

PRO Career Path

Full-Stack Engineer

Resume Path

[Start practice session](#)

 [Career Change Guide](#)

 [Your Career Path Group](#)

Path Progress



 [Reset Progress](#)

 Earn a certificate of completion

96 Projects

168 Lessons

☐ Beginner friendly

A full-stack engineer can get a project done from start to finish. This Career Path will start

with the front-end, move on to the back-end, then teach you how to connect the two.

Current Module

5. Developing Websites Locally

Introduction: Developing Websites Locally



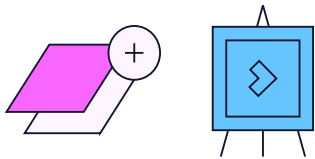
See what's covered in the Developing Websites Locally Unit.



Informational: Introduction: Developing Websites Locally

 [Reset Progress](#)

[Resume](#) →



Upcoming projects in this path

Looking for more to build?

[Visit the full project library.](#)

Guided practice

Try out new skills with helpful guidance.

Practice Project

Bicycle World

Module 6

51 min

Less-guided practice

Test your knowledge with less help.

Practice Project

Challenge Project: Build Your Own Cheat Sheet

Module 7

120 min

Portfolio building

Build your own project from scratch.

Portfolio Project

Mixed Messages

Module 12

5 hrs

Portfolio Ready

Syllabus

1. Welcome to the Full-Stack Engineer Path

Getting Started



2. Overview of Web Development

Introduction: Overview of Web Development



The Internet and Web Development



Introduction to Software Engineering



Review: Overview of Web Development



3. Fundamentals of HTML

Introduction: Fundamentals of HTML



Learn HTML: Elements



Learn HTML: Structure



Learn HTML: Tables



Semantic HTML



Review: Fundamentals of HTML



4. Fundamentals of CSS

Introduction: Fundamentals of CSS



Learn CSS: Selectors and Visual Rules



Learn CSS: The Box Model



Learn CSS: Display and Positioning



Review: Fundamentals of CSS



5. Developing Websites Locally

Introduction: Developing Websites Locally



Getting Started with Text Editors



Developing with CSS



Review: Developing Websites Locally



6. Deploying Websites

Introduction: Deploying Websites



Web Hosting

2 Videos



Deploy a Site with GitHub Pages

1 External Resource, 1 Article



Command Line for Building Websites

1 Lesson, 1 Quiz, 1 Article, 2 Projects



Review: Deploying Websites

1 Informational



7. Improved Styling with CSS

Introduction: Improved Styling with CSS

1 Informational



Learn CSS: Colors

1 Lesson, 1 Quiz, 1 Project



Learn CSS: Typography

2 Lessons, 1 Quiz, 1 Project



Challenge Project: Build Your Own Cheat Sheet

1 Project



Learn Links and Buttons

1 Lesson, 1 Article, 1 Quiz, 1 Project



Learn Secondary Navigation

1 Lesson, 1 Quiz, 1 Project



Wireframing

2 Videos, 1 Article



Challenge Project: Build a Website Design System

1 Project



Review: Improved Styling with CSS

1 Informational



8. Making a Website Responsive

Introduction: Making a Website Responsive

1 Informational



Learn Responsive Design: Grids and Spacing

1 Lesson, 1 Quiz



Layout with Flexbox

1 Lesson, 1 Quiz, 2 Projects



Learn CSS: Grid

2 Lessons, 2 Quizzes, 2 Projects



Learn Responsive Design

2 Lessons, 2 Quizzes, 1 Article, 1 Project



Learn CSS: Documentation and Debugging

1 Lesson, 2 Informationals



Challenge Project: Company Home Page

1 Project



Challenge Project: Responsive Club Website

1 Project



Review: Making a Website Responsive

1 Informational



9. JavaScript Syntax, Part I

Introduction: JavaScript Syntax, Part I

1 Informational



Introduction to JavaScript

2 Articles, 1 External Resource



Learn JavaScript Syntax: Introduction

2 Lessons, 1 Quiz, 2 Projects



Learn JavaScript Syntax: Conditionals

1 Lesson, 1 Quiz, 2 Projects



Learn JavaScript Syntax: Functions

1 Lesson, 1 Quiz, 2 Projects



Learn JavaScript Syntax: Scope

1 Lesson, 1 Quiz, 1 Project



Practice JavaScript Syntax: Variables, Data Types, Conditionals, Functions

1 Lesson, 1 Article



Going off-platform with JavaScript

2 Informationals, 4 Articles



Challenge Project: Number Guesser

1 Project



Review: JavaScript Syntax, Part I

1 Informational



10. JavaScript Syntax, Part II

Introduction: JavaScript Syntax, Part II

1 Informational



Learn JavaScript Syntax: Arrays

1 Lesson, 1 Quiz, 1 Project



Learn JavaScript Syntax: Loops

1 Lesson, 1 Quiz, 1 Project, 1 Article



Learn JavaScript Syntax: Objects

2 Lessons, 1 Quiz, 2 Projects, 1 External Resource



Learn JavaScript Syntax: Iterators

2 Lessons, 1 Quiz, 1 Project, 1 External Resource



Learn JavaScript Syntax: Errors and Debugging

1 Article, 1 Lesson



Pair-Programming: JavaScript Syntax Part I and II

1 Informational



Practice JavaScript Syntax: Arrays, Loops, Objects, Iterators

1 Lesson, 1 Article



Challenge Project: Credit Card Checker

1 Project



Challenge Project: Mysterious Organism

1 Project



Review: JavaScript Syntax, Part II

1 Informational



11. Git and GitHub, Part I

Introduction: Git and GitHub, Part I

1 Informational



Basic Git Workflow

1 Video, 1 Lesson, 1 Quiz, 2 Projects



Important Git Operations

1 Lesson, 1 Quiz, 2 Projects, 1 Article, 1 External Resource



Introduction to GitHub

3 Articles, 2 Videos, 1 Lesson, 1 Quiz



GitHub & Markdown

1 Informational, 1 Video, 2 Articles



Review: Git and GitHub, Part I

1 Informational



12. Portfolio Project: JavaScript Syntax

Group Project: Mixed Messages

1 Informational



Mixed Messages

1 Portfolio



13. Building Interactive Websites

Introduction: Building Interactive Websites

1 Informational



JavaScript and the DOM

3 Lessons, 2 Videos, 1 Quiz



DOM Events with JavaScript

1 Lesson, 1 Quiz, 1 Project



HTML Forms

3 Lessons, 1 Quiz, 1 Project



Review: Building Interactive Websites

1 Informational



14. Making A Website Accessible

Introduction: Making a Website Accessible

1 Informational



Learn Web Accessibility

2 Articles, 2 Lessons, 1 Quiz



Review: Making a Website Accessible

1 Informational



15. Portfolio Project: Personal Portfolio Website

Portfolio Project: Personal Portfolio Website

1 Portfolio



16. JavaScript Syntax, Part III

Introduction: JavaScript Syntax, Part III

1 Informational



Learn JavaScript Syntax: Classes

1 Lesson, 1 Quiz, 2 Projects, 1 External Resource



Learn JavaScript Syntax: Modules

1 Article, 1 Quiz, 1 External Resource, 1 Project



Learn JavaScript Syntax: Error Handling

1 Lesson, 1 Quiz



Pair-Programming: JavaScript Syntax, Part III

1 Informational



Practice JavaScript Syntax: Classes

1 Article



Review: JavaScript Syntax, Part III

1 Informational



17. JavaScript Testing

Introduction: JavaScript Testing

1 Informational



Why Test?

1 Lesson, 2 Articles, 1 Quiz



Write Good Tests with Mocha

2 Lessons, 1 External Resource, 1 Quiz, 1 Project



Learn TDD with Mocha

1 Lesson, 1 External Resource, 1 Quiz, 1 Project



Advanced Testing Concepts

3 Articles



Review: JavaScript Testing

1 Informational



18. Async JavaScript and HTTP Requests

Introduction: Async JavaScript and HTTP Requests

1 Informational



Basics of Asynchronous JavaScript

3 Articles



Learn JavaScript Syntax: Promises

1 Lesson, 1 Quiz



Learn JavaScript Syntax: Async-Await

1 Lesson, 1 Quiz



APIs and HTTP Requests

5 Articles



Learn JavaScript Syntax: Requests

1 Lesson, 1 Quiz, 1 Project



Review: Async JavaScript and HTTP Requests

1 Informational



19. Web Apps

Introduction: Web Apps

1 Informational



What is a Web App?

2 Articles



Review: Web Apps

1 Informational



20. React, Part I

Introduction: React, Part I

1 Informational



JavaScript Refresher

1 Informational, 1 Article



The Virtual DOM

1 Video, 1 Article



JSX

2 Lessons, 1 Quiz, 1 Project



React Components

2 Lessons, 1 Quiz, 1 Project, 1 Article, 1 External Resource



Review: React, Part I

1 Informational



21. React, Part II

Introduction: React, Part II

1 Informational



Components Interacting

3 Lessons, 1 Quiz, 1 Project, 1 Article, 1 External Resource



Stateless Components from Stateful Components

3 Lessons, 1 Quiz, 1 Project



Lifecycle Methods

1 Lesson, 1 Quiz, 1 Project



Practice Project: Jammming

2 Projects



Deploy a React Application With Netlify

3 Articles, 1 Informational



Function Components and Hooks

3 Lessons, 1 Quiz, 1 Project



Intermediate React

4 Lessons, 1 Quiz, 1 Project



codecademy / PRO



1 Lesson, 1 Quiz, 1 External Resource, 1 Project



Learn React Testing with Jest

2 Articles, 2 External Resources



Code Review: React

1 Informational



Challenge Project: Appointment Planner

1 Project



Review: React, Part II

1 Informational



22. Redux

Introduction: Redux

1 Informational



Core Concepts in Redux

1 Lesson, 1 Quiz, 1 Project



Core Redux API

2 Lessons, 1 Quiz, 1 Project, 1 Article



Connect to React with React Redux

1 Lesson, 1 Quiz, 1 Project



Refactoring with Redux Toolkit

1 Lesson, 1 Quiz, 1 Project, 1 Video



Async Actions with Middleware and Thunks

2 Lessons, 1 Quiz, 1 Project



Code Review: Redux

1 Informational



Challenge Project: Flashcards

1 Project



Review: Redux

1 Informational



23. Git and GitHub, Part II

Introduction: Git and Github, Part II

1 Informational



Git Branching

1 Lesson, 1 Quiz, 2 Projects



Git Teamwork

1 Lesson, 1 Quiz, 2 Projects



Best Practices for GitHub Repositories

5 Articles



Collaborating with the GitHub Community

3 Articles



Review: Git and GitHub, Part II

1 Informational



24. Portfolio Project: Reddit Client

Group Project: React/Redux

1 Informational



Portfolio Project: Reddit Client

1 Portfolio



25. Introduction to Back-End

Introduction: Basics of Back-End Development

1 Informational



What is a Back-End?

1 Video, 1 Article



Back-End JavaScript with Node.js

2 Lessons, 2 Quizzes, 1 External Resource



Modular Development with Node.js

2 Articles, 1 Quiz, 1 External Resource, 1 Project



Challenge Project: Find your Hat

1 Project



Review: Basics of Back-End Development

1 Informational



26. Build a Back-end with Express.js

Introduction: Build a Back-End with Express.js

1 Informational



Introduction to Express.js

1 Article, 1 External Resource



Learn Express: Routes

3 Lessons, 2 External Resources, 1 Article, 1 Quiz



Challenge Project: Quote API

1 Project



Learn Express: Middleware

3 Lessons, 1 Article, 1 Quiz



Off-Platform Project: Boss Machine

2 Informationals



Review: Build a Back-End with Express.js

1 Informational



27. User Authentication & Authorization

Introduction: User Authentication and Authorization

1 Informational



Authentication, Authorization, and Encryption

2 Articles, 1 Quiz



Session Authentication in Express.js

2 Lessons, 2 Articles, 1 Quiz



Password Authentication

1 Article, 2 Lessons, 1 Quiz, 1 Project



OAuth 2.0

2 Articles, 1 Lesson, 1 Quiz



Review: User Authentication and Authorization

1 Informational



28. Back-End and Feature Testing

Introduction: Back-End and Feature Testing

1 Informational



Feature Testing with TDD

2 Articles, 1 Lesson, 1 Quiz, 1 Project, 1 External Resource



Server Testing with TDD

2 Lessons, 3 External Resources, 2 Quizzes, 1 Project



Review: Back-End and Feature Testing

1 Informational



29. Database Basics

Introduction: Database Basics

1 Informational



Types of Databases

2 Articles



Working With Your First Database

1 Lesson, 1 Quiz, 1 Project



Using PostgreSQL On Your Own Computer

1 Article, 1 Informational



Review: Database Basics

1 Informational



30. Working with Databases

Introduction: Working with Databases

1 Informational



What Can I Do With A Database?

1 Informational, 1 Lesson, 1 Quiz, 1 Project



Aggregate Functions

1 Lesson, 1 Quiz, 2 Projects



Multiple Tables

1 Lesson, 1 Quiz, 1 Project



Off-Platform Project: Baseball Data

1 Informational



Review: Working with Databases

1 Informational



31. Designing Relational Databases

Introduction: Designing Relational Databases

1 Informational



How Do I Make and Populate My Own Database?

3 Lessons, 1 Quiz, 1 Project



Triggers

1 Lesson, 1 Quiz, 1 Project



Creating an Organized Database

2 Articles, 1 Informational



Review: Designing Relational Databases

1 Informational



32. Advanced PostgreSQL

Introduction: Advanced PostgreSQL

1 Informational



How Do I Make Sure My Database Stays Intact?

2 Lessons, 2 Quizzes, 2 Projects, 2 Articles



How Do I Make Sure My Database Stays Fast?

2 Lessons, 2 Quizzes, 2 Projects, 1 Article



Normalizing a Database

1 Lesson, 1 Quiz, 1 Project, 1 Article



Database Maintenance

1 Lesson, 1 Quiz, 1 Project



Review: Advanced PostgreSQL

1 Informational



33. Adding a PostgreSQL Database

Introduction: Adding a PostgreSQL Database

1 Informational



PostgreSQL with Node and Express

3 External Resources



SQL, Query Builders, and ORMs

1 Article



Review: Adding a PostgreSQL Database

1 Informational



34. API Development with Swagger and OpenAPI

Introduction: API Development with Swagger and OpenAPI

1 Informational



Introduction to API Development

4 Articles



Design First API Design

3 Articles



Design and Document APIs with Swagger and OpenAPI

2 Articles, 1 Quiz



Review: API Development with Swagger and OpenAPI

1 Informational



35. Portfolio Project: E-Commerce App (REST API)

Group Project: Back-End

1 Informational



E-Commerce App (REST API)

1 Portfolio



36. Connecting Front-End to Back-End

Introduction: Connecting Front-End to Back-End

1 Informational



Connecting Front-End to Back-End

1 Lesson, 4 Articles, 1 Quiz



How to Structure Your Apps

3 Articles, 1 Quiz



Review: Connecting Front-End to Back-End

1 Informational



37. Deploying Web Applications

Introduction: Deploying Web Applications

1 Informational



Deploying a PERN App with Heroku

1 Informational, 4 Articles



Review: Deploying Web Applications

1 Informational



38. Web Security Fundamentals

Introduction: Web Security Fundamentals

1 Informational



Web Security

1 Article, 1 Lesson, 1 Quiz



Review: Web Security Fundamentals

1 Informational



39. Data Security

Introduction: Data Security

1 Informational



Transport Layer Security (TLS)

1 Article, 1 Quiz



Role-Based Access Control (RBAC)

2 Articles, 1 Quiz



Authentication and Authorization in Postgres

1 Lesson, 1 Quiz



Managing Environment Variables, API Keys, and Files

1 Lesson, 1 Quiz, 1 External Resource



Off-Platform Project: Securing School Data

1 Project



Review: Data Security

1 Informational



40. Common Attacks on Web Applications

Introduction: Common Attacks on Web Applications

1 Informational



Preventing Cross-Site Scripting (XSS) Attacks

2 Articles, 1 Lesson, 1 Quiz, 1 Project



Preventing Cross-Site Request Forgery (CSRF) Attacks

1 Article, 1 Lesson, 1 Quiz, 1 Project



Preventing SQL Injection Attacks

1 Article, 1 Lesson, 1 Quiz, 1 Project



Defensive Coding in Javascript

1 Lesson, 1 Quiz, 1 Project



Remediation and Incident Response

1 Article, 1 Quiz



Off-Platform Project: ACME Bank

1 Article



Review: Common Attacks on Web Applications

1 Informational



41. Fundamentals of Operating Systems

Introduction: Fundamentals of Operating Systems

1 Informational



Operating System Basics

1 Lesson, 3 Articles



Processes and Threads

1 Lesson, 1 Quiz, 1 Article



Process Scheduling

1 Lesson, 1 Quiz, 1 Article



Synchronization + Deadlock

1 Lesson, 2 Articles, 1 Quiz



Memory Management

1 Lesson, 1 Quiz, 1 Article



File Systems

1 Lesson, 1 Quiz, 1 Article



I/O Systems

2 Articles, 2 Lessons, 1 Quiz



Review: Fundamentals of Operating Systems

1 Informational



42. DevOps Fundamentals

Introduction: DevOps Fundamentals

1 Informational



DevOps: Introduction and Culture

2 Articles, 1 Quiz



DevOps Infrastructure

5 Articles, 1 Quiz



System Health

2 Articles, 1 Quiz



DevOps Processes

3 Articles, 1 Quiz



Review: DevOps Fundamentals

1 Informational



43. Portfolio Project: E-Commerce App (Client)

Group Project: Full-Stack

1 Informational



E-Commerce App (Client)

1 Portfolio



44. What To Expect in a Technical Interview

Introduction: What to Expect in a Technical Interview

1 Informational



Intro to Tech Interviews

3 Articles



Review: What to Expect in a Technical Interview

1 Informational



45. Linear Data Structures

Introduction: Linear Data Structures

1 Informational



Intro to Data Structures

2 Articles



Nodes

2 Informationals, 2 Lessons, 2 Quizzes



Singly Linked Lists

2 Informationals, 2 Lessons, 2 Quizzes, 2 Articles



Doubly Linked Lists

2 Informationals, 2 Lessons, 2 Quizzes



Queues

2 Informationals, 2 Lessons, 2 Quizzes



Stacks

2 Informationals, 2 Lessons, 2 Quizzes, 1 Project



Review: Linear Data Structures

1 Informational



46. Complex Data Structures

Introduction: Complex Data Structures

1 Informational



Hash Maps

2 Informationals, 2 Lessons, 2 Quizzes



Trees

2 Informationals, 2 Lessons, 2 Quizzes



Heaps

2 Informationals, 2 Lessons, 2 Quizzes



Graphs

2 Informationals, 2 Lessons, 2 Quizzes



Review: Complex Data Structures

1 Informational



47. Algorithms

Introduction: Algorithms

1 Informational



Recursion

2 Informationals, 3 Lessons, 2 Quizzes



Asymptotic Notation

3 Articles, 1 Lesson, 2 Quizzes, 1 Informational



Bubble Sort

1 Article, 2 Informationals, 2 Lessons, 2 Quizzes



Merge Sort

2 Lessons, 2 Quizzes, 1 Informational



Quicksort

2 Lessons, 2 Quizzes, 1 Informational



Review: Algorithms

1 Informational



48. Search & Graph Search Algorithms

Introduction: Search and Graph Search Algorithms

1 Informational



Binary Search and Search Trees

2 Informationals, 3 Lessons, 2 Quizzes



Graph Traversals

2 Informationals, 2 Lessons, 2 Quizzes



Review: Search and Graph Search Algorithms

1 Informational



49. Interview Skills

Introduction: Interview Skills

1 Informational



Technical Interviews: Whiteboarding

1 Lesson, 1 Quiz



Code Review: Interview Skills

1 Informational



JavaScript Algorithm Practice

5 Articles



Behavioral Interview

2 Articles



Review: Interview Skills

1 Informational



50. Portfolio Project: Open-Ended PERN App

Group Project: Final Project

1 Informational



Final PERN App

1 Portfolio



51. Next Steps in Your Full-Stack Engineer Journey

Next Steps

2 Informationals



