

**Introduction to React, GraphQL, and Relay**

**Course Number:** RCT-106  
**Duration:** 5 days

**Overview**

React is a popular, high-performance JavaScript library for building fast, composable user interfaces. GraphQL is a new and innovative way to query and mutate graphs of data according to the needs of the GraphQL consumer. Relay is a React/GraphQL framework which manages the querying and mutating of data for React components consuming GraphQL services.

Accelebrate’s Introduction to React/GraphQL/Relay training class teaches experienced JavaScript developers the skills they need to immediately implement React/GraphQL/Relay in their applications.

**Prerequisites**

All attendees must be experienced JavaScript developers with a fairly advanced understanding of JavaScript, including prototypes and functions as first class citizens.  If your group doesn’t yet have this experience, we could readily add one or two days to the beginning of your course to appropriately prepare them.

**Materials**

All attendees receive comprehensive courseware.

**Software Needed on Each Student PC**

* Google Chrome and/or Firefox
* Other modern browsers as desired
* IDE/development environment of your choice
* Other free software and lab files that Accelebrate would specify, including Node.js

**Objectives**

* Understand what React, GraphQL and Relay are and what problems they solve
* Gain a deeper knowledge of ES2015, JSX and RelayQL
* Learn how to configure React and GraphQL for Relay
* Implement unit tests for React/GraphQL/Relay components
* Learn React/GraphQL/Relay best practices

**Outline**

* Overview
  + What is GraphQL? What problem does it solve?
  + What is React? What problem does it solve?
  + What is Relay? What problem does it solve?
* ES2015, JSX and RelayQL
  + ES2015 features which impact React, GraphQL & Relay
  + How to create components with ES2015
  + Using Babel for ES2015, JSX & RelayQL
  + Using WebPack with React/GraphQL/Relay Development
  + Immutable Programming & Immutable.js
* GraphQL - Setting up GraphQL with Node.js and Express
  + Express-GraphQL Package
  + Graphiql Tool
* GraphQL - Built-In Types
  + Scalar Type
  + Object Type
  + Interface Type
  + Union Types
  + Input Object Type
  + List Type
  + Enum Type
* GraphQL - Working Types
  + Selecting the Right Built-In Type to Construct Custom Types
  + Arguments
  + Resolving Values
  + Return Types
* Querying GraphQL
  + Organizing Endpoints
  + Exploring the Query Language
  + Fragments
  + Consuming with AJAX
* Mutations with GraphQL
  + Formatting Data to Send to the Server
  + Configuring Mutations and Input Types
  + Variables
* React - Creating Components
  + Using createClass
  + Extending React.Component
  + Stateless Functions
  + Referencing DOM Elements
* React - Create Element & JSX
  + Rendering
  + Passing Props
* React - Working with State
  + Initializing State
  + Updating State
  + Working with Forms
* React - Composing Components
  + Sibling Components and Keys
  + Parent and Child Components
  + Props and State
* React - Component Life-Cycle
  + Events
  + Functions
* React - Server Rendering
* Relay - Configuring GraphQL for Relay
  + Node Interface
  + Registering Types
  + Mutations
* Configuring React for Relay
  + Creating Containers and the Root Container
  + Configuring Routes
  + Setting up Mutations
* Unit Testing - Tools
  + Jest & Jasmine
  + Enzyme
  + TestUtils
* Unit Testing - Testing GraphQL
  + Unit Testing Custom Types
  + Unit Testing Queries
  + Unit Testing Mutations
* Unit Testing - Testing React
  + Testing DOM Manipulations
  + Testing Properties and State
  + Simulating Events
  + Shallow Rendering
* Testing Relay
  + Unit Testing Containers, Routes and Root Containers
  + Unit Testing Mutations
* Conclusion