

# Chapter 2

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## Creating Network of Tools

### Learning Objectives

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

- *Load a footage*
- *View the output of a tool*
- *Set the frame format for the composition*
- *Color-correct the footage*
- *Connect and disconnect pipes between tools*
- *Merge multiple images*
- *Save and render a composition*

## INTRODUCTION

Fusion is a node-based compositing application. Compositing is an art of combining multiple images to create a single image. In this chapter, you will learn to create, save, and render a composition. You will also learn how to load and merge the 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 the **Bins** folder 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\_6.2\_tut.zip* file from <http://www.cadcim.com>. The path of the file is as follows:

*Textbooks > Animation and Visual Effects > Fusion > The eyeon Fusion 6.2 : 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\_Projects*. Next, extract the contents of the downloaded zip file to the *Fusion\_Projects* folder.

### Tutorial 1

In this tutorial, you will create a composition and then render it. The final output of the composition is shown in Figure 2-1. **(Expected time: 20 min)**



*Figure 2-1 The final output of the composition*

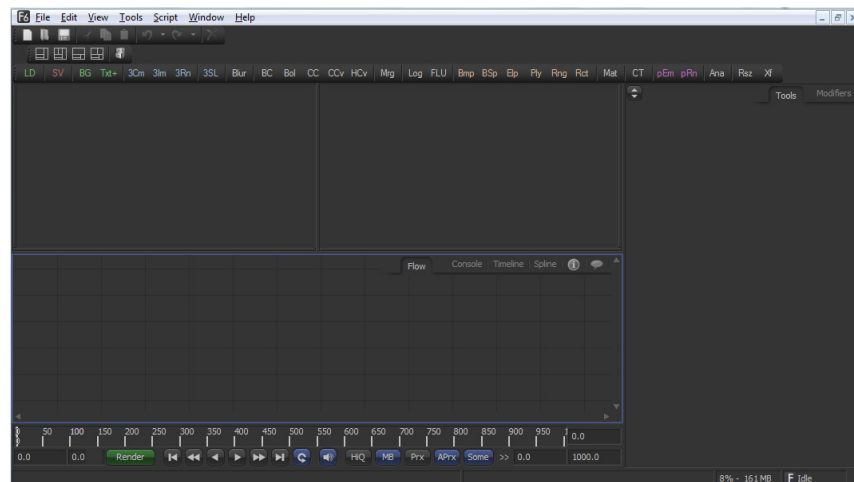
The following steps are required to complete this tutorial:

- a. Create a new composition.
- b. Load the footage.
- c. View the output of the tools in Display Views.
- d. Color-correct the footage.
- e. Resize the footage.
- f. Prepare the composition for rendering.
- g. Render 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, as shown in Figure 2-2.



*Figure 2-2 The new composition displayed in the Fusion screen*

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, 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 on 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 and close the dialog box.



### Note

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

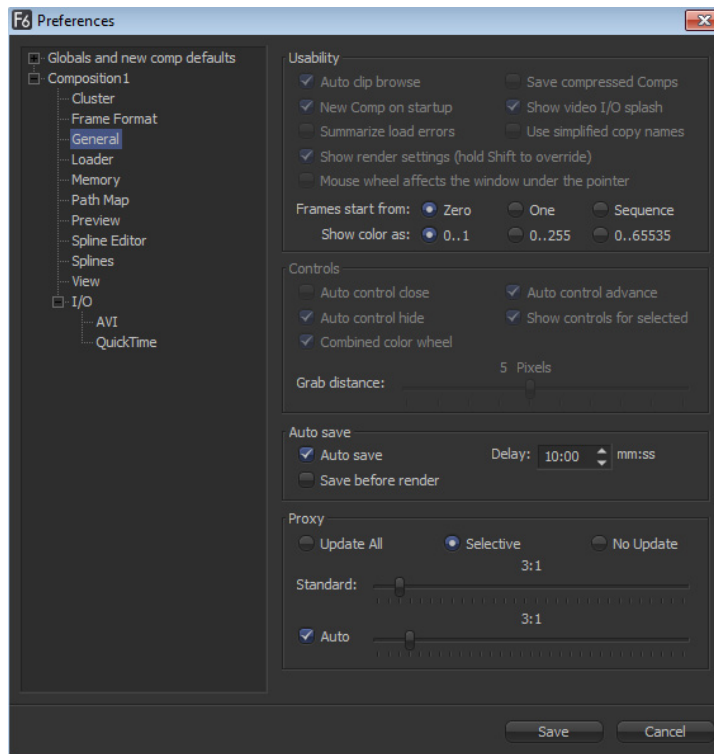


Figure 2-3 The *Preferences* dialog box

## 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 is inserted in the **Flow** area and the **Open File** dialog box is displayed, as shown in Figure 2-4.
2. In this dialog box, choose **Documents > Fusion\_Projects > c02\_tut > c02\_tut\_01 > Media\_Files > beach\_clip.mov**. Next, choose the **Open** button; the **Loader1** tool is inserted in the **Flow** area, as shown in Figure 2-5.

## 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 press 1; the footage is displayed in the left Display View. Similarly, press 2 to display the footage in the right Display View.



### Note

You can create additional Display Views to view the output of the tools. To do so, choose **Window > New 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.

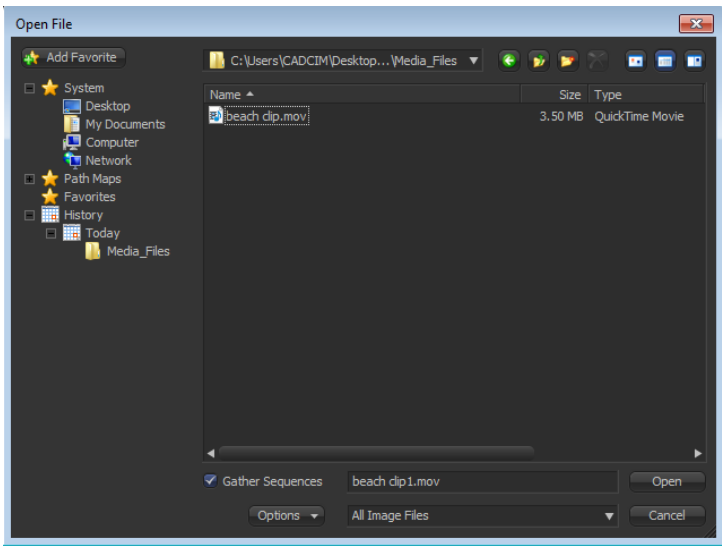


Figure 2-4 The *Open File* dialog box

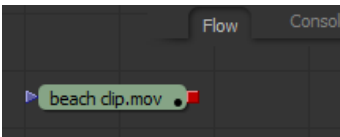


Figure 2-5 The *Loader1* tool inserted in the *Flow* area

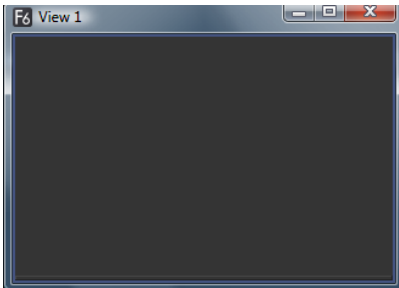


Figure 2-6 The *View1* window



**Tip:** You can also drag and drop the **Loader** tools into the **Display Views** to view the output of the tools. Alternatively, you can click 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 2-7.



**Note**  
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.

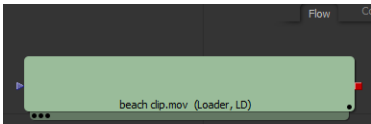


Figure 2-7 The black dots displayed on the tool tile

## Color-Correcting the Footage

In this section, you will color-correct the footage.

1. Click in the empty space of **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 Display View.
2. Choose **Tools > Color > Color Corrector** from the menubar; the **ColorCorrector1** tool is inserted in the **Flow** area and its properties are displayed in the control window on the right of the interface, refer to Figure 2-8.
3. Click on the red output node of the **Loader1** tool and drag the cursor over the orange input node of the **ColorCorrector1** tool; a pipe is drawn between the **Loader1** and **ColorCorrector1** tools to make connection between them.



### 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.

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 image sequence in the right Display View.

## Resizing the Footage

In this section, you will resize the footage.

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.

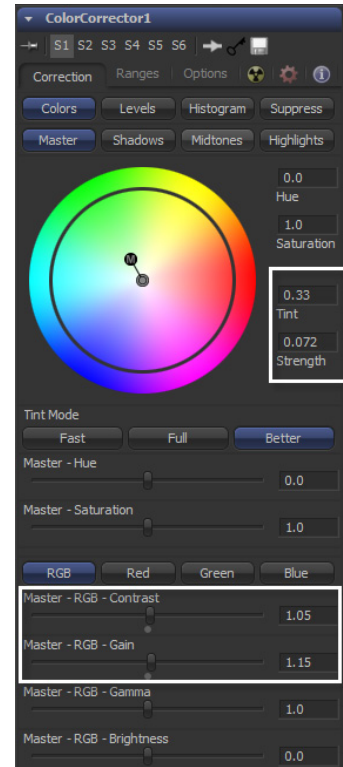


Figure 2-8 The **ColorCorrector1** tool control window

- Expand the **Tools** node and then choose **Tools > Transform** 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**

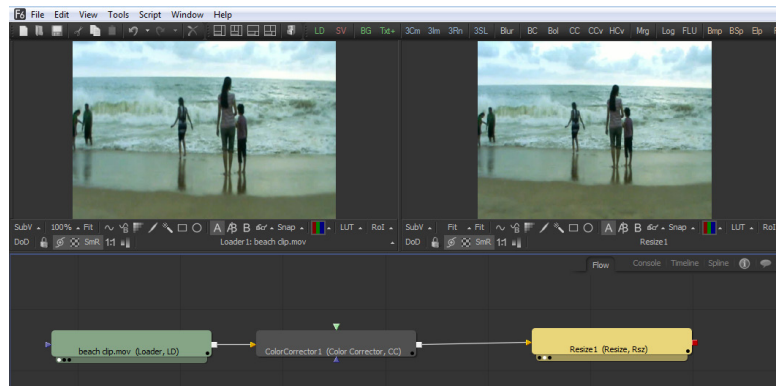
*You can also drag and drop tools from the **Bins** folder to the **Flow** area and then make connections between the tools based on your requirement.*

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

Width: **360**

Height: **288**

After entering the values in the **Resize1** tool control window, the output of the tool is displayed, refer to Figure 2-9.



*Figure 2-9 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.

- Make sure the **Resize1** tool tile is selected from the **Flow** area and right-click; a shortcut menu is displayed. Choose **Insert Tool > I/O > Saver** from the shortcut menu; the **Saver1** tool is inserted in the **Flow** area and the **Save File** dialog box is displayed.
- Choose **Documents > Fusion\_Projects > c02\_tut > c02\_tut\_01** from the dialog box. Select **Quick Time Movies (\*.mov; \*.qt)** from the File Type drop-down list. Next, enter **beach clip1** in the File Name edit box, located above the **All Image Files** drop-down list. Next, choose the **Save** button, refer to Figure 2-10.
- Choose the **Format** tab in the **Saver1** 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 2-11.

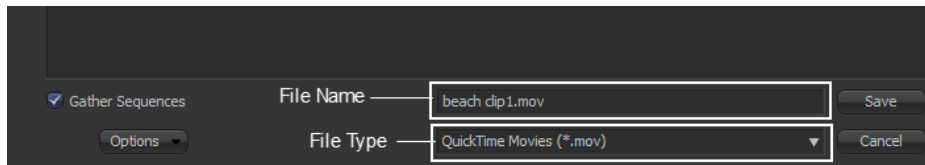


Figure 2-10 Partial view of the **Save File** dialog box displayed to save the composition

## Rendering the Composition

In this section, you will render the composition.

1. Choose **File > Start Render** from the menubar; the **Render Settings** dialog box is displayed, as shown in Figure 2-12.
2. 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 2-13. Next, choose the **OK** button to close the message box.

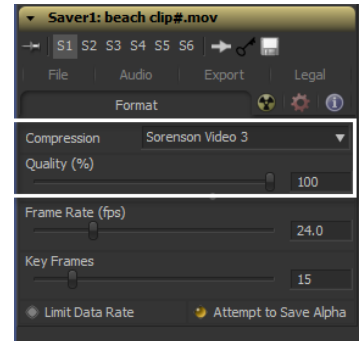


Figure 2-11 The **Saver1** tool control window



**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.

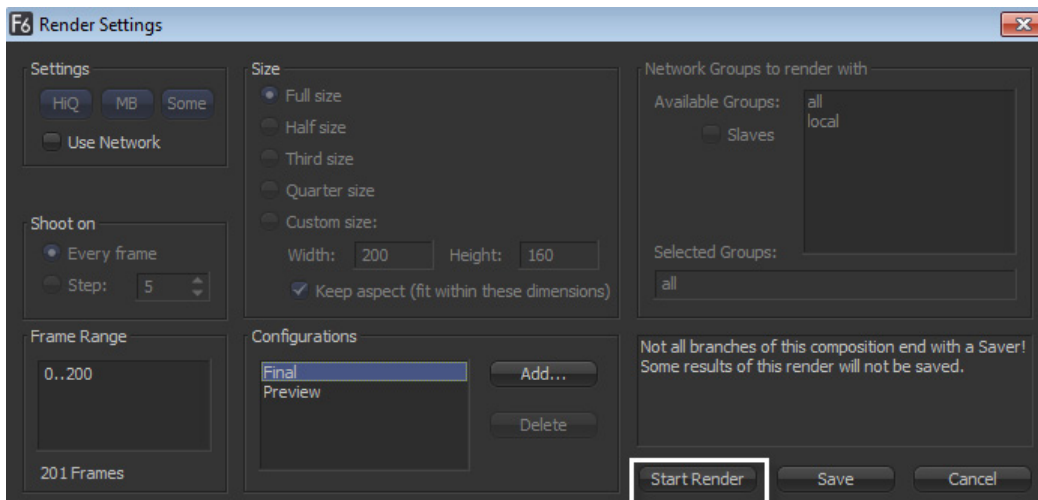
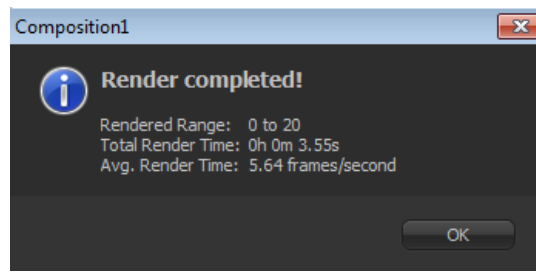


Figure 2-12 The **Render Settings** dialog box

3. Navigate to `/Documents/Fusion_Projects/c02_tut/c02_tut_01` and double-click on the `beach clip1.mov` file to view the final rendered output, refer to Figure 2-1.





**Figure 2-13** The message box informing about the completion of the rendering process

## Tutorial 2

In this tutorial, you will composite three images to create a single image. The final output of the composition is shown in Figure 2-14. **(Expected time: 25 min)**



**Figure 2-14** 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. Resize images.
- d. Color-correct the image.
- e. Merge images.
- f. Prepare the composition for rendering.
- g. Render the composition.

## Setting the Frame Format

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

1. Choose **File > New** from the menubar; a new composition is displayed in the Fusion screen.
2. Choose **File > Preferences** from the menubar; the **Preferences** dialog box is displayed.
3. In this dialog box, select **Frame Format** from the **Composition#** preferences tree; various frame format settings are displayed on 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.
4. Choose the **Save** button to close the dialog box.
5. In the Time Ruler area, enter **0** in **Global End Time** edit box.

## Downloading and Importing the Images

In this section, you will import the images for creating the composition.

1. Open the link <http://www.sxc.hu/photo/1252649>; an image is displayed.
2. Download the image to `/Documents/Fusion_Projects/c02_tut/c02_tut_02/Media_Files` and save it with the name `sunset.jpg`.



### Note

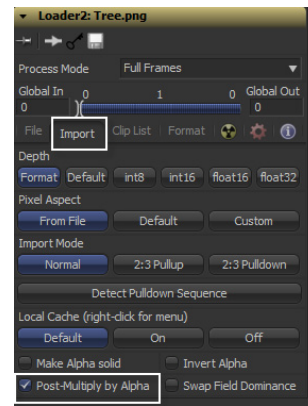
Footage Courtesy: **Colin Broug** (<http://www.sxc.hu/profile/ColinBroug>).

3. Choose the **LD** button from the toolbar; the **Open File** dialog box is displayed, refer to Figure 2-4. Next, choose **Documents > Fusion\_Projects > c02\_tut > c02\_tut\_02 > Media\_Files > sunset.jpg** from the dialog box; the **Loader1** tool is inserted in the **Flow** area, refer to Figure 2-15.
4. Press 1; the output of the **Loader1** tool is displayed in the left Display View. Choose the **Fit** button from the **Display View** toolbar to fit the image into the Display View.
5. Click in the empty space of the **Flow** area to deselect the **Loader1** tool tile. Import *Tree.png* from the location specified in step 3; the **Loader2** tool is inserted in the **Flow** area, refer to Figure 2-15.
6. 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.
7. 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 2-16; the transparency is displayed in the Display View. When you select **Post-Multiply by Alpha** check box, the color values of the pixels are multiplied by their alpha values, thereby producing clear transparency.





*Figure 2-15 The **Loader1** and **Loader2** tools inserted in the **Flow** area*



*Figure 2-16 Choosing the **Import** tab from the **Loader2** tool control window*

## 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 is inserted in the **Flow** area and a connection between **Loader1** and **Resize1** tools is established.
2. Select the **Loader2** tool tile from the **Flow** area and then choose the **Rsz** button from the toolbar; the **Resize2** tool 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** tools 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.
2. Make sure the **ColorCorrector1** tool tile is selected from the **Flow** area and 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; a 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 2-17. Alternatively, you can set the values of the parameters as follows:

Yellow: **0.039**

Green: **0**

## Merging the Images

In this section, you will merge the images.

1. Click on the red output node of the **ColorCorrector1** tool and then drag the cursor to the red output node of the **Resize1** tool; the **Merge1** tool is inserted in the **Flow** area and a connection between the **Resize1**, **ColorCorrector1**, and **Merge1** tools is established.



*Figure 2-17 The **Suppress** color wheel in the control window*



### 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 in the empty space of **Flow** area to deselect the selected tool tile, if any. Choose the **LD** button from the toolbar; a **Open File** dialog box is displayed, refer to Figure 2-4. In this dialog box, choose **Documents > Fusion\_Projects > c02\_tut > c02\_tut\_02 > Media\_Files > man standing.png**; the **Loader3** tool 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 from the **Flow** area. Next, choose the **Rsz** button from the toolbar; the **Resize3** tool is inserted in the **Flow** area and a connection between the **Loader3** and **Resize3** tools is established.
8. Click in the empty space of **Flow** area to deselect the selected tool tile, if any. Choose the **Mrg** button from the toolbar; the **Merge2** tool is inserted in the **Flow** area. Click on the red output node of the **Merge1** tool and then drag the cursor 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 from the **Flow** area and then choose the **CC** button from the toolbar; the **ColorCorrector2** tool 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**

After entering the values, the output of the **ColorCorrector2** tool is displayed in the right Display View, as shown in Figure 2-18.



*Figure 2-18 The output of the **ColorCorrector2** tool*

12. Click in the empty space of **Flow** area to deselect the selected tool tile, if any. Choose **Tools > Blur > Blur** from the toolbar; the **Blur1** tool is inserted in the **Flow** area.
13. Click on the red output node of the **ColorCorrector2** tool and then drag the cursor to the orange input node of the **Blur1** tool; 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.

## Preparing the Composition for Rendering

Next, you will prepare the composition for rendering.

1. Make sure the **Blur1** tool tile is selected from the **Flow** area. Choose the **SV** button from the toolbar; the **Save File** dialog box is displayed, as shown in 2-19.
2. Choose **Documents > Fusion\_Projects > c02\_tut > c02\_tut\_02** from the dialog box. Select **JPEG Files (\*.jpg; \*.jpeg)** from the File Type drop-down list. Next, enter **composite1.jpg** in the File Name edit box, located above the **All Image Files** drop-down list. Next, choose the **Save** button, refer to Figure 2-10.
3. Choose the **Format** tab in the **Saver1** control window and move the **Quality** slider to **100**.

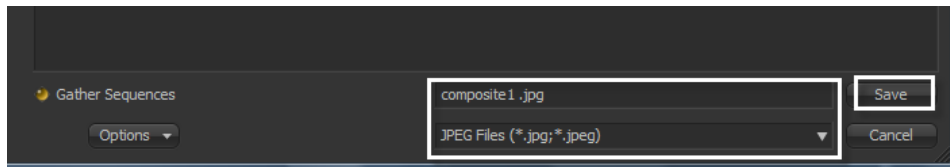


Figure 2-19 Partial view of the **Save File** dialog box displayed on choosing the **SV** button

## Rendering the Composition

In this section, you will render the composition.

1. Choose the **Render** button from the Time Ruler available below the **Flow** area, refer to Figure 2-20; the **Render Settings** dialog box is displayed. Next, choose the **Start Render** button; the rendering process starts. On completion of rendering, a **Composition#** message box is displayed. Next, choose the **OK** button to close the message box.



Figure 2-20 The Time Ruler showing the **Render** button

2. Navigate to `/Documents/Fusion_Projects/c02_tut/c02_tut_02` and double-click on the `composite1.jpg` file to view the final rendered output.

## Using the Undo and Redo Commands in Fusion

In Fusion, you can use the **Undo** and **Redo** commands to undo and redo the steps performed earlier. To undo a step, choose **Edit > Undo** from the menubar or press CTRL + Z. To redo a step, choose **Edit > Redo** from the menubar or press CTRL+Y. You can also delete tools by first selecting them and then pressing DEL.

## General HotKeys

In Fusion, you can invoke some of the commands by using hotkeys. The main hotkeys and their functions are given next:

Hotkey	Function
CTRL+ N	Creates a new composition
CTRL + O	Opens an existing composition
CTRL + S	Saves the composition
CTRL + Z	Used to undo the last action performed
CTRL+ Y	Used to redo the last action performed
CTRL + X or SHIFT+DEL	Cuts the selected item in the clipboard
CTRL + C	Copies the selected tools in the clipboard
CTRL + G	Creates a group of selected tools
CTRL + V	Paste the selected tools from the clipboard
[	Moves forward one frame on the Time Ruler
]	Moves backward one frame on the Time Ruler
ALT + [	Advances to the next keyframe
ALT + ]	Moves back to the previous keyframe

## Function Keys

The function keys are used to perform various functions.

Key	Function
F1	Displays the help for the selected tool
F2	Renames the selected tools
F4	Maximizes and restores the selected area
F5	Activates the <b>Flow</b> area in the Work area
F6	Activates the <b>Console</b> tab in the Work area
F7	Activates the <b>Time Ruler</b> tab in the Work area
F8	Activates the <b>Spline</b> tab in the Work area
F11	Activates the <b>Modifiers</b> tab in the Control area
F12	Displays the <b>Render Settings</b> dialog box

## Display Views Keys

These keys are used to view the composition in different channels.

Key	Function
R	Displays the red channel in the selected Display View

G	Displays the green channel in the selected Display View
B	Displays the blue channel in the selected Display View
A	Displays the alpha channel in the selected Display View
Z	Displays the Z channel in the selected Display View
C	Displays full color image in the selected Display View
V	Displays the selected sub views in the Display View
SHIFT + V	Swaps the content of the Display View and sub view
CTRL + L	Locks the Display View
CTRL + Q	Toggles quad view in the selected Display View
CTRL + K	Toggles the <b>Show Controls</b> button
CTRL + G	Toggles the display of guides
SHIFT + H	Toggles the display of handles on spline keypoints
, (comma)	Switches the view to use the A image buffer
. (period)	Switches the view to use the B image buffer
/	Switches the view so that it shows both the A and B buffers and enables splitwipe.

## Flow Tab Keys

These keys are used to perform various functions in the **Flow** area.

Key	Function
CTRL + F	Displays the <b>Find tools</b> dialog box
CTRL + L	Toggles the lock mode of the selected tool
V	Toggles the display of the navigator

## Spline Tab Keys

These keys are used to perform various functions in the **Spline** tab.

Key	Function
S	Smoothens the curve of the selected points on a spline or polyline
V	Reverses the selected keyframes on a spline
CTRL + drag	Copies the selected points on a spline



## Time Ruler Keys

These keys are used to perform functions in the Time Ruler tab.

Key	Function
CTRL + SHIFT+ double-click	Sets the render range to the slider range
CTRL + Drag	Sets the render range to frames enclosed by dragging mouse

## 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 group tools?
  - CTRL+H
  - CTRL+V
  - CTRL+G
  - CTRL+Z
- Which of the following shortcut keys is used to maximize and restore the selected area?
  - F5
  - F8
  - F9
  - F4
- 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 \_\_\_\_\_ shortcut key is used to rename a tool.
- The \_\_\_\_\_ button in 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 \_\_\_\_\_ is a folder that can store references, composition, and various other data across the network.
- The **Merge** tool is used to combine background and foreground images together. (T/F)
- You can undo the last step performed by using the CTRL + Y keys. (T/F)

## Review Questions

Answer the following questions:

1. Which of the following colors is used to represent the output node of a tool?
 

(a) Green	(b) Orange
(c) Red	(d) None of these
2. Which of the following keys is used to smoothen the points on a spline?
 

(a) R	(b) S
(c) A	(d) O
3. Which of following combination of shortcut keys is used to break the connection between tools?
 

(a) CTRL + DEL	(b) SHIFT + DEL
(c) ALT + DEL	(d) None of these
4. The **Suppress** parameters in the **Color Corrector** tool control window are used to \_\_\_\_\_ the color of an image.
5. The **Merge** tool is represented as \_\_\_\_\_ button on the toolbar.
6. A Fusion composition consists of a network of nodes called tools. These tools are connected through \_\_\_\_\_.
7. The \_\_\_\_\_ button in the Time Ruler is used to start the rendering process.
8. The \_\_\_\_\_ shortcut key is used to lock the Display View.
9. On pressing the F12 key, the **Render Settings** dialog box is displayed. ( T/F)
10. You can save the composition by using the CTRL + Z keys. (T/F)

### Answers to the Self-Evaluation Test

1. c, 2. d, 3. 1, 2, 4. LD, 5. F2, 6. CC, 7. Compositing, 8. Bins, 9. T, 10. F