Java

Web A

Web Literature

Server

API

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SERVER API

API:Application programming interface

A **web API** is an application programming interface for either a web server or a web browser. It is a web development concept, usually limited to a web application's client-side (including any web frameworks being used), and thus usually does not include web server or browser implementation details such as SAPIs or APIs unless publicly accessible by a remote web application.

**Server side:

A server-side web API is a programmatic interface consisting of one or more publicly exposed endpoints to a defined request–response message system, typically expressed in JSON or XML, which is exposed via the web—most commonly by means of an HTTP-based web server. Mashups are web applications which combine the use of multiple server-side web APIs.[1][2][3] Webhooks are server-side web APIs that take input as a Uniform Resource Identifier (URI) that is designed to be used like a remote named pipe or a type of callback such that the server acts as a client to dereference the provided URI and trigger an event on another server which handles this event thus providing a type of peer-to-peer IPC.

EndpointsEdit

Endpoints are important aspects of interacting with server-side web APIs, as they specify where resources lie that can be accessed by third party software. Usually the access is via a URI to which HTTP requests are posted, and from which the response is thus expected. Web APIs may be public or private, the latter of which requires an *access token*.

Endpoints need to be static, otherwise the correct functioning of software that interacts with it cannot be guaranteed. If the location of a resource changes (and with it the endpoint) then previously written software will break, as the required resource can no longer be found at the same place. As API providers still want to update their web APIs, many have introduced a versioning system in the URI that points to an endpoint.

Resources versus servicesEdit

Web 2.0 Web APIs often use machine-based interactions such as REST and SOAP. RESTful web APIs use HTTP methods to access resources via URL-encoded parameters, and use JSON or XML to transmit data. By contrast, SOAP protocols are standardized by the W3C and mandate the use of XML as the payload format, typically over HTTP. Furthermore, SOAP-based Web APIs use XML validation to ensure structural message integrity, by leveraging the XML schemas provisioned

ith WSDL documents. A WSDL document accurately defines the XML messages and transport bindings of a Web service.

DocumentationEdit

Server-side web APIs are interfaces for the outside world to interact with the business logic. For many companies this internal business logic and the intellectual property associated with it are what distinguishes them from other companies, and potentially what gives them a competitive edge. They do not want this information to be exposed. However, in order to provide a web API of high quality, there *needs* to be a sufficient level of documentation. One API provider that not only provides documentation, but also links to it in its error messages is Twilio.
However, there are now directories of popular documented server-side web APIs.

Growth and impactEdit

The number of available web APIs has grown consistently over the past years, as businesses realize the growth opportunities associated with running an open platform, that any developer can interact with. ProgrammableWeb tracks over 24000 Web APIs that were available in 2022, up from 105 in 2005.
Web APIs have become ubiquitous. There are few major software applications/services that do not offer some form of web API. One of the most common forms of interacting with these web APIs is via embedding external resources, such as tweets, Facebook comments, YouTube videos, etc. In fact there are very successful companies, such as Disqus, whose main service is to provide embeddable tools, such as a feature-rich comment system.[7] Any website of the TOP 100 Alexa Internet ranked websites uses APIs and/or provides its own APIs, which is a very distinct indicator for the prodigious scale and impact of web APIs as a whole.
As the number of available web APIs has grown, open source tools have been developed to provide more sophisticated search and discovery. APIs.json provides a machine-readable description of an API and its operations, and the related project APIs.io offers a searchable public listing of APIs based on the APIs.json metadata format.

BusinessEdit

CommercialEdit

Many companies and organizations rely heavily on their Web API infrastructure to serve their core business clients. In 2014 Netflix received around 5 billion API requests, most of them within their private API.

GovernmentalEdit

Many governments collect a lot of data, and some governments are now opening up access to this data. The interfaces through which this data is typically made accessible are web APIs. Web APIs allow for data, such as "budget, public works, crime, legal, and other agency data"to be accessed by any developer in a convenient manner.

**Client side:

A client-side web API is a programmatic interface to extend functionality within a web browser or other HTTP client. Originally these were most commonly in the form of native plug-in browser extensions however most newer ones target standardized JavaScript bindings.
The Mozilla Foundation created their WebAPI specification which is designed to help replace native mobile applications with HTML5 applications.[13][14]
Google created their Native Client architecture which is designed to help replace insecure native plug-ins with secure native sandboxed extensions and applications. They have also made this portable by employing a modified LLVM AOT compiler.


```
{
  "date":"1996-12-03",
  "explanation":"Like a butterfly,\r a white dwarf star begins its
life\r by casting off a cocoon that enclosed its former self. In this\r
analogy, however, the Sun would be\r a caterpillar\r and the ejected
shell of gas would become the prettiest of all!\r The above cocoon, the
planetary nebula\r designated NGC 2440, contains one of the hottest
white dwarf stars known.\r The white dwarf can be seen as the bright
dot near the photo's\r center. Our Sun will eventually become a \"white
dwarf butterfly\",\r but not for another 5 billion years. The above
false color image recently entered the public domain\r and was post-
processed by F. Hamilton.\r",
  "hdurl":"https://apod.nasa.gov/apod/image/9612/ngc2440_hst2_big.jpg",
  "media_type":"image",
  "service_version":"v1",
  "title":"Cocoon of a New White Dwarf\r\nCredit:",
  "url":"https://apod.nasa.gov/apod/image/9612/ngc2440_hst2.jpg"
}
```


Conclusion:

Uses of API Server:

1 Application Programming Interface acronym API helps two different software's to communicate and exchange data with each other.
2 It helps you to embed content from any site or application more efficiently.
3 APIs can access app components. ...
4 Content generated can be published automatically. More items...

1602-21-733-100, 102, 107

Game Development Using Java

Java programming language can be used extensively in game development. These days, mobile games are in huge demand. During the pandemic, the number of people playing videogames, especially multiplayer games, increased exponentially, creating a huge market for developers to create different types of games, and collaborate with people.

Java 3D is an API (Application Programming Interface) of Java, used to develop 3D games. It has plenty of modeling functions which include basic 3D modeling, scene graph structure, 3D texturing, appearance and materials, behaviour and interaction, and animation. So, it is a kind of programming tool to design 3D computer games. But, Java 3D has limited functions in designing complex 3D models used in 3D games. So, we need additional dedicated design software for designing in 3D and transforming into Java 3D.

Designing complex 3D graphics can be done using software like 3Ds Max. Then, they are loaded into Java 3D by the class Loader3Ds of Microcrowloader in loader3DS1-2.jar. The class

TextureLoader of Java 3D loads the texture pictures into Java 3D and the class TexPlane maps the textures on the 3D models. The class Alpha and PositionPathInterpolator define the models' motion. The LOD is the Level of Details which defines the effect of a model from near to far. If a model is very far from us, its details are very vague and if it is near, its details are very clear. The DistanceLOD class has this method.

The Behaviour class of Java 3D is an abstract class which includes two abstract methods, void initialize() and void processStimulus(Enumeration wakeupCriteria). When we use objects of Behaviour class, we must call the method initialize(). In some specific wakeup conditions, the program of Java 3D calls the method processStimulus(). The method, void wakeupOn(WakeupCondition wakeup) defines wakeup conditions. When some wakeup conditions appear, the object of the class WakeupCondition calls the method processStimulus() to wakeup the object of Behaviour class and to accomplish the behaviours

defined within. The method WakeupOnElapsedTime() controls the interval of wakeup events. The method WakeupOnAWTEvent(KeyEvent.KEY_PRESSED) defines keyboard events and the method WakeupOnAWTEvent(Event.MOUSE_DOWN) defines mouse events. If we require several AWT events, we use '|' to combine them. For example, the method WakeupOnAWTEvent(AWTEvent.MOUSE_EVENT_MASK | AWTEvent.MOUSE_MOTION_EVENT_MASK) combines the mouse down event and the mouse motion event. The WakeupOnAWTEvent() method can be used to develop "reactions" to user inputs to produce interactive games. Java ME (Java Platform - Micro Edition) is used in mobiles for running games which have lower specifications. Not only mobiles, but also in PDA's, Printers, set-top boxes and TV's. There are some limitations for a phone - limited memory space, small processing power, constrained battery life, limited screen size, along with a huge list of drawbacks. All this context is summarized based upon older generation phones and other devices with limited processing power.

CLDC (Connected Limited Device Configuration) a J2ME configuration intended for devices with as low as 512KB memory available for Java environment and its applications. The MIDP (Mobile Information Device Profile) is a very important component of Java 2 Platform Mobile Edition. MIDP offers a standard Java environment when it is combined with CLDC. It allows features such as networking, local storage on the CLDC itself and user interface capabilities. Java is responsible for one of the biggest videogame hits of all time, Minecraft, which shows that Java can be used to succeed in gaming. Java offers an excellent entry point for many to get into game development projects with a limited but highly capable range of frameworks and tools to assist. LibGDX and jMonkeyEngine are two examples of game engines that support game development using Java.