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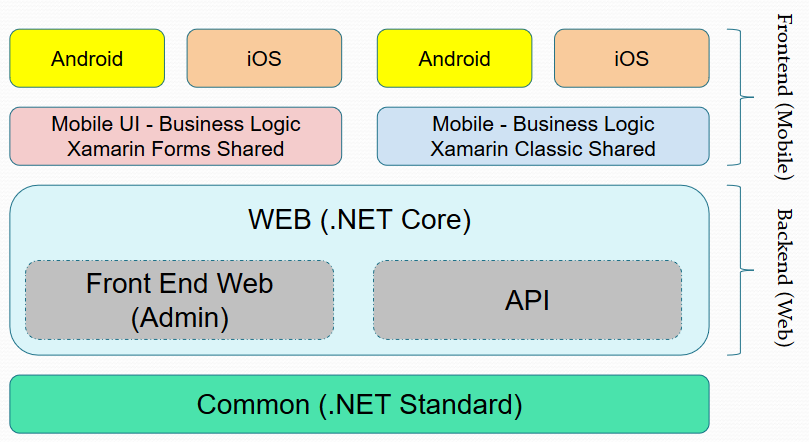
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# 

# Create the Solution

Create the following solution:



In Visual Studio, you must build something similar to:



# Create the Database

1. Create the entities (in folder Web.Data.Entities):

using System;

using System.ComponentModel.DataAnnotations;

public class Product

{

public int Id { get; set; }

public string Name { get; set; }

[DisplayFormat(DataFormatString = "{0:C2}", ApplyFormatInEditMode = false)]

public decimal Price { get; set; }

[Display(Name = "Image")]

public string ImageUrl { get; set; }

[Display(Name = "Last Purchase")]

public DateTime LastPurchase { get; set; }

[Display(Name = "Last Sale")]

public DateTime LastSale { get; set; }

[Display(Name = "Is Availabe?")]

public bool IsAvailabe { get; set; }

[DisplayFormat(DataFormatString = "{0:N2}", ApplyFormatInEditMode = false)]

public double Stock { get; set; }

}

1. Create the context class (in folder Data):

using Common.Models;

using Microsoft.EntityFrameworkCore;

public class DataContext : DbContext

{

public DbSet<Product> Products { get; set; }

public DataContext(DbContextOptions<DataContext> options) : base(options)

{

}

}

1. Add the connection string to the configuration json file (see the SQL Server Object Explorer):

{

"Logging": {

"LogLevel": {

"Default": "Warning"

}

},

"AllowedHosts": "\*",

"ConnectionStrings": {

"DefaultConnection": "Server=(localdb)\\ProjectsV13;Database=Shop;Trusted\_Connection=True;MultipleActiveResultSets=true"

}

}

**Note**: You must be sure of the servers names in your installation, you can check it out, by clicking in SQL Server Object Explorer:



In this case, there are three available servers: **(localdb)\MSSQLLocalDB**, **(localdb)\ProjectsV13** and **(localdb)\v11.0**. Or you can explore your server by clicking on “Add SQL Server” icon:



1. Add the database injection in startup class (before MVC services lines):

services.AddDbContext<DataContext>(cfg =>

{

cfg.UseSqlServer(this.Configuration.GetConnectionString("DefaultConnection"));

});

1. Run this commands by command line in the same folder that is the web project:

dotnet ef database update

dotnet ef migrations add InitialDb

dotnet ef database update

Or you can run this commands in package manager console:

PM> update-database

PM> add-migration InitialDb

PM> update-database

1. Add the products controller.
2. Add the products menu and test the DB connection.

<ul class="nav navbar-nav">

<li><a asp-area="" asp-controller="Home" asp-action="Index">Home</a></li>

<li><a asp-area="" asp-controller="Home" asp-action="About">About</a></li>

<li><a asp-area="" asp-controller="Home" asp-action="Contact">Contact</a></li>

<li><a asp-area="" asp-controller="Products" asp-action="Index">Products</a></li>

</ul>

# Modify DB

1. Modify the model product by:

using System;

using System.ComponentModel.DataAnnotations;

public class Product

{

public int Id { get; set; }

[MaxLength(50, ErrorMessage = "The field {0} only can contain a maximum {1} characters")]

[Required]

public string Name { get; set; }

[DisplayFormat(DataFormatString = "{0:C2}", ApplyFormatInEditMode = false)]

public decimal Price { get; set; }

[Display(Name = "Image")]

public string ImageUrl { get; set; }

[Display(Name = "Last Purchase")]

public DateTime? LastPurchase { get; set; }

[Display(Name = "Last Sale")]

public DateTime? LastSale { get; set; }

[Display(Name = "Is Availabe?")]

public bool IsAvailabe { get; set; }

[DisplayFormat(DataFormatString = "{0:N2}", ApplyFormatInEditMode = false)]

public double Stock { get; set; }

}

1. Run this commands:

dotnet ef migrations add ModifyProducts

dotnet ef database update

Or you can run this commands in package manager console:

PM> add-migration ModifyProducts

PM> update-database

1. Test it.

# Seed the DB with initial data

1. Create the seed class, with your population data logic:

using System;

using System.Linq;

using System.Threading.Tasks;

using Common.Models;

public class SeedDb

{

private readonly DataContext context;

private Random random;

public SeedDb(DataContext context)

{

this.context = context;

this.random = new Random();

}

public async Task SeedAsync()

{

await this.context.Database.EnsureCreatedAsync();

if (!this.context.Products.Any())

{

this.AddProduct("First Product");

this.AddProduct("Second Product");

this.AddProduct("Third Product");

await this.context.SaveChangesAsync();

}

}

private void AddProduct(string name)

{

this.context.Products.Add(new Product

{

Name = name,

Price = this.random.Next(100),

IsAvailabe = true,

Stock = this.random.Next(100)

});

}

}

1. Modify the Program class by:

using Data;

using Microsoft.AspNetCore;

using Microsoft.AspNetCore.Hosting;

using Microsoft.Extensions.DependencyInjection;

public class Program

{

public static void Main(string[] args)

{

var host = CreateWebHostBuilder(args).Build();

RunSeeding(host);

host.Run();

}

private static void RunSeeding(IWebHost host)

{

var scopeFactory = host.Services.GetService<IServiceScopeFactory>();

using (var scope = scopeFactory.CreateScope())

{

var seeder = scope.ServiceProvider.GetService<SeedDb>();

seeder.SeedAsync().Wait();

}

}

public static IWebHostBuilder CreateWebHostBuilder(string[] args) =>

WebHost.CreateDefaultBuilder(args)

.UseStartup<Startup>();

}

1. Add the injection for the seeder in Startup class (before cookie policy options lines):

services.AddTransient<SeedDb>();

1. Test it.

# Implement the pattern repository

1. Create the repository class:

using System.Collections.Generic;

using System.Linq;

using System.Threading.Tasks;

using Common.Models;

public class Repository

{

private readonly DataContext context;

public Repository(DataContext context)

{

this.context = context;

}

public IEnumerable<Product> GetProducts()

{

return this.context.Products.OrderBy(p => p.Name);

}

public Product GetProduct(int id)

{

return this.context.Products.Find(id);

}

public void AddProduct(Product product)

{

this.context.Products.Add(product);

}

public void UpdateProduct(Product product)

{

this.context.Update(product);

}

public void RemoveProduct(Product product)

{

this.context.Products.Remove(product);

}

public async Task<bool> SaveAllAsync()

{

return await this.context.SaveChangesAsync() > 0;

}

public bool ProductExists(int id)

{

return this.context.Products.Any(p => p.Id == id);

}

}

1. Extract the interface for the repository class:

using System.Collections.Generic;

using System.Threading.Tasks;

using Common.Models;

public interface IRepository

{

void AddProduct(Product product);

Product GetProduct(int id);

IEnumerable<Product> GetProducts();

bool ProductExists(int id);

void RemoveProduct(Product product);

Task<bool> SaveAllAsync();

void UpdateProduct(Product product);

}

1. Replace the controller to uses the repository and not uses the database context:

using Data;

using Data.Entities;

using Microsoft.AspNetCore.Mvc;

using Microsoft.EntityFrameworkCore;

using System.Threading.Tasks;

public class ProductsController : Controller

{

private readonly IRepository repository;

public ProductsController(IRepository repository)

{

this.repository = repository;

}

public IActionResult Index()

{

return View(this.repository.GetProducts());

}

public IActionResult Details(int? id)

{

if (id == null)

{

return NotFound();

}

var product = this.repository.GetProduct(id.Value);

if (product == null)

{

return NotFound();

}

return View(product);

}

public IActionResult Create()

{

return View();

}

[HttpPost]

[ValidateAntiForgeryToken]

public async Task<IActionResult> Create(Product product)

{

if (ModelState.IsValid)

{

this.repository.AddProduct(product);

await this.repository.SaveAllAsync();

return RedirectToAction(nameof(Index));

}

return View(product);

}

public IActionResult Edit(int? id)

{

if (id == null)

{

return NotFound();

}

var product = this.repository.GetProduct(id.Value);

if (product == null)

{

return NotFound();

}

return View(product);

}

[HttpPost]

[ValidateAntiForgeryToken]

public async Task<IActionResult> Edit(Product product)

{

if (ModelState.IsValid)

{

try

{

this.repository.UpdateProduct(product);

await this.repository.SaveAllAsync();

}

catch (DbUpdateConcurrencyException)

{

if (!this.repository.ProductExists(product.Id))

{

return NotFound();

}

else

{

throw;

}

}

return RedirectToAction(nameof(Index));

}

return View(product);

}

public IActionResult Delete(int? id)

{

if (id == null)

{

return NotFound();

}

var product = this.repository.GetProduct(id.Value);

if (product == null)

{

return NotFound();

}

return View(product);

}

[HttpPost, ActionName("Delete")]

[ValidateAntiForgeryToken]

public async Task<IActionResult> DeleteConfirmed(int id)

{

var product = this.repository.GetProduct(id);

this.repository.RemoveProduct(product);

await this.repository.SaveAllAsync();

return RedirectToAction(nameof(Index));

}

}

1. Add the injection for the repository in Startup class (before cookie policy options lines):

services.AddScoped<IRepository, Repository>();

1. Test it.

# Add User Identities

1. Create your own users class inherit from IdentityUser class (in Common.Models):

using Microsoft.AspNetCore.Identity;

public class User : IdentityUser

{

public string FirstName { get; set; }

public string LastName { get; set; }

}

1. Modify the data context class:

using Entities;

using Microsoft.AspNetCore.Identity.EntityFrameworkCore;

using Microsoft.EntityFrameworkCore;

public class DataContext : IdentityDbContext<User>

{

public DbSet<Product> Products { get; set; }

public DataContext(DbContextOptions<DataContext> options) : base(options)

{

}

}

1. Make the relations with other models:

public User User { get; set; }

1. Drop the database and add the new migrations with those commands:

dotnet ef database drop

dotnet ef migrations add Users

dotnet ef database update

Or you can run those commands in package manager console:

PM> drop-database

PM> add-migration Users

PM> update-database

1. Modify the seeder to add some user:

using System;

using System.Linq;

using System.Threading.Tasks;

using Common.Models;

using Microsoft.AspNetCore.Identity;

public class SeedDb

{

private readonly DataContext context;

private readonly UserManager<User> userManager;

private Random random;

public SeedDb(DataContext context, UserManager<User> userManager)

{

this.context = context;

this.userManager = userManager;

this.random = new Random();

}

public async Task SeedAsync()

{

await this.context.Database.EnsureCreatedAsync();

var user = await this.userManager.FindByEmailAsync("jzuluaga55@gmail.com");

if (user == null)

{

user = new User

{

FirstName = "Juan",

LastName = "Zuluaga",

Email = "jzuluaga55@gmail.com",

UserName = "jzuluaga55@gmail.com"

};

var result = await this.userManager.CreateAsync(user, "123456");

if (result != IdentityResult.Success)

{

throw new InvalidOperationException("Could not create the user in seeder");

}

}

if (!this.context.Products.Any())

{

this.AddProduct("First Product", user);

this.AddProduct("Second Product", user);

this.AddProduct("Third Product", user);

await this.context.SaveChangesAsync();

}

}

private void AddProduct(string name, User user)

{

this.context.Products.Add(new Product

{

Name = name,

Price = this.random.Next(100),

IsAvailabe = true,

Stock = this.random.Next(100),

User = user

});

}

}

1. Modify the configuration to setup the new functionality:

public void ConfigureServices(IServiceCollection services)

{

services.AddIdentity<User, IdentityRole>(cfg =>

{

cfg.User.RequireUniqueEmail = true;

cfg.Password.RequireDigit = false;

cfg.Password.RequiredUniqueChars = 0;

cfg.Password.RequireLowercase = false;

cfg.Password.RequireNonAlphanumeric = false;

cfg.Password.RequireUppercase = false;

})

.AddEntityFrameworkStores<DataContext>();

services.AddDbContext<DataContext>(cfg =>

{

cfg.UseSqlServer(this.Configuration.GetConnectionString("DefaultConnection"));

});

services.AddTransient<SeedDb>();

services.AddScoped<IRepository, Repository>();

services.Configure<CookiePolicyOptions>(options =>

{

// This lambda determines whether user consent for non-essential cookies is needed for a given request.

options.CheckConsentNeeded = context => true;

options.MinimumSameSitePolicy = SameSiteMode.None;

});

services.AddMvc().SetCompatibilityVersion(CompatibilityVersion.Version\_2\_1);

}

public void Configure(IApplicationBuilder app, IHostingEnvironment env)

{

if (env.IsDevelopment())

{

app.UseDeveloperExceptionPage();

}

else

{

app.UseExceptionHandler("/Home/Error");

app.UseHsts();

}

app.UseHttpsRedirection();

app.UseStaticFiles();

app.UseAuthentication();

app.UseCookiePolicy();

app.UseMvc(routes =>

{

routes.MapRoute(

name: "default",

template: "{controller=Home}/{action=Index}/{id?}");

});

}

1. Test it.

# Implement A Generic Repository & Some Fixes

(Tanks to Fabian Camargo <https://www.youtube.com/user/fabiancv90>)

1. Create the folder **Helpers** and inside it add the interface **IUserHelper**:

using System.Threading.Tasks;

using Data.Entities;

using Microsoft.AspNetCore.Identity;

public interface IUserHelper

{

Task<User> GetUserByEmailAsync(string email);

Task<IdentityResult> AddUserAsync(User user, string password);

}

1. In the same folder add the implementation (**UserHelper**):

using System.Threading.Tasks;

using Data.Entities;

using Microsoft.AspNetCore.Identity;

public class UserHelper : IUserHelper

{

private readonly UserManager<User> userManager;

public UserHelper(UserManager<User> userManager)

{

this.userManager = userManager;

}

public async Task<IdentityResult> AddUserAsync(User user, string password)

{

return await this.userManager.CreateAsync(user, password);

}

public async Task<User> GetUserByEmailAsync(string email)

{

var user = await this.userManager.FindByEmailAsync(email);

return user;

}

}

1. In **Web.Data.Entities** add the interface **IEntity**:

public interface IEntity

{

int Id { get; set; }

}

1. Modify the **Products** entity:

public class Product : IEntity

1. In **Data** add the interfaz **IGenericRepository**:

using System.Linq;

using System.Threading.Tasks;

public interface IGenericRepository<T> where T : class

{

IQueryable<T> GetAll();

Task<T> GetByIdAsync(int id);

Task CreateAsync(T entity);

Task UpdateAsync(T entity);

Task DeleteAsync(T entity);

Task<bool> ExistAsync(int id);

}

1. In the same folder add the implementation (**GenericRepository**):

using System.Linq;

using System.Threading.Tasks;

using Entities;

using Microsoft.EntityFrameworkCore;

public class GenericRepository<T> : IGenericRepository<T> where T : class, IEntity

{

private readonly DataContext context;

public GenericRepository(DataContext context)

{

this.context = context;

}

public IQueryable<T> GetAll()

{

return this.context.Set<T>().AsNoTracking();

}

public async Task<T> GetByIdAsync(int id)

{

return await this.context.Set<T>()

.AsNoTracking()

.FirstOrDefaultAsync(e => e.Id == id);

}

public async Task CreateAsync(T entity)

{

await this.context.Set<T>().AddAsync(entity);

await SaveAllAsync();

}

public async Task UpdateAsync(T entity)

{

this.context.Set<T>().Update(entity);

await SaveAllAsync();

}

public async Task DeleteAsync(T entity)

{

this.context.Set<T>().Remove(entity);

await SaveAllAsync();

}

public async Task<bool> ExistAsync(int id)

{

return await this.context.Set<T>().AnyAsync(e => e.Id == id);

}

public async Task<bool> SaveAllAsync()

{

return await this.context.SaveChangesAsync() > 0;

}

}

1. Add the **IProductRepository**:

using Entities;

public interface IProductRepository : IGenericRepository<Product>

{

}

1. Add the **ProductRepository**:

using Entities;

public class ProductRepository : GenericRepository<Product>, IProductRepository

{

public ProductRepository(DataContext context) : base(context)

{

}

}

1. Delete the previous repository (**Repository** and **IRepository**).
2. Modify the **Startup**:

services.AddScoped<IProductRepository, ProductRepository>();

1. Modify the **ProductsController**:

using System.Threading.Tasks;

using Data;

using Data.Entities;

using Helpers;

using Microsoft.AspNetCore.Mvc;

using Microsoft.EntityFrameworkCore;

public class ProductsController : Controller

{

private readonly IProductRepository productRepository;

private readonly IUserHelper userHelper;

public ProductsController(IProductRepository productRepository, IUserHelper userHelper)

{

this.productRepository = productRepository;

this.userHelper = userHelper;

}

// GET: Products

public IActionResult Index()

{

return View(this.productRepository.GetAll());

}

// GET: Products/Details/5

public async Task<IActionResult> Details(int? id)

{

if (id == null)

{

return NotFound();

}

var product = await this.productRepository.GetByIdAsync(id.Value);

if (product == null)

{

return NotFound();

}

return View(product);

}

// GET: Products/Create

public IActionResult Create()

{

return View();

}

// POST: Products/Create

[HttpPost]

[ValidateAntiForgeryToken]

public async Task<IActionResult> Create(Product product)

{

if (ModelState.IsValid)

{

// TODO: Pending to change to: this.User.Identity.Name

product.User = await this.userHelper.GetUserByEmailAsync("jzuluaga55@gmail.com");

await this.productRepository.CreateAsync(product);

return RedirectToAction(nameof(Index));

}

return View(product);

}

// GET: Products/Edit/5

public async Task<IActionResult> Edit(int? id)

{

if (id == null)

{

return NotFound();

}

var product = await this.productRepository.GetByIdAsync(id.Value);

if (product == null)

{

return NotFound();

}

return View(product);

}

// POST: Products/Edit/5

[HttpPost]

[ValidateAntiForgeryToken]

public async Task<IActionResult> Edit(Product product)

{

if (ModelState.IsValid)

{

try

{

// TODO: Pending to change to: this.User.Identity.Name

product.User = await this.userHelper.GetUserByEmailAsync("jzuluaga55@gmail.com");

await this.productRepository.UpdateAsync(product);

}

catch (DbUpdateConcurrencyException)

{

if (!await this.productRepository.ExistAsync(product.Id))

{

return NotFound();

}

else

{

throw;

}

}

return RedirectToAction(nameof(Index));

}

return View(product);

}

// GET: Products/Delete/5

public async Task<IActionResult> Delete(int? id)

{

if (id == null)

{

return NotFound();

}

var product = await this.productRepository.GetByIdAsync(id.Value);

if (product == null)

{

return NotFound();

}

return View(product);

}

// POST: Products/Delete/5

[HttpPost, ActionName("Delete")]

[ValidateAntiForgeryToken]

public async Task<IActionResult> DeleteConfirmed(int id)

{

var product = await this.productRepository.GetByIdAsync(id);

await this.productRepository.DeleteAsync(product);

return RedirectToAction(nameof(Index));

}

}

1. Modify the **SeedDb**:

using System;

using System.Linq;

using System.Threading.Tasks;

using Entities;

using Microsoft.AspNetCore.Identity;

using Shop.Web.Helpers;

public class SeedDb

{

private readonly DataContext context;

private readonly IUserHelper userHelper;

private Random random;

public SeedDb(DataContext context, IUserHelper userHelper)

{

this.context = context;

this.userHelper = userHelper;

this.random = new Random();

}

public async Task SeedAsync()

{

await this.context.Database.EnsureCreatedAsync();

// Add user

var user = await this.userHelper.GetUserByEmail("jzuluaga55@gmail.com");

if (user == null)

{

user = new User

{

FirstName = "Juan",

LastName = "Zuluaga",

Email = "jzuluaga55@gmail.com",

UserName = "jzuluaga55@gmail.com",

PhoneNumber = "3506342747"

};

var result = await this.userHelper.AddUser(user, "123456");

if (result != IdentityResult.Success)

{

throw new InvalidOperationException("Could not create the user in seeder");

}

}

// Add products

if (!this.context.Products.Any())

{

this.AddProduct("iPhone X", user);

this.AddProduct("Magic Mouse", user);

this.AddProduct("iWatch Series 4", user);

await this.context.SaveChangesAsync();

}

}

private void AddProduct(string name, User user)

{

this.context.Products.Add(new Product

{

Name = name,

Price = this.random.Next(1000),

IsAvailabe = true,

Stock = this.random.Next(100),

User = user

});

}

}

1. Test it.
2. Now to take advance the this implementation, we’ll create another entity that we’ll use nearly. Add the entity **Country**:

using System.ComponentModel.DataAnnotations;

public class Country : IEntity

{

public int Id { get; set; }

[MaxLength(50, ErrorMessage = "The field {0} only can contain {1} characters length.")]

[Required]

[Display(Name = "Country")]

public string Name { get; set; }

}

1. Add the interface for countries:

using Entities;

public interface ICountryRepository : IGenericRepository<Country>

{

}

1. And add the implementation:

using Entities;

public class CountryRepository : GenericRepository<Country>, ICountryRepository

{

public CountryRepository(DataContext context) : base(context)

{

}

}

1. Add the injection in **StartUp**:

services.AddScoped<ICountryRepository, CountryRepository>();

1. Add the property in the **DataContext**.

public DbSet<Country> Countries { get; set; }

1. Save all and run those commands to update the database:

dotnet ef migrations add Countries

dotnet ef database update

Or you can run this commands in package manager console:

PM> add-migration Countries

PM> update-database

1. Run the App and test it.

# Add API

1. Create the API controller, this is an example (in Web.Controllers.API):

using Data;

using Microsoft.AspNetCore.Mvc;

[Route("api/[Controller]")]

public class ProductsController : Controller

{

private readonly IProductRepository productRepository;

public ProductsController(IProductRepository productRepository)

{

this.productRepository = productRepository;

}

[HttpGet]

public IActionResult GetProducts()

{

return this.Ok(this.productRepository.GetAll());

}

}

1. Test it.
2. Publish the App in Azure.







# Adding Images

1. In Web the folder **Models** and the class **MainViewModel**.

using System.ComponentModel.DataAnnotations;

using Data.Entities;

using Microsoft.AspNetCore.Http;

public class ProductViewModel : Product

{

[Display(Name = "Image")]

public IFormFile ImageFile { get; set; }

}

1. Modify the **Create** products view:

@model Shop.Web.Models.ProductViewModel

@{

ViewData["Title"] = "Create";

}

<h2>Create</h2>

<h4>Product</h4>

<hr />

<div class="row">

<div class="col-md-4">

<form asp-action="Create" enctype="multipart/form-data">

<div asp-validation-summary="ModelOnly" class="text-danger"></div>

<div class="form-group">

<label asp-for="Name" class="control-label"></label>

<input asp-for="Name" class="form-control" />

<span asp-validation-for="Name" class="text-danger"></span>

</div>

<div class="form-group">

<label asp-for="Price" class="control-label"></label>

<input asp-for="Price" class="form-control" />

<span asp-validation-for="Price" class="text-danger"></span>

</div>

<div class="form-group">

<label asp-for="ImageFile" class="control-label"></label>

<input asp-for="ImageFile" class="form-control" type="file" />

<span asp-validation-for="ImageFile" class="text-danger"></span>

</div>

<div class="form-group">

…

1. Add the folder **Products** into **wwwroot/images**.
2. Modify the method **Create** POST and the class **ProductsController**:

[HttpPost]

[ValidateAntiForgeryToken]

public async Task<IActionResult> Create(ProductViewModel view)

{

if (ModelState.IsValid)

{

var path = string.Empty;

if (view.ImageFile != null && view.ImageFile.Length > 0)

{

path = Path.Combine(Directory.GetCurrentDirectory(), "wwwroot\\images\\Products", view.ImageFile.FileName);

using (var stream = new FileStream(path, FileMode.Create))

{

await view.ImageFile.CopyToAsync(stream);

}

path = $"~/images/Products/{view.ImageFile.FileName}";

}

// TODO: Pending to change to: this.User.Identity.Name

view.User = await this.userHelper.GetUserByEmail("jzuluaga55@gmail.com");

var product = this.ToProduct(view, path);

await this.productRepository.CreateAsync(product);

return RedirectToAction(nameof(Index));

}

return View(view);

}

private Product ToProduct(ProductViewModel view, string path)

{

return new Product

{

Id = view.Id,

ImageUrl = path,

IsAvailabe = view.IsAvailabe,

LastPurchase = view.LastPurchase,

LastSale = view.LastSale,

Name = view.Name,

Price = view.Price,

Stock = view.Stock,

User = view.User

};

}

1. Modify the products index view:

<td>

@if (!string.IsNullOrEmpty(item.ImageUrl))

{

<img src="@Url.Content(item.ImageUrl)" alt="Image" style="width:100px;height:150px;max-width: 100%; height: auto;" />

}

</td>

1. Test it what we do until the moment.
2. Now modify the GET and POST Edit in **ProductsController**.

// GET: Products/Edit/5

public async Task<IActionResult> Edit(int? id)

{

if (id == null)

{

return NotFound();

}

var product = await this.productRepository.GetByIdAsync(id.Value);

if (product == null)

{

return NotFound();

}

var view = this.ToProducViewModel(product);

return View(view);

}

private ProductViewModel ToProducViewModel(Product product)

{

return new ProductViewModel

{

Id = product.Id,

ImageUrl = product.ImageUrl,

IsAvailabe = product.IsAvailabe,

LastPurchase = product.LastPurchase,

LastSale = product.LastSale,

Name = product.Name,

Price = product.Price,

Stock = product.Stock,

User = product.User

};

}

// POST: Products/Edit/5

[HttpPost]

[ValidateAntiForgeryToken]

public async Task<IActionResult> Edit(ProductViewModel view)

{

if (ModelState.IsValid)

{

try

{

var path = view.ImageUrl;

if (view.ImageFile != null && view.ImageFile.Length > 0)

{

path = Path.Combine(Directory.GetCurrentDirectory(), "wwwroot\\images\\Products", view.ImageFile.FileName);

using (var stream = new FileStream(path, FileMode.Create))

{

await view.ImageFile.CopyToAsync(stream);

}

path = $"~/images/Products/{view.ImageFile.FileName}";

}

// TODO: Pending to change to: this.User.Identity.Name

view.User = await this.userHelper.GetUserByEmail("jzuluaga55@gmail.com");

var product = this.ToProduct(view, path);

await this.productRepository.UpdateAsync(product);

}

catch (DbUpdateConcurrencyException)

{

if (!await this.productRepository.ExistAsync(view.Id))

{

return NotFound();

}

else

{

throw;

}

}

return RedirectToAction(nameof(Index));

}

return View(view);

}

1. Modify the edit product view model:

@model Shop.Web.Models.ProductViewModel

@{

ViewData["Title"] = "Edit";

}

<h2>Edit</h2>

<h4>Product</h4>

<hr />

<div class="row">

<div class="col-md-4">

<form asp-action="Edit" enctype="multipart/form-data">

<div asp-validation-summary="ModelOnly" class="text-danger"></div>

<input type="hidden" asp-for="Id" />

<input type="hidden" asp-for="ImageUrl" />

<div class="form-group">

<label asp-for="Name" class="control-label"></label>

<input asp-for="Name" class="form-control" />

<span asp-validation-for="Name" class="text-danger"></span>

</div>

<div class="form-group">

<label asp-for="Price" class="control-label"></label>

<input asp-for="Price" class="form-control" />

<span asp-validation-for="Price" class="text-danger"></span>

</div>

<div class="form-group">

<label asp-for="ImageFile" class="control-label"></label>

<input asp-for="ImageFile" class="form-control" type="file" />

<span asp-validation-for="ImageFile" class="text-danger"></span>

</div>

<div class="form-group">

<label asp-for="LastPurchase" class="control-label"></label>

<input asp-for="LastPurchase" class="form-control" />

<span asp-validation-for="LastPurchase" class="text-danger"></span>

</div>

<div class="form-group">

<label asp-for="LastSale" class="control-label"></label>

<input asp-for="LastSale" class="form-control" />

<span asp-validation-for="LastSale" class="text-danger"></span>

</div>

<div class="form-group">

<div class="checkbox">

<label>

<input asp-for="IsAvailabe" /> @Html.DisplayNameFor(model => model.IsAvailabe)

</label>

</div>

</div>

<div class="form-group">

<label asp-for="Stock" class="control-label"></label>

<input asp-for="Stock" class="form-control" />

<span asp-validation-for="Stock" class="text-danger"></span>

</div>

<div class="form-group">

<input type="submit" value="Save" class="btn btn-primary" />

<a asp-action="Index" class="btn btn-success">Back to List</a>

</div>

</form>

</div>

<div class="col-md-4">

@if (!string.IsNullOrEmpty(Model.ImageUrl))

{

<img src="@Url.Content(Model.ImageUrl)" alt="Image" style="width:200px;height:300px;max-width: 100%; height: auto;" />

}

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

}

1. Test it.
2. Modify the details product view model:

<dd>

@if (!string.IsNullOrEmpty(Model.ImageUrl))

{

<img src="@Url.Content(Model.ImageUrl)" alt="Image" style="width:200px;height:300px;max-width: 100%; height: auto;" />

}

</dd>

1. Modify the delete product view model:

<dd>

@if (!string.IsNullOrEmpty(Model.ImageUrl))

{

<img src="@Url.Content(Model.ImageUrl)" alt="Image" style="width:200px;height:300px;max-width: 100%; height: auto;" />

}

</dd>

1. Test it.

.

1. Finally add this property to Product entity:

public string ImageFullPath

{

get

{

if (string.IsNullOrEmpty(this.ImageUrl))

{

return null;

}

return $"https://shopzulu.azurewebsites.net{this.ImageUrl.Substring(1)}";

}

}

1. Ant test the API and publish the Changes in Azure.

# Adding Other Methods To Generic Repository

1. Modify the **IProductRepository**.

using Entities;

using System.Linq;

public interface IProductRepository : IGenericRepository<Product>

{

IQueryable GetAllWithUsers();

}

1. Modify the **ProductRepository**.

using System.Linq;

using Entities;

using Microsoft.EntityFrameworkCore;

public class ProductRepository : GenericRepository<Product>, IProductRepository

{

private readonly DataContext context;

public ProductRepository(DataContext context) : base(context)

{

this.context = context;

}

public IQueryable GetAllWithUsers()

{

return this.context.Products.Include(p => p.User).OrderBy(p => p.Name);

}

}

1. Modify the product API Controller.

public IQueryable GetAllWithUsers()

{

return this.context.Products.Include(p => p.User).OrderBy(p => p.Name);

}

1. Test it.

# Starting with Xamarin Forms

1. Create the folder **ViewModels** and inside it add the class **ProductViewModel**.

public class MainViewModel

{

}

1. Create the folder **Infrastructure** and inside it add the class **InstanceLocator**.

public class InstanceLocator

{

public MainViewModel Main { get; set; }

public InstanceLocator()

{

this.Main = new MainViewModel();

}

}

1. Modify the **App.xaml** to add an application dictionary:

<?xml version="1.0" encoding="utf-8" ?>

<Application xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

xmlns:infra="clr-namespace:ShopPrep.UIForms.Infrastructure"

x:Class="ShopPrep.UIForms.App">

<Application.Resources>

<ResourceDictionary>

<!-- Locator -->

<infra:InstanceLocator x:Key="Locator"/>

</ResourceDictionary>

</Application.Resources>

</Application>

1. Add the folder **Views** and inside it, create the **LoginPage**:

<?xml version="1.0" encoding="utf-8" ?>

<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

x:Class="Shop.UIForms.Views.LoginPage"

BindingContext="{Binding Main, Source={StaticResource Locator}}"

Title="Login">

<ContentPage.Content>

<ScrollView

BindingContext="{Binding Login}">

<StackLayout

Padding="5">

<Label

Text="Email">

</Label>

<Entry

Keyboard="Email"

Placeholder="Enter your email..."

Text="{Binding Email}">

</Entry>

<Label

Text="Password">

</Label>

<Entry

IsPassword="True"

Placeholder="Enter your password..."

Text="{Binding Password}">

</Entry>

<Button

Command="{Binding LoginCommand}"

Text="Login">

</Button>

</StackLayout>

</ScrollView>

</ContentPage.Content>

</ContentPage>

1. Add the NuGet **MvvmLigthLibsStd10**. (Plaase search as: **Mvvm Ligth Libs Std**)
2. In ViewModels add the class **LoginViewModel**:

using System.Windows.Input;

using GalaSoft.MvvmLight.Command;

using Xamarin.Forms;

public class LoginViewModel

{

public string Email { get; set; }

public string Password { get; set; }

public ICommand LoginCommand => new RelayCommand(this.Login);

private async void Login()

{

if (string.IsNullOrEmpty(this.Email))

{

await Application.Current.MainPage.DisplayAlert("Error", "You must enter an email", "Accept");

return;

}

if (string.IsNullOrEmpty(this.Password))

{

await Application.Current.MainPage.DisplayAlert("Error", "You must enter a password", "Accept");

return;

}

if (!this.Email.Equals("jzuluaga55@gmail.com") || !this.Password.Equals("123456"))

{

await Application.Current.MainPage.DisplayAlert("Error", "Incorrect user or password", "Accept");

return;

}

await Application.Current.MainPage.DisplayAlert("Ok", "Fuck yeah!!!", "Accept");

}

}

1. Modify the **MainViewModel**:

public class MainViewModel

{

public LoginViewModel Login { get; set; }

public MainViewModel()

{

this.Login = new LoginViewModel();

}

}

1. Modify the **App.xaml.cs**:

using Views;

using Xamarin.Forms;

public partial class App : Application

{

public App()

{

InitializeComponent();

this.MainPage = new NavigationPage(new LoginPage());

}

protected override void OnStart()

{

// Handle when your app starts

}

protected override void OnSleep()

{

// Handle when your app sleeps

}

protected override void OnResume()

{

// Handle when your app resumes

}

}

1. Test it.

# Fix Bug to Don’t Replace Images

1. Modify the MVC **ProductsController** in Create and Edit:

if (view.ImageFile != null && view.ImageFile.Length > 0)

{

var guid = Guid.NewGuid().ToString();

var file = $"{guid}.jpg";

path = Path.Combine(

Directory.GetCurrentDirectory(),

"wwwroot\\images\\Products",

file);

using (var stream = new FileStream(path, FileMode.Create))

{

await view.ImageFile.CopyToAsync(stream);

}

path = $"~/images/Products/{file}";

}

1. Test it.

# Consuming RestFull

1. Add the NuGet **Newtonsoft.Json** to project **Commond**.
2. Add the folder **Models** and inside it those classes (I recommend use the <http://json2csharp.com/> page):

using System;

using Newtonsoft.Json;

public class User

{

[JsonProperty("firstName")]

public string FirstName { get; set; }

[JsonProperty("lastName")]

public string LastName { get; set; }

[JsonProperty("id")]

public Guid Id { get; set; }

[JsonProperty("userName")]

public string UserName { get; set; }

[JsonProperty("normalizedUserName")]

public string NormalizedUserName { get; set; }

[JsonProperty("email")]

public string Email { get; set; }

[JsonProperty("normalizedEmail")]

public string NormalizedEmail { get; set; }

[JsonProperty("emailConfirmed")]

public bool EmailConfirmed { get; set; }

[JsonProperty("passwordHash")]

public string PasswordHash { get; set; }

[JsonProperty("securityStamp")]

public string SecurityStamp { get; set; }

[JsonProperty("concurrencyStamp")]

public Guid ConcurrencyStamp { get; set; }

[JsonProperty("phoneNumber")]

public string PhoneNumber { get; set; }

[JsonProperty("phoneNumberConfirmed")]

public bool PhoneNumberConfirmed { get; set; }

[JsonProperty("twoFactorEnabled")]

public bool TwoFactorEnabled { get; set; }

[JsonProperty("lockoutEnd")]

public object LockoutEnd { get; set; }

[JsonProperty("lockoutEnabled")]

public bool LockoutEnabled { get; set; }

[JsonProperty("accessFailedCount")]

public long AccessFailedCount { get; set; }

}

And:

using Newtonsoft.Json;

using System;

public class Product

{

[JsonProperty("id")]

public int Id { get; set; }

[JsonProperty("name")]

public string Name { get; set; }

[JsonProperty("price")]

public decimal Price { get; set; }

[JsonProperty("imageUrl")]

public string ImageUrl { get; set; }

[JsonProperty("lastPurchase")]

public DateTime LastPurchase { get; set; }

[JsonProperty("lastSale")]

public DateTime LastSale { get; set; }

[JsonProperty("isAvailabe")]

public bool IsAvailabe { get; set; }

[JsonProperty("stock")]

public double Stock { get; set; }

[JsonProperty("user")]

public User User { get; set; }

[JsonProperty("imageFullPath")]

public Uri ImageFullPath { get; set; }

}

1. Add the **Response** model.

public class Response

{

public bool IsSuccess { get; set; }

public string Message { get; set; }

public object Result { get; set; }

}

1. In Common project add the folder **Services** and inside it add the class **ApiService**.

using System;

using System.Collections.Generic;

using System.Net.Http;

using Models;

using Newtonsoft.Json;

using System.Threading.Tasks;

public class ApiService

{

public async Task<Response> GetListAsync<T>(string urlBase, string servicePrefix, string controller)

{

try

{

var client = new HttpClient

{

BaseAddress = new Uri(urlBase)

};

var url = $"{servicePrefix}{controller}";

var response = await client.GetAsync(url);

var result = await response.Content.ReadAsStringAsync();

if (!response.IsSuccessStatusCode)

{

return new Response

{

IsSuccess = false,

Message = result,

};

}

var list = JsonConvert.DeserializeObject<List<T>>(result);

return new Response

{

IsSuccess = true,

Result = list

};

}

catch (Exception ex)

{

return new Response

{

IsSuccess = false,

Message = ex.Message

};

}

}

}

1. Add the **ProductsPage**.

<?xml version="1.0" encoding="utf-8" ?>

<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

x:Class="Shop.UIForms.Views.ProductsPage"

BindingContext="{Binding Main, Source={StaticResource Locator}}"

Title="Products">

<ContentPage.Content>

<StackLayout

BindingContext="{Binding Products}"

Padding="5">

<ListView

HasUnevenRows="True"

ItemsSource="{Binding Products}">

<ListView.ItemTemplate>

<DataTemplate>

<ViewCell>

<Grid>

<Grid.ColumnDefinitions>

<ColumnDefinition Width="Auto"/>

<ColumnDefinition Width="\*"/>

</Grid.ColumnDefinitions>

<Image

Grid.Column="0"

Source="{Binding ImageFullPath}"

WidthRequest="100">

</Image>

<StackLayout

Grid.Column="1"

VerticalOptions="Center">

<Label

FontAttributes="Bold"

FontSize="Medium"

Text="{Binding Name}"

TextColor="Black">

</Label>

<Label

Text="{Binding Price, StringFormat='{0:C2}'}"

TextColor="Black">

</Label>

</StackLayout>

</Grid>

</ViewCell>

</DataTemplate>

</ListView.ItemTemplate>

</ListView>

</StackLayout>

</ContentPage.Content>

</ContentPage>

1. Add the **BaseViewModel**:

using System.Collections.Generic;

using System.ComponentModel;

using System.Runtime.CompilerServices;

public class BaseViewModel : INotifyPropertyChanged

{

public event PropertyChangedEventHandler PropertyChanged;

protected void OnPropertyChanged([CallerMemberName] string propertyName = null)

{

PropertyChanged?.Invoke(this, new PropertyChangedEventArgs(propertyName));

}

protected void SetValue<T>(ref T backingField, T value, [CallerMemberName] string propertyName = null)

{

if (EqualityComparer<T>.Default.Equals(backingField, value))

{

return;

}

backingField = value;

OnPropertyChanged(propertyName);

}

}

1. Add the **ProductsViewModel**:

using System.Collections.Generic;

using System.Collections.ObjectModel;

using Common.Models;

using Common.Services;

using Xamarin.Forms;

public class ProductsViewModel : BaseViewModel

{

private ApiService apiService;

private ObservableCollection<Product> products;

public ObservableCollection<Product> Products

{

get { return this.products; }

set { this.SetValue(ref this.products, value); }

}

public ProductsViewModel()

{

this.apiService = new ApiService();

this.LoadProducts();

}

private async void LoadProducts()

{

var response = await this.apiService.GetListAsync<Product>(

"https://shopprep.azurewebsites.net",

"/api",

"/Products");

if (!response.IsSuccess)

{

await Application.Current.MainPage.DisplayAlert(

"Error",

response.Message,

"Accept");

return;

}

var products = (List<Product>)response.Result;

this.Products = new ObservableCollection<Product>(products);

}

}

1. Modify the **MainViewModel**.

public class MainViewModel

{

private static MainViewModel instance;

public LoginViewModel Login { get; set; }

public ProductsViewModel Products { get; set; }

public MainViewModel()

{

instance = this;

this.Login = new LoginViewModel();

}

public static MainViewModel GetInstance()

{

if (instance == null)

{

return new MainViewModel();

}

return instance;

}

}

1. Modify the **LoginViewModel**.

if (!this.Email.Equals("jzuluaga55@gmail.com") || !this.Password.Equals("123456"))

{

await Application.Current.MainPage.DisplayAlert("Error", "Incorrect user or password", "Accept");

return;

}

MainViewModel.GetInstance().Products = new ProductsViewModel();

await Application.Current.MainPage.Navigation.PushAsync(new ProductsPage());

1. Now add an activity indicator and refresh to the list view. Modify the **ProductsPage**:

<ListView

IsPullToRefreshEnabled="True"

IsRefreshing="{Binding IsRefreshing}"

HasUnevenRows="True"

ItemsSource="{Binding Products}"

RefreshCommand="{Binding RefreshCommand}">

1. Modify the **ProductViewModel**:

using System.Collections.Generic;

using System.Collections.ObjectModel;

using System.Windows.Input;

using Common.Models;

using Common.Services;

using GalaSoft.MvvmLight.Command;

using Xamarin.Forms;

public class ProductsViewModel : BaseViewModel

{

private readonly ApiService apiService;

private ObservableCollection<Product> products;

private bool isRefreshing;

public ObservableCollection<Product> Products

{

get => this.products;

set => this.SetValue(ref this.products, value);

}

public bool IsRefreshing

{

get => this.isRefreshing;

set => this.SetValue(ref this.isRefreshing, value);

}

public ICommand RefreshCommand => new RelayCommand(this.LoadProducts);

public ProductsViewModel()

{

this.apiService = new ApiService();

this.LoadProducts();

}

private async void LoadProducts()

{

this.IsRefreshing = true;

var response = await this.apiService.GetListAsync<Product>(

"https://shopprep.azurewebsites.net",

"/api",

"/Products");

if (!response.IsSuccess)

{

await Application.Current.MainPage.DisplayAlert(

"Error",

response.Message,

"Accept");

this.IsRefreshing = false;

return;

}

var products = (List<Product>)response.Result;

this.Products = new ObservableCollection<Product>(products);

this.IsRefreshing = false;

}

}

1. Test it.

# To Disable Cascade Delete Rule & Avoid Warnings in Update Database

(Tanks to Starling Germosen (<https://www.youtube.com/user/sgrysoft?feature=em-comments>)

1. Add this method to **DataContext**:

protected override void OnModelCreating(ModelBuilder modelBuilder)

{

modelBuilder.Entity<Product>()

.Property(p => p.Price)

.HasColumnType("decimal(18,2)");

var cascadeFKs = modelBuilder.Model

.G­etEntityTypes()

.SelectMany(t => t.GetForeignKeys())

.Where(fk => !fk.IsOwnership && fk.DeleteBehavior == DeleteBehavior.Casca­de);

foreach (var fk in cascadeFKs)

{

fk.DeleteBehavior = DeleteBehavior.Restr­ict;

}

base.OnModelCreating(modelBuilder);

}

# Implementing login and logout in Web

1. Create the model for login (in Web.Models):

using System.ComponentModel.DataAnnotations;

public class LoginViewModel

{

[Required]

[EmailAddress]

public string Username { get; set; }

[Required]

public string Password { get; set; }

public bool RememberMe { get; set; }

}

1. Add those methods to interface and implementation:

Task<SignInResult> LoginAsync(LoginViewModel model);

Task LogoutAsync();

Implementation:

public UserHelper(UserManager<User> userManager, SignInManager<User> signInManager)

{

this.userManager = userManager;

this.signInManager = signInManager;

}

public async Task<SignInResult> LoginAsync(LoginViewModel model)

{

return await this.signInManager.PasswordSignInAsync(

model.Username,

model.Password,

model.RememberMe,

false);

}

public async Task LogoutAsync()

{

await this.signInManager.SignOutAsync();

}

1. Create the controller for login:

using System.Linq;

using System.Threading.Tasks;

using Helpers;

using Microsoft.AspNetCore.Mvc;

using Models;

public class AccountController : Controller

{

private readonly IUserHelper userHelper;

public AccountController(IUserHelper userHelper)

{

this.userHelper = userHelper;

}

public IActionResult Login()

{

if (this.User.Identity.IsAuthenticated)

{

return this.RedirectToAction("Index", "Home");

}

return this.View();

}

[HttpPost]

public async Task<IActionResult> Login(LoginViewModel model)

{

if (this.ModelState.IsValid)

{

var result = await this.userHelper.LoginAsync(model);

if (result.Succeeded)

{

if (this.Request.Query.Keys.Contains("ReturnUrl"))

{

return this.Redirect(this.Request.Query["ReturnUrl"].First());

}

return this.RedirectToAction("Index", "Home");

}

}

this.ModelState.AddModelError(string.Empty, "Failed to login.");

return this.View(model);

}

public async Task<IActionResult> Logout()

{

await this.userHelper.LogoutAsync();

return this.RedirectToAction("Index", "Home");

}

}

1. Create the view for login:

@model Shop.Web.Models.LoginViewModel

@{

ViewData["Title"] = "Login";

}

<h2>Login</h2>

<div class="row">

<div class="col-md-4 offset-md-4">

<form method="post">

<div asp-validation-summary="ModelOnly"></div>

<div class="form-group">

<label asp-for="Username">Username</label>

<input asp-for="Username" class="form-control" />

<span asp-validation-for="Username" class="text-warning"></span>

</div>

<script src="~/lib/jquery-validation/dist/jquery.validate.js"></script>

<div class="form-group">

<label asp-for="Password">Password</label>

<input asp-for="Password" type="password" class="form-control" />

<span asp-validation-for="Password" class="text-warning"></span>

</div>

<div class="form-group">

<div class="form-check">

<input asp-for="RememberMe" type="checkbox" class="form-check-input" />

<label asp-for="RememberMe" class="form-check-label">Remember Me?</label>

</div>

<span asp-validation-for="RememberMe" class="text-warning"></span>

</div>

<div class="form-group">

<input type="submit" value="Login" class="btn btn-success" />

<a asp-action="Register" class="btn btn-primary">Register New User</a>

</div>

</form>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

}

1. Add the annotation authorize to the other controllers:

[Authorize]

1. Add the options login and logout in the menu:

<ul class="nav navbar-nav navbar-right">

@if (this.User.Identity.IsAuthenticated)

{

<li><a asp-area="" asp-controller="Account" asp-action="ChangeUser">@this.User.Identity.Name</a></li>

<li><a asp-area="" asp-controller="Account" asp-action="Logout">Logout</a></li>

}

else

{

<li><a asp-area="" asp-controller="Account" asp-action="Login">Login</a></li>

}

</ul>

1. If the any user is logged in, don’t show the products option in menu:

@if (this.User.Identity.IsAuthenticated)

{

<li><a asp-area="" asp-controller="Products" asp-action="Index">Products</a></li>

}

1. Test it.

# Registering new users

1. Create the model for register new users (in Web.Models):

using System.ComponentModel.DataAnnotations;

public class RegisterNewUserViewModel

{

[Required]

[Display(Name = "First Name")]

public string FirstName { get; set; }

[Required]

[Display(Name = "Last Name")]

public string LastName { get; set; }

[Required]

[DataType(DataType.EmailAddress)]

public string Username { get; set; }

[Required]

public string Password { get; set; }

[Required]

[Compare("Password")]

public string Confirm { get; set; }

}

1. Create the actions in the controller:

public IActionResult Register()

{

return this.View();

}

[HttpPost]

public async Task<IActionResult> Register(RegisterNewUserViewModel model)

{

if (this.ModelState.IsValid)

{

var user = await this.userHelper.GetUserByEmailAsync(model.Username);

if (user == null)

{

user = new User

{

FirstName = model.FirstName,

LastName = model.LastName,

Email = model.Username,

UserName = model.Username

};

var result = await this.userHelper.AddUserAsync(user, model.Password);

if (result != IdentityResult.Success)

{

this.ModelState.AddModelError(string.Empty, "The user couldn't be created.");

return this.View(model);

}

var loginViewModel = new LoginViewModel

{

Password = model.Password,

RememberMe = false,

Username = model.Username

};

var result2 = await this.userHelper.LoginAsync(loginViewModel);

if (result2.Succeeded)

{

return this.RedirectToAction("Index", "Home");

}

this.ModelState.AddModelError(string.Empty, "The user couldn't be login.");

return this.View(model);

}

this.ModelState.AddModelError(string.Empty, "The username is already registered.");

}

return this.View(model);

}

1. Create the register view:

@model Shop.Web.Models.RegisterNewUserViewModel

@{

ViewData["Title"] = "Register";

}

<h2>Register New User</h2>

<div class="row">

<div class="col-md-4 offset-md-4">

<form method="post">

<div asp-validation-summary="ModelOnly"></div>

<div class="form-group">

<label asp-for="FirstName">First Name</label>

<input asp-for="FirstName" class="form-control" />

<span asp-validation-for="FirstName" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="LastName">Last Name</label>

<input asp-for="LastName" class="form-control" />

<span asp-validation-for="LastName" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="Username">Username</label>

<input asp-for="Username" class="form-control" />

<span asp-validation-for="Username" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="Password">Password</label>

<input asp-for="Password" type="password" class="form-control" />

<span asp-validation-for="Password" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="Confirm">Confirm</label>

<input asp-for="Confirm" type="password" class="form-control" />

<span asp-validation-for="Confirm" class="text-warning"></span>

</div>

<div class="form-group">

<input type="submit" value="Register New User" class="btn btn-primary" />

</div>

</form>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

}

1. Test it.

# Modifying users

1. Create those new models (in Web.Models):

using System.ComponentModel.DataAnnotations;

public class ChangeUserViewModel

{

[Required]

[Display(Name = "First Name")]

public string FirstName { get; set; }

[Required]

[Display(Name = "Last Name")]

public string LastName { get; set; }

}

And:

using System.ComponentModel.DataAnnotations;

public class ChangePasswordViewModel

{

[Required]

[Display(Name = "Current password")]

public string OldPassword { get; set; }

[Required]

[Display(Name = "New password")]

public string NewPassword { get; set; }

[Required]

[Compare("NewPassword")]

public string Confirm { get; set; }

}

1. Add this methods to **IUserHelper**:

Task<IdentityResult> UpdateUserAsync(User user);

Task<IdentityResult> ChangePasswordAsync(User user, string oldPassword, string newPassword);

And the implementation:

public async Task<IdentityResult> UpdateUserAsync(User user)

{

return await this.userManager.UpdateAsync(user);

}

public async Task<IdentityResult> ChangePasswordAsync(User user, string oldPassword, string newPassword)

{

return await this.userManager.ChangePasswordAsync(user, oldPassword, newPassword);

}

1. Create this actions in the account controller:

public async Task<IActionResult> ChangeUser()

{

var user = await this.userHelper.GetUserByEmailAsync(this.User.Identity.Name);

var model = new ChangeUserViewModel();

if (user != null)

{

model.FirstName = user.FirstName;

model.LastName = user.LastName;

}

return this.View(model);

}

[HttpPost]

public async Task<IActionResult> ChangeUser(ChangeUserViewModel model)

{

if (this.ModelState.IsValid)

{

var user = await this.userHelper.GetUserByEmailAsync(this.User.Identity.Name);

if (user != null)

{

user.FirstName = model.FirstName;

user.LastName = model.LastName;

var respose = await this.userHelper.UpdateUserAsync(user);

if (respose.Succeeded)

{

this.ViewBag.UserMessage = "User updated!";

}

else

{

this.ModelState.AddModelError(string.Empty, respose.Errors.FirstOrDefault().Description);

}

}

else

{

this.ModelState.AddModelError(string.Empty, "User no found.");

}

}

return this.View(model);

}

1. Create this view:

@model Shop.Web.Models.ChangeUserViewModel

@{

ViewData["Title"] = "Register";

}

<h2>Update User</h2>

<div class="row">

<div class="col-md-4 offset-md-4">

<form method="post">

<div asp-validation-summary="ModelOnly"></div>

<div class="form-group">

<label asp-for="FirstName">First Name</label>

<input asp-for="FirstName" class="form-control" />

<span asp-validation-for="FirstName" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="LastName">Last Name</label>

<input asp-for="LastName" class="form-control" />

<span asp-validation-for="LastName" class="text-warning"></span>

</div>

<div class="form-group">

<input type="submit" value="Update" class="btn btn-primary" />

<a asp-action="ChangePassword" class="btn btn-success">Change Password</a>

</div>

<div class="text-success">@ViewBag.UserMessage</div>

</form>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

}

1. And now this actions in the controller to password modification:

public IActionResult ChangePassword()

{

return this.View();

}

[HttpPost]

public async Task<IActionResult> ChangePassword(ChangePasswordViewModel model)

{

if (this.ModelState.IsValid)

{

var user = await this.userHelper.GetUserByEmailAsync(this.User.Identity.Name);

if (user != null)

{

var result = await this.userHelper.ChangePasswordAsync(user, model.OldPassword, model.NewPassword);

if (result.Succeeded)

{

return this.RedirectToAction("ChangeUser");

}

else

{

this.ModelState.AddModelError(string.Empty, result.Errors.FirstOrDefault().Description);

}

}

else

{

this.ModelState.AddModelError(string.Empty, "User no found.");

}

}

return this.View(model);

}

1. Finally add this view:

@model Shop.Web.Models.ChangePasswordViewModel

@{

ViewData["Title"] = "Register";

}

@section Scripts {

<script src="~/lib/jquery-validation/dist/jquery.validate.min.js"></script>

<script src="~/lib/jquery-validation-unobtrusive/jquery.validate.unobtrusive.min.js"></script>

}

<h2>Change Password</h2>

<div class="row">

<div class="col-md-4 offset-md-4">

<form method="post">

<div asp-validation-summary="ModelOnly"></div>

<div class="form-group">

<label asp-for="OldPassword">Current password</label>

<input asp-for="OldPassword" type="password" class="form-control" />

<span asp-validation-for="OldPassword" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="NewPassword">New password</label>

<input asp-for="NewPassword" type="password" class="form-control" />

<span asp-validation-for="NewPassword" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="Confirm">Confirm</label>

<input asp-for="Confirm" type="password" class="form-control" />

<span asp-validation-for="Confirm" class="text-warning"></span>

</div>

<div class="form-group">

<input type="submit" value="Change password" class="btn btn-primary" />

<a asp-action="ChangeUser" class="btn btn-success">Back to user</a>

</div>

</form>

</div>

</div>

1. Test it.

# Add Tokens Generation

1. Add those values in json configuration file:

{

"Logging": {

"LogLevel": {

"Default": "Warning"

}

},

"AllowedHosts": "\*",

"ConnectionStrings": {

"DefaultConnection": "Server=(localdb)\\ProjectsV13;Database=Core3;Trusted\_Connection=True;MultipleActiveResultSets=true"

},

"Tokens": {

"Key": "asdfghjikbnvcgfdsrtfyhgcvgfxdgc",

"Issuer": "localhost",

"Audience": "users"

}

}

1. Add this method to **IUserHelper**:

Task<SignInResult> ValidatePasswordAsync(User user, string password);

And the implementation:

public async Task<SignInResult> ValidatePasswordAsync(User user, string password)

{

return await this.signInManager.CheckPasswordSignInAsync(

user,

password,

false);

}

1. Modify the accounts controller constructor:

public AccountController(

SignInManager<User> signInManager,

UserManager<User> userManager,

IConfiguration configuration)

{

this.signInManager = signInManager;

this.userManager = userManager;

this.configuration = configuration;

}

1. Add the method to generate the token in the account controller:

[HttpPost]

public async Task<IActionResult> CreateToken([FromBody] LoginViewModel model)

{

if (this.ModelState.IsValid)

{

var user = await this.userHelper.GetUserByEmailAsync(model.Username);

if (user != null)

{

var result = await this.userHelper.ValidatePasswordAsync(

user,

model.Password);

if (result.Succeeded)

{

var claims = new[]

{

new Claim(JwtRegisteredClaimNames.Sub, user.Email),

new Claim(JwtRegisteredClaimNames.Jti, Guid.NewGuid().ToString())

};

var key = new SymmetricSecurityKey(Encoding.UTF8.GetBytes(this.configuration["Tokens:Key"]));

var credentials = new SigningCredentials(key, SecurityAlgorithms.HmacSha256);

var token = new JwtSecurityToken(

this.configuration["Tokens:Issuer"],

this.configuration["Tokens:Audience"],

claims,

expires: DateTime.UtcNow.AddDays(15),

signingCredentials: credentials);

var results = new

{

token = new JwtSecurityTokenHandler().WriteToken(token),

expiration = token.ValidTo

};

return this.Created(string.Empty, results);

}

}

}

return this.BadRequest();

}

1. Add the authorization annotation to API Products controllers:

[Authorize(AuthenticationSchemes = JwtBearerDefaults.AuthenticationScheme)]

1. Add the new configuration for validate the tokens (before data context lines):

services.AddAuthentication()

.AddCookie()

.AddJwtBearer(cfg =>

{

cfg.TokenValidationParameters = new TokenValidationParameters

{

ValidIssuer = this.Configuration["Tokens:Issuer"],

ValidAudience = this.Configuration["Tokens:Audience"],

IssuerSigningKey = new SymmetricSecurityKey(Encoding.UTF8.GetBytes(this.Configuration["Tokens:Key"]))

};

});

1. Test it.

# Add Font Awesome for Icons

1. Add a NPM configuration file and add the line that references Font Awesome library:

{

"version": "1.0.0",

"name": "asp.net",

"private": true,

"devDependencies": {

"font-awesome": "^4.7.0"

}

}

1. Copy the hidden folder “node\_modules” into “wwwroot”.
2. Reference the font awesome css in “\_Layout”:

<environment include="Development">

<link rel="stylesheet" href="~/lib/bootstrap/dist/css/bootstrap.css" />

<link href="~/node\_modules/font-awesome/css/font-awesome.min.css" rel="stylesheet" />

<link rel="stylesheet" href="~/css/site.css" />

</environment>

1. Add some funny icons, for example in create a product view:

<div class="form-group">

<button type="submit" class="btn btn-primary"><i class="fa fa-save"></i> Create</button>

<a asp-action="Index" class="btn btn-success"><i class="fa fa-chevron-left"></i> Back to List</a>

</div>

# Add Roles

1. Add those methods to **IUserHelper**:

Task CheckRoleAsync(string roleName);

Task AddUserToRoleAsync(User user, string roleName);

Task<bool> IsUserInRoleAsync(User user, string roleName);

And the implementation:

public UserHelper(

UserManager<User> userManager,

SignInManager<User> signInManager,

RoleManager<IdentityRole> roleManager)

{

this.userManager = userManager;

this.signInManager = signInManager;

this.roleManager = roleManager;

}

public async Task CheckRoleAsync(string roleName)

{

var roleExists = await this.roleManager.RoleExistsAsync(roleName);

if (!roleExists)

{

await this.roleManager.CreateAsync(new IdentityRole

{

Name = roleName

});

}

}

public async Task AddUserToRoleAsync(User user, string roleName)

{

await this.userManager.AddToRoleAsync(user, roleName);

}

public async Task<bool> IsUserInRoleAsync(User user, string roleName)

{

return await this.userManager.IsInRoleAsync(user, roleName);

}

1. Modify the seeder class:

public async Task SeedAsync()

{

await this.context.Database.EnsureCreatedAsync();

await this.userHelper.CheckRoleAsync("Admin");

await this.userHelper.CheckRoleAsync("Customer");

// Add user

var user = await this.userHelper.GetUserByEmailAsync("jzuluaga55@gmail.com");

if (user == null)

{

user = new User

{

FirstName = "Juan",

LastName = "Zuluaga",

Email = "jzuluaga55@gmail.com",

UserName = "jzuluaga55@gmail.com",

PhoneNumber = "3506342747"

};

var result = await this.userHelper.AddUserAsync(user, "123456");

if (result != IdentityResult.Success)

{

throw new InvalidOperationException("Could not create the user in seeder");

}

await this.userHelper.AddUserToRoleAsync(user, "Admin");

}

var isInRole = await this.userHelper.IsUserInRoleAsync(user, "Admin");

if (!isInRole)

{

await this.userHelper.AddUserToRoleAsync(user, "Admin");

}

// Add products

if (!this.context.Products.Any())

{

this.AddProduct("iPhone X", user);

this.AddProduct("Magic Mouse", user);

this.AddProduct("iWatch Series 4", user);

await this.context.SaveChangesAsync();

}

}

1. Now you can include the role in authorization annotation in methods Create, Edit and Delete in Products MVC controller:

[Authorize(Roles = "Admin")]

1. Test it.

# Redirect Pages

(Thanks to Gonzalo Jaimes)

## Not Authorized

1. Create **NotAuthorized** method on **AccountController**:

public IActionResult NotAuthorized()

{

return this.View();

}

1. Create correspondent view with this lines:

@{

ViewData["Title"] = "NotAuthorized";

}

<h2>YOU ARE NOT AUTHORIZED TO PERFORM THIS ACTION!</h2>

1. Modify **Startup.cs** to configure the Application Cookie Options (before cookies lines)

services.ConfigureApplicationCookie(options =>

{

options.LoginPath = "/Account/NotAuthorized";

options.AccessDeniedPath = "/Account/NotAuthorized";

});

1. Test it!

## Handle Not Found Errors Gracefully

1. Create **NotFoundViewResult** Class (Inside **Helpers** Folder). This way we can customize the page depending on the controller action.

using Microsoft.AspNetCore.Mvc;

using System.Net;

public class NotFoundViewResult : ViewResult

{

public NotFoundViewResult(string viewName)

{

ViewName = viewName;

StatusCode = (int)HttpStatusCode.NotFound;

}

}

1. In the controller Action call the **NotFoundViewResult** method when you`ll expect a not found event

// GET: Products/Details/5

public async Task<IActionResult> Details(int? id)

{

if (id == null)

{

return new NotFoundViewResult("ProductNotFound");

}

var product = await this.productRepository.GetByIdAsync(id.Value);

if (product == null)

{

return new NotFoundViewResult("ProductNotFound");

}

return View(product);

}

1. Create the **ProductNotFound** action or any other custom view depending on what you want.

public IActionResult ProductNotFound()

{

return this.View();

}

1. Add the view.

@{

ViewData["Title"] = "ProductNotFound";

}

<h2>Product Not Found</h2>

1. Test it!.

## Manage Not Found Pages

When a page is not found, for instance, trying to execute an non-existing controller action, we need to handle the 404 not found error. StatusCodePagesWithReExecute is a clever piece of Middleware that handles non-success status codes *where the response has not already started*.  This means that when we are handling the error inside a controller action it will not be handled by this middleware which is what we want.

1. We add it to the pipeline inside **Startup.cs** with a wildcard as a parameter.

public void Configure(IApplicationBuilder app, IHostingEnvironment env)

{

if (env.IsDevelopment())

{

app.UseDeveloperExceptionPage();

}

else

{

app.UseExceptionHandler("/Home/Error");

app.UseHsts();

}

app.UseStatusCodePagesWithReExecute("/error/{0}");

app.UseHttpsRedirection();

app.UseStaticFiles();

app.UseAuthentication();

app.UseCookiePolicy();

app.UseMvc(routes =>

{

routes.MapRoute(

name: "default",

template: "{controller=Home}/{action=Index}/{id?}");

});

}

1. Inside the Home Controller create the following action.

[Route("error/404")]

public IActionResult Error404()

{

return View();

}

1. Create the correspondent view.

@{

ViewData["Title"] = "Error404";

}

<br />

<br />

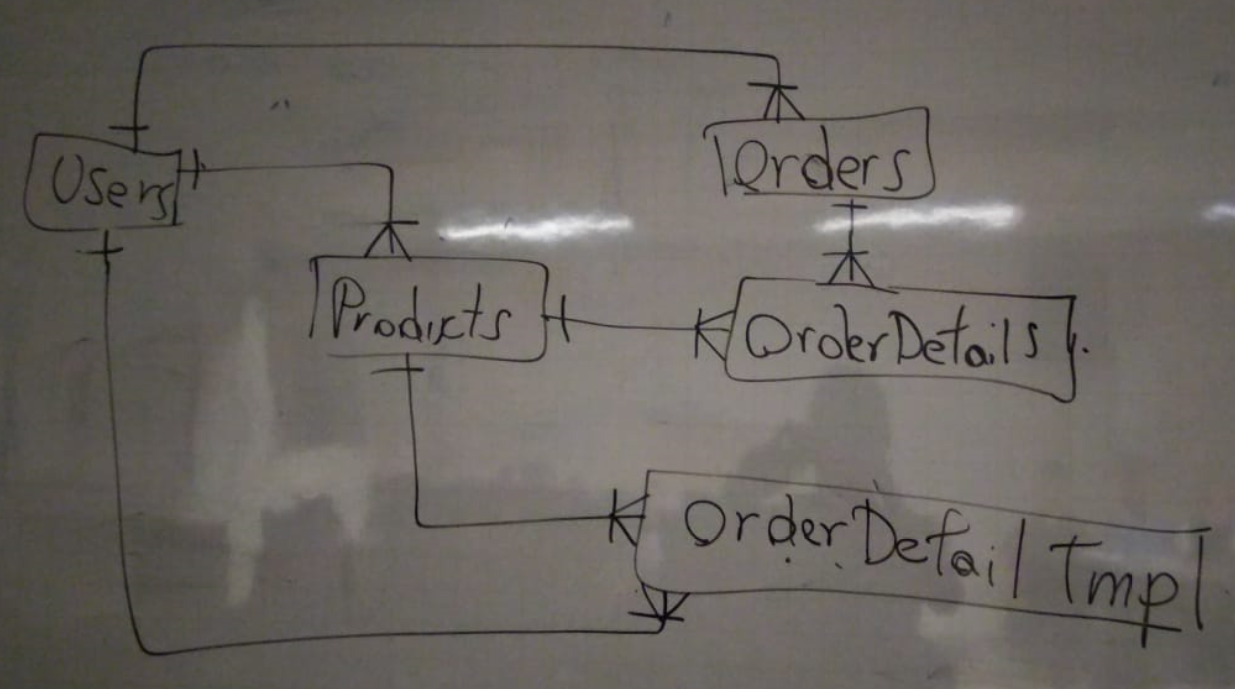
<img src="~/images/gopher\_head-min.png" />

<h2>Sorry, page not found</h2>

1. Test it!.

# Orders Functionality

We need to build this:



1. Add order detail temporarily model (in Common.Models):

using System.ComponentModel.DataAnnotations;

public class OrderDetailTemp : IEntity

{

public int Id { get; set; }

[Required]

public User User { get; set; }

[Required]

public Product Product { get; set; }

[DisplayFormat(DataFormatString = "{0:C2}")]

public decimal Price { get; set; }

[DisplayFormat(DataFormatString = "{0:N2}")]

public double Quantity { get; set; }

[DisplayFormat(DataFormatString = "{0:C2}")]

public decimal Value { get { return this.Price \* (decimal)this.Quantity; } }

}

1. Add order detail model:

using System.ComponentModel.DataAnnotations;

public class OrderDetail : IEntity

{

public int Id { get; set; }

[Required]

public Product Product { get; set; }

[DisplayFormat(DataFormatString = "{0:C2}")]

public decimal Price { get; set; }

[DisplayFormat(DataFormatString = "{0:N2}")]

public double Quantity { get; set; }

[DisplayFormat(DataFormatString = "{0:C2}")]

public decimal Value { get { return this.Price \* (decimal)this.Quantity; } }

}

1. Add order model:

using System;

using System.Collections.Generic;

using System.ComponentModel.DataAnnotations;

using System.Linq;

public class Order : IEntity

{

public int Id { get; set; }

[Required]

[Display(Name = "Order date")]

[DisplayFormat(DataFormatString = "{0:yyyy/MM/dd hh:mm tt}", ApplyFormatInEditMode = false)]

public DateTime OrderDate { get; set; }

[Display(Name = "Delivery date")]

[DisplayFormat(DataFormatString = "{0:yyyy/MM/dd hh:mm tt}", ApplyFormatInEditMode = false)]

public DateTime? DeliveryDate { get; set; }

[Required]

public User User { get; set; }

public IEnumerable<OrderDetail> Items { get; set; }

[DisplayFormat(DataFormatString = "{0:N2}")]

public double Quantity { get { return this.Items == null ? 0 : this.Items.Sum(i => i.Quantity); } }

[DisplayFormat(DataFormatString = "{0:C2}")]

public decimal Value { get { return this.Items == null ? 0 : this.Items.Sum(i => i.Value); } }

}

1. Add the order and order detail temporarily to data context, it’s not necessary to add order detail, but I recommend to include it.

public DbSet<Product> Products { get; set; }

public DbSet<Order> Orders { get; set; }

public DbSet<OrderDetail> OrderDetails { get; set; }

public DbSet<OrderDetailTemp> OrderDetailTemps { get; set; }

1. Save all and run this commands to update the database:

dotnet ef migrations add OrderModels

dotnet ef database update

Or you can run this commands in package manager console:

PM> add-migration OrderModels

PM> update-database

1. Add the new repository **IOrderRepository**:

using System.Linq;

using System.Threading.Tasks;

using Entities;

public interface IOrderRepository : IGenericRepository<Order>

{

Task<IQueryable<Order>> GetOrdersAsync(string userName);

}

1. Add the implementation **OrderRepository**:

using System.Linq;

using System.Threading.Tasks;

using Entities;

using Helpers;

using Microsoft.EntityFrameworkCore;

public class OrderRepository : GenericRepository<Order>, IOrderRepository

{

private readonly DataContext context;

private readonly IUserHelper userHelper;

public OrderRepository(DataContext context, IUserHelper userHelper) : base(context)

{

this.context = context;

this.userHelper = userHelper;

}

public async Task<IQueryable<Order>> GetOrdersAsync(string userName)

{

var user = await this.userHelper.GetUserByEmailAsync(userName);

if (user == null)

{

return null;

}

if (await this.userHelper.IsUserInRoleAsync(user, "Admin"))

{

return this.context.Orders

.Include(o => o.Items)

.ThenInclude(i => i.Product)

.OrderByDescending(o => o.OrderDate);

}

return this.context.Orders

.Include(o => o.Items)

.ThenInclude(i => i.Product)

.Where(o => o.User == user)

.OrderByDescending(o => o.OrderDate);

}

}

1. Add the injection for the new repository:

services.AddScoped<ICountryRepository, CountryRepository>();

services.AddScoped<IOrderRepository, OrderRepository>();

services.AddScoped<IUserHelper, UserHelper>();

1. Add an empty controller **OrdersController**:

using System.Threading.Tasks;

using Data;

using Microsoft.AspNetCore.Authorization;

using Microsoft.AspNetCore.Mvc;

[Authorize]

public class OrdersController : Controller

{

private readonly IOrderRepository orderRepository;

public OrdersController(IOrderRepository orderRepository)

{

this.orderRepository = orderRepository;

}

public async Task<IActionResult> Index()

{

var model = await orderRepository.GetOrdersAsync(this.User.Identity.Name);

return View(model);

}

}

1. Add this property to users entity:

[Display(Name = "Full Name")]

public string FullName { get { return $"{this.FirstName} {this.LastName}"; } }

1. Add the corresponding view:

@model IEnumerable<Shop.Web.Data.Entities.Order>

@{

ViewData["Title"] = "Index";

}

@model IEnumerable<Shop.Web.Data.Entities.Order>

@{

ViewData["Title"] = "Index";

}

<h2>Orders</h2>

<p>

<a asp-action="Create" class="btn btn-primary">Create New</a>

</p>

<table class="table">

<thead>

<tr>

@if (this.User.IsInRole("Admin"))

{

<th>

@Html.DisplayNameFor(model => model.User.FullName)

</th>

}

<th>

@Html.DisplayNameFor(model => model.OrderDate)

</th>

<th>

@Html.DisplayNameFor(model => model.DeliveryDate)

</th>

<th>

# Lines

</th>

<th>

@Html.DisplayNameFor(model => model.Quantity)

</th>

<th>

@Html.DisplayNameFor(model => model.Value)

</th>

<th></th>

</tr>

</thead>

<tbody>

@foreach (var item in Model)

{

<tr>

@if (this.User.IsInRole("Admin"))

{

<th>

@Html.DisplayFor(modelItem => item.User.FullName)

</th>

}

<td>

@Html.DisplayFor(modelItem => item.OrderDate)

</td>

<td>

@Html.DisplayFor(modelItem => item.DeliveryDate)

</td>

<td>

@Html.DisplayFor(modelItem => item.Items.Count())

</td>

<td>

@Html.DisplayFor(modelItem => item.Quantity)

</td>

<td>

@Html.DisplayFor(modelItem => item.Value)

</td>

<td>

<a asp-action="Edit" asp-route-id="@item.Id" class="btn btn-warning">Edit</a>

<a asp-action="Details" asp-route-id="@item.Id" class="btn btn-info">Details</a>

<a asp-action="Delete" asp-route-id="@item.Id" class="btn btn-danger">Delete</a>

</td>

</tr>

}

</tbody>

</table>

1. Add the new menu:

<li><a asp-area="" asp-controller="Orders" asp-action="Index">Orders</a></li>

1. Test it what we do until this step.
2. Add the method to get temporary orders for a user:

Task<IQueryable<OrderDetailTemp>> GetDetailTempsAsync(string userName);

And the implementation:

public async Task<IQueryable<OrderDetailTemp>> GetDetailTempsAsync(string userName)

{

var user = await this.userHelper.GetUserByEmailAsync(userName);

if (user == null)

{

return null;

}

return this.context.OrderDetailTemps

.Include(o => o.Product)

.Where(o => o.User == user)

.OrderBy(o => o.Product.Name);

}

1. Add the method create to the orders controller:

public async Task<IActionResult> Create()

{

var model = await this.orderRepository.GetDetailTempsAsync(this.User.Identity.Name);

return this.View(model);

}

1. And their corresponding view:

@model IEnumerable<Shop.Web.Data.Entities.OrderDetailTemp>

@{

ViewData["Title"] = "Create";

}

<h2>Create</h2>

<p>

<a asp-action="AddProduct" class="btn btn-success">Add Product</a>

<a asp-action="ConfirmOrder" class="btn btn-primary">Confirm Order</a>

</p>

<table class="table">

<thead>

<tr>

<th>

@Html.DisplayNameFor(model => model.Product.Name)

</th>

<th>

@Html.DisplayNameFor(model => model.Price)

</th>

<th>

@Html.DisplayNameFor(model => model.Quantity)

</th>

<th>

@Html.DisplayNameFor(model => model.Value)

</th>

<th></th>

</tr>

</thead>

<tbody>

@foreach (var item in Model)

{

<tr>

<td>

@Html.DisplayFor(modelItem => item.Product.Name)

</td>

<td>

@Html.DisplayFor(modelItem => item.Price)

</td>

<td>

@Html.DisplayFor(modelItem => item.Quantity)

</td>

<td>

@Html.DisplayFor(modelItem => item.Value)

</td>

<td>

<a asp-action="Increase" asp-route-id="@item.Id" class="btn btn-warning"><i class="fa fa-plus"></i></a>

<a asp-action="Decrease" asp-route-id="@item.Id" class="btn btn-info"><i class="fa fa-minus"></i></a>

<a asp-action="DeleteItem" asp-route-id="@item.Id" class="btn btn-danger">Delete</a>

</td>

</tr>

}

</tbody>

</table>

1. Test it.
2. Create the model to add products to order temporary:

using Microsoft.AspNetCore.Mvc.Rendering;

using System.Collections.Generic;

using System.ComponentModel.DataAnnotations;

public class AddItemViewModel

{

[Display(Name = "Product")]

[Range(1, int.MaxValue, ErrorMessage = "You must select a product.")]

public int ProductId { get; set; }

[Range(0.0001, double.MaxValue, ErrorMessage = "The quantiy must be a positive number")]

public double Quantity { get; set; }

public IEnumerable<SelectListItem> Products { get; set; }

}

1. Add this method to **IProductRepository**:

IEnumerable<SelectListItem> GetComboProducts();

And to the implementation:

public IEnumerable<SelectListItem> GetComboProducts()

{

var list = this.context.Products.Select(p => new SelectListItem

{

Text = p.Name,

Value = p.Id.ToString()

}).ToList();

list.Insert(0, new SelectListItem

{

Text = "(Select a product...)",

Value = "0"

});

return list;

}

1. Add this method to **IOrderRepository**:

Task AddItemToOrderAsync(AddItemViewModel model, string userName);

Task ModifyOrderDetailTempQuantityAsync(int id, double quantity);

And to the implementation:

public async Task AddItemToOrderAsync(AddItemViewModel model, string userName)

{

var user = await this.userHelper.GetUserByEmailAsync(userName);

if (user == null)

{

return;

}

var product = await this.context.Products.FindAsync(model.ProductId);

if (product == null)

{

return;

}

var orderDetailTemp = await this.context.OrderDetailTemps

.Where(odt => odt.User == user && odt.Product == product)

.FirstOrDefaultAsync();

if (orderDetailTemp == null)

{

orderDetailTemp = new OrderDetailTemp

{

Price = product.Price,

Product = product,

Quantity = model.Quantity,

User = user,

};

this.context.OrderDetailTemps.Add(orderDetailTemp);

}

else

{

orderDetailTemp.Quantity += model.Quantity;

this.context.OrderDetailTemps.Update(orderDetailTemp);

}

await this.context.SaveChangesAsync();

}

public async Task ModifyOrderDetailTempQuantityAsync(int id, double quantity)

{

var orderDetailTemp = await this.context.OrderDetailTemps.FindAsync(id);

if (orderDetailTemp == null)

{

return;

}

orderDetailTemp.Quantity += quantity;

if (orderDetailTemp.Quantity > 0)

{

this.context.OrderDetailTemps.Update(orderDetailTemp);

await this.context.SaveChangesAsync();

}

}

1. Add those methods to the **OrdersController**:

public IActionResult AddProduct()

{

var model = new AddItemViewModel

{

Quantity = 1,

Products = this.productRepository.GetComboProducts()

};

return View(model);

}

[HttpPost]

public async Task<IActionResult> AddProduct(AddItemViewModel model)

{

if (this.ModelState.IsValid)

{

await this.orderRepository.AddItemToOrderAsync(model, this.User.Identity.Name);

return this.RedirectToAction("Create");

}

return this.View(model);

}

1. Add the view:

@model Shop.Web.Models.AddItemViewModel

@{

ViewData["Title"] = "AddProduct";

}

<h2>Add Product</h2>

<h4>To Order</h4>

<hr />

<div class="row">

<div class="col-md-4">

<form asp-action="AddProduct">

<div asp-validation-summary="ModelOnly" class="text-danger"></div>

<div class="form-group">

<label asp-for="ProductId" class="control-label"></label>

<select asp-for="ProductId" asp-items="Model.Products" class="form-control"></select>

<span asp-validation-for="ProductId" class="text-danger"></span>

</div>

<div class="form-group">

<label asp-for="Quantity" class="control-label"></label>

<input asp-for="Quantity" class="form-control" />

<span asp-validation-for="Quantity" class="text-danger"></span>

</div>

<div class="form-group">

<input type="submit" value="Create" class="btn btn-primary" />

<a asp-action="Index" class="btn btn-success">Back to List</a>

</div>

</form>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

}

1. Test it.
2. Add this method to interface **IOrderRepository**:

Task DeleteDetailTempAsync(int id);

And repository:

public async Task DeleteDetailTempAsync(int id)

{

var orderDetailTemp = await this.context.OrderDetailTemps.FindAsync(id);

if (orderDetailTemp == null)

{

return;

}

this.context.OrderDetailTemps.Remove(orderDetailTemp);

await this.context.SaveChangesAsync();

}

1. Now implement those methods in the controller:

public async Task<IActionResult> DeleteItem(int? id)

{

if (id == null)

{

return NotFound();

}

await this.orderRepository.DeleteDetailTempAsync(id.Value);

return this.RedirectToAction("Create");

}

public async Task<IActionResult> Increase(int? id)

{

if (id == null)

{

return NotFound();

}

await this.orderRepository.ModifyOrderDetailTempQuantityAsync(id.Value, 1);

return this.RedirectToAction("Create");

}

public async Task<IActionResult> Decrease(int? id)

{

if (id == null)

{

return NotFound();

}

await this.orderRepository.ModifyOrderDetailTempQuantityAsync(id.Value, -1);

return this.RedirectToAction("Create");

}

1. Test it.
2. Add the confirm order method in the interface and implementation in **IOrderRepository**:

Task<bool> ConfirmOrderAsync(string userName);

And in the implementation:

public async Task<bool> ConfirmOrderAsync(string userName)

{

var user = await this.userHelper.GetUserByEmailAsync(userName);

if (user == null)

{

return false;

}

var orderTmps = await this.context.OrderDetailTemps

.Include(o => o.Product)

.Where(o => o.User == user)

.ToListAsync();

if (orderTmps == null || orderTmps.Count == 0)

{

return false;

}

var details = orderTmps.Select(o => new OrderDetail

{

Price = o.Price,

Product = o.Product,

Quantity = o.Quantity

}).ToList();

var order = new Order

{

OrderDate = DateTime.UtcNow,

User = user,

Items = details,

};

this.context.Orders.Add(order);

this.context.OrderDetailTemps.RemoveRange(orderTmps);

await this.context.SaveChangesAsync();

return true;

}

1. Modify the order model:

public IEnumerable<OrderDetail> Items { get; set; }

[DisplayFormat(DataFormatString = "{0:N0}")]

public int Lines { get { return this.Items == null ? 0 : this.Items.Count(); } }

[DisplayFormat(DataFormatString = "{0:N2}")]

public double Quantity { get { return this.Items == null ? 0 : this.Items.Sum(i => i.Quantity); } }

1. Modify the index view in Orders:

@model IEnumerable<Core4.Data.Entities.Order>

@{

ViewData["Title"] = "Index";

}

<h2>Orders</h2>

<p>

<a asp-action="Create" class="btn btn-primary">Create New</a>

</p>

<table class="table">

<thead>

<tr>

<th>

@Html.DisplayNameFor(model => model.OrderDate)

</th>

<th>

@Html.DisplayNameFor(model => model.DeliveryDate)

</th>

<th>

@Html.DisplayNameFor(model => model.Lines)

</th>

<th>

@Html.DisplayNameFor(model => model.Quantity)

</th>

<th>

@Html.DisplayNameFor(model => model.Value)

</th>

<th></th>

</tr>

</thead>

<tbody>

@foreach (var item in Model)

{

<tr>

<td>

@Html.DisplayFor(modelItem => item.OrderDate)

</td>

<td>

@Html.DisplayFor(modelItem => item.DeliveryDate)

</td>

<td>

@Html.DisplayFor(modelItem => item.Lines)

</td>

<td>

@Html.DisplayFor(modelItem => item.Quantity)

</td>

<td>

@Html.DisplayFor(modelItem => item.Value)

</td>

<td>

<a asp-action="Edit" asp-route-id="@item.Id" class="btn btn-warning">Edit</a>

<a asp-action="Details" asp-route-id="@item.Id" class="btn btn-info">Details</a>

<a asp-action="Delete" asp-route-id="@item.Id" class="btn btn-danger">Delete</a>

</td>

</tr>

}

</tbody>

</table>

1. Add the method to the controller:

public async Task<IActionResult> ConfirmOrder()

{

var response = await this.orderRepository.ConfirmOrderAsync(this.User.Identity.Name);

if (response)

{

return this.RedirectToAction("Index");

}

return this.RedirectToAction("Create");

}

1. Add this property to entity **Order**.

[Display(Name = "Order date")]

[DisplayFormat(DataFormatString = "{0:yyyy/MM/dd hh:mm tt}", ApplyFormatInEditMode = false)]

public DateTime? OrderDateLocal

{

get

{

if (this.OrderDate == null)

{

return null;

}

return this.OrderDate.ToLocalTime();

}

}

Change the index view to show this new property (and do the same for other data fields).

<th>

@Html.DisplayNameFor(model => model.OrderDateLocal)

</th>

And:

<td>

@Html.DisplayFor(modelItem => item.OrderDateLocal)

</td>

1. Fix the bug in **OrderRepository** in method **GetOrdersAsync** to get the user in the query.

if (await this.userHelper.IsUserInRoleAsync(user, "Admin"))

{

return this.context.Orders

.Include(o => o.User)

.Include(o => o.Items)

.ThenInclude(i => i.Product)

.OrderByDescending(o => o.OrderDate);

}

1. Test it.

# Add Modal Windows

1. To add a validation to confirm the order, add those lines at the end of crete view in orders:

@model IEnumerable<ShopPrep.Common.Models.OrderDetailTemp>

@{

ViewData["Title"] = "Create";

}

<h2>Create</h2>

<p>

<a asp-action="AddProduct" class="btn btn-success">Add Product</a>

<a asp-action="ConfirmOrder" class="btn btn-primary" id="btnConfirm">Confirm Order</a>

</p>

<table class="table">

<thead>

<tr>

<th>

@Html.DisplayNameFor(model => model.Product.Name)

</th>

<th>

@Html.DisplayNameFor(model => model.Price)

</th>

<th>

@Html.DisplayNameFor(model => model.Quantity)

</th>

<th>

@Html.DisplayNameFor(model => model.Value)

</th>

<th></th>

</tr>

</thead>

<tbody>

@foreach (var item in Model)

{

<tr>

<td>

@Html.DisplayFor(modelItem => item.Product.Name)

</td>

<td>

@Html.DisplayFor(modelItem => item.Price)

</td>

<td>

@Html.DisplayFor(modelItem => item.Quantity)

</td>

<td>

@Html.DisplayFor(modelItem => item.Value)

</td>

<td>

<a asp-action="Increase" asp-route-id="@item.Id" class="btn btn-warning"><i class="fa fa-plus"></i></a>

<a asp-action="Decrease" asp-route-id="@item.Id" class="btn btn-info"><i class="fa fa-minus"></i></a>

<a asp-action="DeleteItem" asp-route-id="@item.Id" class="btn btn-danger">Delete</a>

</td>

</tr>

}

</tbody>

</table>

<div id="confirmDialog" class="modal fade">

<div class="modal-dialog modal-sm">

<div class="modal-content">

<div class="modal-header">

<button type="button" class="close" data-dismiss="modal"><i class="fa fa-window-close"></i></button>

<h4 class="modal-title">Confirm</h4>

</div>

<div class="modal-body">

<p>Do you want to confirm the order?</p>

</div>

<div class="modal-footer">

<button type="button" class="btn btn-primary" id="btnYes">Yes</button>

<button type="button" class="btn btn-success" id="btnNo">No</button>

</div>

</div>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

<script type="text/javascript">

$(document).ready(function () {

$("#btnConfirm").click(function () {

$("#confirmDialog").modal('show');

return false;

});

$("#btnNo").click(function () {

$("#confirmDialog").modal('hide');

return false;

});

$("#btnYes").click(function () {

window.location.href = '/Orders/ConfirmOrder';

});

});

</script>

}

1. Test it.
2. To add a validation to delete a product from the order, make this modifications in the view:

...

</td>

<td id="@item.Id">

<a asp-action="Increase" asp-route-id="@item.Id" class="btn btn-warning"><i class="fa fa-plus"></i></a>

<a asp-action="Decrease" asp-route-id="@item.Id" class="btn btn-info"><i class="fa fa-minus"></i></a>

<a asp-action="DeleteItem" asp-route-id="@item.Id" class="btn btn-danger" id="btnDeleteItem">Delete</a>

</td>

</tr>

}

</tbody>

</table>

<div id="confirmDialog" class="modal fade">

<div class="modal-dialog modal-sm">

<div class="modal-content">

<div class="modal-header">

<button type="button" class="close" data-dismiss="modal"><i class="fa fa-window-close"></i></button>

<h4 class="modal-title">Confirm</h4>

</div>

<div class="modal-body">

<p>Do you want to confirm the order?</p>

</div>

<div class="modal-footer">

<button type="button" class="btn btn-primary" id="btnYesConfirm">Yes</button>

<button type="button" class="btn btn-success" id="btnNoConfirm">No</button>

</div>

</div>

</div>

</div>

<div id="deleteDialog" class="modal fade">

<div class="modal-dialog modal-sm">

<div class="modal-content">

<div class="modal-header">

<button type="button" class="close" data-dismiss="modal"><i class="fa fa-window-close"></i></button>

<h4 class="modal-title">Delete</h4>

</div>

<div class="modal-body">

<p>Do you want to delete the product from order?</p>

</div>

<div class="modal-footer">

<button type="button" class="btn btn-danger" id="btnYesDelete">Delete</button>

<button type="button" class="btn btn-success" id="btnNoDelete">No</button>

</div>

</div>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

<script type="text/javascript">

$(document).ready(function () {

var id = 0;

$("#btnConfirm").click(function () {

$("#confirmDialog").modal('show');

return false;

});

$("#btnNoConfirm").click(function () {

$("#confirmDialog").modal('hide');

return false;

});

$("#btnYesConfirm").click(function () {

window.location.href = '/Orders/ConfirmOrder';

});

$('a[id\*=btnDeleteItem]').click(function () {

debugger;

id = $(this).parent()[0].id;

$("#deleteDialog").modal('show');

return false;

});

$("#btnNoDelete").click(function () {

$("#deleteDialog").modal('hide');

return false;

});

$("#btnYesDelete").click(function () {

window.location.href = '/Orders/DeleteItem/' + id;

});

});

</script>

}

1. Test it.

# Date Picker

1. Add to de package json file this line:

{

"version": "1.0.0",

"name": "asp.net",

"private": true,

"devDependencies": {

"font-awesome": "^4.7.0",

"bootstrap-datepicker": "^1.8.0"

}

}

1. Save the file and copy the bootstrap date picker into folder root node modules.
2. Add those lines to \_layout:

<environment include="Development">

<link rel="stylesheet" href="~/lib/bootstrap/dist/css/bootstrap.css" />

<link href="~/node\_modules/font-awesome/css/font-awesome.min.css" rel="stylesheet" />

<link rel="stylesheet" href="~/css/site.css" />

<link href="~/node\_modules/bootstrap-datepicker/dist/css/bootstrap-datepicker.min.css" rel="stylesheet" />

</environment>

….

<environment include="Development">

<script src="~/lib/jquery/dist/jquery.js"></script>

<script src="~/lib/bootstrap/dist/js/bootstrap.js"></script>

<script src="~/node\_modules/bootstrap-datepicker/dist/js/bootstrap-datepicker.min.js"></script>

<script src="~/js/site.js" asp-append-version="true"></script>

</environment>

1. Add the view model:

using System;

using System.ComponentModel.DataAnnotations;

public class DeliverViewModel

{

public int Id { get; set; }

[Display(Name = "Delivery date")]

[DisplayFormat(DataFormatString = "{0:MM/dd/yyyy}", ApplyFormatInEditMode = true)]

public DateTime DeliveryDate { get; set; }

}

1. Add those methods to interface **IOrderRepository**:

Task DeliverOrder(DeliverViewModel model);

Task<Order> GetOrdersAsync(int id);

And the repository:

public async Task DeliverOrder(DeliverViewModel model)

{

var order = await this.context.Orders.FindAsync(model.Id);

if (order == null)

{

return;

}

order.DeliveryDate = model.DeliveryDate;

this.context.Orders.Update(order);

await this.context.SaveChangesAsync();

}

public async Task<Order> GetOrdersAsync(int id)

{

return await this.context.Orders.FindAsync(id);

}

1. Add this method to the orders controller:

public async Task<IActionResult> Deliver(int? id)

{

if (id == null)

{

return NotFound();

}

var order = await this.orderRepository.GetOrdersAsync(id.Value);

if (order == null)

{

return NotFound();

}

var model = new DeliverViewModel

{

Id = order.Id,

DeliveryDate = DateTime.Today

};

return View(model);

}

[HttpPost]

public async Task<IActionResult> Deliver(DeliverViewModel model)

{

if (this.ModelState.IsValid)

{

await this.orderRepository.DeliverOrder(model);

return this.RedirectToAction("Index");

}

return this.View();

}

1. Add the view:

@model Core4.Models.DeliverViewModel

@{

ViewData["Title"] = "Deliver";

}

<h2>Deliver</h2>

<h4>Order</h4>

<hr />

<div class="row">

<div class="col-md-4">

<form asp-action="Deliver">

<div asp-validation-summary="ModelOnly" class="text-danger"></div>

<input type="hidden" asp-for="Id" />

<div class="form-group">

<label asp-for="DeliveryDate" class="control-label"></label>

<div class="input-group date" data-provide="datepicker">

<input asp-for="DeliveryDate" class="form-control" />

<span class="input-group-addon">

<span class="glyphicon glyphicon-calendar"></span>

</span>

</div>

<span asp-validation-for="DeliveryDate" class="text-danger"></span>

</div>

<div class="form-group">

<input type="submit" value="Save" class="btn btn-primary" />

<a asp-action="Index" class="btn btn-success">Back to List</a>

</div>

</form>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

}

1. Modify the order index view:

<td id="@item.Id">

<a asp-action="Deliver" asp-route-id="@item.Id" class="btn btn-info" id="btnDeliver">Deliver</a>

<a asp-action="Delete" asp-route-id="@item.Id" class="btn btn-danger" id="btnDelete">Delete</a>

</td>

1. Test it.
2. Modify the Create and Edit products in views:

<div class="form-group">

<label asp-for="LastPurchase" class="control-label"></label>

<div class="input-group date" data-provide="datepicker">

<input asp-for="LastPurchase" class="form-control" />

<span class="input-group-addon">

<span class="glyphicon glyphicon-calendar"></span>

</span>

</div>

<span asp-validation-for="LastPurchase" class="text-danger"></span>

</div>

<div class="form-group">

<label asp-for="LastSale" class="control-label"></label>

<div class="input-group date" data-provide="datepicker">

<input asp-for="LastSale" class="form-control" />

<span class="input-group-addon">

<span class="glyphicon glyphicon-calendar"></span>

</span>

</div>

<span asp-validation-for="LastSale" class="text-danger"></span>

</div>

1. Test it.

# Cascade Drop Down List

1. First add the new entities:

using System.ComponentModel.DataAnnotations;

public class City : IEntity

{

public int Id { get; set; }

[Required]

[Display(Name = "City")]

[MaxLength(50, ErrorMessage = "The field {0} only can contain {1} characters length.")]

public string Name { get; set; }

}

And modify the previous country entity :

using System.Collections.Generic;

using System.ComponentModel.DataAnnotations;

public class Country : IEntity

{

public int Id { get; set; }

[Required]

[Display(Name = "Country")]

[MaxLength(50, ErrorMessage = "The field {0} only can contain {1} characters length.")]

public string Name { get; set; }

public ICollection<City> Cities { get; set; }

[Display(Name = "# Cities")]

public int NumberCities { get { return this.Cities == null ? 0 : this.Cities.Count; } }

}

1. And modify the user entity, adding this properties:

[MaxLength(100, ErrorMessage = "The field {0} only can contain {1} characters length.")]

public string Address { get; set; }

public int CityId { get; set; }

public City City { get; set; }

1. Add this lines to the data context:

public DbSet<City> Cities { get; set; }

1. Save all and run this commands to update the database, it’s important delete the database for ensure that all users have the new fields:

dotnet ef database drop

dotnet ef migrations add CountriesAndCities

dotnet ef database update

Or you can run this commands in package manager console:

PM> drop-database

PM> add-migration CountriesAndCities

PM> update-database

1. Modify the seeder class:

await this.CheckRole("Admin");

await this.CheckRole("Customer");

if (!this.context.Countries.Any())

{

var cities = new List<City>();

cities.Add(new City { Name = "Medellín" });

cities.Add(new City { Name = "Bogotá" });

cities.Add(new City { Name = "Calí" });

this.context.Countries.Add(new Country

{

Cities = cities,

Name = "Colombia"

});

await this.context.SaveChangesAsync();

}

var user = await this.userManager.FindByEmailAsync("jzuluaga55@gmail.com");

if (user == null)

{

user = new User

{

FirstName = "Juan",

LastName = "Zuluaga",

Email = "jzuluaga55@gmail.com",

UserName = "jzuluaga55@gmail.com",

Address = "Calle Luna Calle Sol",

PhoneNumber = "350 634 2747",

CityId = this.context.Countries.FirstOrDefault().Cities.FirstOrDefault().Id,

City = this.context.Countries.FirstOrDefault().Cities.FirstOrDefault()

};

var result = await this.userManager.CreateAsync(user, "123456");

1. Add the new view model:

using System.ComponentModel.DataAnnotations;

public class CityViewModel

{

public int CountryId { get; set; }

public int CityId { get; set; }

[Required]

[Display(Name = "City")]

[MaxLength(50, ErrorMessage = "The field {0} only can contain {1} characters length.")]

public string Name { get; set; }

}

1. Add this methods to the repository **ICountryRepository**:

using System.Linq;

using System.Threading.Tasks;

using Entities;

using Models;

public interface ICountryRepository : IGenericRepository<Country>

{

IQueryable GetCountriesWithCities();

Task<Country> GetCountryWithCitiesAsync(int id);

Task<City> GetCityAsync(int id);

Task AddCityAsync(CityViewModel model);

Task<int> UpdateCityAsync(City city);

Task<int> DeleteCityAsync(City city);

}

And the implementation:

using System.Linq;

using System.Threading.Tasks;

using Entities;

using Microsoft.EntityFrameworkCore;

using Models;

public class CountryRepository : GenericRepository<Country>, ICountryRepository

{

private readonly DataContext context;

public CountryRepository(DataContext context) : base(context)

{

this.context = context;

}

public async Task AddCityAsync(CityViewModel model)

{

var country = await this.GetCountryWithCitiesAsync(model.CountryId);

if (country == null)

{

return;

}

country.Cities.Add(new City { Name = model.Name });

this.context.Countries.Update(country);

await this.context.SaveChangesAsync();

}

public async Task<int> DeleteCityAsync(City city)

{

var country = await this.context.Countries.Where(c => c.Cities.Any(ci => ci.Id == city.Id)).FirstOrDefaultAsync();

if (country == null)

{

return 0;

}

this.context.Cities.Remove(city);

await this.context.SaveChangesAsync();

return country.Id;

}

public IQueryable GetCountriesWithCities()

{

return this.context.Countries

.Include(c => c.Cities)

.OrderBy(c => c.Name);

}

public async Task<Country> GetCountryWithCitiesAsync(int id)

{

return await this.context.Countries

.Include(c => c.Cities)

.Where(c => c.Id == id)

.FirstOrDefaultAsync();

}

public async Task<int> UpdateCityAsync(City city)

{

var country = await this.context.Countries.Where(c => c.Cities.Any(ci => ci.Id == city.Id)).FirstOrDefaultAsync();

if (country == null)

{

return 0;

}

this.context.Cities.Update(city);

await this.context.SaveChangesAsync();

return country.Id;

}

public async Task<City> GetCityAsync(int id)

{

return await this.context.Cities.FindAsync(id);

}

}

1. Add the countries controller:

using System.Threading.Tasks;

using Data;

using Data.Entities;

using Microsoft.AspNetCore.Authorization;

using Microsoft.AspNetCore.Mvc;

using Models;

[Authorize(Roles = "Admin")]

public class CountriesController : Controller

{

private readonly ICountryRepository countryRepository;

public CountriesController(ICountryRepository countryRepository)

{

this.countryRepository = countryRepository;

}

public async Task<IActionResult> DeleteCity(int? id)

{

if (id == null)

{

return NotFound();

}

var city = await this.countryRepository.GetCityAsync(id.Value);

if (city == null)

{

return NotFound();

}

var countryId = await this.countryRepository.DeleteCityAsync(city);

return this.RedirectToAction($"Details/{countryId}");

}

public async Task<IActionResult> EditCity(int? id)

{

if (id == null)

{

return NotFound();

}

var city = await this.countryRepository.GetCityAsync(id.Value);

if (city == null)

{

return NotFound();

}

return View(city);

}

[HttpPost]

public async Task<IActionResult> EditCity(City city)

{

if (this.ModelState.IsValid)

{

var countryId = await this.countryRepository.UpdateCityAsync(city);

if (countryId != 0)

{

return this.RedirectToAction($"Details/{countryId}");

}

}

return this.View(city);

}

public async Task<IActionResult> AddCity(int? id)

{

if (id == null)

{

return NotFound();

}

var country = await this.countryRepository.GetByIdAsync(id.Value);

if (country == null)

{

return NotFound();

}

var model = new CityViewModel { CountryId = country.Id };

return View(model);

}

[HttpPost]

public async Task<IActionResult> AddCity(CityViewModel model)

{

if (this.ModelState.IsValid)

{

await this.countryRepository.AddCityAsync(model);

return this.RedirectToAction($"Details/{model.CountryId}");

}

return this.View(model);

}

public IActionResult Index()

{

return View(this.countryRepository.GetCountriesWithCities());

}

public async Task<IActionResult> Details(int? id)

{

if (id == null)

{

return NotFound();

}

var country = await this.countryRepository.GetCountryWithCitiesAsync(id.Value);

if (country == null)

{

return NotFound();

}

return View(country);

}

public IActionResult Create()

{

return View();

}

[HttpPost]

[ValidateAntiForgeryToken]

public async Task<IActionResult> Create(Country country)

{

if (ModelState.IsValid)

{

await this.countryRepository.CreateAsync(country);

return RedirectToAction(nameof(Index));

}

return View(country);

}

public async Task<IActionResult> Edit(int? id)

{

if (id == null)

{

return NotFound();

}

var country = await this.countryRepository.GetByIdAsync(id.Value);

if (country == null)

{

return NotFound();

}

return View(country);

}

[HttpPost]

[ValidateAntiForgeryToken]

public async Task<IActionResult> Edit(Country country)

{

if (ModelState.IsValid)

{

await this.countryRepository.UpdateAsync(country);

return RedirectToAction(nameof(Index));

}

return View(country);

}

public async Task<IActionResult> Delete(int? id)

{

if (id == null)

{

return NotFound();

}

var country = await this.countryRepository.GetByIdAsync(id.Value);

if (country == null)

{

return NotFound();

}

await this.countryRepository.DeleteAsync(country);

return RedirectToAction(nameof(Index));

}

}

1. Add the corresponding Views:

**Index:**

@model IEnumerable<Shop.Web.Data.Entities.Country>

@{

ViewData["Title"] = "Index";

}

<h2>Countries</h2>

<p>

<a asp-action="Create" class="btn btn-primary">Create New</a>

</p>

<table class="table">

<thead>

<tr>

<th>

@Html.DisplayNameFor(model => model.Name)

</th>

<th>

@Html.DisplayNameFor(model => model.NumberCities)

</th>

<th></th>

</tr>

</thead>

<tbody>

@foreach (var item in Model)

{

<tr>

<td>

@Html.DisplayFor(modelItem => item.Name)

</td>

<td>

@Html.DisplayFor(modelItem => item.NumberCities)

</td>

<td id="@item.Id">

<a asp-action="Edit" asp-route-id="@item.Id" class="btn btn-warning">Edit</a>

<a asp-action="Details" asp-route-id="@item.Id" class="btn btn-info">Details</a>

<a asp-action="Delete" asp-route-id="@item.Id" class="btn btn-danger" id="btnDelete">Delete</a>

</td>

</tr>

}

</tbody>

</table>

<div id="deleteDialog" class="modal fade">

<div class="modal-dialog modal-sm">

<div class="modal-content">

<div class="modal-header">

<button type="button" class="close" data-dismiss="modal"><i class="fa fa-window-close"></i></button>

<h4 class="modal-title">Delete</h4>

</div>

<div class="modal-body">

<p>Do you want to delete the country?</p>

</div>

<div class="modal-footer">

<button type="button" class="btn btn-danger" id="btnYesDelete">Delete</button>

<button type="button" class="btn btn-success" id="btnNoDelete">No</button>

</div>

</div>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

<script type="text/javascript">

$(document).ready(function () {

var id = 0;

$('a[id\*=btnDelete]').click(function () {

debugger;

id = $(this).parent()[0].id;

$("#deleteDialog").modal('show');

return false;

});

$("#btnNoDelete").click(function () {

$("#deleteDialog").modal('hide');

return false;

});

$("#btnYesDelete").click(function () {

window.location.href = '/Countries/Delete/' + id;

});

});

</script>

}

**Create:**

@model Shop.Web.Data.Entities.Country

@{

ViewData["Title"] = "Create";

}

<h2>Create</h2>

<h4>Country</h4>

<hr />

<div class="row">

<div class="col-md-4">

<form asp-action="Create">

<div asp-validation-summary="ModelOnly" class="text-danger"></div>

<div class="form-group">

<label asp-for="Name" class="control-label"></label>

<input asp-for="Name" class="form-control" />

<span asp-validation-for="Name" class="text-danger"></span>

</div>

<div class="form-group">

<input type="submit" value="Create" class="btn btn-primary" />

<a asp-action="Index" class="btn btn-success">Back to List</a>

</div>

</form>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

}

**Edit:**

@model Shop.Web.Data.Entities.Country

@{

ViewData["Title"] = "Edit";

}

<h2>Edit</h2>

<h4>Country</h4>

<hr />

<div class="row">

<div class="col-md-4">

<form asp-action="Edit">

<div asp-validation-summary="ModelOnly" class="text-danger"></div>

<input type="hidden" asp-for="Id" />

<div class="form-group">

<label asp-for="Name" class="control-label"></label>

<input asp-for="Name" class="form-control" />

<span asp-validation-for="Name" class="text-danger"></span>

</div>

<div class="form-group">

<input type="submit" value="Save" class="btn btn-primary" />

<a asp-action="Index" class="btn btn-success">Back to List</a>

</div>

</form>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

}

**Details:**

@model Shop.Web.Data.Entities.Country

@{

ViewData["Title"] = "Details";

}

<h2>Details</h2>

<div>

<h4>Country</h4>

<hr />

<dl class="dl-horizontal">

<dt>

@Html.DisplayNameFor(model => model.Name)

</dt>

<dd>

@Html.DisplayFor(model => model.Name)

</dd>

</dl>

</div>

<div>

<a asp-action="Edit" asp-route-id="@Model.Id" class="btn btn-warning">Edit</a>

<a asp-action="AddCity" asp-route-id="@Model.Id" class="btn btn-info">Add City</a>

<a asp-action="Index" class="btn btn-success">Back to List</a>

</div>

<h4>Cities</h4>

@if (Model.Cities == null || Model.Cities.Count == 0)

{

<h5>No cities added yet</h5>

}

else

{

<table class="table">

<thead>

<tr>

<th>

@Html.DisplayNameFor(model => model.Cities.FirstOrDefault().Name)

</th>

<th></th>

</tr>

</thead>

<tbody>

@foreach (var item in Model.Cities.OrderBy(c => c.Name))

{

<tr>

<td>

@Html.DisplayFor(modelItem => item.Name)

</td>

<td id="@item.Id">

<a asp-action="EditCity" asp-route-id="@item.Id" class="btn btn-warning">Edit</a>

<a asp-action="DeleteCity" asp-route-id="@item.Id" class="btn btn-danger" id="btnDelete">Delete</a>

</td>

</tr>

}

</tbody>

</table>

}

<div id="deleteDialog" class="modal fade">

<div class="modal-dialog modal-sm">

<div class="modal-content">

<div class="modal-header">

<button type="button" class="close" data-dismiss="modal"><i class="fa fa-window-close"></i></button>

<h4 class="modal-title">Delete</h4>

</div>

<div class="modal-body">

<p>Do you want to delete the city?</p>

</div>

<div class="modal-footer">

<button type="button" class="btn btn-danger" id="btnYesDelete">Delete</button>

<button type="button" class="btn btn-success" id="btnNoDelete">No</button>

</div>

</div>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

<script type="text/javascript">

$(document).ready(function () {

var id = 0;

$('a[id\*=btnDelete]').click(function () {

debugger;

id = $(this).parent()[0].id;

$("#deleteDialog").modal('show');

return false;

});

$("#btnNoDelete").click(function () {

$("#deleteDialog").modal('hide');

return false;

});

$("#btnYesDelete").click(function () {

window.location.href = '/Countries/DeleteCity/' + id;

});

});

</script>

}

**Add city:**

@model Shop.Web.Models.CityViewModel

<h4>City</h4>

<hr />

<div class="row">

<div class="col-md-4">

<form asp-action="AddCity">

<div asp-validation-summary="ModelOnly" class="text-danger"></div>

<input type="hidden" asp-for="CountryId" />

<div class="form-group">

<label asp-for="Name" class="control-label"></label>

<input asp-for="Name" class="form-control" />

<span asp-validation-for="Name" class="text-danger"></span>

</div>

<div class="form-group">

<input type="submit" value="Create" class="btn btn-primary" />

<a asp-action="Index" class="btn btn-success">Back to List</a>

</div>

</form>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

}

**Edit city:**

@model Shop.Web.Data.Entities.City

<h4>City</h4>

<hr />

<div class="row">

<div class="col-md-4">

<form asp-action="EditCity">

<div asp-validation-summary="ModelOnly" class="text-danger"></div>

<input type="hidden" asp-for="Id" />

<div class="form-group">

<label asp-for="Name" class="control-label"></label>

<input asp-for="Name" class="form-control" />

<span asp-validation-for="Name" class="text-danger"></span>

</div>

<div class="form-group">

<input type="submit" value="Save" class="btn btn-primary" />

<a asp-action="Index" class="btn btn-success">Back to List</a>

</div>

</form>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

}

1. Add to the new menu for countries:

@if (this.User.Identity.IsAuthenticated)

{

<li><a asp-area="" asp-controller="Products" asp-action="Index">Products</a></li>

@if (this.User.IsInRole("Admin"))

{

<li><a asp-area="" asp-controller="Countries" asp-action="Index">Countries</a></li>

}

<li><a asp-area="" asp-controller="Orders" asp-action="Index">Orders</a></li>

}

1. Test it and add some countries and cities.
2. Modify the **RegisterNewUserViewModel**:

[Required]

[Compare("Password")]

public string Confirm { get; set; }

[MaxLength(100, ErrorMessage = "The field {0} only can contain {1} characters length.")]

public string Address { get; set; }

[MaxLength(20, ErrorMessage = "The field {0} only can contain {1} characters length.")]

public string PhoneNumber { get; set; }

[Display(Name = "City")]

[Range(1, int.MaxValue, ErrorMessage = "You must select a city.")]

public int CityId { get; set; }

public IEnumerable<SelectListItem> Cities { get; set; }

[Display(Name = "Country")]

[Range(1, int.MaxValue, ErrorMessage = "You must select a country.")]

public int CountryId { get; set; }

public IEnumerable<SelectListItem> Countries { get; set; }

1. Add this methods to the repository **ICountryRepository**:

IEnumerable<SelectListItem> GetComboCountries();

IEnumerable<SelectListItem> GetComboCities(int conuntryId);

Task<Country> GetCountryAsync(City city);

And the implementation:

public IEnumerable<SelectListItem> GetComboCountries()

{

var list = this.context.Countries.Select(c => new SelectListItem

{

Text = c.Name,

Value = c.Id.ToString()

}).OrderBy(l => l.Text).ToList();

list.Insert(0, new SelectListItem

{

Text = "(Select a country...)",

Value = "0"

});

return list;

}

public IEnumerable<SelectListItem> GetComboCities(int conuntryId)

{

var country = this.context.Countries.Find(conuntryId);

var list = new List<SelectListItem>();

if (country != null)

{

list = country.Cities.Select(c => new SelectListItem

{

Text = c.Name,

Value = c.Id.ToString()

}).OrderBy(l => l.Text).ToList();

}

list.Insert(0, new SelectListItem

{

Text = "(Select a city...)",

Value = "0"

});

return list;

}

public async Task<Country> GetCountryAsync(City city)

{

return await this.context.Countries.Where(c => c.Cities.Any(ci => ci.Id == city.Id)).FirstOrDefaultAsync();

}

1. Change the register method in account controller (first inject **ICountryRepository**):

public IActionResult Register()

{

var model = new RegisterNewUserViewModel

{

Countries = this.countryRepository.GetComboCountries(),

Cities = this.countryRepository.GetComboCities(0)

};

return this.View(model);

}

[HttpPost]

public async Task<IActionResult> Register(RegisterNewUserViewModel model)

{

if (this.ModelState.IsValid)

{

var user = await this.userManager.FindByEmailAsync(model.Username);

if (user == null)

{

var city = await this.repository.GetCityAsync(model.CityId);

user = new User

{

FirstName = model.FirstName,

LastName = model.LastName,

Email = model.Username,

UserName = model.Username,

Address = model.Address,

PhoneNumber = model.PhoneNumber,

CityId = model.CityId,

City = city

};

var result = await this.userManager.CreateAsync(user, model.Password);

if (result != IdentityResult.Success)

{

this.ModelState.AddModelError(string.Empty, "The user couldn't be created.");

return this.View(model);

}

var result2 = await this.signInManager.PasswordSignInAsync(

model.Username,

model.Password,

true,

false);

if (result2.Succeeded)

{

await this.userManager.AddToRoleAsync(user, "Customer");

return this.RedirectToAction("Index", "Home");

}

this.ModelState.AddModelError(string.Empty, "The user couldn't be login.");

return this.View(model);

}

this.ModelState.AddModelError(string.Empty, "The username is already registered.");

}

return this.View(model);

}

1. Modify the register view with the new fields:

<div class="form-group">

<label asp-for="FirstName">First Name</label>

<input asp-for="FirstName" class="form-control" />

<span asp-validation-for="FirstName" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="LastName">Last Name</label>

<input asp-for="LastName" class="form-control" />

<span asp-validation-for="LastName" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="Username">Username</label>

<input asp-for="Username" class="form-control" />

<span asp-validation-for="Username" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="CountryId" class="control-label"></label>

<select asp-for="CountryId" asp-items="Model.Countries" class="form-control"></select>

<span asp-validation-for="CountryId" class="text-danger"></span>

</div>

<div class="form-group">

<label asp-for="CityId" class="control-label"></label>

<select asp-for="CityId" asp-items="Model.Cities" class="form-control"></select>

<span asp-validation-for="CityId" class="text-danger"></span>

</div>

<div class="form-group">

<label asp-for="Address">Address</label>

<input asp-for="Address" class="form-control" />

<span asp-validation-for="Address" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="PhoneNumber">Phone Number</label>

<input asp-for="PhoneNumber" class="form-control" />

<span asp-validation-for="PhoneNumber" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="Password">Password</label>

<input asp-for="Password" type="password" class="form-control" />

<span asp-validation-for="Password" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="Confirm">Confirm</label>

<input asp-for="Confirm" type="password" class="form-control" />

<span asp-validation-for="Confirm" class="text-warning"></span>

</div>

1. Test the code until this point.
2. Now implement the cascade drop down list.
3. Add this method to **ICountryRepository**:

Task<Country> GetCountryAsync(int id);

And the implementation:

public async Task<Country> GetCountryAsync(int id)

{

return await this.context.Countries

.Include(c => c.Cities)

.Where(c => c.Id == id)

.FirstOrDefaultAsync();

}

1. Add this method to account controller:

public async Task<JsonResult> GetCities(int countryId)

{

var country = await this.countryRepository.GetCountryAsync(countryId);

return this.Json(country.Cities.OrderBy(c => c.Name));

}

1. And modify the register view:

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

<script type="text/javascript">

$(document).ready(function () {

$("#CountryId").change(function () {

$("#CityId").empty();

$.ajax({

type: 'POST',

url: '@Url.Action("GetCities")',

dataType: 'json',

data: { countryId: $("#CountryId").val() },

success: function (cities) {

debugger;

$("#CityId").append('<option value="0">(Select a city...)</option>');

$.each(cities, function (i, city) {

$("#CityId").append('<option value="'

+ city.id + '">'

+ city.name + '</option>');

});

},

error: function (ex) {

alert('Failed to retrieve cities.' + ex);

}

});

return false;

})

});

</script>

}

1. Test it.
2. Now we’ll continue with the user modification. Please modify the model **ChangeUserViewModel**:

[Required]

[Display(Name = "Last Name")]

public string LastName { get; set; }

[MaxLength(100, ErrorMessage = "The field {0} only can contain {1} characters length.")]

public string Address { get; set; }

[MaxLength(20, ErrorMessage = "The field {0} only can contain {1} characters length.")]

public string PhoneNumber { get; set; }

[Display(Name = "City")]

[Range(1, int.MaxValue, ErrorMessage = "You must select a city.")]

public int CityId { get; set; }

public IEnumerable<SelectListItem> Cities { get; set; }

[Display(Name = "Country")]

[Range(1, int.MaxValue, ErrorMessage = "You must select a country.")]

public int CountryId { get; set; }

public IEnumerable<SelectListItem> Countries { get; set; }

1. Modify the change user method in account controller:

public async Task<IActionResult> ChangeUser()

{

var user = await this.userManager.FindByEmailAsync(this.User.Identity.Name);

var model = new ChangeUserViewModel();

if (user != null)

{

model.FirstName = user.FirstName;

model.LastName = user.LastName;

model.Address = user.Address;

model.PhoneNumber = user.PhoneNumber;

var city = await this.repository.GetCityAsync(user.CityId);

if (city != null)

{

var country = await this.repository.GetCountryAsync(city);

if (country != null)

{

model.CountryId = country.Id;

model.Cities = this.repository.GetComboCities(country.Id);

model.Countries = this.repository.GetComboCountries();

model.CityId = user.CityId;

}

}

}

model.Cities = this.repository.GetComboCities(model.CountryId);

model.Countries = this.repository.GetComboCountries();

return this.View(model);

}

[HttpPost]

public async Task<IActionResult> ChangeUser(ChangeUserViewModel model)

{

if (this.ModelState.IsValid)

{

var user = await this.userManager.FindByEmailAsync(this.User.Identity.Name);

if (user != null)

{

var city = await this.countryRepository.GetCityAsync(model.CityId);

user.FirstName = model.FirstName;

user.LastName = model.LastName;

user.Address = model.Address;

user.PhoneNumber = model.PhoneNumber;

user.CityId = model.CityId;

user.City = city;

var respose = await this.userManager.UpdateAsync(user);

if (respose.Succeeded)

{

this.ViewBag.UserMessage = "User updated!";

}

else

{

this.ModelState.AddModelError(string.Empty, respose.Errors.FirstOrDefault().Description);

}

}

else

{

this.ModelState.AddModelError(string.Empty, "User no found.");

}

}

return this.View(model);

}

1. Modify the view:

@model Shop.Web.Models.ChangeUserViewModel

@{

ViewData["Title"] = "Register";

}

<h2>Update User</h2>

<div class="row">

<div class="col-md-4 offset-md-4">

<form method="post">

<div asp-validation-summary="ModelOnly"></div>

<div class="form-group">

<label asp-for="FirstName">First Name</label>

<input asp-for="FirstName" class="form-control" />

<span asp-validation-for="FirstName" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="LastName">Last Name</label>

<input asp-for="LastName" class="form-control" />

<span asp-validation-for="LastName" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="CountryId" class="control-label"></label>

<select asp-for="CountryId" asp-items="Model.Countries" class="form-control"></select>

<span asp-validation-for="CountryId" class="text-danger"></span>

</div>

<div class="form-group">

<label asp-for="CityId" class="control-label"></label>

<select asp-for="CityId" asp-items="Model.Cities" class="form-control"></select>

<span asp-validation-for="CityId" class="text-danger"></span>

</div>

<div class="form-group">

<label asp-for="Address">Address</label>

<input asp-for="Address" class="form-control" />

<span asp-validation-for="Address" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="PhoneNumber">Phone Number</label>

<input asp-for="PhoneNumber" class="form-control" />

<span asp-validation-for="PhoneNumber" class="text-warning"></span>

</div>

<div class="form-group">

<input type="submit" value="Update" class="btn btn-primary" />

<a asp-action="ChangePassword" class="btn btn-success">Change Password</a>

</div>

<div class="text-success">@ViewBag.UserMessage</div>

</form>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

<script type="text/javascript">

$(document).ready(function () {

$("#CountryId").change(function () {

$("#CityId").empty();

$.ajax({

type: 'POST',

url: '@Url.Action("GetCities")',

dataType: 'json',

data: { countryId: $("#CountryId").val() },

success: function (cities) {

debugger;

$("#CityId").append('<option value="0">(Select a city...)</option>');

$.each(cities, function (i, city) {

$("#CityId").append('<option value="'

+ city.id + '">'

+ city.name + '</option>');

});

},

error: function (ex) {

alert('Failed to retrieve cities.' + ex);

}

});

return false;

})

});

</script>

}

1. Test it.

# Confirm Email Registration

1. First, change the setup project:

services.AddIdentity<User, IdentityRole>(cfg =>

{

cfg.Tokens.AuthenticatorTokenProvider = TokenOptions.DefaultAuthenticatorProvider;

cfg.SignIn.RequireConfirmedEmail = true;

cfg.User.RequireUniqueEmail = true;

cfg.Password.RequireDigit = false;

cfg.Password.RequiredUniqueChars = 0;

cfg.Password.RequireLowercase = false;

cfg.Password.RequireNonAlphanumeric = false;

cfg.Password.RequireUppercase = false;

})

.AddDefaultTokenProviders()

.AddEntityFrameworkStores<DataContext>();

1. Check if your email account is enabled to send email in: <https://myaccount.google.com/lesssecureapps>
2. Add this parameters to the configuration file:

"Mail": {

"From": "youremail@gmail.com",

"Smtp": "smtp.gmail.com",

"Port": 587,

"Password": "yourpassword"

}

1. Add the nuget “**Mailkit**”.
2. In **Helpers** folder add the interface **IMailHelper**:

public interface IMailHelper

{

void SendMail(string to, string subject, string body);

}

1. In **Helpers** folder add the implementation **MailHelper**:

using MailKit.Net.Smtp;

using Microsoft.Extensions.Configuration;

using MimeKit;

public class MailHelper : IMailHelper

{

private readonly IConfiguration configuration;

public MailHelper(IConfiguration configuration)

{

this.configuration = configuration;

}

public void SendMail(string to, string subject, string body)

{

var from = this.configuration["Mail:From"];

var smtp = this.configuration["Mail:Smtp"];

var port = this.configuration["Mail:Port"];

var password = this.configuration["Mail:Password"];

var message = new MimeMessage();

message.From.Add(new MailboxAddress(from));

message.To.Add(new MailboxAddress(to));

message.Subject = subject;

var bodyBuilder = new BodyBuilder();

bodyBuilder.HtmlBody = body;

message.Body = bodyBuilder.ToMessageBody();

using (var client = new SmtpClient())

{

client.Connect(smtp, int.Parse(port), false);

client.Authenticate(from, password);

client.Send(message);

client.Disconnect(true);

}

}

}

1. Configure the injection for the new interface:

services.AddScoped<IMailHelper, MailHelper>();

1. Add those methods to **IUserHelper**:

Task<string> GenerateEmailConfirmationTokenAsync(User user);

Task<IdentityResult> ConfirmEmailAsync(User user, string token);

Task<User> GetUserByIdAsync(string userId);

And the implementation:

public async Task<IdentityResult> ConfirmEmailAsync(User user, string token)

{

return await this.userManager.ConfirmEmailAsync(user, token);

}

public async Task<string> GenerateEmailConfirmationTokenAsync(User user)

{

return await this.userManager.GenerateEmailConfirmationTokenAsync(user);

}

public async Task<User> GetUserByIdAsync(string userId)

{

return await this.userManager.FindByIdAsync(userId);

}

1. Modify the register post method (first inject the **IMailHelper** in **AccountController**):

[HttpPost]

public async Task<IActionResult> Register(RegisterNewUserViewModel model)

{

if (this.ModelState.IsValid)

{

var user = await this.userHelper.GetUserByEmailAsync(model.Username);

if (user == null)

{

var city = await this.countryRepository.GetCityAsync(model.CityId);

user = new User

{

FirstName = model.FirstName,

LastName = model.LastName,

Email = model.Username,

UserName = model.Username,

Address = model.Address,

PhoneNumber = model.PhoneNumber,

CityId = model.CityId,

City = city

};

var result = await this.userHelper.AddUserAsync(user, model.Password);

if (result != IdentityResult.Success)

{

this.ModelState.AddModelError(string.Empty, "The user couldn't be created.");

return this.View(model);

}

var myToken = await this.userHelper.GenerateEmailConfirmationTokenAsync(user);

var tokenLink = this.Url.Action("ConfirmEmail", "Account", new

{

userid = user.Id,

token = myToken

}, protocol: HttpContext.Request.Scheme);

this.mailHelper.SendMail(model.Username, "Email confirmation", $"<h1>Email Confirmation</h1>" +

$"To allow the user, " +

$"plase click in this link:</br></br><a href = \"{tokenLink}\">Confirm Email</a>");

this.ViewBag.Message = "The instructions to allow your user has been sent to email.";

return this.View(model);

}

this.ModelState.AddModelError(string.Empty, "The username is already registered.");

}

return this.View(model);

}

1. Modify the register view:

...

<div class="form-group">

<input type="submit" value="Register New User" class="btn btn-primary" />

</div>

</form>

</div>

</div>

<div class="text-success">

<p>

@ViewBag.Message

</p>

</div>

@section Scripts {

...

1. Create the method confirm email in account controller:

public async Task<IActionResult> ConfirmEmail(string userId, string token)

{

if (string.IsNullOrEmpty(userId) || string.IsNullOrEmpty(token))

{

return this.NotFound();

}

var user = await this.userHelper.GetUserByIdAsync(userId);

if (user == null)

{

return this.NotFound();

}

var result = await this.userHelper.ConfirmEmailAsync(user, token);

if (!result.Succeeded)

{

return this.NotFound();

}

return View();

}

1. Create the view:

@{

ViewData["Title"] = "Confirm email";

}

<h2>@ViewData["Title"]</h2>

<div>

<p>

Thank you for confirming your email. Now you can login into system.

</p>

</div>

1. Drop the database (PM> drop-database) to ensure that all the users have a confirmed email.
2. Modify the seed class:

await this.userHelper.AddUserToRoleAsync(user, "Admin");

var token = await this.userHelper.GenerateEmailConfirmationTokenAsync(user);

await this.userHelper.ConfirmEmailAsync(user, token);

1. Test it.

# Password Recovery

1. Modify the login view:

<div class="form-group">

<input type="submit" value="Login" class="btn btn-success" />

<a asp-action="Register" class="btn btn-primary">Register New User</a>

<a asp-action="RecoverPassword" class="btn btn-link">Forgot your password?</a>

</div>

1. Add the model:

using System.ComponentModel.DataAnnotations;

public class RecoverPasswordViewModel

{

[Required]

[EmailAddress]

public string Email { get; set; }

}

1. Add the model:

using System.ComponentModel.DataAnnotations;

public class ResetPasswordViewModel

{

[Required]

public string UserName { get; set; }

[Required]

[DataType(DataType.Password)]

public string Password { get; set; }

[Required]

[DataType(DataType.Password)]

[Compare("Password")]

public string ConfirmPassword { get; set; }

[Required]

public string Token { get; set; }

}

1. Add those methods to **IUserHelper**:

Task<string> GeneratePasswordResetTokenAsync(User user);

Task<IdentityResult> ResetPasswordAsync(User user, string token, string password);

And the implementation:

public async Task<string> GeneratePasswordResetTokenAsync(User user)

{

return await this.userManager.GeneratePasswordResetTokenAsync(user);

}

public async Task<IdentityResult> ResetPasswordAsync(User user, string token, string password)

{

return await this.userManager.ResetPasswordAsync(user, token, password);

}

1. Add this methods to account controller:

public IActionResult RecoverPassword()

{

return this.View();

}

[HttpPost]

public async Task<IActionResult> RecoverPassword(RecoverPasswordViewModel model)

{

if (this.ModelState.IsValid)

{

var user = await this.userManager.FindByEmailAsync(model.Email);

if (user == null)

{

ModelState.AddModelError(string.Empty, "The email doesn't correspont to a registered user.");

return this.View(model);

}

var myToken = await this.userManager.GeneratePasswordResetTokenAsync(user);

var link = this.Url.Action("ResetPassword", "Account", new { token = myToken }, protocol: HttpContext.Request.Scheme);

var mailSender = new MailHelper(configuration);

mailSender.SendMail(model.Email, "Password Reset", $"<h1>Recover Password</h1>" +

$"To reset the password click in this link:</br></br>" +

$"<a href = \"{link}\">Reset Password</a>");

this.ViewBag.Message = "The instructions to recover your password has been sent to email.";

return this.View();

}

return this.View(model);

}

public IActionResult ResetPassword(string token)

{

return View();

}

[HttpPost]

public async Task<IActionResult> ResetPassword(ResetPasswordViewModel model)

{

var user = await this.userManager.FindByNameAsync(model.UserName);

if (user != null)

{

var result = await this.userManager.ResetPasswordAsync(user, model.Token, model.Password);

if (result.Succeeded)

{

this.ViewBag.Message = "Password reset successful.";

return this.View();

}

this.ViewBag.Message = "Error while resetting the password.";

return View(model);

}

this.ViewBag.Message = "User not found.";

return View(model);

}

1. Add the view:

@model Shop.Web.Models.RecoverPasswordViewModel

@{

ViewData["Title"] = "Recover Password";

}

<h2>Recover Password</h2>

<div class="row">

<div class="col-md-4 offset-md-4">

<form method="post">

<div asp-validation-summary="ModelOnly"></div>

<div class="form-group">

<label asp-for="Email">Email</label>

<input asp-for="Email" class="form-control" />

<span asp-validation-for="Email" class="text-warning"></span>

</div>

<div class="form-group">

<input type="submit" value="Recover password" class="btn btn-primary" />

<a asp-action="Login" class="btn btn-success">Back to login</a>

</div>

</form>

<div class="text-success">

<p>

@ViewBag.Message

</p>

</div>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

}

1. Add the view:

@model Shop.Web.Models.ResetPasswordViewModel

@{

ViewData["Title"] = "Reset Password";

}

<h1>Reset Your Password</h1>

<div class="row">

<div class="col-md-4 offset-md-4">

<form method="post">

<div asp-validation-summary="All"></div>

<input type="hidden" asp-for="Token" />

<div class="form-group">

<label asp-for="UserName">Email</label>

<input asp-for="UserName" class="form-control" />

<span asp-validation-for="UserName" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="Password">New password</label>

<input asp-for="Password" type="password" class="form-control" />

<span asp-validation-for="Password" class="text-warning"></span>

</div>

<div class="form-group">

<label asp-for="ConfirmPassword">Confirm</label>

<input asp-for="ConfirmPassword" type="password" class="form-control" />

<span asp-validation-for="ConfirmPassword" class="text-warning"></span>

</div>

<div class="form-group">

<input type="submit" value="Reset password" class="btn btn-primary" />

</div>

</form>

<div class="text-success">

<p>

@ViewBag.Message

</p>

</div>

</div>

</div>

@section Scripts {

@{await Html.RenderPartialAsync("\_ValidationScriptsPartial");}

}

1. Test it.
2. Finally, delete all records in Azure DB and re-publish the solution.

# Improve the Seeder

1. Add the products images:
2. Modify the seeder:

using System;

using System.Collections.Generic;

using System.Linq;

using System.Threading.Tasks;

using Entities;

using Helpers;

using Microsoft.AspNetCore.Identity;

public class SeedDb

{

private readonly DataContext context;

private readonly IUserHelper userHelper;

private readonly Random random;

public SeedDb(DataContext context, IUserHelper userHelper)

{

this.context = context;

this.userHelper = userHelper;

this.random = new Random();

}

public async Task SeedAsync()

{

await this.context.Database.EnsureCreatedAsync();

await this.CheckRoles();

if (!this.context.Countries.Any())

{

await this.CountriesAndCities();

}

await this.CheckUser("brad@gmail.com", "Brad", "Pit", "Customer");

await this.CheckUser("angelina@gmail.com", "Angelina", "Jolie", "Customer");

var user = await this.CheckUser("jzuluaga55@gmail.com", "Juan", "Zuluaga", "Admin");

// Add products

if (!this.context.Products.Any())

{

this.AddProduct("AirPods", 159, user);

this.AddProduct("iPad Pro", 799, user);

this.AddProduct("iPhone X", 749, user);

this.AddProduct("iWatch Series 4", 399, user);

this.AddProduct("Mac Book Pro", 1299, user);

this.AddProduct("Magic Mouse", 47, user);

this.AddProduct("Wireless Charging Pad", 67.67M, user);

await this.context.SaveChangesAsync();

}

}

private async Task<User> CheckUser(string userName, string firstName, string lastName, string role)

{

// Add user

var user = await this.userHelper.GetUserByEmailAsync(userName);

if (user == null)

{

user = await this.AddUser(userName, firstName, lastName, role);

}

var isInRole = await this.userHelper.IsUserInRoleAsync(user, role);

if (!isInRole)

{

await this.userHelper.AddUserToRoleAsync(user, role);

}

return user;

}

private async Task<User> AddUser(string userName, string firstName, string lastName, string role)

{

var user = new User

{

FirstName = firstName,

LastName = lastName,

Email = userName,

UserName = userName,

Address = "Calle Luna Calle Sol",

PhoneNumber = "350 634 2747",

CityId = this.context.Countries.FirstOrDefault().Cities.FirstOrDefault().Id,

City = this.context.Countries.FirstOrDefault().Cities.FirstOrDefault()

};

var result = await this.userHelper.AddUserAsync(user, "123456");

if (result != IdentityResult.Success)

{

throw new InvalidOperationException("Could not create the user in seeder");

}

await this.userHelper.AddUserToRoleAsync(user, role);

var token = await this.userHelper.GenerateEmailConfirmationTokenAsync(user);

await this.userHelper.ConfirmEmailAsync(user, token);

return user;

}

private async Task CountriesAndCities()

{

var citiesCol = new List<City>();

citiesCol.Add(new City { Name = "Medellín" });

citiesCol.Add(new City { Name = "Bogotá" });

citiesCol.Add(new City { Name = "Calí" });

this.context.Countries.Add(new Country

{

Cities = citiesCol,

Name = "Colombia"

});

var citiesArg = new List<City>();

citiesArg.Add(new City { Name = "Córdoba" });

citiesArg.Add(new City { Name = "Buenos Aires" });

citiesArg.Add(new City { Name = "Rosario" });

this.context.Countries.Add(new Country

{

Cities = citiesArg,

Name = "Argentina"

});

var citiesUsa = new List<City>();

citiesUsa.Add(new City { Name = "New York" });

citiesUsa.Add(new City { Name = "Los Ángeles" });

citiesUsa.Add(new City { Name = "Chicago" });

this.context.Countries.Add(new Country

{

Cities = citiesUsa,

Name = "Estados Unidos"

});

await this.context.SaveChangesAsync();

}

private async Task CheckRoles()

{

await this.userHelper.CheckRoleAsync("Admin");

await this.userHelper.CheckRoleAsync("Customer");

}

private void AddProduct(string name, decimal price, User user)

{

this.context.Products.Add(new Product

{

Name = name,

Price = price,

IsAvailabe = true,

Stock = this.random.Next(100),

User = user,

ImageUrl = $"~/images/Products/{name}.png"

});

}

}

1. Drop the database and test it.

# Login in Xamarin Forms

1. Add the class **TokenRequest** (in **Common.Models**):

public class TokenRequest

{

public string Username { get; set; }

public string Password { get; set; }

}

1. Add the class **TokenResponse** (in **Common.Models**):

using System;

using Newtonsoft.Json;

public class TokenResponse

{

[JsonProperty("token")]

public string Token { get; set; }

[JsonProperty("expiration")]

public DateTimeOffset Expiration { get; set; }

}

1. In the **ApiService** add the methods **GetTokenAsync** and overload the method **GetListAsync**:

public async Task<Response> GetListAsync<T>(

string urlBase,

string servicePrefix,

string controller,

string tokenType,

string accessToken)

{

try

{

var client = new HttpClient

{

BaseAddress = new Uri(urlBase),

};

client.DefaultRequestHeaders.Authorization = new AuthenticationHeaderValue(tokenType, accessToken);

var url = $"{servicePrefix}{controller}";

var response = await client.GetAsync(url);

var result = await response.Content.ReadAsStringAsync();

if (!response.IsSuccessStatusCode)

{

return new Response

{

IsSuccess = false,

Message = result,

};

}

var list = JsonConvert.DeserializeObject<List<T>>(result);

return new Response

{

IsSuccess = true,

Result = list

};

}

catch (Exception ex)

{

return new Response

{

IsSuccess = false,

Message = ex.Message

};

}

}

public async Task<Response> GetTokenAsync(

string urlBase,

string servicePrefix,

string controller,

TokenRequest request)

{

try

{

var requestString = JsonConvert.SerializeObject(request);

var content = new StringContent(requestString, Encoding.UTF8, "application/json");

var client = new HttpClient

{

BaseAddress = new Uri(urlBase)

};

var url = $"{servicePrefix}{controller}";

var response = await client.PostAsync(url, content);

var result = await response.Content.ReadAsStringAsync();

if (!response.IsSuccessStatusCode)

{

return new Response

{

IsSuccess = false,

Message = result,

};

}

var token = JsonConvert.DeserializeObject<TokenResponse>(result);

return new Response

{

IsSuccess = true,

Result = token

};

}

catch (Exception ex)

{

return new Response

{

IsSuccess = false,

Message = ex.Message

};

}

}

1. Modify the **LoginPage**:

<?xml version="1.0" encoding="utf-8" ?>

<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

x:Class="Shop.UIForms.Views.LoginPage"

BindingContext="{Binding Main, Source={StaticResource Locator}}"

Title="Login">

<ContentPage.Content>

<ScrollView

BindingContext="{Binding Login}">

<StackLayout

Padding="5">

<Label

Text="Email">

</Label>

<Entry

Keyboard="Email"

Placeholder="Enter your email..."

Text="{Binding Email}">

</Entry>

<Label

Text="Password">

</Label>

<Entry

IsPassword="True"

Placeholder="Enter your password..."

Text="{Binding Password}">

</Entry>

<ActivityIndicator

IsRunning="{Binding IsRunning}">

</ActivityIndicator>

<Button

Command="{Binding LoginCommand}"

IsEnabled="{Binding IsEnabled}"

Text="Login">

</Button>

</StackLayout>

</ScrollView>

</ContentPage.Content>

</ContentPage>

1. Add the property **Token** to **MainViewModel**:

public TokenResponse Token { get; set; }

1. Add the new value into resource dictionary:

<!-- Locator -->

<infra:InstanceLocator x:Key="Locator"/>

<!-- Parameters -->

<x:String x:Key="UrlAPI">https://shopzulu.azurewebsites.net</x:String>

1. Modify the **LoginViewModel**:

using Common.Services;

using GalaSoft.MvvmLight.Command;

using Shop.Common.Models;

using System.Windows.Input;

using Views;

using Xamarin.Forms;

public class LoginViewModel : BaseViewModel

{

private bool isRunning;

private bool isEnabled;

private readonly ApiService apiService;

public bool IsRunning

{

get => this.isRunning;

set => this.SetValue(ref this.isRunning, value);

}

public bool IsEnabled

{

get => this.isEnabled;

set => this.SetValue(ref this.isEnabled, value);

}

public string Email { get; set; }

public string Password { get; set; }

public ICommand LoginCommand => new RelayCommand(this.Login);

public LoginViewModel()

{

this.apiService = new ApiService();

this.IsEnabled = true;

this.Email = "jzuluaga55@gmail.com";

this.Password = "123456";

}

private async void Login()

{

if (string.IsNullOrEmpty(this.Email))

{

await Application.Current.MainPage.DisplayAlert("Error", "You must enter an email.", "Accept");

return;

}

if (string.IsNullOrEmpty(this.Password))

{

await Application.Current.MainPage.DisplayAlert("Error", "You must enter a password.", "Accept");

return;

}

this.IsRunning = true;

this.IsEnabled = false;

var request = new TokenRequest

{

Password = this.Password,

Username = this.Email

};

var url = Application.Current.Resources["UrlAPI"].ToString();

var response = await this.apiService.GetTokenAsync(

url,

"/Account",

"/CreateToken",

request);

this.IsRunning = false;

this.IsEnabled = true;

if (!response.IsSuccess)

{

await Application.Current.MainPage.DisplayAlert("Error", "Email or password incorrect.", "Accept");

return;

}

var token = (TokenResponse)response.Result;

var mainViewModel = MainViewModel.GetInstance();

mainViewModel.Token = token;

mainViewModel.Products = new ProductsViewModel();

await Application.Current.MainPage.Navigation.PushAsync(new ProductsPage());

}

}

1. Finally, modify the method **LoadProducts** in **ProductsViewModel**):

private async void LoadProducts()

{

this.IsRefreshing = true;

var url = Application.Current.Resources["UrlAPI"].ToString();

var response = await this.apiService.GetListAsync<Product>(

url,

"/api",

"/Products",

"bearer",

MainViewModel.GetInstance().Token.Token);

if (!response.IsSuccess)

{

await Application.Current.MainPage.DisplayAlert(

"Error",

response.Message,

"Accept");

this.IsRefreshing = false;

return;

}

var products = (List<Product>)response.Result;

this.Products = new ObservableCollection<Product>(products);

this.IsRefreshing = false;

}

1. Test it.

# Master Detail in Xamarin Forms

1. Add a new page call **MenuPage**:

<?xml version="1.0" encoding="utf-8" ?>

<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

x:Class="Shop.UIForms.Views.MenuPage"

BackgroundColor="BlueViolet"

BindingContext="{Binding Main, Source={StaticResource Locator}}"

Title="Menu">

<ContentPage.Content>

<StackLayout>

<Label

TextColor="White"

Text="Menu"

VerticalOptions="CenterAndExpand"

HorizontalOptions="CenterAndExpand" />

</StackLayout>

</ContentPage.Content>

</ContentPage>

1. Add a new page call **MasterPage**:

<?xml version="1.0" encoding="utf-8" ?>

<MasterDetailPage xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

xmlns:pages="clr-namespace:Shop.UIForms.Views"

x:Class="Shop.UIForms.Views.MasterPage">

<MasterDetailPage.Master>

<pages:MenuPage/>

</MasterDetailPage.Master>

<MasterDetailPage.Detail>

<NavigationPage x:Name="Navigator">

<x:Arguments>

<pages:ProductsPage/>

</x:Arguments>

</NavigationPage>

</MasterDetailPage.Detail>

</MasterDetailPage>

1. Modify the code behind **MasterPage.xaml.cs**:

using Xamarin.Forms;

using Xamarin.Forms.Xaml;

[XamlCompilation(XamlCompilationOptions.Compile)]

public partial class MasterPage : MasterDetailPage

{

public MasterPage()

{

InitializeComponent();

}

protected override void OnAppearing()

{

base.OnAppearing();

App.Navigator = this.Navigator;

}

}

1. Add the **Navigator** property.
2. Modify the **LoginViewModel**:

var token = (TokenResponse)response.Result;

var mainViewModel = MainViewModel.GetInstance();

mainViewModel.Token = token;

mainViewModel.Products = new ProductsViewModel();

Application.Current.MainPage = new MasterPage();

1. Test it, that we do until the moment.
2. Add icons for: About, Setup, Exit and an image for the solution. I recommend Android Asset Studio. And add those icons in their corresponding folder by the platform.
3. Add the **Menu** mode (in **Common.Models**):

public class Menu

{

public string Icon { get; set; }

public string Title { get; set; }

public string PageName { get; set; }

}

1. Add a new page call **AboutPage**:

<?xml version="1.0" encoding="utf-8" ?>

<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

x:Class="Shop.UIForms.Views.AboutPage"

Title="About">

<ContentPage.Content>

<StackLayout>

<Label Text="About"

VerticalOptions="CenterAndExpand"

HorizontalOptions="CenterAndExpand" />

</StackLayout>

</ContentPage.Content>

</ContentPage>

1. Add a new page call **SetupPage**:

<?xml version="1.0" encoding="utf-8" ?>

<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

x:Class="Shop.UIForms.Views.SetupPage"

Title="Setup">

<ContentPage.Content>

<StackLayout>

<Label Text="Setup"

VerticalOptions="CenterAndExpand"

HorizontalOptions="CenterAndExpand" />

</StackLayout>

</ContentPage.Content>

</ContentPage>

1. Modify the **MenuPage**:

<?xml version="1.0" encoding="utf-8" ?>

<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

x:Class="Shop.UIForms.Views.MenuPage"

BackgroundColor="Gainsboro"

BindingContext="{Binding Main, Source={StaticResource Locator}}"

Title="Menu">

<ContentPage.Content>

<StackLayout

Padding="10">

<Image

HeightRequest="150"

Source="shop.png">

</Image>

<ListView

ItemsSource="{Binding Menus}"

HasUnevenRows="True"

SeparatorVisibility="None">

<ListView.ItemTemplate>

<DataTemplate>

<ViewCell>

<Grid>

<Grid.ColumnDefinitions>

<ColumnDefinition Width="Auto"></ColumnDefinition>

<ColumnDefinition Width="\*"></ColumnDefinition>

</Grid.ColumnDefinitions>

<Image

Grid.Column="0"

HeightRequest="50"

Source="{Binding Icon}"

WidthRequest="50">

</Image>

<Label

Grid.Column="1"

FontAttributes="Bold"

VerticalOptions="Center"

TextColor="White"

Text="{Binding Title}">

</Label>

</Grid>

</ViewCell>

</DataTemplate>

</ListView.ItemTemplate>

</ListView>

</StackLayout>

</ContentPage.Content>

</ContentPage>

1. Modify the **LoginPage**:

<?xml version="1.0" encoding="utf-8" ?>

<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

x:Class="Shop.UIForms.Views.LoginPage"

BindingContext="{Binding Main, Source={StaticResource Locator}}"

Title="Login">

<ContentPage.Content>

<ScrollView

BindingContext="{Binding Login}">

<StackLayout

Padding="10">

<Image

HeightRequest="150"

Source="shop.png">

</Image>

<Label

Text="Email">

</Label>

<Entry

Keyboard="Email"

Placeholder="Enter your email..."

Text="{Binding Email}">

</Entry>

<Label

Text="Password">

</Label>

<Entry

IsPassword="True"

Placeholder="Enter your password..."

Text="{Binding Password}">

</Entry>

<ActivityIndicator

IsRunning="{Binding IsRunning}"

VerticalOptions="CenterAndExpand">

</ActivityIndicator>

<Button

BackgroundColor="Navy"

BorderRadius="23"

Command="{Binding LoginCommand}"

HeightRequest="46"

IsEnabled="{Binding IsEnabled}"

Text="Login"

TextColor="White">

</Button>

</StackLayout>

</ScrollView>

</ContentPage.Content>

</ContentPage>

1. Test it:
2. Add the **MenuItemViewModel**:

using System.Windows.Input;

using GalaSoft.MvvmLight.Command;

using Views;

using Xamarin.Forms;

public class MenuItemViewModel : Common.Models.Menu

{

public ICommand SelectMenuCommand => new RelayCommand(this.SelectMenu);

private async void SelectMenu()

{

var mainViewModel = MainViewModel.GetInstance();

switch (this.PageName)

{

case "AboutPage":

await App.Navigator.PushAsync(new AboutPage());

break;

case "SetupPage":

await App.Navigator.PushAsync(new SetupPage());

break;

default:

Application.Current.MainPage = new NavigationPage(new LoginPage());

break;

}

}

}

1. Modify the **MenuPage**:

<Grid>

<Grid.GestureRecognizers>

<TapGestureRecognizer Command="{Binding SelectMenuCommand}"/>

</Grid.GestureRecognizers>

<Grid.ColumnDefinitions>

1. Modify the **MainViewModel**:

…

public ObservableCollection<MenuItemViewModel> Menus { get; set; }

…

public MainViewModel()

{

instance = this;

this.LoadMenus();

}

...

private void LoadMenus()

{

var menus = new List<Menu>

{

new Menu

{

Icon = "ic\_info",

PageName = "AboutPage",

Title = "About"

},

new Menu

{

Icon = "ic\_phonelink\_setup",

PageName = "SetupPage",

Title = "Setup"

},

new Menu

{

Icon = "ic\_exit\_to\_app",

PageName = "LoginPage",

Title = "Close session"

}

};

this.Menus = new ObservableCollection<MenuItemViewModel>(menus.Select(m => new MenuItemViewModel

{

Icon = m.Icon,

PageName = m.PageName,

Title = m.Title

}).ToList());

}

1. Test it, that we do until the moment.
2. Modify the **MasterPage.xaml.cs**:

protected override void OnAppearing()

{

base.OnAppearing();

App.Navigator = this.Navigator;

App.Master = this;

}

1. Add the property in **App**:

public static MasterPage Master { get; internal set; }

1. Finally add this line in **SelectMenu** in **MenuItemViewModel**.

App.Master.IsPresented = false;

1. Test it.

# Completing the products API

1. Add reference to **Common** project in **Web** project.
2. Fix the **Product** model in **Common.Models**:

[JsonProperty("lastPurchase")]

public DateTime? LastPurchase { get; set; }

[JsonProperty("lastSale")]

public DateTime? LastSale { get; set; }

1. Modify those methods in **IGenericRepository**.

Task<T> CreateAsync(T entity);

Task<T> UpdateAsync(T entity);

And implementation:

public async Task<T> CreateAsync(T entity)

{

await this.context.Set<T>().AddAsync(entity);

await SaveAllAsync();

return entity;

}

public async Task<T> UpdateAsync(T entity)

{

this.context.Set<T>().Update(entity);

await SaveAllAsync();

return entity;

}

1. Add those methods to **Products** API Controller.

[HttpPost]

public async Task<IActionResult> PostProduct([FromBody] Common.Models.Product product)

{

if (!ModelState.IsValid)

{

return this.BadRequest(ModelState);

}

var user = await this.userHelper.GetUserByEmailAsync(product.User.Email);

if (user == null)

{

return this.BadRequest("Invalid user");

}

//TODO: Upload images

var entityProduct = new Product

{

IsAvailabe = product.IsAvailabe,

LastPurchase = product.LastPurchase,

LastSale = product.LastSale,

Name = product.Name,

Price = product.Price,

Stock = product.Stock,

User = user

};

var newProduct = await this.productRepository.CreateAsync(entityProduct);

return Ok(newProduct);

}

[HttpPut("{id}")]

public async Task<IActionResult> PutProduct([FromRoute] int id, [FromBody] Common.Models.Product product)

{

if (!ModelState.IsValid)

{

return this.BadRequest(ModelState);

}

if (id != product.Id)

{

return BadRequest();

}

var oldProduct = await this.productRepository.GetByIdAsync(id);

if (oldProduct == null)

{

return this.BadRequest("Product Id don't exists.");

}

//TODO: Upload images

oldProduct.IsAvailabe = product.IsAvailabe;

oldProduct.LastPurchase = product.LastPurchase;

oldProduct.LastSale = product.LastSale;

oldProduct.Name = product.Name;

oldProduct.Price = product.Price;

oldProduct.Stock = product.Stock;

var updatedProduct = await this.productRepository.UpdateAsync(oldProduct);

return Ok(updatedProduct);

}

[HttpDelete("{id}")]

public async Task<IActionResult> DeleteProduct([FromRoute] int id)

{

if (!ModelState.IsValid)

{

return this.BadRequest(ModelState);

}

var product = await this.productRepository.GetByIdAsync(id);

if (product == null)

{

return this.NotFound();

}

await this.productRepository.DeleteAsync(product);

return Ok(product);

}

1. Test it in PostMan.
2. Publish the changes in Azure.

# Completing the CRUD in Xamarin Forms

1. Add the method **PostAsync** to **ApiService**:

public async Task<Response> PostAsync<T>(

string urlBase,

string servicePrefix,

string controller,

T model,

string tokenType,

string accessToken)

{

try

{

var request = JsonConvert.SerializeObject(model);

var content = new StringContent(request, Encoding.UTF8, "application/json");

var client = new HttpClient

{

BaseAddress = new Uri(urlBase)

};

client.DefaultRequestHeaders.Authorization = new AuthenticationHeaderValue(tokenType, accessToken);

var url = $"{servicePrefix}{controller}";

var response = await client.PostAsync(url, content);

var answer = await response.Content.ReadAsStringAsync();

if (!response.IsSuccessStatusCode)

{

return new Response

{

IsSuccess = false,

Message = answer,

};

}

var obj = JsonConvert.DeserializeObject<T>(answer);

return new Response

{

IsSuccess = true,

Result = obj,

};

}

catch (Exception ex)

{

return new Response

{

IsSuccess = false,

Message = ex.Message,

};

}

}

1. Modify the **ProductsPage** to add the icon in the title bar:

<?xml version="1.0" encoding="utf-8" ?>

<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

x:Class="Shop.UIForms.Views.ProductsPage"

BindingContext="{Binding Main, Source={StaticResource Locator}}"

Title="Products">

<ContentPage.ToolbarItems>

<ToolbarItem Icon="ic\_action\_add\_circle" Command="{Binding AddProductCommand}"/>

</ContentPage.ToolbarItems>

<ContentPage.Content>

...

1. Add the **AddProductPage**:

<?xml version="1.0" encoding="utf-8" ?>

<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

x:Class="Shop.UIForms.Views.AddProductPage"

BindingContext="{Binding Main, Source={StaticResource Locator}}"

Title="Add Product">

<ContentPage.Content>

<ScrollView

BindingContext="{Binding AddProduct}">

<StackLayout

Padding="10">

<Image

HeightRequest="150"

Source="{Binding Image}">

</Image>

<Label

FontSize="Micro"

HorizontalOptions="Center"

Text="Tap the image to change it...">

</Label>

<Grid>

<Grid.ColumnDefinitions>

<ColumnDefinition Width="Auto"/>

<ColumnDefinition Width="\*"/>

</Grid.ColumnDefinitions>

<Label

Grid.Column="0"

Grid.Row="0"

Text="Name"

VerticalOptions="Center">

</Label>

<Entry

Grid.Column="1"

Grid.Row="0"

Placeholder="Product name..."

Text="{Binding Name}">

</Entry>

<Label

Grid.Column="0"

Grid.Row="1"

Text="Price"

VerticalOptions="Center">

</Label>

<Entry

Grid.Column="1"

Grid.Row="1"

Keyboard="Numeric"

Placeholder="Product price..."

Text="{Binding Price}">

</Entry>

</Grid>

<ActivityIndicator

IsRunning="{Binding IsRunning}"

VerticalOptions="CenterAndExpand">

</ActivityIndicator>

<Button

BackgroundColor="Navy"

BorderRadius="23"

Command="{Binding SaveCommand}"

HeightRequest="46"

IsEnabled="{Binding IsEnabled}"

Text="Save"

TextColor="White">

</Button>

</StackLayout>

</ScrollView>

</ContentPage.Content>

</ContentPage>

1. Modify the **MainViewModel** to add the logged user and password:

public string UserEmail { get; set; }

public string UserPassword { get; set; }

1. Modify the **LoginViewModel** to storage the user email when this is logged in:

mainViewModel.Products = new ProductsViewModel();

mainViewModel.UserEmail = this.Email;

mainViewModel.UserPassword = this.Password;

Application.Current.MainPage = new MasterPage();

1. Add the **AddProductViewModel**:

using System.Windows.Input;

using Common.Models;

using Common.Services;

using GalaSoft.MvvmLight.Command;

using Xamarin.Forms;

public class AddProductViewModel : BaseViewModel

{

private bool isRunning;

private bool isEnabled;

private readonly ApiService apiService;

public string Image { get; set; }

public bool IsRunning

{

get => this.isRunning;

set => this.SetValue(ref this.isRunning, value);

}

public bool IsEnabled

{

get => this.isEnabled;

set => this.SetValue(ref this.isEnabled, value);

}

public string Name { get; set; }

public string Price { get; set; }

public ICommand SaveCommand => new RelayCommand(this.Save);

public AddProductViewModel()

{

this.apiService = new ApiService();

this.Image = "noImage";

this.IsEnabled = true;

}

private async void Save()

{

if (string.IsNullOrEmpty(this.Name))

{

await Application.Current.MainPage.DisplayAlert("Error", "You must enter a product name.", "Accept");

return;

}

if (string.IsNullOrEmpty(this.Price))

{

await Application.Current.MainPage.DisplayAlert("Error", "You must enter a product price.", "Accept");

return;

}

var price = decimal.Parse(this.Price);

if (price <= 0)

{

await Application.Current.MainPage.DisplayAlert("Error", "The price must be a number greather than zero.", "Accept");

return;

}

this.IsRunning = true;

this.IsEnabled = false;

//TODO: Add image

var product = new Product

{

IsAvailabe = true,

Name = this.Name,

Price = price,

User = new User { UserName = MainViewModel.GetInstance().UserEmail }

};

var url = Application.Current.Resources["UrlAPI"].ToString();

var response = await this.apiService.PostAsync(

url,

"/api",

"/Products",

product,

"bearer",

MainViewModel.GetInstance().Token.Token);

if (!response.IsSuccess)

{

await Application.Current.MainPage.DisplayAlert("Error", response.Message, "Accept");

return;

}

var newProduct = (Product)response.Result;

MainViewModel.GetInstance().Products.Products.Add(newProduct);

this.IsRunning = false;

this.IsEnabled = true;

await App.Navigator.PopAsync();

}

}

1. Modify the **MainViewModel** adding the property **AddProduct**, **AddProductCommand** and **GoAddProduct** method:

public AddProductViewModel AddProduct { get; set; }

public ICommand AddProductCommand => new RelayCommand(this.GoAddProduct);

…

private async void GoAddProduct()

{

this.AddProduct = new AddProductViewModel();

await App.Navigator.PushAsync(new AddProductPage());

}

1. Add an image for “no image”.
2. Modify the property **ImageFullPath** in entity **Product** (in **Data.Entities**):

public string ImageFullPath

{

get

{

if (string.IsNullOrEmpty(this.ImageUrl))

{

return "noImage";

}

return $"https://shopzulu.azurewebsites.net{this.ImageUrl.Substring(1)}";

}

}

1. Modify the property **ImageFullPath** in model **Product** (in **Common.Models**):

[JsonProperty("imageFullPath")]

public string ImageFullPath { get; set; }

1. Modify this line at the end of **ProductsViewModel** :

var myProducts = (List<Product>)response.Result;

this.Products = new ObservableCollection<Product>(myProducts.OrderBy(p => p.Name));

1. Test it, what we do until the moment.
2. Now we implement the update and delete operations. Add this methods to the API controller:

public async Task<Response> PutAsync<T>(

string urlBase,

string servicePrefix,

string controller,

int id,

T model,

string tokenType,

string accessToken)

{

try

{

var request = JsonConvert.SerializeObject(model);

var content = new StringContent(request, Encoding.UTF8, "application/json");

var client = new HttpClient

{

BaseAddress = new Uri(urlBase)

};

client.DefaultRequestHeaders.Authorization = new AuthenticationHeaderValue(tokenType, accessToken);

var url = $"{servicePrefix}{controller}/{id}";

var response = await client.PutAsync(url, content);

var answer = await response.Content.ReadAsStringAsync();

if (!response.IsSuccessStatusCode)

{

return new Response

{

IsSuccess = false,

Message = answer,

};

}

var obj = JsonConvert.DeserializeObject<T>(answer);

return new Response

{

IsSuccess = true,

Result = obj,

};

}

catch (Exception ex)

{

return new Response

{

IsSuccess = false,

Message = ex.Message,

};

}

}

public async Task<Response> DeleteAsync(

string urlBase,

string servicePrefix,

string controller,

int id,

string tokenType,

string accessToken)

{

try

{

var client = new HttpClient

{

BaseAddress = new Uri(urlBase)

};

client.DefaultRequestHeaders.Authorization = new AuthenticationHeaderValue(tokenType, accessToken);

var url = $"{servicePrefix}{controller}/{id}";

var response = await client.DeleteAsync(url);

var answer = await response.Content.ReadAsStringAsync();

if (!response.IsSuccessStatusCode)

{

return new Response

{

IsSuccess = false,

Message = answer,

};

}

return new Response

{

IsSuccess = true

};

}

catch (Exception ex)

{

return new Response

{

IsSuccess = false,

Message = ex.Message,

};

}

}

1. Add the **EditProductPage**:

<?xml version="1.0" encoding="utf-8" ?>

<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

x:Class="Shop.UIForms.Views.EditProductPage"

BindingContext="{Binding Main, Source={StaticResource Locator}}"

Title="Edit Product">

<ContentPage.Content>

<ScrollView

BindingContext="{Binding EditProduct}">

<StackLayout

Padding="10">

<Image

HeightRequest="150"

Source="{Binding Product.ImageFullPath}">

</Image>

<Label

FontSize="Micro"

HorizontalOptions="Center"

Text="Tap the image to change it...">

</Label>

<Grid>

<Grid.ColumnDefinitions>

<ColumnDefinition Width="Auto"/>

<ColumnDefinition Width="\*"/>

</Grid.ColumnDefinitions>

<Label

Grid.Column="0"

Grid.Row="0"

Text="Name"

VerticalOptions="Center">

</Label>

<Entry

Grid.Column="1"

Grid.Row="0"

Placeholder="Product name..."

Text="{Binding Product.Name}">

</Entry>

<Label

Grid.Column="0"

Grid.Row="1"

Text="Price"

VerticalOptions="Center">

</Label>

<Entry

Grid.Column="1"

Grid.Row="1"

Keyboard="Numeric"

Placeholder="Product price..."

Text="{Binding Product.Price}">

</Entry>

</Grid>

<ActivityIndicator

IsRunning="{Binding IsRunning}"

VerticalOptions="CenterAndExpand">

</ActivityIndicator>

<StackLayout

Orientation="Horizontal">

<Button

BackgroundColor="Navy"

BorderRadius="23"

Command="{Binding SaveCommand}"

HeightRequest="46"

HorizontalOptions="FillAndExpand"

IsEnabled="{Binding IsEnabled}"

Text="Save"

TextColor="White">

</Button>

<Button

BackgroundColor="Red"

BorderRadius="23"

Command="{Binding DeleteCommand}"

HeightRequest="46"

HorizontalOptions="FillAndExpand"

IsEnabled="{Binding IsEnabled}"

Text="Delete"

TextColor="White">

</Button>

</StackLayout>

</StackLayout>

</ScrollView>

</ContentPage.Content>

</ContentPage>

1. Add the **ProductItemViewModel**:

using System.Windows.Input;

using Common.Models;

using GalaSoft.MvvmLight.Command;

using Views;

public class ProductItemViewModel : Product

{

public ICommand SelectProductCommand => new RelayCommand(this.SelectProduct);

private async void SelectProduct()

{

MainViewModel.GetInstance().EditProduct = new EditProductViewModel(this);

await App.Navigator.PushAsync(new EditProductPage());

}

}

1. Modify the **ProductsViewModel** to change the observable collection:

…

private List<Product> myProducts;

private ObservableCollection<ProductItemViewModel> products;

…

public ObservableCollection<ProductItemViewModel> Products

{

get => this.products;

set => this.SetValue(ref this.products, value);

}

…

if (!response.IsSuccess)

{

await Application.Current.MainPage.DisplayAlert(

"Error",

response.Message,

"Accept");

return;

}

this.myProducts = (List<Product>)response.Result;

this.RefresProductsList();

}

public void AddProductToList(Product product)

{

this.myProducts.Add(product);

this.RefresProductsList();

}

public void UpdateProductInList(Product product)

{

var previousProduct = this.myProducts.Where(p => p.Id == product.Id).FirstOrDefault();

if (previousProduct != null)

{

this.myProducts.Remove(previousProduct);

}

this.myProducts.Add(product);

this.RefresProductsList();

}

public void DeleteProductInList(int productId)

{

var previousProduct = this.myProducts.Where(p => p.Id == productId).FirstOrDefault();

if (previousProduct != null)

{

this.myProducts.Remove(previousProduct);

}

this.RefresProductsList();

}

private void RefresProductsList()

{

this.Products = new ObservableCollection<ProductItemViewModel>(myProducts.Select(p => new ProductItemViewModel

{

Id = p.Id,

ImageUrl = p.ImageUrl,

ImageFullPath = p.ImageFullPath,

IsAvailabe = p.IsAvailabe,

LastPurchase = p.LastPurchase,

LastSale = p.LastSale,

Name = p.Name,

Price = p.Price,

Stock = p.Stock,

User = p.User

})

.OrderBy(p => p.Name)

.ToList());

}

1. Add modify the grid definition in **ProductsPage**:

<Grid>

<Grid.GestureRecognizers>

<TapGestureRecognizer Command="{Binding SelectProductCommand}"/>

</Grid.GestureRecognizers>

<Grid.ColumnDefinitions>

<ColumnDefinition Width="Auto"/>

<ColumnDefinition Width="\*"/>

<ColumnDefinition Width="Auto"/>

</Grid.ColumnDefinitions>

<Image

Grid.Column="0"

Source="{Binding ImageFullPath}"

WidthRequest="100">

</Image>

<StackLayout

Grid.Column="1"

VerticalOptions="Center">

<Label

FontAttributes="Bold"

FontSize="Medium"

Text="{Binding Name}"

TextColor="Black">

</Label>

<Label

Text="{Binding Price, StringFormat='Price: {0:C2}'}"

TextColor="Navy">

</Label>

<Label

Text="{Binding Stock, StringFormat='Stock: {0:N2}'}"

TextColor="Black">

</Label>

</StackLayout>

<Image

Grid.Column="2"

Source="ic\_action\_chevron\_right">

</Image>

</Grid>

1. Add the **EditProductViewModel**:

using System.Linq;

using System.Windows.Input;

using Common.Models;

using Common.Services;

using GalaSoft.MvvmLight.Command;

using Xamarin.Forms;

public class EditProductViewModel : BaseViewModel

{

private bool isRunning;

private bool isEnabled;

private readonly ApiService apiService;

public Product Product { get; set; }

public bool IsRunning

{

get => this.isRunning;

set => this.SetValue(ref this.isRunning, value);

}

public bool IsEnabled

{

get => this.isEnabled;

set => this.SetValue(ref this.isEnabled, value);

}

public ICommand SaveCommand => new RelayCommand(this.Save);

public ICommand DeleteCommand => new RelayCommand(this.Delete);

public EditProductViewModel(Product product)

{

this.Product = product;

this.apiService = new ApiService();

this.IsEnabled = true;

}

private async void Save()

{

if (string.IsNullOrEmpty(this.Product.Name))

{

await Application.Current.MainPage.DisplayAlert("Error", "You must enter a product name.", "Accept");

return;

}

if (this.Product.Price <= 0)

{

await Application.Current.MainPage.DisplayAlert("Error", "The price must be a number greather than zero.", "Accept");

return;

}

this.IsRunning = true;

this.IsEnabled = false;

var url = Application.Current.Resources["UrlAPI"].ToString();

var response = await this.apiService.PutAsync(

url,

"/api",

"/Products",

this.Product.Id,

this.Product,

"bearer",

MainViewModel.GetInstance().Token.Token);

this.IsRunning = false;

this.IsEnabled = true;

if (!response.IsSuccess)

{

await Application.Current.MainPage.DisplayAlert("Error", response.Message, "Accept");

return;

}

var modifiedProduct = (Product)response.Result;

MainViewModel.GetInstance().Products.UpdateProductInList(modifiedProduct);

await App.Navigator.PopAsync();

}

private async void Delete()

{

var confirm = await Application.Current.MainPage.DisplayAlert("Confirm", "Are you sure to delete the product?", "Yes", "No");

if (!confirm)

{

return;

}

this.IsRunning = true;

this.IsEnabled = false;

var url = Application.Current.Resources["UrlAPI"].ToString();

var response = await this.apiService.DeleteAsync(

url,

"/api",

"/Products",

this.Product.Id,

"bearer",

MainViewModel.GetInstance().Token.Token);

this.IsRunning = false;

this.IsEnabled = true;

if (!response.IsSuccess)

{

await Application.Current.MainPage.DisplayAlert("Error", response.Message, "Accept");

return;

}

MainViewModel.GetInstance().Products.DeleteProductInList(this.Product.Id);

await App.Navigator.PopAsync();

}

}

1. Add the property in the **MainViewModel**:

public EditProductViewModel EditProduct { get; set; }

1. Test the update and delete operations.

# Implementing Settings in Xamarin Forms

1. Add the NuGet **Xam.Plugins.Settings**, in **Common** project.
2. Add the folder **Helpers** (in Common.Helpers), and inside it, add the class **Settings**:

using Plugin.Settings;

using Plugin.Settings.Abstractions;

public static class Settings

{

private const string token = "token";

private const string userEmail = "userEmail";

private const string userPassword = "userPassword";

private const string isRemember = "isRemember";

private static readonly string stringDefault = string.Empty;

private static readonly bool boolDefault = false;

private static ISettings AppSettings => CrossSettings.Current;

public static string Token

{

get => AppSettings.GetValueOrDefault(token, stringDefault);

set => AppSettings.AddOrUpdateValue(token, value);

}

public static string UserEmail

{

get => AppSettings.GetValueOrDefault(userEmail, stringDefault);

set => AppSettings.AddOrUpdateValue(userEmail, value);

}

public static string UserPassword

{

get => AppSettings.GetValueOrDefault(userPassword, stringDefault);

set => AppSettings.AddOrUpdateValue(userPassword, value);

}

public static bool IsRemember

{

get => AppSettings.GetValueOrDefault(isRemember, boolDefault);

set => AppSettings.AddOrUpdateValue(isRemember, value);

}

}

1. Modify the **LoginPage**:

<Entry

IsPassword="True"

Placeholder="Enter your password..."

Text="{Binding Password}">

</Entry>

<StackLayout

HorizontalOptions="Center"

Orientation="Horizontal">

<Label

Text="Rememberme in this device"

VerticalOptions="Center">

</Label>

<Switch

IsToggled="{Binding IsRemember}">

</Switch>

</StackLayout>

<ActivityIndicator

IsRunning="{Binding IsRunning}"

VerticalOptions="CenterAndExpand">

</ActivityIndicator>

1. Modify the **LoginViewModel**.

public bool IsRemember { get; set; }

…

public LoginViewModel()

{

this.apiService = new ApiService();

this.IsEnabled = true;

this.IsRemember = true;

}

…

var token = (TokenResponse)response.Result;

var mainViewModel = MainViewModel.GetInstance();

mainViewModel.Token = token;

mainViewModel.UserEmail = this.Email;

mainViewModel.Products = new ProductsViewModel();

Settings.IsRemember = this.IsToggled;

Settings.UserEmail = this.Email;

Settings.UserPassword = this.Password;

Settings.Token = JsonConvert.SerializeObject(token);

Application.Current.MainPage = new MasterPage();

1. Modify the **App.xaml.cs**.

public App()

{

InitializeComponent();

if (Settings.IsRemember)

{

var token = JsonConvert.DeserializeObject<TokenResponse>(Settings.Token);

if (token.Expiration > DateTime.Now)

{

var mainViewModel = MainViewModel.GetInstance();

mainViewModel.Token = token;

mainViewModel.UserEmail = Settings.UserEmail;

mainViewModel.UserPassword = Settings.UserPassword;

mainViewModel.Products = new ProductsViewModel();

this.MainPage = new MasterPage();

return;

}

}

MainViewModel.GetInstance().Login = new LoginViewModel();

this.MainPage = new NavigationPage(new LoginPage());

}

1. Modify the **MenuItemViewModel**:

default:

Settings.IsRemember = false;

Settings.Token = string.Empty;

Settings.UserEmail = string.Empty;

Settings.UserPassword = string.Empty;

Application.Current.MainPage = new NavigationPage(new LoginPage());

break;

1. Test it.

# Multi Language in Xamarin Forms

1. If you don’t have the ResX Manager Tool, install from: <https://marketplace.visualstudio.com/items?itemName=TomEnglert.ResXManager>
2. In shared forms project add the folder **Resources** and inside it, add the resource call **Resource**, add some literals and translate with the ResX Manager tool. The default resource language must be Public, the others in no code generation.



1. In shared forms project add the folder **Interfaces**, inside it, add the interface **ILocalize**.

using System.Globalization;

public interface ILocalize

{

CultureInfo GetCurrentCultureInfo();

void SetLocale(CultureInfo ci);

}

1. In the folder **Helpers** add the class **PlatformCulture**.

using System;

public class PlatformCulture

{

public string PlatformString { get; private set; }

public string LanguageCode { get; private set; }

public string LocaleCode { get; private set; }

public PlatformCulture(string platformCultureString)

{

if (string.IsNullOrEmpty(platformCultureString))

{

throw new ArgumentException("Expected culture identifier", "platformCultureString"); // in C# 6 use nameof(platformCultureString)

}

PlatformString = platformCultureString.Replace("\_", "-"); // .NET expects dash, not underscore

var dashIndex = PlatformString.IndexOf("-", StringComparison.Ordinal);

if (dashIndex > 0)

{

var parts = PlatformString.Split('-');

LanguageCode = parts[0];

LocaleCode = parts[1];

}

else

{

LanguageCode = PlatformString;

LocaleCode = "";

}

}

public override string ToString()

{

return PlatformString;

}

}

1. In the same folder add the class **Languages** with the literals.

using Interfaces;

using Resources;

using Xamarin.Forms;

public static class Languages

{

static Languages()

{

var ci = DependencyService.Get<ILocalize>().GetCurrentCultureInfo();

Resource.Culture = ci;

DependencyService.Get<ILocalize>().SetLocale(ci);

}

public static string Accept => Resource.Accept;

public static string Error => Resource.Error;

public static string EmailMessage => Resource.EmailMessage;

}

1. Implement the interface in iOS in the folder **Implementations**.

[assembly: Xamarin.Forms.Dependency(typeof(ShopPrep.UIForms.iOS.Implementations.Localize))]

namespace ShopPrep.UIForms.iOS.Implementations

{

using System.Globalization;

using System.Threading;

using Foundation;

using Helpers;

using Interfaces;

public class Localize : ILocalize

{

public CultureInfo GetCurrentCultureInfo()

{

var netLanguage = "en";

if (NSLocale.PreferredLanguages.Length > 0)

{

var pref = NSLocale.PreferredLanguages[0];

netLanguage = iOSToDotnetLanguage(pref);

}

// this gets called a lot - try/catch can be expensive so consider caching or something

System.Globalization.CultureInfo ci = null;

try

{

ci = new System.Globalization.CultureInfo(netLanguage);

}

catch (CultureNotFoundException e1)

{

// iOS locale not valid .NET culture (eg. "en-ES" : English in Spain)

// fallback to first characters, in this case "en"

try

{

var fallback = ToDotnetFallbackLanguage(new PlatformCulture(netLanguage));

ci = new System.Globalization.CultureInfo(fallback);

}

catch (CultureNotFoundException e2)

{

// iOS language not valid .NET culture, falling back to English

ci = new System.Globalization.CultureInfo("en");

}

}

return ci;

}

public void SetLocale(CultureInfo ci)

{

Thread.CurrentThread.CurrentCulture = ci;

Thread.CurrentThread.CurrentUICulture = ci;

}

string iOSToDotnetLanguage(string iOSLanguage)

{

var netLanguage = iOSLanguage;

//certain languages need to be converted to CultureInfo equivalent

switch (iOSLanguage)

{

case "ms-MY": // "Malaysian (Malaysia)" not supported .NET culture

case "ms-SG": // "Malaysian (Singapore)" not supported .NET culture

netLanguage = "ms"; // closest supported

break;

case "gsw-CH": // "Schwiizertüütsch (Swiss German)" not supported .NET culture

netLanguage = "de-CH"; // closest supported

break;

// add more application-specific cases here (if required)

// ONLY use cultures that have been tested and known to work

}

return netLanguage;

}

string ToDotnetFallbackLanguage(PlatformCulture platCulture)

{

var netLanguage = platCulture.LanguageCode; // use the first part of the identifier (two chars, usually);

switch (platCulture.LanguageCode)

{

case "pt":

netLanguage = "pt-PT"; // fallback to Portuguese (Portugal)

break;

case "gsw":

netLanguage = "de-CH"; // equivalent to German (Switzerland) for this app

break;

// add more application-specific cases here (if required)

// ONLY use cultures that have been tested and known to work

}

return netLanguage;

}

}

}

1. Add this lintes into the **info.plist**.

<key>CFBundleLocalizations</key>

<array>

<string>es</string>

<string>pt</string>

</array>

<key>CFBundleDevelopmentRegion</key>

<string>en</string>

1. Implement the interface in Android in the folder **Implementations**.

[assembly: Xamarin.Forms.Dependency(typeof(ShopPrep.UIForms.iOS.Implementations.Localize))]

namespace ShopPrep.UIForms.iOS.Implementations

{

using System.Globalization;

using System.Threading;

using Foundation;

using Helpers;

using Interfaces;

public class Localize : ILocalize

{

public CultureInfo GetCurrentCultureInfo()

{

var netLanguage = "en";

if (NSLocale.PreferredLanguages.Length > 0)

{

var pref = NSLocale.PreferredLanguages[0];

netLanguage = iOSToDotnetLanguage(pref);

}

// this gets called a lot - try/catch can be expensive so consider caching or something

System.Globalization.CultureInfo ci = null;

try

{

ci = new System.Globalization.CultureInfo(netLanguage);

}

catch (CultureNotFoundException e1)

{

// iOS locale not valid .NET culture (eg. "en-ES" : English in Spain)

// fallback to first characters, in this case "en"

try

{

var fallback = ToDotnetFallbackLanguage(new PlatformCulture(netLanguage));

ci = new System.Globalization.CultureInfo(fallback);

}

catch (CultureNotFoundException e2)

{

// iOS language not valid .NET culture, falling back to English

ci = new System.Globalization.CultureInfo("en");

}

}

return ci;

}

public void SetLocale(CultureInfo ci)

{

Thread.CurrentThread.CurrentCulture = ci;

Thread.CurrentThread.CurrentUICulture = ci;

}

string iOSToDotnetLanguage(string iOSLanguage)

{

var netLanguage = iOSLanguage;

//certain languages need to be converted to CultureInfo equivalent

switch (iOSLanguage)

{

case "ms-MY": // "Malaysian (Malaysia)" not supported .NET culture

case "ms-SG": // "Malaysian (Singapore)" not supported .NET culture

netLanguage = "ms"; // closest supported

break;

case "gsw-CH": // "Schwiizertüütsch (Swiss German)" not supported .NET culture

netLanguage = "de-CH"; // closest supported

break;

// add more application-specific cases here (if required)

// ONLY use cultures that have been tested and known to work

}

return netLanguage;

}

string ToDotnetFallbackLanguage(PlatformCulture platCulture)

{

var netLanguage = platCulture.LanguageCode; // use the first part of the identifier (two chars, usually);

switch (platCulture.LanguageCode)

{

case "pt":

netLanguage = "pt-PT"; // fallback to Portuguese (Portugal)

break;

case "gsw":

netLanguage = "de-CH"; // equivalent to German (Switzerland) for this app

break;

// add more application-specific cases here (if required)

// ONLY use cultures that have been tested and known to work

}

return netLanguage;

}

}

}

1. Modify the **LoginViewModel**:

if (string.IsNullOrEmpty(this.Email))

{

await Application.Current.MainPage.DisplayAlert(Languages.Error, Languages.EmailMessage, Languages.Accept);

return;

}

1. Test it.
2. Now to translate literals directly in the XAML add the class **TranslateExtension**:

using Interfaces;

using System;

using System.Globalization;

using System.Reflection;

using System.Resources;

using Xamarin.Forms;

using Xamarin.Forms.Xaml;

[ContentProperty("Text")]

public class TranslateExtension : IMarkupExtension

{

private readonly CultureInfo ci;

private const string ResourceId = "ShopPrep.UIForms.Resources.Resource";

private static readonly Lazy<ResourceManager> ResMgr =

new Lazy<ResourceManager>(() => new ResourceManager(

ResourceId,

typeof(TranslateExtension).GetTypeInfo().Assembly));

public TranslateExtension()

{

ci = DependencyService.Get<ILocalize>().GetCurrentCultureInfo();

}

public string Text { get; set; }

public object ProvideValue(IServiceProvider serviceProvider)

{

if (Text == null)

{

return "";

}

var translation = ResMgr.Value.GetString(Text, ci);

if (translation == null)

{

#if DEBUG

throw new ArgumentException(

string.Format(

"Key '{0}' was not found in resources '{1}' for culture '{2}'.",

Text, ResourceId, ci.Name), "Text");

#else

translation = Text; // returns the key, which GETS DISPLAYED TO THE USER

#endif

}

return translation;

}

}

1. Complete the literals:



1. And add the properties in **Languages** class:

using Interfaces;

using Resources;

using Xamarin.Forms;

public static class Languages

{

static Languages()

{

var ci = DependencyService.Get<ILocalize>().GetCurrentCultureInfo();

Resource.Culture = ci;

DependencyService.Get<ILocalize>().SetLocale(ci);

}

public static string Accept => Resource.Accept;

public static string Error => Resource.Error;

public static string EmailMessage => Resource.EmailMessage;

public static string Login => Resource.Login;

public static string EmailMEmailessage => Resource.Email;

public static string EmailPlaceHolder => Resource.EmailPlaceHolder;

public static string Password => Resource.Password;

public static string PasswordPlaceHolder => Resource.PasswordPlaceHolder;

public static string PasswordMessage => Resource.PasswordMessage;

public static string Remember => Resource.Remember;

public static string EmailOrPasswordIncorrect => Resource.EmailOrPasswordIncorrect;

}

1. Modify the **LoginVewModel** to complete the translations.

if (string.IsNullOrEmpty(this.Email))

{

await Application.Current.MainPage.DisplayAlert(Languages.Error, Languages.EmailMessage, Languages.Accept);

return;

}

if (string.IsNullOrEmpty(this.Password))

{

await Application.Current.MainPage.DisplayAlert(Languages.Error, Languages.PasswordMessage, Languages.Accept);

return;

}

var request = new TokenRequest

{

Password = this.Password,

Username = this.Email

};

this.IsRunning = true;

this.IsEnabled = false;

var response = await this.apiService.GetTokenAsync(

"https://shopprep.azurewebsites.net",

"/Account",

"/CreateToken",

request);

if (!response.IsSuccess)

{

this.IsRunning = false;

this.IsEnabled = true;

await Application.Current.MainPage.DisplayAlert(Languages.Error, Languages.EmailOrPasswordIncorrect, Languages.Accept);

return;

}

1. Modify the **LoginPage** for the translations in XAML.

<?xml version="1.0" encoding="utf-8" ?>

<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

xmlns:i18n="clr-namespace:ShopPrep.UIForms.Helpers"

x:Class="Shop.UIForms.Views.LoginPage"

BindingContext="{Binding Main, Source={StaticResource Locator}}"

Title="{i18n:Translate Login}">

<ContentPage.Content>

<ScrollView

BindingContext="{Binding Login}">

<StackLayout

Padding="10">

<Image

HeightRequest="150"

Source="shop.png">

</Image>

<Label

Text="{i18n:Translate Email}">

</Label>

<Entry

Keyboard="{i18n:Translate Email}"

Placeholder="{i18n:Translate EmailPlaceHolder}"

Text="{Binding Email}">

</Entry>

<Label

Text="{i18n:Translate Password}">

</Label>

<Entry

IsPassword="True"

Placeholder="{i18n:Translate PasswordPlaceHolder}"

Text="{Binding Password}">

</Entry>

<StackLayout

HorizontalOptions="Center"

Orientation="Horizontal">

<Label

Text="{i18n:Translate Remember}"

VerticalOptions="Center">

</Label>

<Switch

IsToggled="{Binding IsToggled}">

</Switch>

</StackLayout>

<ActivityIndicator

IsRunning="{Binding IsRunning}"

VerticalOptions="CenterAndExpand">

</ActivityIndicator>

<Button

BackgroundColor="Navy"

BorderRadius="23"

Command="{Binding LoginCommand}"

HeightRequest="46"

IsEnabled="{Binding IsEnabled}"

Text="{i18n:Translate Login}"

TextColor="White">

</Button>

</StackLayout>

</ScrollView>

</ContentPage.Content>

</ContentPage>

1. Test it.

# Acceding To Camera and Gallery in Xamarin Forms

1. Change the **AddProductPage**:

<Image

HeightRequest="150"

Source="{Binding ImageSource}">

<Image.GestureRecognizers>

<TapGestureRecognizer Command="{Binding ChangeImageCommand}"/>

</Image.GestureRecognizers>

</Image>

1. Add the property in **AddProductViewModel**:

public ImageSource ImageSource

{

get => this.imageSource;

set => this.SetValue(ref this.imageSource, value);

}

1. And initialize in the constructor:

this.ImageSource = "noImage";

1. Add the NuGet **Xam.Plugin.Media** in all Xamarin Forms projects:
2. Modify the **MainActivity**:

protected override void OnCreate(Bundle savedInstanceState)

{

TabLayoutResource = Resource.Layout.Tabbar;

ToolbarResource = Resource.Layout.Toolbar;

base.OnCreate(savedInstanceState);

CrossCurrentActivity.Current.Init(this, savedInstanceState);

global::Xamarin.Forms.Forms.Init(this, savedInstanceState);

LoadApplication(new App());

}

public override void OnRequestPermissionsResult(

int requestCode,

string[] permissions,

[GeneratedEnum] Permission[] grantResults)

{

PermissionsImplementation.Current.OnRequestPermissionsResult(

requestCode,

permissions,

grantResults);

}

1. Modify the **AndroidManifest**:

<?xml version="1.0" encoding="utf-8"?>

<manifest xmlns:android="http://schemas.android.com/apk/res/android" android:versionCode="1" android:versionName="1.0" package="com.companyname.ShopPrep.UIForms">

<uses-sdk android:minSdkVersion="21" android:targetSdkVersion="27" />

<uses-permission android:name="android.permission.INTERNET" />

<uses-permission android:name="android.permission.ACCESS\_WIFI\_STATE" />

<uses-permission android:name="android.permission.ACCESS\_NETWORK\_STATE" />

<uses-permission android:name="android.permission.CAMERA" />

<uses-permission android:name="android.permission.WRITE\_EXTERNAL\_STORAGE" />

<uses-permission android:name="android.permission.READ\_EXTERNAL\_STORAGE" />

<application android:label="ShopPrep.UIForms.Android">

<provider android:name="android.support.v4.content.FileProvider"

android:authorities="${applicationId}.fileprovider"

android:exported="false"

android:grantUriPermissions="true">

<meta-data android:name="android.support.FILE\_PROVIDER\_PATHS"

android:resource="@xml/file\_paths"></meta-data>

</provider>

</application>

</manifest>

1. Add the folder **xml** inside **Resources** and inside it, add the **file\_paths.xml**:

<?xml version="1.0" encoding="utf-8" ?>

<paths xmlns:android="http://schemas.android.com/apk/res/android">

<external-files-path name="my\_images" path="Pictures" />

<external-files-path name="my\_movies" path="Movies" />

</paths>

1. Modify the **info.plist**:

<key>NSCameraUsageDescription</key>

<string>This app needs access to the camera to take photos.</string>

<key>NSPhotoLibraryUsageDescription</key>

<string>This app needs access to photos.</string>

<key>NSMicrophoneUsageDescription</key>

<string>This app needs access to microphone.</string>

<key>NSPhotoLibraryAddUsageDescription</key>

<string>This app needs access to the photo gallery.</string>

1. Add the attribute in **AddProductViewModel**:

private MediaFile file;

1. Add the command in **AddProductViewModel**:

public ICommand ChangeImageCommand => new RelayCommand(this.ChangeImage);

1. Add the method in **AddProductViewModel**:

private async void ChangeImage()

{

await CrossMedia.Current.Initialize();

var source = await Application.Current.MainPage.DisplayActionSheet(

"Where do you take the picture?",

"Cancel",

null,

"From Gallery",

"From Camera");

if (source == "Cancel")

{

this.file = null;

return;

}

if (source == "From Camera")

{

this.file = await CrossMedia.Current.TakePhotoAsync(

new StoreCameraMediaOptions

{

Directory = "Sample",

Name = "test.jpg",

PhotoSize = PhotoSize.Small,

}

);

}

else

{

this.file = await CrossMedia.Current.PickPhotoAsync();

}

if (this.file != null)

{

this.ImageSource = ImageSource.FromStream(() =>

{

var stream = file.GetStream();

return stream;

});

}

}

1. Test it.

# Sending the Image to Backend

1. In **Helpers** add the class **FilesHelper**:

using System.IO;

public class FilesHelper

{

public static bool UploadPhoto(MemoryStream stream, string folder, string name)

{

try

{

stream.Position = 0;

var path = Path.Combine(Directory.GetCurrentDirectory(), folder , name);

File.WriteAllBytes(path, stream.ToArray());

}

catch

{

return false;

}

return true;

}

}

1. Add the property **ImageArray** in **Product** (in Common.Models):

public byte[] ImageArray { get; set; }

1. Modify the method **PostProduct** in products API controller:

[HttpPost]

public async Task<IActionResult> PostProduct([FromBody] Common.Models.Product product)

{

if (!ModelState.IsValid)

{

return this.BadRequest(ModelState);

}

var user = await this.userHelper.GetUserByEmail(product.UserEmail);

if (user == null)

{

return this.BadRequest("Invalid user");

}

var imageUrl = string.Empty;

if (product.ImageArray != null && product.ImageArray.Length > 0)

{

var stream = new MemoryStream(product.ImageArray);

var guid = Guid.NewGuid().ToString();

var file = $"{guid}.jpg";

var folder = "wwwroot\\images\\Products";

var fullPath = $"~/images/Products/{file}";

var response = FilesHelper.UploadPhoto(stream, folder, file);

if (response)

{

imageUrl = fullPath;

}

}

var entityProduct = new Product

{

IsAvailabe = product.IsAvailabe,

LastPurchase = product.LastPurchase,

LastSale = product.LastSale,

Name = product.Name,

Price = product.Price,

Stock = product.Stock,

User = user,

ImageUrl = imageUrl

};

var newProduct = await this.repository.AddProductAsync(entityProduct);

return Ok(newProduct);

}

1. Now in Xamarin Shared project, add the class **FilesHelper**:

using System.IO;

public class FilesHelper

{

public static byte[] ReadFully(Stream input)

{

using (MemoryStream ms = new MemoryStream())

{

input.CopyTo(ms);

return ms.ToArray();

}

}

}

1. Modify the **AddProductViewModel**:

this.IsRunning = true;

this.IsEnabled = false;

byte[] imageArray = null;

if (this.file != null)

{

imageArray = FilesHelper.ReadFully(this.file.GetStream());

}

var product = new Product

{

IsAvailabe = true,

Name = this.Name,

Price = price,

UserEmail = MainViewModel.GetInstance().UserEmail,

ImageArray = imageArray

};

1. Test it locally.
2. Publish the changes on Azure and make a complete test.

# Starting With Xamarin Android Classic

1. In layout folder add the **LoginPage**:

<?xml version="1.0" encoding="utf-8"?>

<RelativeLayout

xmlns:android="http://schemas.android.com/apk/res/android"

xmlns:app="http://schemas.android.com/apk/res-auto"

xmlns:tools="http://schemas.android.com/tools"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<LinearLayout

android:paddingTop="10dp"

android:paddingLeft="10dp"

android:paddingRight="10dp"

android:orientation="vertical"

android:minWidth="25px"

android:minHeight="25px"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content">

<TextView

android:text="Email"

android:textAppearance="?android:attr/textAppearanceLarge"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:minWidth="25px"

android:minHeight="25px"/>

<EditText

android:inputType="textEmailAddress"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:id="@+id/emailText" />

<TextView

android:text="Password"

android:textAppearance="?android:attr/textAppearanceLarge"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:minWidth="25px"

android:minHeight="25px"/>

<EditText

android:inputType="textPassword"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:id="@+id/passwordText" />

<ProgressBar

android:layout\_height="wrap\_content"

android:layout\_width="match\_parent"

android:id="@+id/activityIndicatorProgressBar"

android:indeterminateOnly="true"

android:keepScreenOn="true"/>

<Button

android:text="Login"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:id="@+id/loginButton" />

</LinearLayout>

</RelativeLayout>

1. Add the folder **Helpers** and inside it, add the **DiaglogService**:

using Android.App;

using Android.Content;

namespace ShopPrep.UIClassic.Android.Helpers

{

public static class DiaglogService

{

public static void ShowMessage(Context context, string title, string message, string button)

{

new AlertDialog.Builder(context)

.SetPositiveButton(button, (sent, args) => { })

.SetMessage(message)

.SetTitle(title)

.SetCancelable(false)

.Show();

}

}

}

1. Add the folder **Activities** and inside it, add the **LoginActivity**:

using Android.App;

using Android.Content;

using Android.OS;

using Android.Views;

using Android.Widget;

using Newtonsoft.Json;

using Shop.Common.Models;

using Shop.Common.Services;

using Shop.UIClassic.Android.Helpers;

using System;

namespace ShopPrep.UIClassic.Android.Activities

{

[Activity(Label = "@string/app\_name", Theme = "@style/AppTheme", MainLauncher = true)]

public class LoginActivity : Activity

{

private EditText emailText;

private EditText passwordText;

private Button loginButton;

private ApiService apiService;

private ProgressBar activityIndicatorProgressBar;

protected override void OnCreate(Bundle savedInstanceState)

{

base.OnCreate(savedInstanceState);

this.SetContentView(Resource.Layout.LoginPage);

this.FindViews();

this.HandleEvents();

this.SetInitialData();

}

private void SetInitialData()

{

this.apiService = new ApiService();

this.emailText.Text = "jzuluaga55@gmail.com";

this.passwordText.Text = "123456";

this.activityIndicatorProgressBar.Visibility = ViewStates.Gone;

}

private void HandleEvents()

{

this.loginButton.Click += this.LoginButton\_Click;

}

private async void LoginButton\_Click(object sender, EventArgs e)

{

if (string.IsNullOrEmpty(this.emailText.Text))

{

DiaglogService.ShowMessage(this, "Error", "You must enter an email.", "Accept");

return;

}

if (string.IsNullOrEmpty(this.passwordText.Text))

{

DiaglogService.ShowMessage(this, "Error", "You must enter a password.", "Accept");

return;

}

this.activityIndicatorProgressBar.Visibility = ViewStates.Visible;

var request = new TokenRequest

{

Password = this.passwordText.Text,

Username = this.emailText.Text

};

var response = await this.apiService.GetTokenAsync(

"https://shopprep.azurewebsites.net",

"/Account",

"/CreateToken",

request);

if (!response.IsSuccess)

{

DiaglogService.ShowMessage(this, "Error", "User or password incorrect.", "Accept");

return;

}

this.activityIndicatorProgressBar.Visibility = ViewStates.Gone;

DiaglogService.ShowMessage(this, "Ok", "Fuck Yeah!", "Accept");

}

private void FindViews()

{

this.emailText = this.FindViewById<EditText>(Resource.Id.emailText);

this.passwordText = this.FindViewById<EditText>(Resource.Id.passwordText);

this.loginButton = this.FindViewById<Button>(Resource.Id.loginButton);

this.activityIndicatorProgressBar = this.FindViewById<ProgressBar>(Resource.Id.activityIndicatorProgressBar);

}

}

}

1. Delete the **MainActivity** and original layout.
2. Test it.
3. In **layout** add the **ProductsPage**:

<?xml version="1.0" encoding="utf-8"?>

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:orientation="vertical"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<ListView

android:minWidth="25px"

android:minHeight="25px"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:id="@+id/productsListView" />

</LinearLayout>

1. In **layout** add the **ProductRow**:

<?xml version="1.0" encoding="utf-8"?>

<LinearLayout

xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="fill\_parent"

android:layout\_height="wrap\_content"

android:padding="8dp"

android:orientation="horizontal">

<ImageView

android:id="@+id/productImageView"

android:layout\_width="80dp"

android:layout\_height="80dp"

android:padding="5dp" />

<LinearLayout

android:orientation="vertical"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:paddingLeft="10dip">

<RelativeLayout

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:paddingLeft="10dip">

<TextView

android:id="@+id/nameTextView"

android:layout\_width="200dp"

android:textSize="24dp"

android:layout\_height="wrap\_content"

android:textColor="@android:color/black"

android:layout\_alignParentLeft="true"

android:textStyle="bold"

android:gravity="left" />

<TextView

android:id="@+id/priceTextView"

android:layout\_width="200dp"

android:layout\_height="wrap\_content"

android:layout\_alignParentLeft="true"

android:gravity="left"

android:textSize="12dp"

android:textColor="@android:color/black"

android:layout\_below="@+id/nameTextView" />

</RelativeLayout>

</LinearLayout>

</LinearLayout>

1. In folder **Helpers** add the **ImageHelper**:

using Android.Graphics;

using System.Net;

namespace ShopPrep.UIClassic.Android.Helpers

{

public class ImageHelper

{

public static Bitmap GetImageBitmapFromUrl(string url)

{

Bitmap imageBitmap = null;

using (var webClient = new WebClient())

{

var imageBytes = webClient.DownloadData(url);

if (imageBytes != null && imageBytes.Length > 0)

{

imageBitmap = BitmapFactory.DecodeByteArray(imageBytes, 0, imageBytes.Length);

}

}

return imageBitmap;

}

}

}

1. Create the folder **Adapters** and inside it add the class **ProductsListAdapter**:

using Android.App;

using Android.Views;

using Android.Widget;

using Shop.Common.Models;

using Shop.UIClassic.Android.Helpers;

using System.Collections.Generic;

namespace ShopPrep.UIClassic.Android.Adapters

{

public class ProductsListAdapter : BaseAdapter<Product>

{

private readonly List<Product> items;

private readonly Activity context;

public ProductsListAdapter(Activity context, List<Product> items) : base()

{

this.context = context;

this.items = items;

}

public override long GetItemId(int position)

{

return position;

}

public override Product this[int position] => items[position];

public override int Count => items.Count;

public override View GetView(int position, View convertView, ViewGroup parent)

{

var item = items[position];

var imageBitmap = ImageHelper.GetImageBitmapFromUrl(item.ImageFullPath);

if (convertView == null)

{

convertView = context.LayoutInflater.Inflate(Resource.Layout.ProductRow, null);

}

convertView.FindViewById<TextView>(Resource.Id.nameTextView).Text = item.Name;

convertView.FindViewById<TextView>(Resource.Id.priceTextView).Text = $"{item.Price:C2}";

convertView.FindViewById<ImageView>(Resource.Id.productImageView).SetImageBitmap(imageBitmap);

return convertView;

}

}

}

1. Modify the **LoginActivity**:

this.activityIndicatorProgressBar.Visibility = ViewStates.Gone;

//DiaglogService.ShowMessage(this, "Ok", "Fuck Yeah!", "Accept");

var token = (TokenResponse)response.Result;

var intent = new Intent(this, typeof(ProductsActivity));

intent.PutExtra("token", JsonConvert.SerializeObject(token));

intent.PutExtra("email", this.emailText.Text);

this.StartActivity(intent);

1. In **Activities** folder add the **ProductsActivity**:

using Android.App;

using Android.OS;

using Android.Widget;

using Newtonsoft.Json;

using Shop.Common.Models;

using Shop.Common.Services;

using Shop.UIClassic.Android.Adapters;

using Shop.UIClassic.Android.Helpers;

using System.Collections.Generic;

namespace ShopPrep.UIClassic.Android.Activities

{

[Activity(Label = "@string/app\_name", Theme = "@style/AppTheme", MainLauncher = true)]

public class ProductsActivity : Activity

{

private TokenResponse token;

private string email;

private ApiService apiService;

private ListView productsListView;

protected override void OnCreate(Bundle savedInstanceState)

{

base.OnCreate(savedInstanceState);

this.SetContentView(Resource.Layout.ProductsPage);

this.productsListView = FindViewById<ListView>(Resource.Id.productsListView);

this.email = Intent.Extras.GetString("email");

var tokenString = Intent.Extras.GetString("token");

this.token = JsonConvert.DeserializeObject<TokenResponse>(tokenString);

this.apiService = new ApiService();

this.LoadProducts();

}

private async void LoadProducts()

{

var response = await this.apiService.GetListAsync<Product>(

"https://shopprep.azurewebsites.net",

"/api",

"/Products",

"bearer",

this.token.Token);

if (!response.IsSuccess)

{

DiaglogService.ShowMessage(this, "Error", response.Message, "Accept");

return;

}

var products = (List<Product>)response.Result;

this.productsListView.Adapter = new ProductsListAdapter(this, products);

this.productsListView.FastScrollEnabled = true;

}

}

}

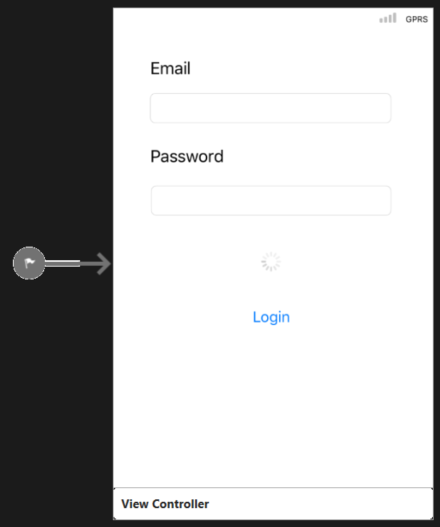
1. Test it.

# Starting With Xamarin iOS Classic

1. In classic folder add the Xamarin iOS project **ShopPrep.UIClassic.iOS**, using single view app template:
2. Add a reference to **Shop.Common**.
3. Add the reference to **netstandard.dll**, browse to **C:\**Windows**\Microsoft.NET\Framework\v4.0.30319** to find it.
4. Modify the **LaunchScreen.storyboard**:



1. Modify the **Main.storyboard**.



1. Modify the **ViewController**:

using System;

using UIKit;

public partial class ViewController : UIViewController

{

public ViewController(IntPtr handle) : base(handle)

{

}

public override void ViewDidLoad()

{

base.ViewDidLoad();

this.ActivityIndicator.StopAnimating();

}

public override void DidReceiveMemoryWarning()

{

base.DidReceiveMemoryWarning();

// Release any cached data, images, etc that aren't in use.

}

partial void LoginButton\_TouchUpInside(UIButton sender)

{

if (string.IsNullOrEmpty(this.EmailText.Text))

{

var alert = UIAlertController.Create("Error", "You must enter an email.", UIAlertControllerStyle.Alert);

alert.AddAction(UIAlertAction.Create("Accept", UIAlertActionStyle.Default, null));

this.PresentViewController(alert, true, null);

return;

}

if (string.IsNullOrEmpty(this.PasswordText.Text))

{

var alert = UIAlertController.Create("Error", "You must enter a password.", UIAlertControllerStyle.Alert);

alert.AddAction(UIAlertAction.Create("Accept", UIAlertActionStyle.Default, null));

this.PresentViewController(alert, true, null);

return;

}

var ok = UIAlertController.Create("Ok", "Fuck yeah!", UIAlertControllerStyle.Alert);

ok.AddAction(UIAlertAction.Create("Accept", UIAlertActionStyle.Default, null));

this.PresentViewController(ok, true, null);

}

}

1. Test it.
2. Modify the ViewController:

//var ok = UIAlertController.Create("Ok", "Fuck yeah!", UIAlertControllerStyle.Alert);

//ok.AddAction(UIAlertAction.Create("Accept", UIAlertActionStyle.Default, null));

//this.PresentViewController(ok, true, null);

this.DoLogin();

}

private async void DoLogin()

{

this.ActivityIndicator.StartAnimating();

var request = new TokenRequest

{

Username = this.EmailText.Text,

Password = this.PasswordText.Text

};

var response = await this.apiService.GetTokenAsync(

"https://shopprep.azurewebsites.net",

"/Account",

"/CreateToken",

request);

if (!response.IsSuccess)

{

this.ActivityIndicator.StopAnimating();

var alert = UIAlertController.Create("Error", "User or password incorrect.", UIAlertControllerStyle.Alert);

alert.AddAction(UIAlertAction.Create("Accept", UIAlertActionStyle.Default, null));

this.PresentViewController(alert, true, null);

return;

}

var token = (TokenResponse)response.Result;

this.ActivityIndicator.StopAnimating();

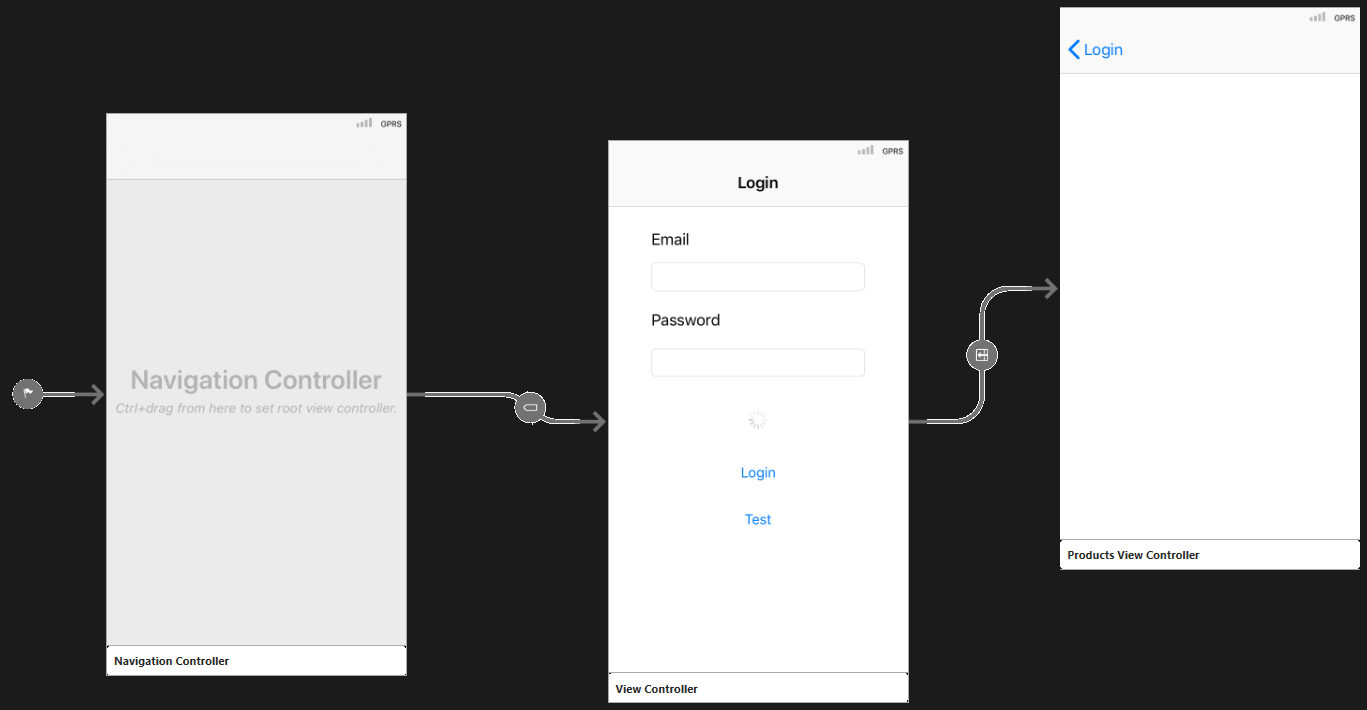
var ok = UIAlertController.Create("Ok", "Fuck yeah!", UIAlertControllerStyle.Alert);

ok.AddAction(UIAlertAction.Create("Accept", UIAlertActionStyle.Default, null));

this.PresentViewController(ok, true, null);

}

1. Add the NuGet **Newtonsoft.Json** and test what we do until this moment.
2. Modify the **Main.storyboard**:



1. Test the button **Test**.
2. Add the NuGet **Xam.Plugins.Settings** to **UIClassic.iOS**.
3. Add the new property **Products** in **Settings**.
4. Delete the **Test** button and modify the **ViewController**:

//var ok = UIAlertController.Create("Ok", "Fuck yeah!", UIAlertControllerStyle.Alert);

//ok.AddAction(UIAlertAction.Create("Accept", UIAlertActionStyle.Default, null));

//this.PresentViewController(ok, true, null);

var token = (TokenResponse)response.Result;

var response2 = await this.apiService.GetListAsync<Product>(

"https://shopprep.azurewebsites.net",

"/api",

"/Products",

"bearer",

token.Token);

if (!response2.IsSuccess)

{

var alert = UIAlertController.Create("Error", response.Message, UIAlertControllerStyle.Alert);

alert.AddAction(UIAlertAction.Create("Accept", UIAlertActionStyle.Default, null));

this.PresentViewController(alert, true, null);

return;

}

var products = (List<Product>)response2.Result;

Settings.UserEmail = this.EmailText.Text;

Settings.Token = JsonConvert.SerializeObject(token);

Settings.Products = JsonConvert.SerializeObject(products);

this.ActivityIndicator.StopAnimating();

var board = UIStoryboard.FromName("Main", null);

var productsViewController = board.InstantiateViewController("ProductsViewController");

productsViewController.Title = "Products";

this.NavigationController.PushViewController(productsViewController, true);

1. Add the folder **DataSources** and inside it, add the class **ProductsDataSource**:

using System;

using System.Collections.Generic;

using Common.Models;

using Foundation;

using UIKit;

public class ProductsDataSource : UITableViewSource

{

private readonly List<Product> products;

private readonly NSString cellIdentifier = new NSString("ProductCell");

public ProductsDataSource(List<Product> products)

{

this.products = products;

}

public override UITableViewCell GetCell(UITableView tableView, NSIndexPath indexPath)

{

var cell = tableView.DequeueReusableCell(cellIdentifier) as UITableViewCell;

if (cell == null)

{

cell = new UITableViewCell(UITableViewCellStyle.Default, cellIdentifier);

}

var product = products[indexPath.Row];

cell.TextLabel.Text = product.Name;

cell.ImageView.Image = UIImage.FromFile(product.ImageFullPath);

return cell;

}

public override nint RowsInSection(UITableView tableview, nint section)

{

return this.products.Count;

}

}

1. Modify the **ProductsViewController**:

using System;

using System.Collections.Generic;

using Common.Helpers;

using Common.Models;

using DataSources;

using Newtonsoft.Json;

using UIKit;

public partial class ProductsViewController : UIViewController

{

public ProductsViewController(IntPtr handle) : base(handle)

{

}

public override void ViewDidLoad()

{

base.ViewDidLoad();

var products = JsonConvert.DeserializeObject<List<Product>>(Settings.Products);

var datasource = new ProductsDataSource(products);

this.TableView.Source = datasource;

}

}

1. Test what we did until this moment.
2. Add the folder **Cells** and inside it add the class **ProductCell**:

using System.Drawing;

using Foundation;

using UIKit;

public class ProductCell : UITableViewCell

{

private readonly UILabel nameLabel;

private readonly UILabel priceLabel;

private readonly UIImageView imageView;

public ProductCell(NSString cellId) : base(UITableViewCellStyle.Default, cellId)

{

this.SelectionStyle = UITableViewCellSelectionStyle.Gray;

this.imageView = new UIImageView();

this.nameLabel = new UILabel();

this.priceLabel = new UILabel()

{

TextAlignment = UITextAlignment.Right

};

this.ContentView.Add(this.nameLabel);

this.ContentView.Add(this.priceLabel);

this.ContentView.Add(this.imageView);

}

public void UpdateCell(string caption, string subtitle, UIImage image)

{

this.imageView.Image = image;

this.nameLabel.Text = caption;

this.priceLabel.Text = subtitle;

}

public override void LayoutSubviews()

{

base.LayoutSubviews();

this.imageView.Frame = new RectangleF((float)this.ContentView.Bounds.Width - 63, 5, 33, 33);

this.nameLabel.Frame = new RectangleF(5, 4, (float)this.ContentView.Bounds.Width - 63, 25);

this.priceLabel.Frame = new RectangleF(200, 10, 100, 20);

}

}

1. Modify the **GetCell** method in **ProductsDataSource**:

public override UITableViewCell GetCell(UITableView tableView, NSIndexPath indexPath)

{

var cell = tableView.DequeueReusableCell(cellIdentifier) as ProductCell;

if (cell == null)

{

cell = new ProductCell(cellIdentifier);

}

var product = products[indexPath.Row];

cell.UpdateCell(product.Name, $"{product.Price:C2}", UIImage.FromFile(product.ImageUrl));

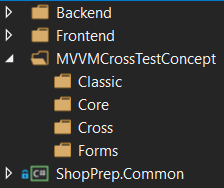
return cell;

}

1. Test it.

# Starting With MVVM Cross, Test Concept

Create the following folder structure:



## MVVM Cross Core Project

1. In **Cross** folder, add a standard protect call **ThreeWays.Core**.
2. Delete **Class1**.
3. Add NuGet **MvvmCross**.
4. Add **Services** folder and add **ICalculationService** interface inside it.

public interface ICalculationService

{

decimal TipAmount(decimal subTotal, double generosity);

}

1. Then, add the implementation (**CalculationService**):

public class CalculationService : ICalculationService

{

public decimal TipAmount(decimal subTotal, double generosity)

{

var tip = subTotal \* (decimal)(generosity / 100);

return tip;

}

}

1. Add the folder **ViewModels** and the class **TipViewModel** inside it.

using System.Threading.Tasks;

using MvvmCross.ViewModels;

using Services;

public class TipViewModel : MvxViewModel

{

#region Attributes

private readonly ICalculationService calculationService;

private decimal subTotal;

private int generosity;

private decimal tip;

#endregion

#region Properties

public decimal SubTotal

{

get

{

return this.subTotal;

}

set

{

this.subTotal = value;

this.RaisePropertyChanged(() => this.SubTotal);

this.Recalculate();

}

}

public decimal Tip

{

get

{

return this.tip;

}

set

{

this.tip = value;

this.RaisePropertyChanged(() => this.Tip);

}

}

public int Generosity

{

get

{

return this.generosity;

}

set

{

this.generosity = value;

this.RaisePropertyChanged(() => this.Generosity);

this.Recalculate();

}

}

#endregion

#region Constructors

public TipViewModel(ICalculationService calculationService)

{

this.calculationService = calculationService;

}

#endregion

#region Methods

public override async Task Initialize()

{

await base.Initialize();

this.SubTotal = 100;

this.Generosity = 10;

this.Recalculate();

}

private void Recalculate()

{

this.Tip = this.calculationService.TipAmount(this.SubTotal, this.Generosity);

}

#endregion

}

1. In the root project add the **App** class.

using MvvmCross.IoC;

using MvvmCross.ViewModels;

using ViewModels;

public class App : MvxApplication

{

public override void Initialize()

{

this.CreatableTypes()

.EndingWith("Service")

.AsInterfaces()

.RegisterAsLazySingleton();

this.RegisterAppStart<TipViewModel>();

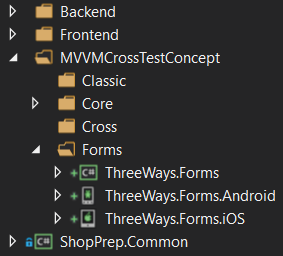
}

}

1. Congratulations you have ready the foundation for the solution.

## Forms Project

1. In folder **Forms** Add a Xamarin Forms project call: **ThreeWays.Forms** and move all the projects to the correct folder:



1. Add the reference to **ThreeWaysCore**:
2. Add the **Mono.Android.Export.dll** to **ThreeWays.Forms.Android**.
3. Add the folder **ViewModels** and inside it the class **BaseViewModel**:

using System.Collections.Generic;

using System.ComponentModel;

using System.Runtime.CompilerServices;

public class BaseViewModel : INotifyPropertyChanged

{

public event PropertyChangedEventHandler PropertyChanged;

protected void OnPropertyChanged([CallerMemberName] string propertyName = null)

{

this.PropertyChanged?.Invoke(this, new PropertyChangedEventArgs(propertyName));

}

protected void SetValue<T>(ref T backingField, T value, [CallerMemberName] string propertyName = null)

{

if (EqualityComparer<T>.Default.Equals(backingField, value))

{

return;

}

backingField = value;

this.OnPropertyChanged(propertyName);

}

}

1. Now in the same folder, add the **MainViewModel**:

using ThreeWays.Core.Services;

public class MainViewModel : BaseViewModel

{

private ICalculationService calculationService;

private decimal amount;

private double generosity;

private decimal tip;

public decimal Amount

{

get { return this.amount; }

set

{

this.SetValue(ref this.amount, value);

this.Recalculate();

}

}

public double Generosity

{

get { return this.generosity; }

set

{

this.SetValue(ref this.generosity, value);

this.Recalculate();

}

}

public decimal Tip

{

get { return this.tip; }

set

{

this.SetValue(ref this.tip, value);

}

}

public MainViewModel()

{

this.calculationService = new CalculationService();

this.Amount = 100;

this.Generosity = 10;

}

private void Recalculate()

{

this.Tip = this.calculationService.TipAmount(this.Amount, this.Generosity);

}

}

1. Add the folder **Infrastructure** and inside it the class **InstanceLocator**:

using ViewModels;

public class InstanceLocator

{

public MainViewModel Main { get; set; }

public InstanceLocator()

{

this.Main = new MainViewModel();

}

}

1. Add the folder **Views** and inside it add the **TipPage**:

<?xml version="1.0" encoding="utf-8" ?>

<ContentPage xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

x:Class="ThreeWays.Forms.Views.TipPage"

BindingContext="{Binding Main, Source={StaticResource Locator}}"

Title="Tip Calculator">

<ContentPage.Content>

<StackLayout

Padding="5">

<Label

Text="Amount:">

</Label>

<Entry

Keyboard="Numeric"

Text="{Binding Amount, Mode=TwoWay}">

</Entry>

<Label

Text="Generosity:">

</Label>

<Slider

Minimum="0"

Maximum="100"

Value="{Binding Generosity, Mode=TwoWay}">

</Slider>

<Label

Text="Tip:">

</Label>

<Label

FontAttributes="Bold"

FontSize="Large"

HorizontalTextAlignment="Center"

Text="{Binding Tip, Mode=TwoWay, StringFormat='{0:C2}'}">

</Label>

</StackLayout>

</ContentPage.Content>

</ContentPage>

1. Modify the **App.xaml**:

<?xml version="1.0" encoding="utf-8" ?>

<Application xmlns="http://xamarin.com/schemas/2014/forms"

xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"

xmlns:infra="clr-namespace:ThreeWays.Forms.Infrastructure"

x:Class="ThreeWays.Forms.App">

<Application.Resources>

<ResourceDictionary>

<infra:InstanceLocator x:Key="Locator"/>

</ResourceDictionary>

</Application.Resources>

</Application>

1. Modify the **App.xaml.cs**:

using ThreeWays.Forms.Views;

using Xamarin.Forms;

namespace ThreeWays.Forms

{

public partial class App : Application

{

public App()

{

InitializeComponent();

this.MainPage = new NavigationPage(new TipPage());

}

protected override void OnStart()

{

// Handle when your app starts

}

protected override void OnSleep()

{

// Handle when your app sleeps

}

protected override void OnResume()

{

// Handle when your app resumes

}

}

}

1. Test it on Android and iOS.

## Xamarin Android Classic

1. In folder **Classic** Add a Xamarin Android project call: **ThreeWays.Classic.Droid**, using blank template.
2. Add a reference to **ThreeWays.Core**.
3. Add the **Mono.Android.Export.dll** to **ThreeWays.Forms.Android**.
4. Modify the **activity\_main.axml**:

<?xml version="1.0" encoding="utf-8"?>

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:orientation="vertical"

android:padding="20dp"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<TextView

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:textSize="24dp"

android:text="SubTotal" />

<EditText

android:text="100"

android:id="@+id/amountEditText"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:inputType="number|numberDecimal"

android:textSize="24dp"

android:gravity="right" />

<TextView

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginTop="10dp"

android:textSize="24dp"

android:text="Generosity" />

<SeekBar

android:id="@+id/generositySeekBar"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:max="100"

android:min="0"

android:progress="10" />

<View

android:layout\_width="match\_parent"

android:layout\_height="1dp"

android:layout\_margin="30dp"

android:background="@android:color/darker\_gray" />

<TextView

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:textSize="24dp"

android:text="Tip to leave" />

<TextView

android:id="@+id/tipTextView"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:textColor="@android:color/holo\_blue\_dark"

android:textSize="24dp"

android:gravity="center" />

</LinearLayout>

1. Modify the **MainActivity**:

using System;

using Android.App;

using Android.OS;

using Android.Support.V7.App;

using Android.Widget;

using Core.Services;

[Activity(Label = "@string/app\_name", Theme = "@style/AppTheme", MainLauncher = true)]

public class MainActivity : AppCompatActivity

{

private EditText amountEditText;

private SeekBar generositySeekBar;

private TextView tipTextView;

private ICalculationService calculationService;

protected override void OnCreate(Bundle savedInstanceState)

{

base.OnCreate(savedInstanceState);

this.SetContentView(Resource.Layout.activity\_main);

this.calculationService = new CalculationService();

this.FindViews();

this.SetupEvents();

}

private void SetupEvents()

{

this.amountEditText.TextChanged += AmountEditText\_TextChanged;

this.generositySeekBar.ProgressChanged += GenerositySeekBar\_ProgressChanged;

}

private void GenerositySeekBar\_ProgressChanged(object sender, SeekBar.ProgressChangedEventArgs e)

{

this.RefreshTip();

}

private void AmountEditText\_TextChanged(object sender, Android.Text.TextChangedEventArgs e)

{

this.RefreshTip();

}

private void RefreshTip()

{

var amount = Convert.ToDecimal(this.amountEditText.Text);

var generosity = (double)this.generositySeekBar.Progress;

this.tipTextView.Text = $"{this.calculationService.TipAmount(amount, generosity):C2}";

}

private void FindViews()

{

this.amountEditText = this.FindViewById<EditText>(Resource.Id.amountEditText);

this.generositySeekBar = this.FindViewById<SeekBar>(Resource.Id.generositySeekBar);

this.tipTextView = this.FindViewById<TextView>(Resource.Id.tipTextView);

}

}

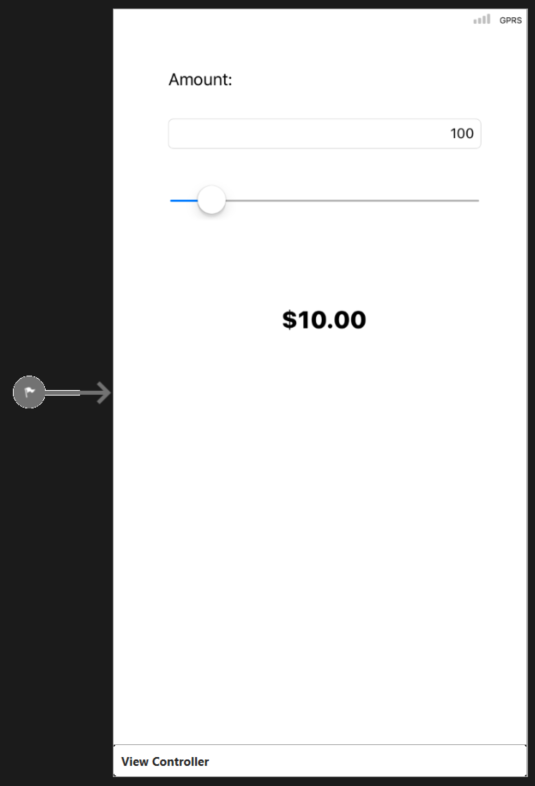
1. Test it.

## Xamarin iOS Classic

1. In folder **Classic** Add a Xamarin iOS Project call: **ThreeWays.Classic.iOS**, using “Single View App” template.
2. Add a reference to **ThreeWays.Core**.
3. Add the reference to **netstandard.dll**, browse to **C:\Windows\Microsoft.NET\Framework\v4.0.30319** to find it.
4. Modify the **LaunchScreen.storyboard**:



1. Modify the **Main.storyboard**.



1. Modify the **ViewController**.

using System;

using ThreeWays.Core.Services;

using UIKit;

public partial class ViewController : UIViewController

{

private readonly ICalculationService calculationService;

public ViewController(IntPtr handle) : base(handle)

{

this.calculationService = new CalculationService();

}

public override void ViewDidLoad()

{

base.ViewDidLoad();

this.AmountText.EditingChanged += AmountText\_EditingChanged;

this.GenerositySlider.ValueChanged += GenerositySlider\_ValueChanged;

}

private void GenerositySlider\_ValueChanged(object sender, EventArgs e)

{

this.RefreshTip();

}

private void RefreshTip()

{

var amount = Convert.ToDecimal(this.AmountText.Text);

var generosity = (double)this.GenerositySlider.Value;

this.TipLabel.Text = $"{this.calculationService.TipAmount(amount, generosity):C2}";

}

private void AmountText\_EditingChanged(object sender, EventArgs e)

{

this.RefreshTip();

}

public override void DidReceiveMemoryWarning()

{

base.DidReceiveMemoryWarning();

}

}

1. Test it.

## MVVM Cross Android Project

1. Now add the android project and call **ThreeWays.Cross.Droid**, use blank application template.
2. Add the reference to **Core** project and add the NuGet **MvvmCross**.
3. Add a reference to **Mono.Android.Export.dll**.
4. Delete the **MainActivity** activity and the **activity\_main** layout.
5. Into **Resources** folder, add the folder **drawable** and inside it add the files **Icon.png** and **splash.png** (you can get it for my repository <https://github.com/Zulu55/Shop> select a branch different to master).
6. Into **layout** folder add the **SplashPage** layout.

<?xml version="1.0" encoding="utf-8"?>

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:orientation="vertical"

android:layout\_width="fill\_parent"

android:layout\_height="fill\_parent">

<TextView

android:layout\_width="fill\_parent"

android:layout\_height="wrap\_content"

android:text="Loading...." />

</LinearLayout>

1. Into layout folder add the **TipPage** layout.

<?xml version="1.0" encoding="utf-8"?>

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

xmlns:local="http://schemas.android.com/apk/res-auto"

android:orientation="vertical"

android:padding="20dp"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<TextView

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:textSize="24dp"

android:text="SubTotal" />

<EditText

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:inputType="number|numberDecimal"

android:textSize="24dp"

android:gravity="right"

local:MvxBind="Text SubTotal" />

<TextView

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginTop="10dp"

android:textSize="24dp"

android:text="Generosity" />

<SeekBar

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:max="100"

local:MvxBind="Progress Generosity" />

<View

android:layout\_width="match\_parent"

android:layout\_height="1dp"

android:layout\_margin="30dp"

android:background="@android:color/darker\_gray" />

<TextView

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:textSize="24dp"

android:text="Tip to leave" />

<TextView

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:textColor="@android:color/holo\_blue\_dark"

android:textSize="24dp"

android:gravity="center"

local:MvxBind="Text Tip" />

</LinearLayout>

1. In **strings.xml** modify the application name.

<resources>

<string name="app\_name">MVVM Cross</string>

<string name="action\_settings">Settings</string>

</resources>

1. In **values** folder add the **SplashStyle.xml** file.

<?xml version="1.0" encoding="utf-8"?>

<resources>

<style name="Theme.Splash" parent="android:Theme">

<item name="android:windowBackground">@drawable/splash</item>

<item name="android:windowNoTitle">true</item>

</style>

</resources>

1. Add the folder **Views** and inside it add the class **SplashView**.

using Android.App;

using Android.Content.PM;

using Core;

using MvvmCross.Platforms.Android.Core;

using MvvmCross.Platforms.Android.Views;

[Activity(

Label = "@string/app\_name",

MainLauncher = true,

Icon = "@drawable/icon",

Theme = "@style/Theme.Splash",

NoHistory = true,

ScreenOrientation = ScreenOrientation.Portrait)]

public class SplashView : MvxSplashScreenActivity<MvxAndroidSetup<App>, App>

{

public SplashView() : base(Resource.Layout.SplashPage)

{

}

}

1. In the folder **Views** add **TipView**.

using Android.App;

using Android.OS;

using Core.ViewModels;

using MvvmCross.Platforms.Android.Views;

[Activity(Label = "@string/app\_name")]

public class TipView : MvxActivity<TipViewModel>

{

protected override void OnCreate(Bundle savedInstanceState)

{

base.OnCreate(savedInstanceState);

this.SetContentView(Resource.Layout.TipPage);

}

}

1. You’re ready to test the real cross project in android!

## MVVM Cross iOS Project

1. Now add the iOS project and call **ThreeWays.Cross.iOS**, use blank application template.
2. Verify in Application properties the **Assembly name** and **Default namespace** are call correctly, I mean **ThreeWays.Cross.iOS**.
3. Add the reference to **netstandard.dll**, browse to **C:\Windows\Microsoft.NET\Framework\v4.0.30319** to find it.
4. Add the reference to **Core** project and add the NuGet **MvvmCross**.
5. Modify the **AppDelegate** by:

using Core;

using Foundation;

using MvvmCross.Platforms.Ios.Core;

[Register("AppDelegate")]

public class AppDelegate : MvxApplicationDelegate<MvxIosSetup<App>, App>

{

}

1. Fix the name space in the **AppDelegate**.
2. Modify the **LaunchScreen.storyboard** by:



1. Add the folder **Views** and inside it add the view **HomeView.xib, HomeView.cs** and **HomeView.designer.cs**. And fix the namespaces.
2. Modify the view **HomeView.xib** similar to this:



1. Modify the class **HomeView**:

using Core.ViewModels;

using MvvmCross.Binding.BindingContext;

using MvvmCross.Platforms.Ios.Presenters.Attributes;

using MvvmCross.Platforms.Ios.Views;

[MvxRootPresentation(WrapInNavigationController = true)]

public partial class HomeView : MvxViewController<TipViewModel>

{

public override void ViewDidLoad()

{

base.ViewDidLoad();

var set = this.CreateBindingSet<HomeView, TipViewModel>();

set.Bind(this.AmountText).To(vm => vm.SubTotal);

set.Bind(this.GenerositySlider).To(vm => vm.Generosity);

set.Bind(this.TipLabel).To(vm => vm.Tip);

set.Apply();

}

}

1. You’re ready to test the project on iOS!

I recommend to watch this video: <https://www.youtube.com/watch?v=c8dwpnN3sl8>

The official site is: <https://www.mvvmcross.com/>

# MVVM Cross Value Converters

## Core Project

1. Add the folder **Converters** and inside it, create the class: **DecimalToStringValueConverter**, it’s very important that the class name ends with **ValueConverter**.

using MvvmCross.Converters;

using System;

using System.Globalization;

public class DecimalToStringValueConverter : MvxValueConverter<decimal, string>

{

protected override string Convert(decimal value, Type targetType, object parameter, CultureInfo culture)

{

return $"{value:C2}";

}

}

## Android Project

1. Change the Page to call the converter:

<TextView

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:textColor="@android:color/holo\_blue\_dark"

android:textSize="24dp"

android:gravity="center"

local:MvxBind="Text Tip,Converter=DecimalToString" />

1. Test it.

## iOS Project

1. Change the controller to call the converter:

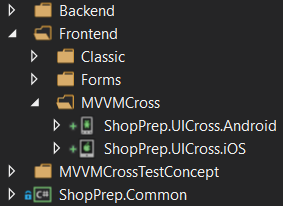
set.Bind(this.TipLabel).To(vm => vm.Tip).WithConversion("DecimalToString");

1. Test it.

# Making the Shop Project With MVVM Cross

## Core First Part

1. Create this projects folder structure, add a project Xamarin Android and Xamarin iOS:



1. Add the NuGet **MvvmCross** to **Common** project.
2. Extract the interface to **ApiService**:

using System.Threading.Tasks;

using Models;

public interface IApiService

{

Task<Response> DeleteAsync(

string urlBase,

string servicePrefix,

string controller,

int id,

string tokenType,

string accessToken);

Task<Response> GetListAsync<T>(

string urlBase,

string servicePrefix,

string controller);

Task<Response> GetListAsync<T>(

string urlBase,

string servicePrefix,

string controller,

string tokenType,

string accessToken);

Task<Response> GetTokenAsync(

string urlBase,

string servicePrefix,

string controller,

TokenRequest request);

Task<Response> PostAsync<T>(

string urlBase,

string servicePrefix,

string controller,

T model,

string tokenType,

string accessToken);

Task<Response> PutAsync<T>(

string urlBase,

string servicePrefix,

string controller,

int id,

T model,

string tokenType,

string accessToken);

}

1. Add the folder **Interfaces** and inside it add the interface **IDialogService**:

public interface IDialogService

{

void Alert(string message, string title, string okbtnText);

}

1. Add the folder **ViewModels** and inside it add the class **LoginViewModel**:

using System.Windows.Input;

using Interfaces;

using Models;

using MvvmCross.Commands;

using MvvmCross.ViewModels;

using Services;

public class LoginViewModel : MvxViewModel

{

private string email;

private string password;

private MvxCommand loginCommand;

private readonly IApiService apiService;

private readonly IDialogService dialogService;

private bool isLoading;

public bool IsLoading

{

get => this.isLoading;

set => this.SetProperty(ref this.isLoading, value);

}

public string Email

{

get => this.email;

set => this.SetProperty(ref this.email, value);

}

public string Password

{

get => this.password;

set => this.SetProperty(ref this.password, value);

}

public ICommand LoginCommand

{

get

{

this.loginCommand = this.loginCommand ?? new MvxCommand(this.DoLoginCommand);

return this.loginCommand;

}

}

public LoginViewModel(

IApiService apiService,

IDialogService dialogService)

{

this.apiService = apiService;

this.dialogService = dialogService;

this.Email = "jzuluaga55@gmail.com";

this.Password = "123456";

this.IsLoading = false;

}

private async void DoLoginCommand()

{

if (string.IsNullOrEmpty(this.Email))

{

this.dialogService.Alert("Error", "You must enter an email.", "Accept");

return;

}

if (string.IsNullOrEmpty(this.Email))

{

this.dialogService.Alert("Error", "You must enter a password.", "Accept");

return;

}

this.IsLoading = true;

var request = new TokenRequest

{

Password = this.Password,

Username = this.Email

};

var response = await this.apiService.GetTokenAsync(

"https://shopprep.azurewebsites.net",

"/Account",

"/CreateToken",

request);

if (!response.IsSuccess)

{

this.IsLoading = false;

this.dialogService.Alert("Error", "User or password incorrect.", "Accept");

return;

}

this.IsLoading = false;

this.dialogService.Alert("Ok", "Fuck yeah!", "Accept");

}

}

1. Add the **App** class to **Common** project:

using MvvmCross.IoC;

using MvvmCross.ViewModels;

using ViewModels;

public class App : MvxApplication

{

public override void Initialize()

{

this.CreatableTypes()

.EndingWith("Service")

.AsInterfaces()

.RegisterAsLazySingleton();

this.RegisterAppStart<LoginViewModel>();

}

}

1. Ready the first part to **Common** project:

## Android First Part

1. Now to the project **UICross.Android** add the NuGets: **MvvmCross** and **MvvmCross.Plugin.Visibility**:



1. Add a reference to **Mono.Android.Export.dll**.
2. Delete the **MainActivity** activity and the **activity\_main** layout.
3. Into **Resources** folder, add the folder **drawable** and inside it add the files **Icon.png** and **splash.png** (you can get it from the repository: <https://github.com/Zulu55/Shop>, select the branch Group 3)
4. Into **layout** folder add the **SplashPage** layout.

<?xml version="1.0" encoding="utf-8"?>

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:orientation="vertical"

android:layout\_width="fill\_parent"

android:layout\_height="fill\_parent">

<TextView

android:layout\_width="fill\_parent"

android:layout\_height="wrap\_content"

android:text="Loading...." />

</LinearLayout>

1. Into **layout** folder add the **LoginPage** layout:

<?xml version="1.0" encoding="utf-8"?>

<RelativeLayout

xmlns:android="http://schemas.android.com/apk/res/android"

xmlns:local="http://schemas.android.com/apk/res-auto"

xmlns:app="http://schemas.android.com/apk/res-auto"

xmlns:tools="http://schemas.android.com/tools"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<LinearLayout

android:paddingTop="10dp"

android:paddingLeft="10dp"

android:paddingRight="10dp"

android:orientation="vertical"

android:minWidth="25px"

android:minHeight="25px"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content">

<TextView

android:text="Email"

android:textAppearance="?android:attr/textAppearanceLarge"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:minWidth="25px"

android:minHeight="25px"/>

<EditText

android:inputType="textEmailAddress"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

local:MvxBind="Text Email" />

<TextView

android:text="Password"

android:textAppearance="?android:attr/textAppearanceLarge"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:minWidth="25px"

android:minHeight="25px"/>

<EditText

android:inputType="textPassword"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

local:MvxBind="Text Password" />

<ProgressBar

android:layout\_height="wrap\_content"

android:layout\_width="match\_parent"

local:MvxBind="Visibility Visibility(IsLoading)"

android:indeterminateOnly="true"

android:keepScreenOn="true"/>

<Button

android:text="Login"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

local:MvxBind="Click LoginCommand" />

</LinearLayout>

</RelativeLayout>

1. In **strings.xml** modify the application name.

<resources>

<string name="app\_name">Shop</string>

<string name="action\_settings">Settings</string>

</resources>

1. In values folder add the **SplashStyle.xml** file.

<?xml version="1.0" encoding="utf-8"?>

<resources>

<style name="Theme.Splash" parent="android:Theme">

<item name="android:windowBackground">@drawable/splash</item>

<item name="android:windowNoTitle">true</item>

</style>

</resources>

1. Add the folder **Views** and inside it add the class **SplashView**.

using global::Android.App;

using global::Android.Content.PM;

using MvvmCross.Platforms.Android.Views;

[Activity(

Label = "@string/app\_name",

MainLauncher = true,

Icon = "@drawable/icon",

Theme = "@style/Theme.Splash",

NoHistory = true,

ScreenOrientation = ScreenOrientation.Portrait)]

public class SplashView : MvxSplashScreenActivity

{

public SplashView() : base(Resource.Layout.SplashPage)

{

}

}

1. In the folder **Views** add the **LoginView**.

using Common.ViewModels;

using global::Android.App;

using global::Android.OS;

using MvvmCross.Platforms.Android.Views;

[Activity(Label = "@string/app\_name")]

public class LoginView : MvxActivity<LoginViewModel>

{

protected override void OnCreate(Bundle savedInstanceState)

{

base.OnCreate(savedInstanceState);

this.SetContentView(Resource.Layout.LoginPage);

}

}

1. Add the folder **Services** and inside it add the class **DialogService**:

using Common.Interfaces;

using global::Android.App;

using MvvmCross;

using MvvmCross.Platforms.Android;

public class DialogService : IDialogService

{

public void Alert(string title, string message, string okbtnText)

{

var top = Mvx.Resolve<IMvxAndroidCurrentTopActivity>();

var act = top.Activity;

var adb = new AlertDialog.Builder(act);

adb.SetTitle(title);

adb.SetMessage(message);

adb.SetPositiveButton(okbtnText, (sender, args) => { /\* some logic \*/ });

adb.Create().Show();

}

}

1. To the root **UICross.Android** project, add the class **Setup**:

using Common;

using Common.Interfaces;

using MvvmCross;

using MvvmCross.Platforms.Android.Core;

using Services;

using System.Collections.Generic;

using System.Linq;

using System.Reflection;

public class Setup : MvxAndroidSetup<App>

{

protected override void InitializeFirstChance()

{

Mvx.IoCProvider.RegisterType<IDialogService, DialogService>();

base.InitializeFirstChance();

}

public override IEnumerable<Assembly> GetPluginAssemblies()

{

var assemblies = base.GetPluginAssemblies().ToList();

assemblies.Add(typeof(MvvmCross.Plugin.Visibility.Platforms.Android.Plugin).Assembly);

return assemblies;

}

}

1. Modif.
2. Now you can test the first part on Android.

## iOS First Part

1. Now to the project **UICross.iOS** add the NuGets: **MvvmCross** and **MvvmCross.Plugin.Visibility**:



1. Add the reference to **Common** project.
2. Modify the **AppDelegate** by:

using Foundation;

using MvvmCross.Platforms.Ios.Core;

[Register("AppDelegate")]

public class AppDelegate : MvxApplicationDelegate

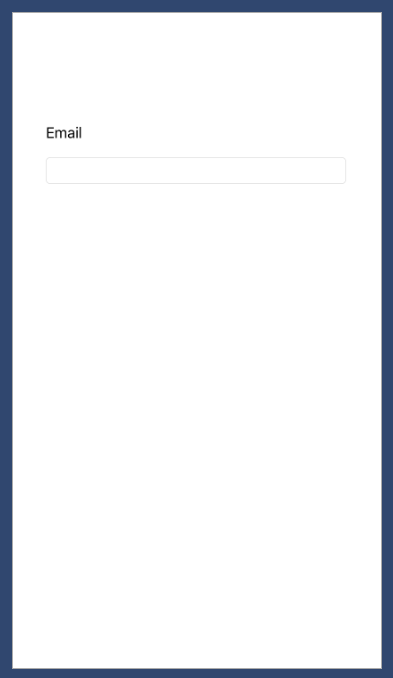
{

}

1. Modify the **LaunchScreen.storyboard** by:



1. Add the folder **Views** and inside it add the view **HomeView.xib, HomeView.cs** and **HomeView.designer.cs**. And fix the namespaces.
2. Modify the view **HomeView.xib** similar to this:



1. Modify the class **HomeView**:

using Common.ViewModels;

using MvvmCross.Binding.BindingContext;

using MvvmCross.Platforms.Ios.Presenters.Attributes;

using MvvmCross.Platforms.Ios.Views;

[MvxRootPresentation(WrapInNavigationController = true)]

public partial class HomeView : MvxViewController<LoginViewModel>

{

public HomeView() : base("HomeView", null)

{

}

public override void ViewDidLoad()

{

base.ViewDidLoad();

var set = this.CreateBindingSet<HomeView, LoginViewModel>();

set.Bind(this.EmailText).To(vm => vm.Email);

//set.Bind(Button).To(vm => vm.ResetTextCommand);

set.Apply();

}

}

1. Add the **Setup** class in root:

using MvvmCross.Platforms.Ios.Core;

using MvvmCross.ViewModels;

public class Setup : MvxIosSetup

{

protected override IMvxApplication CreateApp()

{

return new Common.App();

}

}

1. You’re ready to test the project on iOS!

## Core Second Part

1. Add the **ProductsViewModel** in **Common.ViewModels**:

using System.Collections.Generic;

using Helpers;

using Interfaces;

using Models;

using MvvmCross.ViewModels;

using Newtonsoft.Json;

using Services;

public class ProductsViewModel : MvxViewModel

{

private List<Product> products;

private readonly IApiService apiService;

private readonly IDialogService dialogService;

public List<Product> Products

{

get => this.products;

set => this.SetProperty(ref this.products, value);

}

public ProductsViewModel(

IApiService apiService,

IDialogService dialogService)

{

this.apiService = apiService;

this.dialogService = dialogService;

this.LoadProducts();

}

private async void LoadProducts()

{

var token = JsonConvert.DeserializeObject<TokenResponse>(Settings.Token);

var response = await this.apiService.GetListAsync<Product>(

"https://shopprep.azurewebsites.net",

"/api",

"/Products",

"bearer",

token.Token);

if (!response.IsSuccess)

{

this.dialogService.Alert("Error", response.Message, "Accept");

return;

}

this.Products = (List<Product>)response.Result;

}

}

1. Add the folder **Converters** in inside it add the class **DecimalToStringValueConverter**:

using System;

using System.Globalization;

using MvvmCross.Converters;

public class DecimalToStringValueConverter : MvxValueConverter<decimal, string>

{

protected override string Convert(decimal value, Type targetType, object parameter, CultureInfo culture)

{

return $"{value:C2}";

}

}

1. Modify the **LoginViewModel**.

using System.Windows.Input;

using Interfaces;

using Models;

using MvvmCross.Commands;

using MvvmCross.Navigation;

using MvvmCross.ViewModels;

using Newtonsoft.Json;

using Services;

using Shop.Common.Helpers;

public class LoginViewModel : MvxViewModel

{

private string email;

private string password;

private MvxCommand loginCommand;

private readonly IApiService apiService;

private readonly IDialogService dialogService;

private readonly IMvxNavigationService navigationService;

private bool isLoading;

public bool IsLoading

{

get => this.isLoading;

set => this.SetProperty(ref this.isLoading, value);

}

public string Email

{

get => this.email;

set => this.SetProperty(ref this.email, value);

}

public string Password

{

get => this.password;

set => this.SetProperty(ref this.password, value);

}

public ICommand LoginCommand

{

get

{

this.loginCommand = this.loginCommand ?? new MvxCommand(this.DoLoginCommand);

return this.loginCommand;

}

}

public LoginViewModel(

IApiService apiService,

IDialogService dialogService,

IMvxNavigationService navigationService)

{

this.apiService = apiService;

this.dialogService = dialogService;

this.navigationService = navigationService;

this.Email = "jzuluaga55@gmail.com";

this.Password = "123456";

this.IsLoading = false;

}

private async void DoLoginCommand()

{

if (string.IsNullOrEmpty(this.Email))

{

this.dialogService.Alert("Error", "You must enter an email.", "Accept");

return;

}

if (string.IsNullOrEmpty(this.Email))

{

this.dialogService.Alert("Error", "You must enter a password.", "Accept");

return;

}

this.IsLoading = true;

var request = new TokenRequest

{

Password = this.Password,

Username = this.Email

};

var response = await this.apiService.GetTokenAsync(

"https://shopprep.azurewebsites.net",

"/Account",

"/CreateToken",

request);

if (!response.IsSuccess)

{

this.IsLoading = false;

this.dialogService.Alert("Error", "User or password incorrect.", "Accept");

return;

}

var token = (TokenResponse)response.Result;

Settings.UserEmail = this.Email;

Settings.Token = JsonConvert.SerializeObject(token);

this.IsLoading = false;

//this.dialogService.Alert("Ok", "Fuck yeah!", "Accept");

await this.navigationService.Navigate<ProductsViewModel>();

}

}

1. We’ve finished the second part on core.

## Android Second Part

1. Add the NuGet **Xamarin.FFImageLoading**.
2. In **layout** add the **ProductRow** layout:

<?xml version="1.0" encoding="utf-8"?>

<LinearLayout

xmlns:android="http://schemas.android.com/apk/res/android"

xmlns:local="http://schemas.android.com/apk/res-auto"

android:orientation="horizontal"

android:layout\_width="fill\_parent"

android:layout\_height="fill\_parent">

<ffimageloading.cross.MvxCachedImageView

android:layout\_width="75dp"

android:layout\_height="75dp"

android:layout\_margin="10dp"

local:MvxBind="ImagePath ImageFullPath" />

<LinearLayout

android:orientation="vertical"

android:layout\_width="fill\_parent"

android:layout\_height="fill\_parent">

<TextView

android:layout\_width="fill\_parent"

android:layout\_height="wrap\_content"

android:textSize="30dp"

local:MvxBind="Text Name" />

<TextView

android:layout\_width="fill\_parent"

android:layout\_height="wrap\_content"

android:textSize="20dp"

local:MvxBind="Text Price,Converter=DecimalToString" />

</LinearLayout>

</LinearLayout>

1. In **layout** add the **ProductsPage** layout:

<?xml version="1.0" encoding="utf-8"?>

<LinearLayout

xmlns:android="http://schemas.android.com/apk/res/android"

xmlns:local="http://schemas.android.com/apk/res-auto"

android:orientation="vertical"

android:layout\_width="fill\_parent"

android:layout\_height="fill\_parent">

<MvxListView

android:layout\_width="fill\_parent"

android:layout\_height="fill\_parent"

local:MvxBind="ItemsSource Products"

local:MvxItemTemplate="@layout/productrow"/>

</LinearLayout>

1. In **Views**, add the **ProductView** class:

using Common.ViewModels;

using global::Android.App;

using global::Android.OS;

using MvvmCross.Platforms.Android.Views;

[Activity(Label = "@string/app\_name")]

public class KittensView : MvxActivity<ProductsViewModel>

{

protected override void OnCreate(Bundle bundle)

{

base.OnCreate(bundle);

this.SetContentView(Resource.Layout.ProductsPage);

}

}

1. Test it in Android.

## iOS Second Part

1. Now to the project **UICross.iOS** add the NuGets: **MvvmCross** and **MvvmCross.Plugin.Visibility**: