**Notes for Blazor (WebAssembly)**

1. Lifecycle of a Blazor Component (check **MoviesListGen.razor** component under BlazorMovies.Client\Shared)

* **OnInitialized** and **OnInitializedAsync** (to initialize the component (ex. to get data) after the HTTP request)
* **OnParametersSet** and **OnParametersSetAsync** (triggered any time a parameter is updated)
* **OnAfterRender** and **OnAfterRenderAsync** (triggered after component has been rendered)
* **ShouldRender** (define if a component has to be rendered again after rendering, ex. after the user performs some actions on the UI)
* **StateHasChanged()** to notify a change on the component

1. Dependency Injection refers to supply dependencies of a class from another class (services), and it can be performed using the **@inject** attribute.  
   Defailt services
   * HttpClient for HTTP requests to server
   * IJSRuntime to interact with JavaScript
   * NavigationManager to manage navigation through code

Lifecycle of a service

* Scoped, the service lives within a context (ex. during HTTP request). In the client side, it is like a singleton.
* Singleton
* Transient, different instances are created each time the service is requested

Let us create a new class for services in the client project called **Services.cs**

public class SigletonServices

{

. . . . . .

}

public class TransientServices

{

. . . . . . . . .

}

then we need to configure the DI in the **Program.cs** class in the following way



Then in the component we can inject the instance with

@inject SigletonService singleton  
@inject TransientService transient  
@inject IRepository repo

1. We can separate HTML code from c# code using partial classes, the partial class must have the same name as the component ex. **Counter.razor** and the class must be **Conter.razor.cs**, in this way we have a sort of code-behind, the class must be declared as partial, as following



And the component html will be



In a component it’s possible to invoke a method from JavaScript, ex.

[JSInvokable]

public static async Task<int> GetCurrentCount()

{

return await Task.FromResult(currentCountStatic);

}

And from JavaScript

function dotnetStaticInvokation() {

DotNet.invokeMethodAsync("BlazorMovies.Client", "GetCurrentCount")

.then(result => {

console.log("count from javascript", result);

});

To invoke an instance method the logic s the same it’s important to mark the c# method with the attribute **[JSInvokable]**.

1. **Using Identity Server**
   * DataContext class must inherit from IdentityDbContext   
     public class DataContext : IdentityDbContext //DbContext

Import the namespace from NuGet as

Microsoft.AspNetCore.Identity.EntityFrameworkCore

* + In DataContext make sure under the OnModelCreating to have the line  
    base.OnModelCreating(builder);  
    after the builder.Entity statements otherwise there will be an error during migration.
  + Under Startup.cs in ConfigureServices make sure to add the following lines  
     // Using Identity Server

services.AddIdentity<IdentityUser, IdentityRole>()

.AddEntityFrameworkStores<DataContext>()

.AddDefaultTokenProviders();

* + Finally run the command for a new migrations in order to create the table for IdentityServer. Open the terminal window, make sure to be in the Server folder then run  
    **dotnet ef migrations add IdentityTables** (or **Add-Migration IdentityTables 🡸** under Package Manager Console)  
    Then run  
    **dotnet ef database update** (or **Update-Database 🡸** under Package Manager Console)
  + To update db tools:  
    **dotnet tool install --global dotnet-ef --version 3.1.5**

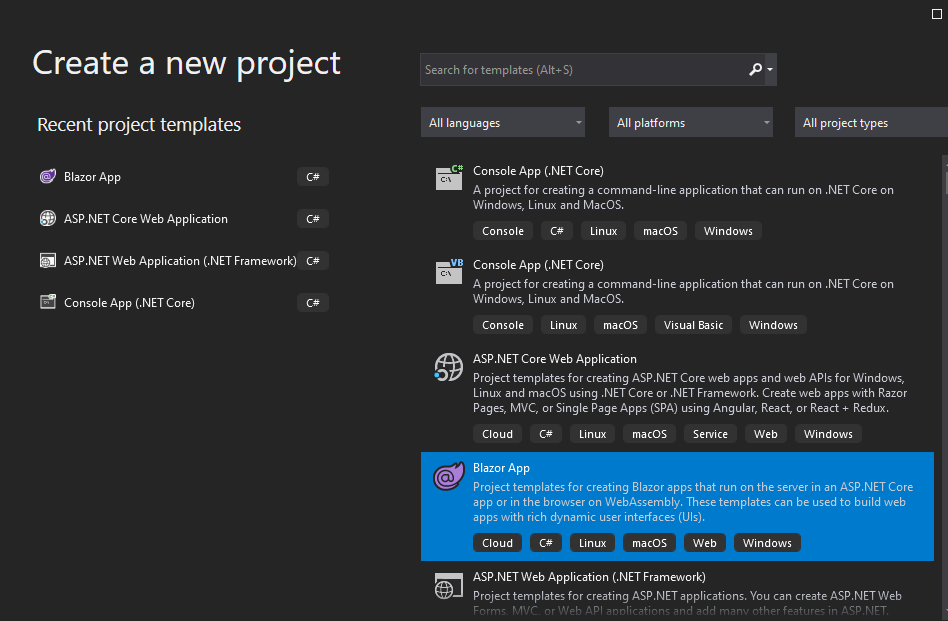
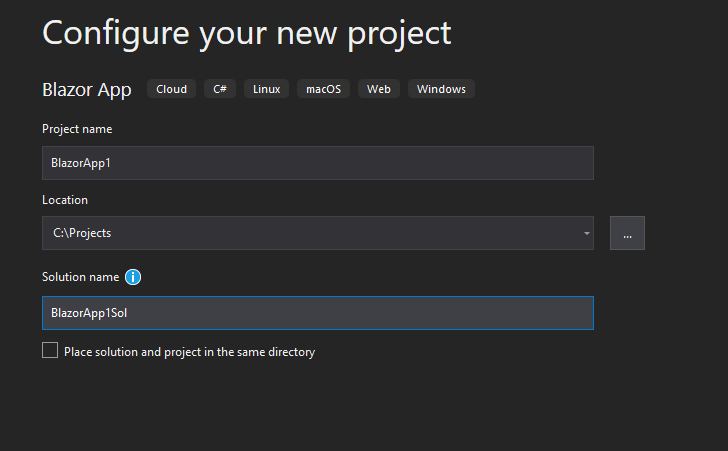
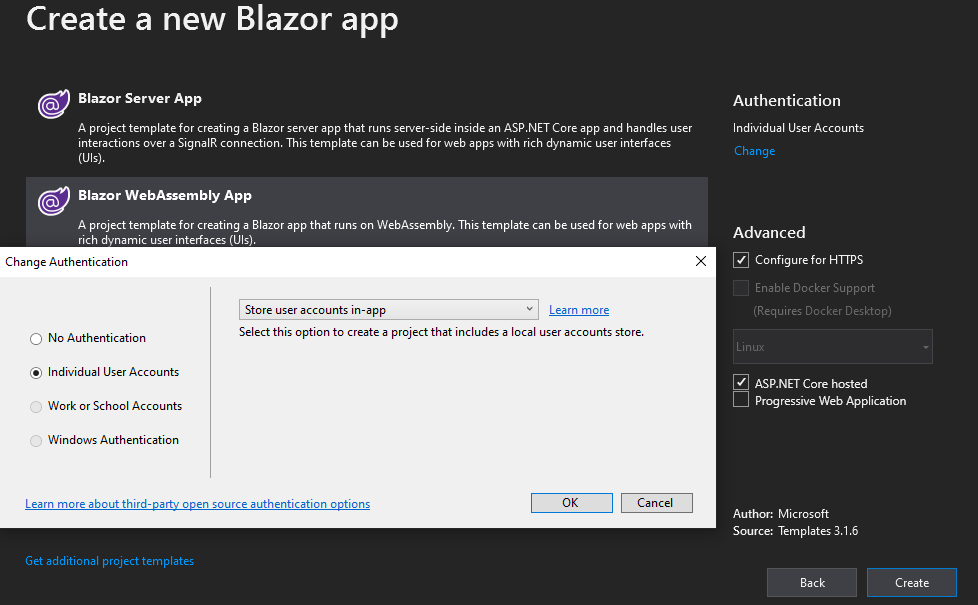
Ref. <https://www.nuget.org/packages/dotnet-ef/>

If issues to install the latest version, remove the previous version

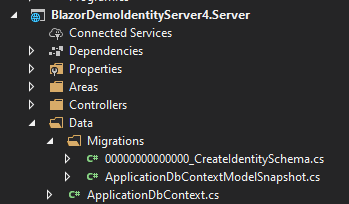
**dotnet tool uninstall -g dotnet-ef**

and then run the install again

The identity tables should be now created in our database.

1. **IdentityServer4** project
   * Create a Blazor App, then Next ****
   * Name the app  
     ****
   * Choose the following config with Authentication on Individual User Account ****
   * In appsettings.json update the DB connection to something like

"DefaultConnection": "Server=.\\SS2017DEV;Database=BlazorDemoIdentityServer4;User Id=aaaaaa;Password=xxxxxx;MultipleActiveResultSets=true"

* + In the Server project under the Data folder there is predefined migration  
    
  + In the terminal, uder the Server folder, run the command  
    **dotnet ef database update** (or **Update-Database** in the Package Manager Console)  
      
    in order to create the identity server database.
  + In order to change the password policy in the Server project, inside Startup.cs, method ConfigureServices it is possible to add some options for identity service, as follows  
      
    services.AddDefaultIdentity<ApplicationUser>(options =>

{

options.SignIn.RequireConfirmedAccount = false; // true if we want the user to confirm his account via email

// The pasword rules can be changed here

options.Password.RequireDigit = false; // no need for the password to contain numbers

options.Password.RequireLowercase = false; // no need of lowercase characters

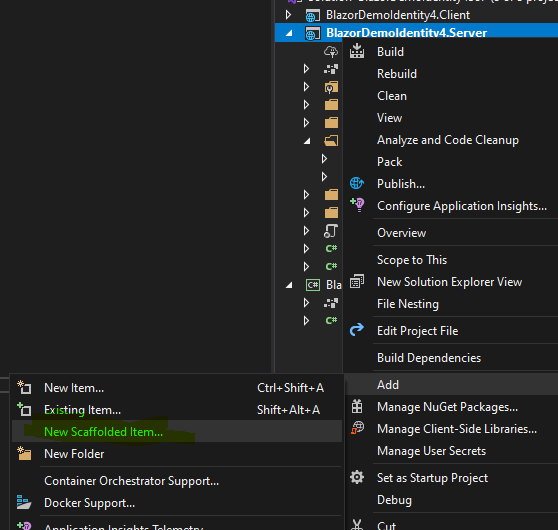
options.Password.RequireUppercase = false; // no need of uppercase characters

options.Password.RequireNonAlphanumeric = false; // no need of non alphanumeric characters (@#?...)

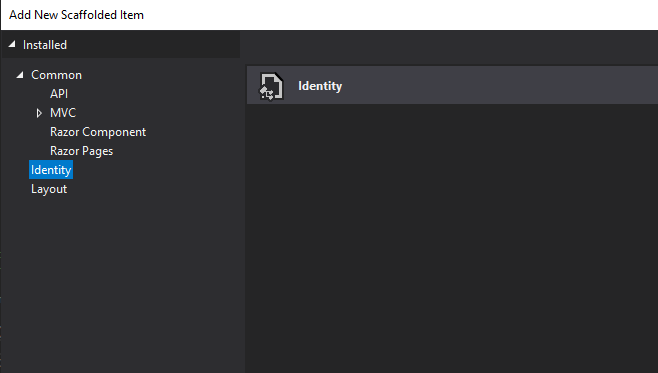
})

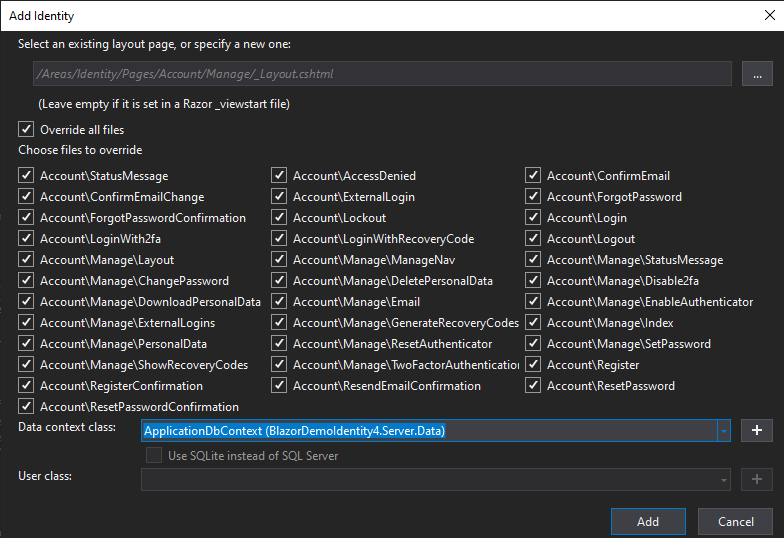
.AddEntityFrameworkStores<ApplicationDbContext>();

* + How modify the Login page or other scaffolded pages  
      
    Right click on the server project and select Add | New Scaffolded item



* + Then select Identity and press Add or double click on Identity item



* + After few seconds it is possible to select a particular layout page or select all the pages, then press Add  
      
    We can find the selected pages under server project folder Areas\Identity\Pages\Account.

In order to make it work, it is **IMPORTANT** to check under the server project, file **\_Layout.cshtml** in folder **Pages\Shared** that the scripts are not required as shown by the following code

. . . .

<body>

<div class="main">

<div class="content px-4">

@RenderBody()

**@RenderSection("Scripts", required: false**) 🡸 **IF THIS LINE IS NOT INCLUDED THEN ERROR**

</div>

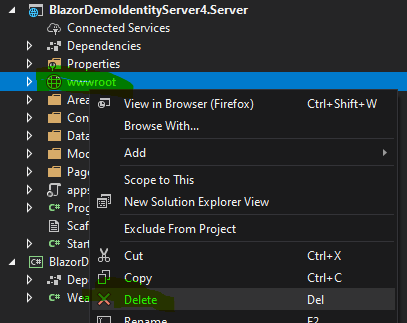
</div>

</body>

. . . .

Or just remove the \_Layout.cshtml file.

* + After the scaffolding under the server project is created a **wwwroot** folder that can be deleted



The file **ScaffoldingReadMe.txt** can be deleted either, as we don’t need it anymore.

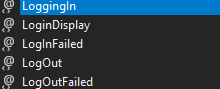
* + After pressing the **Log out button** it is possible to be redirected to any page required, in order to do that we need to perform some change to the file **Authentication.razor** under the Client project, folder Pages, in the following way, adding a RenderFragment under the tag <**RemoteAuthenticatorView** **Action**="@Action" /> therefore we get  
    . . . .  
    <**RemoteAuthenticatorView** **Action**="@Action">

<**LogOutSucceeded**>

**@ On logout succeeded redirect to Home page \*@**

**@{ nm.NavigateTo("/"); }**

</**LogOutSucceeded**>

</**RemoteAuthenticatorView**>  
. . . .  
There are other types of RenderFragment for logging such as  


1. How to add **IdentityServer4** to an existing project.
   * In the **Server** project, perform an update to all the packages, if required, then install the following packages:

Microsoft.AspNetCore.Identity.UI  
Microsoft.VisualStudio.Web.CodeGeneration.Design  
Microsoft.AspNetCore.ApiAuthorization.IdentityServer

* + Open in the Server folder the file **DataContext.cs** (or whatever the name is) and let the class to inherit now from **ApiAuthorizationDbContext**,while for IdentityServer it just was IdentityDbContext

public class DataContext : ApiAuthorizationDbContext<IdentityUser>

as we are using as representation of the user for authentication/authorization the **IdentityUser**.

* + The construct must become as follows

public DataContext(DbContextOptions<DataContext> options,

IOptions<OperationalStoreOptions> operationalStoreOptions

) : base(options, operationalStoreOptions) { }

* + At this point we can add a new migration, therefore under the Server folder, we can run the commanddotnet ef migrations add NewIdentitySystem (or **Add-Migration NewIdentitySystem 🡸** under Package Manager Console)

then, after checking the migration went well, run the command

dotnet ef database update (or **Update-Database 🡸** under Package Manager Console)

* + Then we need to perform some changes to the **Startup.cs** file in the Server project, in method ConfigureServices

// Using Identity Server

//services.AddIdentity<IdentityUser, IdentityRole>()

// .AddEntityFrameworkStores<DataContext>()

// .AddDefaultTokenProviders();

// Using IdentityServer4

**services.AddDefaultIdentity<IdentityUser>(options =>**

**{**

**options.SignIn.RequireConfirmedAccount = false; //Probably true in production**

**})**

**.AddRoles<IdentityRole>()**

**.AddEntityFrameworkStores<DataContext>();**

Then we can comment out the code for JWT token for IdentityServer will take care of that

//JWT token - authentication scheme

//services.AddAuthentication(JwtBearerDefaults.AuthenticationScheme)

// .AddJwtBearer(options =>

// options.TokenValidationParameters = new TokenValidationParameters

// {

// ValidateIssuer = false,

// ValidateAudience = false,

// ValidateLifetime = true,

// ValidateIssuerSigningKey = true,

// IssuerSigningKey = new SymmetricSecurityKey(

// Encoding.UTF8.GetBytes(Configuration["jwt:key"])),

// ClockSkew = TimeSpan.Zero

// });

**services.AddAuthentication()**

**.AddIdentityServerJwt();**

Then in method **Configure**, we need to use the **IdentityServer** therefore we have the following

//Add authentication and authorization for IdentityServer

app.UseAuthentication();

app.UseIdentityServer();

app.UseAuthorization();

* + Then we can delete the **AccountController.cs** file undwer Controllers folder for we don’t need it anymore and we can remove from each **[Authorize]** attribute the reference to the JWT bearer

[Authorize(~~AuthenticationSchemes = JwtBearerDefaults.AuthenticationScheme~~, Roles = "Admin")]

Just becomes

[Authorize(Roles = "Admin")]

In the **appsettings.json** we can remove the item

~~"jwt": {~~

~~"key": "KLASMDKL3M4KLMSDLKM3LKM4KLMSK543643341332S5DA3S5D453"~~

~~}~~

Then we need to add info for the Client is using IdentityServer, therefore we can add the following

. . . .

"IdentityServer": {

"Key": {

"Type": "Development"

},

"Clients": {

"BlazorMovies.Client": {

"Profile": "IdentityServerSPA"

}

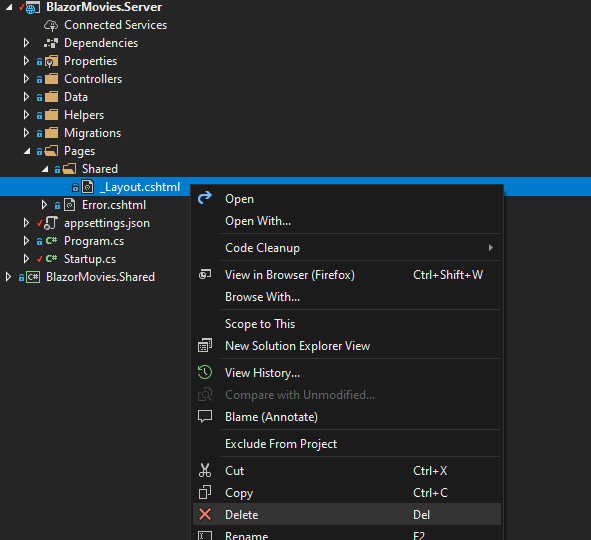
}

}

. . . .

The Client will use the profile called IdentityServerSPA, now we need to configure this profile

In order to do that we need the scaffolding, but first we need to remove the \_Layout.cshtml file from the Server project



After that, we can proceed with the scaffolding as mentioned above.