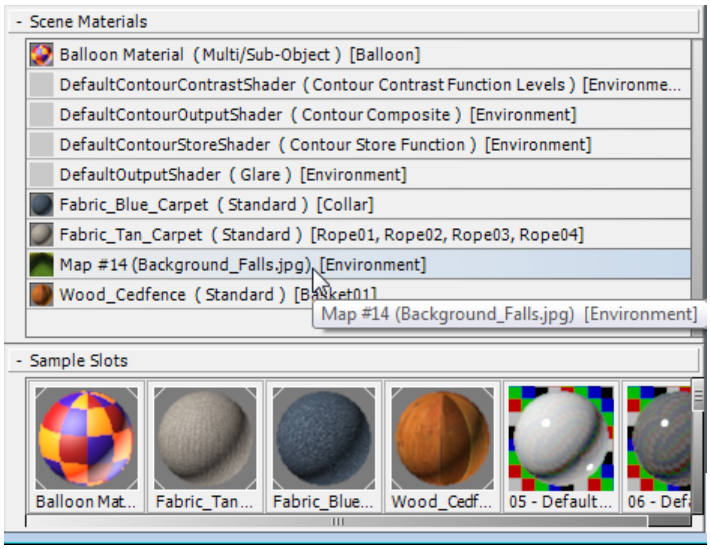


Figure 11-21 *Loading* ***Map# (Background_Falls.jpg)[Enviornment]*** *in the material sample slot*

Figure 11-22 *The final rendered scene*

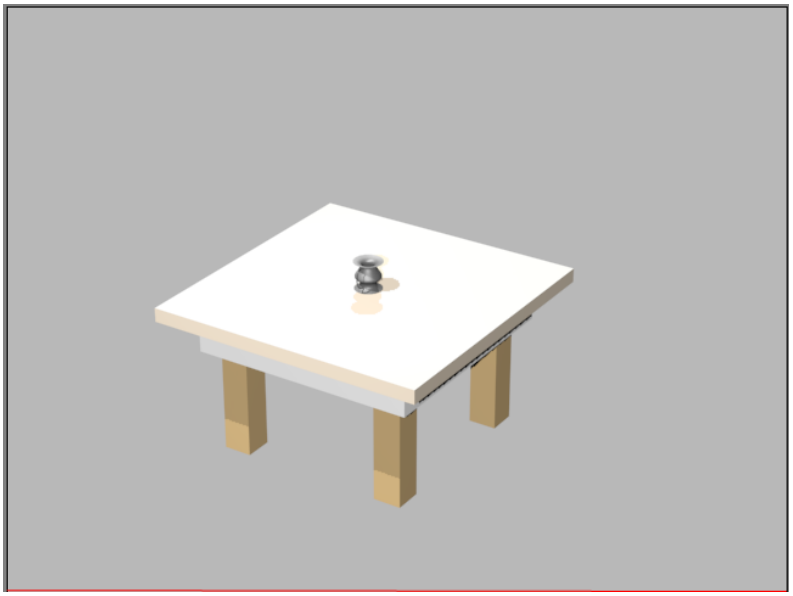


Figure 11-23 *The model of the table*

Chapter 12

Interior Lighting-I

Figure 12-1 *The illuminated night interior scene*

Figure 12-2 *The c12_tut1_start.max file*

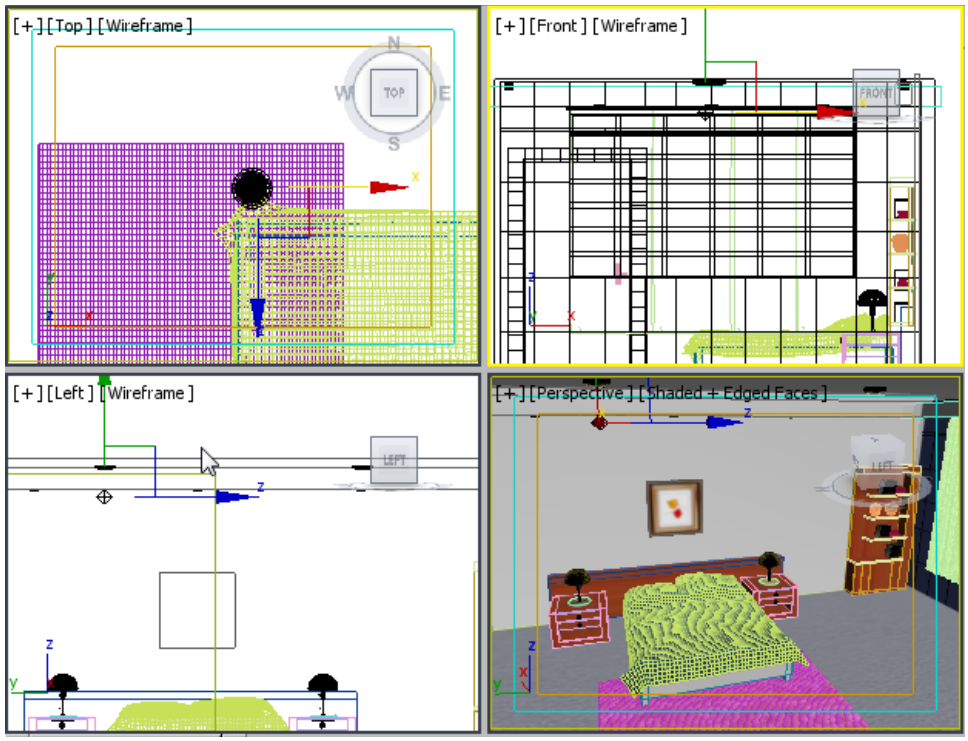


Figure 12-3 *Omni001 aligned in all viewports*

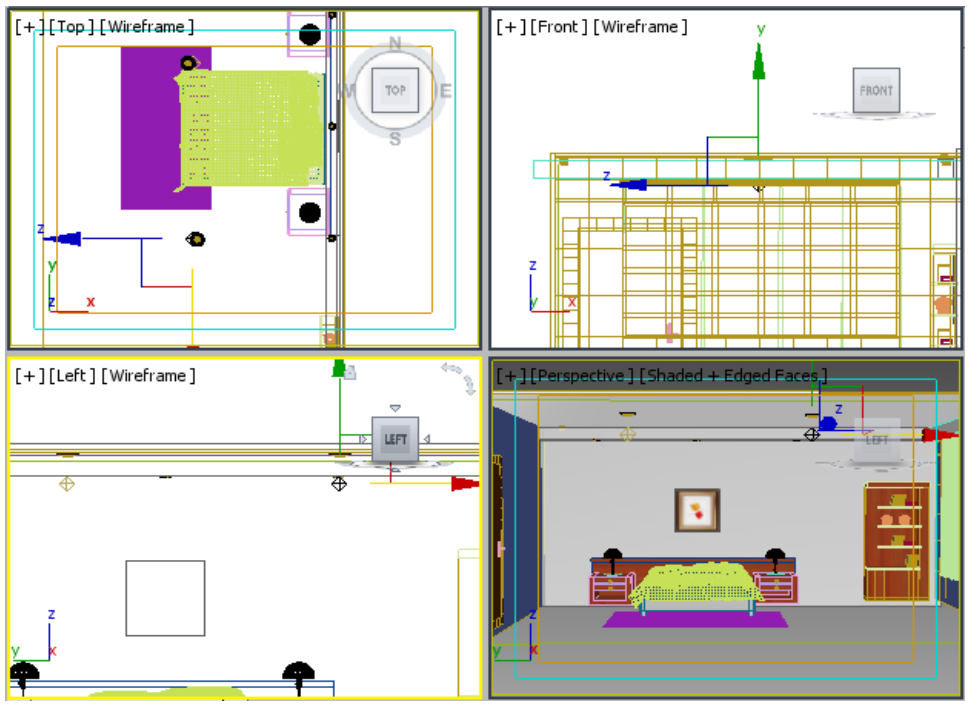


Figure 12-4 *The copy of roof light1 aligned in all viewports*

Figure 12-5 *The rendered image*

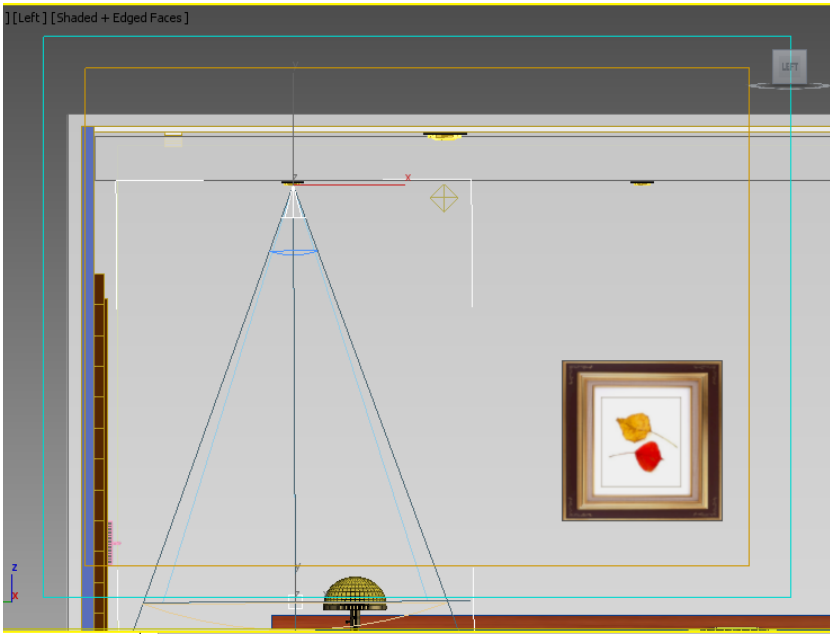


Figure 12-6 *The spot light created*

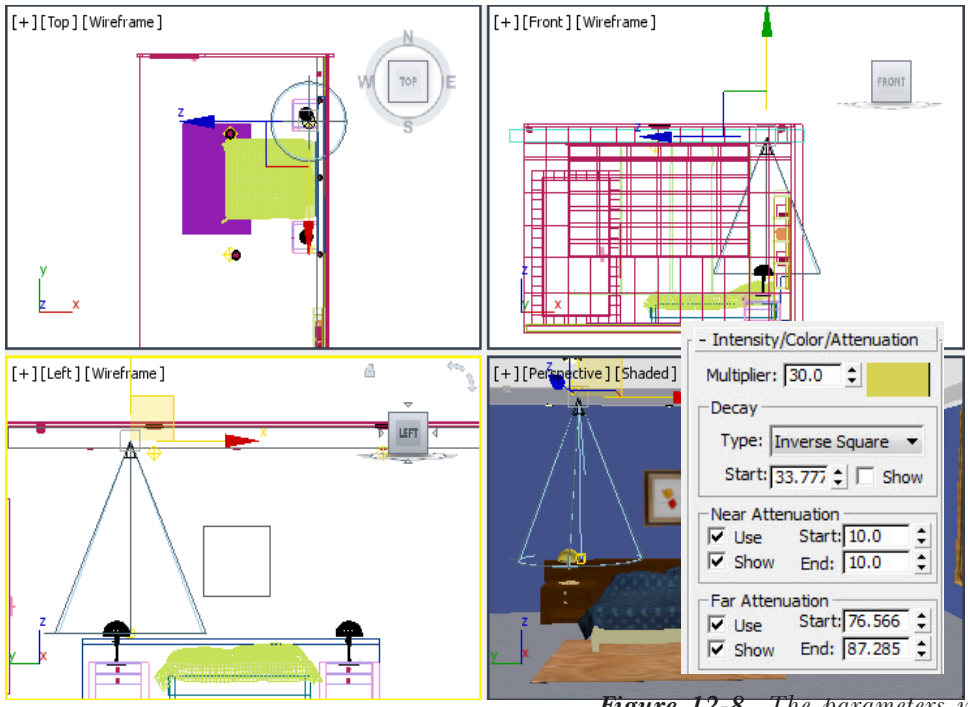


Figure 12-7 *The spot light 1 and spot light 1.Target aligned*

Figure 12-8 *The parameters in the* ***Intensity/Color/Attenuation*** *rollout*

Figure 12-9 *The rendered image*

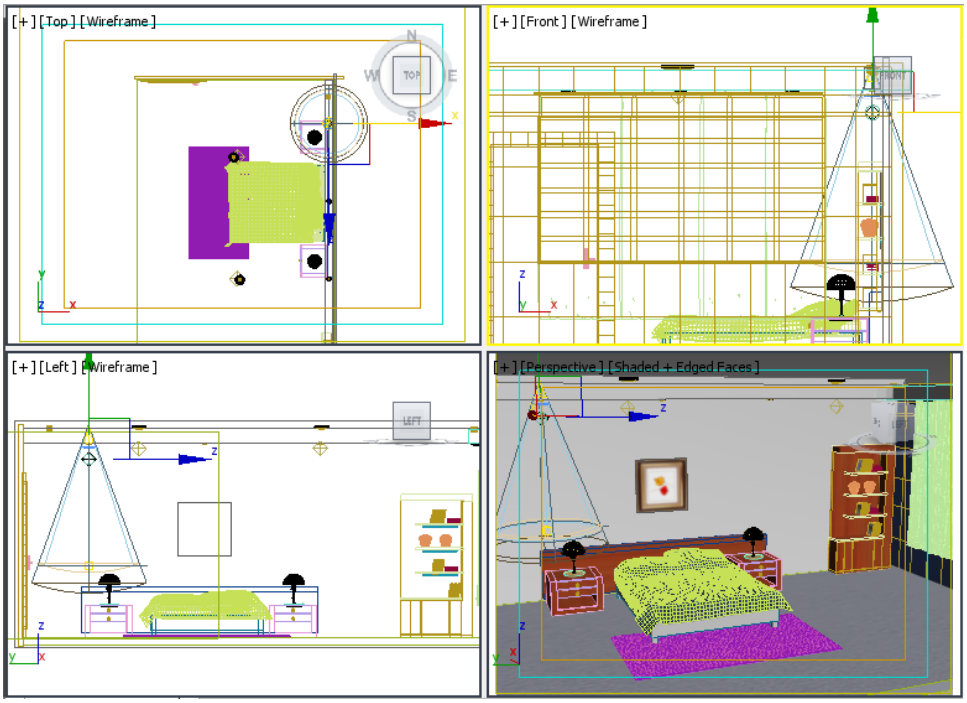


Figure 12-10 *The glow light 1 aligned*

Figure 12-11 *The rendered image*

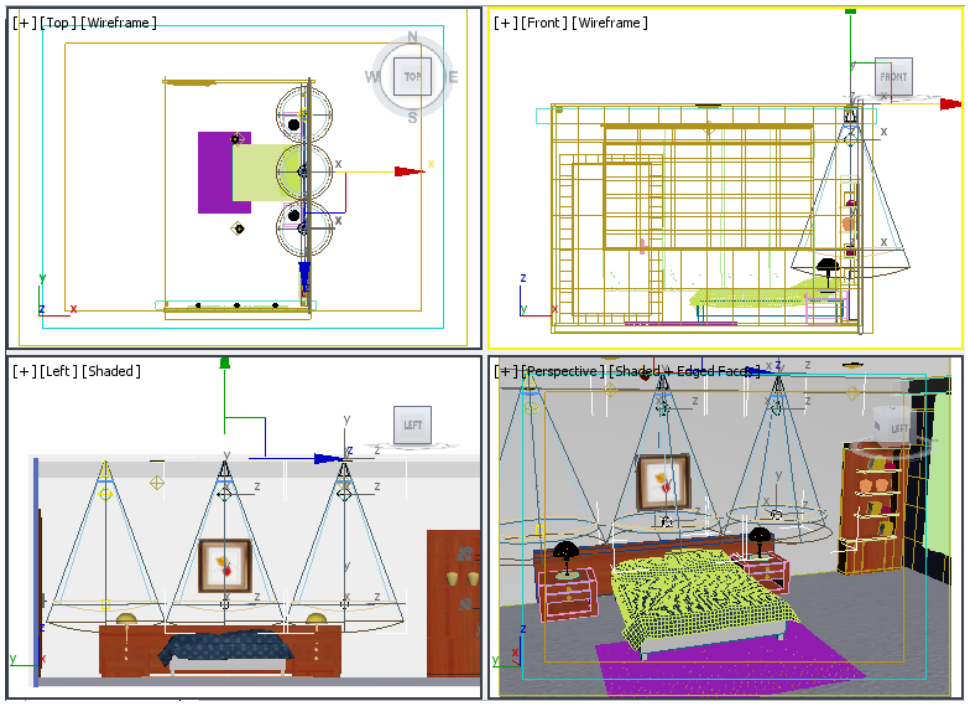


Figure 12-12 *The copies of spot light 1 and glow light 1 created*

Figure 12-13 *The rendered image*

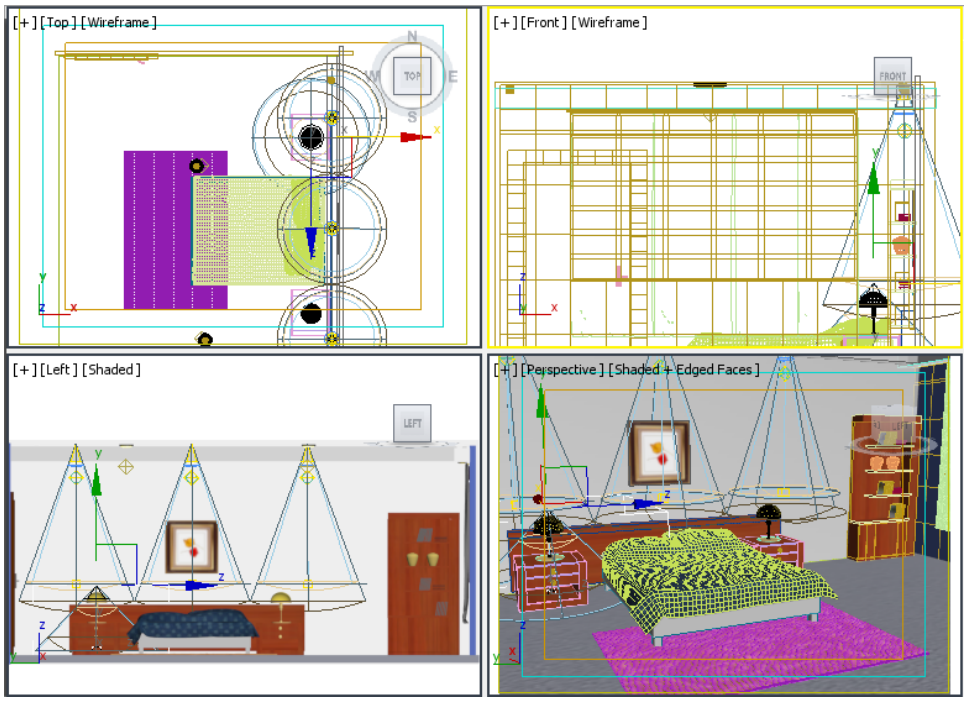


Figure 12-14 *The lamp light 1and lamp light 1.Target aligned*

Figure 12-15 *The rendered image*

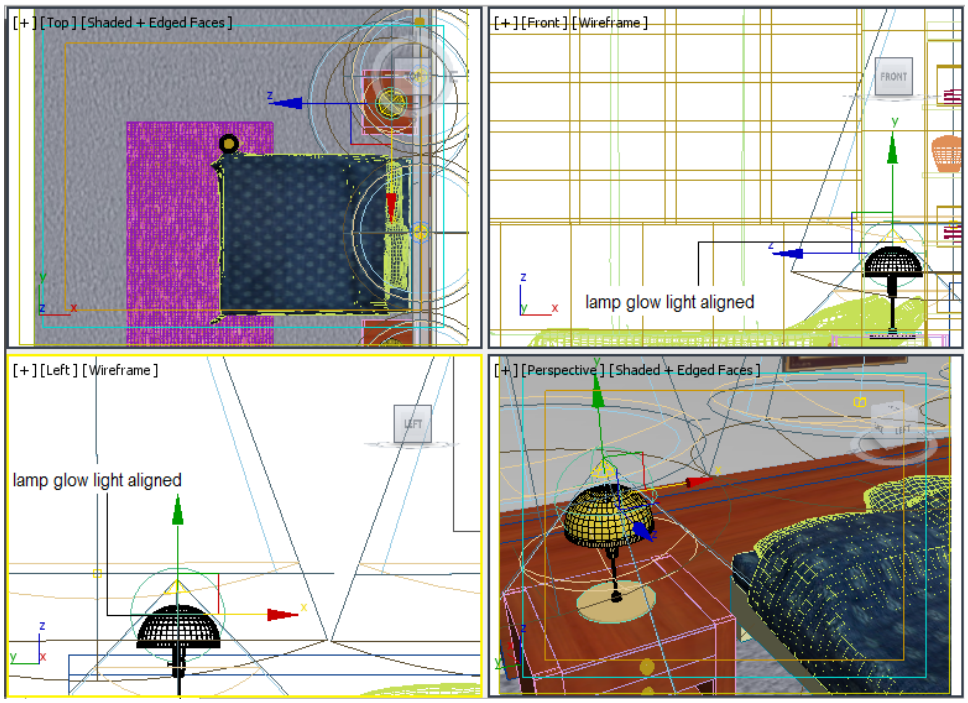


Figure 12-16 *The lamp glow light 1 aligned*

Figure 12-17 *The rendered image*

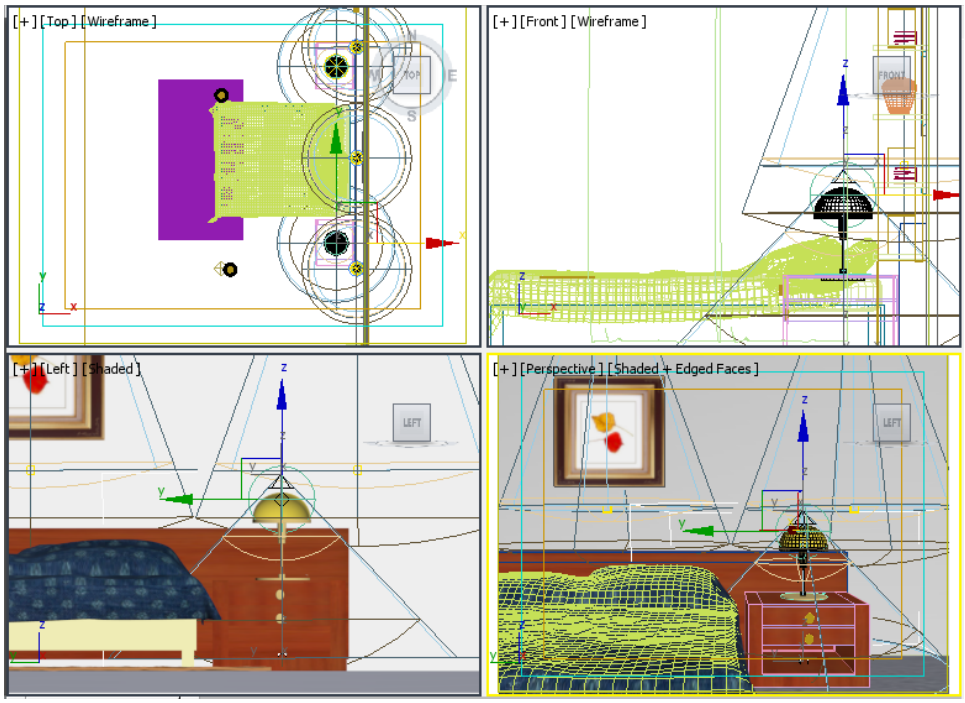


Figure 12-18 *The copy of lamp light 1, lamp light1.Target, lamp glow light 1 aligned*

Figure 12-19 *The rendered image*

Figure 12-20 *The daylight interior scene*

Figure 12-21 *The c12_tut2_start file*

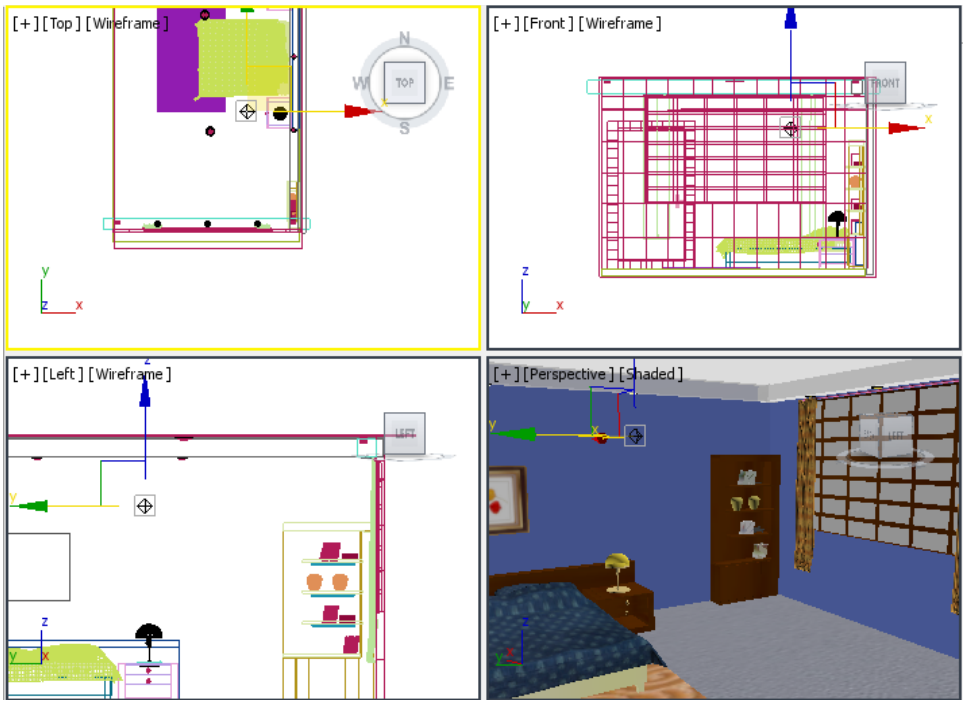


Figure 12-22 *The omni 001 light aligned in all viewports*

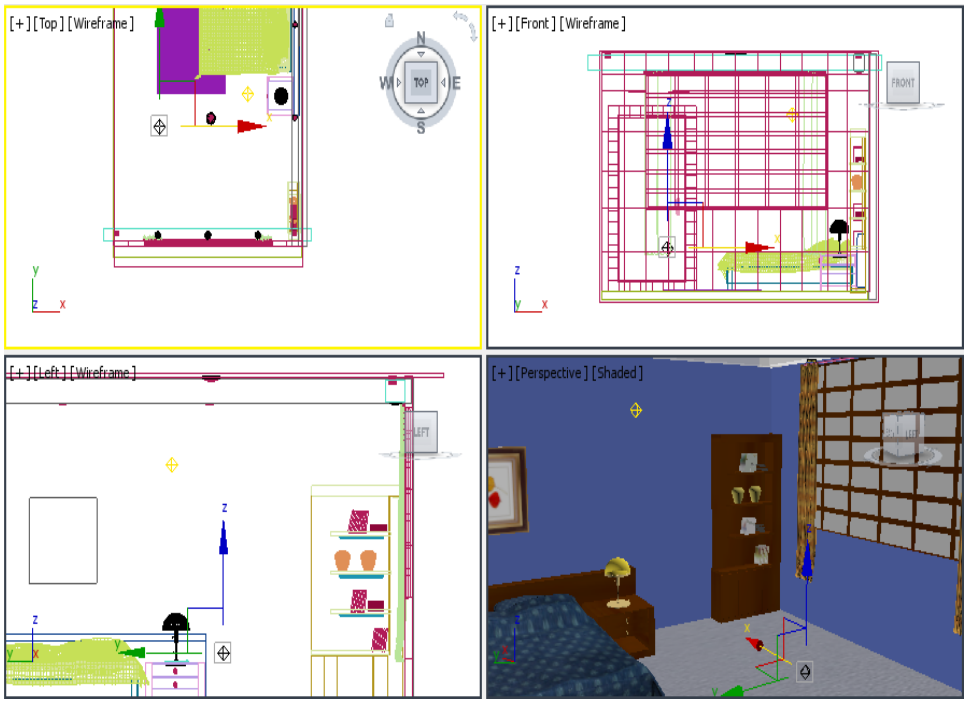


Figure 12-23 *The omni 002 aligned*

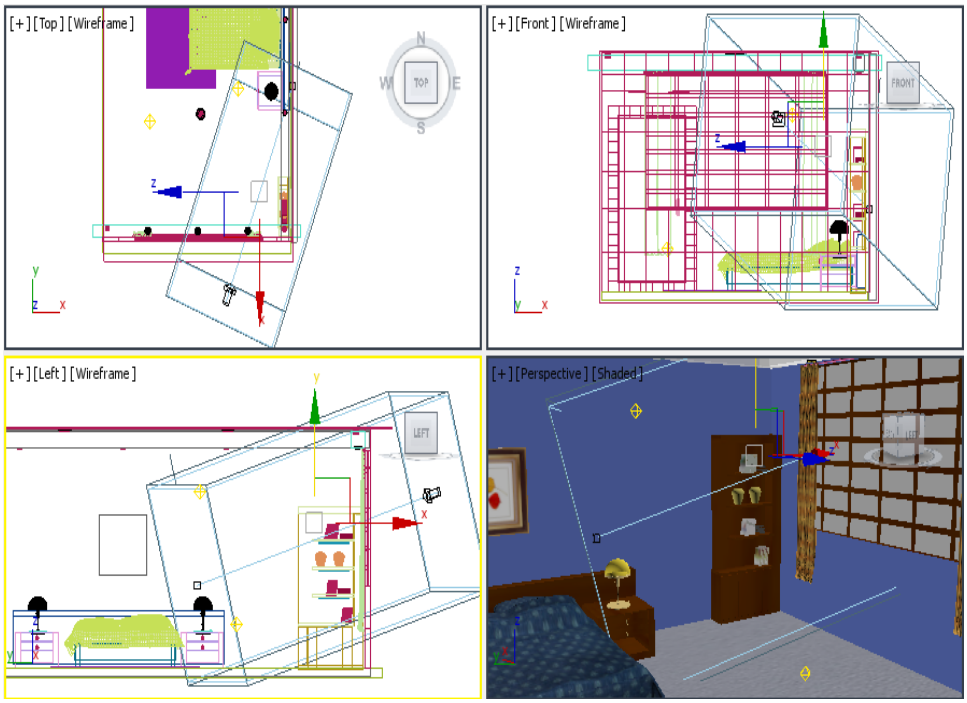


Figure 12-24 *The Direct 001, Direct 001.Target aligned*

Figure 12-25 *The rendered image*

Figure 12-26 *The illuminated scene*

Chapter 13

Interior Lighting-II

Figure 13-1 *The illuminated night interior scene*

Figure 13-2 *The c13_tut1_start.max file*

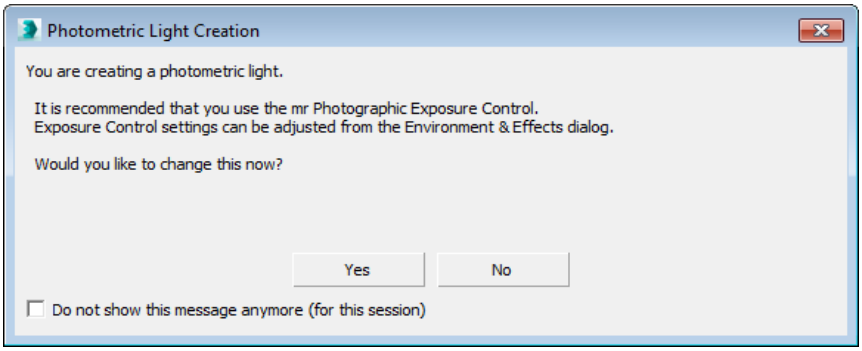


Figure 13-3 *The* ***Photometric Light Creation*** *message box*

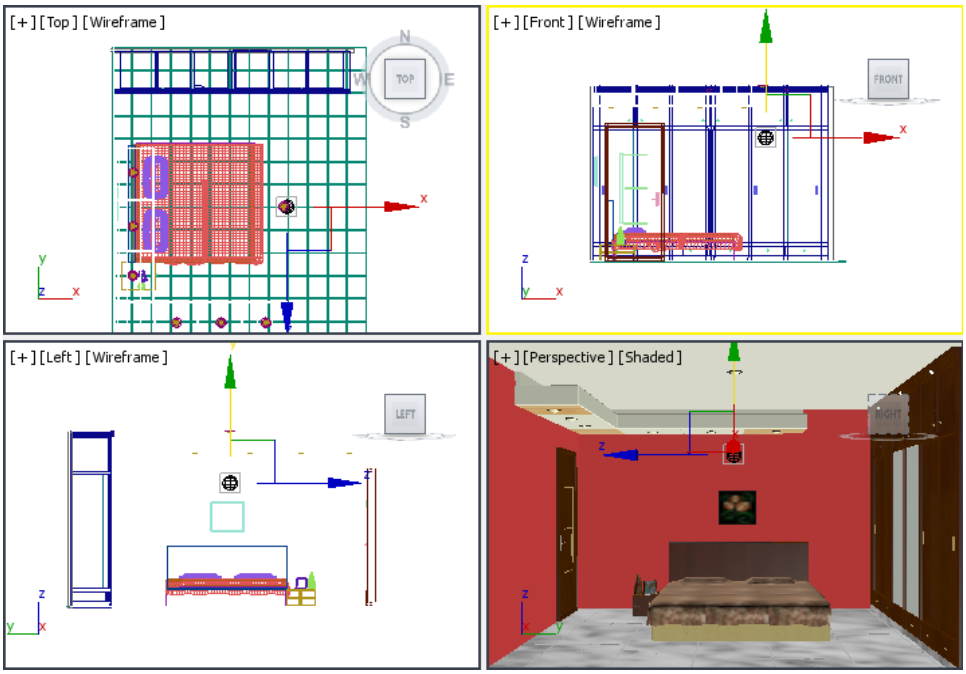


Figure 13-4 *The rooflight1 aligned in all viewports*

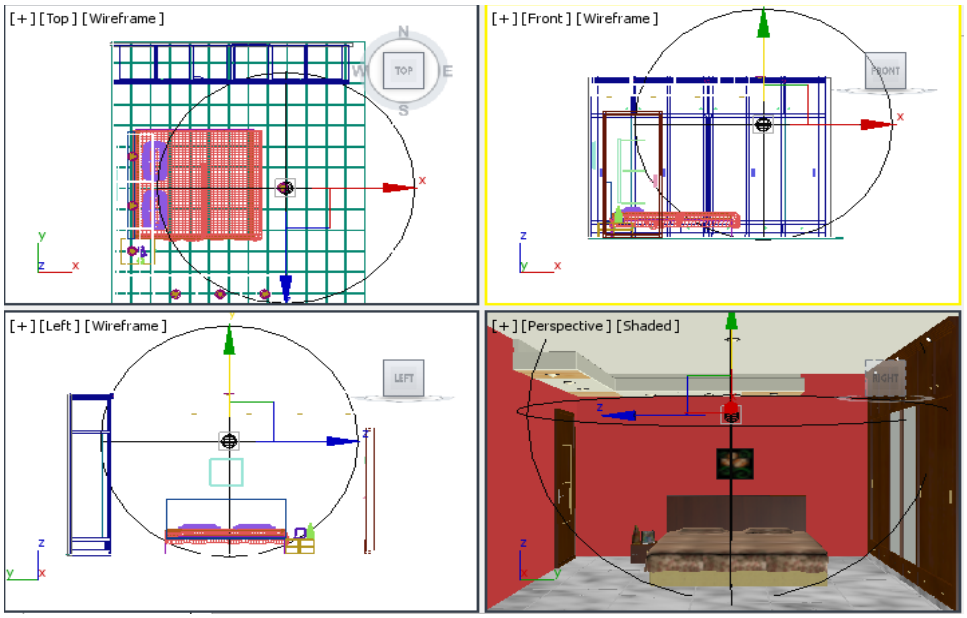


Figure 13-5 *The shape of rooflight1 changed*

Figure 13-6 *The rendered image with grains*

Figure 13-7 *The rendered image without grains*

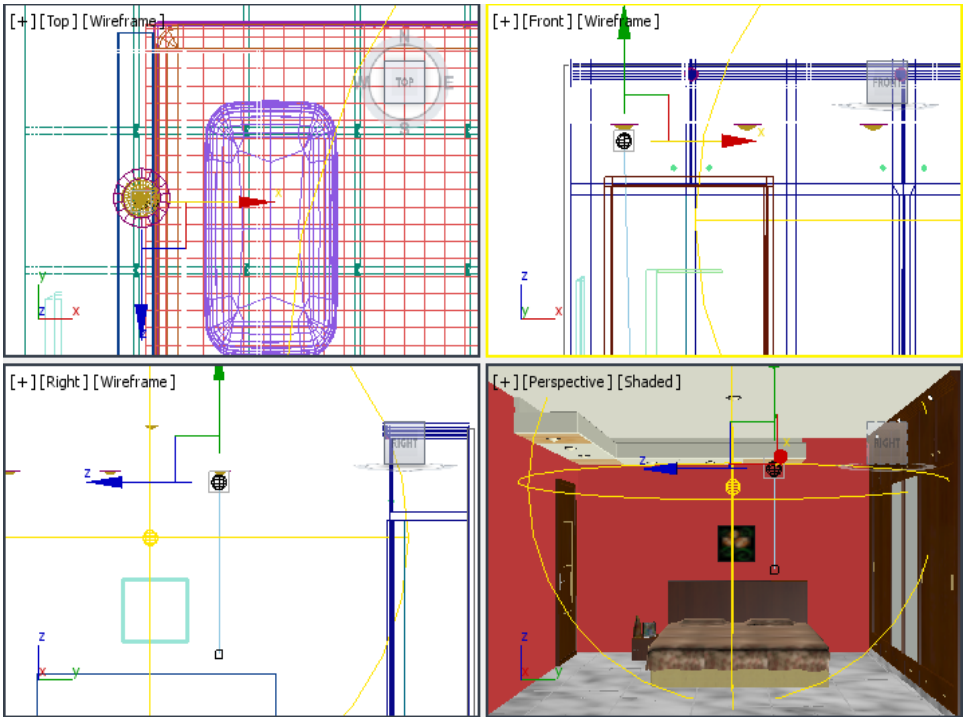


Figure 13-8 *The spot light1 and spot light1.Target aligned in all viewports*

Figure 13-9 *The rendered image*

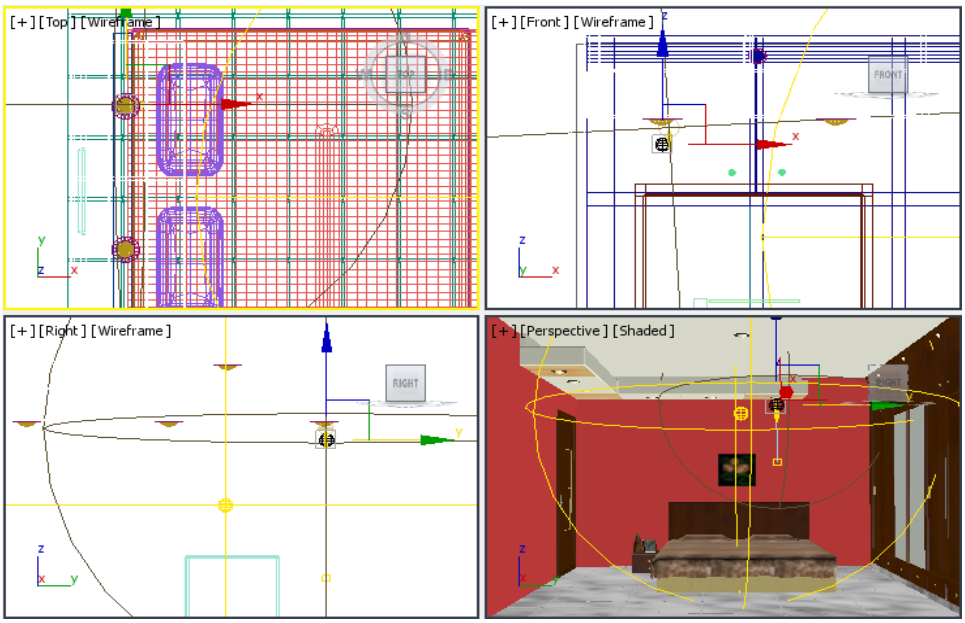


Figure 13-10 *The glowlight1 aligned in all viewports*

Figure 13-11 *The rendered image*

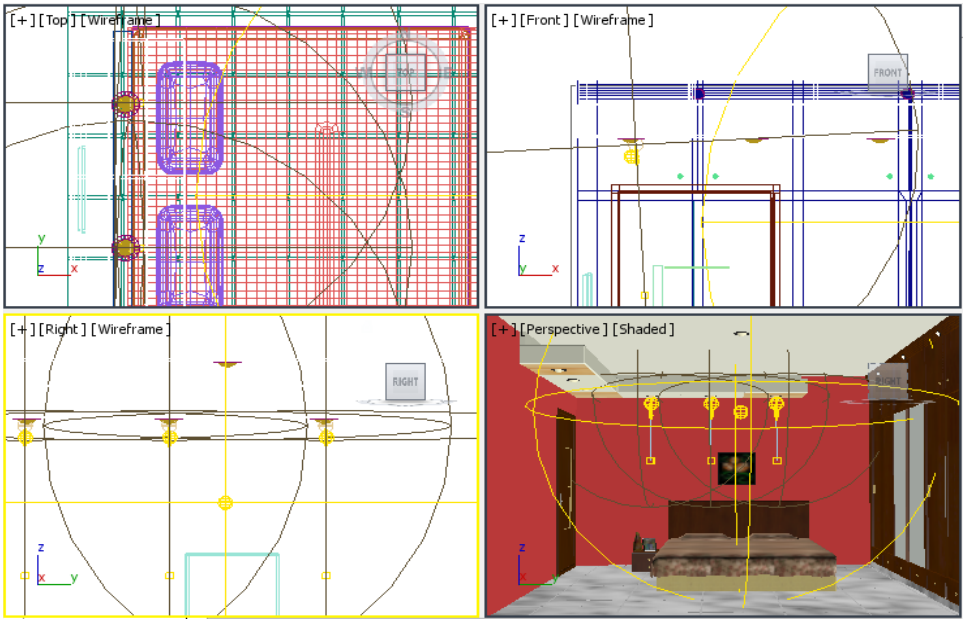


Figure 13-12 *Copies of spot light1, spot light1.Target,* and *glowlight1 aligned in all viewports*

Figure 13-13 *The rendered image*

Figure 13-14 *The scene with false ceiling lights*

Figure 13-15 *The c13_tut2_start.max file*

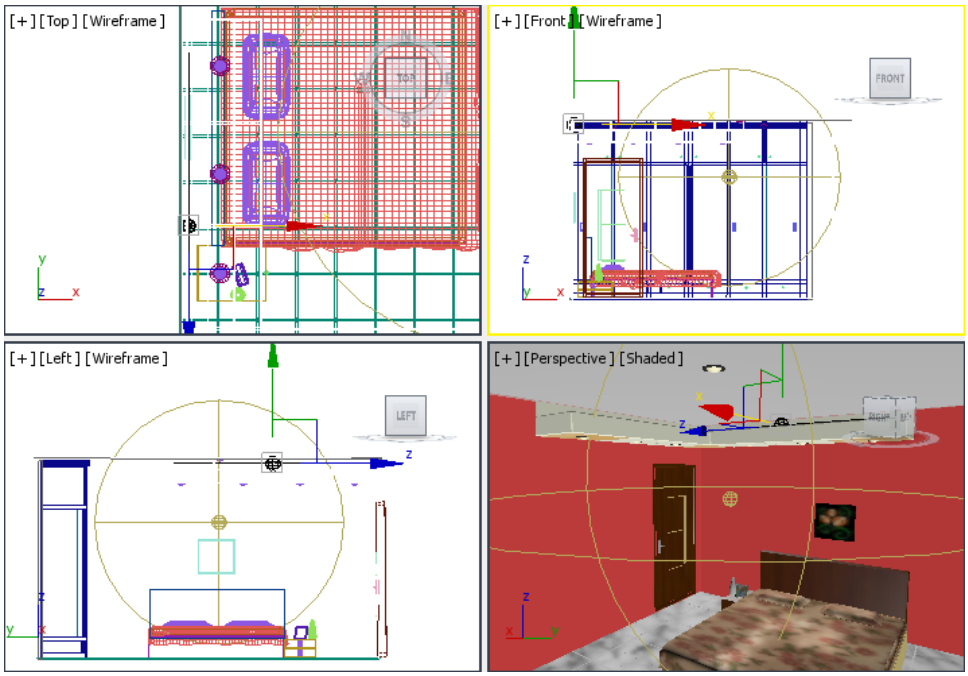


Figure 13-16 ***The*** *fceilinglight1 aligned in all viewports*

Figure 13-17 *The rendered image*

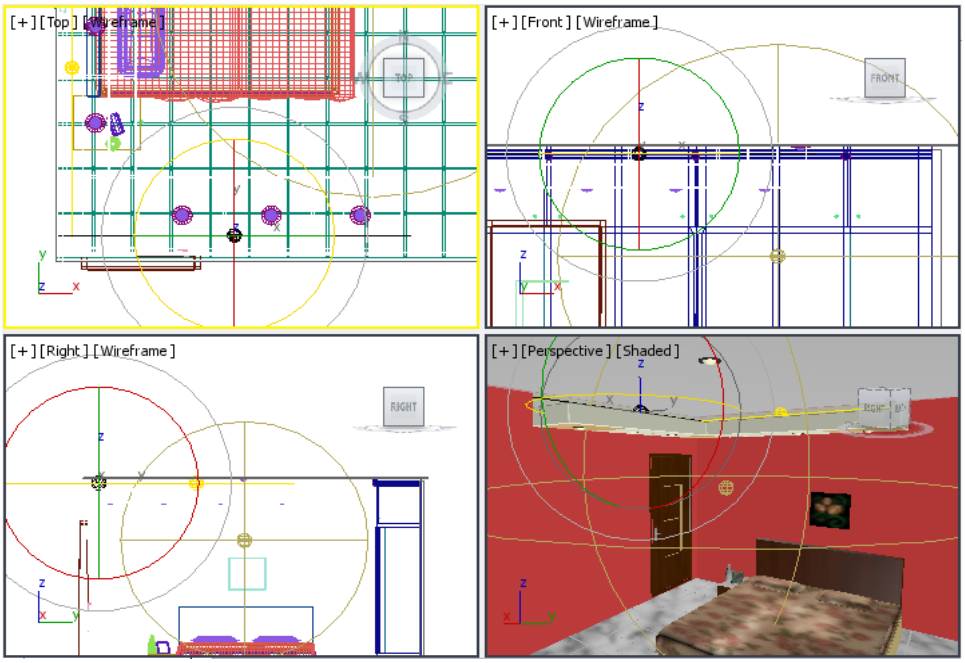


Figure 13-18 *The fceilinglight002 aligned in all viewports*

Figure 13-19 *The rendered image*

Figure 13-20 *The illuminated scene*

Chapter 14

Animation Basics

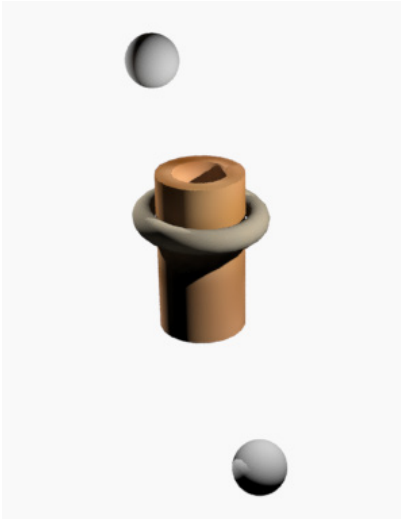


Figure 14-1 *Animated scene at frame 12*

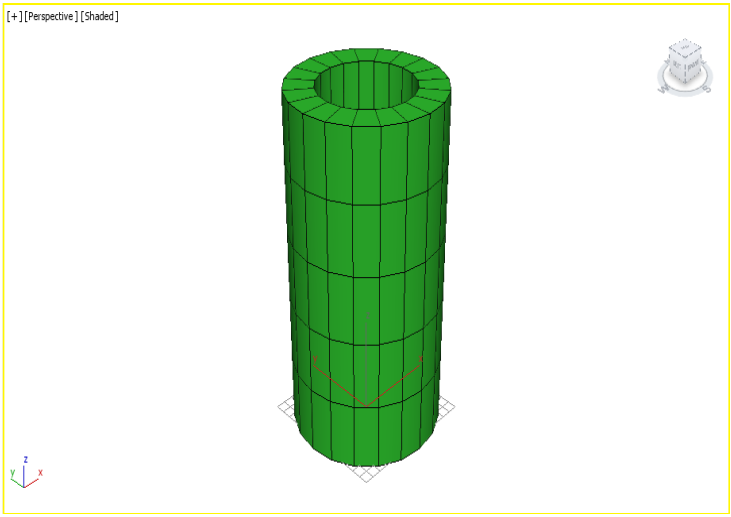


Figure 14-2 *The Shaft zoomed*

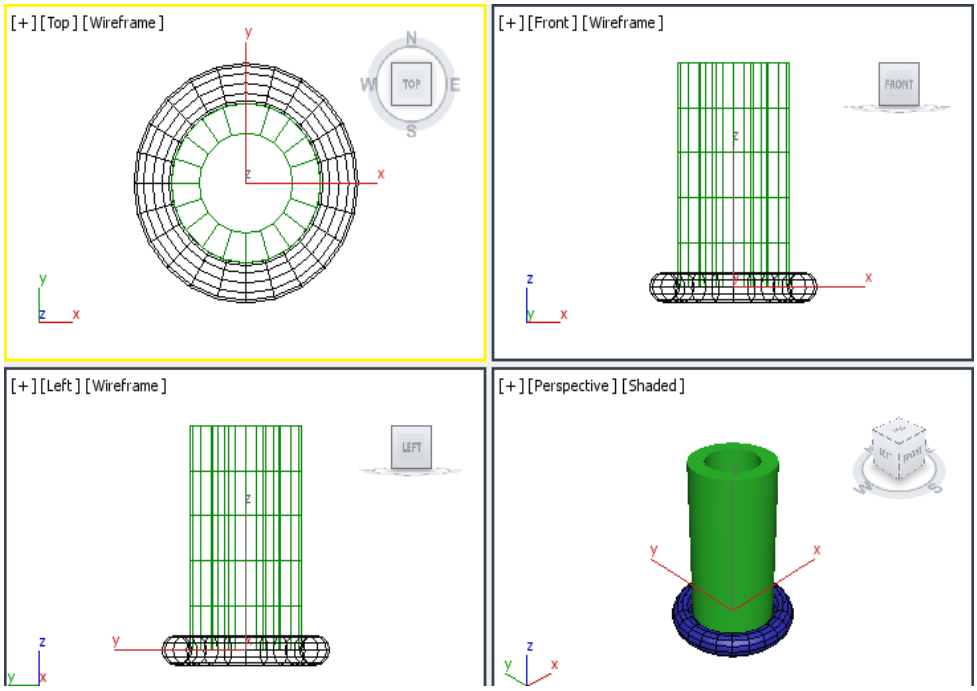


Figure 14-3 *The objects zoomed to their extents*

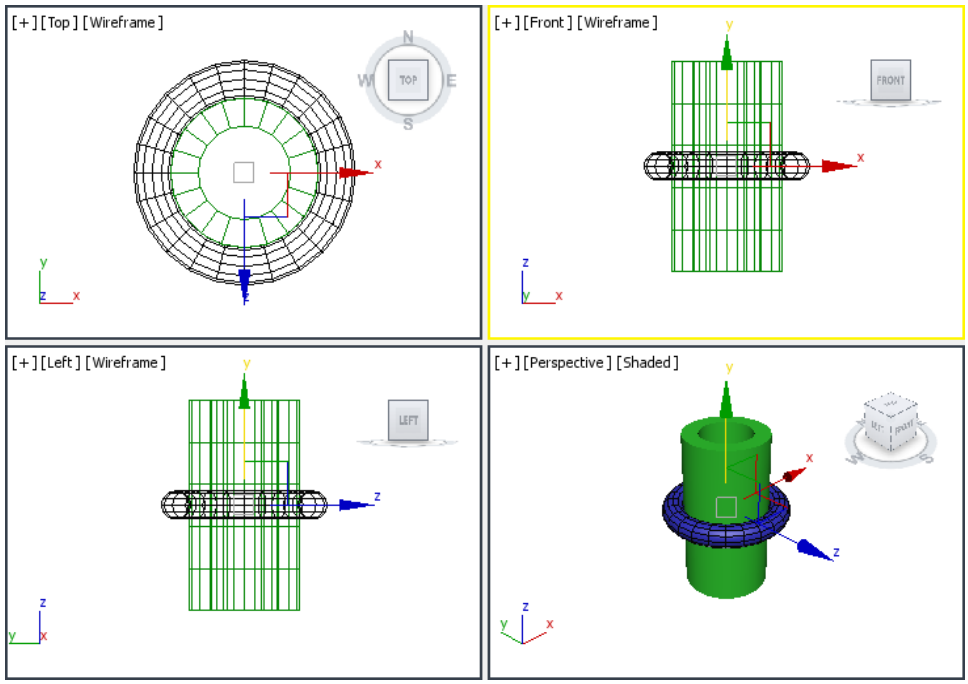


Figure 14-4 *Bearing placed near the middle of Shaft*

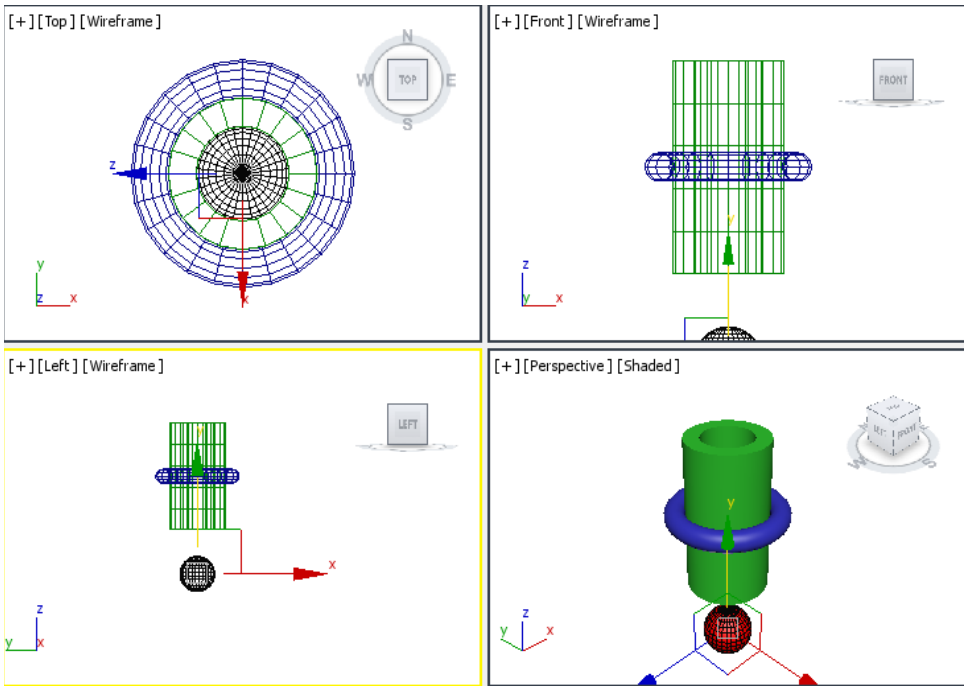


Figure 14-5 *Ball01 created and moved down the Y axis*

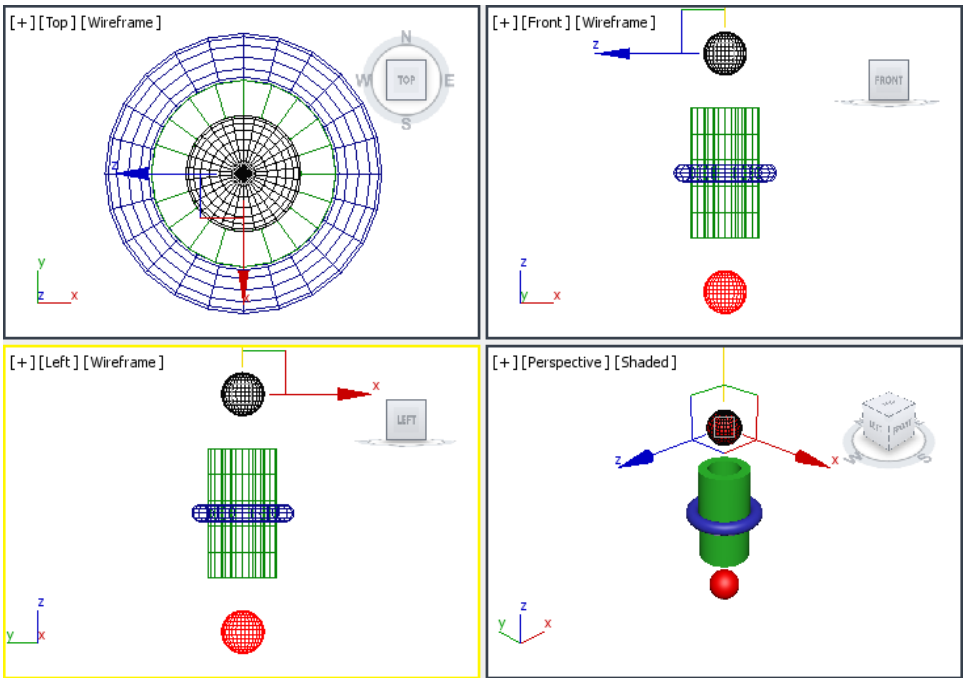


Figure 14-6 *Ball02 created above Shaft*

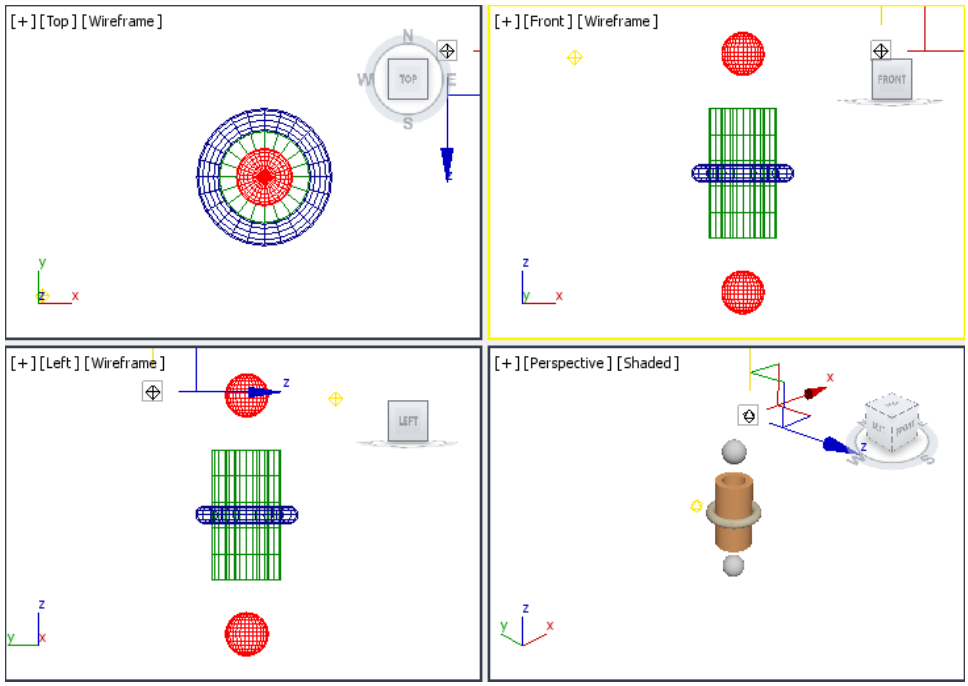


Figure 14-7 *The two omni lights displayed in all viewports*

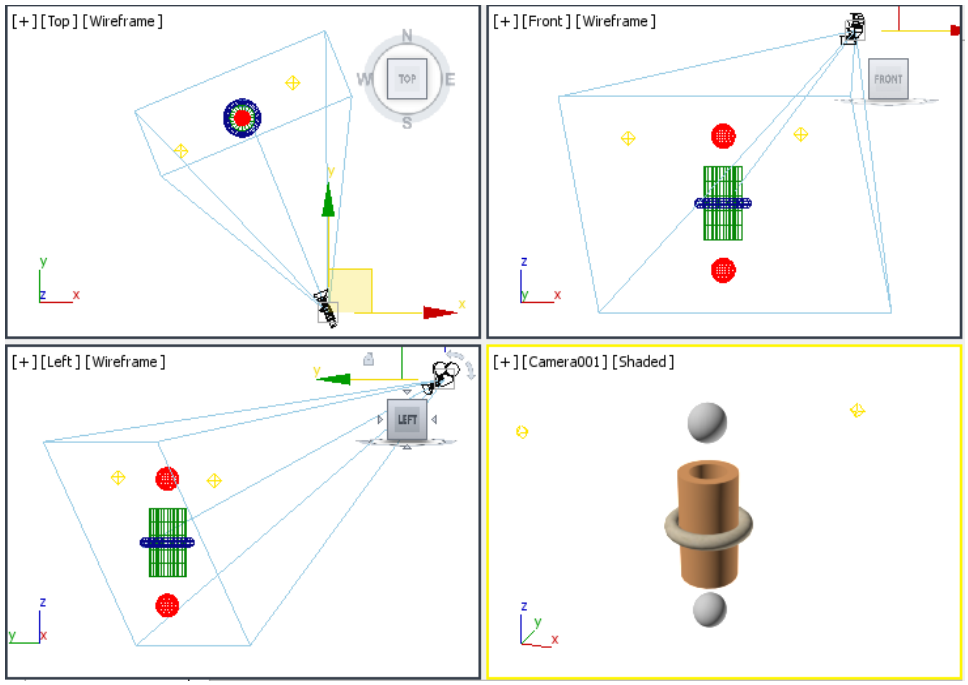


Figure 14-8 *Placing the objects at the center of the Camera viewport*

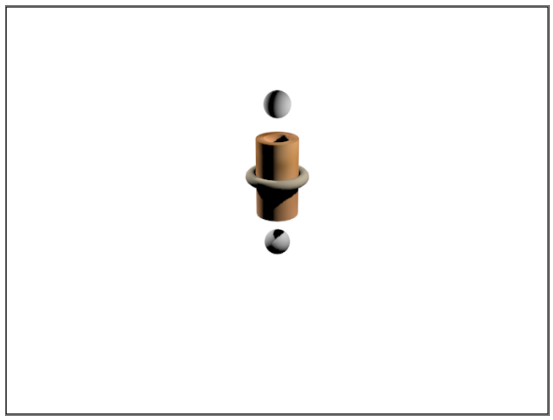


Figure 14-9 *The rendered image*

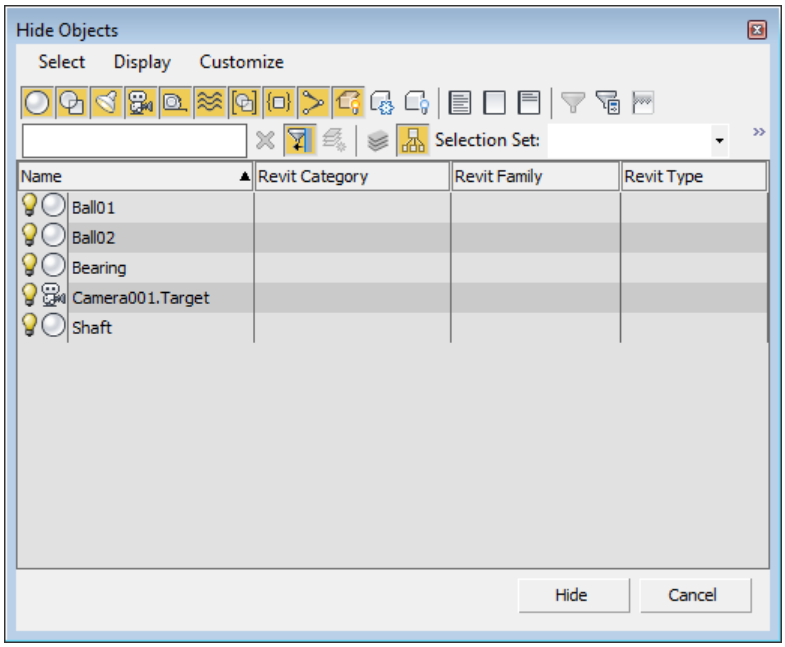


Figure 14-10 *The* ***Hide Objects*** *dialog box*

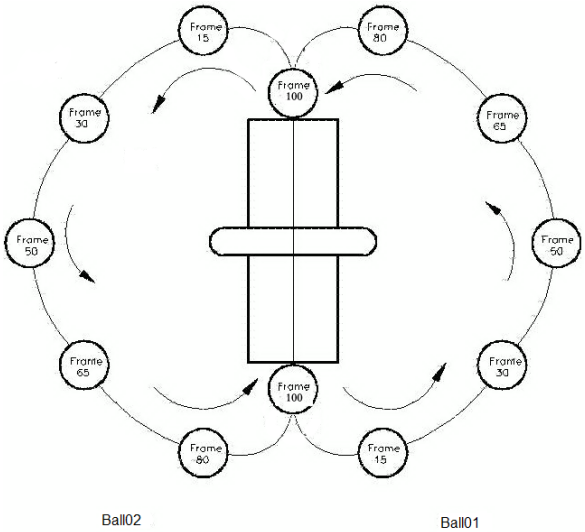


Figure 14-11 *The image showing the suggested paths for the two balls*

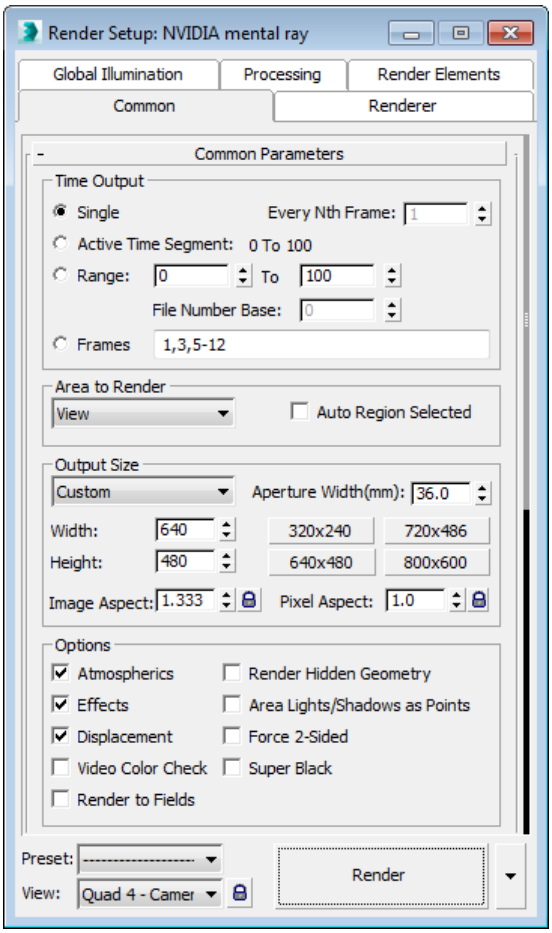


Figure 14-12 *The* ***Render Setup: NVIDIA mental ray*** *dialog box*

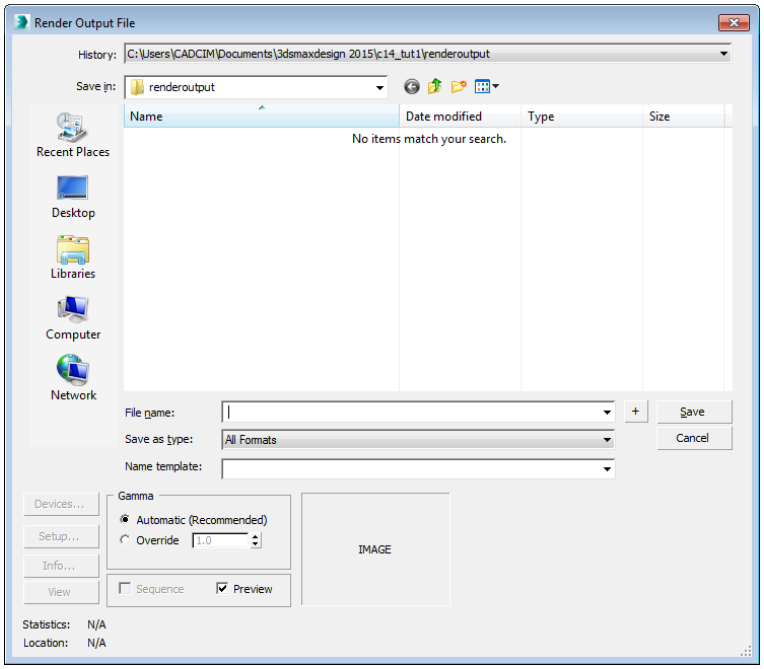


Figure 14-13 *The* ***Render Output File*** *dialog box*

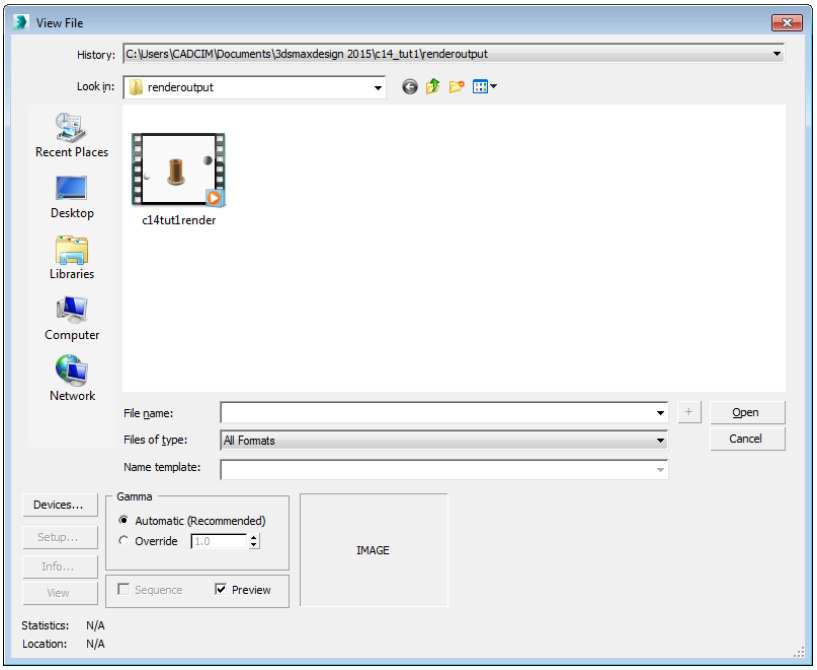


Figure 14-14 *The* ***View File*** *dialog box*

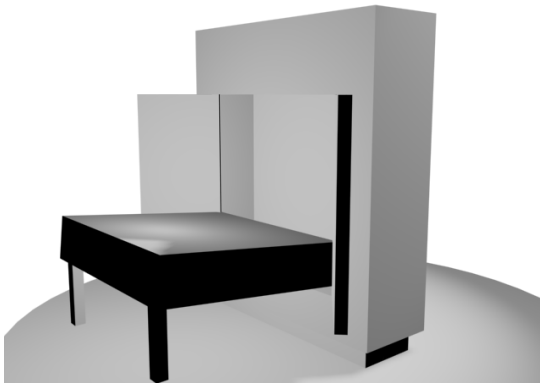


Figure 14-15 *Animated scene at frame 39*

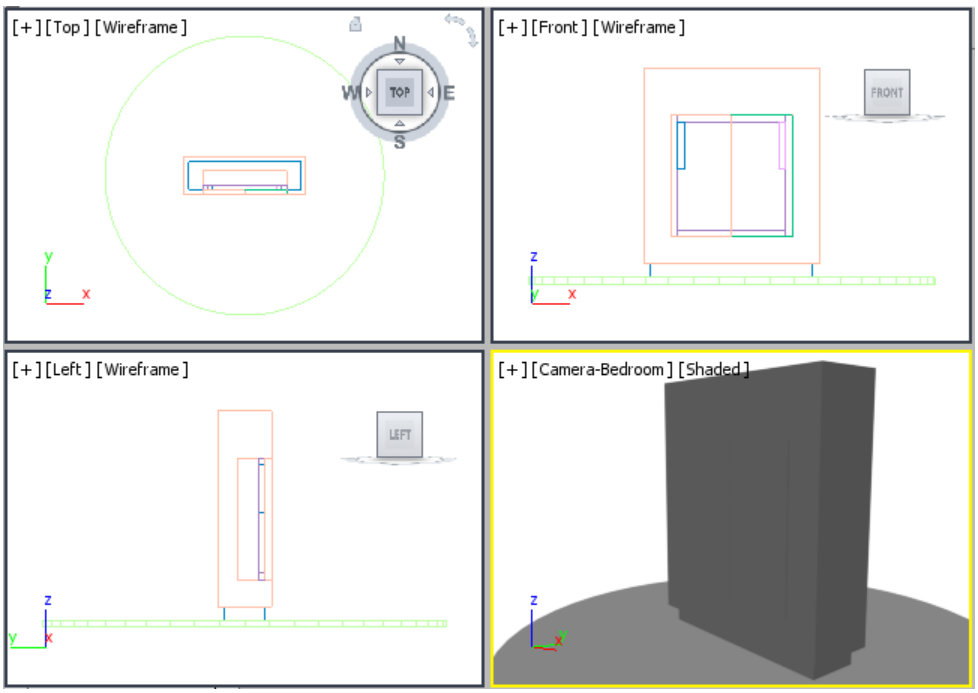


Figure 14-16 *The c14_tut2_start.max file*

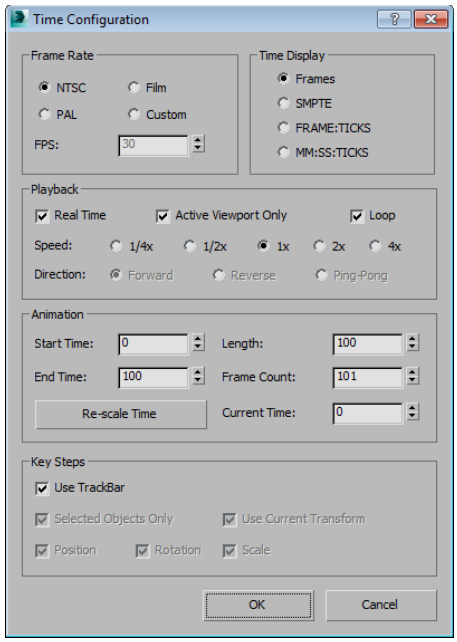


Figure 14-17 *The* ***Time Configuration*** *dialog box*

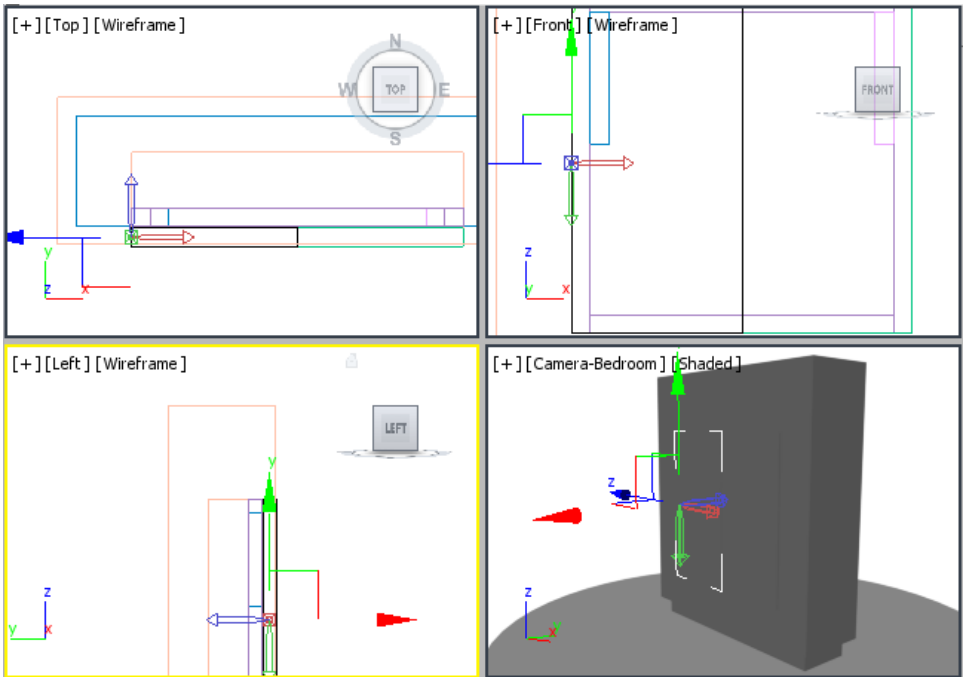


Figure 14-18 *The Pivot point of the Door-Left object*

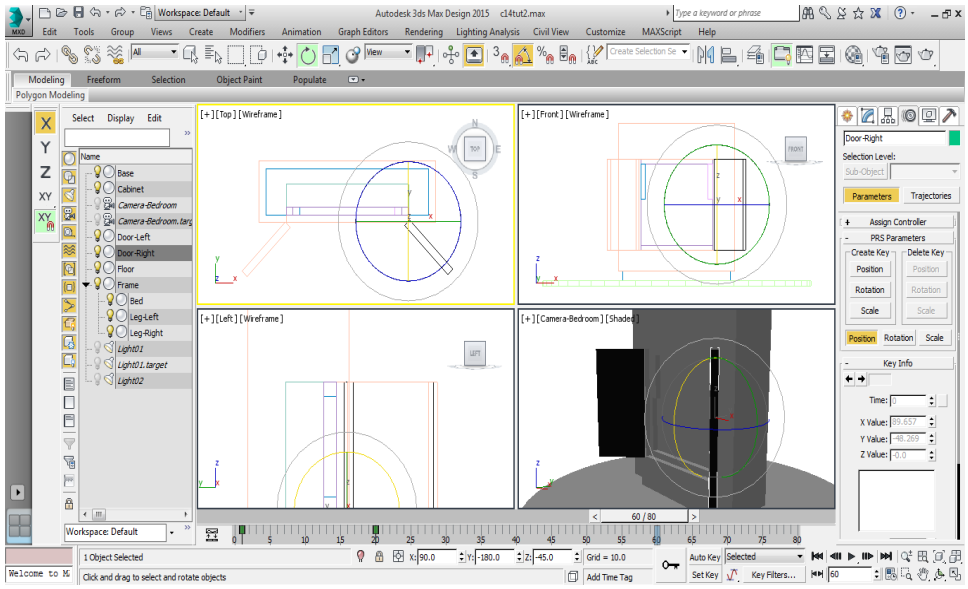


*Figure 14-19 The **Motion** tab displayed for the Door-Right object*

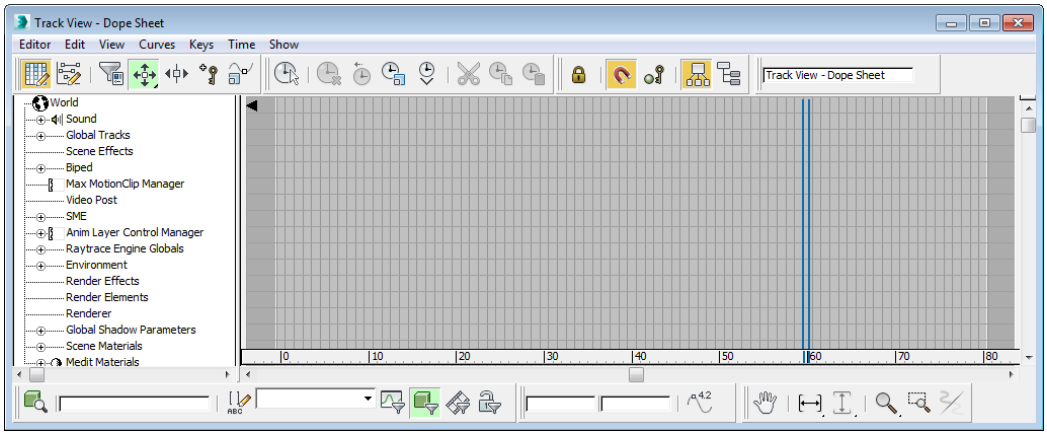


*Figure 14-20 The **Track View -Dope Sheet** window*

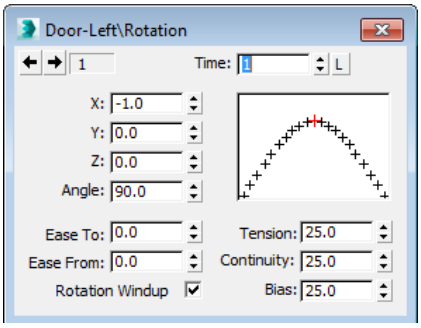


*Figure 14-21 The **Door-Left\Rotation** dialog box*

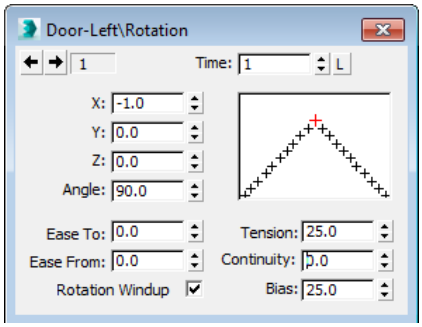


*Figure 14-22 The **Door-Left\Rotation** dialog box*

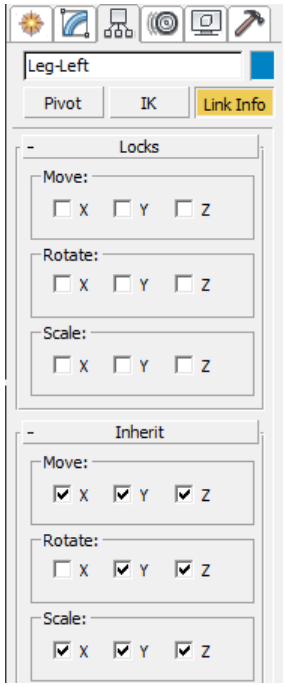


Figure 14-23 *The* ***Link Info*** *button in the* ***Hierarchy*** *tab*

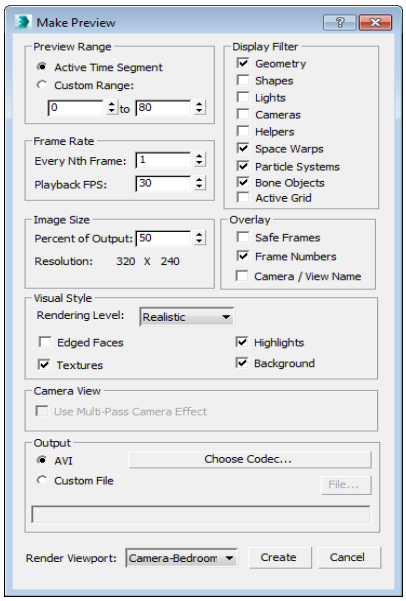


Figure 14-24 *The* ***Make Preview*** *dialog box*

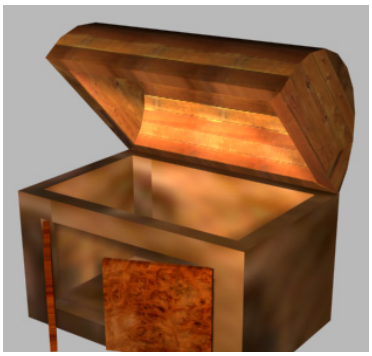


Figure 14-25 *Animation at frame 15*

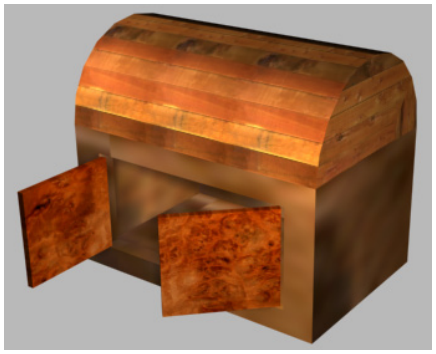


Figure 14-26 *Animation at frame 30*

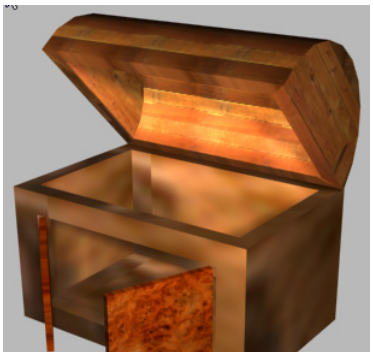


Figure 14-27 *Animation at frame 45*

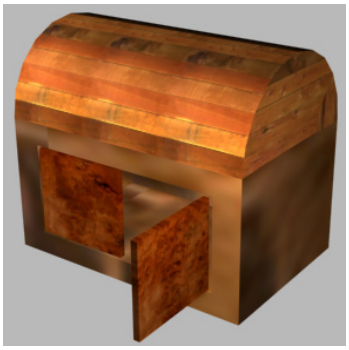


Figure 14-28 *Animation at frame 60*

Figure 14-29 *Animation at frame 0*

Figure 14-30 *Animation at frame 10*

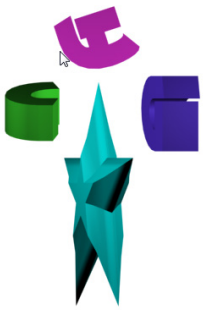


Figure 14-31 *Animation at frame 30*

Figure 14-32 *Animation at frame 0*

Figure 14-33 *Animation at frame 30*

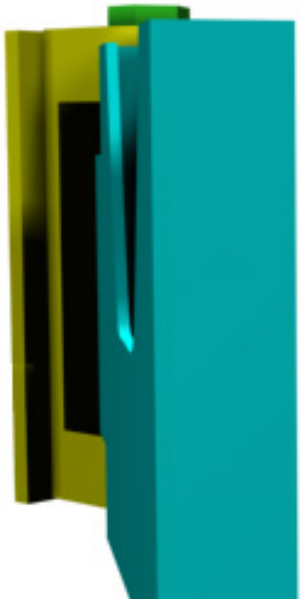


Figure 14-34 *Animation at frame 40*

Chapter 15

Complex Animation

Figure 15-1 *Animation at frame 43*

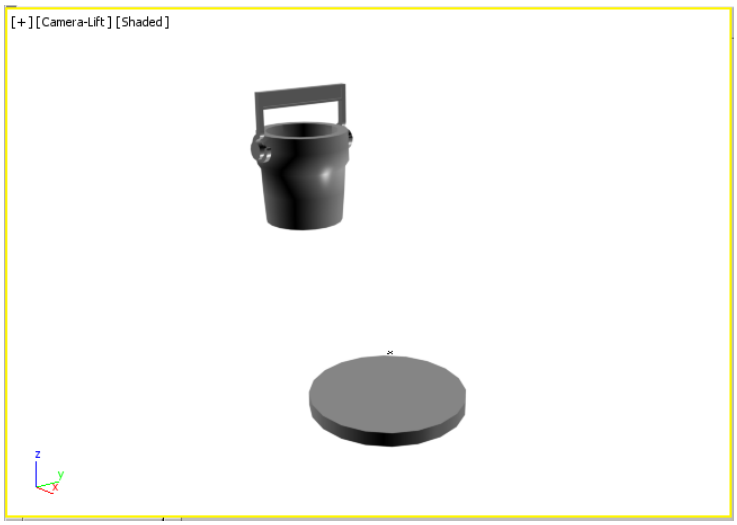


Figure 15-2 *The c15_tut1_start file*

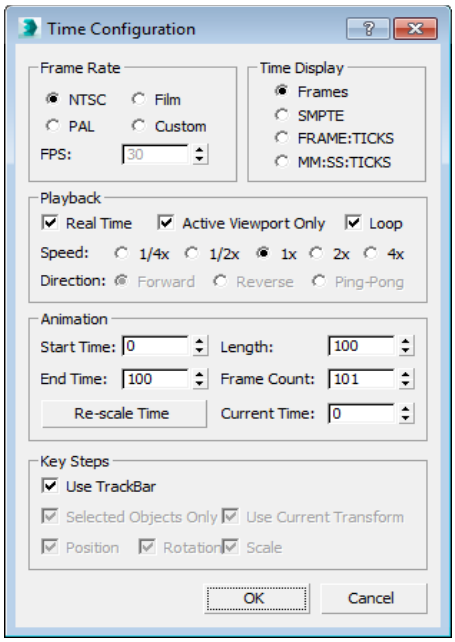


Figure 15-3 *The* ***Time Configuration*** *dialog box*

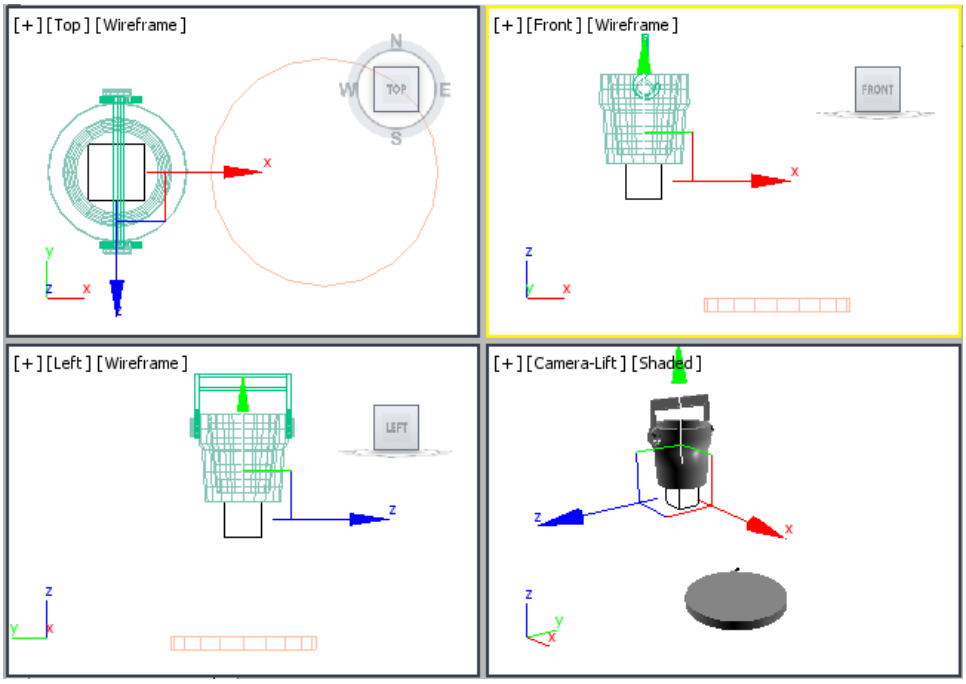


Figure 15-4 *A dummy object created*

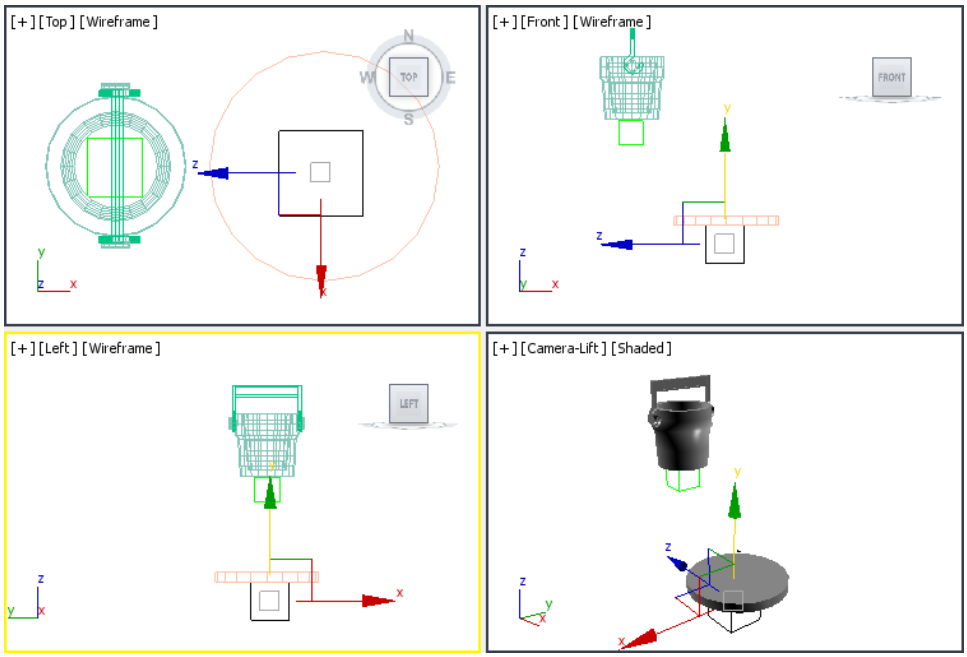


Figure 15-5 *Adjusting the position of the cube below Base*

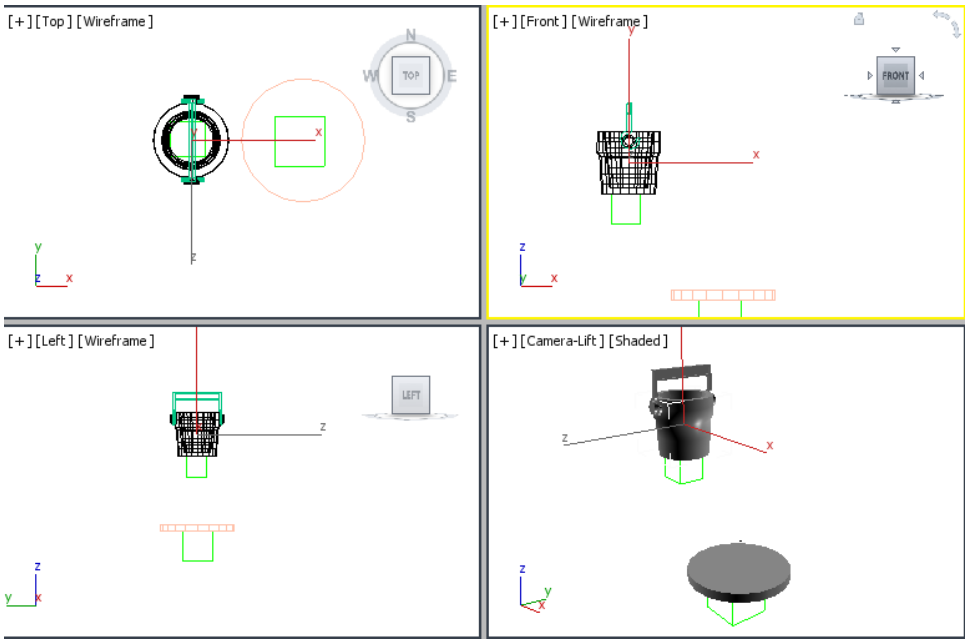


Figure 15-6 *Linking Cauldron with Cal-Dummy*

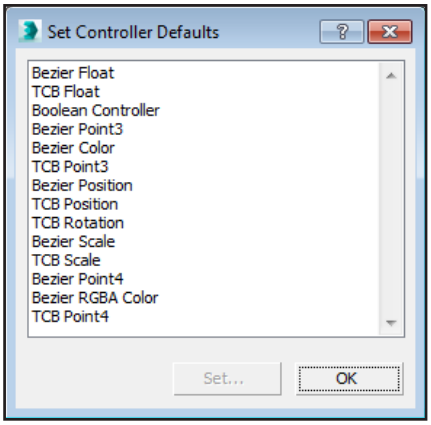


Figure 15-7 *The* ***Set Controller Defaults*** *dialog box*

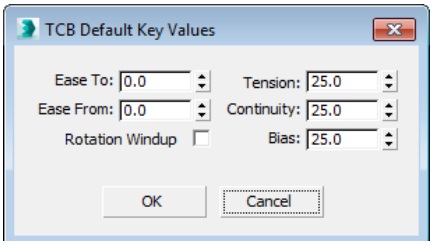


Figure 15-8 *The* ***TCB Default Key Values*** *dialog box*

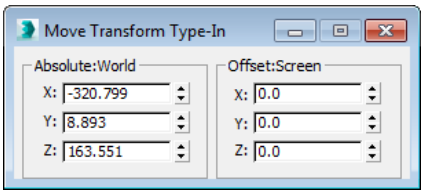


Figure 15-9 *The* ***Move Transform Type-In*** *dialog box*

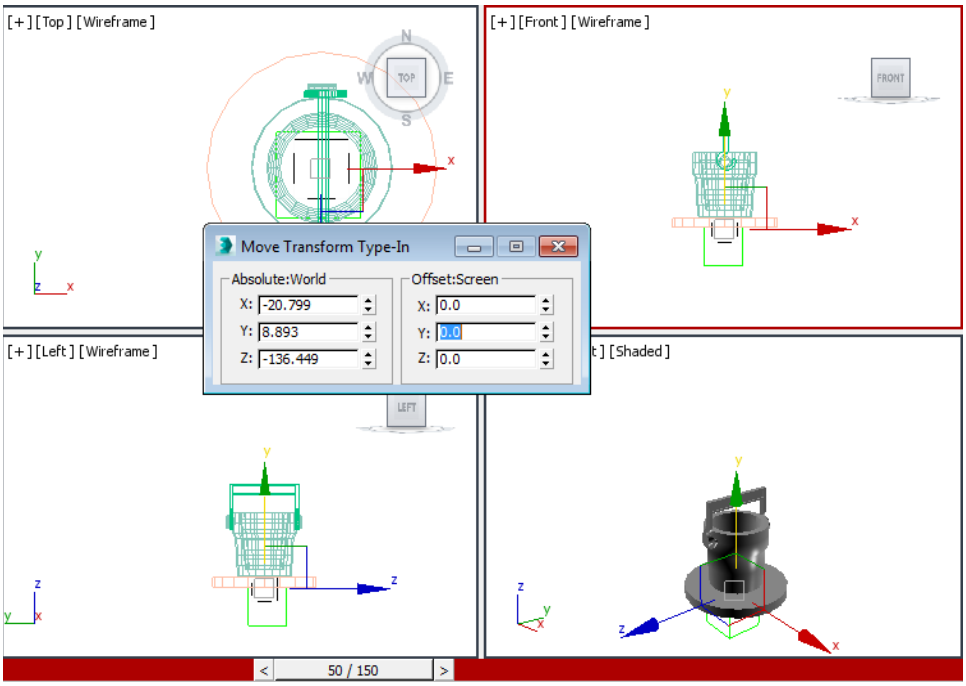


Figure 15-10 *The Cauldron placed on the circular Base*

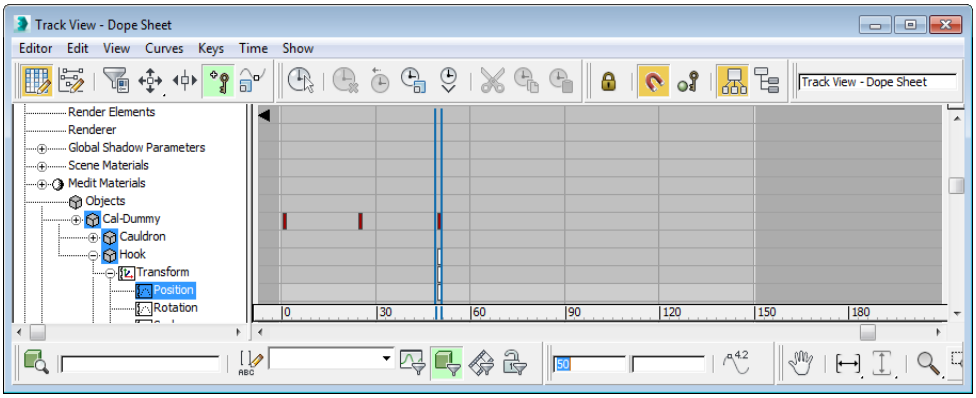


Figure 15-11 *The new key added to the Hook's* ***Position*** *track*

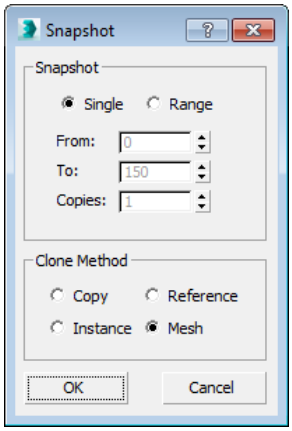


Figure 15-12 *The* ***Snapshot*** *dialog box*

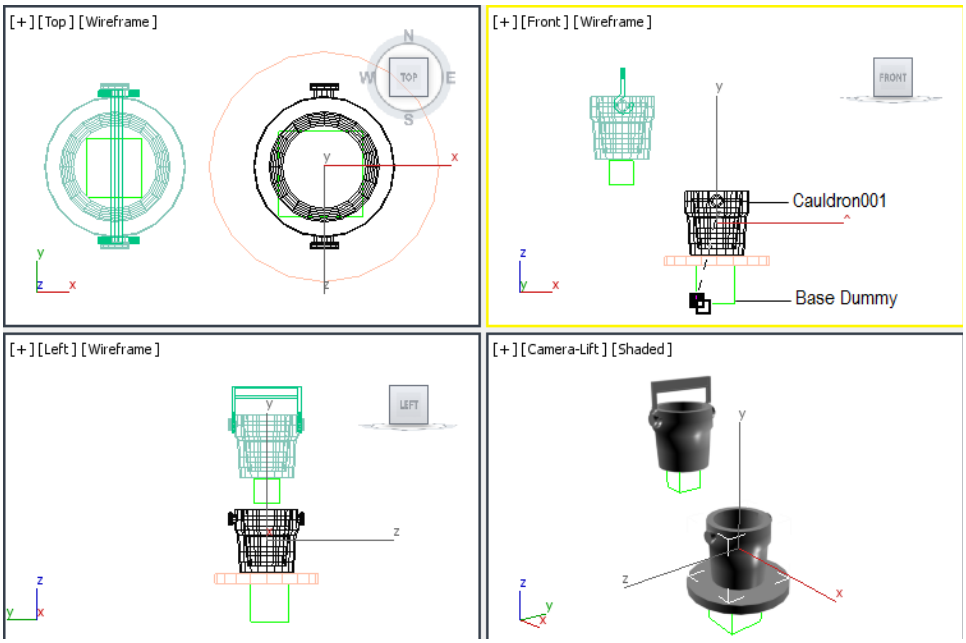


Figure 15-13 *Linking Cauldron with Base-Dummy*

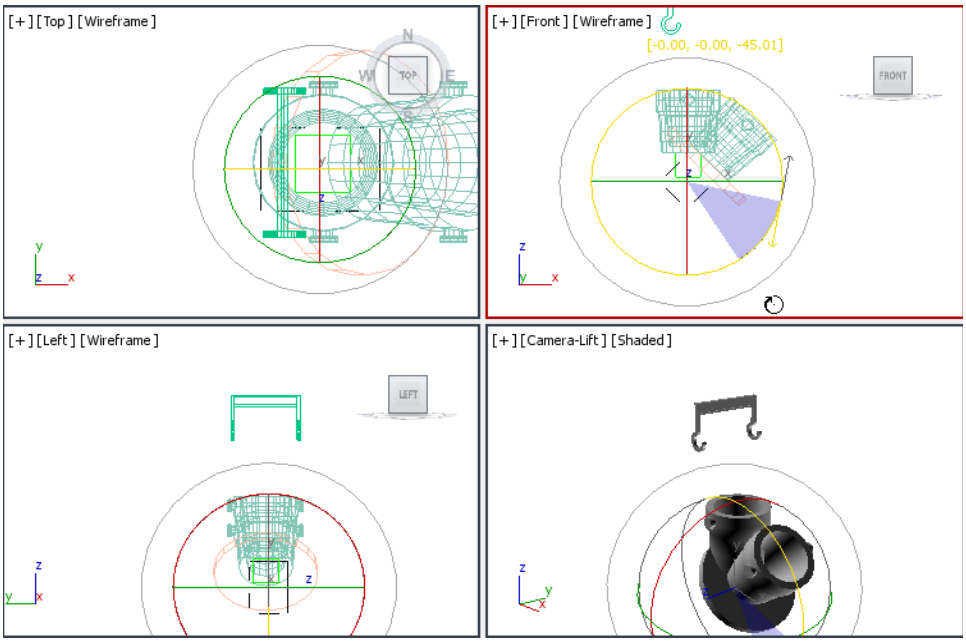


Figure 15-14 *Rotating Base-Dummy -45 degrees on the Z axis*

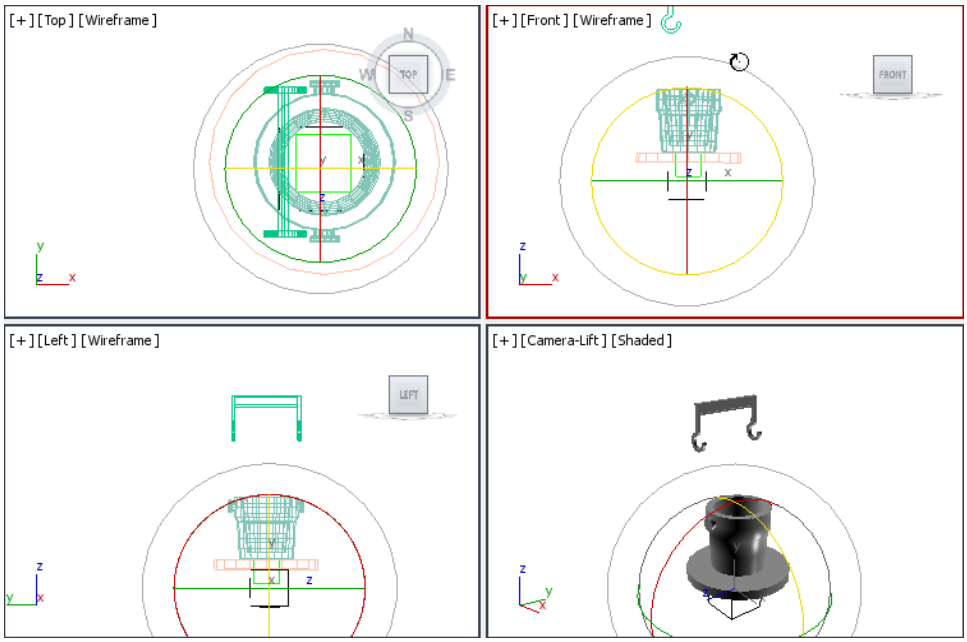


Figure 15-15 *Rotating Base-Dummy +45 degrees on the Z axis*

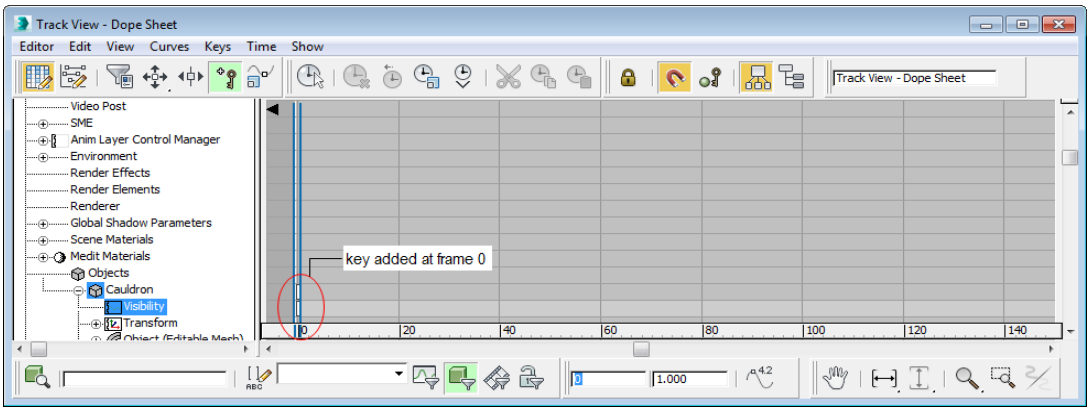


Figure 15-16 *Adding a new key in the* ***Visibility*** *track at frame 0*

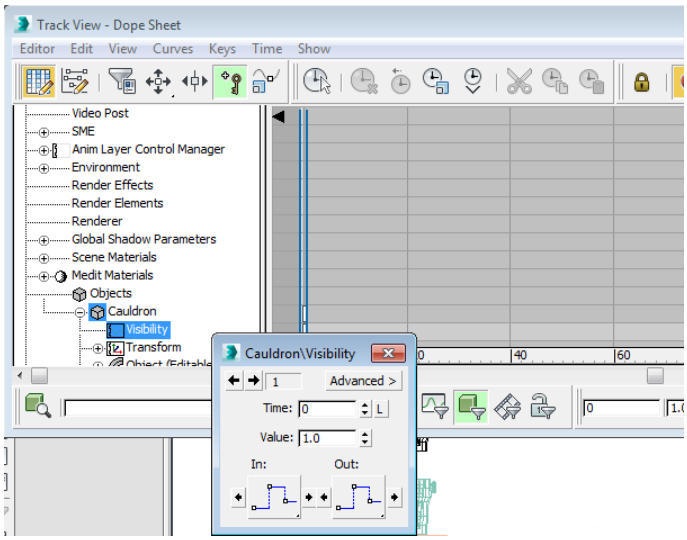


Figure 15-17 The ***Cauldron/Visibility*** *dialog box*

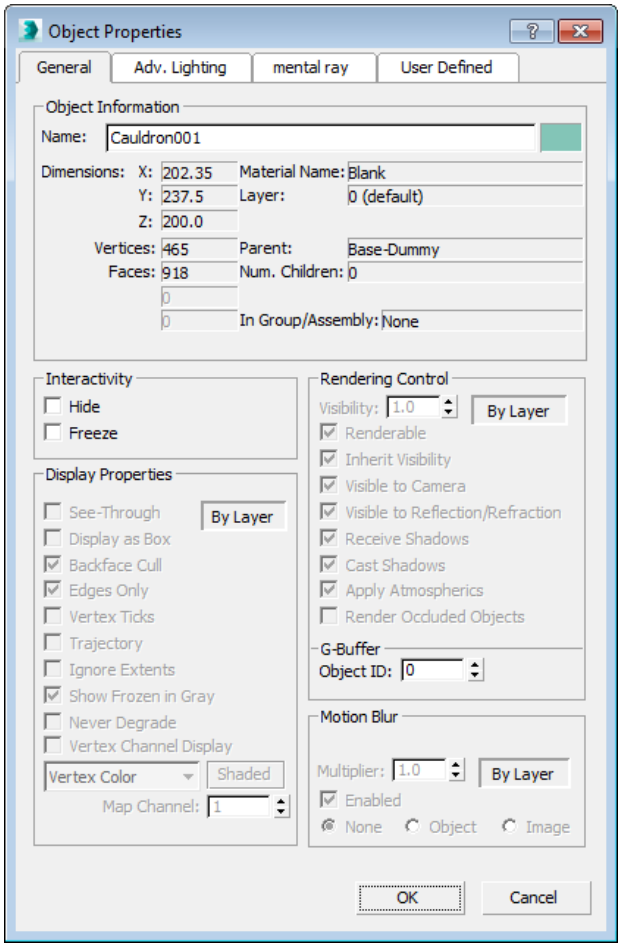


Figure 15-18 The ***Object Properties*** *dialog box*

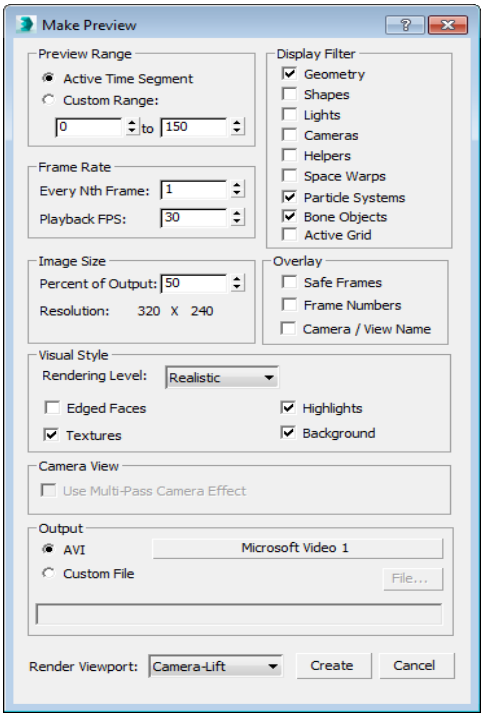


Figure 15-19 *The* ***Make Preview*** *dialog box*

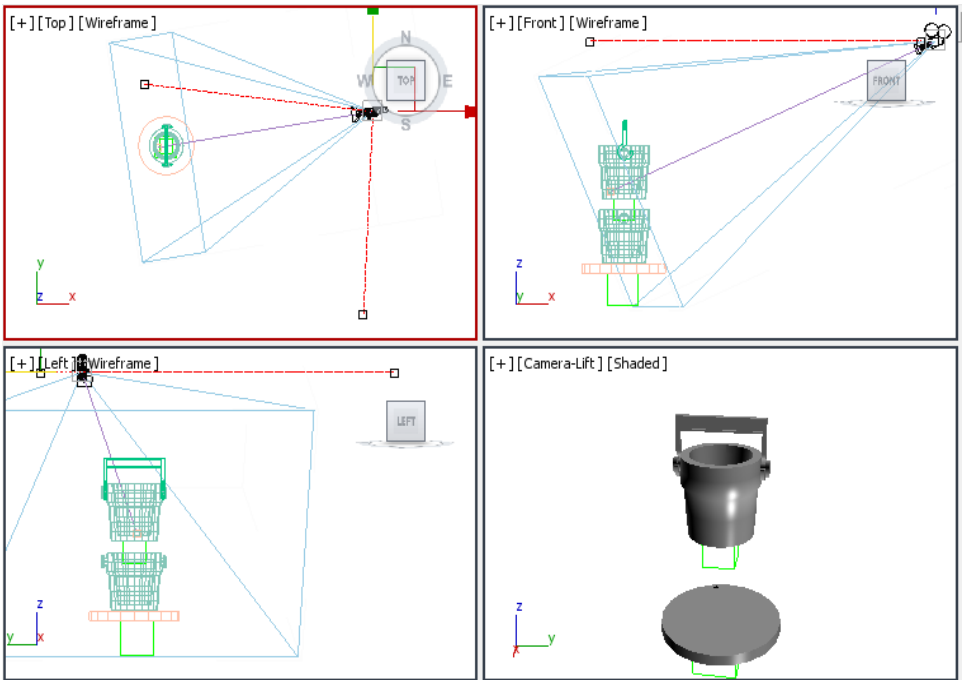


Figure 15-20 *Adjusting the camera position in the viewport*

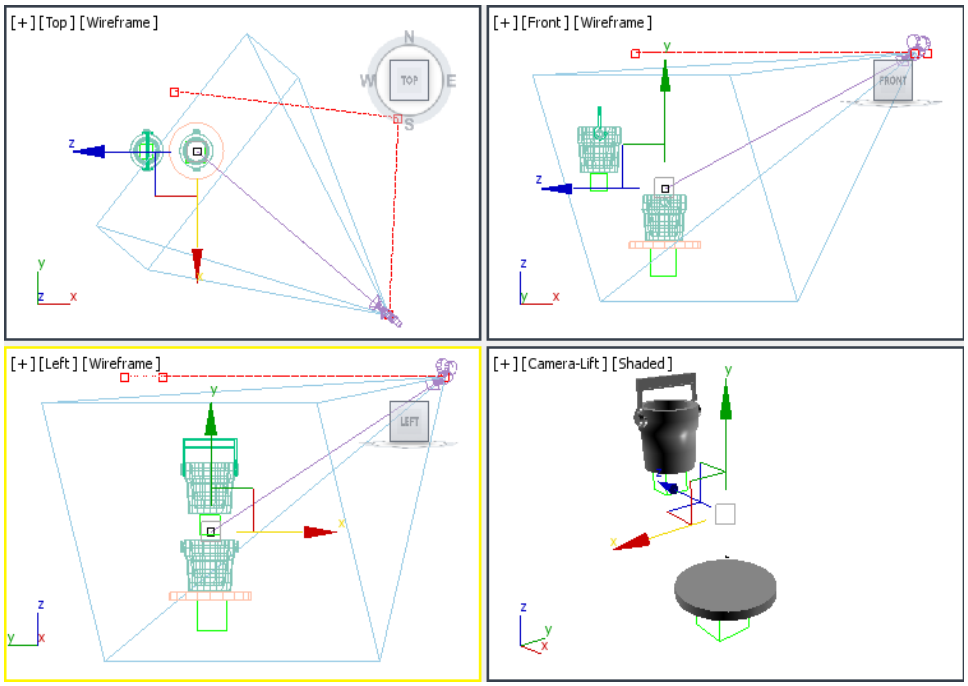


Figure 15-21 *Adjusting the Camera-Lift.target to the center of Cauldron in the Top and Left viewports*

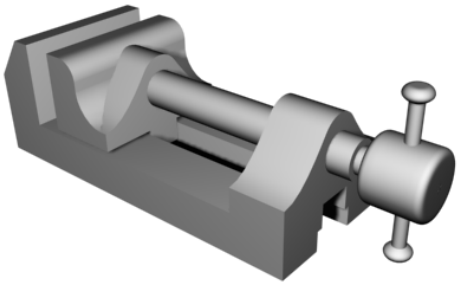


Figure 15-22 *Animation at frame 50*

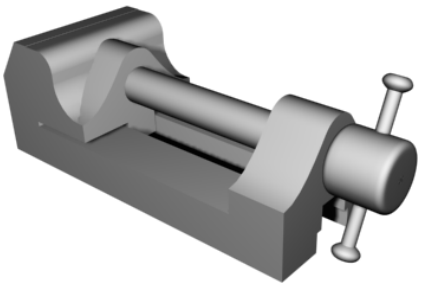


Figure 15-23 *Animation at frame 75*

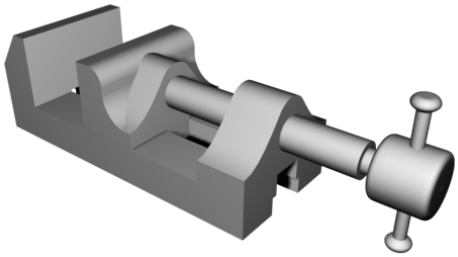


Figure 15-24 *Animation at frame 125*

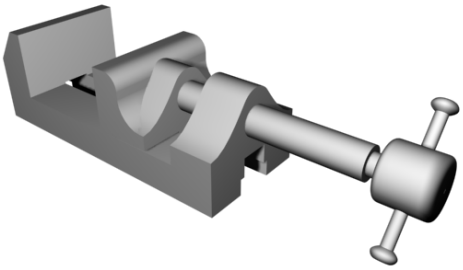


Figure 15-25 *Animation at frame 150*

Chapter 16

Rendering

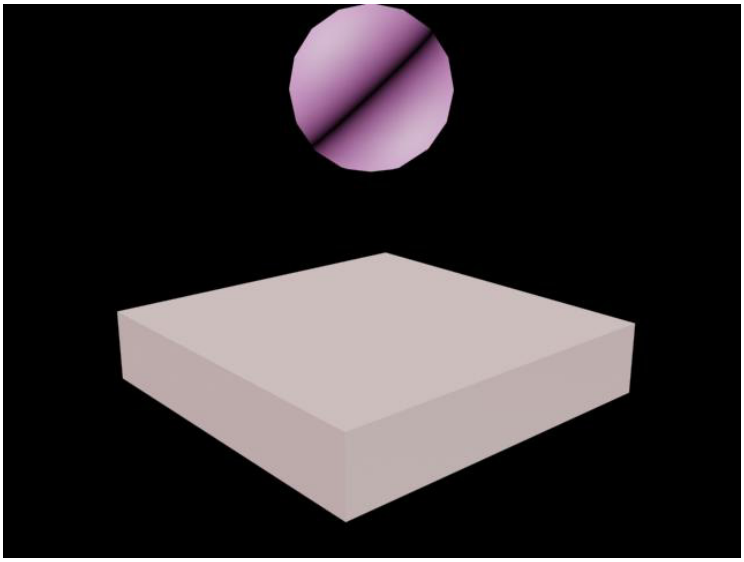


Figure 16-1 *The rendered animation for preview*

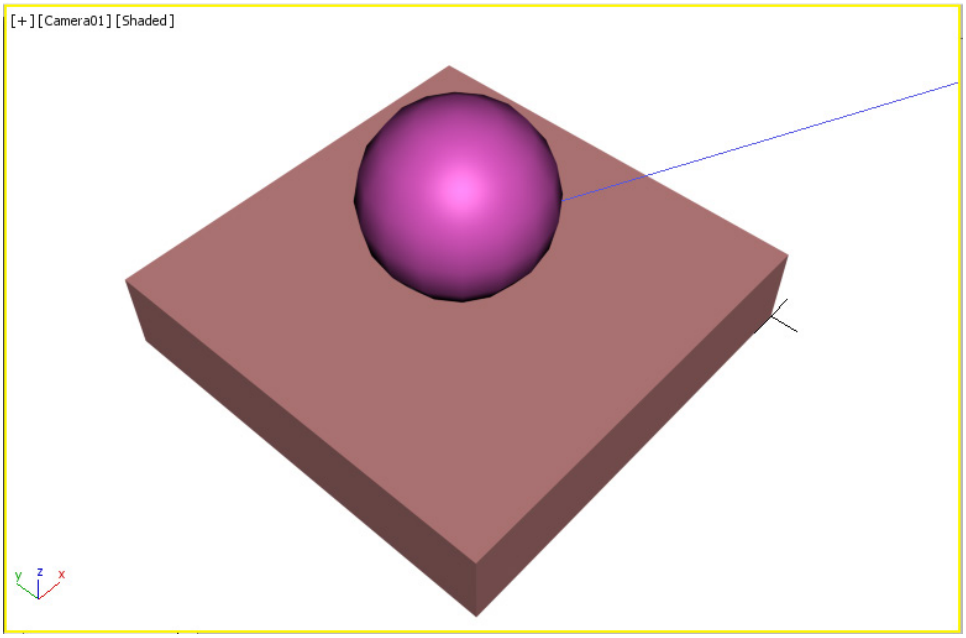


Figure 16-2 *The c16_tut1_start.max file*

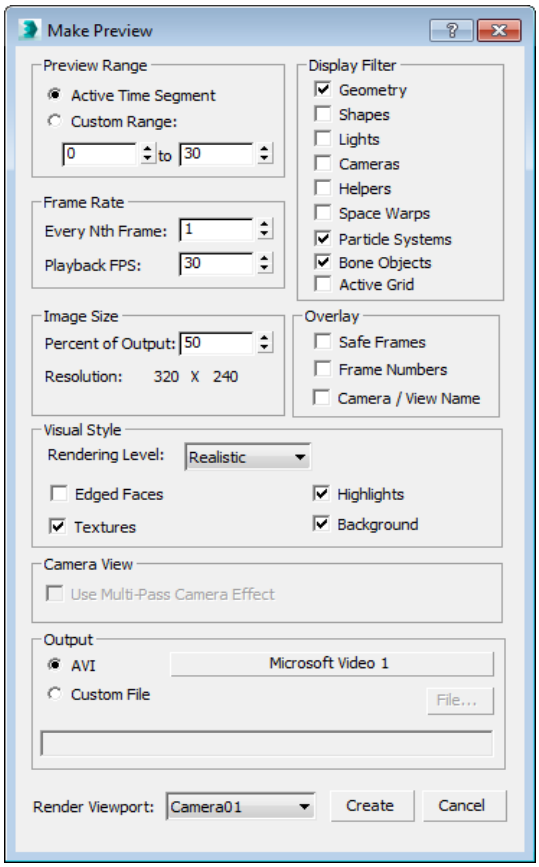


Figure 16-3 *The* ***Make Preview*** *dialog box*

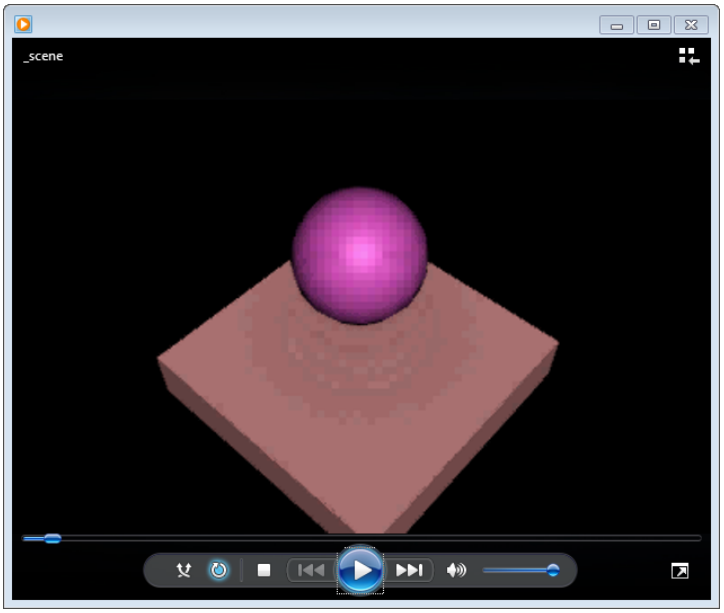


Figure 16-4 *The preview animation played in Windows Media Player*

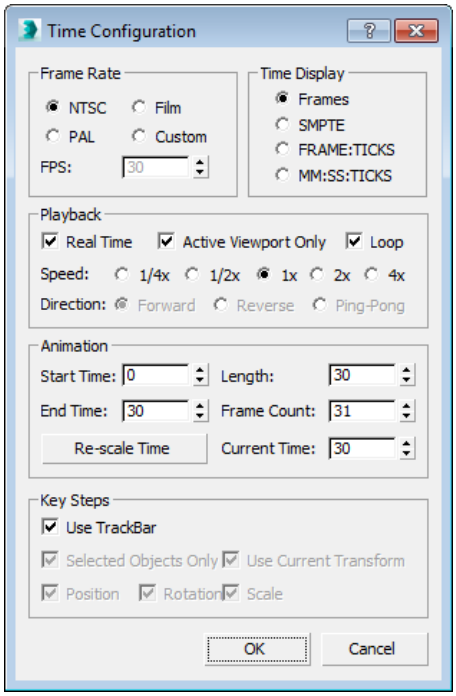


Figure 16-5 *The* ***Time Configuration*** *dialog box*

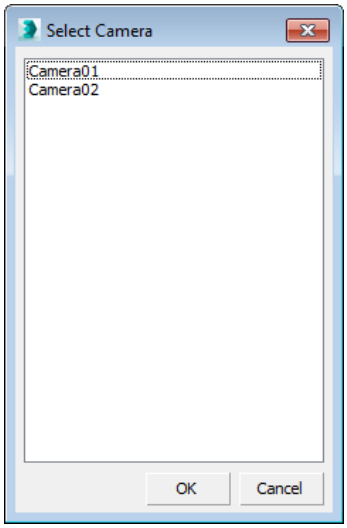


Figure 16-6 *The* ***Select Camera*** *dialog box*

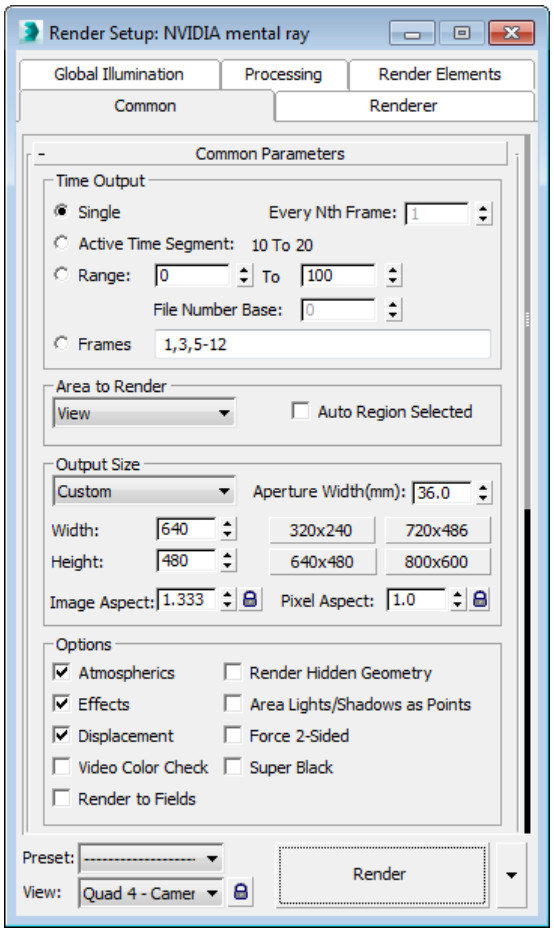


Figure 16-7 The ***Render Setup: NVIDIA mental ray*** *dialog box displayed*

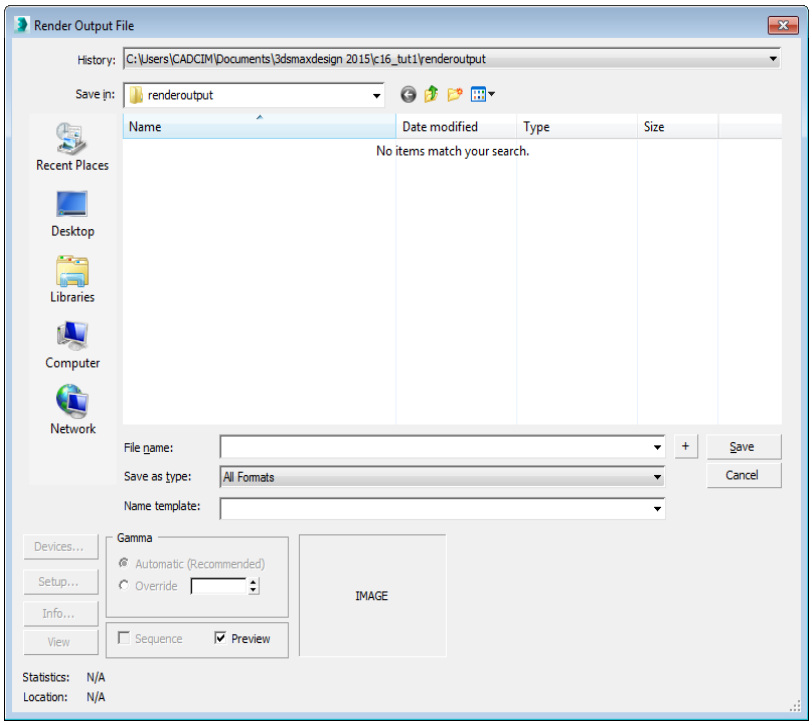


Figure 16-8 *The* ***Render Output File*** *dialog box*

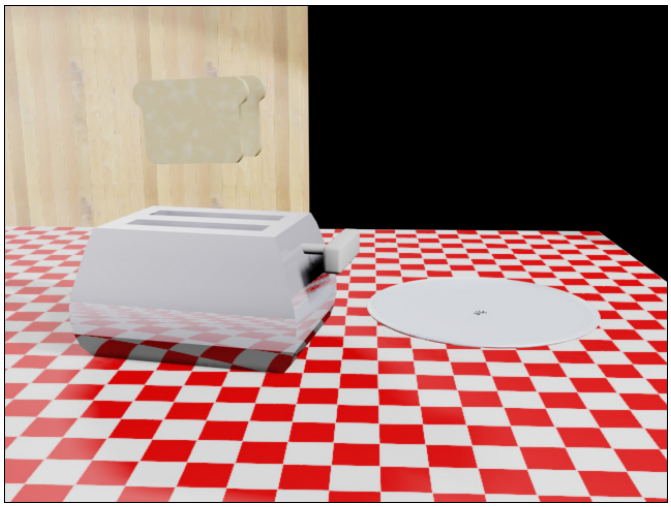


Figure 16-9 *The toaster*

Chapter 17

Creating Walkthrough

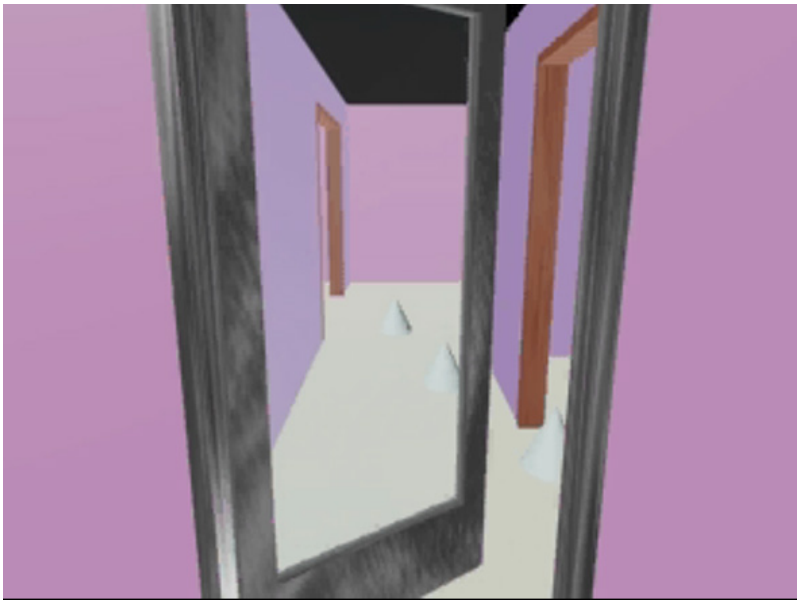


Figure 17-1 *The final walkthrough at frame 70*

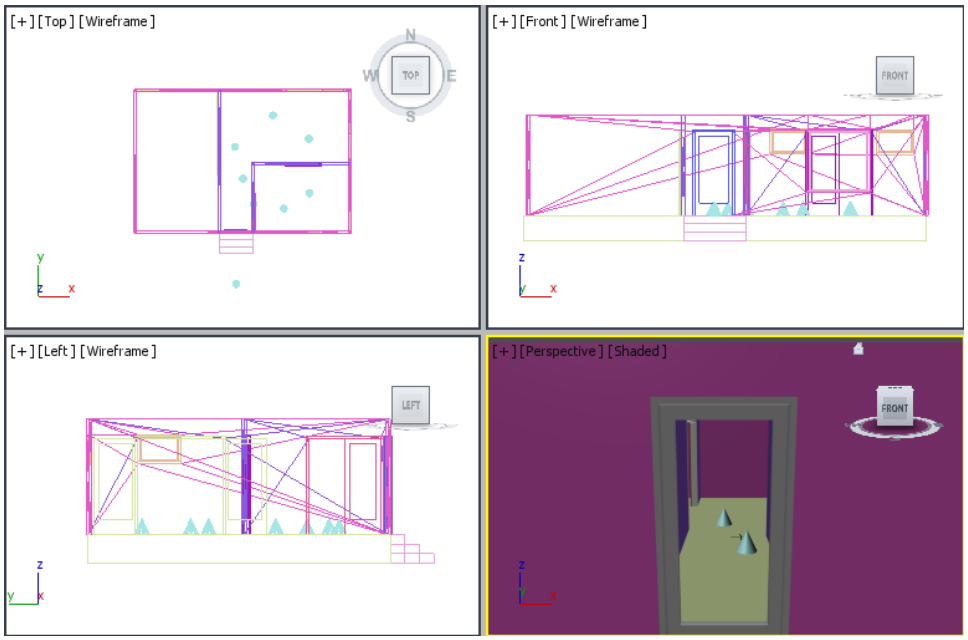


Figure 17-2 *The c17_tut1_start file*

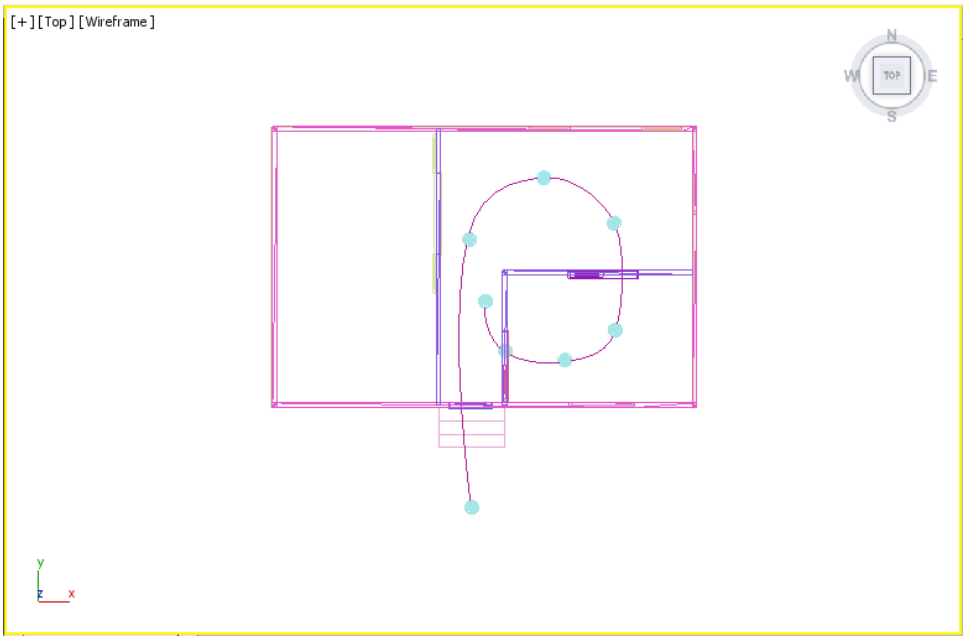


Figure 17-3 *A line created to be used as a path*

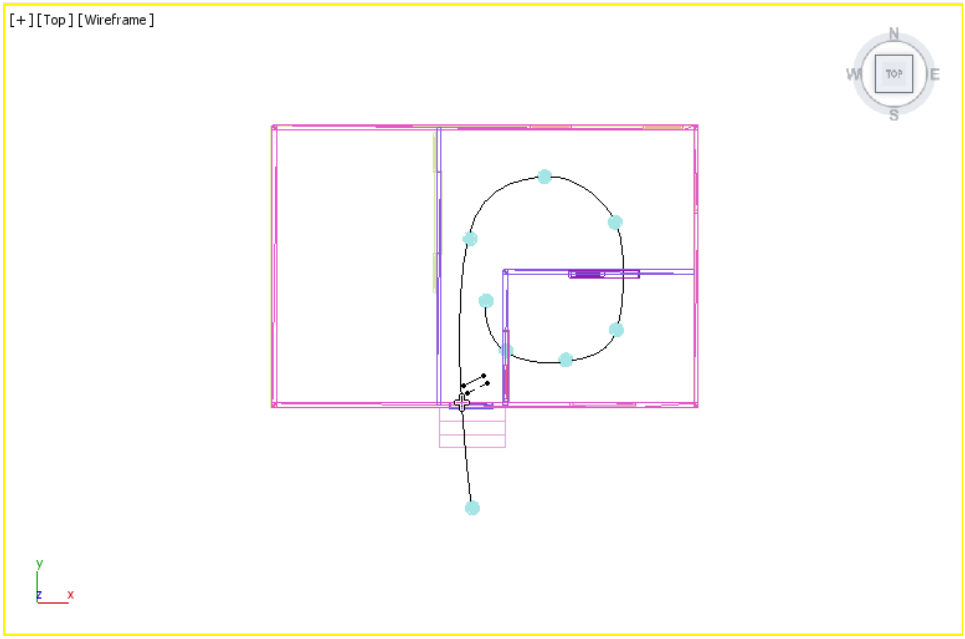


Figure 17-4 *A new vertex added to the path*

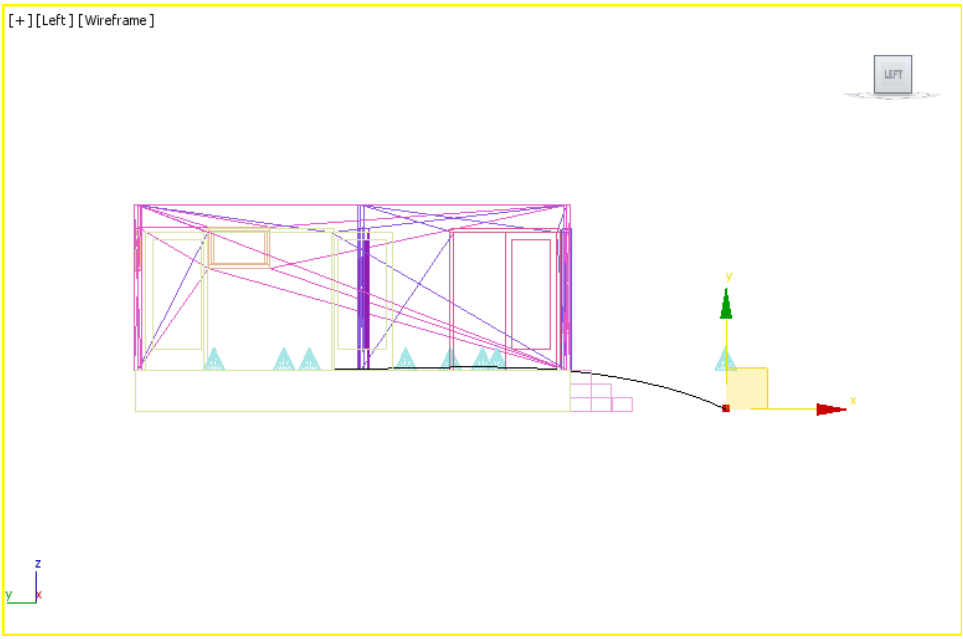


Figure 17-5 *The first vertex moved down*

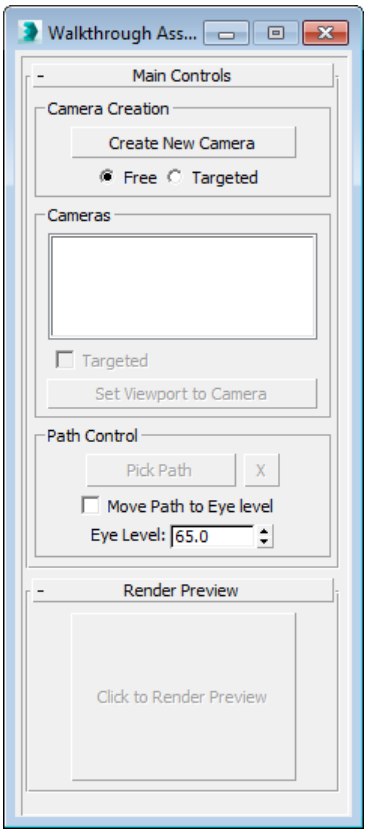


Figure 17-6 *The* ***Walkthrough Assistant*** *dialog box*

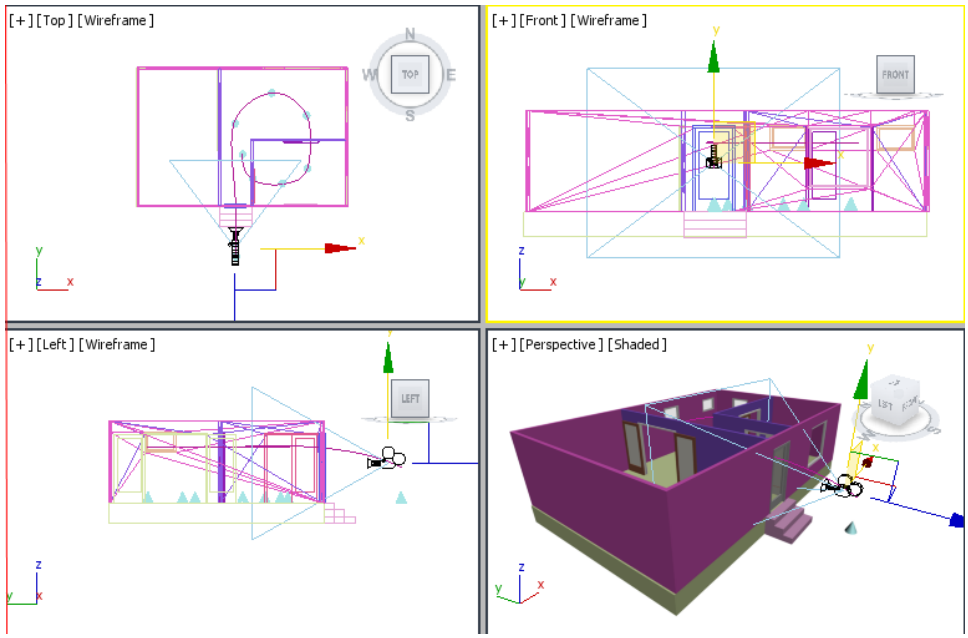


Figure 17-7 *Creating a* ***Free*** *camera*

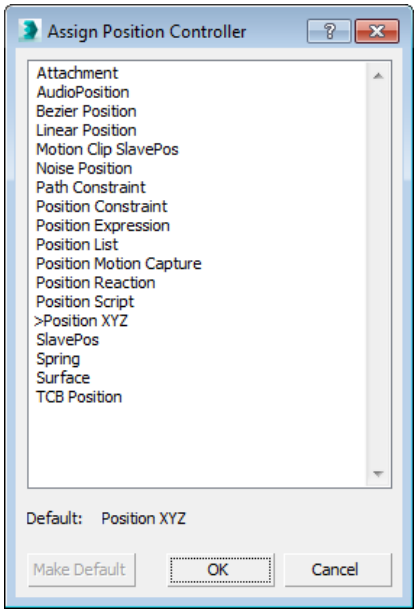


Figure 17-8 *The* ***Assign Position Controller*** *dialog box*

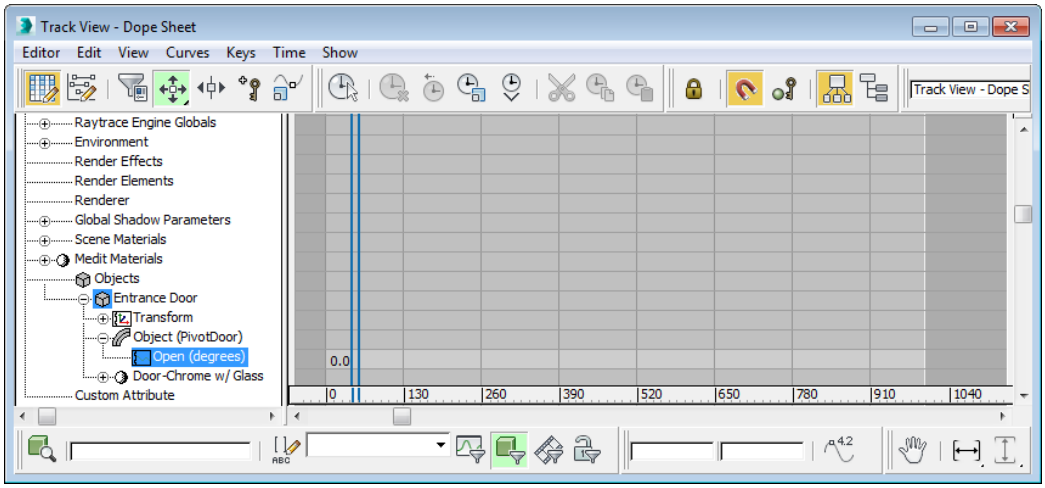


Figure 17-9 The ***Track View - Dope Sheet*** *window*

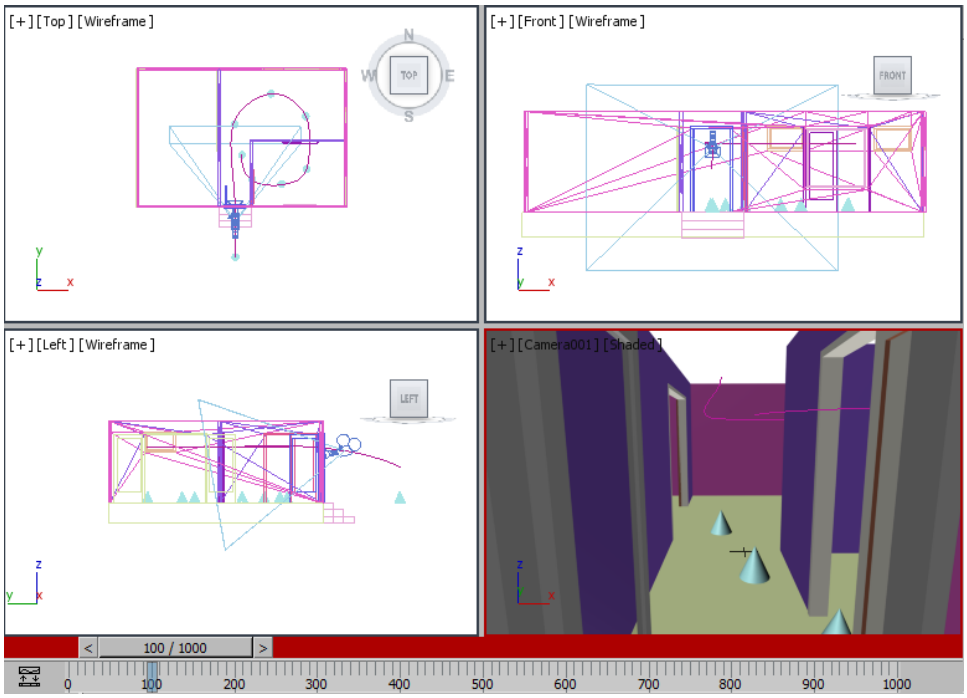


Figure 17-10 The ***Entrance Door*** *is opened 90 degrees at frame 100*

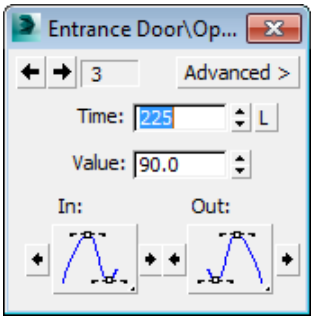


Figure 17-11 *The* ***Entrance Door\Open (degrees)*** *dialog box*

Figure 17-12 *Walkthrough for the lobby*

Project 1

Creating a Windmill

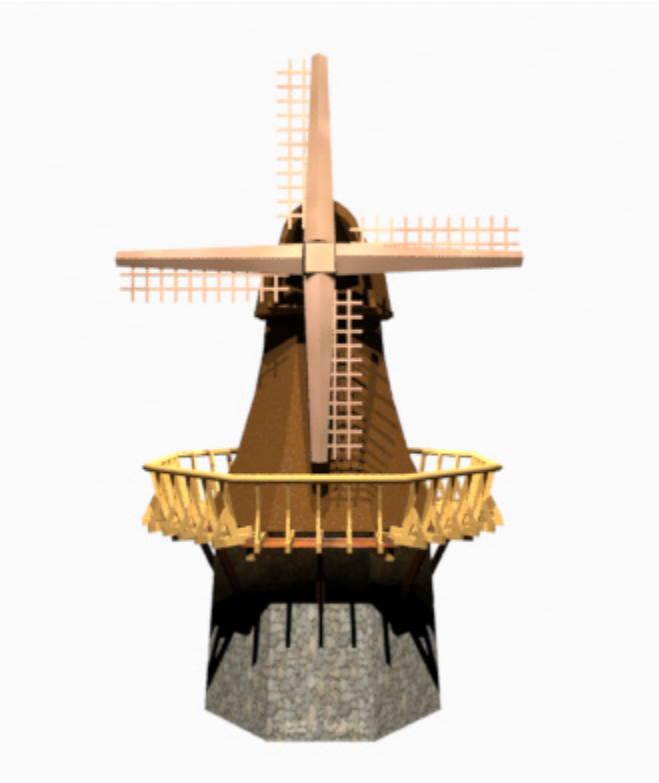


Figure P1-1 *The model of the windmill*

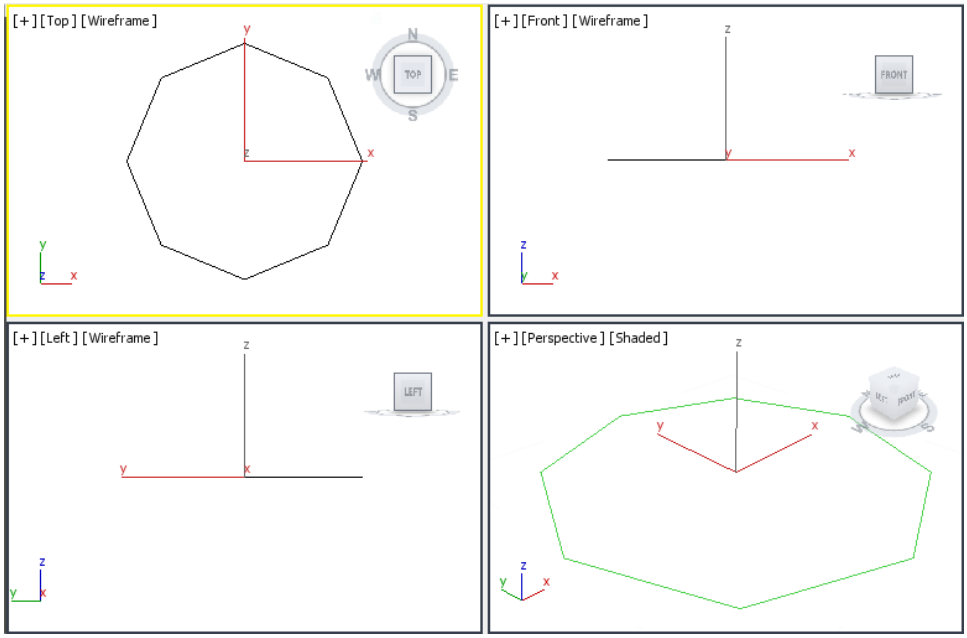


Figure P1-2 *The shape created with the name NGon001*

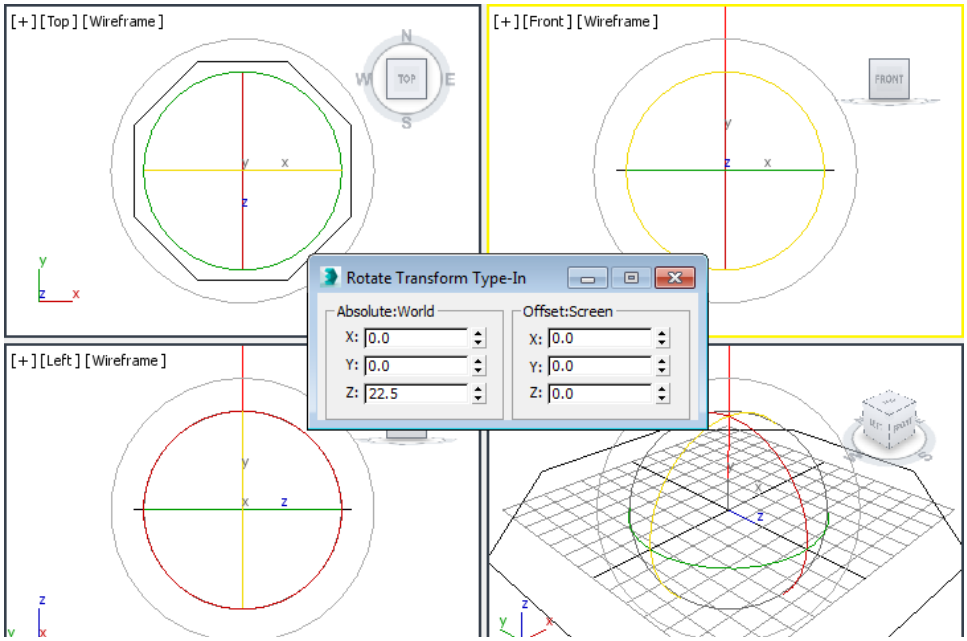


Figure P1-3 *Rotating NGon001 in the Top viewport*

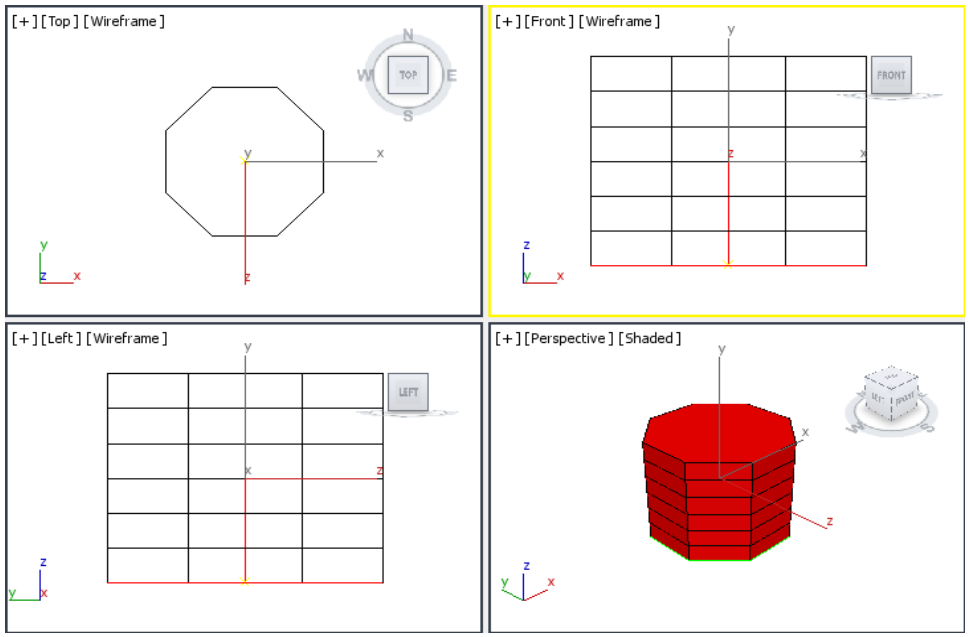


Figure P1-4 *NGon001 lofted along the line in all viewports*

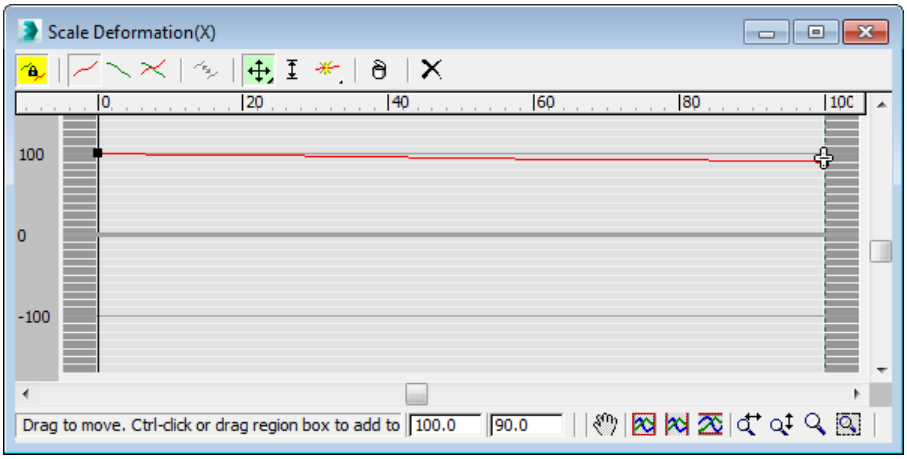


Figure P1-5 *The* ***Scale Deformation(X)*** *dialog box*

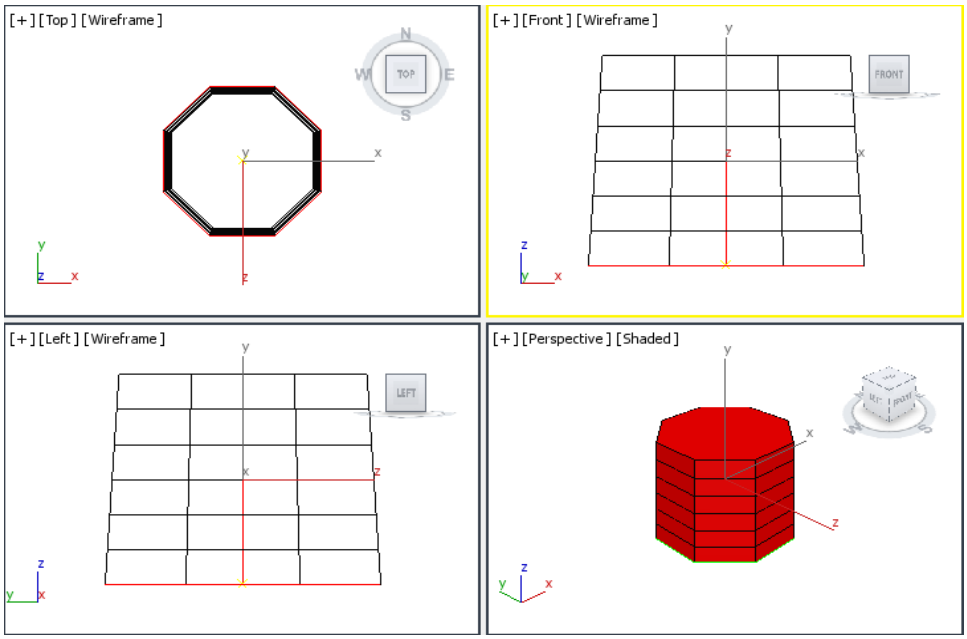


Figure P1-6 *Loft001 tapered at its top*

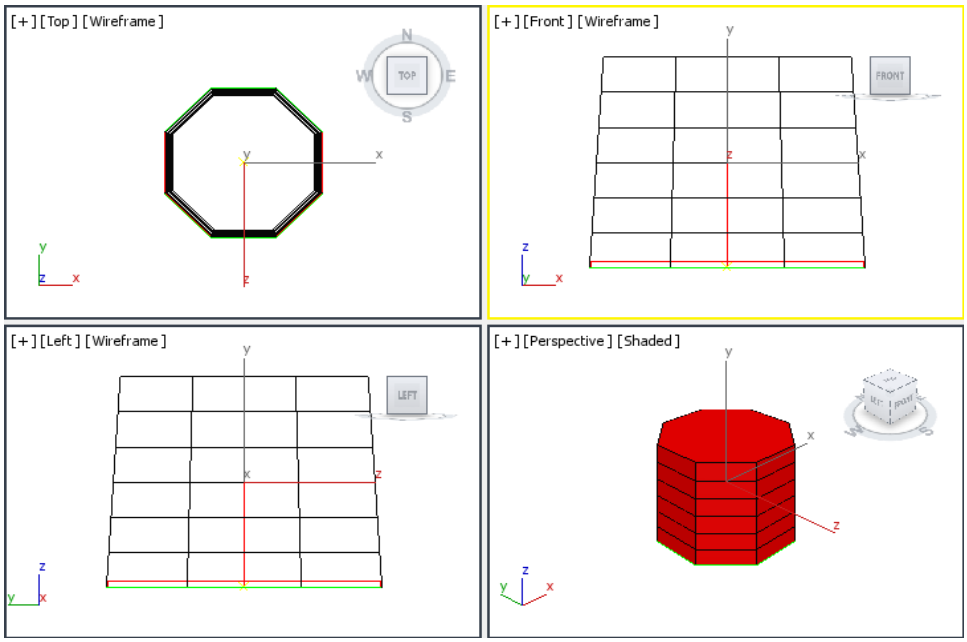


Figure P1-7 *Floor created with a thickness of five units*

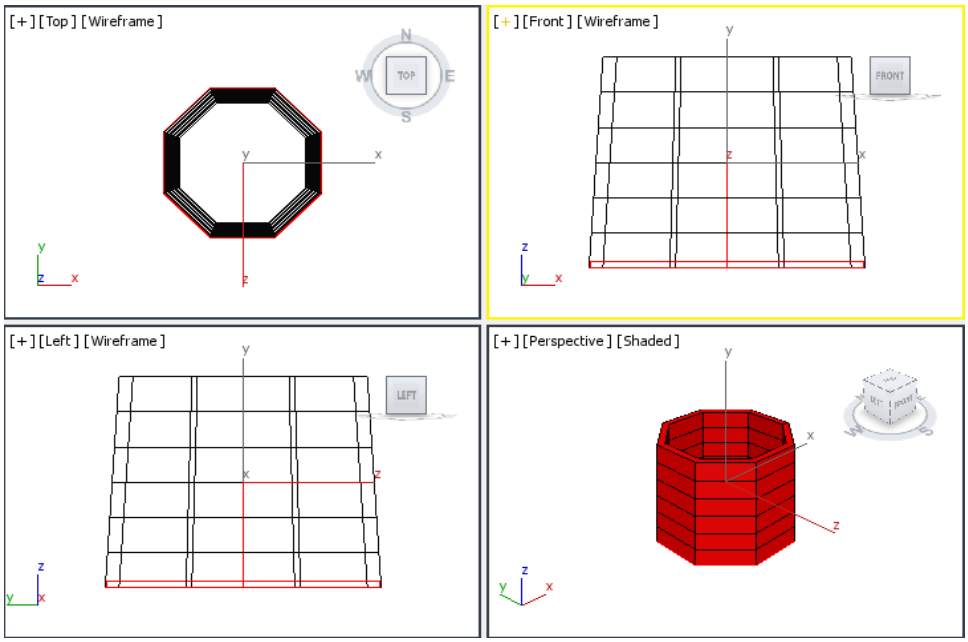


Figure P1-8 *Loft001 displayed after performing the Boolean operation*

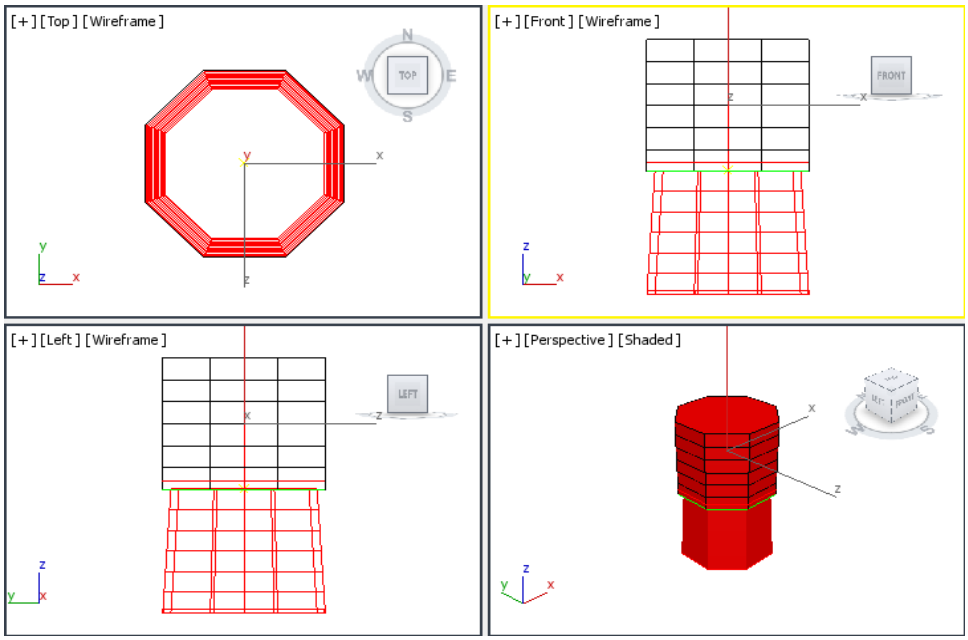


Figure P1-9 *NGon003 lofted along the line*

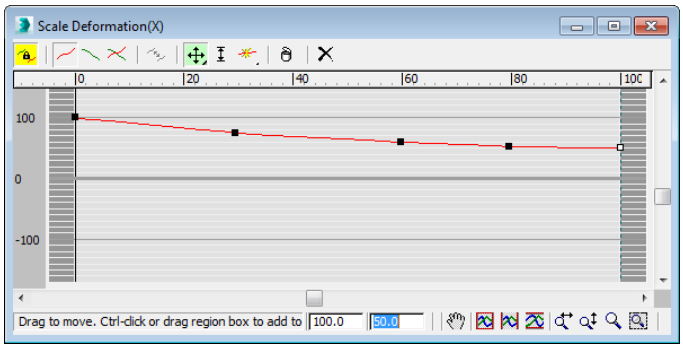


Figure P1-10 *Inserting and moving the control points in the* ***Scale Deformation(X)*** *dialog box*

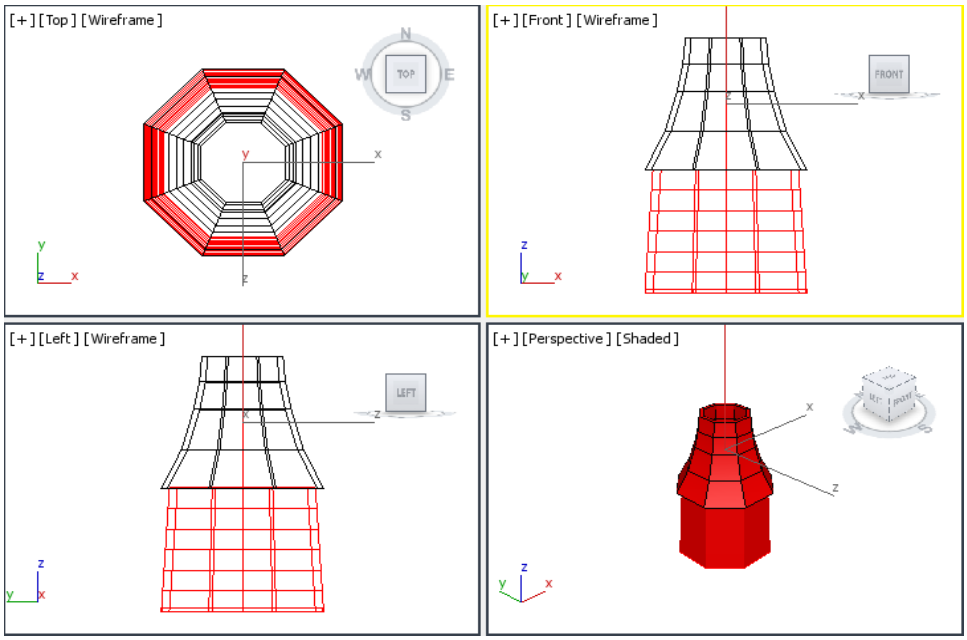


Figure P1-11 *Walls created for the middle structure of the windmill*

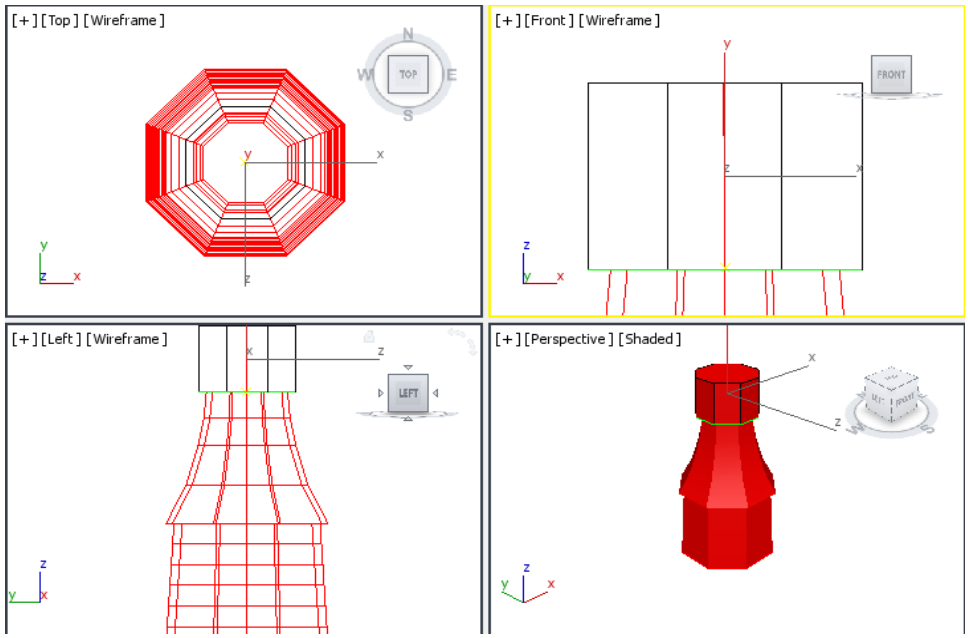


Figure P1-12 *NGon002 lofted along the line*

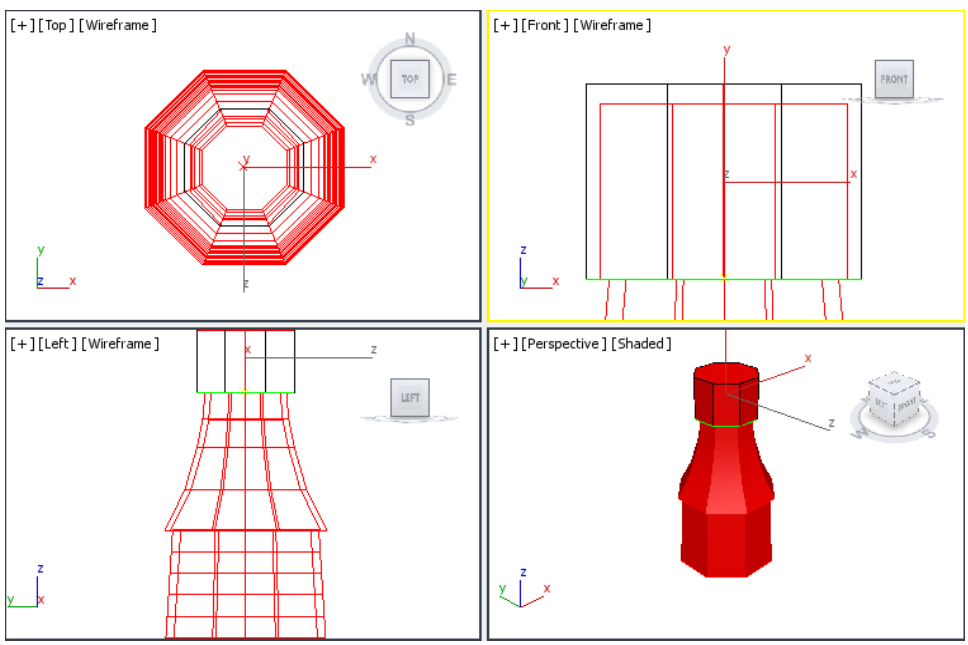


Figure P1-13 *Top_drill scaled uniformly*

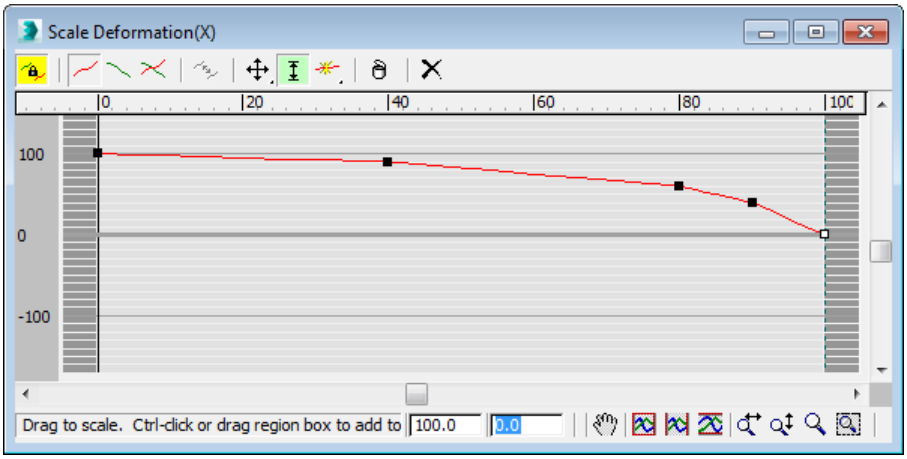


Figure P1-14 *Top_drill modified using the* ***Scale Deformation(X)*** *dialog box*

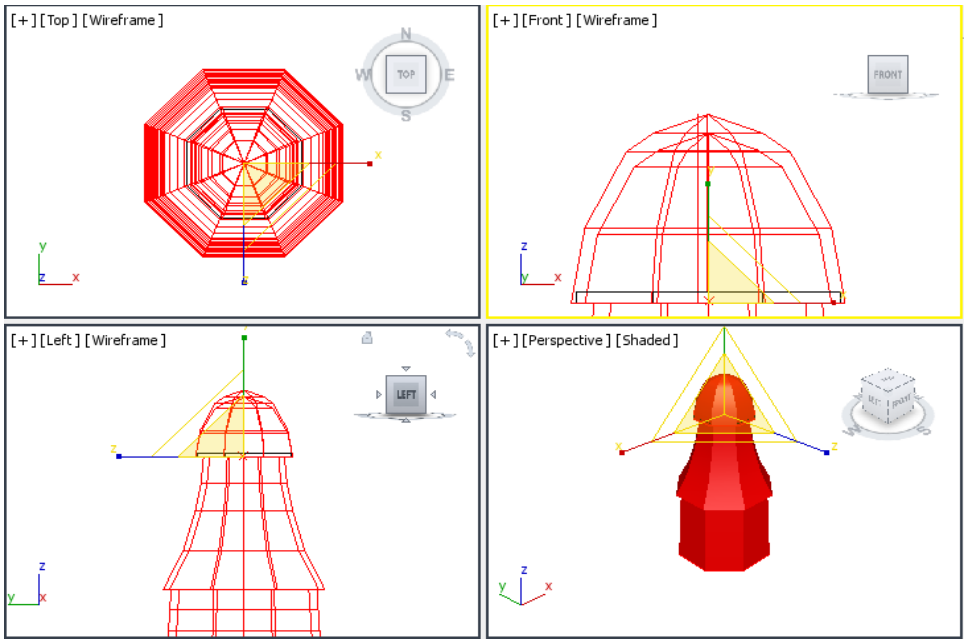


Figure P1-15 *Floor_top extruded*

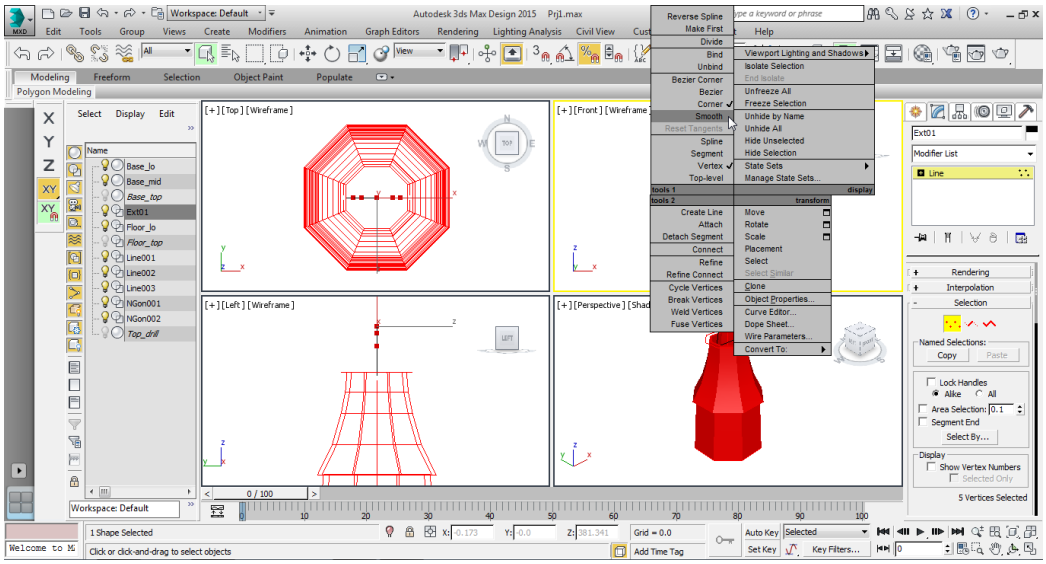


Figure P1-16 *The quad menu displayed*

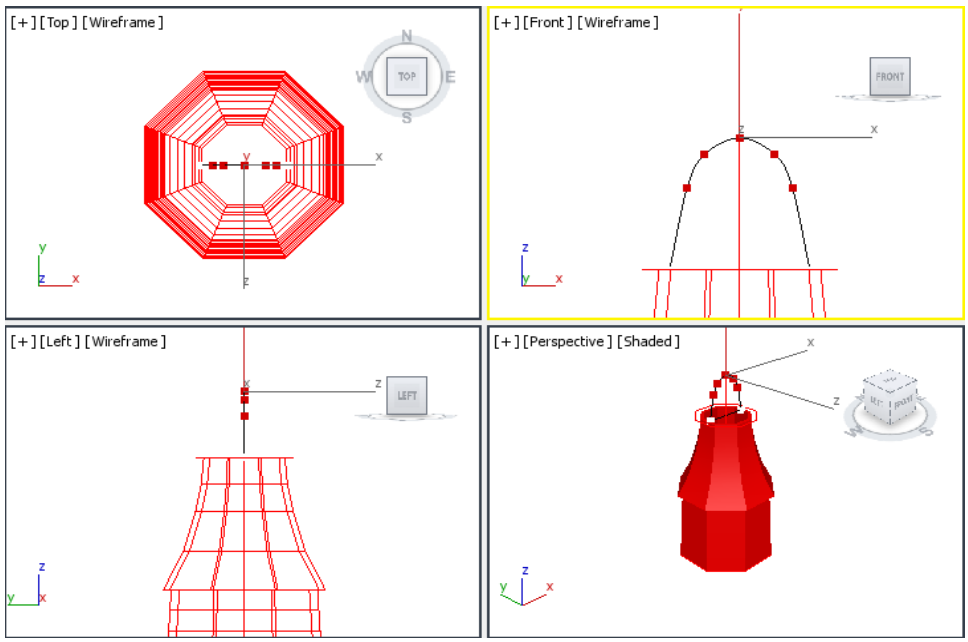


Figure P1-17 *Ext01 line smoothened*

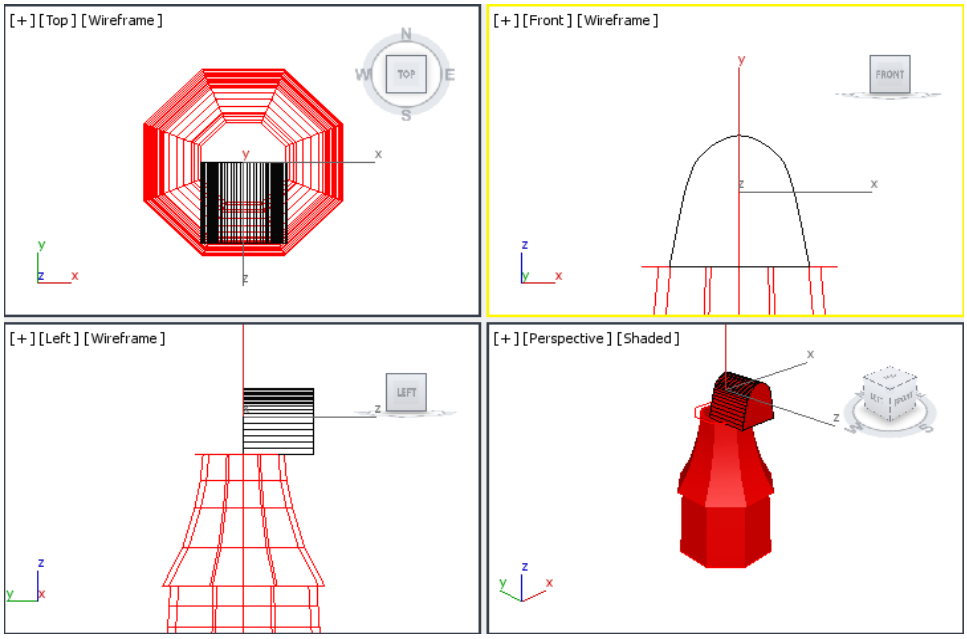


Figure P1-18 *Ext01 line extruded*

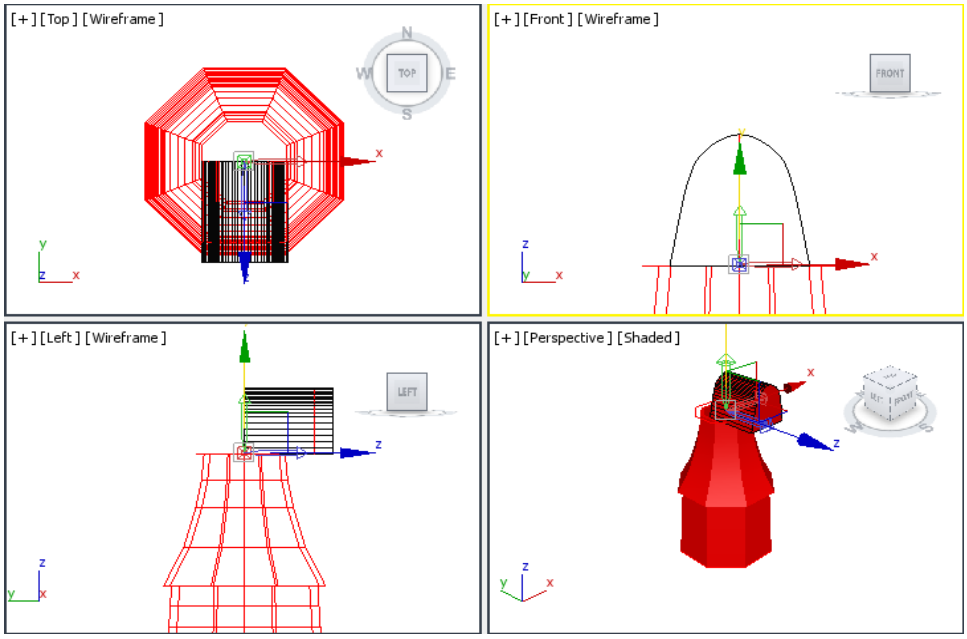


Figure P1-19 *The pivot point aligned at the bottom of Drill02*

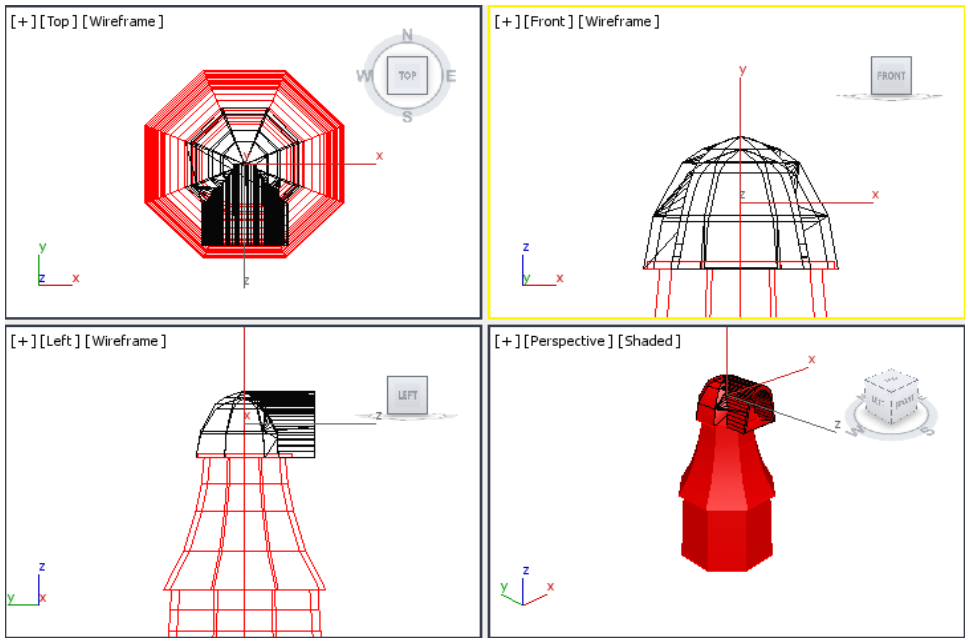


Figure P1-20 *Base_top hollowed out*

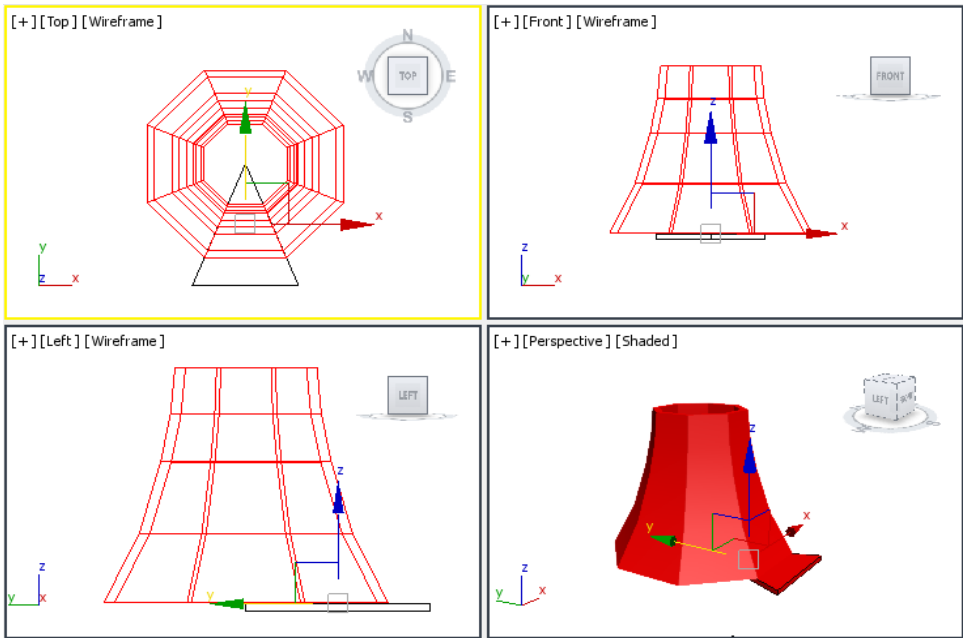


Figure P1-21 *Deck01 extruded in all viewports*

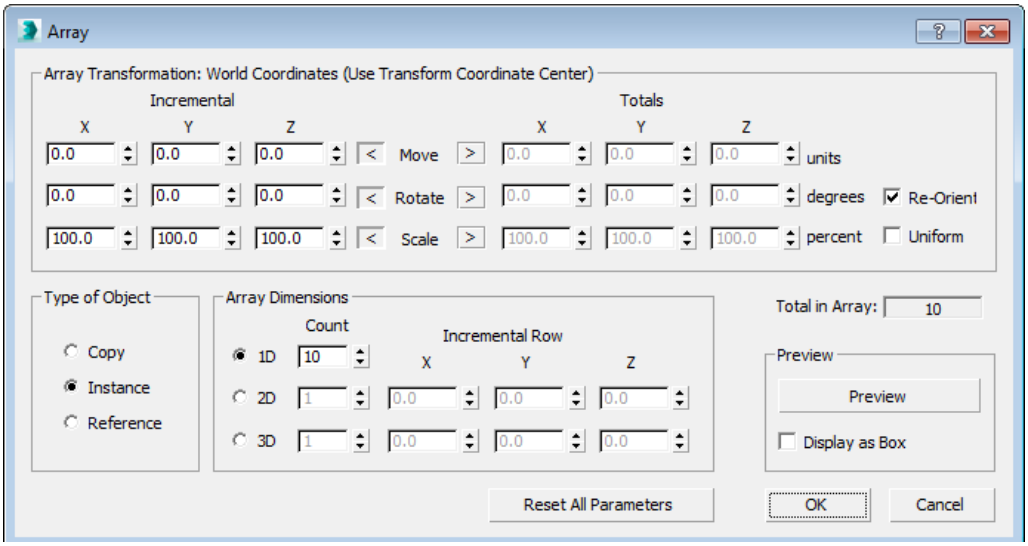


Figure P1-22 *The* ***Array*** *dialog box*

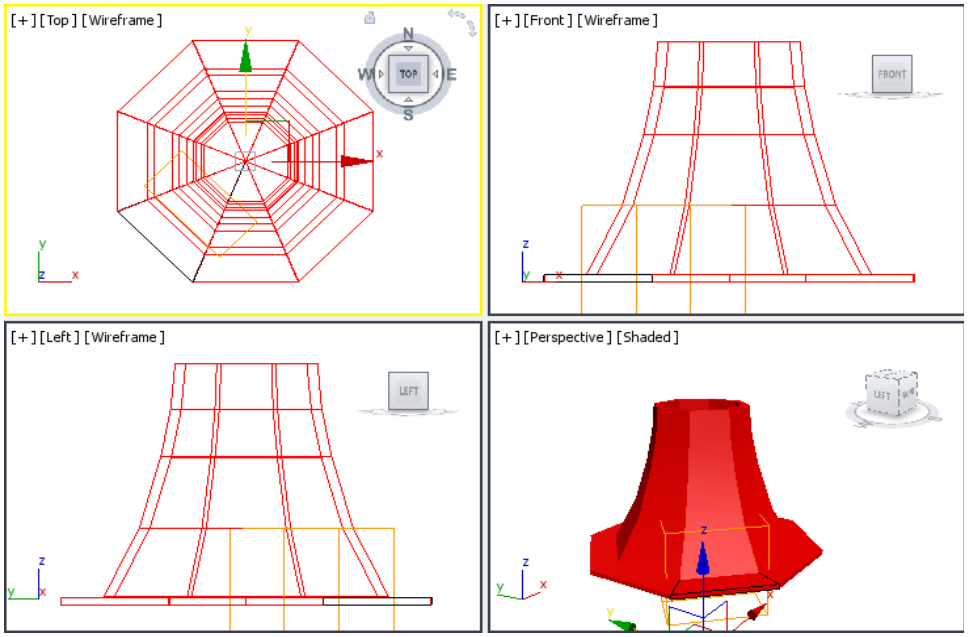


Figure P1-23 *The array created*

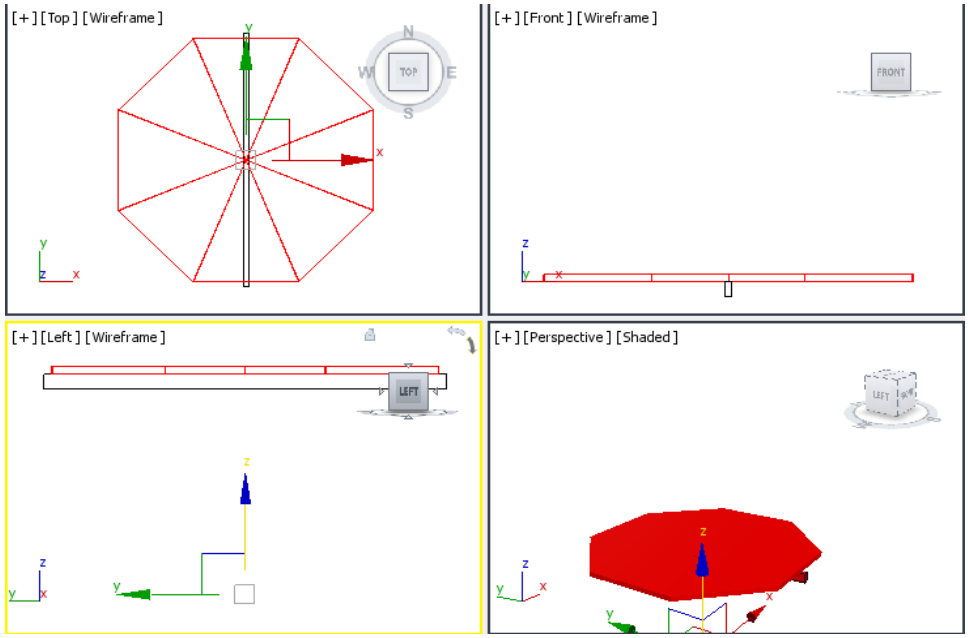


Figure P1-24 *DeckBeam01 created and aligned*

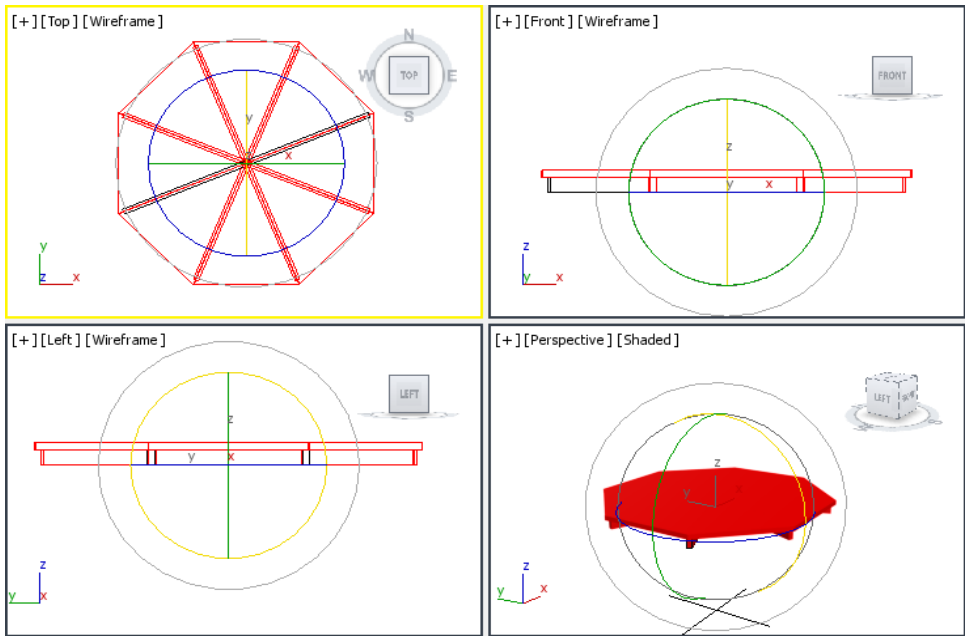


Figure P1-25 *The clones of DeckBeam01 created*

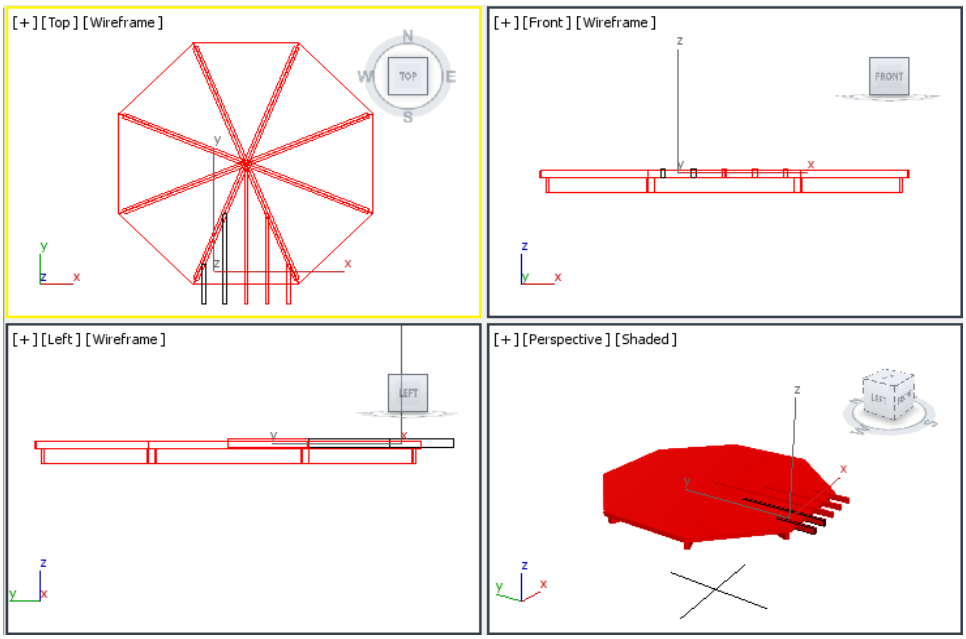


Figure P1-26 *The first set of DeckBeam01 created*

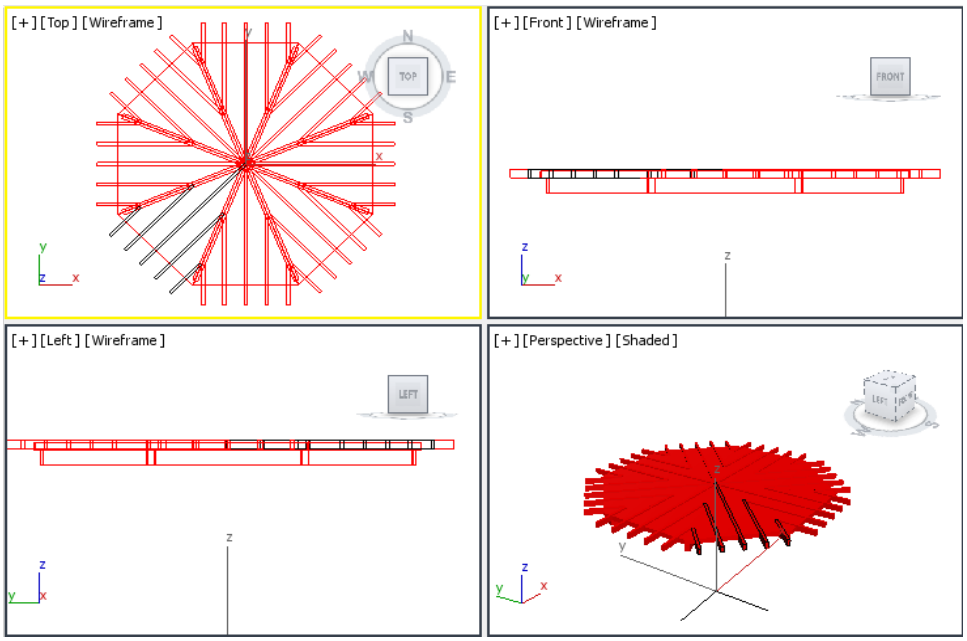


Figure P1-27 *The array of deck support boards created using the* ***Array*** *tool*

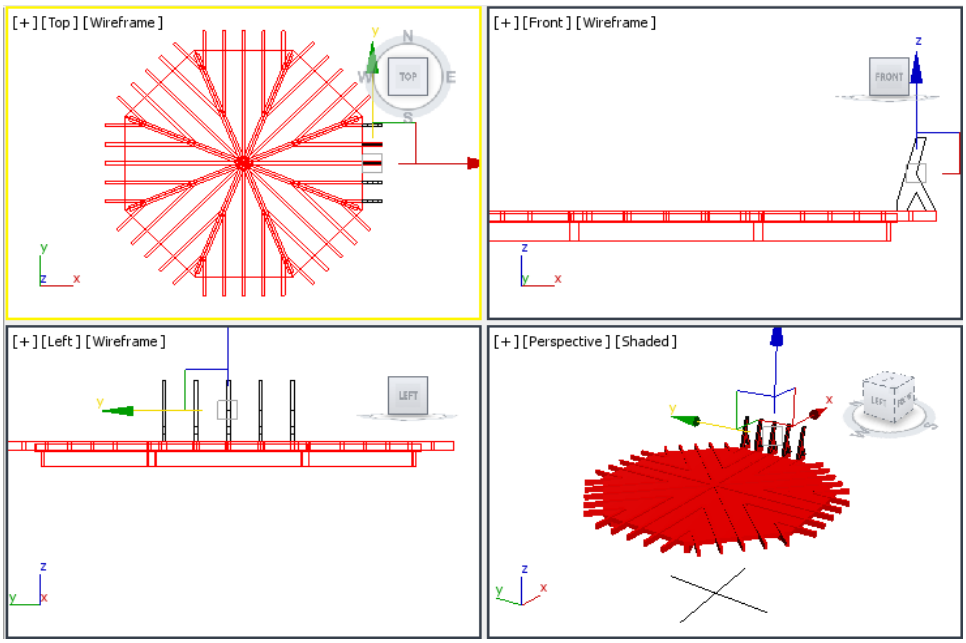


Figure P1-28 *DeckRail_Group01 created in all viewports*

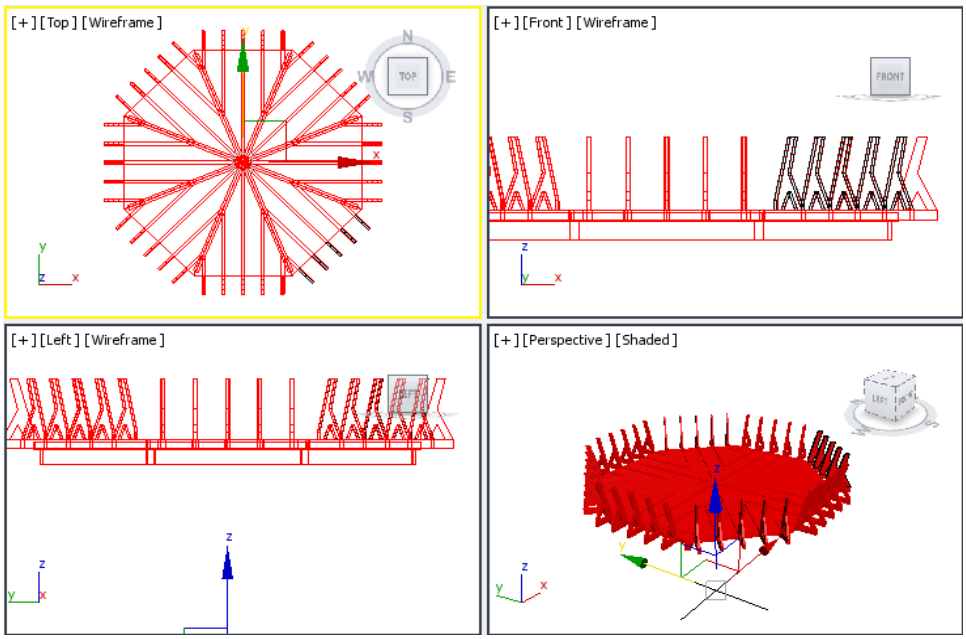


Figure P1-29 *The set of DeckRail_Group objects created*

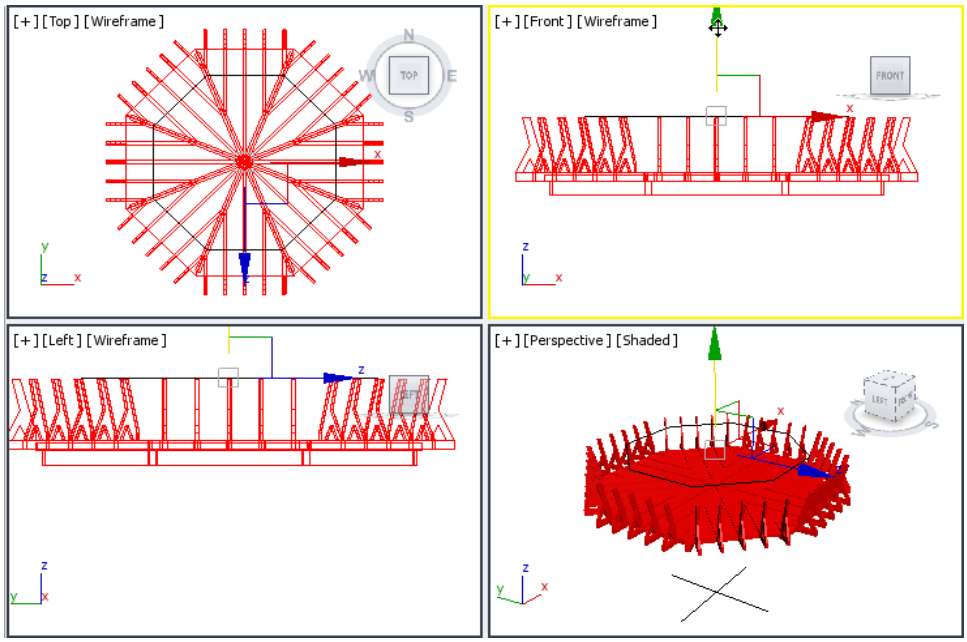


Figure P1-30 *NGon004 created and positioned*

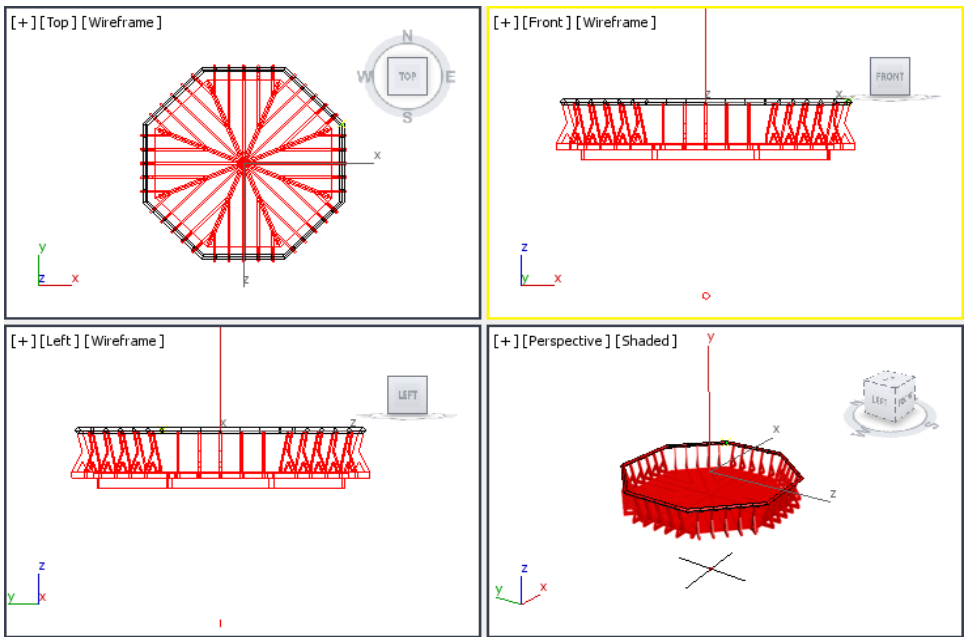


Figure P1-31 *Handrail created in viewports*

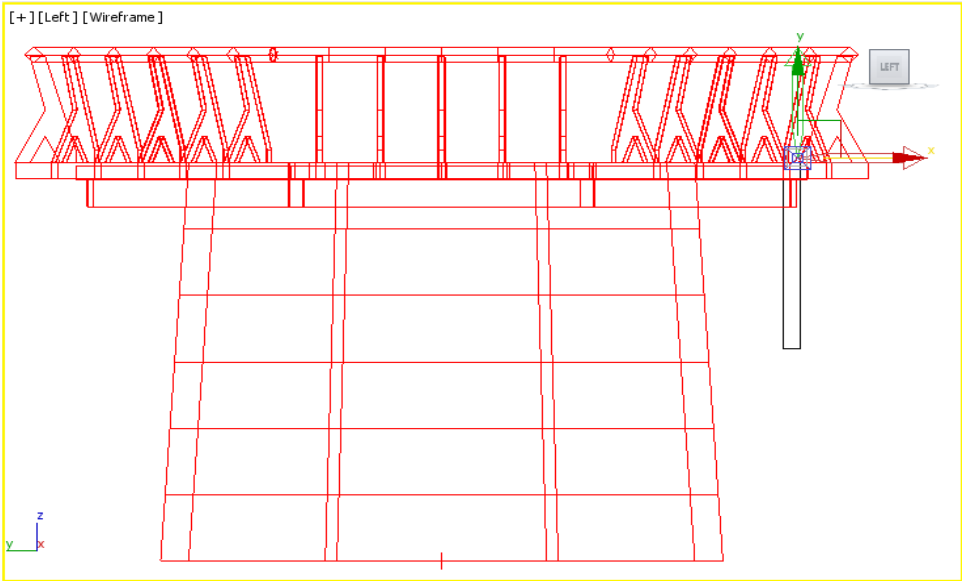


Figure P1-32 *The pivot point of DeckBrace01 moved to the top right corner*

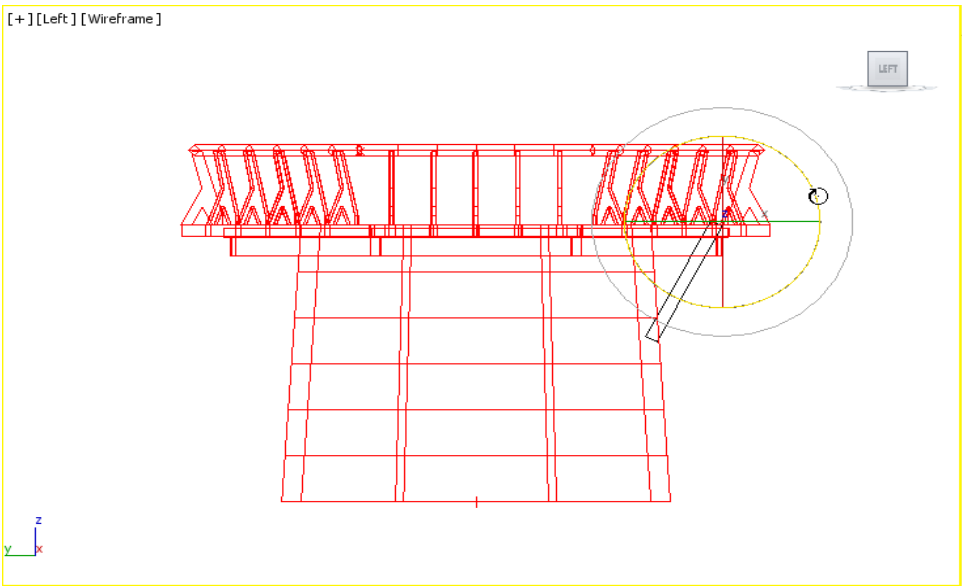


Figure P1-33 *DeckBrace01 rotated in the Left viewport*

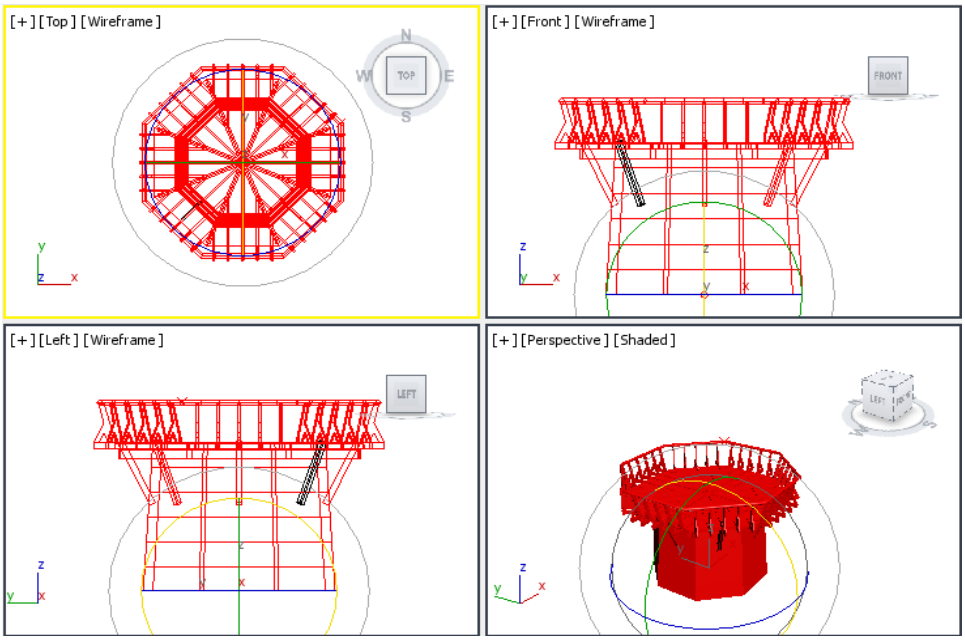


Figure P1-34 *The clones of DeckBrace01 created*

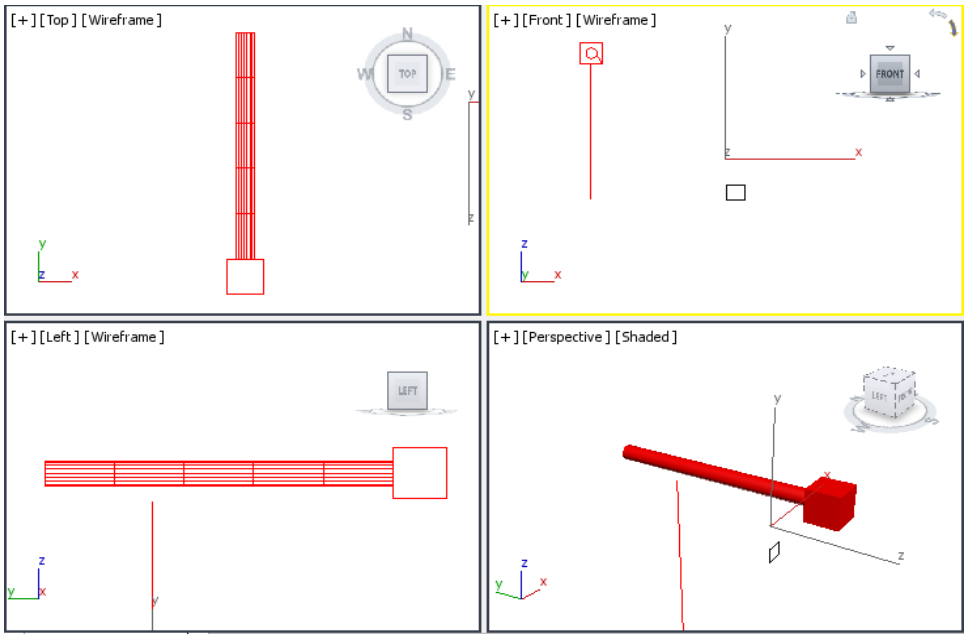


Figure P1-35 *A line and a square created*

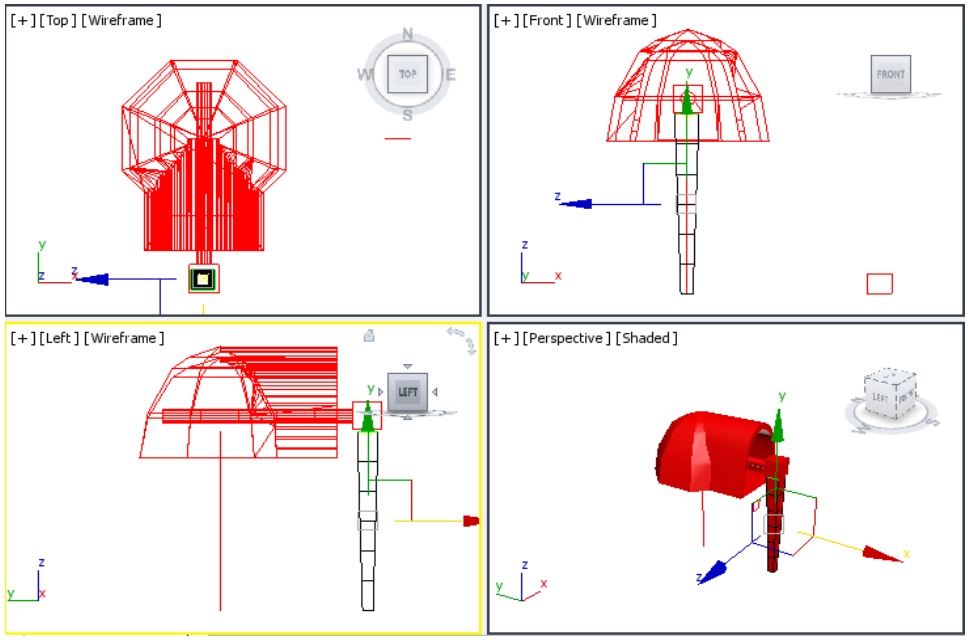


Figure P1-36 *MainRib01 zoomed to its extents*

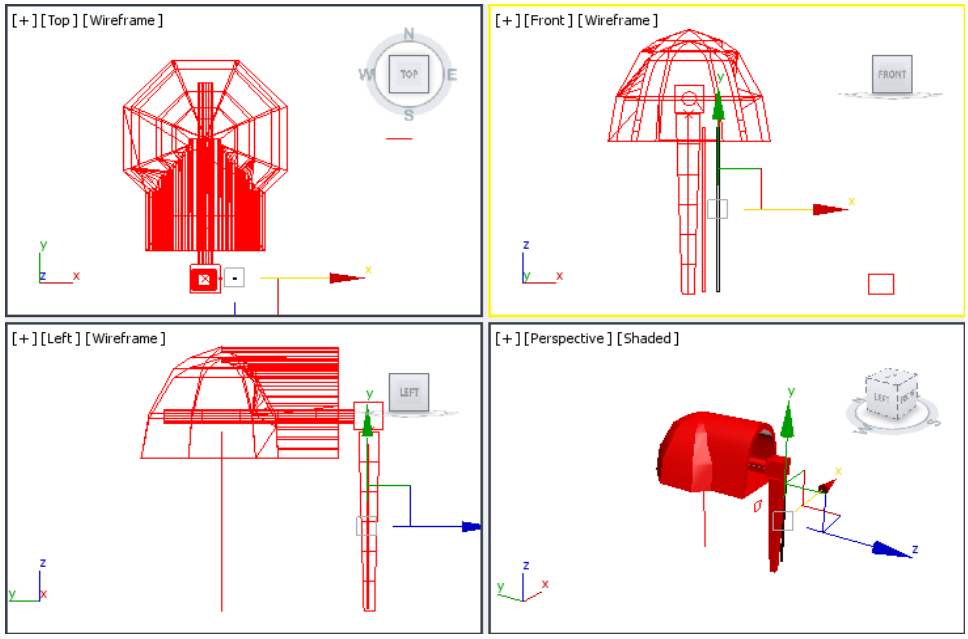


Figure P1-37 *Rib01 and Rib02 created in viewports*

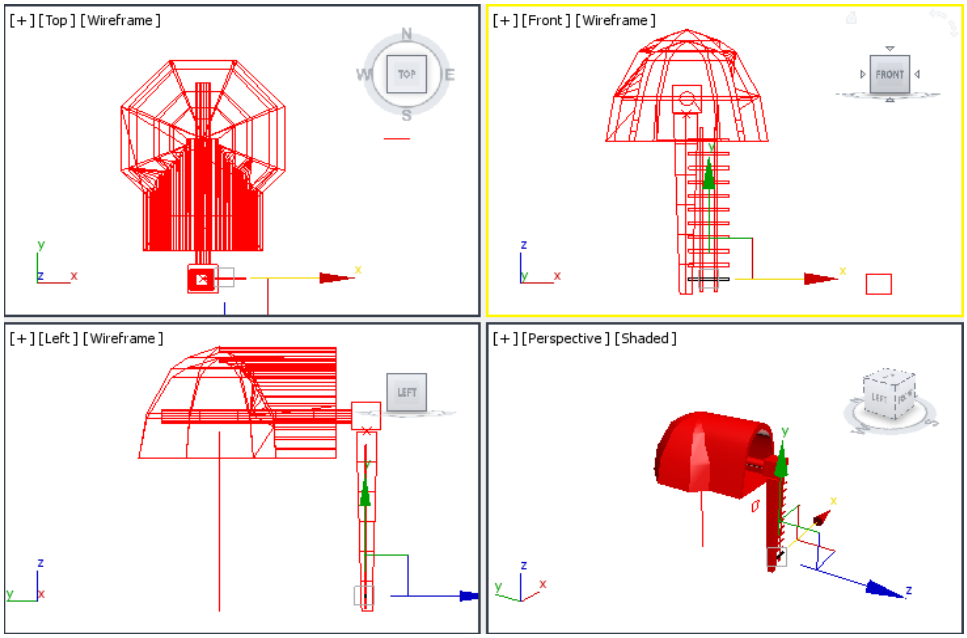


Figure P1-38 *The horizontal ribs are created*

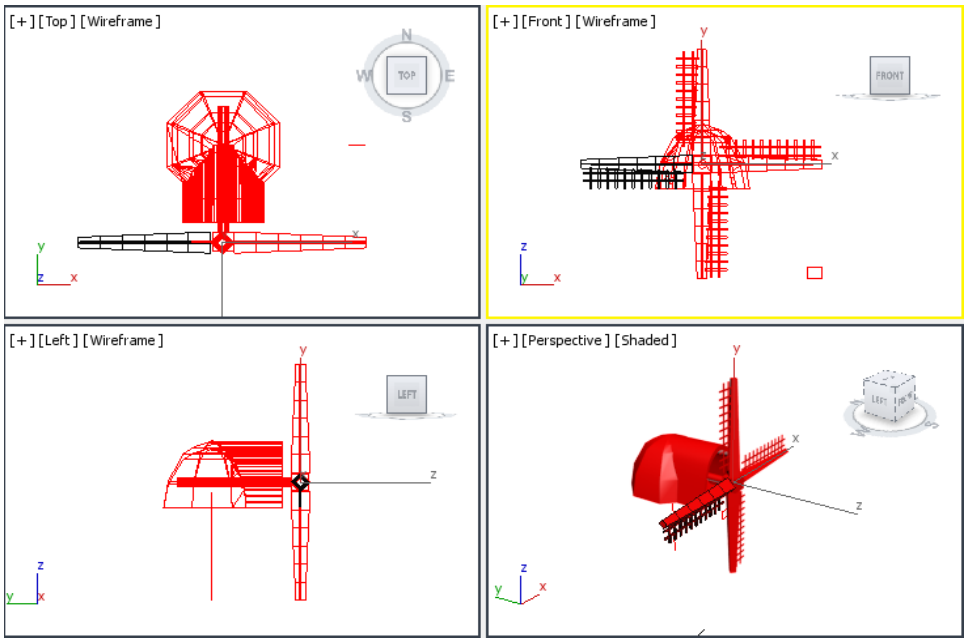


Figure P1-39 *The blades of the windmill created*

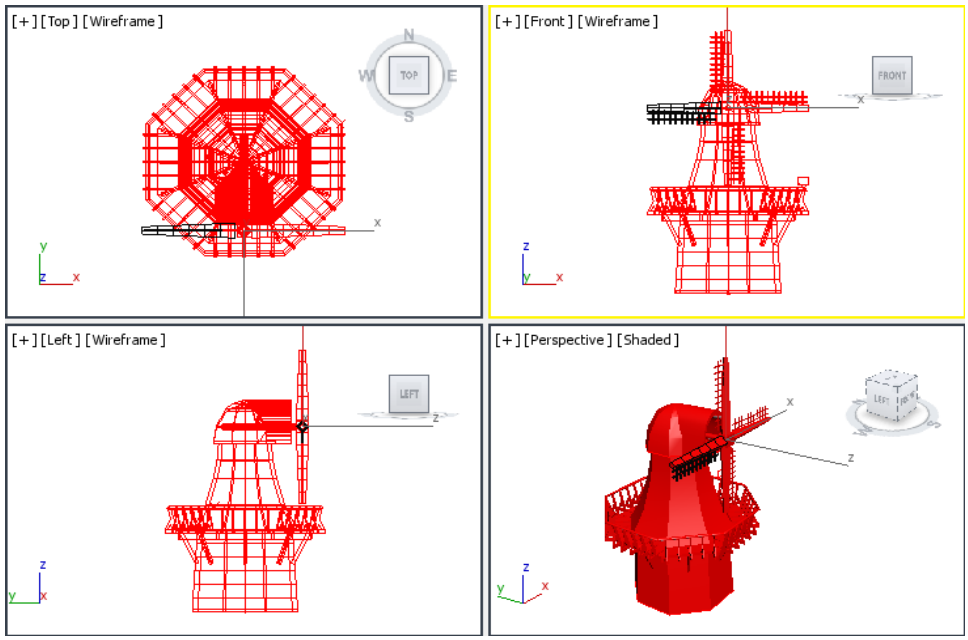


Figure P1-40 *All objects of the windmill displayed*

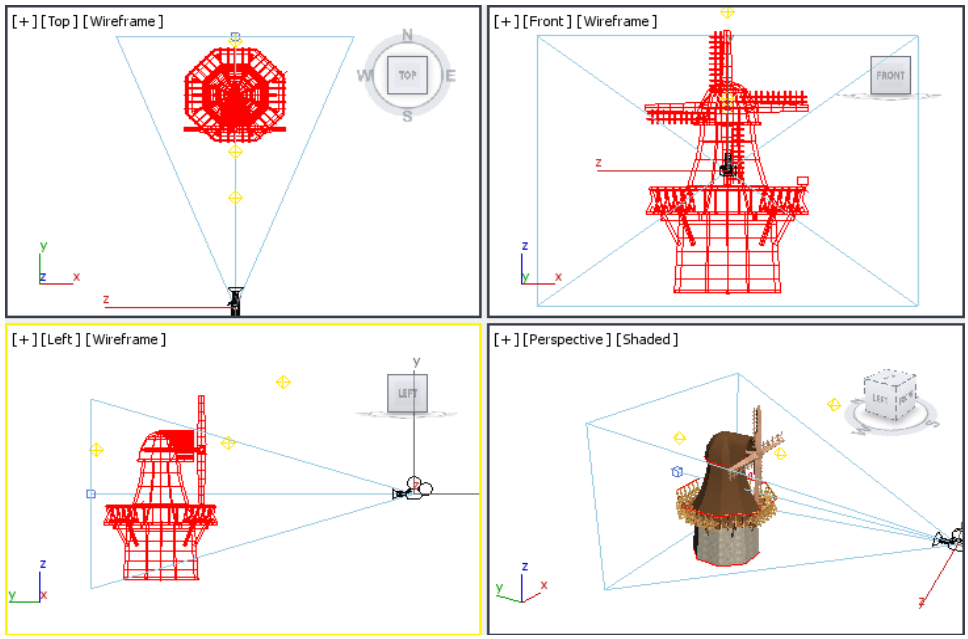


Figure P1-41 *Lights and Camera created and positioned in the scene*

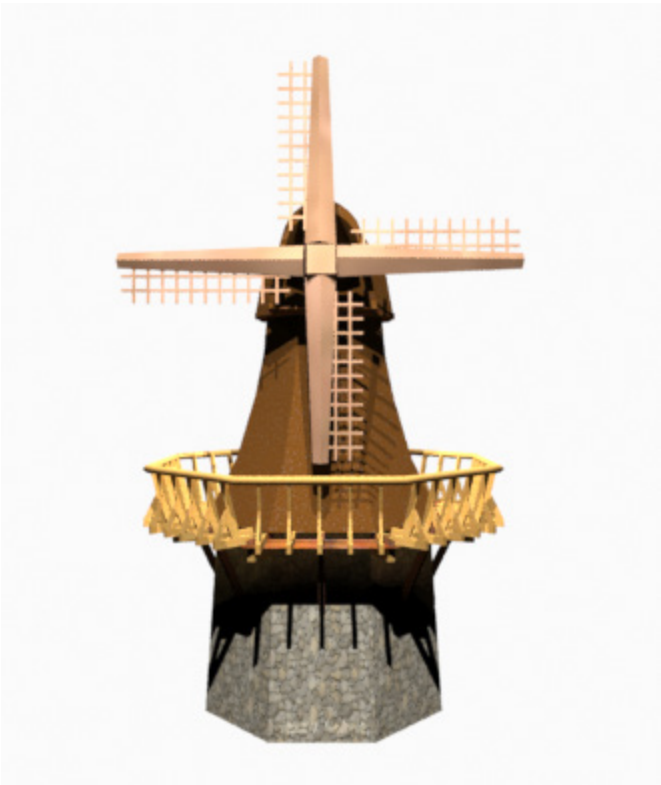


Figure P1-42 *The scene displayed after rendering at frame 1*

Project 2

Creating a Diner

Figure P2-1 *The scene of the diner*

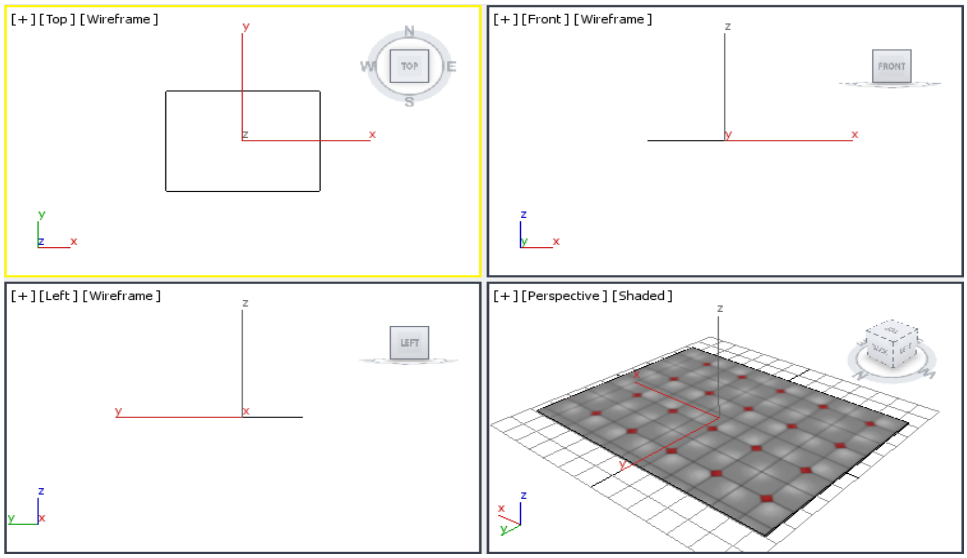


Figure P2-2 *Floor created and a material assigned to it*

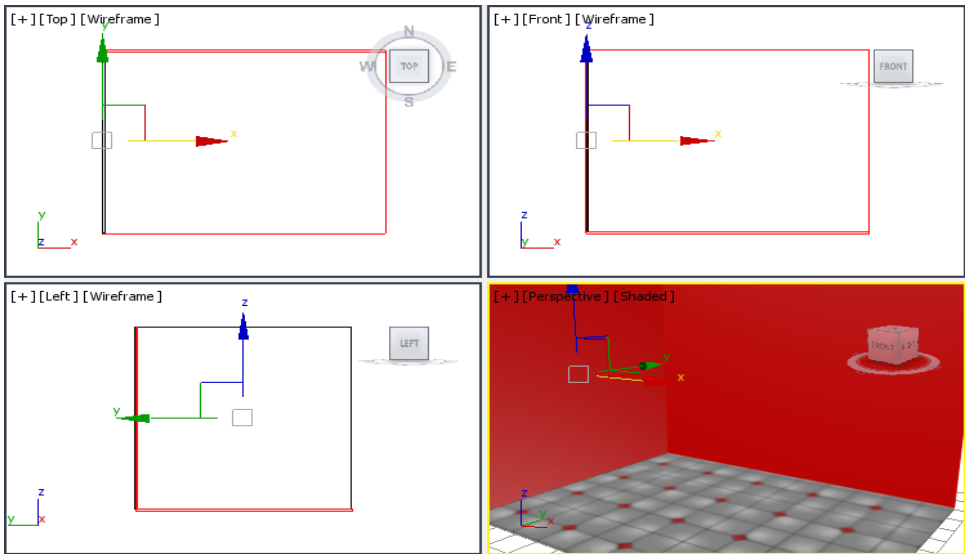


Figure P2-3 *Setting the Perspective viewport*

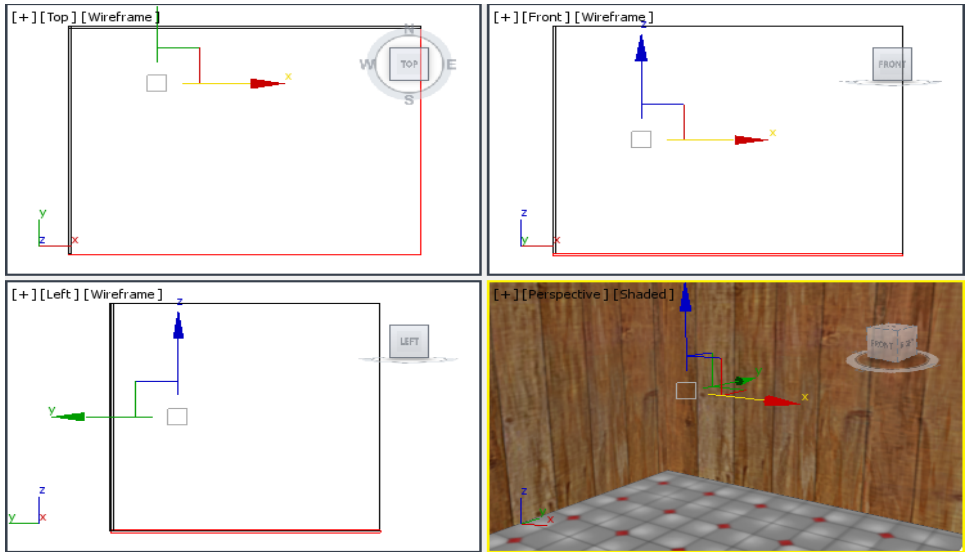


Figure P2-4 *The material assigned to Wall01 and Wall02 displayed in the viewport*

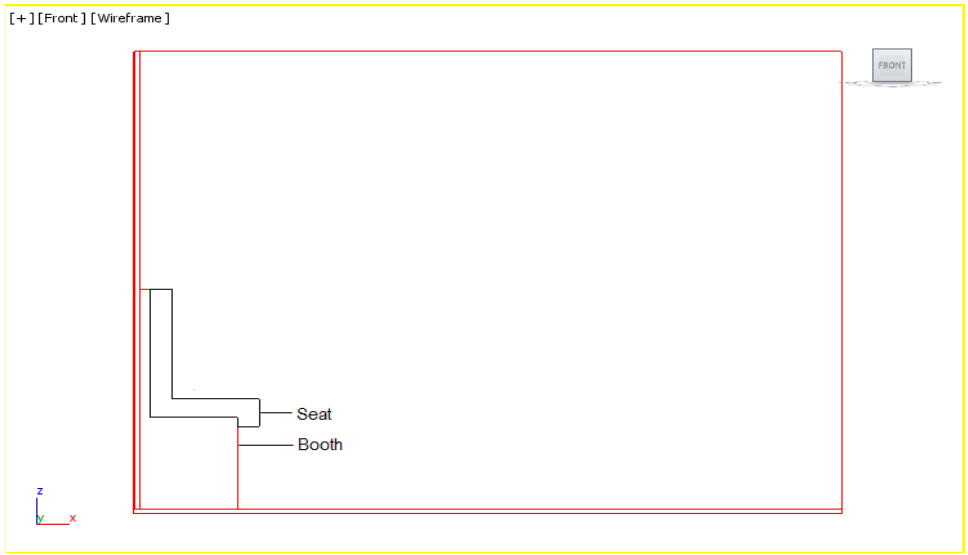


Figure P2-5 *The profile of seat created*

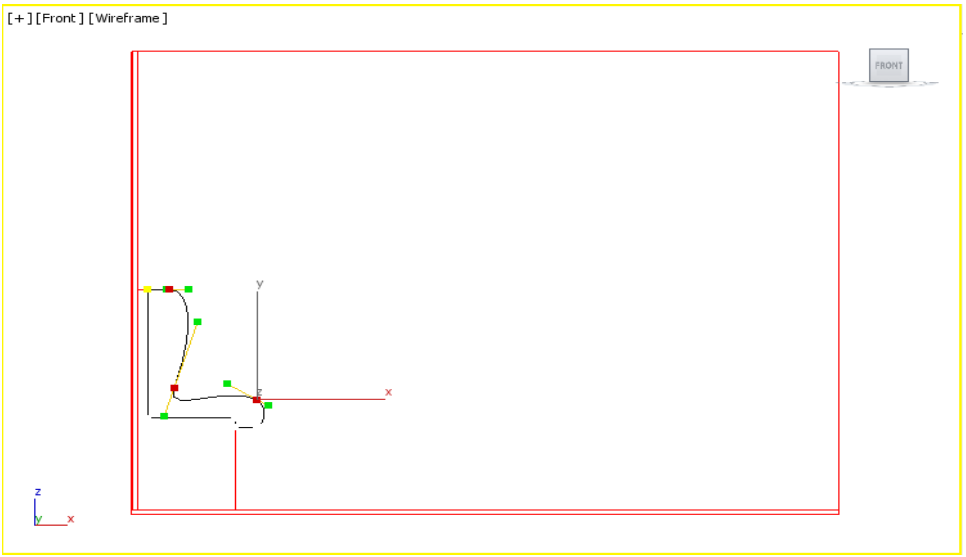


Figure P2-6 *The vertices of Seat modified using the bezier handles*

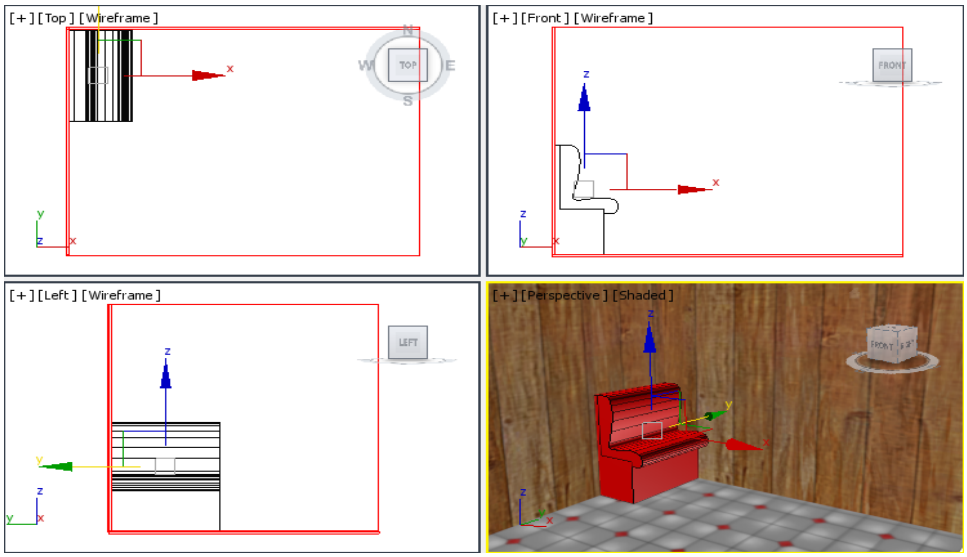


Figure P2-7 *Booth and Seat created in the viewport*

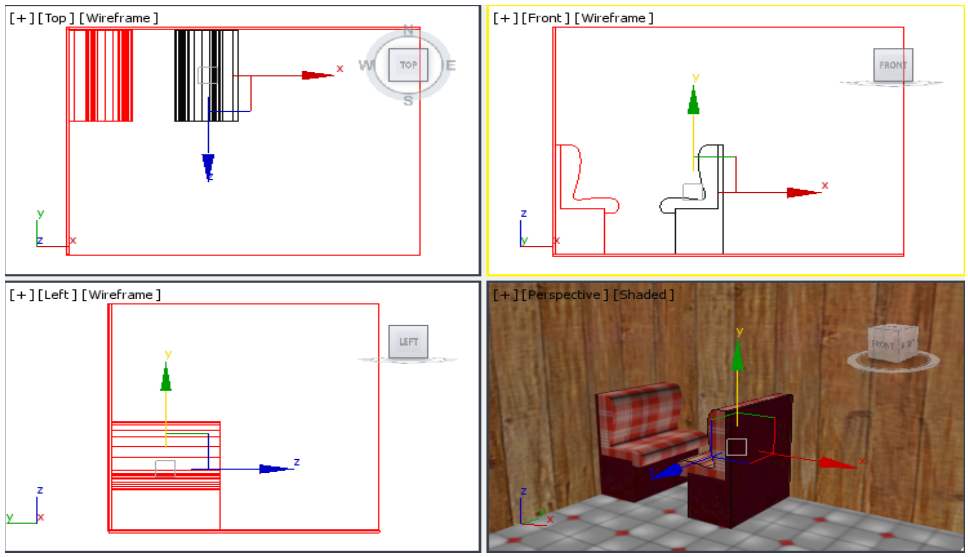


Figure P2-8 *Mirror image created 40 units to the right of Booth01*

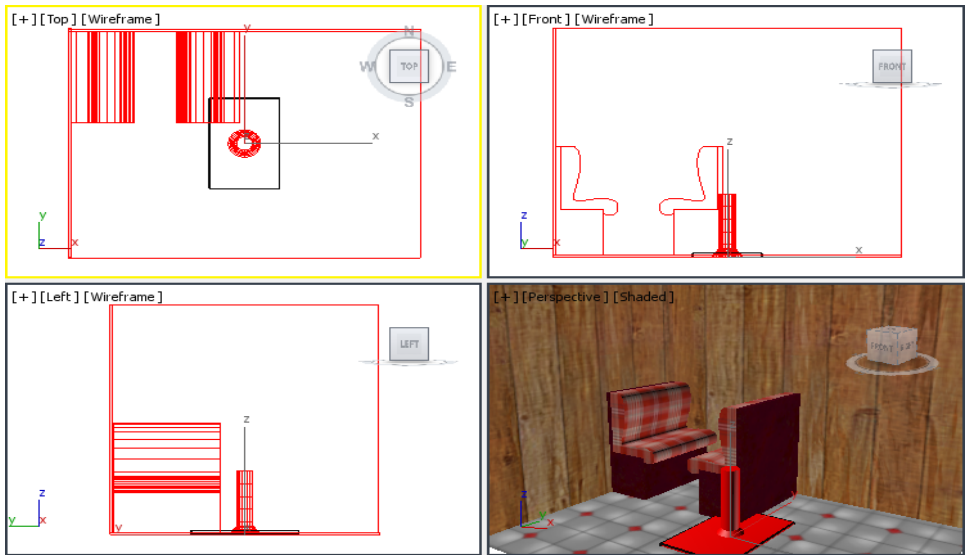


Figure P2-9 *Top of the table created*

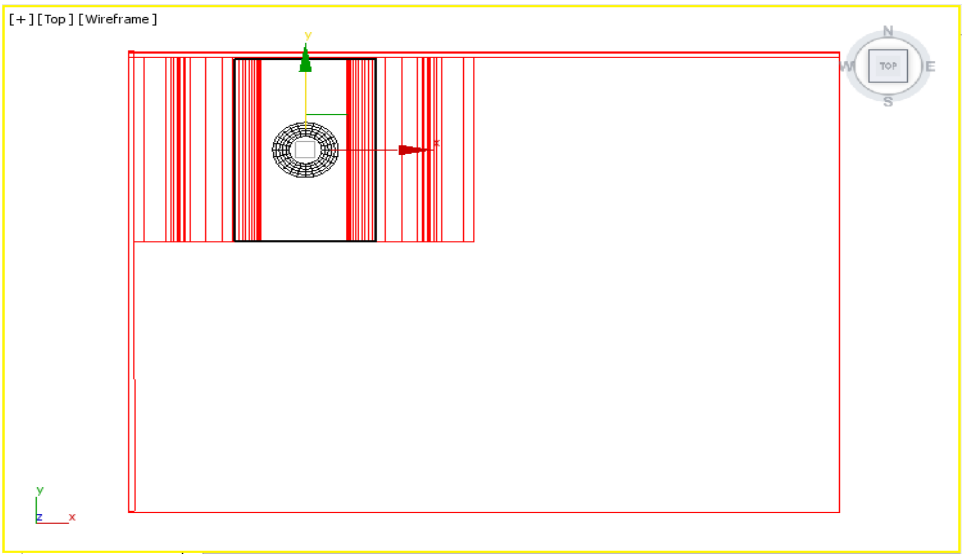


Figure P2-10 *The table components aligned*

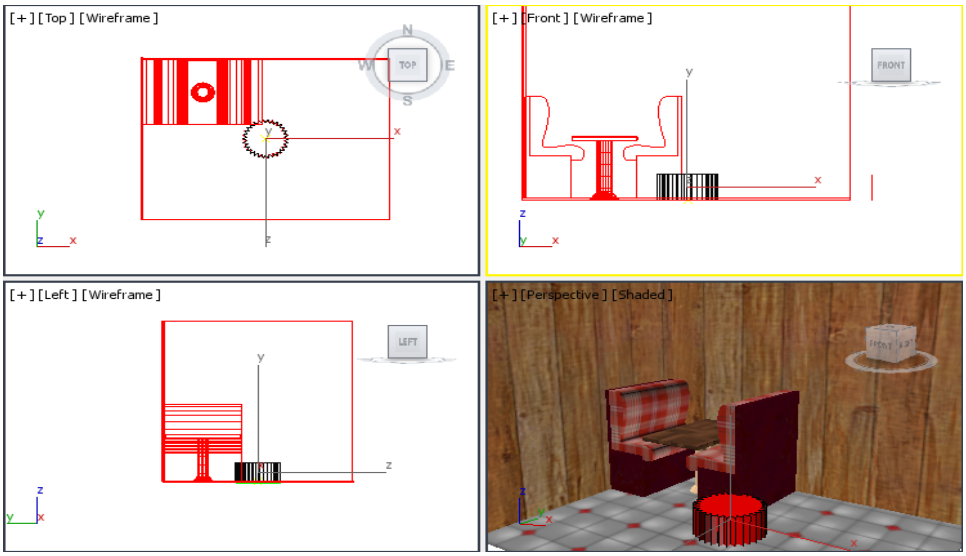


Figure P2-11 *The lofted star shape*

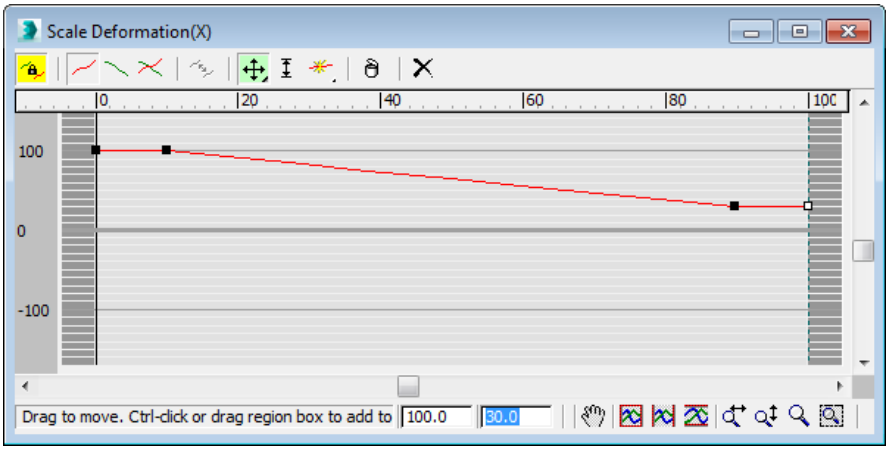


Figure P2-12 *The vertices created and moved in the* ***Scale Deformation****(X) dialog box*

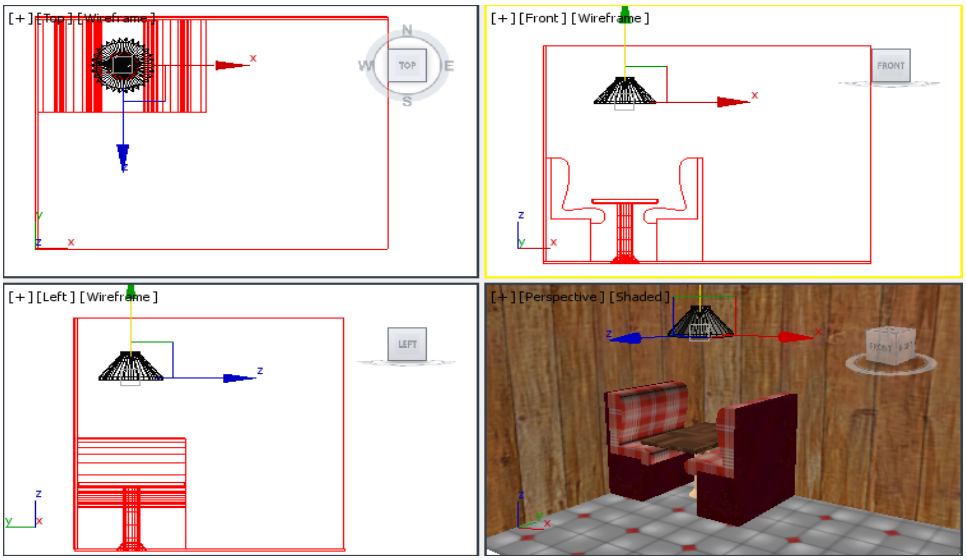


Figure P2-13 *Shade moved into position*

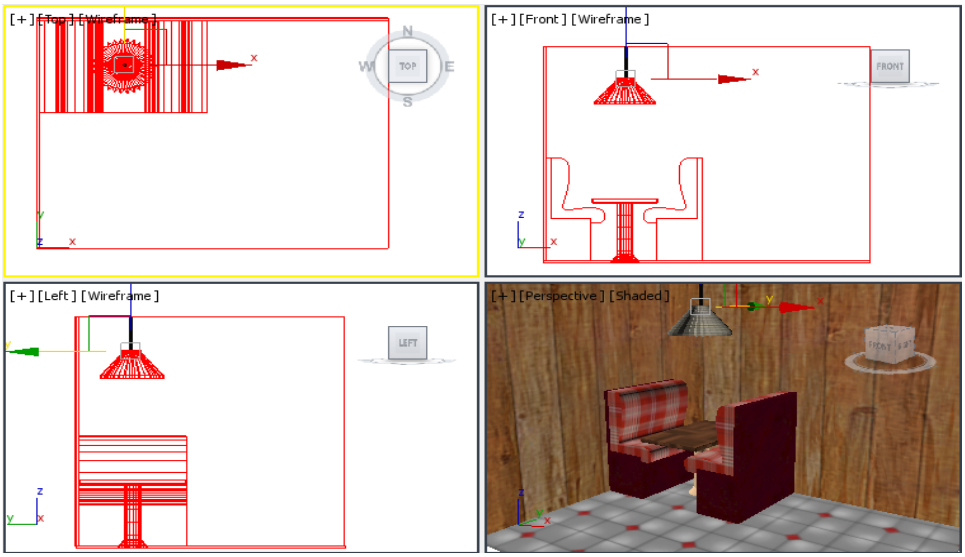


Figure P2-14 *A suspension cylinder created*

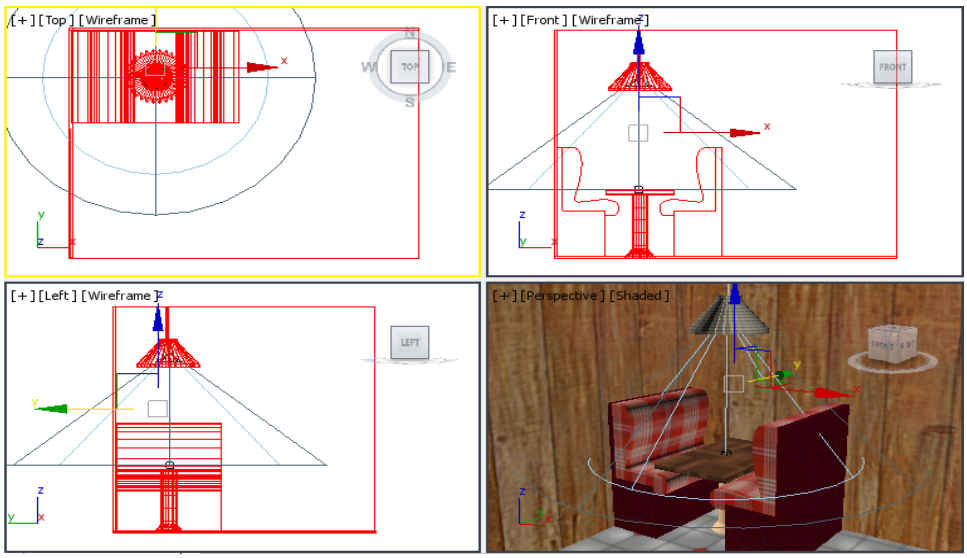


Figure P2-15 *A light placed inside the lamp shade*

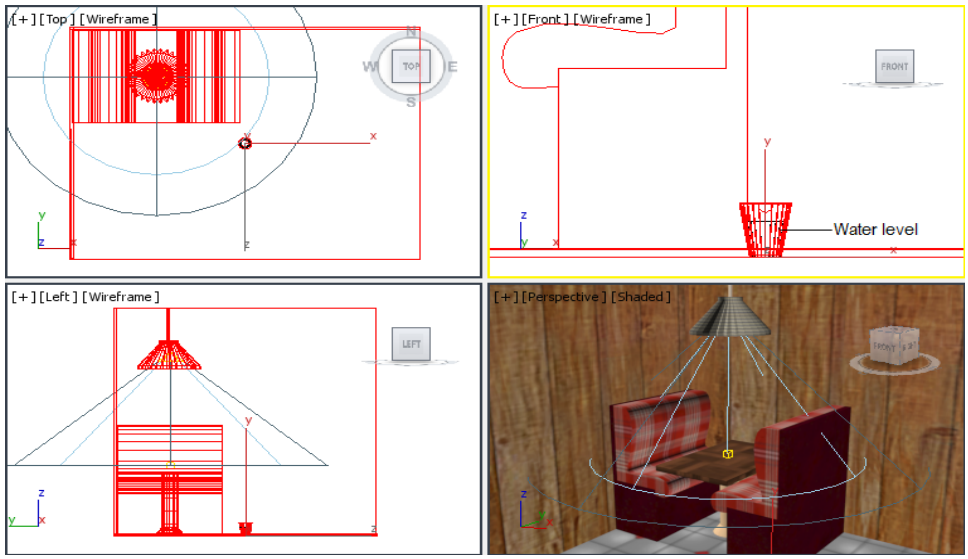


Figure P2-16 *A glass with water created*

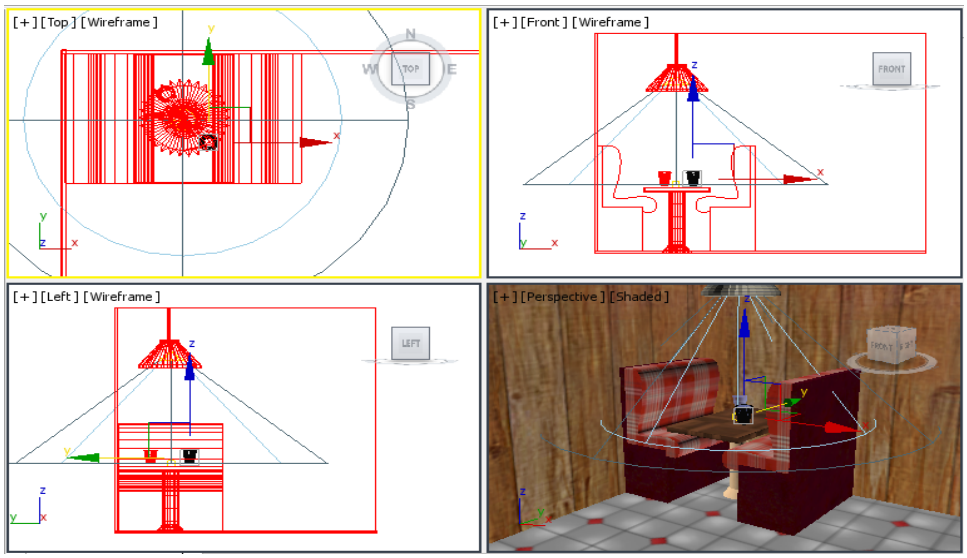


Figure P2-17 *Drink02 created and positioned*

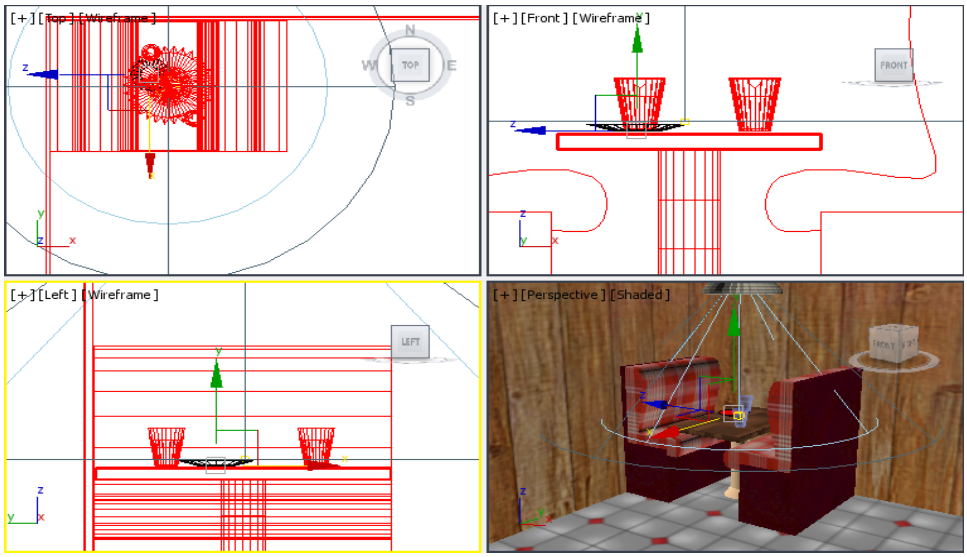


Figure P2-18 *Plate01 created and positioned*

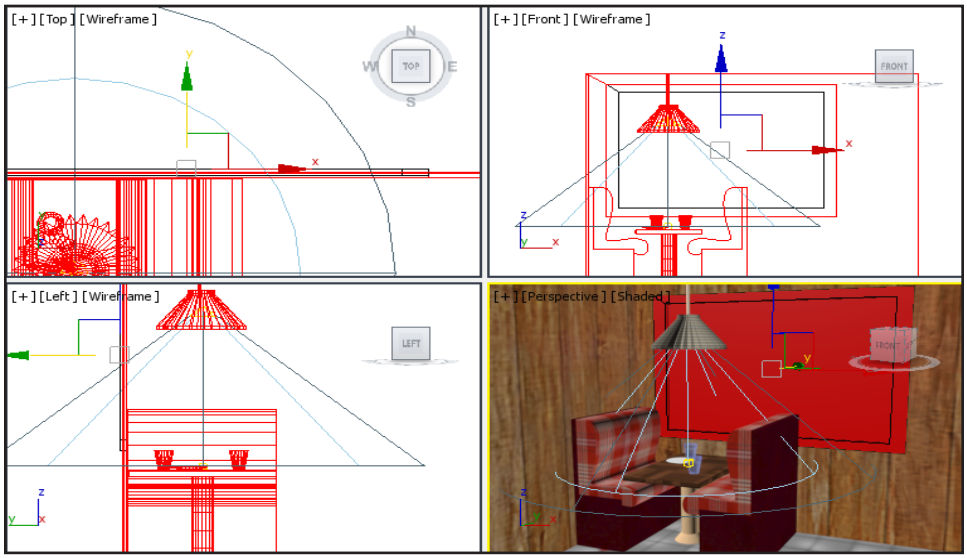


Figure P2-19 *The window placed on the wall*

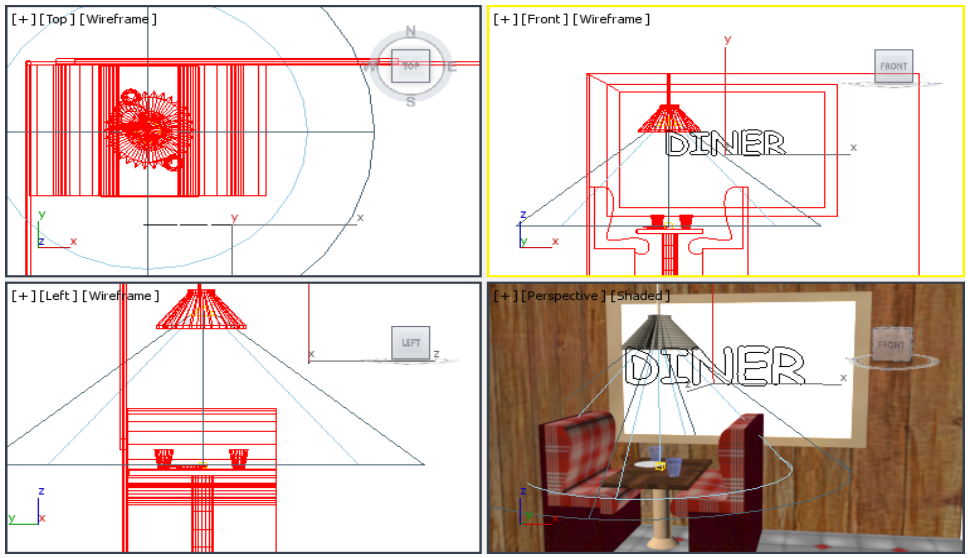


Figure P2-20 *The text for the sign created*

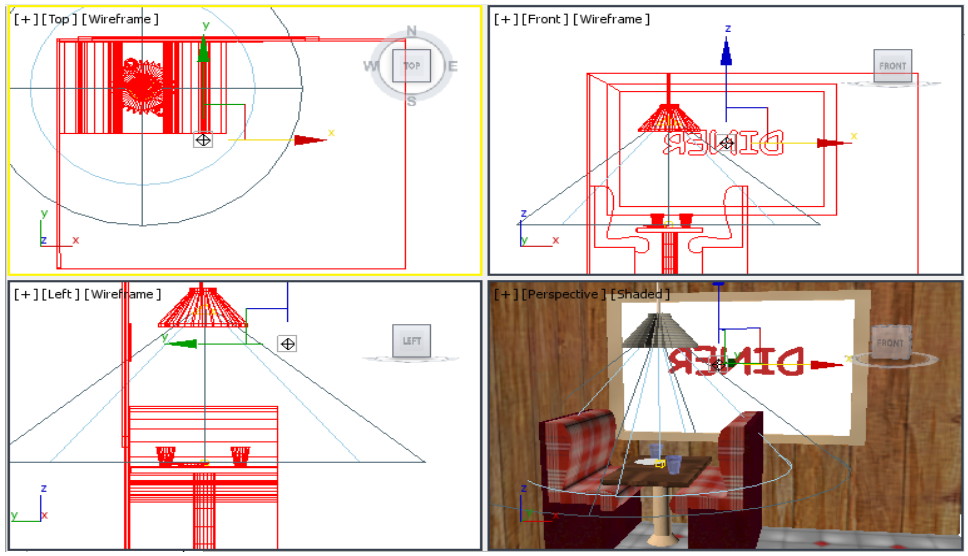


Figure P2-21 *Omni01 light created and positioned*

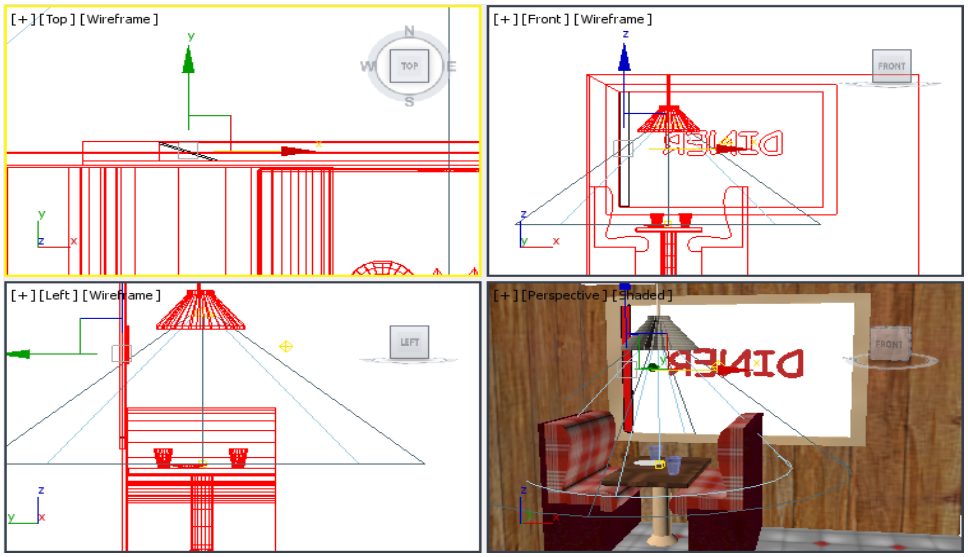


Figure P2-22 *Blind01 created and positioned*

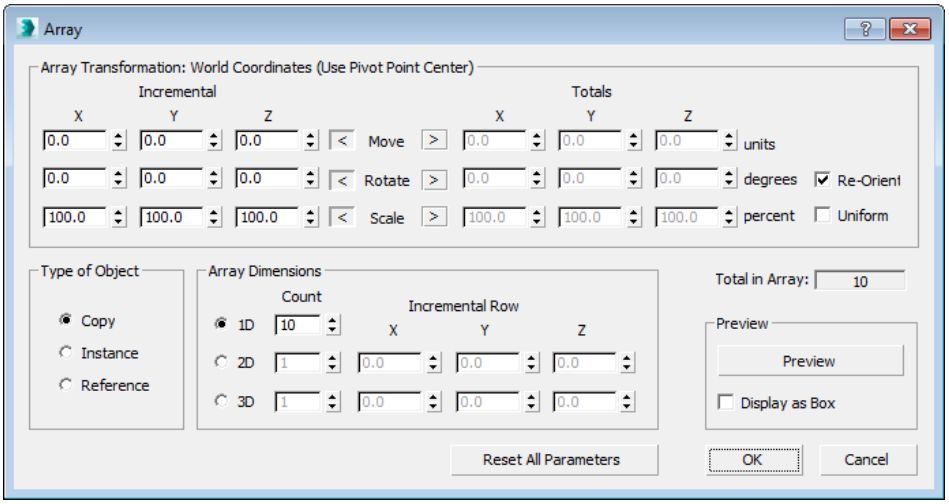


Figure P2-23 *The* ***Array*** *dialog box*

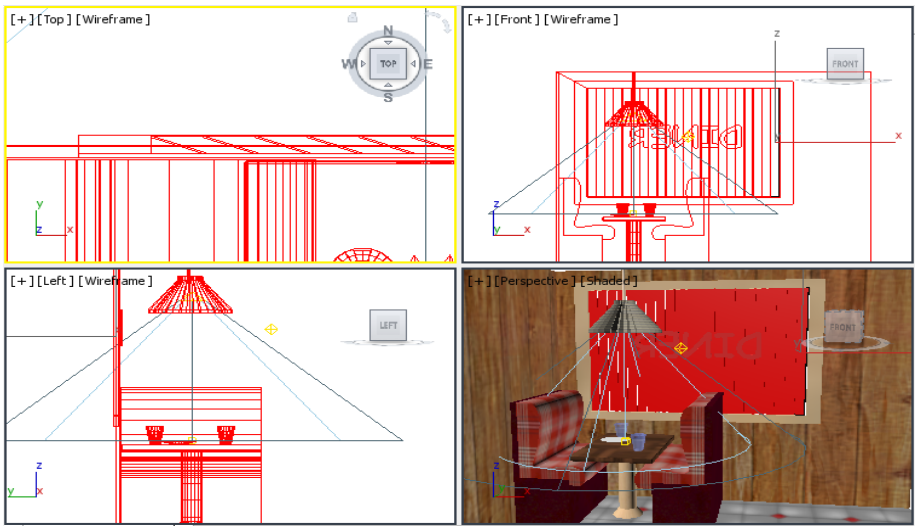


Figure P2-24 *The blinds created using the* ***Array*** *tool*

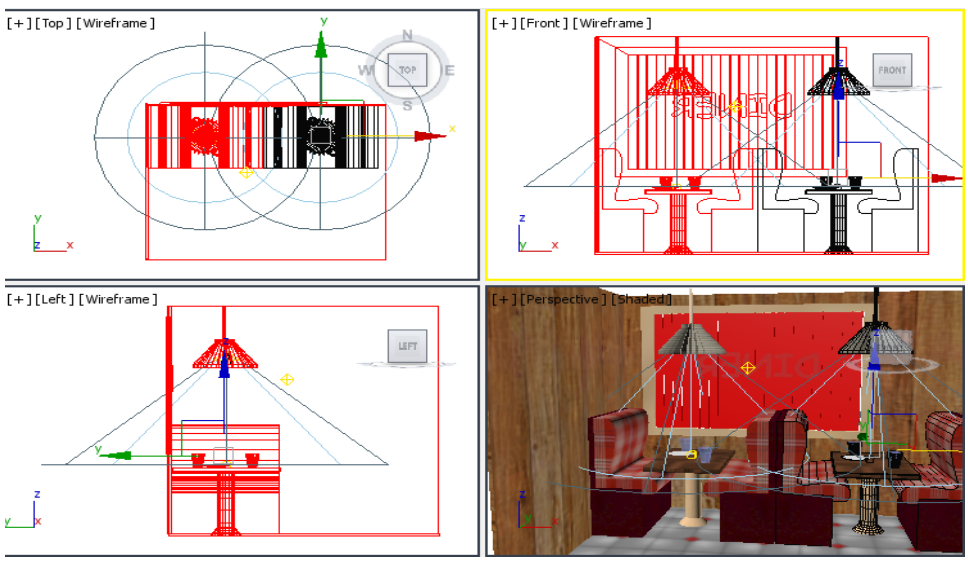


Figure P2-25 *The selected objects copied and positioned*

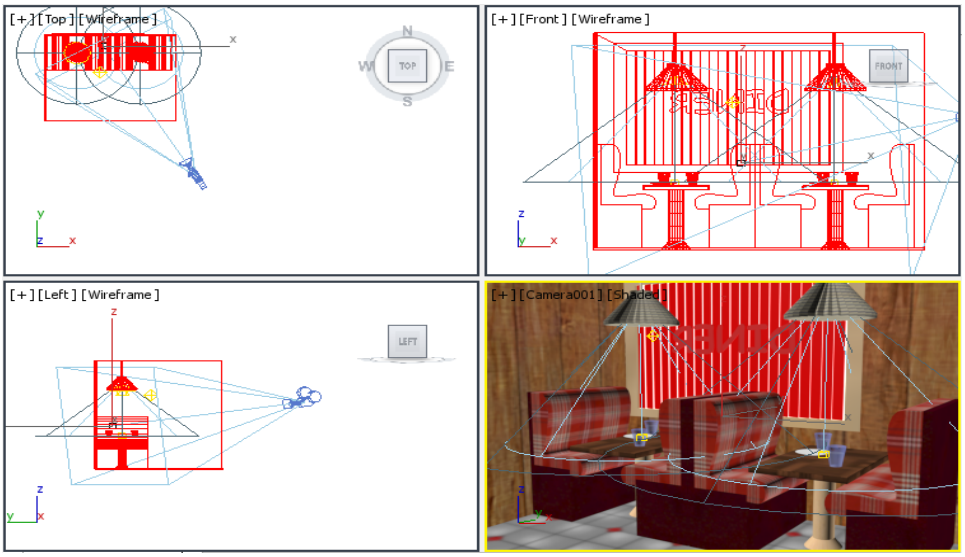


Figure P2-26 *Aligning objects at the center of the Camera001 viewport*

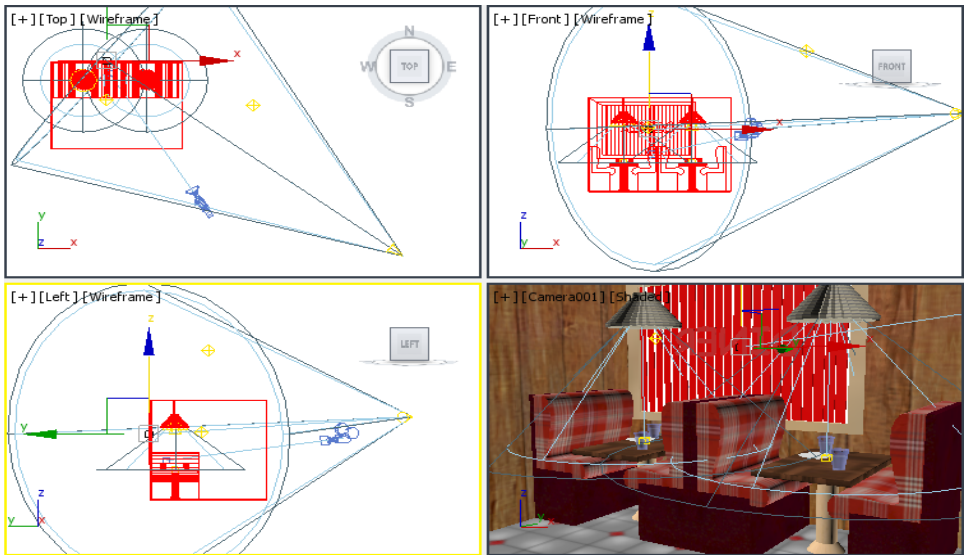


Figure P2-27 *The Spot003.Target moved and placed in the middle of the window*

Figure P2-28 *The rendered view of the scene*

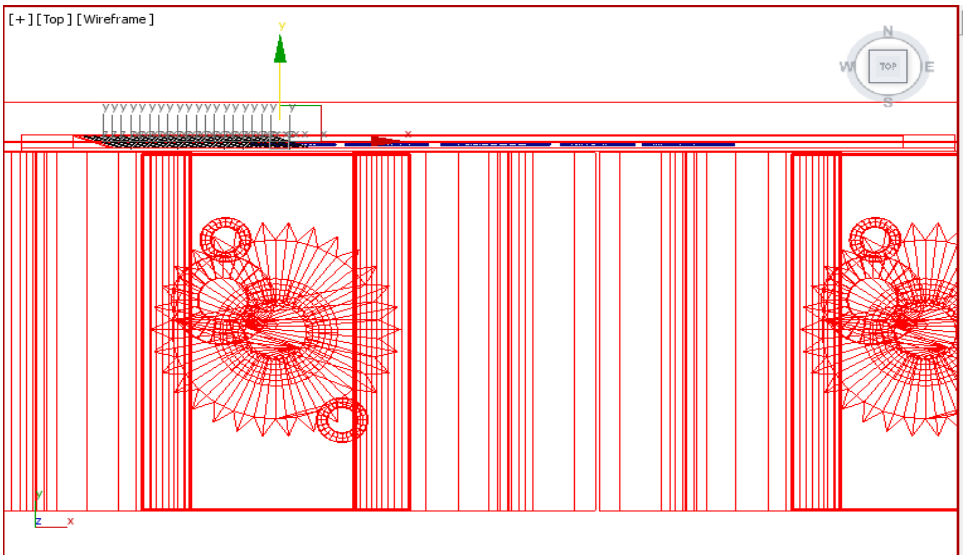


Figure P2-29 *The blinds at the midpoint of the animation*

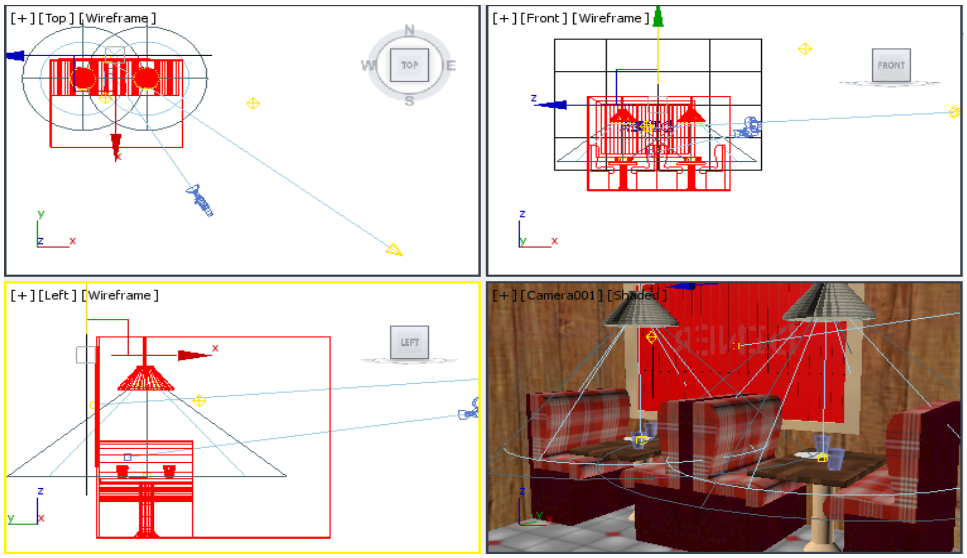


Figure P2-30 *The Plane created and aligned on back of Wall02*

Figure P2-31 *The final animation rendered at frame 42*

Project 3

Architectural Project

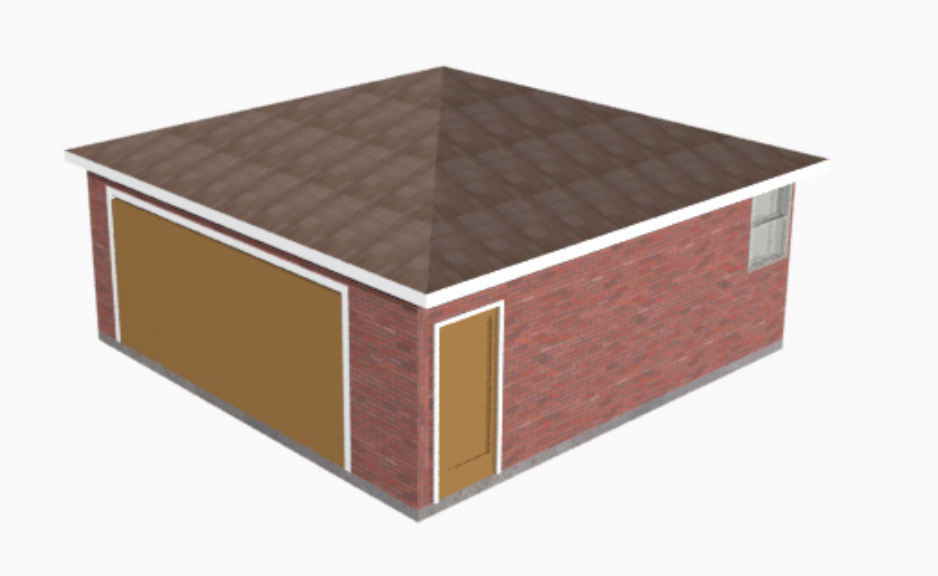


Figure P3-1 *The model of a residential garage*

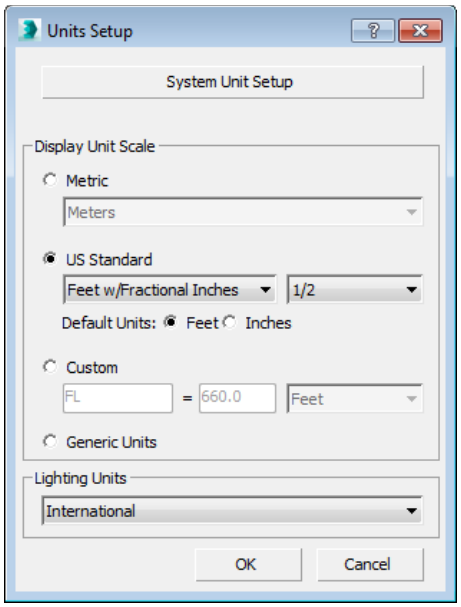


Figure P3-2 *The* ***Units Setup*** *dialog box*

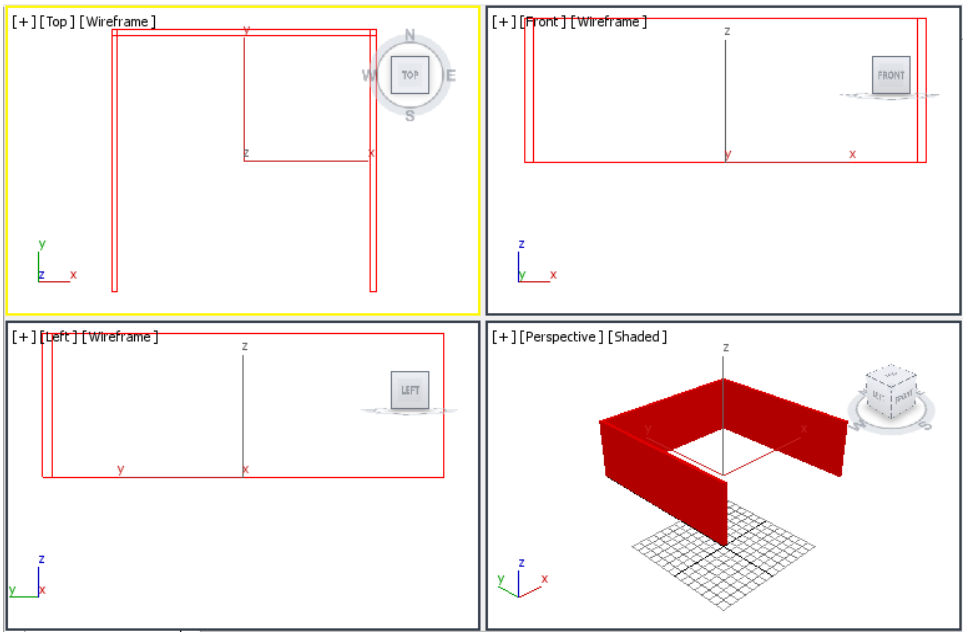


Figure P3-3 *The 3D Wall001 created on top of the selected path*

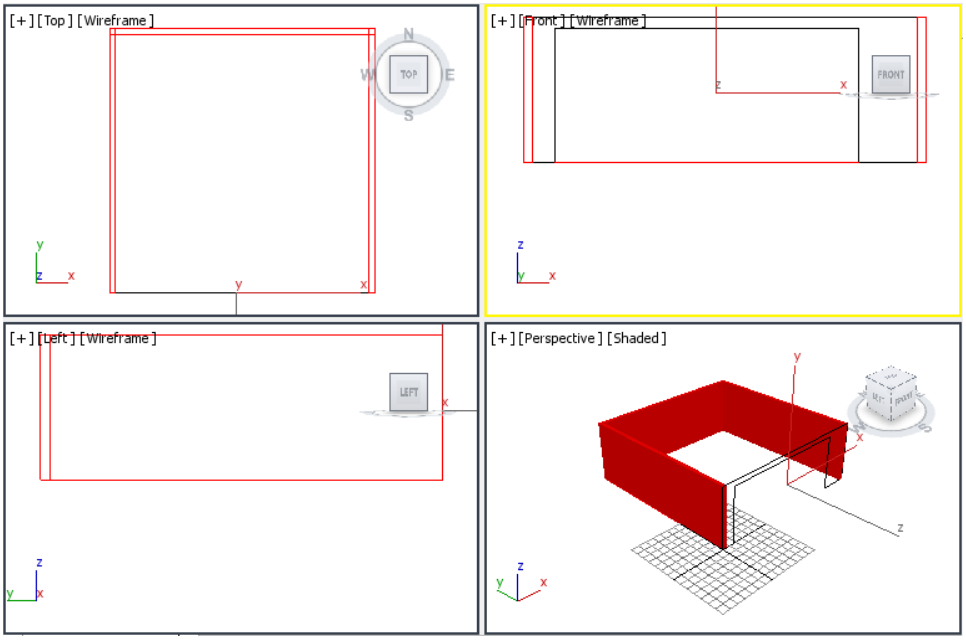


Figure P3-4 *The front wall created*

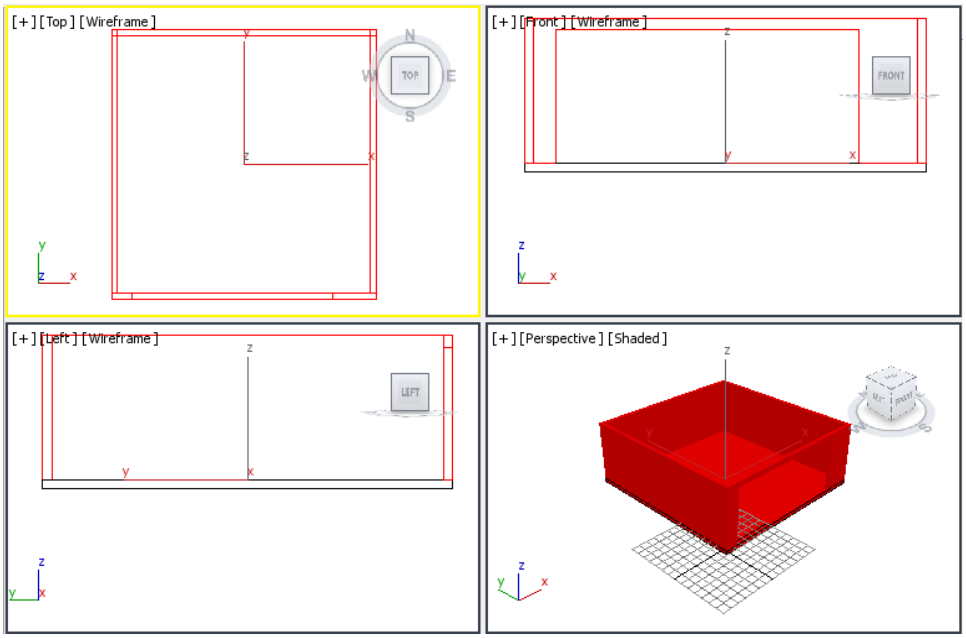


Figure P3-5 *The floor and walls created*

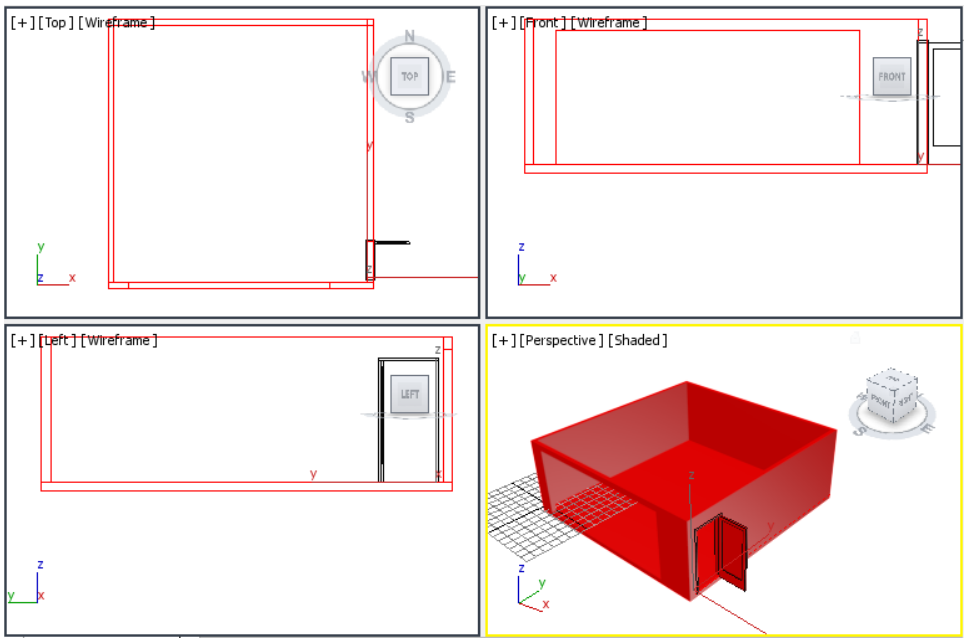


Figure P3-6 *The door created*

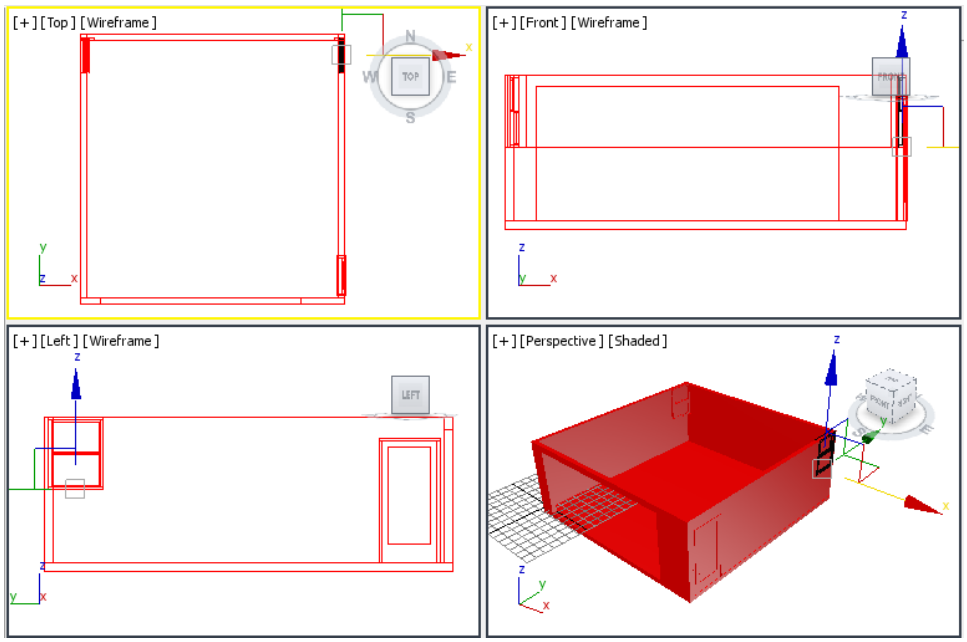


Figure P3-7 *The sliding windows created*

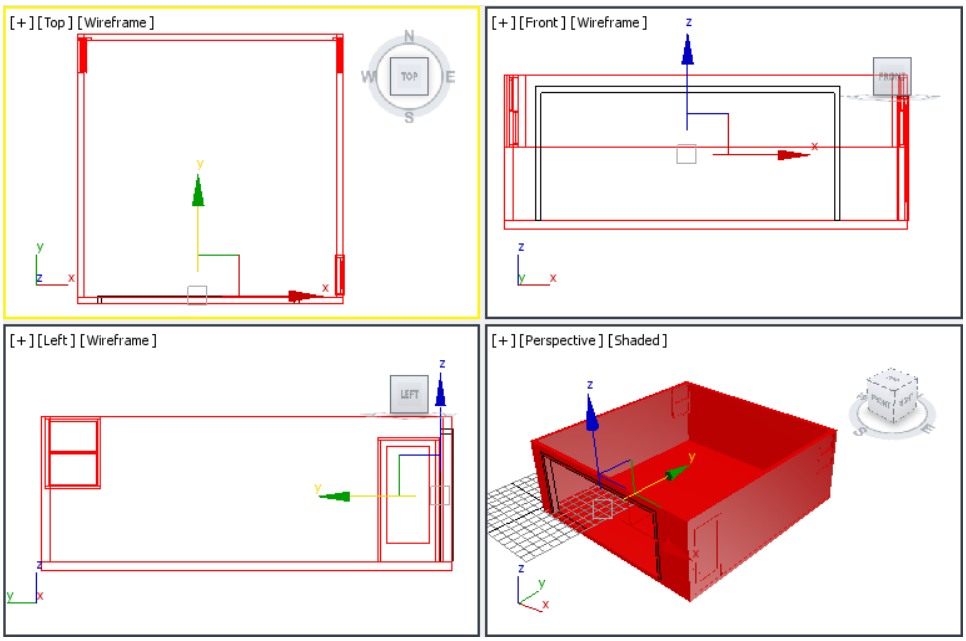


Figure P3-8 *Overhead Door Frame created and positioned*

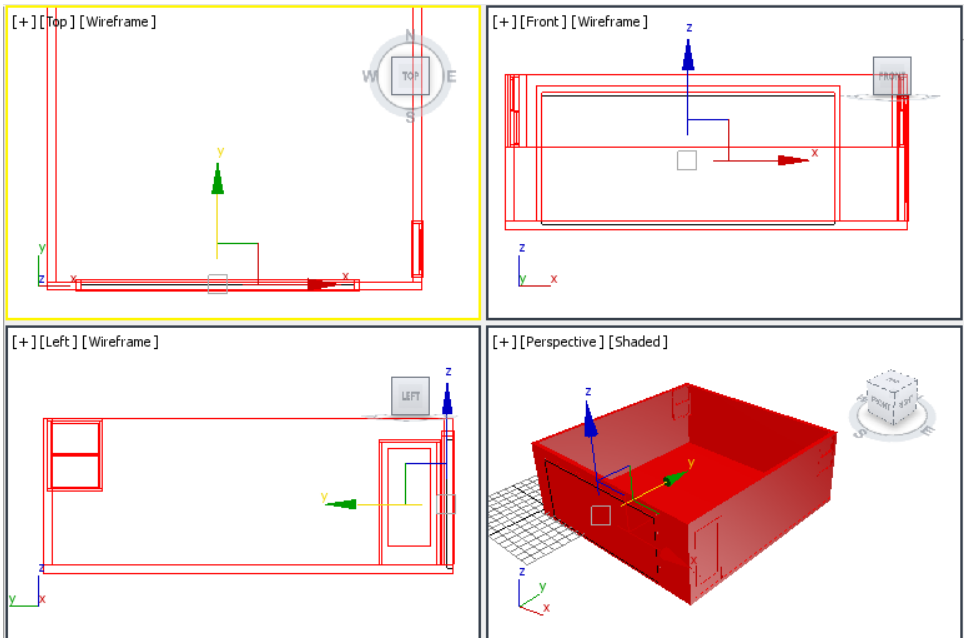


Figure P3-9 *Overhead Door created and positioned*

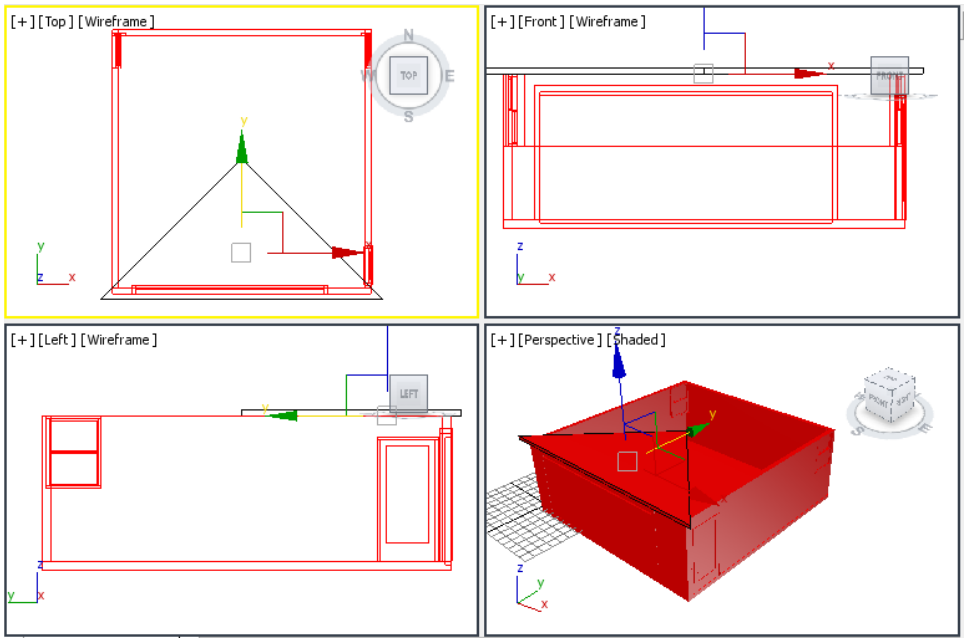


Figure P3-10 *Roof Section01 created*

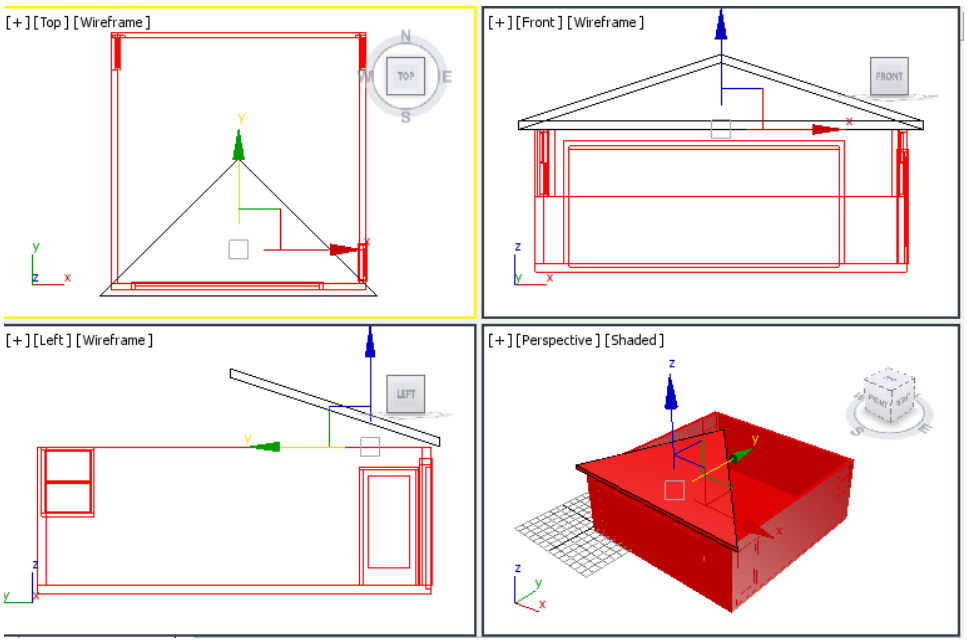


Figure P3-11 *The peak of Roof Section01 moved*

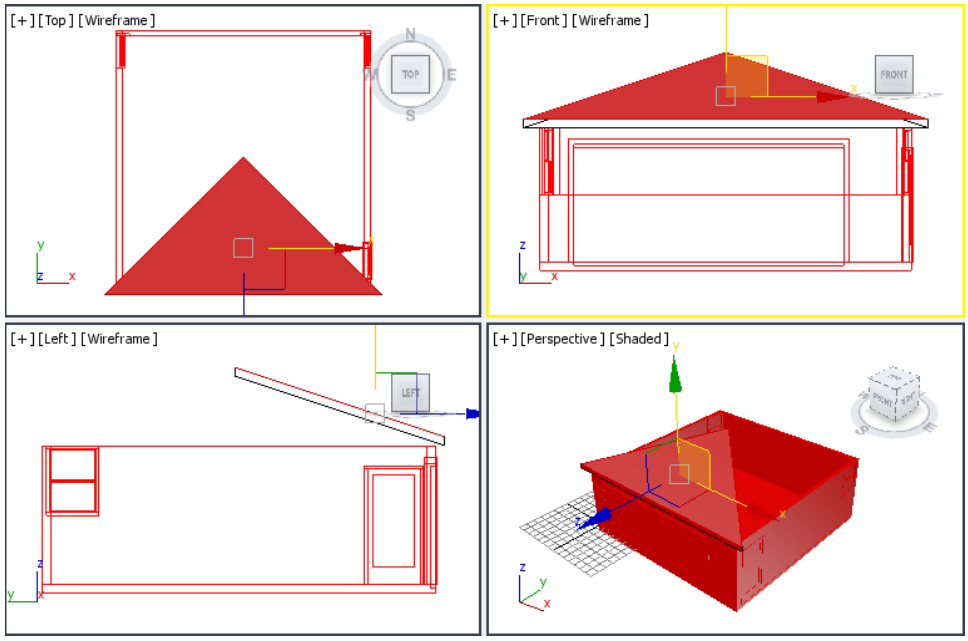


Figure P3-12 *The front face of the Roof Section01 selected*

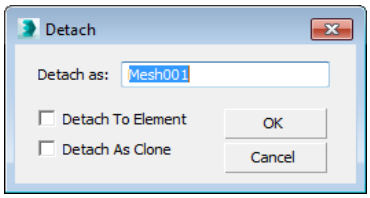


Figure P3-13 *The* ***Detach*** *dialog box*

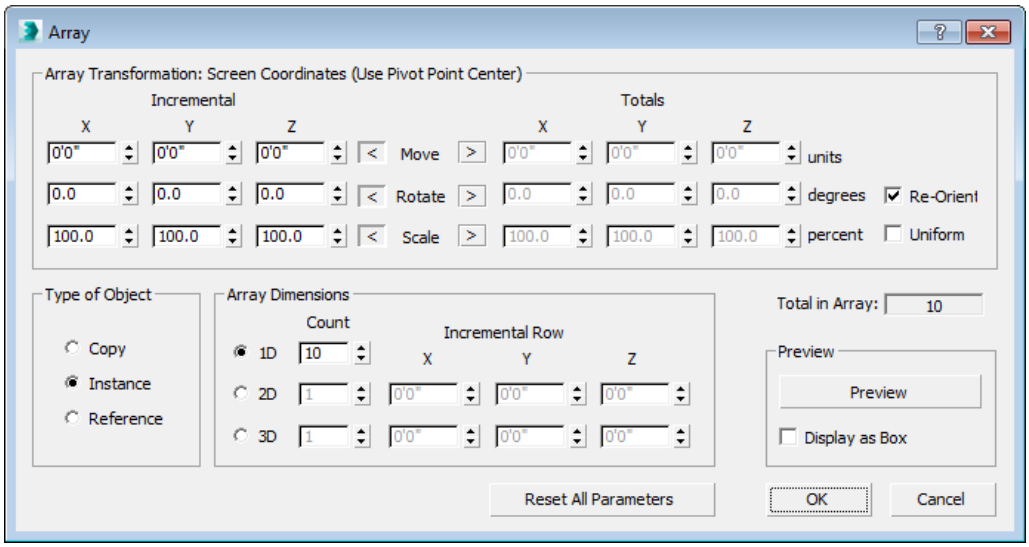


Figure P3-14 *The* ***Array*** *dialog box*

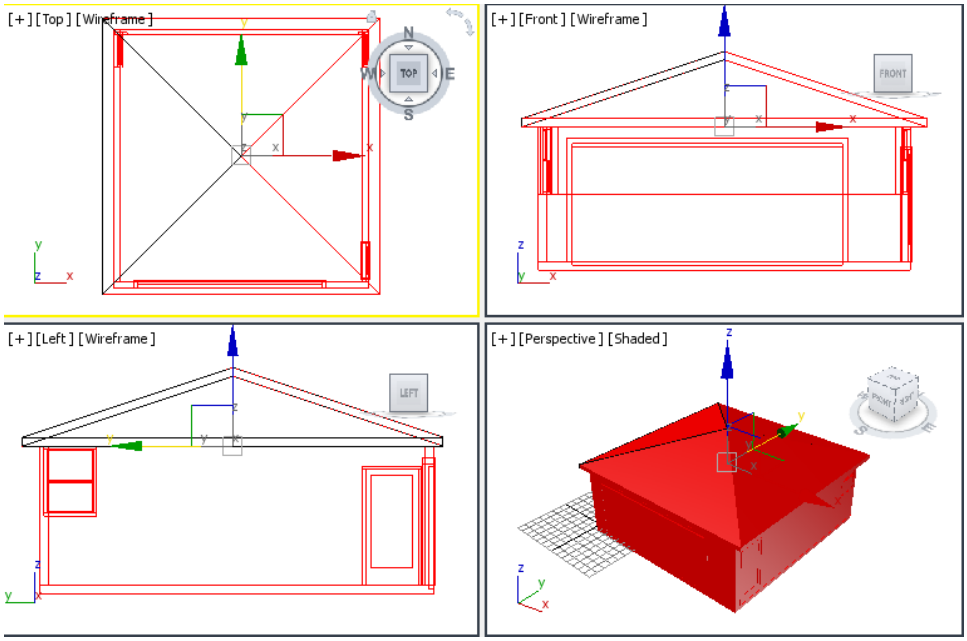


Figure P3-15 *The array created to complete the roof*

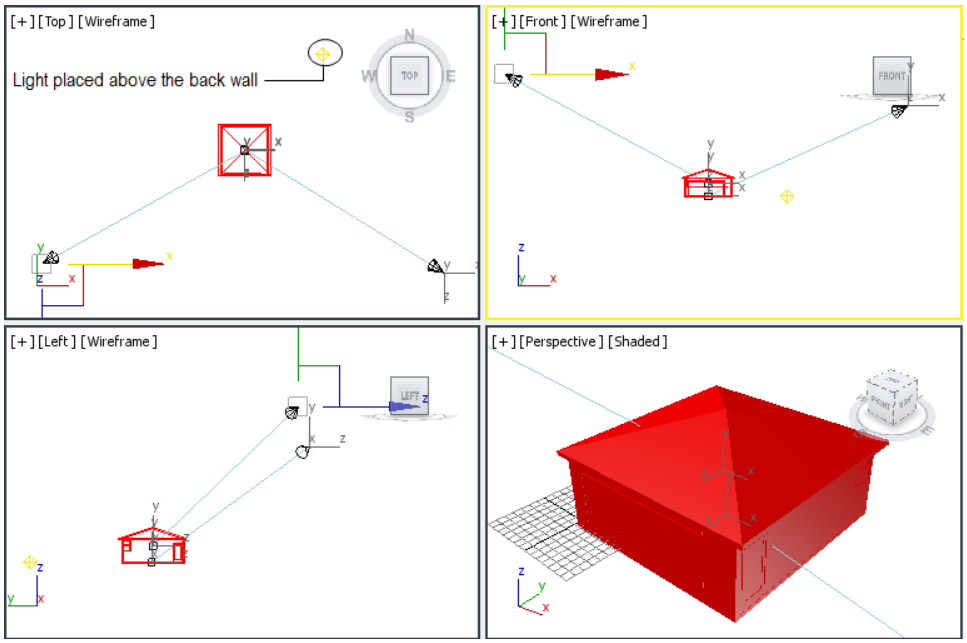


Figure P3-16 *The lights displayed and positioned in all viewports*

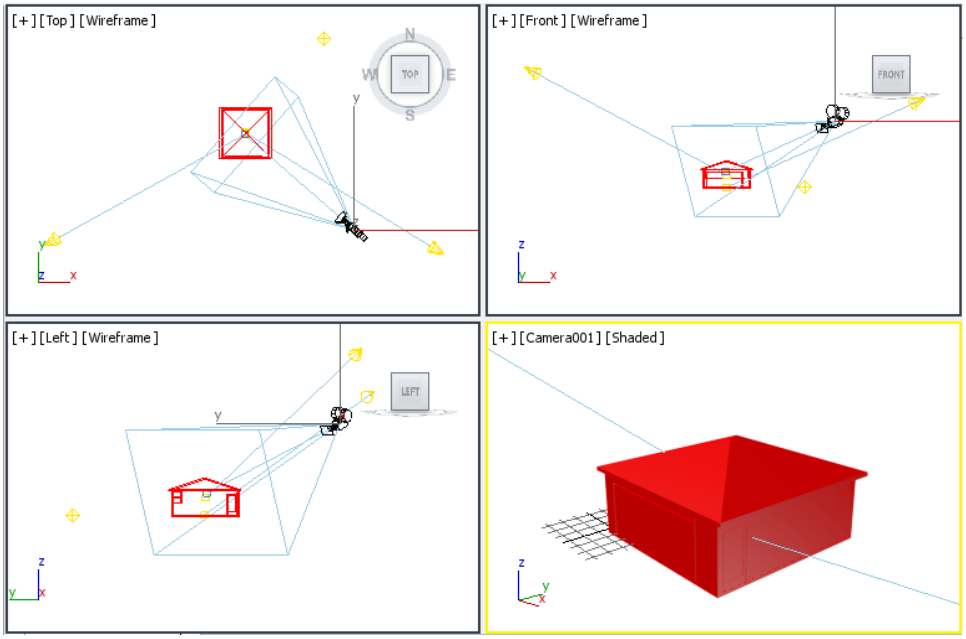


Figure P3-17 *The view displayed in the Camera001 viewport*

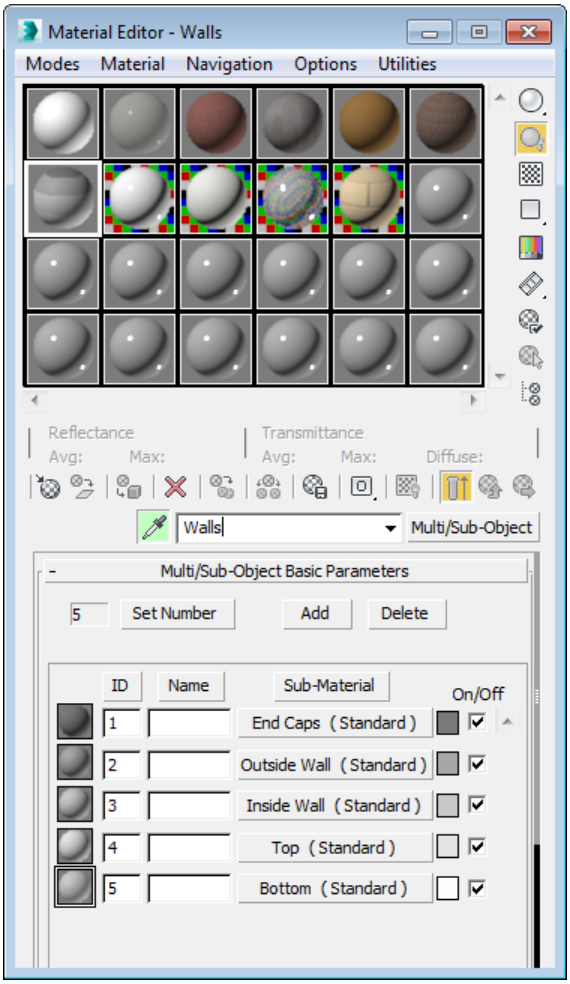


Figure P3-18 *The* ***Multi/Sub-Object*** *material created*

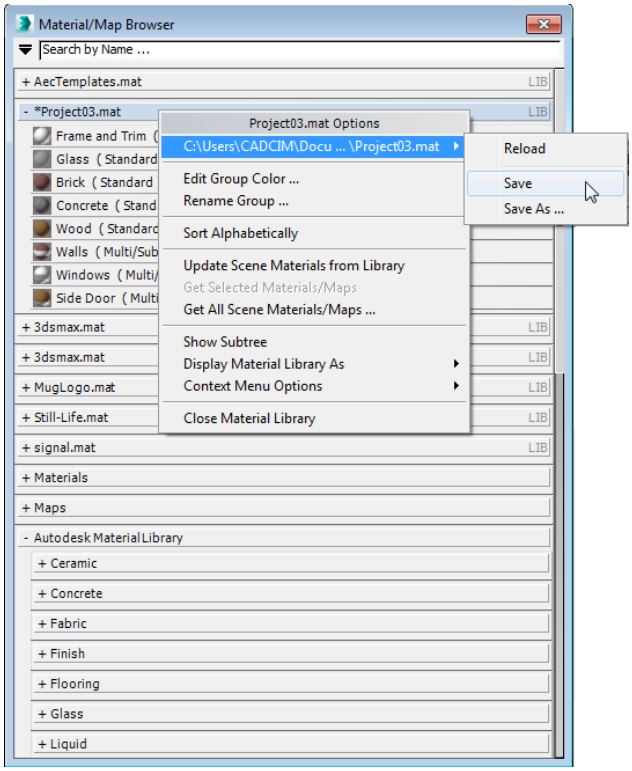


Figure P3-19 *Saving the material library*

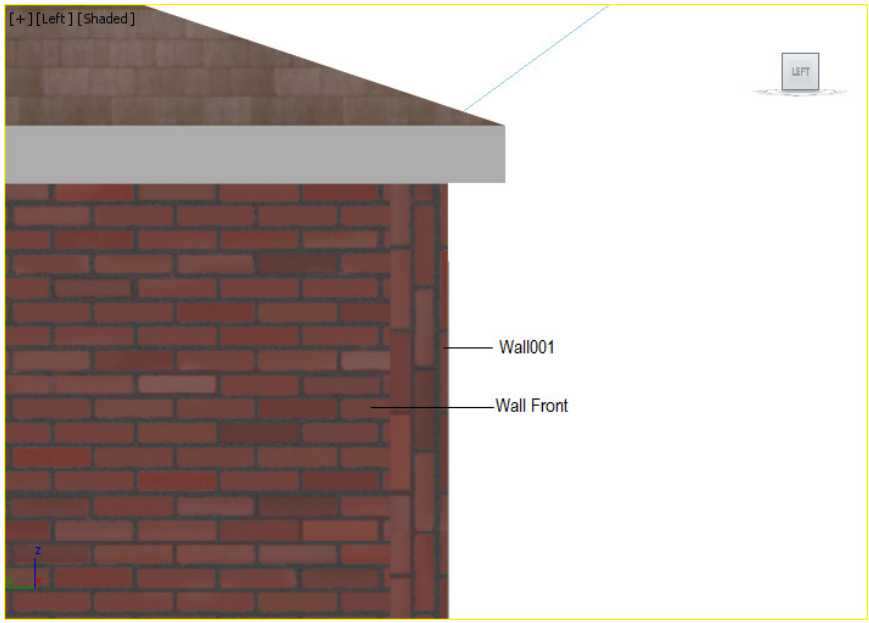


Figure P3-20 *Wall001 and Wall Front zoomed in the Left viewport*

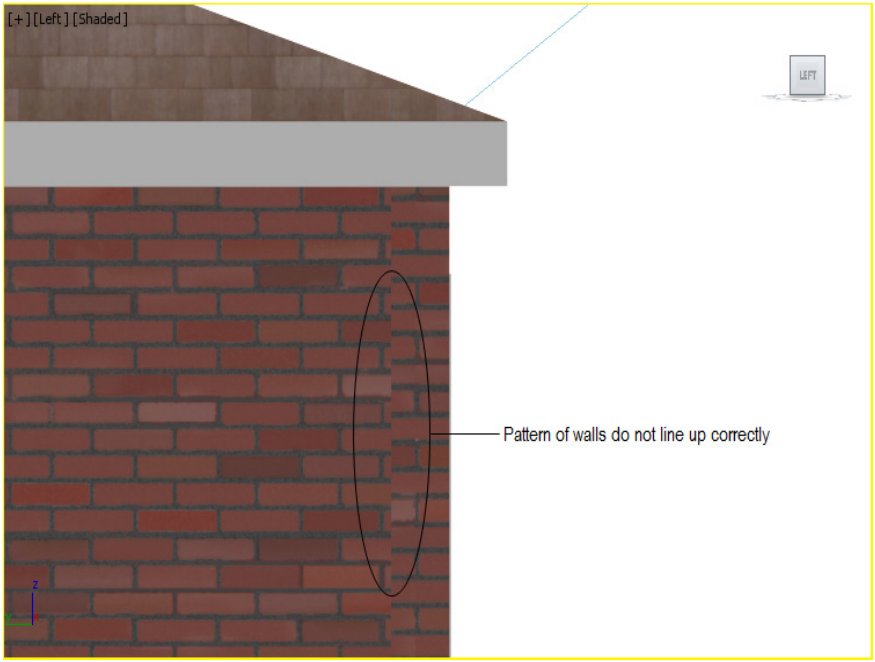


Figure P3-21 *Pattern of Wall001 and Wall Front not lined up correctly*

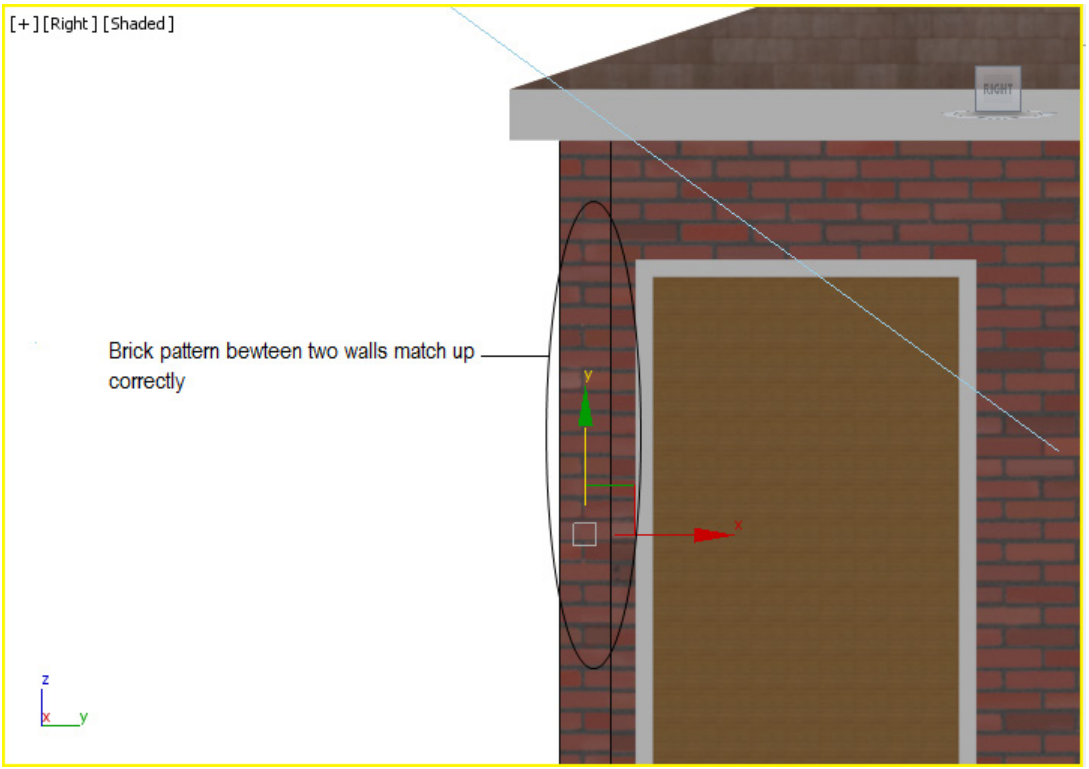


Figure P3-22 *The brick pattern between two walls matched up correctly*

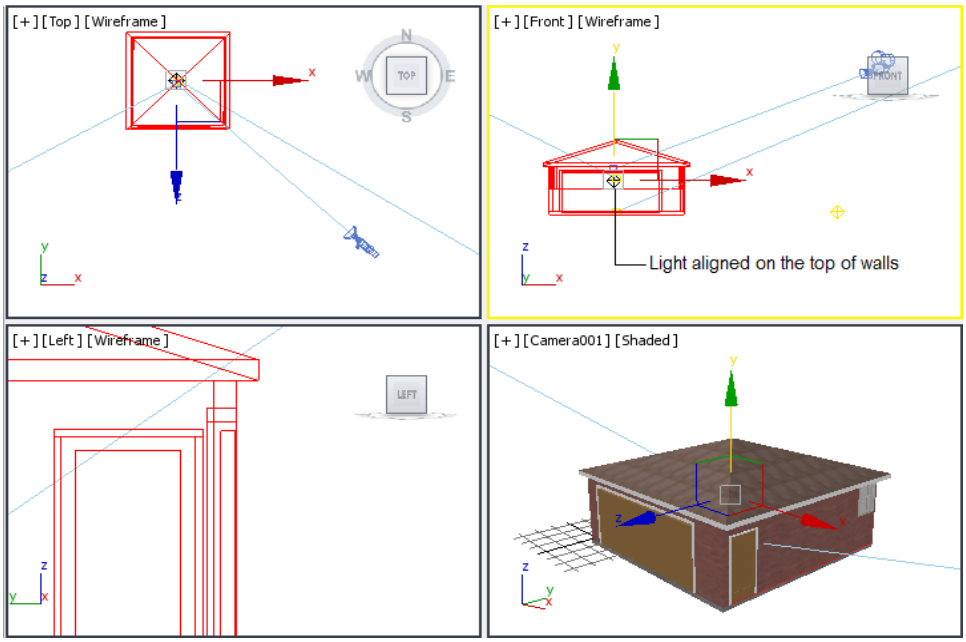


Figure P3-23 *The light aligned on the top of walls*

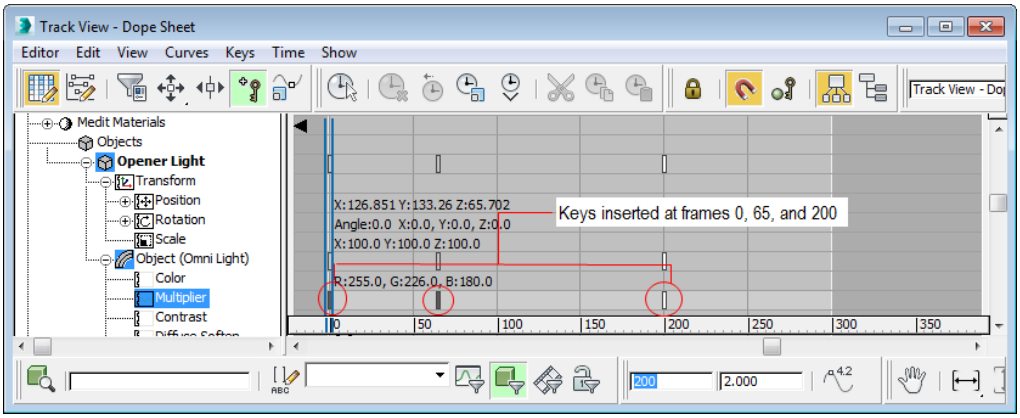


Figure P3-24 *Keys inserted at frames* ***0***, ***65***, *and* ***200*** *in the* ***Multiplier*** *track*

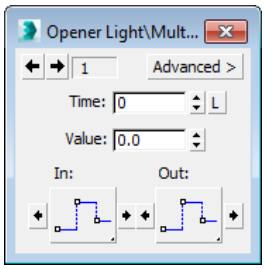


Figure P3-25 *The* ***Opener Light\Multiplier*** *dialog box*

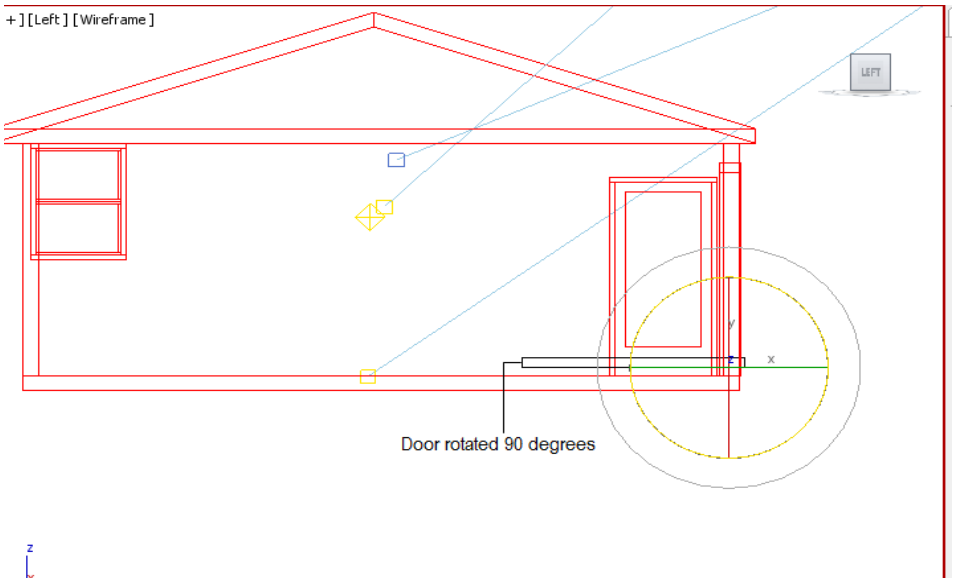


Figure P3-26 *The door rotated 90 degrees about the local Z axis*

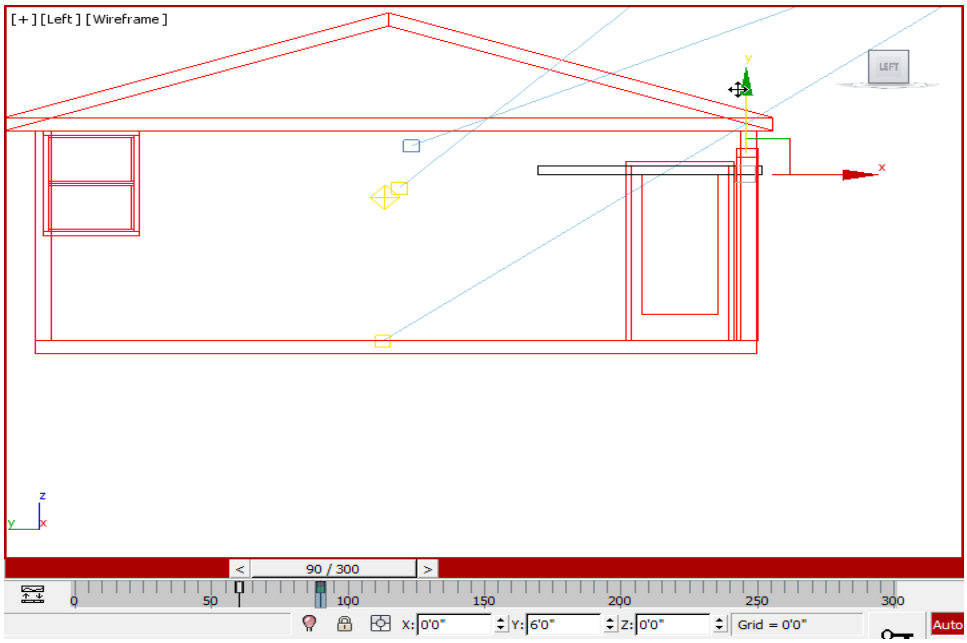


Figure P3-27 *The door moved up 6'0"(1.82m) on the Y axis*

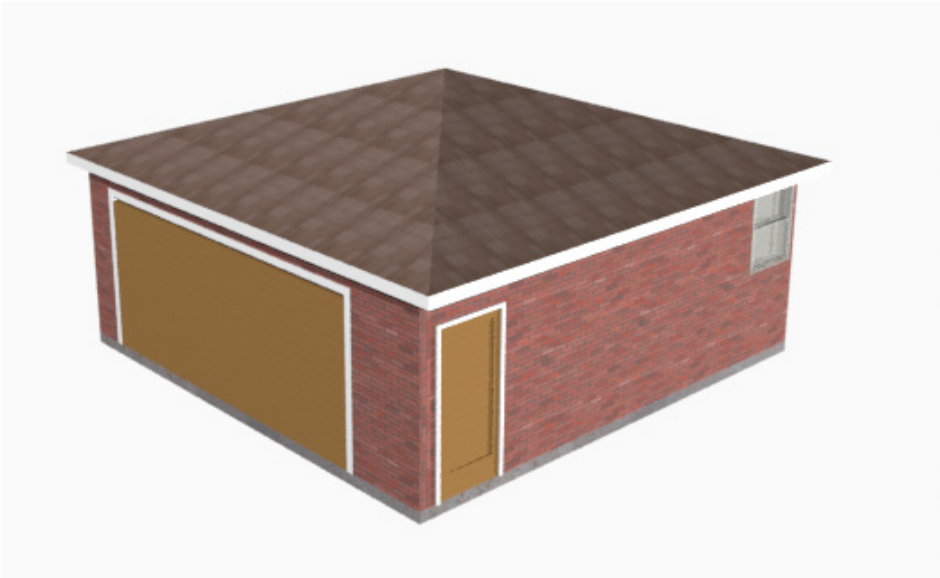


Figure P3-28 *The rendered image at last frame*

Pr gn ect

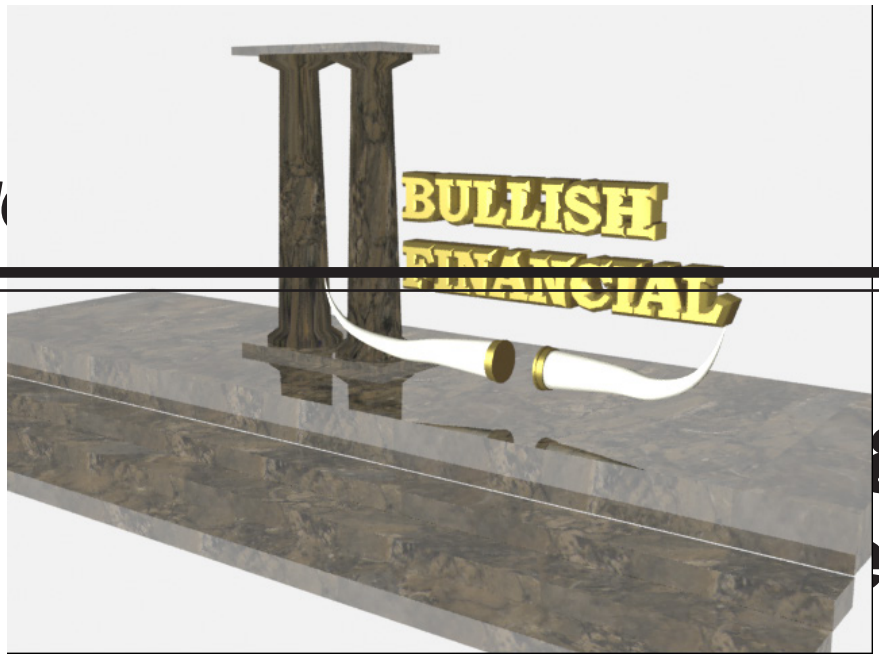


Figure P4-1 *The model of the logo*

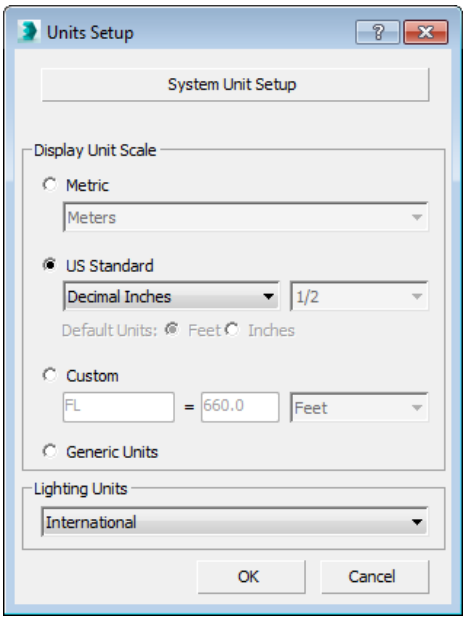


Figure P4-2 *The* ***Units Setup*** *dialog box*

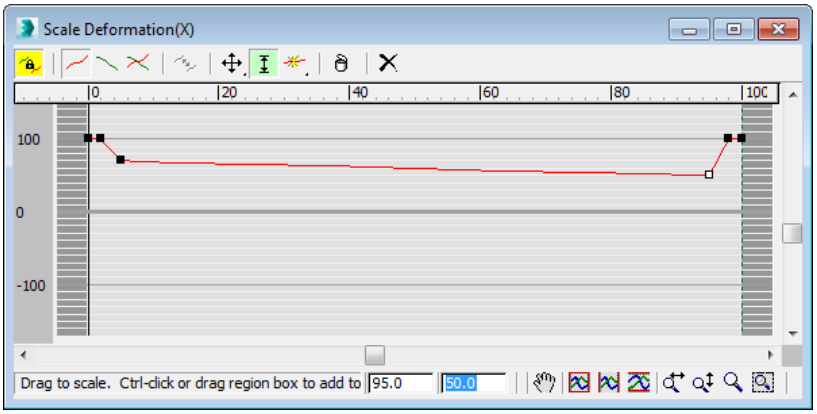


Figure P4-3 *The* ***Scale Deformation(X)*** *dialog box after scaling at different points*

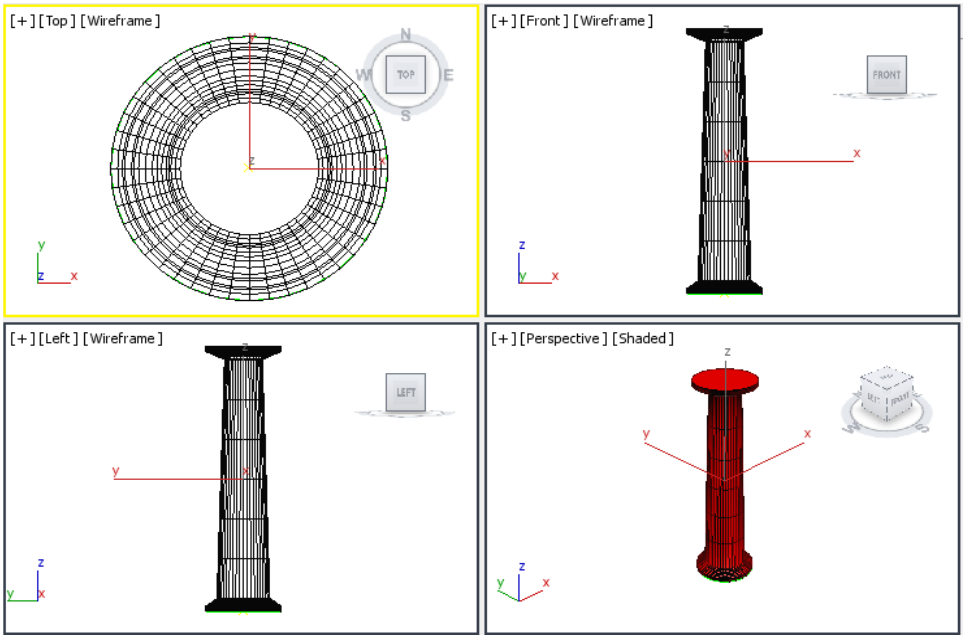


Figure P4-4 *Column01 modified using the* ***Scale Deformation(X)*** *dialog box*

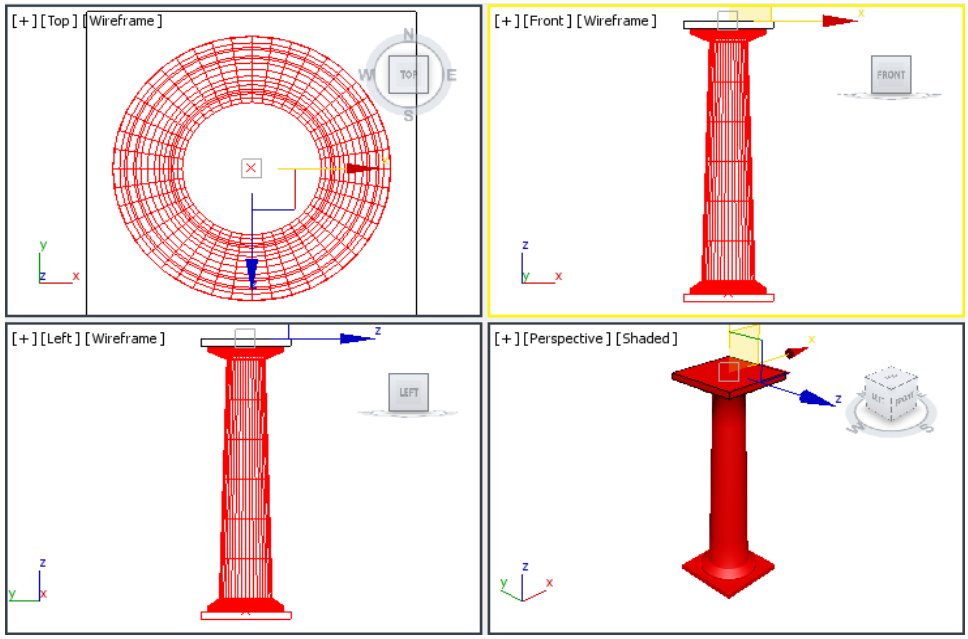


Figure P4-5 *Column01Top is aligned with the top of Column01*

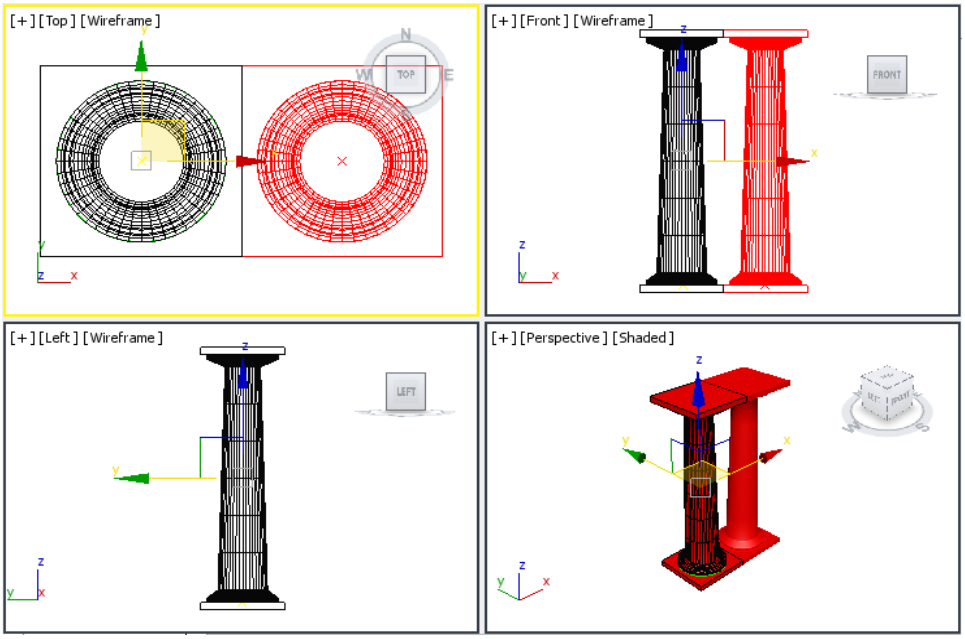


Figure P4-6 *Column02 Assembly created*

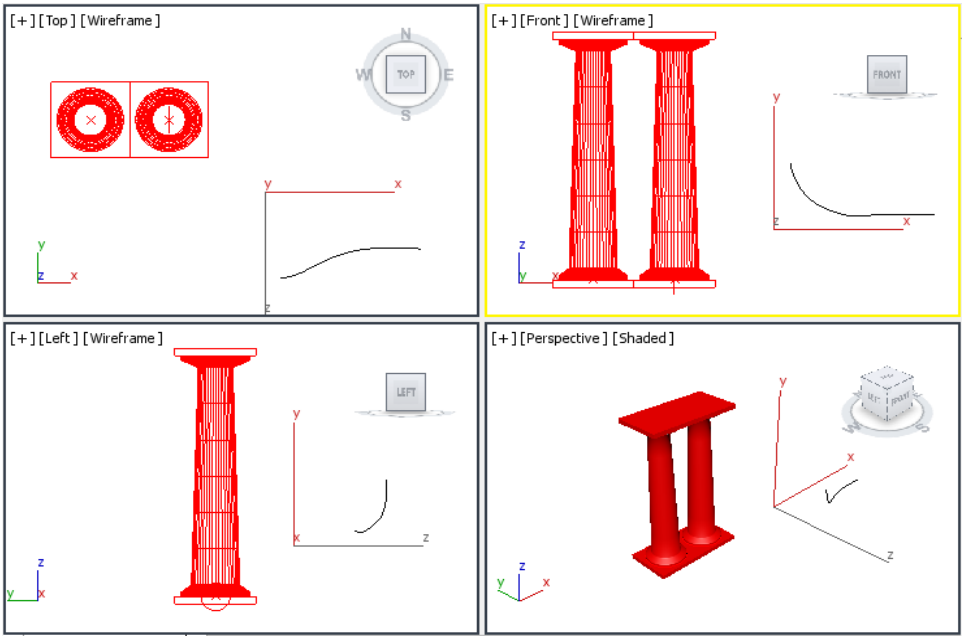


Figure P4-7 *The path created for the left-hand horn*

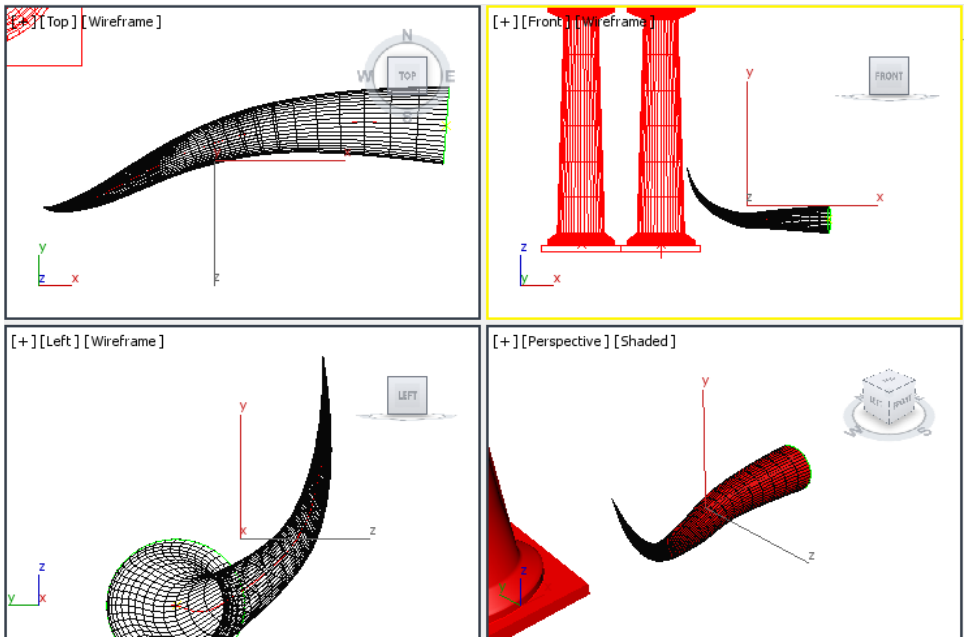


Figure P4-8 *Horn-Left modified using the* ***Scale Deformation(X)*** *dialog box*

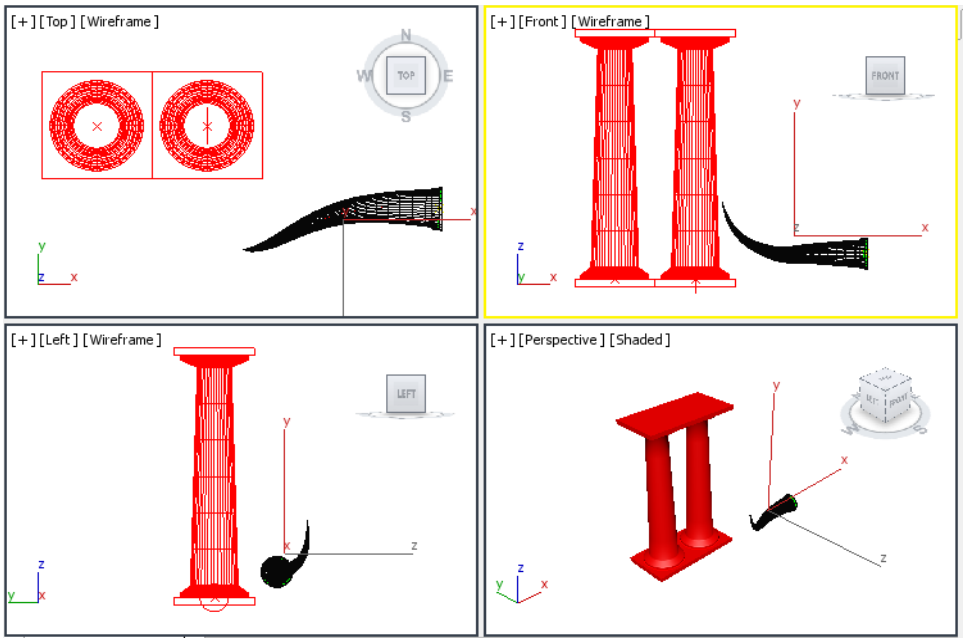


Figure P4-9 *HornAssemblyLeft created*

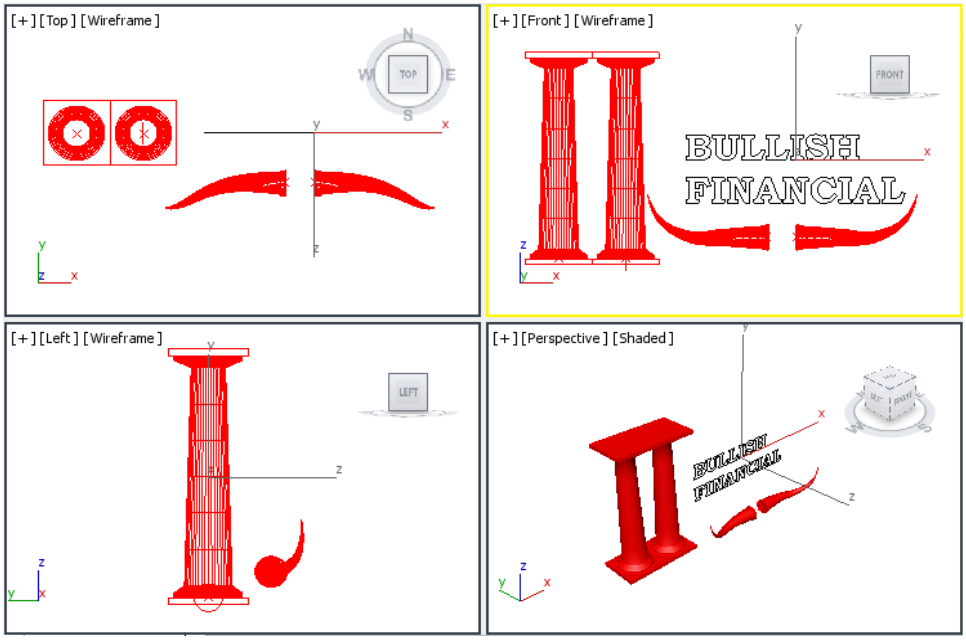


Figure P4-10 *The text displayed as a single object*

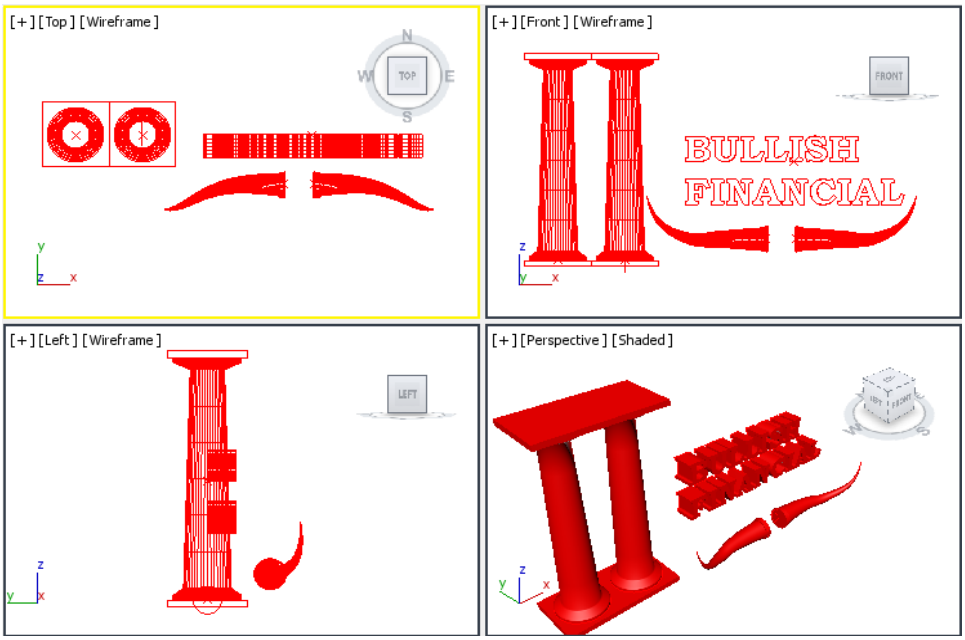


Figure P4-11 *The logo text lofted*

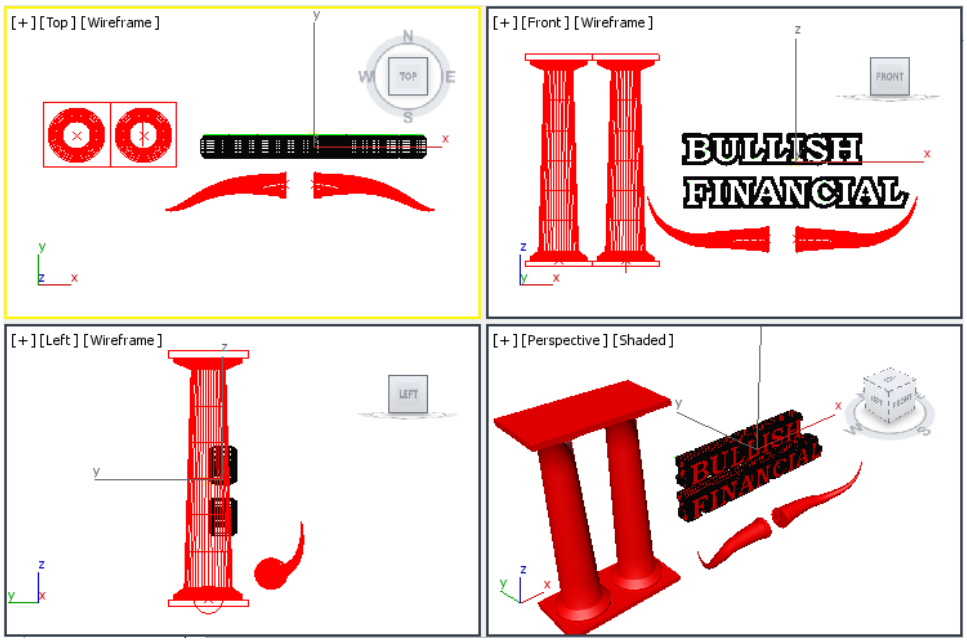


Figure P4-12 *A bevel deformation applied to Logo Text and the text centered over the horns*

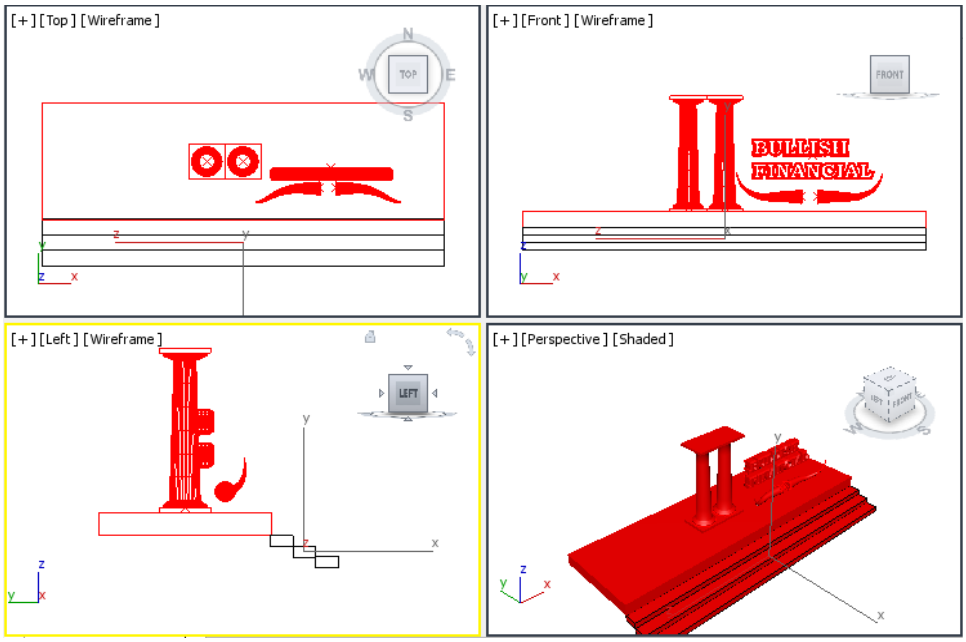


Figure P4-13 *The floor and three stairs created and aligned*

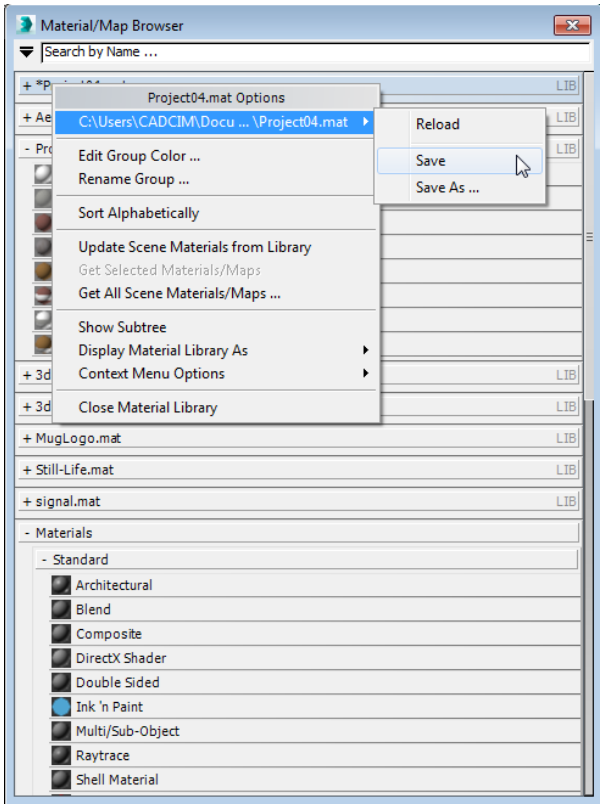


Figure P4-14 *Saving the material library*

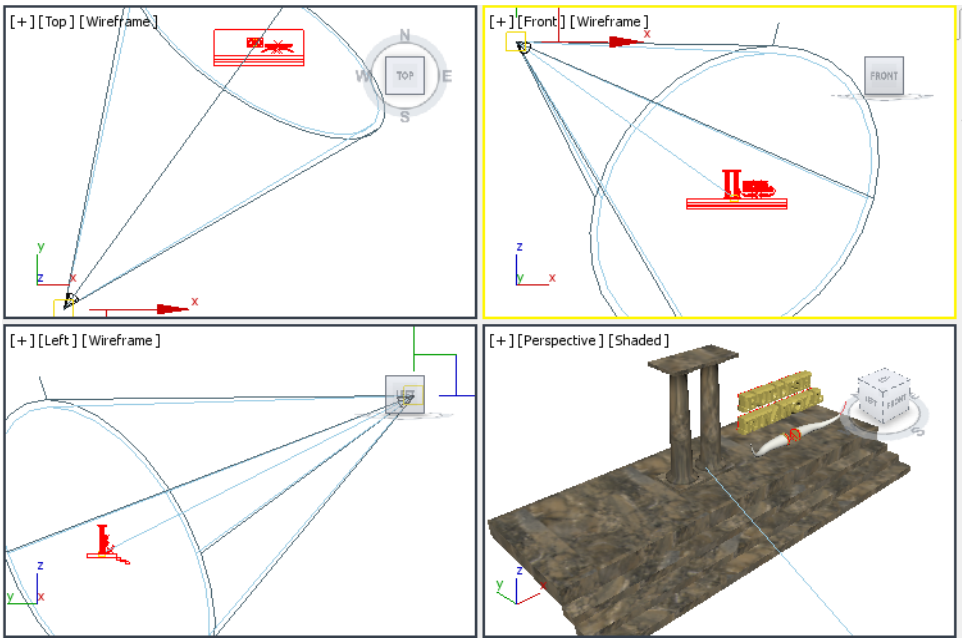


Figure P4-15 *The spotlights created and positioned*

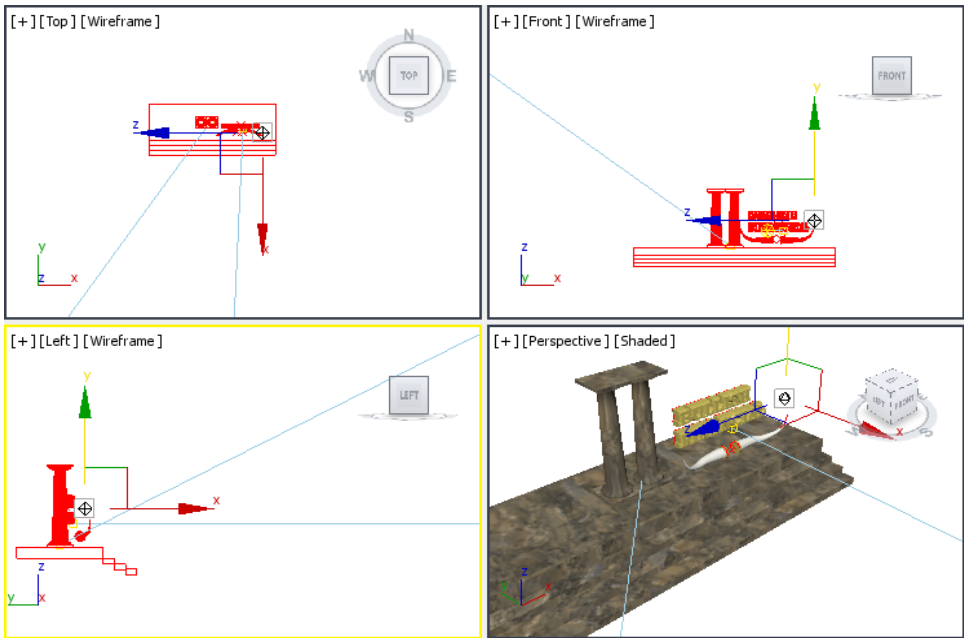


Figure P4-16 *The omni light positioned*

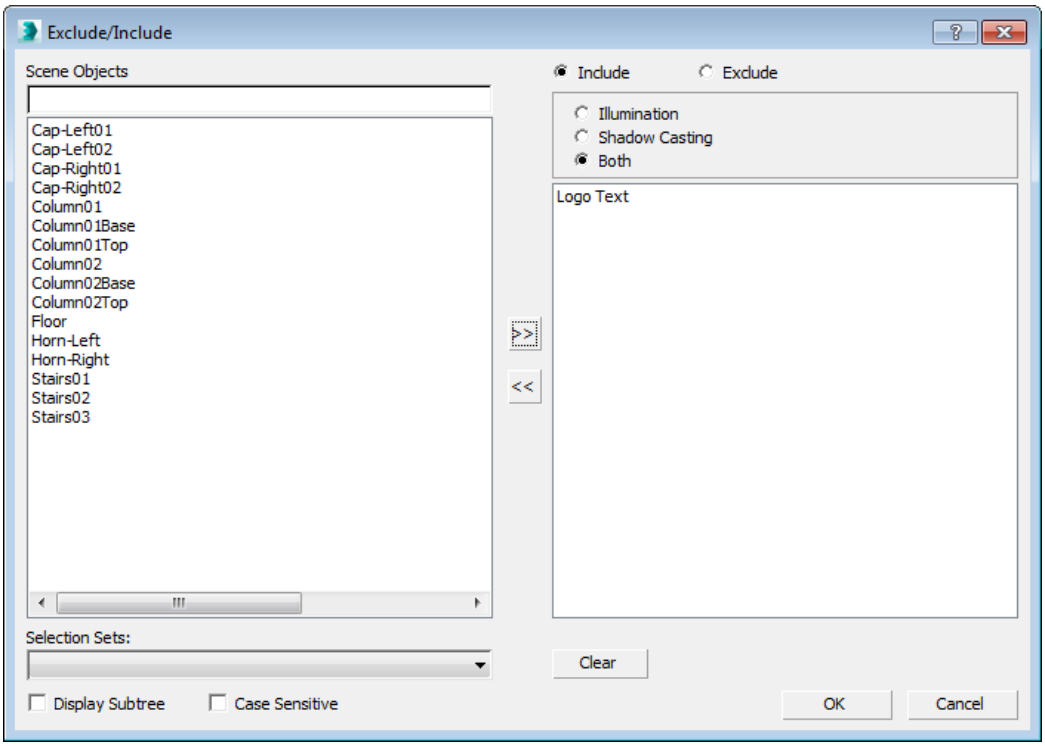


Figure P4-17 *The* ***Exclude/Include*** *dialog box*

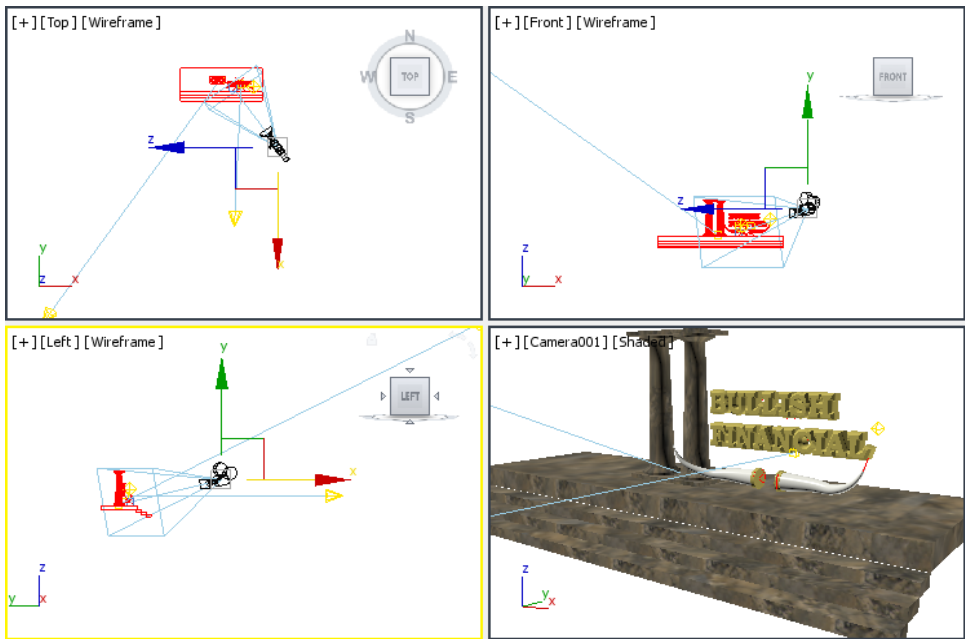


Figure P4-18 *The camera created and aligned*

Figure P4-19 *The scene rendered after creating the lights and camera*

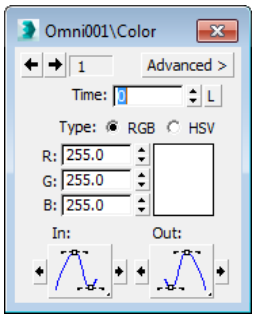


Figure P4-20 *The* ***Omni001\Color*** *dialog box*

Figure P4-21 *A rendered image of the final animation at frame 0*

Project 5

Creating a Computer Center

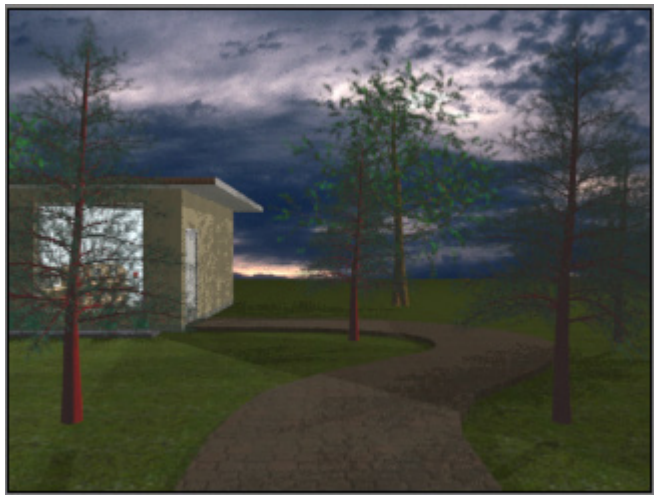


Figure P5-1 *Walkthrough towards the computer center*

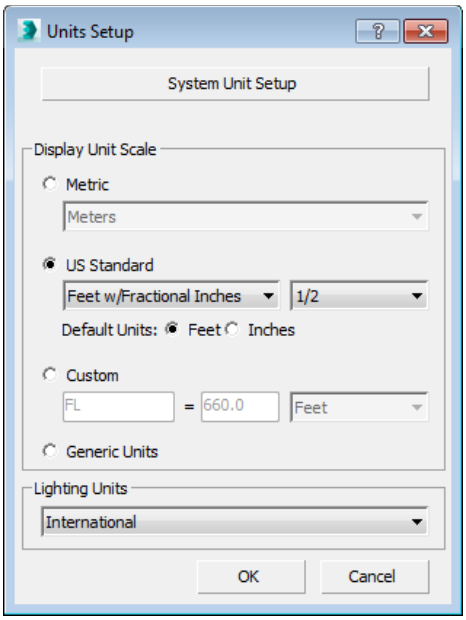


Figure P5-2 *The* ***Units Setup*** *dialog box*

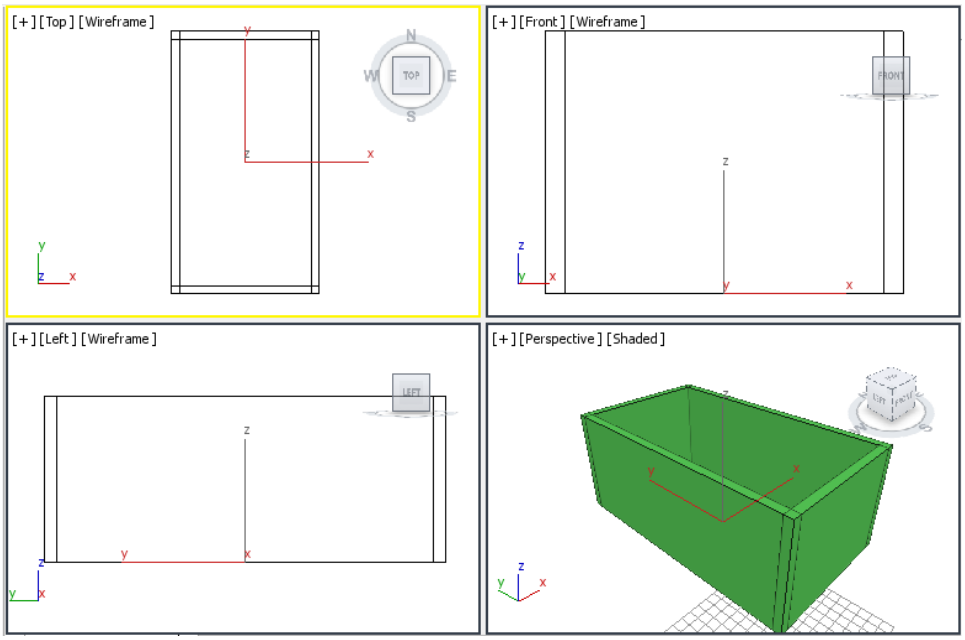


Figure P5-3 *Walls of the computer center*

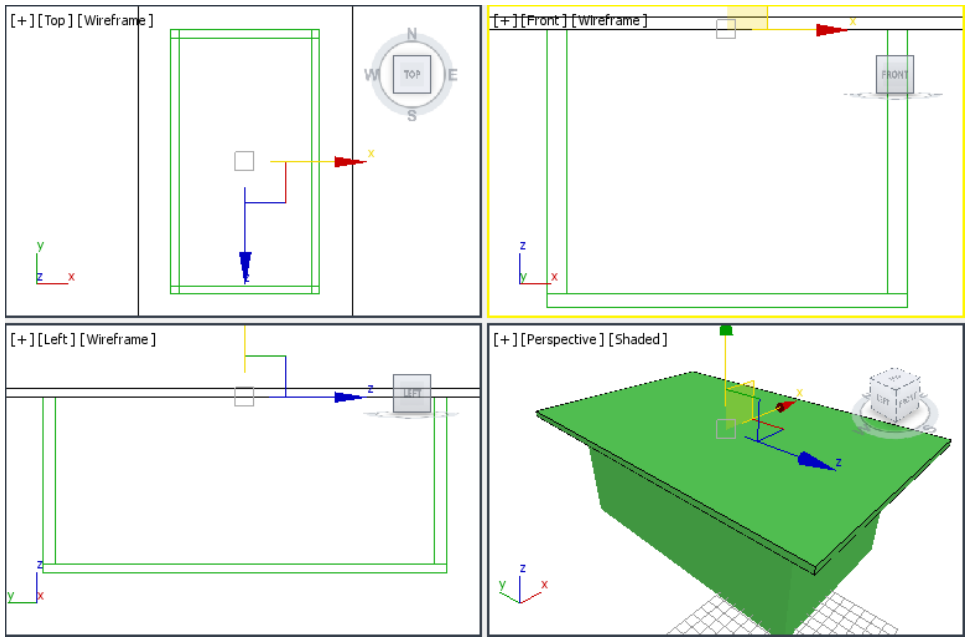


Figure P5-4 *Roof created and placed above Walls*

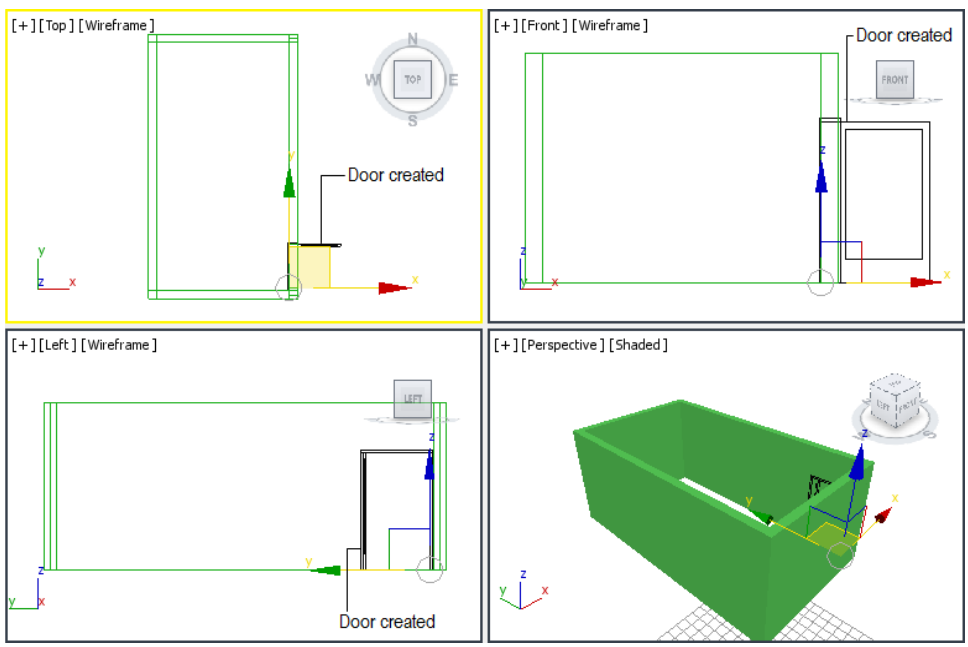


Figure P5-5 *The door created on the right wall*

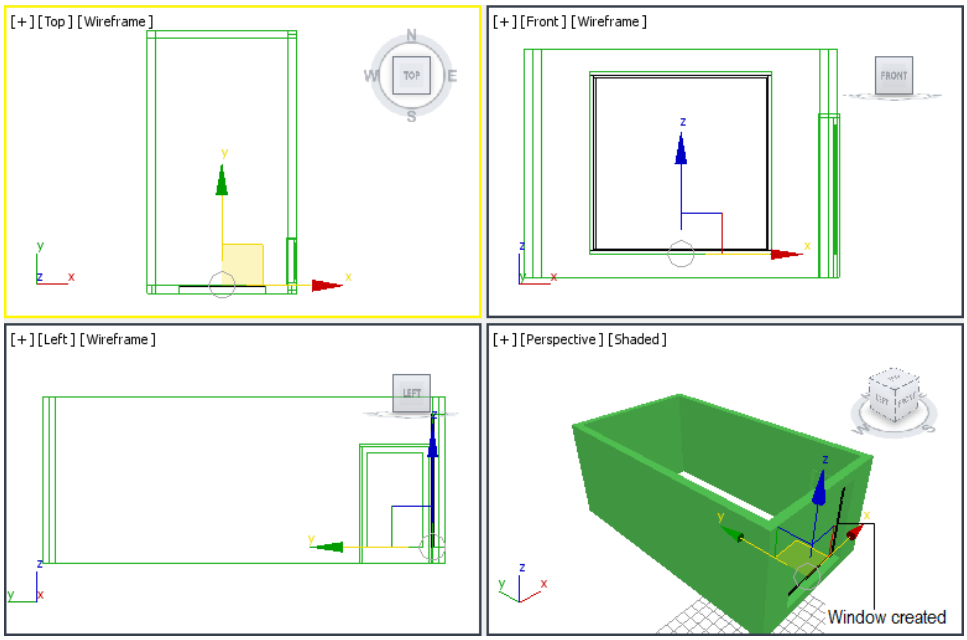


Figure P5-6 *The alignment of the window on the front wall*

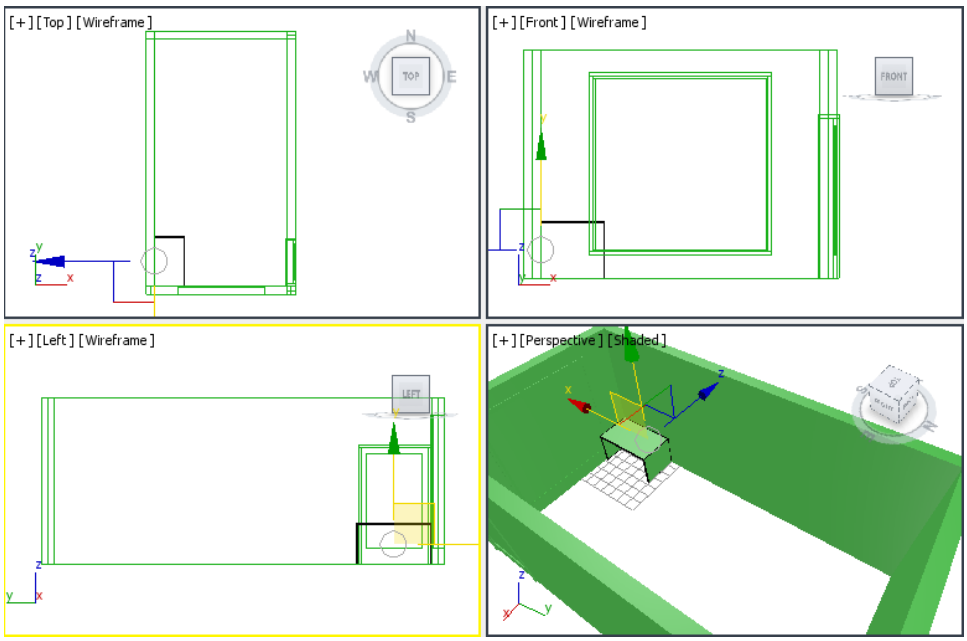


Figure P5-7 *The top and sides of the first computer station*

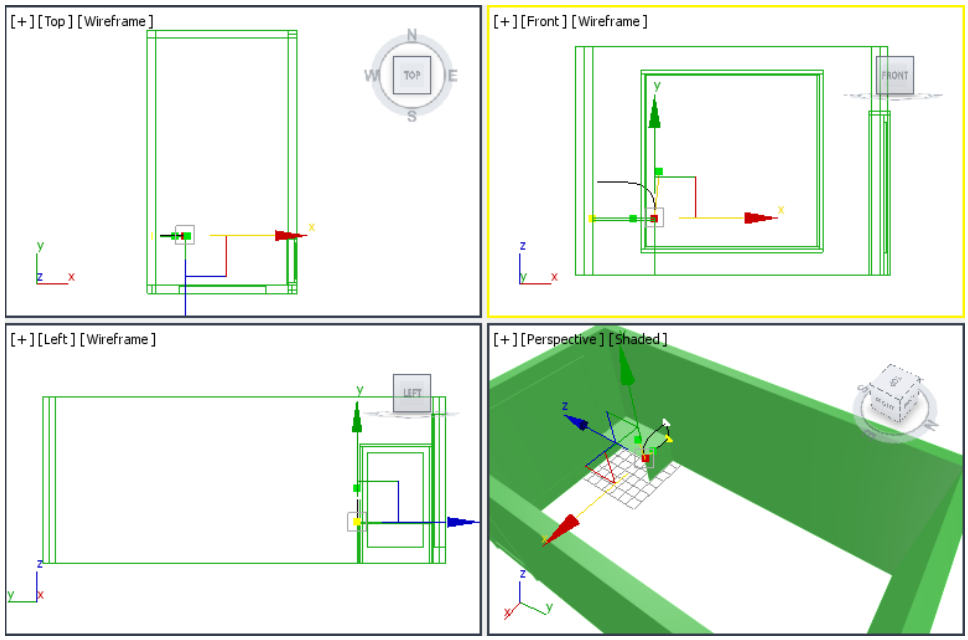


Figure P5-8 *Side01 spline modified in Front viewport*

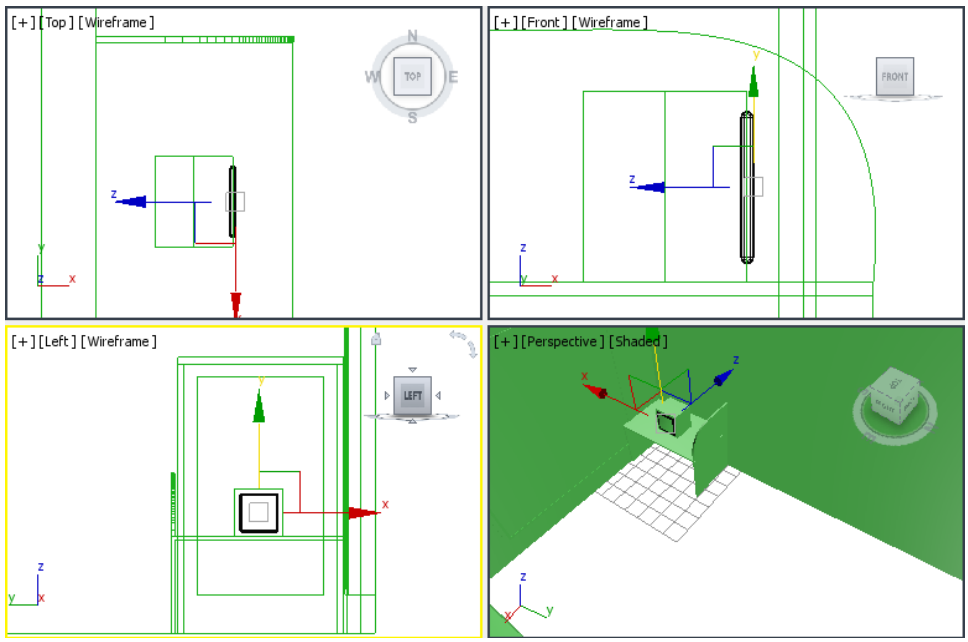


Figure P5-9 *The chamfer box created and centered on the monitor*

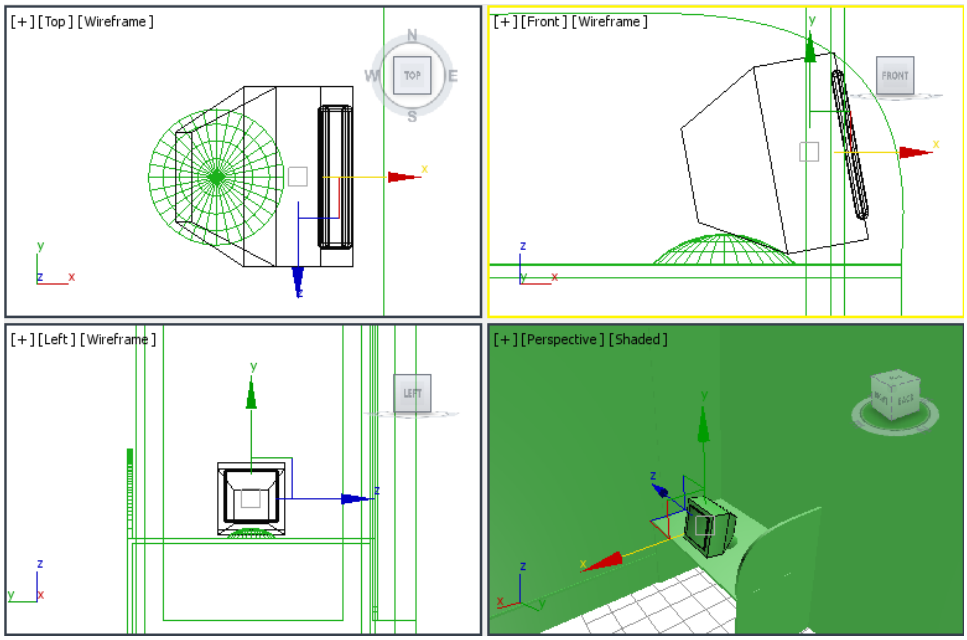


Figure P5-10 *The shape of the monitor modified and the base created*

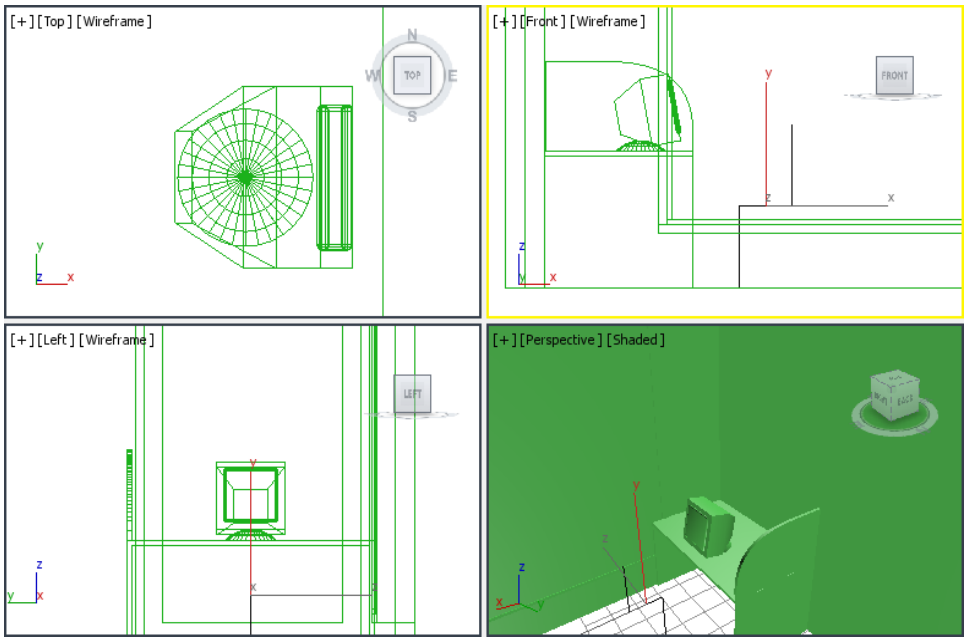


Figure P5-11 *The path created for the chair frame*

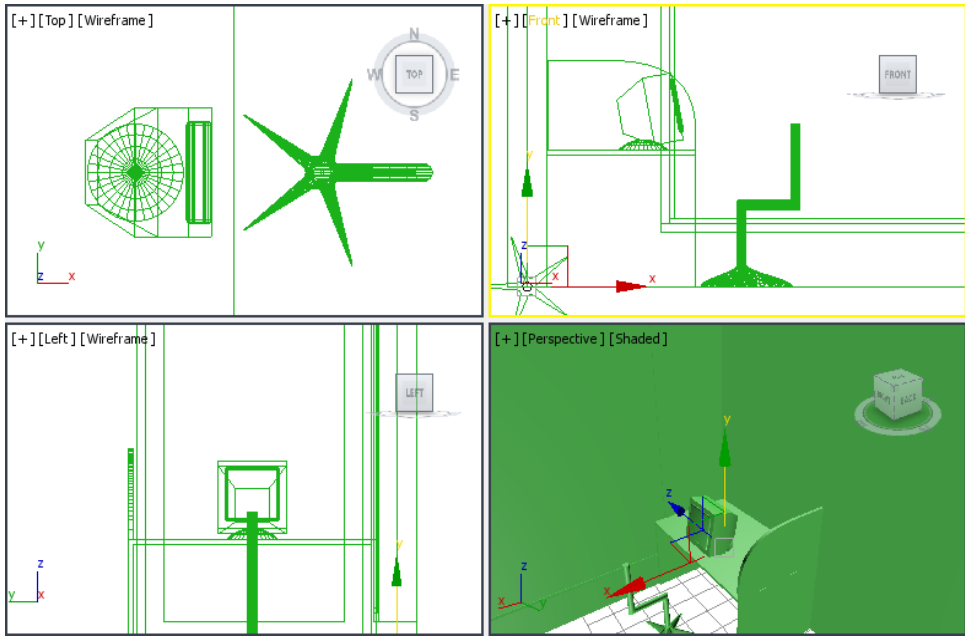


Figure P5-12 *The Chair Frame created*

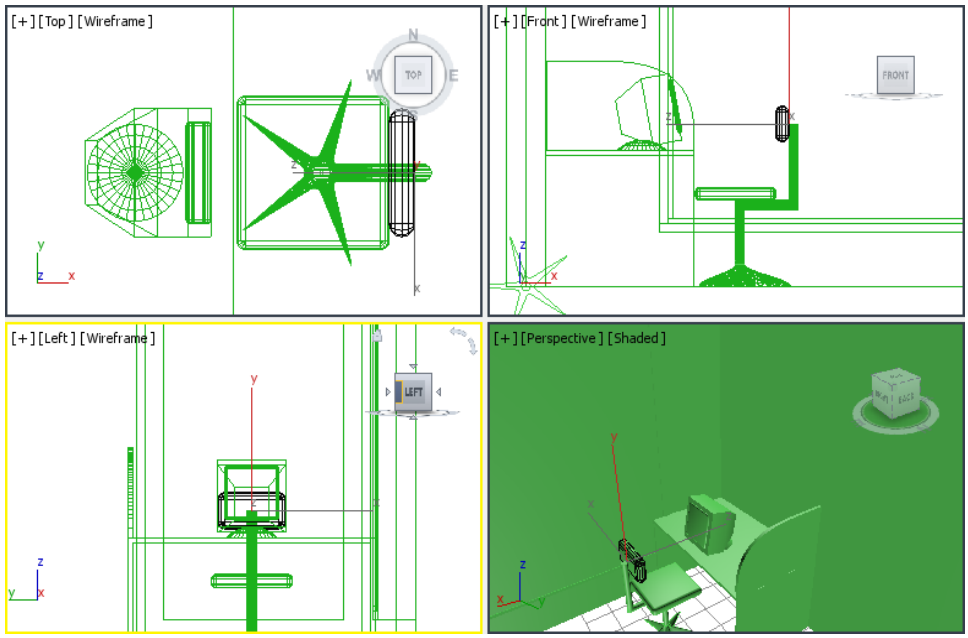


Figure P5-13 *The chair created*

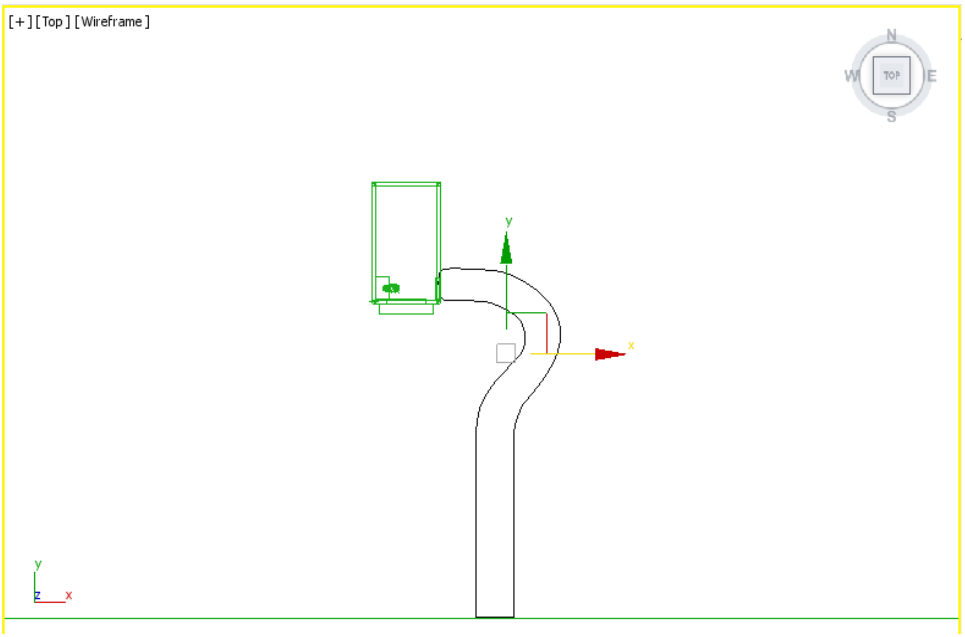


Figure P5-14 *Path leading to computer center*

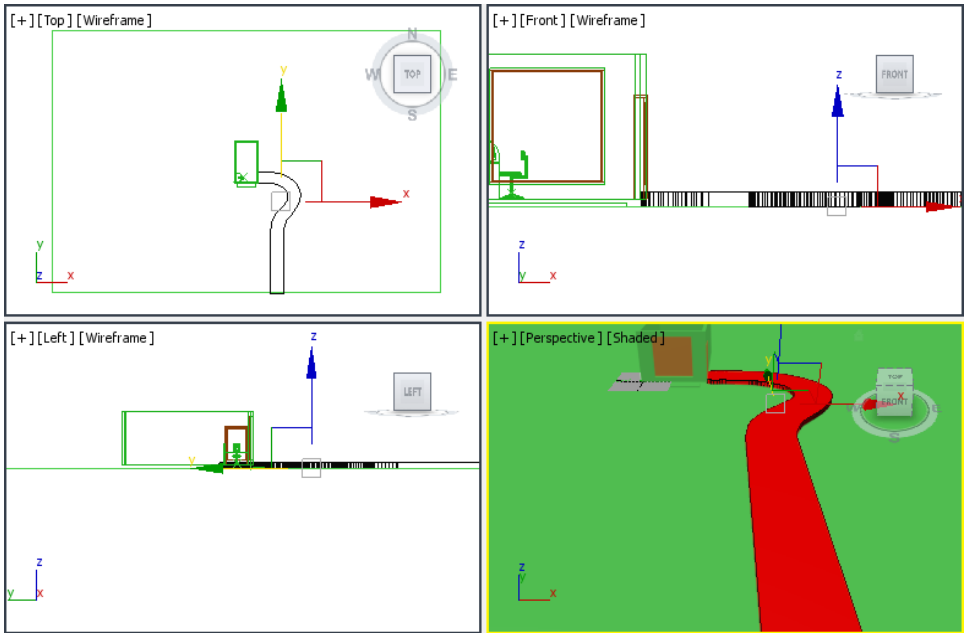


Figure P5-15 *Path extruded*

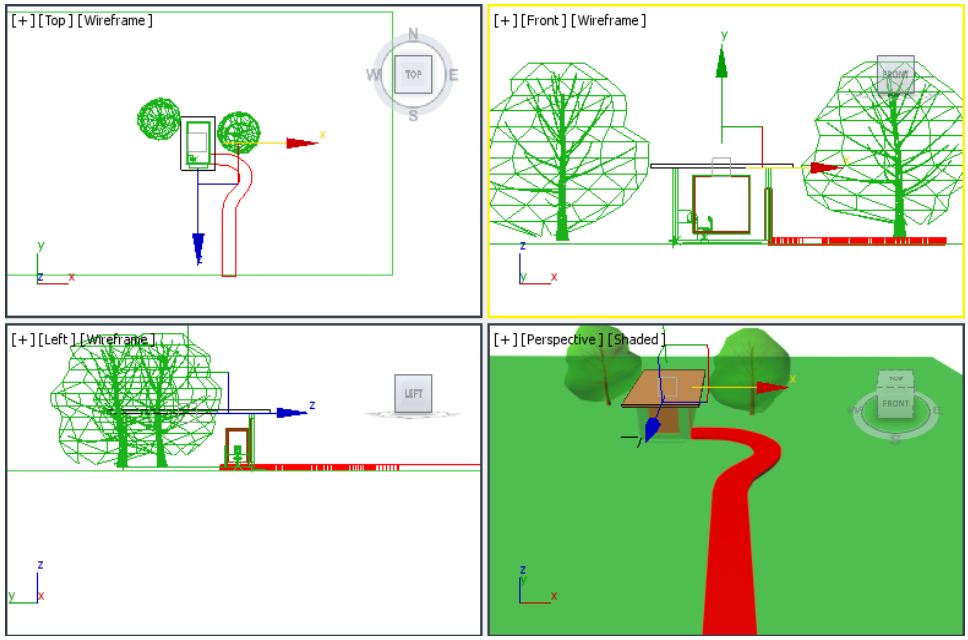


Figure P5-16 *The roof aligned on the top of walls*

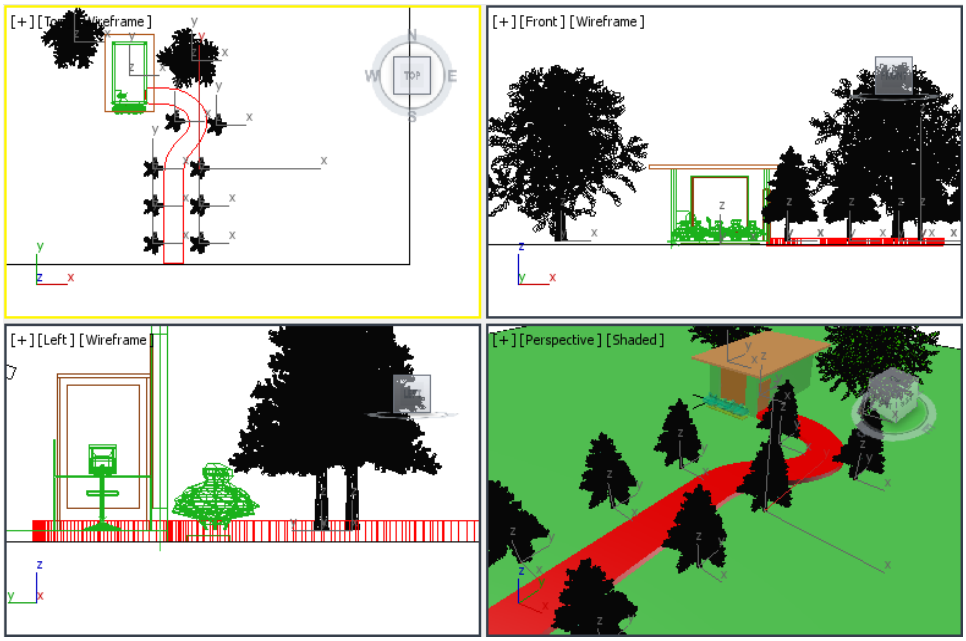


Figure P5-17 *The trees aligned around Path*

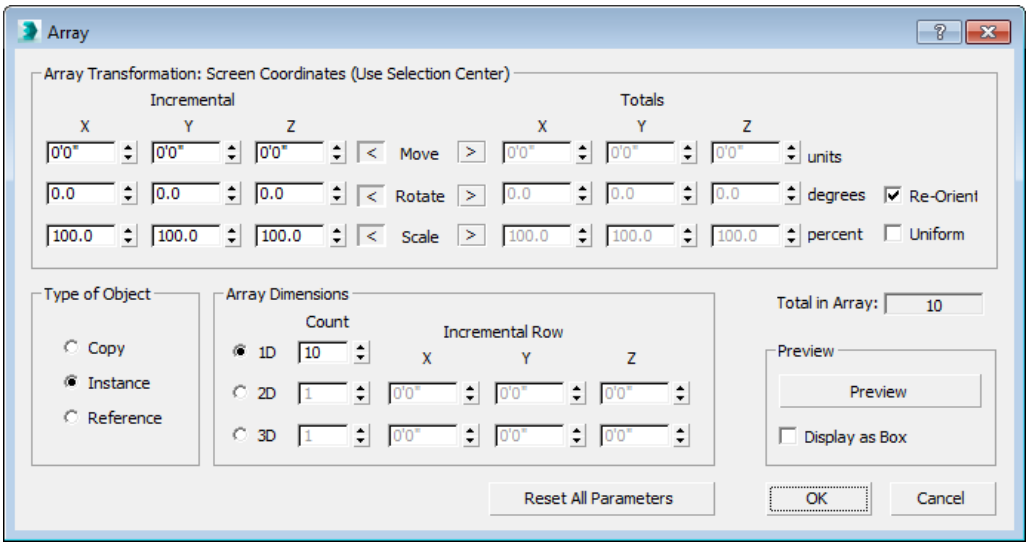


Figure P5-18 *The **Array** dialog box*

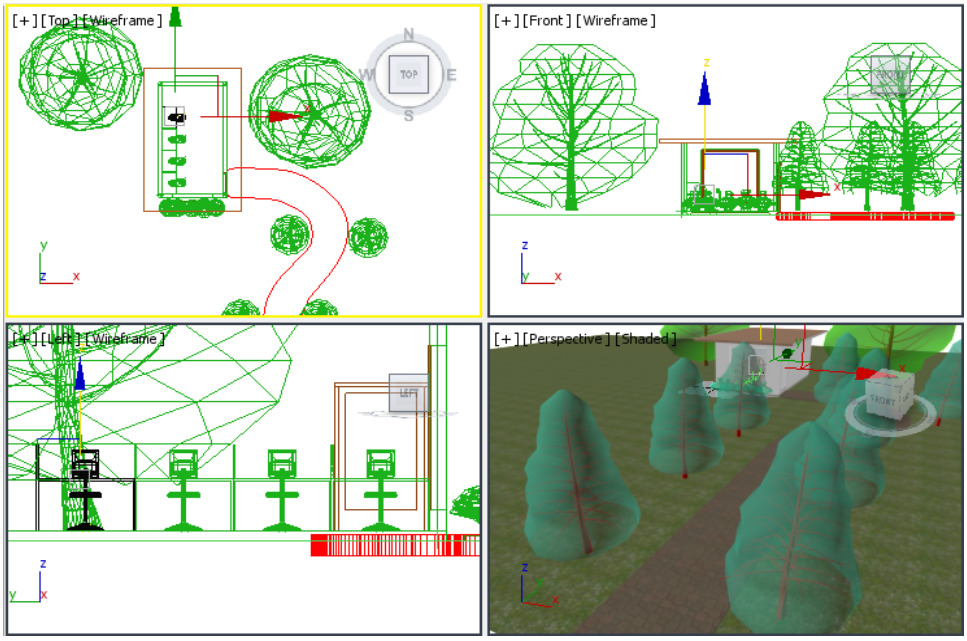


Figure P5-19 *The first row of computer stations created*

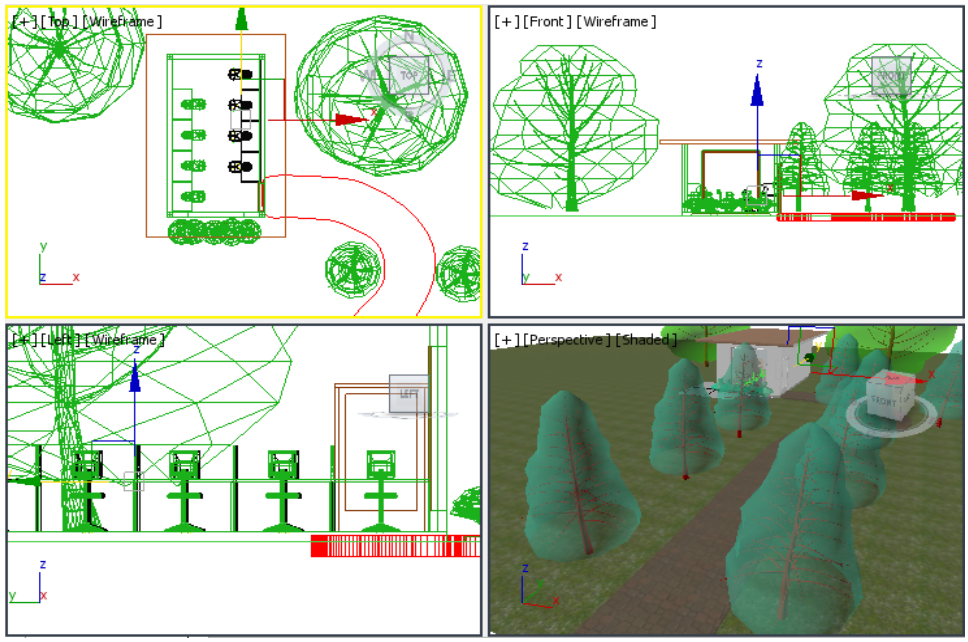


Figure P5-20 *The second row of computer stations created and aligned*

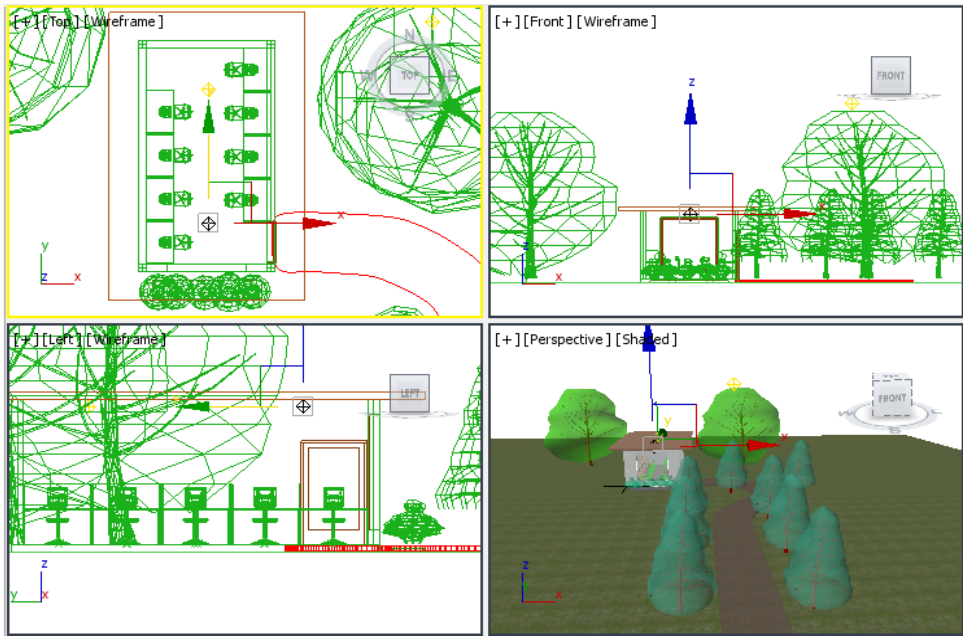


Figure P5-21 *The omni lights created and aligned in the viewports*

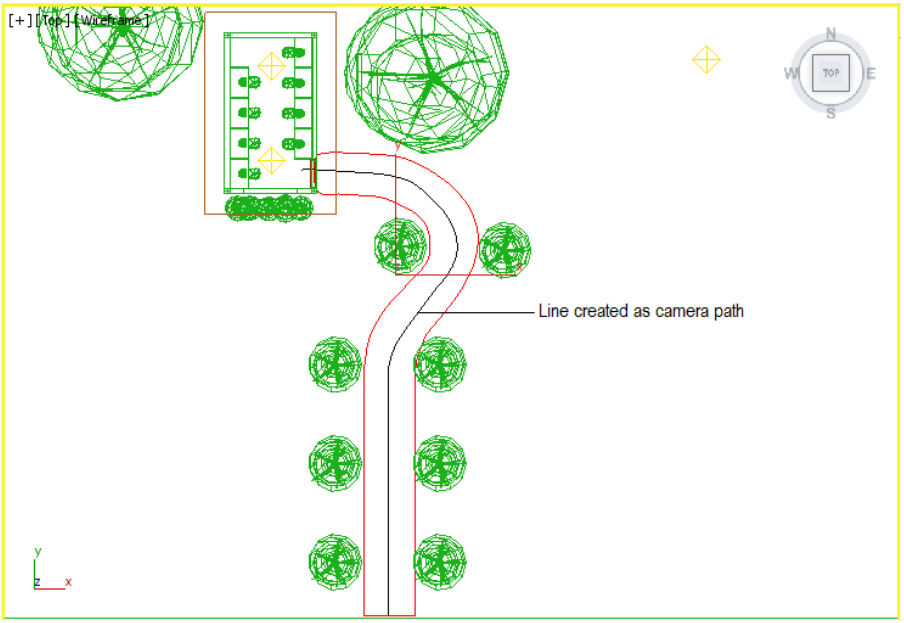


Figure P5-22 *Line created as Camera Path*

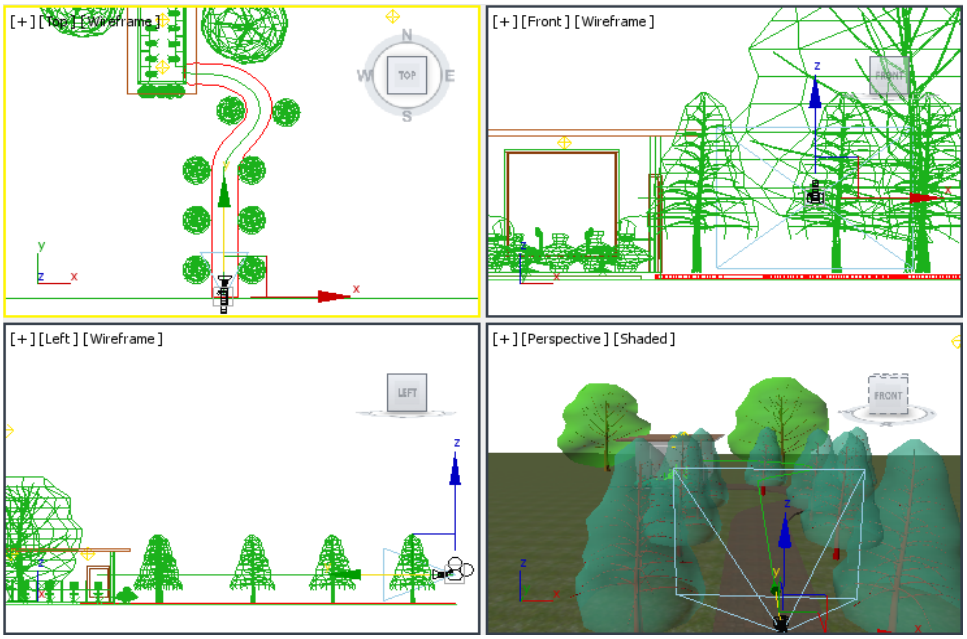


Figure P5-23 *The camera placed at the start point of Camera Path*

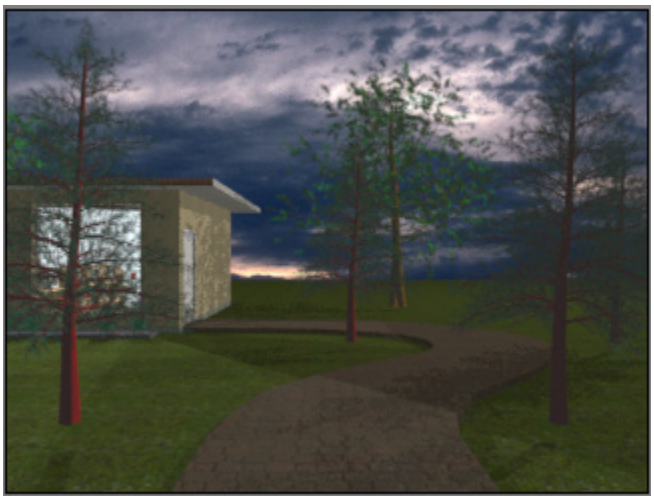


Figure P5-24 *The rendered view of the final animation at frame 0*