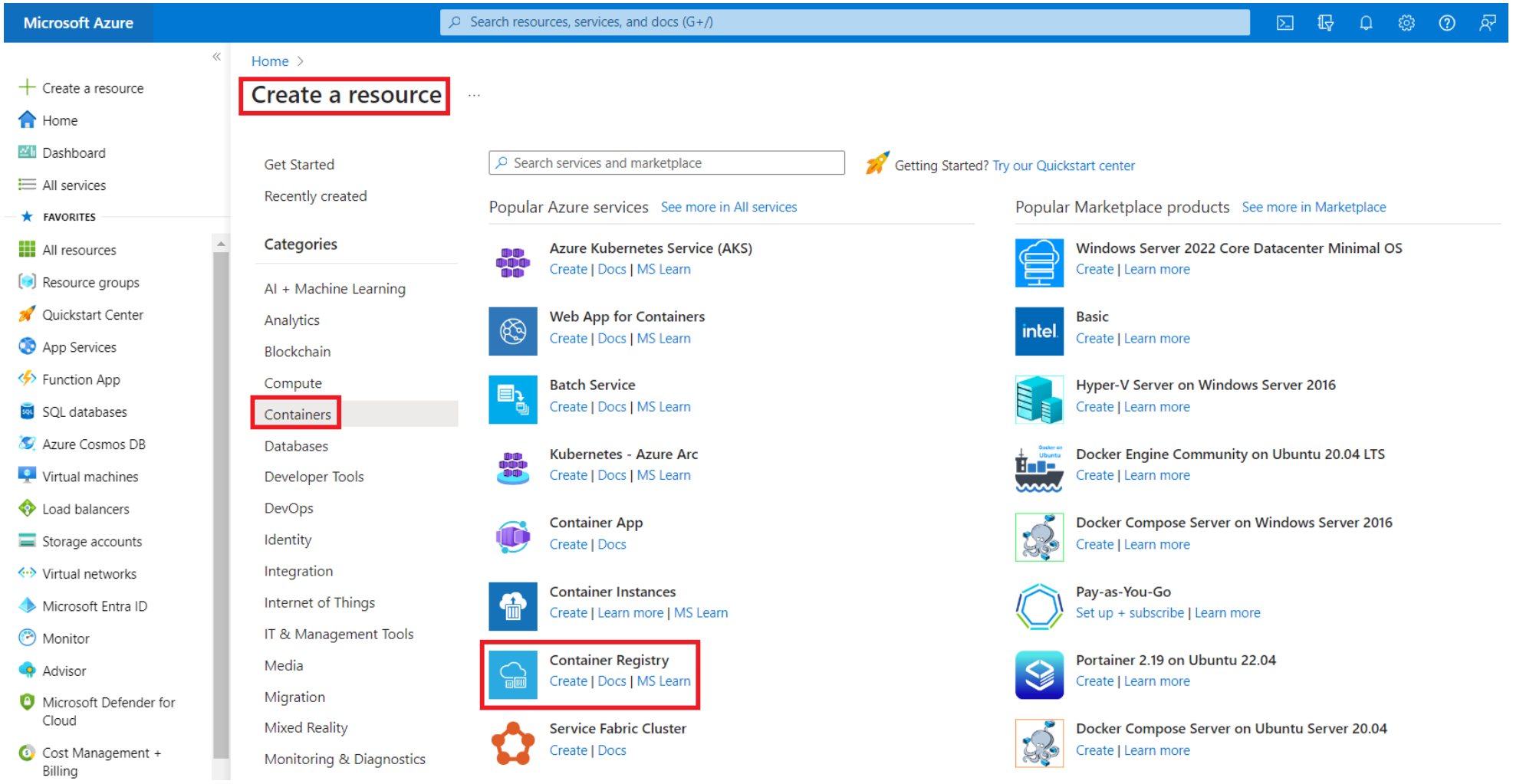
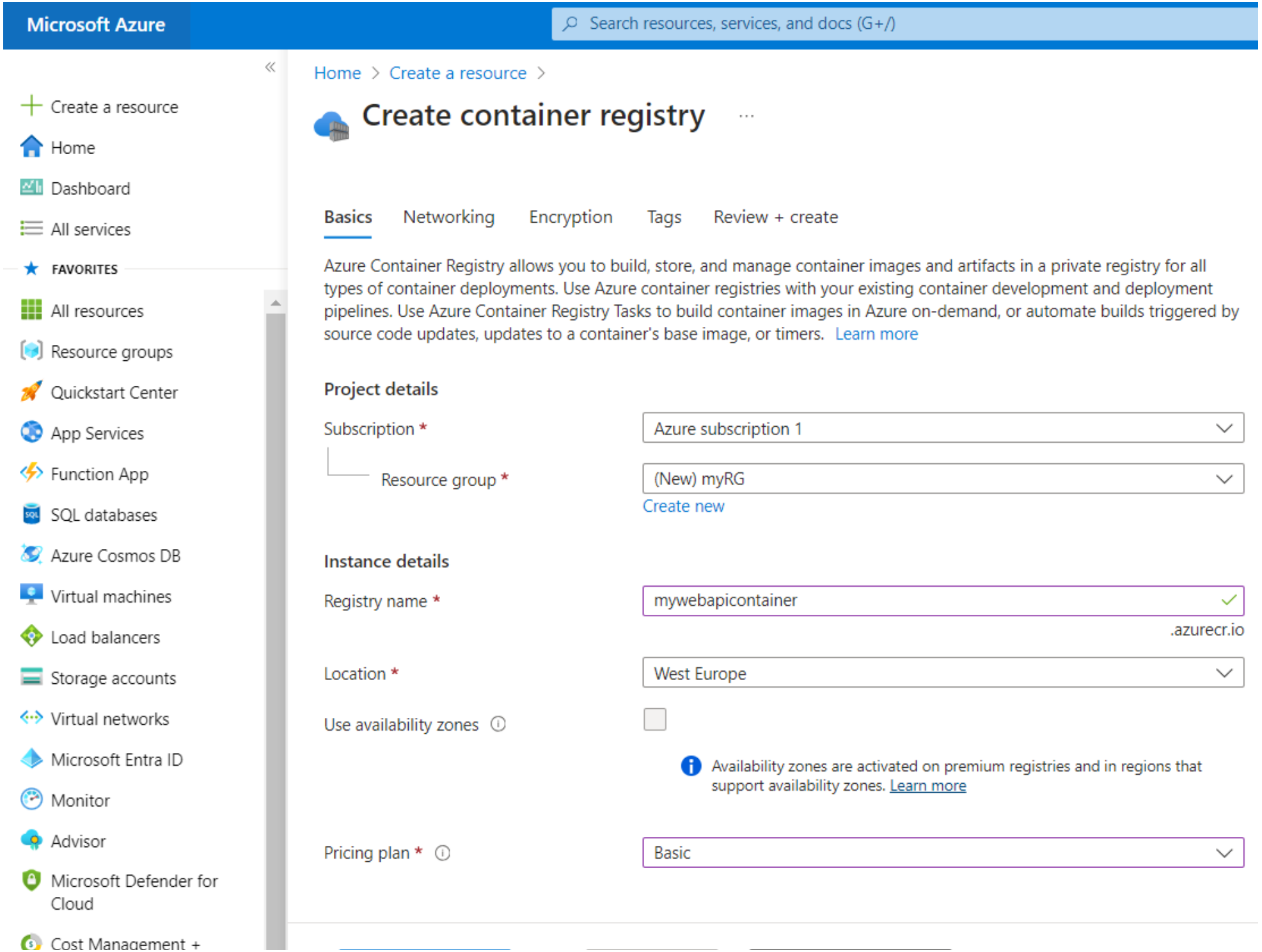
How to deploy a .NET 7 Web API in Azure Container Instance

1. Create an Azure Container Registry

We create a Container Registry service

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Resource groups
Quickstart Center
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Function App
SQL databases
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Microsoft Entra ID
Monitor
Advisor
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Home > Create a resource >
Create container registry
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Encryption
Tags
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Azure Container Registry allows you to build, store, and manage container images and artifacts in a private registry for all types of container deployments. Use Azure container registries with your existing container development and deployment pipelines. Use Azure Container Registry Tasks to build container images in Azure on-demand, or automate builds triggered by source code updates, updates to a container's base image, or timers. Learn more
Project details
Subscription *
Azure subscription 1
Resource group *
(New) myRG
Create new
Instance details
Registry name *
mywebapicontainer
.azurecr.io
Location *
West Europe
Use availability zones
Availability zones are activated on premium registries and in regions that support availability zones. Learn more
Pricing plan *
Basic


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Review + create
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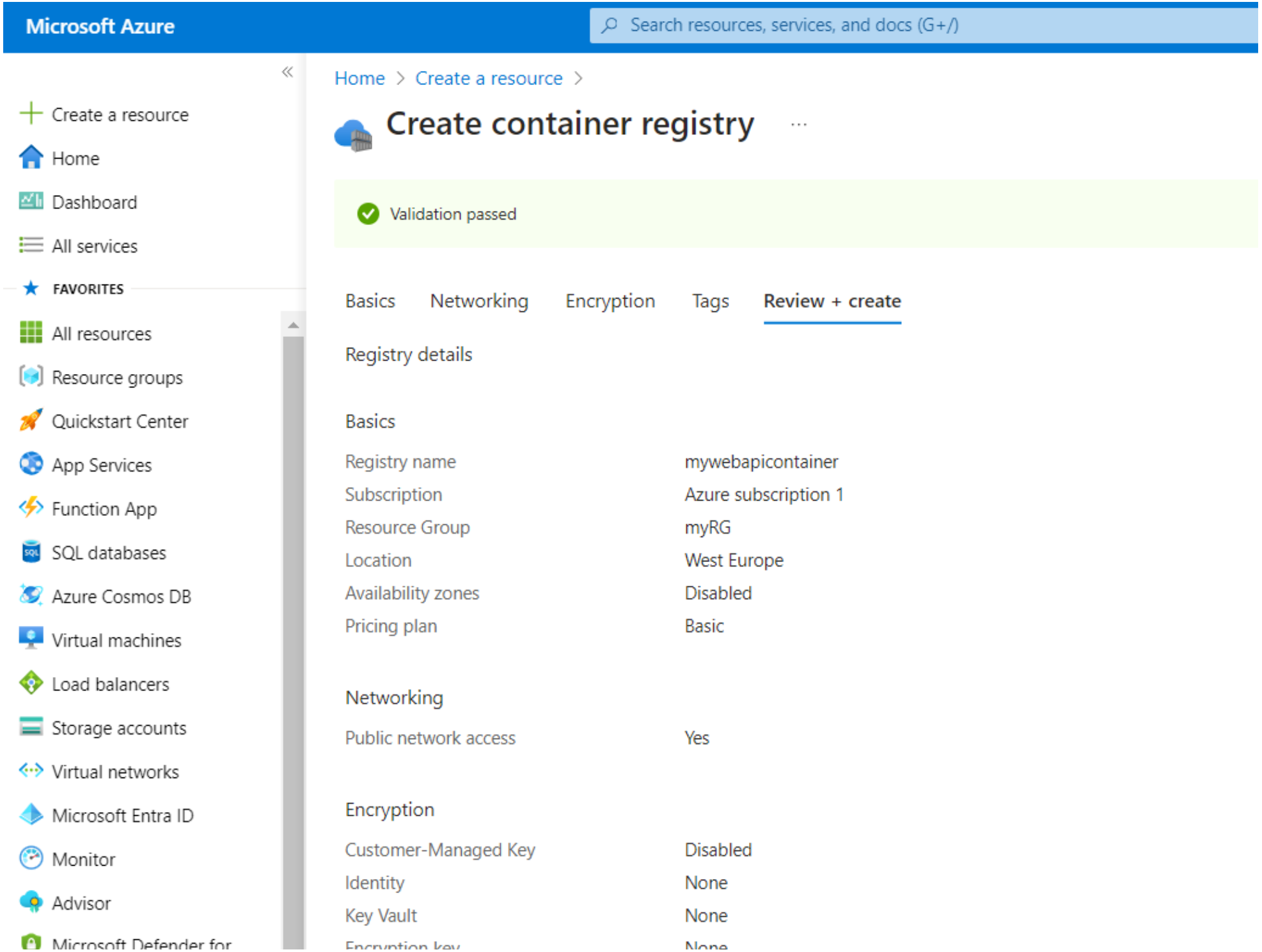
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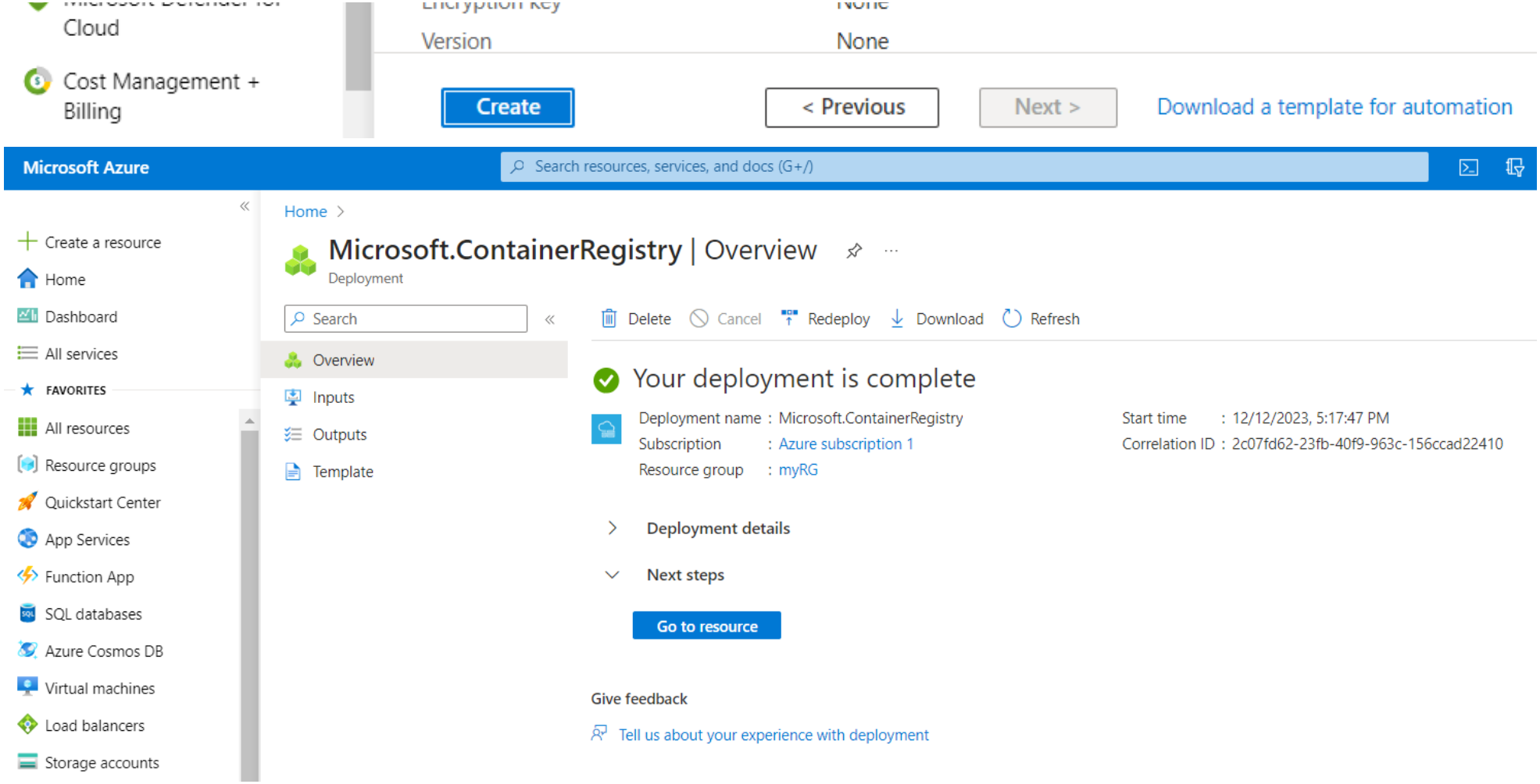
Home > Create a resource >
Create container registry
Validation passed
Basics Networking Encryption Tags Review + create
Registry details
Basics
Registry name mywebapicontainer
Subscription Azure subscription 1
Resource Group myRG
Location West Europe
Availability zones Disabled
Pricing plan Basic
Networking
Public network access Yes
Encryption
Customer-Managed Key Disabled
Identity None
Key Vault None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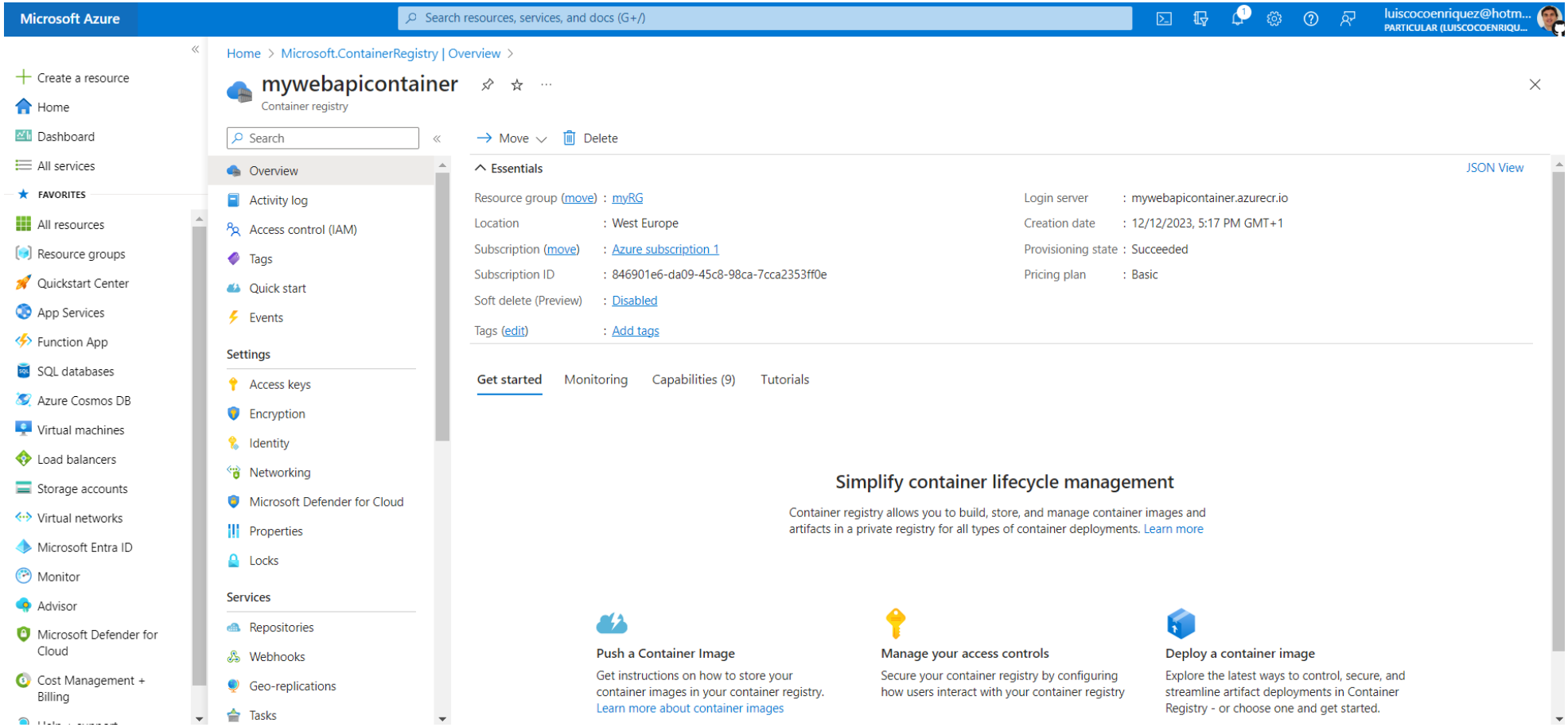
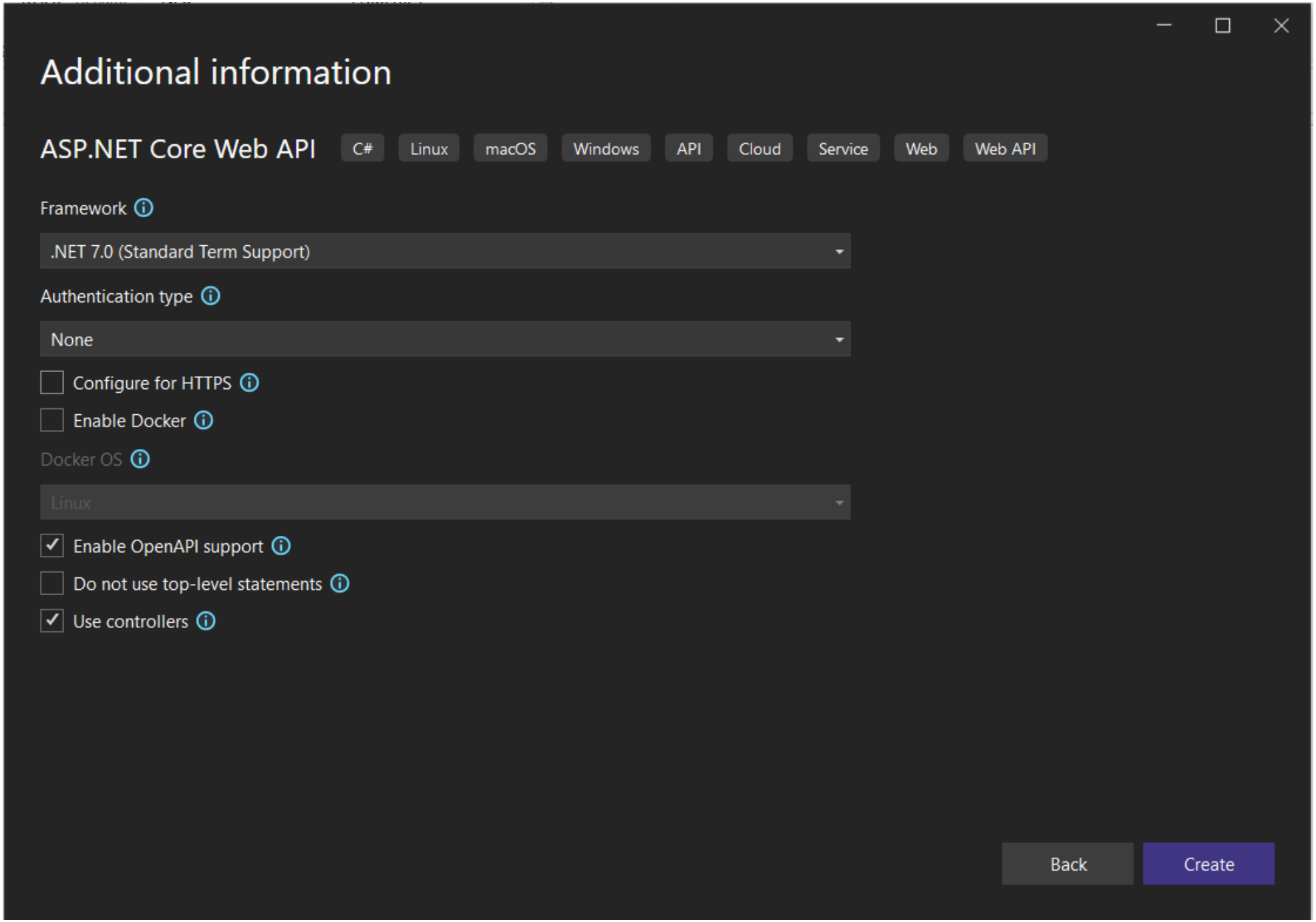
Home
Microsoft.ContainerRegistry | Overview
Deployment
Search
Overview
Inputs
Outputs
Template
Delete
Cancel
Redeploy
Download
Refresh
Your deployment is complete
Deployment name : Microsoft.ContainerRegistry
Subscription : Azure subscription 1
Resource group : myRG
Start time : 12/12/2023, 5:17:47 PM
Correlation ID : 2c07fd62-23fb-40f9-963c-156ccad22410
Deployment details
Next steps
Go to resource
Give feedback
Tell us about your experience with deployment



2. Create a .NET 7 Web API in Visual Studio 2022 Community Edition

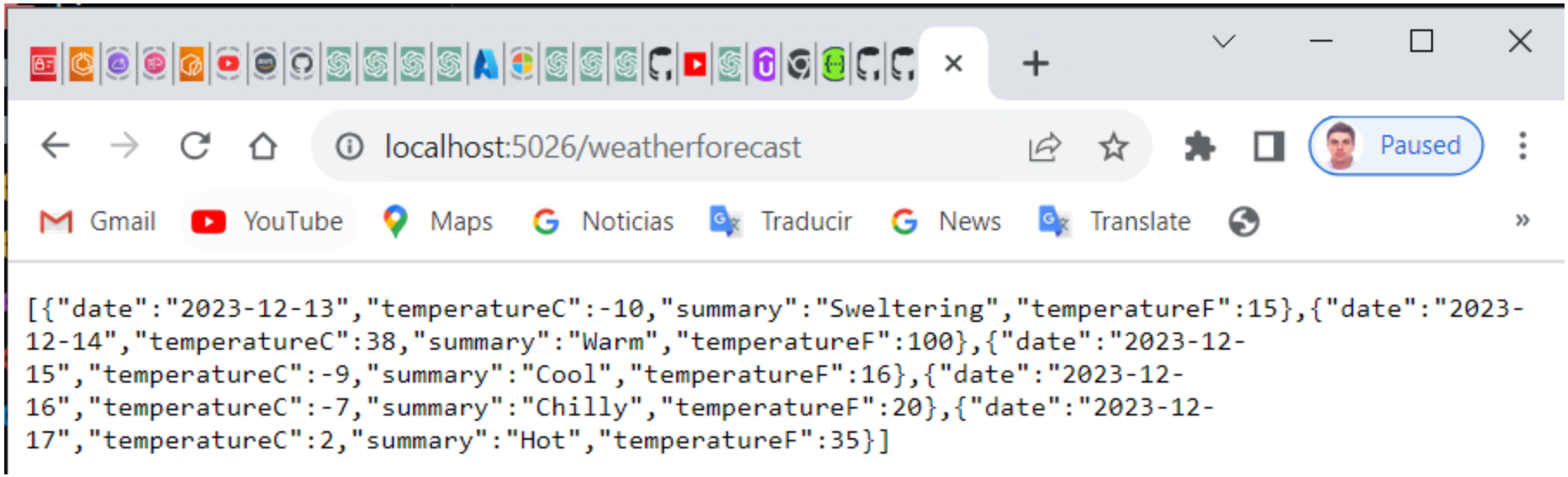
Open Visual Studio 2022 Community Edition and we create a new .NET 7 API



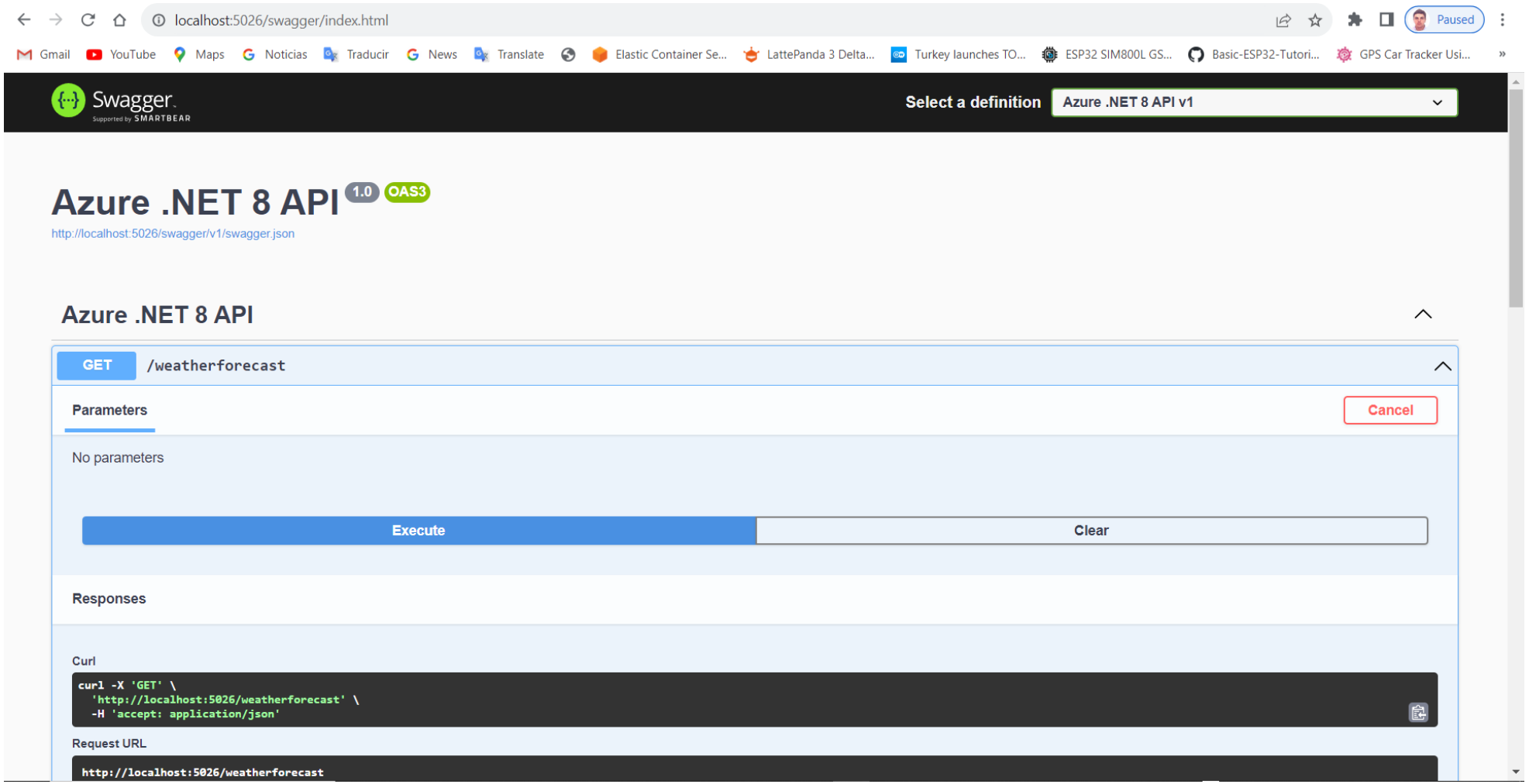
We build and run the application to verify it

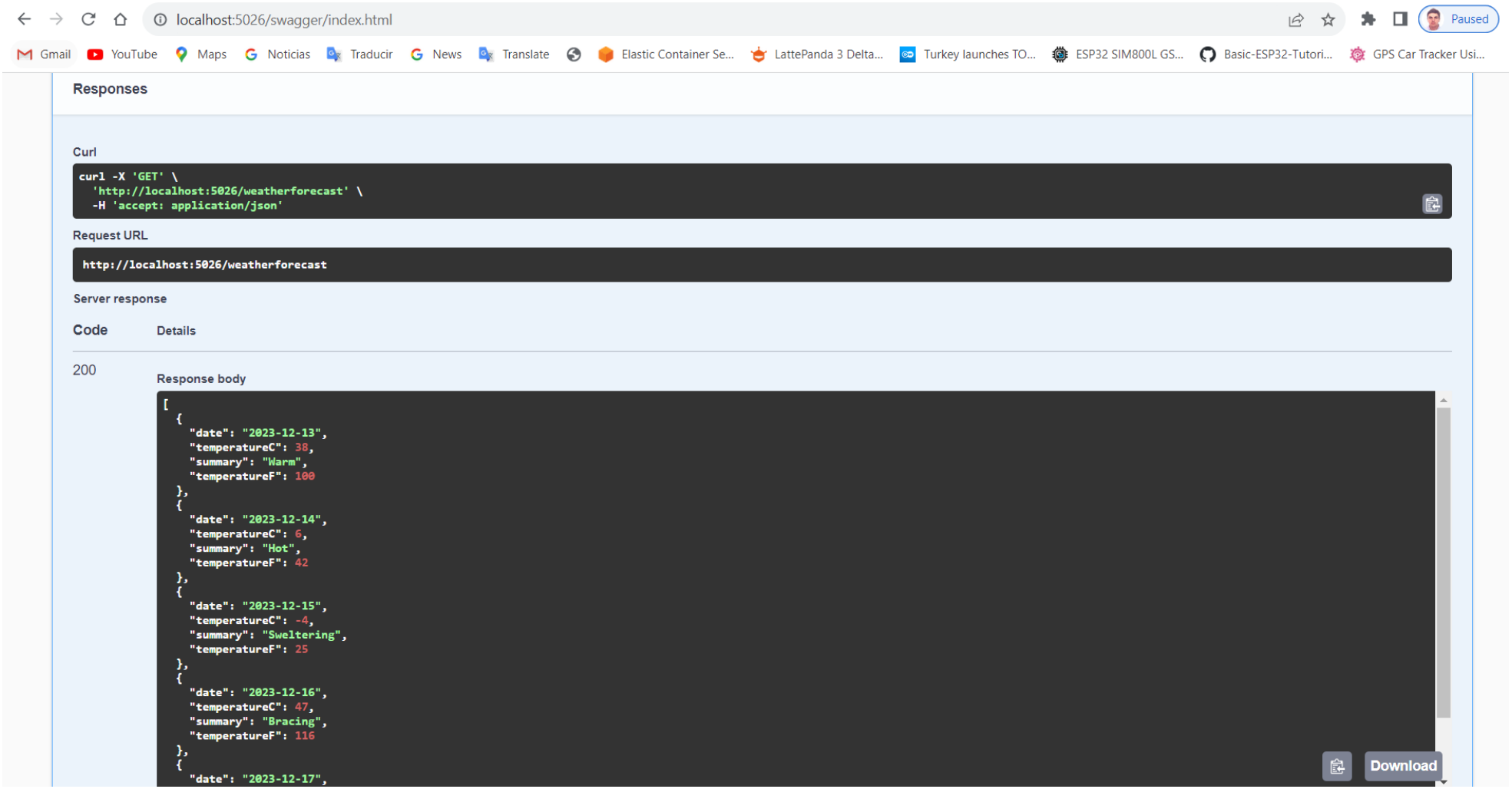
We navigate to the Web API URL contoller endpoint:

http://localhost:5026/weatherforecast



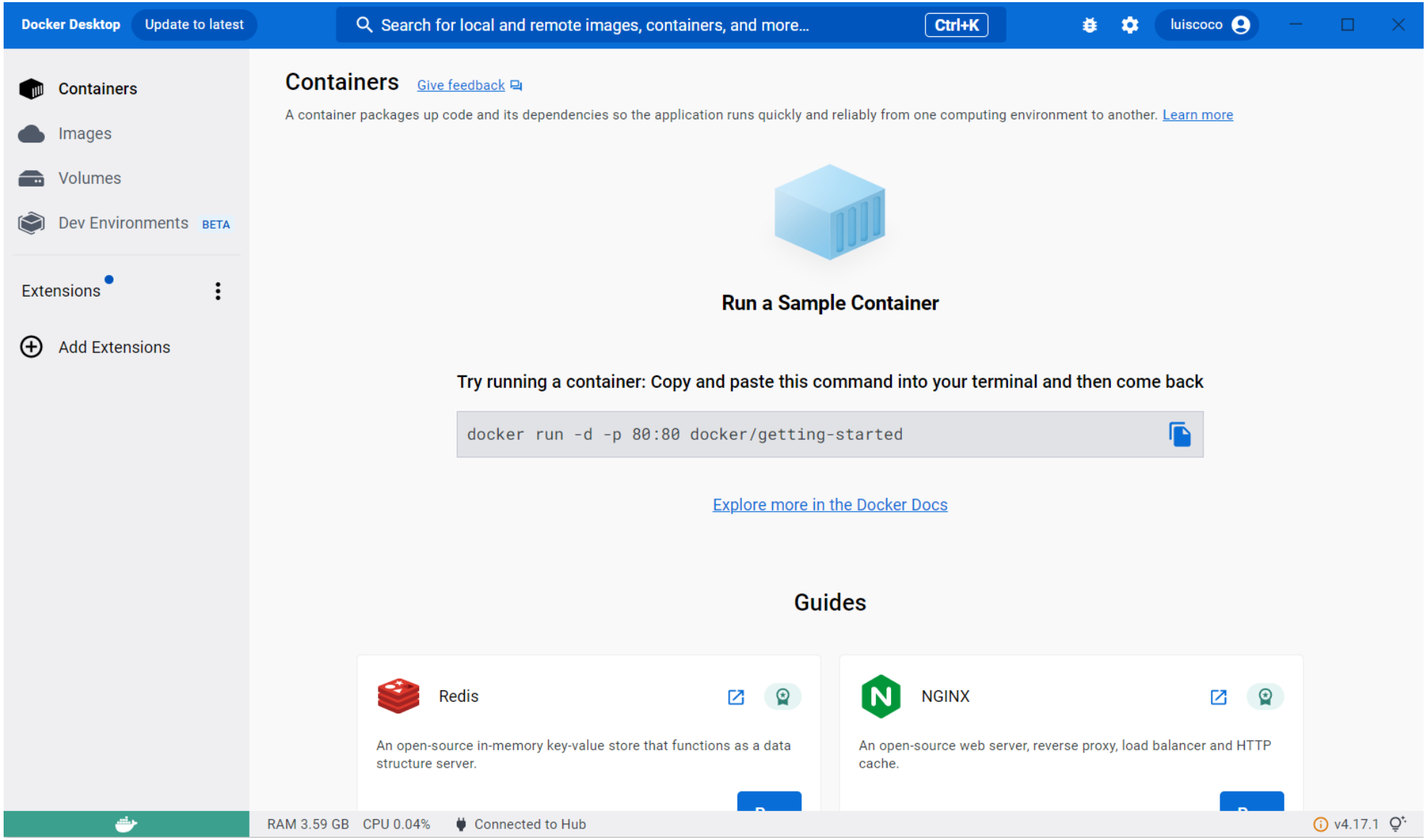
And also we visit the swagger API doc webpage:


localhost:5026/swagger/index.html
Paused
Gmail
YouTube
Maps
Noticias
Traducir
News
Translate
Elastic Container Se...
LattePanda 3 Delta...
Turkey launches TO...
ESP32 SIM800L GS...
Basic-ESP32-Tutori...
GPS Car Tracker Usi...
Swagger
Supported by SMARTBEAR
Select a definition
Azure .NET 8 API v1
Azure .NET 8 API
1.0
OAS3
http://localhost:5026/swagger/v1/swagger.json
Azure .NET 8 API
GET
/weatherforecast
Parameters
Cancel
No parameters
Execute
Clear
Responses
Curl
curl -X 'GET' \
'http://localhost:5026/weatherforecast' \
-H 'accept: application/json'
Request URL
http://localhost:5026/weatherforecast

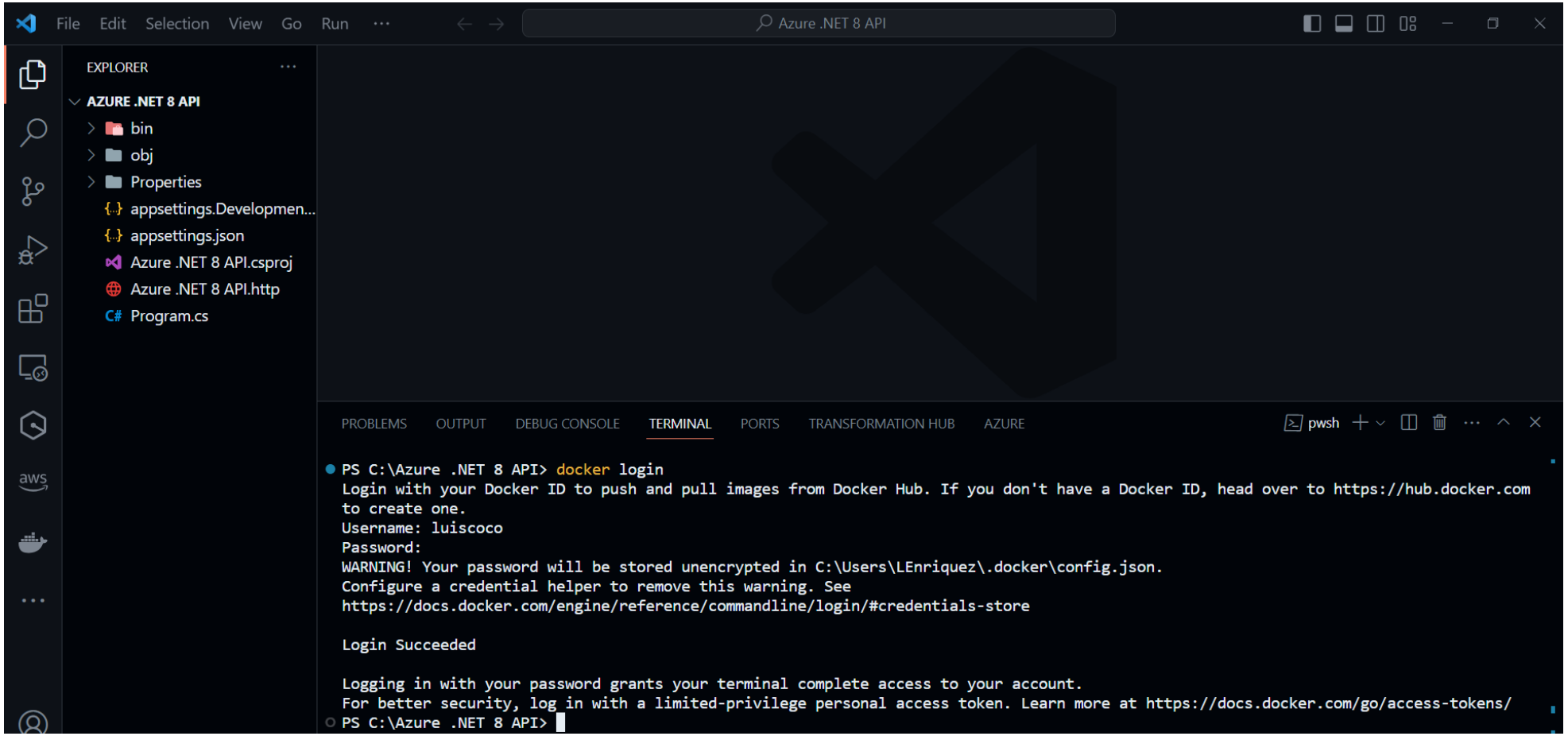


3. Create the docker image and we push in Azure ACR

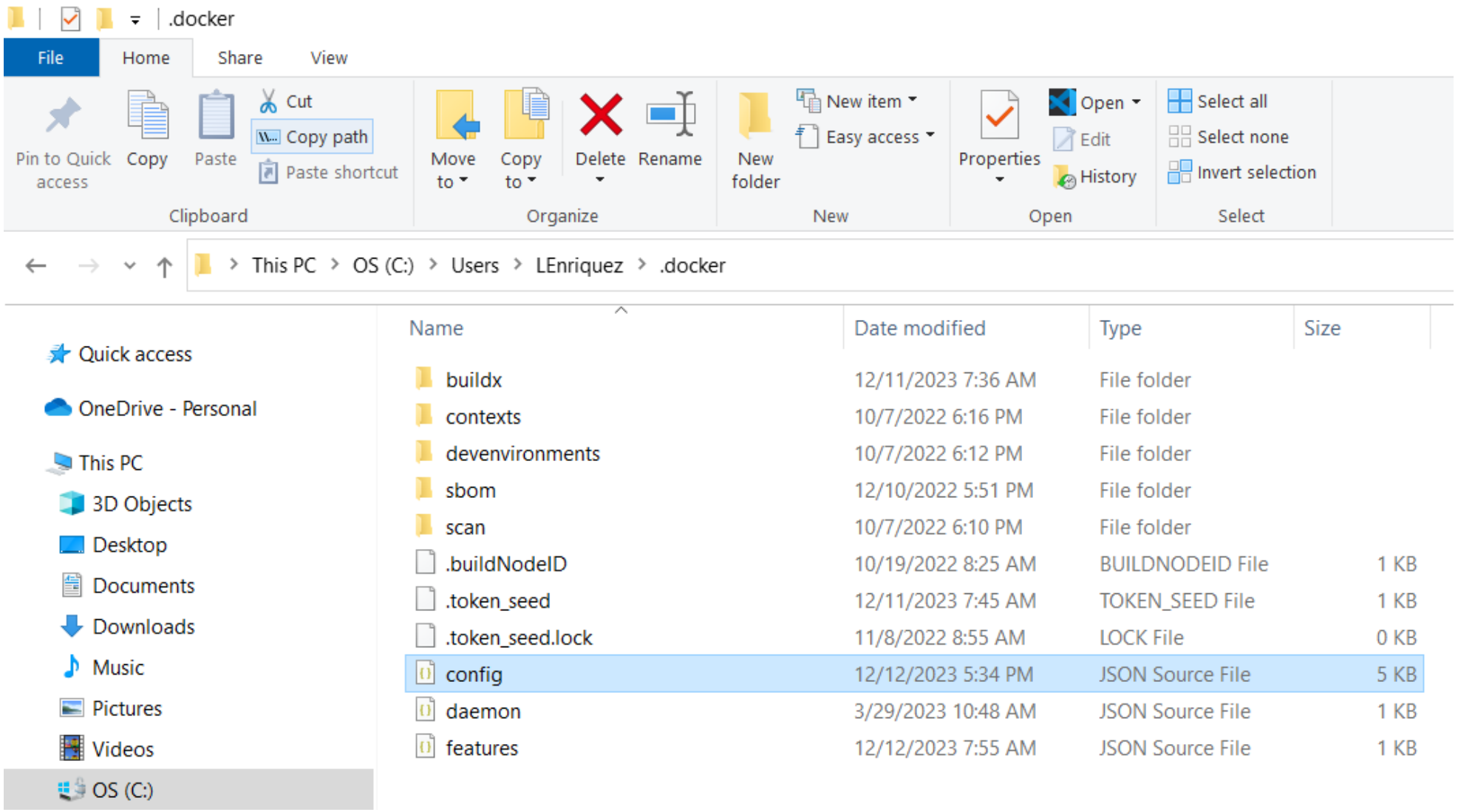
IMPORTANT! We first have to run **Docker Desktop**



Then we login in docker



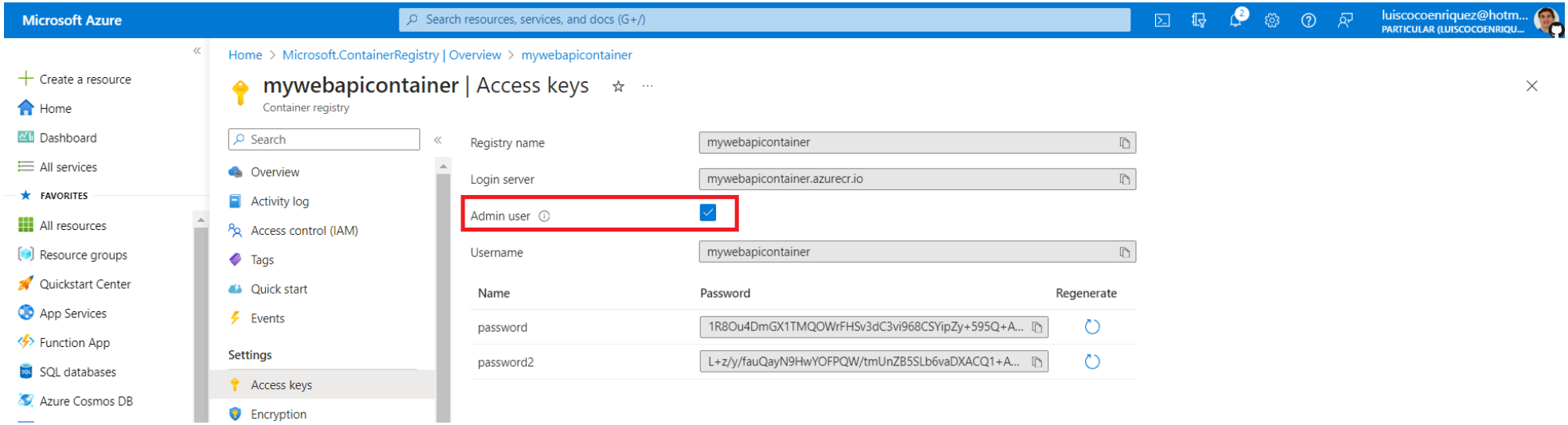
If we want to reset the docker configuration, go to this path and delete the config.json file and then run the above command **docker login**



Now we login in Azure CLI

```
az login
```

We go to the Azure Portal and we activate the admin user

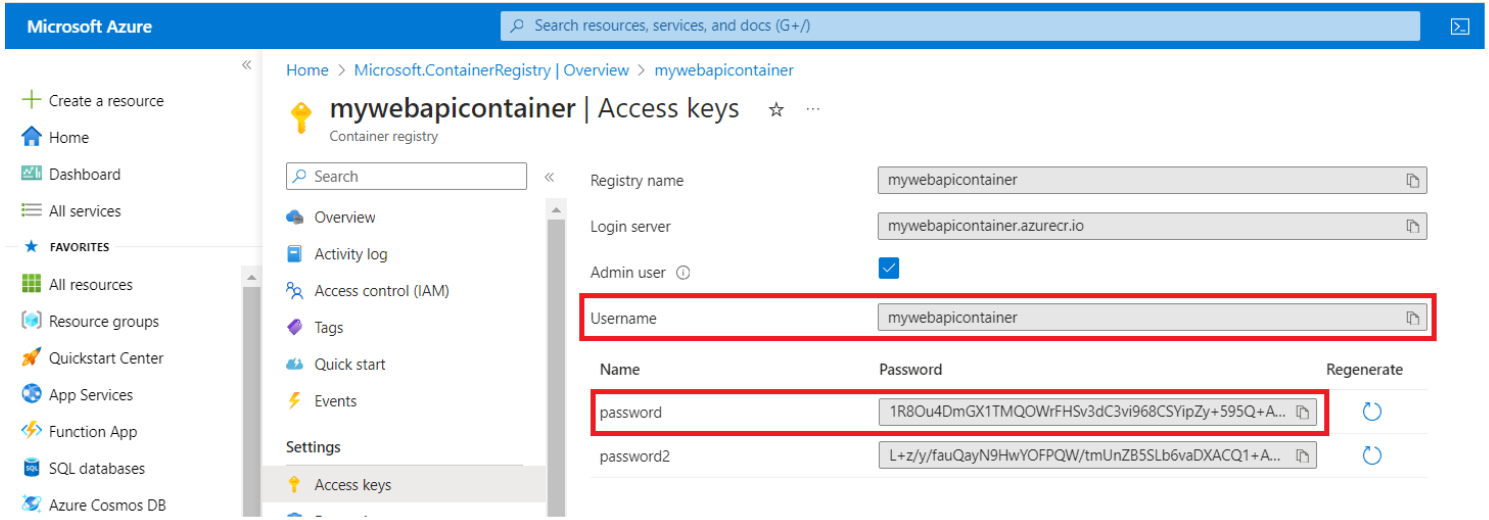


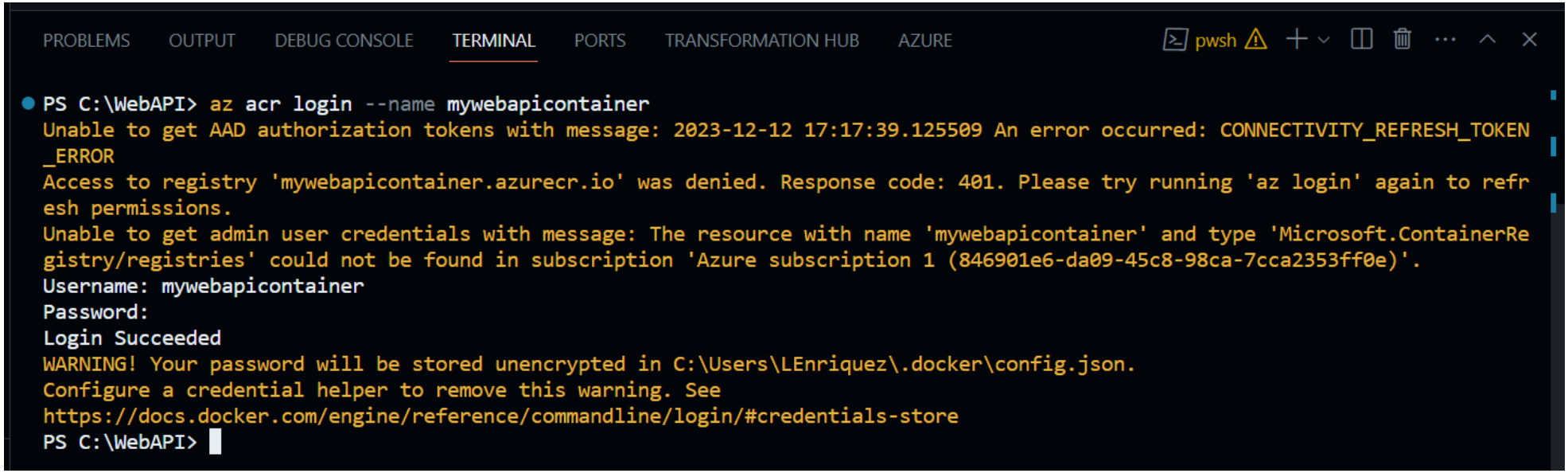
or we can activate the admin user with this command:

```
az acr update --name mywebapicontainer --resource-group myRG --admin-enabled true
```

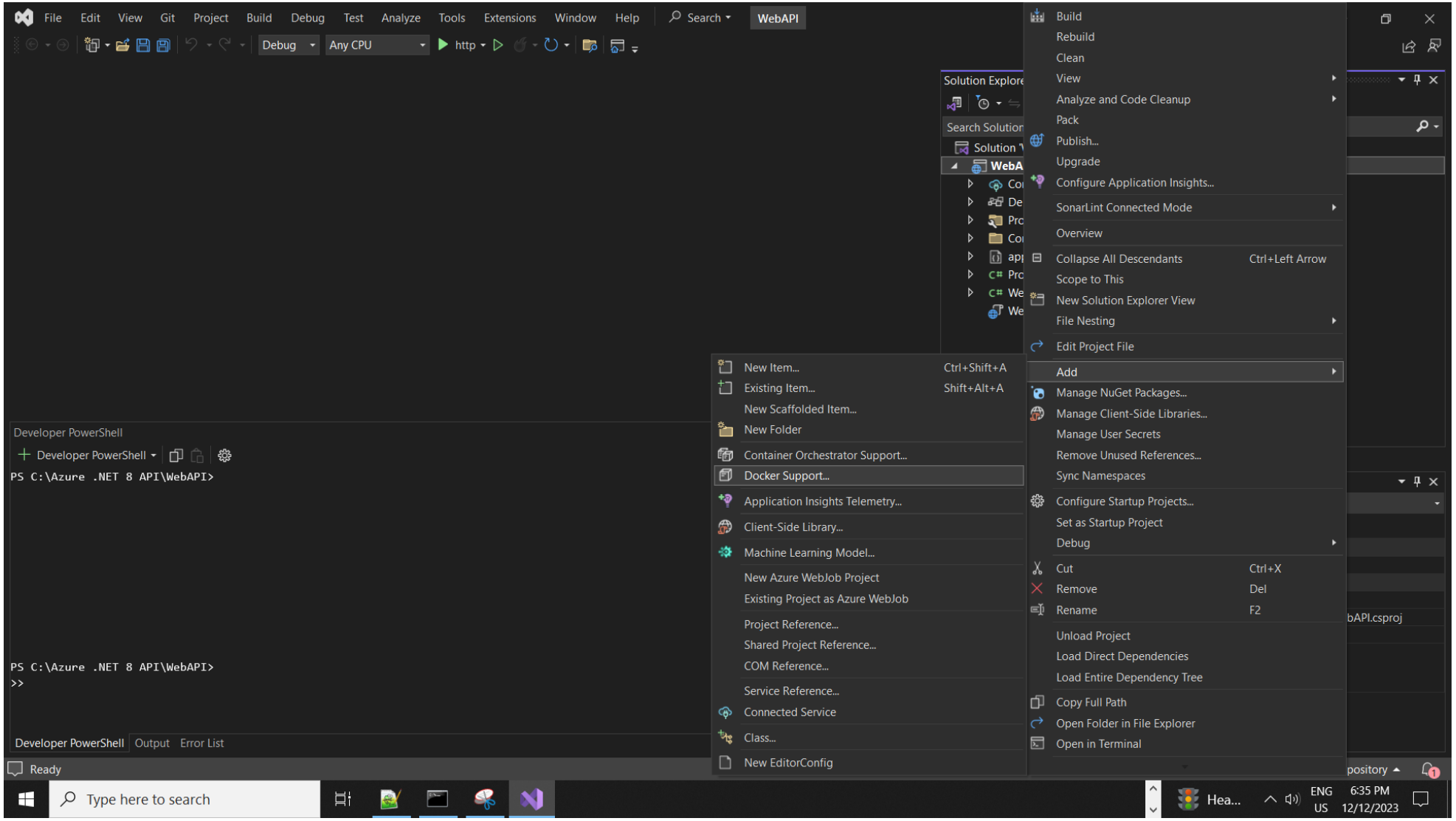
Then we login in the Azure ACR and set the username and password in the admin user page

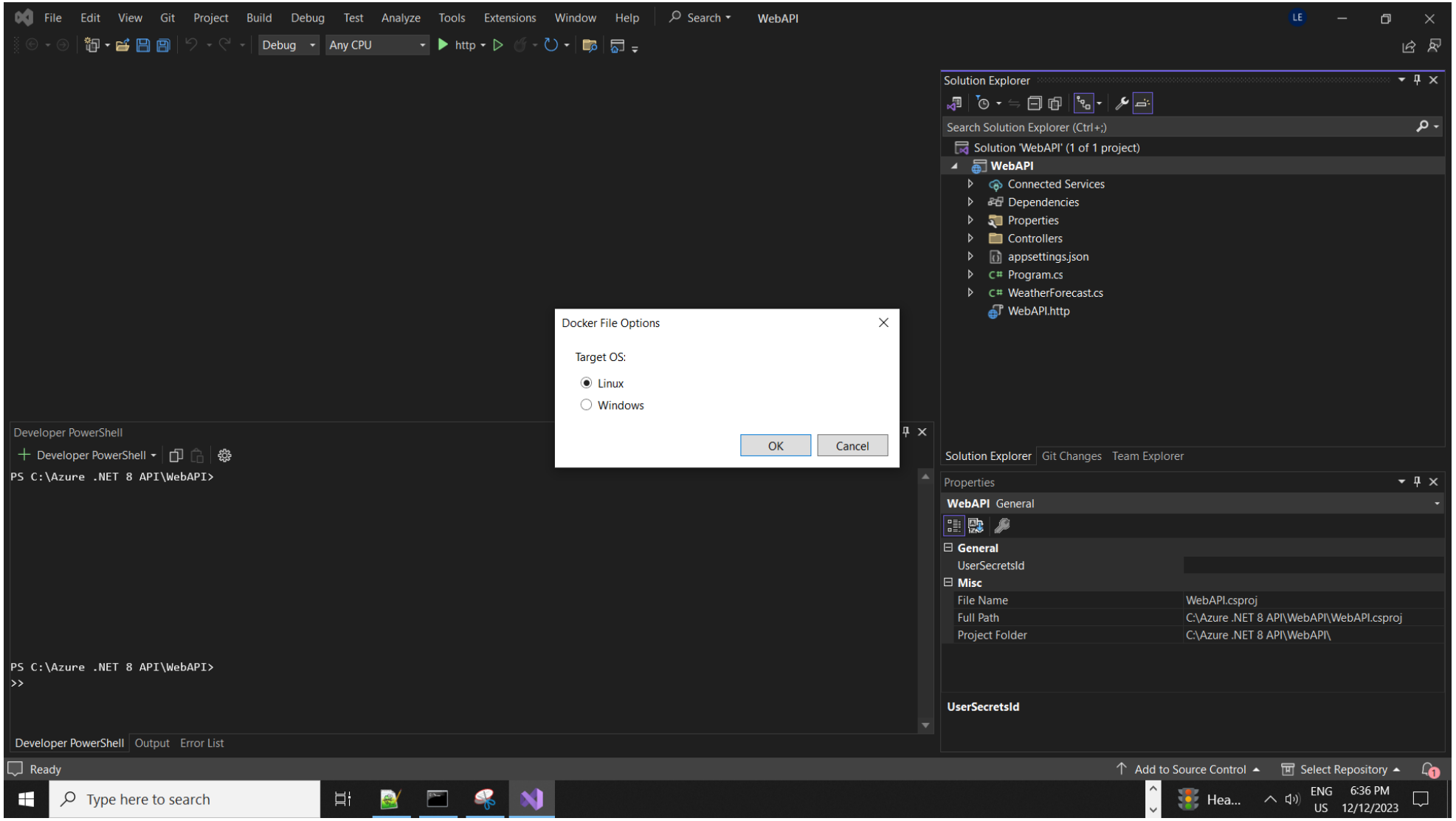
```
az acr login --name mywebapicontainer
```





To automatically create the **Dockerfile** we add docker support to out application


File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help
Search
WebAPI
Debug
Any CPU
http
Solution Explorer
Search Solution
Developer PowerShell
Developer PowerShell
PS C:\Azure .NET 8 API\WebAPI>
PS C:\Azure .NET 8 API\WebAPI>
>>
Developer PowerShell Output Error List
Ready
Build
Rebuild
Clean
View
Analyze and Code Cleanup
Pack
Publish...
Upgrade
Configure Application Insights...
SonarLint Connected Mode
Overview
Collapse All Descendants Ctrl+Left Arrow
Scope to This
New Solution Explorer View
File Nesting
Edit Project File
Add
Manage NuGet Packages...
Manage Client-Side Libraries...
Manage User Secrets
Remove Unused References...
Sync Namespaces
Configure Startup Projects...
Set as Startup Project
Debug
Cut Ctrl+X
Remove Del
Rename F2
Unload Project
Load Direct Dependencies
Load Entire Dependency Tree
Copy Full Path
Open Folder in File Explorer
Open in Terminal
New Item... Ctrl+Shift+A
Existing Item... Shift+Alt+A
New Scaffolded Item...
New Folder
Container Orchestrator Support...
Docker Support...
Application Insights Telemetry...
Client-Side Library...
Machine Learning Model...
New Azure WebJob Project
Existing Project as Azure WebJob
Project Reference...
Shared Project Reference...
COM Reference...
Service Reference...
Connected Service
Class...
New EditorConfig
bAPI.csproj
Type here to search
ENG US
6:35 PM 12/12/2023



This is the dockerfile generated by Visual Studio

```
#See https://aka.ms/customizecontainer to learn how to customize your debug container and how Visual Studio uses this Dockerfile

FROM mcr.microsoft.com/dotnet/aspnet:7.0 AS base
WORKDIR /app
EXPOSE 80
```

```
EXPOSE 443

FROM mcr.microsoft.com/dotnet/sdk:7.0 AS build
ARG BUILD_CONFIGURATION=Release
WORKDIR /src
COPY ["WebAPIdotNet7.csproj", "."]
RUN dotnet restore "./././WebAPIdotNet7.csproj"
COPY . .
WORKDIR "/src/."
RUN dotnet build "./WebAPIdotNet7.csproj" -c $BUILD_CONFIGURATION -o /app/build

FROM build AS publish
ARG BUILD_CONFIGURATION=Release
RUN dotnet publish "./WebAPIdotNet7.csproj" -c $BUILD_CONFIGURATION -o /app/publish /p:UseAppHost=false

FROM base AS final
WORKDIR /app
COPY --from=publish /app/publish .
ENTRYPOINT ["dotnet", "WebAPIdotNet7.dll"]
```

4. We build the Docker Image

```
docker build -t mywebapicontainer.azurecr.io/mywebapicontainer:v1 .
```

5. We push the Docker image to the Azure ACR

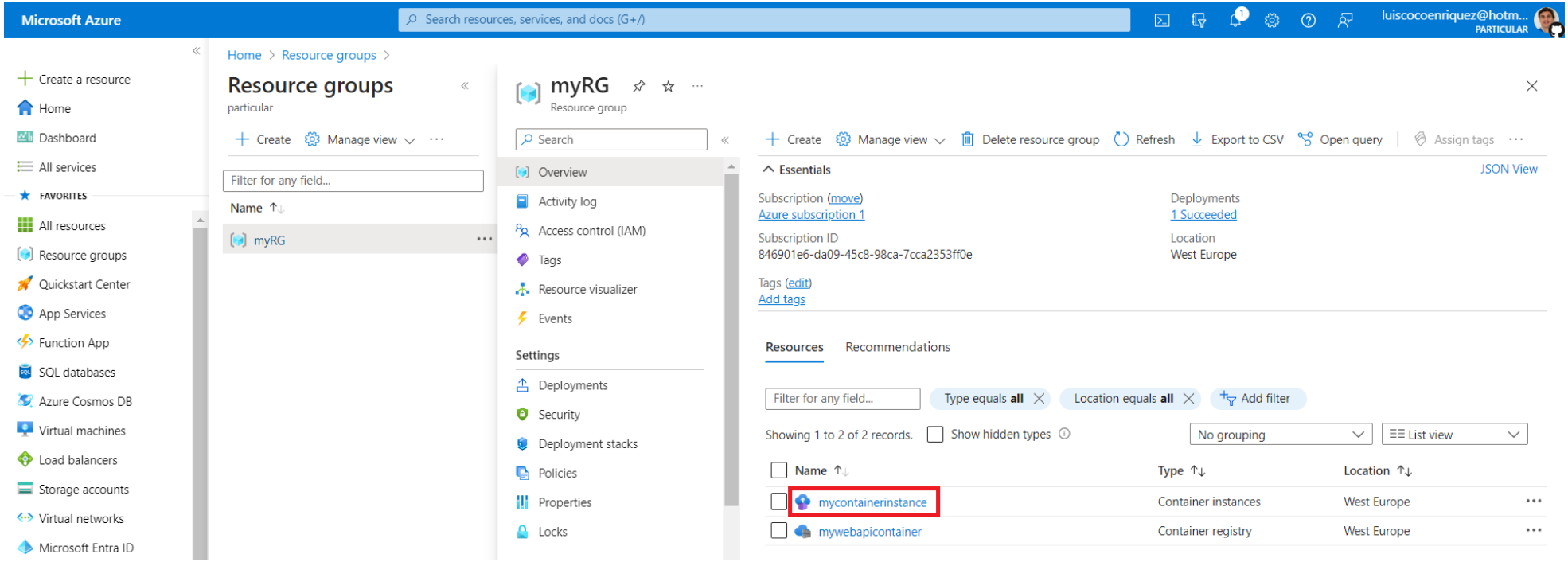
```
docker push mywebapicontainer.azurecr.io/mywebapicontainer:v1
```

5. We create the Azure Container Instance (ACI) and we deploy it

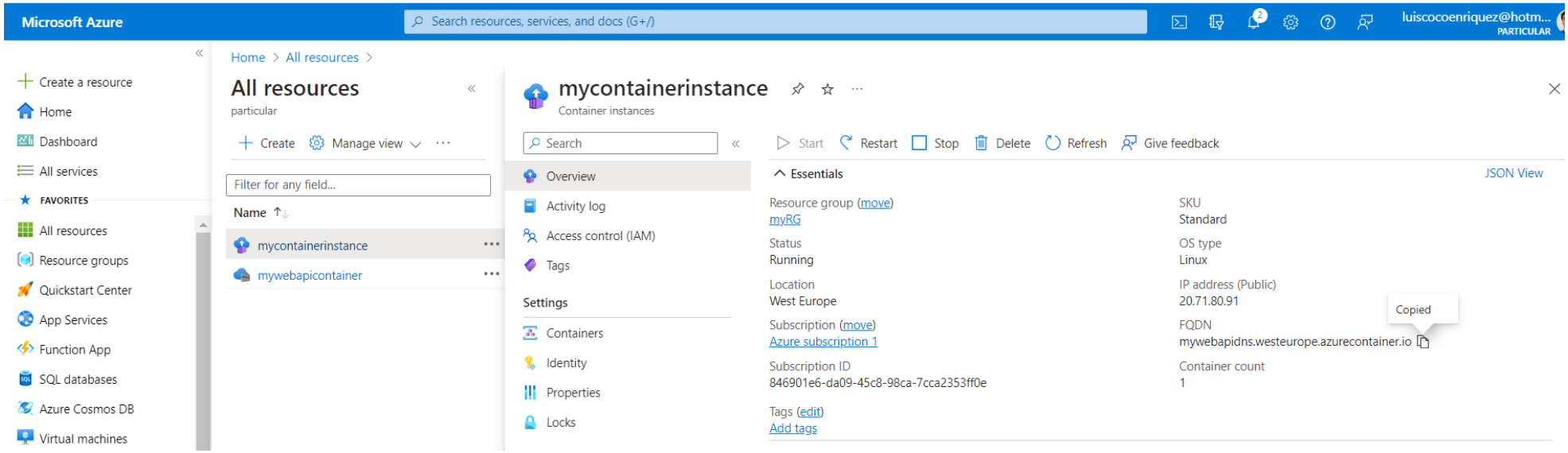
```
az container create --resource-group myRG --name mycontainerinstance --image mywebapicontainer.azurecr.io/mywebapicontainer:v1 --
```

6. In Azure Portal we navigate to Azure ACI

We navigate to the ACI continer in Azure Portal



We copy the DNS and past it in the internet web browser: http://mywebapidns.westeurope.azurecontainer.io/weatherforecast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luiscocoenriquez@hotm...
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All resources
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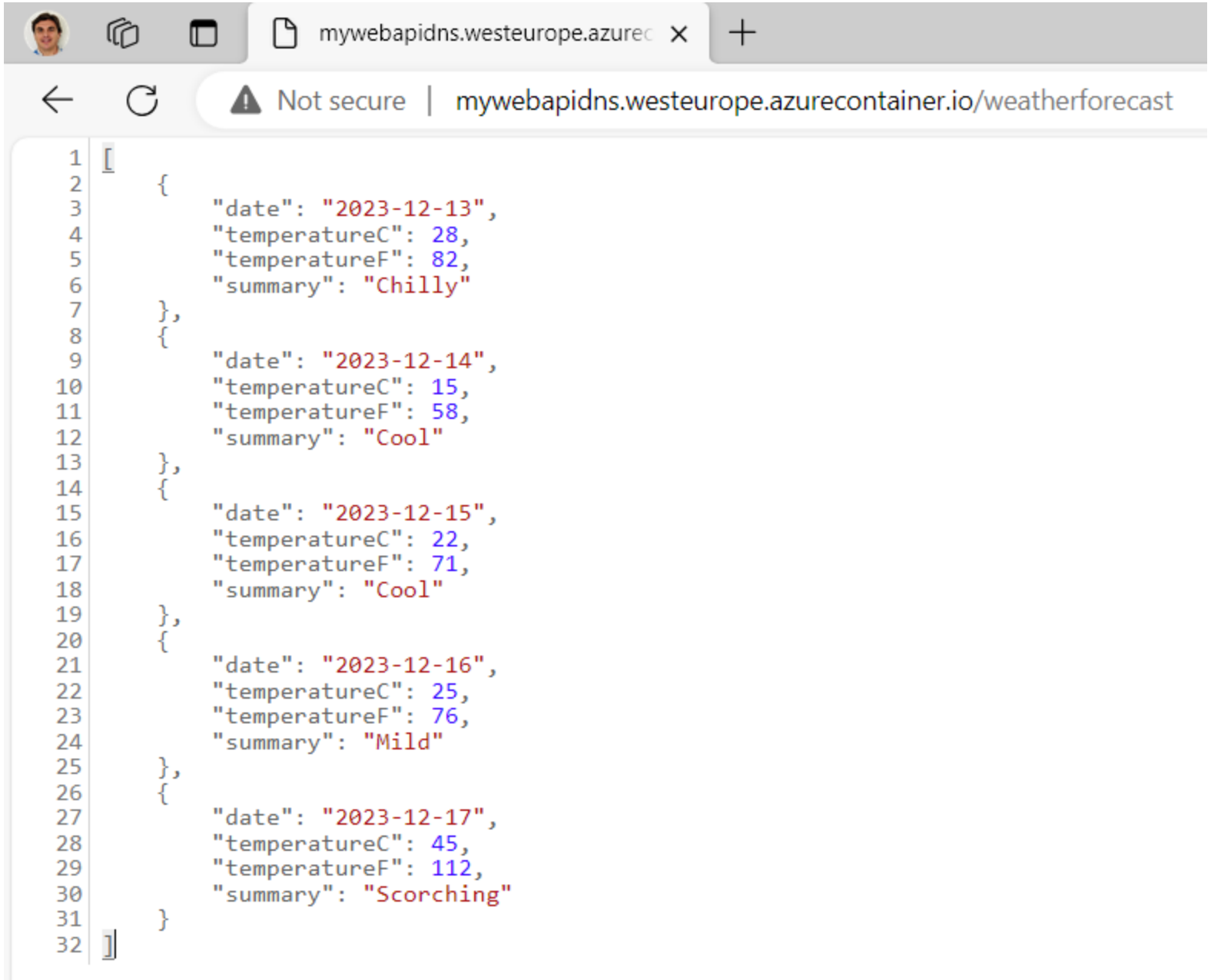
Manage view
Filter for any field...
Name
mycontainerinstance
mywebapicontainer
mycontainerinstance
Container instances
Search
Overview
Activity log
Access control (IAM)
Tags
Settings
Containers
Identity
Properties
Locks
Start
Restart
Stop
Delete
Refresh
Give feedback
Essentials
JSON View
Resource group (move)
myRG
Status
Running
Location
West Europe
Subscription (move)
Azure subscription 1
Subscription ID
846901e6-da09-45c8-98ca-7cca2353ff0e
Tags (edit)
Add tags
SKU
Standard
OS type
Linux
IP address (Public)
20.71.80.91
Copied
FQDN
mywebapidns.westeurope.azurecontainer.io
Container count
1


mywebapidns.westeurope.azurec
Not secure | mywebapidns.westeurope.azurecontainer.io/weatherforecast
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"temperatureF": 82,
"summary": "Chilly"
},
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"temperatureF": 58,
"summary": "Cool"
},
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"temperatureC": 22,
"temperatureF": 71,
"summary": "Cool"
},
{
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"temperatureF": 76,
"summary": "Mild"
},
{
"date": "2023-12-17",
"temperatureC": 45,
"temperatureF": 112,
"summary": "Scorching"
}
]