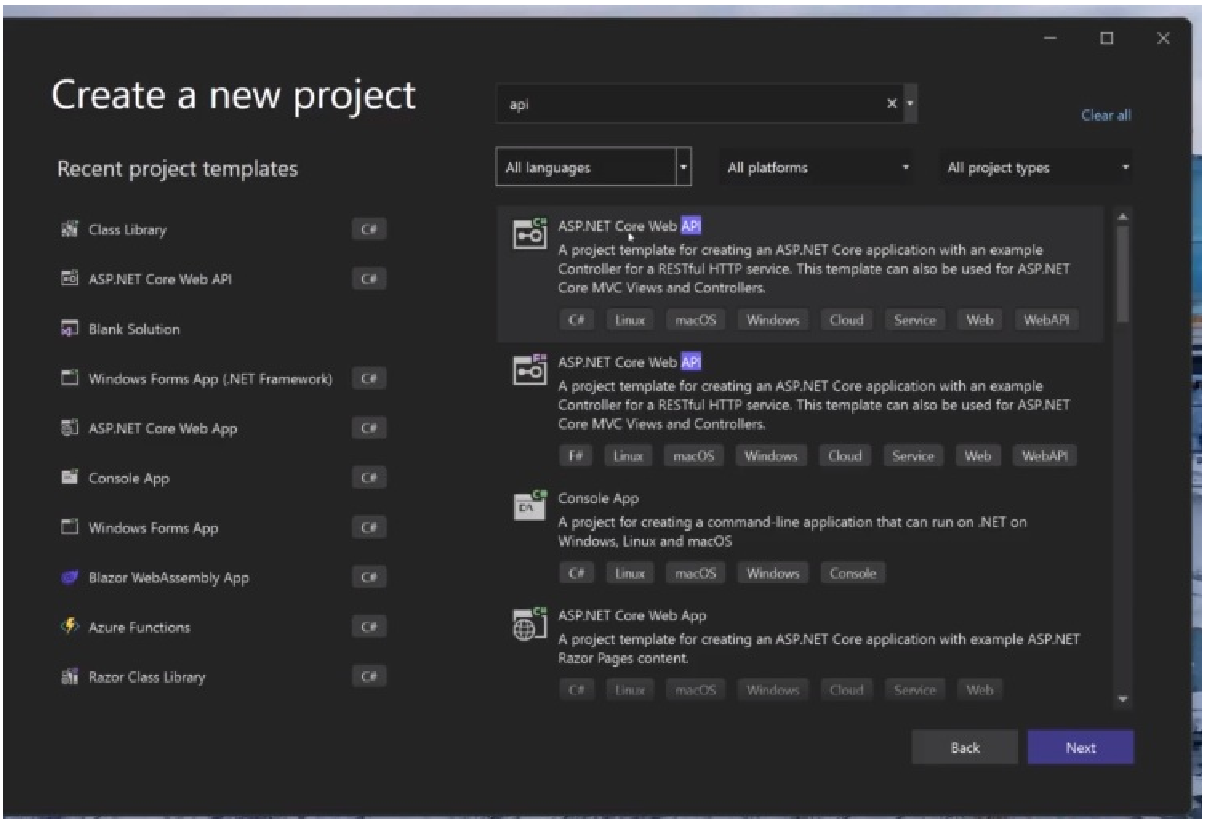
Udemy course: Ultimate ASP.NET pt. 2-2

Projekt Setup and Configuration

Create a ASP.NET Core API Project in Visual Studio (in WIndows!)

- in Visual Studio 2019 or 2021


Create a new project

api

Clear all

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ASP.NET Core Web API C#
Blank Solution
Windows Forms App (.NET Framework) C#
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Azure Functions C#
Razor Class Library C#

All languages | All platforms | All project types

ASP.NET Core Web API
A project template for creating an ASP.NET Core application with an example Controller for a RESTful HTTP service. This template can also be used for ASP.NET Core MVC Views and Controllers.
C# Linux macOS Windows Cloud Service Web WebAPI

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Console App
A project for creating a command-line application that can run on .NET on Windows, Linux and macOS
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ASP.NET Core Web App
A project template for creating an ASP.NET Core application with example ASP.NET Razor Pages content.
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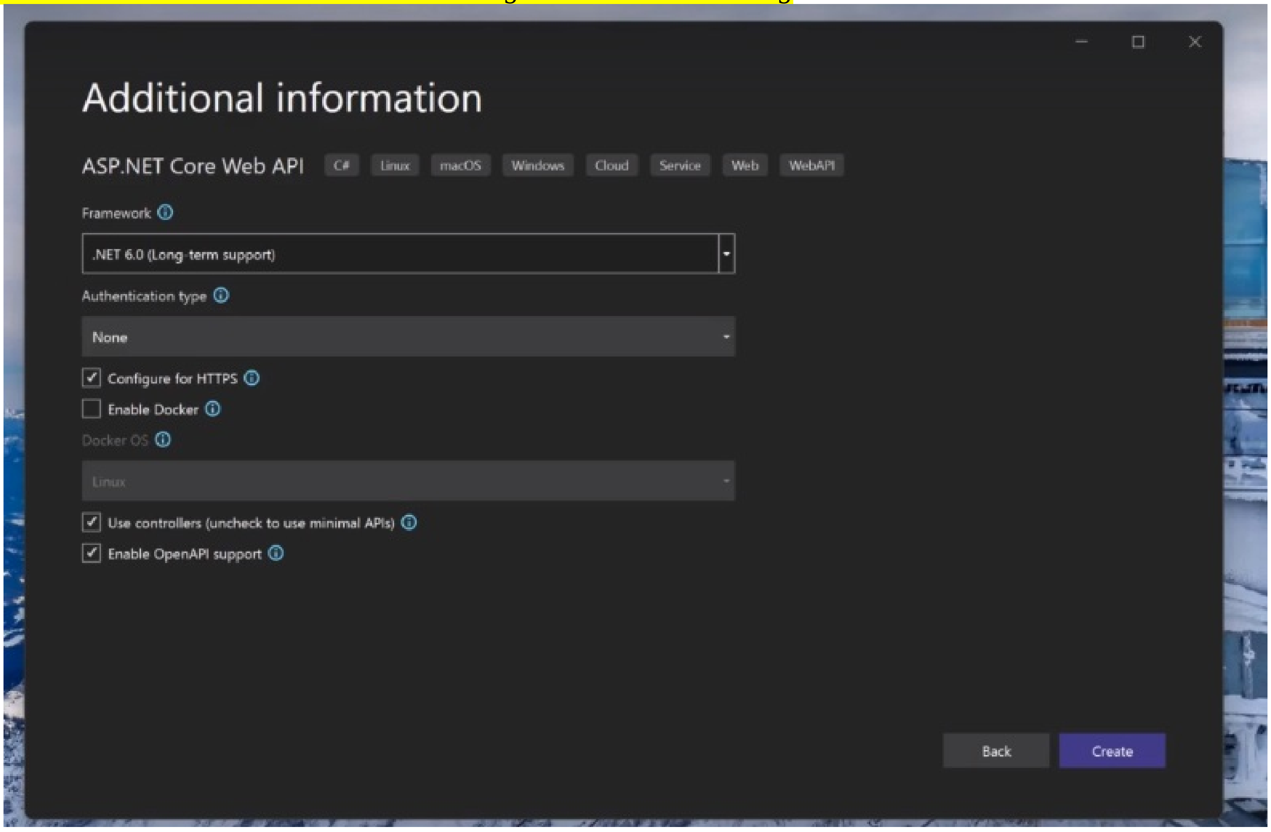
-
- we select ASP.NET Core Web API
- name example: HotelListing.API
- Project name automatically sets the Solution name, but you can remove .ASP in Solution name
- the next screen about the Framework configuration is interesting
  - 

Additional information

ASP.NET Core Web API C# Linux macOS Windows Cloud Service Web WebAPI

Framework: .NET 6.0 (Long-term support)

Authentication type: None

☑ Configure for HTTPS
☐ Enable Docker

Docker OS: Linux

☑ Use controllers (uncheck to use minimal APIs)
☑ Enable OpenAPI support

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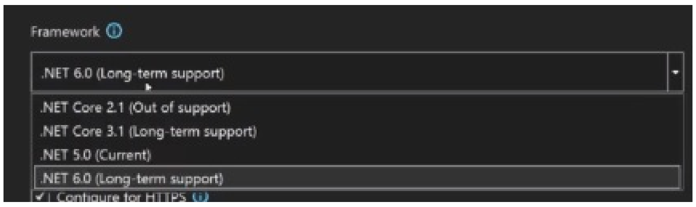
- 
Framework

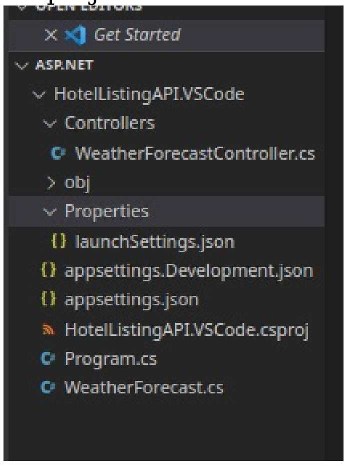
.NET 6.0 (Long-term support)

.NET Core 2.1 (Out of support)
.NET Core 3.1 (Long-term support)
.NET 5.0 (Current)
.NET 6.0 (Long-term support)

✓ Configure for HTTPS

- course instructor is proceeding with .NET 6.0
  - but on .NET 5.0 it is mostly the same - only few differences the course instructor will speak about
- Authentication type
  - the one the course instructor wants to use is not available
  - so we choose None
  - Microsoft Identity platform
    - this would be with a identity server as your id
    - we won't be getting into that right now
  - Windows
    - in a corporate setting and you want to use Active Directory
    - or local Active Directory for your authentication
- Enable Docker
  - we will not enable that for now
- Use controller (uncheck to use minimal APIs)
  - only >= .NET 6
- we enable OpenAPI support
  - gives access to Swagger documentation
  - easy out of the box way to document your API
-

#7: Alternative: create ASP.NET Core Project in Visual Studio Code

- most or even all of the things done in the course can be done in Visual Studio Code as well
- install .NET 6 SDK on your environment
  - debian linux instructions: https://docs.microsoft.com/de-de/dotnet/core/install/linux-debian#debian-10-
- entering in terminal
  - $ dotnet --info
  - should list information of the version
- to create a project enter following command
  - dotnet new webapi -o HotelListingAPI.VSCode
    - here 'webapi' is a templatename
    - -o for output
- main difference: Visual Studio vs Visual Studio Code development with ASP.NET
  - one has functionality in the UI
  - the other you need to use more the command line interface
- created project files with above command:
  - 

#8: Explore ASP.NET Core API Project and Explore Swagger UI

- all code and debugging we are carrying out on Visual Studio, can be replicated in Visual Studio Code
- about the files
  - Properties/launchSettings.json
    - usually not to be edited

        - only very rarely
        - sometimes you would add new environment variables
        - usually not required to master this file
        - only modify it, when you know what you are doing!
    - MVC
        - Model View Controller
        - Model of the data
        - View about what the user sees
        - Controller: pulls the strings between the model and view
          * gets request, processes it, sends a response
- code in controller:

    -
      ```
      [ApiController]

      [Route("[controller]")]
      ```
        - define how do we go to the controller name
        - this means just we use the name of the controller
        - for example when we are testing the API: this define how you get to that controller
    - when you are calling the API you don't know anything about the code

    -
      ```
      [HttpGet(Name = "GetWeatherForecast")]
      ```
    - when you send a request with the controller name - in the example WeatherForecast - /GetWeatherForecast
        - it is like calling that method
        - this method then returns the data
    - this is a simple example
- another file: appsettings.json

    -
      ```
      {

      "Logging": {

      "LogLevel": {

      "Default": "Information",

      "Microsoft.AspNetCore":
      "Warning"

      }

      },

      "AllowedHosts":
      "*"

      }
      ```
    - certain settings for development purposes
- .NET5 vs .NET6 differences
    - .NET6 more minimalistic mindset
    - difference e.g. in Program.cs file
    - takes away lot of defining of different namespaces
    - in .NET 6 a lot of constructs were introduced to reduce all of that
    - more on differences in the next video
    - all services to be configured are between the builder declaration in Program.cs and the Build() command

        -
          ```
          var builder = WebApplication.CreateBuilder(args);



          // Add services to the
          container.
          ```

```
builder.Services.AddControllers();

// Learn more about configuring
Swagger/OpenAPI at
https://aka.ms/aspnetcore/swashbuckle

builder.Services.AddEndpointsApiExplorer();

builder.Services.AddSwaggerGen();



var app = builder.Build();
```

- what happens here:
  - the builder is constructing all the services that need to be injected
  - before or by the time the app is run
  - all of those things need to be in place
  - so they can be accessed
  - that is what we call the AOC container
    - or inversion of Control Container
    - that is what needs us to do our dependency injection
    - better explanation on that later
- we are letting the app know
  - it needs to use controllers
  - it needs to use endpoints
  - API explorer
  - needs to use swagger engine
- then after the Build() command
  - configure the middleware
  - like request pipeline
  - we want to use Swagger in Development
  - we can use Authorization, MapController etc
  - finally we Run()
- before we run we can also introduce customized middleware
  - which we will be looking at also
  - and introduced that to the pipeline if we need to
- then we have our model: WeatherForecast.cs
  - it looks like the data should look like
  -
```
public class WeatherForecast

{

public DateTime Date { get; set; }



public int TemperatureC { get; set; }



public int TemperatureF => 32 + (int)(TemperatureC / 0.5556);



public string? Summary { get; set; }

}
```

- how to run it in Visual Studio Code?
  - error message "Scriptcs not found"

    - Settings->Run code configuration
        - find "Run in terminal"; enable that
    - via the "Open Settings" open the Json and add type "`code-runner.executorMap`" and then press enter
        - add

          ```
          "code-runner.executorMap": { "csharp": "scriptcs -script" }
          ```

          in debian at least and i think in most linux based systems you will find it at ~/.config/Code/User
    - below C# add "cd $dir && dotnet run $fileName" and save
- in the terminal it will indicate where the server is running e.g. at
    - https://localhost:7213
    - with this port you can see the swagger API documentation at
        - https://localhost:7213/swagger/index.html
    - you can click for method /WeatherForecast -> Try it out -> Execute
    - you will get a response
- also useful extension for VIsual Studio code:
    - Solution explorer

#9 .NET 6 vs previous versions

- .NET5 support is over quite soon/ or already behind us (when the video was captured it was 5 months away)
- .NET6 will have longterm support
    - so better start new projects with .NET6!
- a major difference:
    - in .NET5 you have a Startup.cs file, and Program.cs
    - Program.cs looks like it is built with any version before .NET6
    - you have your Main function
    - the main function executes another function etc.
- another major difference:
    - you have builder.Services in .NET6 (in Program.cs) instead of just services in Startup.cs
    - that WebBuilder is inside Program.cs inside method "CreateHostBuilder" in .NET5
    - in the Configure method of Startup.cs are the pipeline objects etc as in Program.cs in .NET6
- .NET6 vs. .NET5 look different, but are basically very much the same!
- most of the things in the course can be done in both .NET6 and .NET5
    - where it is not possible or completely compatible, the course author will point it out
    - everything you are able to do in .NET5 you are able to do in .NET6

#10: CORS configuration

- CORS:
    - Cross Origin Resource Sharing
    - so our API can be accessed by resource by clients that are not on the same server
    - e.g. you deployed it in your company or on the internet
    - and you want others to use your API to access information
- in Program.cs we are adding following line:

    -
      ```
      builder.Services.AddCors(options => {

      options.AddPolicy("AllowAll", b => b.AllowAnyHeader().AllowAnyOrigin().AllowAnyMethod());

      });
      ```
    - "AllowAll" is just our tag name
    - b: our actually security policies
- we actually don't have to set that in the application project; we could also change settings on our firewall or other security tools on the network!
    - however you can allow certain APIs, certain methods from specific services etc.
    - instead we are giving access to all the resources
- below we add the line:

    -
      ```
      app.UseCors("AllowAll");
      ```

- we need to put the settings when
  - other systems want to access our API
-

---

other Notes - not from Udemy course:

- run ASP.NET app with docker
  - https://code.visualstudio.com/docs/containers/quickstart-aspnet-core
- to build/run in Visual Studio Code without scriptcs:
  - how to run it in Visual Studio Code?
    - error message "Scriptcs not found"
    - Settings->Run code configuration
      - find "Run in terminal"; enable that
    - via the "Open Settings" open the Json and add type "`code-runner.executorMap"` and then press enter
    - below C# add "cd $dir && dotnet run $fileName" and save
  - add

    ```
    "code-runner.executorMap": { "csharp": "scriptcs -script" }
    ```

    in debian at least and i think in most linux based systems you will find it at ~/.config/Code/User
- if there is a error like this:

  -
    ```
    Only one compilation unit can have
    top-level statements.
    ```
  - it means you have toplevel C-sharp code in more than one file!
- dotnet new gitignore
  - to create the gitignore file
- also useful extension for VIsual Studio code:
  - Solution explorer
- we are using Swagger in the course
  - on my linux debian machine I could open it, on this url with this port:
    - https://localhost:7213/swagger/index.html
    - the port is shown in the terminal output
    -