**Course Outline**

**.NET 6 Entity Framework: How-To Guide for Professionals**

Building advanced and scalable architectures using .net 6 Entity Framework; the inner workings of the Data Services Layer.

# **Martin M. Lacey**



# **DURATION**

# Approx. 4 hours

# **OVERVIEW**

Are you tasked with upshifting an application to .net CORE 6 or starting from scratch? There are many changes and improvements to the Entity Framework in .net CORE 6 that can dramatically improve code quality, clarity, performance, and improve synchronization of the model on deployment. This course covers the fundamental design patterns as well as advanced concepts that will improve code quality, the security of your data and code. Each video is a bite-sized nugget of knowledge to empower your next generation of applications.

This hands-on course will guild you through each aspect of the Entity Framework in .net CORE 6, from the fundamentals such as keeping models in synch as they evolve through Migrations and code automation and clarity through Data Annotations will be explained. We will dive deep into the Fluent API and how to use the **ModelBuilder** class. You will learn the fundamental CRUD operations and understand the usage of the **DbContext**, and dive deep into **IQuerable** and **IEnumerable** – learn when to use each and best practices.

You will also learn to advanced features such Scaffolding to generate classes that map to data entities, using the Repository and Unit Of Work Pattern to optimize code and improve quality and consistency. You will learn how to do pagination that will improve application performance, and execute raw SQL and handle the results.

Furthering your advanced knowledge, you will learn how to secure your data and application code through encryption and built-in Identity providers.

# **TARGET AUDIENCE**

If you are a software Geek, Guru, Business Analysis, Software Architects, Students or Established Software Developers wanting to understand and adopt the latest in .net data access technology, this course is for you. From reviewing the basics to advanced features and design patterns, looking at ways to improve performance and user experience – you will quickly come up to speed in .net 6 Entity Framework with this course. Even if you a just starting – this is ground floor needed to build great .net Core 6 applications and micro-services.

# **KEY FEATURES**

* Industry Expert Training (over 23 years in .net technology, radio host)
* Easy, bite-sized focused video on each topic
* Hand-on guidance with code examples

# **APPROACH**

The Author will walk you through each topic area, explain what it used for and how to use it, and show you how to make the best use of each through hand-on examples as we build up a working data service layer. Best practices and when to apply each technique will be covered, as well as hints to improve productivity and re-use.

# **WHAT WILL YOU LEARN**

* How to use Data Annotations for Automation and Code Clarity
* Code first and Model first scenarios
* How to use Migrations
* How to use Scaffolding
* The fundamentals and advance usages of the Fluent API
* Fundamental CRUD operations and best practices
* How and When to use IQuerable vs IEnumerable
* Code patterns for scalability
* In Depth Repository Pattern with an Advanced implementation
* Securing your Application Data and Code

# **ABOUT THE AUTHOR**

Martin M. Lacey is an accomplished software architect and host of “The Art Of Software” radio show on Voice America. He has extensive industry experience spanning 4 decades and ranging from Forestry, Oil and Natural Gas, Fisheries, Gaming, City Management, Pharmaceutical, Finance, and supply chain businesses. The past 24 year, Mr. Lacey has been involved in designing and developing .net solutions and modernizing existing applications to adopt the latest in .net CORE 6.

Martin is currently involved redesigning applications and monolithic architectures to micro-services and modern applications using .net CORE 6 and variety of front-end technologies for several large and established business clients.

# **SUMMARY OF CONTENTS**

1. **Section 1 Course Overview**
2. **Section 2 Migrations**
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5. **Section 5 CRUD Operations**
6. **Section 6 IQueryable vs IEnumerable**
7. **Section 7 Advanced Framework Concepts**
8. **Section 8 Securing your Applications and Data**

# **COURSE ROADMAP**

### **SECTION ONE – Course Overview (~10 Minutes)**

Buckle up, we are going to take a detailed tour of the .net Entity Framework in Core 6! In this course you will learn all the basics to be proficient, take advantage of built-in features and automation, and advanced skills to make the applications you build scalable, efficient, and optimized with less code.

* Video 1 – Introduction, Course Organization, and Objectives.
* Video 2 – Course Breakdown, each Section is reviewed

### **SECTION TWO – Migrations (~20 Minutes)**

Learn how to manage the changes to database schema between deployments and ensuring those changes are included with dependent code.

* Video 1 – Why Migrations? Purpose and Usage
* Video 2 – Managing Migrations
* Video 3 – Applying Migrations
* Video 4 – Custom Operations
* Video 5 – How to use Custom Project for Migrations
* Video 6 – Multiple Providers / Domain Contexts

### **SECTION THREE – Data Annotations (~20 Minutes)**

Learn how to Improving clarity of usage and enabling automation through data annotation enabled behaviors.

* Video 1 – Introduction to Data Annotations
* Video 1 – Code First Data Annotations
* Video 2 - Attributes

### **SECTION FOUR – Fluent API (~40 Minutes)**

Learn how to use the **ModelBuilder** class as a Fluent API to configure domain classes to override Entity Framework conventions.

* Video 1 – Fluent API Overview
* Video 2 – Entity Mapping
* Video 3 – Property Mapping
* Video 4 – Relationship Mapping
* Video 5 – Stored Procedure Mapping
* Video 6 – Raw SQL Mapping

### **SECTION FIVE – CRUD Operations (~30 Minutes)**

Learn the basics of data access and manipulation of data in a back-end database using Entity Framework 6.

* Video 1 – Understanding DbContext
* Video 2 – How to Create New Data Instances and Persist
* Video 3 – How to Retrieve Data from a Repository
* Video 4 – How to Update a Row of data in a Repository
* Video 5 – How to Remove Data from a Repository
* Video 6 -- Read Related Data
* Video 7 – How to Perform a Search with Result List

### **SECTION SIX – IQueryable vs IEnumberable (~30 Minutes)**

Learn the best practices and when to make use of the IQuerable and IEnumerable Interfaces for accessing and returning data sets.

* Video 1 – IEnumerable Explained and Usage
* Video 2 – IQueryable Explained and Usage
* Video 3 – Read Related Data
* Video 4 – Boundary Bleed / Layer

### **SECTION SEVEN – Advanced Framework Concepts (~60 Minutes)**

Learn Advanced concepts for scaling, automation, security, and code optimization.

* Video 1 – Accessing SQL Views
* Video 2 – How to use Scaffolding
* Video 3 – Implementing the Repository Pattern
* Video 4 – Implementing the Unit Of Work Pattern
* Video 6 – Search & Paged Results
* Video 7 – Raw SQL

### **SECTION EIGHT – Securing your Applications & Data (~30 Minutes)**

* Video 1 – How to use Cryptography
* Video 2 – Implementing Role Based Security
* Video 3 – Code Signing & Code Access
* Video 4 – Built In Identity Providers

# **SETUP AND INSTALLATION**

### Minimum Hardware Requirements

For successful completion of this course, students will require the computer systems with at least the following:

* OS:
* Processor:
* Memory:
* Storage:

### Recommended Hardware Requirements

For an optimal experience with hands-on labs and other practical activities, we recommend the following configuration:

* OS:
* Processor:
* Memory:
* Storage:

### Software Requirements

* Operating system:
* Browser:
* Atom IDE, Latest Version
* Node.js LTS 8.9.1 Installed

Provide links/instructions so that the customer can easily find out where to download the required software.