互联网应用开发技术

Web Application Development

第1课
WEB应用

Episode One

Web Application

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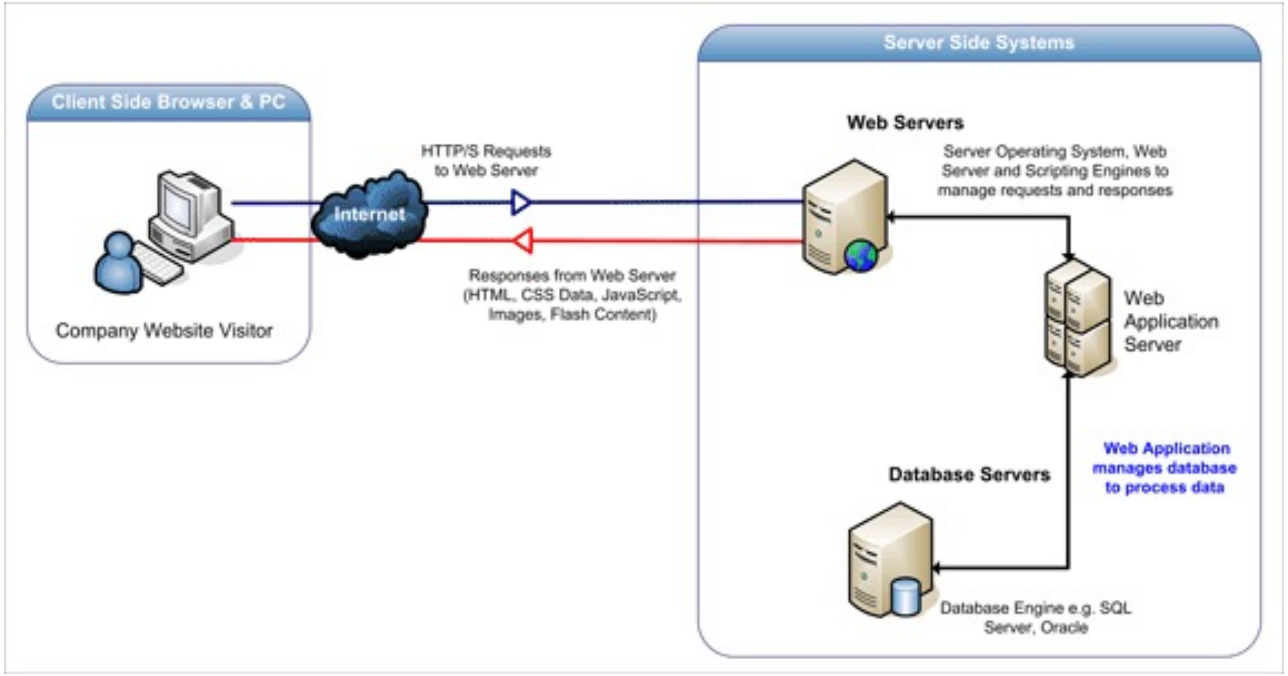
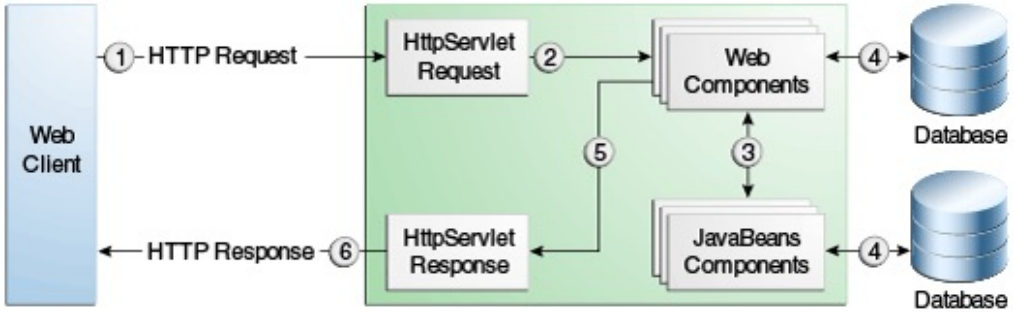
What is web application ?

- Web applications are
  - computer programs allowing website visitors to submit and retrieve data to/from a database over the Internet using their preferred web browser.



Web Applications

- Web applications are of the following types:
  - Presentation-oriented: A presentation-oriented web application generates interactive web pages containing various types of markup language (HTML, XHTML, XML, and so on) and dynamic content in response to requests.
  - Service-oriented: A service-oriented web application implements the endpoint of a web service. Presentation-oriented applications are often clients of service-oriented web applications.



Web Application Lifecycle

- A web application consists of
  - web components;
  - static resource files, such as images and cascading style sheets (CSS);
  - and helper classes and libraries.

- The web container provides many supporting services that enhance the capabilities of web components and make them easier to develop.

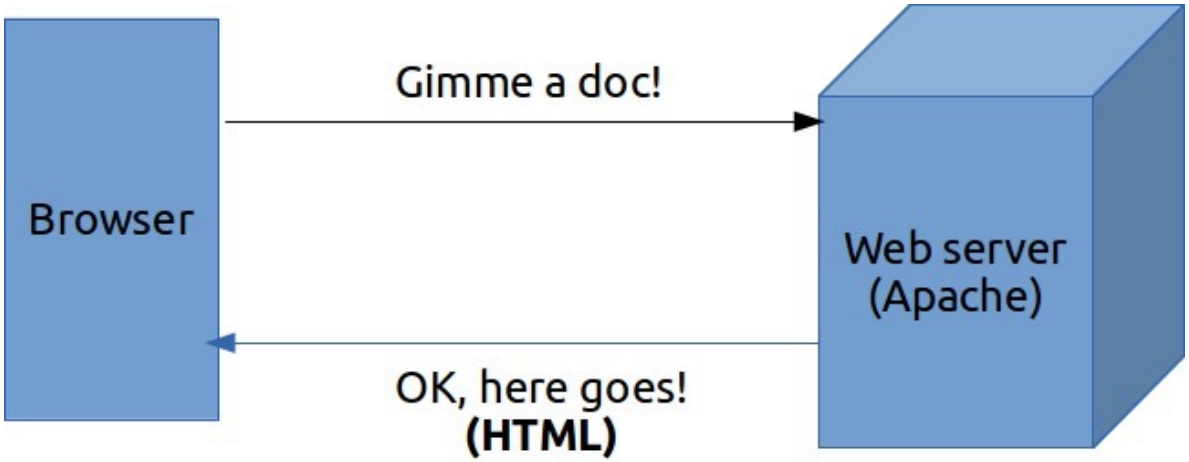
Web Application Lifecycle

- However,
  - because a web application must take these services into account, the process for creating and running a web application is different from that of traditional stand-alone Java classes.

- The process for creating, deploying, and executing a web application can be summarized as follows:
  1. Develop the web component code.
  2. Develop the web application deployment descriptor, if necessary.
  3. Compile the web application components and helper classes referenced by the components.
  4. Optionally, package the application into a deployable unit.
  5. Deploy the application into a web container.
  6. Access a URL that references the web application.

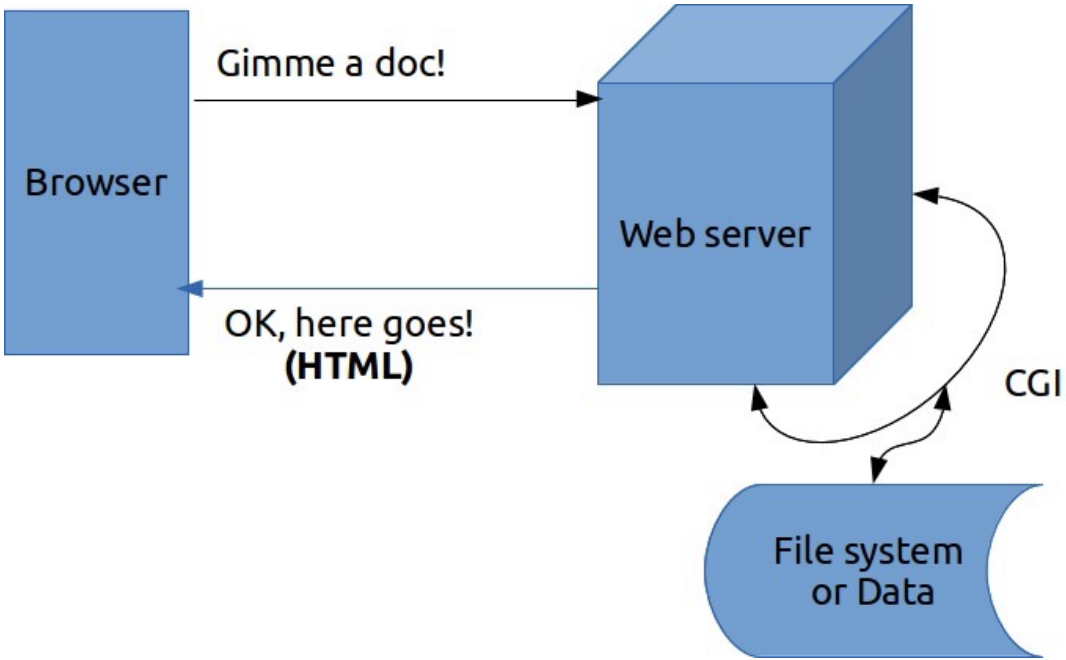
Static Websites

- All are static webpages



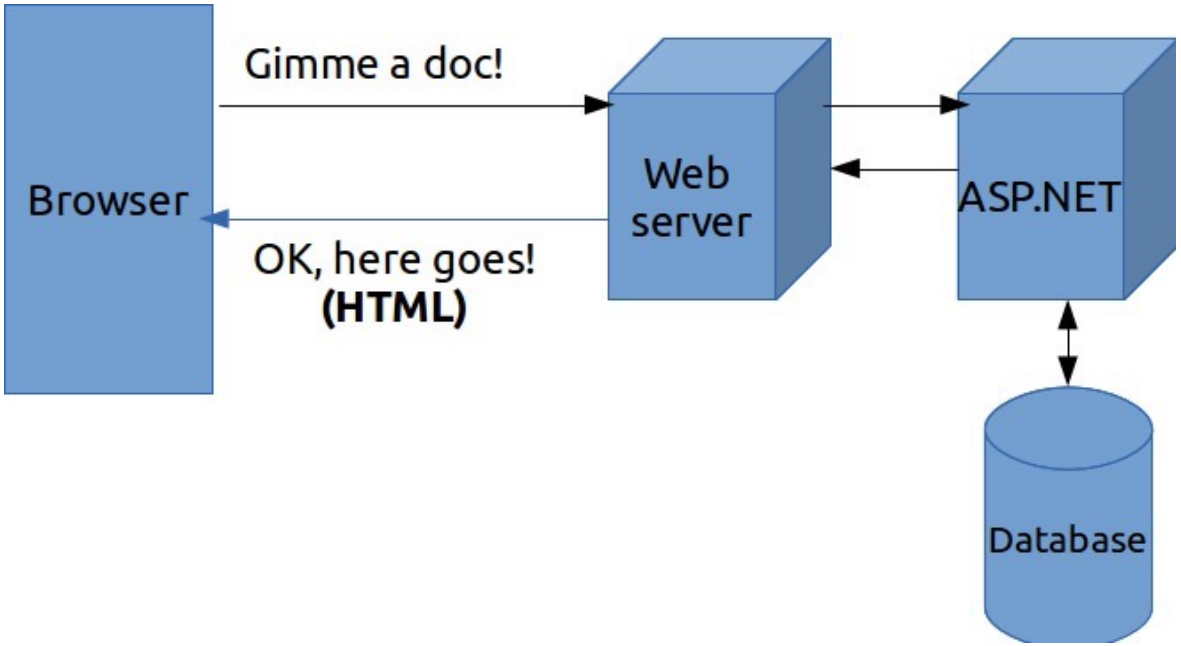
Web 1.0

- Dynamic Web application based on CGI



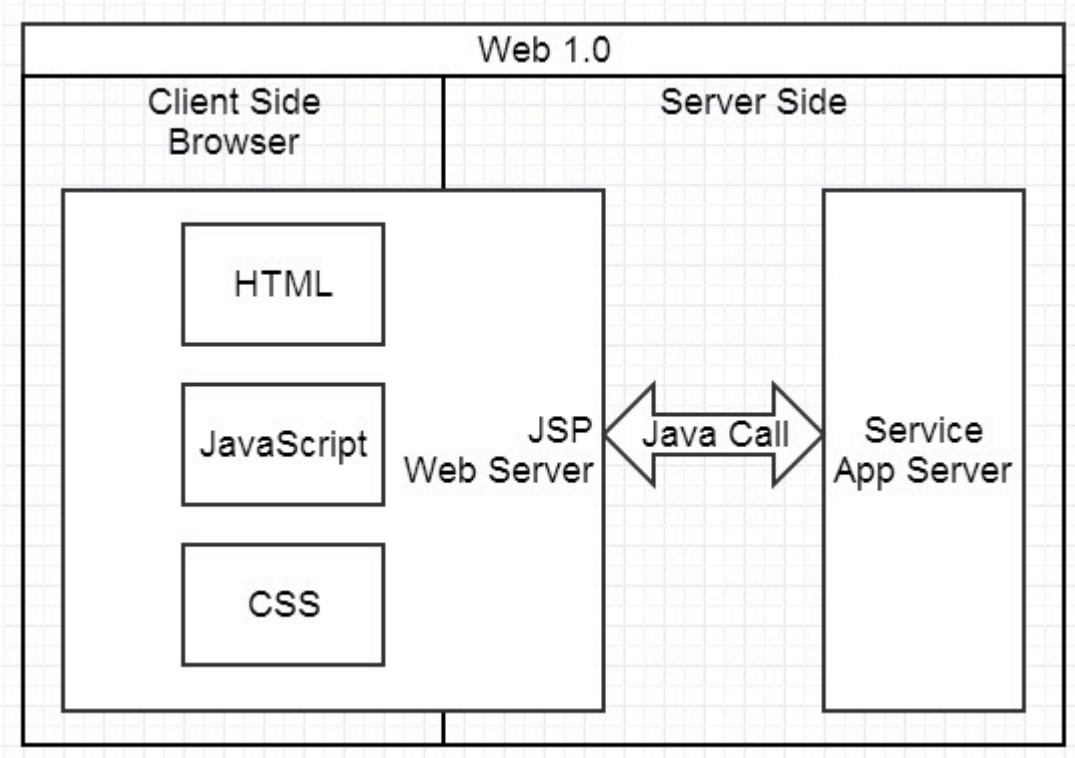
Web 1.0

- Dynamic Web application developed with ASP.NET/JSP



Web 1.0

- Traditional web client server interaction model



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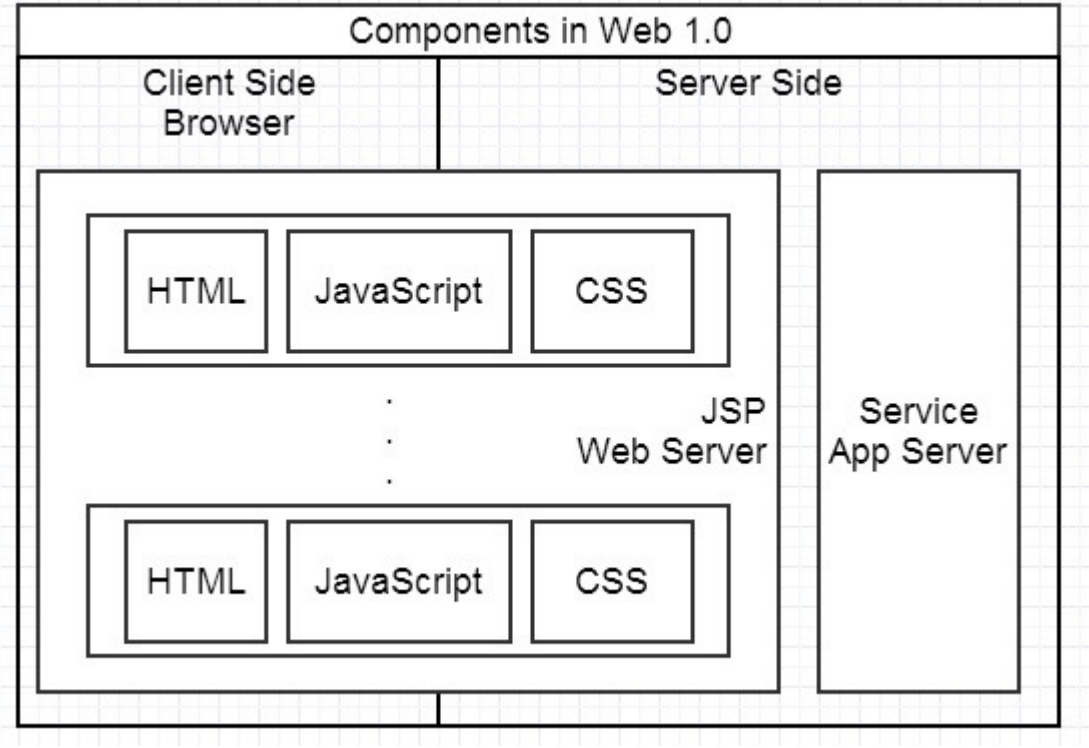
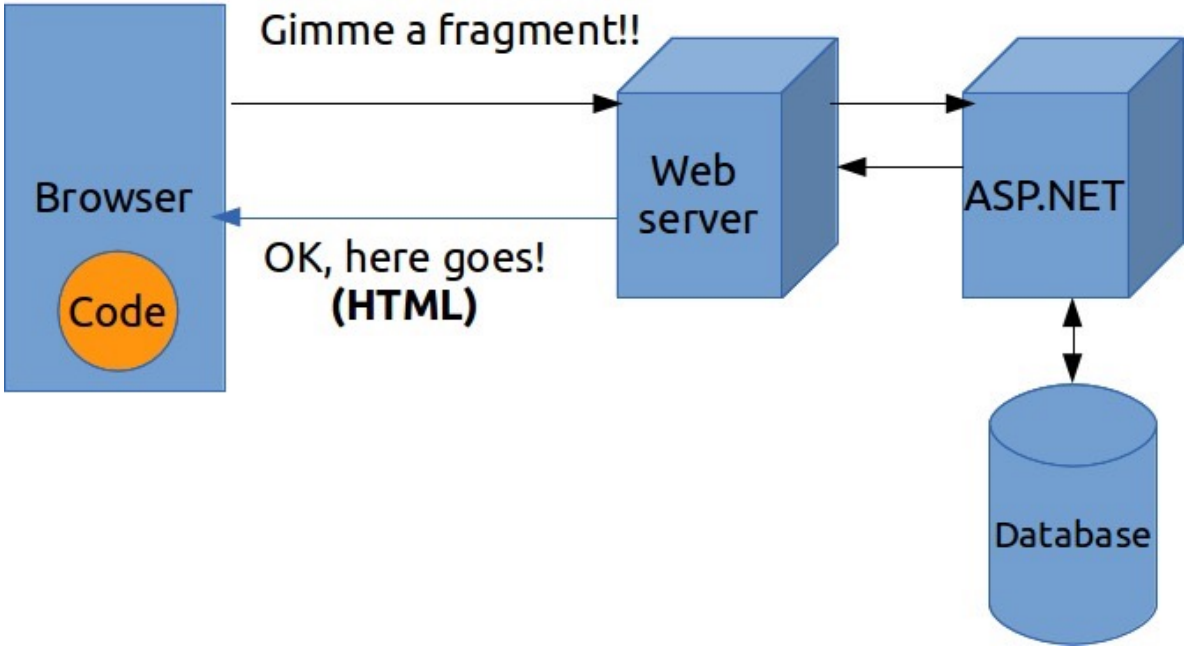
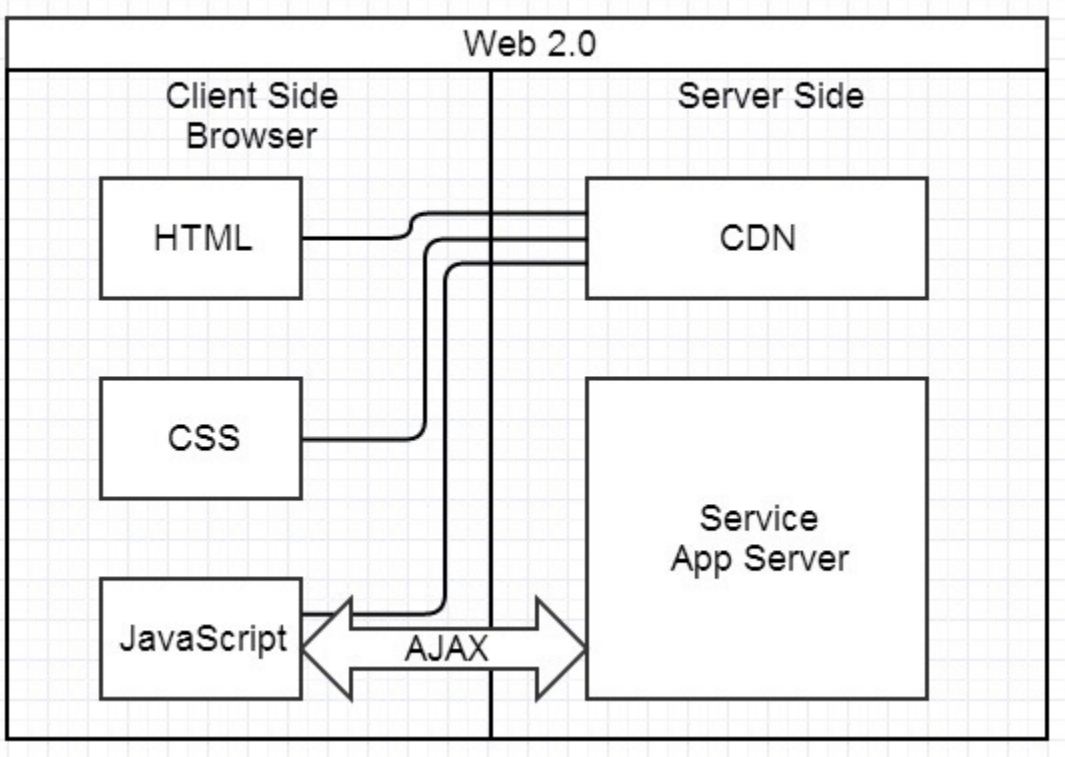


Web 2.0

- Ajax brought a new world in 2005

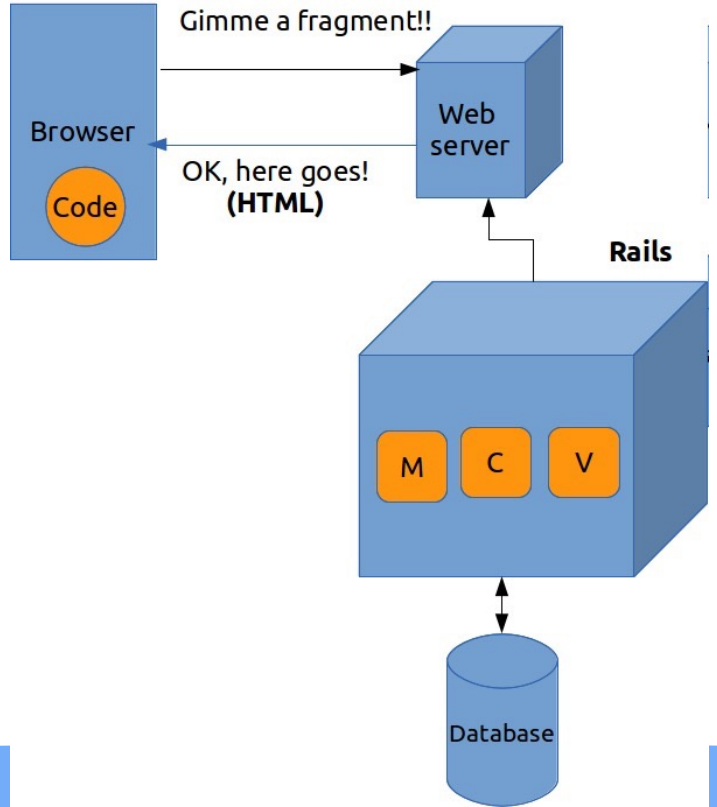


- Single Page Application



MVC Pattern

- Applying MVC patterns to improve maintainability



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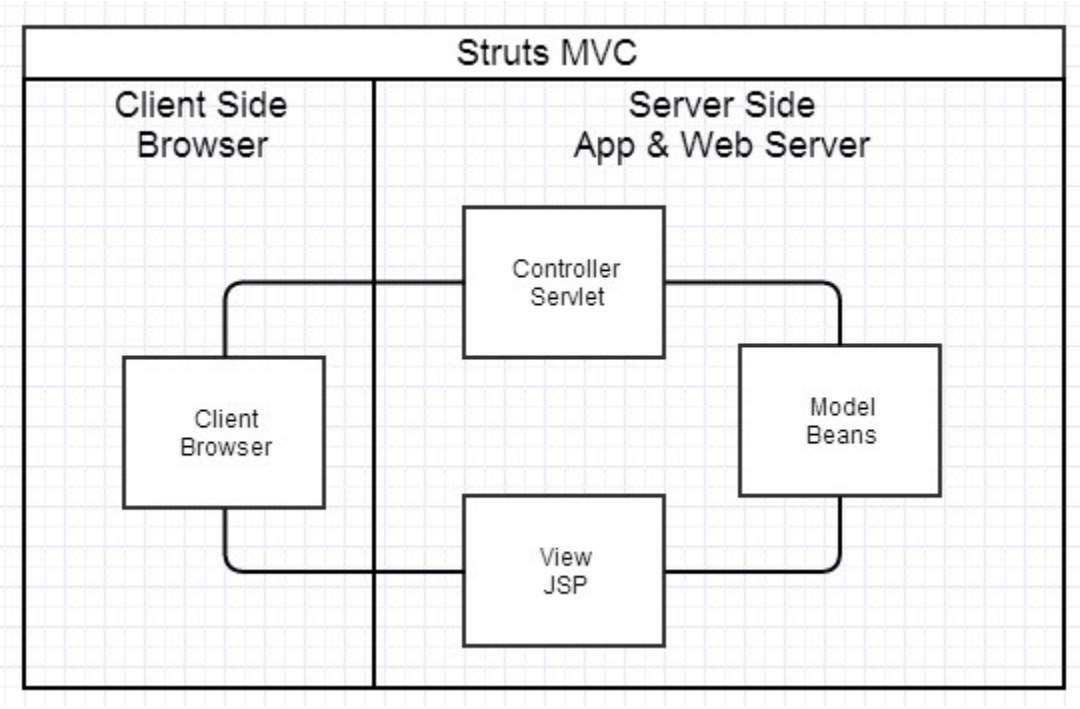
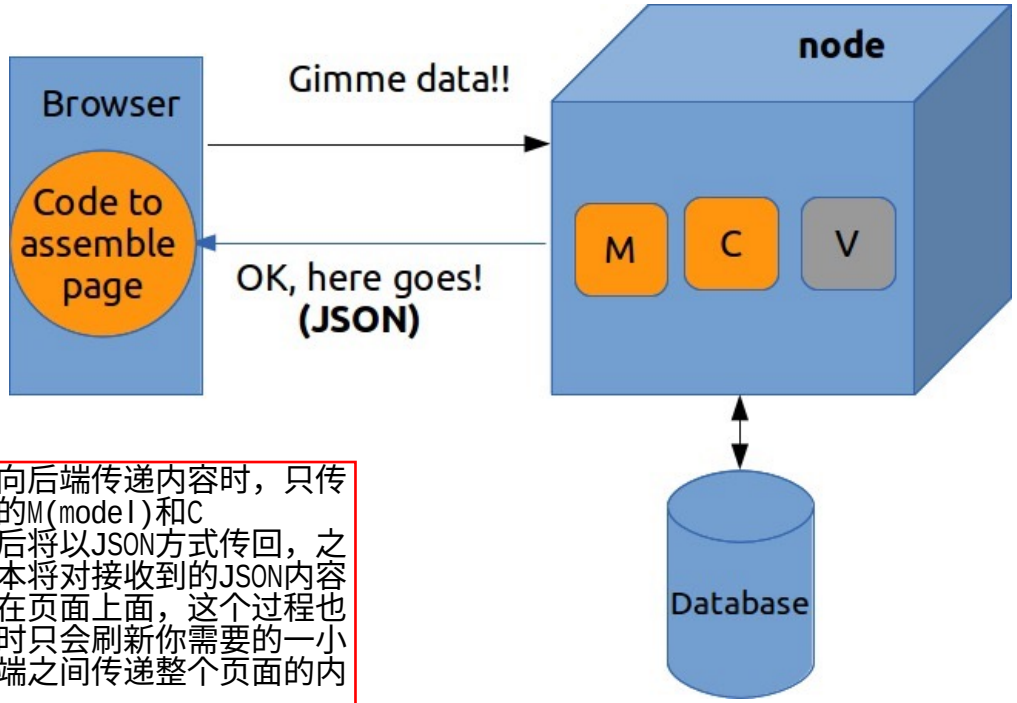


- Assemble page with retrieved data at front-end

MVC具体结构图见附页1

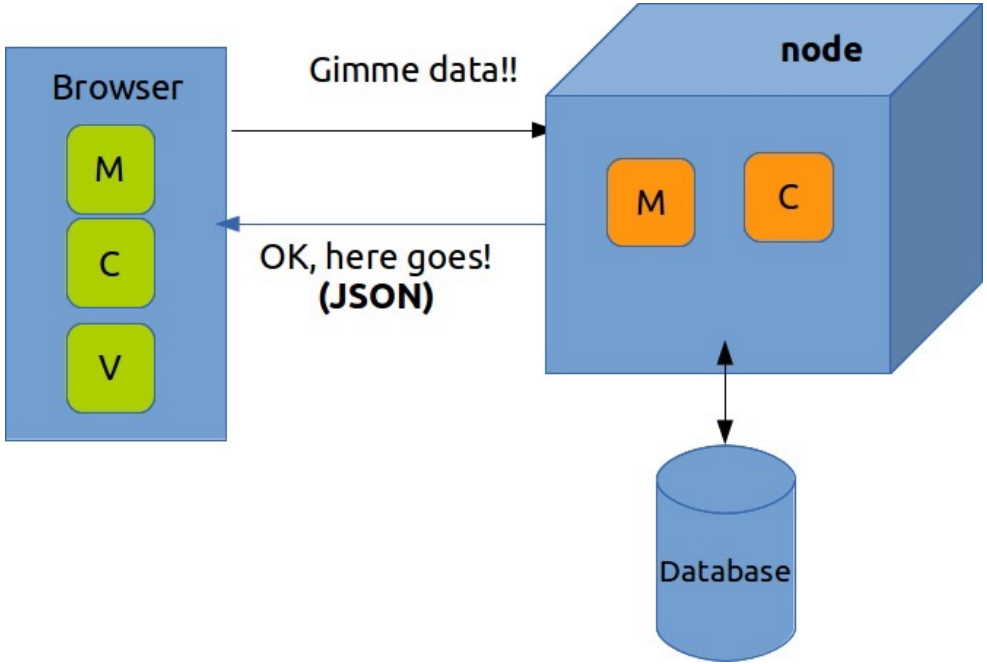


在MVC模式运行过程中，V是看不到M，C的具体操作的，同时M也是看不到C的具体分配流程的，即相互独立。

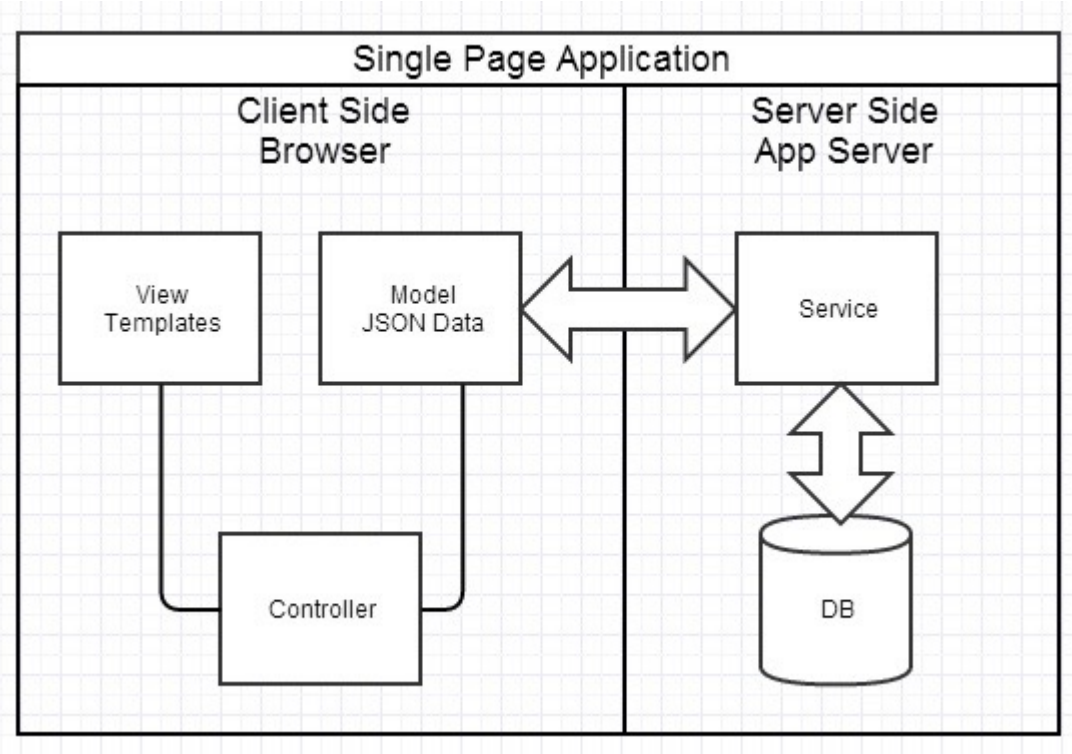
由右图可知，在前端向后端传递内容时，只传递数据，而经过后端的M(model)和C(Controller)处理之后将以JSON方式传回，之后前端的大量的JS脚本将对接收到的JSON内容进行运行，从而显示在页面上面，这个过程也就实现了在更新页面时只会刷新你需要的一小部分，而不是在前后端之间传递整个页面的内容的功能。

MVC & Ajax

- MVC at front-end

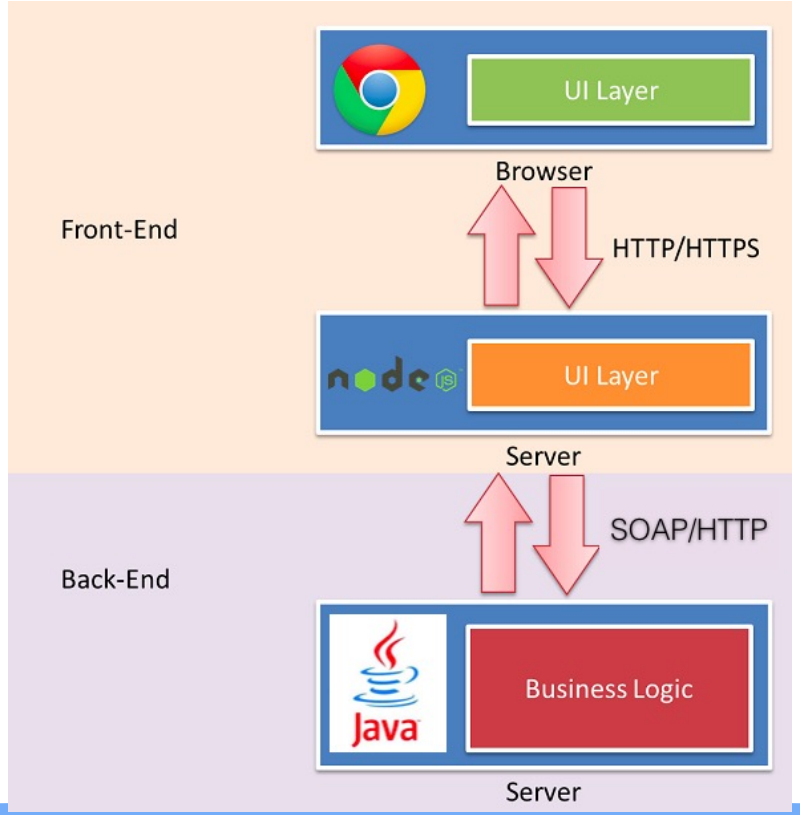


- MVC Pattern at front-end



Full-stack JavaScript & REST API

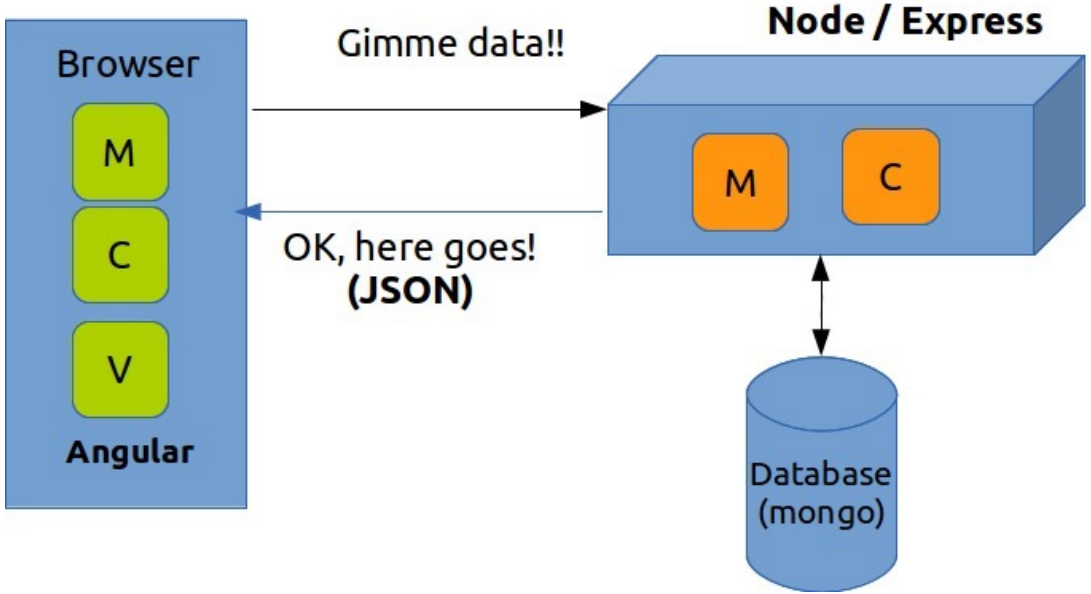
- Node.js



Full-stack JavaScript & REST API

- MongoDB - JSON

数据库的类型很多。。

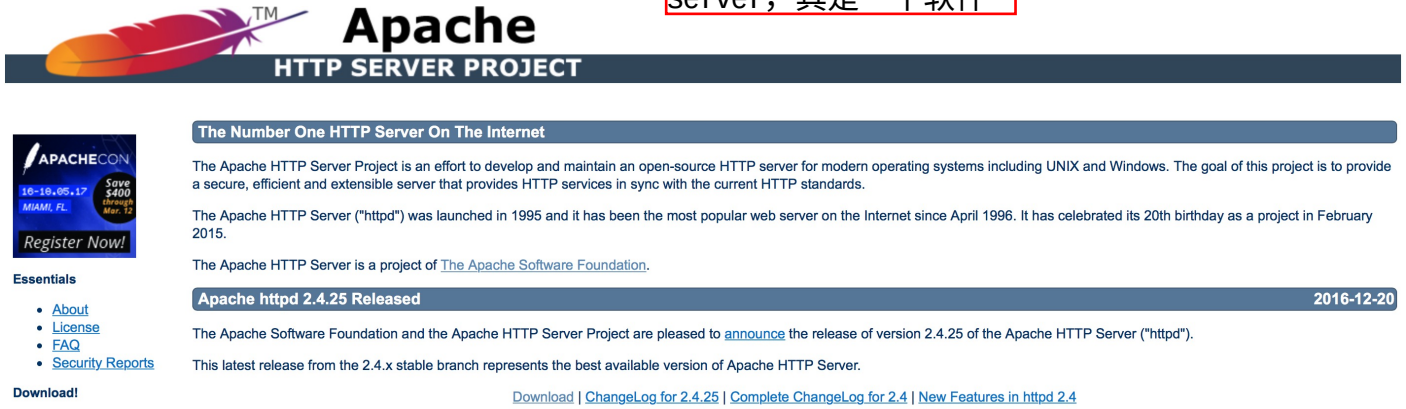


大作业重点部分之一

Apache HTTP Server

- The **Apache HTTP Server**
  - commonly referred to as **Apache** (/əˈpætʃiː/ *ə-**PA**-chee*)
  - is a web server application notable for playing a key role in the initial growth of the World Wide Web User enters interacts with a web page.

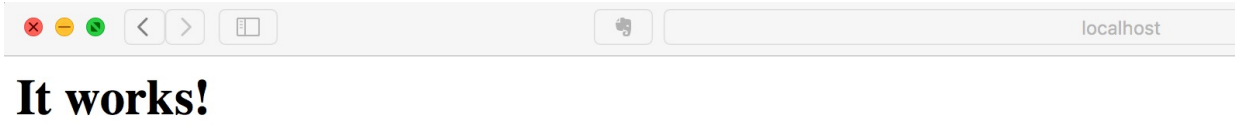
和之前讲的内容一致，
Apache作为一个web
server，其是一个软件



Testing

- Run `bin/httpd.exe` (on Windows)
  - The Apache HTTP Server will be running in a command window.
- Run `sudo apachectl start` (on Linux | Mac OS)
  - Mac OS has a built-in Apache HTTP Server.

- Browse `http://localhost`
  - If the Apache HTTP Server is correctly deployed, you will see:



- Shutdown `sudo apachectl stop` (on Linux | Mac OS)

- PHP
  - Hypertext Preprocessor
  - PHP is a popular general-purpose scripting language that is especially suited to web development.
  - Fast, flexible and pragmatic, PHP powers everything from your blog to the most popular websites in the world.

From http://www.php.net/

  - LAMP
    - Linux + Apache + MySQL + PHP/Python/Perl
    - Facebook, Yahoo, Weibo

Ruby on Rails

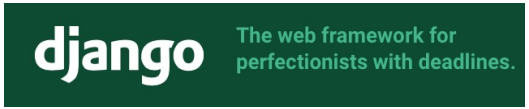
- Ruby on Rails on rails是ruby语言程序用于后端的一种编程规范
  - Rails is a web application development framework written in the Ruby language.
  - It is designed to make programming web applications easier by making assumptions about what every developer needs to get started.
  - It allows you to write less code while accomplishing more than many other languages and frameworks.
  - http://rubyonrails.org
  - If you run bin/rails routes, you'll see that it has defined routes for all the standard RESTful actions.

JS：解释型语言
JAVA:编译型语言

  - Github, Airbnb

Web Frameworks for Python

- Popular Python Full-Stack Frameworks
- Diango
  - Django is a high-level Python Web framework that encourages rapid development and clean, pragmatic design.



- TurboGears 2
  - TurboGears 2 is built on top of the experience of several next generation web frameworks including TurboGears 1 (of course), Django, and Rails.

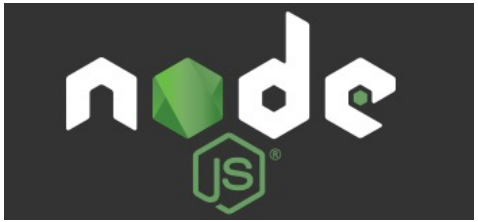
- Web2py
  - Free open source full-stack framework for rapid development of fast, scalable, secure and portable database-driven web-based applications. Written and programmable in Python.

- YouTube

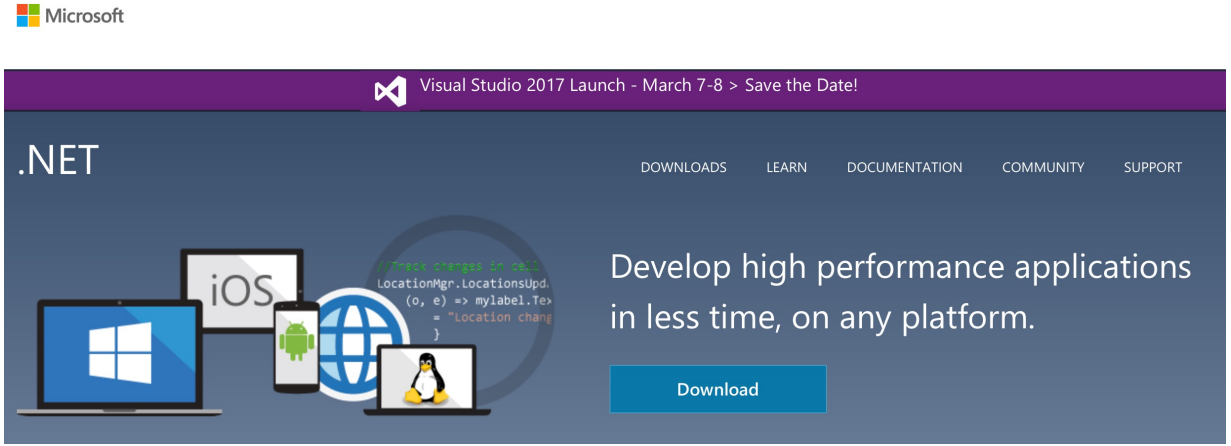
Node.js

- Node.js
  - Node.js ® is a JavaScript runtime built on Chrome's V8 JavaScript engine.
  - Node.js uses an event-driven, non-blocking I/O model that makes it lightweight and efficient.
  - Node.js' package ecosystem, npm, is the largest ecosystem of open source libraries in the world.

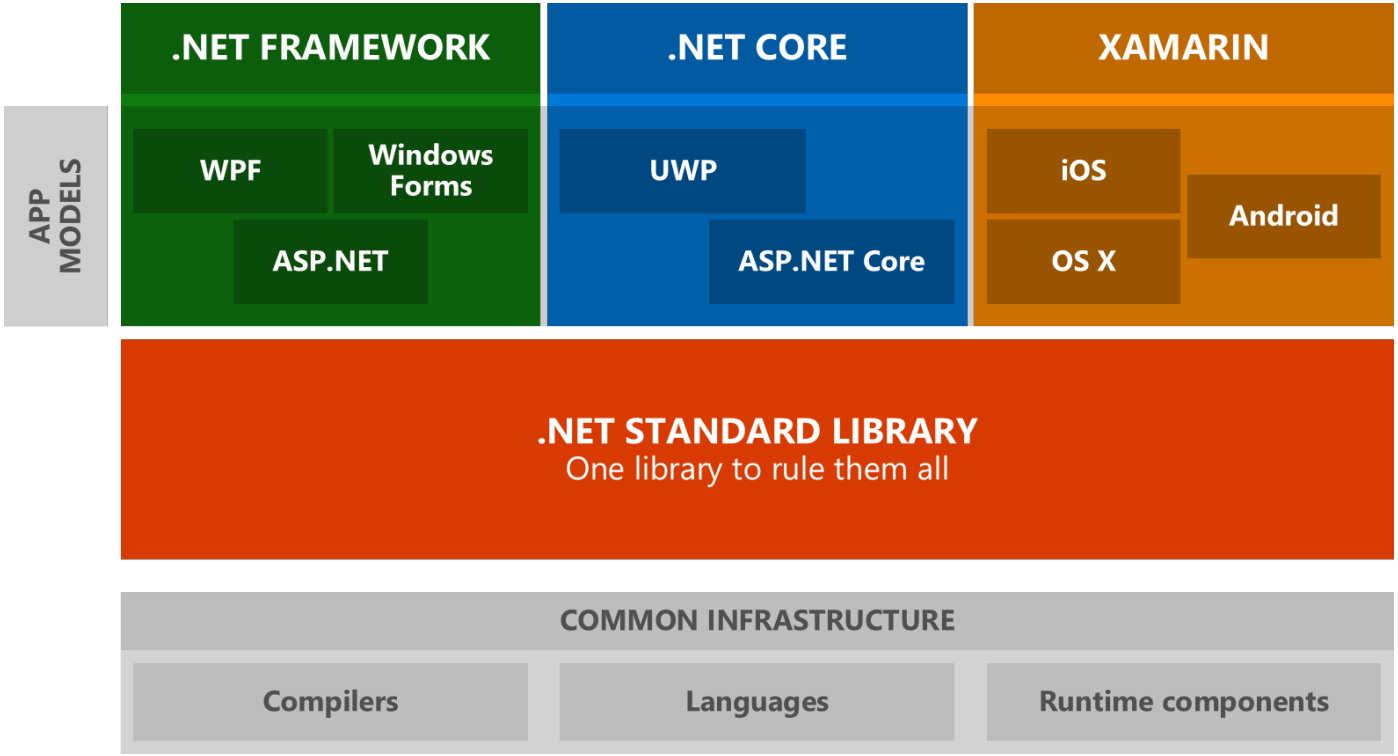
  - Emerging Technology



- Another heavy-weight framework
  - An alternative of Java EE
  - Stackoverflow



Windows .NET


APP MODELS
.NET FRAMEWORK
WPF
Windows Forms
ASP.NET
.NET CORE
UWP
ASP.NET Core
XAMARIN
iOS
Android
OS X
.NET STANDARD LIBRARY
One library to rule them all
COMMON INFRASTRUCTURE
Compilers
Languages
Runtime components

Other Options

- Erlang
  - Erlang is a programming language used to build massively scalable soft real-time systems with requirements on high availability.

- Scala
  - Construct elegant class hierarchies for maximum code reuse and extensibility, implement their behavior using higher-order functions. Or anything in-between.

- Go
  - Go is an open source programming language that makes it easy to build simple, reliable, and efficient software.

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- Erlang
  - http://www.erlang.org
- Scala
  - http://www.scala-lang.org
- Go
  - https://golang.org

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Thank You!