JAVA APPLET

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Abstract:-
A Java applet is a small application which is written in Java and delivered to users in the form of bytecode. The user launches the Java applet from a web page, and the applet is then executed within a Java Virtual Machine (JVM) in a process separate from the web browser itself. A Java applet can appear in a frame of the web page, a new application window, Sun's AppletViewer, or a stand-alone tool for testing applets. Java applets were introduced in the first version of the Java language, which was released in 1995.

Java applets run at very fast speeds and, until 2011, they were many times faster than JavaScript. Unlike JavaScript, Java applets had access to 3D hardware acceleration, making them well-suited for non-trivial, computation-intensive visualizations. As browsers have gained support for hardware-accelerated graphics thanks to the canvas technology (or specifically WebGL in the case of 3D graphics), as well as just-in-time compiled JavaScript, the speed difference has become less noticeable.

1. Technical information

Java applets are executed in a sandbox by most web browsers, preventing them from accessing local data like the clipboard or file system. The code of the applet is downloaded from a web server, after which the browser either embeds the applet into a web page or opens a new window showing the applet's user interface.A Java applet extends the class java.applet.Applet, or in the case of a Swing applet, javax.swing.JApplet. The class which must override methods from the applet class to set up a user interface inside itself (Applet) is a descendant of Panel which is a descendant of Container. As applet inherits from container, it has largely the same user interface possibilities as an ordinary Java application, including regions with user specific visualization.
The first implementations involved downloading an applet class by class. While classes are small files, there are often many of them, so applets got a reputation as slow-loading components. However, since .jars were introduced, an applet is usually delivered as a single file that has a size similar to an image file (hundreds of kilobytes to several megabytes).The domain from where the applet executable has been downloaded is the only domain to which the usual (unsigned) applet is allowed to communicate. This domain can be different from the domain where the surrounding HTML document is hosted.

2. Embedding into a web page

The applet can be displayed on the web page by making use of the deprecated applet HTML element, or the recommended object element.The embed element can be use with Mozilla family browsers (embed was deprecated in HTML 4 but is included in HTML 5). This specifies the applet's source and location. Both object and embed tags can also download and install Java virtual machine (if required) or at least lead to the plugin page. applet and object tags also support loading of the serialized applets that start in some particular (rather than initial) state. Tags also specify the message that shows up in place of the applet if the browser cannot run it due to any reason.
However, despite object being officially a recommended tag, as of 2010, the support of the object tag was not yet consistent among browsers and Sun kept recommending the older applet tag for deploying in multibrowser environments, as it remained the only tag consistently supported by the most popular browsers. To support multiple browsers, the object tag currently requires JavaScript (that recognizes the browser and adjusts the tag), usage of additional browser-specific tags or delivering adapted output from the server side. Deprecating applet tag has been criticized. Oracle now provides a maintained JavaScript code to launch applets with cross platform workarounds.

3. Advantages

A Java applet can have any or all of the following advantages:

- It is simple to make it work on FreeBSD, Linux, Microsoft Windows and OS X—that is, to make it cross platform. Applets are supported by most web browser.

- The same applet can work on "all" installed versions of Java at the same time, rather than just the latest plug-in version only. However, if an applet requires a later version of the Java Runtime Environment (JRE) the client will be forced to wait during the large download.
- Most web browsers cache applets so they will be quick to load when returning to a web page. Applets also improve with use: after a first applet is run, the JVM is already running and starts quickly (the JVM will need to restart each time the browser starts afresh). It should be noted that JRE versions 1.5 and greater stop the JVM and restart it when the browser navigates from one HTML page containing an applet to another containing an applet.
- It can move the work from the server to the client, making a web solution more scalable with the number of users/clients.
- If a standalone program (like Google Earth) talks to a web server, that server normally needs to support all prior versions for users which have not kept their client software updated. In contrast, a properly configured browser loads (and caches) the latest applet version, so there is no need to support legacy versions.
- The applet naturally supports the changing user state, such as figure positions on the chessboard.

4. Disadvantages

A Java applet may have any of the following disadvantages compared to other client-side web technologies:

- Java applets depend on a Java Runtime Environment (JRE), which is a reasonably complex and heavy-weight software package. It also normally requires a plug-in for the web browser. Some organizations only allow software installed by an administrator. As a result, some users can only view applets that are important enough to justify contacting the administrator to request installation of the JRE and plug-in.
- If an applet requires a newer JRE than available on the system, or a specific JRE, the user running it the first time will need to wait for the large JRE download to complete.
- Some browsers, notably mobile browsers on Apple iOS or Android, do not run Java applets at all.
- Unlike the older applet tag, the object tag needs workarounds to write a cross-browser HTML document.
- There is no standard to make the content of applets available to screen readers. Therefore, applets can harm the accessibility of a web site to users with special needs.

5. Reference

- https://en.wikipedia.org/wiki/Java_applet