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🔴 C# **ASP.NET** Developer Roadmap

└─ 🔵 Basics

- └─ 🔴 C# Fundamentals
 - └─ Data Types and Variables
 - └─ Control Flow (Loops, Conditions)
 - └─ Functions and Methods
 - └─ Object-Oriented Programming (OOP)
 - └─ Collections (List, Dictionary, etc.)
 - └─ Exception Handling
 - └─ LINQ (Language Integrated Query)
- └─ 🔴 .NET Basics
 - └─ .NET Runtime and CLR
 - └─ NuGet Package Manager
 - └─ Assemblies and DLLs
 - └─ Garbage Collection

└─ 🔵 Version Control

- └─ 🔴 Git
 - └─ Basic Commands (clone, commit, push, pull)
 - └─ Branching and Merging
 - └─ GitHub / GitLab

└─ 🔵 Package Managers

- └─ 🔴 NuGet

└─ 🔵 Web Development with **ASP.NET** Core

- └─ 🔴 **ASP.NET** Core Basics
 - └─ Middleware & Request Pipeline

- | | └─ Routing & Endpoints
- | | └─ Dependency Injection
- | | └─ Controllers & Actions
- | | └─ Model Binding & Validation
- | └─ ● Razor Pages & MVC
- | | └─ Views, Partial Views, Layouts
- | | └─ View Components
- | | └─ Tag Helpers & View Models
- | └─ ● Blazor (Optional)
- | | └─ Blazor Server vs WebAssembly
- | | └─ Components & State Management

- └─ ● APIs and Microservices
- | └─ ● RESTful APIs
- | | └─ Controllers & Routing
- | | └─ HTTP Methods & Status Codes
- | | └─ Model Validation
- | | └─ API Versioning
- | | └─ Swagger / OpenAPI
- | └─ ● Authentication & Authorization
- | | └─ JWT (JSON Web Tokens)
- | | └─ OAuth2 & OpenID Connect
- | | └─ IdentityServer
- | └─ ● gRPC & SignalR (Real-time Communication)
- | └─ ● Microservices Architecture
- | | └─ API Gateway
- | | └─ Service Discovery
- | | └─ Event-Driven Architecture

- └─ ● Databases & ORM
- | └─ ● SQL Server, PostgreSQL, MySQL
- | └─ ● Entity Framework Core

| | └─ Code First vs Database First

| | └─ Migrations & Seeding

| | └─ Querying Data with LINQ

| | └─ Transactions

| | └─ Performance Optimization

└─ ● Testing

| └─ ● Unit Testing (xUnit, MSTest, NUnit)

| └─ ● Integration Testing

| └─ ● API Testing (Postman, RestSharp)

| └─ ● Mocking (Moq, FakeItEasy)

└─ ● Performance Optimization

| └─ ● Caching (MemoryCache, Redis)

| └─ ● Async/Await & Multithreading

| └─ ● Connection Pooling

| └─ ● Minimizing Memory Leaks

└─ ● Cloud & Deployment

| └─ ● Hosting (Azure, AWS, Google Cloud)

| └─ ● CI/CD Pipelines (GitHub Actions, Azure DevOps)

| └─ ● Docker & Kubernetes

| └─ ● Serverless with Azure Functions

└─ ● Security Best Practices

| └─ ● Data Protection (Encryption, Hashing)

| └─ ● Secure APIs (Rate Limiting, CORS)

| └─ ● OWASP Top 10 Threats

└─ ● Advanced Topics

| └─ ● Clean Architecture

| └─ ● CQRS & MediatR Pattern

| |— ● Event-Driven Systems (RabbitMQ, Kafka)

| |— ● GraphQL with [ASP.NET](#)

|— ● Soft Skills

| |— ● Communication & Documentation

| |— ● Code Reviews & Pair Programming

| |— ● Debugging & Problem-Solving

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