

dotnet Core Technologies

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Chapter 1

dotnetCore

Application - Instructions

The Application

dotnetcore has 2 http endpoints that accepts JSON base64 encoded binary data on both endpoints. After a comparison between these encoded message the result provided to a 3rd endpoint.

This Application is a dotnet core 2.0 application demonstration of web-api technologies. In more details the main application is a dotnet core webapi project. The API use 3rd party library Swagger and makes use of .net standard 2.0 libraries and includes unit tests and integration test created with NUnit. Moreover includes Dockerfile and docker-compose for scale up.

This project developed with VSCode and Rider (JetBrains)

Installation Of .NET Core

<https://github.com/dotnet/core/blob/master/release-notes/download-archives/2.0.3.md>

Build

dotnet clean dotnet build

Run

Move to the WES.WebApp Folder: dotnet run

and go to the next location: <http://localhost:5000/> and <http://localhost:5000/swagger/>

Run UnitTests

dotnet test [WAES.Tests.UnitTests](#)

Run IntegrationTests

dotnet test [WAES.Test.IntegrationTests](#) --filter DifferencesLeft_AreEqualWithDifferentPayload_ReturnComparisonResult dotnet test [WAES.Test.IntegrationTests](#) --filter DifferencesLeft_AreNotEqual_ReturnComparisonResult

Chapter 2

Namespace Index

2.1 Packages

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Class Index

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WAES.Model.ComparisonResult	15
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Chapter 5

Namespace Documentation

5.1 WAES Namespace Reference

Namespaces

5.2 WAES.BitsConverter Namespace Reference

Classes

- class [BitsConverter](#)
- class [BitsDiff](#)

5.3 WAES.Client Namespace Reference

Classes

- class [ClientExtension](#)
- class [DifferencesClient](#)

5.4 WAES.Model Namespace Reference

Classes

- class [ComparisonResult](#)
- class [MessageBinding](#)

Enumerations

- enum [ComparisonResultEnum](#) { [ComparisonResultEnum.NotEqual](#), [ComparisonResultEnum.Equal](#) }

5.4.1 Enumeration Type Documentation

5.4.1.1 ComparisonResultEnum

```
enum WAES.Model.ComparisonResultEnum [strong]
```

Enumerator

NotEqual	Comparison between 2 byte arrays are not equal of size
Equal	Comparison between 2 byte arrays are equal of size

5.5 WAES.Test Namespace Reference

Namespaces

5.6 WAES.Test.IntegrationTests Namespace Reference

Classes

- class [DifferencesFunctionalityTests](#)

5.7 WAES.Tests Namespace Reference

Namespaces

5.8 WAES.Tests.UnitTests Namespace Reference

Classes

- class [CryptographyTests](#)

5.9 WAYS Namespace Reference

Namespaces

5.10 WAYS.Cryptography Namespace Reference

Classes

- class [Methods](#)

5.11 WebApp Namespace Reference

Namespaces

Classes

- class [Program](#)
- class [Startup](#)

5.12 WebApp.Controllers Namespace Reference

Classes

- class [DifferencesController](#)
- class [HomeController](#)

5.13 WebApp.Migrations Namespace Reference

Classes

- class [DatabaseContextModelSnapshot](#)
- class [InitialCreate](#)

5.14 WebApp.Model Namespace Reference

Classes

- class [DatabaseContext](#)
- class [Message](#)

Chapter 6

Class Documentation

6.1 AutoGeneratedProgram Class Reference

The documentation for this class was generated from the following files:

- C:/Projects/WAES/WAES.Test.IntegrationTests/obj/Debug/netcoreapp2.0/WAES.Test.IntegrationTests.↵
Program.cs
- C:/Projects/WAES/WAES.Tests.UnitTests/obj/Debug/netcoreapp2.0/WAES.Tests.UnitTests.Program.cs
- C:/Projects/WAES/WAES.Tests.UnitTests/obj/Debug/netcoreapp2.0/WAES.WebApp.Tests.Program.cs
- C:/Projects/WAES/WAES.Tests.UnitTests/obj/Debug/netcoreapp2.0/WAES.WebApp.UnitTests.Program.cs

6.2 WAES.BitsConverter.BitsConverter Class Reference

Public Member Functions

- byte [] [FromHex](#) (string hex)
Convert the hexadecimal string format to byte array
- string [BitStringResult](#) (byte[] input)
Convert the byte array to string of bit series

6.2.1 Member Function Documentation

6.2.1.1 BitStringResult()

```
string WAES.BitsConverter.BitsConverter.BitStringResult (  
    byte [] input )
```

Convert the byte array to string of bit series

Parameters

<i>input</i>	Byte Array
--------------	------------

Returns

string of bit representation

6.2.1.2 FromHex()

```
byte [] WAES.BitsConverter.BitsConverter.FromHex (
    string hex )
```

Convert the hexadecimal string format to byte array

Parameters

<i>hex</i>	hexadecimal string
------------	--------------------

Returns

Byte Array Representation

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.BitsConverter/BitsConverter.cs

6.3 WAES.BitsConverter.BitsDiff Class Reference**Static Public Member Functions**

- static [ComparisonResult CompareByteArrays](#) (byte[] a, byte[] b)
Method for comparing byte arrays

6.3.1 Member Function Documentation**6.3.1.1 CompareByteArrays()**

```
static ComparisonResult WAES.BitsConverter.BitsDiff.CompareByteArrays (
    byte [] a,
    byte [] b ) [static]
```

Method for comparing byte arrays

Parameters

<i>a</i>	Byte Array a
<i>b</i>	Byte Array b

Returns

ComparisonResult [Model](#)

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.BitsConverter/BitsDiff.cs

6.4 WAES.Client.ClientExtension Class Reference

Static Public Member Functions

- static async Task< TViewModel > **MethodGet**< TViewModel > (this HttpClient client, string baseAddress, string apiPath)
- static async Task< TViewModel > **MethodPost**< TViewModel, TBindingModel > (this HttpClient client, string baseAddress, string apiPath, TBindingModel model)

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.Client/ClientExtension.cs

6.5 WAES.Model.ComparisonResult Class Reference

Properties

- [ComparisonResultEnum](#) **AreEqual** [get, set]
- int[] **Offsets** [get, set]
- int **OffsetsLength** [get, set]

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.Model/ComparisonResult.cs

6.6 WAES.Tests.UnitTests.CryptographyTests Class Reference

Public Member Functions

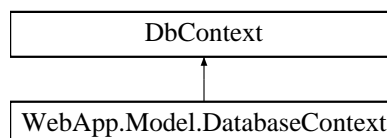
- void **IsValidBase64Test_ValidBase64_ReturnTrue** (string message)
- void **IsValidBase64Test_NotValidBase64_ReturnFalse** (string message)
- void **Base64Encode_StringHasValue_ReturnBase64** (string encodingMessage, string expectedResult)
- void **Base64Encode_StringIsEmptyOrNull_ThrowsArgumentNullException** (string encodingMessage)
- void **Base64Decode_DecodeEncodingString_ReturnDecodedMessage** (string encodingMessage, string expectedResult)
- void **Base64Decode_StringIsEmptyOrNull_ThrowsArgumentNullException** (string encodingMessage)
- void **Base64DecodeToBinaryDataString_DecodeBase64Message_ReturnBinaryStringData** (string encodingMessage, string expectedResult)
- void **DecodeBase64ToByteArray_DecodeBase64Message_ReturnByteArray** (string encodingMessage, byte[] expectedResult)
- void **CompareByteArrays_AreEqual_ReturnZeroDiffs** (byte[] a, byte[] b)
- void **CompareByteArrays_AreEqual_Return2Diffs** (byte[] a, byte[] b)

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.Tests.UnitTests/CryptographyTests.cs

6.7 WebApp.Model.DatabaseContext Class Reference

Inheritance diagram for WebApp.Model.DatabaseContext:



Protected Member Functions

- override void **OnConfiguring** (DbContextOptionsBuilder optionsBuilder)

Properties

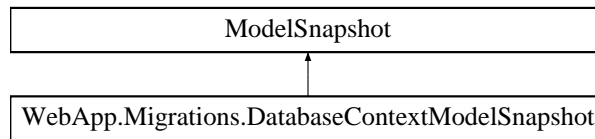
- DbSet< [Message](#) > **Messages** [get, set]

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.WebApp/Model/DatabaseContext.cs

6.8 WebApp.Migrations.DatabaseContextModelSnapshot Class Reference

Inheritance diagram for WebApp.Migrations.DatabaseContextModelSnapshot:



Protected Member Functions

- override void **BuildModel** (ModelBuilder modelBuilder)

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.WebApp/Migrations/DatabaseContextModelSnapshot.cs

6.9 WAES.Client.DifferencesClient Class Reference

Static Public Member Functions

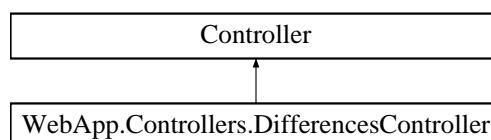
- static async Task< [ComparisonResult](#) > **LeftTask** (string basePath, int version, int id, [MessageBinding](#) model)
- static async Task< [ComparisonResult](#) > **RightTask** (string basePath, int version, int id, [MessageBinding](#) model)
- static async Task< [ComparisonResult](#) > **Middle** (string basePath, int version, int id, [ComparisonResult](#) model)

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.Client/DifferencesClient.cs

6.10 WebApp.Controllers.DifferencesController Class Reference

Inheritance diagram for WebApp.Controllers.DifferencesController:



Public Member Functions

- **DifferencesController** (ILogger< [DifferencesController](#) > logger, IConfiguration configuration)
- IActionResult [GetResultFromDiffs](#) (int id, [FromBody] [ComparisonResult](#) model)
HTTP Endpoint that returns the base64 encoded binary differences
- IActionResult [Left](#) (int id, [FromBody] [MessageBinding](#) model)
HTTP Endpoint that accepts a base64 encoded binary data and compares them from the same of the database
- IActionResult [Right](#) (int id, [FromBody] [MessageBinding](#) model)
HTTP Endpoint that accepts a base64 encoded binary data and compares them from the same of the database
- IActionResult **Common** (int id, [MessageBinding](#) model, string method)

Properties

- IConfiguration **Configuration** [get]

6.10.1 Member Function Documentation

6.10.1.1 GetResultFromDiffs()

```
IActionResult WebApp.Controllers.DifferencesController.GetResultFromDiffs (
    int id,
    [FromBody] ComparisonResult model )
```

HTTP Endpoint that returns the base64 encoded binary differences

Parameters

<i>id</i>	ID Of the Message
<i>model</i>	ComparisonResult model

Returns

ComparisonResult

6.10.1.2 Left()

```
IActionResult WebApp.Controllers.DifferencesController.Left (
    int id,
    [FromBody] MessageBinding model )
```

HTTP Endpoint that accepts a base64 encoded binary data and compares them from the same of the database

Parameters

<i>id</i>	ID Of the Message
<i>model</i>	MessageBinding Model

Returns

MessageResponse

6.10.1.3 Right()

```

IActionResult WebApp.Controllers.DifferencesController.Right (
    int id,
    [FromBody] MessageBinding model )

```

HTTP Endpoint that accepts a base64 encoded binary data and compares them from the same of the database

Parameters

<i>id</i>	ID Of the Message
<i>model</i>	MessageBinding Model

Returns

MessageResponse

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.WebApp/Controllers/DifferencesController.cs

6.11 WAES.Test.IntegrationTests.DifferencesFunctionalityTests Class Reference

Public Member Functions

- async Task [Setup](#) ()
Add base64 data to the database at specidic id
- void [DifferencesLeft_AreEqualWithDifferentPayload_ReturnComparisonResult](#) ()
Create a POST Action to [Test](#) Left Method
- void [DifferencesLeft_AreNotEqual_ReturnComparisonResult](#) ()
- void [DifferencesRight_AreEqualWithDifferentPayload_ReturnComparisonResult](#) ()
- void [DifferencesRight_AreNotEqual_ReturnComparisonResult](#) ()

6.11.1 Member Function Documentation

6.11.1.1 DifferencesLeft_AreEqualWithDifferentPayload_ReturnComparisonResult()

```
void WAES.Test.IntegrationTests.DifferencesFunctionalityTests.DifferencesLeft_AreEqualWith↵  
DifferentPayload_ReturnComparisonResult ( )
```

Create a POST Action to [Test Left Method](#)

6.11.1.2 Setup()

```
async Task WAES.Test.IntegrationTests.DifferencesFunctionalityTests.Setup ( )
```

Add base64 data to the database at specidic id

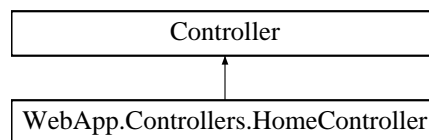
Returns

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.Test.IntegrationTests/DifferencesFunctionalityTests.cs

6.12 WebApp.Controllers.HomeController Class Reference

Inheritance diagram for WebApp.Controllers.HomeController:



Public Member Functions

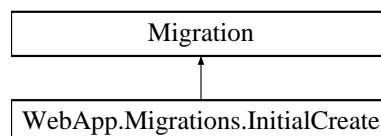
- IActionResult **Index** ()

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.WebApp/Controllers/HomeController.cs

6.13 WebApp.Migrations.InitialCreate Class Reference

Inheritance diagram for WebApp.Migrations.InitialCreate:



Protected Member Functions

- override void **Up** (MigrationBuilder migrationBuilder)
- override void **Down** (MigrationBuilder migrationBuilder)
- override void **BuildTargetModel** (ModelBuilder modelBuilder)

The documentation for this class was generated from the following files:

- C:/Projects/WAES/WAES.WebApp/Migrations/20180127171358_InitialCreate.cs
- C:/Projects/WAES/WAES.WebApp/Migrations/20180127171358_InitialCreate.Designer.cs

6.14 WebApp.Model.Message Class Reference

Properties

- int **Id** [get, set]
- int **MessageId** [get, set]
- string **Payload** [get, set]

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.WebApp/Model/Message.cs

6.15 WAES.Model.MessageBinding Class Reference

Properties

- string **Payload** [get, set]

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.Model/MessageBinding.cs

6.16 WAYS.Cryptography.Methods Class Reference

Static Public Member Functions

- static bool **IsValidBase64** (string message)
Checks if the string is a valid base64 string
- static string **Base64EncodeText** (string encodingMessage)
Encodes the message using base64 encoding
- static string **Base64DecodeText** (string base64EncodedData)
Decodes the base64 string message to the original string message
- static string **Base64DecodeToBinaryDataString** (string message)
Converts a base64 message to byte Array
- static byte [] **DecodeBase64ToByteArray** (string input)
Decodes the base64 input string to a representative byte array

6.16.1 Member Function Documentation

6.16.1.1 Base64DecodeText()

```
static string WAYS.Cryptography.Methods.Base64DecodeText (
    string base64EncodedData ) [static]
```

Decodes the base64 string message to the original string message

Parameters

<i>base64EncodedData</i>	base64 string message
--------------------------	-----------------------

Returns

Original String Message

Exceptions

<i>ArgumentException</i>	
--------------------------	--

6.16.1.2 Base64DecodeToBinaryDataString()

```
static string WAYS.Cryptography.Methods.Base64DecodeToBinaryDataString (
    string message ) [static]
```

Converts a base64 message to byte Array

Parameters

<i>message</i>	Base64 Input Message
----------------	----------------------

Returns

Byte Array

Exceptions

<i>ArgumentException</i>	input cannot be null or empty string
--------------------------	--------------------------------------

6.16.1.3 Base64EncodeText()

```
static string WAYS.Cryptography.Methods.Base64EncodeText (
    string encodingMessage ) [static]
```

Encodes the message using base64 encoding

Parameters

<i>encodingMessage</i>	string of the message
------------------------	-----------------------

Returns

base64 encoded string message

Exceptions

<i>ArgumentException</i>	
--------------------------	--

6.16.1.4 DecodeBase64ToByteArray()

```
static byte [] WAYS.Cryptography.Methods.DecodeBase64ToByteArray (
    string input ) [static]
```

Decodes the base64 input string to a representative byte array

Parameters

<i>input</i>	base64 message
--------------	----------------

Returns

Byte Array of the base64 message

Exceptions

<i>ArgumentException</i>	
--------------------------	--

6.16.1.5 IsValidBase64()

```
static bool WAYS.Cryptography.Methods.IsValidBase64 (
    string message ) [static]
```

Checks if the string is a valid base64 string

Parameters

<i>message</i>	input string
----------------	--------------

Returns

Boolean Result

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.Cryptography/Methods.cs

6.17 WebApp.Program Class Reference

Static Public Member Functions

- static int **Main** (string[] args)
- static IWebHost **BuildWebHost** (string[] args)

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.WebApp/Program.cs

6.18 WebApp.Startup Class Reference

Public Member Functions

- **Startup** (IConfiguration configuration)
- void **ConfigureServices** (IServiceCollection services)
- void **Configure** (IApplicationBuilder app, IHostingEnvironment env, IApiVersionDescriptionProvider provider)

Properties

- IConfiguration **Configuration** [get, set]

The documentation for this class was generated from the following file:

- C:/Projects/WAES/WAES.WebApp/Startup.cs

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 - WAYS::Cryptography::Methods, [22](#)
- Base64DecodeToBinaryDataString
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- BitStringResult
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- CompareByteArrays
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- ComparisonResultEnum
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