

A thick red vertical bar is positioned on the left side of the page, extending from the top to the middle section.

DEVELOPMENT DOCUMENT

BDO OUT PERFORM

2021/05/26

A thick red vertical bar is positioned on the left side of the page, extending from the bottom section to the middle section.

FRONT END PACKAGES

Name	Version	Description
NG Bootstrap	12.0.2	Angular widgets built from the ground up using only Bootstrap 5 CSS with APIs designed for the Angular ecosystem.
Angular Material	13.3.2	Material Design components for Angular
Tailwind CSS	0.5.0	A utility-first CSS framework for rapidly building custom user interfaces.
bootstrap	5.1.3	Powerful, extensible, and feature-packed frontend toolkit. Build and customize with Sass, utilize prebuilt grid system and components, and bring projects to life with powerful JavaScript plugins.
Echarts, ngx-echarts	5.3.2	powerful charting and visualization library offering an easy way of adding intuitive, interactive, and highly customizable charts to your commercial products.
file-server	2.0.5	Simple http file server that supports files and directories
jquery		jQuery is a fast, small, and feature-rich JavaScript library.
Microsoft Authentication Library		SAL for Angular enables Angular web applications to authenticate users using Azure AD work and school accounts (AAD), Microsoft personal accounts (MSA) and social identity providers like Facebook, Google, LinkedIn, Microsoft accounts, etc. through Azure AD B2C service.

BACK-END PACKAGES

Name	Version	Description
NG Bootstrap	4.0.2	ASP.NET Core rate limiting middleware
Auto Mapper	11.0.1	A convention-based object-object mapper.
AutoMapper.Extensions	11.0.0	AutoMapper extensions for ASP.NET Core
ExcelDataReader	3.6.0	Lightweight and fast library written in C# for reading Microsoft Excel files (2.0-2007)..
FluentValidation	10.4.0	A validation library for .NET that uses a fluent interface to construct strongly-typed validation rules..
FluentValidation.DependencyInjection	10.4.0	Dependency injection extensions for FluentValidation
Hangfire.AspNetCore	1.7.28	ASP.NET Core support for Hangfire (background job system for ASP.NET applications).
Hangfire.Core	1.7.28	<p>An easy and reliable way to perform fire-and-forget, delayed and recurring, long-running, short-running, CPU or I/O intensive tasks inside ASP.NET applications. No Windows Service / Task Scheduler required. Even ASP.NET is not required.</p> <p>Backed by Redis, SQL Server, SQL Azure or MSMQ. This is a .NET alternative to Sidekiq, Resque and Celery.</p> <p>https://www.hangfire.io/</p>
Hangfire.SqlServer	1.7.8	SQL Server 2008+ (including Express), SQL Server LocalDB and SQL Azure storage support for Hangfire (background job system for ASP.NET applications).
MailKit	3.2.0	<p>MailKit is an Open Source cross-platform .NET mail-client library that is based on MimeKit and optimized for mobile devices.</p> <p>Features include:</p> <ul style="list-style-type: none">* HTTP, Socks4, Socks4a and Socks5 proxy support.* SASL Authentication via ANONYMOUS, CRAM-MD5, DIGEST-MD5, LOGIN, NTLM, OAUTHBEARER, PLAIN, SCRAM-SHA-1, SCRAM-SHA-256, SCRAM-SHA-512 and XOAUTH2.* A fully-cancellable SmtpClient with support for STARTTLS, 8BITMIME, BINARYMIME, ENHANCEDSTATUSCODES, SIZE, DSN, PIPELINING and SMTPUTF8.

		<p>* A fully-cancellable Pop3Client with support for STLS, UIDL, APOP, PIPELINING, UTF8, and LANG.</p> <p>* A fully-cancellable ImapClient with support for ACL, QUOTA, LITERAL+, IDLE, NAMESPACE, ID, CHILDREN, LOGINDISABLED, STARTTLS, MULTIAPPEND, UNSELECT, UIDPLUS, CONDSTORE, ESEARCH, SASL-IR, COMPRESS, WITHIN, ENABLE, QRESYNC, SORT, THREAD, ANNOTATE, LIST-EXTENDED, ESORT, METADATA / METADATA-SERVER, NOTIFY, FILTERS, LIST-STATUS, SORT=DISPLAY, SPECIAL-USE / CREATE-SPECIAL-USE, SEARCH=FUZZY, MOVE, UTF8=ACCEPT / UTF8=ONLY, LITERAL-, APPENDLIMIT, STATUS=SIZE, OBJECTID, REPLACE, SAVEDATE, XLIST, and X-GM-EXT1.</p> <p>* Client-side sorting and threading of messages (the Ordinal Subject and the Jamie Zawinski threading algorithms are supported).</p> <p>* Asynchronous versions of all methods that hit the network.</p> <p>* S/MIME, OpenPGP, DKIM and ARC support via MimeKit.</p> <p>* Microsoft TNEF support via MimeKit.</p>
MediatR.Extensions.Microsoft.DependencyInjection	10.0.1	MediatR extensions for ASP.NET Core
Microsoft.AspNetCore.Mvc.NewtonsoftJson	6.0.3	<p>ASP.NET Core MVC features that use Newtonsoft.Json. Includes input and output formatters for JSON and JSON PATCH.</p> <p>This package was built from the source code at https://github.com/dotnet/aspnetcore/tree/c911002ab43b7b989ed67090f2a48d9073d5118d</p>
Microsoft.AspNetCore.Mvc.Versioning	5.0.0	A service API versioning library for Microsoft ASP.NET Core.
Microsoft.AspNetCore.SpaServices.Extensions	6.0.3	<p>Helpers for building single-page applications on ASP.NET MVC Core.</p> <p>This package was built from the source code at https://github.com/dotnet/aspnetcore/tree/c911002ab43b7b989ed67090f2a48d9073d5118d</p>
Microsoft.EntityFrameworkCore	6.0.3	<p>Entity Framework Core is a modern object-database mapper for .NET. It supports LINQ queries, change tracking, updates, and schema migrations. EF Core works with SQL Server, Azure SQL Database, SQLite, Azure Cosmos DB, MySQL, PostgreSQL, and other databases through a provider plugin API.</p> <p>Commonly Used Types:</p> <p>Microsoft.EntityFrameworkCore.DbContext</p> <p>Microsoft.EntityFrameworkCore.DbSet</p>

Microsoft.EntityFrameworkCore.Design	6.0.3	Shared design-time components for Entity Framework Core tools
Microsoft.EntityFrameworkCore.SqlServer	6.0.3	Microsoft SQL Server database provider for Entity Framework Core.
Microsoft.EntityFrameworkCore.Tools	6.0.3	<p>Entity Framework Core Tools for the NuGet Package Manager Console in Visual Studio.</p> <p>Enables these commonly used commands:</p> <p>Add-Migration</p> <p>Bundle-Migration</p> <p>Drop-Database</p> <p>Get-DbContext</p> <p>Get-Migration</p> <p>Optimize-DbContext</p> <p>Remove-Migration</p> <p>Scaffold-DbContext</p> <p>Script-Migration</p> <p>Update-Database</p>
Microsoft.Extensions.Options.ConfigurationExtension	6.0.0	Provides additional configuration specific functionality related to Options.
Microsoft.Identity.Web	1.23.1	<p>This package enables ASP.NET Core web apps and web APIs to use the Microsoft identity platform (formerly Azure AD v2.0).</p> <p>This package is specifically used for web applications, which sign-in users, and protected web APIs, which optionally call downstream web APIs.</p>
Microsoft.PowerBI.Api	4.5.0	.NET Client library for Microsoft Power BI public REST endpoints providing access to your Workspaces, Reports, Datasets and more.
Microsoft.TypeScript.MSBuild	4.6.4	The TypeScript MSBuild task, and matching compiler version.
MimeKit	3.2.0	<p>MimeKit is an Open Source library for creating and parsing MIME, S/MIME and PGP messages on desktop and mobile platforms. It also supports parsing of Unix mbox files.</p> <p>Unlike any other .NET MIME parser, MimeKit's parser does not need to parse string input nor does it use a TextReader. Instead, it parses raw byte streams, thus allowing it to better support undeclared 8bit text in headers as well as message bodies. It also means that MimeKit's parser is significantly faster than other .NET MIME parsers.</p> <p>MimeKit's parser also uses a real tokenizer when parsing the headers rather than regex or string.Split() like most other .NET MIME parsers. This means that</p>

		<p>MimeKit is much more RFC-compliant than any other .NET MIME parser out there, including the commercial implementations. In addition to having a far superior parser implementation, MimeKit's object tree is not a derivative of System.Net.Mail objects and thus does not suffer from System.Net.Mail's limitations.</p> <p>API documentation can be found on the web at http://www.mimekit.net/docs</p> <p>For those that need SMTP, POP3 or IMAP support, check out https://github.com/jstedfast/MailKit</p>
NLog.Extensions.Logging	1.7.4	<p>NLog LoggerProvider for Microsoft.Extensions.Logging for logging in .NET Standard libraries and .NET Core applications.</p> <p>For ASP.NET Core, check: https://www.nuget.org/packages/NLog.Web.AspNetCore</p>
Swashbuckle.AspNetCore	6.3.0	<p>Swagger tools for documenting APIs built on ASP.NET Core</p>
Swashbuckle.AspNetCore.Swagger	6.3.0	<p>Middleware to expose Swagger JSON endpoints from APIs built on ASP.NET Core</p>

PR STEPS

1. Pull latest from the Development branch
2. Remove connection string and ClientSecret in Backend(appsettings.json).
3. If any resolve merge conflicts
4. Commit and push latest changes.
5. Go to Azure dev > your own repo. Create PR to Development.

CODING STANDARDS

PURPOSE:

A coding standard gives a uniform appearance to the codes written by different developers. It improves readability, and maintainability of the code and it reduces complexity also. It helps in code reuse, promotes sound programming practices, and increases efficiency of the developers.

Definitions

Term	Explanation
Separation of Concerns (SoC)	Is a design principle for separating a computer program into distinct sections
MVC	Model View Controller
UI	User interface

CODING FRAMEWORK

ASP.NET MVC

MVC is a design pattern used to decouple user-interface (view), data (model), and application logic (controller).

ASP.NET gives you a powerful, patterns-based way to build dynamic websites using the MVC pattern that enables a clean separation of concerns.

Views with Razor

The Razor syntax provides a simple, clean, and lightweight way to render HTML content based on your view. Razor lets you render a page using C#, producing fully HTML5 compliant web pages.

CODE REPOSITORY

Azure DevOps Services includes Azure Pipelines, Azure Repos, Azure Boards, Azure Test Plans and Azure Artifacts.

Azure Repos provides private Git repositories for projects.

Alternatively, GitHub should be considered as a project repository, making using of a BDO Account (non-user) to manage the repositories stored in GitHub.

MANAGING CREDENTIALS

Azure key vault is a cloud service for securely storing and accessing secrets.

This will be used to tightly control access to API keys, passwords, certificates, cryptographic keys, or connection strings to SQL databases.

DRY PRINCIPLE - DON'T REPEAT YOURSELF

This principle is aimed at reducing repetition of software patterns, replacing it with abstractions. Code that will be used multiple time, should be abstracted into a function that can referenced multiple times.

STANDARD HEADERS FOR MODULES

Header format must contain the following information

1. Name of the module
2. Synopsis of the module
3. Date of creation
4. Author
5. Modification history

NAMING CONVENTIONS FOR VARIABLES AND FUNCTIONS

Local variables must use camel case lettering starting with small letters (e.g. localData).

Global variables names should start with a capital letter (e.g. GlobalData).

Constant names should be formed with capital letters only (e.g. CONSDATA).

Function names should be written in camel case starting with small letters and the name must describe the reason of using the function clearly and briefly.

Limited use of Global values / variables

Avoid using identifier for multiple purposes. Variables should be given description and meaningful names.

FORMATTING AND INDENTATIONS

Proper indentation is important to increase the readability of the code.

Nested blocks should be properly indented and spaced.

All braces should start from a new line and the code following the end of braces should also start from a new line.

Avoid using complex coding style that is too difficult to understand.

CODE SHOULD BE WELL DOCUMENTED

Code should be properly commented for understanding easily.

LENGTH OF FUNCTIONS

Function lengths should be kept small. Lengthy functions should be broken into small ones for completing small tasks.

DATABASE QUERIES

The preferred method for communicating with the data layer will be through REST / API calls.

The use of Stored Procedures should be minimised.

DATABASE ID'S

Where record identifiers are not added from the UI or auto generated by a process or the identifier is not of type INT, the primary key identification should be set to Yes. This will allow for auto generation of the primary key in the table.

Please see the BDO Corporate Visual Identity guide as well as BDO Brand Guidelines.

[illegible]