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DEVELOPMENT
OF CANADA

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ASP PLAYLIST



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COVERED TOPICS

- Entity Framework
- Set Up –Not Required (If you would like to make your own, I have included the process)
- All the controllers and views are scaffolded.



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ENTITY FRAMEWORK



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ENTITY FRAMEWORK

- Entity Framework is a popular object-relational mapping (ORM) framework developed by Microsoft for .NET applications. It provides a set of libraries and tools for developers to work with data in a more intuitive and efficient way. The main purpose of Entity Framework is to simplify the process of accessing and manipulating data stored in relational databases, such as Microsoft SQL Server, Oracle, MySQL, and PostgreSQL.

ENTITY FRAMEWORK

- When you're building an application, you need to store data in a database. That can be a pretty complex task, involving lots of SQL queries and other technical details. But with Entity Framework, you can define your database schema using simple classes and attributes, which makes it easier to manage your data in an object-oriented way. This approach, known as Code-First development, allows programmers to focus on the logic of their application, rather than getting bogged down in the details of database management. Plus, Entity Framework includes a lot of features that can help improve performance and reduce database round-trips, which can be a big deal for large-scale applications. Overall, Entity Framework is a powerful tool that can help programmers build data-driven applications quickly and efficiently.

ENTITY FRAMEWORK

- With Entity Framework, developers can define their database schema using a set of classes and attributes, and then use these classes to interact with the database without writing any SQL code. This approach, known as Code-First development, allows developers to focus on the object-oriented design of their application, rather than the complexities of relational database management.



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ENTITY FRAMEWORK DBCONTEXT

ENTITY FRAMEWORK – DBCONTEXT

- In Entity Framework, the DbContext class represents a session with the database, and is responsible for tracking changes to the entities in your application and persisting those changes to the database.
- Here's an analogy that might help you understand the concept of a DbContext: imagine you're a librarian managing a library of books. The DbContext is like your librarian's desk, where you keep track of all the books in your library and their current status (e.g. checked out, available, overdue).



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ENTITY FRAMEWORK – DBCONTEXT

- In Entity Framework terms, the books in your library are like the entities in your database (e.g. customers, orders, products), and the DbContext is responsible for keeping track of the current state of those entities. When you make changes to an entity (e.g. update a customer's address), the DbContext tracks those changes and ensures that they are persisted to the database when you save your changes.



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ENTITY FRAMEWORK – DBCONTEXT

- The DbContext class also provides a number of methods for querying the database and manipulating data, such as Find, Add, Update, and Remove. These methods make it easy to work with data in a way that's intuitive and object-oriented, without having to write complex SQL queries.



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ENTITY FRAMEWORK APPLICATIONDBCONTEXT

ENTITY FRAMEWORK – APPLICATIONDBCONTEXT

- ApplicationDbContext is a class we create that inherits from the DbContext base class provided by Entity Framework. The DbContext class represents a session with the database and is responsible for tracking changes to entities in the application and persisting those changes to the database.
- The ApplicationDbContext class defines three DbSet properties for the Playlists, Song, and PlaylistSong entities, which are collections of instances of those types that are stored in the database.



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ENTITY FRAMEWORK ON MODEL CREATING

ENTITY FRAMEWORK – ONMODELCREATING

- The OnModelCreating method is a tool in Entity Framework that lets us set up how the database model works. In this code, we use it to configure the relationships between our entities.
- This code sets up the relationships between three entities - Playlist, Song, and PlaylistSong. The PlaylistSong entity is used to model the many-to-many relationship between Playlist and Song.
- We use the HasKey method to specify that the primary key for the PlaylistSong entity should be a combination of the PlaylistId and SongId properties.



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ENTITY FRAMEWORK – ONMODELCREATING

- We use the HasOne, WithMany, and HasForeignKey methods to define the relationships between the PlaylistSong, Playlist, and Song entities. These methods specify how the entities are related and how their keys are connected.
- Overall, this code is used to set up and define the relationships between entities in an Entity Framework application.



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SET UP



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SET UP

- I have given a general overview. I have intentionally left out bits and pieces that you should be able to think through based on the last project we made.



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ASP PLAYLIST

- Choose the model-view-controller

Create a new project

Recent project templates

- Windows Forms App C#
- ASP.NET Core Web App C#
- ASP.NET Core Web App (Model-View-Controller) C#
- Console App C#
- Console App C++
- Windows Forms App Visual Basic
- CMake Project C++
- Windows Desktop Application C++
- Console App Visual Basic

Mo

Clear all

C# All platforms Web



ASP.NET Core Web App (Model-View-Controller)

A project template for creating an ASP.NET Core application with example ASP.NET Core MVC Views and Controllers. This template can also be used for RESTful HTTP services.

C# Linux macOS Windows Cloud Service Web

Other results based on your search



ASP.NET Core Web App (Model-View-Controller)

A project template for creating an ASP.NET Core application with example ASP.NET Core MVC Views and Controllers. This template can also be used for RESTful HTTP services.

F# Linux macOS Windows Cloud Service Web



CMake Project

Build modern, cross-platform C++ apps that don't depend on .sln or .vcxproj files.

C++ Windows Linux Console



Dynamic Shared Library (Android)

A project for creating a dynamic shared library for the Android Platform.

C++ Android Library Mobile

Back

Next



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ASP PLAYLIST

- Call it Playlist

ASP.NET Core Web App (Model-View-Controller)

C#

Linux

macOS

Windows

Cloud

Service

Web

Project name

Playlist

Location

C:\repos\Teaching\ASP.NET\2023PBLMT

Solution name ⓘ

Playlist

☐

Place solution and project in the same directory



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ASP PLAYLIST

- Keep all Default settings

Additional information

ASP.NET Core Web App (Model-View-Controller)

C#

Linux

macOS

Windows

Cloud

Service

Web

Framework ⓘ

.NET 6.0 (Long Term Support)

Authentication type ⓘ

None

☒ Configure for HTTPS ⓘ

☐ Enable Docker ⓘ

Docker OS ⓘ

Linux

☐ Do not use top-level statements ⓘ

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Create



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ASP PLAYLIST

- Keep all Default settings

Additional information

ASP.NET Core Web App (Model-View-Controller)

C#

Linux

macOS

Windows

Cloud

Service

Web

Framework ⓘ

.NET 6.0 (Long Term Support)

Authentication type ⓘ

None

☒ Configure for HTTPS ⓘ

☐ Enable Docker ⓘ

Docker OS ⓘ

Linux

☐ Do not use top-level statements ⓘ

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Create



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ADDING MODELS



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ASP PLAYLIST

- Read this whole section to get a full understanding of the models



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ASP PLAYLIST

- Make three classes in the Models folder called:
 1. PlaylistSong
 2. Playlist
 3. Song



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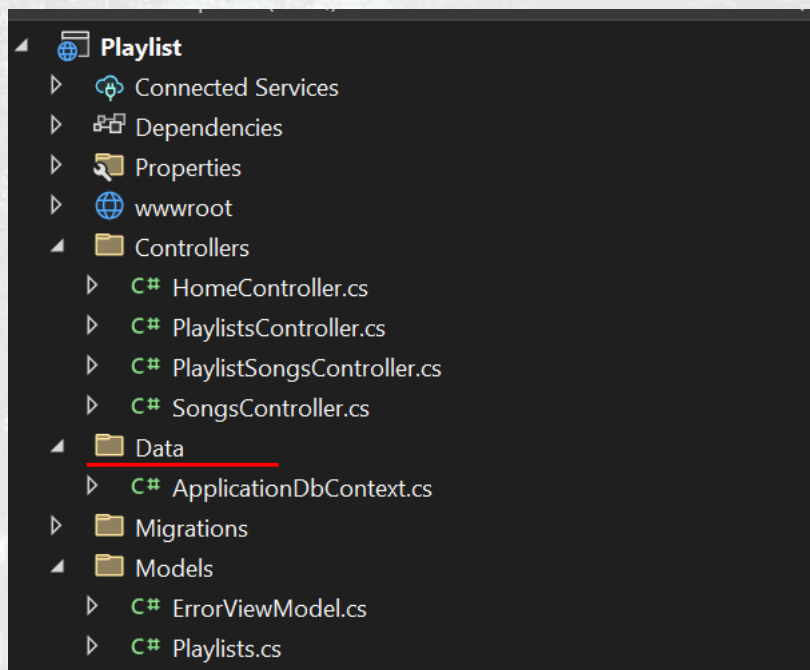
ADD APPLICATION DBCONTEXT



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ASP PLAYLIST





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ASP PLAYLIST

```
12 references
public class ApplicationDbContext : DbContext
{
    0 references
    public ApplicationDbContext(DbContextOptions<ApplicationDbContext> options) : base(options)
    {
    }

    17 references
    public DbSet<Playlists> Playlists { get; set; }

    16 references
    public DbSet<Song> Songs { get; set; }

    11 references
    public DbSet<PlaylistSong> PlaylistSongs { get; set; }

    0 references
    protected override void OnModelCreating(ModelBuilder modelBuilder)
    {
        modelBuilder.Entity<PlaylistSong>()
            .HasKey(ps => new { ps.PlaylistId, ps.SongId });

        modelBuilder.Entity<PlaylistSong>()
            .HasOne(ps => ps.Playlist)
            .WithMany(p => p.PlaylistSongs)
            .HasForeignKey(ps => ps.PlaylistId)
            .OnDelete(DeleteBehavior.Restrict);

        modelBuilder.Entity<PlaylistSong>()
            .HasOne(ps => ps.Song)
            .WithMany(s => s.PlaylistSongs)
            .HasForeignKey(ps => ps.SongId);
    }
}
```



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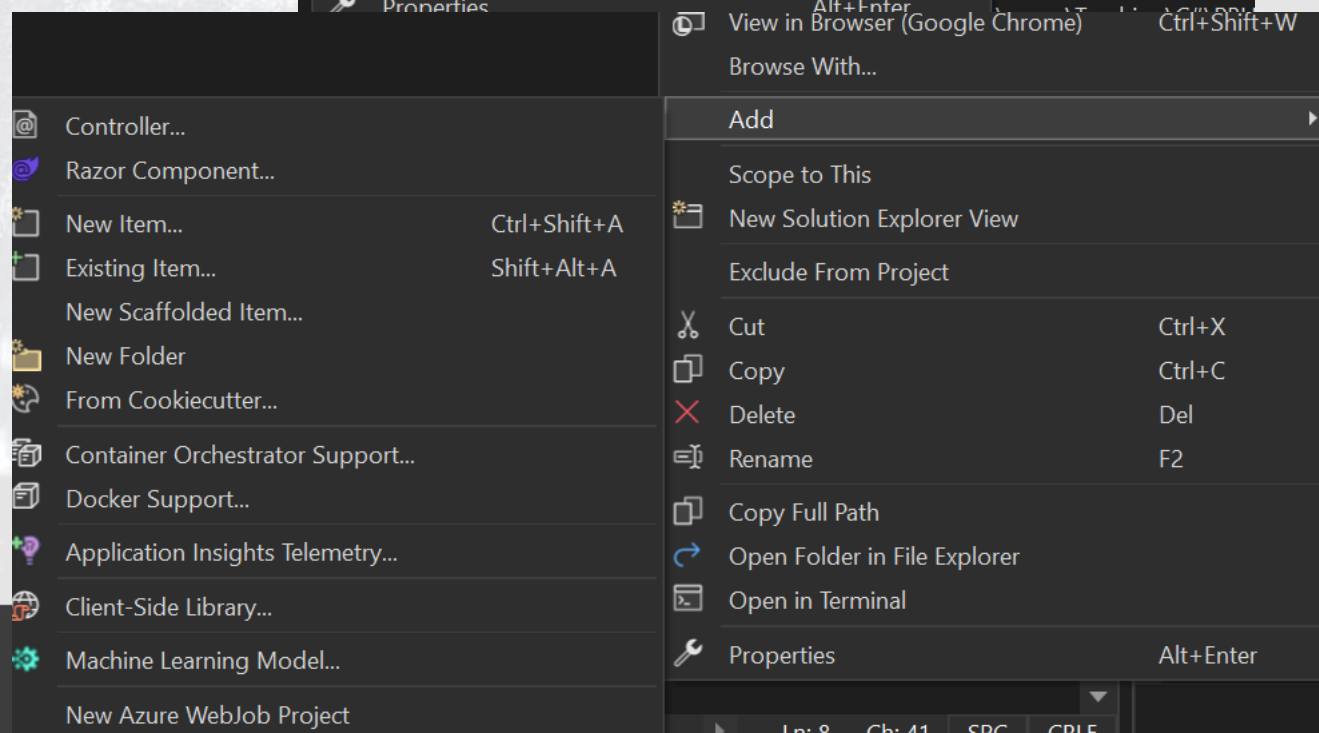
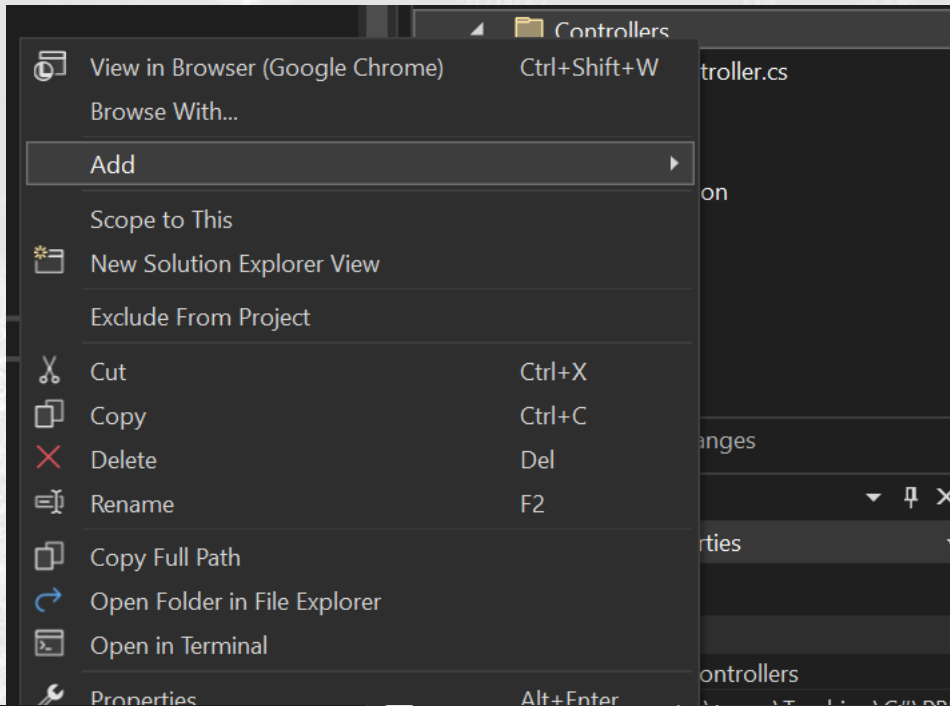
ADDING A CONTROLLER



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ASP PLAYLIST

- Right Click on controllers folder, add, Controller...



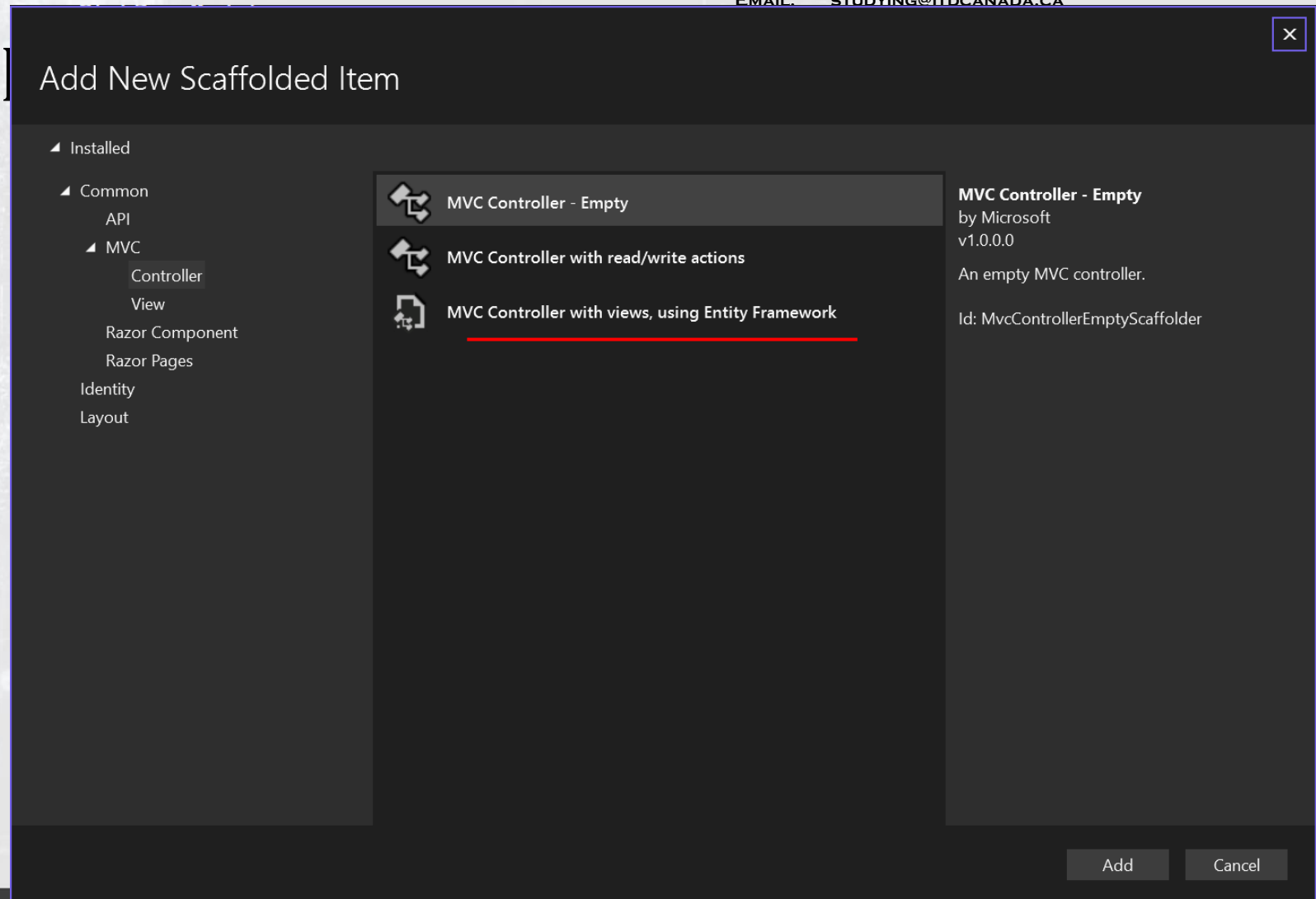


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ASP PLAYL

- Choose MVC Controller – With views, Using Entity Framework
- After you click add, select what details you want





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ADD PACKAGES



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ASP PLAYLIST

- Install-Package Microsoft.EntityFrameworkCore.SqlServer
- Install-Package Microsoft.EntityFrameworkCore.Tools
- Install-Package Microsoft.VisualStudio.Web.CodeGeneration.Design



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ADD DBCONTEXT TO PROGRAM.CS



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ASP PLAYLIST

```
8    // Add services to the container.
9    builder.Services.AddControllersWithViews();
10
11    builder.Services.AddDbContext<ApplicationDbContext>(options => options.UseSqlServer
    (builder.Configuration.GetConnectionString("DefaultConnection")));
12
13    var app = builder.Build();
14
```



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ADD CONNECTION STRING INTO APPSETTINGS.JSON



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ASP PLAYLIST

ema: <https://json.schemastore.org/appsettings.json>

```
1 1 {
2 2   "ConnectionStrings": {
3 3     "DefaultConnection": "Server=(localdb)\
      \mssqllocaldb;Database=MusicPlaylists;Trusted_Connection=True;MultipleActiveResults
      ets=true"
4 4   },
5 5   "Logging": {
6 6     "LogLevel": {
7 7       "Default": "Information",
8 8       "Microsoft.AspNetCore": "Warning"
9 9     }
10 10  },
11 11  "AllowedHosts": "*"
12 12  }
13 13 }
```




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CHANGING THE CONTROLLER INDEX



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ASP PLAYLIST

- In Program.cs
- On line 25 change “Home” to the name of your controller, but remove the word controller
- ClubMembersController
- ClubMembers

```
16 app.UseHttpsRedirection();
17 app.UseStaticFiles();
18
19 app.UseRouting();
20
21 app.UseAuthorization();
22
23 app.MapControllerRoute(
24     name: "default",
25     pattern: "{controller=Home}/{action=Index}/{id?}");
26
27 app.Run();
```

```
17 app.UseStaticFiles();
18
19 app.UseRouting();
20
21 app.UseAuthorization();
22
23 app.MapControllerRoute(
24     name: "default",
25     pattern: "{controller=ClubMembers}/{action=Index}/{id?}");
26
27 app.Run();
28
```



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ADDING THE DATABASE



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ASP PLAYLIST

- Run the below command in the Package Manage Console:
 - Add-Migration InitialCreate
 - Update-Database
- Check your Server Object Explorer for the database