

AJAX FUNDAMENTALS

Table of Contents

1 Introduction	1
2 Language	1
3 Interaction with User	2
4 Interaction with outside	2
5 Dojo implementation	3
6 Google Web Toolkit implementation	3

1 Introduction

An AJAX Application can have two different form. One the one hand, she can only run on the client and perform action only with user. On the other hand, the software can retrieve data from an external server for improve user experience. Here we will talk about the two type off application because the first type is include into the second.

2 Language

An AJAX application is a set of Javascript loaded with an web page. This script can dynamically change the page with creation of some component Like Tree; if you click on the + button, the tree will expand. Each time you the an active component it's done by add of Java Script into web page.

Java Script, as the name said it, it's a script language. For run it, you don't compile it into another language, you must use an interpreter. For the user, this interpreter is embedded with the internet browser such as Firefox, Opera, Safari, W3M, Links...

Because it's a script language there, the syntax is checked at the execution time, you must test it onto interpreter for see the efficiency of the source code. This kind execution make the language slow to computing, like Java, and can't be used for complex operation like graph layout and displaying.

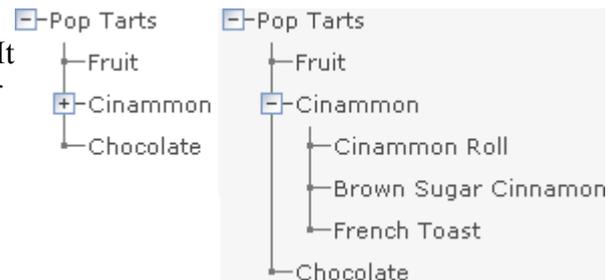
The worse problem with the interpreter is that all web kit didn't have the same implementation of Java Script because they don't respect all the norm of ECMAScript and make harder to do a portable application but it's not impossible to do if you aware of differences.

Java Script is an prototype based programming and not an object based. The property, the method and the inheritance tree can be redefine at the execution time by the running application. It can add some unpredictability into application.

3 Interaction with User

An AJAX application, which run on the client browser, can change layout of HTML component and make them interactive for the user. In the AJAX Framework language we will call a widget a interactive component made by one or more HTML markup.

The more illustrative widget is the Tree Widget. It permit to show an tree like in a file system explorer. It have capability to hide/unhide part of the tree by user click on the  or  button.



You will be able to find an overview of widget by visiting the [Dijit library](#) of the [Dojo project](#).

Now, the widget are enough evolved for be able to communicate together and exchange informations. For example, you can click on a button which open the three and change imge display.

But all those interactions are limited inside the client browser.

4 Interaction with outside

For make user application communicate we have an object named [xmlHttpRequest](#); which was introduce by Microsoft © for Outlook and finally widely adopted by other browser and became an [W3C recommendation](#).

This object permit to do HTTP request on the internet and give back informations fetched. The data can be XML and automatically parsed or any another format. The common use is to have [JSON](#) which is natively supported by Java Script; this format permit to serialize/unserialize data by only one instruction. The second reason of JSON adoption is the lightness of the overhead add on the serialized data and easiness to produce/parse it on the server-side.

XmlHttpRequest is good but do not provide any check about the format of the request and type of the result, that why almost all framework have implement an [RPC](#) (message passing system for communication) mechanism for Client ⇔ Server communication. It's permit to the programmer to specify address of server service an argument and wait for the data given back. All the RPC mechanism are implement with use of JSON serialization language as subsystem for exchange of data.

The typical use of this component is for retrieve data from server instead of hard coddng them into web page. It's permit to maintain more easily the content of the page. For continue the example of the tree, the data representing relation between Pop Tart, Fruit, Cinnamon and Chocolate are retrieve form the server, then process by the software and the layout of component is done.

5 Dojo implementation

Dojo is the best Open Source AJAX framework totally write into Java script language. It's means that there is not part of the application on the server-side process.

Dojo implement a lot of Widget which give to the programmer a base library for work with.

This project provide an object model which not work properly for distinction between regular and static class member. This can be a problem for use the object orientation of their model.

The RPC implementation is correctly done but they have no helper if you want to code the server side.

6 Google Web Toolkit implementation

The GWT have a new view of making Ajax application instead of make programmer write Java Script, instead they use Java language and translate it into Java Script with coupling of their Java Script library.

It's really great for programmer because you didn't have all inconvenient which came from Java Script language. Java is a more strict language about the syntax; first because it's an oriented object language; second because it's a typed language.

Has Dojo they provide a set of widget for the user interface.

The RPC implementation is done very well. The programmer only need to describe the interface of the service and to implement it for be run on Java Application Web Server. Google has already write the stub for RPC services. You don't need to find good data format for exchange information, just write interface and all the format, RPC error, serialization/unserialization is done by the Google library.