‘WINGS ON’ USER STORY

**Technical Assessment**

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|  | |
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# Record of Changes

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Author | Change Reference |
| 0.1 | 05-Jan-2019 | Mohamed Salah | Initial version |
|  |  |  |  |
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# Approvals

This document has been approved by the following people

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| Name | Function | Date of Approval | Signature |
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# Documents References

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# 

# Purpose

The purpose of this document is presenting the **design** and **development** approaches to achieve the requirement in the technical assignment.

I did my best to cover most common topic in design Restful API.

# Problem statement

As a Front-End Developer, I need a REST-ful Web API for my ticketing website, so that I can access and manage information related to the passengers.

Website need the following:

1. Endpoint that returns a person by Id.

2. Endpoint that returns all passengers on the flight by number for example ‘PZ696’.

3. Endpoint that updates a person’s email address.

4. Endpoint that creates a booking of an existing flight for a new passenger.

5. Endpoint that lists all the male passengers.

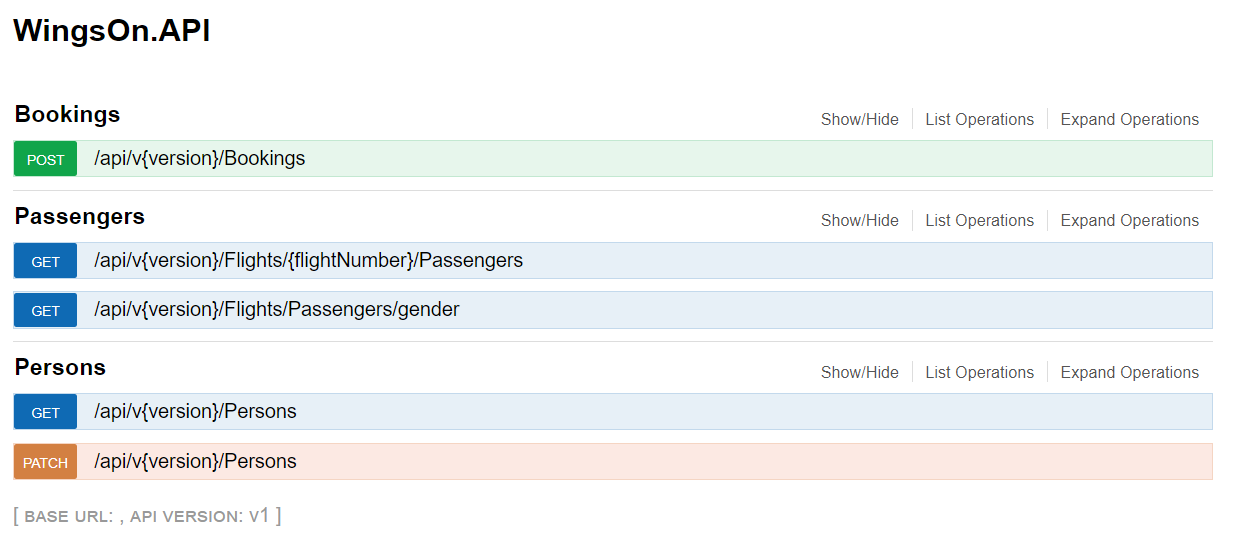
# Endpoint Table

The following is the Endpoint Table

|  |  |  |
| --- | --- | --- |
|  | Endpoint | Usage |
| POST | /api/v1/Bookings |  |
| GET | /api/v1/Flights/{flightNumber}/Passengers |  |
| GET | [/api/v1/Flights/Passengers/gender](http://localhost:63312/swagger/ui/index#!/Passengers/Passengers_Get) |  |
| GET | [/api/v1/Persons](http://localhost:63312/swagger/ui/index#!/Persons/Persons_Get) |  |
| PATCH | [/api/v1/Persons](http://localhost:63312/swagger/ui/index#!/Persons/Persons_Get) |  |

Also, you can find this using Swagger url

http://<hostname>:<port>/swagger/ui/index



# Assumption

The following assumption will apply for the different approaches

* This approach is focus of build restful API but not deeply focus of business validation for example available capacity of the flight and the departure date of the flight
* No authentication required for that test

# Covered Topics

The goal of this project is mainly to focus on some topics the following are the topics that covered in this project

1. *SOLID* Principals
2. Separation of concern
3. Simplicity, readability and Clean code

# Best Practice followed for Building REST API

I follow the next point in building the APIs

### Use nouns but no verbs

For an easy understanding use this structure for every resource:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Resource | GET read | POST create | PUT update | PATCH  Update Partially |
| /Bookings |  | Create a new Booking |  |  |
| /Flights/{flightNumber}/Passengers | Returns Passengers in specific flight number |  |  |  |
| [/Flights/Passengers/{gender](http://localhost:63312/swagger/ui/index#!/Passengers/Passengers_Get)} | Returns Passengers in specific gender (male or female) |  |  |  |
| [/Persons](http://localhost:63312/swagger/ui/index#!/Persons/Persons_Get)/{Id} | Returns a specific person |  |  |  |
| [/Persons](http://localhost:63312/swagger/ui/index#!/Persons/Persons_Get)/{Id} |  |  |  | Update person email Email |

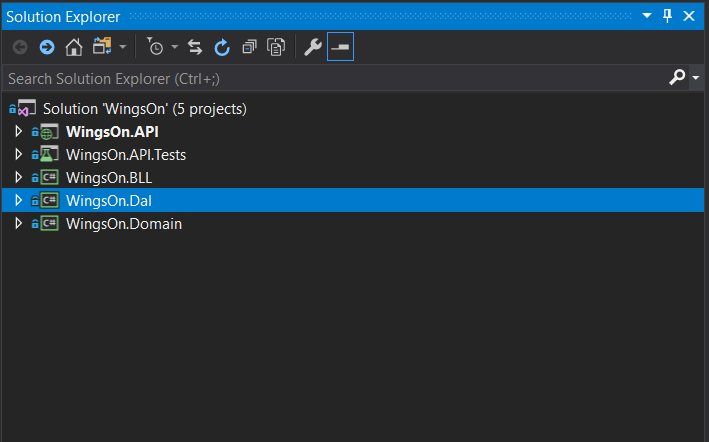
# Solution

To prove the solution for both problem and according to what is minimum required.

New Solution “WingsOn” contains the following projects

Using Visual studio 17 and .Net Framework 4.7

|  |  |
| --- | --- |
| Project Name | Usage |
| WingsOn.API | API Tier |
| WingsOn.API.Tests | Test project for the API tier |
| WingsOn.BLL | Business Logic tier |
| WingsOn.Dal | Data Access tier |
| WingsOn.Domain | Domain Tier |



**Note**

Adding Business Logic Layer (BLL) Due to ***concept separation of Concern***

This gives capability to

1. separate the API layer from being tightly coupled with data base layer DAL
2. Also contains the algorithms which operate on the data in response to user input
3. BLL can contains any business rules or integration with external services

# Used Packages

The following tables show and used packages

|  |  |
| --- | --- |
| Package Name | Usage |
| AutoMapper | Automapper is an object to the object mapper. Automapper can map properties of one object of one type, to the properties of another object. The automapper is widely used in the cases where DTO (Data transfer object) are used. By this, object properties can be assigned very easily from View object to DTO object and DTO object to Domain model |
| log4net | use logging as a way to store information about performed operations. Such data is very useful when you have to diagnose an issue |
| Swashbuckle | Swagger basically is a framework for describing, consuming, and visualizing RESTful APIs. The nice thing about Swagger that it is really keeps the documentation system, the client, and the server code in sync always, in other words the documentation of methods, parameters, and models are tightly integrated into the server code. |
| Unity.WebApi | Unity.WebAPI is a library that allows the simple integration of Microsoft's Unity **IoC** container with ASP.NET Web API. |
| System.Linq.Dynamic | helper library that allows you to express LINQ queries using extension methods that take string arguments instead of type-safe language operators |

# Spot on Code

There are 3 parts on the code need to put spot on it.

### SOLID

As mention in covered topic solution focus in applying the ***SOLID*** principal specially the second principal ***O*** (open for extension close for modification)

So, in tier “WingsOn.Dal” when I need to add more features for RepositoryBase

I add extension for it RepositoryBaseExtension and avoid modify the RepositoryBase

Then I got the following features without touch RepositoryBase

/// adding where

public static IEnumerable<T> Where<T>(this RepositoryBase<T> repository,Func<T,bool> predict)

/// adding singleOrDefault

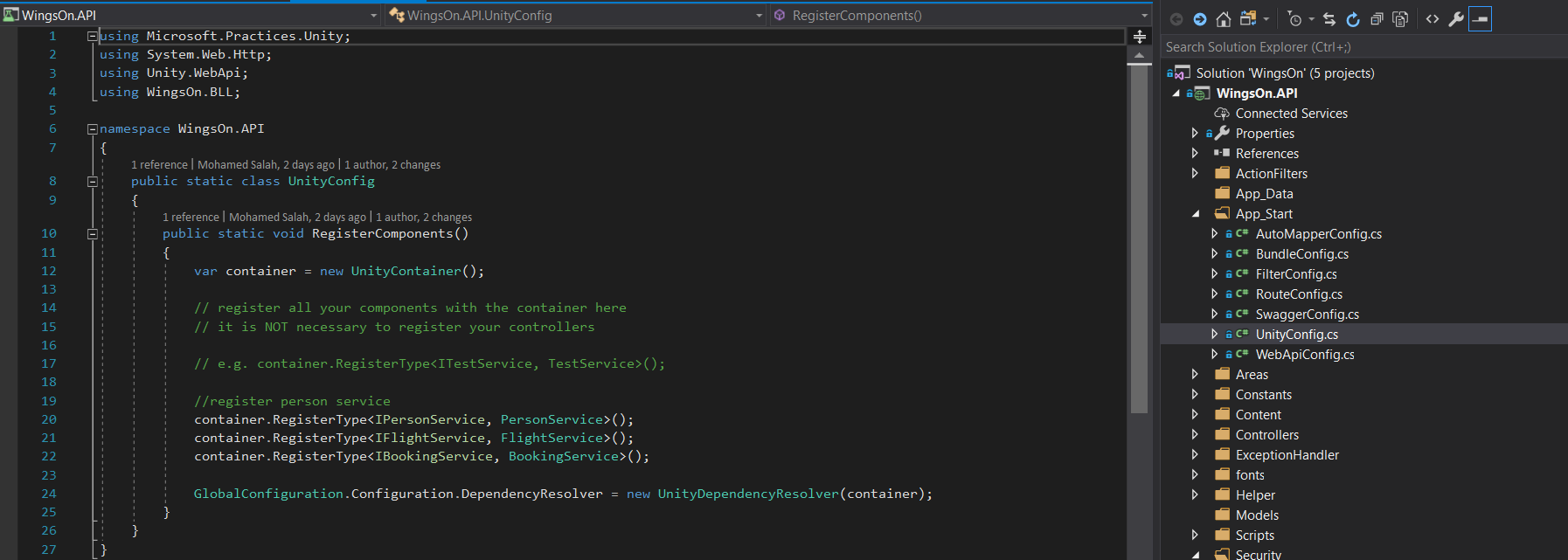
public static T SingleOrDefault<T>(this RepositoryBase<T> repository, Func<T, bool> predict)

/// create new object with new Unique Id

public static T Create<T>(this RepositoryBase<T> repository,T newObj)

### IoC

For applying the IoC project used unity.webApi packge and the configuration was put on file



### Generating unique ID for Booking