**Day4 Labs: xUnit + Moq + ASP.NET Core Web API Controller Tests**

**1) NuGet dependencies**

Install in your test project:

dotnet add package xunit

dotnet add package xunit.runner.visualstudio

dotnet add package Moq

dotnet add package Microsoft.AspNetCore.Mvc.Testing

dotnet add package Microsoft.AspNetCore.Mvc.NewtonsoftJson

**2) User model**

namespace DemoApp.Models

{

public class User

{

public long Id { get; set; }

public string? Name { get; set; }

public string? Email { get; set; }

}

}

**3) IUserService interface**

using DemoApp.Models;

namespace DemoApp.Services

{

public interface IUserService

{

IEnumerable<User> GetAll();

User? GetById(long id);

User Save(User user);

User? Update(long id, User user);

bool Delete(long id);

}

}

**4) UserController**

using DemoApp.Models;

using DemoApp.Services;

using Microsoft.AspNetCore.Mvc;

namespace DemoApp.Controllers

{

[ApiController]

[Route("api/users")]

public class UserController : ControllerBase

{

private readonly IUserService \_userService;

public UserController(IUserService userService) => \_userService = userService;

[HttpGet]

public ActionResult<IEnumerable<User>> GetAll()

=> Ok(\_userService.GetAll());

[HttpGet("{id}")]

public ActionResult<User> GetById(long id)

{

var user = \_userService.GetById(id);

return user is null ? NotFound() : Ok(user);

}

[HttpPost]

public ActionResult<User> Create(User user)

{

var saved = \_userService.Save(user);

return CreatedAtAction(nameof(GetById), new { id = saved.Id }, saved);

}

[HttpPut("{id}")]

public ActionResult<User> Update(long id, User user)

{

var updated = \_userService.Update(id, user);

return updated is null ? NotFound() : Ok(updated);

}

[HttpDelete("{id}")]

public IActionResult Delete(long id)

{

var deleted = \_userService.Delete(id);

return deleted ? NoContent() : NotFound();

}

}

}

**5) UserControllerTests (xUnit + Moq)**

using DemoApp.Controllers;

using DemoApp.Models;

using DemoApp.Services;

using Microsoft.AspNetCore.Mvc;

using Moq;

using System.Collections.Generic;

using Xunit;

namespace DemoApp.Tests

{

public class UserControllerTests

{

public UserControllerTests()

{

}

[Fact]

public void GetAll\_ReturnsList()

{

// Arrange

// Act

// Assert

}

[Fact]

public void GetById\_Found()

{

}

[Fact]

public void GetById\_NotFound()

{

}

[Fact]

public void CreateUser\_Success()

{

}

[Fact]

public void UpdateUser\_Success()

{

}

[Fact]

public void UpdateUser\_NotFound()

{

}

[Fact]

public void DeleteUser\_Success()

{

}

[Fact]

public void DeleteUser\_NotFound()

{

}

}

}