**1. Folder Structure**

dotnetapp/

│

├── Models/

│ ├── Student.cs

│ ├── Course.cs

│ ├── Enrollment.cs

│ ├── Instructor.cs

│ ├── CourseAssignment.cs

│ └── ApplicationDbContext.cs

│

├── Program.cs

├── dotnetapp.csproj

└── appsettings.json (optional)

**2. Model Classes (in Models namespace)**

**Student.cs**

using System.Collections.Generic;

namespace dotnetapp.Models

{

public class Student

{

public int StudentID { get; set; }

public string FirstName { get; set; }

public string LastName { get; set; }

public ICollection<Enrollment> Enrollments { get; set; }

}

}

**Course.cs**

using System.Collections.Generic;

namespace dotnetapp.Models

{

public class Course

{

public int CourseID { get; set; }

public string Title { get; set; }

public int Credits { get; set; }

public ICollection<Enrollment> Enrollments { get; set; }

public ICollection<CourseAssignment> CourseAssignments { get; set; }

}

}

**Enrollment.cs**

namespace dotnetapp.Models

{

public class Enrollment

{

public int EnrollmentID { get; set; }

public int CourseID { get; set; }

public int StudentID { get; set; }

public Course? Course { get; set; }

public Student? Student { get; set; }

}

}

**Instructor.cs**

using System;

using System.Collections.Generic;

namespace dotnetapp.Models

{

public class Instructor

{

public int InstructorID { get; set; }

public string FirstName { get; set; }

public string LastName { get; set; }

public DateTime HireDate { get; set; }

public ICollection<CourseAssignment> CourseAssignments { get; set; }

}

}

**CourseAssignment.cs**

namespace dotnetapp.Models

{

public class CourseAssignment

{

public int CourseAssignmentID { get; set; }

public int CourseID { get; set; }

public int InstructorID { get; set; }

public Course? Course { get; set; }

public Instructor? Instructor { get; set; }

}

}

**3. ApplicationDbContext.cs**

using Microsoft.EntityFrameworkCore;

namespace dotnetapp.Models

{

public class ApplicationDbContext : DbContext

{

private string connectionString = "User ID=sa;password=examlyMssql@123; server=localhost;Database=appdb;trusted\_connection=false;Persist Security Info=False;Encrypt=False";

public DbSet<Student> Students { get; set; }

public DbSet<Course> Courses { get; set; }

public DbSet<Enrollment> Enrollments { get; set; }

public DbSet<Instructor> Instructors { get; set; }

public DbSet<CourseAssignment> CourseAssignments { get; set; }

protected override void OnConfiguring(DbContextOptionsBuilder optionsBuilder)

{

optionsBuilder.UseSqlServer(connectionString);

}

protected override void OnModelCreating(ModelBuilder modelBuilder)

{

// Relationships

modelBuilder.Entity<Enrollment>()

.HasOne(e => e.Student)

.WithMany(s => s.Enrollments)

.HasForeignKey(e => e.StudentID);

modelBuilder.Entity<Enrollment>()

.HasOne(e => e.Course)

.WithMany(c => c.Enrollments)

.HasForeignKey(e => e.CourseID);

modelBuilder.Entity<CourseAssignment>()

.HasOne(ca => ca.Course)

.WithMany(c => c.CourseAssignments)

.HasForeignKey(ca => ca.CourseID);

modelBuilder.Entity<CourseAssignment>()

.HasOne(ca => ca.Instructor)

.WithMany(i => i.CourseAssignments)

.HasForeignKey(ca => ca.InstructorID);

}

}

}

**4. Program.cs**

using System;

using dotnetapp.Models;

class Program

{

static void Main(string[] args)

{

using (var context = new ApplicationDbContext())

{

Console.WriteLine("Database creation in progress...");

context.Database.EnsureCreated();

Console.WriteLine("Database created successfully as 'appdb'.");

}

}

}

**5. EF Core Setup Commands**

Run these commands in the **project root** (inside dotnetapp folder):

dotnet new tool-manifest

dotnet tool install --local dotnet-ef --version 6.0.6

Check installation:

dotnet dotnet-ef

Add migration:

dotnet dotnet-ef migrations add "InitialSetup"

Apply migration:

dotnet dotnet-ef database update

**6. SQL Server Commands (optional)**

sqlcmd -U sa

password: examlyMssql@123

1> create database appdb

2> go

The Code-First migration will automatically create all required tables inside this database.

**7. Build and Run**

dotnet restore

dotnet build

dotnet run

Your database appdb will now contain:

* **Students**
* **Courses**
* **Enrollments**
* **Instructors**
* **CourseAssignments**