

## *.NET Coding Bootcamp for VOLO Syllabus*

### *Programming Fundamentals*

- 1 System Data Types
- 2 Value and Reference types, Nullable types
- 3 String, Immutable types, String Builder
- 4 Arrays, Enum
- 5 Iteration constructs
- 6 Decision constructs
- 7 Methods and parameter modifiers
- 8 Methods overloading, default parameter

### *Object-oriented programming*

- 1 class, constructor, memory allocation
- 2 this keyword
- 3 Encapsulation
- 4 Static classes and members
- 5 readonly and const keywords
- 6 Exception Handling
- 7 Nested types
- 8 Inheritance and Polymorphism
- 9 Object class, Boxing and Unboxing
- 10 Abstract class
- 11 Interface

### *Advanced Programming*

- 1 Operator Overloading, Indexer Methods, Extension Methods
- 2 Generic Programming
- 3 Reflection, Attributes
- 4 IEnumerable and IEnumerator Interfaces
- 5 Delegates, Events, Lambda Expressions
- 6 LINQ
- 7 Garbage Collectors, GC class
- 8 Async programming with Threads
- 9 TPL, async, await

## ***Algorithms and Data Structures***

- 1 Measuring Performance
- 2 Linked List
- 3 Stack
- 4 Queue
- 5 Binary Trees
- 6 Hash Tables
- 7 Sorting Algorithms
- 8 Set Collection and Algorithms

## ***Design Patterns***

- 1 Overview of Design pattern and SOLID principles
- 2 Repository Pattern
- 3 Unit of work
- 4 Dependency Injection (DI)
- 5 Singleton

## ***T-SQL and SQL Server***

- 1 Introduction to SQL
- 2 Single-Table Queries
- 3 Joins
- 4 Subqueries
- 5 Table Expressions
- 6 Set Operators
- 7 Data Modification (CRUD)

## ***ADO.NET***

- 1 Commands
- 2 Data Reader
- 3 Data Set
- 4 Transactions

## ***Entity Framework***

- 1 EF Mapping
- 2 EF Entities
- 3 Data Context
- 4 EF Database First
- 5 EF Code First

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## ***Front-end programming***

- 1 HTML5, CSS3
- 2 JavaScript Fundamentals

## ***ASP .NET Core***

- 1 MVC Pattern
- 2 Routes and URLs
- 3 Controllers and Actions
- 4 Views, Layouts, HTML Helpers and Data Validation
- 5 Data Access Layer
- 6 Middleware
- 7 Authentication and Authorization
- 8 Configuration files and security

## ***Development and collaboration***

- 1 Unit Testing
- 2 Git and GitHub