BIRZEIT UNIVERSITY

Service-Oriented Architecture (SWEN6307)

Assignment #: 5

Project Name: Pal-TripAdvisor

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Abstract

Web Services are the means by which devices communicate over the World Wide Web. Whether you use a mobile application, search engine or an enterprise system, the user piece of the application (the interface) resides on the used device. The data, and potentially the business rules, live on some other server on the network. How the interface communicates with the server piece is the role of Web Services. Here in this course project we will demonstrate the concepts of web services via implementing REST and SOAP web-service. The project is considered as a web application for tourism guidance. Our application name is Pal-TripAdvisor.

1. Introduction

These days people spending a lot of time before deciding to travel to a new country. They usually know where they want to go, but sometimes they don't. Our web service designed for people who are feeling hesitancy in searching and collecting information about the country they are going to visit..

Usually, traveler visit one website for check the flight, then they try to find information about hotel in different website looking for famous sights to decide where they should go first, after that they collect information about weather in this country at specific time. And the most important thing is their need to know the currency of this country and the change rate comparing with their local currency.

Our web-service application will provide the user a comprehensive global view of the complex modern travel ecosystem and unlocks fresh insights into how travelers research and decide their holidays. It introduces a needs based approach to know hotels, images, currency rate and city weather. Moreover, the objective of this application that we want to learn composition webservice ,we find this is a good way to understand all fundamental and concept of our course. For sure beside implementation for SOAP and REST APIs and composite the implemented APIS with External APIs

1.1. Proposed Web-Service Application

In our proposed application , we will use REST and SOAP APIs and a composite them to have the needed services. We will have the user (client) will request the data from web-server using web-application (as we implemented) or mobile application (future work).

The user should enter some inputs to use the application , firstly the application will ask the user to provide the destination country name , local currency , date of departure and date of arrival.

Our web service will be composite of (Rest and WSDL) Services , client request data from web server using either web page or mobile application then provide basic information as (destination country , from date , to date) . all API work to return point of interest , weather currency change and available hotel near the destination city. as shown below :

We sequentially call the first api (point of interests), and when this api returns a list of interesting places, we iterate over those returned places, and for each one, we parallelly call the other for api's (get weather, get currency, get closest hotels, get language) for each place, then we combine the response from those 4 api's with the data returned from the (point of interest api) to form complete information for each place, both sequential and parallel calls combined together to form the flow pattern.

2. The objectives

We can summarize our objectives as the following:
1. Designing a composition web service that will be an added value to other composition web services.
2. Reusing of existing web services such as Weather and CurrencyFacrot API
3. Composite a publishable web services and orcstrate different web service (REST or SOAP).

3. Description

After the user enter the needed parameter , we will use sequential call request for the API , the API will return a list of interesting places in this country, this developed API will return city name in this destination country , city image and list of the available hotels in this city.

Then we will parally call the rest of APIs using different invocation and call types. We will use the city name as an input parameter for the weather API to get the weather statues in the need city. But the weather API neds three parameter as input, one parameter from the developed service (PointOfIntrest) and the other two parameters will be collected from the user.

City name will be used as input parameter for the hotel API , which return a list of hotels of the destination city, the city name is an output from point of interest API. The hotel API and weather API will be called in parallel sequence.

And then the input of local currency will be used in calculating the exchange rate between the local currency and destination country currency . This service is implemented and developed by us as SOAP service.

So after this process , the data from hotel API, weather API, currency API will be combined with the point of interest API result to provide the response for the user.

The below summary table will represent the used service

API	Type	Source
Weather API	SOAP	External
Hotel API	REST	Eternal
Currency exchange	SOAP	Internal
Point of interest	REST	Internal

4. Data Flow

We used JOpera library on eclipse to represent the business process of our application and to test the APIs we invoked and developed . The below diagram will show
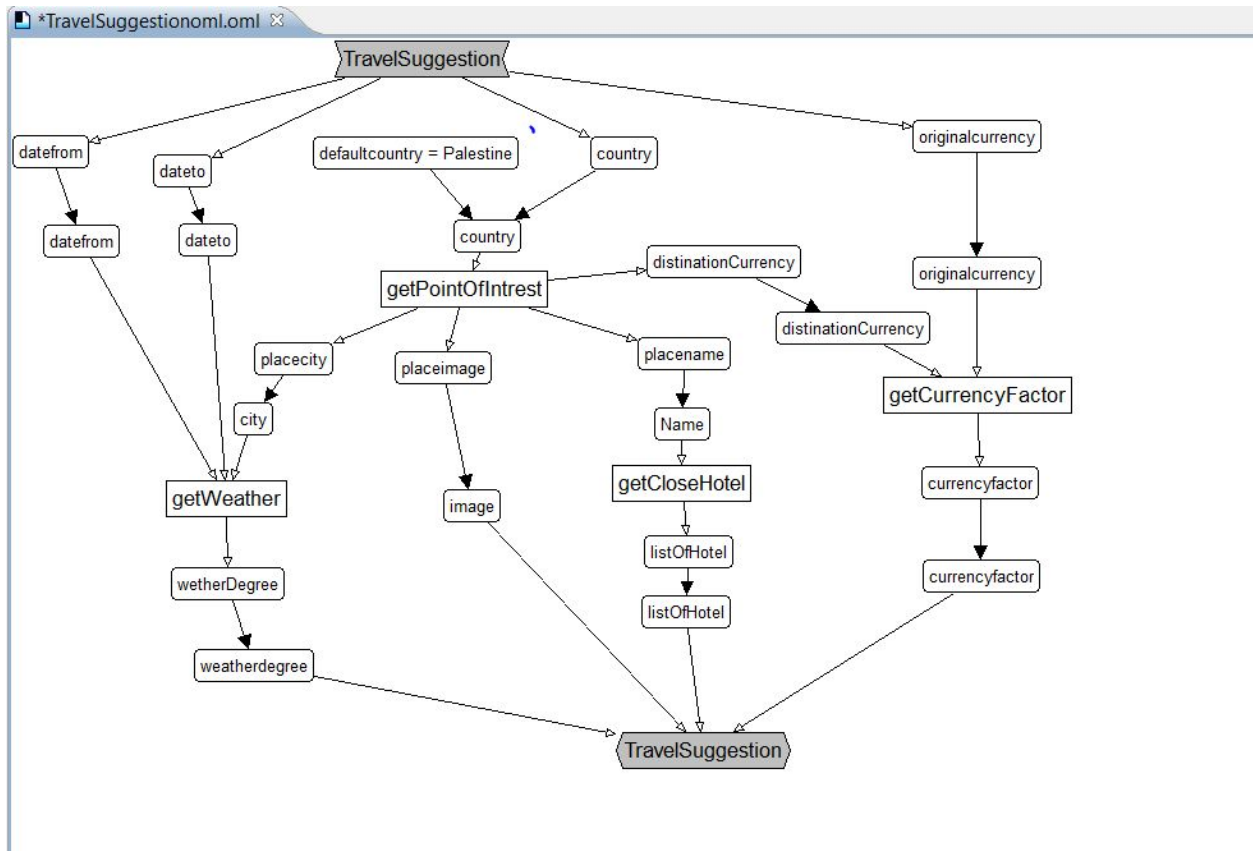
5. The structure of the web Composition service
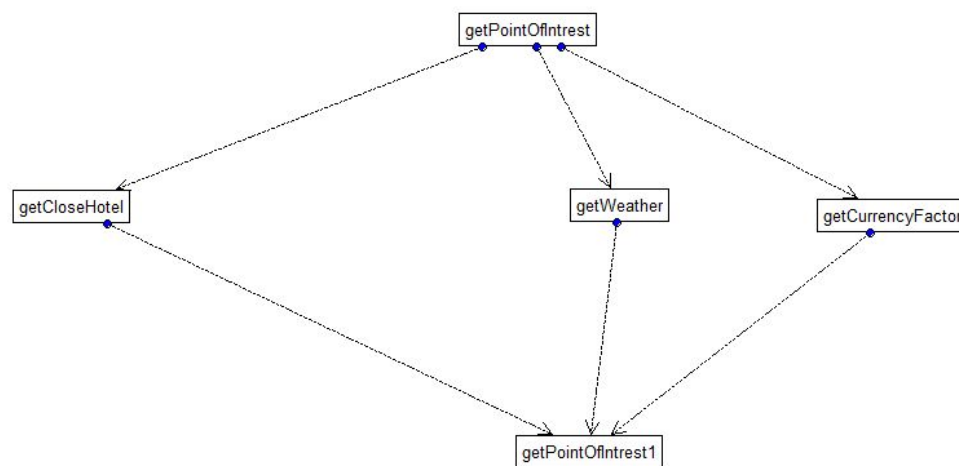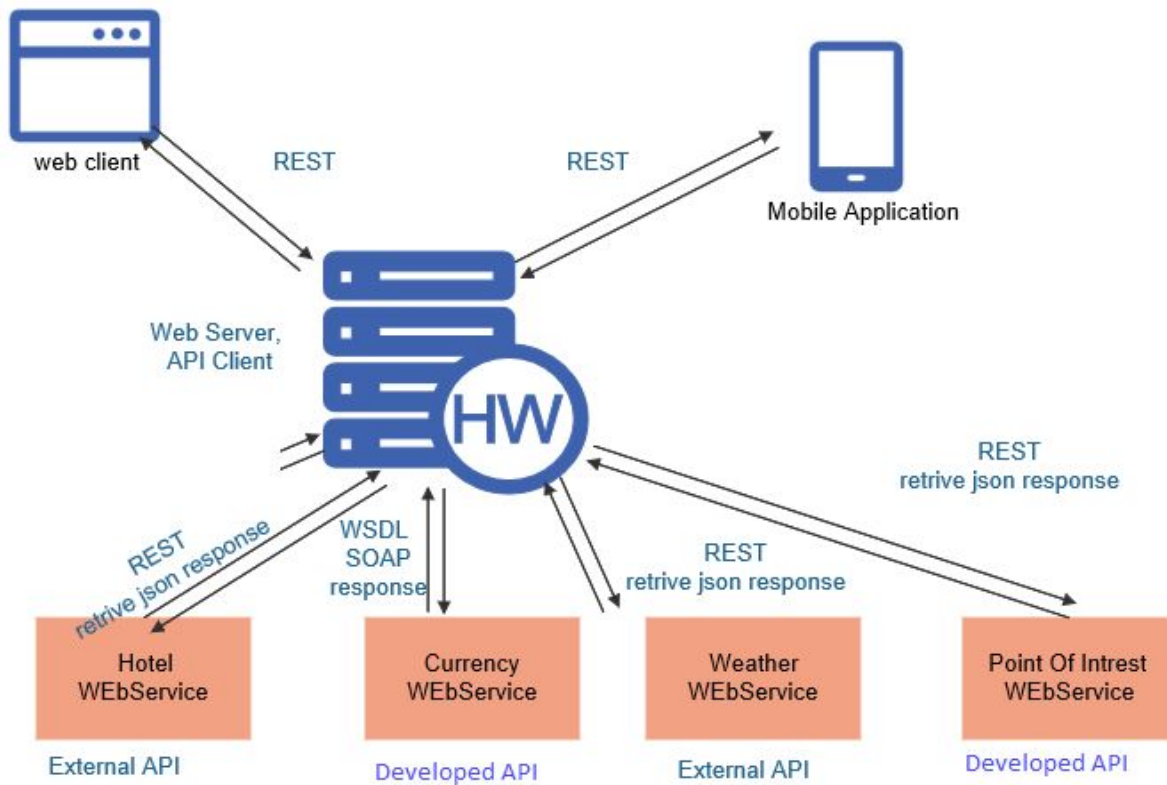
Control flow :

6. Class Diagram

7. Technologies

In this project we will use the following technologies:

1. Swagger: RESTful API Documentation Specification. is a project used to describe and document RESTful APIs. The Swagger specification defines a set of files required to describe such an API. These files can then be used by the Swagger-UI project to display the API and Swagger Codegen to generate clients in various languages. Additional utilities can also take advantage of the resulting files, such as testing tools.

2.Visual Studio :is an integrated development environment (IDE) from Microsoft. It is used to develop computer programs, as well as web sites, web apps, web services and mobile apps. Visual Studio uses Microsoft software development platforms such as Windows API, Windows Forms, Windows Presentation Foundation, Windows Store and Microsoft Silverlight. We define it in --- file with Route:controller method as shown below.

Route::get('sendSMS/{mobile no}','SendSMSController@sendSMS');
Route::get('gps', 'SendSMSController@getGPS');
Route::get('map','SendSMSController@getMap');

The method name of the controller should start with HTTP verb like get or post. We start it with get, it will handle only get request. After the HTTP verb we can give any name to the method but it should follow the title case version of the URI

3. All data will be represented in json.

8. Implementation & Discussion

9. Future Enhancements

Starting from the current interest in travel web service and give suggestion about (point of interest , weather , available hotel there and currency factor) .In future we want to get in details for more and more composition API like language API,booking flights . we also hope to improve our web service as website and mobile application the user can detect from anywhere.our plan is to cover all answers from travellers about anythings relating to there trips.

10. Implantation

11. Conclusion