

# Chapter 2

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## Polygon Modeling

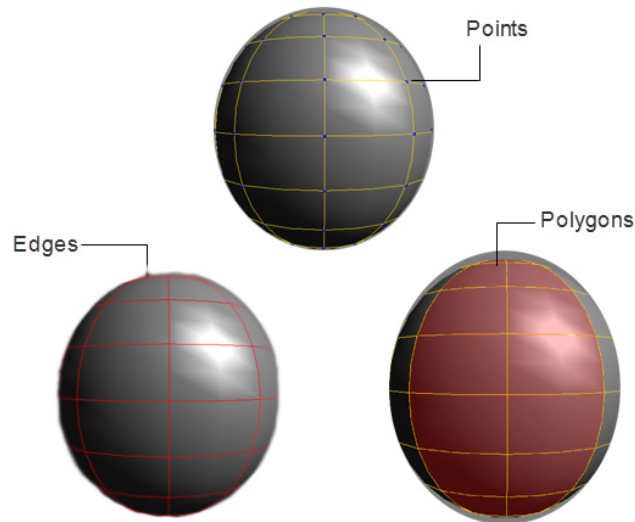
### Learning Objectives

**After completing this chapter, you will be able to:**

- *Create and edit primitive objects*
- *Work in 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. The 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.

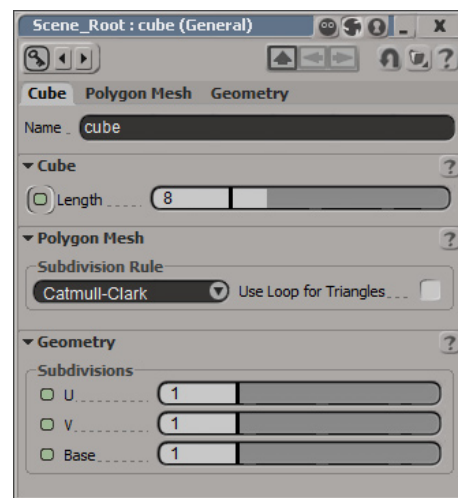


*Figure 2-1 Different components of a polygon mesh*

## 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 **Modify > Poly. Mesh** from the **Model** toolbar. Alternatively, you can press and hold ALT and then right-click on a 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 **Subdivision Rule** drop-down list in the **Polygon Mesh** property set is used to specify the subdivision algorithm of the geometry. You can use the **Subdivisions** area in the **Geometry** property set to add segments to the cube.

## Grouping Objects

Grouping is a process in which you can unite multiple objects to make a group. You can add various 3D objects in a scene that can be grouped together. To create a group, select objects in the viewport and then choose **Edit > Create Group** from the menu bar or press CTRL+G.

## Duplicating and Cloning the Objects

In Softimage, there are two methods to copy 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 duplicating 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.

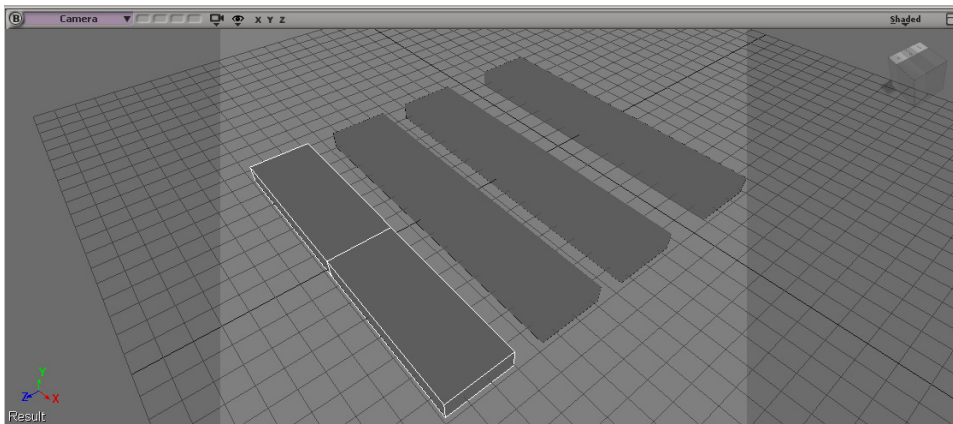
You can access duplicate and clone options from the cascading menu displayed on choosing **Edit > Duplicate/Instantiate** from the menu bar. Most commonly used options for duplicating and cloning an object available in the **Duplicate/Instantiate** cascading menu are discussed next.

### Duplicate Single

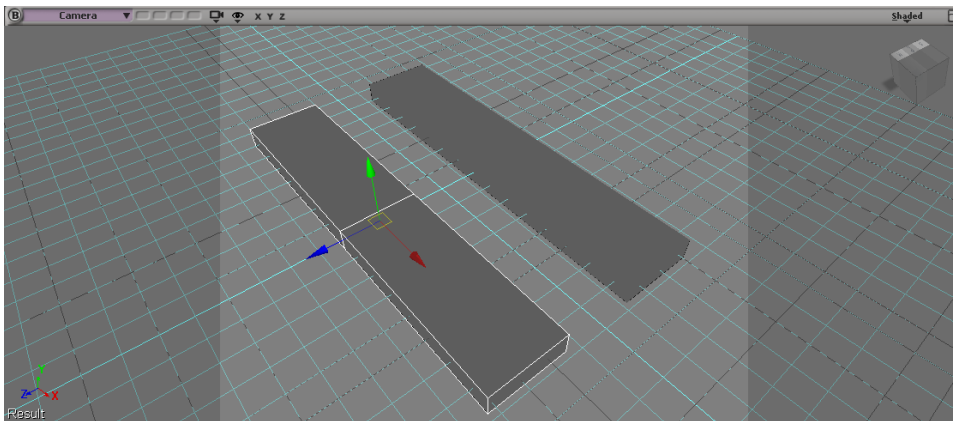
This option is used to create a duplicate of the object. The duplicated object superimposes the original geometry. Alternatively, select the object in the viewport and then press CTRL+D to duplicate the object. Move the duplicate object using any of the transform tools and then press CTRL+D. You will notice that the object is duplicated with the same transformation as the selected duplicated object, refer to Figure 2-3. You can precisely change the transform value by using the **Duplicate Options** property editor which can be invoked by choosing **Duplicate/Instantiate Options** from the **Duplicate/Instantiate** cascading menu.

### Duplicate Single without Options

This option is used to create a duplicate of the object that superimposes the original geometry. Alternatively, you can select the object in the viewport and then press CTRL+ALT+D. To move the duplicate object, press V to activate **Translate Tool** and then drag the duplicate object. Figure 2-4 shows the duplicated object in the viewport.



*Figure 2-3 Duplicated cubes displayed in the viewport*



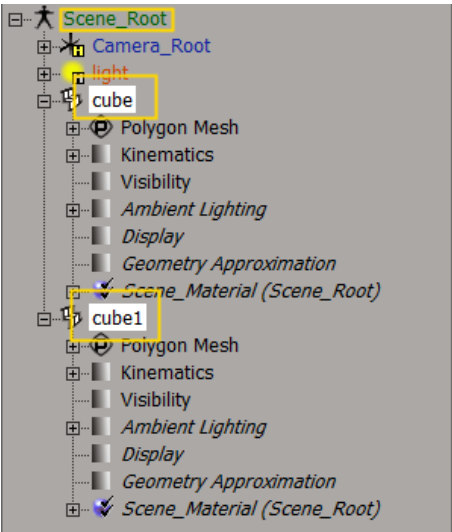
*Figure 2-4 A duplicated cube in the viewport*

You can use the **Explorer** window to view the original and duplicated 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 2-5. This window displays original (cube) and duplicated (cube1) geometries.



### Note

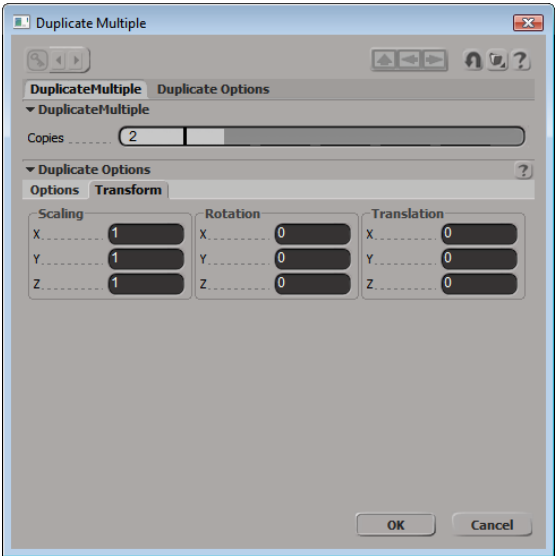
The **Explorer** window is used to view the contents of the scene in a hierarchical structure called *tree*. It displays the objects as well as their properties. Also, in this window, you can search objects by name, rename the scene elements, sort or reorder the elements, create parent/child relationships,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



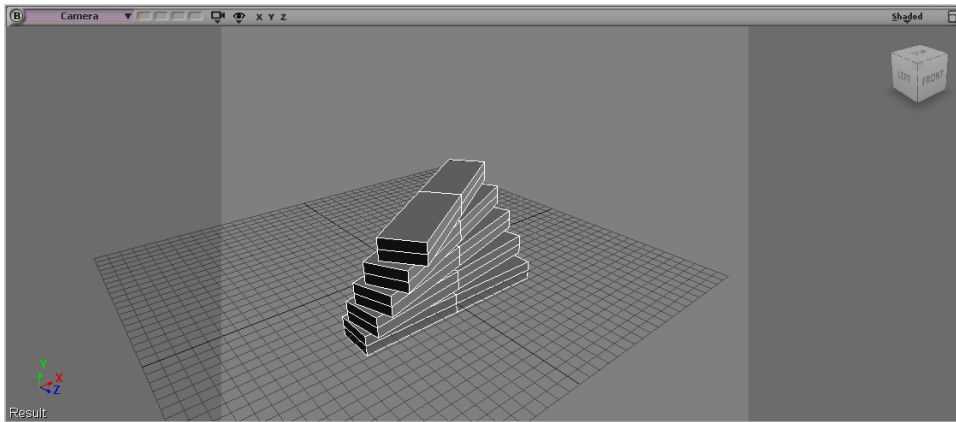
*Figure 2-5 The original (cube) and duplicated (cube1) geometries displayed in the **Explorer** window*

### Duplicate Multiple

This option is used to create multiple duplicates of an object. When you choose this option from the cascading menu, the **Duplicate Multiple** dialog box will be displayed, as shown in Figure 2-6. Alternatively, select the object in the viewport and then press CTRL+SHIFT+D to create multiple duplicates of an object. 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 **Scaling**, **Rotation**, or **Translation** area and then choose the **OK** button to duplicate the object with transformation applied. Figure 2-7 shows the duplicated cube objects with transformation applied.



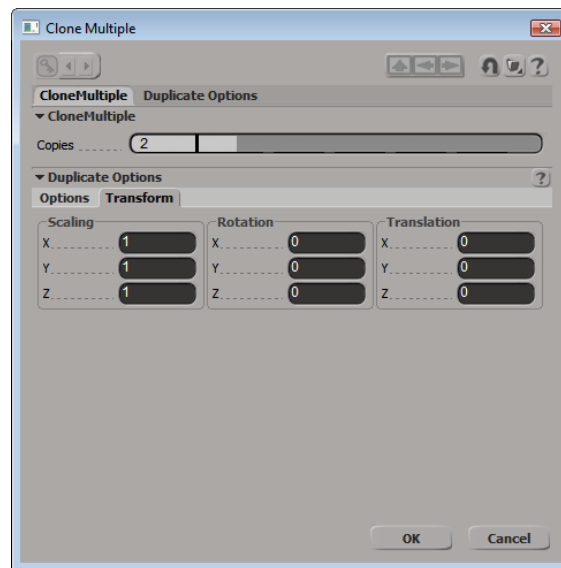
*Figure 2-6 The **Duplicate Multiple** dialog box*



*Figure 2-7 Transformation applied to the duplicated cube objects*

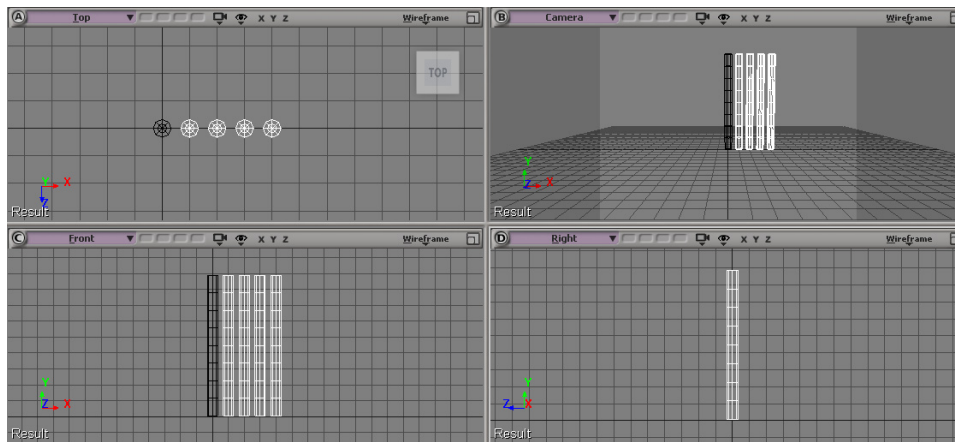
## Clone Multiple

This option is used to create multiple clones of an object. Select the object in the scene 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.

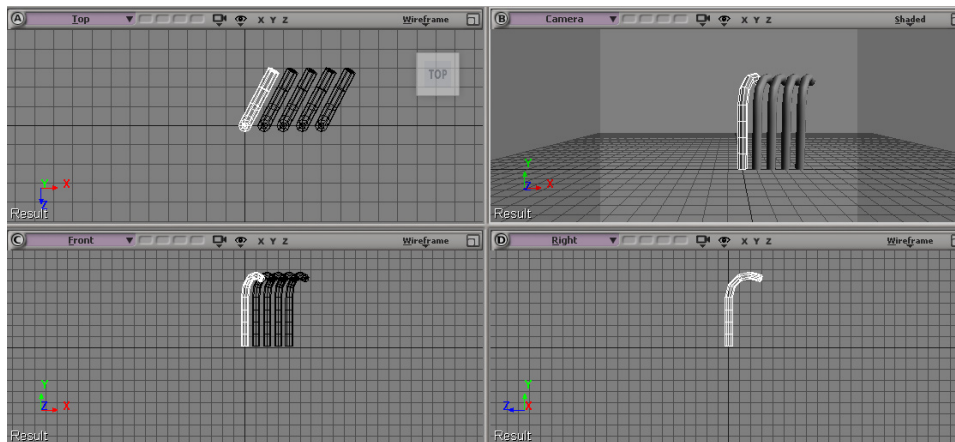


*Figure 2-8 The Clone Multiple dialog box*

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.



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



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

## TUTORIALS

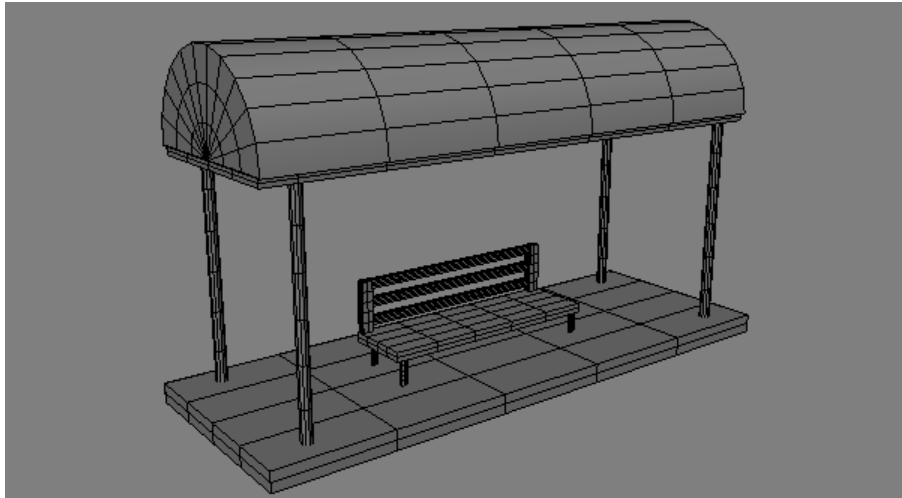
### Tutorial 1

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.
- 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 the Windows Explorer and browse to the *Documents* folder. In this folder, create a new folder with the name *Softimage\_Projects*. The *Softimage\_Projects* folder will be the main folder and it will contain all the projects 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 2013.
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|Softimage\_Projects* 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 *Softimage\_Projects* 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 2013, the last project that you have worked with is opened and an empty scene is created with the name *Untitled*.

2. It is recommended that you frequently save the file while you are working on them by pressing the CTRL+S keys.

## 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 **30.193** and **33.337** in the **U Length** and **V Length** edit boxes, respectively.
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 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**, 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.

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

6. 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 all viewports, as shown in Figure 2-13.

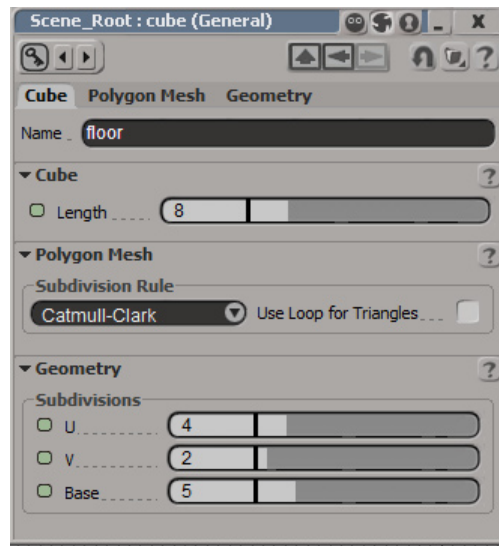


Figure 2-12 The *Scene\_Root: cube (General)* property editor

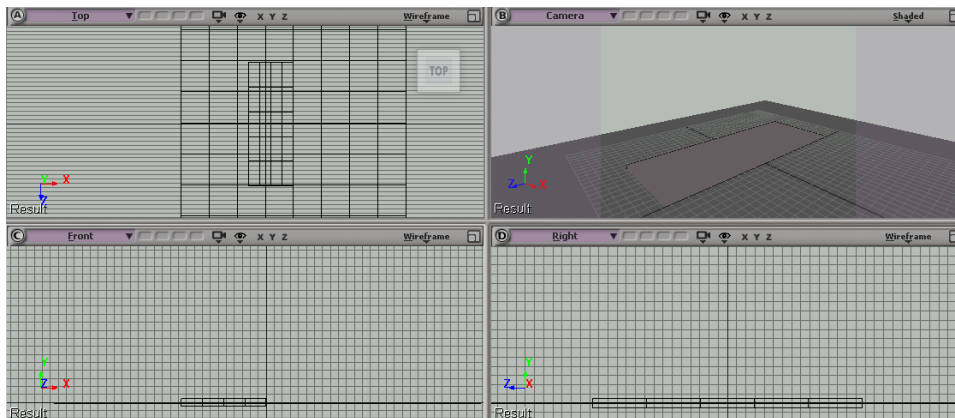


Figure 2-13 The floor created in all viewports



**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+F**.

## 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 of the **Subdivisions** area, respectively. Next, close the *Scene\_Root: cylinder (General)* property editor.

- 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**

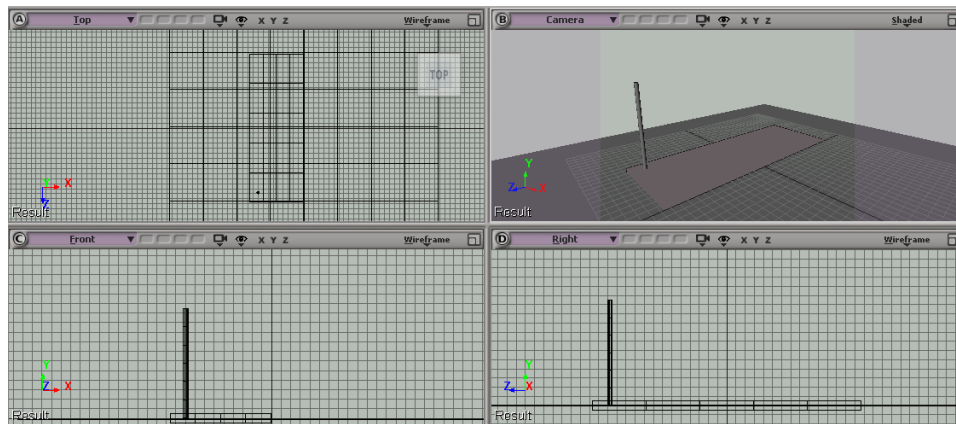
**t** area

x: **-1.5**

y: **5.79**

z: **-12.7**

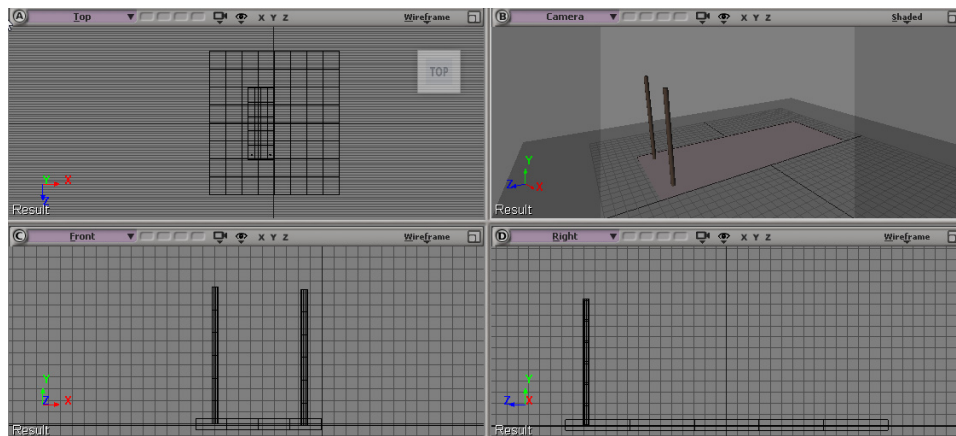
After specifying the values, *pillar1* is displayed in all viewports, as shown in Figure 2-14.



**Figure 2-14** The *pillar1* displayed in all viewports

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

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



**Figure 2-15** Aligning *pillar2* with floor in all viewports

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

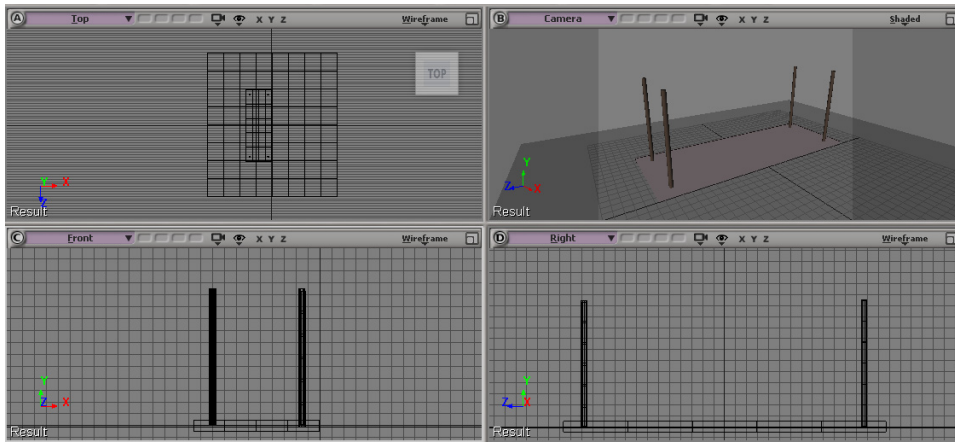


Figure 2-16 Aligning the pillars in all viewports

## 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 of the **Subdivisions** area, respectively.
4. Enter **180** and **0** in the **Start U** and **End U** edit boxes of the **Extent (Angles)** area of the **Geometry** property set, respectively. Next, close the **Scene\_Root : cylinder# (General)** property editor; a cylinder with the name *roof* is created in all viewports.
5. 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**

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

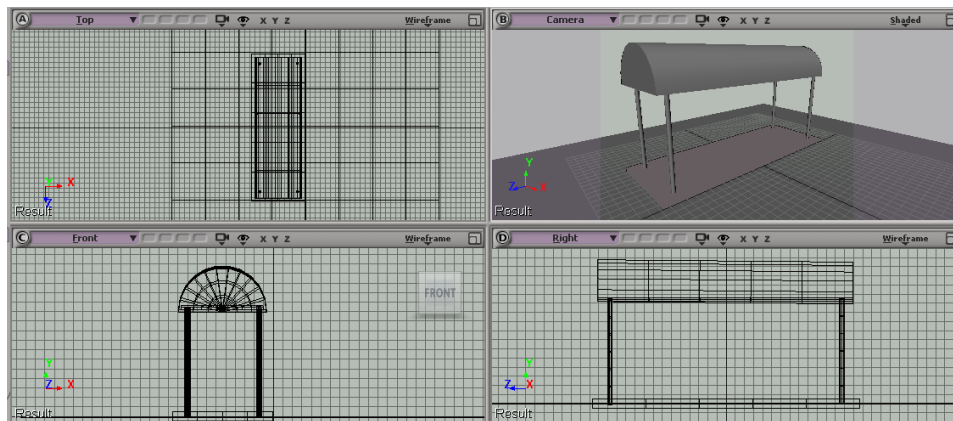


Figure 2-17 The roof of the bus stop displayed in all viewports

Next, you will create the base of the roof.

6. 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: **0.01**



#### Note

*Always remember that if you align an object at a particular position in a viewport, it is obligatory to align it in all 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 of the **Subdivisions** area, respectively. 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**

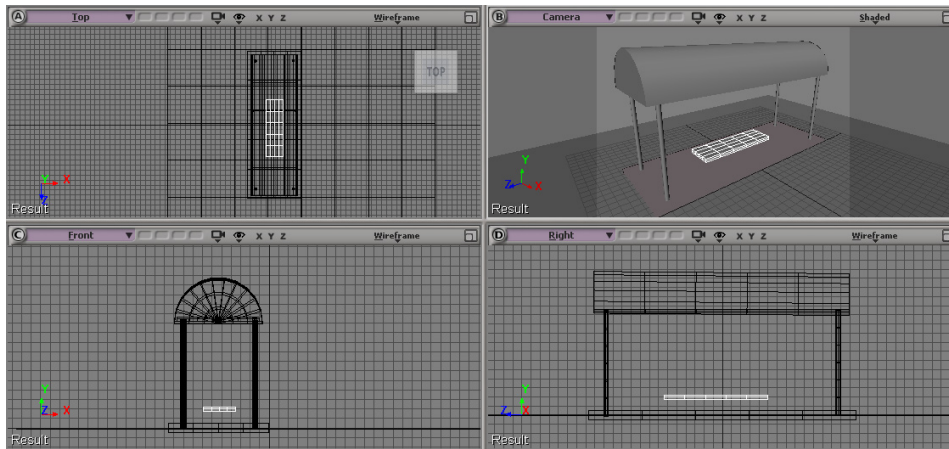
**t** area

x: **-5.23**

y: **1.98**

z: **0.72**

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



*Figure 2-18 The base of bench displayed in all 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.
2. In the **Geometry** property set, enter **10**, **6**, and **3** in the **U**, **V**, and **Base** edit boxes of the **Subdivisions** area, respectively. Next, close the **Scene\_Root : cube# (General)** property editor; a cube with the name *leg1* is created in all viewports.
3. 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**

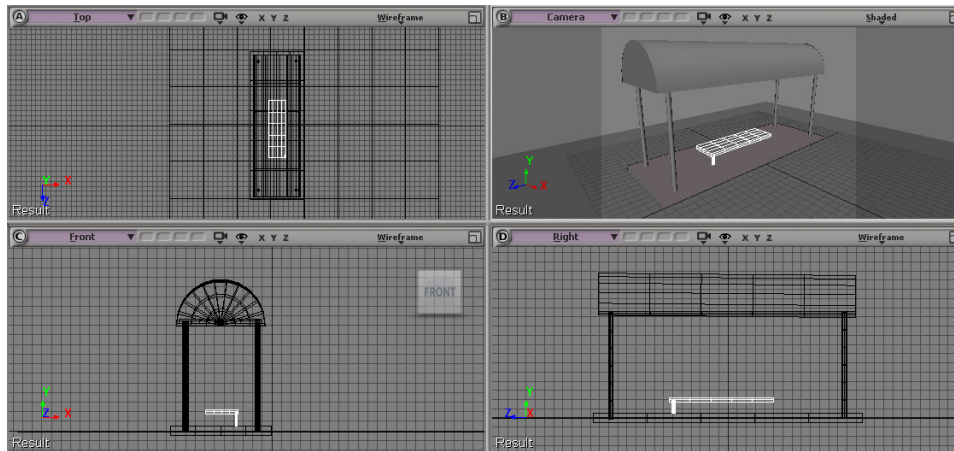
t area

x: -3.72

y: 1.23

z: 5.95

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

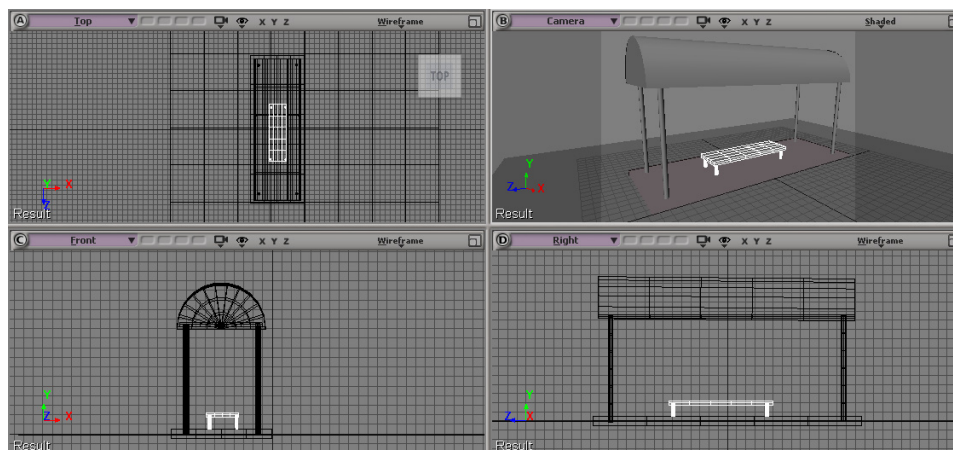


**Figure 2-19** The *leg1* displayed in all viewports

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

4. Press D; the **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 all viewports, refer to Figure 2-20.



**Figure 2-20** Aligning the legs in all 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 of the **Subdivisions** area, respectively. Next, close the **Scene\_Root : cube# (General)** property editor; a cube with the name *backsupport1* is created in all 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 all viewports, as shown in Figure 2-21.

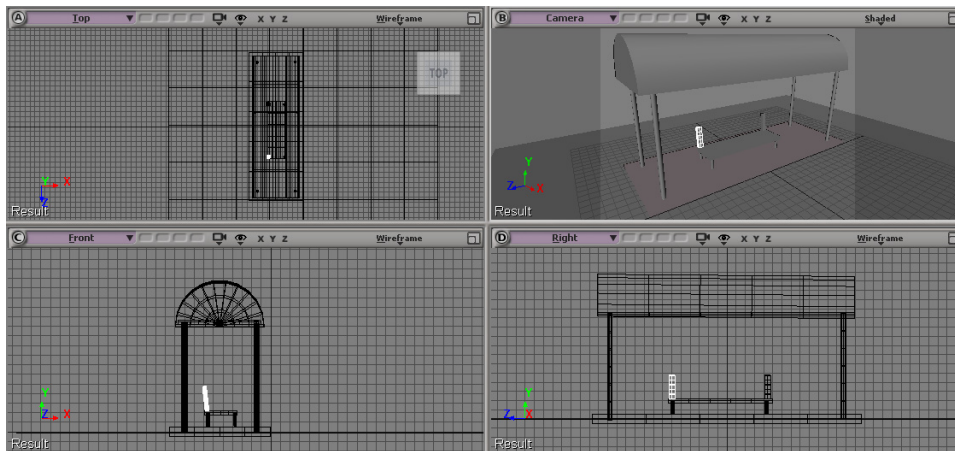


Figure 2-21 Backsupports displayed in all viewports

## Creating the Backrest of the Bench

In this section, you will create the backrest 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 **backrest1** in the **Name** edit box.
2. In the **Geometry** property set, enter **4**, **2**, and **5** in the **U**, **V**, and **Base** edit boxes of the **Subdivisions** area, respectively. Next, close the **Scene\_Root : cube# (General)** property editor; a cube with the name *backrest1* is created in all viewports.
3. Set the values of the following parameters in the **Transform** subpanel of the Main Command Panel:

**s** area

x: **0.05**

y: **0.04**

z: **1.32**

**r** area

z: **90**

**t** area

x: **-6.92**

y: **4.5**

z: **0.9**

4. Make three more copies of *backrest1* and align them in all viewports, as shown in Figure 2-22.

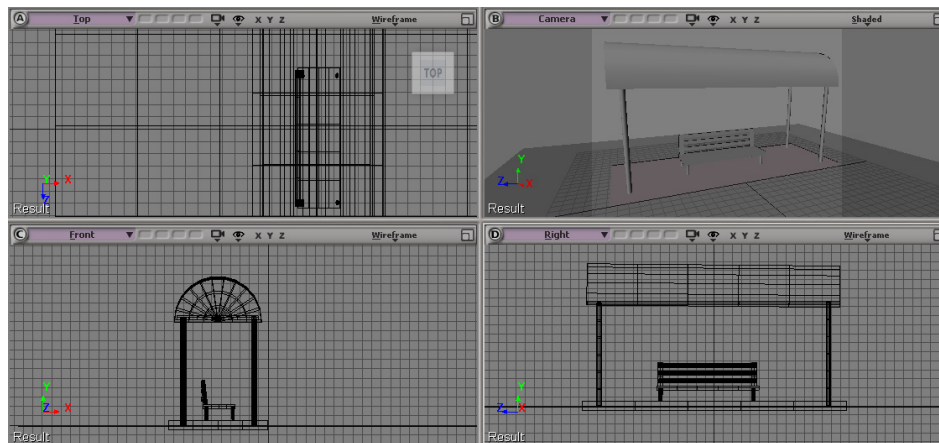


Figure 2-22 Aligning the copies of *backrest1*

## 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\_2013\_rndr.zip* file from [www.cadcim.com](http://www.cadcim.com). The path of this file is as follows: *Textbooks > Animation and Visual Effects > Softimage > Autodesk Softimage 2013: 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 per your requirement. Choose **Render > Render > Preview** from the menu bar; a window is displayed with the rendered output. Now, you can save the rendered output by choosing the **Save Picture** button from this window.

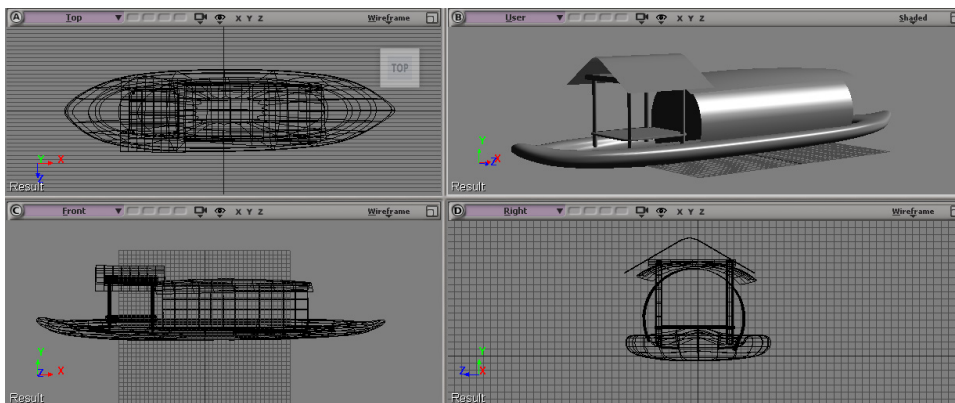


### Note

*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:

- a. Create the project folder.
- b. Create the hull of the house boat.
- c. Create the shelter of the house boat.
- d. Create the roof of the boat shelter.
- e. Create the floor of the boat shed.
- f. Create the pillars of the boat shed.
- g. Create the roof of the boat shed.
- h. Save and render the scene.

## Creating the Project Folder

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

## Creating the Hull of the House Boat

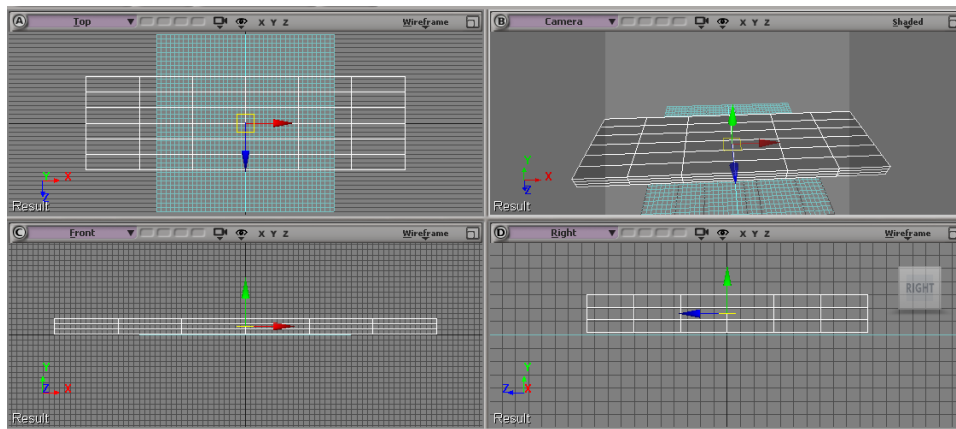
In this section, you will create the hull of the house boat by using the cube primitive.

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 **hull** in the **Name** edit box.
2. In the **Geometry** property set, enter **6**, **3**, and **6** in the **U**, **V**, and **Base** edit boxes of the **Subdivisions** area, respectively. Next, close the **Scene\_Root : cube (General)** property editor; a cube with the name *hull* is created in all 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 shaded mode in the Camera viewport.
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 all viewports, as shown in Figure 2-24.



**Figure 2-24** The hull displayed in all viewports

5. Activate the Top viewport. Next, choose the **Point** button from the Main Command Panel; the **Object** selection mode is changed to the **Point** selection mode. Alternatively, you can press T to activate the **Point** mode.

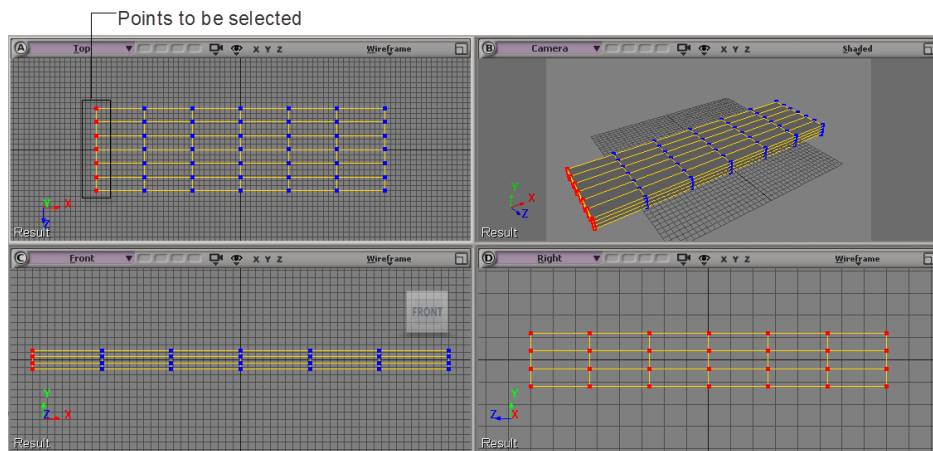
Selection modes are most commonly used predefined combinations of selection filters. You can access these filters from the **Modes** cascading menu which is displayed when you click on the **Select** subpanel in the Main Command Panel or by pressing the corresponding shortcut keys such as T (**Point**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



### Note

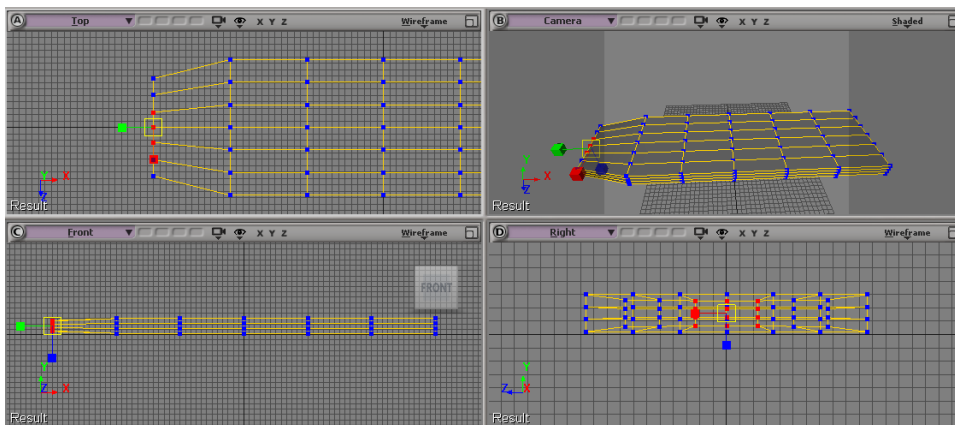
*The extended modes are similar to the non-extended modes. However, the only difference between these two is that when you activate the extended mode, the components those you have already selected are not removed from the selection.*

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; the **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 the **Translate Tool** (press and hold V) and then define the shape of the boat, as shown in Figure 2-27.

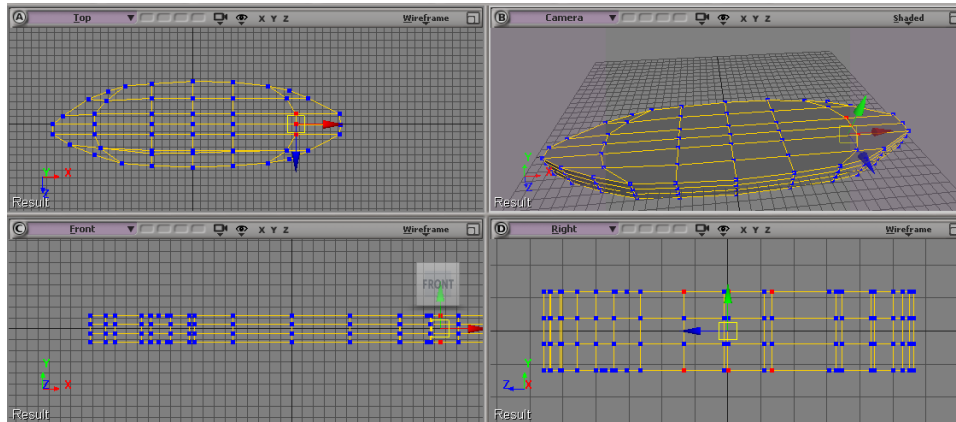


Figure 2-27 Modifying the shape of hull

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 the **Main Shelf**. If the **Main Shelf** is not visible, choose **View > Optional Panels > Main Shelf** from the menu bar. Next, choose the **Raycast Polygon Selection Mode** button from the **Selection** tab and then select the polygons in the Top viewport, as shown in Figure 2-28. Alternatively, press U to invoke the **Raycast Polygon Selection Mode**.

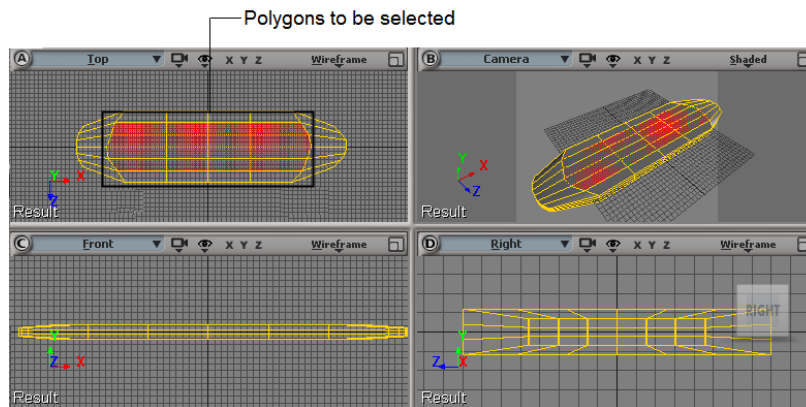
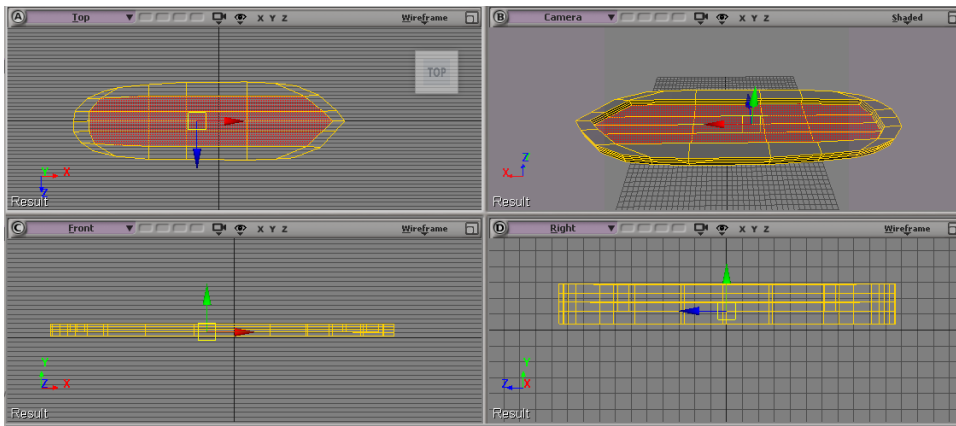


Figure 2-28 Selecting the center polygons of hull in all viewports

11. Choose **Model > Modify > Poly.Mesh > Extrude Along Axis** from the main toolbar; the **Scene\_Root : hull : Poly Mesh : Extrude Op** property editor is displayed. In this property editor, enter **-7** in the **Length** edit box and **0.123** in the **Inset Amount** edit box. Next, close the property editor; the extruded polygons are displayed in all viewports, as shown in Figure 2-29.

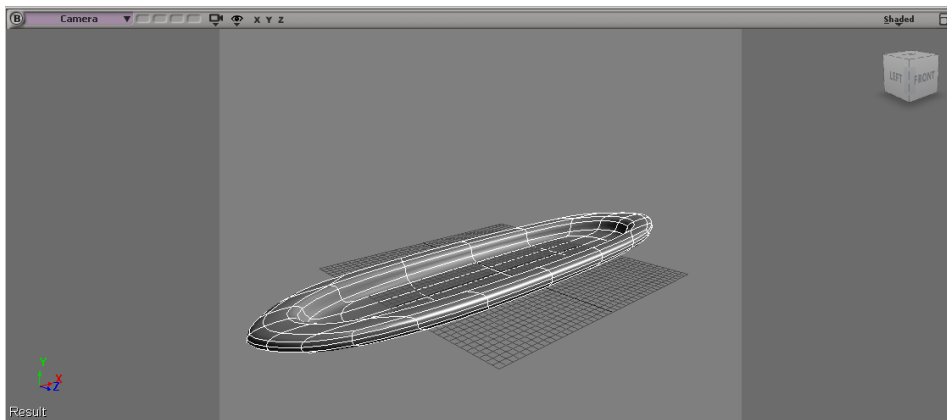


*Figure 2-29 The extruded polygons of hull displayed in all viewports*

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.

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

12. Press SPACEBAR; the **Object** mode is activated. Next, select *hull* 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 the Camera viewport, as shown in Figure 2-30.

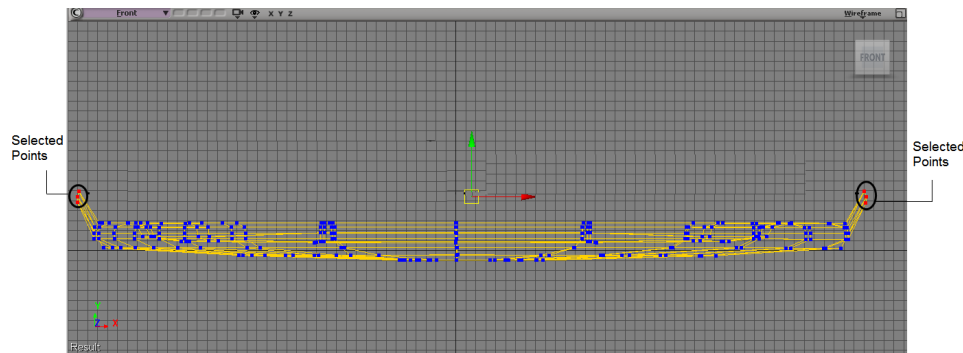


*Figure 2-30 The smooth hull displayed in the Camera viewport*

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.

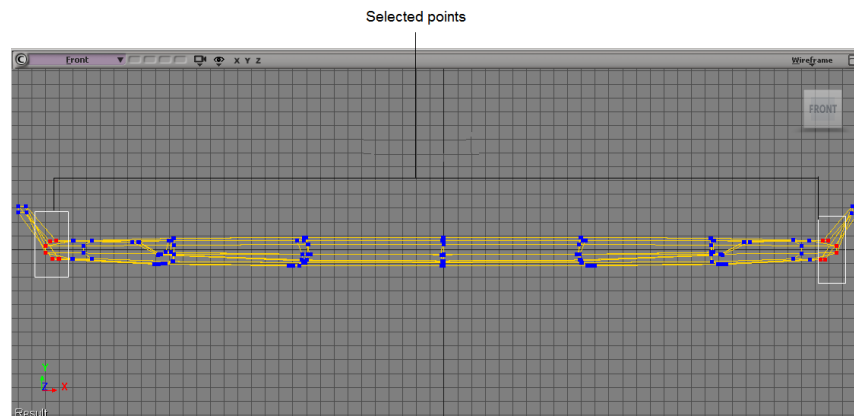
The **Smooth** deformer is used to remove spikes from the geometry. It is also used to smoothen the discontinuities in a shape and in rounding seams around extruded polygons.

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; the **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 the **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; the **Translate Tool** is activated. Next, move the selected points up along the Y-axis, as shown in Figure 2-33.



*Figure 2-32 Points selected in the Front viewport*

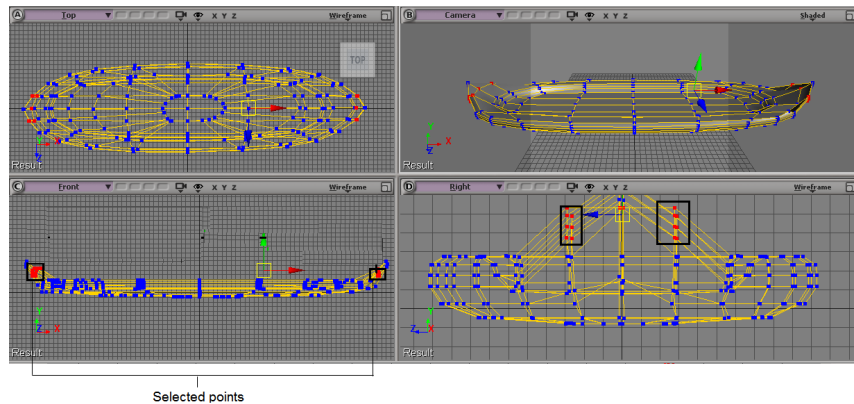


Figure 2-33 Moving the selected points up along the Y axis

## Creating Shelter of the House Boat

In this section, you will create the 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 **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 all 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 **-237.55** in the **Angle** edit box in 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**  
z: **1.5**

**r area**  
y: **-90**

**t area**  
x: **7.04**                      y: **8.55**                      z: **0.07**

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

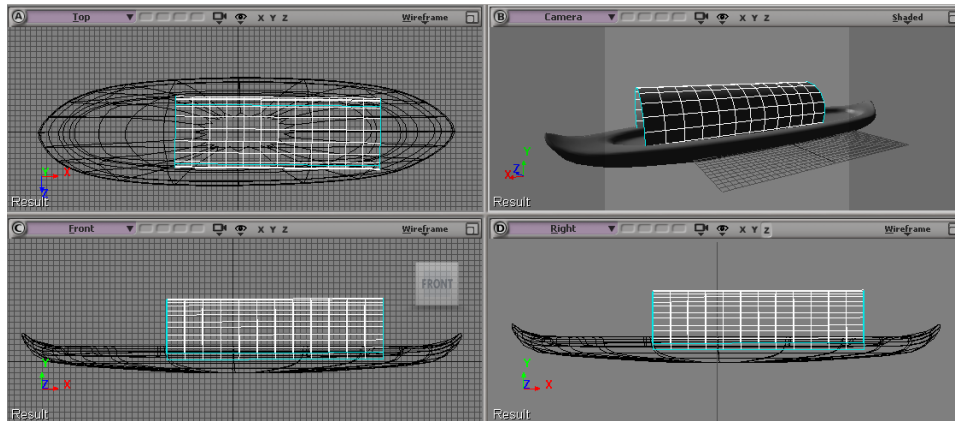


Figure 2-34 Aligning boatshelter in all viewports

## Creating the Roof of 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 all viewports.
3. Choose **Model > Modify > Deform > Fold** from the main toolbar; the **Fold** deformer is applied to *roof* and the **Scene\_Root : roof : Polygone Mesh : Fold Op** property editor is displayed. In this property editor, enter **-20** in the **Angle** edit box 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:

**r** area  
y: **-90**

**t** area  
x: **7.04**                      y: **8.6**

## 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 **Geometry** property set, enter **4**, **4**, and **4** in the **U**, **V**, and **Base** edit boxes of the **Subdivisions** area, respectively. Next, close the **Scene\_Root : cube# (General)** property editor; a cube with the name *floor* is created in all viewports.
3. Set the values of the following parameters in the **Transform** subpanel of the Main Command Panel:

**s** area  
y: **0.03**

**t** area  
x: **-14.07**                      y: **1.12**                      z: **0.5**

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

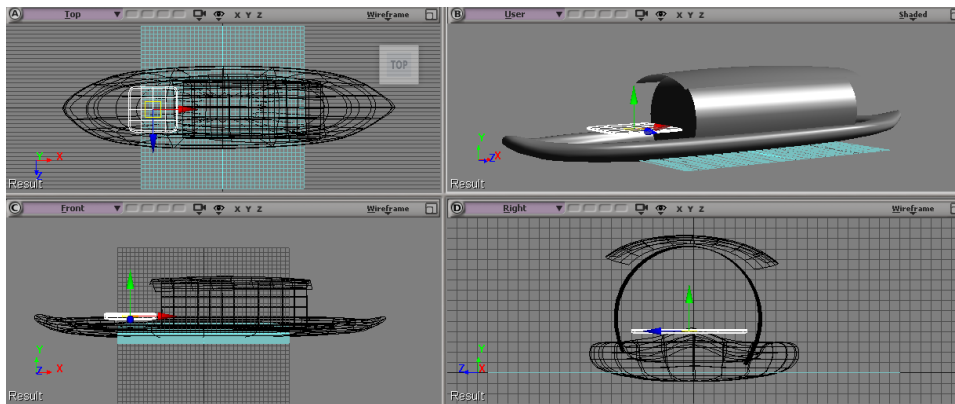


Figure 2-35 The floor displayed in all viewports

## 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 **9** 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 all viewports.
3. Set the values of the following parameters in the **Transform** subpanel of the Main Command Panel:

**t** area  
x: **-17.5**                      y: **4**                      z: **-3**

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

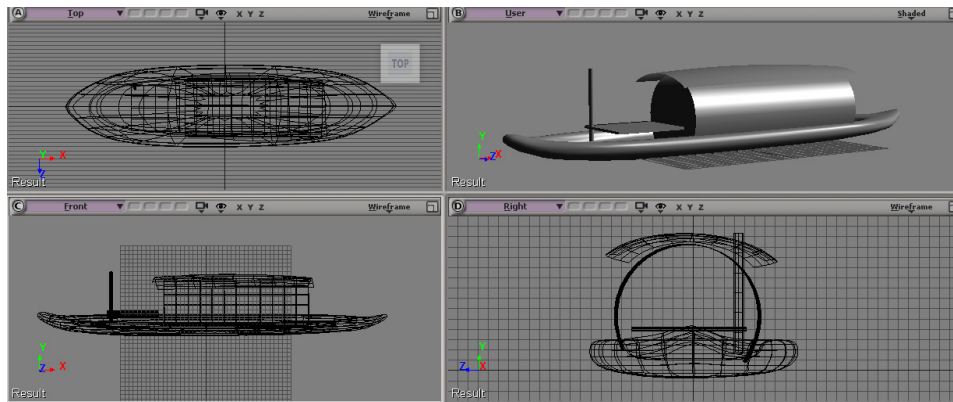


Figure 2-36 The pillar1 displayed in all viewports

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

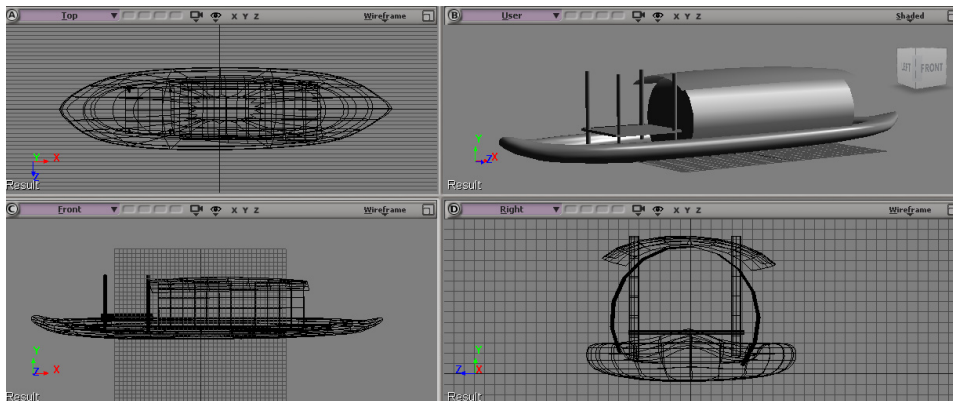


Figure 2-37 Aligning pillars in all viewports

## 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 **Geometry** property set, enter **4**, **3**, and **4** in the **U**, **V**, and **Base** edit boxes of the **Subdivisions** area, respectively. Next, close the **Scene\_Root : cube# (General)** property editor; a cube with the name *shedroofbase* is created in all viewports.

- 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: **-14.01**                      y: **8.5**                      z: **0.45**

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

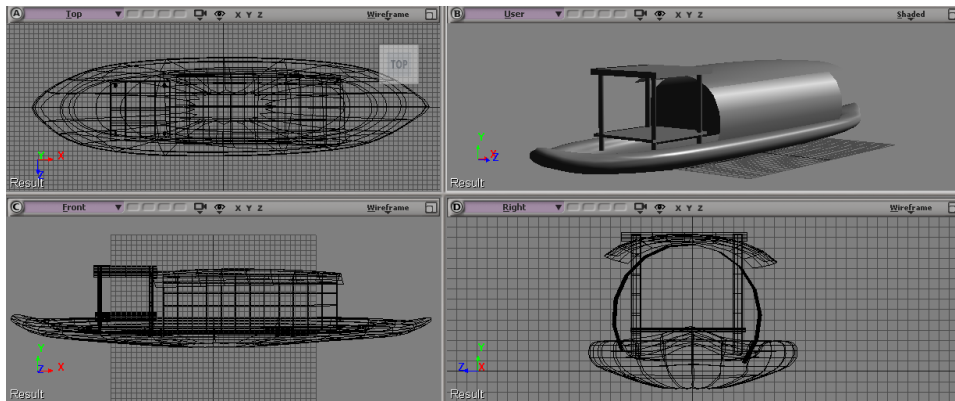


Figure 2-38 The *shedroofbase* displayed in all viewports

- 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.
- 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 all viewports.
- Choose **Model > Modify > Deform > Fold** from the main toolbar; the **Fold** deformer is applied to *shedroof* and the **Scene\_Root : shedroof : Polygone Mesh : Fold Op** property editor is displayed. In this property editor, select **Linear** from **Type** drop-down list of the **Direction** area, enter **-144.49** in the **Angle** edit box in the **Amplitude** area and then close the property editor; the shape of *shedroof* is changed.
- Set the values of the following parameters in the **Transform** subpanel of the Main Command Panel:

r area

y: **90**

t area

x: **-14**                      y: **12**                      y: **0.55**

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

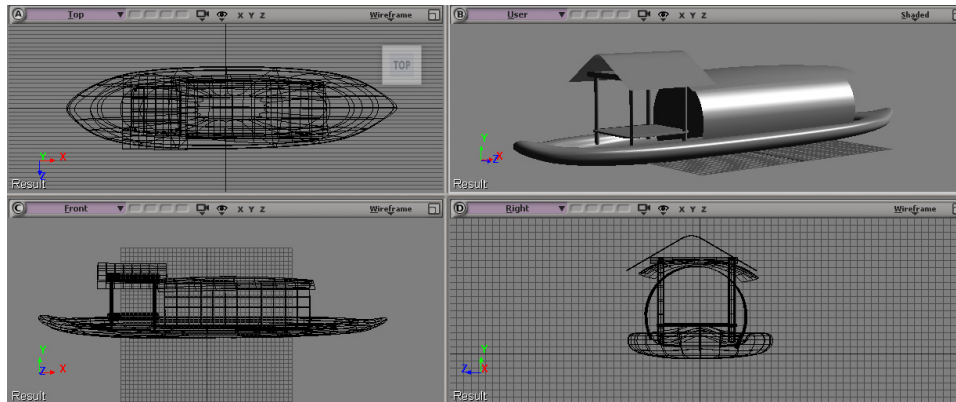


Figure 2-39 The shedroof displayed in all viewports

## 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\_2013\_rndr.zip* file from [www.cadcam.com](http://www.cadcam.com). The path of this file is as follows: *Textbooks > Animation and Visual Effects > Softimage > Autodesk Softimage 2013: 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 per your requirement. Choose **Render > Render > Preview** from the menu bar; a window is displayed with the rendered output. Now, you can save the rendered output by choosing the **Save Picture** button from this window.

## 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) <b>Bend</b>	(b) <b>Taper</b>
(c) <b>Smooth</b>	(d) None of these
2. Which of the following key combination 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) <b>Scene</b>	(b) <b>Polygon</b>
(c) <b>Group</b>	(d) <b>Explorer</b>
3. Which of the following shortcut keys is used to invoke the **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.

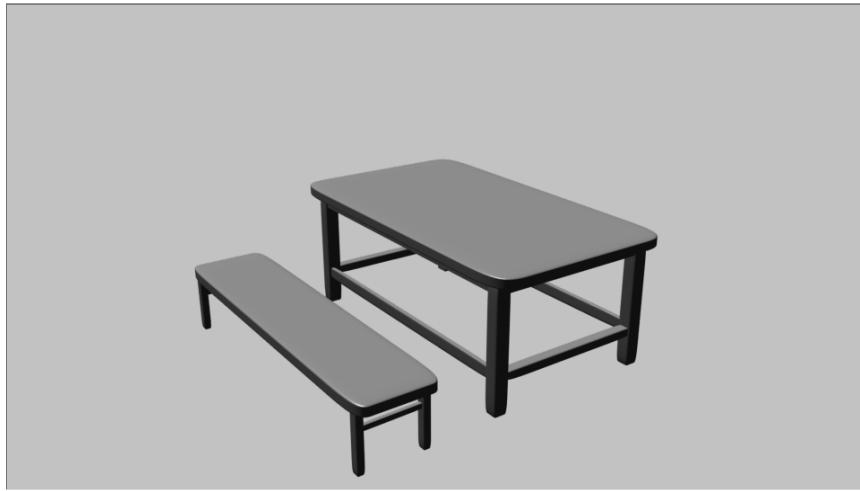
## Exercises

### Exercise 1

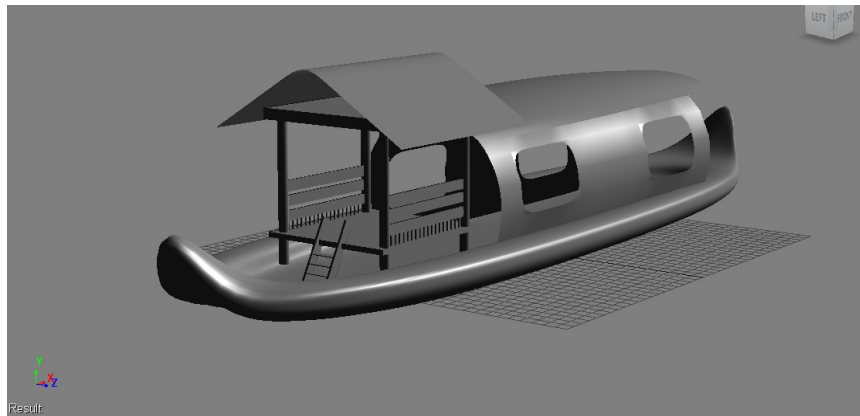
Create the models of a table and bench, as shown in Figure 2-40. You can view the final rendered image of these models by downloading the *c02\_softimage\_2013\_exr.zip* file from *www.cadcim.com*. The path of the file is as follows: *Textbooks > Animation and Visual Effects > Softimage > Autodesk Softimage 2013: A Tutorial Approach* **(Expected time: 35 min)**

### Exercise 2

Create the model of a houseboat, as shown in Figure 2-41. You can view the final rendered image of this model by downloading the *c02\_softimage\_2013\_exr.zip* file from *www.cadcim.com*. The path of file is mentioned in Exercise 1. **(Expected time: 40 min)**



*Figure 2-40 The models of the table and bench*



*Figure 2-41 The model of the houseboat*

### Exercise 3

Create the models of a chair and center table, as shown in Figure 2-42. You can view the final rendered image of these models by downloading the *c02\_softimage\_2013\_exr.zip* file from [www.cadcim.com](http://www.cadcim.com). The path of file is mentioned in Exercise 1. **(Expected time: 30 min)**



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

#### Exercise 4

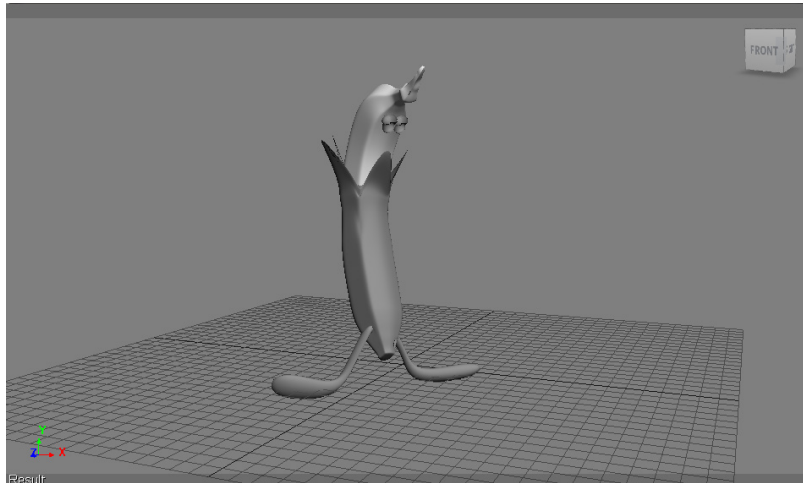
Create the model of a cartoon character, as shown in Figure 2-43. You can view the final rendered image of this model by downloading the *c02\_softimage\_2013\_exr.zip* file from [www.cadcim.com](http://www.cadcim.com). The path of file is mentioned in Exercise 1. (Expected time: 30 min)



*Figure 2-43 The model of a cartoon character*

## Exercise 5

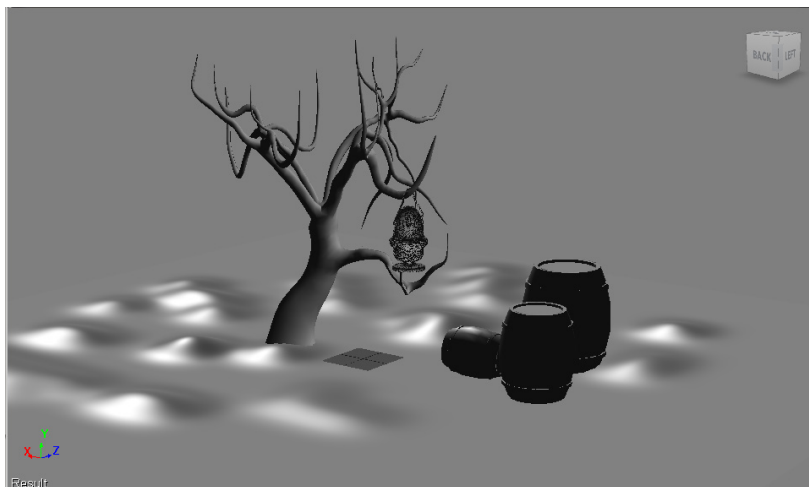
Create the model of a cartoon character, as shown in Figure 2-44. You can view the final rendered image of this model by downloading the *c02\_softimage\_2013\_exr.zip* file from [www.cadcim.com](http://www.cadcim.com). The path of file is mentioned in Exercise 1. **(Expected time: 35 min)**



*Figure 2-44 The model of a cartoon character*

## Exercise 6

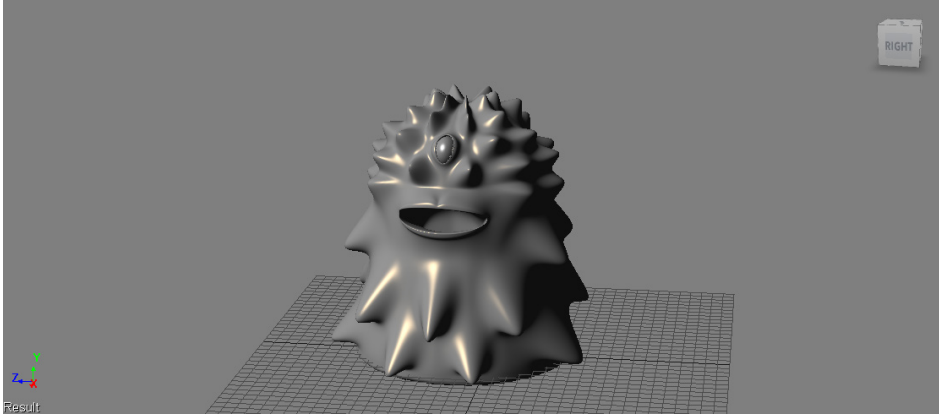
Create a 3D scene by using primitive tools, as shown in Figure 2-45. You can view the final rendered image of this model by downloading the *c02\_softimage\_2013\_exr.zip* file from [www.cadcim.com](http://www.cadcim.com). The path of file is mentioned in Exercise 1. **(Expected time: 40 min)**



*Figure 2-45 3D scene created using primitive tools*

## Exercise 7

Create the model of a cartoon character, as shown in Figure 2-46. You can view the final rendered image of this model by downloading the *c02\_softimage\_2013\_exr.zip* file from [www.cadcim.com](http://www.cadcim.com). The path of file is mentioned in Exercise 1. **(Expected time: 30 min)**



*Figure 2-46 The model of a cartoon character*

### Answers to Self-Evaluation Test

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