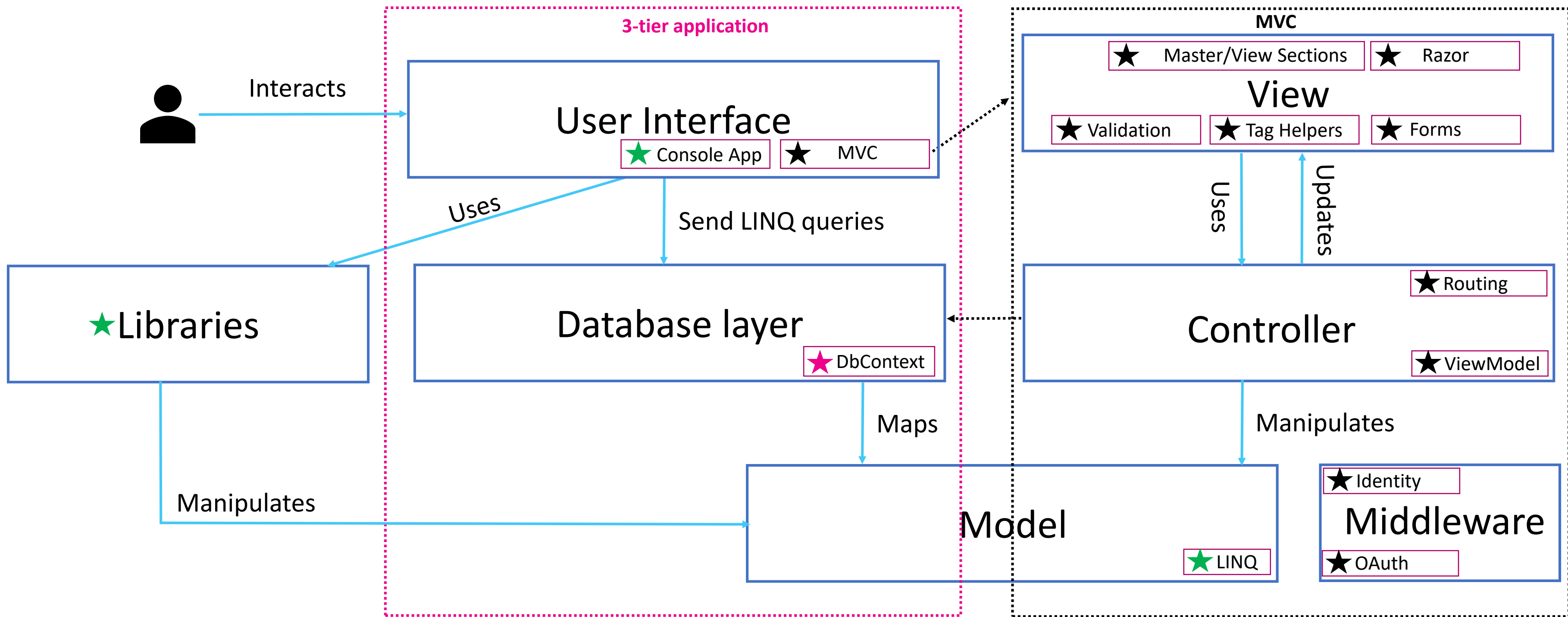






# Entity Framework

S4 - .NET Technology CCCP-IBC



## Roadmap .NET CCCP

**howest**  
hogeschool

# ENTITY FRAMEWORK

# ORM

# OBJECT RELATIONAL MAPPING

# USING OBJECTS TO CONSUME THE DATABASE

# ENTITY FRAMEWORK



LINQ

# APPROACHES

- **database first** (use existing database)
- **code first** (use model classes to create database)





# DATABASE FIRST



SO WE NEED A  
DATABASE

# DATABASE

- **SQL Server (Express)**
- **Northwind.sql**

**SQL SERVER (EXPRESS)**

# SQL Server (Express) - download

Of download een gratis speciale editie



## Developer

SQL Server 2019 Developer is een volledig functionele gratis editie, die wordt gelicentieerd voor gebruik als ontwikkel- en testdatabase in een niet-productieomgeving.

Download nu ↓



## Express

SQL Server 2019 Express is een gratis editie van SQL Server. Deze editie is ideaal om applicaties voor desktops, het web en kleine servers te ontwikkelen en in je productieomgeving te plaatsen.

Download nu ↓

<https://www.microsoft.com/nl-be/sql-server/sql-server-downloads>

# SQL Server (Express) - install

<https://www.sqlshack.com/how-to-install-sql-server-express-edition/>

**IMPORT NORTHWIND.SQL**



A man with dark hair and a mustache, wearing a blue button-down shirt and a red tie, is looking directly at the camera with a serious expression. He is holding a baby in his arms. The baby is wearing a red onesie and has its arms outstretched. The background is a dimly lit room with a bookshelf filled with books. The text "DEMO" is overlaid in large white letters, and "import database" is overlaid in smaller white letters below it.

DEMO

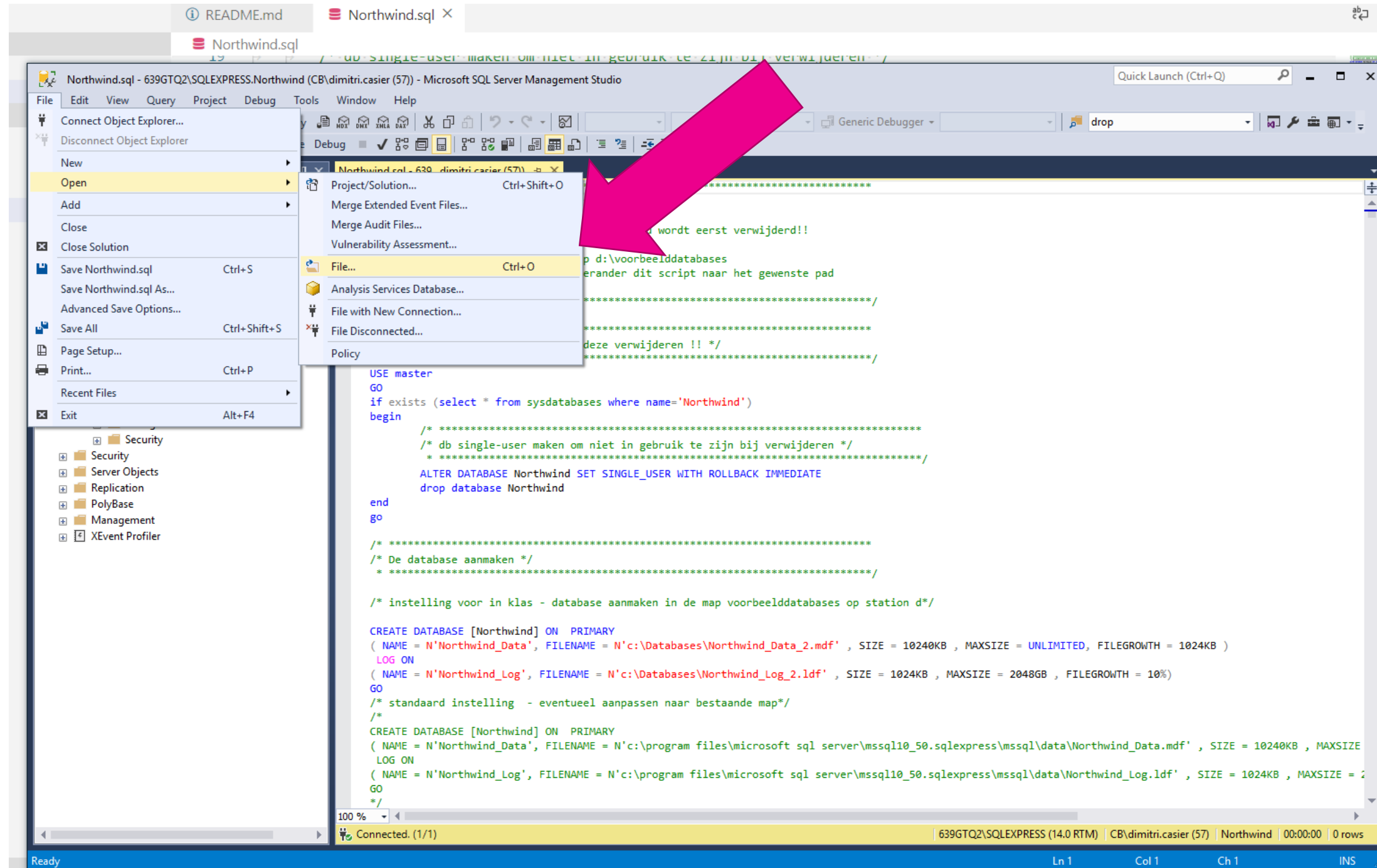
import database



# Northwind.sql - download

<https://op-gitlab.howest.be/IT/2019-2020/s4-.net-technology/cccp-ibc/topics/entity-framework/databases>

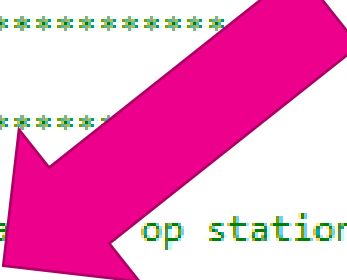
# Northwind.sql - import



# Northwind.sql - import

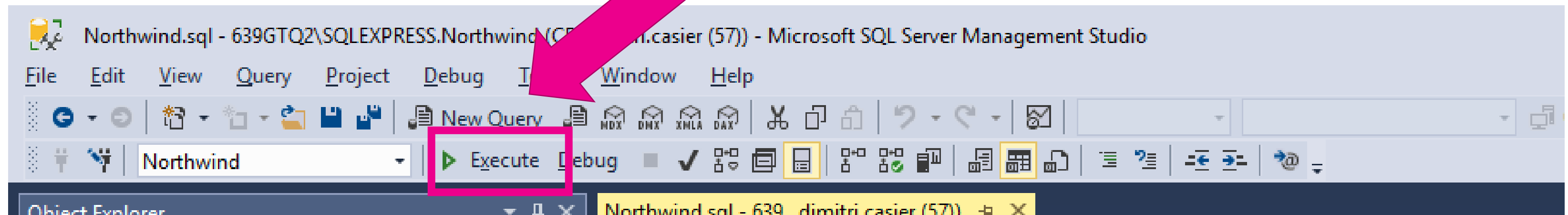
CHANGE THIS TO YOUR PATH!

```
/* *****  
/* De database aanmaken */  
* *****  
  
/* instelling voor in klas - database aanmaken in de map voorbeelddata op station d*/  
  
CREATE DATABASE [Northwind] ON PRIMARY  
 ( NAME = N'Northwind_Data', FILENAME = N'c:\Databases\Northwind_Data_2.mdf' , SIZE = 10240KB , MAXSIZE = UNLIMITED, FILEGROWTH = 1024KB )  
 LOG ON  
 ( NAME = N'Northwind_Log', FILENAME = N'c:\Databases\Northwind_Log_2.ldf' , SIZE = 1024KB , MAXSIZE = 2048GB , FILEGROWTH = 10%)  
GO  
/* standaard instelling - eventueel aanpassen naar bestaande map*/  
/*
```



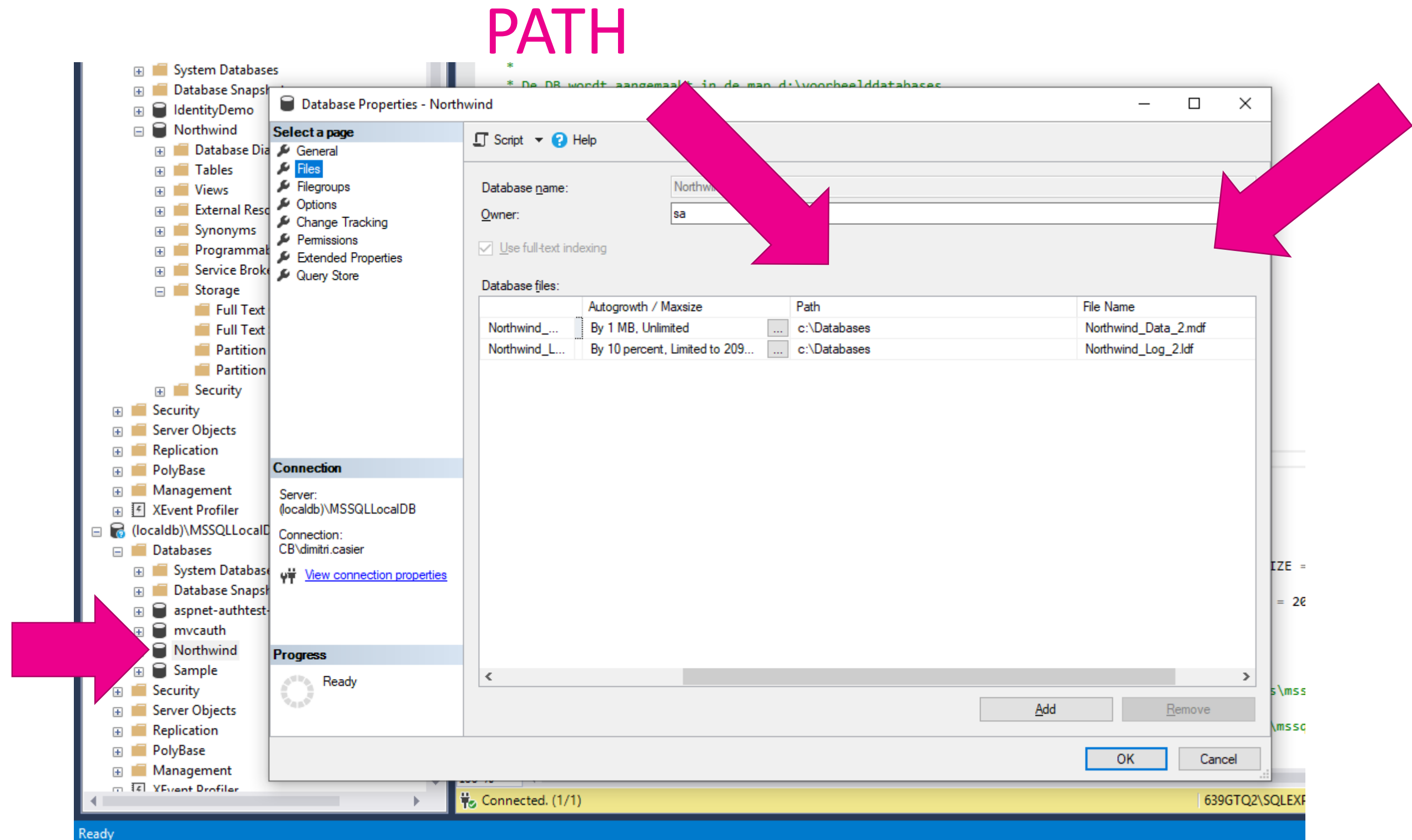
# Northwind.sql - import

HIT THE BUTTON!!!

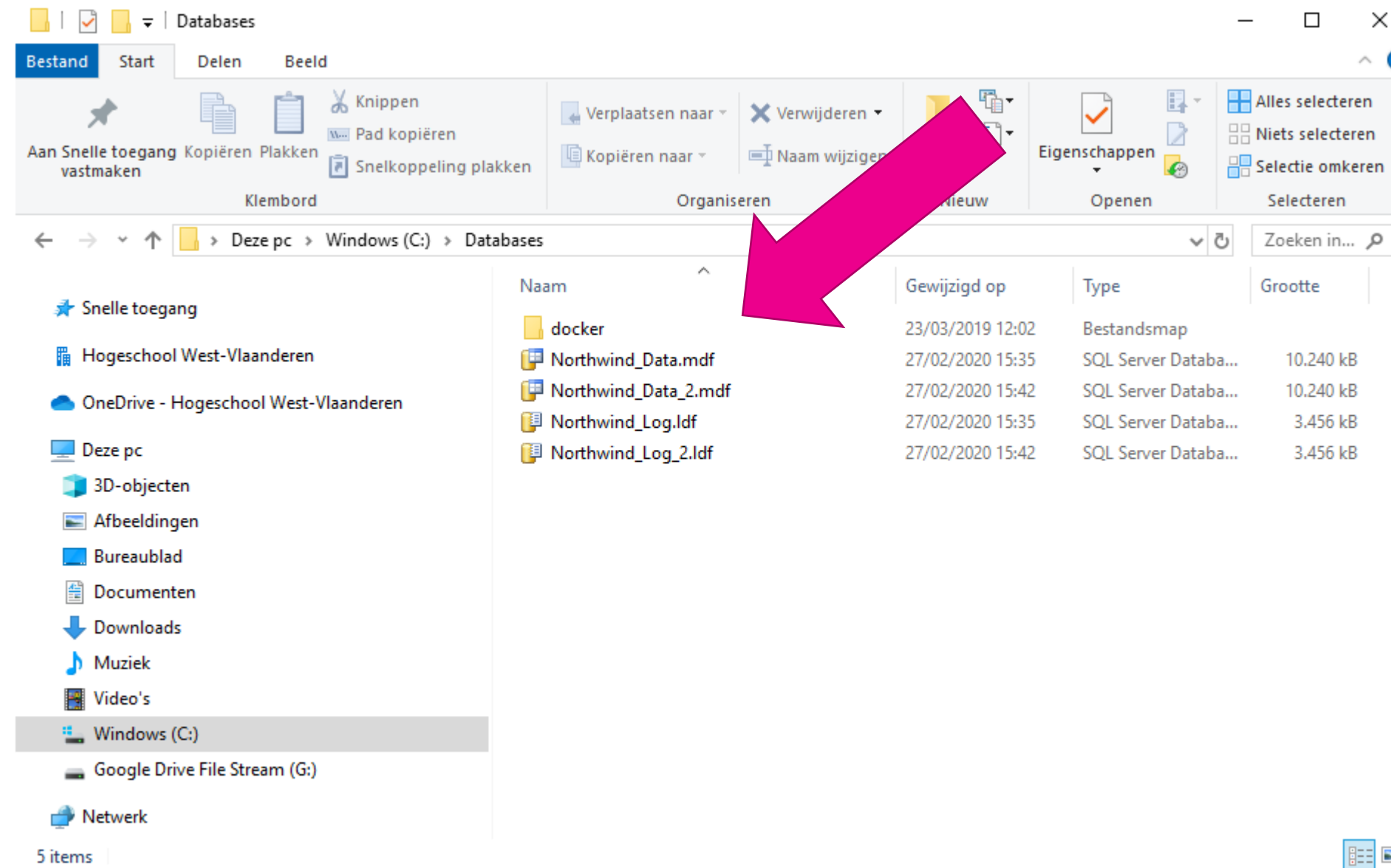


# Northwind.sql - import

1. RMC
2. properties



# Northwind.sql - import





A woman with shoulder-length brown hair, wearing a dark blue short-sleeved top and a gold necklace, stands in a modern kitchen. She has a frustrated or exasperated expression on her face and her hands are raised in the air, palms facing up. The kitchen features light-colored wooden cabinets, a black built-in oven, and a stainless steel refrigerator. On the countertop to her right, there are several glass jars containing various dry goods. In the foreground, a small portion of a dish is visible on the left, and a metal pot is on the right.

**Easy, peasy, lemon squeezy**

# SCAFFOLD ENTITY FRAMEWORK



# PREREQUISITES

**.NET Core runtimes installed** (dotnet --info)

Microsoft.**AspNetCore.App 3.1.2** [C:\Program Files\dotnet\shared\Microsoft.AspNetCore.App]

Microsoft.**NETCore.App 3.1.2** [C:\Program Files\dotnet\shared\Microsoft.NETCore.App]

Microsoft.**WindowsDesktop.App 3.1.2** [C:\Program Files\dotnet\shared\Microsoft.WindowsDesktop.App]

# PREREQUISITES

**.NET**  
Core

**.NET**  
Framework

## .NET Core 3.1

.NET Core is a cross-platform version of .NET for building websites, services, and console apps.

Run Apps ⓘ

[Download .NET Core Runtime](#)

Build Apps ⓘ

[Download .NET Core SDK](#)

Advanced ⓘ

[All .NET Core downloads...](#)

## .NET Framework 4.8

.NET Framework is a Windows-only version of .NET for building any type of app that runs on Windows.

Run Apps ⓘ

[Download .NET Framework Runtime](#)

Build Apps ⓘ

[Download .NET Framework Dev Pack](#)

Advanced ⓘ

[All .NET Framework downloads...](#)

# PREREQUISITES

`dotnet tool install --global dotnet-ef`



DEMO

scaffold entity framework



**WE USE**

**dotnet ef dbcontext scaffold**

**NOT**

**Scaffold-DbContext**

# Scaffold entity framework (every time)

- dotnet new <app-type>
- dotnet add package Microsoft.EntityFrameworkCore.SqlServer
- dotnet add package Microsoft.EntityFrameworkCore.Design
- dotnet ef dbcontext scaffold "Data Source=<YOURSQLEXPRESS>;Initial Catalog=<database>;Integrated Security=True;" Microsoft.EntityFrameworkCore.SqlServer --output-dir <models-folder>



# Scaffold entity framework

```
dotnet ef dbcontext scaffold connectionstring library --output-dir folder
```

dotnet ef dbcontext scaffold **connectionstring** library --output-dir folder

"Data Source=639GTQ2\SQLEXPRESS;Initial Catalog=northwind;Integrated Security=True;"

Sql server name

databasename

login type



# AUTHENTICATION:

- `Trusted_Connection=True;`
- `Persist Security Info=False;User ID=sa;Password=Password123;`

dotnet ef dbcontext scaffold **connectionstring** **library** --output-dir **folder**



Microsoft.EntityFrameworkCore.SqlServer

dotnet ef dbcontext scaffold **connectionstring library** --output-dir **folder**



Library\Models or Models

northwind\_app.csproj

```
1 <Project Sdk="Microsoft.NET.Sdk">
2
3   <PropertyGroup>
4     <OutputType>Exe</OutputType>
5     <TargetFramework>netcoreapp3.1</TargetFramework>
6   </PropertyGroup>
7
8   <ItemGroup>
9     <PackageReference Include="Microsoft.EntityFrameworkCore.Design" Version="3.1.2">
10       <IncludeAssets>runtime; build; native; contentfiles; analyzers; buildtransitive</IncludeAssets>
11       <PrivateAssets>all</PrivateAssets>
12     </PackageReference>
13     <PackageReference Include="Microsoft.EntityFrameworkCore.SqlServer" Version="3.1.2" />
14     <PackageReference Include="northwinddata" Version="1.0.2" />
15   </ItemGroup>
16
17 </Project>
18
```

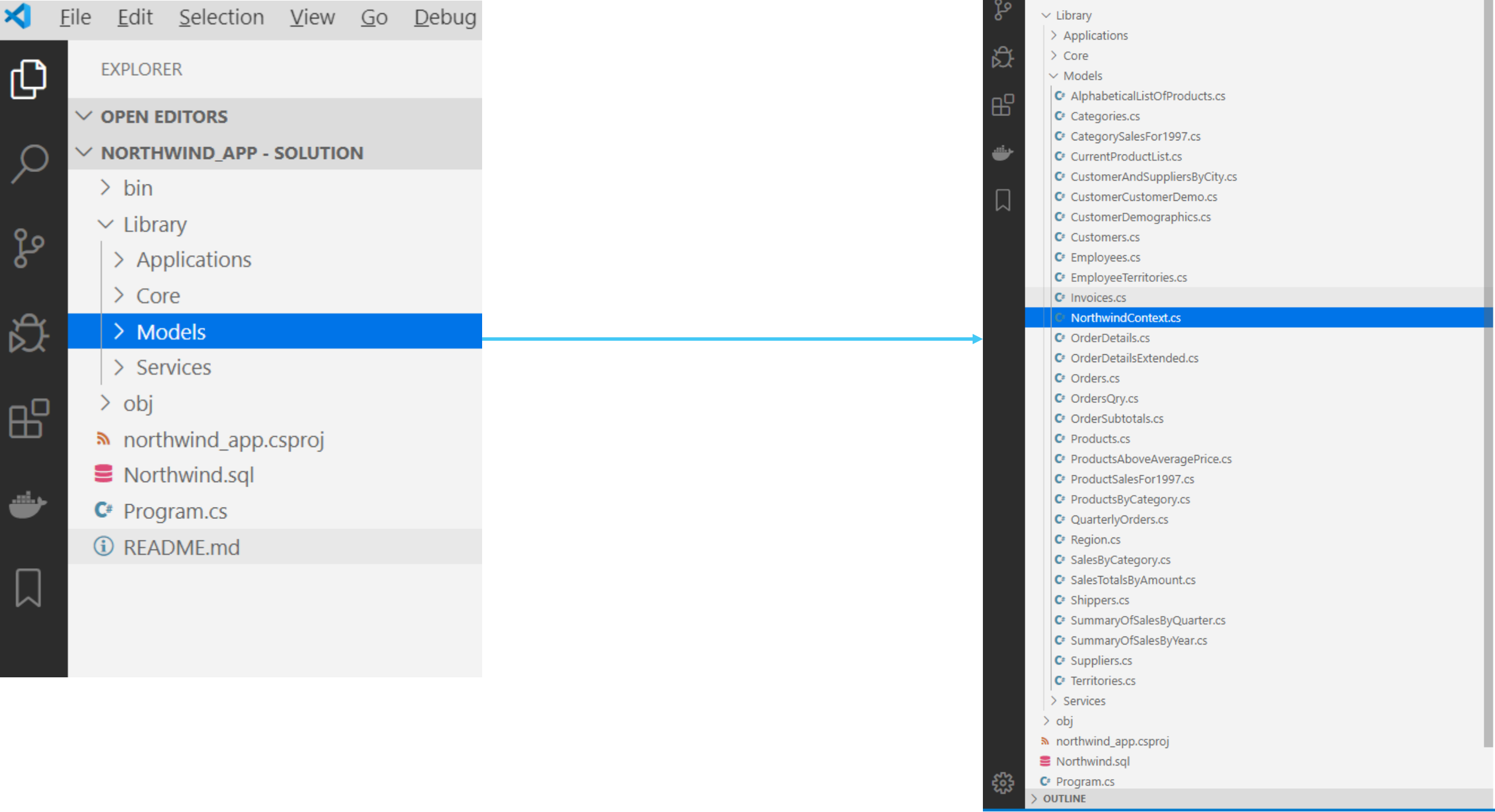
dotnet add package Microsoft.EntityFrameworkCore.Design



dotnet add package Microsoft.EntityFrameworkCore.SqlServer



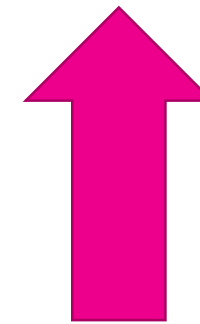
dotnet ef dbcontext scaffold **connectionstring library** --output-dir **folder**



C# NorthwindContext.cs X

Library > Models > C# NorthwindContext.cs

```
48
49 .....protected override void OnConfiguring(DbContextOptionsBuilder optionsBuilder)
50 .....{
51 .....    if (!optionsBuilder.IsConfigured)
52 .....    {
53 warning To protect potentially sensitive information in your connection string, you should move it out of source code. See http://go.microsoft.co
54 .....    optionsBuilder.UseSqlServer("Data Source=639GTQ2\\SQLEXPRESS;Initial Catalog=Northwind;Trusted_Connection=True;");
55 .....
56 .....    }
57 .....}
58
```



dotnet ef dbcontext scaffold **connectionstring library** --output-dir **folder**

**USE ENTITY FRAMEWORK**

# DBContext - READ

```
NorthwindContext context = new NorthwindContext();
```

```
public Categories GetCategory(int id){  
    var results = context.Categories.Where(c => c.CategoryId == id);  
    if(results.Count() == 0){  
        return null;  
    }  
    return results.First();  
}
```



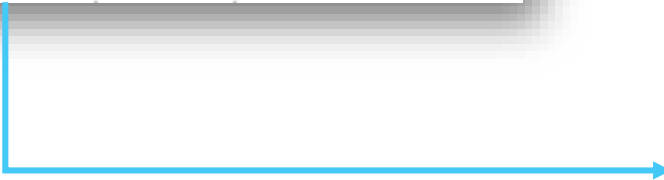
# DBContext - INSERT

```
NorthwindContext db = new NorthwindContext();
```

```
Customers newCustomer = new Customers()  
{  
    CustomerId="HOW",  
    CompanyName = "Howest",  
    Address = "Rijsselstraat 5",  
    ContactName = "Mr. Butterfly",  
    ContactTitle = "CEO",  
    Country="Belgium"  
};  
  
db.Customers.Add(newCustomer);  
db.SaveChanges();
```

# DbContext - UPDATE


```
NorthwindContext db = new NorthwindContext();
```



```
Customers updCustomer = db.Customers  
    .First(c => c.CompanyName == "Howest");  
  
updCustomer.CompanyName = "Howest, DE hogeschool";  
updCustomer.Country += ", W-VL";  
  
db.Update(updCustomer);  
db.SaveChanges();
```

# DBContext - DELETE

```
NorthwindContext db = new NorthwindContext();
```



```
Customers delCustomer = db.Customers  
    .FirstOrDefault(c => c.CompanyName.Contains("Howest"));  
if(delCustomer != null)  
{  
    db.Customers.Remove(delCustomer);  
    db.SaveChanges();  
}
```