



Full-stack Application Development

using ReactJS, Express and TypeScript

The Course Main Goals

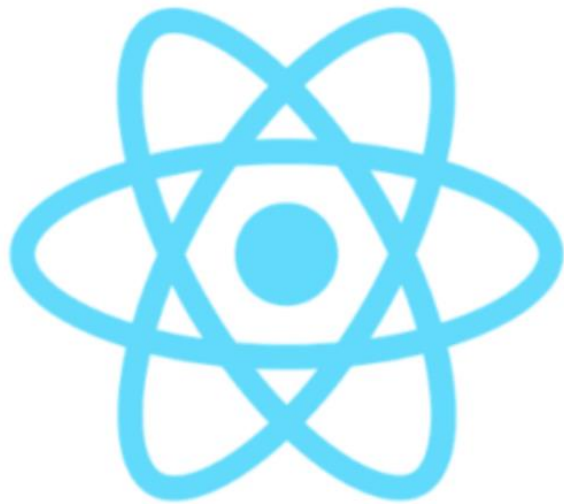
The course provides in-depth study of state-of-the-art *TypeScript*, *ReactJS*, *NodeJS*, and *Express* platform for rapid development of modern, component-based, mobile-first, responsive full-stack web applications, that are easy to extend and maintain.

Time Schedule

- 9.00 – 10.30 – Block 1
- 10.30 – 10.45 – Break
- 10.45 – 12.15 – Block 2
- 12.15 – 13.00 – Lunch break
- 13.00 – 14.30 – Block 3
- 14.30 – 14.45 – Break
- 14.45 – 16.15 – Block 4

Where to Find The Code and Materials?

<https://github.com/iproduct/fullstack-typescript-react>



Why to Attend This Training?

What will you learn?

You Will Learn How To:

- Set up different kinds of TypeScript projects – front-end with [React + Redux](#), and back-end with [NodeJS](#) and [Express](#);
- Integrate them in a full-stack project using [REST/JSON APIs](#);
- Build [type-safe components](#), [single page apps](#), and [backend services](#);
- Implement real-time server-push event streaming using [Socket.IO](#);
- Understand how to boost development performance with [TypeScript](#), and different tooling alternatives;
- Implement unit, integration and functional (UI, E2E) tests with [Jest](#), [Enzyme](#), and [TestCafe](#);
- Debug full-stack applications written in TypeScript

Course Schedule

- [08.06, 09.06] - Introduction to HTML5, CSS and JavaScript – 12h
- [10.06] - HTTP Client and Fetch APIs – 6 h
- [11.06] - Novelties in ES6+ – 6 h
- [12.06] - TypeScript – 6h
- [15.06] - Single Page Applications (SPA) development with ReactJS – 2h. Building React components and applications with TypeScript – 6h
- [16.06] - TSX in depth – 4h
- [17.06] - Working with forms – 6h
- [18.01] - Components composition in depth – 6h

Course Schedule

- [\[19.06\]](#) - New lifecycle methods – 3h. Building purely functional components using new Hooks API – 6 h
- [\[22.06\]](#) - Other novelties in React 16+ – 3h
- [\[23.06\]](#) - Dependency Injection (DI) of custom application services using React Context – 4 h
- [\[24.06\]](#) - SPA routing using React Router v5 – 8 h
- [\[25.06\]](#) - Testing React Components – unit and end-to-end (E2E, UI) testing using – 6h
- [\[26.06\]](#) - Using Component Libraries – 6h

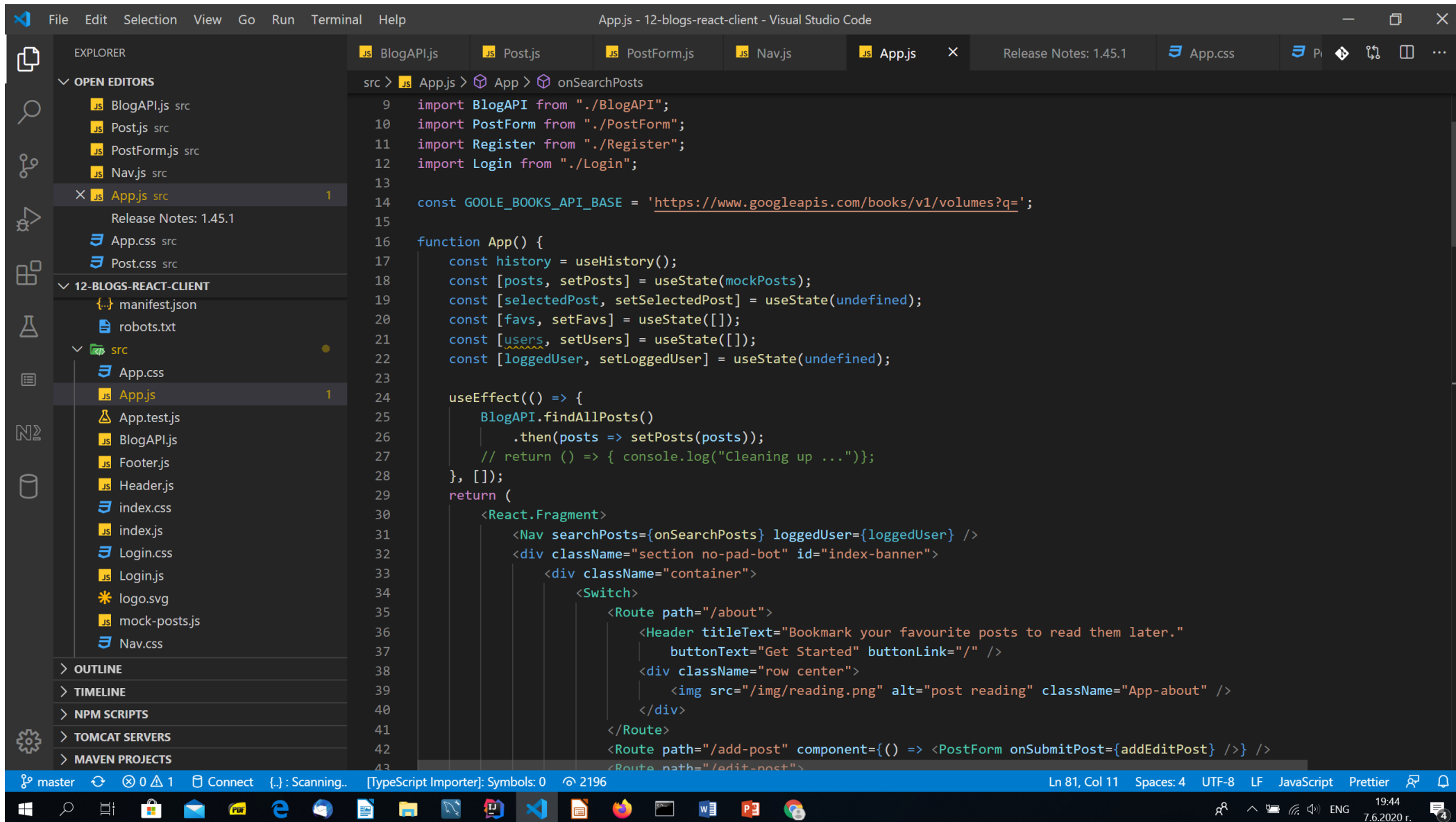
Course Schedule

- [29.06] - Redux – predictable state container for JavaScript apps – 8h
- [30.06] - Server side application development with Node.js and TypeScript – 8h
- [01.07, 02.07, 03.07] - REST service API development using Express.js. Database integration: document and relational DBs – MongoDB and MySQL. – 14h
- [09.07] - Final projects demonstration: presentation + demonstration – 10 min per project

Software to Install

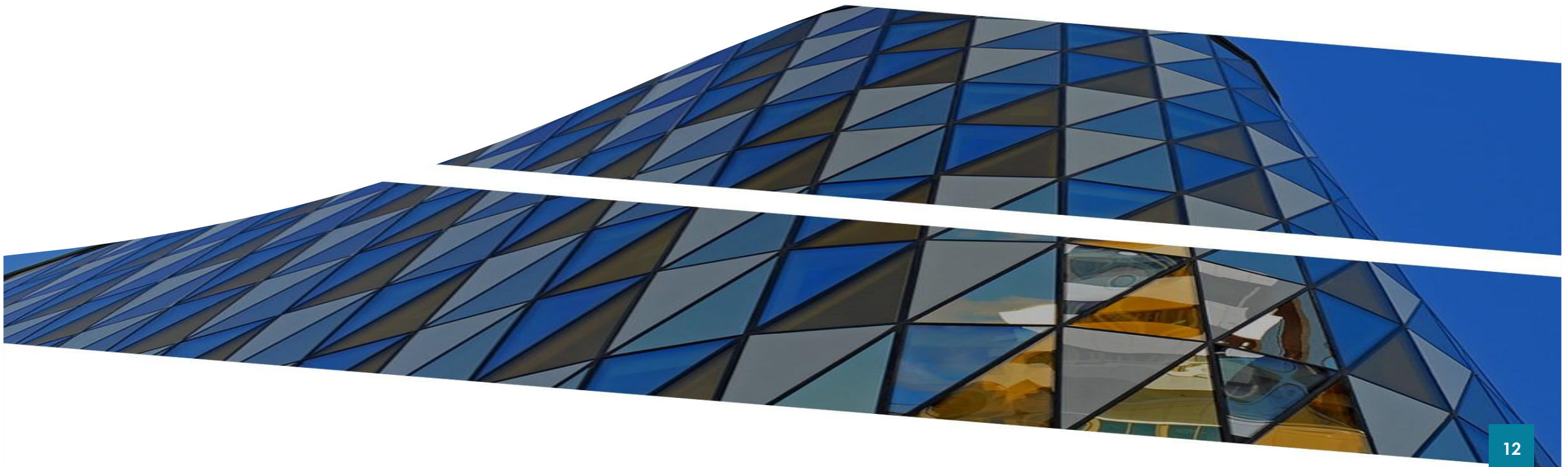
- NodeJS - <https://nodejs.org/en/download/current/>
- Visual Studio Code - <https://code.visualstudio.com/download>
- MongoDB Community Server -
<https://www.mongodb.com/try/download/community>
Don't forget to install MongoDB Compass (GUI) too.
- MySQL Community Server v8 - <https://dev.mysql.com/downloads/mysql/>
- MySQL Workbench - <https://dev.mysql.com/downloads/workbench/>
- Yarn package manager for NodeJS -
<https://classic.yarnpkg.com/en/docs/install/#windows-stable>
- Chrome Web Browser

Visual Studio Code



Introduction to HTML5, CSS & JavaScript

Web design technologies recap



Introduction to HTML 5

Base tags, semantic markup, styling



We will follow the [HTML 5 Tutorials at W3Schools:](#)

- HTML Elements
- Styles and formatting
- Integration with CSS
- Basic building blocks: links, images, tables, lists
- Block and inline elements
- Ids and classes. Basic CSS selectors
- Adding behaviour with JavaScript
- Basic layouts with HTML and CSS
- Semantic markup

We will follow the [HTML 5 Tutorials at W3Schools:](#)

- Charsets and URL encoding
- HTML forms and validation
- HTML Graphics with Canvas and SVG
- HTML 5 Media API - <audio>, <video>
- HTML 5 Geolocation API
- Drag and drop support
- Web Storage API – localStorage and sessionStorage
- Web Workers
- Server Sent Events (SSE)

Quiz Time

<https://www.w3schools.com/quiztest/quiztest.asp?qtest=HTML>



Exercises

<https://www.w3schools.com/html/exercise.asp>



Introduction to CSS

Selectors, positioning, backgrounds, box model and layout, grid system, Flexbox



We will follow the [CSS Tutorials at W3Schools:](#)

- Selectors
- Positioning
- Colours
- Gradients
- Backgrounds
- Borders
- Box model
- Text and fonts
- Horizontal and vertical alignment

We will follow the [CSS Tutorials at W3Schools](#):

- Complex selectors
- Pseudo-classes and pseudo-elements
- How-to's: navigation bar, dropdowns, gallery
- Forms styling
- Counters
- CSS units
- Selectors specificity
- Web page layout using CSS floating
- Animations and transforms

We will follow the CSS Tutorials at W3Schools:

- Styling images
- CSS variables (custom properties) - https://developer.mozilla.org/en-US/docs/Web/CSS/Using_CSS_custom_properties
- calc() Function - <https://developer.mozilla.org/en-US/docs/Web/CSS/calc>
- Responsive web design (RWD)
- CSS @media rule and media queries
- Flexbox - <https://css-tricks.com/snippets/css/a-guide-to-flexbox/>
- Responsive page layout using Flexbox
- CSS Grid Layout - <https://css-tricks.com/snippets/css/complete-guide-grid/>
Comparing different layout styles

Quiz Time

https://www.w3schools.com/css/css_quiz.asp



Exercises

<https://www.w3schools.com/css/exercise.asp>



Introduction to SASS

SASS: Syntactically Awesome Style Sheets



We will follow the SASS Tutorial at W3Schools:

- Variables
- Nesting
- @import
- @mixin
- @extend
- Sass functions - string, numeric, list, map, selector, introspection, color
- For more details see: <https://sass-lang.com/documentation/style-rules>

CSS Modules

- CSS Modules documentation - <https://github.com/css-modules/css-modules>
- What are CSS Modules - <https://css-tricks.com/css-modules-part-1-need/>
- Getting Started with CSS Modules - <https://css-tricks.com/css-modules-part-2-getting-started/>

- Example:

- `/* style.css */`

`.className { color: green; }`

- `/* index.js */`

`import styles from './style.css'; // import { className } from './style.css';`

`element.innerHTML = '<div class="' + styles.className + '>';`

CSS
MODULES

Homework 1: MyBlogs - Page Layouts

<https://github.com/iproduct/fullstack-typescript-react/wiki/Homeworks>



Thank's for Your Attention!



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IPT – Intellectual Products & Technologies

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