

Web Technologies

Lecture 8

Server side web

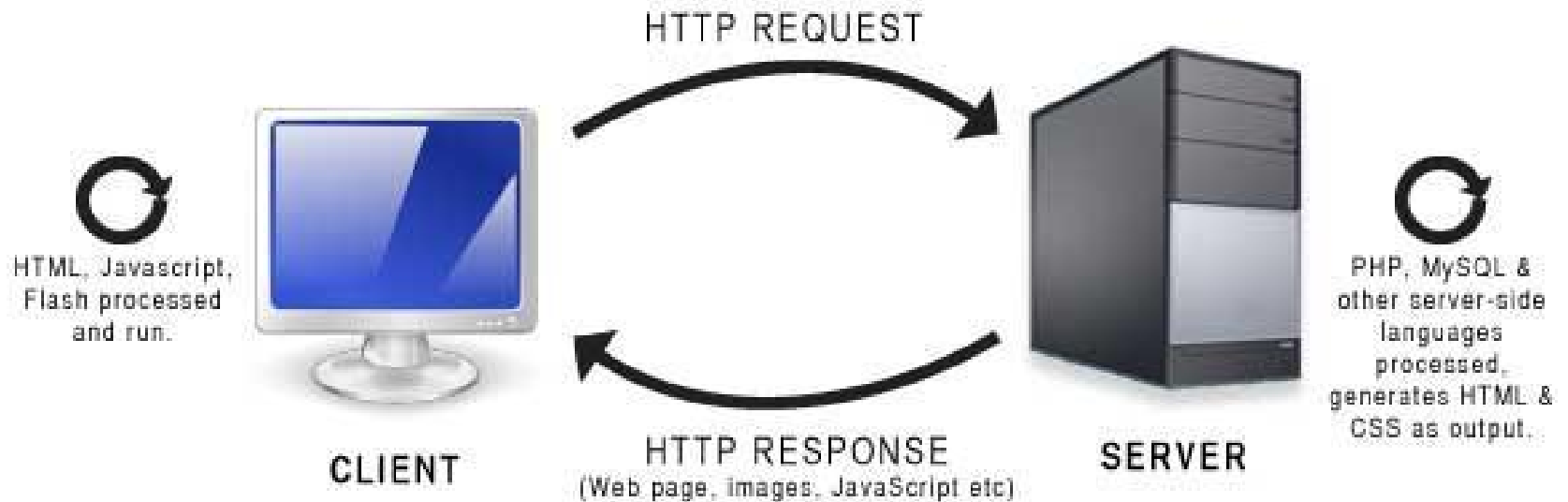
Client Side vs. Server Side Web

- **Client-side** code executes on the end-user's computer, usually within a web browser.
- **Server-side** code executes on the web server, usually within a web application environment, which in turn generates HTML to be viewed in a browser.

Note: material adapted from

- <http://people.clarkson.edu/~bjukic/IS400/Lecture%2013.ppt>
- www.massey.ac.nz/~nhreyes/.../Lectures/Lecture%206%20-%20CGI.ppt

Client-server interactions



Client or server side?

- **Determining factors:**
 - **Performance:**
 - Responsiveness, speed, reliability
 - Ability to handle a large number of simultaneous users
 - **Functionality:**
 - Simplicity of use and maintenance,
 - Breadth of user options
 - Ability to handle multiple simultaneous transactions
 - **Security:**
 - Desktop security
 - Server security
 - Database security
 - Network security

Examples

- Code that runs on the server that interprets every mouse move and keystroke is clearly **undesirable**
 - terminal to mainframe paradigm
- On the other hand, one does **not** want to **download** an entire product database to a browser and then run code that searches for the products.
- **Server side forms** have direct access to active code and perform more reliably
 - On the other hand they are more **prone to slowdowns** due to the server/network congestion

Client side vs. server side strengths

- **Client-side** coding advantages stem from its location on the user desktop and/or other end device. They include the following:
 - **Interactivity** (e.g., mouse and keyboard handling)
 - Handling of user **interface controls**: buttons, textboxes, etc.
 - **Feedback** and **validation**
- **Server-side** strengths include stem from their proximity to the backend business databases and other applications. They include the following:
 - **Direct information access**, retrieval, processing and storage
 - facilitate e-commerce, reservations, shipment tracking etc.
 - **Central repository** of added web **features** such as e-mail, chat and multimedia streaming
 - **Security** and **authentication** (mostly)

Server Side Technologies

- Server-side technologies
 - numerous and diverse
- Popular server side web application technologies:
 - Microsoft ASP/.NET
 - Java server technologies such as J2EE, JSP, and servlets
 - CGI / Perl
 - PHP
 - ColdFusion

Server Side Technologies

- Server-side technologies also include **database systems**
 - Oracle, SQL Server (Microsoft), MySQL (open source) and many others
- DB systems are **indispensable** part of server side operations
 - some DB software providers, such as Oracle are combining web application functionality with their core database functions

Server Side Technologies

- The “core” server side application development platforms can retrieve, modify and query the contents of databases through their own access mechanisms:
 - ADO.NET for Microsoft’s .NET platform enables access to almost every existing database platform
 - PHP enables direct access to many existing DB platforms
 - MySQL, Oracle, SQL Server, MongoDB, etc.

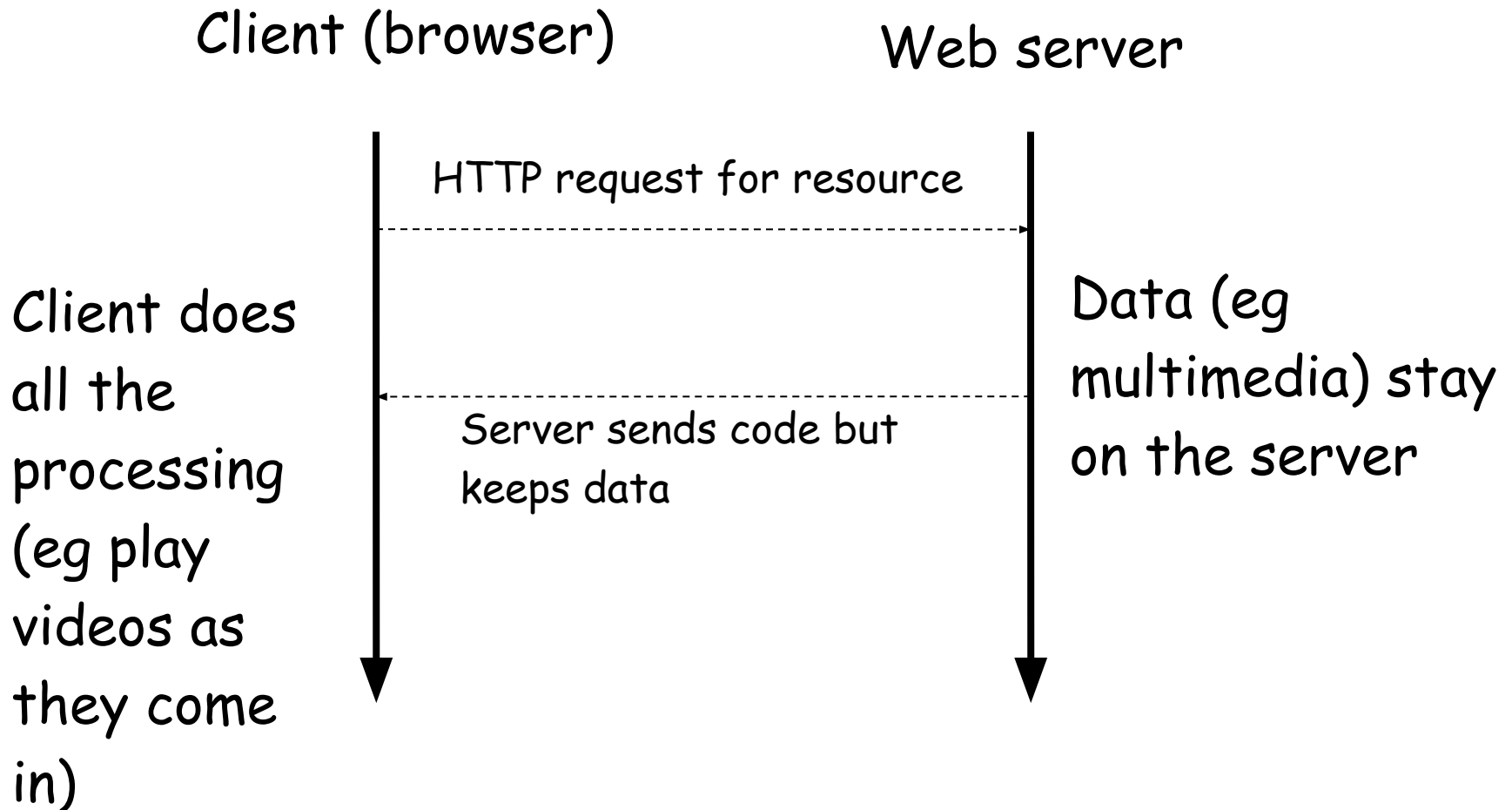
Server-Side Programming

- Lots of programs/applications designed to run on the machines on which they are installed
- *How can a remote client request access to these?*

Rich Internet Applications

- Web applications that provide the client with the features and functionality of desktop applications
- Require transferring the processing from the server to the client
- Javascript is one enabling technology for a RIA

RIAs in the Internet client-server model



Some technologies that support RIA development

- Javascript (and associated ECMA dialects)
- Adobe Flash
 - Flash player and IDE
- Java Applets and Java Webstart
- AJAX
 - Asynchronous JavaScript and XML

CGI programming

- CGI → Common Gateway Interface
 - A protocol for interfacing local applications with a web server
- Sequence of steps
 - Client sends URL request
 - Program runs at the server side
 - Output is collected and sent back to the client
 - Often the output is an HTML “built” by the server

CGI programming

- CGI programs can be written in any language supported by the server.
- This includes compiled programming languages, such as C and C++; interpreted languages, such as Perl, Python, Ruby, and languages, such as Java, that lie somewhere in between.

What's next?

- REST and SOAP Web services
- Cloud computing