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ASP.NET Core Identity tutorial from scratch

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In this video and in our upcoming videos in this series we will discuss everything you need to effectively use **ASP.NET Core Identity** to implement security related features in your asp.net core application.

ASP.NET Core Identity

ASP.NET Core Identity is a membership system. It allows us to create, read, update and delete user accounts. Supports account confirmation, authentication, authorisation, password recovery, two-factor authentication with SMS. It also supports external login providers like Microsoft, Facebook, Google etc. We will discuss implementing these features in our upcoming videos in this series.

Adding ASP.NET Core Identity Support in ASP.NET Core

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The following are the steps to add and configure ASP.NET Core Identity

Step 1 : Inherit from IdentityDbContext class

```
public class AppDbContext : IdentityDbContext
{
    // Rest of the code
}
```

Your application DbContext class must inherit from IdentityDbContext class instead of DbContext class. This is required because IdentityDbContext provides all the DbSet properties needed to manage the identity tables in SQL Server. We will see all the tables that the asp.net core identity framework generates in just a bit. If you go through the hierarchy chain of IdentityDbContext class, you will see it inherits from DbContext class. So this is the reason you do not have to explicitly inherit from DbContext class if your class is inheriting from IdentityDbContext class.

Step 2 : Configure ASP.NET Core Identity Services

In ConfigureServices() method of the Startup class, include the following line of code.

```
services.AddIdentity<IdentityUser, IdentityRole>()
        .AddEntityFrameworkStores<AppDbContext>();
```

- AddIdentity() method adds the default identity system configuration for the specified user and role types.
- IdentityUser class is provided by ASP.NET core and contains properties for UserName, PasswordHash, Email etc. This is the class that is used by default by the ASP.NET Core Identity framework to manage registered users of your application.
- If you want store additional information about the registered users like their Gender, City etc. Create a custom class that derives from IdentityUser. In this custom class add the additional properties you need and then plug-in

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Entity Framework

this class instead of the built-in IdentityUser class. We will discuss how to do this in our upcoming videos.

- Similarly, IdentityRole is also a builtin class provided by ASP.NET Core Identity and contains Role information.
- We want to store and retrieve User and Role information of the registered users using EntityFrameWork Core from the underlying SQL Server database. We specify this using AddEntityFrameworkStores<AppDbContext>() passing our application DbContext class as the generic argument.

Step 3 : Add Authentication middleware to the request pipeline

```
public void Configure(IApplicationBuilder app, IHostingEnvironment env)
{
    if (env.IsDevelopment())
    {
        app.UseDeveloperExceptionPage();
    }
    else
    {
        app.UseExceptionHandler("/Error");
        app.UseStatusCodePagesWithReExecute("/Error/{0}");
    }

    app.UseStaticFiles();
    app.UseAuthentication();
    app.UseMvc(routes =>
    {
        routes.MapRoute("default", "{controller=Home}/{action=Index}/{id?}");
    });
}
```

In the Configure() method of the Startup class, call UseAuthentication() method to add the Authentication middleware to the application's request processing pipeline. We want to be able to authenticate users before the request reaches the MVC middleware. So it's important we add authentication middleware before the MVC middleware in the request processing pipeline.

Step 4 : Add Identity Migration

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In Visual Studio, from the Package Manager Console window execute the following command to add a new migration

```
Add-Migration AddingIdentity
```

This migration contains code that creates the tables required by the ASP.NET Core Identity system.

Error : The entity type 'IdentityUserLogin<string>' requires a primary key to be defined

If you get this error, the most likely cause is that you are overriding OnModelCreating() method in your application DbContext class but not calling the base IdentityDbContext class OnModelCreating() method.

Keys of Identity tables are mapped in OnModelCreating method of IdentityDbContext class. So, to fix this error, all you need to do is, call the base class OnModelCreating() method using the base keyword as shown below.

```
public class AppDbContext : IdentityDbContext
{
    public AppDbContext(DbContextOptions<AppDbContext> options)
        : base(options)
    {
    }

    public DbSet<Employee> Employees { get; set; }

    protected override void OnModelCreating(ModelBuilder modelBuilder)
    {
        base.OnModelCreating(modelBuilder);
        modelBuilder.Seed();
    }
}
```

Step 4 : Generate ASP.NET Core Identity Tables

Finally execute Update-Database command to apply the identity migration and have the required identity tables created.

GridView

ASP.NET MVC

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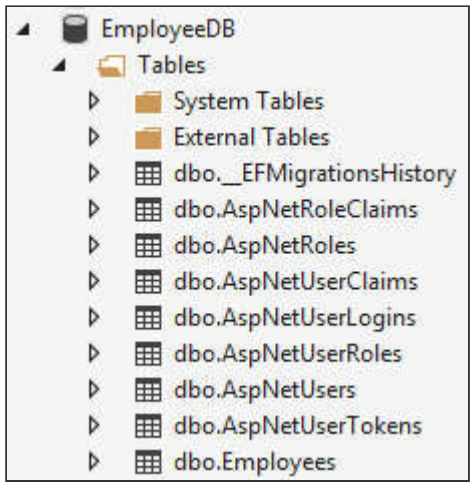

Next Video : **How to register a new user using asp.net core identity**

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