Blazor Training Resources Document

This document serves as a guide to help developers begin their learning journey with Blazor, specifically targeting .NET 8.0. Below are curated learning resources, tutorials, and best practices for Blazor development.

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1. Introduction to Blazor

Blazor Overview

- Understand the fundamentals of Blazor: What it is, how it works, and its advantages.
- Official Documentation: Blazor Overview

Learning Objectives:

- Difference between Blazor Server and Blazor WebAssembly.
- Lifecycle of a Blazor component.
- Understanding Razor syntax and its usage in Blazor.

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2. Setting Up the Environment

Prerequisites:

- Install .NET 8 SDK: Download .NET 8 SDK
- Visual Studio: Ensure you have the latest version installed with the ASP.NET and web development workload.

Getting Started Guide:

- Official Tutorial: Get started with Blazor

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3. Hands-On Tutorials

Basic Tutorials:

1. Creating Your First Blazor App
    - Follow the official "Hello World" Blazor tutorial.
    - Link: Create your first Blazor app
2. Data Binding in Blazor
    - Learn about one-way and two-way data binding in Blazor components.
    - Tutorial: Data binding

3. Event Handling in Blazor
    - Understand how events work in Blazor and how to handle them.
    - Tutorial: Event handling

Advanced Tutorials:

1. Dependency Injection in Blazor
    - Learn about using DI to manage services and state in Blazor.
    - Tutorial: Dependency injection
2. Building Reusable Components
    - Tutorial: Reusable components
3. Authentication and Authorization
    - Tutorial: Blazor Authentication

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4. Key Concepts in Blazor

Component Communication

- Learn how to pass data between components using parameters, cascading parameters, and event callbacks.
    - Guide: Component Communication

Routing

- Understand how to configure routing in Blazor applications.
    - Guide: Routing in Blazor

Forms and Validation

- Work with forms and integrate validation in Blazor components.
    - Guide: Forms and Validation

Error Handling

- Learn best practices for handling errors in Blazor applications, including global error handling and component-level handling.
    - Guide: Error Handling in Blazor

Cascading Parameters

- Understand how to use cascading parameters to share data across components.
    - Guide: Cascading Parameters

Calling APIs

- Fetch data from APIs using HttpClient in Blazor.
    - Guide: Call Web API

Authentication and Authorization

- Implement authentication and secure your Blazor application with proper authorization.
    - Guide: Authentication and Authorization

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5. Practical Exercises

1. Build a To-Do App
    - Focus: CRUD operations, state management, and component design.
2. Develop a Weather App
    - Focus: Fetching and displaying data from a public API.
3. Create a Multi-Step Form
    - Focus: Advanced form handling and validation.
4. Implement Authentication
    - Create a login page using JWT authentication.
5. Error Logging System
    - Build a component to log and display application errors.

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6. Recommended Courses

1. **Microsoft Learn Paths:**
    - Free Blazor Courses: Microsoft Learn - Blazor
2. **Pluralsight:**
    - Course: "Getting Started with Blazor"
    - Link: Pluralsight Blazor Course
3. **Udemy:**
    - Course: "Blazor WebAssembly Full Stack Bootcamp"
    - Link: Udemy Blazor Course

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7. Additional Resources

- **Community Blogs:**
    - Chris Sainty's Blog - Great for advanced Blazor concepts.
    - Blazor University - Beginner to advanced topics.
- **YouTube Channels:**
- Blazor Fundamentals Tutorial – Learn Blazor Step-by-Step
- CRUD w/ Blazor in .NET 8 🔥 All Render Modes (SSR, Server, Wasm, Auto), Entity Framework & SQL Server
- **GitHub Repositories:**
    - Sample projects: Microsoft Blazor Samples

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8. Best Practices

- Write reusable components for better scalability.
- Use dependency injection wisely to maintain a clean architecture.
- Optimize performance by avoiding unnecessary re-renders.
- Secure your Blazor application with proper authentication mechanisms.
- Implement global error handling for better debugging and user experience.

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9. Additional Advanced Topics

State Management

- Explore built-in state management tools like cascading parameters, context, and IJSRuntime.
- Discuss more advanced approaches like using state containers or libraries such as Redux or Fluxor.
    - Guide: State Management in Blazor

JavaScript Interoperability (JS Interop)

- Learn how to call JavaScript functions from Blazor and vice versa.
- Example use cases like integrating third-party libraries (e.g., charts, maps).
    - Guide: JavaScript Interoperability

SignalR Integration

- Use SignalR for real-time communication in Blazor apps.
    - Guide: Blazor SignalR

Performance Optimization

- Tips for reducing Blazor app load time, including lazy loading, minimizing HttpClient calls, and avoiding overuse of @key.
- Profiling and debugging tools for Blazor.
    - Guide: Blazor Performance

Testing Blazor Components

- Testing approaches for Blazor, including unit testing components and integration testing.
    - Guide: Testing in Blazor

Deployment and Hosting

- Steps to publish Blazor applications to Azure, IIS, or static web hosts.
- Include CI/CD pipelines setup for Blazor projects.
    - Guide: Deploy Blazor Apps

Localization and Globalization

- How to support multiple languages in a Blazor app using IStringLocalizer.
    - Guide: Localization in Blazor

Progressive Web Apps (PWAs)

- Convert a Blazor app into a PWA.
- Include caching strategies and offline functionality.
    - Guide: Blazor PWAs

Custom Renderers

- For advanced users, create custom rendering logic for specific scenarios.
    - Guide: Custom Rendering in Blazor

Third-Party Library Integrations

- Introduce popular Blazor component libraries such as Telerik, Syncfusion, or MudBlazor.
- Examples of using these libraries in projects.
    - Guide: MudBlazor Library