

# Hands-on Workshop "Web Development with Angular and TypeScript"

Participants of this workshop will gain practical skills while exploring the best practices and principles of developing Angular applications and get familiar with multiple sample applications illustrating solutions for real-world challenges. During this course we'll cover all the latest APIs (routing, dependency injection, forms). Each of the first three days of the workshop ends with hands-on work on a sample application "Online Auction". During the fourth day, participants will create the front end of the online store that will look like [this one](#).

We offer this training as a 4-day workshop.

**By the end of this hands-on course, participants will understand:**

- How to jump-start a new project with Angular CLI
- How to arrange the client-side navigation in single-page applications
- How to communicate with servers using the HTTP protocol

**And they'll be able to:**

- Write code in TypeScript with the Angular framework and deploy it in any modern web browser
- Unit test the router, services, and components
- Automate the building and deployment processes

This workshop runs from 9AM to 5PM, which includes a lunch break. The first three days of this workshop consist of 60% lectures and 40% of the hands-on work. The fourth day is a 100% hands-on work under the instructor's guidance. Participants will receive the PDFs of all slides and all code samples covered in this course. The size of this class is limited to 25 participants. During this workshop we'll use Angular 6.

## The Instructor

Yakov Fain is the lead author of two editions of the book [Angular Development with TypeScript](#) as well as a number of other technical books on programming. Yakov works at the IT consultancy Farata Systems. A Java Champion, he has taught multiple classes and workshops on the web and Java-related technologies, presented at international conferences, and published more than a thousand blog posts at <http://yakovfain.com>. Yakov lives in New York City.

## Prerequisites

To gain the most from this class attendees should understand the syntax of JavaScript and HTML.

# Course Outline (Day 1-3)

## Unit 1. Getting familiar with Angular

- Project structure
- Angular modules and components
- Package managers: npm and Yarn
- Getting started with Angular CLI
- Intro to TypeScript
- Intro to templates and bindings

## Unit 2. Client-side navigation with the router

- Location strategies
- Main router elements
- Configuring routes
- Passing data to routes
- Child routes
- Multiple router outlets
- Guarding routes with CanActivate and CanDeactivate
- Lazy loading of modules

## Unit 3. Dependency injection

- Benefits of dependency injection
- Injectors and providers
- Hierarchies of injectors
- Injecting using factories and values
- Back to the router: using the Resolve guard

Hands-on. Participants work on the first version of the ngAuction app (1 hour)

## Unit 4. Inter-component communications

- @Input() and @Output() annotations
- Using a parent component as a mediator
- Using an injectable service as a mediator
- Projection of HTML fragments to child components
- A brief overview of change detection
- Component lifecycle

## **Unit 5. Working with Forms API**

- Template-driven forms
- Reactive forms
- Form validation
- Creating custom validators
- Asynchronous validators

## **Unit 6. Reactive programming in Angular**

- Introduction to reactive programming with RxJS
- The roles of an observable, observer and subscriber
- RxJS operators
- Observables in forms
- Observable HTTP requests
- Multi-casting with RxJS Subject
- Canceling pending HTTP requests with switchMap
- Using the Flex Layout library and ObservableMedia

Hands-on. Participants work on the second version of the ngAuction app (1 hour)

## **Unit 7. Communicating with a web server**

- Developing a simple Node.js server
- Working with the Angular HttpClient object
- Deploying apps on the server with Angular CLI
- Adding custom npm scripts
- Code review of using WebSockets in ngAuction

## **Unit 8. Unit testing and deployment**

- Using the Jasmine framework
- Using the Karma test runner
- Bundling apps for dev and prod using Angular CLI
- Building and deploying ngAuction under NodeJS server

## **Unit 9 Introduction to Angular Material library**

- Creating a modern-looking UI with the Angular Material library
- Overview of Angular Material components
- Getting started with Angular Material

Hands-on. Participants work on the third version of ngAuction app (1 hour).

## Day 4

Under the instructor's guidance, participants will work on the front end of the online store application that uses Angular material. This app uses UI components offered by the Angular Material library. By the end of the day, the participants will have developed the online store app that will look like [this one](#).