Node.js Application Development

Duration: 28 hours

Prerequisites: Knowledge of JavaScript. Attendees should also have familiarity with a Windows, Linux, or OS X command line interface as well as a basic understanding of network protocols such as HTTP.

Course Description: This hands on Node.js course will teach front end designers and server side developers how to rapidly create, maintain, and deploy Node.js applications. This course includes thorough coverage of the Node.js architecture, the V8 engine and the Node Ecosystem. The course takes a practical approach to creating and organizing Node.js applications using functions and modules as part of the Node.js organizational structure. This course will provide attendees with a comprehensive understanding of Node.js core modules and how to procure and install packages using npm. Attendees will learn to identify and correct problems through unit testing and exception handling.

Attendees will learn how to use Node.js to create Command Line Interface applications for system administration and process management, use Node.js networking modules to communicate with TCP/IP clients and servers such as HTTP servers, and create / consume REST (Representational State Transfer) data services. Attendees will learn how to leverage frameworks such as Express to rapidly build Web Applications. Attendees will learn how to use Node.js to connect to NoSQL databases such as MongoDB to store, retrieve, and manipulate data (i.e., achieve data persistence).

Comprehensive hands on exercises are integrated throughout to reinforce learning and develop real competency.

Students Will Learn

- Installation and configuration of Node.js
- Using npm to install and manage modules
- Working with the V8 Engine
- Building HTTP servers and HTTP clients
- Synchronous and asynchronous design patterns
- Building Node.js applications
- Storing application data in NoSQL databases
- Working with Web application frameworks such as Express
- Testing and Debugging Node.js applications
- Using Node.js core modules
- Using the Node.js event system and event emitters
- Interacting with the file system using buffers and streams
- Using Node.js networking API's to build internetworked applications
- Creating and consuming RESTful Web services

Overview

About Node.js

- Server Side JavaScript
- The Event Loop
- Asynchronous Execution
- `npm`

Node.js Global Environment

- Timers
- Global Objects
- The `process` Object
- Buffers and Buffer Manipulation

- Node.js Architecture
- Node.js Core Modules
- Node.js Projects and Applications
- Node.js Command Line Arguments

ES6 Enhancements

- Arrow Functions
- `let` and `const` Keywords
- Enhanced Object Literals
- Map and Set Collections
- `WeakMap` and `WeakSet` Collections
- String Template Literals

Programming Fundamentals with Node

- Using Modules to Organize Code
  - Creating and Reusing Code with Modules
- Asynchronous Programming Fundamentals
- Using Callbacks to Handle Events
- Using `EventEmitters` to Handle Repeating Events
- Type Testing with the `util` Module
- The Node.js Module Loading System
- Module Caching

System and Data Interaction With Node

- Interacting with the System Using the `os` Module
- Working with the File System Using the `fs` and `path` Modules
- Managing Data Flow with Pipes and Streams
- Synchronous vs. Asynchronous File System Interaction
- Using Buffers to Read and Manipulate Binary Data
- Handling and Transforming File Path Information with the `path` Module
- Spawning and Managing Processes using the `process` Module

Web Application and Network Programming

- Using Express to Rapidly Build and Deploy Web Applications
- REST-Based Web Service Fundamentals
- Creating HTTP Servers and Clients Using the `http` Module
  - Sending HTTP Requests and Receiving HTTP Responses
- Making DNS Requests with the `dns` Module
- Creating TCP Clients and Servers with the `net` Module

Creating Modules

Installation and Configuration

- Node.js
- `npm`
- Express
- MongoDB
- Mongoose

Unit Testing and Debugging with Node.js

- Implementing Unit Tests with the `Assert` Module
- Test Driven Development with Nodeunit
- Behavioral Testing with Mocha
- Facilitating Debugging with the `Console` Module
- Working with the Node.js Debug Utility

Data Persistence with Node.js

- Data Persistence Mechanisms
- MongoDB Capabilities
- Connecting to MongoDB
- Using the `fs` Module to Read and Write Files Synchronously and Asynchronously

Process Management with the `process` Module

- Executing External Applications
- Attaching and Detaching Child Processes
- Facilitating Inter-Process Communication between Node.js Processes
- Making Node.js Applications Executable

Planning Modules
- Working with the `package.json` File
- Working with Dependencies
- Understanding Semantic Versioning
- Testing Modules

Related Bootcamp

Track	Duration	Price
Web Developer	119 hours	$3,580

Contact Us

Address: 6 Hemlock Drive Chelmsford, MA 01824

Phone: 978.250.4983

Mon - Thur: 9 am - 5 pm EST
Fri: 9 am - 4 pm EST

E-mail: info@developer-bootcamp.com

Copyright© 2025 Developer Bootcamp