



National University

of Computer & Emerging Sciences

Data Structures Project 2022: Report

Restaurant Database & Recommendation Model

PROJECT MEMBERS:

Anmol Zehrah 20K-0199

Hamza Sameer Khan 20K-1744

Syed Abbas Ali 20K-1630

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Instructor Ms. Anam Qureshi, Mr. Muhammad Sohail



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1 Acknowledgement

In the present world of competition, there is a race of existence in which those, who are having will to come forward, succeed. Project is like a bridge between theoretical and practical working. With this willing we joined this particular project. First of all, we would like to thank the supreme power the Almighty Allah. Without His grace this project could not be possible. Secondly, our parents and our teachers who have been our greatest guide in life and for this project.

2 Introduction

Our Project is mainly focused on a creating a Restaurant Recommendation Model through which users can select a restaurant according to their preference based on Yelp Ratings, Location or available Alternatives. This project deals with big data using different data structures. We aimed to use data structures efficiently and solve identified problems while Utilizing most of the learned programming concepts, if not all. Initially, we selected a data set and cleaned and prepared it and then moved on to focus on restaurant reviews and ratings. Our Project Model can be used for any of the following:

1. Load and view the restaurants' data.
2. View Restaurant Reviews.
3. Search and view restaurants based on Locations.
4. View top rated restaurants.
5. Display restaurants.
6. Search restaurants from our database.
7. Find nearest available restaurant.

3 Working

Our Project works on four main files: the project code file(.cpp), a Binary Search Tree header file, a Priority Queue header file and some .csv file containing the data. The code file contains all the main functionalities:

1. void Load_Restaurants();
2. void Load_Reviews();
3. void Load_PriorityQueue();
4. void Rated();
5. void Display_Restaurants();

6. void Search_Restaurants();
7. void Alternate_Restaurants();
8. void mainmenu()

The header files contain the supporting code for Binary Search Trees and Priority Queue. The searching of restaurants based upon ratings or location is searched using the functionalities and algorithms of a BST and priority queue. Different functionalities are present in both header files through which searching and comparison is being done, There are five detailed .csv files which contain all the data needed for the project.

4 Applications

Our model is deriving results using a real-life data set and this project can be implemented to work on any other data set to search or conclude results. This project has applications in big data analysis majorly and any huge data set with extensive information can be used and specified search results can be obtained using our model.

5 Tools and Technologies Used

1. Visual Studio 2019 (IDE)
2. C++ (IDE)
3. iostream (Library)
4. fstream (Library)
5. string (Library)
6. vector (Library)
7. iomanip (Library)
8. "BST.h" (Header File)
9. "PQueue.h" (Header File)

6 Programming Concepts & Algorithms Used

1. Binary Search Tree
2. Queue (Priority Queue)
3. Linked Lists
4. Node Class

5. Classes and Objects (OOP)
6. Arrays
7. Strings
8. User-defined Functions
9. Library Functions
10. Control Structures(if-else, nested-ifs)
11. Loops
12. Filing

7 Challenges & Discussion

We faced difficulties in cleaning and preparing of the data set and make functions used for comparing the ratings and reviews of each restaurant. In order to make this challenge easier, we implemented BST for searching the most suitable restaurant for the user based on the preferences. Another challenge was to suggest the restaurant according to the location of the user for which we implemented the priority queue which made the task easier for us.

8 Code Link

This is the link to our code: [Click Here!!](#)

Or:

Copy and open this link to access repository containing the project cpp file.

<https://github.com/Anmol-Zehrah/DS-Final-Project-Code-Files.git>

Link to the dataset: [Click Here to open dataset!!](#)

Or:

Copy and open this link to access the dataset csv files used in project.

<https://www.kaggle.com/datasets/yelp-dataset/yelp-dataset/version/6>