

Senior Developer 6-Month Concept Tracker (75 Core Concepts)

C# / .NET (25 Concepts)

- sealed record
- record struct
- readonly record struct
- struct vs class
- async/await
- ConfigureAwait
- minimal APIs
- dependency injection
- generics
- interfaces
- LINQ advanced
- reflection
- Task vs ValueTask
- error handling patterns
- immutable types
- expression-bodied members
- pattern matching
- file-scoped namespaces
- records with primary constructor
- static vs instance members
- extension methods
- attributes
- HttpClient best practices
- global usings
- IOptions pattern

EF Core (15 Concepts)

- DbContext
- DbSet
- migrations
- relationships
- cascade delete
- value conversions
- OnModelCreating
- repository pattern
- tracking vs no-tracking
- updating entities
- concurrency
- pessimistic vs optimistic locking
- raw SQL
- performance tips
- projection (Select new)

Clean Architecture (15 Concepts)

- domain entities
- DTOs
- services
- repository interface
- separation of concerns
- dependency rule
- use-case layer
- controller → service → repository flow
- mapping models
- validation
- command/query separation
- events

- infrastructure boundaries
- API input/output models
- folder-by-feature vs layer-by-layer

ASP.NET Core (10 Concepts)

- controllers
- routing
- HTTP verbs
- middleware
- filters
- ModelState
- binding
- Swagger
- authentication/authorization
- best practices for REST APIs

Concurrency & Performance (10 Concepts)

- locking
- SemaphoreSlim
- thread safety
- async race conditions
- database concurrency
- parallelism
- CPU-bound vs IO-bound
- pooling
- caching (Redis)
- DI lifetimes (Transient / Scoped / Singleton)