**Spatial Analysis Project Documentation**

1. **Project Setup:**

Install python. Create the directory hierarchy. Define a virtual environment. After activating the virtual environment check for the python availability and then install “flask”.

1. **Plugins/External libraries/API:**

There are few plugins, external libraries and APIs used in the project. All of them explain below in the templates description individually/collectively along with the one that use any of it accordingly.

1. **Data Collection and DataBase Setup :**

* Use postgreSQL for database. And pgAdmin for data manipulation.
* Collect the data of Outlets in a spreadsheet (address, lat/long).
* Create a database in postgres and put all the collected data in the database.
* Install SQLAlchemy and import it in the flask Project.
* Configuration of the database through SQLAlchemy (connectivity).
* Create model to get from the database. I create two models (model, geomodel)
* Model is for the simple data collection from postgres.
* Geomodel is used after introducing postgis extension in the database. It is done by the connectivity of GeoAlchemy.
* Include a package of “psycopg2” in the project.
* Query and get the data accordingly.

1. **Urls :**

* There are a number of urls in the app.py file. Some of the urls only represents the data extracted from the database i.e. (data, datav2, geodata)
* Every other url represents a template (Html file).

1. **Templates :**

There is a lot of templates in the project. Some of them are test/sample templates to test the sample codes and rest are self explanatory names and also have short description in it. Every template is explain below except the samples(test code).

* **Sample Templates:**

index, base, add\_shop, shopdata, check, turfSample, mapbox, mapfinalgis, turfExample1, turfExample2

* **Map:**

This is the initial version of the project. It takes data from “/data” url in json form through jquery. It uses Google Map API in it. It contains the data of all outlets in Lahore. It shows markers and popup on Google maps.

* **Maplf:**

It shows marker of all the outlets including competitors using Leaflet and Open Street Maps.

* **MapAll:**

It shows all the marker in different colors according to the brands using Leaflet in Open Street Maps. It contains the data of competitors as well.

* **MapFilter:**

This version contains a filter to show the outlets you want to show on map. But once you select the option these brand’s outlet stays on the map. It also contains a legend that shows which color marker belongs to a particular brand.

* **MapFilterv2:**

The idea is to show only the selected option of the outlets(brand) from the filter. It shows that but also shows the rest of the outlets in another color. So this version contain bug.

* **MapFilterv3:**

This version contains two plugins of leaflet. Leaflet-tag-filter-button and easy-button. Both of them collectively provides a filter button contains name of all the brands(checkbox alike). I made few changes in the css and js of the plugins according to our requirements. It contains static tags.

* **MapFilterFinal:**

This version is similar to mapfilterv3 but for this version made a change in the database by creating foreign key attribute for brand and create a brands table. In this version get the brands name from the brands table and use it in tags.

* **MapFinalpk:**

It is similar to mapfilterfinal but it contains all the royal tag and its competitors outlets all across Pakistan.

* **Mapfinalzoom:**

It contains an extra feature i.e. filter having names of different cities and shift the zoom control accordingly. This is done by a leaflet plugin called “locationlist”.

* **Mapcircle:**

This version contains marker and circles (200 meter radius) according to the lat/long of the outlets. Legend is also change showing circle instead of markers in it.

* **Mapcirclev2:**

It shows circle(1 Km radius) of every outlet all across Pakistan. In this version every competitors is assign a different color specified in the legend.

* **Mapcirclev3:**

It contain an extra filter to change the radius of the circle at run time. But the previous radius also stays on the map because of the same layer(Buffer Analysis).

* **Mapcirclev4:**

This version contains another plugin called “L.CircleEditor”. It is applied to edit the radius of the circles at runtime according to our requirement. I also made some changes in the css and js of this particular plugin as well.

* **MapturfgeoJson:**

This version contains geoJson data and shows marker and popups using mapbox and mapbox turf Api in it.

* **turfLeaflet:**

This version shows the circles on the open street maps using geoJson converted data of all outlets all across Pakistan on the same layer.

* **turfLeafletv2:**

This version contains geoJson data of every brand as a different layer. By that it includes a filter in the layer control to show only desire brand’s outlets on the map. It shows all outlets by default.

* **turfLeafletv3:**

This version is almost same to the previous one but it contains location list plugin in it as explained above. It shows no outlets by default.

1. **Written By :**

Attiq ur Rehman (Project Developer)