

Chapter 2

Polygon Modeling

Learning Objectives

After completing this chapter, you will be able to:

- *Create and edit polygon primitive objects*
- *Work with different selection modes*
- *Set the object properties*
- *Transform the objects*
- *Group and duplicate the objects*
- *Work with deformers*

INTRODUCTION

A polygon is a shape which consists of three or more sides and points. These sides are called edges. The area bounded by three or more points and their associated edges is called a polygon. In other words, there are three basic components of a polygon mesh: points, edges, and polygons, as shown in Figure 2-1. Polygon models are usually created using the three sided polygons (triangles) or four sided polygons called quadrilaterals (quads). In this chapter, you will learn the fundamentals of the polygon modeling.

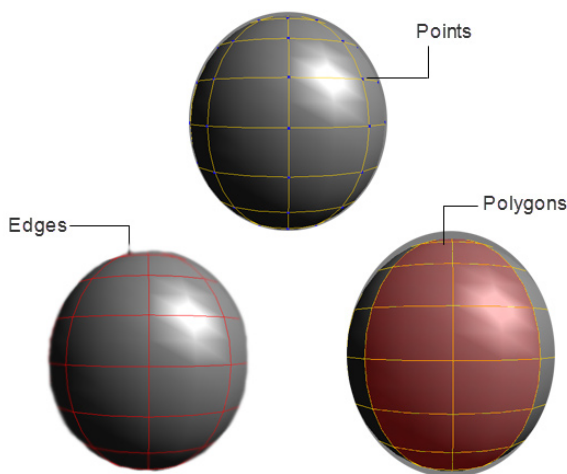


Figure 2-1 Different components of a polygon mesh

WORKING WITH POLYGON MESH

A polygon mesh is a collection of points and edges that make up the surface of the polygon model. In polygon modeling, you can start with a polygon mesh and then modify it by adding edges, subdividing polygons, and so on. There are multiple tools available in Softimage for adding points, edges, and polygons. These tools can be accessed by choosing **Model > Modify > Poly. Mesh** from the main toolbar. Alternatively, you can press and hold ALT and then right-click on the polygon object to access these tools.

To create a polygon mesh object such as cube, choose the **Model** toolbar from the main toolbar or press 1. Next, choose **Get > Primitive > Polygon Mesh > Cube** from the menu bar; the **Scene_Root : cube (General)** property editor will be displayed, as shown in Figure 2-2.

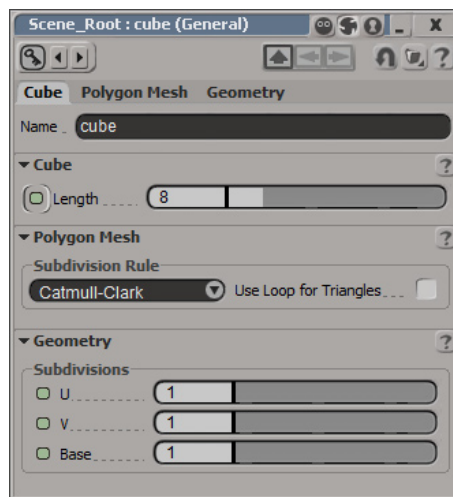


Figure 2-2 The Scene_Root: cube (General) property editor

In this property editor, you can use the **Length** and **Name** edit boxes to specify the length and name of the cube. The options in the drop-down list in the **Subdivision Rule** area of the **Polygon Mesh** property set are used to specify the subdivision algorithm of the geometry. You can use the **Subdivisions** area of the **Geometry** property set to add segments to the cube.

GROUPING, DUPLICATING, AND CLONING OBJECTS

In Softimage, you can group, duplicate, and clone objects. It helps in modeling and scene management. These processes are discussed next.

Grouping Objects

Grouping is a process of uniting multiple objects. You can add various 3D objects that can be grouped together to a scene. To create a group, select objects in the viewport and then choose **Edit > Create Group** from the menu bar or press CTRL+G; the **Scene_Root : Group** property editor will be displayed. Change the options in this editor as required and then close it.

Duplicating and Cloning the Objects

In Softimage, there are two methods to create copies of the objects: duplicating and cloning. Duplicating is the process in which you can make the duplicate copies of an object. When an object is duplicated, the original object and its duplicate can be modified separately. Cloning is the process of creating copies of object such that the changes made in the original object reflect in the cloned object as well.



Note

1. You can not duplicate or clone an object if it is locked.
2. When you duplicate an object, the material applied to the original object is also duplicated.

You can access duplicate and clone options from the cascading menu displayed on choosing **Edit > Duplicate/Instantiate** from the menu bar. The most commonly used options for duplicating and cloning an object available in the **Duplicate/Instantiate** cascading menu are discussed next.

Duplicate Single

This option is used to duplicate the object. The values that will be copied will depend on the settings that you specify in the **Duplicate Options** property editor which can be invoked by choosing **Duplicate/Instantiate Options** from the **Duplicate/Instantiate** cascading menu. You can also duplicate an object in the viewport by first selecting it and then pressing CTRL+D. On duplicating the object, the duplicate object superimposes the original geometry. To rotate the duplicate object, press C to activate **Rotate Tool** and then you can rotate the duplicate object. If you press CTRL+D again, the object will be duplicated with the same transformation as in the selected duplicated object, refer to Figure 2-3. You can precisely change the transform values by specifying the settings in the **Duplicate Options** property editor.

Duplicate Single without Options

This option is used to duplicate the object without using options specified in the **Duplicate Options** property editor. You can also invoke this option by pressing CTRL+ALT+D. To move the duplicate object, press V to activate **Translate Tool** and then drag the duplicate object. If you press CTRL+ALT+D again, the object will be duplicated and it will superimpose the selected geometry. When you use this command, it does not apply transformations to the duplicated geometry.

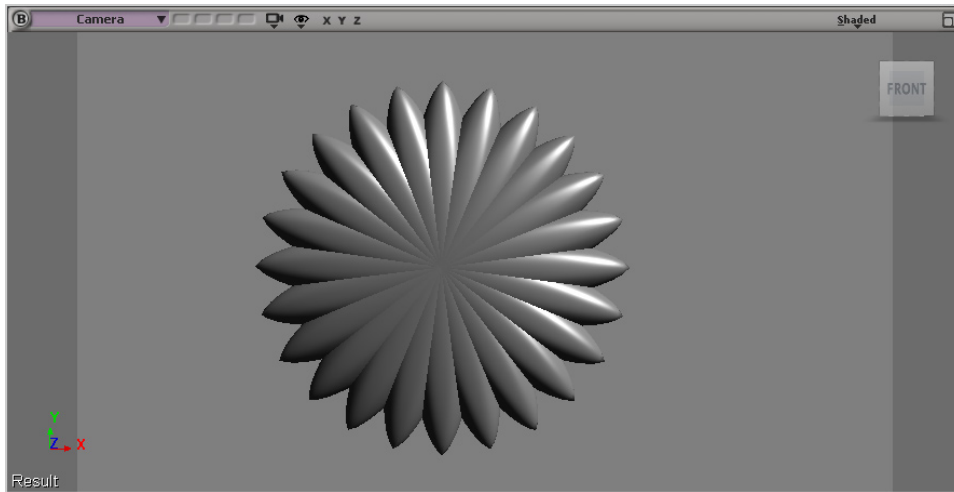


Figure 2-3 Duplicate copies of object displayed in the viewport

You can use the **Explorer** window to view the original and duplicate object in a hierarchical structure. To do so, choose the **Scene** button from the Main Command Panel; the **Explorer** window will be displayed, refer to Figure 2-4. This window displays original (*cone*) and duplicated (*cone1*) geometries.



Note

*The **Explorer** window is used to view the contents of the scene in a hierarchical structure called tree. It displays the objects as well as their properties. Also, in this window, you can search objects by name, rename the scene elements, sort or reorder the elements, create parent/child relationships, add objects to group and so on.*

Duplicate Multiple

This option is used to create multiple copies of an object. Select the object in the viewport that you want to duplicate and then choose this option from the cascading menu; the **Duplicate Multiple** dialog box will be displayed, as shown in Figure 2-5. Alternatively, you can press CTRL+SHIFT+D to invoke this dialog box. In this dialog box, enter the desired value in the **Copies** edit box of the **Duplicate Multiple** property set. Next, set the required transformation values in the **Rotation** and **Translation** area of the **Transform** tab and then choose the **OK** button to duplicate the object with the transformation applied. Figure 2-6 shows the duplicate cube objects with transformation applied.

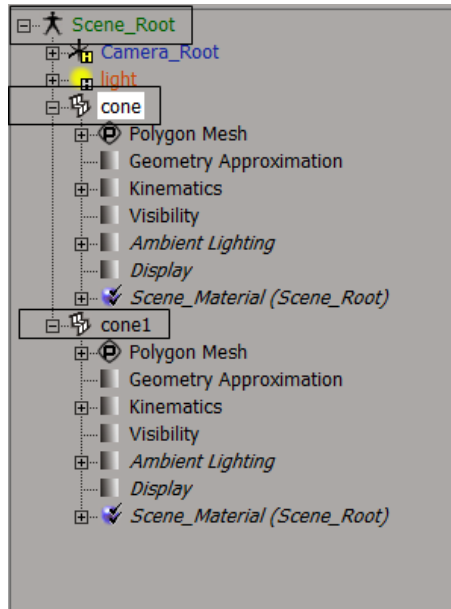


Figure 2-4 The original (*cone*) and duplicated (*cone1*) geometries displayed in the **Explorer** window

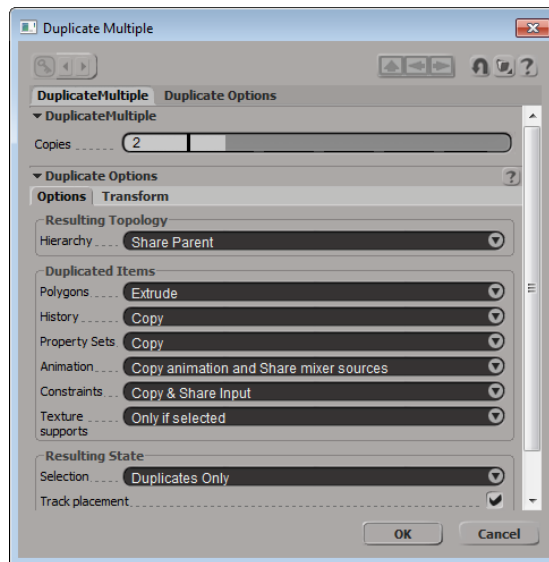


Figure 2-5 The **Duplicate Multiple** dialog box

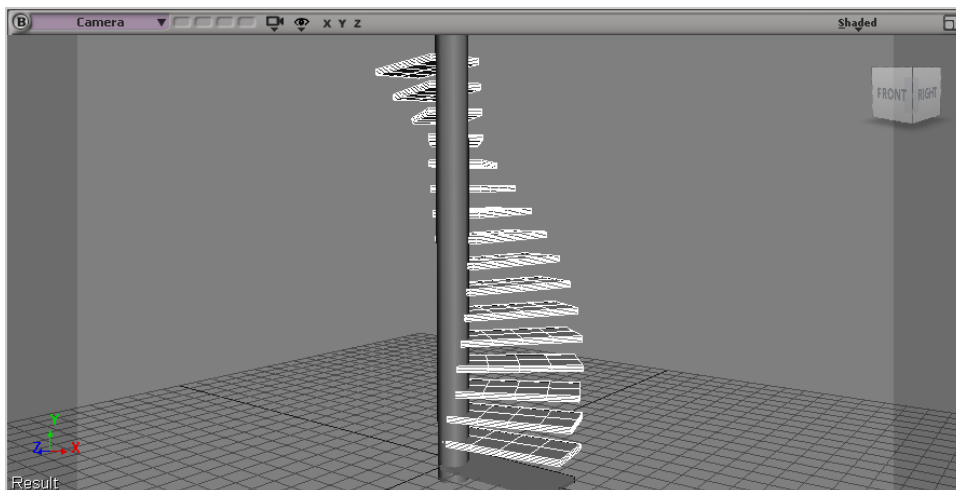


Figure 2-6 Transformation applied to the duplicated cube objects

You can also create duplicates along a curve. To do so, create a path in the viewport by choosing **Model > Create > Curve > Draw Cubic by CVs** and then select the animated object in the scene. Next, press CTRL+SHIFT+D to invoke the **Duplicate Multiple** dialog box. In this dialog box, specify the number of copies you need to create and then choose the **OK** button. Make sure that the duplicates are still selected and then choose the **Constrain** subpanel from the Main Command Panel; a flyout will be displayed. Choose **Curve (Path)** from the flyout; the shape of the cursor will be changed. Now, pick the curve from the viewport that you want to use as a path. On doing so, the **Scene_Root : [multi] : PathCns** property editor will be displayed. In this property editor, enter **L(100)** in the **Path %age** edit box; the duplicates will be placed along the curve, refer to Figure 2-7. If you want to spread the duplicates to a specific length of curve, enter **L(n)** in the **Path %age** edit box. Here, **n** represents percentage of the path. For example, if you want to spread the duplicates along half of the path, replace **n** by 50.



Note

*The process of duplicating a group is similar to that of duplicating an object. However, it is important that what is selected before you execute any duplicate/instantiate command. If you select group container in the **Explorer** window and then execute any duplicate/instantiate command, only the container will be duplicated not its members. To duplicate the members, choose the **Select** subpanel from the Main Command Panel; a flyout will be displayed. Now, choose **Select Member/Components** and then execute any duplicate/instantiate command.*

Clone Multiple

This option is used to create multiple clones of an object. To create clones of the object, select it in the viewport and then choose **Clone Multiple** from the cascading menu; the **Clone Multiple** dialog box will be displayed, as shown in Figure 2-8. The options in this dialog box are similar to those of the **Duplicate Multiple** dialog box. Figure 2-9 shows the cloned cylinder objects with transformation applied.

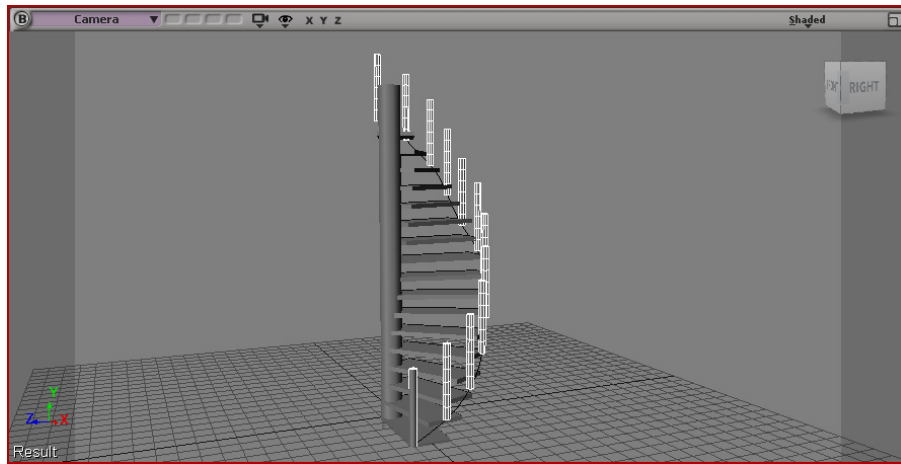


Figure 2-7 Duplicated cylinder objects placed along the curve

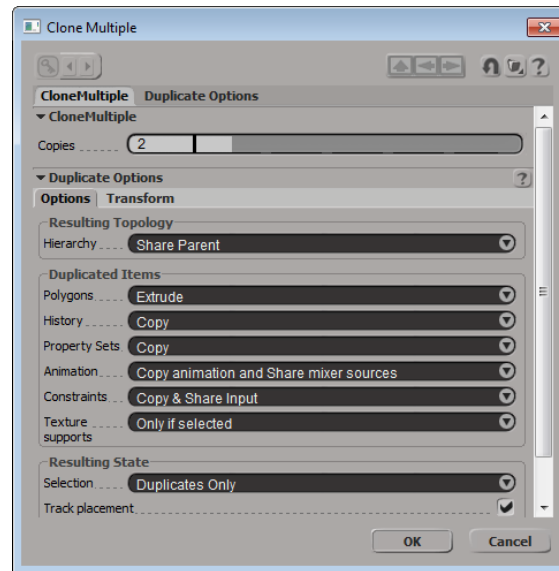


Figure 2-8 The Clone Multiple dialog box

When you make changes in the original object, it will also affect the cloned geometries. Figure 2-10 shows cloned cylinder objects after the **Bend** deformer is applied to the original cylinder object.



Note

In Softimage, you can copy multiple 3D objects and paste them on one or more target objects. To do so, select the objects in the **Explorer** window and then choose **Edit > Copy** from the menu bar. Now, select the target objects and choose **Edit > Paste** from the menu bar; the copied objects will be displayed under the targets objects in the **Explorer** window.

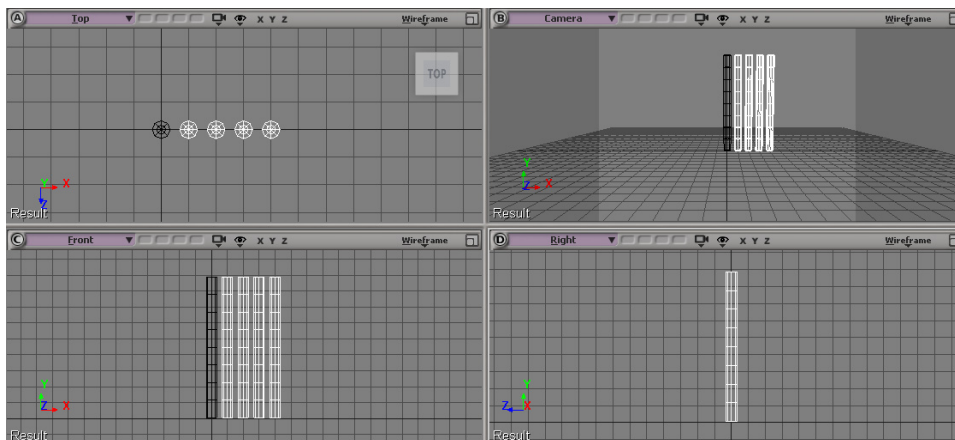


Figure 2-9 The instances of the cylinder in all viewports

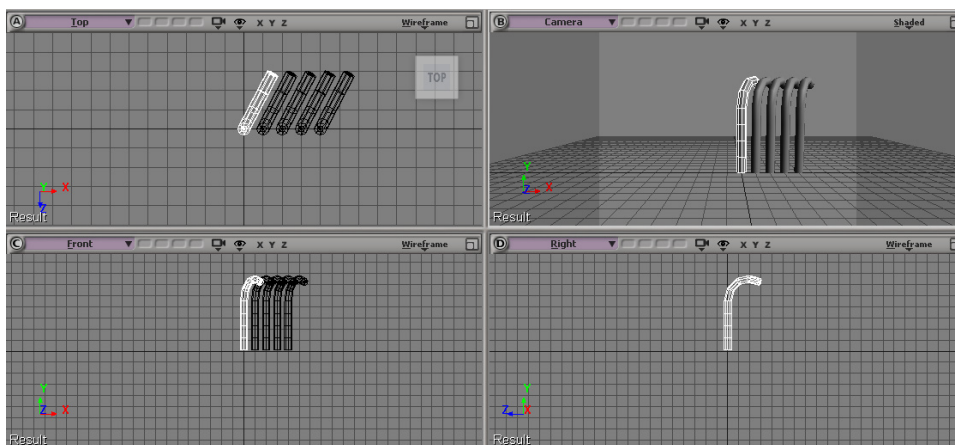


Figure 2-10 The instanced cylinder objects after applying the **Bend** deformer

TUTORIALS

Tutorial 1

In this tutorial, you will create a bus stop model, as shown in Figure 2-11, by using the polygon primitives. **(Expected time: 35 min)**

The following steps are required to complete this tutorial:

- Create the project folder.
- Create the floor of the bus stop.
- Create the pillars of the bus stop.
- Create the roof of the bus stop.
- Create the base of the bench.

- f. Create the legs of the bench.
- g. Create the back support of the bench.
- h. Create the backrest of the bench.
- i. Save and render the scene.

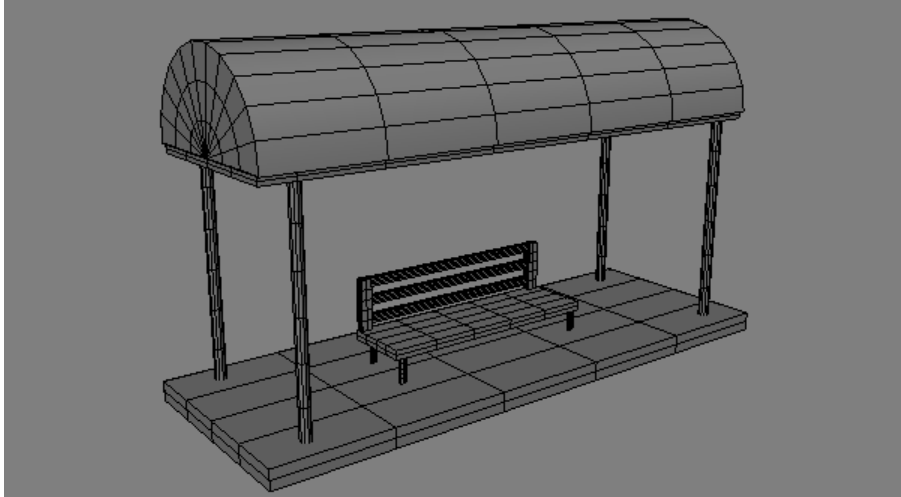


Figure 2-11 The bus stop model

Creating the Project Folder

Before you start working on a new scene, it is recommended that you create the project folder. Creating a project folder helps you keep all files of a project organized.

Open Windows Explorer and browse to the *Documents* folder. In this folder, create a new folder with the name *softimage2014*. The *softimage2014* folder will be the main folder and it will contain all the project folders that you will create while doing tutorials of this textbook. Now, you will create first project folder for Tutorial 1 of this chapter. To do so, you need to follow the steps given below:

1. Start Autodesk Softimage 2014.
2. Choose **File > New Scene** from the menu bar; a new scene is displayed.
3. Choose **File > New Project** from the menu bar; the **New Project** dialog box is displayed.
4. Enter **c02_tut1** in the **Project Name** edit box. Now, choose the Browse button located next to the **Location** edit box; the **Browse for Folder** dialog box is displayed. Navigate to `|Documents|softimage2014` and then choose the **Select** button.
5. Choose the **OK** button in the **New Project** dialog box; a new folder with the name *c02_tut1* created in the *softimage2014* folder.

6. Choose **File > Save** from the menu bar; the **Save Scene** dialog box is displayed.
7. Enter **c02_tut_01** in the **File Name** edit box and then choose the **OK** button.



Note

1. When you start Softimage, the last project that you have worked with is opened and an empty scene is created with the name *Untitled*.
2. You can expand or collapse a subpanel in the Main Command Panel by right-clicking on it.
3. It is recommended that you frequently save the file while you are working on them by pressing the **CTRL+S** keys.
4. Softimage 2014 handles large scene files upto 4 GB on Windows and 2 GB on Linux.

Creating the Floor of the Bus Stop

In this section, you will create the floor of the bus stop.

1. Choose **Model > Get > Primitive > Polygon Mesh > Grid** from the main toolbar; the **Scene_Root : grid (General)** property editor is displayed. In this property editor, enter **base** in the **Name** edit box.
2. In the **Grid** property set, enter **50** and **50** in the **U Length** and **V Length** edit boxes, respectively. Next, close the property editor.
3. Choose the Display Mode button from the Camera Viewport menu bar; the Display Mode menu is displayed. Next, choose **Shaded** from the menu; the geometry is displayed in the shaded mode in the Camera viewport.



When you choose the Display Mode button, the Display Mode menu is displayed. The options in this menu are used to specify how scene elements will be displayed in the viewport. You can choose options such as **Wireframe**, **Shaded**, **Bounding Box**, **Textured**, **High Quality**, and so on from this menu.

4. Choose **Model > Get > Primitive > Polygon Mesh > Cube** from the main toolbar; the **Scene_Root : cube (General)** property editor is displayed. In this property editor, enter **floor** in the **Name** edit box.
5. In the **Geometry** property set, enter **4**, **2**, and **5** in the **U**, **V**, and **Base** edit boxes of the **Subdivisions** area, respectively, as shown in Figure 2-12. Next, close the property editor; a cube with the name *floor* is created in all viewports. To view all the viewports simultaneously, press F12.

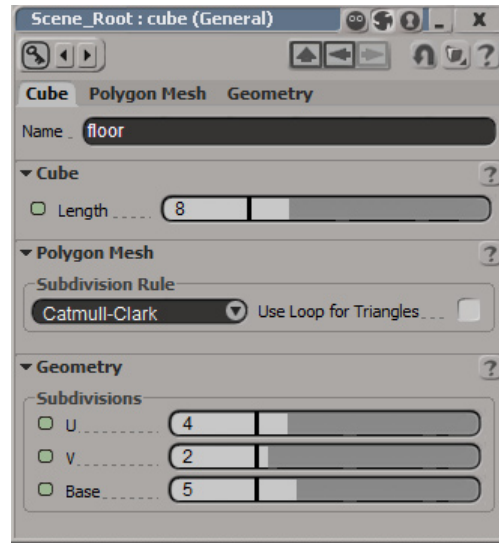


Figure 2-12 The *Scene_Root: cube (General)* property editor

Next, you will position the floor of the bus stop.

- Next, set the values of the following parameters in the **Transform** subpanel of the Main Command Panel:

s area

x: **1.32**

y: **0.12**

z: **3.67**

t area

x: **-5.34**

After specifying the values, *floor* is displayed in viewports, as shown in Figure 2-13.

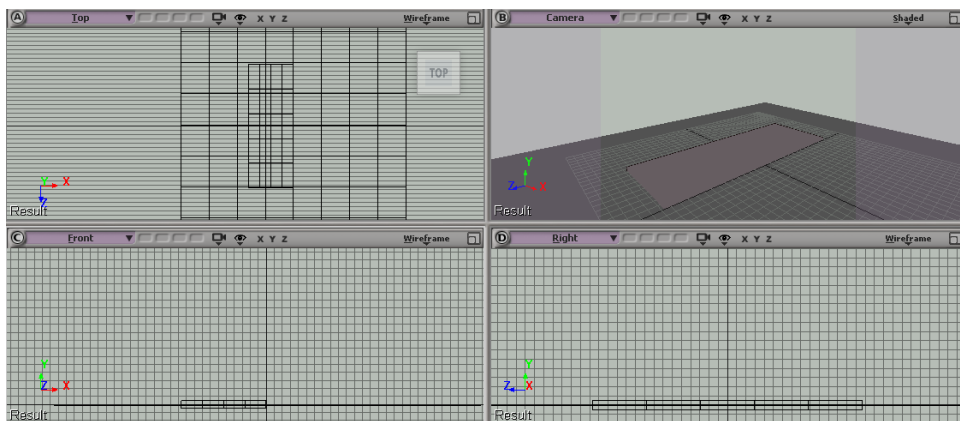


Figure 2-13 The floor displayed in viewports



Tip: To frame a selected object in a viewport, press **F**. To frame selected objects in all viewports, press **SHIFT+F**. To frame all visible objects in a viewport, press **A**. To frame all visible objects in all 3D views, press **SHIFT+A**.

Creating the Pillars of the Bus Stop

In this section, you will create pillars of the bus stop.

1. Choose **Model > Get > Primitive > Polygon Mesh > Cylinder** from the main toolbar; the **Scene_Root : cylinder (General)** property editor is displayed. In this property editor, enter **pillar1** in the **Name** edit box.
2. In the **Geometry** property set, enter **10**, **6**, and **3** in the **U**, **V**, and **Base** edit boxes, respectively, of the **Subdivisions** area. Next, close the **Scene_Root : cylinder (General)** property editor.
3. Set the values of the following parameters in the **Transform** subpanel of the Main Command Panel:

s area

x: **0.26**

y: **2.86**

z: **0.26**

t area

x: **-9**

y: **5.79**

z: **13**

After specifying the values, *pillar1* is displayed in viewports, as shown in Figure 2-14.

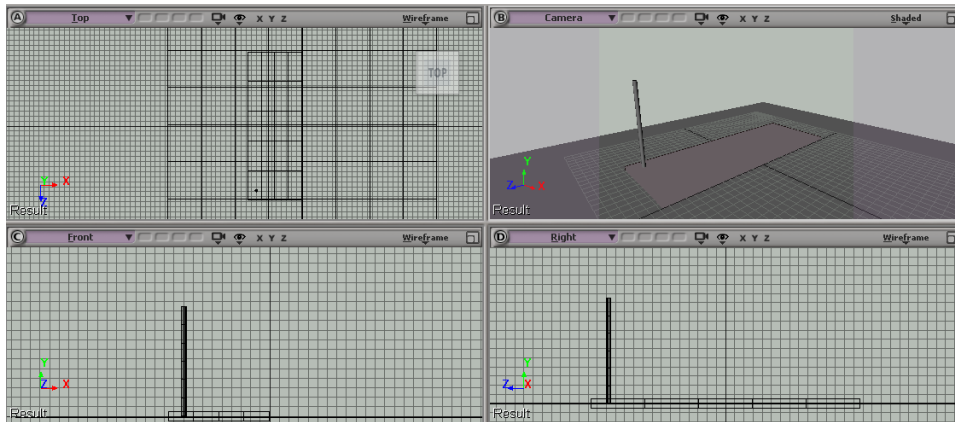


Figure 2-14 The *pillar1* displayed in viewports

Next, you will duplicate and arrange the pillars at their desired positions.

4. Press **CTRL+ALT+D**; a duplicate copy of *pillar1* is created with the name *pillar2*. Next, press **V**; **Translate Tool** is activated. Now, align *pillar2* with the floor in viewports, as shown in Figure 2-15.

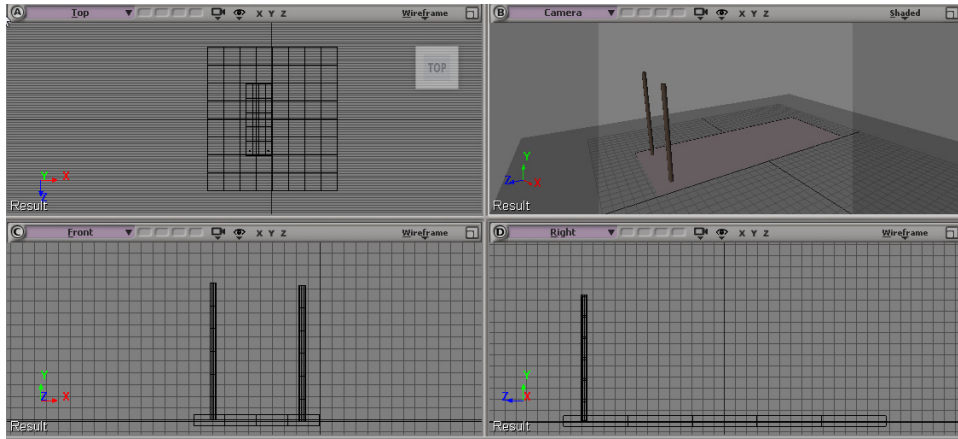


Figure 2-15 Aligning pillar2 with floor in viewports

5. Create two more duplicate copies of pillar and align them with floor in viewports, as shown in Figure 2-16.

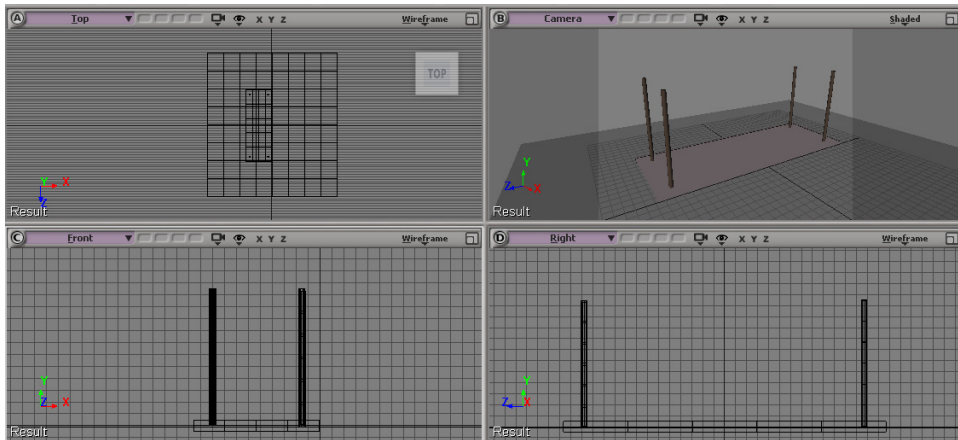


Figure 2-16 Aligning the duplicate pillars in viewports

Creating the Roof of the Bus Stop

In this section, you will create the roof of the bus stop.

1. Choose **Model > Get > Primitive > Polygon Mesh > Cylinder** from the main toolbar; the **Scene_Root : cylinder (General)** property editor is displayed. In this property editor, enter **roof** in the **Name** edit box.
2. In the **Cylinder** property set of the property editor, enter **4.62** and **28.07** in the **Radius** and **Height** edit boxes, respectively.
3. In the **Geometry** property set, enter **11**, **5**, and **3** in the **U**, **V**, and **Base** edit boxes, respectively, of the **Subdivisions** area.

- Enter **180** and **0** in the **Start U** and **End U** edit boxes, respectively of the **Extent (Angles)** area of the **Geometry** property set. Next, close the **Scene_Root : cylinder (General)** property editor; a cylinder with the name *roof* is created in viewports.
- Set the values of the following parameters in the **Transform** subpanel of the Main Command Panel:

r area

x: 90

t area

x: -5.47

y: 11.06

z: 0.5

After specifying the values, the roof of the bus stop is displayed in viewports, as shown in Figure 2-17.

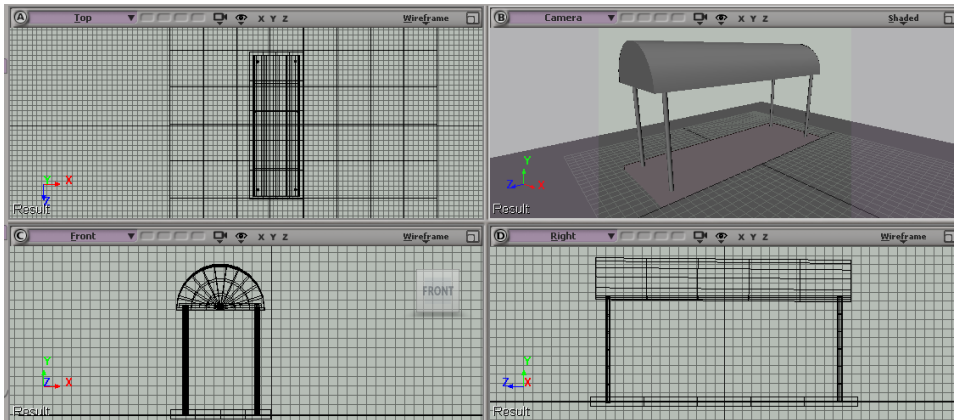


Figure 2-17 The roof of the bus stop displayed in viewports

Next, you will create the base of the roof.

- Press SPACEBAR; the **Object** mode is activated. Next, select *floor* and then duplicate it by pressing CTRL+ALT+D. Now, enter the values for the following parameters in the **Transform** subpanel of the Main Command Panel:

s area

x: 1.08

y: 0.05

z: 3.5

t area

x: -5.4

y: 11.42

z: 0.5



Note

Always remember that if you align an object at a particular position in a viewport, it is obligatory to align it in viewports.

Creating the Base of the Bench

In this section, you will create the base of the bench.

1. Choose **Model > Get > Primitive > Polygon Mesh > Cube** from the menu bar; the **Scene_Root : cube (General)** property editor is displayed. In this property editor, enter **bench** in the **Name** edit box.
2. In the **Geometry** property set, enter **4**, **2**, and **5** in the **U**, **V**, and **Base** edit boxes, respectively, of the **Subdivisions** area. Next, close the **Scene_Root : cube (General)** property editor; a cube with the name *bench* is created in all viewports.
3. Enter the values for the following parameters in the **Transform** subpanel of the Main Command Panel:

s area

x: **0.42**

y: **0.06**

z: **1.42**

t area

x: **-5.23**

y: **1.98**

z: **0.72**

After specifying the values, the base of *bench* is displayed in viewports, as shown in Figure 2-18.

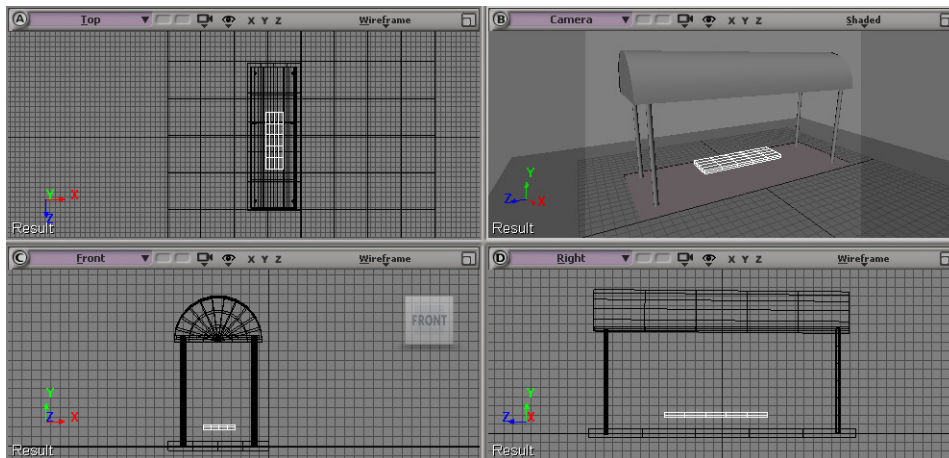


Figure 2-18 The base of bench displayed in viewports

Creating the Legs of the Bench

In this section, you will create the legs of the bench.

1. Choose **Model > Get > Primitive > Polygon Mesh > Cylinder** from the main toolbar; the **Scene_Root : cylinder (General)** property editor is displayed. In this property editor, enter **leg1** in the **Name** edit box.

- In the **Geometry** property set, enter **10**, **6**, and **3** in the **U**, **V**, and **Base** edit boxes, respectively, of the **Subdivisions** area. Next, close the **Scene_Root : cube (General)** property editor; a cube with the name *leg1* is created in all viewports.
- Set the values of the following parameters in the **Transform** subpanel of the Main Command Panel:

s area

x: **0.19**

y: **0.37**

z: **0.11**

r area

y: **-90**

t area

x: **-3.72**

y: **1.23**

z: **5.95**

After specifying the values, *leg1* is displayed in viewports, as shown in Figure 2-19.

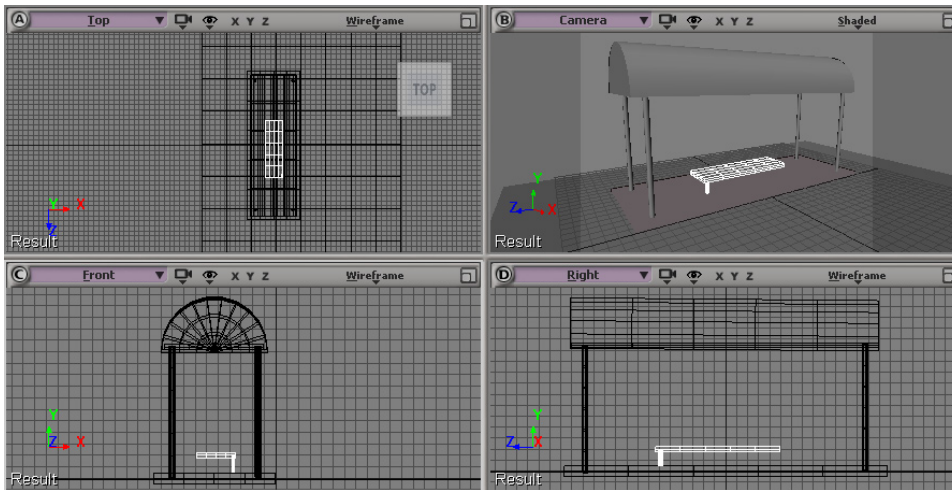


Figure 2-19 The leg1 displayed in viewports

Next, you will duplicate *leg1* to create three more legs and then arrange them.

- Press D; **Duplicate Tool** is activated and the shape of the cursor changes to a pen icon. Next, in the Top viewport, click on it where you want to place the second leg. Repeat the process to create other two legs. Right-click in the viewport to exit the tool. Now, you have created three new duplicates of *leg1*. Next, place and align *leg2*, *leg3*, and *leg4* at the corner of the *bench* in viewports, refer to Figure 2-20.

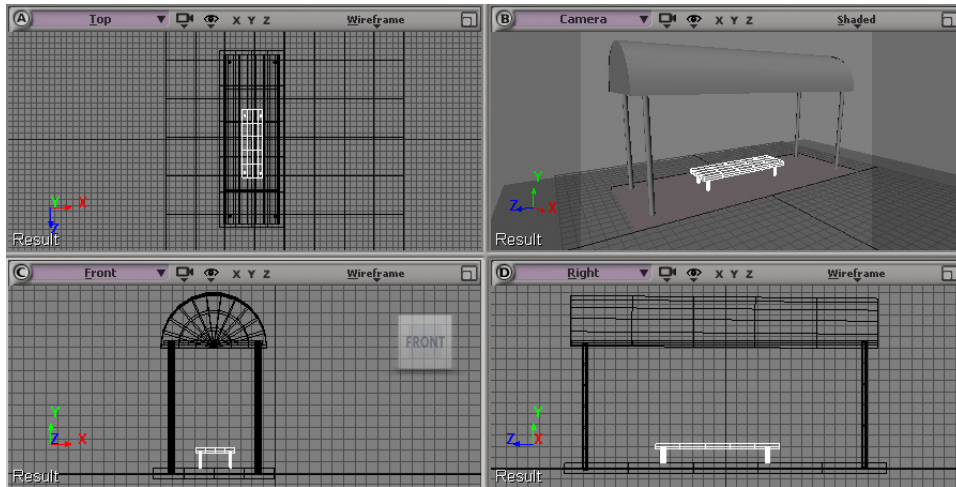


Figure 2-20 Aligning the legs in viewports

Creating the Back Support of the Bench

In this section, you will create the back support of the bench.

1. Choose **Model > Get > Primitive > Polygon Mesh > Cube** from the main toolbar; the **Scene_Root : cube (General)** property editor is displayed. In this property editor, enter **backsupport1** in the **Name** edit box.
2. In the **Geometry** property set, enter **4**, **2**, and **5** in the **U**, **V**, and **Base** edit boxes, respectively, of the **Subdivisions** area. Next, close the **Scene_Root : cube (General)** property editor; a cube with the name *backsupport1* is created in viewports.
3. Set the following values in the **Transform** subpanel of the Main Command Panel:

s area

x: **0.05**

y: **0.07**

z: **0.32**

r area

x: **-90**

z: **180**

t area

x: **-6.81**

y: **3.47**

z: **6**

4. Press **CTRL+ALT+D**; *backsupport1* is duplicated with the name *backsupport2*. Next, enter **-4.54** in the **z** edit box of the **t area** in the **Transform** subpanel of the Main Command Panel.

After specifying the values, *backsupport1* and *backsupport2* are displayed in viewports, as shown in Figure 2-21.



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

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

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

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

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

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

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

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

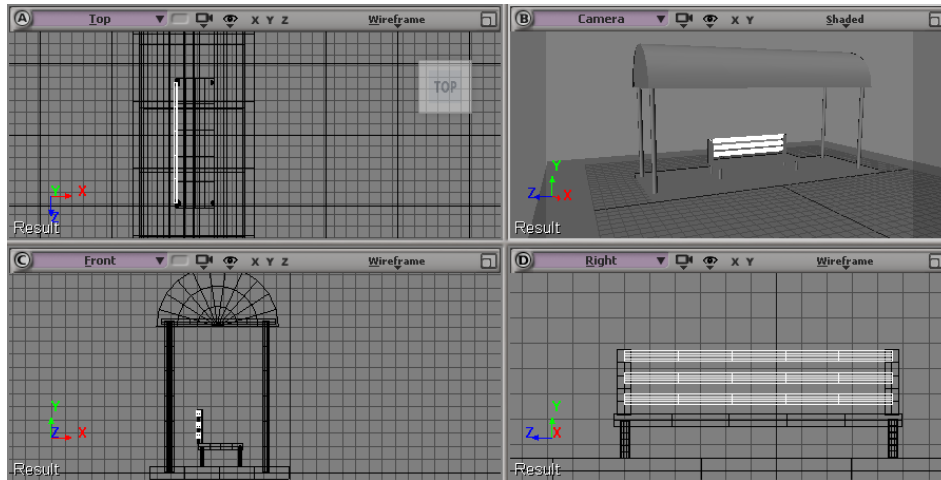


Figure 2-22 Aligning the copies of backrest1

Saving and Rendering the Scene

In this section, you will save the scene that you have created and then render it. You can view the final rendered image of this scene by downloading the *c02_softimage_2014_rndr.zip* file from www.cadcim.com. The path of this file is as follows: *Textbooks > Animation and Visual Effects > Softimage > Autodesk Softimage 2014: A Tutorial Approach*

1. Choose **File > Save** from the menu bar.
2. Hover the cursor over the Camera viewport and then press F12; the Camera viewport is maximized. Set the camera angle in it as required.
3. Choose **Render > Render > Preview** from the menu bar; a window is displayed with the rendered output. To save the rendered image, choose the **Save Picture** button from this window; the **Select File** dialog box is displayed.
4. In the **Select File** dialog box, navigate to the folder where you want save the image file. Next, select the required image format from the **File Types** drop-down list. Now, enter the name of the image in the **File Name** edit box and then choose the **OK** button to save the image file.



Note

Softimage files are saved with the .scn extension.

Tutorial 2

In this tutorial, you will create a house boat model, as shown in Figure 2-23, by using various polygon modeling techniques. **(Expected time: 40 min)**

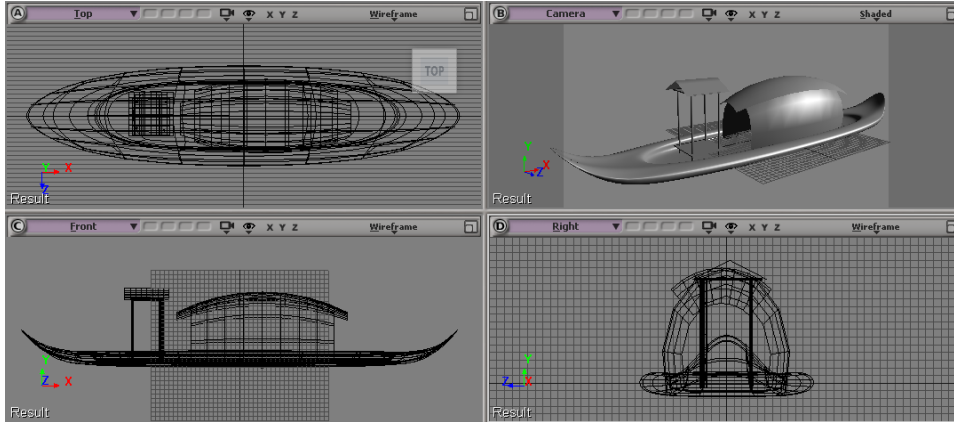


Figure 2-23 The model of a house boat

The following steps are required to complete this tutorial:

- Create the project folder.
- Create the hull of the house boat.
- Create the shelter of the house boat.
- Create the roof of the boat shelter.
- Create the floor of the boat shed.
- Create the pillars of the boat shed.
- Create the roof of the boat shed.
- Save and render the scene.

Creating the Project Folder

Create a new project folder with the name `c02_tut2` at `|Documents|Softimage2014` and then save the file with the name `c02_tut_02`, as discussed in Tutorial 1.

Creating the Hull of the House Boat

In this section, you will create the hull of the house boat by using polygon primitive.

- Choose **Model > Get > Primitive > Polygon Mesh > Cube** from the main toolbar; the **Scene_Root : cube (General)** property editor is displayed. In this property editor, enter **hull** in the **Name** edit box.
- In the **Cube** property set, enter **12** in the **Length** edit box. Next, enter **6**, **3**, and **6** in the **U**, **V**, and **Base** edit boxes, respectively, in the **Geometry** property set of the **Subdivisions** area. Next, close the **Scene_Root : cube (General)** property editor; a cube with the name **hull** is created in viewports.

3. Choose the Display Mode button from the Camera Viewport menu bar; the Display Mode menu is displayed. Choose **Shaded** from this menu; the geometry is displayed in the shaded mode in the Camera viewport. To view all viewports simultaneously, press F12.
4. Set the values of the following parameters in the **Transform** subpanel of the Main Command Panel:

s area

x: 7

y: 0.3

z: 2

After specifying the values, *hull* is displayed in viewports, as shown in Figure 2-24.

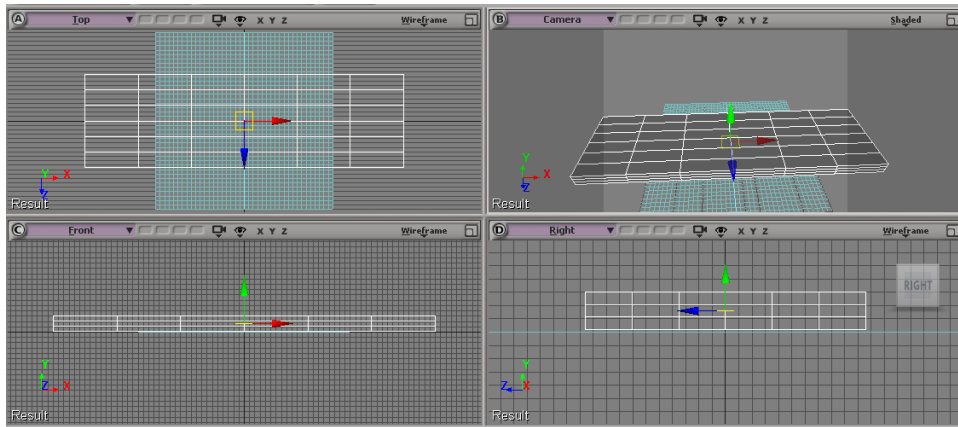


Figure 2-24 The hull displayed in viewports

5. Choose the **Point** button from the Main Command Panel; the **Object** mode is changed to the **Point** mode. Alternatively, you can press T to activate the **Point** mode.

Selection modes are most commonly used predefined combinations of selection filters. You can access these filters from the **Modes** cascading menu which is displayed when you click on the **Select** subpanel in the Main Command Panel or by pressing the corresponding shortcut keys such as T (**Point** mode), E (**Edge** mode), and Y (**Polygon** mode). You can press the SHIFT key with the aforesaid keys for enabling the extended mode.



Note

The extended modes are similar to the non-extended modes. However, the only difference between these two is that when you activate the extended mode, the components those you have already selected are not removed from the selection.

6. Marque-select the left-most points in the Top viewport, as shown in Figure 2-25; the color of the selected points is changed from blue to red.

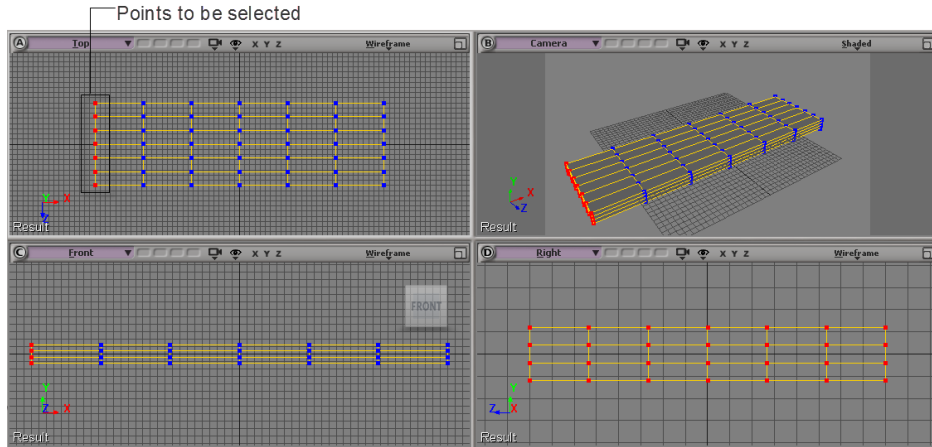


Figure 2-25 Points selected in the Top viewport

7. Press and hold the X key; **Scale Tool** is activated. Next, scale the points inward along the X axis and then release the X key, as shown in Figure 2-26.

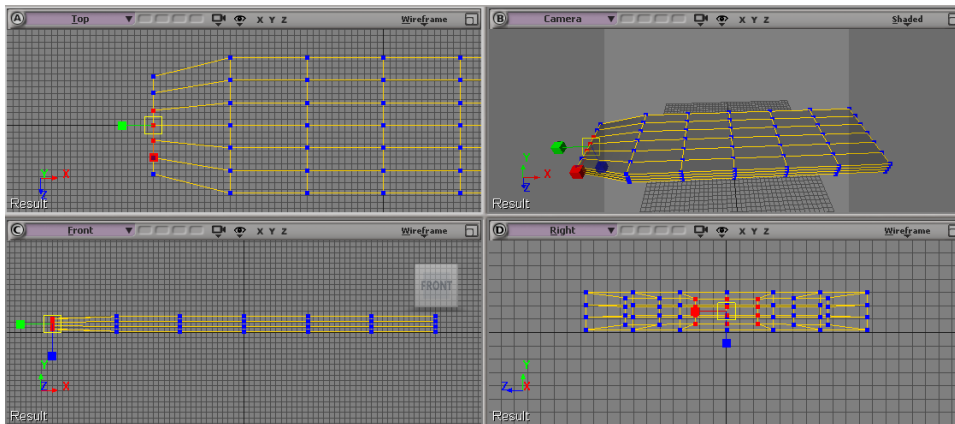


Figure 2-26 Selected points scaled inward

8. Similarly, adjust the points on the right side of *hull*. Modify the shape of *hull* by moving the points using **Translate Tool** (press and hold V) and then define the shape of the boat, as shown in Figure 2-27.
9. Choose the **Polygon** button from the Main Command Panel; the **Polygon** mode is activated. Alternatively, press Y to activate it.
10. Choose the **Selection** tab from **Main Shelf**. If **Main Shelf** is not visible, choose **View > Optional Panels > Main Shelf** from the menu bar. Next, choose the **Raycast Polygon Selection Mode** tool from the **Selection** tab and then select the polygons in the Top viewport by dragging the cursor on them, as shown in Figure 2-28. Alternatively, press U to invoke the **Raycast Polygon Selection Mode** tool.

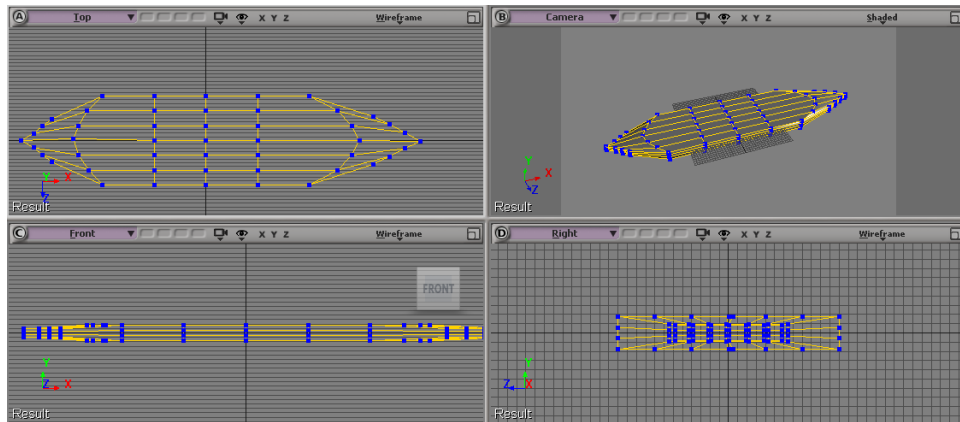


Figure 2-27 Modifying the shape of hull

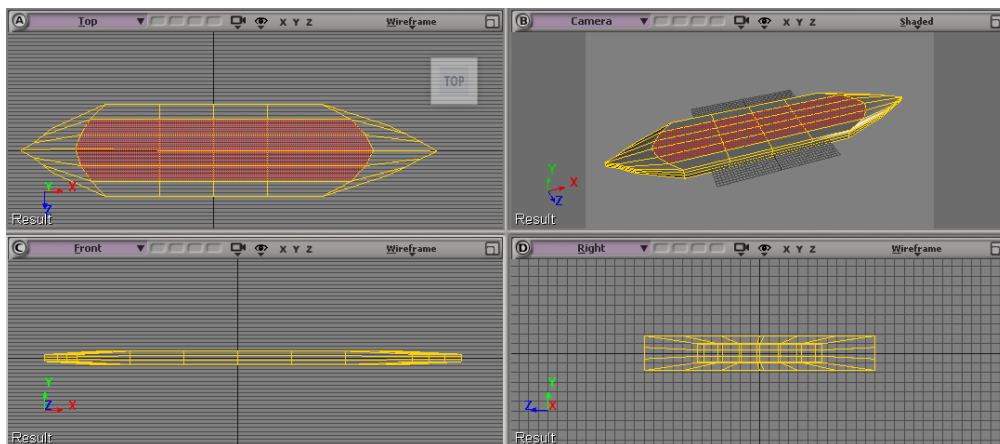


Figure 2-28 Selecting the center polygons of hull in viewports

11. Choose **Model > Modify > Poly. Mesh > Extrude Along Axis** from the main toolbar; the **Scene_Root : hull : Polygon Mesh : Extrude Op** property editor is displayed. In this property editor, enter **-10** and **0.123** in the **Length** and **Inset Amount** edit boxes, respectively. Next, enter **5** in the **Subdivs** edit box. Now, close the property editor; the extruded polygons are displayed in viewports, as shown in Figure 2-29.

The **Extrude Along Axis** option is used to copy the selected components (polygons, edges, points, clusters, or polygon mesh objects) and transform the new geometry. The extruded components remain connected to the original geometry.

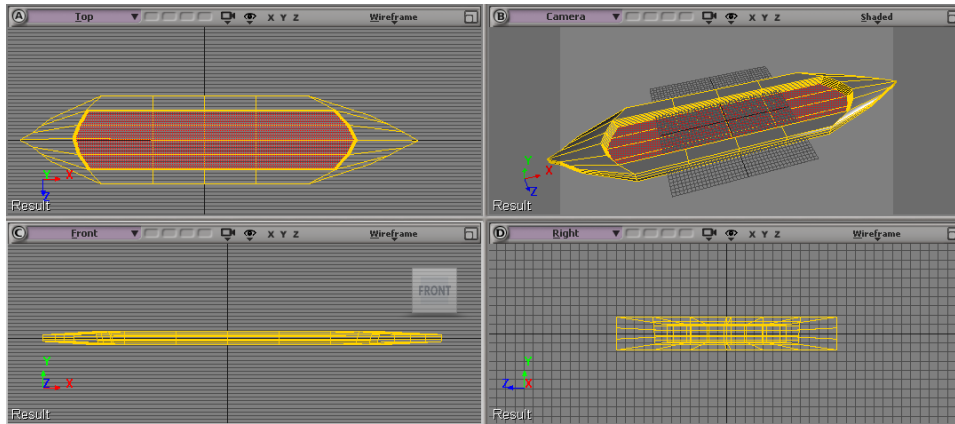


Figure 2-29 The extruded polygons of hull displayed in viewports

Next, you will apply the **Smooth** deformer to *hull* to smoothen it.

12. Press SPACEBAR; the **Object** mode is activated. Make sure *hull* is selected and then choose **Model > Modify > Deform > Smooth** from the main toolbar; the **Scene_Root : hull : Polygon Mesh : Smooth** property editor is displayed. In this property editor, set the value for the **Strength** parameter based on your requirement. After applying the **Smooth** deformer, the smooth *hull* is displayed in viewport, as shown in Figure 2-30.

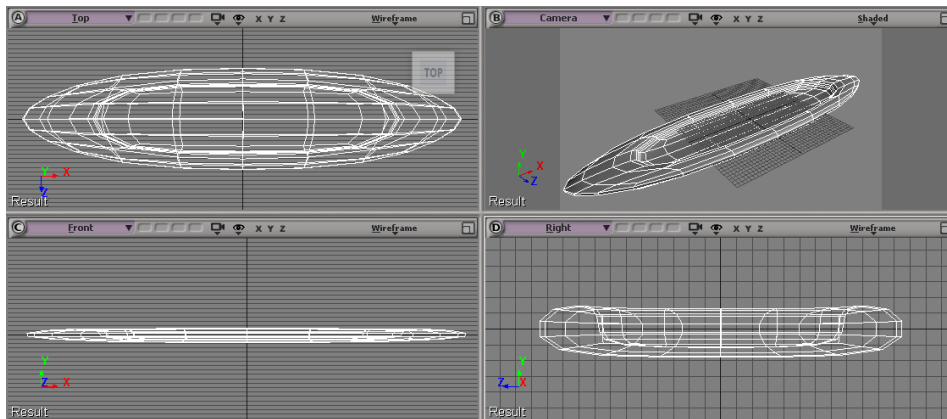


Figure 2-30 The smooth hull displayed in viewport

There are many deformers available in Softimage. They are powerful modeling and animation tools. You can apply deformers to polygon meshes, surfaces, hierarchies, cluster of components, lattices, particle clouds, and hair.

The **Smooth** deformer is used to remove spikes from the geometry. It is also used to smoothen the discontinuities in the shape and in rounding seams around extruded polygons.

13. Press T; the **Point** mode is activated. Move the mouse pointer to the Front viewport and press F12; the Front viewport is maximized. Next, select the points in it, refer to Figure 2-31 and press V; **Translate Tool** is activated. Now, move the selected points up along the Y axis, as shown in Figure 2-31. Press V again to deactivate **Translate Tool**.

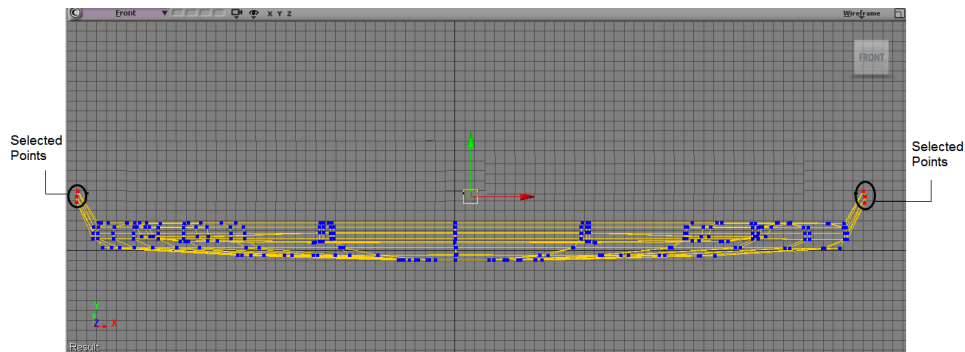


Figure 2-31 Moving the selected points up along the Y axis

14. Select the points in the Front viewport, as shown in Figure 2-32. Press V; **Translate Tool** is activated. Next, move the selected points up along the Y axis, as shown in Figure 2-33. Now, press the + (plus) key twice; the surface becomes smooth.

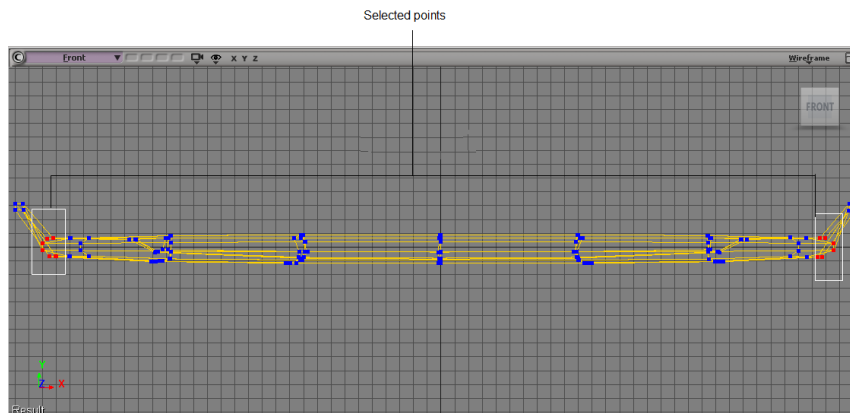


Figure 2-32 Points selected in the Front viewport



Note

Press the + (plus) key repeatedly to increase the smoothness of the object and the - (minus) to decrease the smoothness of the object.

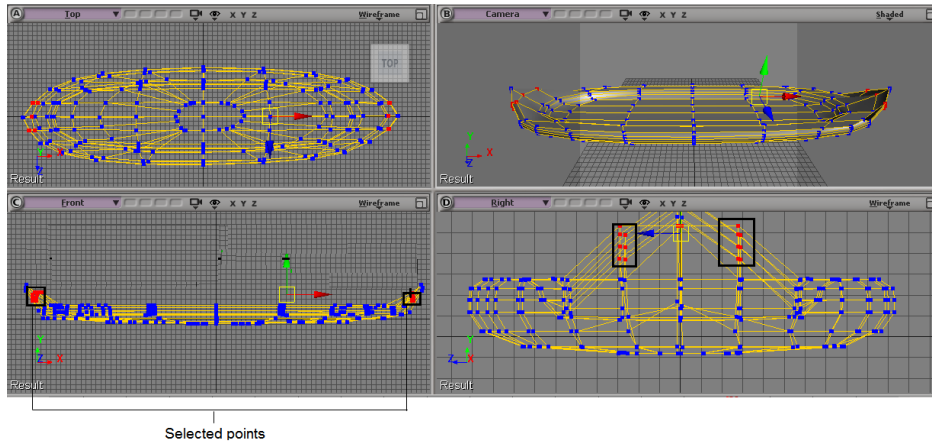


Figure 2-33 Moving the selected points up along the Y axis

Creating Shelter of the House Boat

In this section, you will create the shelter of the house boat.

1. Choose **Model > Get > Primitive > Polygon Mesh > Grid** from the main toolbar; the **Scene_Root : grid (General)** property editor is displayed. In this property editor, enter **boatshelter** in the **Name** edit box.
2. In the **Grid** property set, enter **25** and **20** in the **U Length** and **V Length** edit boxes, respectively. Next, close the **Scene_Root : grid (General)** property editor; a grid with the name **boatshelter** is displayed in viewports.
3. Choose **Model > Modify > Deform > Fold** from the main toolbar; the **Fold** deformer is applied to **boatshelter** and the **Scene_Root : boatshelter : Polygon Mesh : Fold Op** property editor is displayed. Next, enter **-223** and **51** in the **Angle** and **Distortion** edit boxes, respectively, of the **Amplitude** area and then close the property editor; the shape of **boatshelter** is changed.

The **Fold** deformer is used to fold the object. It wraps the extremities of an object toward the specified axis. The **Angle** parameter is used to specify the amount of folding in degrees.

4. Set the values for following parameters in the **Transform** subpanel of the Main Command Panel:

s area
 x: 1.3 y: 1.9 z: 1.7

r area
 y: -90

t area
 x: 5 y: 15 z: 0.07

After specifying the values, *boatshelter* is aligned on the top of *hull* in viewports, as shown in Figure 2-34.

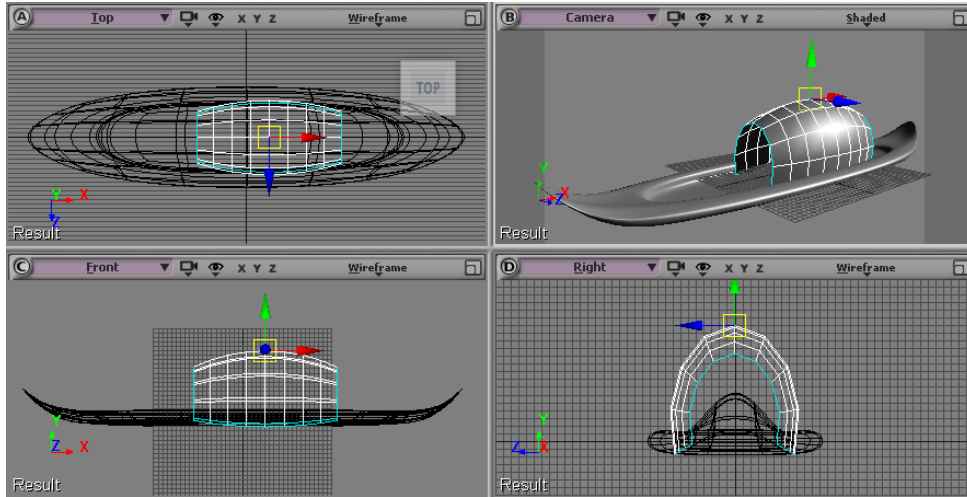


Figure 2-34 Aligning boatshelter in viewports

Creating the Roof of the Boat Shelter

In this section, you will create the roof of the boat shelter.

1. Choose **Model > Get > Primitive > Polygon Mesh > Grid** from the main toolbar; the **Scene_Root : grid# (General)** property editor is displayed. In this property editor, enter **roof** in the **Name** edit box.
2. In the **Grid** property set, enter **12** and **32** in the **U Length** and **V Length** edit boxes, respectively. Next, close the **Scene_Root : grid# (General)** property editor; a grid with the name *roof* is displayed in viewports.
3. Choose **Model > Modify > Deform > Fold** from the main toolbar; the **Fold** deformer is applied to *roof* and the **Scene_Root : roof : Polygon Mesh : Fold Op** property editor is displayed. In this property editor, enter **-86** and **49** in the **Angle** and **Distortion** edit boxes, respectively, in the **Amplitude** area and then close the property editor; the shape of *roof* is changed.
4. Set the values for the following parameters in the **Transform** subpanel of the Main Command Panel:

s area

x: 1.2

y: 1.3

z: 1.3

r area

y: **-90**

t area

x: **5**

y: **15**

z: **0**

Creating the Floor of the Boat Shed

In this section, you will create the floor of the boat shed.

1. Choose **Model > Get > Primitive > Polygon Mesh > Cube** from the main toolbar; the **Scene_Root : cube (General)** property editor is displayed. In this property editor, enter **floor** in the **Name** edit box.
2. In the **Cube** property set, enter **7** in the **Length** edit box. Next, in the **Geometry** property set, enter **4**, **4**, and **4** in the **U**, **V**, and **Base** edit boxes, respectively, of the **Subdivisions** area. Now, close the **Scene_Root : cube (General)** property editor; a cube with the name *floor* is created in viewports.
3. Set the values of the following parameters in the **Transform** subpanel of the Main Command Panel:

s area

x: **1.2**

y: **0.03**

z: **1.2**

t area

x: **-21**

y: **1.12**

z: **0.2**

After specifying the values, *floor* is displayed in viewports, as shown in Figure 2-35.

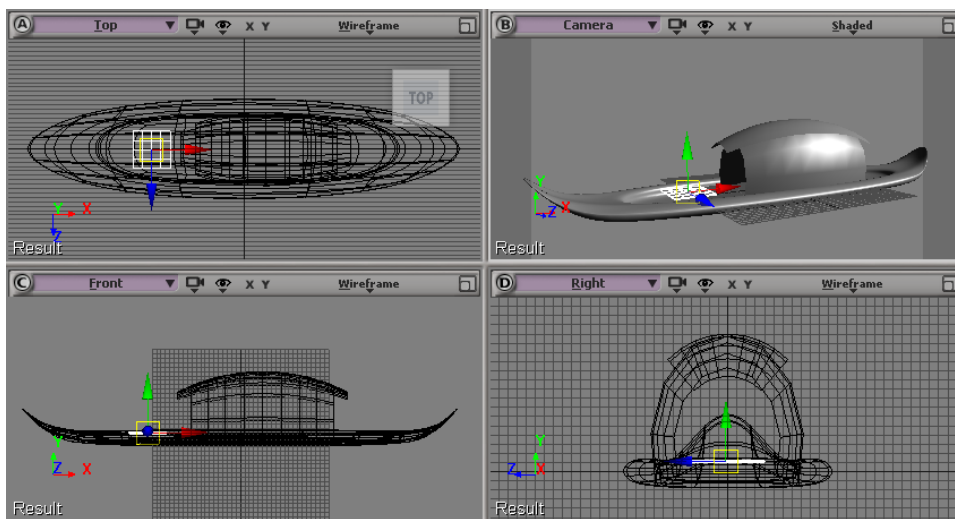


Figure 2-35 The floor displayed in viewports

Creating the Pillars of the Boat Shed

In this section, you will create the pillars of the boat shed.

1. Choose **Model > Get > Primitive > Polygon Mesh > Cylinder** from the main toolbar; the **Scene_Root : cylinder (General)** property editor is displayed. In this property editor, enter **pillar1** in the **Name** edit box.
2. In the **Cylinder** property set, enter **0.2** and **14** in the **Radius** and **Height** edit boxes, respectively. Next, close the **Scene_Root : cylinder (General)** property editor; a cylinder with the name *pillar1* is displayed in viewports.
3. Set the values of the following parameters in the **Transform** subpanel of the Main Command Panel:

t area

x: -17

y: 6.4

z: -3.5

After specifying the values, *pillar1* is displayed in viewports, as shown in Figure 2-36.

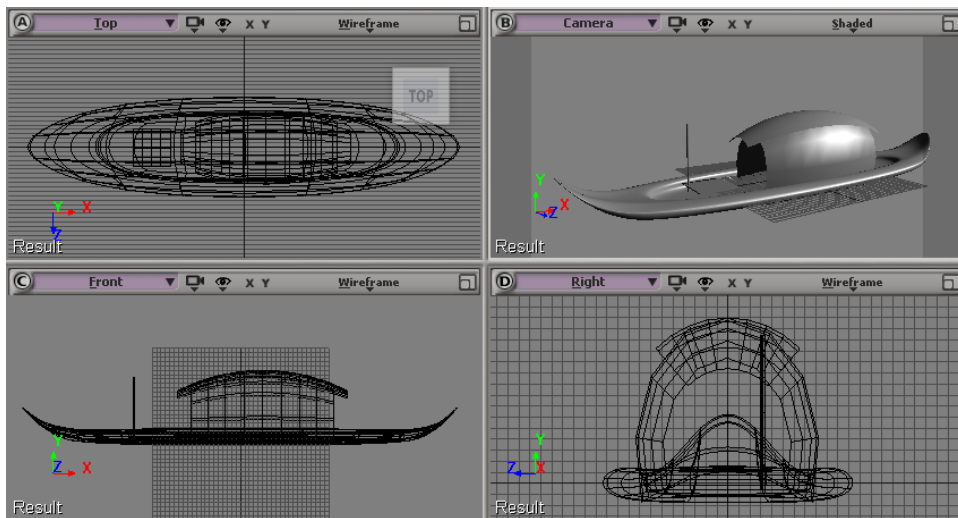


Figure 2-36 The *pillar1* displayed in viewports

4. Make three more copies of *pillar1* by pressing CTRL+ALT+D and align them in viewports, as shown in Figure 2-37.

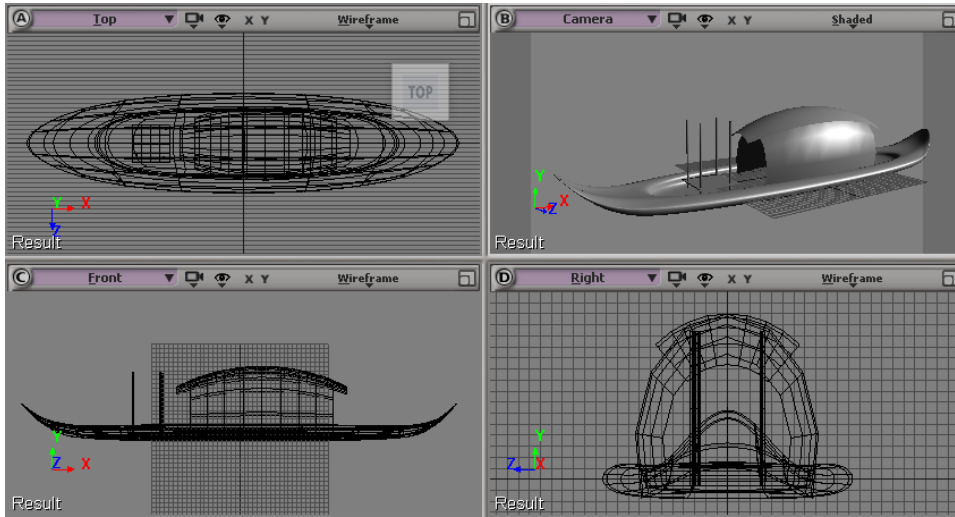


Figure 2-37 Aligning pillars in viewports

Creating the Roof of the Boat Shed

In this section, you will create the roof of the boat shed.

1. Choose **Model > Get > Primitive > Polygon Mesh > Cube** from the main toolbar; the **Scene_Root : cube# (General)** property editor is displayed. In this property editor, enter **shedroofbase** in the **Name** edit box.
2. In the **Cube** property set, enter **6** in the **Length** edit box. Next, in the **Geometry** property set, enter **4**, **3**, and **4** in the **U**, **V**, and **Base** edit boxes, respectively, of the **Subdivisions** area. Next, close the **Scene_Root : cube# (General)** property editor; a cube with the name *shedroofbase* is created in viewports.
3. Set the values of the following parameters in the **Transform** subpanel of the Main Command Panel:

s area		
x: 1.2	y: 0.04	z: 1.47
t area		
x: -21	y: 13.5	z: -0.2

After specifying the values, *shedroofbase* is displayed in viewports, as shown in Figure 2-38.

4. Choose **Model > Get > Primitive > Polygon Mesh > Grid** from the main toolbar; the **Scene_Root : grid (General)** property editor is displayed. In this property editor, enter **shedroof** in the **Name** edit box.

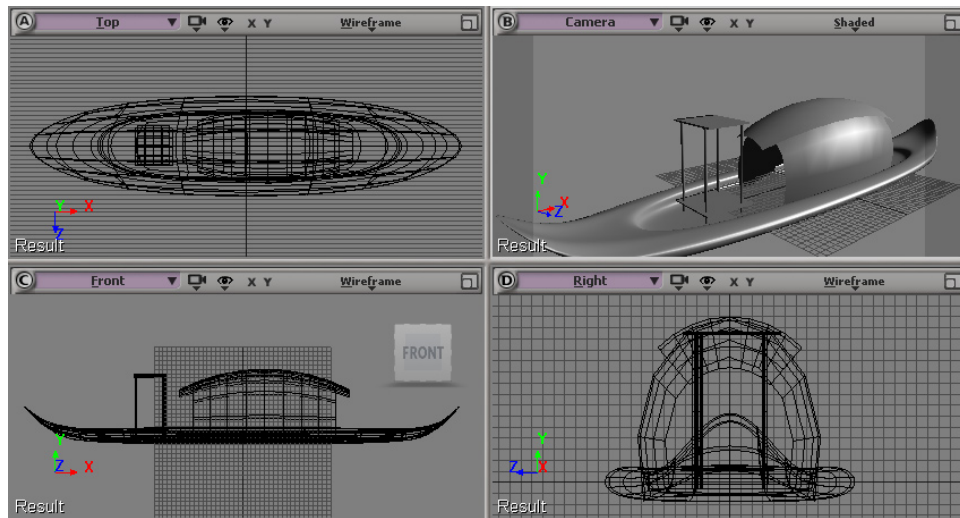


Figure 2-38 The shedroofbase displayed in viewports

5. In the **Grid** property set, enter **11** and **10** in the **U Length** and **V Length** edit boxes, respectively. Next, close the **Scene_Root : grid (General)** property editor; a grid with the name *shedroof* is created in viewports.
6. Choose **Model > Modify > Deform > Fold** from the main toolbar; the **Fold** deformer is applied to *shedroof* and the **Scene_Root : shedroof : Polygon Mesh : Fold Op** property editor is displayed. In this property editor, select **Linear** from the **Type** drop-down list of the **Direction** area and enter **-104** in the **Angle** edit box in the **Amplitude** area and then close the property editor; the shape of *shedroof* is changed.
7. Set the values of the following parameters in the **Transform** subpanel of the Main Command Panel:

r area

y: 90

t area

x: -21

y: 16

z: 0.39

After specifying the values, *shedroof* is displayed in viewports, as shown in Figure 2-39.

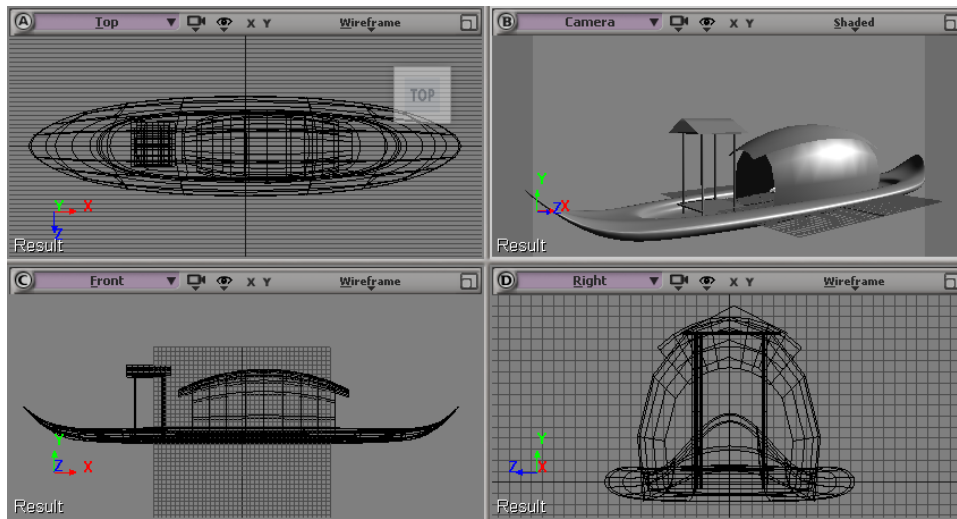


Figure 2-39 The shedroof displayed in viewports

Saving and Rendering the Scene

In this section, you will save the scene that you have created and then render it. You can view the final rendered image of this scene by downloading the *c02_softimage_2014_rndr.zip* file from www.cadcim.com. The path of this file is as follows: *Textbooks > Animation and Visual Effects > Softimage > Autodesk Softimage 2014: A Tutorial Approach*

1. Choose **File > Save** from the menu bar.
2. Activate the Camera viewport and then set the camera angle in it as required. Choose **Render > Render > Preview** from the menu bar; a window is displayed with the rendered output.

Self-Evaluation Test

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

1. Which of the following deformers is used to fold the object?

(a) Bend	(b) Taper
(c) Smooth	(d) Twist
2. Which of the following key combinations is used to create multiple duplicate copies of an object?

(a) CTRL+SHIFT+D	(b) CTRL+D
(c) CTRL+ALT+D	(d) D

3. The _____ option in the **Render** menu from the menu bar is used to view the rendered scene.
4. You can duplicate the selected object at any desired location by pressing D. (T/F)
5. In cloning, if you edit the parent object, it will affect all the cloned objects. (T/F)

Review Questions

Answer the following questions:

1. Which of the following shortcut keys is used to switch the object from object mode to point mode?
 - (a) V
 - (b) T
 - (c) Y
 - (d) X
2. Which of the following buttons is used to open the **Scene_Root** flyout?
 - (a) **Scene**
 - (b) **Polygon**
 - (c) **Group**
 - (d) **Explorer**
3. Which of the following shortcut keys is used to invoke **Translate Tool**?
 - (a) V
 - (b) X
 - (c) T
 - (d) C
4. The _____ key is used to switch to **Polygon** mode.
5. The _____ deformer is used to smoothen the object.

EXERCISES

The rendered output of the models used in the following exercises can be accessed by downloading the *c02_softimage_2014_exr.zip* from www.cadcim.com. The path of the file is as follows: *Textbooks > Animation and Visual Effects > Softimage > Autodesk Softimage 2014: A Tutorial Approach*

Exercise 1

Create the models of a table and bench using the polygon primitives, as shown in Figure 2-40. **(Expected time: 35 min)**

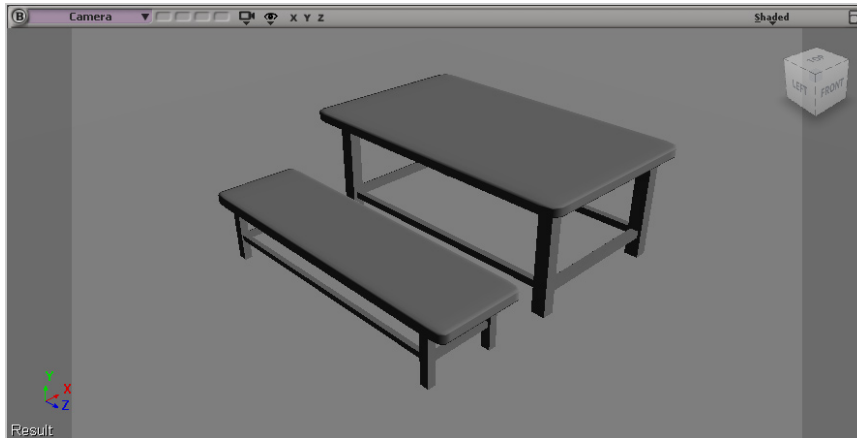


Figure 2-40 The models of the table and bench

Exercise 2

Create the model of a houseboat using polygon primitives and deformers, as shown in Figure 2-41. **(Expected time: 40 min)**

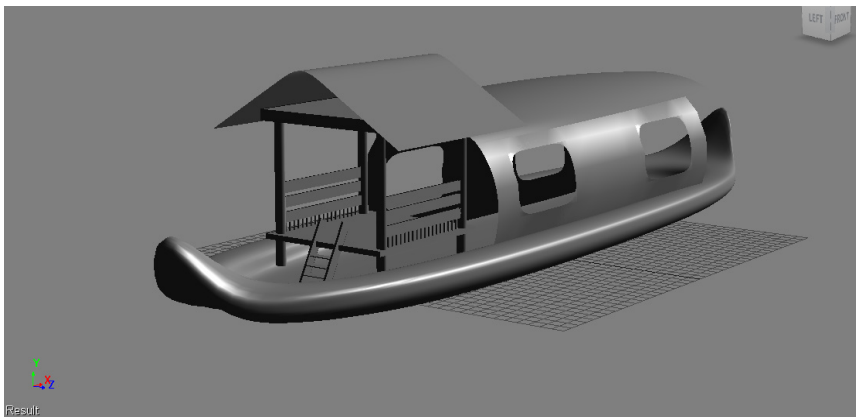


Figure 2-41 The model of the houseboat

Exercise 3

Create the models of a chair and center table using the deformers, as shown in Figure 2-42.
(Expected time: 30 min)



Figure 2-42 The models of the chair and the center table

Exercise 4

Create the model of a cartoon character using **Extrude Along Axis** tool, as shown in Figure 2-43.
(Expected time: 30 min)

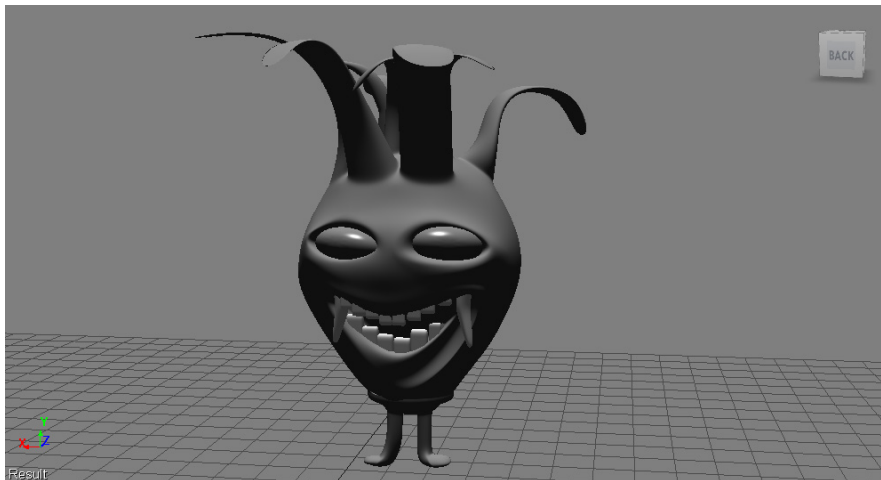


Figure 2-43 The model of a cartoon character

Exercise 5

Create the model of a cartoon character using **Extrude Along Axis** tool, as shown in Figure 2-44.
(Expected time: 35 min)



Figure 2-44 The model of a cartoon character

Exercise 6

Create a 3D scene by using primitive tools and deformers, as shown in Figure 2-45.
(Expected time: 40 min)

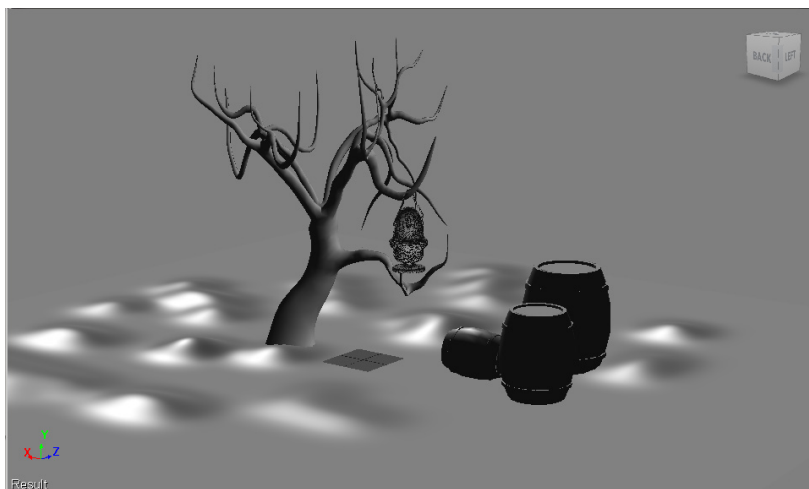


Figure 2-45 3D scene created using primitive tools

Exercise 7

Create the model of a cartoon character, as shown in Figure 2-46.

(Expected time: 30 min)

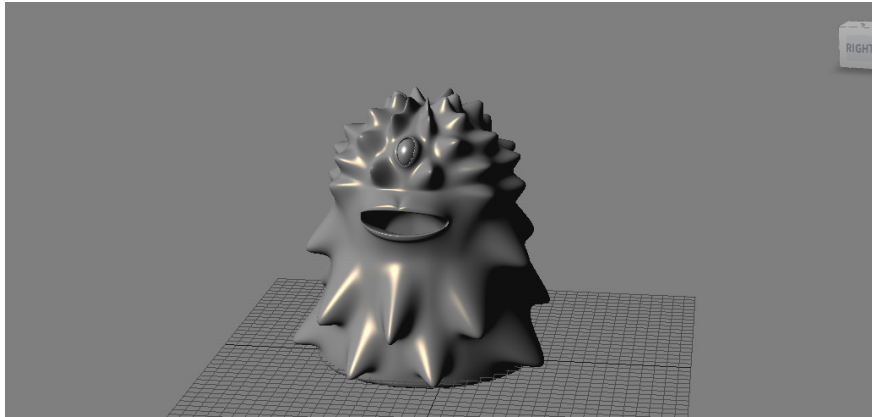


Figure 2-46 The model of a cartoon character

Exercise 8

Create the stairs using polygon primitives and various duplicating techniques, as shown in Figure 2-47.

(Expected time: 25 min)

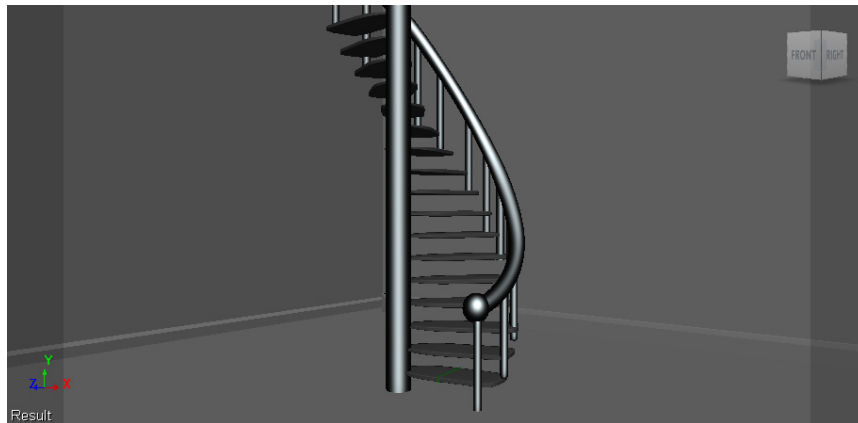


Figure 2-47 Stairs created using various primitive tools

Answers to Self-Evaluation Test

1. d, **2.** a, **3.** Preview, **4.** T, **5.** T