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Full Stack Web Developer with Ruby on Rails

Format:	Self-Pace Online / eLearning
Program Duration:	6 Months
Course Contact Hours:	375

Full Stack Developer with Ruby-on-Rails Profession

"Front-end" (or "client-side") Web development involves using JavaScript, HTML, CSS, and jQuery to make interactive applications that run inside a Web browser and can communicate with a Web server running remotely. HTML and CSS are the basic building blocks of Web pages. JavaScript is a full-fledged programming language and is the part that connects all the others together. jQuery is an open-source library that simplifies complex JavaScript applications, and jQuery UI enables you to build rich interfaces and basic widgets. In addition, front-end Web developers need to understand how to use the version control program Git and the collaboration website GitHub.

Full Stack Developer with Ruby-on-Rails Program

Adding in the "Full Stack", this program continues on so you can discover web development with Rails, the popular web framework for building dynamic, database-backed web applications. The program offers instruction in Rails by example by building a substantial sample application from scratch. teaches Rails by guiding you through the development of three sample applications of increasing sophistication, focusing on the fundamental techniques in web development needed for virtually any kind of application. This program offers full compatibility with Rails 5 and numerous exercises interspersed in each lesson for maximum reinforcement. This indispensable guide provides integrated tutorials not only for Rails, but also for the essential Ruby, HTML, CSS, and SQL skills you need when developing web applications. The program reviews in-depth how each new technique solves a real-world problem, and then demonstrates it with bite-sized code that's simple enough to understand, yet useful.

Education and National Certifications

- Students should have or be pursuing a high school diploma or GED.
- Students who complete this program can sit for the **Microsoft Technology Associate (MTA) 98-375: HTML5 Application Exam**

Program Objectives

At the conclusion of this program, students will be able to:

- Manage the application development life cycle

- Build the user interface using HTML5
- Format the user interface using CSS
- Code the user interface using JavaScript
- Install and configure a complete Rails environment
- Manage the application development life cycle
- Build the user interface using HTML5
- Format the user interface using CSS
- Code the user interface using JavaScript
- How to install and set up your Rails development environment
- Optional easy start using pre-installed IDE in the cloud
- How to build Rails applications from scratch
- Learn testing and test-driven development
- Effectively use the Model-View-Controller (MVC) pattern
- Structure applications using REST architecture
- Build static pages and transform them into dynamic ones
- Implement registration and authentication systems, including validation and secure passwords
- How to deploy your application

Full Stack Web Developer with Ruby on Rails Detailed Student Objectives

PRE-REQUISITE: HTML & CSS

INTRODUCING HTML

- Understand the basics of HTML
- Choose a tool for writing HTML
- Post HTML to a hosting service
- Define HTML5

BUILDING A BASIC HTML DOCUMENT

- Build a simple web page
- Recognize the standard HTML tags for every web page
- Add paragraphs and line breaks
- Create HTML headlines
- Use semantic tags
- Write links to other web pages

INTRODUCING CSS

- Define CSS
- Use inline styles
- Write a basic CSS style sheet
- Use internal and external style sheets
- Add CSS Classes and IDs
- Understand the Basics of CSS

BUILDING AND STYLING HTML TEST

- Align Text
- Write ordered and unordered lists
- Create definition lists

- Add two types of quotations

UNDERSTANDING HTML5 SEMANTIC ELEMENTS

- Recognize sectioning elements
- Add figures
- Include document headers and footers
- Create HTML5 outlines

ADDING IMAGES AND MULTIMEDIA

- Add images to web pages
- Position images
- Use background images
- Link to documents and PDFs
- Add HTML5 video and audio
- Make multimedia responsive

BUILDING AND USING HTML FORMS

- Create a basic form
- Use HTML5 input
- Add in other form input fields
- Validate forms and Submit form data

JAVASCRIPT

GETTING STARTED WITH JAVASCRIPT

- Understand how JavaScript is used
- Practice interactively with JavaScript (simple and complex versions)
- Define, modify and access variables
- Apply operators
- Define and call functions

JAVASCRIPT BASIC SYNTAX – PART 1

- Execute code conditionally
- Execute code
- Format code so that it can be understood, edited and maintained
- Call functions from the Math class
- Embed JavaScript in HTML
- Choose among HTML versions

JAVASCRIPT BASIC SYNTAX – PART 2

- Define and access arrays
- Create, compare, and call methods on strings
- Recognize patterns with regular expressions
- Call methods on arrays

JAVASCRIPT FUNCTIONS

- Understand how the use of functions in JavaScript differs from other languages
- Assign functions to variables, arrays, and other data structures

- Pass functions to other functions
- Return functions from functions
- Create anonymous functions
- Capture local variables (make closures)
- Use the apply method

JAVASCRIPT OBJECTS

- Define, instantiate, and access objects
- Define methods with the prototype property
- Use namespaces to avoid name conflicts
- Create anonymous objects
- Create and parse JSON
- Apply a few other object "tricks"

HTML & CSS

HTML BASICS

- Differentiate among HTML versions
- Define hypertext links and apply different types of URLs
- Understand how block-level (paragraph-like) elements differ from other HTML elements
- Use headings and basic paragraphs
- Understand the difference between div and span
- Create bulleted and numbered lists
- Understand how inline (font-line or text-level) elements differ from other HTML elements

MORE HTML

- Use tables to present tabular information or to align sections of text
- Use forms to send data to servers
- Collect user data with form input elements
- Apply a few miscellaneous elements

jQUERY

jQUERY INSTALLATION, OVERVIEW AND GETTING STARTED

- See what jQuery is all about
- Download jQuery and use it in your pages
- Interactively practice with jQuery
- Manipulate the DOM with jQuery
- Walk through a quick example of the use of jQuery selectors

DEPLOYING WEB APPLICATIONS WITH ECLIPSE AND TOMCAT

- Understand why you need to run on a "real" web server when applying Ajax
- Install Java, Tomcat, and Eclipse
- Configure and launch Eclipse
- Create and deploy apps in Eclipse

jQUERY AJAX SUPPORT - BASICS

- Understand what Ajax is all about and how its use improves traditional web applications

- Make Ajax requests with $.ajax: basics
- Walk through a complete example that uses $.ajax
- Define jQuery behaviors with unobtrusive JavaScript
- Insert Ajax results into the page
- Implement content-centric Ajax with the load function

jQUERY AJAX SUPPORT – SENDING DATA TO THE SERVER

- Send data to the server with $.ajax: summary
- Send data with an explicit string
- Send data with a data object
- Send data by using the serialize function
- Send data when using the load function

jQUERY AJAX SUPPORT ADVANCED CAPABILITIES

- Display temporary messages during Ajax requests
- Handle JSON data
- Walk through an example of handling JSON Data
- Understand and apply $.ajax options
- Use shortcut functions

jQUERY AJAX SUPPORT – PROMISES AND DEFERRED OBJECTS

- Using promises and deferred objects for Ajax
- Highligh Ajax results
- Display temporary messages during Ajax requests
- Check multiple promises with $.when
- Create and apply your own deferred objects

jQUERY: SELECTORS AND DOM MANIPULATION

- Review the basics of CSS
- Recall the basics of jQuery DOM manipulation
- Find sets of page elements with basic selectors
- Operate on sets of page elements with basic operators
- Respond to user events
- Walk through an example that combines selectors, operators and event handlers

UNIT TESTING WITH JsUNIT

- Understand the purpose of JsUnit and the basic steps in applying it
- Install JsUnit and begin using it
- Use available assertion functions
- Walk through a more realistic example
- Apply unit testing to functions that use jQuery

jQUERY UI BASICS

RICH INTERFACES WITH jQUERY UI SETUP AND BASIC WIDGETS

- Understand what jQuery is all about and how to set up your page to use it
- Use styled buttons: basics

- Use styled buttons: options
- Collect dates using a date picker (popup calendar)
- Collect numbers using a number spinner
- Collect numbers using a slider
- Show updates using a progress bar

jQUERY UI DIALOG BOXES

- Understand what dialog boxes are for
- Create and pop up basic dialogs
- Animate the opening and closing of dialogs
- Make dialogs modal
- Use modal dialogs that have been inserted automatically
- Disply Ajax content in dialogs

jQUERY UI TABBED PANELS AND ACCORDION PANELS

- Display static content in tabbed panels
- Display dynamic (Ajax) content in tabbed panels
- Animate the opening or closing of tabs
- Display content in accordion panels

jQUERY UI AUTOCOMPLETERS

- See how the page is set up for the lesson examples
- Understand what autocompleters are for and the basic alternatives in the source of the suggestions
- Get suggestions from local (client-side) data
- Get suggestions from remote (server-side) data
- Get suggestions from a custom matching function
- Apply custom CSS styles to the suggestion menu
- Use an array of objects to differentiate between display values and insert values
- Peform side effects in addition to inserting value into textfield

jQUERY UI ANIMATION EFFECTS AND THEMES

- Understand what animation effects are all about and what the available effects are
- Walk through an example that applies to each of the animation effects
- Understand how themes let you update the look of your pages with little change to the code
- Change themes at runtime
- Design your pages so that they adapt well when the theme changes

USING GIT AND GITHUB IN WEB DEVELOPMENT

CONFIGURING GIT

- Understand three levels of configuration
- Deploy basic configuration settings
- Configure line endings
- Configure aliases

GETTING STARTED WITH GITHUB

- Create your first Git repository
- Commit in Git

- Understand a Git commit
- Understand the benefits of the staging area
- Use the Git log to view history

FILES IN GIT – RENAMING, DELETING AND IGNORING

- Rename a file in Git
- Delete a file in Git
- Ignore files using a .gitignore file
- Use global gitexludes and other Git ignore options
- Understand Git ignore precedence
- Use Git commit -a

FILES IN GIT – BRANCHING, MERGING AND REBASING

- Understand branching
- Merge a branch
- Create a fast forward merge
- Understand recursive merges
- Understand "no fast forward" recursive merges
- Resolve merge conflicts
- Understand a merge conflict example
- Understand Git Diff
- Understand rebasing
- Rebase a branch
- Handle rebase conflicts

REVIWEING A PROJECT ON GITHUB

- Get an overview of a project on GitHub using the README
- Get more information about a project
- Understand issues
- View project state through pulse and graphs

CONFIGURING A PROJECT ON GITHUB

- Understand basic configuration options and rename a repo
- Understand GitHub Pages
- Add collaborators and integrations
- Configure deploy keys

RUBY ON RAILS

FROM ZERO TO DEPLOY

- Up and running
- Bundler
- Version control with Git
- Deploying

A TOY APP

- Planning the application
- The Users resource
- The Microposts resource

MOSTLY STATIC PAGES

- Sample app setup
- Static pages
- Getting started with testing
- Slightly dynamic pages

RAILS-FLAVORED RUBY

- Motivation
- Strings and methods
- Other data structures
- Ruby classes

FILLING IN THE LAYOUT

- Adding structure
- Site navigation
- Sass and the asset pipeline
- Layout links
- User Signup: A first step

MODELING USERS

- User model
- User validations
- Adding a secure password

SIGN UP

- Showing users
- Signup form
- Unsuccessful signups
- Successful signups
- Professional-grade deployment

BASIC LOGIN

- Sessions
- Logging in
- Logging out

ADVANCED LOGIN

- Remember me
- “Remember me” checkbox
- Remember tests

UPDATING, SHOWING, AND DELETING USERS

- Updating users
- Authorization

- Showing all users
- Deleting users

ACCOUNT ACTIVATION

- Account activations resource
- Account activation emails
- Activating the account
- Email in production

PASSWORD RESET

- Password resets resource
- Password reset emails
- Resetting the password
- Email in production

USER MICROPOSTS

- A micropost model
- The basic model
- Showing microposts
- Micropost images

FOLLOWING USERS

- The relationship model
- A web interface for following users
- The status feed