

Chapter 2

Creating Network of Tools

Learning Objectives

After completing this chapter, you will be able to:

- *Set the frame format for the composition*
- *Merge multiple images*
- *Load a footage*
- *Color-correct the footage*
- *Connect and disconnect connections between tools*
- *Save and render a composition*

INTRODUCTION

Fusion is an advanced node-based compositing application for visual effects artists. Compositing is an art of combining multiple images to create a single image. You can create complex effects simply by connecting various nodes together. In this chapter, you will learn to create, save, and render a composition. You will also learn how to load and merge images.

A Fusion composition consists of a network of nodes called tools. These tools are connected through pipes to form a composition. You can connect or disconnect pipes easily by using various methods which are discussed later in this chapter.

In this chapter, you will also learn about **Bins**, where you can store references, compositions, and large quantity of data across the network. You can also access tools from this folder.

TUTORIALS

Before you start the tutorials of this chapter, you need to download the *c02_fusion_7_tut.zip* file from <http://www.cadcim.com>. The path of the file is as follows:

Textbooks > Animation and Visual Effects > Fusion > Blackmagic Design Fusion 7 Studio: A Tutorial Approach

Next, you need to extract the contents of the zip file. To do so, navigate to the *Documents* folder and then create a new folder with the name *Fusion_7*. Next, extract the contents of the downloaded zip file to the *Fusion_7* folder.

Tutorial 1

In this tutorial, you will composite three images to create a single image. The final output of the composition is shown in Figure 2-1.

(Expected time: 25 min)



Figure 2-1 The final output of the composition

The following steps are required to complete this tutorial:

- a. Set the frame format.
- b. Download and import images.
- c. View the output of the tools in Display Views.
- d. Resize images.
- e. Color-correct the image.
- f. Merge images.
- g. Prepare the composition for rendering.
- h. Save and render the composition.

Setting the Frame Format

In this section, you will set the frame format for the composition.

- 1. Choose **File > New** from the menubar; a new composition is displayed in the Fusion interface, as shown in Figure 2-2.

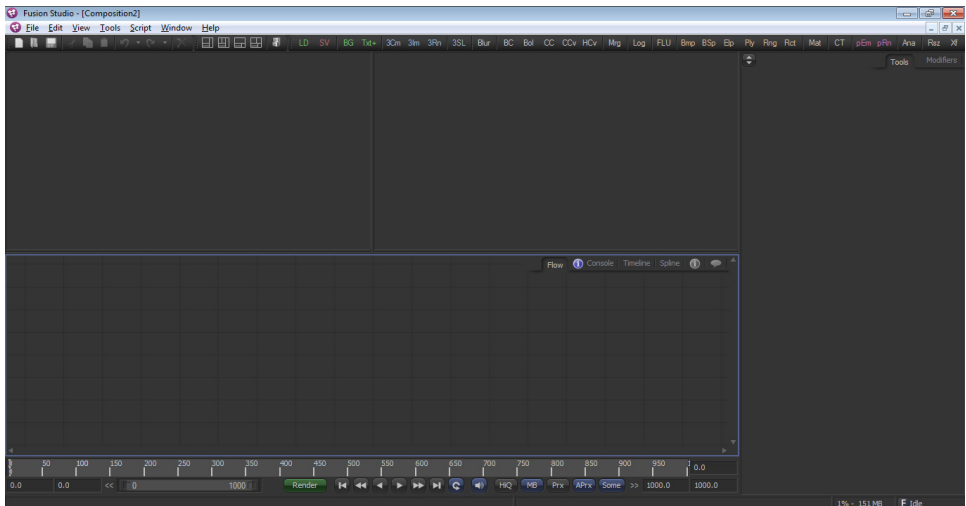


Figure 2-2 The new composition displayed

- 2. Choose **File > Preferences** from the menubar; the **Preferences** dialog box is displayed, as shown in Figure 2-3.
- 3. In this dialog box, select **Frame Format** from the **Composition#** preferences tree; various frame format settings are displayed in the right of the **Preferences** dialog box. Next, select the **NTSC (Square Pixel)** option from the **Default format** drop-down list and then choose the **Save** button to save the changes made.



Note

*If you generally work in a particular frame format, you can set it in the **Global and new comp defaults** preferences tree of the **Preferences** dialog box. As a result, the next time when you create a new composition, Fusion will inherit the preference settings for the new composition from the global preferences.*

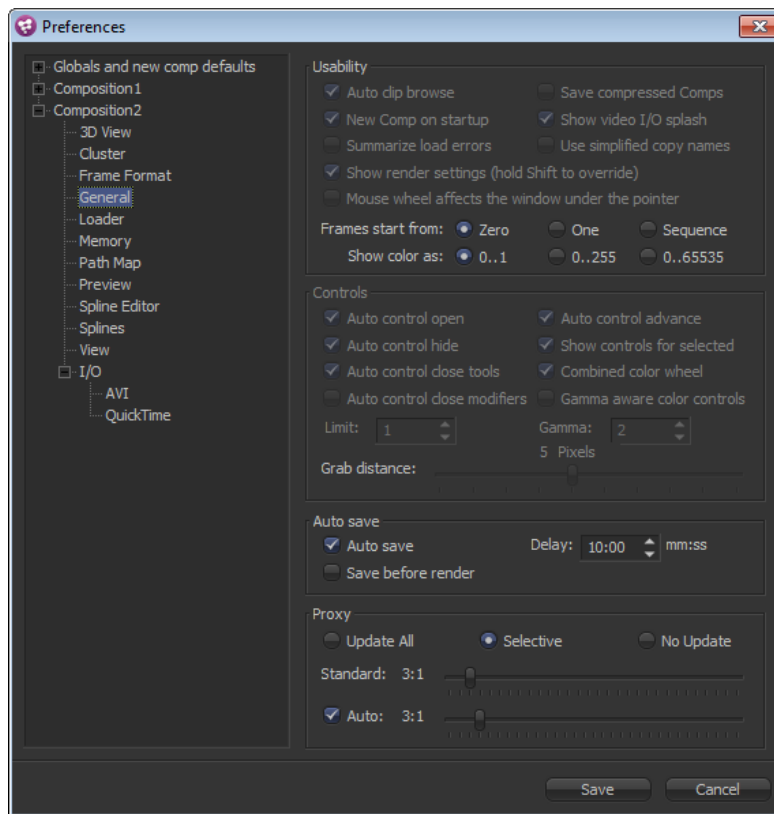


Figure 2-3 The Preferences dialog box

The **Frame Format** option allows you to set the various aspects (width, height, frame rate, aspect ratio) of the frame format settings for the composition. The footage may be NTSC, PAL, HD, or even Multimedia.

4. In the Time Ruler area, enter **0** in the **Global End Time** edit box.

The Time Ruler area controls the playback as well as sets the composition options like current frame, quality, proxy level and motion blur.

Downloading and Importing the Images

In this section, you will download the images and import them to the composition.

1. Open the link <http://www.freeimages.com/photo/1252649>; an image is displayed.
2. Download the image to `/Documents/Fusion_7/c02_tut/c02_tut_01/Media_Files` and save it with the name `sunset.jpg`.



Note

Footage Courtesy: **Colin Broug** (<http://www.freeimages.com/profile/ColinBroug>).

3. Choose the **LD** button from the toolbar; the **Open File** dialog box is displayed, refer to Figure 2-4. Next, choose **Documents > Fusion_7 > c02_tut > c02_tut_01 > Media_Files > sunset.jpg** from the dialog box and then choose the **Open** button; the **Loader1** tool tile is inserted in the **Flow** area, refer to Figure 2-5.

The **Loader** tool is used to select and load the footage from hard-drive or network storage.

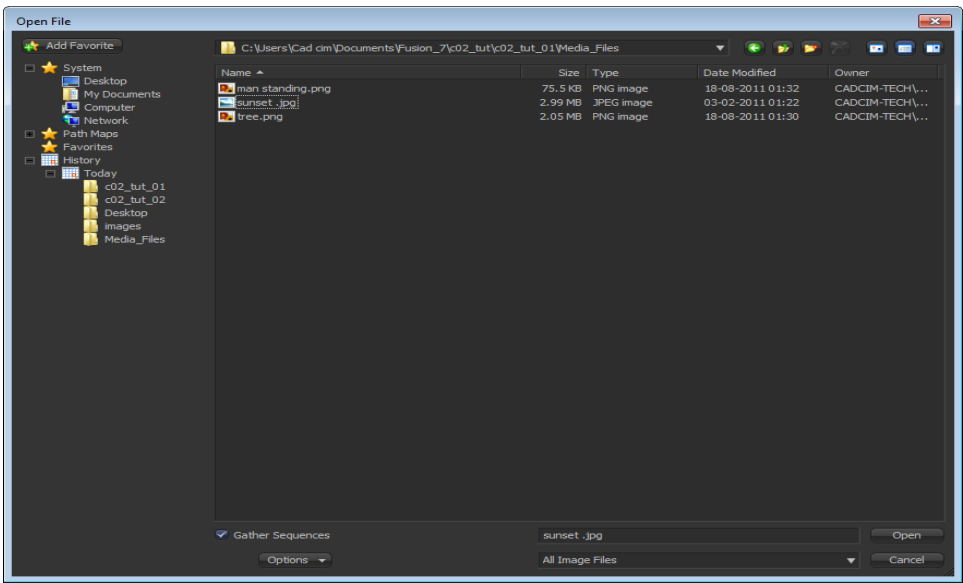


Figure 2-4 The **Open File** dialog box

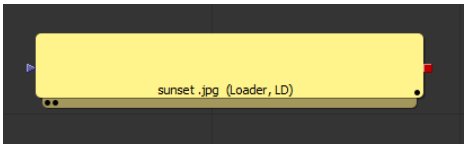


Figure 2-5 The **Loader 1** tool tile inserted in the **Flow** area




Note

You can add the tools in the **Flow** area using one of the following methods:

1. Using the **Tool** menu from the menubar.
2. Right click in the **Flow** area; a shortcut menu is displayed. Choose **Add Tool** from the shortcut menu to add the tools.
3. Press **CTRL+SPACEBAR** to add the tools in the **Flow** area.
4. You can access the tools from toolbar.

Viewing the Output of the Tools in the Display Views

In this section, you will view the output of the tools in the Display Views.

1. Make sure the **Loader1** tool tile is selected in the **Flow** area and then press 1; the output of the **Loader1** tool is displayed in the left Display View. Choose the **Fit** button from the left Display View toolbar to fit the image into the left Display View. 



Note

You can create additional Display Views to view the output of the tools. To do so, choose **Window > New Image View** from the menubar; the **View1** window is displayed, as shown in Figure 2-6. Now, to display the footage in the new Display View, press 3 or drag and drop the **Loader1** tool tile in the **View1** window.



Tip: 1. You can also drag and drop the loader tools into the Display Views to view the output of the tools. Alternatively, you can click on the black dots available at the bottom left corner of the tool tile to display the footage in the left, right, and additional views that you have created, refer to Figure 2-5.

2. If you choose the third dot in the tool tile, Fusion will display the output in full screen mode. Press **Esc** to exit this mode.

2. Click on the empty space in the **Flow** area to deselect the **Loader1** tool tile. Import *tree.png* from the location specified in step 3; the **Loader2** tool tile is inserted in the **Flow** area, as shown in Figure 2-7.
3. Press 2; the output of the **Loader2** tool is displayed in the right Display View. Next, choose the **Fit** button from the right Display View toolbar to fit the image in the right Display View.

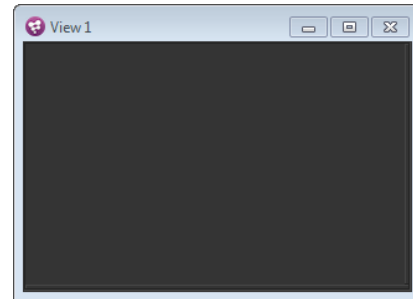


Figure 2-6 The View 1 window

4. In the control window of the **Loader2** tool, choose the **Import** tab and then select the **Post-Multiply by Alpha** check box, refer to Figure 2-8; the transparency is displayed in the Display View.

When you select the **Post-Multiply by Alpha** check box, the color values of the pixels are multiplied by their alpha values, thereby producing clear transparency.

Resizing the Images

In this section, you will resize the images.

1. Select the **Loader1** tool tile from the **Flow** area and then choose the **Rsz** button from the toolbar; the **Resize1** tool tile is inserted in the **Flow** area and a connection between **Loader1** and **Resize1** tools is established. 

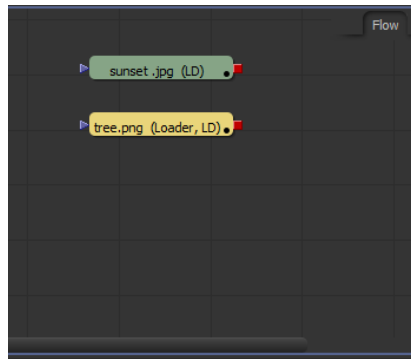


Figure 2-7 The **Loader2** tool tile inserted in the **Flow** area

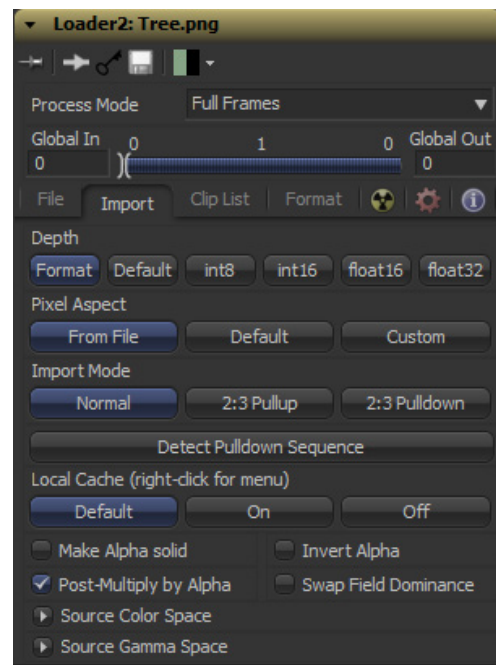


Figure 2-8 Choosing the **Import** tab from the **Loader2** tool control window

The **Resize1** tool is used to increase or decrease the resolution of an image.



Note

To break the connection between two tools, click on the connecting arrow head and drop it into an empty space of the **Flow** area.

2. Select the **Loader2** tool tile from the **Flow** area and then choose the **Rsz** button from the toolbar; the **Resize2** tool tile is inserted in the **Flow** area and a connection between the **Loader2** and **Resize2** tools is established.
3. Set the values of the **Width** and **Height** parameters in the **Resize1** and **Resize2** tool control windows to **640** and **480**, respectively.

Color-Correcting the Image

In this section, you will color-correct the tree image.

1. Select the **Resize2** tool tile from the **Flow** area and then choose **Tools > Color > Color Corrector** from the menubar; the **ColorCorrector1** tool is inserted in the **Flow** area and a connection between the **ColorCorrector1** and **Resize2** tools is established.

The **Color Corrector** tool is used to set the color of an image. It helps to manipulate the colors with the help of histograms, levels, curves, and color compression functions.

2. Make sure the **ColorCorrector1** tool tile is selected in the **Flow** area and then press 2; the output of the **ColorCorrector1** tool is displayed in the right Display View.

3. In the control window of the **ColorCorrector1** tool, set the values of the parameters as follows:

Master - RGB - Gain: **0.18** Master - RGB - Brightness: **-0.64**

4. Choose the **Suppress** button in the **ColorCorrector1** tool control window; the Suppress color wheel is displayed. In this color wheel, move the circles corresponding to yellow and green colors to the center of the color wheel, refer to Figure 2-9.

The **Suppress** button is used to suppress the individual colors on an image.

Merging the Images

In this section, you will merge the images.

1. Drag the red output node of the **ColorCorrector1** tool tile to the red output node of the **Resize1** tool tile; the **Merge1** tool tile is inserted in the **Flow** area and a connection between the **Resize1**, **ColorCorrector1**, and **Merge1** tools is established.

The **Merge1** tool is used to combine background and foreground images.



Note

*If you click on the red output node of a tool and then drag the cursor to the red output node of another tool, the **Merge** tool will appear automatically and pipes will be drawn between the tools.*

2. Press 2; the output of the **Merge1** tool is displayed in the right Display View.
3. In the **Merge1** tool control window, enter **1.49** in the **Size** edit box.
4. Click on the empty space in the **Flow** area to deselect the selected tool tile, if any. Choose the **LD** button from the toolbar; the **Open File** dialog box is displayed, refer to Figure 2-4. In this dialog box, choose **Documents > Fusion_7 > c02_tut > c02_tut_01 > Media_Files > man standing.png**; the **Loader3** tool tile is inserted in the **Flow** area.
5. Press 1; the output of the **Loader3** tool is displayed in the left Display View.
6. In the control window of the **Loader3** tool, choose the **Import** tab and then select the **Post-Multiply by Alpha** check box.
7. Make sure the **Loader3** tool tile is selected in the **Flow** area. Next, choose the **Rsz** button from the toolbar; the **Resize3** tool tile is inserted in the **Flow** area and a connection between the **Loader3** and **Resize3** tools is established.

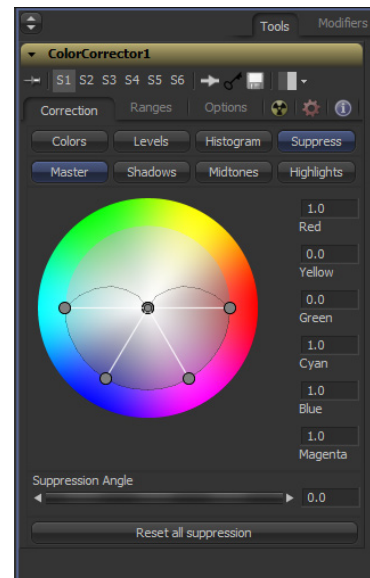


Figure 2-9 The Suppress color wheel in the control window

8. Click on the empty space in the **Flow** area to deselect the selected tool tile, if any. Choose the **Mrg** button from the toolbar; the **Merge2** tool tile is inserted in the **Flow** area. Drag the red output node of the **Merge1** tool to the orange node of the **Merge2** tool to connect these tools. Similarly, connect the red output node of the **Resize3** tool to the green node of the **Merge2** tool. Next, press 2; the output of the **Merge2** tool is displayed in the right Display View.

9. In the control window of the **Merge2** tool, set the values of the parameters as follows:

Center

X: **0.54**

Y: **0.26**

Size: **0.21**

10. Make sure the **Merge2** tool tile is selected in the **Flow** area and then choose the **CC** button from the toolbar; the **ColorCorrector2** tool tile is inserted in the **Flow** area and a connection between the **Merge2** and **ColorCorrector2** tools is established. Next, press 2; the output of the **ColorCorrector2** tool is displayed in the right Display View.

11. In the **ColorCorrector2** tool control window, set the values of the parameters as follows:

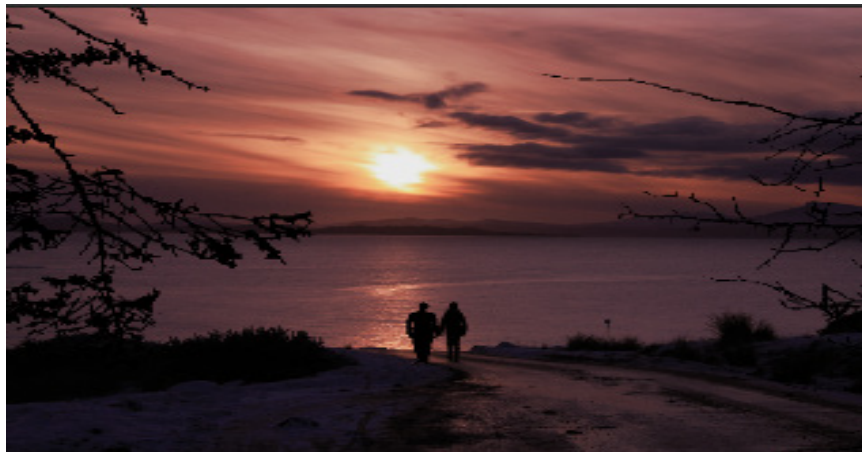
Tint: **0.11**

Strength: **0.28**

Master - RGB - Gain: **0.92**

The **Tint** option is used to make the original color lighter and the **Strength** option controls the tint applied to the selected range of colors.

After entering the values, the output of the **ColorCorrector2** tool is displayed in the right Display View, as shown in Figure 2-10.



*Figure 2-10 The output of the **ColorCorrector2** tool*

12. Click on the empty space of the **Flow** area to deselect the selected tool tile, if any. Choose **Tools > Blur > Blur** from the toolbar; the **Blur1** tool tile is inserted in the **Flow** area.

The **Blur** tool is used to blur the input images.

13. Drag the red output node of the **ColorCorrector2** tool tile to the orange input node of the **Blur1** tool tile; a pipe is drawn between the **ColorCorrector2** and **Blur1** tools to represent the connection between them.
14. Press 1; the output of the **Blur1** tool is displayed in the left Display View.
15. In the control window of the **Blur1** tool, enter **1.05** in the **Blur Size** edit box.

The **Blur Size** option controls the amount of blur applied to the image.

Preparing the Composition for Rendering

Next, you will prepare the composition for rendering.

1. Make sure the **Blur1** tool tile is selected in the **Flow** area. Choose the **SV** button from the toolbar; the **Save File** dialog box is displayed, as shown in Figure 2-11.

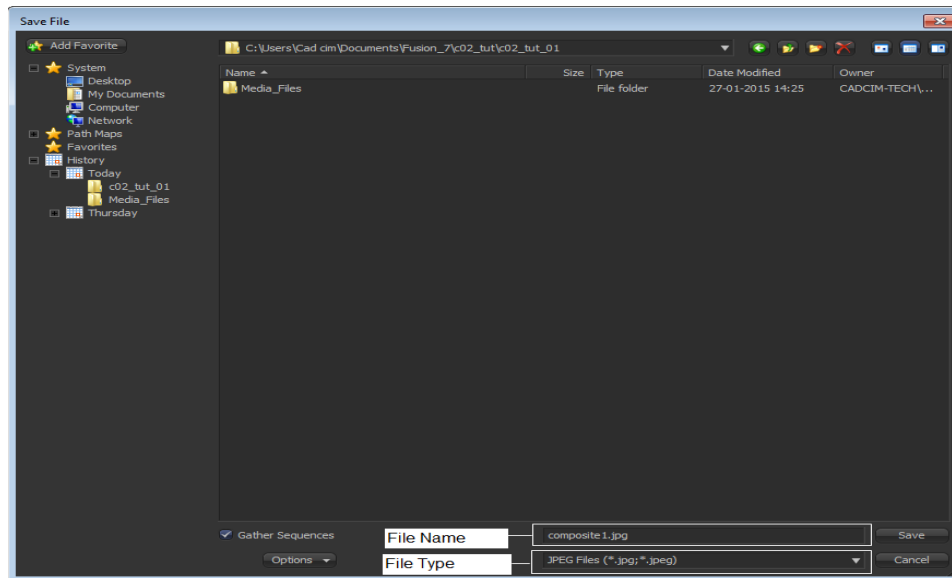


Figure 2-11 The **Save File** dialog box

2. Choose **Documents > Fusion_7 > c02_tut > c02_tut_01** from the dialog box. Select **JPEG Files (*.jpg; *.jpeg)** from the File Type drop-down list. Next, enter **composite.jpg** in the File Name edit box. Next, choose the **Save** button.
3. Choose the **Format** tab in the **Saver1** tool control window and move the **Quality** slider to **100**.

Saving and Rendering the Composition

In this section, you will save and render the composition. You can also view the final render of the composition by downloading the file *c02_fusion_7_rndr.zip* from <http://www.cadcim.com>. The path of the file is given at the beginning of the chapter.

1. Choose **File > Save** from the menubar; the **Save File** dialog box will be displayed. In this dialog box, choose **Documents > Fusion_7 > c02_tut > c02_tut_01** and then enter **c02tut1** in the File Name edit box. Next, choose the **Save** button to close the dialog box and save the composition.
2. Choose the **Render** button from the Time Ruler available below the **Flow** area, refer to Figure 2-12; the **Render Settings** dialog box is displayed, as shown in Figure 2-13. Next, choose the **Start Render** button; the rendering process starts. On completion of rendering, the **c02tut1.comp** message box is displayed, as shown in Figure 2-14. Next, choose the **OK** button to close the message box.

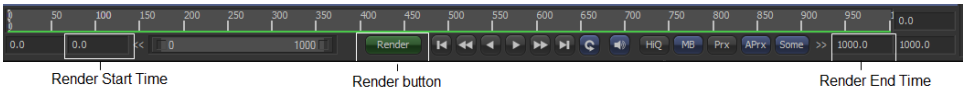


Figure 2-12 The Time Ruler showing the **Render** button

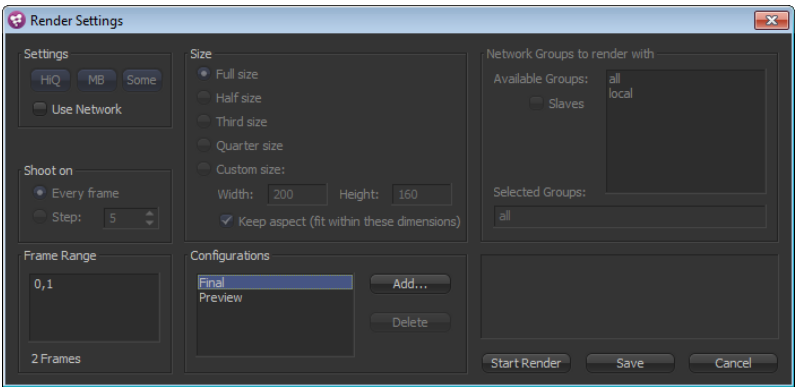


Figure 2-13 The **Render Settings** dialog box

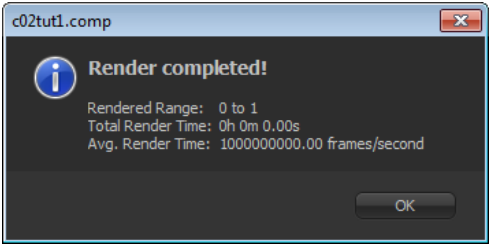


Figure 2-14 The **c02tut1.comp** message box informing about the completion of the rendering process

3. Navigate to `/Documents/Fusion_7/c02_tut/c02_tut_01` and double-click on the `composite0000.jpg` file to view the final rendered output.

Tutorial 2

In this tutorial, you will create a composition and then render it. The final output of the composition is shown in Figure 2-15. (Expected time: 20 min)

The following steps are required to complete this tutorial:

- a. Create a new composition.
- b. Load the footage.
- c. Color-correct the footage.
- d. Resize the footage.
- e. Prepare the composition for rendering.
- f. Save and Render the composition.



Figure 2-15 The final output of the composition

Creating a New Composition

In this section, you will create a new composition.

1. Choose **File > New** from the menubar; a new composition is displayed in the Fusion screen, refer to Figure 2-2.

Before you start working on the composition, you need to set the frame format, frame rate, and other parameters of the composition.

2. Choose **File > Preferences** from the menubar; the **Preferences** dialog box is displayed, refer to Figure 2-3.

3. In this dialog box, select **Frame Format** from the **Composition#** preferences tree; various frame format settings are displayed in the right of the **Preferences** dialog box. Next, select the **Pal / SECAM (D1)** option from the **Default format** drop-down list and then choose the **Save** button to save the changes made.

Loading the Footage

Image or image sequences are loaded into Fusion by using the **Loader** tool. In this section, you will load the footage in the **Flow** area.

1. Choose the **LD** button from the toolbar; the **Loader1** tool tile is inserted in the **Flow** area and the **Open File** dialog box is displayed.
2. In this dialog box, choose **Documents > Fusion_7 > c02_tut > c02_tut_02 > Media_Files > beach clip.mov**. Next, choose the **Open** button.
3. Make sure the **Loader1** tool tile is selected in the **Flow** area and then press 1; the output of the **Loader1** tool is displayed in the left Display View. Similarly, press 2 to display the **Loader1** tool in the right Display View, refer to Figure 2-16.

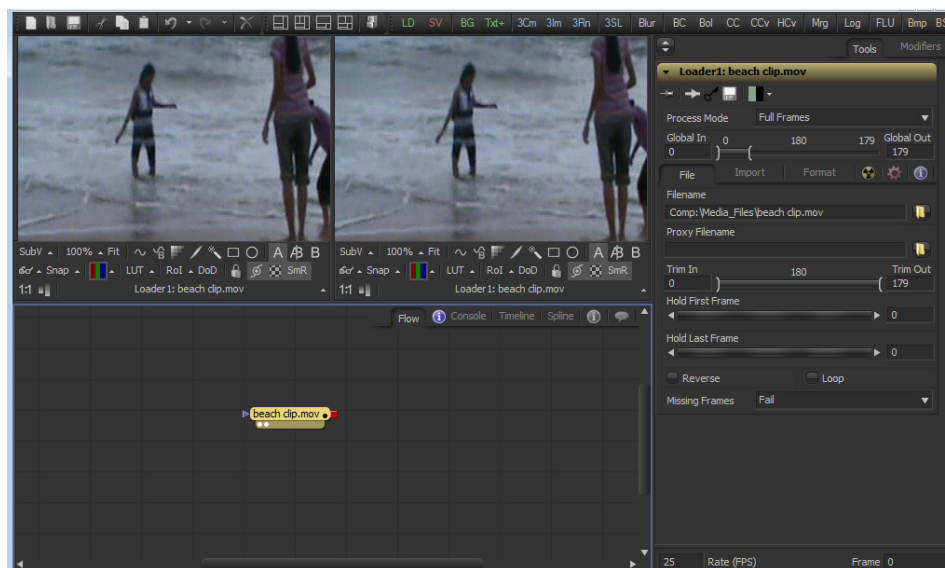


Figure 2-16 The output of the **Loader 1** tool displayed in left and Right Display Views

Color-Correcting the Footage

In this section, you will color-correct the footage by using the **Color Corrector** tool.

1. Click on the empty space in the **Flow** area to deselect the selected tool tile, if any. Choose the **Fit** button from the left **Display View** toolbar to fit the image into the left Display View.
2. Choose **Tools > Color > Color Corrector** from the menubar; the **ColorCorrector1** tool tile is inserted in the **Flow** area and its properties are displayed in the control window on the right of the interface, refer to Figure 2-17.

3. Drag the red output node of the **Loader1** tool tile to the orange input node of the **ColorCorrector1** tool tile; a pipe is drawn between the **Loader1** and **ColorCorrector1** tools to make a connection between them.

4. Select the **ColorCorrector1** tool tile from the **Flow** area and press 2; the output of the **ColorCorrector1** tool is displayed in the right Display View. Next, choose the **Fit** button from the right **Display View** toolbar to fit the image into the right Display View.

5. In the control window of the **ColorCorrector1** tool, set the values of the parameters as follows:

Tint: **0.33**

Strength: **0.072**

Master - RGB - Contrast: **1.05**

Master - RGB - Gain: **1.15**

Notice the change in the colors of the footage in the right Display View.

Resizing the Footage

In this section, you will resize the footage by using the **Resize** tool.

1. Make sure the **ColorCorrector1** tool tile is selected in the **Flow** area and then choose the **Bins** button from the toolbar; the **Bins** window is displayed. Expand **Library on localhost** in the left pane of the **Bins** window by clicking on the plus sign placed before it.
2. Expand the **Tools** node and then select the **Transform** node from the left pane in the **Bins** window; the tools under the **Transform** category are displayed in the right pane. Double-click on the **Resize** tool in the **Bins** window; the **Resize1** tool is connected to the **ColorCorrector1** tool and its properties are displayed in the control window. Next, close the **Bins** window.



Note

You can also drag and drop tools from the **Bins** window to the **Flow** area and then make connections between the tools based on your requirement.

3. Press 2; the output of the **Resize1** tool is displayed in the right Display View.
4. In the control window of the **Resize1** tool, set the values of the parameters as follows:

Width: **625**

Height: **391**

After entering the values in the **Resize1** tool control window, the output of the tool is displayed, refer to Figure 2-18.

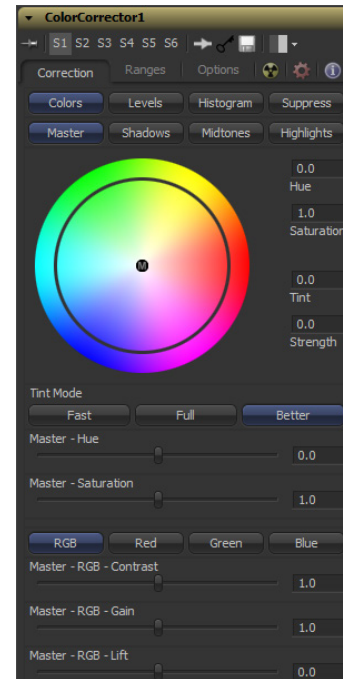


Figure 2-17 The **ColorCorrector1** tool control window

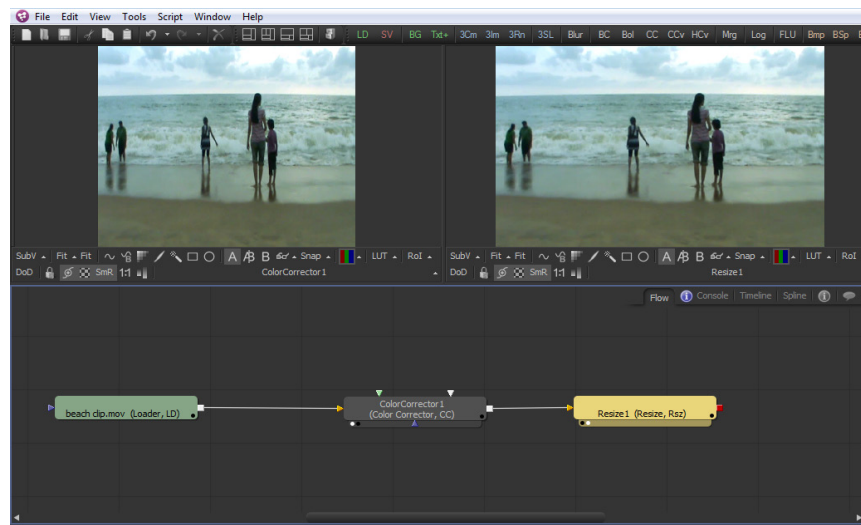


Figure 2-18 The **Resize1** tool in the **Flow** area and its output in the right **Display View**

Preparing the Composition for Rendering

In this section, you will prepare the composition for rendering.

1. Make sure the **Resize1** tool tile is selected in the **Flow** area and then right-click on it; a shortcut menu is displayed. Choose **Insert Tool > I/O > Saver** from the shortcut menu; the **Saver1** tool tile is inserted in the **Flow** area and the **Save File** dialog box is displayed.
2. Choose **Documents > Fusion_7 > c02_tut > c02_tut_02** from the dialog box. Select **Quick Time Movies (*.mov; *.qt; *.gp; *.mp4)** from the File Type drop-down list. Next, enter **beach clip** in the File Name edit box. Next, choose the **Save** button.
3. Choose the **Format** tab in the **Saver: beach clip.mov** tool control window and select **Sorenson Video 3** or **H.264** from the **Compression** drop-down list. Next, move the **Quality** slider to **100**, refer to Figure 2-19.

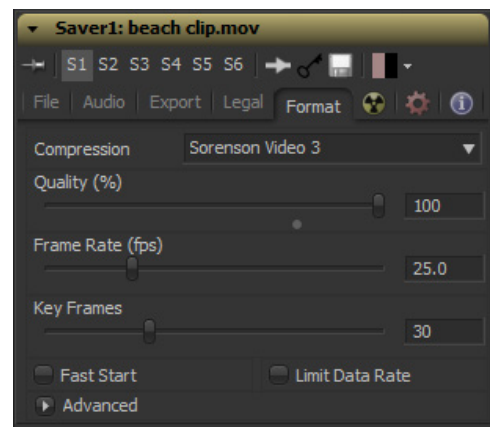


Figure 2-19 The **Saver1** tool control window

Saving and Rendering the Composition

In this section, you will save and render the composition. You can also view the final render of the composition by downloading the file *c02_fusion_7_rndr.zip* from <http://www.cadcim.com>. The path of the file is given at the beginning of the chapter.

1. Choose **File > Save** from the menubar; the **Save File** dialog box is displayed. In this dialog box, choose **Documents > Fusion_7 > c02_tut > c02_tut_02** and then enter **c02tut2** in the File Name edit box. Next, choose the **Save** button to close the dialog box and save the composition.

2. Choose **File > Start Render** from the menubar; the **Render Settings** dialog box is displayed, as shown in Figure 2-20.

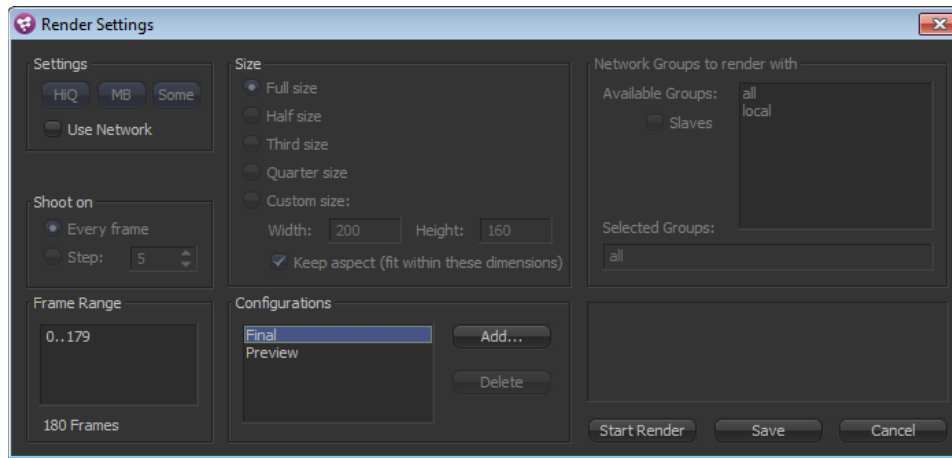


Figure 2-20 The Render Settings dialog box

3. Choose the **Start Render** button; the rendering process is started. On completion of rendering, a message box is displayed with the information about the frame range rendered and the time taken to render the frame range, as shown in Figure 2-21. Next, choose the **OK** button to close the message box.

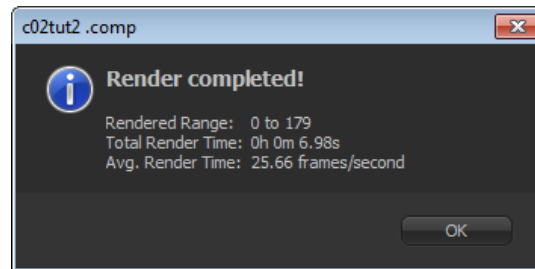


Figure 2-21 The c02tut2.comp message box informing about the completion of the rendering process

4. Navigate to /Documents/Fusion_7/c02_tut/c02_tut_02 and double-click on the *beach clip.mov* file to view the final rendered output, refer to Figure 2-15.



Tip: You can also open the **Render Settings** dialog box by pressing **F12** or by choosing the green **Render** button available in the Time Ruler.

Self-Evaluation Test

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

- Which of the following combination of shortcut keys is used to access the tools?
 - CTRL+H
 - CTRL+SPACE
 - CTRL+G
 - CTRL+Z
- The _____ and _____ numeric keys are used to view the output of the tools in the primary Display Views.
- The _____ button in the toolbar is used to load an image or video sequence.
- The _____ button in the toolbar is used to add the **Color Corrector** tool to the **Flow** area.
- The _____ is an art of combining multiple images to create a new image.
- The _____ window is used to store references, composition, and various other data across the network.
- The **Merge** tool is used to combine background and foreground images together. (T/F)

Review Questions

Answer the following questions:

- Which of the following colors is used to represent the output node of a tool?
 - Green
 - Orange
 - Red
 - None of these
- The Suppress parameters in the **Color Corrector** tool control window are used to _____ the color of an image.
- The **Merge** tool is represented as _____ button on the toolbar.
- A Fusion composition consists of a network of nodes called tools. These tools are connected through _____.
- The _____ button in the Time Ruler is used to start the rendering process.
- The _____ shortcut key is used to lock the Display View.
- On pressing the F12 key, the **Render Settings** dialog box is displayed. (T/F)
- You can save the composition by using the CTRL + Z keys. (T/F)

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Answers to Self-Evaluation Test

1. b, **2.** 1, 2, **3.** LD, **4.** CC, **5.** compositing, **6.** Bins, **7.** T