

Adopting Node.js and CoffeeScript in a Software Design Course

Adopting
Node.js and
CoffeeScript
in a Software
Design
Course

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Course

The Software Design and Development Course

Adopting
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Course

- Single project
- Small groups
- Agile methodology
- External customer
- Current technology

Node.js

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- Framework for network applications
- Uses the V8 JavaScript Engine
- Built in web server
- Asynchronous I/O and JavaScript evaluation
- Single-threaded event loop
- large number of additional modules

Development Workflow

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- WebStorm IDE (based on IntelliJ IDEA)
- Unit testing with Mocha
- Version control with GitHub
- Continuous integration with Strider

CoffeeScript

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- Transpiles to JavaScript
- Clean syntax
- About 1/3 fewer lines of code
- Scope safety and object encapsulation

MongoDB

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- Document oriented JSON store
- Queries in JavaScript
- Support for networked data redundancy

Mongoose

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- Node.js wrapper for MongoDB
- Document schemas
- Ensures uniqueness and supports versioning

jQuery

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- DOM interaction library
- Ubiquitous
- Powerful selectors and functions
- Integrates with other front-end tools

Backbone.js

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- MV* Framework for client-side applications
- HTML rendering on the browser
- Minimal opinionation
- Models, Views, Routers
- Hierarchical views with event emission
- REST API conformity with Models and Collections

Bootstrap

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- Formerly Twitter Bootstrap
- Responsive grid layouts
- CSS classes and JavaScript utilities for the client
- Easy to customize
- Simplifies web interface design

Git and GitHub

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- Git is an advanced version control tool
- GitHub is a web service for managing Git repositories
- Integrated in WebStorm
- Nontrivial learning curve

Strider

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- Continuous integration and deployment server
- Pulls code from GitHub
- Compiles Coffeescript and runs tests
- Computes code coverage metrics
- Deploys projects to web server for evaluation
- Supports plugins and custom shell scripts

Unit Testing With Mocha

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- Defines structure and syntax of test code
- Choice of assertion libraries
- Different testing styles supported
- Versions for Node.js and client-side code

Conclusion and Observations

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- Unified language both helps and hurts students
- Particular difficulty with Backbone.js
- Module driven development
- High velocity and low familiarity affects testing practices
- Customer interaction