

Announcements

- Final exam on Friday
- Presentations on Wednesday
- Demos today and on Wednesday (no demo on Thursday nor Friday)

Terminology

- Single-page application (SPA)
 - Web application/site that fits in a single page
 - All necessary code (JS, HTML, CSS) retrieved in a single page load
 - No transferring control to another page
- Software Framework
 - Abstraction where software that provides generic functionality can be changed by user-written code
 - Many include support programs, compiler, code libraries, and APIs that bring different components together

Frameworks

- Libraries → collection of functions that your code can call
- Libraries vs. Frameworks
 - Unlike libraries or normal user applications the overall program's flow of control is dictated by the framework (not the caller)
 - A framework can be extended by the user overriding code
 - Users can extend the framework, but cannot modify its code
- Frameworks rely on well-known software engineering concepts
 - Design Patters
 - Model-View-Controller
- Web Application Frameworks List (based on language)
 - https://en.wikipedia.org/wiki/Comparison_of_web_application_frameworks

Web Application Frameworks

- CakePHP
 - PHP Development Framework
 - Open Source
 - Written in PHP
 - Modeled after Ruby on Rails
 - <http://cakefoundation.org/>
- Ruby on Rails
 - Written in Ruby
 - <http://rubyonrails.org/>

JS Web Application Frameworks

- JavaScript frameworks
 - Allow you to focus on developing interactive elements of the user interface without worrying about code
 - Most rely on MVC design model to ensure scalable, maintainable, and reusable JS code
 - Reference and frameworks list at:
 - <http://noeticforce.com/best-Javascript-frameworks-for-single-page-modern-web-applications>
- AngularJS
 - Open-source framework
 - Maintained by Google and others
 - Addresses challenges associated with developing single-page applications
 - Allows you to extend HTML vocabulary
 - Two-way data binding
 - Data bound to HTML element in the view and HTML element can both update and display the data
 - Provides client-side form validation without using JS code
 - <https://angularjs.org/>

JS Web Application Frameworks

- Ember.js
 - Single page applications
 - Two-way data binding
 - Can develop desktop applications in Ember
 - Early adopter of many JavaScript standards (e.g., promises, web components, E6 syntax)
 - <http://emberjs.com/>
- Batman
- <http://www.improgrammer.net/most-popular-javascript-frameworks-2015/>
- <http://beebom.com/2015/04/best-javascript-frameworks-and-libraries>

JS Libraries

- React
 - By Facebook
 - Abstract away DOM
 - Very fast
 - Handles only the view
 - Easy to learn
 - Sites using it: Facebook, Instagram, Netflix
 - Maintains a virtual DOM of its own
 - Can be used in conjunction with frameworks like Angular
 - <http://facebook.github.io/react/>
- Backbone
 - Provides REST-presistable models with routing and calls backs
 - Most minimal of libraries
 - <http://backbonejs.org/>
 - Single Page Applications
- Knockout
- Spine
- CAnJS

Node.js

- Node.js
 - Open source runtime environment for server-side and networking applications
 - Node.js applications written in JS
 - Uses Google V8 JS engine
 - Contains a built-in library that allow applications to act as a Web server without software similar to Apache HTTP Server
 - **npm** → package manager
 - Collection of modules handle file system I/O, networking, cryptography functions
 - Node.js application can run Windows, Unix, Mac OS X servers
 - Node.js is a non-blocking language where command execute in parallel and use callbacks to signal completion
 - Created because concurrency is difficult in many server-side programming language
 - Enables development of fast web servers in JavaScript
 - Operates on a single thread.
- <https://nodejs.org/>
- Learning resource
 - <http://nodeschool.io/>

References

- http://www.w3schools.com/js/js_libraries.asp
- <https://www.lullabot.com/articles/choosing-the-right-javascript-framework-for-the-job>
- https://en.wikipedia.org/wiki/Software_framework
- <https://en.wikipedia.org>
- <http://blog.stevensanderson.com/2012/08/01/rich-javascript-applications-the-seven-frameworks-throne-of-js-2012/>