



MIS3690 WEB TECHNOLOGIES

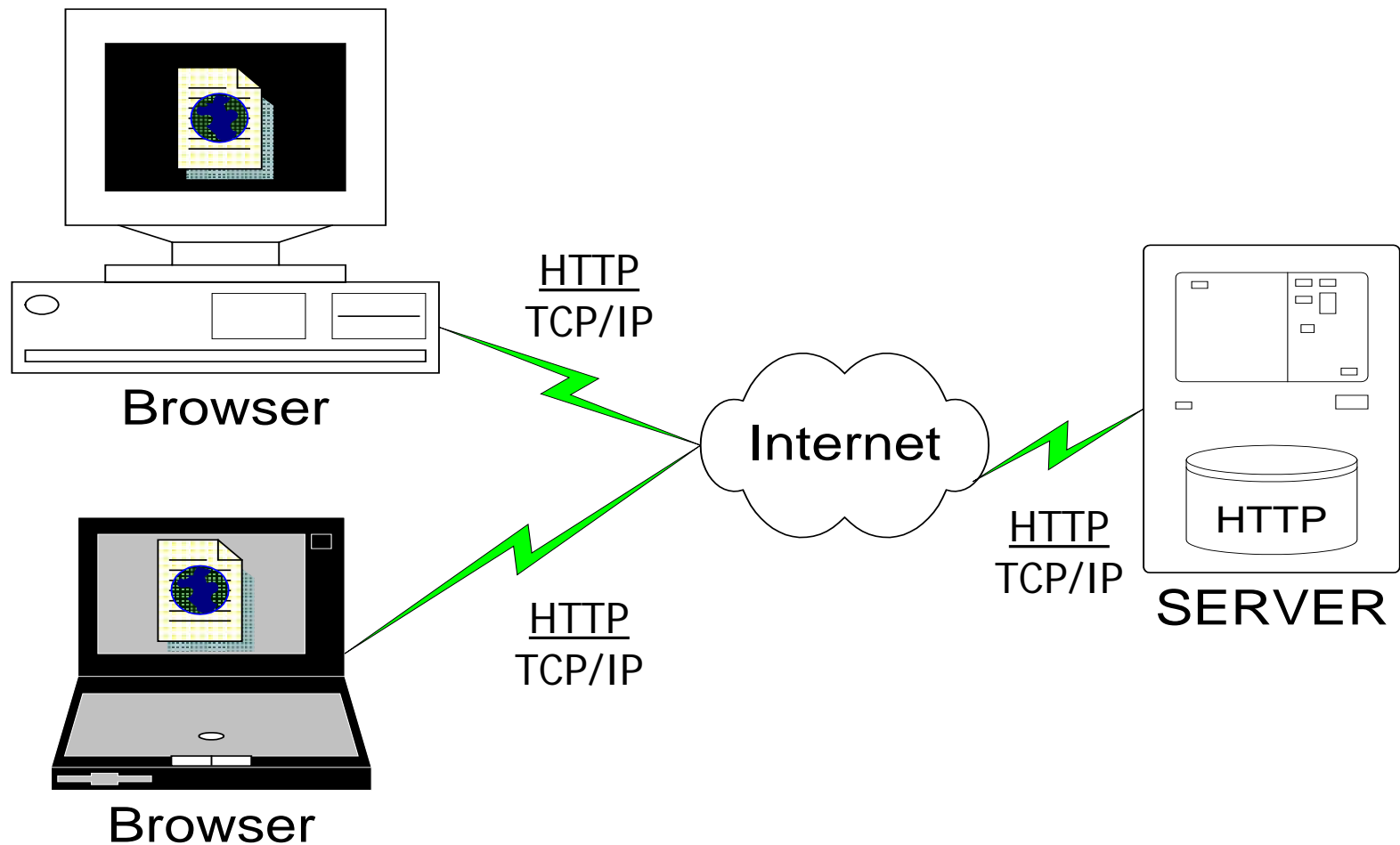
BABSON COLLEGE
TOIM DIVISION



HOW THE WEB WORKS

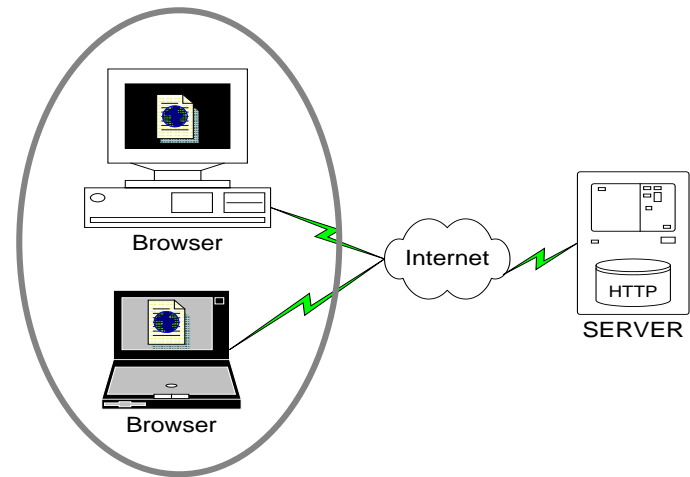


WEB ARCHITECTURE OVERVIEW



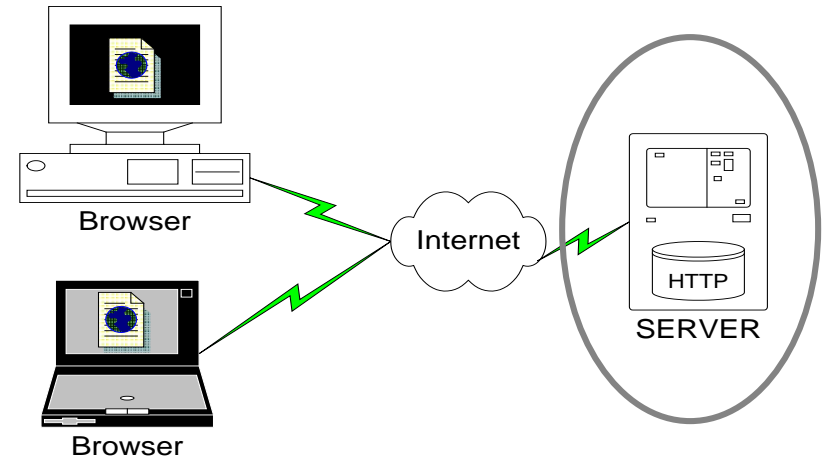
THE CLIENT

- A Client is a device that users can use to submit requests to other computers (Servers).
- A Client can be any device, such as your PC, Mac, tablet, or cell Phone.



THE SERVER

- A Server is a computer that can accept requests from clients and process a response
- There are many kinds of servers:
 - File Servers, Print Servers, Mail Servers, Database Servers, Web Servers....



WEB SOFTWARE COMPONENTS

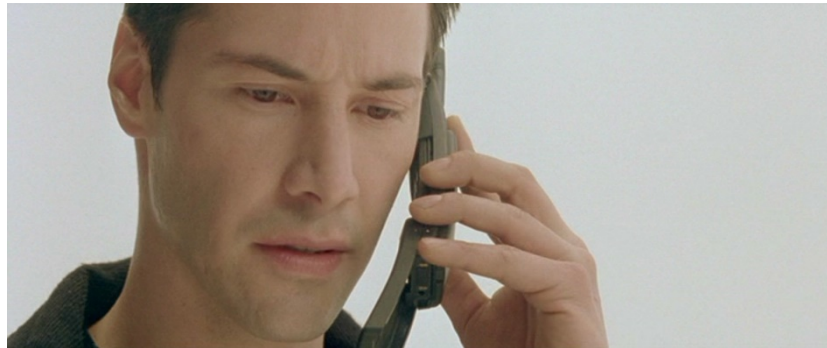
- The Client Browser

- Chrome, Firefox, Internet Explorer, Safari, Opera, and a host of others.

- The Web Server

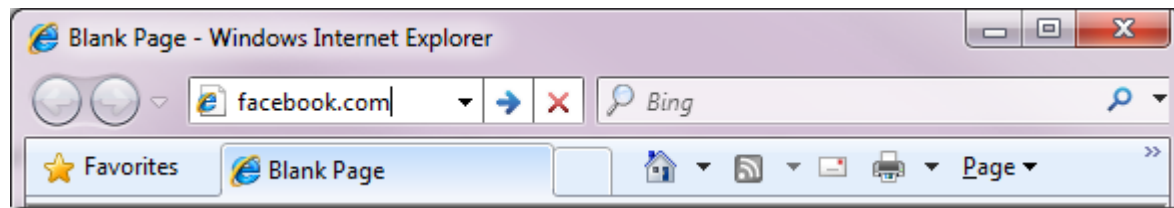
- Apache, Microsoft IIS, nginx, and several others.

HOW DO THE BROWSER AND SERVER REALLY TALK?



WHAT REALLY HAPPENS WHEN YOU NAVIGATE TO A URL?

- You type an **URL** (Uniform Resource Locator, e.g., www.facebook.com) into the browser or click on a link.

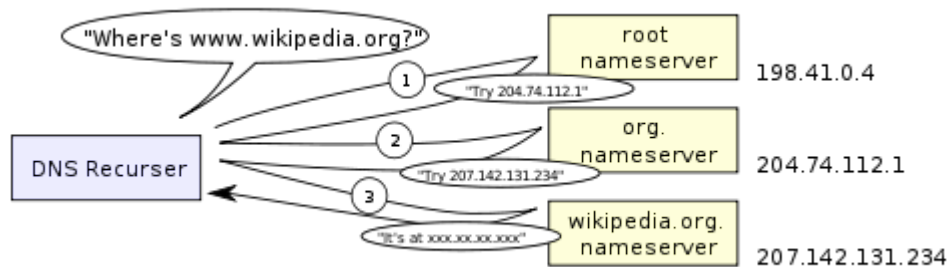


- Either way, the browser sends a request to the IP address specified in the URL.
- The request goes to the local Server (within the company, your service provider (ISP), or the Internet).
- A translator, **DNS** (Domain Name Service/System), translates the URL to an IP Address.



WHAT REALLY HAPPENS WHEN YOU NAVIGATE TO A URL? (CONT.)

- The Server determines that the address (in this case, Facebook) is outside somewhere and forwards the request to the Internet – together with the return address (your computer or client)
- The Internet has a number of machines (computers) called Routers. The router, routes the request to its destination. It may go through several routers before it gets to its destination (in this case, Facebook's Web Server).



- Try to type `tracert www.facebook.com` in Command Prompt in your laptop and see what happens.

WHAT REALLY HAPPENS WHEN YOU NAVIGATE TO A URL? (CONT.)

- The browser sends a HTTP request to the web server.



- Facebook's server then tries to locate the specific page (specified in the URL) that you requested. Sometimes this is the home page – it could also be some specific page within Facebook's web site.



- The resource (the requested page) is then sent back. It goes through several routers on the Internet and eventually gets to the local server (in this case, Babson's Web Server).



WHAT REALLY HAPPENS WHEN YOU NAVIGATE TO A URL? (CONT.)

- This server determines the IP Address to which the resource must be sent (the IP address of your computer).
- Your browser receives the resource. The resource is coded in HTML. The browser interprets the HTML.
- The browser also determines if additional resources are needed to display the page (e.g., images, multi-media, etc.) and sends additional requests for each resource needed.



- Once the browser has all the resources, it interprets the HTML-coded resource and displays the page on your client computer.

ESTABLISHING A SESSION

- What is a session?
 - An extended interaction between a client and a server
- Why are sessions valuable?
- The problem:
 - HTTP is "stateless". Each client file request/server response is treated independently

ESTABLISHING A SESSION

■ Cookie

- A small file written by your web browser at the direction of the HTML page you receive
- The browser viewing a page at one domain can read all the cookies written by (only) that browser when previously viewing a page on that domain



■ Query string

- Text written after a question mark in the URL
- Let's look at an example

GOOGLE SEARCH

- When I search for *something*
 - <https://www.google.com/search?q=babson>
 - <https://www.google.com/search?q=recursion>

GOOGLE SEARCH

- If I search for 'Boston Red Sox', the first link looks like this:

Official Boston Red Sox Website | MLB.com

boston.redsox.mlb.com/ ▼ Boston Red Sox ▼

The official website of the **Boston Red Sox** with the most up-to-date information on scores, schedule, stats, tickets, and team news.

- But if right-click on the link , Copy Link Location, and paste it into a document, this is what I get:

- <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&cad=rja&uact=8&ved=0ahUKEwiVkBhfvPAhUGPz4KHaj7B48QFgguMAM&url=http%3A%2F%2Fboston.redsox.mlb.com%2F&usg=AFQjCNEEetooKfg2x8QiKRPgFxrIPpNltw&sig2=BFD4lviUEOIEQAglR5TZJw>