

WEB FRAMEWORKS

<lecture1> Web Fundamentals </lecture1>

2 About me

“You can only create what you can imagine “

I feel very lucky to be to have access to the latest new technologies and ideas. It is amazing to live in this era of smart and intelligent environment. Every day is a learning experience



Huawei R&D

Chief Scientist

Mobile/Terminal Context
Awareness



Trinity College

Research Fellow

Learnovate Centre,
Intelligent Systems



University College of Dublin

Research Fellow

School of Computer
Science & Informatics



Ministry of Environment

IT Expert

Head of IT Department

Contact and Timetable Information

- Lecture Slot
 - ▣ Thursday 9:00-11:30 AM in AF101
 - ▣ Thursday 2:30-3:30 PM in CAV008A

- Practical Slot
 - ▣ Thursday 3:30- 5:00 pm in JS002
 - ▣ (the 1st week is an exception)
- Attendance is compulsory at all sessions
- Contact Information
 - ▣ First port of call: Moodle forum
 - ▣ Others might have the same question/have already encountered the same issue
 - ▣ Facebook Group
 - ▣ For attendance, submission of medical certs, anything confidential or private, please email me at basel.magableh@icloud.com

Resources

- ❑ Lecture Notes, Assignment Submissions and Announcements
 - ❑ On Moodle - <http://moodle.gcd.ie/>
- ❑ Lecturer Contact Information
 - ❑ Dr. Basel Magableh email:basel.magableh@icloud.com
 - ❑ Office Hours: None (Appointment by email only)
- ❑ Online resources:
 - ❑ Ruby on Rails <http://rubyonrails.org>
 - ❑ Web standard <http://www.webplatform.org/>
 - ❑ Try Ruby <http://tryruby.org/>
 - ❑ Rails for Zombies <http://railsforzombies.org/>
- ❑ Recommended Reading
 - ❑ Harti, B., Ruby on Rails Tutorial: Learn Web Development with Rails (2nd edition), Addison-Wesley Professional, 2012
 - ❑ Web Technologies: A Computer Science Perspective Jeffrey C. Jackson

Assessment

- 70% Continuous Assessment
- Assignment (50%)
 - ▣ Plan, design and build web applications using web frameworks .
- Final Project Submission (50%)
 - ▣ Design and build and deploy web application using a web framework.
- End of Module Examination (30%)

Prerequisite for accessing a Website

- A piece of software residing on a client computer that is capable of displaying the Web files – **Web browser**
- A set of files, e.g. HTML files – **Web pages**
- A piece of software residing on a computer which has Web pages and access to Internet – **Web server**

A Web Server

- Is a piece of specialised software that responds to clients' (i.e. web browsers) requests
 - In this context, we use the term "web server" to refer to software
 - However, the machine on which the software runs can also be referred to as the web server
- Any website will need a web server to process client's requests
- Web servers responds not only to Internet traffic, but also intranets and extranets

Accessing a Web Server

- Must know host name on which the server resides
 - Remote web servers are accessed using either a
 - URL e.g. <http://www.gcd.ie/>
 - or an IP address 83.141.104.148
 - Local web servers (in local machine) are accessed using an IP address or by typing *localhost* in the address bar

Common Web Servers

➤ Apache Web Server

- Is the most popular web server
- It is maintained by the Apache Software Foundation – <http://www.apache.org>
- It runs on Unix, Linux and Windows operating systems
- It supports a range of server-side technologies, but may require additional software installation
- For instance, to support Java Server Pages you will Apache web server with Tomcat



Common Web Servers

➤ Internet Information Services (IIS)

- IIS is a Microsoft product
- It is an enterprise level web server
 - A scaled down version of IIS is called Personal Web Server (PWS)
 - good for small businesses, individuals
- It must run on Windows operating system
- It is usually associated with web applications built using Active Server Pages
- Also supports CGI and Server side includes

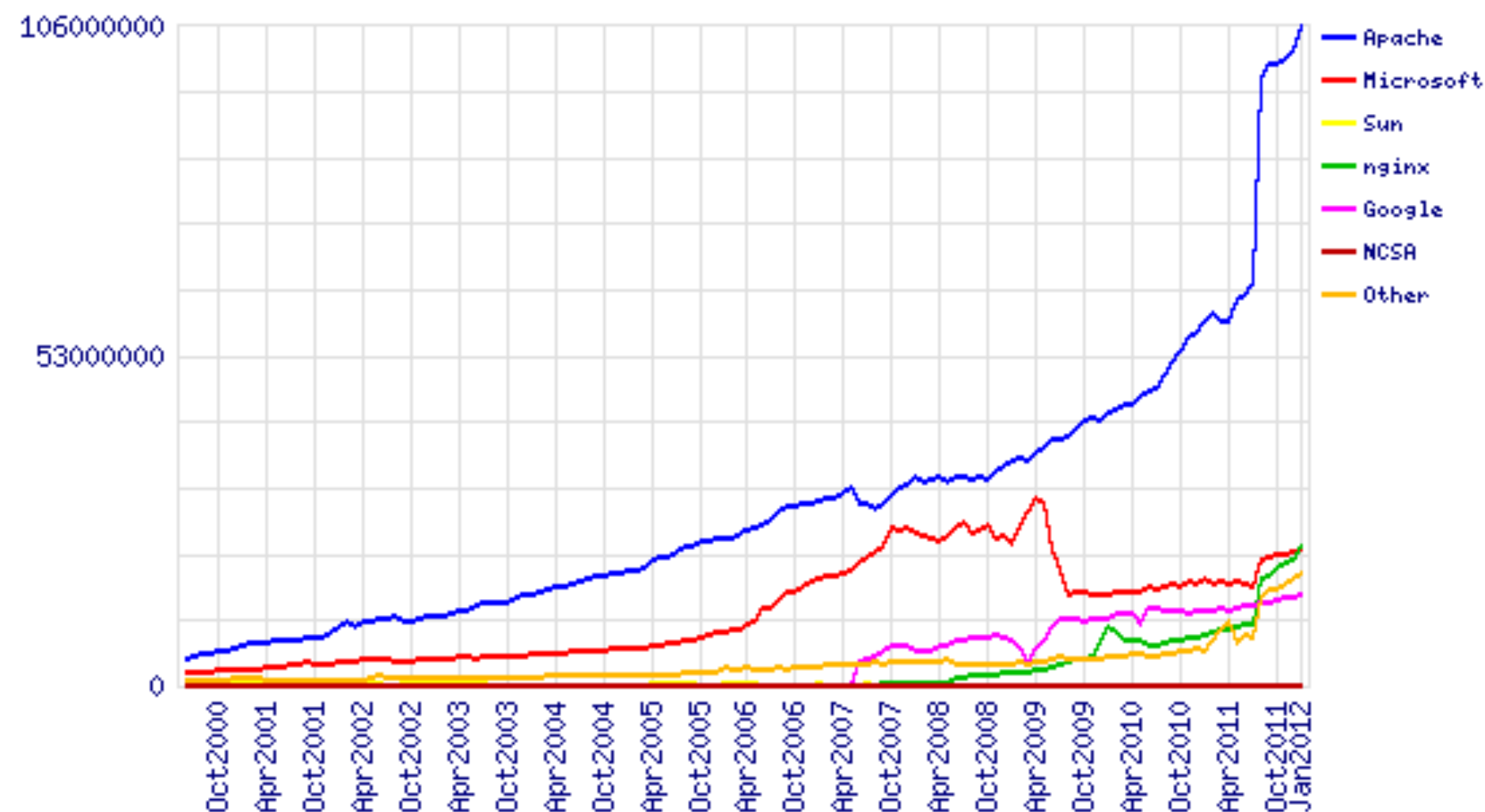


Common Web Servers

➤ nginx Web Server

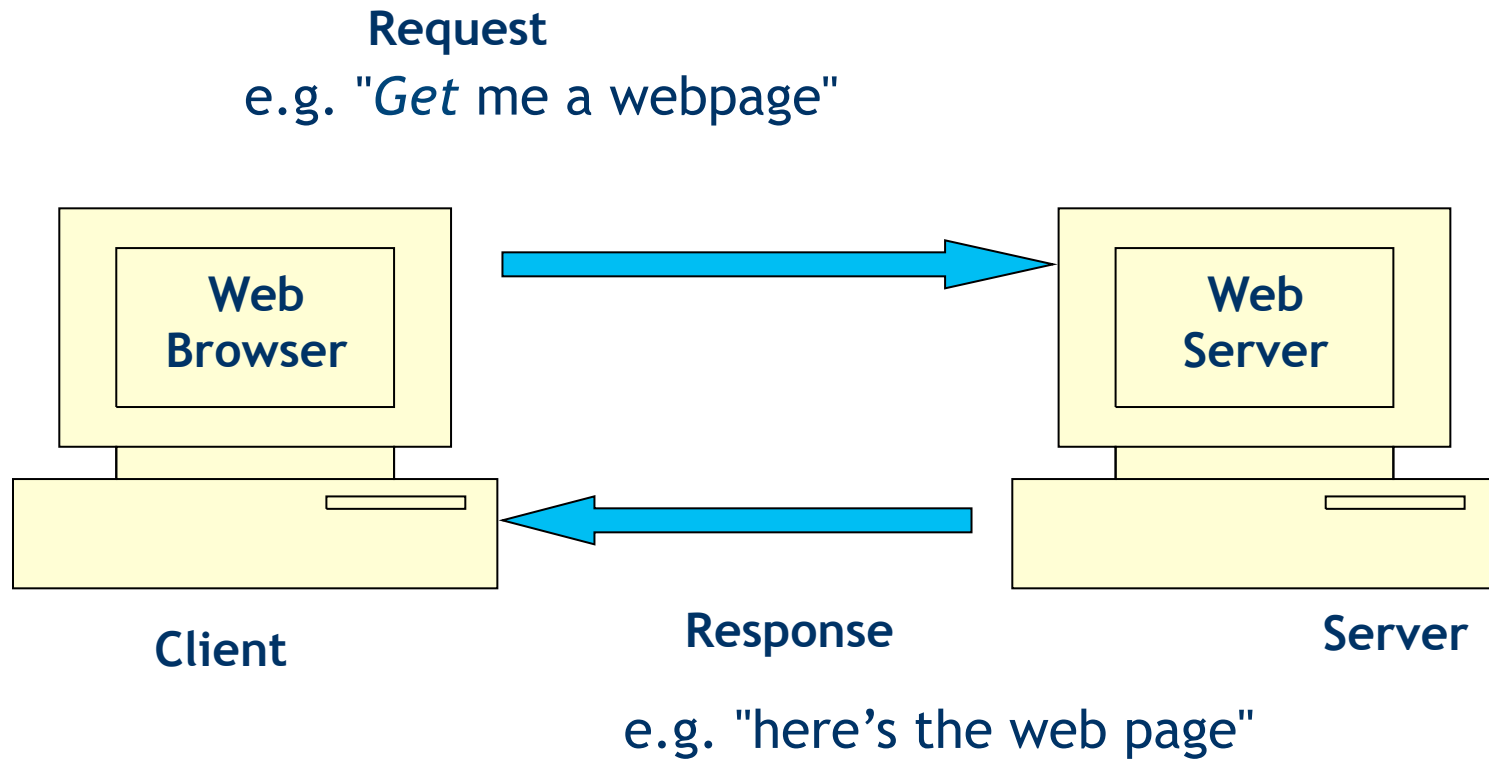


- Pronounced "engine-X"
- It is a lightweight, high-performance Web server
- It does not support Java servlets
- It runs on UNIX, GNU/Linux, BSD variants, Mac OS X, Solaris, and Microsoft Windows
- Available from <http://www.nginx.net>



Developer	December 2011	Percent	January 2012	Percent	Change
Apache	102,005,032	58.21%	105,684,049	57.93%	-0.28

Typical Client-Server Model



Static to Dynamic Websites

- New demands from users
 - Users wanted to see Web pages based on their inputs
 - There were opportunities for new applications such as Social media and News Websites that needs to be frequently updated
 - The desire of users to upload their information
 - The desire of users to dynamically change their information
- Web pages need to be generated ‘on the fly’ or *dynamically*



HOME

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Abuse survivors seek compensation after ruling

22.51 Survivors of sexual abuse carried out on school premises say they should be entitled to seek compensation in court after they were forced to drop legal action against the State.

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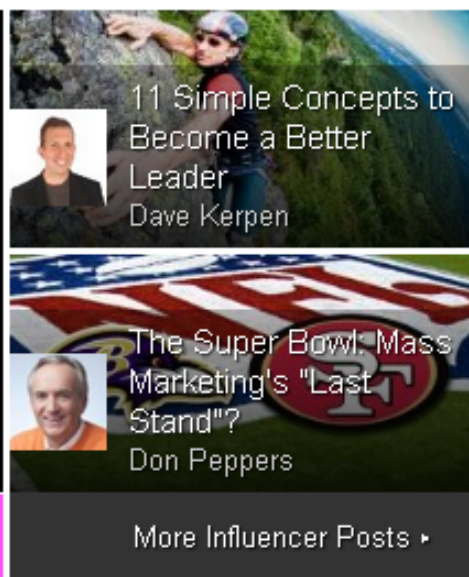
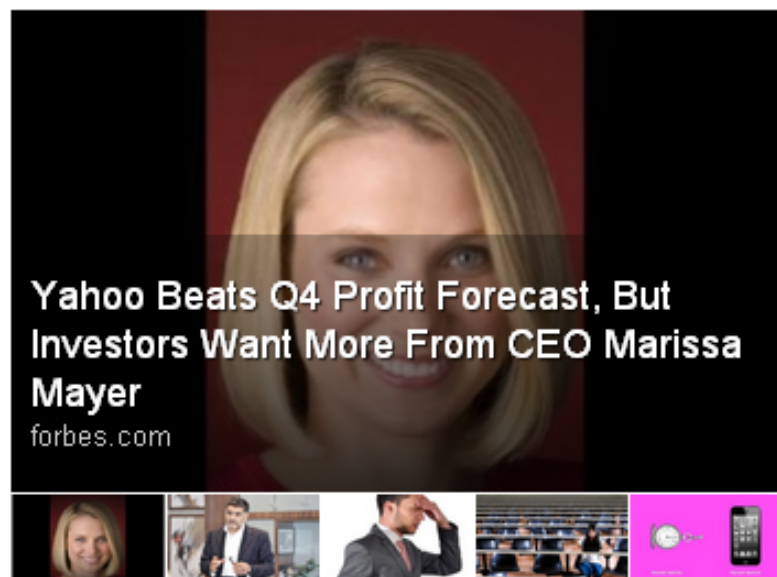


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Lucia Reynolds

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Ashling Jackson, Aidan Harney, MBS Chartered FCIPD and 2 others

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JOBS YOU MAY BE INTERESTED IN

Client-Side Technologies

- Markup Languages
 - HTML, XHTML, WML and CSS
- Client-Side Scripting
 - JavaScript, VBScript, Jscript, and Dynamic HTML
- Java Applets
- ActiveX Controls
- Plugins/Helpers

Client-Side Technologies

➤ Limitations

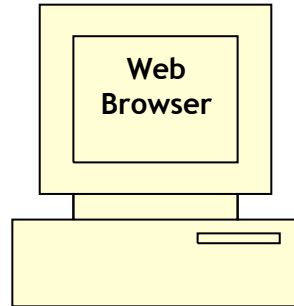
- Cannot implement functionality that returns customised information to the user – e.g. database search results
- Client machine/device must be sufficiently powerful to carry out processing (problems of some handheld devices)
- Need to ensure that the browser can support the client software
- Source code is visible – may compromise security

n-tier Web Architecture

- The functionality of Web system is divided into separate *tiers* or levels
 - Information tier (also called data tier)
 - Middle tier (also known as Business logic tier)
 - Client tier (also known as User Interface tier)
- Different tiers of the system can be on same computer or distributed over a number of separate computers

n-tier Web Architecture

Client tier



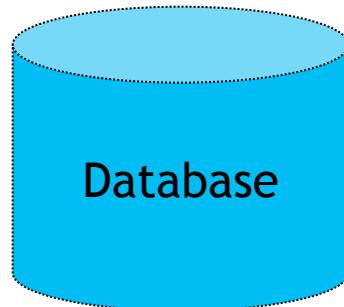
Application User interface.
The client interacts with the middle tier to make requests and to retrieve data from the information tier

Middle tier



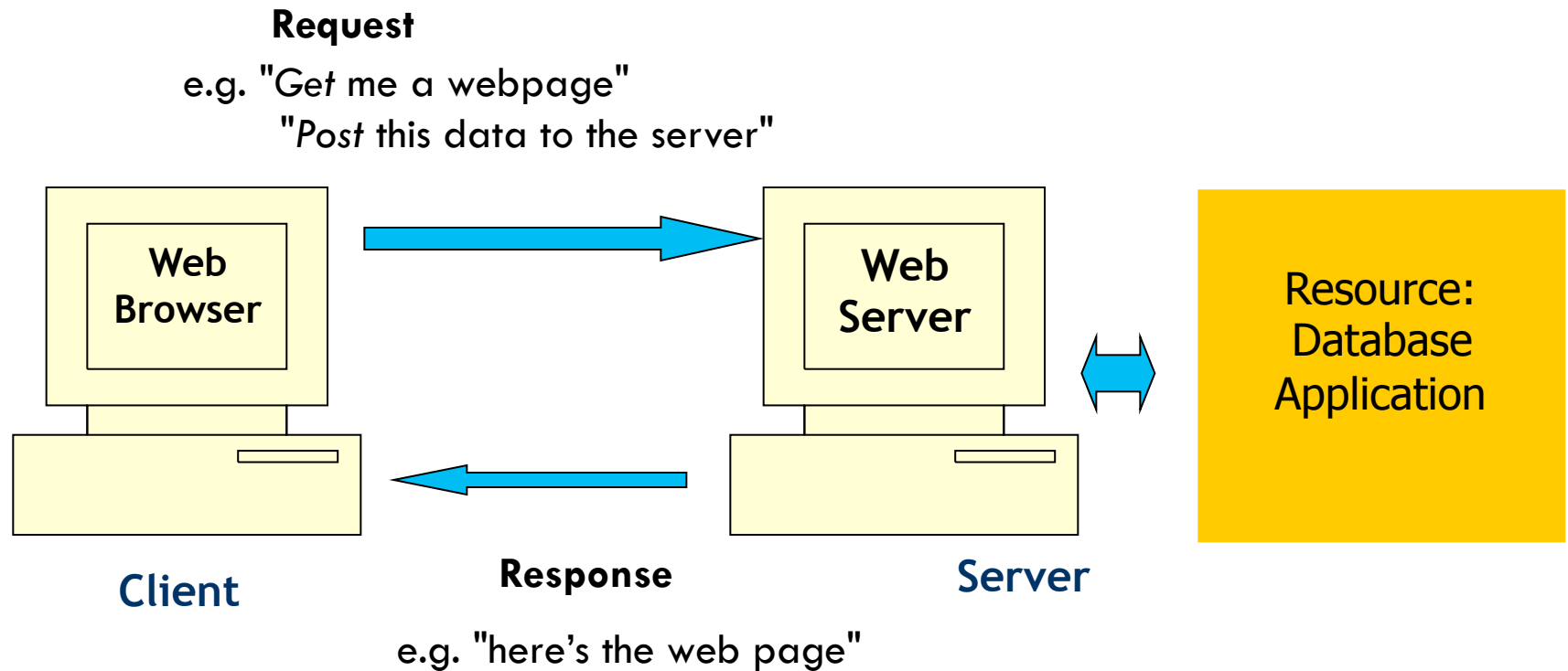
Controls the interactions between the application clients and application data.
Enforces **business rules**.
implements presentation logic.
Web server typically supports this tier.

Information tier



Maintains data used by the application.
Data typically stored in a relational database management system (RDBMS)

n-tier Web Architecture



n-tier Web Architecture

➤ Server-Side Processing

- generate dynamic content from a database (as opposed to static HTML pages)
- Process user requests and hence allow interactivity
- Retrieve, process and store information from users
- Manage sessions (allow the system to "remember" what has happened earlier)

WEB FRAMEWORKS

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Web Development Frameworks

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Web Development Frameworks, What is it?

- Collection of libraries and tools required to simplify development of web applications
- Provide basic structure for developing web applications
- Adopts different patterns (e.g. Model-View-Controller) to organise required software libraries and tools

Web Development Frameworks, Is there a need?

- Demand for rapid developments of web applications
 - A framework provides necessary libraries and tools in one place
- Demand for easy maintenance of web projects
 - A framework systematically organise required software libraries and tools

Web Development Frameworks, Client or Server?

➤ Client Side Frameworks

- Are framework typically for supporting client side development of web applications

➤ Server Side Frameworks

- Are framework typically for supporting client side development of web applications

Web Development Frameworks, Client Side, **YAML**

- Yet Another Multicolumn Layout
- A client side development framework for CSS
- <http://www.yaml.de/>

