Computer Project

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Topic

House Price Predictor using Matrix Based Maps

Summary

A pseudo map that highlights certain houses based on filters applied by the user based on the price range, area of the house, amenities, location, public places nearby, and so on. It stores the information of houses that the user is 'interested' in, into an excel file that is called upon when the user wishes to see the houses they're 'interested' in. A final statistics based bar graph/pie chart will display the information, that's pulled from another file, in a very readable and concise manner for quick decision making.

The Problem

The real estate sector is an important industry with many stakeholders ranging from regulatory bodies to private companies and investors. Among these stakeholders, there is a high demand for a better understanding of the industry operational mechanism and driving factors. Today there is a large amount of data available on relevant statistics as well

as on additional contextual factors, and it is natural to try to make use of these in order to improve our understanding of the industry. It is a huge hassle for house owners and house buyers to find an ideal house, especially when they don't live in the same city or even the same country. It is also hard for people to compare their options of homes meaningfully or browse these houses pictorially as on a map so that it caters not only to their requirements of rooms but to their convenience of work, healthcare and places of interest. There are so many apps and websites that allow sellers to list their houses, but this often leads to fragmentation of the seller base resulting in buyer-end frustration. A single app is required to meaningfully evaluate the value of a house based on its locality and amenities to prevent over or under pricing of houses, while being as user-friendly to the buyer as possible.

A Solution

A python app using the Django framework can be made that allows a user to browse a city, calculate a house price using various factors like the area of the house, number of rooms, amenities, location, the distance between the house and important landmarks like schools, malls, parks, and offices; and save the user's top choices in a SQL database using MySQL. And it also visually displays this database in the form of graphs and differences using MatPlotLib, purely because it's scientifically easier on the mind and more feasible to view visuals and make decisions rather than out of a bland excel file. Functions will be used to simplify the processes of having the user input a location, a price range, requirements for amenities and landmarks, etc; and calculating the prices, opening the matrix based map using file-handling, showing graphs, etc.

Applications

In today's ever modernising world, buying and selling houses is a part of most of the general population's long term plans, and even short term plans. Instead of having to spend tedious hours and money on research for every single aspect of a house - including the amenities in the neighborhood, and distance from important public landmarks like schools, parks, hospitals, offices, and the like - this program builds a better framework where the research is done by a machine in under seconds, and free of cost! A lot of platforms do exist for such purposes, yet there is no **one** program that compiles all these actions into an easy to use program, like this one. This, instead, would serve as a better building block to build a better platform for dealing in houses. And, as an added bonus, it uses matrix based maps that could be integrated into any popular maps app, or can be

infused with a GPS functionality in itself so that it can be a standalone, navigation supported, concise home browsing app!

Limitations

I. Average visual display.

Since we're using HTML for the GUI of the web program and exporting the details required into an excel file, the program or its output wouldn't be as flashy or aesthetic as an actual application made for buying and selling houses would be as the focus of our project is the working rather than the visuals. The logic is being worked on at the moment.

II. Limited choice of houses, and they may not even be in a real city that exists on Earth.

Since it is completely independent of a network connection, it is based on a few given datasets and it only supports searches for the given particular areas. And yet, it is most likely harder to find datasets to incorporate real cities into the database and will most probably only work with sample, fictional cities.

III. Creating custom city using matrices is not guided

The matrix map is imported using file handling, and hence it can be altered before importing to create custom cities but there is no documentation on it and it is not recommended. We’re working on alternatives and/or workarounds at the moment, but if nothing pops up this method shall be implemented.