

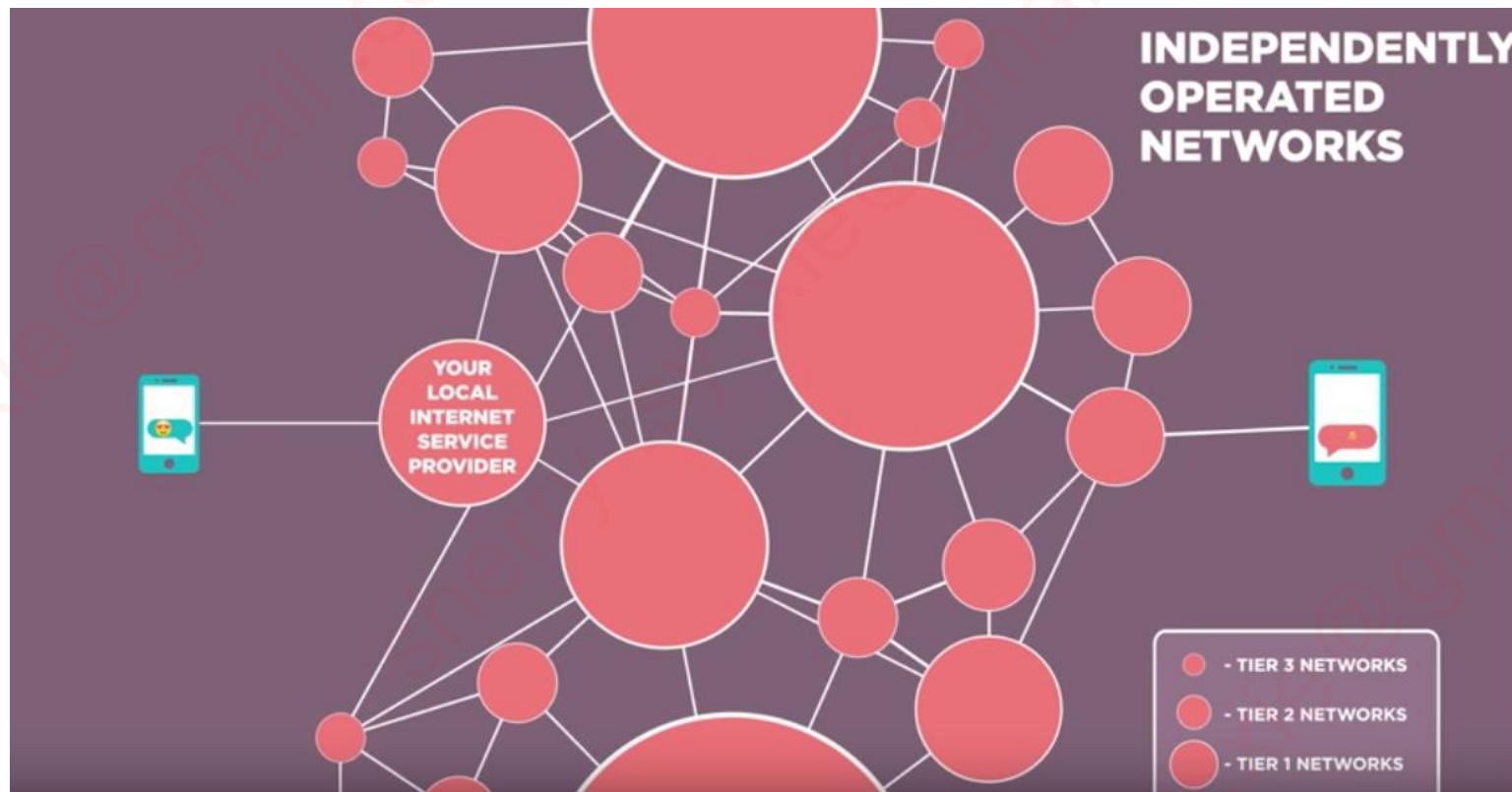


匠人学院  
[jiangren.com.au](http://jiangren.com.au)

# Web & Network Technology



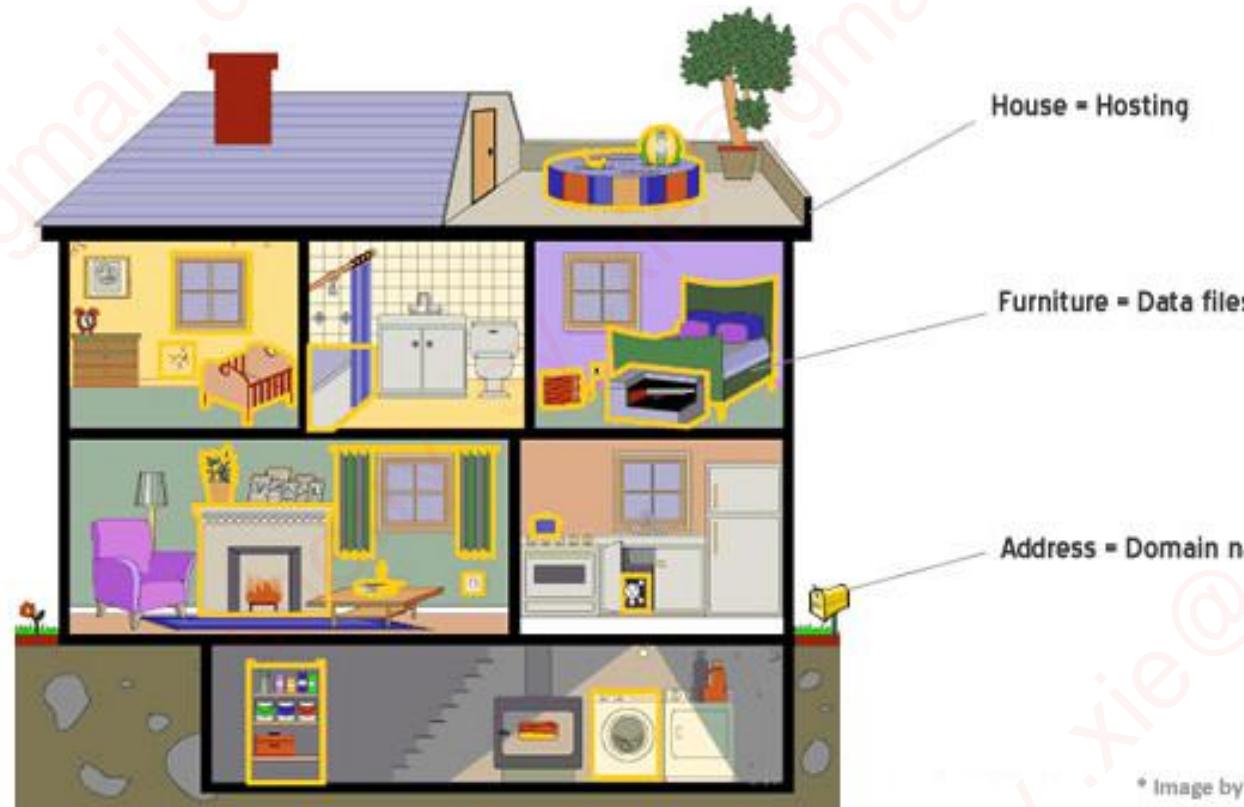
## What's Internet



<https://youtu.be/Dxcc6ycZ73M>



## IP Address , Domain Name, Hosting



\* Image by Web Hosting Secret Revealed

匠人学院 : Domain Name  
Level 13b 116 Adelaide Street : IP Address

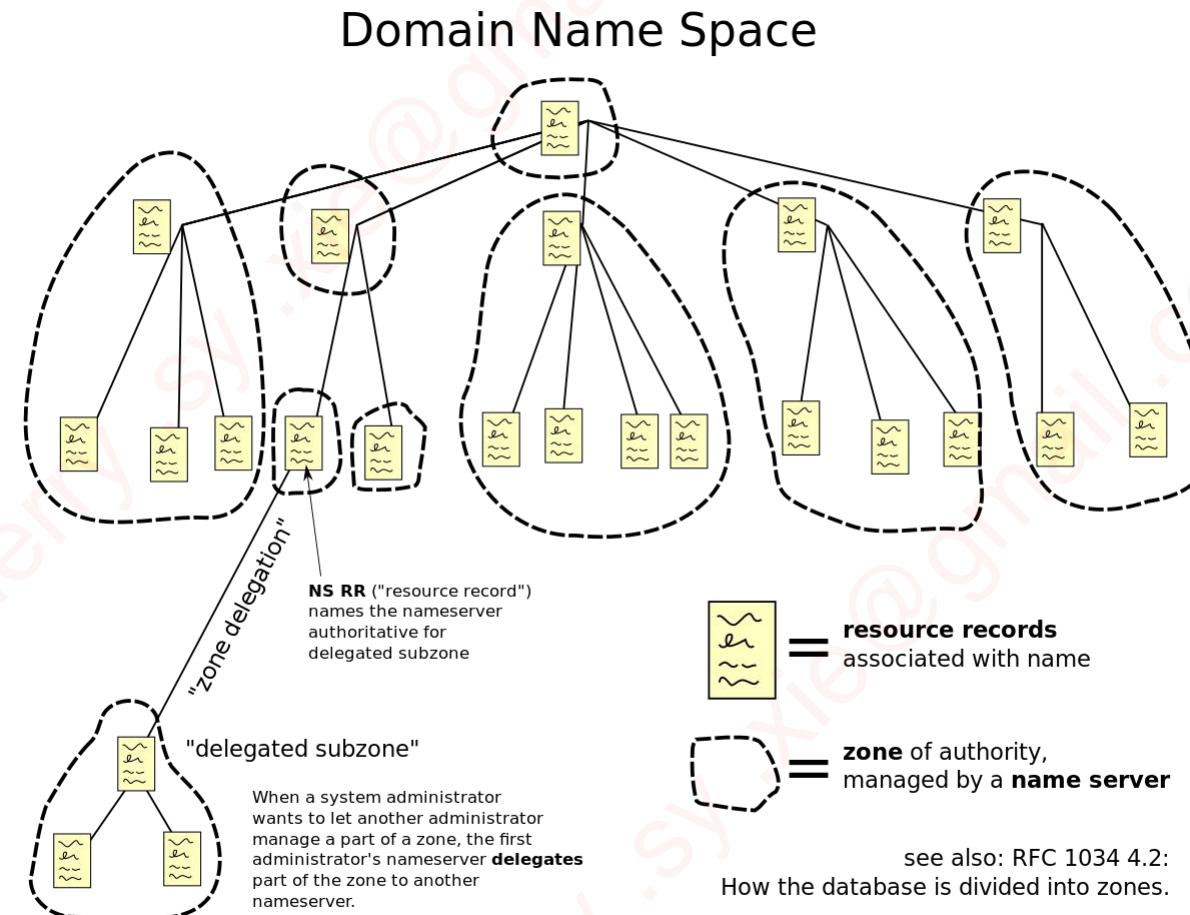


## DNS : Domain Name System



Internet Corporation for  
Assigned Names and Numbers

全世界域名的最高管理机构



13个服务器



## 如何买域名

Godaddy ( <https://au.godaddy.com> )

Crazy Domain ( <https://www.crazydomains.com.au> )

AWS Route 53 ( <https://aws.amazon.com>)

阿里云 ( <https://cn.aliyun.com>)

<https://leandomainsearch.com/>

.com .net .org 国际顶级域名

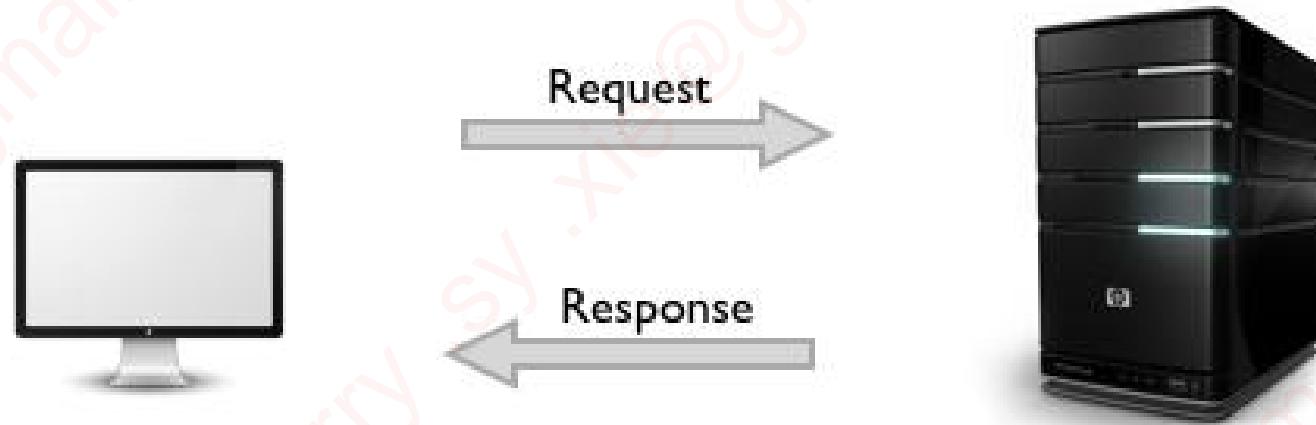
[.com.au](#) (需要ABN)   [.com.cn](#) 国家代码顶级域名，需要ICP备案



# **IP Address , Domain Name, Hosting**



Records (17)		DNSSEC signing	Hosted zone tags (0)		
Records (17)		Info			
Automatic mode is the current search behavior optimized for best filter results. To change modes go to settings.					
<input type="text"/> Filter records by property or value <span>Type</span> <span>Routing policy</span>					
Record name	Type	Routine...	Differ...		
jiangren.com.au	A	Simple	-		
jiangren.com.au	MX	Simple	-		
jiangren.com.au	NS	Simple	-		
jiangren.com.au	SOA	Simple	-		
_b5f5972858a80795...	CNAME	Simple	-		
admin.jiangren.com.au	CNAME	Simple	-		
alidnscheck.jiangren....	TXT	Simple	-		
cdn.jiangren.com.au	CNAME	Simple	-		
cicd.jiangren.com.au	A	Simple	-		
learn.jiangren.com.au	CNAME	Simple	-		



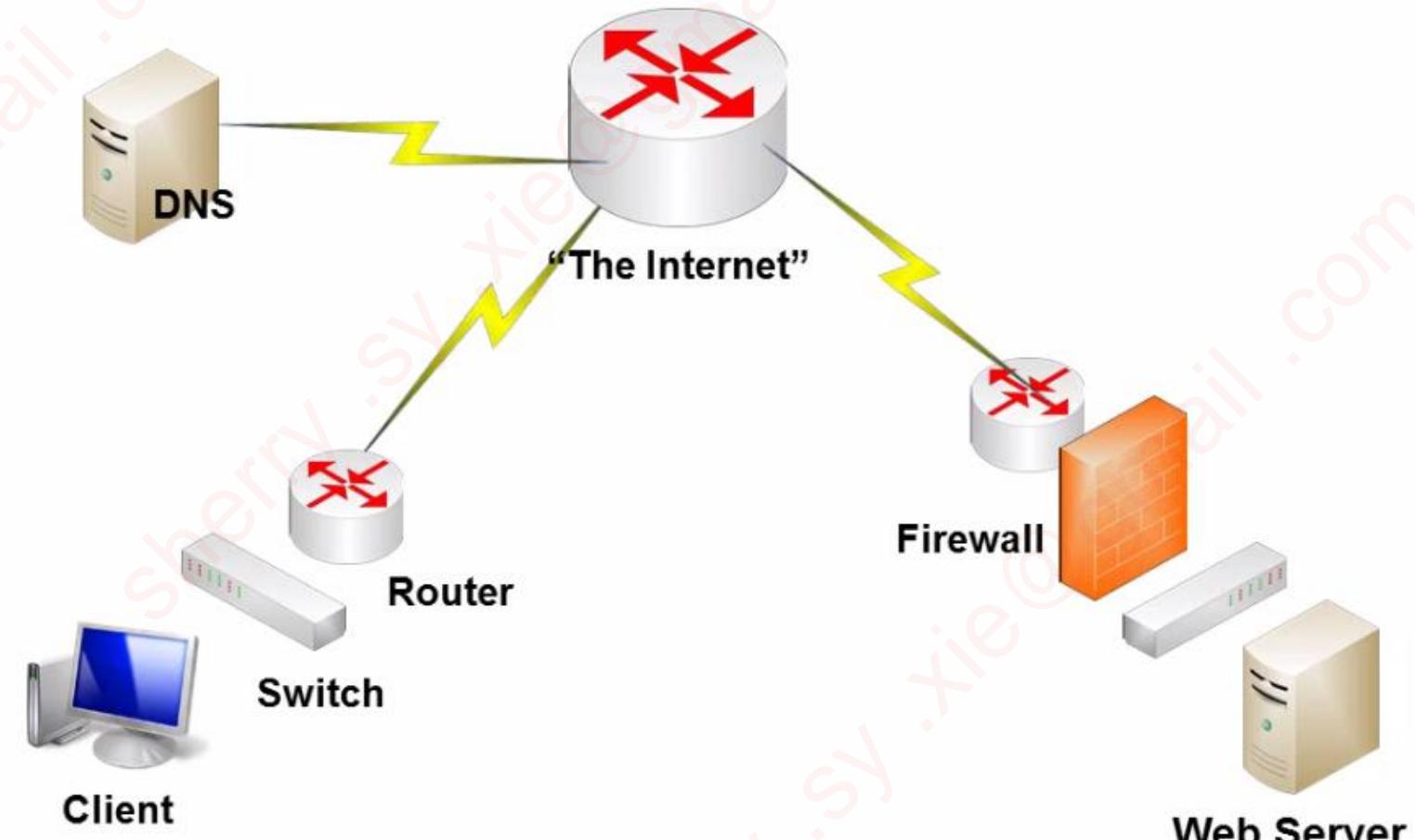
**国内阿里面试题：打开一个网页经历了什么**

**CCNA自学材料：Google Drvie**  
<https://learningnetwork.cisco.com/s/>

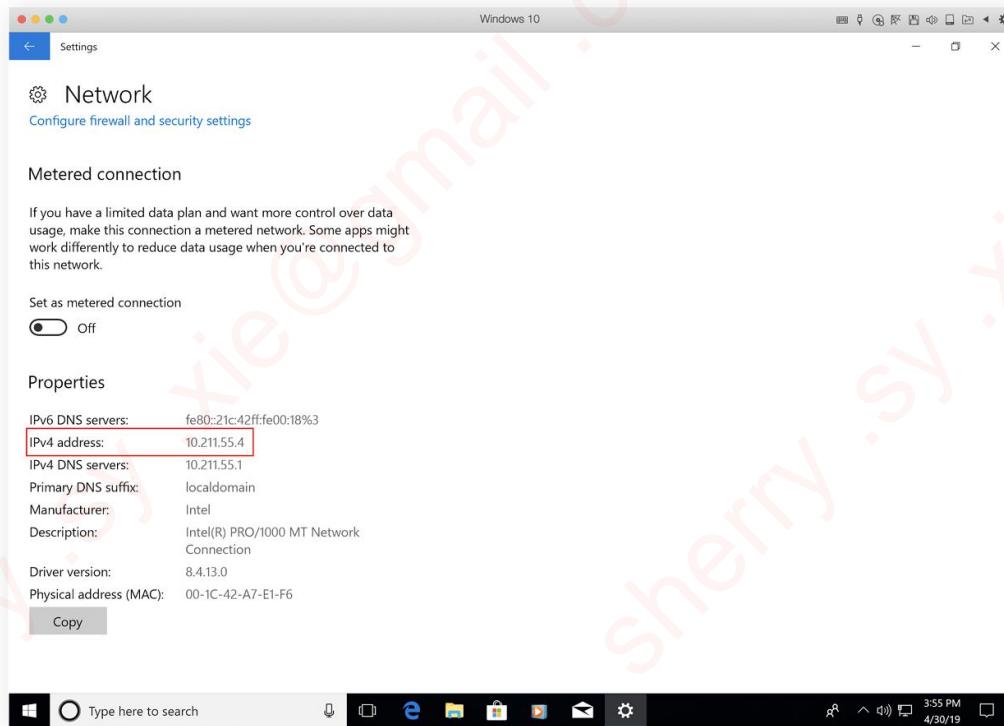


**Command line**  
**Windows:**  
ipconfig

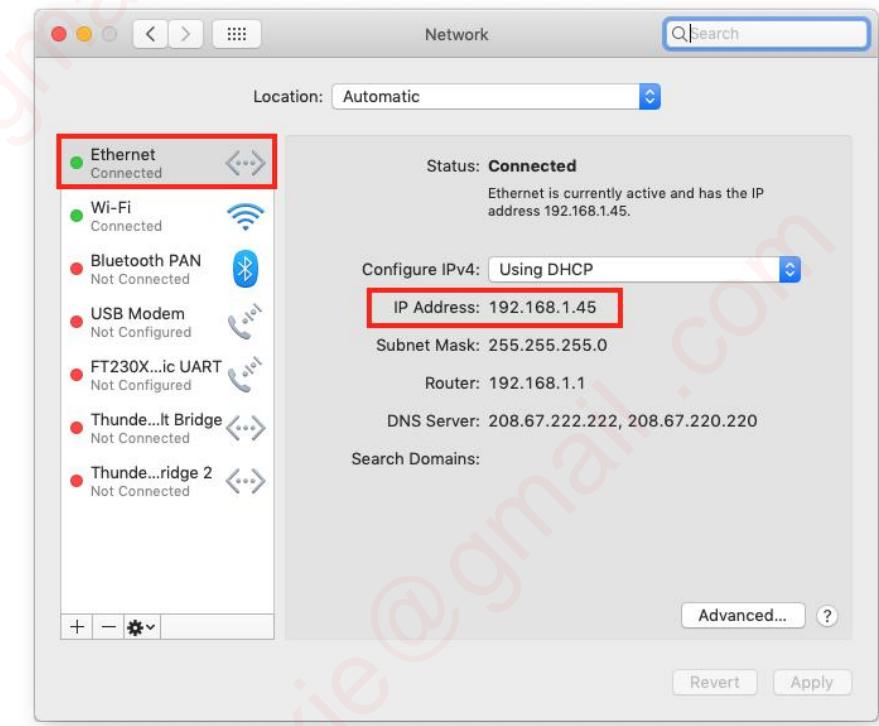
**Mac:**  
ifconfig  
curl ifconfig.me



Google Search: what is my ip



Windows



Mac

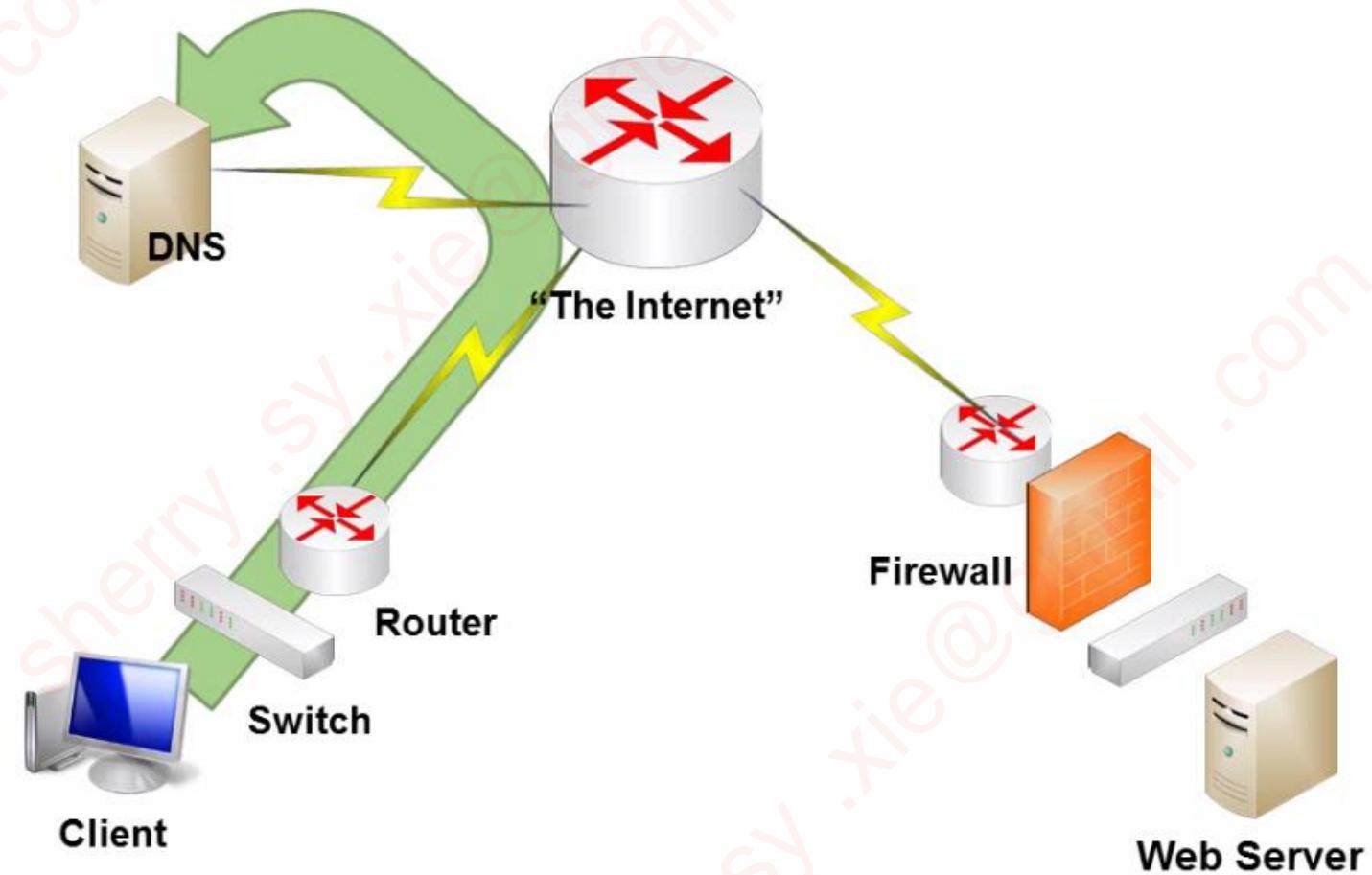
ipconfig getifaddr en0

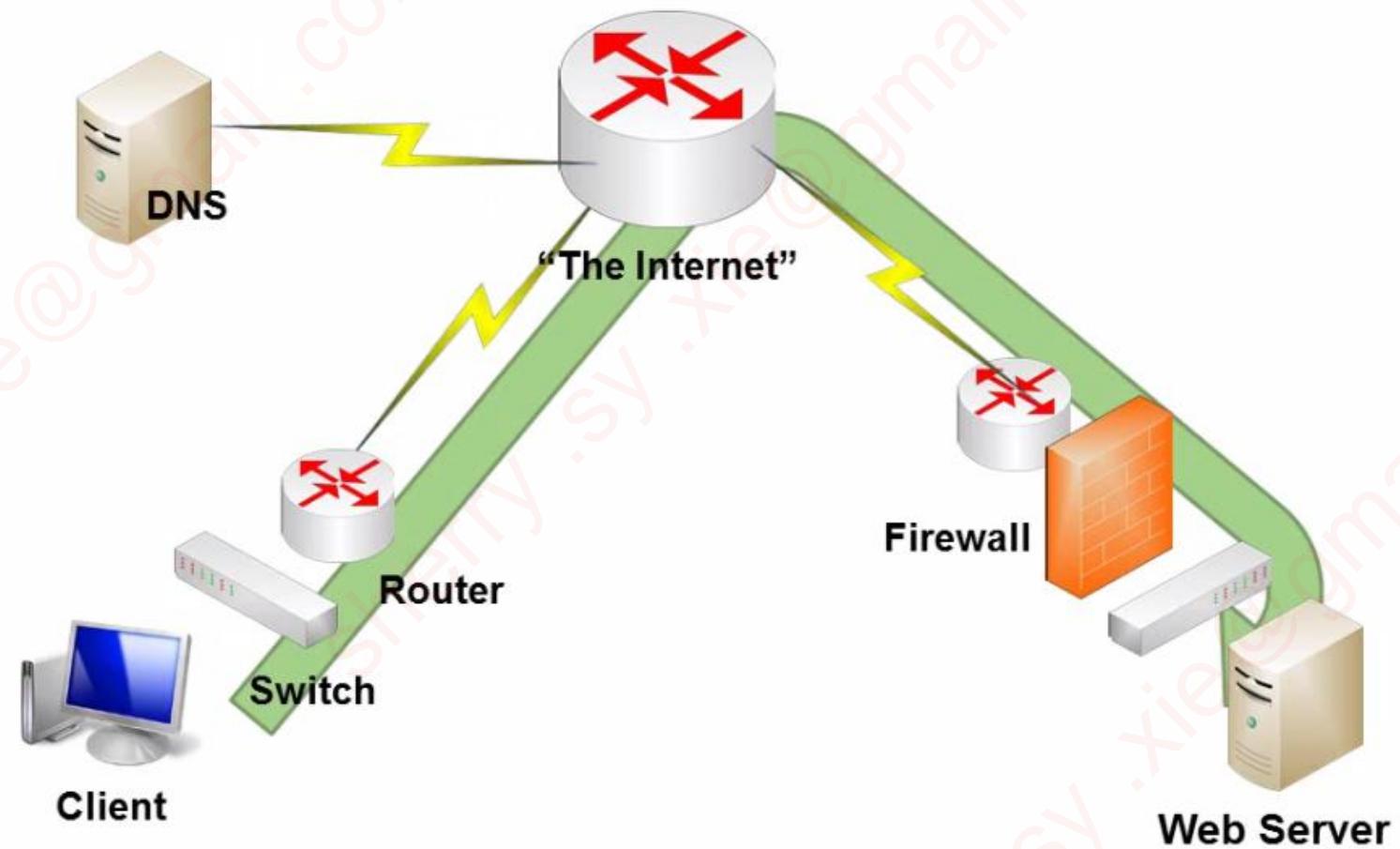


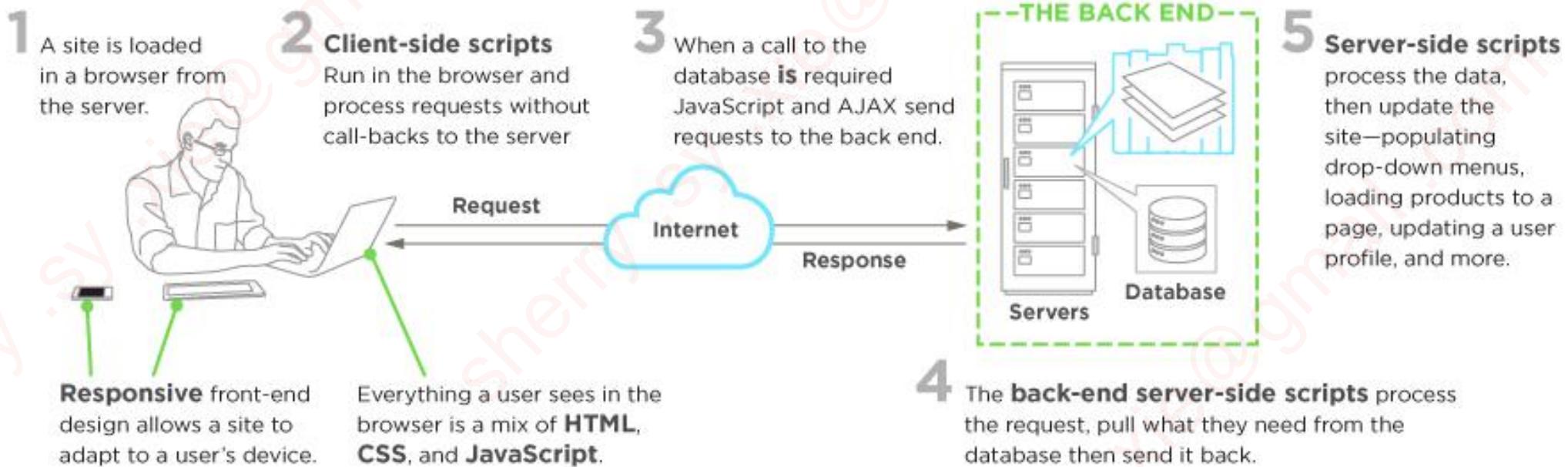
访问 [jiangren.com.au](http://jiangren.com.au)

**Command line**

Ping [jiangren.com.au](http://jiangren.com.au)

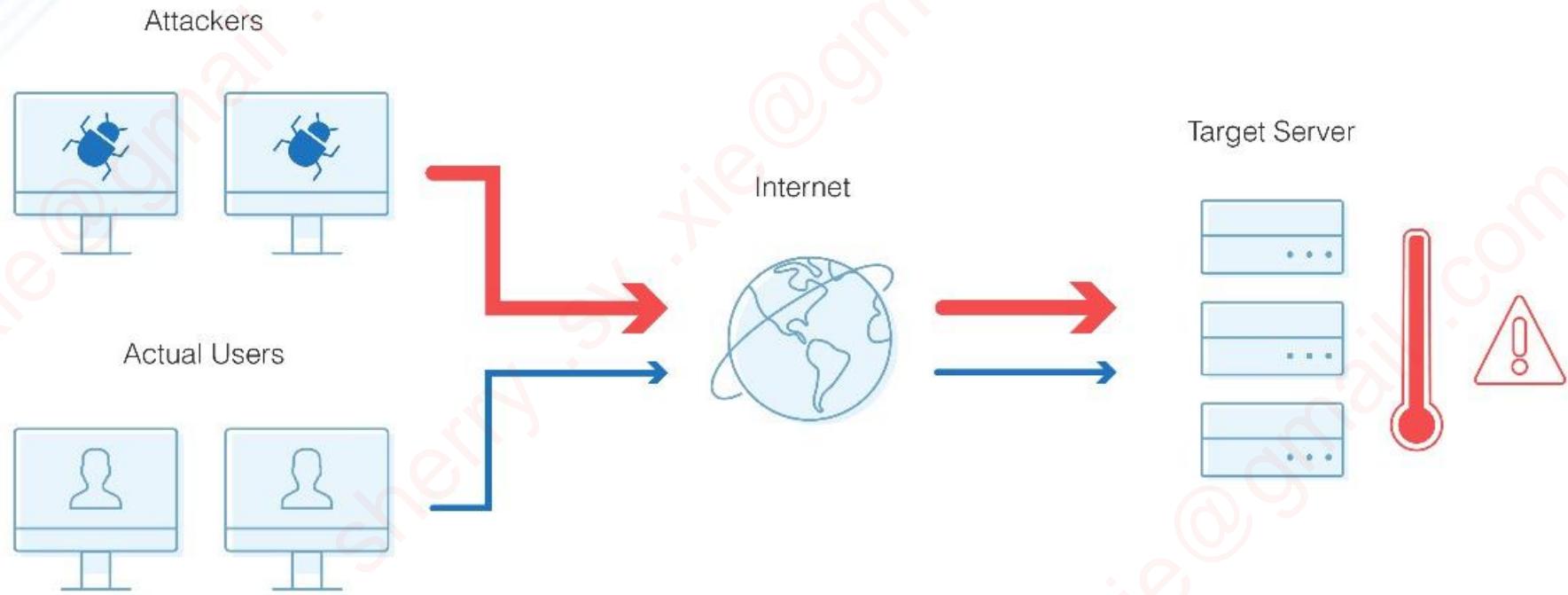








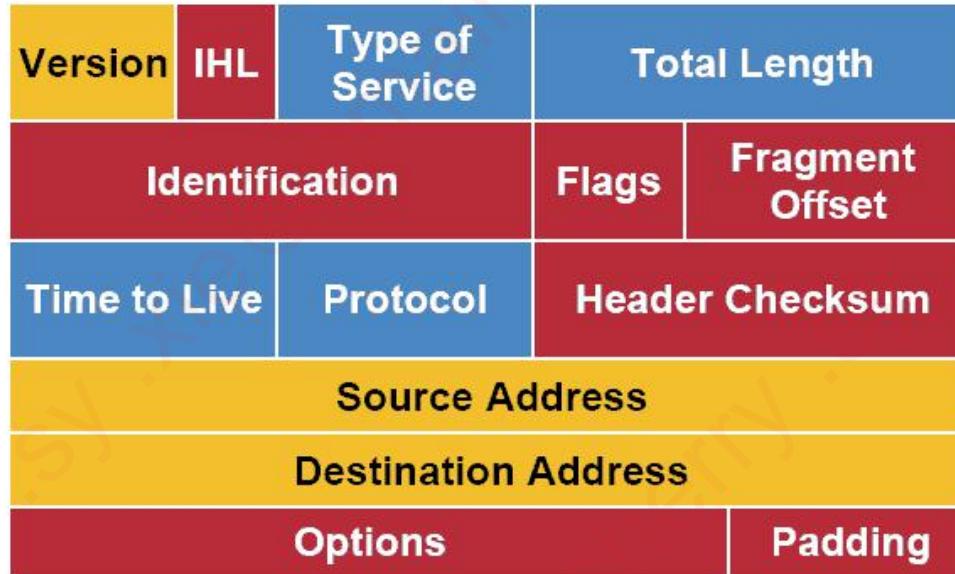
# What Is a DDoS Attack?



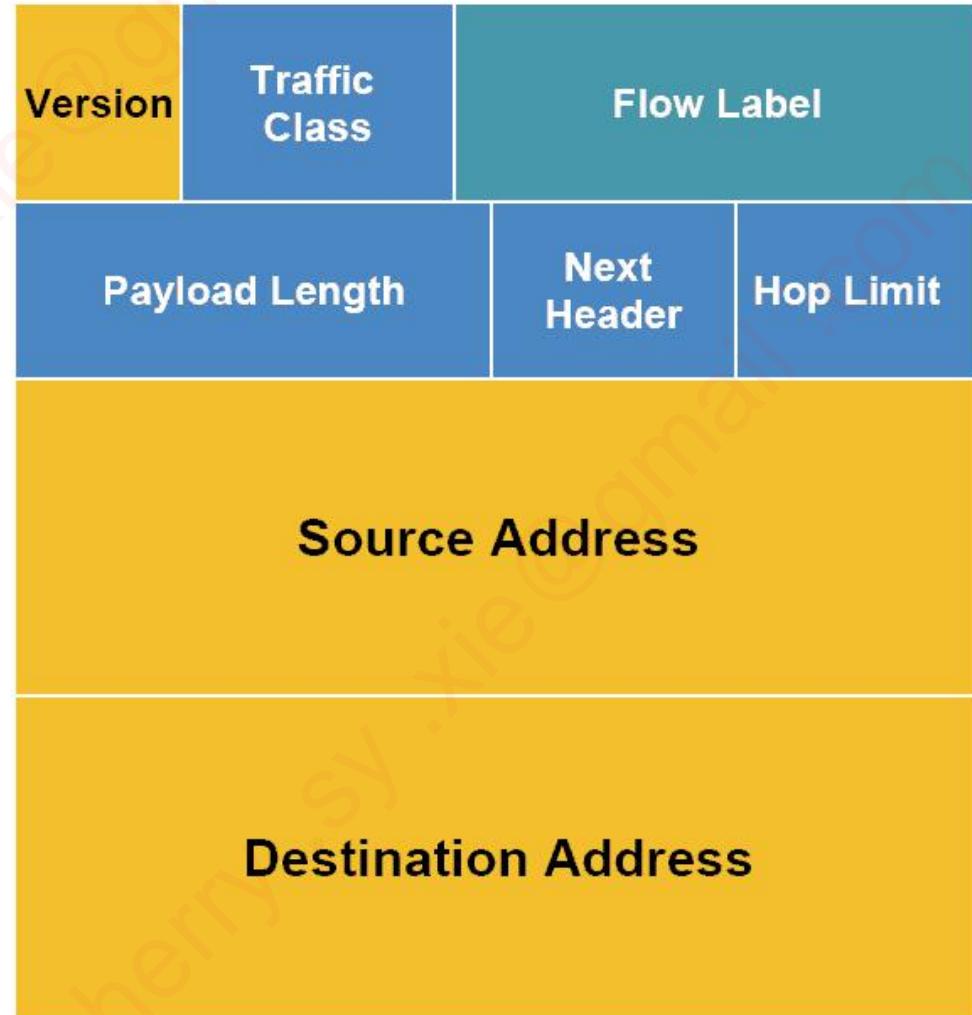
DDOS 攻击，它在短时间内发起大量请求，耗尽服务器的资源，无法响应正常的访问，造成网站实质下线



## IPv4 Header



## IPv6 Header



### Legend

- Yellow Box: Field's Name Kept from IPv4 to IPv6
- Red Box: Fields Not Kept in IPv6
- Blue Box: Name and Position Changed in IPv6
- Teal Box: New Field in IPv6



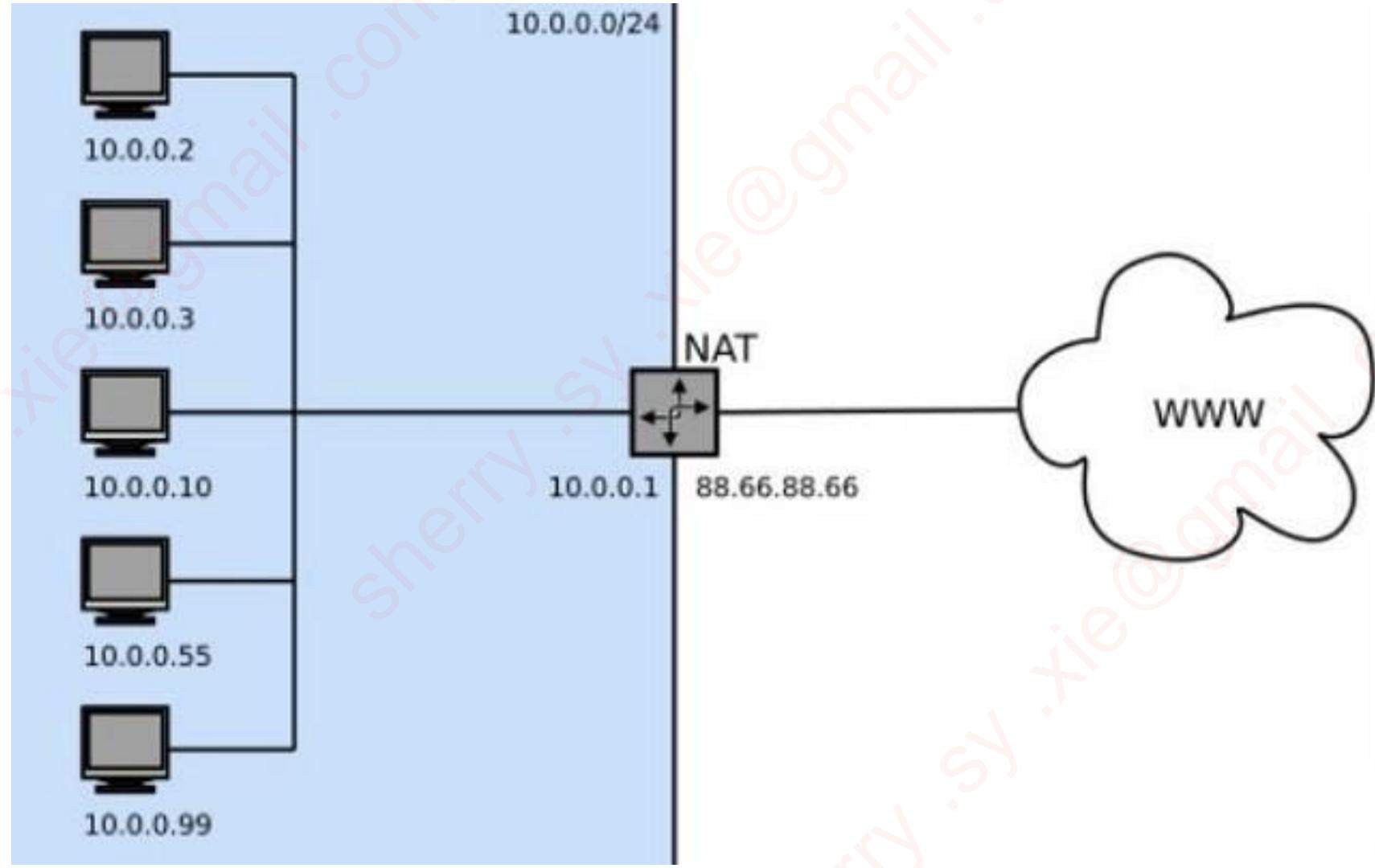
## IPv4

### Public Address

类别	最大网络数	IP地址范围	单个网段最大主机数	私有IP地址范围
A	126 ( $2^7-2$ )	1.0.0.1-127.255.255.254	16777214	10.0.0.0-10.255.255.255
B	16384( $2^{14}$ )	128.0.0.0-191.255.255.255	65534	172.16.0.0-172.31.255.255
C	2097152( $2^{21}$ )	192.0.0.0-223.255.255.255	254	192.168.0.0-192.168.255.255

### Private Address Range

<u>Class</u>	<u>Address Range</u>	<u>Default Subnet Mask</u>
A	10.0.0.0 - 10.255.255.255	255.0.0.0
B	172.16.0.0 - 172.31.255.255	255.255.0.0
C	192.168.0.0 – 192.168.255.255	255.255.255.0





## IPv4

Deployed 1981

32-bit IP address

**4.3 billion addresses**

Addresses must be reused and masked

Numeric dot-decimal notation

**192.168.5.18**

DHCP or manual configuration

## IPv6

Deployed 1998

128-bit IP address

**7.9x10<sup>28</sup> addresses**

Every device can have a unique address

Alphanumeric hexadecimal notation

**50b2:6400:0000:0000:6c3a:b17d:0000:10a9**

(Simplified - 50b2:6400::6c3a:b17d:0:10a9)

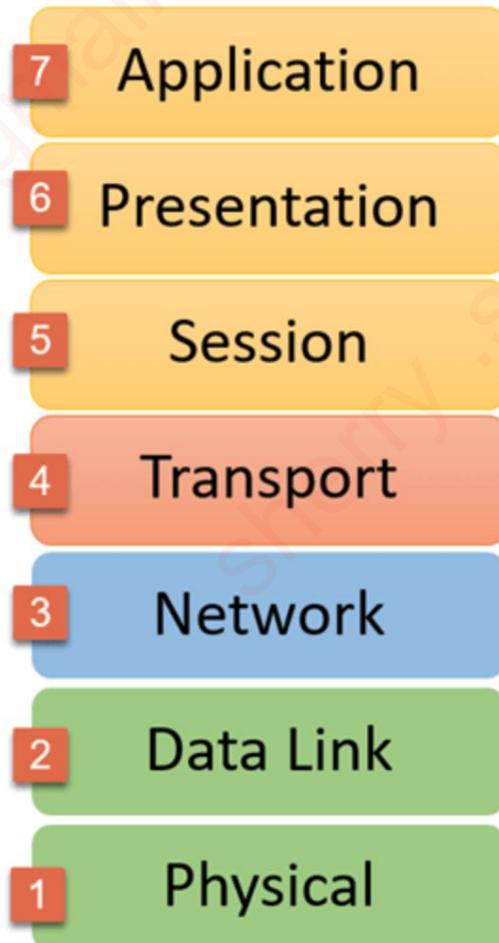
Supports autoconfiguration



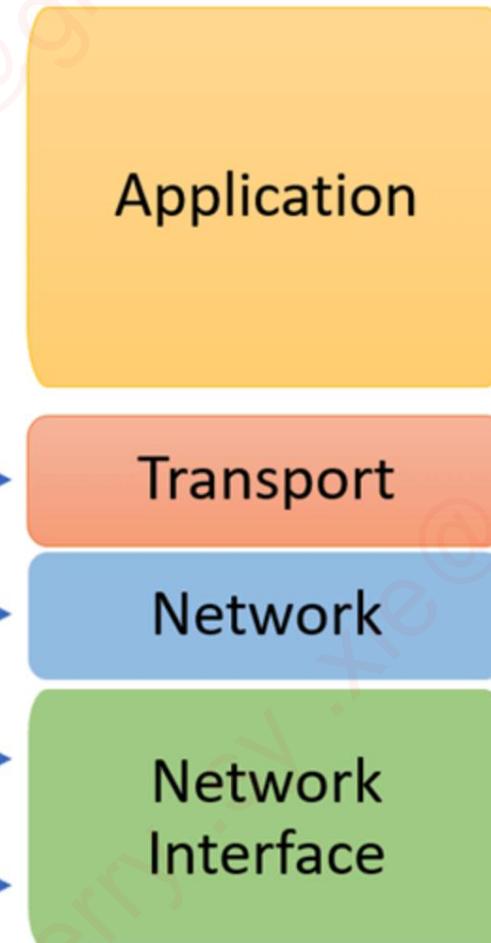
## OSI Model vs TCP/IP

国内常考题

### OSI Reference Model



### TCP/IP Conceptual Layers





AWS



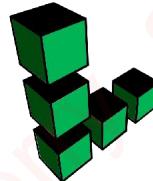
Azure



App Engine



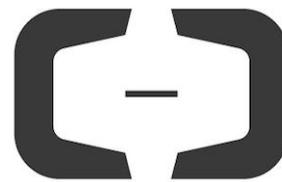
**HEROKU**



linode



**DigitalOcean**



阿里云  
aliyun.com

阿里云



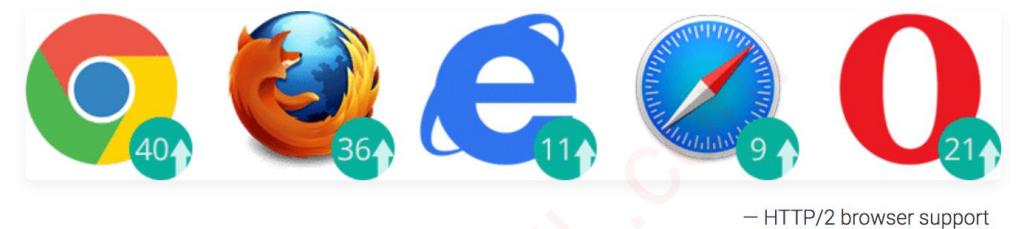
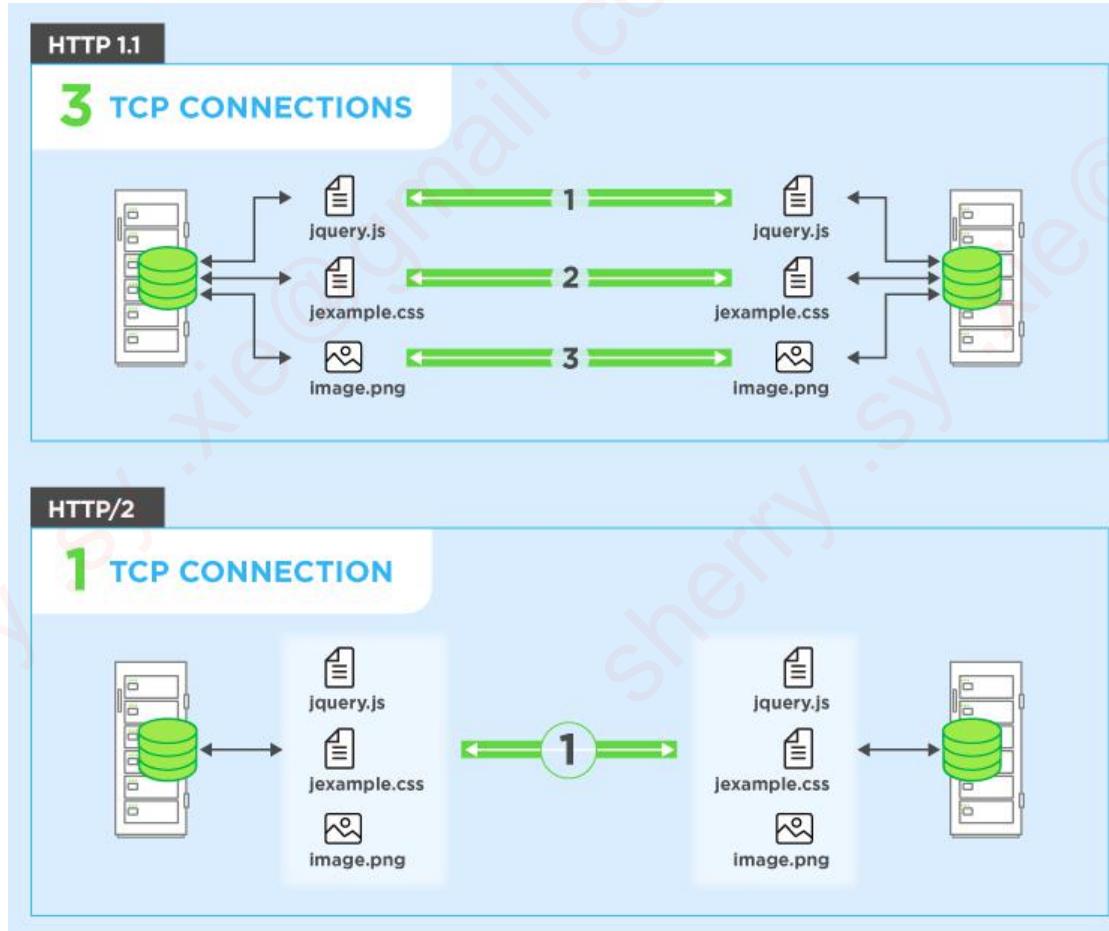
腾讯云

腾讯云

推荐阅读 <https://www.webhostingsecretrevealed.net/web-hosting-beginner-guide>



## HTTP 1.1 vs HTTP/2



多路复用 (Multiplexing)

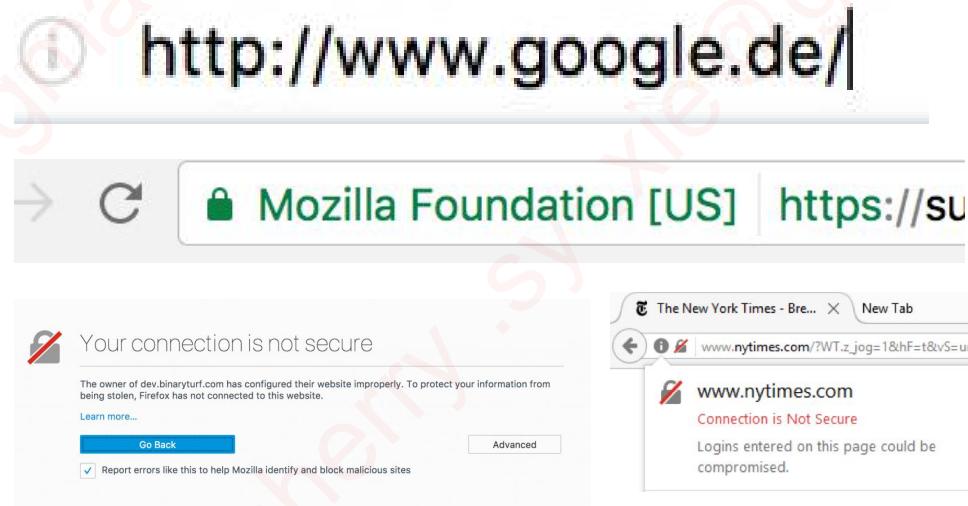
首部压缩 (Header Compression)

服务端推送 (Server Push)



## HTTP vs HTTPS

http



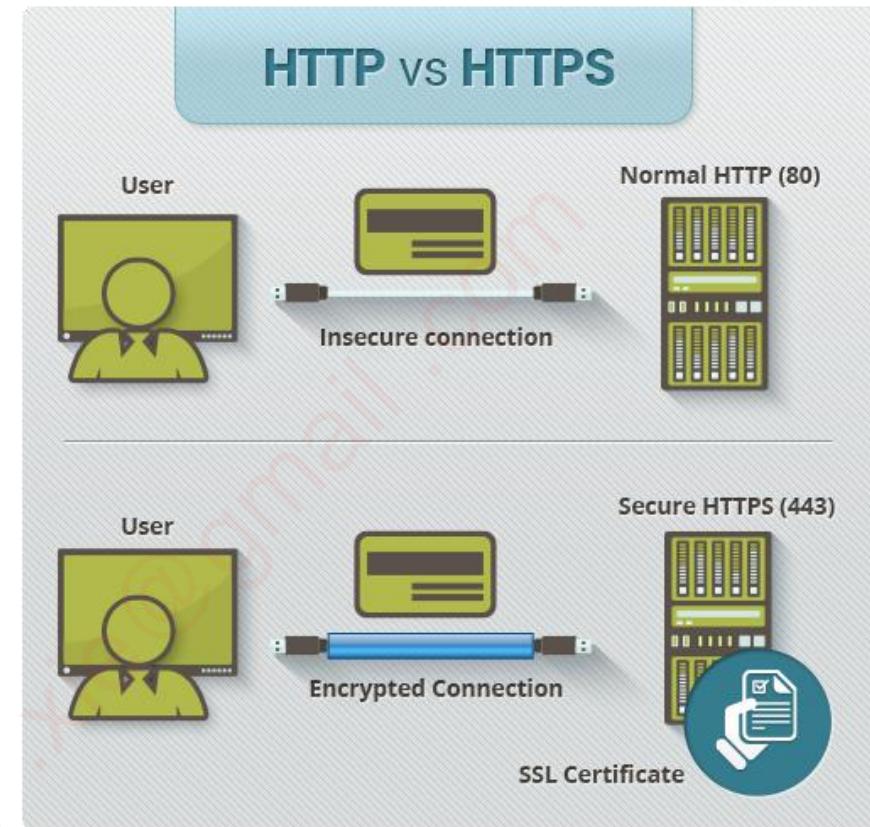
https



### https benefits

1. Safer websites
2. Sense of trust
3. Improve SEO
4. Simplified Integration

Certbot ↕ install





## Port

http : 80  
https: 443  
ssh: 22



## Uniform Resource Locators

<http://www.food.com>

**http://food.com/recipe/grilled-cauliflower**

*URL Scheme*

*Host*

*URL Path*

### Other URL Scheme

<ftp://jiangren.com.au/download/books>  
<mailto://lightman@jiangren.com>



## Uniform Resource Locators

**http://wikipedia.org/wiki/Jabuticaba#Description**



**http://host:8080/path?q=query#fragment**

<https://jiangren.com.au/program-courses>

SPA-Single-page Application

推荐阅读 <https://code.tutsplus.com/tutorials/http-the-protocol-every-web-developer-must-know-part-1--net-31177>

<https://code.tutsplus.com/tutorials/http-the-protocol-every-web-developer-must-know-part-2--net-31155>

# Chrome Dev Tool



## How to Access DevTools

The screenshot shows the Chrome DevTools open in a browser window. The left pane displays the DOM tree with various HTML elements like <html>, <head>, <body>, and <main>. The right pane shows the 'Styles' tab, which lists CSS rules such as 'position: relative;', 'font-family: "Roboto Condensed", "Helvetica", "Arial", sans-serif;', and 'font-weight: 300;'. A color picker tool is visible, showing a gradient from red to black with a hex code #EAEAEA. The bottom right corner of the color picker has an alpha slider set to 100%.

<https://secure.budgetdirect.com.au/sar/2.0/?LinkId=09441>

- Select the **Chrome menu**  at the top-right of your browser window, then select **Tools > Developer Tools**.
- Right-click on any page element and select **Inspect Element**.

## Website vs Web Application



## HTTP example

### Request

```
GET /index.html HTTP/1.1
Host: www.example.com
```

### Method

Get/Post/PUT/Delete

参考 <https://developer.mozilla.org/en-US/docs/Web/HTTP/Methods>

【Chrome Developer Tools】

### Response

```
HTTP/1.1 200 OK
Date: Mon, 23 May 2005 22:38:34 GMT
Content-Type: text/html; charset=UTF-8
Content-Encoding: UTF-8
Content-Length: 138
Last-Modified: Wed, 08 Jan 2003 23:11:55 GMT
Server: Apache/1.3.3.7 (Unix) (Red-Hat/Linux)
ETag: "3f80f-1b6-3e1cb03b"
Accept-Ranges: bytes
Connection: close

<html>
<head>
    <title>An Example Page</title>
</head>
<body>
    Hello World, this is a very simple HTML document.
</body>
</html>
```



200 OK  
400 Bad Request  
401 Unauthorized  
402 Payment Required  
403 Forbidden  
404 Not Found  
500 Internal Server Error

ref <https://httpstatuses.com/>

# Chrome Dev Tool



Inspect Element

Responsive

Resource

Network

Application

Audit

Safari Console

local和session都是存在browser里的

Local storage: 5mb 无论哪个tab, 内容都一样

Session storage: limited by system 可以更改, 跟tab有关系, tab不同, 数据就不一样,  
关掉tab再打开要重来

Cookie: 存文件到电脑里, 因为安全问题, 所以很少用

# Full-stack 基本要求



User Story、Feature等需求，Developer默认对  
Mobile iPad Desktop端的Web都要支持

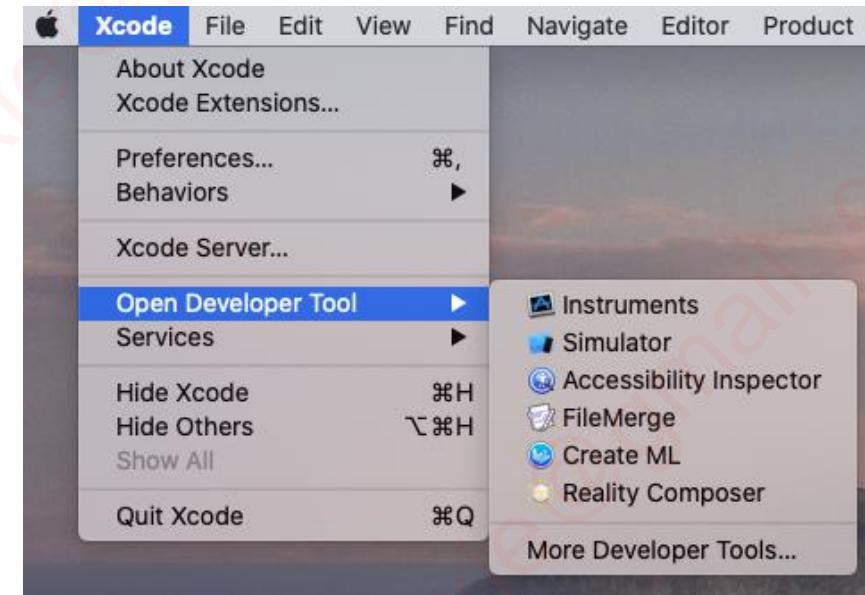
# Debug iOS Real Device



# Debug iOS Real Device



Xcode



# Debug iOS Real Device



# Debug iOS Real Device



1



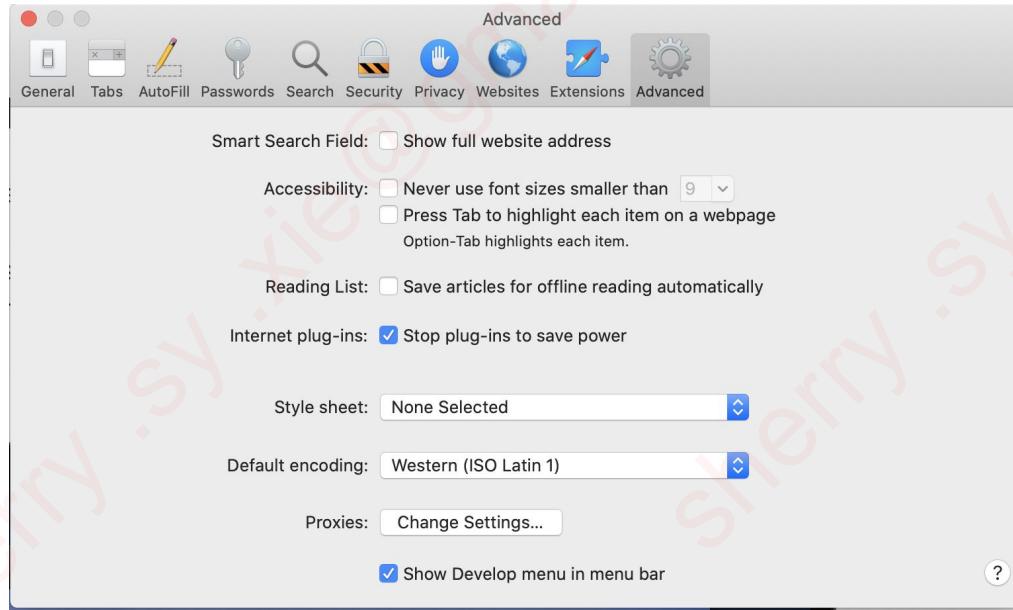
2



3



# Debug iOS Real Device



Apple Developer      Discover      Design      Develop      Distribute      Support      Account     

## Safari

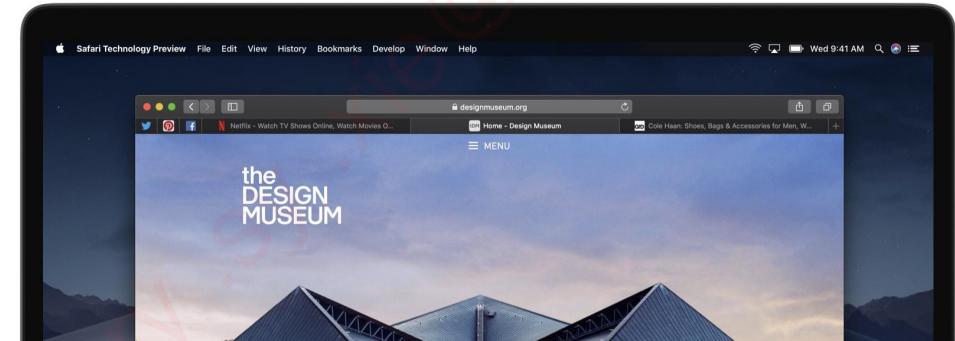
Overview   Tools   Features   Extensions   Preview   Resources   What's New   Download



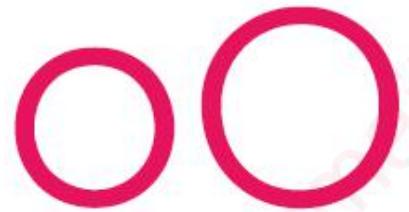
## Safari Technology Preview

Safari is the best way to see the sites on iPhone, iPad, and Mac. Safari Technology Preview gives you an early look at upcoming web technologies in macOS and iOS. Get the latest layout technologies, visual effects, developer tools, and more, so you can provide input on how they are implemented and deliver a best-in-class user experience on all Apple devices.

[Download Safari Technology Preview >](#)



# Debug Android Real Device



**GENYMOTION**  
By Genymobile

<https://www.genymotion.com/>

chrome://inspect/#devices

Chrome | chrome://inspect/#devices

Apps Animation Js SpinKit | Simple C... Reeoo - web desi... www.s...

DevTools Devices

Devices  Discover USB devices Port forwarding...

Pages  Discover network targets Configure...

Extensions

Apps

Shared workers

Remote Target #LOCALHOST

Genymotion - Business

Your virtual devices

- Custom tablet - 7.0.0 - API 24 - 1280x2048
- Samsung Galaxy Note 2 - 4.2.2 - API 17 - 720x1280
- Custom BRUUIHHHHH - 7.1.0 - API 25 - 1536x2048
- Google Pixel XL - 7.1.0 - API 25 - 1440x2560
- Clone - Google Pixel XL - 7.1.0 - API 25 - 1440x2560
- Google Pixel - 7.1.0 - API 25 - 1080x1920

User: cvelet

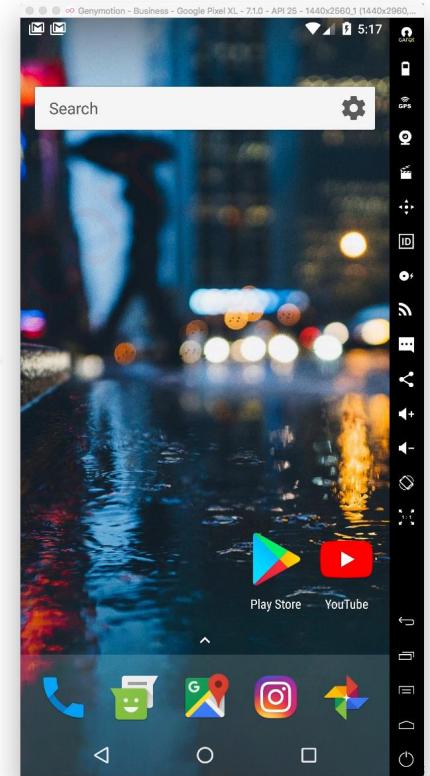
Select a new virtual device

Android version: All Device mode: All Source: All

Available virtual devices

- Google Pixel XL - 7.1.0 - API 25 - 1440x2560
- Custom Phone - 4.1.1 - API 16 - 768x1280
- Custom Phone - 4.2.2 - API 17 - 768x1280
- Custom Phone - 4.3 - API 18 - 768x1280
- Custom Phone - 4.4.4 - API 19 - 768x1280
- Custom Phone - 5.0.0 - API 21 - 768x1280
- Custom Phone - 5.1.0 - API 22 - 768x1280

Cancel Next



# Debug Mobile Device

iOS用户用Safari，并且使用Mac

Android 用户用Chrome





# 其他工具

BrowserStack: 模拟多种设备

<https://www.browserstack.com/>



BrowserStack

Quick Launch		iPhone		iPad	
Android		iPhone 6S Plus	9	iPad Air 2	8
<b>iOS</b>		iPhone 6S	9	iPad Air	7
Windows Phone		iPhone 6 Plus	8	iPad 4	7
Windows	+	iPhone 6	8	iPad Mini 3	8
Mac		iPhone 5S	7	iPad Mini 2	7
Sierra		iPhone 7 Plus	10.3	iPad Pro	10.3
El Capitan		iPhone 7	10.3	iPad Pro	9.3
Yosemite		iPhone SE	10.3	iPad Air 2	9.3
Mavericks		iPhone 5	6	iPad Air	8.3
Mountain Lion		iPhone 4S	6	iPad Mini 4	9.3
Lion		iPhone 4	5.1	iPad Mini 2	8.3
Snow Leopard		iPhone 3GS	4	iPad Mini	7

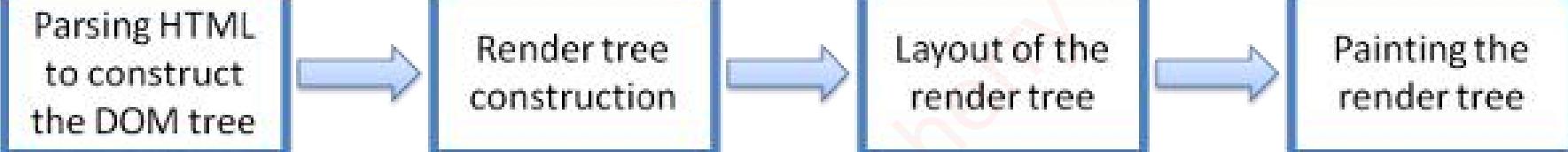
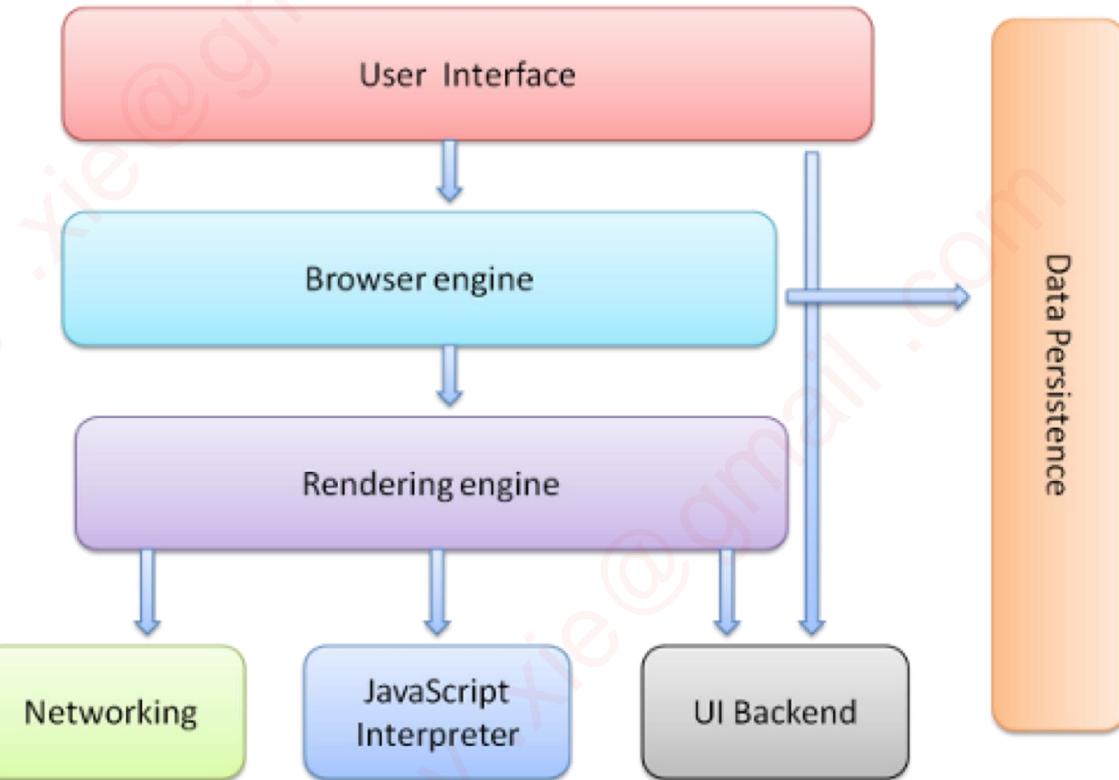
Test on physical devices!  
Look for this icon.

Got It

# How Browser Works



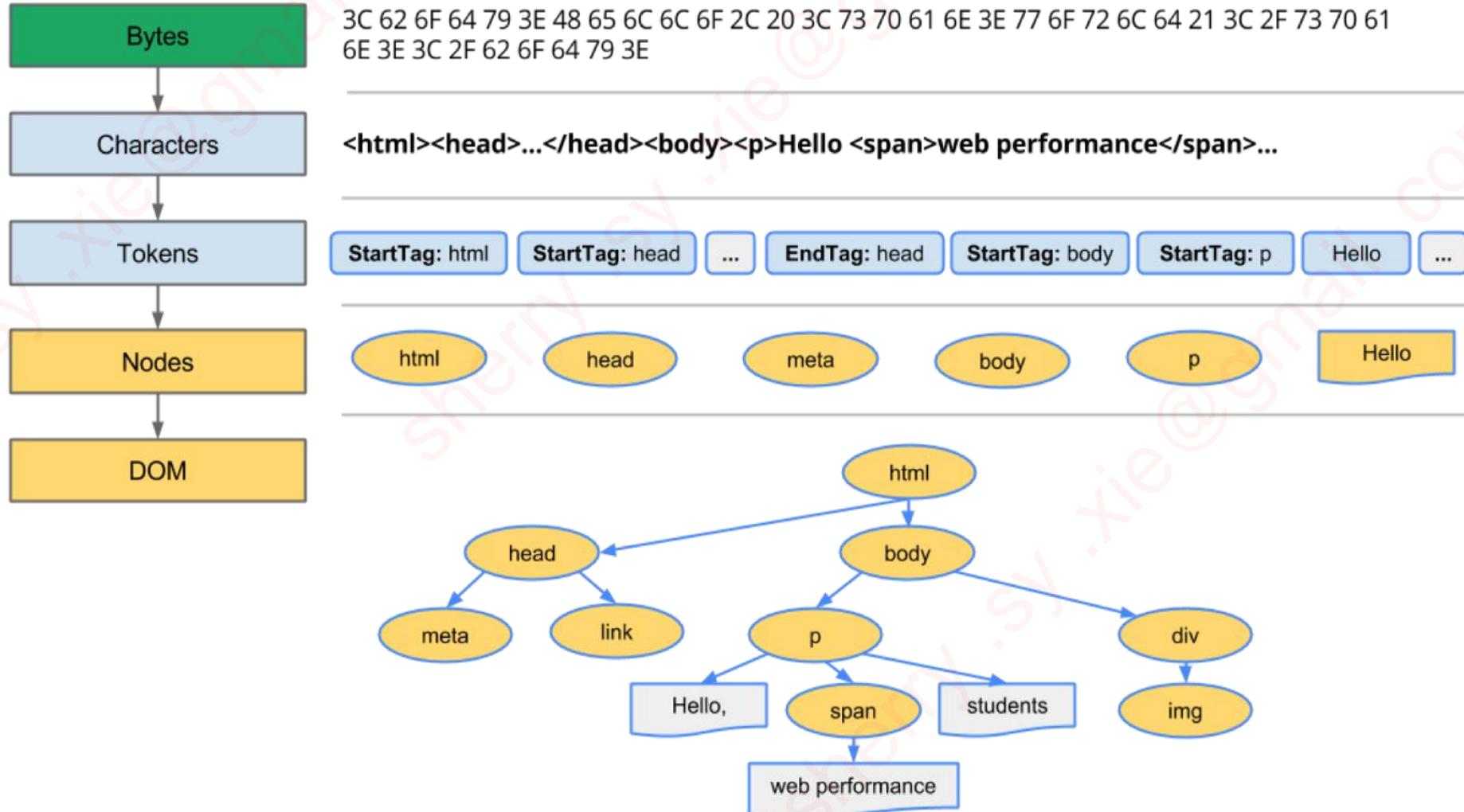
Browser	Engine
Chrome	Blink (a fork of WebKit)
Firefox	Gecko
Safari	Webkit
Opera	Blink (Presto if < v15)
Internet Explorer	Trident
Edge	EdgeHTML



# How Browser Works



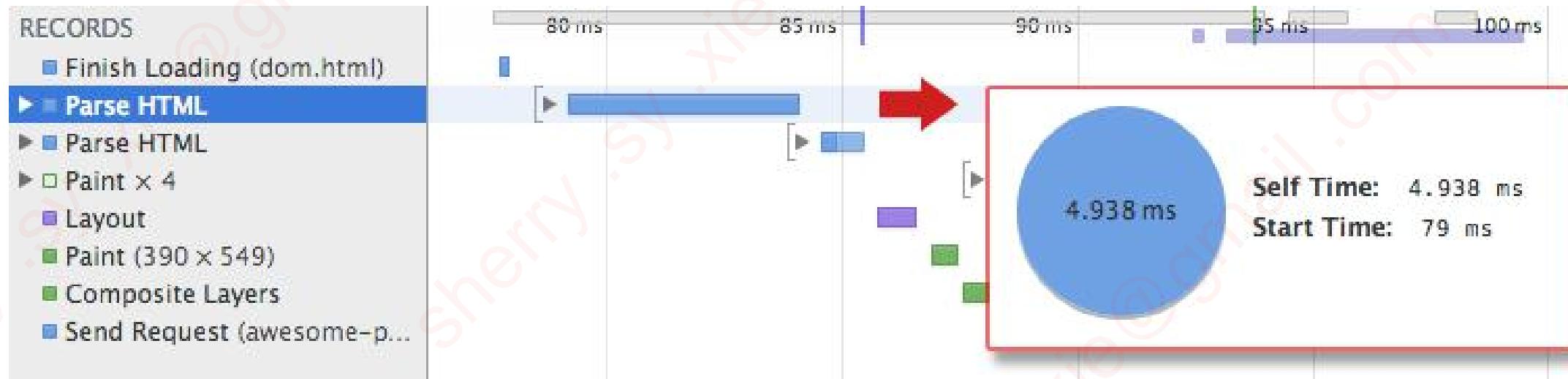
## HTML Data to DOM:



# How Browser Works

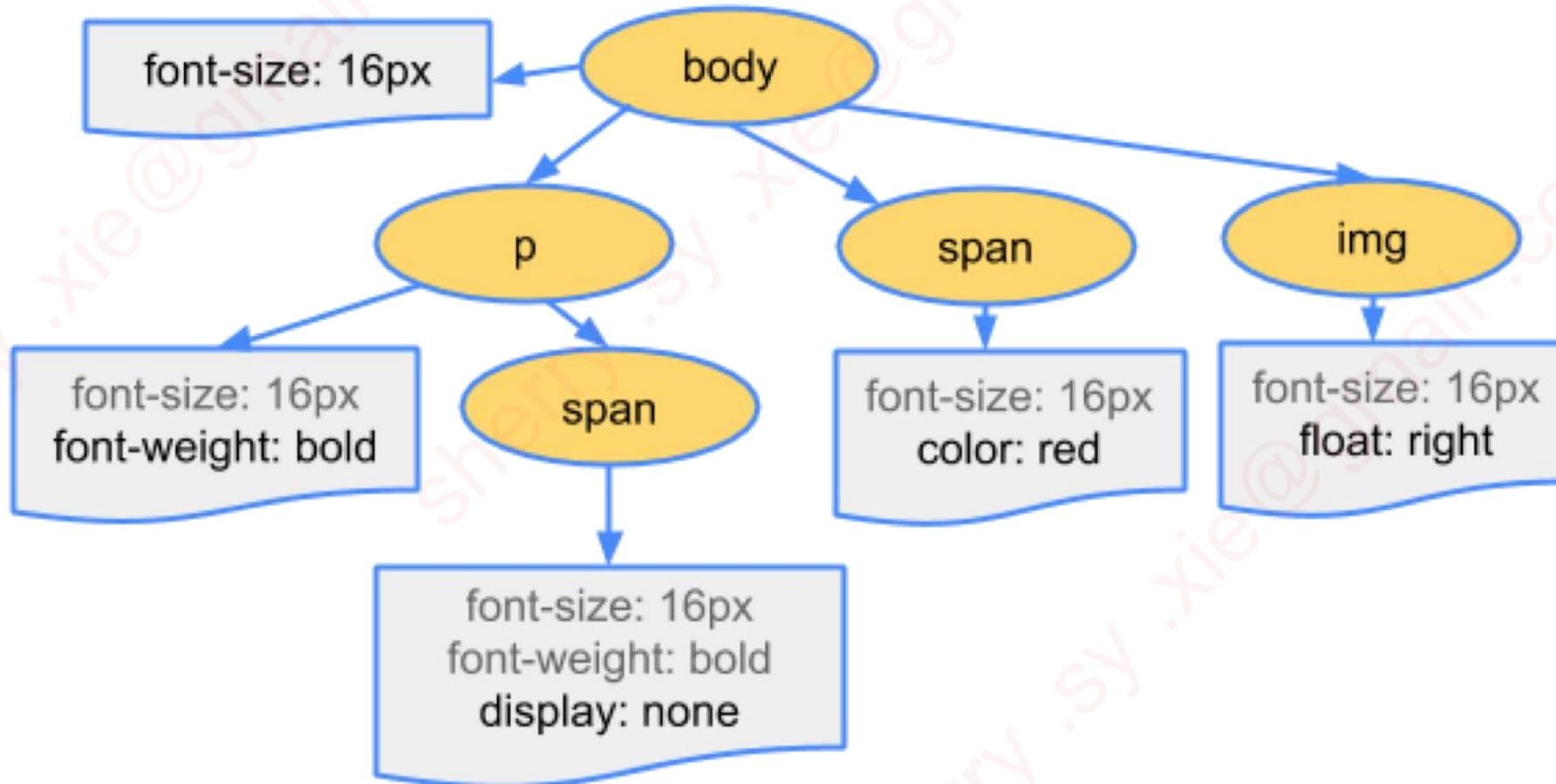


HTML Data to DOM:



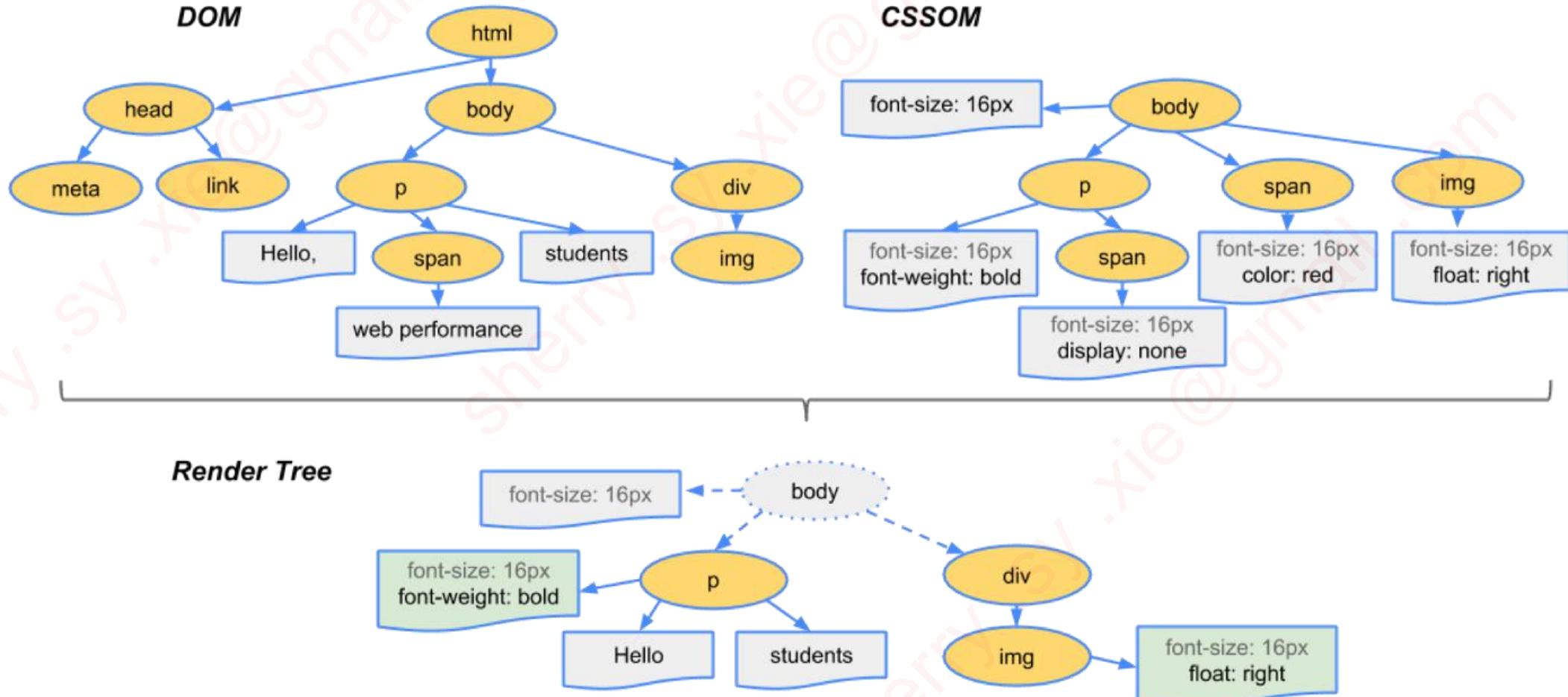
# How Browser Works

CSS Data to DOM:



# How Browser Works

Combination of DOM and CSSOM to Render Tree





## Web Tech

### 什么是Web

#### 前后端不分的时代

互联网发展的早期，前端开发是一体的，前端代码是后端代码的一部分 <http://web.archive.org/>

后端收到浏览器的请求  
生成静态页面  
发送到浏览器

#### 后端 MVC 的开发模式

那时的网站开发，采用的是后端 MVC 模式。

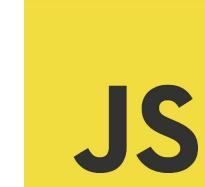
- Model (模型层) : 提供/保存数据
  - Controller (控制层) : 数据处理，实现业务逻辑
  - View (视图层) : 展示数据，提供用户界面
- 前端只是后端 MVC 的 V。



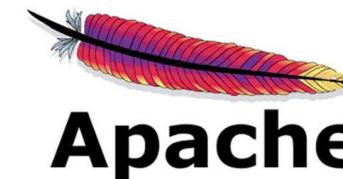
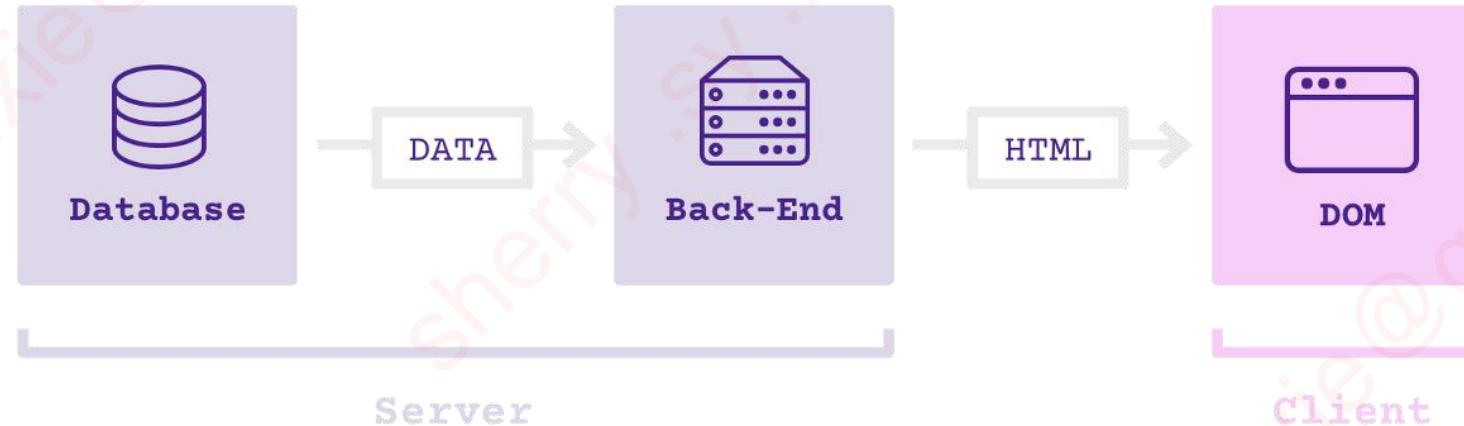
传统的架构

## Server Side Rendering (SSR)

Website



**jQuery**  
write less, do more.



Web入门班·Wordpress班架构



## Modern Web Development Technology

### 前后端分离

#### Ajax

Ajax 技术诞生，改变了一切。

2004年：Gmail

2005年：Google 地图

前端不再是后端的模板，可以独立得到各种数据。

#### Web 2.0

Ajax 技术促成了 Web 2.0 的诞生。

#### 前端 MVC 框架

Backbone.js ,

#### Node

2009年，Node 项目诞生，它是服务器上的 JavaScript 运行环境。

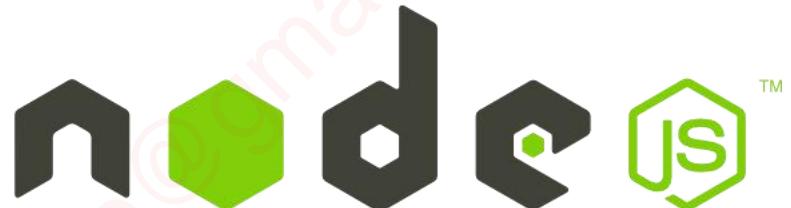
Node = JavaScript + 操作系统 API

#### SPA

前端可以做到：

- 读写数据
- 切换视图
- 用户交互

这意味着，网页其实是一个应用程序。



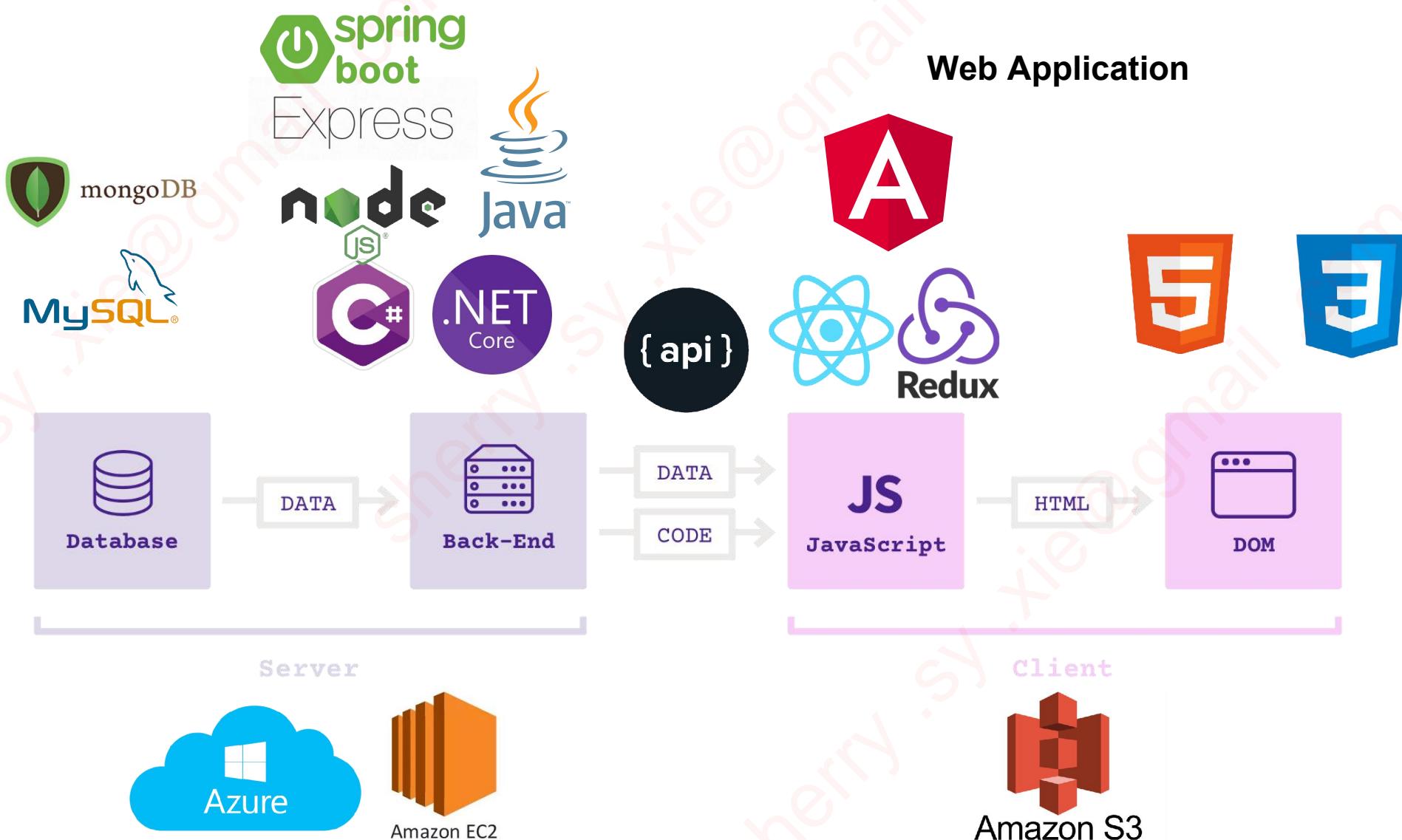
SPA = Single-page application

2010年后，前端工程师从开发页面，变成了开发“前端应用”（跑在浏览器里面的应用程序）。



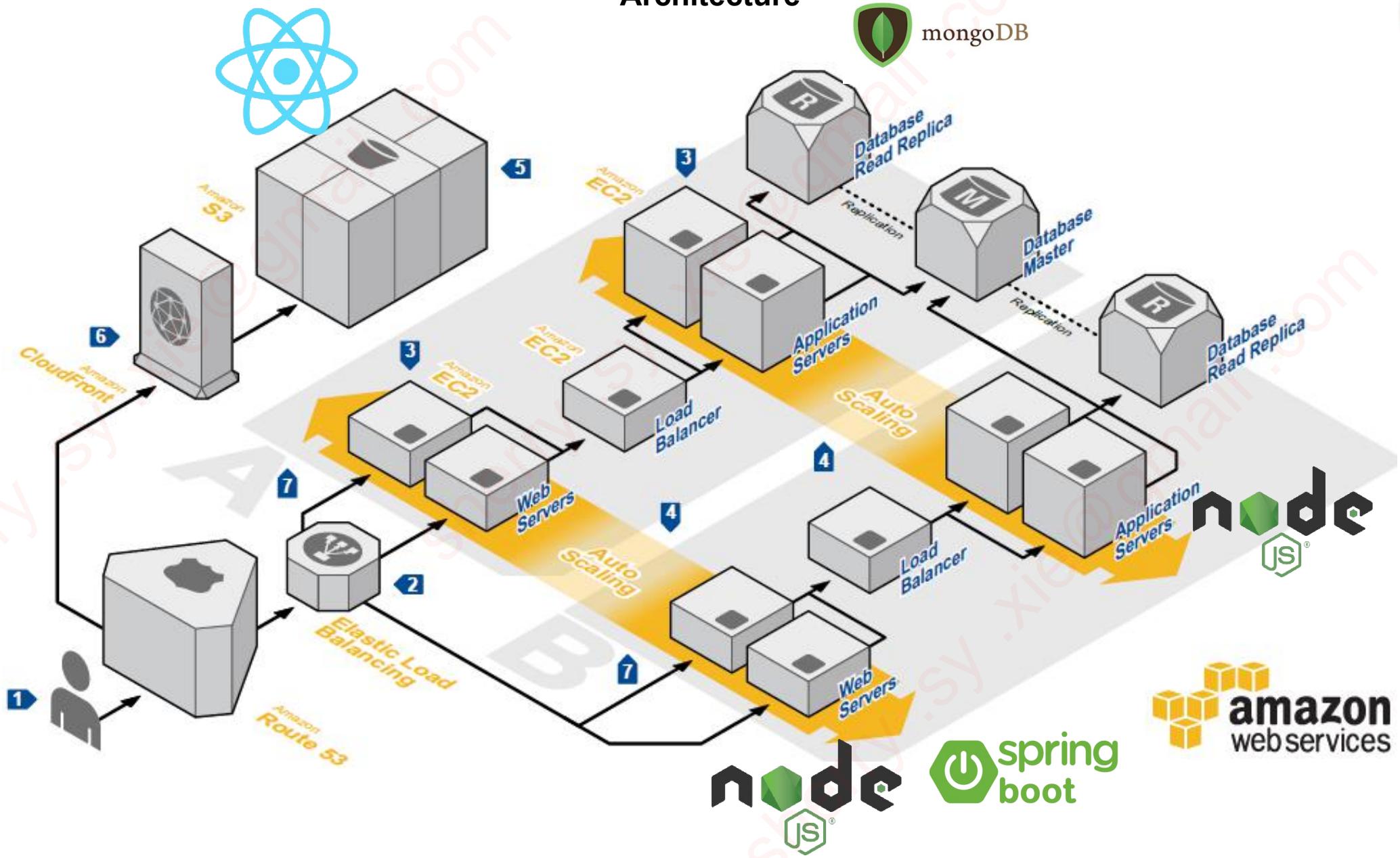
## Web Application : 单页应用的架构 Single Page Application SPA

Client Side Rendering (CSR)





## Architecture

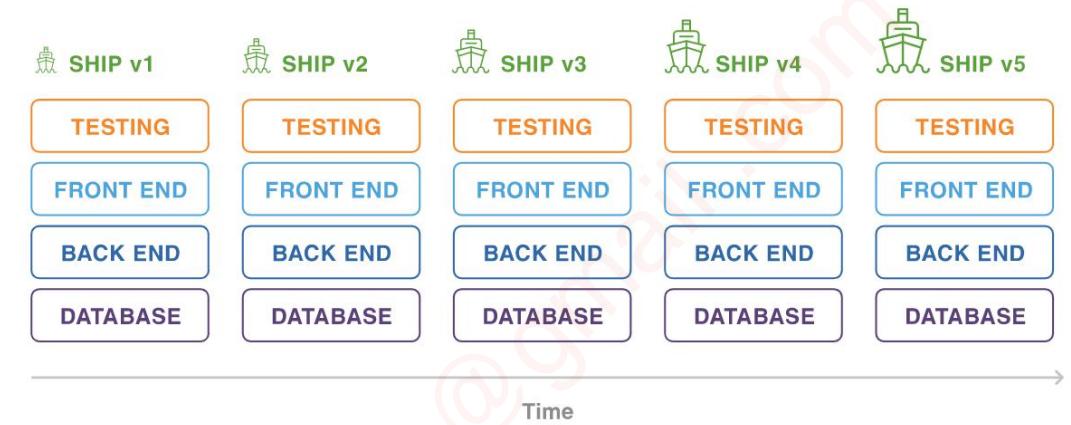




## Agile Project Management



Waterfall



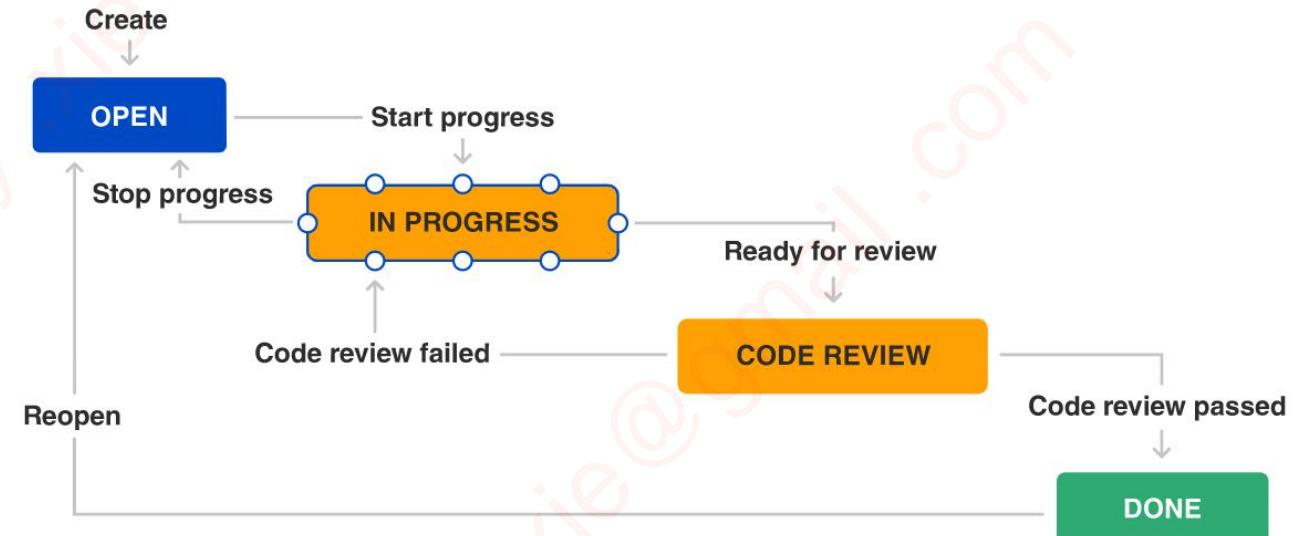
Agile

详细的Agile会有单独的课讲解



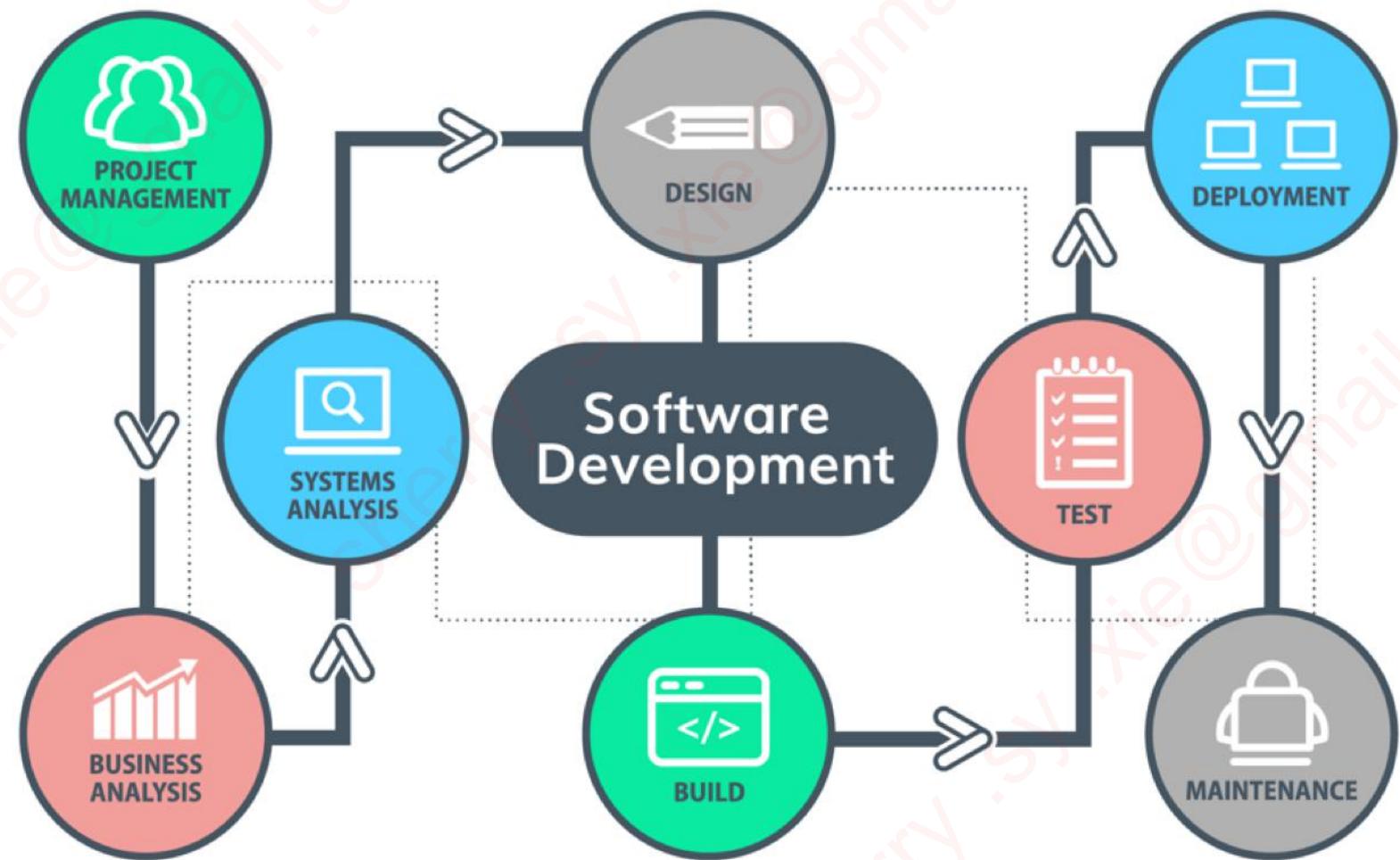
# Agile Project Management - Workflow

- ! TO DO  
Work that has not been started
- IN PROGRESS  
Work that is actively being looked at by the team.
- ! CODE REVIEW  
Work that is completed, but awaiting review.
- ✓ DONE  
Work that is completely finished and meets the team's definition of done.





## Deployment Process





# Environment

- Local
- Development/Trunk
- Integration
- Testing/Test/QC/Internal Acceptance/UAT
- Staging/Stage/Model/Pre-production/External-Client Acceptance/Demo/Prelive
- Production/Live

# Development Process



Dev



Test/Integration



UAT



Staging/Prelive



Production



One Sprint



Product Owner  
Business Analyst  
Product Manager



CI/CD



Jenkins



Travis CI



Ansible



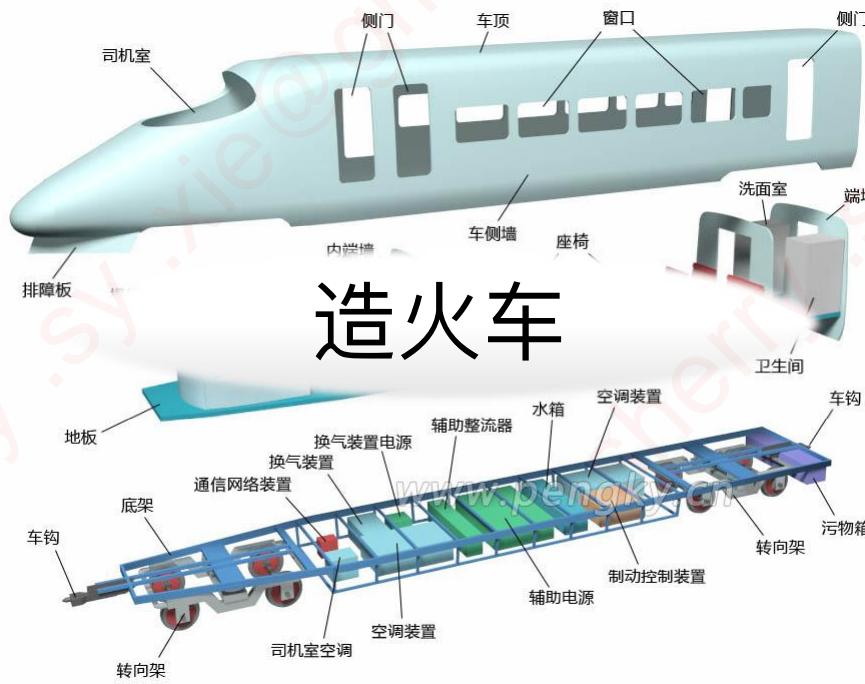
Terraform



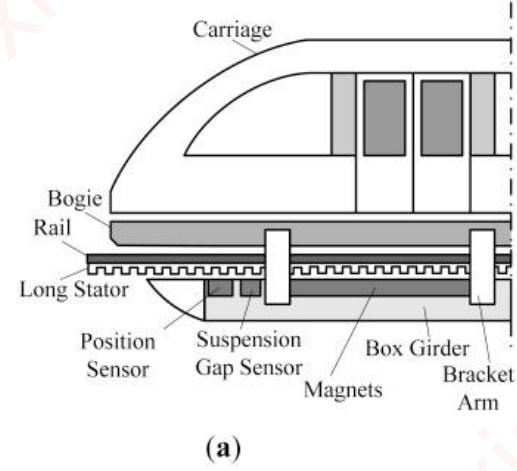
匠人学院™  
jiangren.com.au



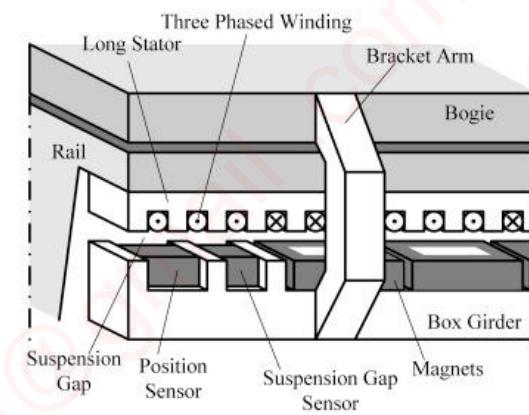
# Developer 工作



造火车



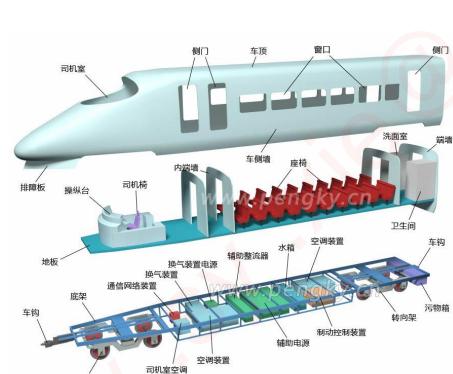
(a)



(b)



# DevOps与Developer工作对比



造



开发运维



Developer / Software Engineer

DevOps / SRE



# 匠人学院DevOps Engineer工作为例

单一数据库



UAT

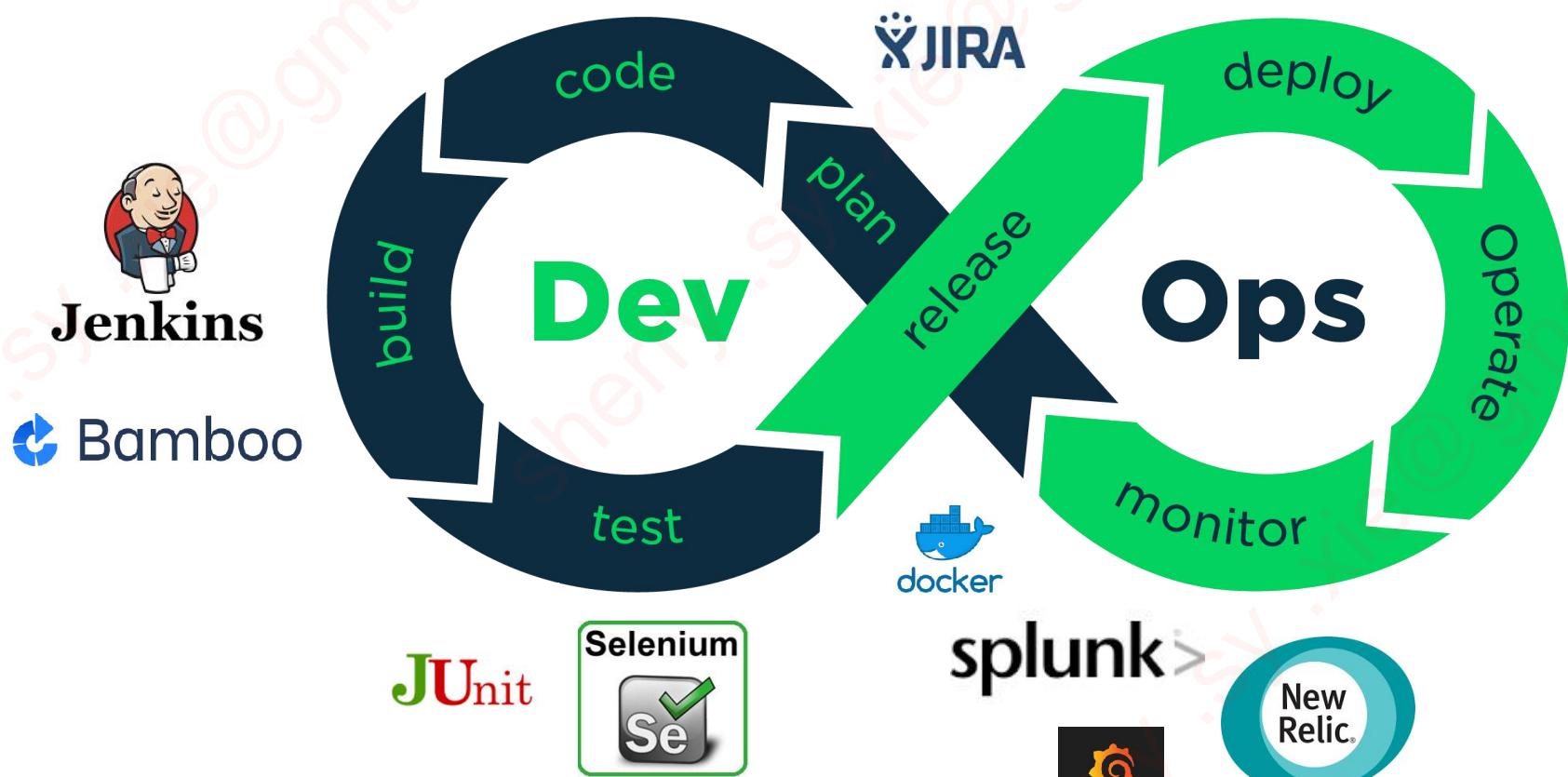


Staging



Production







# Environment





## Web browser market share 2020

Chrome - 59.8% 主要开发

Safari - 3.87%

Firefox - 12.28%

IE - 15.58%

Edge - 5.56%

360 etc Evolution of the web: [evolutionoftheweb.com](https://evolutionoftheweb.com)

browser compatibility: [caniuse.com](https://caniuse.com)

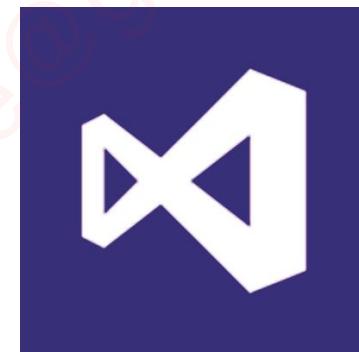
Ref: <https://www.netmarketshare.com/browser-market-share.aspx?qrid=0&qpcustomd=0>  
<https://www.html5rocks.com/en/tutorials/internals/howbrowserswork/>



sublime text



Atom



VS code



Web Storm



intellij



Brackets

Brackets



Visual Studio



500px (<https://500px.com/>)

iconfinder (<https://www.iconfinder.com/>)

themeforest (<https://themeforest.net/>)

codepen (<https://codepen.io>)

codrops (<https://tympanus.net/codrops/>)

freepick (<http://www.freepik.com/>)

behance (<https://www.behance.net/>)

dribbble (<https://dribbble.com/>)

codyhouse (<https://codyhouse.co/>)



## 作业

1. 注册 Github, 安装好Git (Tutor协助)
2. 注册 Linkedin
3. 安装好Nodejs <https://nodejs.org/en/> 12版本或者14版本, 偶数LTS版本
4. Download Visual Studio for mac/Download one editor
5. 浏览常用工具网站并了解功能及价值
6. 阅读第一节课课后阅读



- Web开发模式演变历史和趋势 <http://www.reqianduan.com/680.html>
- Material Design <https://material.io/guidelines/>
- Atomic Design <http://bradfrost.com/blog/post/atomic-web-design/>
- Atomic Design <http://atomicdesign.bradfrost.com/>
- Introducing JSON <http://json.org/>
- The Document Object Model [http://eloquentjavascript.net/13\\_dom.html](http://eloquentjavascript.net/13_dom.html)



## 联系方式

### 1. 微信联系求职顾问



匠人小花



悉尼匠人小嘿



墨尔本匠人小萌



阿德匠人小德

### 2. 匠人官网报名

Jiangren.com.au



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匠人找工

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