**Project Overview**

Basically, the project will give a recommendation to the users on which reataurant they should go. When the user input a city in the United State or just a location (represented by longitude and latitude), the project will return some information of a restaurant that it recommends.

**Data Sources**

There will be two data sources used in this project. One of them is the Yelp Fusion, which is a Web API and requires an API key. Based on some parameters that we provide, it will return a json string that contains lots of information. In this project, it will give us information about restaurant businesses. The parameters given to the API in this project will include “location”, “attributes”, “limit” and “sort\_by”. “location” makes sure that the restaurant businesses the API returns are in this location. The “attributes” parameter will be set to “hot\_and\_new”, so that the API will return results that are popular businesses which recently joined Yelp. “limit” will be set to 1 and “sort\_by” will be set to “rating”. This can make sure that the returned result is the restaurant with highest ratings in that location.

The second data source is an html page, which is scraped from the website <https://en.wikipedia.org/wiki/List_of_United_States_cities_by_population>. In this page, there is a table that contains the name location of cities in the United States. The city name will be extracted out and will be used as the “location” parameter of the Web API.

**Data Structure**

In this project, the data will be stored in a prefix tree according to the name of the city. Each node of the tree will contain one letter of the name, so the leaf of the tree will contain the last letter of the name. Also, the leaf of the tree will contain some other information. For example, the name of the restaurant, the rating of the restaurant and so on. Since this project also provides another option which allow users to search by longitude and latitude, the data will also be stored in a k-dimensional tree to make it faster when searching.

**Data Presentation**

The data will be presented through the command line. All the information about the restaurant will be shown in the command line. Some graph can be displayed if it is selected by the user. Also, if the user wants to open the url of the restaurant, the web browser will be launched and open that website.

Also, a Flask App can be created and users can choose data/visualization option.