Developing with the SharePoint Framework

Module 1: 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.

Lessons

• What is SharePoint Framework

• Why SharePoint Framework?

• Modern toolchain

• The Future

Lab 1: N/A

• N/A

After completing this module, students will be able to:

• Understand the development models in SharePoint

• Understand why SharePoint Framework was introduced

• Know what the toolchain consist of and what the role of every tool is

Module 2: 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.

Lessons

• Setup Office 365

• Software Installation

Lab 1: Preparing your machine for the SharePoint Framework

• Set up an Office 365 developer tenant

• Set up your development machine

After completing this module, students will be able to:

• Set up a machine for developing with the SharePoint Framework

Module 3: 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…

Lessons

• Modules

• Creating a Project

- Using Modules

- CommonJS

- Important Modules

Lab 1: N/A

- N/A

After completing this module, students will be able to:

- Setup a node.js project using npm

- Install the right modules for their node.js project

- Loading and caching modules in a node.js project

Module 4: 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.

Lessons

- Framework Client Web Parts

- What is a Client Web Part?

- Creating a project

- Exploring Project Contents

- Running Your Project

- Gulp tasks

- Web Part Configuration

Lab 1: 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

After completing this module, students will be able to:

- Use Yeoman to scaffold a SharePoint Framework project
- Understand the different components inside a SharePoint Framework project and what their role is

- Create client-side web parts and make changes to it

- Run their client-side web parts on the local and online workbench

- Understand and use the Gulp tasks

Module 5: 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.

Lessons
- What is TypeScript

- Using TypeScript in your project

- Variables

- Functions

- Interfaces and Classes

- Modules and Namespaces

Lab 1: Creating a toy store with TypeScript

- Creating the model classes

- Providing dummy data

- Creating the shopping cart

- Using an external library

After completing this module, students will be able to:

- Use TypeScript as a typed superset of JavaScript

- Configure the TypeScript compiler tsc to convert the TypeScript to JavaScript

- Work with interfaces, classes, generics, lambda's, … in TypeScript

- Debug the TypeScript code

- Create TypeScript modules that can be shared and reused

Module 6: 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, validate property values.

Lessons
- Client Web Part Properties

- Webpart Properties

- Adding Properties

- Using Properties

- Preconfigured Entries

- Dynamic Data

- Custom Properties

- Advanced Configuration

Lab 1: N/A

- N/A

After completing this module, students will be able to:

- Customize the web part property pane with additional properties, groups and pages

- Synchronously and asynchronously load property options into the property pane

- Build custom controls to be used inside the property pane

- Provide property validation

Module 7: 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.

Lessons

- Loading SharePoint data

- Page Context

- Web Services Overview

- REST and ODATA Fundamentals

- SharePoint REST API's

- AJAX

- Framework HttpClient

- Solving cross domain issues with CORS

Lab 1: 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

After completing this module, students will be able to:

- Load/manipulate data from SharePoint by using the SPHttpClient and the SharePoint REST APIs

- Consuming your own webservice by using the HttpClient

Module 8: Loading Frameworks and Libraries

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

Lessons

- Loading Libraries and/or Frameworks

- Considerations

- NPM Package

- Loading from a URL

- Loading A Local Copy

- Loading jQuery and plugins

- Component loader

Lab 1: N/A

- N/A

After completing this module, students will be able to:

- Load additional libraries in their SharePoint Framework project using either npm, a url, local copy or the component loader.

Module 9: 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.

Lessons

- Build and Deploy a Framework solution

- Overview

- Building

- Deployment

- Site Specific App Catalog

- Deploying Assets

- Features

- Versioning

- Deploy to Microsoft Teams

Lab 1: Deploying a SharePoint Framework client web part

- Create a deployment location

- Generate the web part asset files

- Generate the package

- Using the web part

After completing this module, students will be able to:

- Configure and use the build and deployment options with Gulp

- Use the App catalog site to deploy the package

- Distinguish between global and local deployment

- Select the right deployment option for the source files

Module 10: 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.

Lessons

- Overview

- Modern Web Applications

- What is React?

- Components

- SPFx Bootstrapping

- JavaScript Expressions

- JSX Tips and Tricks

- Component Properties

- Component State

- Interactivity

- Multiple Components

- Transferring props between components

- Form Component

- The Lifecycle of a Component

- Advanced Performance

- Pure Component

- Extra

Lab 1: 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

After completing this module, students will be able to:

- Create SharePoint Framework solutions using React

- Work with properties and state inside React components

- Provide interactivity between components by means of events

- Generate HTML tags programmatically or with JSX

Module 11: SASS

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

Lessons

- What is SASS?

- The Language

- Variables

- Types

- Comments

- Nested Rules and Properties

- Partials
- Extend

- Mixins

- Functions

Lab 1: Sass in a SharePoint Framework project

- Optimizing the SCSS file

- Nesting and extending

- Working with mixins

- Observing the generated CSS

After completing this module, students will be able to:

- Write Sass code to style their html components with

- Compile the scss files to css

Module 12: 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.

Lessons

- What Is Office UI Fabric?

- Office UI Fabric Versions

- Fabric Core Styles

- Example Uses

- Fabric Components

- Fabric JS

- ngOfficeUIFabric

- Fabric React

Lab 1: Using Office UI Fabric React Components

- Create a SharePoint Framework web part for facility management

- Improve the appearance with Office UI Fabric

After completing this module, students will be able to:

- Style their html or React components with Office UI Fabric

Module 13: Consuming AAD secured API's

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

Lessons

- Introduction to Microsoft Graph

- Microsoft Graph API

- Consuming the Microsoft Graph API

- Registering application in Azure AD

- API Permissions

- Consuming AAD protected API's

- Security Guidance

- Domain Isolated Web Part

- Security Control

Lab 1: N/A

- N/A

After completing this module, students will be able to:

- Decide between Azure AD or Azure AD v2.0

- Register their applications for authentication and authorization

- Set up implicit oAuth flow, which is needed for JavaScript

- Choose the appropriate authentication library

- Authenticate using ADAL.js

- Authenticate using MSAL

- Understand and consume the Graph API
- Use the GraphClient helper inside their SharePoint Framework projects

Module 14: 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.

Lessons

- SharePoint Framework Extensions

- Extensions Overview

- Creating Extensions

- Application Customizers

- Field Customizers

- Command Sets

Lab 1: 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

After completing this module, students will be able to:

- Use Yeoman to scaffold a SharePoint Framework project for extensions

- Create application extensions, field customizers, command sets

- Run their extensions online, but debug them locally

Module 15: Dynamic Data

This module explains how you can interact with SharePoint Data.

Lessons

- Introduction

- Exposing data

- Consuming data

- Dynamic Data From Code

Lab 1: N/A

- N/A

After completing this module, students will be able to:

• Deploy artifacts to a SharePoint site using a SharePoint Framework solution and interact with dynamic data.

Module 16: Testing
SPFx web parts

This module explains how to test the web parts that you have created.

• Test frameworks

• Running tests

• Component testing

Lab 1: N/A

• N/A

After completing this module, students will be able to:

• Test your custom behaviour

Module 17: SPFx
Tips and Tricks

This module explains the role and the use Gulp,Web Pack and Application Insights inside your SharePoint Framework projects.

Lessons

• Debugging

• Azure Application Insights

• Gulp
• Webpack

Lab 1: N/A

• N/A

After completing this module, students will be able to:

• Understand the existing Gulp tasks in your SharePoint Framework project

• Create basic custom Gulp tasks for compiling, minifying, serving, … your code