Identifying Nearest Hospitals

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Introduction

In case of emergencies, to help get the affected in a faster way to the nearest hospitals, which are the most needed amenities in case of an emergency, this model helps to support the people in need by giving a list of the nearest hospitals and the shortest route to them.

Here we are considering only the road or distance cost to the nearest hospitals which can also be explained or calculated with other queries such as time cost or doctors availability query , traffic congestion query and many more.
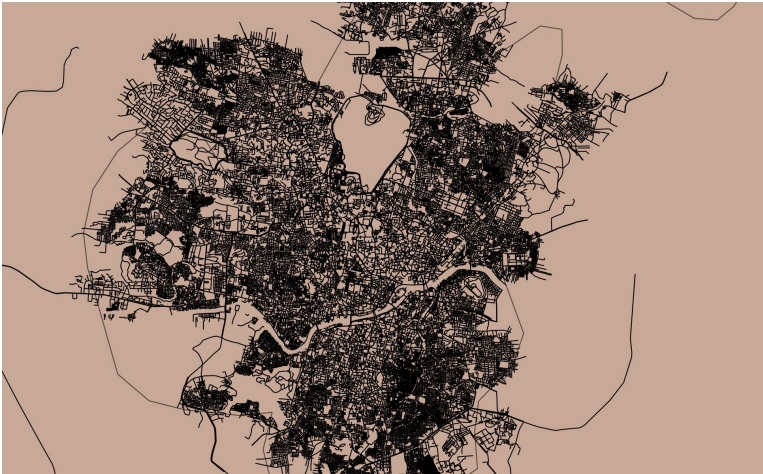
Objectives

Our main objective in this project is to find the shortest route / road path from a given residential area to its nearest hospitals within a given road distance which we find by querying over all the hospitals of the region.
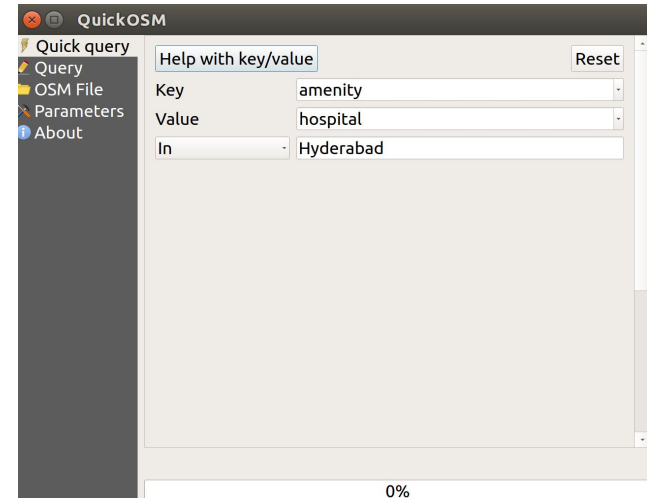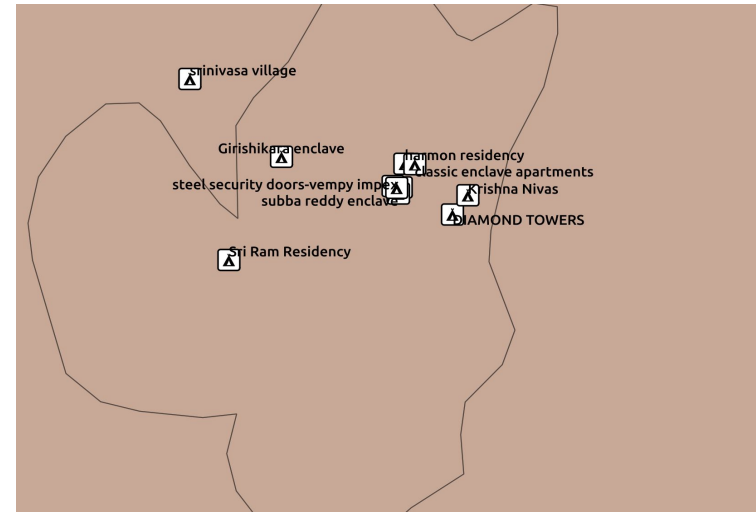
Datasets Used

I used the OSM data for this project as it is free and is quite easily available and reliable.

Road Network

QuickOSM plugin

Hospitals

Residential Areas

There needs to be some preprocessing done on the data always like I needed to sample the layers as some features did not have name attributes while some others needed to add some other attributes like distance metric.
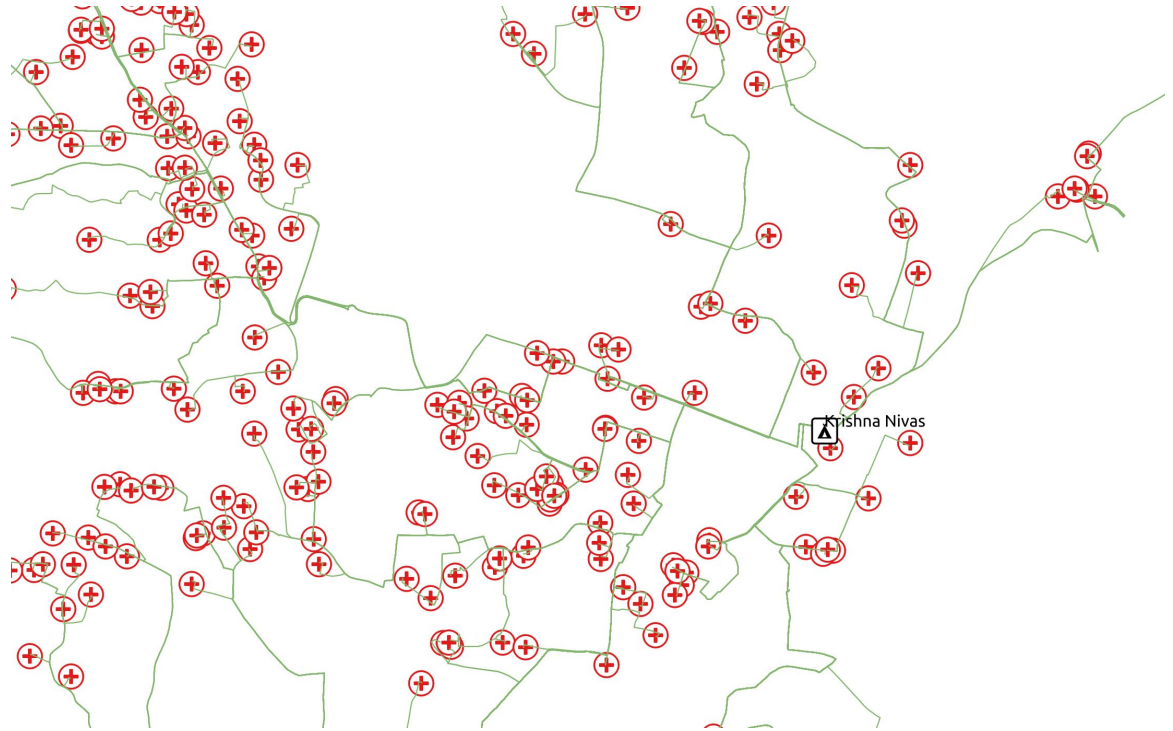
Algorithm/ Steps Taken

- I used the qgis compatibility with python to execute the queries on the given data.
- Firstly, I downloaded the data using the quickOSM plugin of qgis, then I did some preprocessing of the data to remove any discrepancies.
- Then, I used the processing toolbox queries to first find out the shortest path from the given building to the layer of hospitals via the road network that we downloaded.
- After that I edited the hospital layer to a different layer to add another attribute ("cost") using the ld of the hospital layer and the shortest path layer.
- Then the last step is just to filter out the nearest hospitals from the new joined hospital layer.
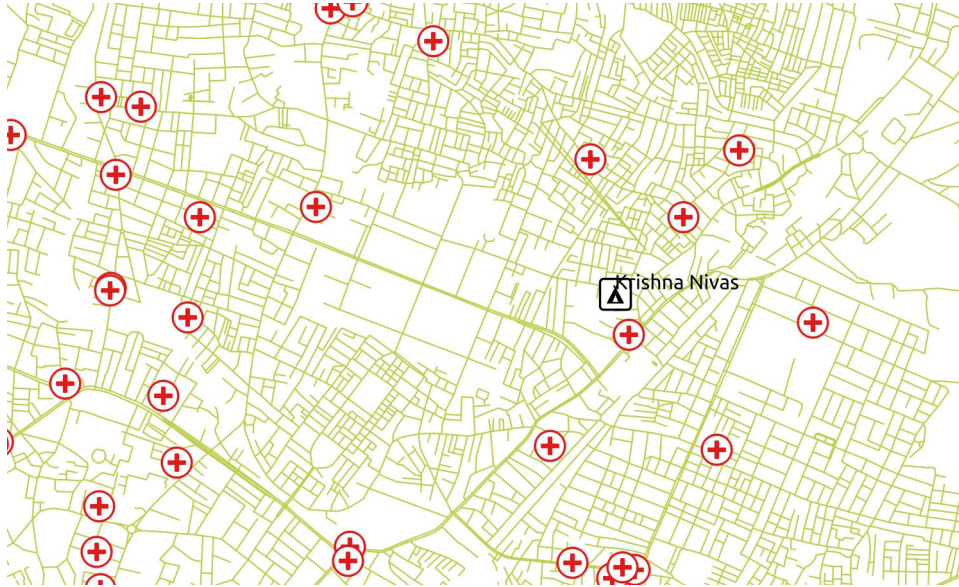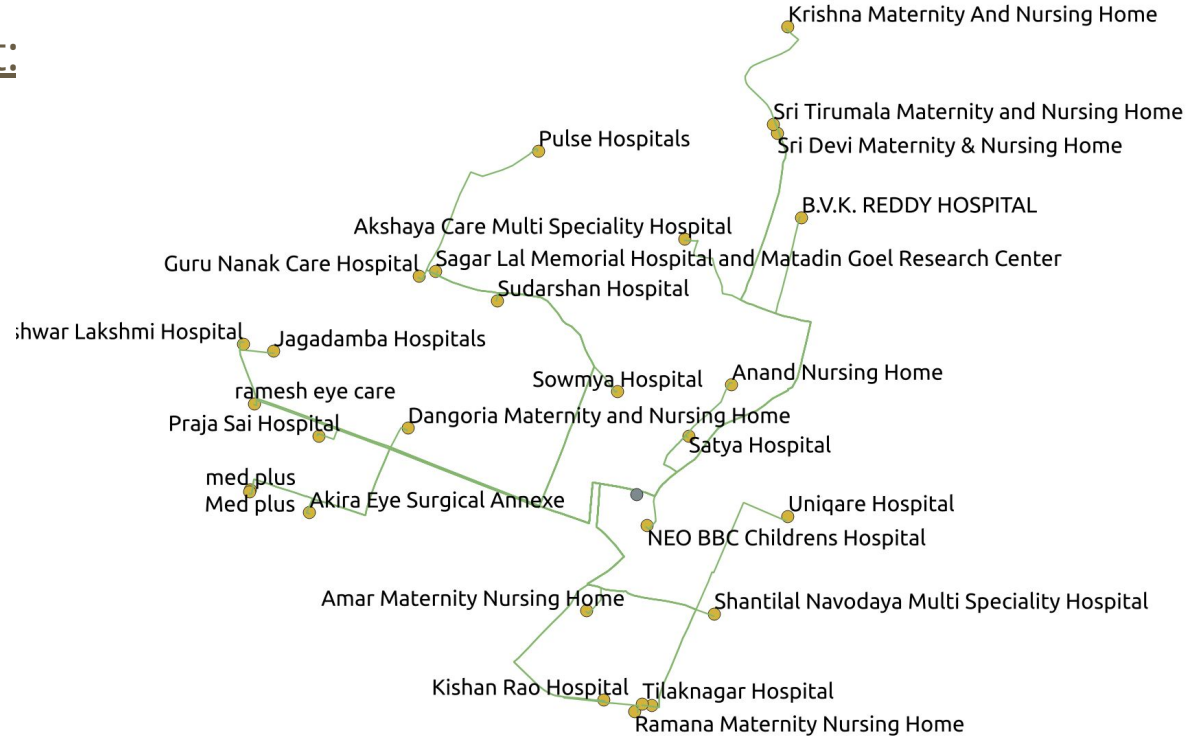
Initial Road and hospitals layer with given apartment filtered Krishna Nivas.

The Intermediate Output:

Calculated the shortest path to all the hospitals Now just join the hospital layer with shortest path layer and query them with distance.

Krishna Maternity And Nursing Home

Sri Tirumala Maternity and Nursing Home
Sri Devi Maternity & Nursing Home

Pulse Hospitals

B.V.K. REDDY HOSPITAL

Akshaya Care Multi Speciality Hospital
Guru Nanak Care Hospital Sagar Lal Memorial Hospital and Matadin Goel Research Center
Sudarshan Hospital

shwar Lakshmi Hospital Jagadamba Hospitals

Sowmya Hospital Anand Nursing Home

ramesh eye care
Praja Sai Hospital Dangoria Maternity and Nursing Home
Satya Hospital

med plus
Med plus Akira Eye Surgical Annexe Uniqare Hospital

NEO BBC Childrens Hospital

Amar Maternity Nursing Home Shantilal Navodaya Multi Speciality Hospital

Kishan Rao Hospital Tilaknagar Hospital
Ramana Maternity Nursing Home

DEMO

Challenges

- Issues in downloading the correct related data for the project.

- Difficulties in handling large road network i.e for whole Hyderabad.

Future Improvements

- This model can be used to query many more type of questions such as eye doctor at certain distance away.
- It can be improved to include more parameters such as time distance or like including real time traffic, etc.
- It can be made better to include the user interaction.
- It can be modified to handle bad queries such as no hospital found in the given region or road network error found.

THE END