

# Volo Coding Bootcamp Syllabus

## 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

## OOP Programming

1. class, constructor, memory allocation
2. this keyword
3. Encapsulation
4. Access modifiers
5. Properties, getter and setter
6. static keyword
7. readonly and const keywords
8. Exception Handling
9. Nested types
10. Inheritance
11. Polymorphism
12. virtual and override keywords
13. Object, Boxing and Unboxing
14. Abstract class
15. Interface
16. Operator Overloading
17. Indexer Methods
18. Extension Methods
19. Generic Programming

## 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

## Advanced Programming

1. IEnumerable and IEnumerator Interfaces
2. Delegates, Events, Lambda Expressions
3. LINQ fundamentals
4. IDisposable Pattern, GC
5. Threading fundamentals
6. TPL, async, await
7. Reflection, Attributes

## Databases

### 1. T-SQL and SQL Server

1. Background to T-SQL Querying and Programming
2. Single-Table Queries
3. Joins
4. Subqueries
5. Set Operators
6. Data Modification

### 2. ADO.NET and EF Core

1. Commands
2. Data Reader
3. Data Set
4. Transactions
5. EF Mapping
6. EF Entities
7. Data Context
8. EF Database First
9. EF Code First

## ASP.NET Core

1. HTML, CSS and JS Fundamentals
2. MVC Pattern
3. Routes and URLs
4. Controllers and Actions
5. Views, Layouts, HTML Helpers and Data Validation
6. Data Access Layer
7. Middleware
8. Authentication and Authorization

## 9. Configuration files and security