

**DevOps Foundations for JavaScript with Git, Jenkins, and NPM**

**Course Number:** JEN-112WA  
**Duration:** 3 days

**Overview**

This DevOps Foundations for JavaScript with Git, Jenkins, and NPM training course teaches attendees DevOps fundamentals and how to continuously build and deploy a React application using NPM, Git, and Jenkins, as well as how to implement continuous code quality.

**Prerequisites**

No prior experience is necessary; however, basic JavaScript knowledge is beneficial.

**Materials**

All DevOps training students receive comprehensive courseware.

**Software Needed on Each Student PC**

Attendees will not need to install any software on their computer for this class. The class will be conducted in a remote environment that Accelebrate will provide; students will only need a local computer with a web browser and a stable Internet connection. Any recent version of Microsoft Edge, Mozilla Firefox, or Google Chrome will be fine.

**Objectives**

* Implement version control using Git
* Branch, merge, and work with Remotes
* Work with GitFlow workflow
* Explore NPM
* Create a React Application with NPM
* Create a Jenkins Job
* Create a Pipeline

**Outline**

* DevOps Fundamentals
  + Why DevOps
  + What is DevOps?
  + Collaborative, Matrixed, and Cross-Functional Teams
  + Key Components of Successful DevOps Teams
  + DevOps-ification
  + DevOps Vocabulary
  + DevOps Goals
  + Not DevOps - Crush Buzzwords
  + Driving Business Outcomes with DevOps
  + Technology-Enabled Business
  + DevOps Key Enabler for Digital Transformation
  + Core Values and Mission
  + Communication
  + Collaboration
  + Value Stream Mapping
  + Behavioral Patterns for Success
  + DevOps Org Structures
  + DevOps Team - Separate
  + DevOps Merged Organization
  + DevOps Overlapped Organization
  + Organizational Structure Leadership
  + What Does Continuous Delivery Mean?
  + Deployment Pipelines
  + Your Organization is Doing CD if …
  + Pipelining for CD
  + Continuous Integration
  + CI Pipeline
  + CD & CI Methodologies
  + Key Tool Categories for CI/CD
* Introduction to Git
  + What is Git
  + Git's Design Goals
  + Branching and Merging
  + Centralized Version Control
  + Distributed Version Control
  + Git Basics
  + Getting Git
  + Git on the Server
  + Git Repository Managers
  + Git on Somebody Else's Server
* Basic Git Operations
  + Using Git
  + Definitions
  + Commit
  + How to Think About Commits
  + Viewing History
  + Configuring Git
  + Configuration Scope
  + User Identification
  + GPG Signing
  + Gnu Privacy Guard
  + GPG Basics
  + GPG and Git
  + .gitignore
  + Other Useful Configurations
  + Git Attributes
  + Where Gitattributes are Set
  + How Gitattributes are Set
  + Git Hooks
  + commit-msg Hook with Jira Key
* Branching, Merging, and Remotes
  + Branching
  + Branches in Git
  + Merge
  + Fast Forward Merge
  + --no-ff
  + More Than One Repository
  + Working with Remotes
  + Fetch and Pull
  + Push
  + Pull Requests
  + Tagging a Commit
  + Lightweight Tags
  + Annotated Tags
  + Sharing Tags
  + Checking Out a Tag
* Introduction to Git Flow
  + Why Use an SCM Workflow?
  + What is Git Flow
  + The Main Branch
  + Benefits
  + How does Git Flow work?
  + Git Flow Extension
  + Initializing Git Flow
  + Features
  + Release
  + Hotfixes
  + Git Flow and Continuous Integration
  + Git Flow – Pros and Cons
  + Git Flow – When it Works Best?
  + Git Flow – When it Doesn’t Work?
  + Git Flow Alternatives
  + Trunk-based Development – When it Works?
  + Trunk-based Development – When it Doesn’t Work?
  + GitHub Flow – Pros and Cons
  + GitLab Flow – Environment Branches
  + GitLab Flow – Release Branches
* Continuous Code Quality
  + Continuous Code Quality
  + What is SonarQube
  + SonarQube - Benefits
  + SonarQube (Multilingual)
  + Seven Axes of Quality
  + Potential Bugs
  + Tests
  + Comments and Duplication
  + Architecture and Design
  + Complexity
  + SonarQube Installation
  + SonarQube Components
  + Code Quality
  + Common Weakness Enumeration (CWE)
  + CWE List Item Example
  + OWASP Top Ten
  + SANS 25
  + SANS 25
  + SonarQube Quality Profiles
  + SonarQube Quality Gates
  + Portfolios
  + SonarLint
* Introduction to Continuous Integration, Continuous Delivery, and Jenkins-CI
  + Foundation of Agile AppDev
  + XP Flow
  + Extreme Programming
  + Agile Development
  + What is Continuous Integration
  + Typical Setup for Continuous Integration
  + Setup Notes for Continuous Integration
  + CI with Artifact Management
  + What is Continuous Delivery?
  + Why Continuous Delivery?
  + DevOps and Continuous Delivery
  + Continuous Delivery Challenges
  + Continuous Delivery vs. Continuous Deployment
  + Jenkins Continuous Integration
  + Jenkins Features
  + Running Jenkins
* Getting Started With Node Package Manager (NPM)
  + Node Package Manager (NPM)
  + History
  + Node.js
  + The NPM Registry
  + Registry UI
  + Module Page
  + Readme
  + Dependencies (upstream)
  + Dependencies (downstream)
  + Versions
  + Other Information
  + Installing NPM
  + NVM for Linux/MacOS
  + NVM for Windows
  + The NPM Command Line Interface (CLI)
  + Packages and Modules
  + package.json
  + NPM init
  + package.json
  + Dependencies
  + Installing Dependencies
  + Installing Dependencies
  + Installing Dependencies from package.json
  + Versioning
  + NPX
* NPM and REACT
  + React
  + NPM and React
  + Create a Simple React App
  + Install create-react-app
  + Possible Installation Issues
  + Examine the Directory
  + Create the app
  + Examine Created Application
  + Details
  + Examine package.json
  + Install
  + Build
  + Build Artifacts
  + Running the Application
  + Tests
* Installing and Running Jenkins
  + Downloading and Installing Jenkins
  + Running Jenkins as a Stand-Alone Application
  + Running Jenkins on an Application Server
  + The Jenkins Home Folder
  + Installing Jenkins as a Windows Service
  + Initial Configuration
  + Configuration Wizard
  + Configuring Tools
  + Logging in Jenkins
  + Custom Log Recorders
* Job Types in Jenkins
  + Introduction
  + Different types of Jenkins Items
  + Configuring Source Code Management (SCM)
  + Working with Subversion
  + Working with Git
  + Storing Credentials
  + Service Accounts
  + Build Triggers
  + Schedule Build Jobs
  + Polling the SCM
  + Polling vs. Triggers
  + Maven Build Steps
* Jenkins Plugins
  + SCM
  + Build and Test
  + Analyzers
  + Jenkins for Teams
  + Installing Jenkins Plugins
* Securing Jenkins
  + Jenkins Security
  + Authentication
  + Authorization
  + Confidentiality
  + Activating Security
  + Configure Authentication
  + Using Jenkins's Internal User Database
  + Creating Users
  + Authorization
  + Matrix-Based Security
  + Note – Create the Administrative User
  + Project-based Matrix Authorization
  + Project-Based Authentication
  + Role-Based Access Control
* Distributed Builds with Jenkins
  + Distributed Builds - Overview
  + Distributed Builds
  + Agent Machines
  + Configure Jenkins Master
  + Configure Projects
* Continuous Delivery and the Jenkins Pipeline
  + Continuous Delivery
  + DevOps and Continuous Delivery
  + Continuous Delivery Challenges
  + Continuous Delivery with Jenkins
  + The Pipeline Plugin
  + Defining a Pipeline
  + A Pipeline Example
  + Parallel Execution
  + Creating a Pipeline
  + Invoking the Pipeline
  + Interacting with the Pipeline
  + Pipeline vs. Traditional Jobs
* Best Practices for Jenkins
  + Secure Jenkins
  + Users
  + Backups
  + Reproducible Builds
  + Testing and Reports
  + Large Systems
  + Distributed Jenkins
* Conclusion