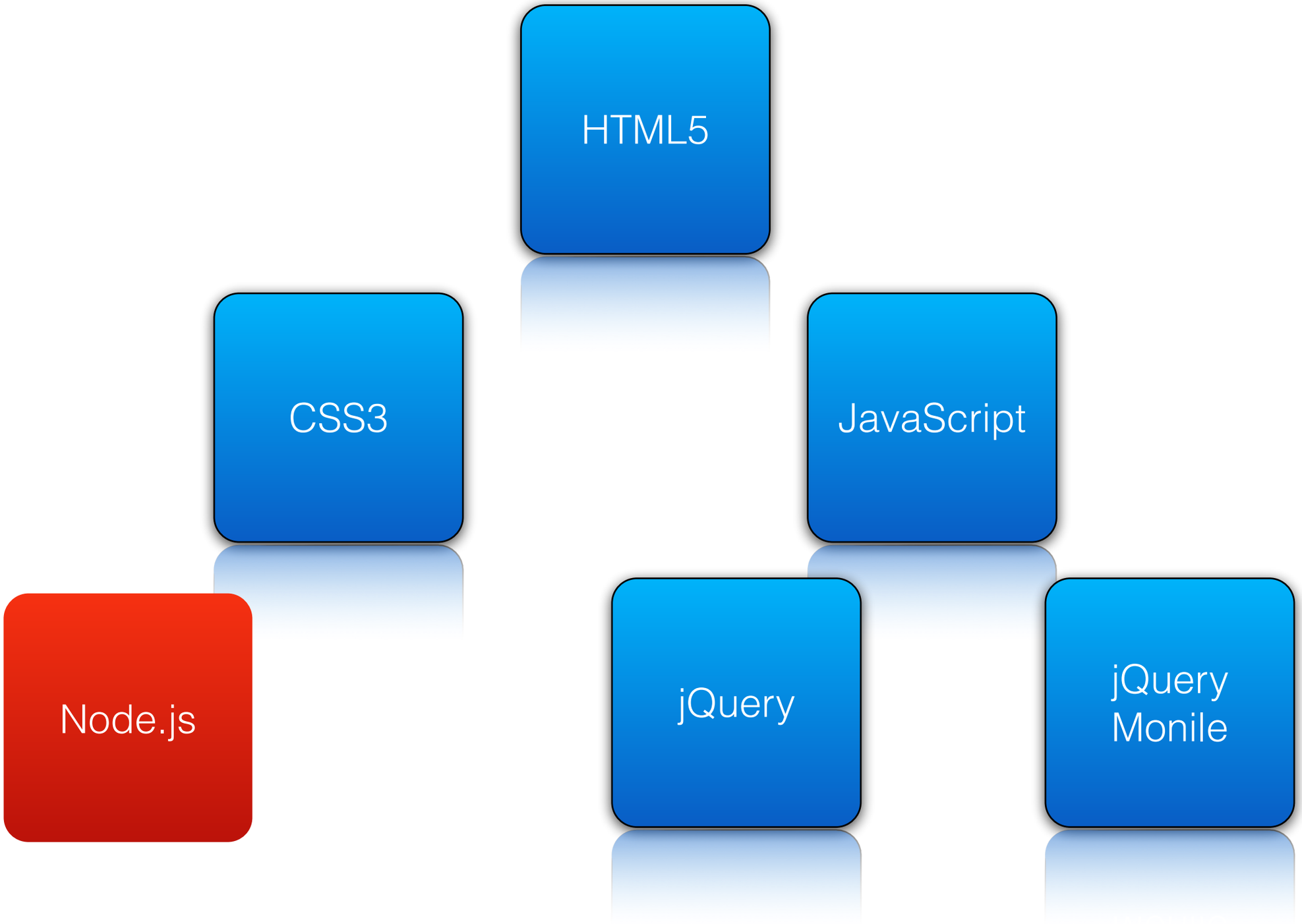


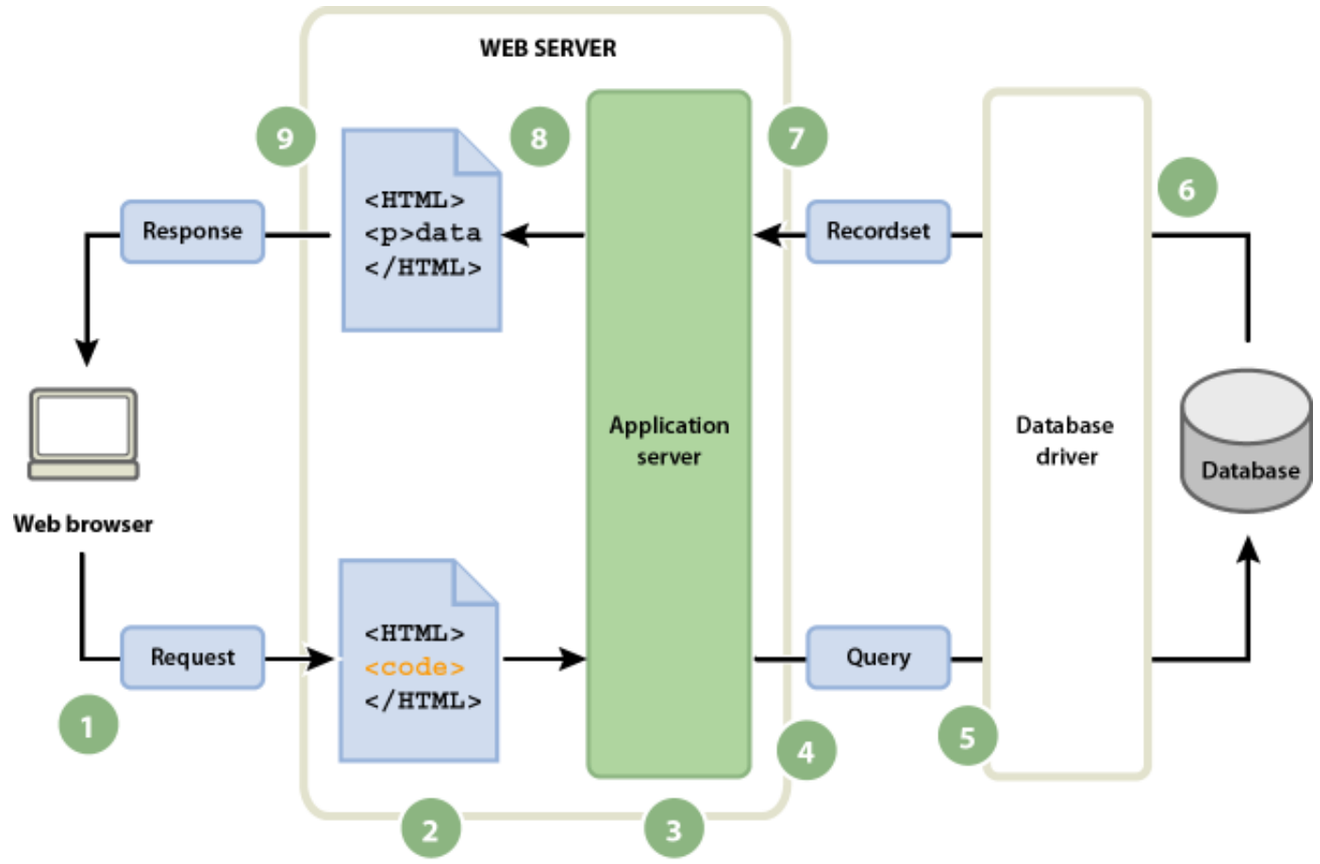
Introduction to Mobile Web Development

By Ken Cheung

Static web page

- Hypertext Markup Language (HTML) is the language to design the web pages of an application.
- A static web page that is stored on the web server and does not change.
- When the user requests a web page, the browser sends an HTTP request to the web server.
- When the web server receives the request, it retrieves it and sends it back as an HTTP response.
- When the web browser receives the response, it renders the HTML that is displayed in the browser.

Dynamic Web Page



- A dynamic web page is a web page that is generated by a server-side program or script.
- When a web server receives a request for a dynamic web page, it looks up the extension of the requested file to find out which application server should process the request.
- When the application server receives a request, it runs the specified script. Sometimes, it may need to get the data from a database server.
- When the application server finishes, it generates the HTML and returns it to the web server. Then the web server returns the HTML to the web browser.

2:09 AM

w3techs.com/technologies/overview/programming_language/all

Search

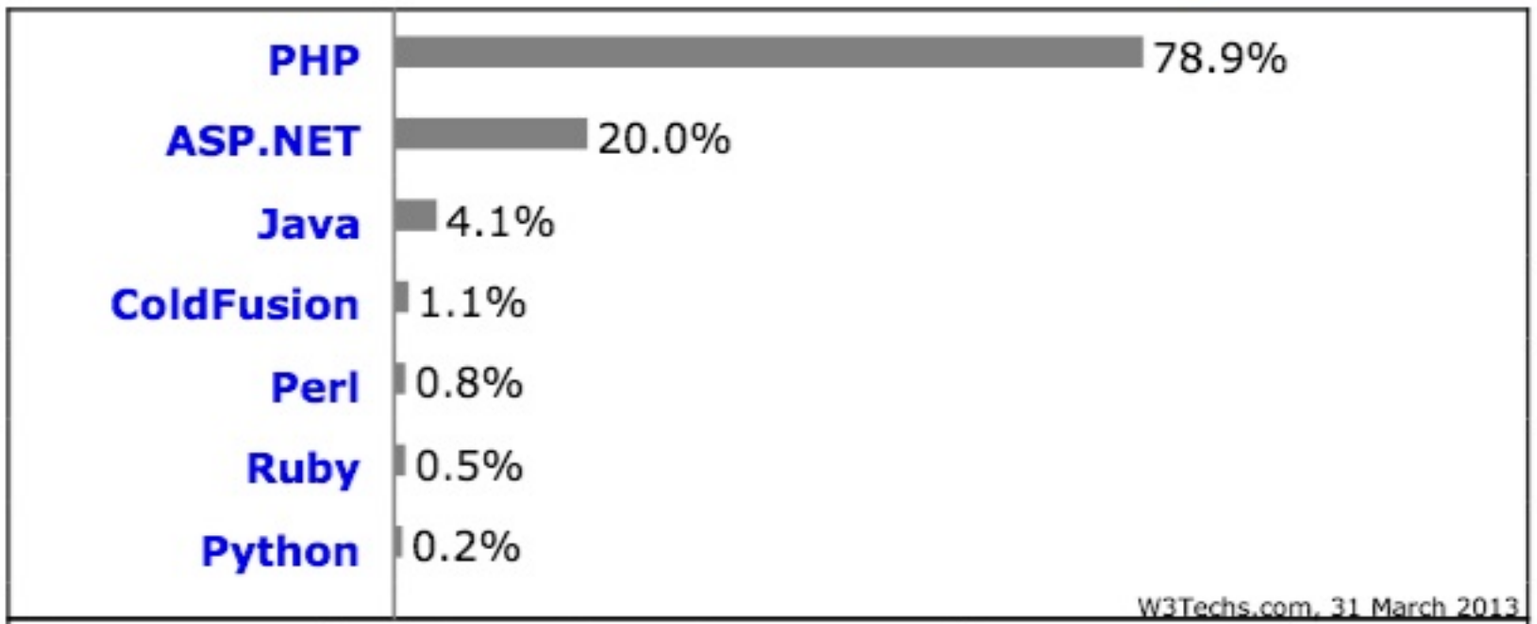
Usage Statistics and Market Share of Server-side Programming Languages for Websites, March 2013

Technologies > Server-side Languages

Usage of server-side programming languages for websites

This diagram shows the percentages of websites using various server-side programming languages. See technologies overview for explanations on the methodologies used in the surveys. Our reports are updated daily.

How to read the diagram:
PHP is used by 78.9% of all the websites whose server-side programming language we know.



Percentages of websites using various server-side programming languages
Note: a website may use more than one server-side programming language

2:13 AM

w3techs.com/technologies/overview/client_side_language/all

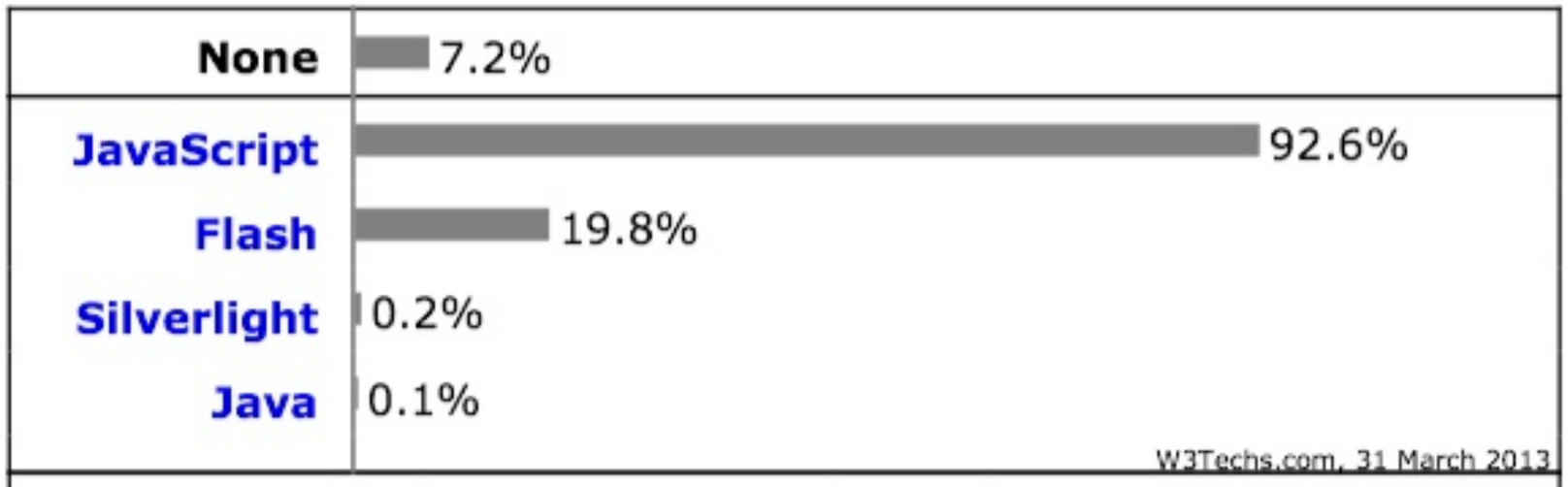
Search

Usage Statistics of Client-side Programming Languages for Websites, March 2013

Usage of client-side programming languages for websites

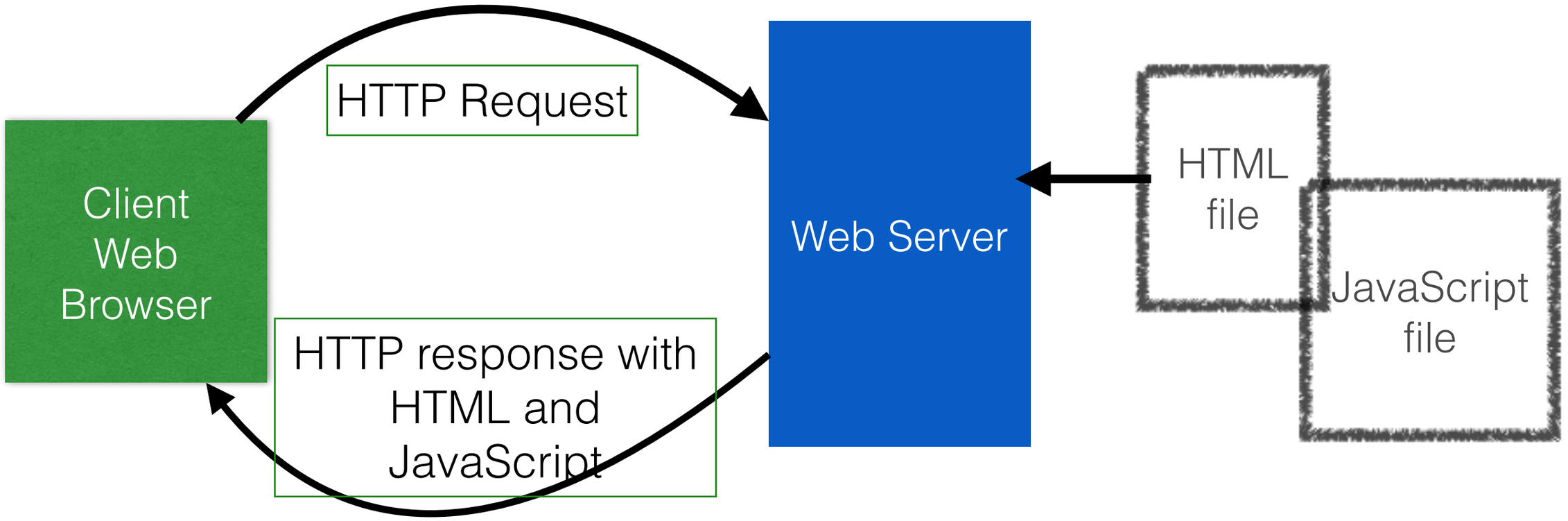
This diagram shows the percentages of websites using various client-side programming languages. See technologies overview for explanations on the methodologies used in the surveys. Our reports are updated daily.

How to read the diagram:
7.2% of the websites use none of the client-side programming languages that we monitor.
JavaScript is used by 92.6% of all the websites.



Percentages of websites using various client-side programming languages
Note: a website may use more than one client-side programming language

How JavaScripts fits into this architecture



- JavaScript is a client side scripting language that is run by the JavaScript engine of a web browser and controls the operation of the browser.
- When the browser requests an HTML page that contains JavaScript or a link to a JavaScript are loaded into the browser.
- Because JavaScript runs on the client, not the server, it provides functions that don't require a trip back to the server. This can help an application run more efficiently.

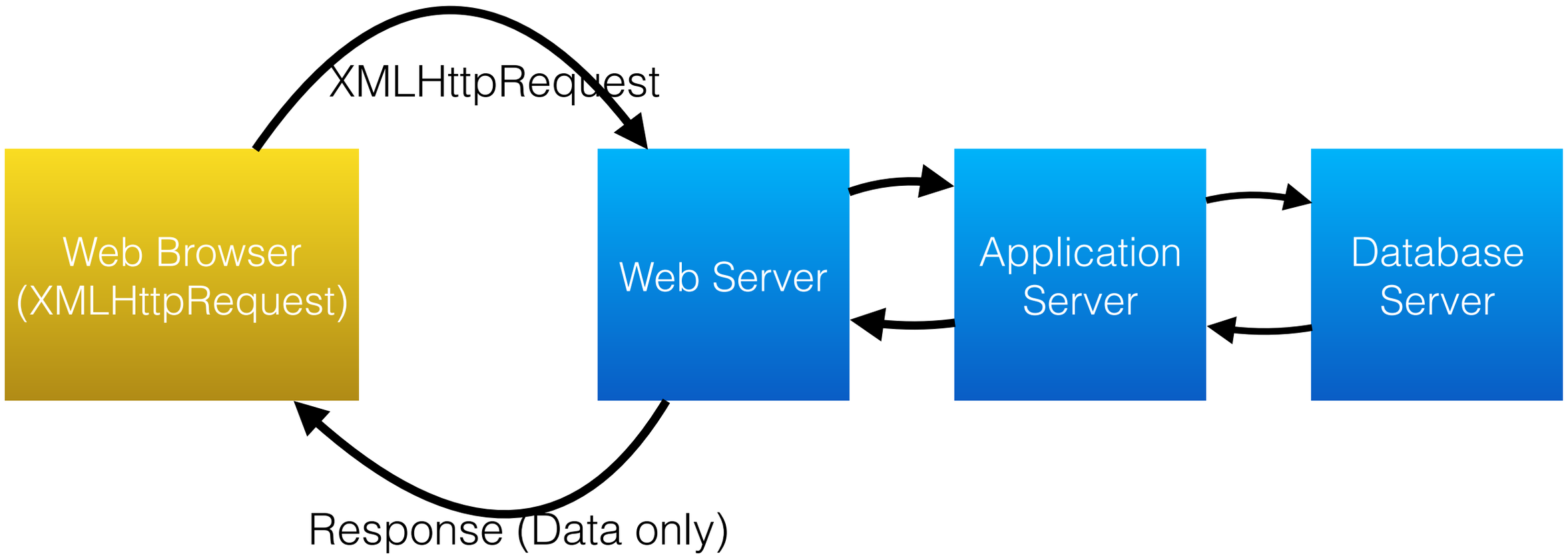
What jQuery is?

- jQuery is a free, open source, JavaScript library that provides methods that JavaScript programming easier. Today jQuery is used by more than 50% of the 10,000 most visited web sites, and its popularity is growing rapidly.
- The jQuery download comes into two versions. One version (mini) is a compressed version that is relatively small and loads fast. The other version is uncompressed so you can use it to study the JavaScript code in the library.

What jQuery Mobile is?

- jQuery Mobile is a free, open source, JavaScript library that makes it much easier to develop web sites for mobile devices. It is used in combination with the core jQuery library.
- The jQuery Mobile lets you store multiple pages in a single html file, create dialog boxes, buttons, and navigation bars; format your pages without coding your CSS; lay out pages with two columns, collapsible content blocks and much more.

What is Ajax?



- Ajax stands for Asynchronous JavaScript and XML. Unlike normal HTTP requests, Ajax lets you receive data from a web server without reloading the page. This is sometimes known as a "partial pat refresh".
- JavaScript is essential to the use of Ajax because JavaScript not only sends th requests but also processes the responses and updates the web page with the new data.
- To send an Ajax request, JavaScript uses a browser object known as an XMLhttpRequest (XHR) object. This object can include data that tells the application server what data is being requested.
- An XHR object is often processed by a program or script on the application server that is written in a language like PHP or ASP.NET. Then, the JavaScript programmer has to coordinate the Ajax requests with the application scripts.

The common data formats for Ajax

- The common data formats for working with Ajax are XML, and JSON.
- XML (extensible markup language) is an open standard, device independent format that must be parsed by JavaScript or jQuery in the browser.
- **JSON** (JavaScript Object Notation) is fast becoming the most popular format for Ajax application. In general, JSON files are smaller and faster than XML files

Web Apps

You can adapt your website to make it available through an online application store like Chrome Web Store, or even to make it installable on a device.

- **Native apps** are built using non–web technologies for specific platforms such as OS X, iOS, Windows, and Android.
- **Web apps** use web platform languages and can include hosted websites or ones packaged inside compressed containers and installed on a device.
- **Hybrid apps** use web platform technologies but are wrapped or packaged inside native containers. E.g. PhoneGap

Hosted vs. Packaged Apps

Hosted Web Apps

- A hosted app is one that holds all files on an external web server, usually accessible via a public URL. Essentially, a hosted app is like a website with a little extra metadata to allow app stores to index it. A hosted app isn't installed onto a device; a shortcut is created on the device that launches a browser or embedded web view when the user decides to open the app.

Packaged Web Apps

- Unlike hosted apps, a packaged app contains all the assets necessary to run it, compressed (usually zipped) in a single file. All the files are installed on the device. If the app is found to be secure; in practice, this means the developer can access restricted APIs on the device, such as those used to access the address book or text messaging functions.

Hybrid Apps

If you want to publish your web apps through the big device app stores - such as the Apple App Store, Google Play, or the Windows Store - you need to create a hybrid app. These apps are similar to packaged apps in that all their resources are contained in a single archive, but they go one step further by adding a native shell, or wrapper, around the files, which ensures that the app can be integrated into the main operating system, providing security and better performance and also allowing access to restricted device APIs. A number of software solutions exist for making hybrid apps, but one of the most common and certainly the easiest to learn is PhoneGap.

PhoneGap

- Although owned by Adobe, a commercial entity, PhoneGap is free, open source software that allows you to build semi-native mobile applications using web platform technologies.
- PhoneGap works across multiple platforms, chief among them iOS, Android, and Windows Phone, and one of its major selling points is that, as it's a native OS wrapper around web platform code, it allows access to APIs on a device. For this, it uses its own API, which matches standard APIs from each device.
- To set up PhoneGap, you need to download the SDK for each device you want to target. When you've done all this, you complete the setup for each environment (full instructions are on the PhoneGap website) and start a new project, which creates a folder structure with a few key files, including the ones necessary for access to the API.

Node.js Trend

- What is Node.js?
  - Allows you to build scalable network applications using JavaScript on the server-side.
  - It is built on top of V8, a modern JavaScript virtual machine that powers Google's Chrome web browser.
  - You can build many kinds of networked applications. For instance, a web application service, a DNS server, an SMTP server, a RESTful web service etc.

- URLs:
  - Node.js, Ruby, PHP Job Trends
  - 5 Technology Trends for 2014
  - Node.js is taking over the Enterprise – whether you like it or not
  - What companies are using Node.js in production?

HTML5 mobile frameworks

- **Sencha Touch** (www.sencha.com/products/touch/) that helps you build applications that look like native apps on iOS, Android, and Blackberry. It is a very extensive framework with lots of built-in support for touch events such as pinch-zoom and swiping. But Sencha Touch is built from the JavaScript, rather than from the HTML and CSS.
- **jQuery Mobile**- (http://jquerymobile.com/) builds off of jQuery to create pages for iOS, Android, Blackberry, WebOs, and Windows phone (as well as others).
- **Jo-Jo** (http://joapp.com/) is a JavaScript framework that will help you take an HTML5 application that you built on Safari or Chrome and convert it to iOS, Android, WebOS, and Symbian. It provides all the animation and native app design features that Sencha Touch and jQuery Mobile do.
- **PhoneGap** (www.phonegap.com/) is more than a framework. It is a tool to help you create mobile applications, but it also works to convert HTML5 applications into native mobile apps.

CS557 Front-end Web Programming for Mobile Devices

- The main topics that you will learn:
  - HTML5 and CSS

CS557 Front-end Web Programming for Mobile Devices

- The main topics that you will learn:
  - HTML5 and CSS
  - JavaScript
  - Responsive Web Design
  - Node.js (server-side service)
  - Ajax
  - jQuery
  - jQuery Mobile Framework
  - PhoneGap

Tools for web development

Aptana Studio 3

- Aptana Studio 3 is a free tool for developing web applications. It can run on Windows, Macintosh, and Linux.
- URL: www.aptana.com

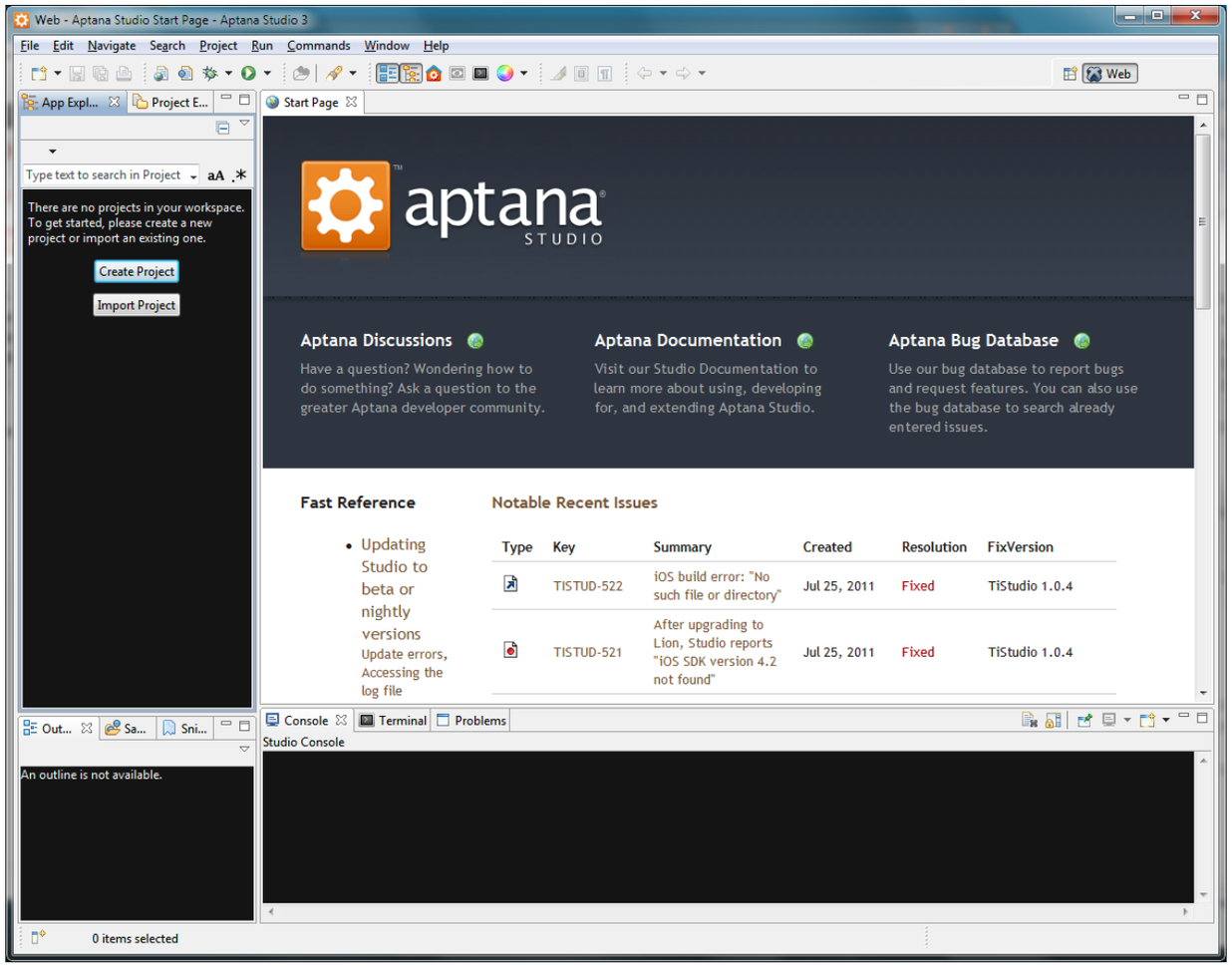
NetBeans IDE

- NetBeans IDE is a free and open source integrated development environment for application development on Windows, Mac, Linux, and Solaris operating systems.The IDE simplifies the development of web, enterprise, desktop, and mobile applications that use the Java and HTML5 platforms. The IDE also offers support for the development of PHP and C/C++ applications.
- URL: https://netbeans.org/downloads/

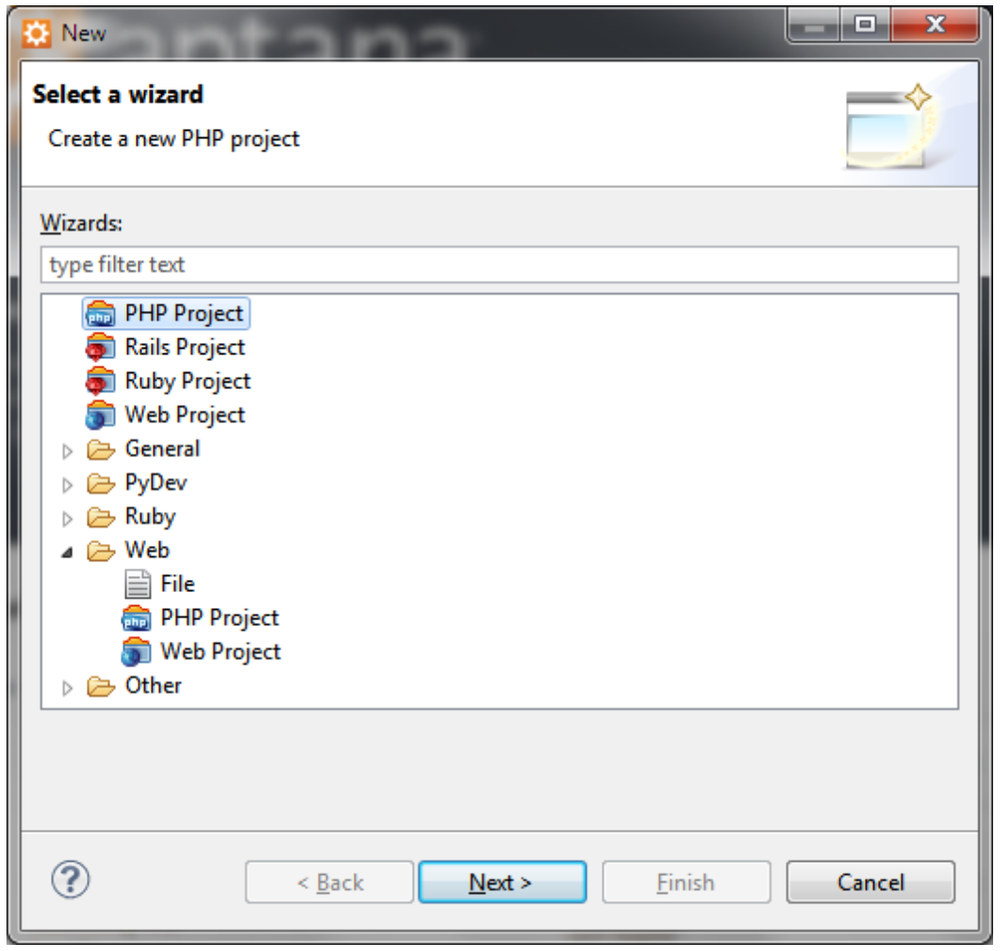
Eclipse

- Eclipse and Aptana Studio are similar. There are many different favors of Eclipse, but all have support for plug-ins and software add-ons, allowing it to be modular and customizable.
- URL: http://www.eclipse.org/downloads/

Aptana Studio 3

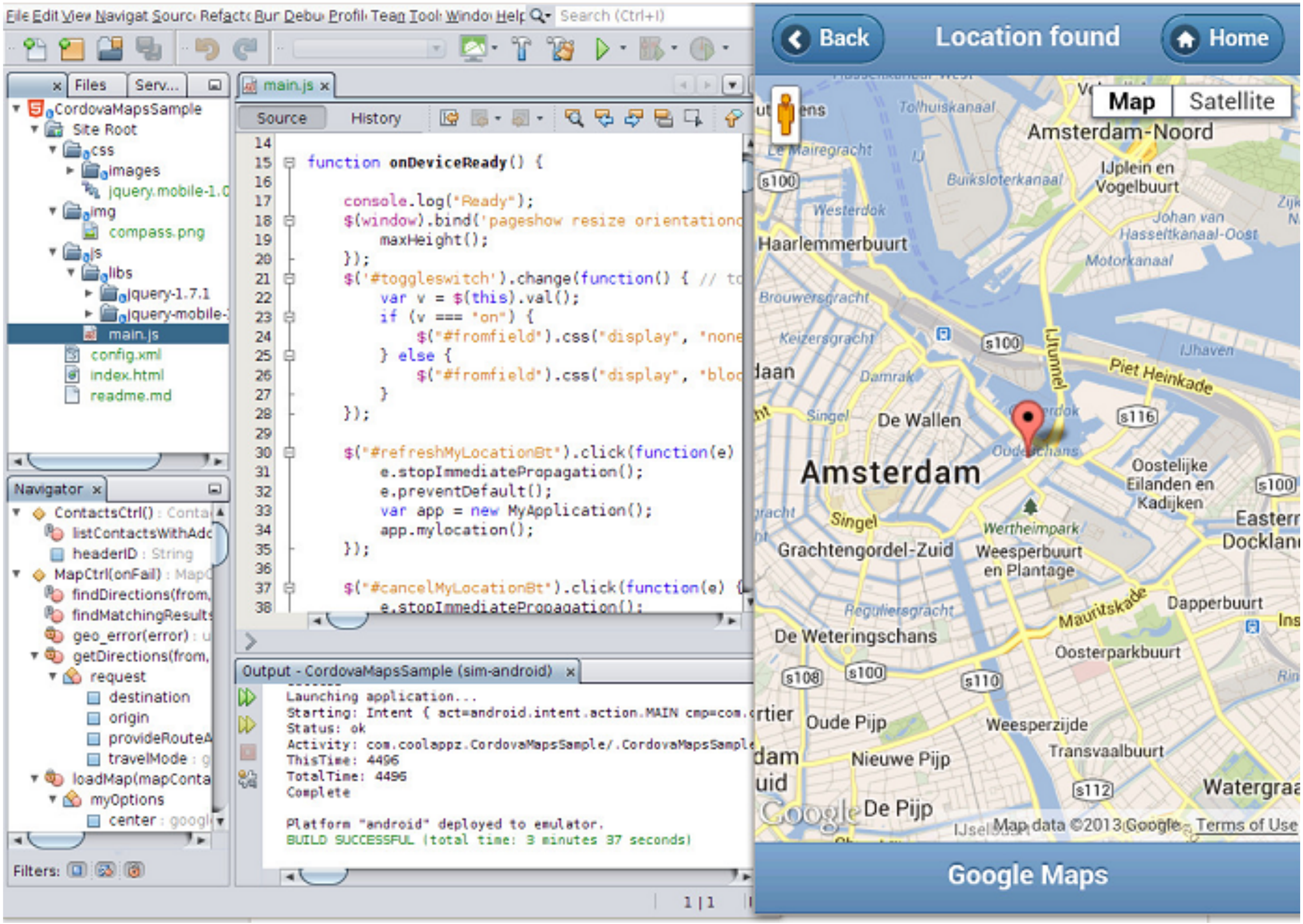


Start Page



Create Project

NetBeans IDE



Useful Links and Books

Websites:

- http://www.dynamicdrive.com/http://www.w3schools.com/html/
- http://www.javascriptsource.com/tutorials/
- http://www.dynamicdrive.com/
- http://www.asp.net

Books:

- The Modern Web: Multi-Device Web Development with HTML5, CSS3, and JavaScript
    - ISBN-10: 1593274874
- Creating Mobile Apps with jQuery Mobile
    - ISBN-10: 178216006X