TOPICS IN DATA MANAGEMENT(WEB SERVICES)
ASSIGNMENT-1

SANDHYA MURALI
(sm2290@g.rit.edu)

ABSTRACT:

This application is about taking the city from the user as an input and displaying the weather conditions currently in that city and the famous restaurants. The user then enters his/her current location and selects the restaurant he/she wants to visit for which the available uber rides to reach the destination (restaurants) are displayed . In this application, four REST API's and one SOAP API is used. Through this application, the user will be able to view the current weather and the famous restaurants in the city. The user will also be able to view the uber rides that are available to reach the selected restaurant from his location.

INTRODUCTION:

Web services are a set of application services that are used in order to exchange information between applications. They can be be invoked by programs using HTTP requests from a repository in order to create new products. A number of users can access some of these services through peer-to-peer communication rather than accessing the central server.

There are number of web services available in the internet. In order to describe and store the web service, a service registry is needed. In order to publish and find a web service, UDDI standard is used. UDDI is a standard that uses WSDL to describe interfaces of the services and helps in businesses find other businesses in the internet. In order to communicate between systems operating on different technologies (operating systems or programing languages), SOAP or REST API is used.

In this assignment, I have used four REST API's and one SOAP API. The application takes a the city of the user as an input. It then displays the current weather conditions along with the restaurants that are famous in that city to the user. Based on the user's current location and selection of the restaurant he/she wants to visit, a list of uber rides available along with the cost and capacity is displayed to the user.

The implementation details of the application is seen in the design section, screenshots are seen in the results section which is followed by challenges faced and conclusion.

DESIGN:

The design of the application is as follows:

The application is entirely coded in Java with output printed in a readable format. I have imported jersey-client to consume RESTful Web Service.

Firstly, the user is asked for the current city as an input. This is taken using the Scanner class of utils package.

Now, once the city is entered by the user, the current weather conditions of the city is obtained using OpenWeatherMap REST API. This API returns the weather forecast in Kelvin by taking input as the current city of the user. The API displays information such as the description of weather (whether clear, cloudy, rainy etc), minimum temperature, maximum temperature of the day followed by current temperature

To convert the weather from Kelvin to Celsius, I have used SOAP API that takes as input the weather in Kelvin and displays the weather in Celcius to the user.

Based on the city entered, I have also displayed the famous restaurants using Yelp REST API. This API takes as input the current city that was entered by the user. The API displays information such as the name of the restaurant, address along with zip code, contact, if it is open and rating.

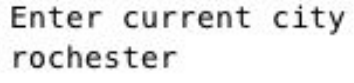
Again, the user is asked to enter the current location as well as select the restaurant he/she wants to visit using the scanner class of utils package.

Based on restaurant the user wants to visit, list of uber rides available to reach the restaurant from the current location is displayed using Uber REST API. This information includes the type of uber and the estimated time of arrival.

Now, for the Uber REST API, the method requires inputs as latitude and longitude instead of the source and destination name. To determine the latitude and longitude of the destination, I have used Google Map REST API. This takes in as input the start and end location and gives the the latitude and longitude of the location. Google Maps REST API also displays the total distance that is needed to reach the distance followed by the total miles to reach the destination This is then passed as an input to the UBER REST API.

SCREENSHOTS:

1. **User input to enter the current city:**



2. **Weather forecast of the city:**

```
---------WEATHER NEAR YOU----------

Description : clear sky
temperature is : 275.82K / 2C
minimum temperature is : 274.15K / 1C
maximum temperature is : 278.15K / 5C
```

3. **Restaurants famous in that city:**

```
Name : Dinosaur Bar-B-Que  Is_Closed : false  Rating : 4.5  Phone : +15853257090  Address : 99 Court St  Zip Code : 14604
Name : Good Luck Restaurant  Is_Closed : false  Rating : 4.5  Phone : +15853406161  Address : 50 Anderson Ave  Zip Code : 1
Name : Dogtown  Is_Closed : false  Rating : 4.5  Phone : +15852716620  Address : 691 Monroe Ave  Zip Code : 14607
Name : The Owl House  Is_Closed : false  Rating : 4.0  Phone : +15853602920  Address : 75 Marshall St  Zip Code : 14607
Name : Voula's Greek Sweets  Is_Closed : false  Rating : 4.5  Phone : +15852420935  Address : 439 Monroe Ave  Zip Code : 14
Name : Fuego Coffee Roasters  Is_Closed : false  Rating : 4.5  Phone : +15852709214  Address : 45 Euclid St  Zip Code : 146
Name : Cedar Mediterranean Restaurant  Is_Closed : false  Rating : 4.5  Phone : +15854427751  Address : 746 Monroe Ave  Zip
Name : Han Noodle Bar  Is_Closed : false  Rating : 4.0  Phone : +15852427333  Address : 687 Monroe Ave  Zip Code : 14607
Name : Zemeta Ethiopian Restaurant  Is_Closed : false  Rating : 4.5  Phone : +15852443344  Address : 1015 S Clinton Ave  Zi
```

4. **User input to enter current location and selected restaurant:**

```
 Enter current location landmark :
220 John Street Rochester
 Enter resturant you want to visit
han noodle bar
```

5. **Total distance and time taken to reach destination:**

```
Total Distance is : 7.3 mi and Total time taken is : 20 mins
```

6. **Uber rides available to reach destination:**

```
estimate of arrival is : 4 seconds  car type is : uberX
estimate of arrival is : 5 seconds  car type is : uberXL
```

<u>CHALLENGES AND LEARNINGS:</u>

There were several challenges I faced while doing this assignment. Firstly, I am completely new to the technologies used. So it took me some efforts to understand how to consume a REST web service. Understanding the documentation to access the keys and parameters passed to the methods to generate required result took me some time to understand. Also the java libraries needed to consume a RESTful Web Service was again a challenge. Since most of the

SOAP services are deprecated, it took me time to figure out the SOAP service that could be used in my application.

On the whole, this assignment helped me learn a lot of new fundamentals. It taught me how to access a REST API and SOAP API and use it in several forms in my application. It also helped me understand the working of REST and SOAP and cleared my concepts to a greater extent.

CONCLUSION:

In this way, based on the city and knowing the nearby restaurants, user can check the available uber rides to reach the restaurants and weather conditions of the city