

# Entity Framework Lab

Perform these labs on your own computer using Visual Studio 2022 to ensure you understand the lessons presented in the corresponding videos and lectures.

## Lab 1: Add Entity Framework

Remove the following items from the project.

- \Controllers\WeatherForecastController.cs
- \WeatherForecast.cs

Open the **CustomerController.cs** file and comment out the **[Authorize]** attribute on the Get() method.

### Add Entity Framework

Right mouse-click on the project and select **Manage NuGet Packages...**

Click on the Browse tab and install the **Microsoft.EntityFrameworkCore.SqlServer**.

Select the latest package: version 7.0.3.

## Lab 2: Add Data Annotations to Customer Class

Open the **Customer.cs** file and **replace** the **entire** contents with the following code.

```
using System.ComponentModel.DataAnnotations;
using System.ComponentModel.DataAnnotations.Schema;

namespace AdvWorksAPI.EntityLayer;

[Table("Customer", Schema = "SalesLT")]
public partial class Customer
{
    public Customer()
    {
        Title = string.Empty;
        FirstName = string.Empty;
        MiddleName = string.Empty;
        LastName = string.Empty;
        CompanyName = string.Empty;
        EmailAddress = string.Empty;
        Phone = string.Empty;
        PasswordHash = string.Empty;
        PasswordSalt = string.Empty;
        SalesPerson = string.Empty;
        Suffix = string.Empty;
    }

    [Key]
    [DatabaseGenerated(DatabaseGeneratedOption.Identity)]
    [Required()]
    public int CustomerID { get; set; }

    [Required()]
    public bool NameStyle { get; set; }

    public string? Title { get; set; }

    [Required()]
    public string FirstName { get; set; }

    public string? MiddleName { get; set; }

    [Required()]
    public string LastName { get; set; }

    public string? Suffix { get; set; }

    public string? CompanyName { get; set; }

    public string? SalesPerson { get; set; }
```

```
public string? EmailAddress { get; set; }

public string? Phone { get; set; }

[Required()]
public string PasswordHash { get; set; }

[Required()]
public string PasswordSalt { get; set; }

[Required()]
public Guid Rowguid { get; set; }

[Required()]
public DateTime ModifiedDate { get; set; }

#region ToString Override
public override string ToString()
{
    return $"{LastName}, {FirstName} ({CustomerID})";
}
#endregion
}
```

## Lab 3: Add an EF DbContext Class

Right mouse-click on the project and create a folder named **Models**.

Right mouse-click on the **Models** folder and add a class named **AdvWorksLTDbContext**.

Replace the entire contents of this new file with the following code.

```
using AdvWorksAPI.EntityLayer;
using Microsoft.EntityFrameworkCore;

namespace AdvWorksAPI.Models;

public partial class AdvWorksLTDbContext : DbContext
{
    public
    AdvWorksLTDbContext(DbContextOptions<AdvWorksLTDbContext> options) : base(options)
    {
    }

    public virtual DbSet<Customer> Customers { get; set; }

    protected override void OnModelCreating(ModelBuilder modelBuilder)
    {
        base.OnModelCreating(modelBuilder);
    }
}
```

## Add Connection String to appsettings file

Open the **appsettings.Development.json** file. Add a "ConnectionStrings" property.

```
{
  "ConnectionStrings": {
    "DefaultConnection":
    "Server=localhost;Database=AdventureWorksLT;Trusted_Connection=True;MultipleActiveResultSets=true;TrustServerCertificate=True;Application Name=AdvWorksAPI;"
  },
  // REST OF THE JSON HERE
}
```

Modify the connection string to correspond to your SQL Server and database.

<b>NOTE:</b> If running local, you might need to add the <b>TrustServerCertificate=True</b>
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## Lab 4: Add DbContext to DI Services

Open the **ServiceExtension.cs** file and add two using statements.

```
using AdvWorksAPI.Models;  
using Microsoft.EntityFrameworkCore;
```

Add a new method to configure the Entity Framework.

```
public static IServiceCollection  
ConfigureAdventureWorksDB(this IServiceCollection  
services, string? cnn)  
{  
    // Setup the DbContext object  
    return services.AddDbContext<AdvWorksLTDbContext>(  
        options => options.UseSqlServer(cnn));  
}
```

Open the **Program.cs** file and call this new method just after you call the `ConfigureGlobalSettings()` as shown in the code in **bold** below.

```
// *****  
// Add and Configure Services  
// *****  
// Add & Configure Global Application Settings  
builder.ConfigureGlobalSettings();  
  
// Add & Configure AdventureWorksLT DbContext  
builder.Services.ConfigureAdventureWorksDB(builder.Confi  
guration.GetConnectionString("DefaultConnection"));
```

## Lab 5: Get Customers from Database

Open the **CustomerRepository.cs** file and add a using statement.

```
using AdvWorksAPI.Models;
```

Add a private variable and a constructor to this class.

```
private readonly AdvWorksLTDbContext _DbContext;

public CustomerRepository(AdvWorksLTDbContext context) {
    _DbContext = context;
}
```

Locate the `Get()` method and **replace** the return statement and all of the hard-coded customer objects with the code shown in **bold** below.

```
public List<Customer> Get()
{
    return _DbContext.Customers.OrderBy(row =>
row.LastName).ToList();
}
```

### Try it Out

Run the application and click on the **GET /api/Customer** button.

You should now be getting customer data from the database.

## Lab 6: Get a Single Customer

Open the **CustomerRepository.cs** file and modify the `Get(id)` method with the code shown in bold below

```
public Customer Get(int id) {
    return _DbContext.Customers.Where(row =>
row.CustomerID == id).FirstOrDefault();
}
```

### Try it Out

Run the application and click on the **GET /api/Customer/{id}** button.

Enter 235 and execute.

You should see a single customer object appear in the **Response body** field.