

## 22.12 Wrap-Up

In this chapter, we completed our discussion of JavaFX that began in [Chapters 12](#) and [13](#). Here, we presented various JavaFX graphics and multimedia capabilities.

We used external Cascading Style Sheets (CSS) to customize the appearance of JavaFX **Nodes**, including **Labels** and objects of various **Shape** subclasses. We displayed two-dimensional shapes, including lines, rectangles, circles, ellipses, arcs, polylines, polygons and custom paths.

We showed how to apply a transform to a **Node**, rotating 18 **Polygon** objects around a specific point to create a circle of star shapes. We created a simple video player using class **Media** to specify the video's location, class **MediaPlayer** to load the video and control its playback and class **MediaView** to display the video.

We animated **Nodes** with **Transition** and **Timeline** animations that change **Node** properties to new values over time. We used built-in **Transition** animations to change specific JavaFX **Node** properties (such as a **Node**'s stroke and fill colors, opacity, angle of rotation and scale). We used **Timeline** animations with **KeyFrames** to bounce a **Circle** around a window, and showed that such animations can be used to change any modifiable **Node** property. We also

showed how to create frame-by-frame animations with **AnimationTimer**.

Next, we presented various capabilities for drawing on a **Canvas Node** using a **GraphicsContext** object. You saw that **GraphicsContext** supports many of the same drawing characteristics and shapes that you can implement with **Shape Nodes**. Finally, we showed the three-dimensional shapes **Box**, **Cylinder** and **Sphere**, and demonstrated how to use materials to apply color and images to them. For more information on JavaFX, visit the FX Experience blog at

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<http://fxexperience.com/>

