

Contents

1.	Fra	mework Introduction	2
۷.	Spe	ecflow Introduction	2
	2.1	Why Specflow	2
	2.2	Specflow plus Living Doc	3
3.	Spe	ecflow Framework Packages	4
4.	Pro	oject Structure	5
		signment Detail	
✓	Sol	ution	6
	5.1	Task 1	6
	5.2	Task 2	<u>c</u>
	5.3	Bonus Requirement	12

SPECFLOW HYBRID FRAMEWORK DOCUMENTATION

1. Framework Introduction

This framework is designed for testing purposes so we can test our web application and API's easily. Mainly This Framework has more focused on Web & API's testing but yes we can add Mobile Testing as well with just one configuration file through which we can decide the devices, browsers etc.

2. Specflow Introduction

SpecFlow is a test automation solution for .NET built upon the BDD paradigm. Use SpecFlow to define, manage and automatically execute human-readable acceptance tests in .NET projects (Full Framework and .NET Core).

SpecFlow tests are written using <u>Gherkin Language</u>, which allows you to write test cases using natural languages. SpecFlow uses the official Gherkin parser, which supports over 70 languages. These tests are then tied to your application code using <u>Bindings</u>, allowing you to execute the tests using the testing framework of your choice. You can also execute your tests using SpecFlow's dedicated test runner, SpecFlow+ Runner.

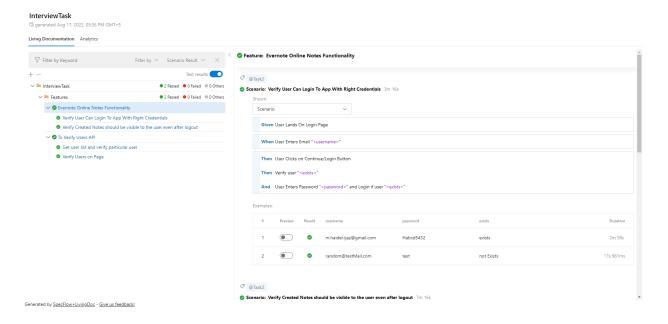
2.1 Why Specflow

- **Step definitions** Step definitions provide the connection between Gherkin feature specifications and application interfaces for test automation.
- Navigation to Step definitions Don't waste your time searching for the correct definition across your binding classes, just right-click and jump to the relevant code.
- **Hooks** Hooks (event bindings) can be used to perform additional automation logic at specific times, such as any setup required before executing a scenario.
- Context Injection SpecFlow supports a dependency injection framework that can
 instantiate and inject context for scenarios. This allows you to group the shared
 state in context classes, and inject them into every binding class that needs access
 to that shared state.

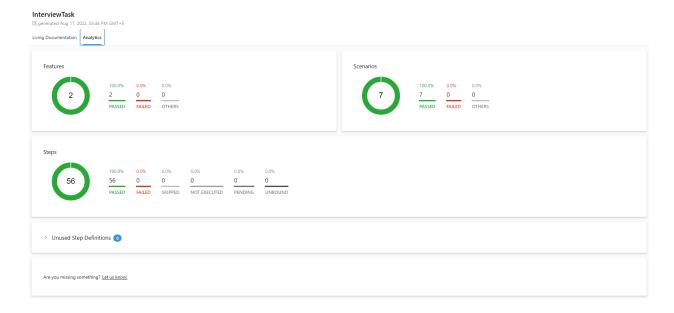
2.2 Specflow plus Living Doc

SpecFlow+LivingDoc is a set of tools that allows you to share and collaborate on Gherkin Feature Files with stakeholders who may not be familiar with developer tools and for technical team as well.

Living Documentation:

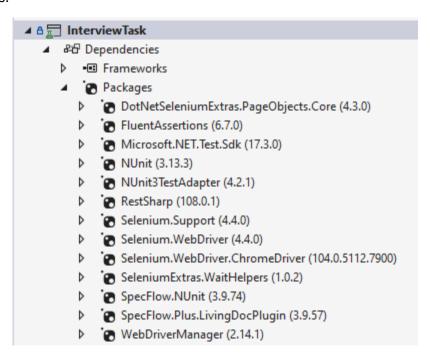


Analytics:



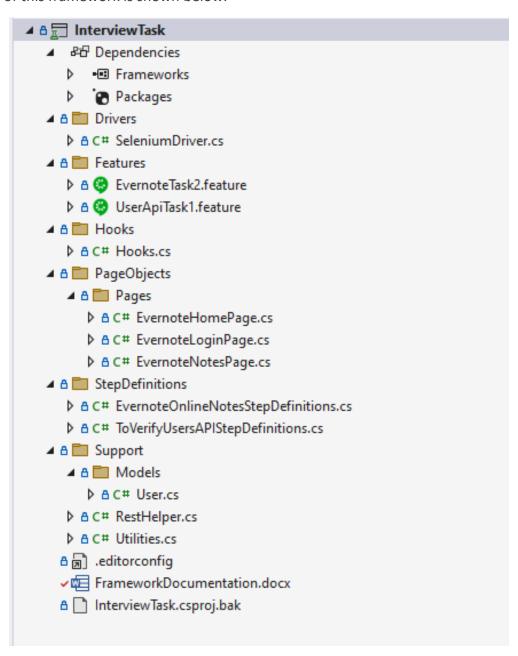
3. Specflow Framework Packages

- Selenium.Webdriver.ChromeDriver: Install Chrome Driver for Selenium WebDriver into your Unit Test Project, "chromedriver(.exe)" is copied to the bin folder from the package folder when the build process NuGet package restoring ready, and no need to commit "chromedriver(.exe)" binary into source code control repository. (This package automatically downloads the latest version of chrome driver so we don't need to use webdriver manager).
- SeleniumExtras.PageObjects: Page Factory is a class provided by Selenium WebDriver to support Page Object Design patterns and lazy initialization. In Page Factory, testers use FindsBy annotation. The initElements method is used to initialize web elements. FindsBy: An annotation used in Page Factory to locate and declare web elements using different locators.
- **NUnit**: NUnit features a fluent assert syntax, parameterized, generic, and theory tests and is user-extensible. This package includes the NUnit 3 framework assembly, which is referenced by your tests. You will need to install version 3 of the nunit3-console program or a third-party runner that supports NUnit 3 to execute tests. Runners intended for use with NUnit 2.x will not run NUnit 3 tests correctly.
- RestSharp: I've used RestSharp for API testing since RestSharp is probably the most popular HTTP client library for .NET. Featuring automatic serialization and deserialization, request and response type detection, variety of authentications and other useful features.



4. Project Structure

Page object model design pattern is used in this framework and the complete structure of this framework is shown below.



5. Assignment Detail

As QA Automation Engineer and as Solution Architect I've designed this Framework which can hold Web Browser Tests as well as API's Test's. So to achieve this target I've used above mentioned technology stack (Selenium, RestSharp with Specflow). Since as per requirement I've to implement it using BDD framework so every task has its own feature file and based on that feature we've different scenario's implemented, let's have a brief Introduction of each Scenario of both the Feature file.

✓ Solution

- I have created one feature file having two scenario's each Scenario has a Background where I'm setting up the base URL. Steps are defined and implemented in a way that every step has reusable capabilities and it can be run through data driven approach means any one can change or add the data to test more scenarios.
- I have used Tags approach to deal different conditions, e.g. we can group them and even
 if you discussed Task2 so there we have to initialize chrome browser and that we don't
 need in Task1, so created hooks with Tags means when Task2 trigger than only browser
 initializes else no need.
- Specflow Living Document and Detail Analysis also available view full execution report and also you can preview scenario behavior.

5.1 Task 1

"As a QA engineer you are requested to test a particular API method with the following URL https://reqres.in/api/users?page=1. During the code analysis, 3 main scenarios to be tested were identified. Develop a .Net Test Framework to implement the below tests (ideally using a BDD language such as Gherkin)."

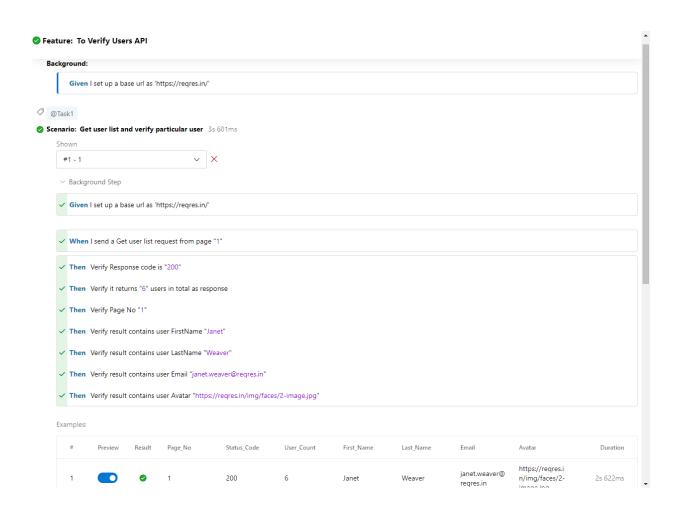
Feature: To Verify Users API

□ Background:

Given I set up a base url as 'https://reqres.in/'

```
@Task1
Scenario: Get user list and verify particular user
     When I send a Get user list request from page "<Page_No>"
     Then Verify Response code is "<Status_Code>"
     Then Verify it returns "<User_Count>" users in total as response
     Then Verify Page No "<Page_No>"
     Then Verify result contains user FirstName "<First_Name>"
     Then Verify result contains user LastName "<Last_Name>"
     Then Verify result contains user Email "<Email>"
     Then Verify result contains user Avatar "<Avatar>"
     Examples:
     | Page_No | Status_Code | User_Count | First_Name | Last_Name | Email
                                                                                           | Avatar
                                                                    janet.weaver@reqres.in | https://reqres.in/img/faces/2-image.jpg
     1 1
               1 200
                            l 6
                                          Janet
                                                        Weaver
               200
                             6
                                         Byron
                                                      | Fields | byron.fields@reqres.in | https://reqres.in/img/faces/10-image.jpg |
```

@Task1



```
:\Users\haiderejaz\source\repos\InterviewTask\InterviewTask>dotnet build
SBuild version 17.3.0+92e077650 for .NET
Determining projects to restore...
All projects are up-to-date for restore.
SpecFlowFeatureFiles: Features\EvernoteTask2.feature;Features\UserApiTask1.feature
      -> Using default config
SpecFlowGeneratedFiles: Features\EvernoteTask2.feature.cs
      SpecFlowGeneratedFiles: Features\UserApiTask1.feature.cs
InterviewTask -> C:\Users\haiderejaz\source\repos\InterviewTask\InterviewTask\bin\Debug\netcoreapp3.1\InterviewTask.d
           0 Warning(s)
           0 Error(s)
   ime Elapsed 00:00:02.82
     :\Users\haiderejaz\source\repos\InterviewTask\InterviewTask>dotnet test
Determining projects to restore...
All projects are up-to-date for restore.
SpecFlowFeatureFiles: Features\EvernoteTask2.feature;Features\UserApiTask1.feature
      SpeciflowFeatureFiles: Features\EvernoteFask2.Features\EvernoteFask1.Feature

-> Using default config

SpeciflowGeneratedFiles: Features\EvernoteTask2.feature.cs

SpeciflowGeneratedFiles: Features\UserApiTask1.feature.cs

InterviewTask -> C:\Users\haiderejaz\source\repos\InterviewTask\InterviewTask\bin\Debug\netcoreapp3.1\InterviewTask.d
  III
Fest run for C:\Users\haiderejaz\source\repos\InterviewTask\InterviewTask\bin\Debug\netcoreapp3.1\InterviewTask.dll (.NETCoreApp,Version=v3.1)
Microsoft (R) Test Execution Command Line Tool Version 17.3.0 (x64)
Copyright (c) Microsoft Corporation. All rights reserved.
  Starting test execution, please wait...
A total of 1 test files matched the specified pattern.
  Then Verify Response code is "200"

-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyResponseCodeIs(200) (0.0s)

Then Verify it returns "6" users in total as response

-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyItReturnsUsersInTotalAsResponse("6") (0.0s)

Then Verify Page No "1"

-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyPageNo("1") (0.0s)

Then Verify result contains user FirstName "Janet"
  Then Verify result contains user FirstName "Janet"
-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyResultContainsUserFirstName("Janet") (0.0s)
Then Verify result contains user LastName "Weaver"
-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyResultContainsUserLastName("Weaver") (0.0s)
Then Verify result contains user Email "janet.weaver@rese.in"
-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyResultContainsUserEmail("janet.weaver@reqre...") (0.0s)
Then Verify result contains user Avatar "https://reqres.in/img/faces/2-image.jpg"
-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyResultContainsUserAvatar("https://reqres.in...") (0.0s)
Given I set up a base url as 'https://reqres.in/'
-> done: ToVerifyUsersAPIStepDefinitions.GivenISetUpABaseUrlAs("https://reqres.in/") (0.0s)
When I send a Get user list request from page "2"
converted to list: 6
-> done: ToVerifyUsersAPIStepDefinitions.WhenISendAGetUserListRequestFromPage("2") (1.0s)
Then Verify Response code is "200"
  Then verity kesponse code is -200

-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyResponseCodeIs(200) (0.0s)
Then Verify it returns "6" users in total as response
-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyItReturnsUsersInTotalAsResponse("6") (0.0s)
Then Verify Page No "2"
  Then Verify Page No "2"
-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyPageNo("2") (0.0s)
Then Verify result contains user FirstName "Byron"
-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyResultContainsUserFirstName("Byron") (0.0s)
Then Verify result contains user LastName "Fields"
-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyResultContainsUserLastName("Fields") (0.0s)
Then Verify result contains user Email "byron.fields@reqres.in"
-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyResultContainsUserEmail("byron.fields@reqr...") (0.0s)
Then Verify result contains user Avatar "https://reqres.in/img/faces/10-image.jpg"
-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyResultContainsUserAvatar("https://reqres.in...") (0.0s)
Given I set up a base url as 'https://reqres.in/'
-> done: ToVerifyUsersAPIStepDefinitions.GivenISetUpABaseUrlAs("https://reqres.in/") (0.0s)
When I send a Get user list request from page "12"
    onverted to list : 0
  tonverted to list. 0

-> done: ToVerifyUsersAPIStepDefinitions.WhenISendAGetUserListRequestFromPage("12") (1.2s)
Then Verify Response code is "200"

-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyResponseCodeIs(200) (0.0s)
Then Verify Page No "12"
    > done: ToVerifyUsersAPIStepDefinitions.ThenVerifyPageNo("12") (0.0s)
  Then Verify it returns "0" users in total as response
-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyItReturnsUsersInTotalAsResponse("0") (0.0s)
  Given I set up a base url as 'https://reqres.in/'
-> done: ToVerifyUsersAPIStepDefinitions.GivenISetUpABaseUrlAs("https://reqres.in/") (0.0s)
When I send a Get user list request from page "1"
converted to list : 6
    > done: ToVerifyUsersAPIStepDefinitions.WhenISendAGetUserListRequestFromPage("1") (1.3s)
    hen Verify Response code is "200'
  >> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyResponseCodeIs(200) (0.0s)
Then Verify Page No "1"
-> done: ToVerifyUsersAPIStepDefinitions.ThenVerifyPageNo("1") (0.0s)
   then Verify it returns "6" users in total as response of the Verify it returns "6" users in total as response of the VerifyUsersAPIStepDefinitions.ThenVerifyItReturnsUsersInTotalAsResponse("6") (0.0s)
```

- InterviewTask.dll (netcoreapp3.1

Test	Duration	Traits	Error Message	Group Summary
✓ ✓ InterviewTask (7)	8.6 min			InterviewTask
■ InterviewTask.Features (7)	8.6 min			Tests in group: 7
	8.5 min			○ Total Duration: 8.6 min
■ ToVerifyUsersAPIFeature (4)	5.1 sec			Outcomes
■ GetUserListAndVerifyParticularUser (2)	2.4 sec			
GetUserListAndVerifyParticularUser("1","	1.7 sec	Task1		
GetUserListAndVerifyParticularUser("2","	700 ms	Task1		
■ VerifyUsersOnPage (2)	2.7 sec			
VerifyUsersOnPage("1","200","6",null)	598 ms	Task1		
VerifyUsersOnPage("12","200","0",null)	2.1 sec	Task1		

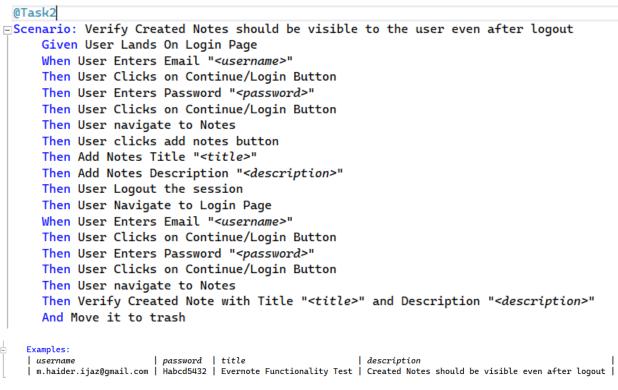
5.2 Task 2

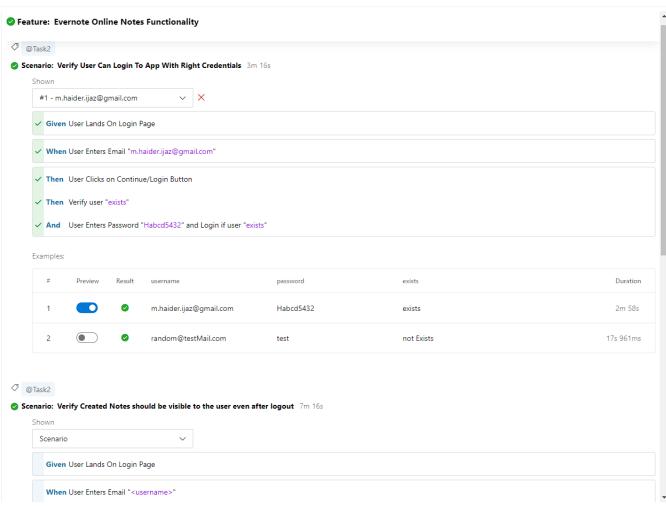
"Consider that you are working with a well-known online note taking company, https://evernote.com/, as QA Test Automation Engineer. You are given the task to develop a test automation framework using Selenium, together with a BDD language such as gherkin to implement UI automated tests on different core functionalities of the Website. These tests should cover:

- 1. Unsuccessful login using email and assert that the proper error messages are returned
- 2. Successful login using email and assert that the user is granted access to the site
- 3. Login and write a note followed by a logout. Finally, login again and make sure you can open and view the note created previously. "

Feature: Evernote Online Notes Functionality

@Task2





```
:\Users\haiderejaz\source\repos\InterviewTask\InterviewTask>dotnet build
   Substitution 17.3.0+92e077650 for .NET

Determining projects to restore...
All projects are up-to-date for restore.

SpecFlowFeatureFiles: Features\EvernoteTask2.feature;Features\UserApiTask1.feature
      -> Using default config
SpecFlowGeneratedFiles: Features\EvernoteTask2.feature.cs
      SpecFlowGeneratedFiles: Features\UserApiTask1.feature.cs
InterviewTask -> C:\Users\haiderejaz\source\repos\InterviewTask\InterviewTask\bin\Debug\netcoreapp3.1\InterviewTask.d
            0 Warning(s)
            0 Error(s)
Time Elapsed 00:00:02.82
      :\Users\haiderejaz\source\repos\InterviewTask\InterviewTask>dotnet test
Determining projects to restore...
All projects are up-to-date for restore.
SpecFlowFeatureFiles: Features\EvernoteTask2.feature;Features\UserApiTask1.feature
      Specific to the state of t
       Test run for C:\Users\haiderejaz\source\repos\InterviewTask\InterviewTask\bin\Debug\netcoreapp3.1\InterviewTask.dll (.NETCoreApp,Version=v3.1)
Microsoft (R) Test Execution Command Line Tool Version 17.3.0 (x64)
Copyright (c) Microsoft Corporation. All rights reserved.
Starting test execution, please wait...
A total of 1 test files matched the specified pattern
  Given User Lands On Login Page
 --> done: EvernoteOnlineNotesStepDefinitions.GivenUserLandsOnLoginPage() (55.1s)
When User Enters Email "m.haider.ijaz@gmail.com"
-> done: EvernoteOnlineNotesStepDefinitions.WhenUserEntersEmail("m.haider.ijaz@gma...") (0.2s)
  Then User Clicks on Continue/Login Button

> done: EvernoteOnlineNotesStepDefinitions.ThenUserClicksOnContinueButton() (0.1s)
Then User Enters Password "Habcd5432"

>> done: EvernoteOnlineNotesStepDefinitions.ThenUserEntersPassword("Habcd5432") (1.8s)
   Then User Clicks on Continue/Login Button
-> done: EvernoteOnlineNotesStepDefinitions.ThenUserClicksOnContinueButton() (33.1s)
  Then User navigate to Notes
-> done: EvernoteOnlineNotesStepDefinitions.ThenUserNavigateToNotes() (26.6s)
-> done: EvernoteOnlineNotesStepDefinitions.ThenUserNavigateToNotes() (26.6s)
Then User clicks add notes button
-> done: EvernoteOnlineNotesStepDefinitions.ThenUserClicksAddNotesButton() (0.1s)
Then Add Notes Title "Evernote Functionality Test"
-> done: EvernoteOnlineNotesStepDefinitions.ThenAddNotesTitle("Evernote Function...") (19.7s)
Then Add Notes Description "Created Notes should be visible even after logout"
-> done: EvernoteOnlineNotesStepDefinitions.ThenAddNotesDescription("Created Notes sho...") (0.7s)
Then User Logout the session
Wait Oven
  Wait Over
Successfully Saved
 Successfully Saved
-> done: EvernoteOnlineNotesStepDefinitions.ThenUserLogoutTheSession() (148.7s)
Then User Navigate to Login Page
-> done: EvernoteOnlineNotesStepDefinitions.ThenUserNavigateToLoginPage() (2.8s)
When User Enters Email "m.haider.ijaz@gmail.com"
-> done: EvernoteOnlineNotesStepDefinitions.WhenUserEntersEmail("m.haider.ijaz@gma...") (0.1s)
  -> done: EvernoteonInlewOessLepoteInItions.WhenDserEntersEmail( m.Halder-1]aZ@gma...
Then User Clicks on Continue/Login Button
-> done: EvernoteOnlineNotesStepDefinitions.ThenUserClicksOnContinueButton() (0.1s)
Then User Enters Password "Habcd5432"
-> done: EvernoteOnlineNotesStepDefinitions.ThenUserEntersPassword("Habcd5432") (0.7s)
   hen User Clicks on Continue/Login Button
> done: EvernoteOnlineNotesStepDefinitions.ThenUserClicksOnContinueButton() (4.8s)
Then User navigate to Notes

-> done: EvernoteOnlineNotesStepDefinitions.ThenUserNavigateToNotes() (13.2s)

Then Verify Created Note with Title "Evernote Functionality Test" and Description "Created Notes should be visible even after logout"

Wait Over
```

> done: EvernoteOnlineNotesStepDefinitions.ThenVerifyCreatedNoteWithTitleAndDescription("Evernote Function...", "Created Notes sho...") (128.7s

. And Move it to trash -> done: EvernoteOnlineNotesStepDefinitions.ThenMoveItToTrash() (0.5s)

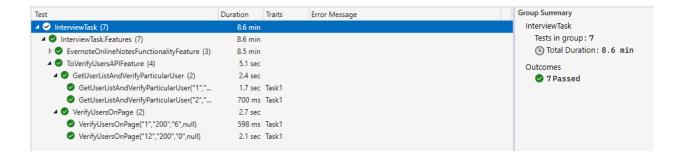
Given User Lands On Login Page -> done: EvernoteOnlineNotesStepDefinitions.GivenUserLandsOnLoginPage() (10.6s)

 > done: EvernoteonineNotesstepperinitions.whemserencerschaft mindre - Joseph Then User Clicks on Continue/Login Button
 > done: EvernoteOnlineNotesStepDefinitions.ThenUserClicksOnContinueButton() (0.1s)
 Then Verify user "exists"
 > done: EvernoteOnlineNotesStepDefinitions.ThenVerifyUser("exists") (0.0s)
 And User Enters Password "Habcd5432" and Login if user "exists"

Nhen User Enters Email "m.haider.ijaz@gmail.com" -> done: EvernoteOnlineNotesStepDefinitions.WhenUserEntersEmail("m.haider.ijaz@gma...") (0.1s)

->- done: EvernoteOnlineNotesStepDefinitions.ThenUserEntersPasswordAndLoginIfUser("Habcd5432", "exists") (167.3s)

Tears Down Browser Setuped



5.3 Bonus Requirement

As I already mentioned on email, I'm trying to access those weather API's https://www.metaweather.com/api/ and these are not accessible and I've found "404 page not found" error more on that got the news from Google that they have closed their services.

But if you share with me anything new as the bonus requirement so yes, I'll submit it as soon as possible, in this repository only.