

Web Development!

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What is web development?

- Web Development is the practice of applying software development principles to web design and practices
- Web Development has followed along parallel with standard software development practices, but has developed its own practices, ideas and technologies

What is web development?

Some considerations of a web developer

1. Gathering requirements
2. Modeling data for good user experience
3. Interprocess communication
4. Storing and retrieving data, securely and at scale
5. UI Design

Ancient History - Big Picture

The internet

- A global network of computers that supports a network of networks
- DARPA (US Military Research) developed it in the early 1960s to find a way to communicate in the case of a nuclear attack
- In the initial years, was primarily used by the military
- ARPA Network/ARPAnet (as it eventually became known) started in 1969 when Stanford University wanted to use it for academic purposes
- HTTP was developed in 1989 (a concept we will return to many times)
- In 1995, ISPs (internet service providers) took over, allowing the internet to have commercial applications

Ancient History - Big Picture

WWW - The world wide web, is essentially created using HTTP

There are many different technologies and practices that allow formatted documents to be shared with each other

Tim Berners-Lee is the inventor

The format of these documents is organized in something known as HTML (!) between 1989 and 1990.

Ancient History - Big Picture

Users use a browser (Firefox, Chrome, IE, etc.), the browser looks up the IP address for the domain names via DNS

Browser sends an HTTP request, and gets back an HTTP response

Browser uses the response to render the HTML

Browser may request additional objects (JavaScript, images, CSS, more HTML, etc.)

Ancient History - Important Points

1962 - The Internet

70's - Client-server architecture

80's - PC's allowed user side rendering

90 - WWW developed

00's - Web Apps

10's - Mobile Development

What is a web page made of?

A web page is composed of a variety of different files:

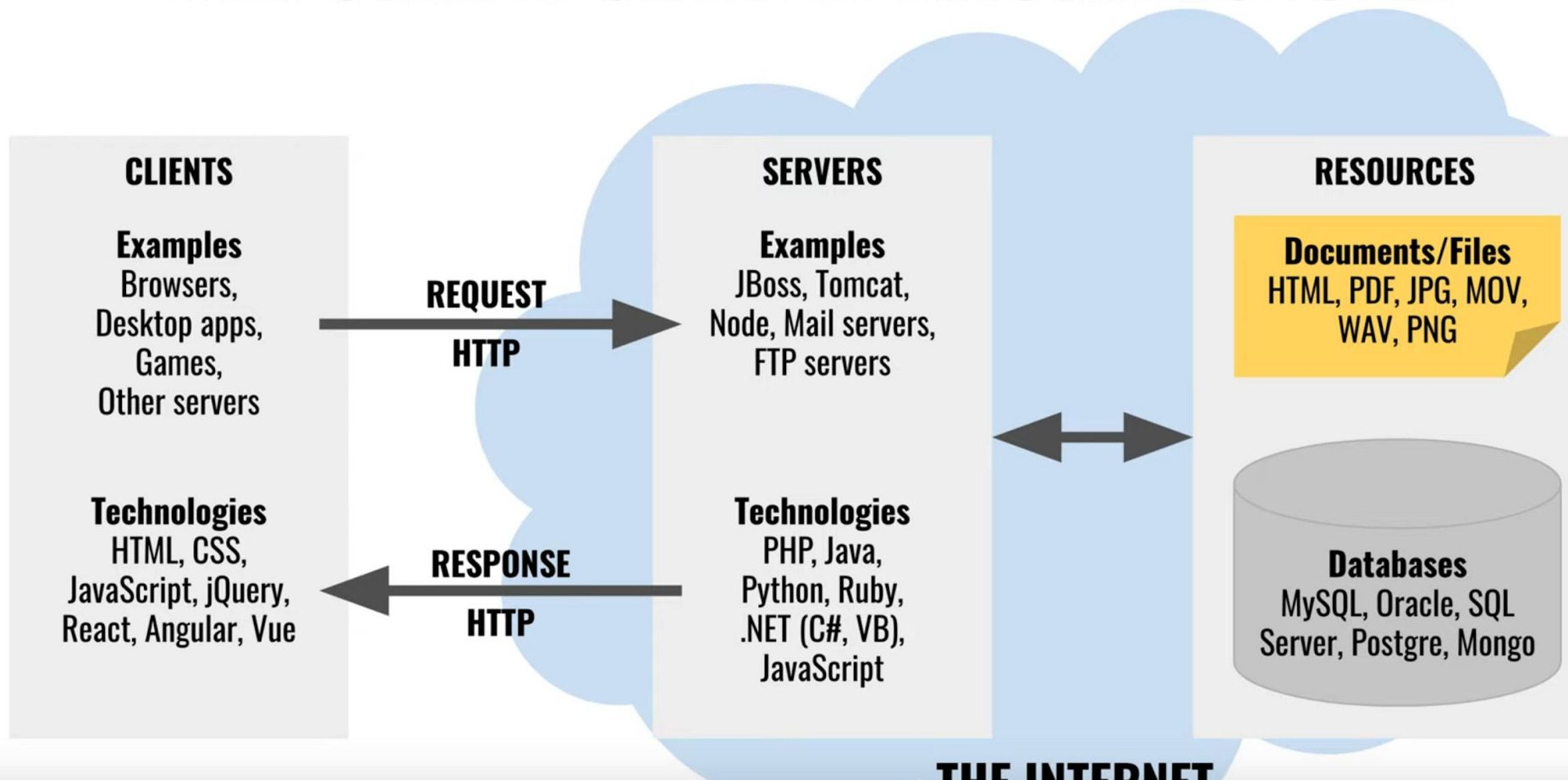
1. HTML - this is the template for a website. It is the skeleton on which the website hangs; most of the content of a web page is built around this content
2. CSS - this provides styling, coloring, and shape for the template. It is a powerful tool that makes a website interesting to look at
3. JavaScript - Allows for interactivity of a website; when buttons are clicked, popups are changed, etc. JavaScript is almost always involved in some capacity
4. Image/Video/Sound/etc - Additional files that bring more content to a web page

Client/Server

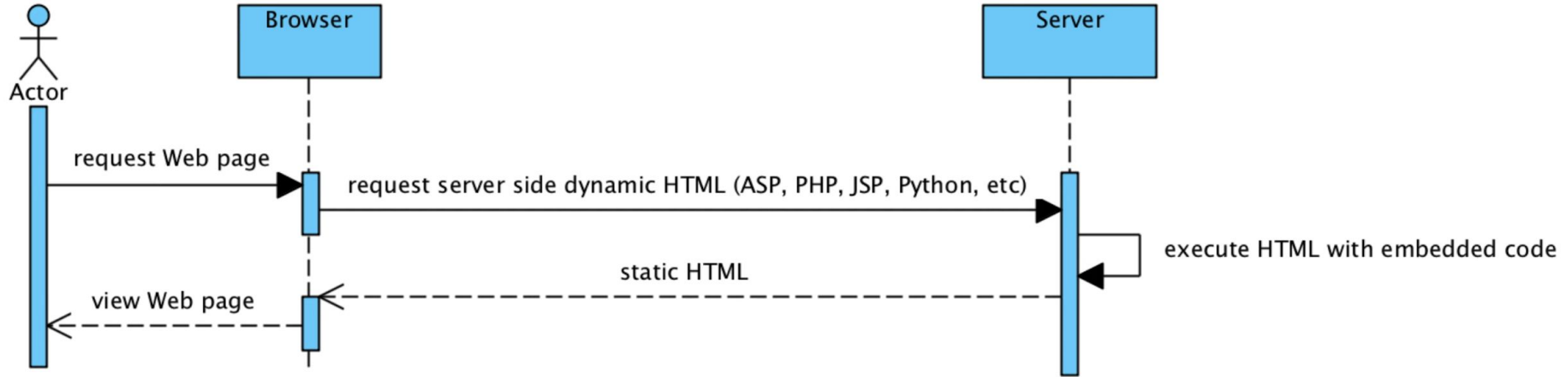
In web development, we make a major distinction between the frontend and the backend of an app. We will explore this more later in semester, however:

1. The frontend (a.k.a. the browser or the client) requests the files of a webpage, and renders them for a user
2. The backend (a.k.a. the server) is a computer the is essentially awaiting your browser to ask for the files needed for a website.
3. HTTP(S) (Hyper Text Transfer Protocol) is the method for requesting and returning data between the frontend and backend

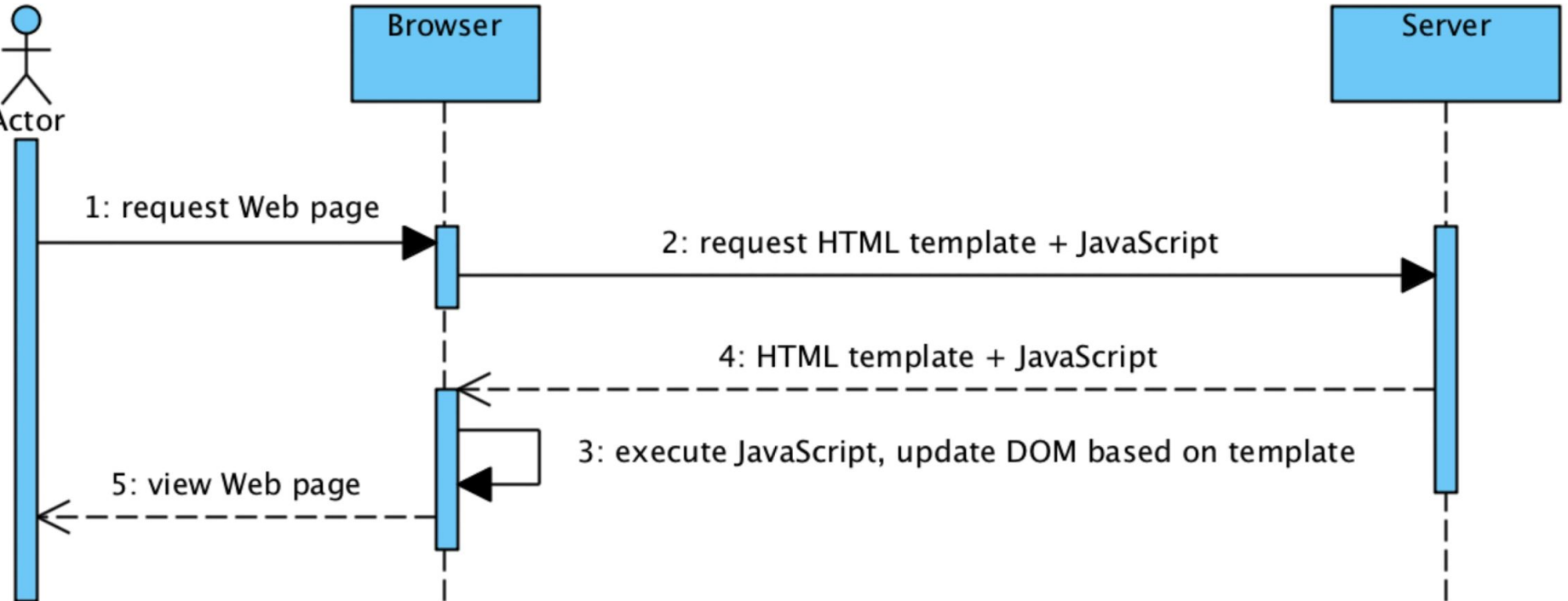
THE CLIENT SERVER ARCHITECTURE



SERVER SIDE RENDERING



CLIENT SIDE RENDERING



Ancient History - Important Server Technologies

93 - Common Gateway Interface (Perl)

'95 - PHP

99 - Java 2 EE

00 - .NET

'05 - Ruby on Rails

'05 - Python Django

'09 - Node.js

'10 - Python Flask

Ancient History - Client Side Development

'95 - JavaScript

'96 - Adobe Flash

'05 - Dojo

'06 - jQuery

'10 - Knockout

'10 - Google's Angular

'10 - Backbone

'11 - Ember

Ancient History - Client Side Development

'11 - Ember

'12 - Sails

'12 - Meteor

'13 - Facebook's React

'14 - Vue

Trends in 2021

- Responsive design and the rise of mobile users
 - Make a website look good seamlessly on mobile and web
 - Due to WASM and PWAs, mobiles app and web apps are going to be distinguishable
- Rise of ML/AI
 - Potential of AI/ML to automatically create custom websites? A bit, but we'll still have jobs
- No huge game changers in React/Vue/Angular wars and JavaScript's changes will be smaller
 - No longer expect any technology to “disrupt” web dev
 - Changes will be smaller

Trends in 2021

- Motion UI and suffering attention spans
 - Interesting designs and animations can increase engagement with users, hide loading, etc.
- Artificial intelligence and cybersecurity
 - Using AI and ML to detect and prevent security threats on an app
- Easycode/Nocode makes it possible for non-devs to make websites
 - Increasing tools for non technical people to make websites/tools

Note:

All these trends are great topics to talk about in the weekly discussions!