

MOC 55249 A: Developing with the SharePoint Framework

Course Summary

Description

This five-day instructor-led course is intended for developers who want to be able to create client-side applications with SharePoint Framework. In this course, students will learn about the new tools needed when developing with SharePoint Framework. Next to that, JavaScript and its potential pitfalls are discussed, leading into using TypeScript as typed superset of JavaScript. Students will also be introduced to the JavaScript library React, which is commonly used inside SharePoint Framework components. Using all these, previously mentioned, techniques, students will learn how to build client-side web parts, extensions, field customizers with SharePoint Framework. Finally, students will learn how to include other JavaScript frameworks, provide unit tests, configure, the packaging and deploying their solutions.

Objectives

After taking this course, students will be able to:

- Work with open source tools Node.js, Yeoman, Gulp
- Prepare a machine for SharePoint Framework development
- Work with npm modules inside their project
- Build client-side web parts with SharePoint Framework
- Build UI extensions like field customizers or command sets with SharePoint Framework
- Write and understand JavaScript
- Use advanced JavaScript patterns like Module and Class
- Write and compile TypeScript
- Include other libraries inside their SharePoint Framework project
- Style their components with Sass (Syntactically Awesome Style Sheets)
- Use the SharePoint REST API inside SharePoint Framework
- Consume their own webservices within SharePoint Framework
- Understand and write React with TypeScript
- Use JSX as a way to create HTML content
- Style their customizations with the Office UI Fabric
- Deploy a SharePoint Framework solution
- Deploy SharePoint artifacts from within a SharePoint Framework solution
- Consume the Microsoft Graph API from within SharePoint Framework
- Configure the build process of Gulp

Topics

- SharePoint Framework Overview
- Preparing your machine for the SharePoint Framework
- Node.js Modules
- SharePoint Framework Client Web Parts
- JavaScript Introduction
- JavaScript Language
- JavaScript Patterns
- TypeScript
- Client Web Part Properties
- Loading Frameworks and Libraries
- SASS
- Loading SharePoint Data in a client web part
- Build and deploy your SharePoint Framework project
- React
- Framework and Office-UI-Fabric
- Deploying SharePoint Artifacts
- Microsoft Graph
- SharePoint Framework Extensions
- Webpack
- Gulp
- Unit testing web parts

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Course Outline (cont.)

Audience

This course is intended for experienced developers who want to start building solutions with SharePoint Framework.

Prerequisites

Participants in this training ideally have a few years of [web, client side] development experience. No TypeScript or JavaScript experience is required [but JavaScript experience] recommended. Knowing your way around SharePoint Online is advised.

Duration

Five days

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Course Outline

I. *SharePoint Framework Overview*

This module explains the development options we have in SharePoint. It gives an overview of the toolchain of SharePoint Framework and how it fits into the SharePoint development story.

- A. What is SharePoint Framework
- B. Why SharePoint Framework?
- C. Modern toolchain
- D. The Future

II. *Preparing your machine for the SharePoint Framework*

This module explains how to prepare your machine for SharePoint Framework development. Configuring your SharePoint environment for development and deployment is also discussed.

- A. Setup Office 365
- B. Software Installation

Lab: Preparing your machine for the SharePoint Framework

- Set up an Office 365 developer tenant
- Set up your development machine

III. *Node.js Modules*

This module explains how a node.js project is structured, explains the role of the different components contained within and how to scaffold a project from scratch. It illustrates the different kind of modules you have and how to work with them; i.e. installing, versioning, locking down, caching...

- A. Modules
- B. Creating a Project
- C. Using Modules
- D. CommonJS
- E. Important Modules

IV. *SharePoint Framework Client Web Parts*

This module explains how to use the Yeoman generator to create a SharePoint Framework project. It will illustrate the structure of a SharePoint Framework project. This module introduces client-side web parts and how to make basic changes to it. It also introduces the local and online Workbench, where your web parts can be tested.

- A. Framework Client Web Parts
- B. What is a Client Web Part?
- C. Creating a project

- D. Exploring Project Contents
 - E. Running Your Project
 - F. Gulp tasks
 - G. Web Part Configuration
- Lab: Create a SharePoint Framework Web Part

- Create a SharePoint client-side solution
- Take a look at the generated project
- Modify the properties and the property pane
- Modify the web part
- Test on SharePoint

V. *JavaScript Introduction*

This module explains about the origins of JavaScript and introduces the student to what JavaScript is.

- A. What is JavaScript
- B. What is ECMAScript
- C. Using libraries to extend JavaScript functionality
- D. Debugging JavaScript with the browser debugger

VI. *JavaScript Language*

This module explains how to write basic JavaScript. It describes how to create and use variables and the types that are available in JavaScript. Also, it explains about objects in Javascript, including some out-of-the-box objects like Date, Array, Math, etc. The module shows how to write functions and explains about the scopes they create. Prototypes are also introduced. Error handling is the last part of this module.

- A. Variables, Objects, Arrays and Functions
- B. JavaScript Scopes and Closures
- C. Function Parameters
- D. Function Constructors
- E. Prototypes
- F. Error handling

Lab: JavaScript Basics

- Read a number input from a user and compare it with a random value
- Write a function to test the elements of an array
- Write a function that transforms the casing of a string
- Write a rock-paper-scissors game using JavaScript objects

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Course Outline (cont.)

- Solve a JavaScript scope problem

VII. *JavaScript Patterns*

This module explains how to use some of the most popular patterns in JavaScript.

- Callback Pattern
- Options hashingSelf-invoking functions
- Class Pattern
- Module Pattern
- The self reference

VIII. *TypeScript*

This module explains how Typescript solves many of the problems discussed in the previous modules. TypeScript adds type annotations and code compilation to your development process so that you write better code. TypeScript is used by default in all SharePoint Framework generated projects. This module will discuss the TypeScript language and how it can help you in building your enterprise scale applications.

- What is TypeScript
- Using TypeScript in your project
- Variables
- Functions
- Interfaces and Classes
- Modules and Namespaces

Lab: Creating a toy store with TypeScript

- Creating the model classes
- Providing dummy data
- Creating the shopping cart
- Using an external library

IX. *Client Web Part Properties*

This module explains how to modify the property pane of your web part. It explains how to configure and use your own properties. It discusses how to dynamically load property pane options, create custom property controls, and validate property values.

- Client Web Part Properties
- Webpart Properties
- Adding Properties
- Using Properties
- Preconfigured Entries
- Dynamic Data
- Custom Properties

- Advanced Configuration

X. *Loading Frameworks and Libraries*

This module explains how to load additional libraries inside your SharePoint Framework project from different sources.

- Loading Libraries and/or Frameworks
- Considerations
- NPM Package
- Loading from a URL
 - Loading A Local Copy
 - Loading jQuery and plugins
 - Component loader

XI. *SASS*

This module explains how to apply styling to your web components by writing maintainable and simpler CSS by means of Sass.

- What is SASS?
- The Language
- Variables
- Types
- Comments
- Nested Rules and Properties
- Partials
- Extend
- Mixins
- Functions

Lab: Sass in a SharePoint Framework project

- Optimizing the SCSS file
- Nesting and extending
- Working with mixins
- Observing the generated CSS

XII. *Loading SharePoint Data in a client web part*

This module explains how to load data in your SharePoint Framework components using the utility classes. The module discusses the SharePoint REST API and how to consume it. Consume your own API and handling cross-origin issues.

- Loading SharePoint data
- Page ContextWeb Services Overview
- REST and ODATA Fundamentals
- SharePoint REST API's
- AJAX
- Framework HttpClient

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Course Outline (cont.)

G. Solving cross domain issues with CORS

Lab: Loading SharePoint data in a client-side web part

- Configuring the web part properties
- Loading SharePoint lists with a DataService and MockService
- Testing in the local/online workbench
- Loading items for the selected list

XIII. *Build and deploy your SharePoint Framework project*

This module explains how to build your SharePoint Framework project for deployment. It discusses the different deployment options you have.

- Build and Deploy a Framework solution
- Overview
- Building
- Deployment

Lab: Deploying a SharePoint Framework client web part

- Create a deployment location
- Generate the web part asset files
- Generate the package
- Using the web part

XIV. *React*

This module will cover the basics of the JavaScript framework React. It discusses how the React component system works, and how to use it inside your SharePoint Framework projects.

- What is React JS
- Model View ViewModel (MVVM)
- React Components
- What is JSX
- Html Tags vs React Components
- Creating Components
- JavaScript Expressions
- JSX Gotchas
- Relationship with State Machines
- Handling Component State
- Adding Interactivity by means of events
- Using Multiple Components
- Transferring props between components
- The Lifecycle of a Component
- Alternative Syntax
- SharePoint Framework and React

Lab: Building React components to view the members and permissions in your site

- Modifying the site permissions web part

- Creating the main component
- Create the data service layer
- Visualizing the data inside your component
- Creating the component to view the Group Members

XV. *Framework and Office-UI-Fabric*

This module explains how to use and apply the styles, components of the Office UI Fabric inside your SharePoint Framework projects.

- What Is Office UI Fabric?
- Office UI Fabric Versions
- Fabric Core Styles
- Example Uses
- Fabric Components
- Fabric JS
- ngOfficeUIFabric
- Fabric React

Lab: Using Office UI Fabric React Components

- Create a SharePoint Framework web part for facility management
- Improve the appearance with Office UI Fabric

XVI. *Deploying SharePoint Artifacts*

This module explains how you can use your SharePoint Framework solutions to provision SharePoint artifacts, like fields, content types, and lists to your SharePoint site.

- Deploying SharePoint Artifacts
- Deployment Options
- Asset Types
- Features

XVII. *Microsoft Graph*

This module explains how to consume the Microsoft Graph from within your SharePoint Framework solutions.

- Introduction to Microsoft Graph
- Authentication Providers
- Microsoft Graph API
- Development

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Course Outline (cont.)

XVIII. SharePoint Framework Extensions

This module explains how to build UI extension for your SharePoint site by means of extensions. It will discuss altering the header/footer of a site with application customizers, creating field customizers to change the rendering of a field and how to use command sets to provide your own command bar buttons.

- A. SharePoint Framework Extensions
- B. Extensions Overview
- C. Creating Extensions
- D. Application Customizers
- E. Field Customizers Command Sets

Lab: Using the new Microsoft Graph client from within an application extension

- Create the extension project
- Retrieving data from the Microsoft Graph using the GraphHttpClient
- Render the data inside your component

XIX. Webpack

This module explains how to use and configure Webpack to bundle all the generated code with.

- A. What is Webpack
- B. Entries and Outputs
- C. Using Loaders
- D. The need for Plugins

XX. Gulp

This module explains the role and the use of the task runner Gulp inside your SharePoint framework projects. It will discuss the existing tasks that have been added by default to your project as well as how you can quickly add new tasks.

- A. Installing Gulp as a node module
- B. Gulp primitives
- C. Gulp by example

XXI. Unit testing web parts

This module explains how to use the included testing frameworks in your SharePoint Framework project to unit test your web parts and components.

- A. Included test frameworks
- B. Running tests
- C. Component testing