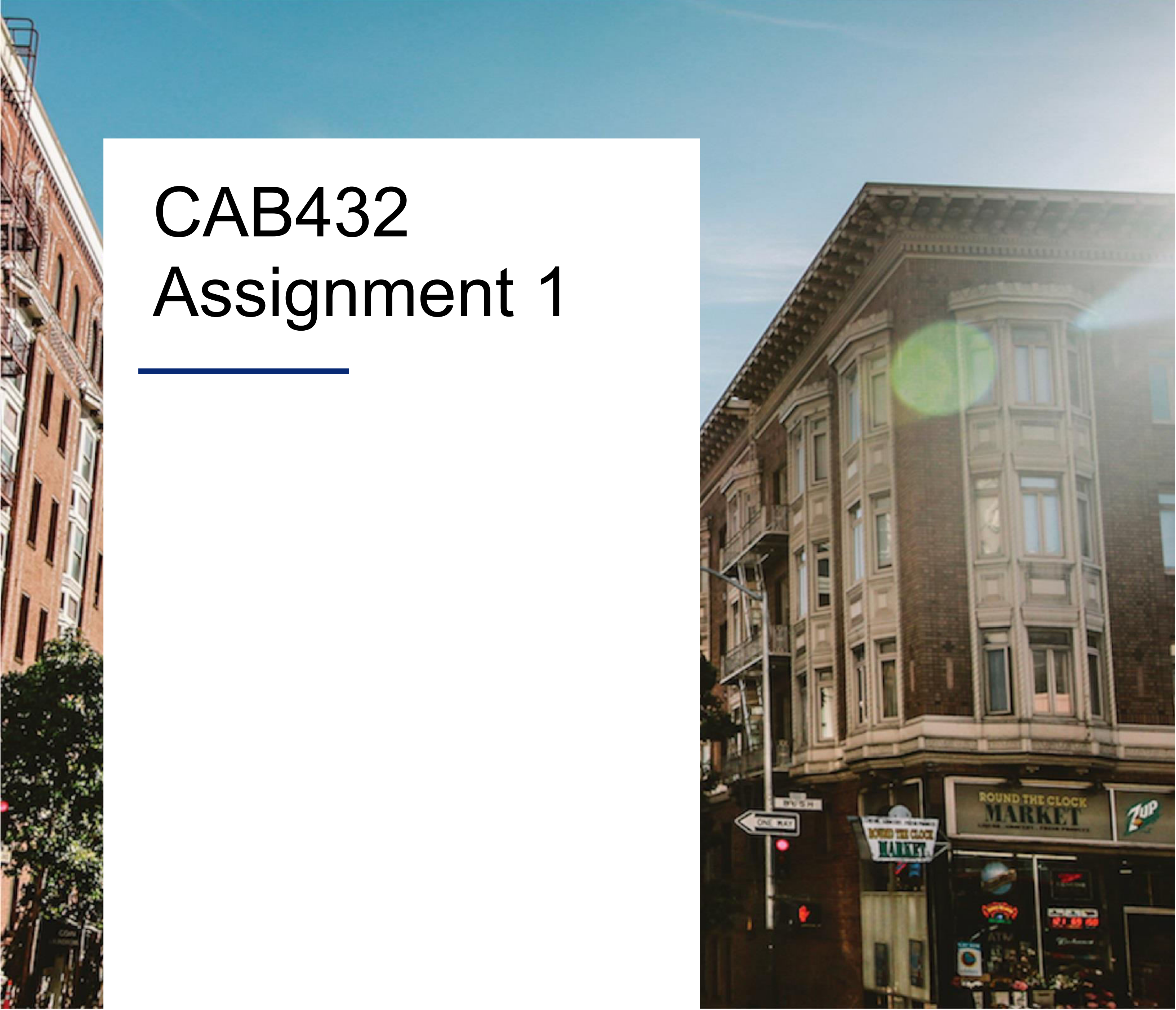


CAB432 Assignment 1

SEPTEMBER 17

Restaurant Launcher: A Web Mashup
Authored by: Sandali Deenalattha

Table of Contents

Introduction

Restaurant Launcher is a Web Mashup created as an assignment for CAB432, Semester 2, 2018. Its purpose is to provide information on restaurants and cuisines around the world. Information can be found based on the location.

Apart from the above information, the service allows the user to translate information when necessary. Restaurant Launcher allows user to locate the restaurant of any type on Google Maps. It also shows direction details of the restaurant.

Zomato API is used to get general information from restaurants. In the Index page, the API is used to derive the cuisine and restaurant types available in a particular city. Once the city is selected Information about restaurants in that city is displayed.
Zomato API URL: https://developers.zomato.com/api

Google Directions API is used to show locations of restaurants. It is also used to derive direction details to the restaurant from Brisbane City. Details such as Duration, Distance and Best Mode of travelling is shown.
Google Directions API URL:
https://developers.google.com/maps/documentation/directions/

Google Translate API is used to translate any information such as reviews, menus (when available) to user preference language. The API will return texts in selected language.
Google Translate API URL: https://cloud.google.com/translate/docs/

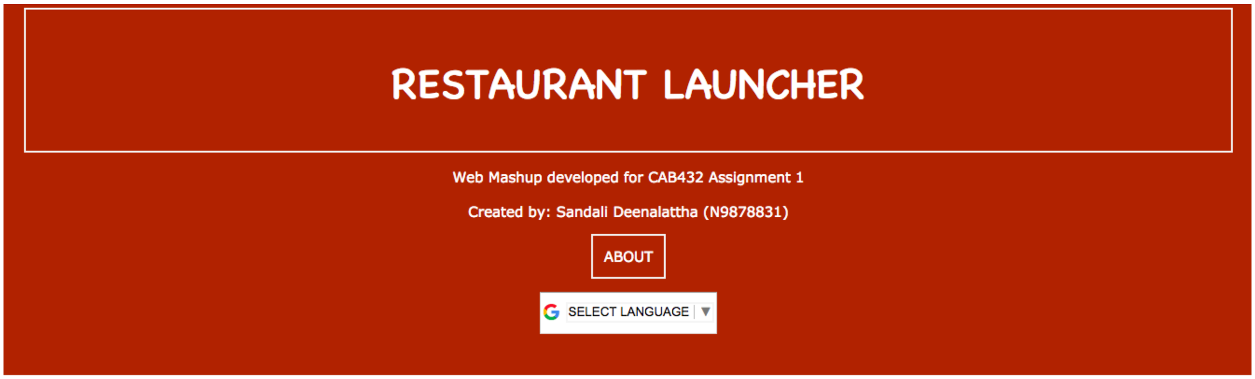
Open Weather map API is used to show Weather Details of the location that the user wanted to find restaurants. Information such as Humidity, Weather, Temperature is displayed.
Open Weather API URL: https://openweathermap.org/api

Mashup Use Cases and Dependent Services

Use Case 1

- **Case:** As a User, I want to get different restaurant from a city with different cuisines, so that I can choose the best suits me

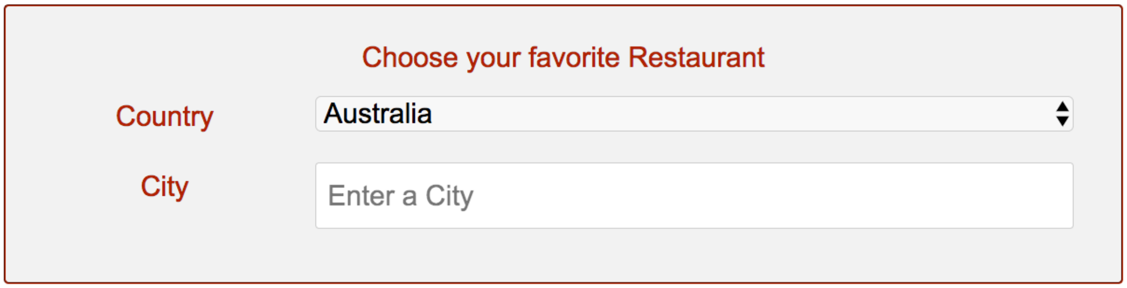
- **Screenshot:**



RESTAURANT LAUNCHER

Web Mashup developed for CAB432 Assignment 1

Created by: Sandali Deenalattha (N9878831)

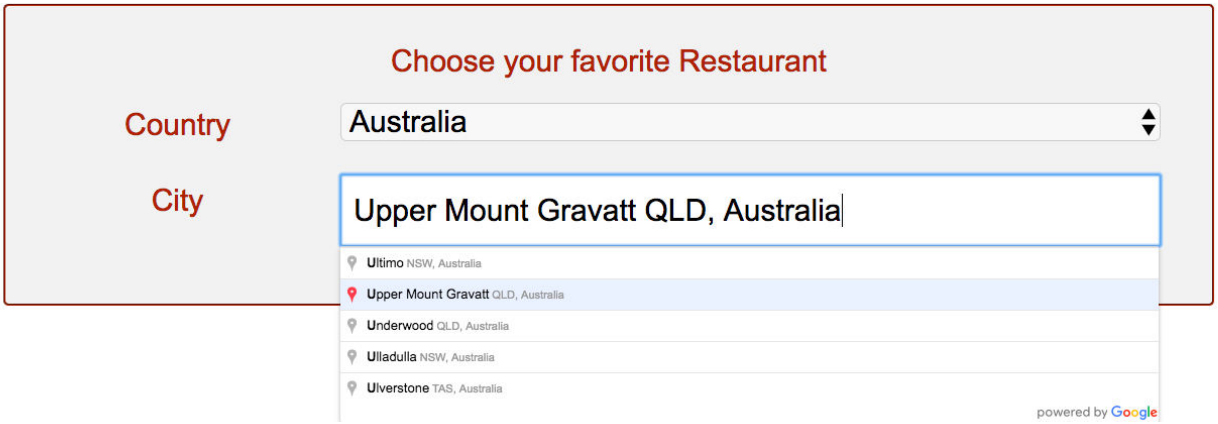


Choose your favorite Restaurant

Country: Australia

City: Enter a City

Anna wants to find the best suited restaurants in a city in Upper Mount Gravatt.



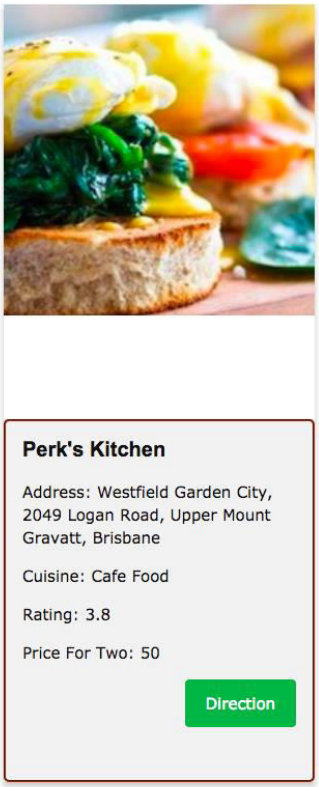
Choose your favorite Restaurant

Country: Australia

City: Upper Mount Gravatt QLD, Australia

Ultimo NSW, Australia
Upper Mount Gravatt QLD, Australia
Underwood QLD, Australia
Ulladulla NSW, Australia
Ulverstone TAS, Australia

After selecting the city, a list of restaurants in the selected city will be displayed. It will display The Restaurant's name, Address, Cuisine, Ratings and Average price for two people.



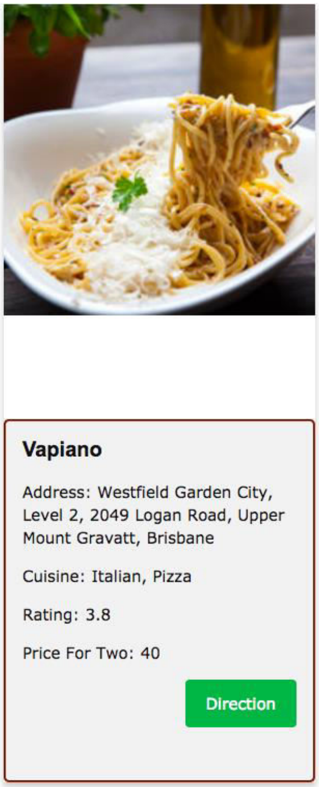
Perk's Kitchen

Address: Westfield Garden City, 2049 Logan Road, Upper Mount Gravatt, Brisbane

Cuisine: Cafe Food

Rating: 3.8

Price For Two: 50



Vapiano

Address: Westfield Garden City, Level 2, 2049 Logan Road, Upper Mount Gravatt, Brisbane

Cuisine: Italian, Pizza

Rating: 3.8

Price For Two: 40

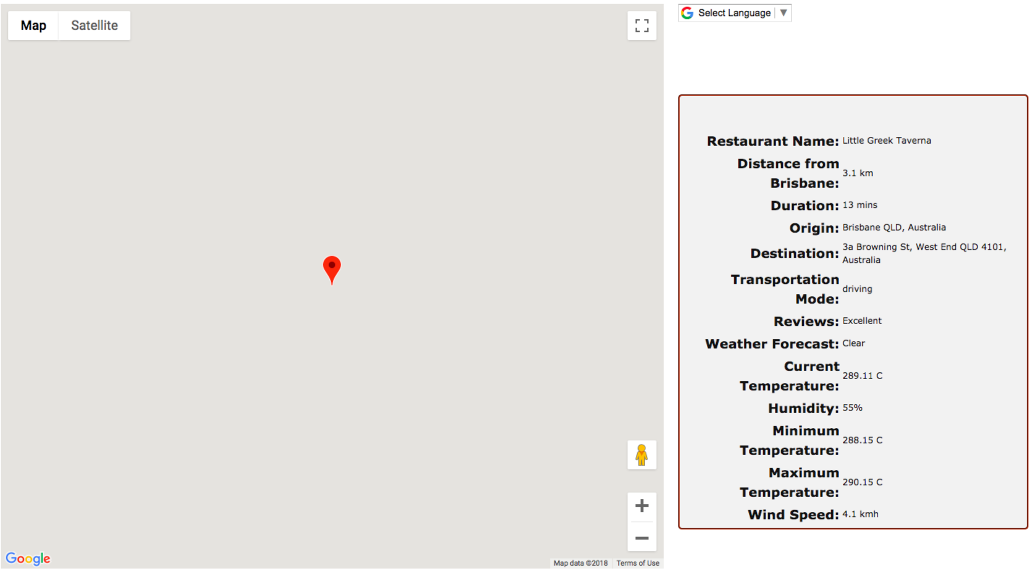
- **API Endpoints Calls:**
  Zomato API key is placed in the apiFile.js, instead of placing it in the route files. A Zomato API wrapper is used for HTTP GET requests.
  - Get Location:
    'http://developers.zomato.com/api/v2.1/locations?query=' + city + '&count=' + number of result counts;
    Number of result count is always set to 1, JSON file is returned based on the city provided by the user to generate types of restaurant locations in a city.

  - Get Location Detail:
    'http://developers.zomato.com/api/v2.1/location_details?entity_id' + entity id retrieved from get location + '&entity_type=' +entity type retrieved from get location;
    Response is generated with JSON, to provide details about restaurants.

Use Case 2

- **Case:** As a User, I want to get the direction information to the restaurant I selected, so that I can know how long it will take me

- **Screenshots:**



Restaurant Name:	Little Greek Taverna
Distance from Brisbane:	3.1 km
Duration:	13 mins
Origin:	Brisbane QLD, Australia
Destination:	3a Browning St, West End QLD 4101, Australia
Transportation Mode:	driving
Reviews:	Excellent
Weather Forecast:	Clear
Current Temperature:	289.11 C
Humidity:	55%
Minimum Temperature:	288.15 C
Maximum Temperature:	290.15 C
Wind Speed:	4.1 kmh

Anne needs to go to a restaurant in Mount Gravatt, she can check travelling time, fastest travelling mode and distance from Brisbane city.

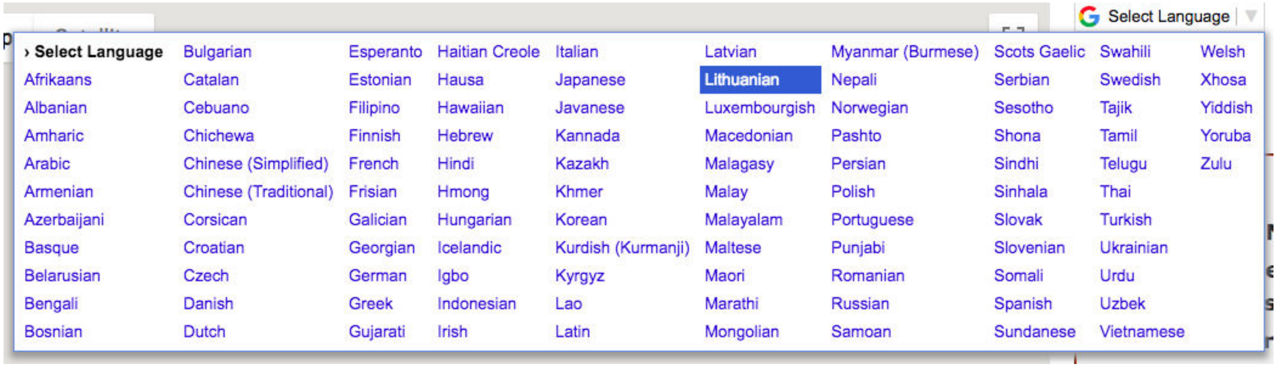
- **API Endpoints Calls:**
  - Get Location Details:
    ‘http://developers.zomato.com/api/v2.1/location_details?entity_id’ + entity id retrieved from get location + ’&entity_type=’ +entity type retrieved from get location;
    Response is generated with JSON, to provide details latitude and longitudes of restaurants.

  - Get Directions:
    ‘https://maps.googleapis.com/maps/api/directions/json?origin=’ + city name +’&destination=’ + Restaurant latitude and longitude;
    JSON response give direction details, duration details and also fastest travelling mode

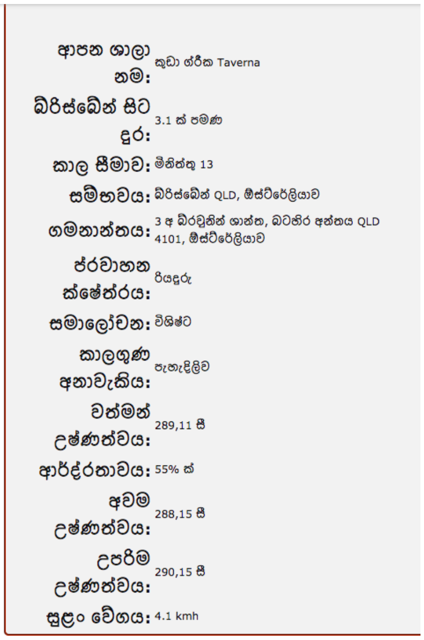
Use Case 3

- **Case:** As a User who is more comfortable with my own language, I want to get reviews translated to my language, so that I can understand reviews clearly

- **Screenshots:**



Sayuri is not very comfortable in using other languages apart from Sinhala. So, she uses Language translate option to change the content into Sinhala language.



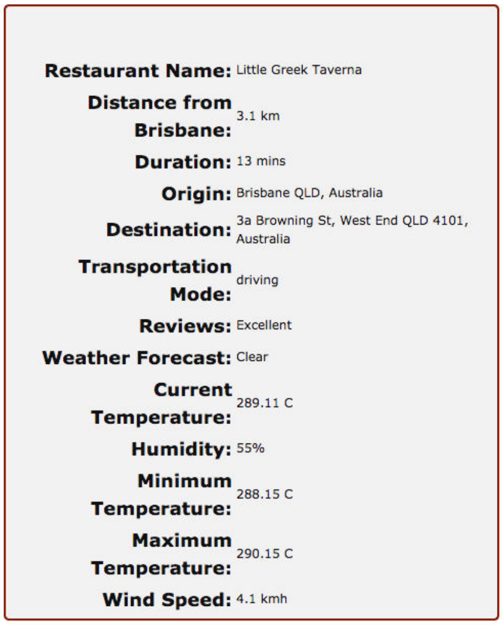
ආපන ශාලා නම:	කුඩා ග්‍රීක Taverna
බ්‍රිස්බේන් සිට දුර:	3.1 ක් පමණ
කාල සීමාව:	මිනිත්තු 13
සම්භවය:	බ්‍රිස්බේන් QLD, ඕස්ට්‍රේලියාව
ගමනාන්තය:	3 අ බ්‍රවුනින් ශාන්ත, බටහිර අන්තය QLD 4101, ඕස්ට්‍රේලියාව
ප්‍රවාහන ක්ෂේත්‍රය:	රියදුරු
සමාලෝචන:	විශිෂ්ට
කාලගුණ අනාවැකිය:	පැහැදිලිව
වත්මන් උෂ්ණත්වය:	289,11 සී
ආර්ද්‍රතාවය:	55% ක්
අවම උෂ්ණත්වය:	288,15 සී
උපරිම උෂ්ණත්වය:	290,15 සී
සුළං වේගය:	4.1 kmh

- **API Endpoints Call:**
    - Google translate: **'//translate.google.com/translate_a/element.js?cb=' + division used to create translate method**

Use Case 4

- **Case:** As a User, I want to know the weather condition of the Restaurant's Location, so that I can be prepared for those weather conditions

- **Screenshots:**



Restaurant Name:	Little Greek Taverna
Distance from Brisbane:	3.1 km
Duration:	13 mins
Origin:	Brisbane QLD, Australia
Destination:	3a Browning St, West End QLD 4101, Australia
Transportation Mode:	driving
Reviews:	Excellent
Weather Forecast:	Clear
Current Temperature:	289.11 C
Humidity:	55%
Minimum Temperature:	288.15 C
Maximum Temperature:	290.15 C
Wind Speed:	4.1 kmh

Anne wants to go out with friends tonight, but she doesn't want to get disturbed by the weather, or she can be prepared for those situations. So, she is able to get weather details of the city of the restaurant using this service.

- **API Endpoints Call:**
    - Get Current weather data: **'api.openweathermap.org/data/2.5/weather?Lat=' + Latitude obtained from Zomato get Location details +'&lon=' + Longitude obtained from Zomato get Location details;**
      JSON file provides details about humidity, weather, wind and temperature.

Technical Description

The overall implementation of this service is built with the help of markup language PUG and CSS3 stylesheets, JavaScript templates and scripting JavaScript. Node.js server was used serve the service in a Docker container.

Server Side

The web server runs on the Express JS web framework and sits on two layers namely Node JS and Docker Container. The service has number of dependencies which helped to fulfill the needs of the service. Following are the server-side components used.

- Node JS: An Asynchronous event driven JavaScript runtime. Designed to build scalable network applications [1]. Node.js server is used to handle server-side files as well as send requests to API and receive responses from API.

- Express JS: Minimal and flexible node.js web application framework [2]. This sets the views and routes easily, allowing rapid developments. Allows to see client and server-side development clearly.

- Docker: Container technology that allows a developer to package up an application with all necessary parts it needs [3]. Discussed more in the Docker section.

- API Wrappers: API wrappers were used to fetch information from Zomato [9], Open Weather Map [11] and Google Directions [10]. This made the development easy, smooth and hassle free.

Client Side

The Web Pages are developed using PUG and CSS3. They are generated by the JavaScript templates. W3Schools stylesheets help is creating styles for forms used in the web page. Following are the client-side components used.

- PUG: Markup Language of the Web Pages. It is a Template Engine for Node.js, which allows to insert data and return HTML. It creates the shape of the Web Page.

- CSS3: Stylesheet Language of the Web Pages. It styles the pages and sets colors, margins, borders for pages created using PUG.

- JavaScript: Enables interactive effects and dynamic effects within Web browsers. It is used to render every function with in the Web Pages created.

Difficulties

- Request Limitations:
  The Zomato API endpoints has a request limiting of 1000 requests/ day [5], Google Directions API has a limitation of 5000 requests/ 100 seconds [6] and Open Weather Map API has a limitation of 60 requests / minute [8]. This will be a problem when accessed by too many users.

- API Inaccuracy:
  Zomato API for locations is not working accurately for some locations. When “Brisbane, QLD” is sent to the query it will display restaurants from “Perth, WA”.

- Get Current Location:
  When fetching current location of a user, an error for geo location occurred. Therefore, when getting direction details origin is hard coded as “Brisbane, QLD”.

- Fetching Data from Zomato:
  Original idea of my proposal is to get Menus from each restaurant and translate them when necessary. But Zomato API is giving menus only for restaurants in Germany. I ditched the Idea of fetching menus and translated other information instead.

Docker

Docker containerize an application and its necessary parts for development, so when it is deployed on any machine, it guaranteed to be identical on any system that can run Docker, regardless of the environment [4].

The Web mashup service is deployed using Docker hosted in the local machine. The docker image is built using Ubuntu. The Dockerfile is created to write commands, similar to Containerizing Express App Practical. First it installs Node JS: 8. Then directed to the app folder and copies dependencies from package.json . At last it installs NPM, exposes port 3000 and starts the server.

Dockerfile content is in the Appendix.

Testing and Limitation

Test Plan and Results

Purpose	Expected / Actual	Result	Appendix number
Filtering Cities	E: Cities are filtered according to the country A: Cities are filtered according to the country	Pass	1
Auto generate Cities	E: Cities are generated according to the country A: Cities are generated according to the country	Pass	2
Get Restaurants	E: When Form is submitted, restaurants of the particular city is generated A: When Form is submitted, restaurants of the particular city is generated	Pass	3
Display Pictures and details	E: Display a picture and details of the restaurant A: Display a picture and details of the restaurant	Pass	3
Get Directions	E: When a button is pressed, page with directions details is generated A: When a button is pressed, page with directions details is generated	Pass	4
Show Map	E: A Marker is shown on the restaurant location A: Only the marker is present Map is not shown	Fail	4
Show Direction Details	E: Directions details are shown alongside of the map A: Directions details are shown alongside of the map	Pass	5

Show Weather Details	E: Weather details are shown alongside of the map A: Weather details are shown alongside of the map	Pass	5
Translate	E: Web Page should be translated to the selected language A: Web Page should be translated to the selected language	Pass	6, 7, 8

Limitations

- **Inaccurate API call:**
  Zomato /Cities doesn’t provide with location details such as latitudes and longitudes. So, I had to use /Location call, which gives out inaccurate location details for some cities.

- **Limited Countries and Menus:**
  Zomato API gives information of restaurant of a list of countries. So, the App is limited to a certain number of countries. And as discussed in difficulties section, Zomato doesn’t provide menus for every restaurant.

Possible Extensions

The Web Mashup service can be extended in several ways. A feature can be added to display pictures from social media such as Facebook and Instagram to get an idea of the ambience of the restaurant. This can be done using Facebook API and Instagram API.

Another extension is to get daily menus from every restaurant, for now it can only get menus from restaurants located in Germany. For this feature we can use different restaurant APIs such as Eat Street API and Foodie API.

We also can allow users to create user accounts and enable them to save their favorite restaurants in to a collection. This will help them to keep their favorites in one place. This extension be more work than just adding an API. A creation database will also be needed.

Reference

[1] Node.js, 2018 “About Node.js” [Online]. Retrieved from https://nodejs.org/en/about/ [Accessed on 13 – Sep – 2018]

[2] StrongLoop, 2017 “Fast, unopinionated, minimalist web framework for Node.js” [Online]. Retrieved from https://expressjs.com/ [Accessed on 13 – Sep – 2018]

[3] opensource.com, 2018 “What is Docker?” [Online]. Retrieved from https://opensource.com/resources/what-docker [Accessed on 13 - Sep – 2018]

[4] Jared Kobos, 2017 “When and Why to Use Docker” [Online]. Retrieved from https://www.linode.com/docs/applications/containers/when-and-why-to-use-docker/ [Accessed on 13 – Sep – 2018]

[5] Zomato, 2018 “Zomato API” [Online] Retrieved from https://developers.zomato.com/api [Accessed on 13 - Sep – 2018]

[6] Google, 2018 “Google Directions API” Retrieved from https://developers.google.com/maps/documentation/directions/ [Accessed on 13 – Sep – 2018]

[7] Google, 2018 “Google Translate API” Retrieved from https://cloud.google.com/translate/docs/ [Accessed on 13 – Sep – 2018]

[8] Open Weather, 2018 “Open Weather API” Retrieved from https://openweathermap.org/api [Accessed on 17 - Sep – 2018]

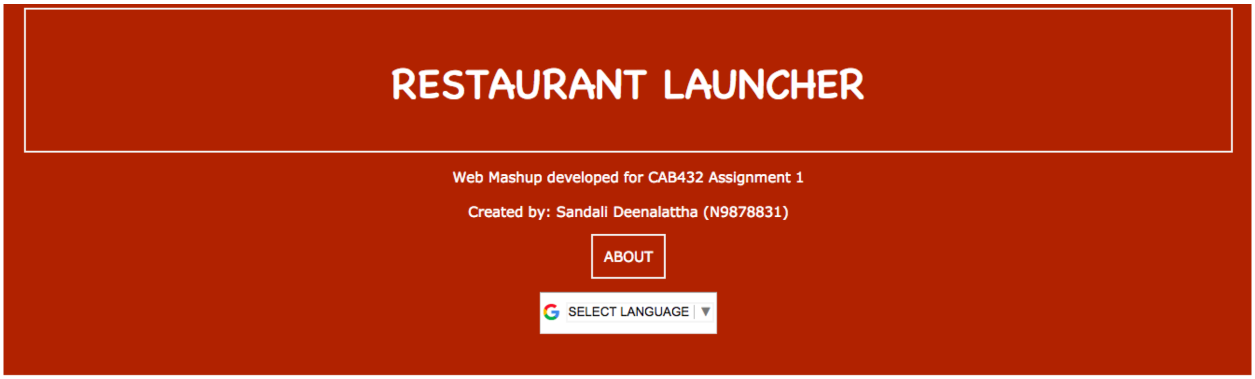
[9] Zomato API Wrapper, 2016 “Zomato” Retrieved from https://www.npmjs.com/package/zomato [Accessed on 17 - Sep – 2018]

[10] Google Directions API Wrapper, 2014 “Google-distance” Retrieved from https://www.npmjs.com/package/google-distance [Accessed on 17 - Sep – 2018]

[11] Open Weather Map API Wrapper, 2017 “Openweathermap-node” Retrieved from https://www.npmjs.com/package/openweathermap-node [Accessed on 17 - Sep – 2018]

Appendix

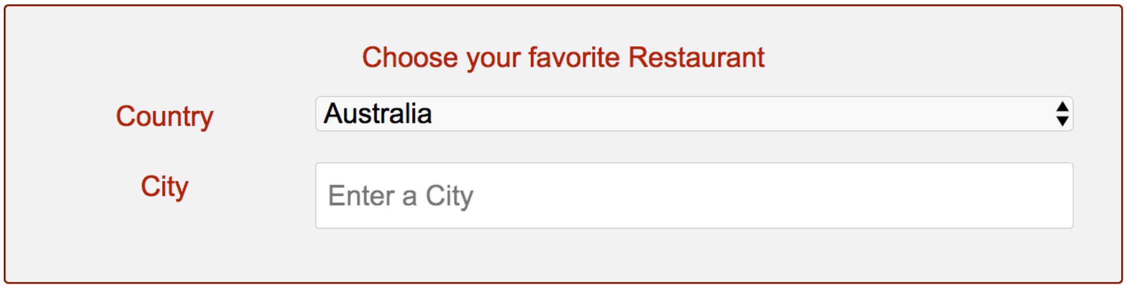
Brief User Guide



RESTAURANT LAUNCHER

Web Mashup developed for CAB432 Assignment 1

Created by: Sandali Deenalattha (N9878831)



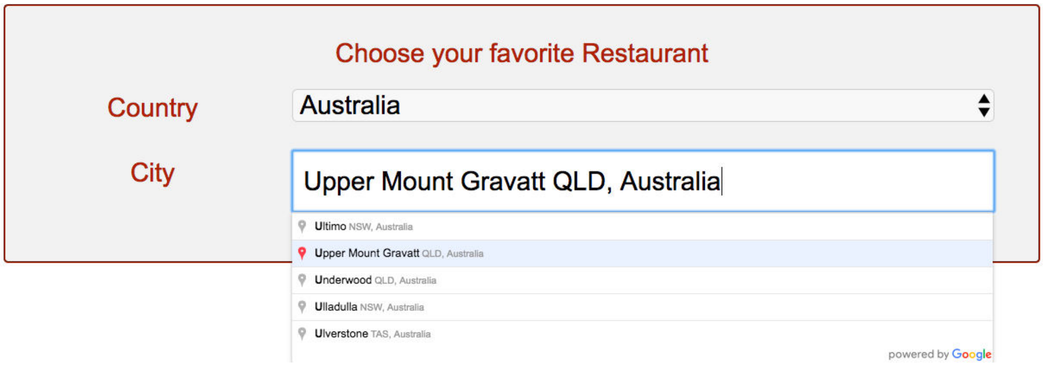
Choose your favorite Restaurant

Country: Australia

City: Enter a City

1.

First the user is able to select a country.



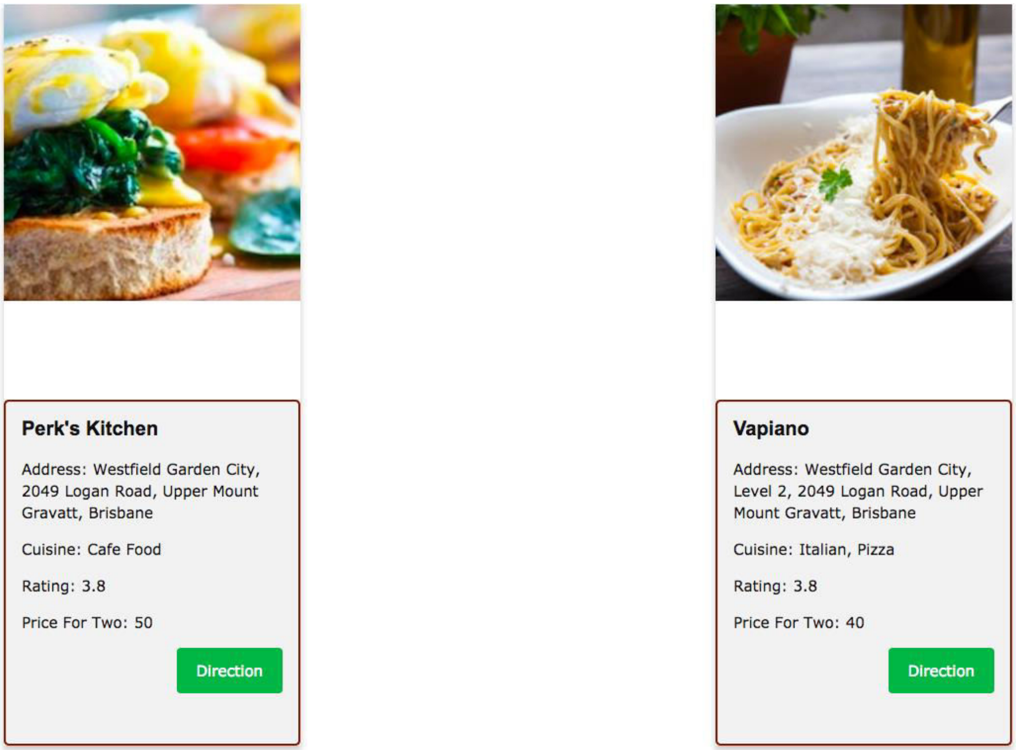
Choose your favorite Restaurant

Country: Australia

City: Upper Mount Gravatt QLD, Australia

2.

Then Cities are autogenerated according to the selected country.



Perk's Kitchen

Address: Westfield Garden City, 2049 Logan Road, Upper Mount Gravatt, Brisbane

Cuisine: Cafe Food

Rating: 3.8

Price For Two: 50

Vapiano

Address: Westfield Garden City, Level 2, 2049 Logan Road, Upper Mount Gravatt, Brisbane

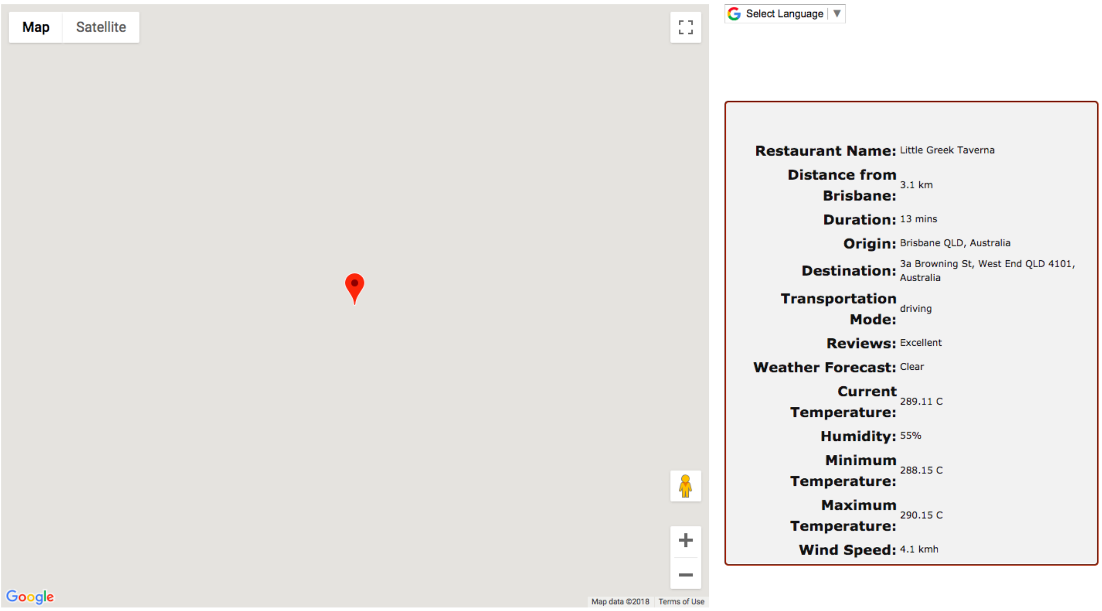
Cuisine: Italian, Pizza

Rating: 3.8

Price For Two: 40

3.

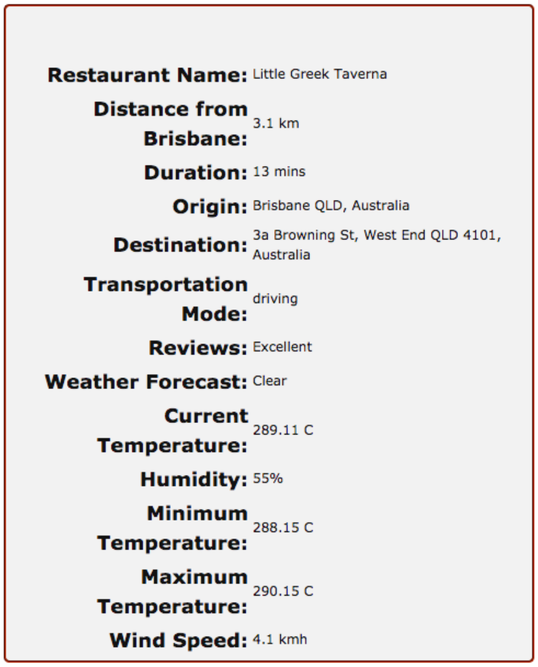
When the Country and City is submitted, A list of restaurants are shown with Details.



Restaurant Name:	Little Greek Taverna
Distance from Brisbane:	3.1 km
Duration:	13 mins
Origin:	Brisbane QLD, Australia
Destination:	3a Browning St, West End QLD 4101, Australia
Transportation Mode:	driving
Reviews:	Excellent
Weather Forecast:	Clear
Current Temperature:	289.11 C
Humidity:	55%
Minimum Temperature:	288.15 C
Maximum Temperature:	290.15 C
Wind Speed:	4.1 kmh

4.

When Direction button on each restaurant is selected, Map with a marker and details are shown.



Restaurant Name:	Little Greek Taverna
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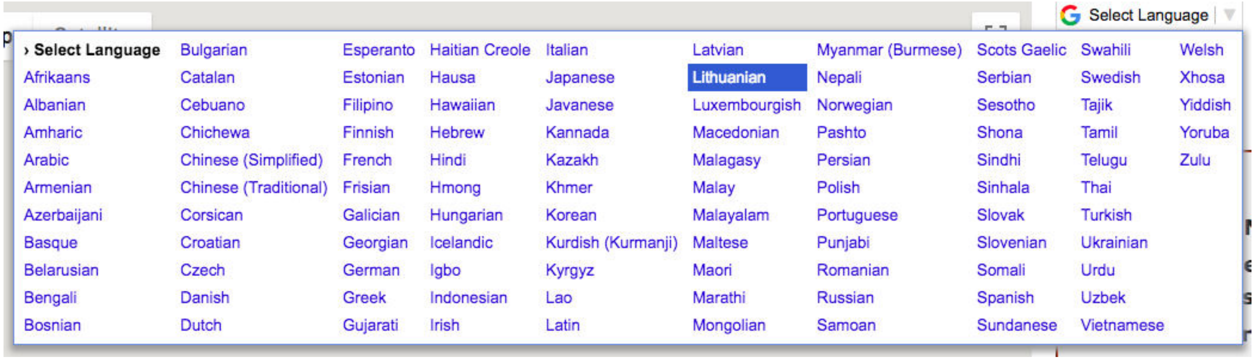
Current Temperature:	289.11 C
Humidity:	55%
Minimum Temperature:	288.15 C
Maximum Temperature:	290.15 C
Wind Speed:	4.1 kmh

5.

Details of Direction and Weather of the location is shown.

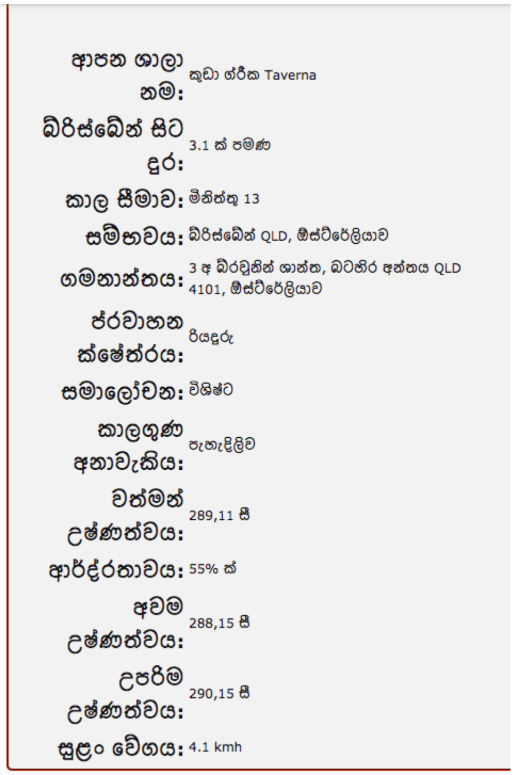
6.

When this button is clicked, below list of languages are shown.



7.

When a language is selected the webpage is translated in to that language.



ආපන ශාලා නම:	කුඩා ග්‍රීක Taverna
බ්‍රිස්බේන් සිට දුර:	3.1 ක් පමණ
කාල සීමාව:	මිනිත්තු 13
සම්භවය:	බ්‍රිස්බේන් QLD, ඕස්ට්‍රේලියාව
ගමනාන්තය:	3 අ බ්‍රවුනින් ශාන්ත, බටහිර අන්තය QLD 4101, ඕස්ට්‍රේලියාව
ප්‍රවාහන ක්ෂේත්‍රය:	රියදුරු
සමාලෝචන:	විශිෂ්ට
කාලගුණ අනාවැකිය:	පැහැදිලිව
වත්මන් උෂ්ණත්වය:	289,11 සී
ආර්ද්‍රතාවය:	55% ක්
අවම උෂ්ණත්වය:	288,15 සී
උපරිම උෂ්ණත්වය:	290,15 සී
සුළං වේගය:	4.1 kmh

8.

An Example of Sinhala translated web page.

Dockerfile

```
FROM node:8

#Set work directory to app
WORKDIR /app

#Copy package.json file to /app
COPY package.json /app

#Install app dependencies
RUN npm install

#Copy them to /app
COPY . /app

#Start command as per package.json
CMD npm start

#Expose port to outside world
EXPOSE 3000
```