CERGY PARIS UNIVERSITÉ

Project : Political Figures + Social Media

SEMESTER 6

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TABLE OF CONTENTS

Abstract 2

Introduction 3

Ressources 4

Software 4

Implementation 5

SOAP SERVICE 6

Description 6

WSDL File 7

REST SERVICE 7

REST API 7

API response using Postman 9

FacebookGraphAPI Service 10

Conclusion 11

References 12

Abstract

Web services are distributed components that provide functionality to applications across the network using open standards. They can therefore be used by applications written in different languages and executed in different platforms on different systems.

Web services use a distributed architecture composed of several different computers and/or systems that communicate over the network. They implement a set of open standards and standards that allow developers to implement distributed applications internally or externally using different vendor-provided tools.

A web service is usually used to offer one or more business functions that will be invoked by one or more consumers.

There are two main families of web services that we use on the project :

-SOAP-type web services
-REST web services

the SOAP and REST are not equally the same. REST is more of a
guideline for developers to give directions how to plan their web services, while SOAP is standardized protocol.

In almost all the websites present over www, business people has made a significant attempt to integrate its capacity with Facebook to have a connection of millions of users worldwide. Who might have thought of connecting with social media 15 years ago? Here is the answer: Social media integration was not available and most importantly industry overlooked its importance but then. In the early months of 2010 the things were going to get seriously change by the game changers of this e business world by connecting more and more users to have incredible customer reach to sell out their n number of products over all „range. After the evaluation of Web Services integration Facebook has launched its new connector knows as REST FB API. REST FB is an easy way to connect with your website with Facebook. Facebook is leading social media and if you want to create a social presence of your product of any kind, Facebook integration is a must-have in these days.

Introduction

This software project is developed to support web-services architecture
development. The purpose of the software project is to develop SOAP and REST web services.

The web-service must support two operations.
The technology used is SOAP and REST. One service must call third party service to
fetch records.
The main goal of these web services is to provide to the customer the possibility to consult informations on politicals figures of the World and to have the last infos on them using what they posts on the social media “Facebook”.

Ressources

Software

Tool name	Description	License
Eclipse IDE JAVA *(also Netbeans and IntelliJ)*	The IDE we used	Open Source (for Eclipse and NetBeans) TrialWare(for IntelliJ)
Java SE 8 (and JDK)	Java runtime environment	Oracle Binary Code License
Eclipse Jersey	provides support for JAX-RS APIs and serves as a JAX-RS Reference	Eclipse Public License 2.0

	Implementation	
RestFB	a simple and flexible Facebook Graph API client written in Java.	MIT License
Apache Maven	a build automation tool	Apache License 2.0
Spring Framework	an application framework and inversion of control container for the Java platform	Apache License 2.0
Apache CXF	JAX-WS fully compliant framework	Apache License 2.0
Apache Tomcat 9	implementation of the Java Servlet, JavaServer Pages, Java Expression Language and WebSocket technologies	Apache License 2.0
Postman	to quickly send REST, SOAP, and GraphQL requests directly within Postman.	End-User Licence Agreement

IMPLEMENTATION

Overview of application

The proposed software system is expected to do the following functionality :

To provide a two web services SOAP and REST related to Politicians records. ✔

The Client Service must call two operation from service. ✔

Integration of facebook Graph API ✔

Feature	REST	SOAP
Transport	HTTP	Various choices
Method	GET, POST, PUT, DELETE	WSDL
Security	HTTPS	HTTPS, WS-Security
Message format	JSON, XML, plain text	XML
Caching	Able to cache	Not able to cache
Failure handling	Client side	Server side

Technology comparison between REST and SOAP

SOAP SERVICE

DESCRIPTION

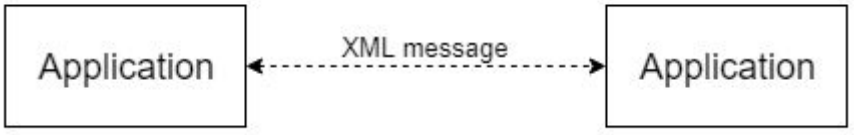
SOAP is our second way to designing API for our web service, where the SOAP defines platform free method to implement messaging .

The base of the SOAP relies on XML message format and HTTP for communications.

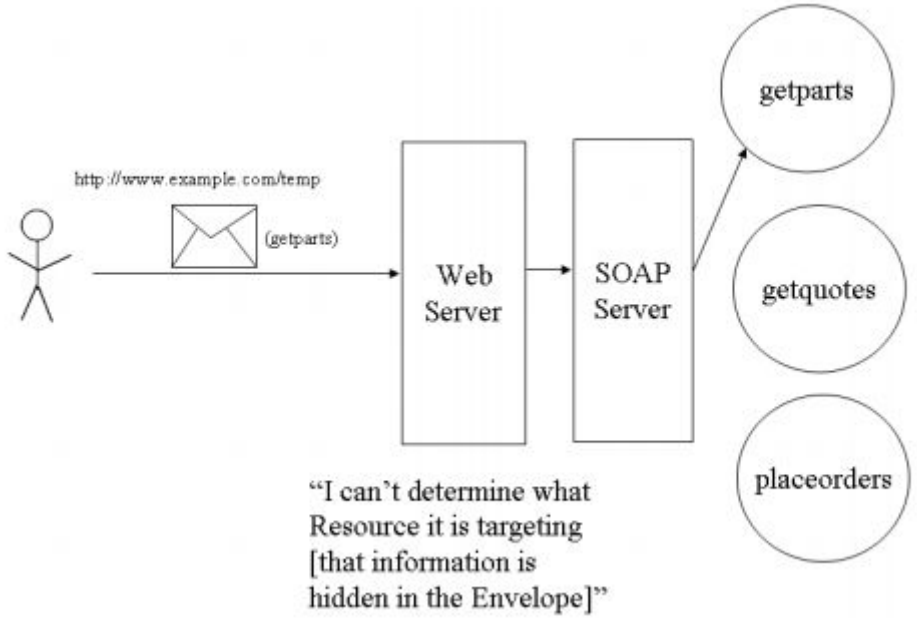
The SOAP definition mainly describes a one-way message delivery, but it can be implemented to serve request-response communications, which is common way of usage of SOAP.

The messages in SOAP are formed by using the XML document format.. XML provides human and machine -readable message structure, which has widely been used as a document or data structure.

The XML messages provide wide support for variety of applications, are easy to create and use and straightforwardly usable over the internet.



SOAP applications messaging through XML



SOAP request to servers example

This service is SOAP service which create operation about politicians records.
We expose the SOAP service WSDL file to get Politicians records.
This service having below API
- getPoliticians()

WSDL File

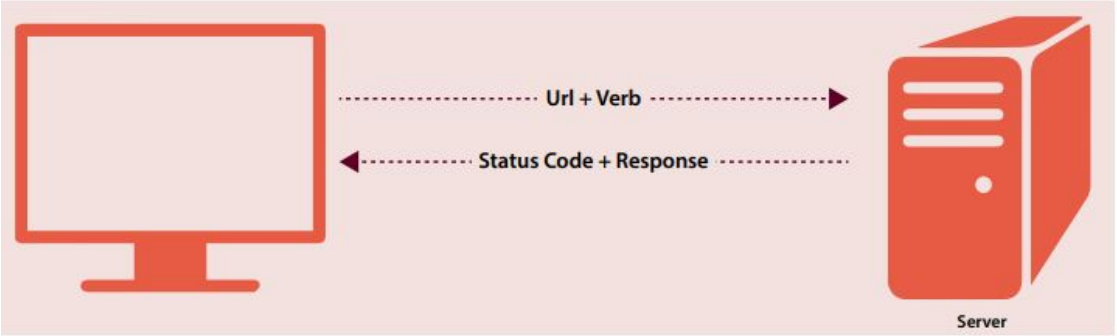
WSDL file contains all details about service like service URL,service name,methods used etc.
The SOAP parses the message in objects using WSDL file, which is generated during the startup of the service from Java classes.
Below is the complete WSDL file

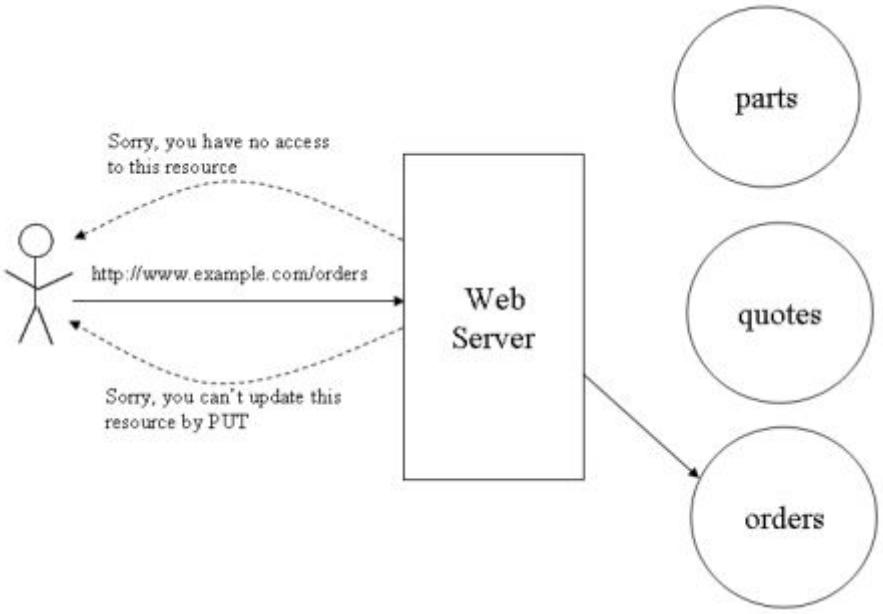
```
<?xml version="1.0" encoding="UTF-8"?>
<wsdl:definitions name="PoliticianService"
targetNamespace="http://service.rest.com/"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
xmlns:tns="http://service.rest.com/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/">
  <wsdl:portType name="Politician">
  </wsdl:portType>
  <wsdl:binding name="PoliticianServiceSoapBinding"
type="tns:Politician">
    <soap:binding style="document"
transport="http://schemas.xmlsoap.org/soap/http"/>
  </wsdl:binding>
  <wsdl:service name="PoliticianService">
    <wsdl:port name="PoliticianPort"
binding="tns:PoliticianServiceSoapBinding">
      <soap:address
location="http://localhost:8085/SoapPoliticianService/service
s/PoliticianPort"/>
    </wsdl:port>
  </wsdl:service>
</wsdl:definitions>
```

REST SERVICE

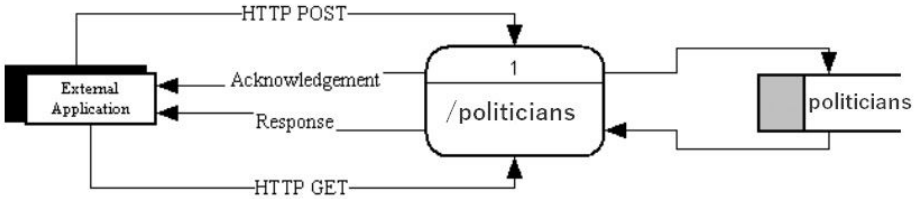
REST API

This service is developed using JAX-RS api.
The REST service is a modern way to develop web services.
SOAP service only support XML format while REST supports many formats like XML,text,html etc.





RESTful Web services request to server example



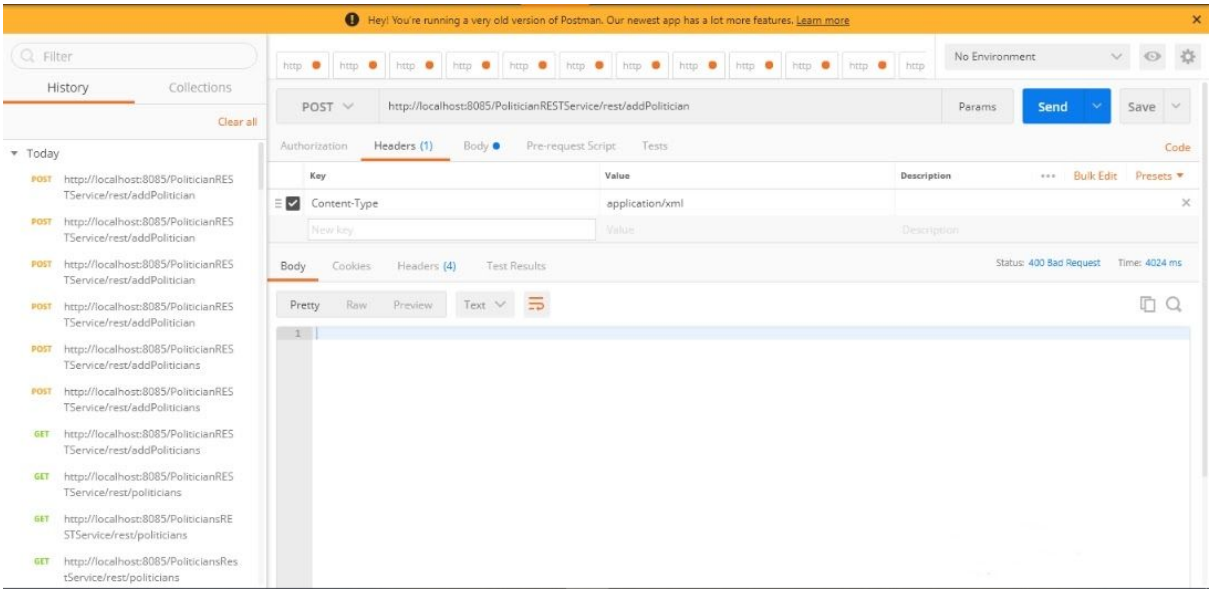
Resource Model for our RESTful Web services

Below are the API used in rest web-service

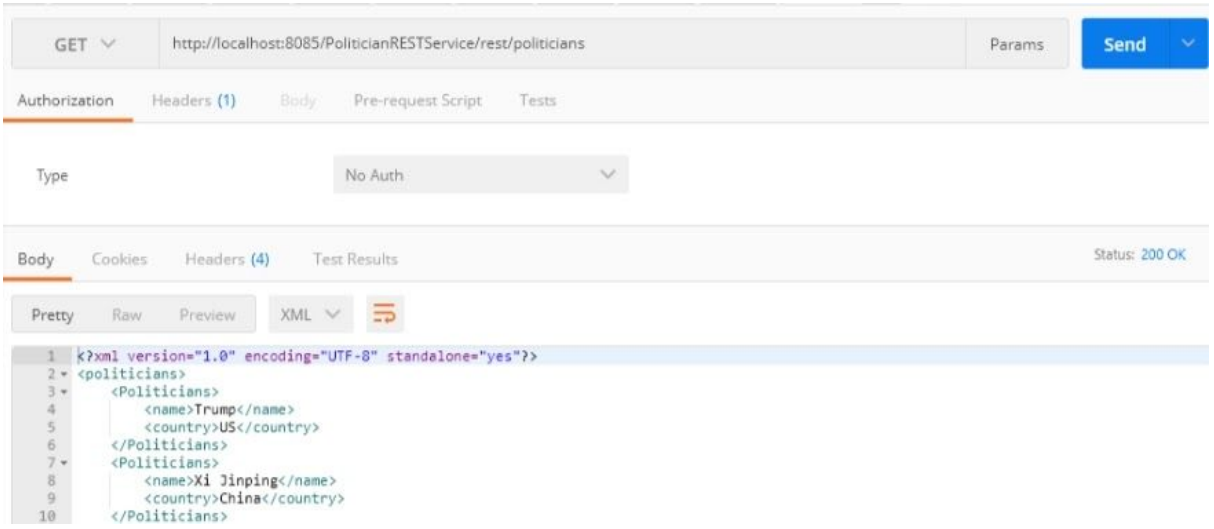
```java
package com.rest.service;


import java.util.ArrayList;
import java.util.List;

import javax.ws.rs.Consumes;
import javax.ws.rs.GET;
import javax.ws.rs.POST;
import javax.ws.rs.Path;
import javax.ws.rs.Produces;
import javax.ws.rs.core.MediaType;

@Path("/rest/")
public class PoliticianResource {

    private List<Politician> politicians=new ArrayList<Politician>();

    @GET
    @Path("politicians")
    @Produces(MediaType.APPLICATION_XML )
    public List<Politician> getPoliticians() {
        politicians.add(new Politician("Trump","US"));
        politicians.add(new Politician("Xi Jinping","China"));
        politicians.add(new Politician("Macron","France"));
        return politicians;
    }

    @POST
    @Path("addPolitician")
    @Consumes(MediaType.APPLICATION_XML )
    @Produces(MediaType.APPLICATION_XML )
    public List<Politician> addPolitician(Politician politician) {
        politicians.add(politician);
        return politicians;
    }
}
```

API RESPONSE USING POSTMAN

The postman provide interface to test REST web-service response

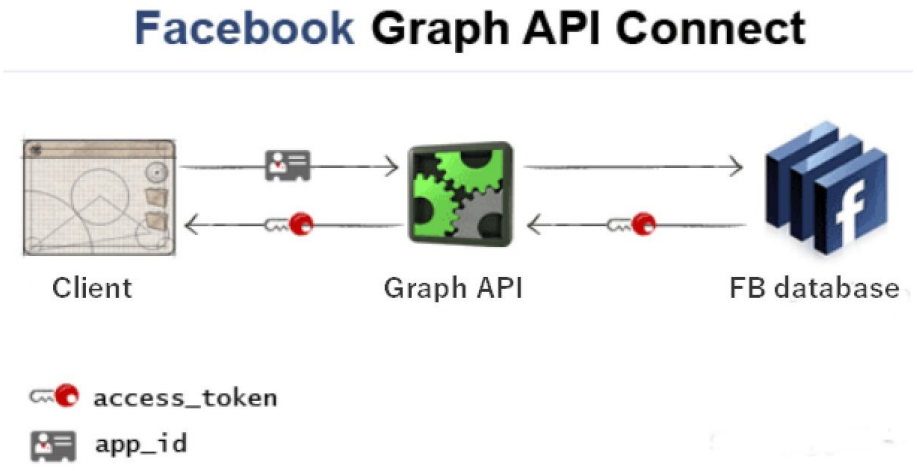


example here with GET to have all politicians



FACEBOOKGRAPHAPI SERVICE

This service use to integrate with facebook.
This service calls the facebook Graph api to get required informations. We have to register with facebook graph API and create an App. After creating app we have to provide appId and token to login and access resources.




```
public class RestController
{
    @Value("${access.token:test}")
    private String MY_ACCESS_TOKEN;


    private static List<Place> places;
```

```
    private final FacebookServiceFacade facebookServiceFacade;


    @Autowired
    public RestController(FacebookServiceFacade facebookServiceFacade)
    {
        this.facebookServiceFacade = facebookServiceFacade;
    }


    @RequestMapping("/facebookData")
    public List<Place> getPlaces() throws IOException
    {
        return places = this.facebookServiceFacade.fetchFacebookData();
    }


    @RequestMapping("/searchByName")
    public List<Place> getitem(@RequestParam("name") String name) throws
IOException
    {
        return places.stream().filter(place -> place.getName() != null &&
place.getName().toLowerCase().contains(name.toLowerCase())).collect(Collec
tors.toList());
    }

    @RequestMapping("/searchByCountry")
    public List<Place> getPlacesByCountry(@RequestParam("countryName")
String countryName) throws IOException
    {
        return places.stream().filter(place -> place.getCountry() != null
&&
place.getCountry().toLowerCase().contains(countryName.toLowerCase())).coll
ect(Collectors.toList());
    }


    @RequestMapping("/searchByCity")
    public List<Place> getPlacesByCity(@RequestParam("cityName") String
cityName) throws IOException
    {
        return places.stream().filter(place -> place.getCity() != null &&
place.getCity().toLowerCase().contains(cityName.toLowerCase())).collect(Co
llectors.toList());
    }

}
```

CONCLUSION

With this project , we saw the differences between SOAP and REST. SOAP is more traditional and heavy, while REST is modern and lightweight way to develop web service message delivery. Advantages of REST consists of scalability, freedom of choice for message format and ease of deployment, whereas it suffers from lack of tools and security options. SOAP suffers from complexity and burdening style of message handling, but brings reliability and extensibility. Overall, REST outperforms SOAP in most of the critical areas.
After all, SOAP is an actual protocol, while REST is just a set of constraints

As this era progresses, integration of social media like Facebook would be vital for every business on this earth. The way Facebook make it happen to connect with users is not been achieved by anyone else so far. Here from scalability of business point of view integrating Facebook apps with REST FB would be must to have for all good business mans.

I wanted to do a Golang implementation of these web services , but I don't success to make it work, it will be the next extension of this projects

References

https://restfb.com/

https://github.com/restfb/restfb

https://github.com/trileksono/Belajar-FacebookAPI

https://github.com/juanunix/restfb-graph

https://www.youtube.com/watch?v=m14hYs1T3FA&list=PLYPFxrXyK0BwiXNe09hTPjFqYbsWv8gxb Facebook API Tutorials in Java

https://www.youtube.com/watch?v=NHT9F3Kukd4 Extraction of data using restfb (french language video)

Abbreviations
API Application Programming Interface
HTML HyperText Markup Language
HTTP Hypertext Transfer Protocol
JSON JavaScript Object Notation
REST Representational State Transfer
SMTP Simple Mail Transfer Protocol
SOAP Simple Object Access Protocol
URL Uniform Resource Locator
XML eXtensible Markup Language