

Chapter 14 Applets, Images, and Audio

1. You run an applet from a Web browser or from the Applet Viewer utility. The applet must be embedded in an HTML file.
2. See the section "The Applet Class."
3. The components are added to the content pane of the applets. The default layout manager of the content pane of JApplet is BorderLayout.
4. The messagePanel is declared in Line 2 as a data field, but redeclared in Line 5 as a local variable. The local variable is assigned with new MessagePanel("Welcome to Java!"), but the data field is still null. In Line 9, messagePanel is null, which causes NullPointerException.
5. See the section "The <applet> HTML Tag." You use the <param> tag to pass parameters to an applet.
6. The `getParameter()` method is defined in the Applet class.
7. Revision 1 is wrong because the `getParameter` method is an instance method and it cannot be invoked before an instance of the applet is created. Revision 2 is wrong because the `init` method is invoked after the applet instance is created.
8. An application has a `main()` method and runs as a standalone. An applet does not need a main method and must run from a Web browser. Applications and applets are compiled in the same way.

Applets are not allowed to read from, or write to, the file system of the computer. Applets are not allowed to run any programs on the browser's computer. Applets are not allowed to establish connections between the user's computer and another computer except with the server where the applets are stored.

9. No.
10. Yes. You can create an instance of JApplet and place it in a frame and use it.
11. You will see garbage displayed in the cell.
12. To create an URL object for the file www.cs.armstrong.edu/liang/anthem/us.mid on the Internet, use `new URL("http://www.cs.armstrong.edu/liang/anthem/us.mid")`. To create an URL object for the file [anthem/us.mid](http://www.cs.armstrong.edu/liang/anthem/us.mid), use

```
URL url = this.getClass().getResource(filename);
```

13. First create an URL for the image source, then use `new ImageIcon(url)` to create an `ImageIcon` for the source.
14. Use `imageIcon.getImage()`.
15. Use `new ImageIcon(image)`.
16. The `drawImage(...)` method displays the image on the viewing area.
17. An image displayed on a label is non-stretchable, but an image displayed on a panel is stretchable.
18. The images cannot be stretched in `JLabel`. The images can be stretched in `JPanel`.
19. You can use `AIFF`, `MIDI`, and `RMF` in addition to `AU` and `WAS` files in Java 2.
20. First create an URL for the audio source, then use the `Applet.getAudioClip(url)` method to obtain an audio clip.
21. You can use the `play()`, `stop()`, and `loop()` methods to play, stop, or repeatedly play the audio, respectively.