A Project Report On

GROCERY FINDER

Ms. Manjushree S. Ghadge. (191081908)
Ms. Shraddha Y. Khedkar. (191081904)
Ms. Bhagyashri D. Walde. (191081907)
Mr. Kshitij K. Avhad. (191080906)

Under the guidance of

Prof. Nikam V. B.

DEPARTMENT OF INFORMATION TECHNOLOGY,
VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE,
H.R. MAHAJAN ROAD, MATUNGA, MUMBAI, MAHARASHTRA-400019

(2019-20)

Experiment No 1

Aim: Problem Statement:

Human trait that is not going to change is that people don’t like to wait. Sometimes that urgent need is real, and you need to have an ingredient for the cake that you already started, but mostly getting the items in a couple of days, tomorrow or even in two hours is good enough. Nevertheless, many times people prefer to go to the physical store to get products immediately. The same analysis that we did before regarding the fact that more than 85% of the market is still in the physical stores is holding true here as well, but this time using a finder application we can bring the physical store to your door.

Grocery Finder application uses top to date GPS (Global Positioning System) tracking system which allows users to track availability of their product so nearby shops which have the product will show on map. And also for tracking the delivery of product within a minimum span of time. Grocery Finder application will provide an interactive user interface where they can search products they desire and can find differentiate among prices in different shops. Then users will select shops that have a minimum price & can buy products from them online or walk in.

The main Data for implementing this project is Shops Latitude and Longitude value. This two values are used for coordinate system of map projection.

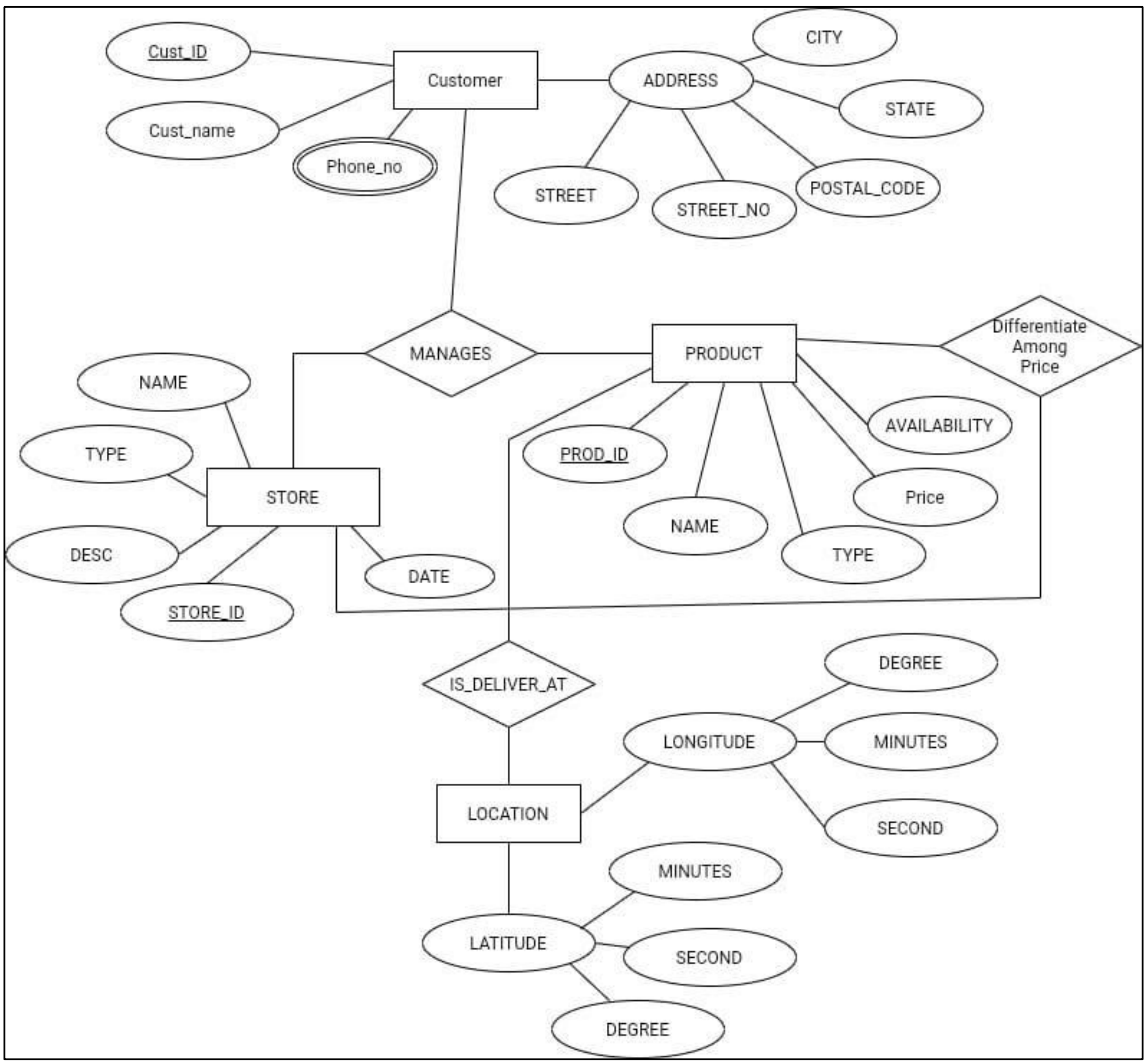
Raster Data is used.

BaseMap Used: OpenStreetMap (OSM) hosted by Esri

Geo-referencing is done by mapping the longitude and latitude value of the shop on the surface on the map.

Experiment Number 2

Aim: ER Diagram



Experiment No 3

Aim: The Schema and Data Dictionary should have clear visibility for the spatial data types you are using for spatial data in your problem statement. What are the Spatial Data types

Data Dictionary & Database Schema:

Payment Table:

Table	Column	Data Type	Reference	Default	Not Null
Payment	Pay_ID	int		Identity	
	Pay_Amount	number			Y
	Pay_Date	date		now	Y
	Pay_Cust_ID	int	Customer		

Unique Keys:

Type	Table	Key	Column
primary	Payment	pk_Payment	Pay_ID

Foreign Keys:

Key	Table	Column	Ref. Table	Ref. Column
fk_Payment_Customer	Customer	Pay_Cust_ID	Customer	ID

Customer Table:

Table	Column	Data Type	Reference	Default	Not Null
Customer	Cust_ID	int		Identity	
	Cust_Name	varchar(50)			Y
	Phone_No	String			Y
	Address	varchar(50)			Y

Unique Keys:

Type	Table	Key	Column
primary	Cust_ID	pk_Customer	Cust_ID
unique	Phone_No	uk_Customer	Phone_No

Foreign Keys:

Key	Table	Column	Ref. Table	Ref. Column
fk_Customer_OnlineOrder	Customer	Order_no	Online_Order	Order_No

Product Table:

Table	Column	Data Type	Reference	Default	Not Null
Products	Availability	boolean			Y
	ID	int			
	Name	varchar(50)			Y
	Price	real			Y
	Type				Y

Unique Keys:

Type	Table	Key	Column
primary	ID	pk_Product	ID

Store Table:

Table	Column	Data Type	Reference	Default	Not Null
Store	Address	String			Y
	Shopkeeper_Name	varchar(50)			Y
	Rates				Y

Online_Order:

Table	Column	Data Type	Reference	Default	Not Null
Online_Order	Ordered	date		now	
	Pay_Date	date		now	
	Shipped	date		now	
	Cost	real			Y
	Ship_To	string			Y
	Ordered_No	int			

Unique Keys:

Type	Table	Key	Column
primary	Online_Order	pk_Online_No	Ordered_No

Foreign Keys:

Key	Table	Column	Ref.Table	Ref.Column
fk_OnlineOrder_Customer	Online_Order	Order_no	Customer	Cust_ID

Line Item Table:

Table	Column	Data Type	Reference	Default	Not Null
LineItem	Quality	int		Identity	
	Price	real			Y

Location Table:

Table	Column	Data Type	Reference	Default	Not Null
Location	Latitude	numeric(p,s)			Y
	Longitude	numeric(p,s)			Y

Experiment No 4

Aim: Relational tables query with DDL,DML shall include spatial data handling attributes, and syntaxes. How you represented Geographic data used in your project ? Is that Raster Data or Vector Data? Give 2 examples of each of raster and vector data with appropriate applications where they can be used . The point on earth is measured with Longitude, latitude, what is that? have u used the same in your GIS Project ? What is Map Projection, and Coordinate System ? Have u used in your project, where exactly you have used in your project work?

Spatial Queries

```
CREATE TABLE Shop(
        title varchar(30),
        lat  numeric(p,s),
        lng numeric(p,s),
        description varchar(100),
        Url varchar(30) )
```

Adding a row to an existing table

- INSERT INTO statement
- Specifies table name, attribute names and values
- Example:

INSERT INTO Shop(title, lat, lng, description, Url) VALUES('Shivraj Supermarket', '19.078505', '72.907166', 'Shivraj Supermarket', 'http://groceryfinder.cf/shop/')

Se**lecting columns from a table:**

SELECT title, description **from** Shop

Prgram:

```
var markers = [
{
   "title": 'Shivraj Supermarket',
   "lat": '19.078505',
   "lng": '72.907166',
   "description": 'Shivraj Supermarket',
   "Url": 'http://groceryfinder.cf/shop/'
},
{
   "title": 'Ghelani Super Market',
   "lat": '19.062054',
   "lng": '72.883438',
   "description": 'Ghelani Super Market',
   "url": 'http://groceryfinder.cf/shop/'
},
{
   "title": 'Ratna Stores',
   "lat":'19.035288',
   "lng": '72.867119',
   "description": 'Ratna Stores',
   "url": 'http://groceryfinder.cf/shop/'
},
{
   "title": 'Aksa kirana Shop',
   "lat": '19.149900',
   "lng": '72.931137',
   "description": 'Aksa kirana shop',
   "url": 'http://groceryfinder.cf/product-category/aksa-kirana-shop/'
},
{
   "title": 'Kailash Prakash store',
   "lat": '19.032801',
   "lng": '72.896355',
   "description": 'Kailash Prakash',
   "url": 'http://groceryfinder.cf/product-category/kailash-prakash-store/'
},
```

{
  "title": 'LUCKY GENERAL STORES',
  "lat": '19.009161',
  "lng": '72.837608',
  "description": 'LUCKY GENERAL STORES',
  "url": 'http://groceryfinder.cf/product-category/lucky-general-stores/'
},
{
  "title": 'Apna Kirana Shop',
  "lat": '19.174673',
  "lng": '72.943108',
  "description": 'Oberoi Mall',
  "url": 'http://groceryfinder.cf/product-category/apna-kirana-shop/'
},
{
  "title": 'Mohan Kirana shop',
  "lat": '19.218330',
  "lng": '72.978088',
  "description": 'Infinity Mall',
  "url": 'http://groceryfinder.cf/product-category/mohan-grocery-shop/'
},
{
  "title": 'Grocery finder',
  "lat": '19.242439',
  "lng": '73.120193',
  "description": 'grocery finder',
  "url": 'http://groceryfinder.cf/product-category/grocery-finder/'
},
{
  "title": 'shubham Kirana Store',
  "lat": '19.016439',
  "lng": '72.829422',
  "description": 'shubham grocery store',
  "url": 'http://groceryfinder.cf/shop/'
},
{
  "title": 'asha traders',

```
            "lat": '19.077065',
            "lng": '72.998993',
            "description": 'asha traders',
            "url": 'http://groceryfinder.cf/product-category/asha-traders/'
        },
        {
            "title": 'lakshmi store',
            "lat": '19.115492',
            "lng": '72.872696',
            "description": 'lakshmi store',
            "url": 'http://groceryfinder.cf/product-category/lakshmi-store/'
        },
        {
            "title": 'navrang kirana bhandar',
            "lat": '19.180874',
            "lng": '72.857452',
            "description": 'navrang kirana store',
            "url": 'http://groceryfinder.cf/shop/'
        }
        ];
        window.onload = function () {
            LoadMap();
        }
        function LoadMap() {
            var mapOptions = {
                center: new google.maps.LatLng(markers[0].lat, markers[0].lng),
                zoom: 8,
                mapTypeId: google.maps.MapTypeId.ROADMAP
            };
            var infoWindow = new google.maps.InfoWindow();
            var latlngbounds = new google.maps.LatLngBounds();
            var map = new google.maps.Map(document.getElementById("dvMap"),
mapOptions);

            for (var i = 0; i < markers.length; i++) {
                var data = markers[i]
                var myLatlng = new google.maps.LatLng(data.lat, data.lng);
```

```
            var marker = new google.maps.Marker({
               position: myLatlng,
               map: map,
               title: data.title,
               url: data.url
            });
            (function (marker, data) {
               google.maps.event.addListener(marker, "click", function (e) {
                  window.location = marker.url + "?lat=" + marker.position.k +
"&lon=" + marker.position.B + "&title=" + encodeURIComponent(marker.title);
               });
            })(marker, data);
            latlngbounds.extend(marker.position);
         }
         var bounds = new google.maps.LatLngBounds();
         map.setCenter(latlngbounds.getCenter());
         map.fitBounds(latlngbounds);
      }
```

Representation of Geographic Data in Our Project:

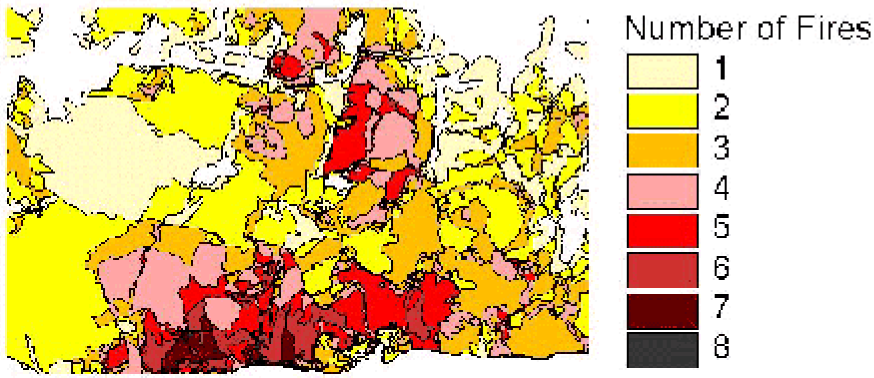
First we create a .js & .html file & insert our code in it. And that file we upload on the backend of our project that is on PHP, with name " htdocs" folder.

Then on wordpress root directory we link this "htdocs" file.

This is how we map our map in our project

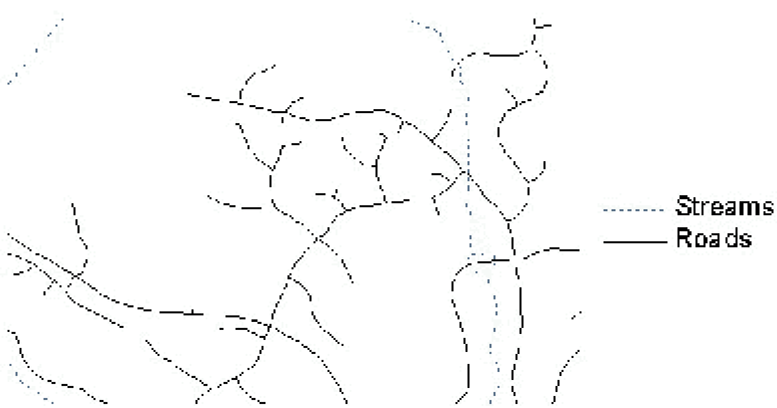
Vector data

Vector data is split into three types: polygon, line (or arc) and point data. Polygons are used to represent areas such as the boundary of a city (on a large scale map), lake, or forest. Polygon features are two dimensional and therefore can be used to measure the area and perimeter of a geographic feature. Polygon features are most commonly distinguished using either a thematic mapping symbology (color schemes), patterns, or in the case of numeric gradation, a color gradation scheme could be used.



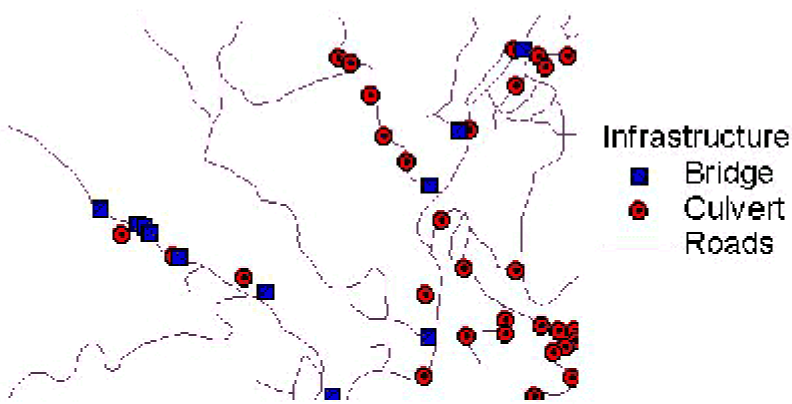
IN THIS VIEW OF A POLYGON BASED DATASET, FREQUENCY OF FIRE IN AN AREA IS DEPICTED SHOWING A GRADUATE COLOR SYMBOLOGY.

Line (or arc) data is used to represent linear features. Common examples would be rivers, trails, and streets. Line features only have one dimension and therefore can only be used to measure length. Line features have a starting and ending point. Common examples would be road centerlines and hydrology. Symbology most commonly used to distinguish arc features from one another are line types (solid lines versus dashed lines) and combinations using colors and line thicknesses. In the example below roads are distinguished from the stream network by designating the roads as a solid black line and the hydrology a dashed blue line.



STREAMS ARE SHOWN AS DASHED BLUE LINES AND ROADS AS SOLID BLACK LINES IN THIS EXAMPLE.

Point data is most commonly used to represent nonadjacent features and to represent discrete data points. Points have zero dimensions, therefore you can measure neither length or area with this dataset. Examples would be schools, points of interest, and in the example below, bridge and culvert locations. Point features are also used to represent abstract points. For instance, point locations could represent city locations or place names.

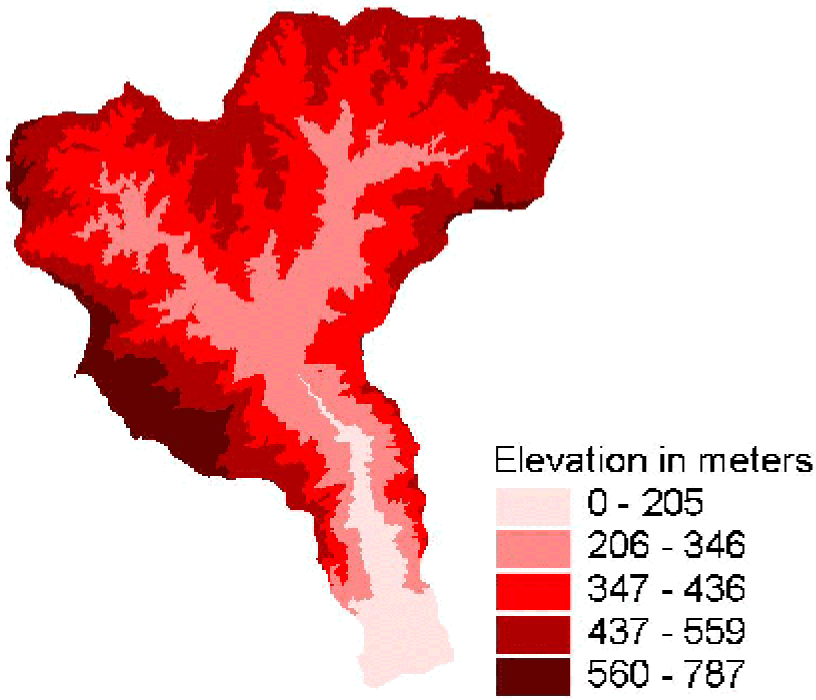


GIS POINT DATA SHOWING THE LOCATION OF BRIDGES AND CULVERTS.

Both line and point feature data represent polygon data at a much smaller scale. They help reduce clutter by simplifying data locations. As the features are zoomed in, the point location of a school is more realistically represented by a series of building footprints showing the physical location of the campus. Line features of a street centerline file only represent the physical location of the street. If a higher degree of spatial resolution is needed, a street curbwidth file would be used to show the width of the road as well as any features such as medians and right-of-ways (or sidewalks).

Raster Data

Raster data (also known as grid data) represents the fourth type of feature: surfaces. Raster data is cell-based and this data category also includes aerial and satellite imagery. There are two types of raster data: continuous and discrete. An example of discrete raster data is population density. Continuous data examples are temperature and elevation measurements. There are also three types of raster datasets: thematic data, spectral data, and pictures (imagery).



DIGITAL ELEVATION MODEL (DEM) SHOWING ELEVATION.

This example of a thematic raster dataset is called a Digital Elevation Model (DEM). Each cell presents a 30m pixel size with an elevation value assigned to that cell. The area shown is the Topanga Watershed in California and gives the viewer and understand of the topography of the region.

THIS IMAGE SHOWS A PORTION OF TOPANGA, CALIFORNIA TAKEN FROM A USGS DOQ.

Latitude lines run east-west and are parallel to each other. If you go north, latitude values increase. Finally, latitude values (Y-values) range between -90 and +90 degrees

But **longitude** lines run north-south. They converge at the poles. And its X-coordinates are between -180 and +180 degrees.

Latitude and longitude coordinates make up our geographic coordinate system.

Yes we use Latitude and Longitude in our GIS Project.

What is a Map Projection :

A map projection is one of many methods used to represent the 3-dimensional surface of the earth or other round body on a 2-dimensional plane in cartography (mapmaking). This process is typically, but not necessarily, a mathematical procedure (some methods are graphically based).

Creation of a Map Projection

The creation of a map projection involves three steps in which information is lost in each step:

1. selection of a model for the shape of the earth or round body (choosing between a sphere or ellipsoid)
2. transform geographic coordinates (longitude and latitude) to plane coordinates (eastings and northings).
3. reduce the scale (in manual cartography this step came second, in digital cartography it comes last)

Coordinate System

Coordinate systems enable geographic datasets to use common locations for integration. A coordinate system is a reference system used to represent the locations of geographic features, imagery, and observations such as GPS locations within a common geographic framework.

Each coordinate system is defined by:

1. Its measurement framework which is either geographic (in which spherical coordinates are measured from the earth's center) or planimetric (in which the earth's coordinates are projected onto a two-dimensional planar surface).

2. Unit of measurement (typically feet or meters for projected coordinate systems or decimal degrees for latitude–longitude).

3. The definition of the map projection for projected coordinate systems.

4. Other measurement system properties such as a spheroid of reference, a datum, and projection parameters like one or more standard parallels, a central meridian, and possible shifts in the xand y-directions. Types of coordinate systems There are two common types of coordinate systems used in GIS:

5. A global or spherical coordinate system such as latitude– longitude. These are often referred to as geographic coordinate systems.

6. A projected coordinate system based on a map projection such as transverse Mercator, Albers equal area, or Robinson, all of which (along with numerous other map projection models) provide various mechanisms to project maps of the earth's spherical surface onto a two-dimensional Cartesian coordinate plane.

Projected coordinate systems are sometimes referred to as map projections. Coordinate systems (either geographic or projected) provide a framework for defining real-world locations. The maps in our project are based on the longitude and the latitude. Every location is determined with the help of the longitude and latitude. The dataset contains all the location address and respected longitude ,latitude points with the location . Map access that dataset in order to be able to plot the points accurately.

The Co-ordinate System used is the Geographic coordinate system with the wgs84 datum (EPSG: 4326)

Experiment No. 5

Aim: **Write on other coordinate Capture systems? What is GNSS & GNSS Control points? What is Georeferencing, and Satellite based positioning? Have you used Geo-referencing? What is base map, what base map you have used?**

Coordinate Capture systems

Coordinated systems allow the use of specific locations for integration through geographic datasets. The coordinate system is a mapping system used to describe positions of geographical objects, imagery and measurements, such as Global Positioning System (GPS) coordinates, within a specific geographic framework.

Each coordinate system is defined by the following:

- Its measurement framework, which is either geographic (in which spherical coordinates are measured from the earth's center) or planimetric (in which the earth's coordinates are projected onto a two-dimensional planar surface)
- Units of measurement (typically feet or meters for projected coordinate systems or decimal degrees for latitude-longitude)
- The definition of the map projection for projected coordinate systems
- Other measurement system properties such as a spheroid of reference, a datum, one or more standard parallels, a central meridian, and possible shifts in the x- and y-directions

Several hundred geographic coordinate systems and a few thousand projected coordinate systems are available for use. In addition, you can define a custom coordinate system.

Types of coordinate systems:

The following are two common types of coordinate systems used in a geographic information system (GIS):

A global or spherical coordinate system such as latitude-longitude. These are often referred to as geographic coordinate systems.

A projected coordinate system such as universal transverse Mercator (UTM), Albers Equal Area, or Robinson, all of which (along with numerous other map projection models) provide various mechanisms to project maps of the earth's spherical surface onto a two-dimensional Cartesian coordinate plane. Projected coordinate systems are referred to as map projections.

Coordinate systems (both geographic and projected) provide a framework for defining real-world locations

GNSS (Global Navigation Satellite System)

GNSS stands for Global Navigation Satellite System, and is an umbrella term that encompasses all global satellite positioning systems. This includes constellations of satellites orbiting over the earth’s surface and continuously transmitting signals that enable users to determine their position.The Global Positioning System (GPS) is one component of the Global Navigation Satellite System. Specifically, it refers to the NAVSTAR Global Positioning System, a constellation of satellites developed by the United States Department of Defence (DoD). Originally, the Global Positioning System was developed for military use, but was later made accessible to civilians as well. GPS is now the most widely used GNSS in the world, and provides continuous positioning and timing information globally, under any weather conditions. The GNSS currently includes other satellite navigation systems, such as the Russian GLONASS, and may soon include others such as the European Union's Galileo and China's Beidou.

The performance of GNSS is assessed using four criteria:

- Accuracy: the difference between a receiver's measured and real position, speed or time;
- Integrity: a system's capacity to provide a threshold of confidence and, in the event of an anomaly in the positioning data, an alarm;
- Continuity: a system's ability to function without interruption;
- Availability: the percentage of time a signal fulfils the above accuracy, integrity and continuity criteria.

GNSS is used in collaboration with GPS systems to provide precise location positioning anywhere on earth. GNSS and GPS work together, but the main difference between GPS and GNSS is that GNSScompatible equipment can use navigational satellites from other networks beyond the GPS system, and more satellites means increased receiver accuracy and reliability. All GNSS receivers are compatible with GPS, but GPS receivers are not necessarily compatible with GNSS.

Currently, GNSS is being used in a variety of fields where the use of precise, continually available position and time information is required, including agriculture, transportation, machine control, marine navigation, vehicle navigation, mobile communication and athletics.

Geo-referencing

Georeferencing is the name given to the process of geospatially referencing data and information objects – datasets, text documents, maps, photographs and imagery, etc. – to their proper locations on Earth.

Georeferencing means that the internal coordinate system of a map or aerial photo image can be related to a ground system of geographic coordinates. The relevant coordinate transforms are typically stored within the image file (GeoPDF and GeoTIFF are examples), though there are many possible mechanisms for implementing georeferencing. The most visible effect of georeferencing is that display software can show ground coordinates (such as latitude/longitude or UTM coordinates) and also measure ground distances and areas.Georeferencing can be accomplished in two main ways: formally, by assigning geospatial coordinates directly to data and information objects; and informally, by relating such objects to one or more pre-existing ones for which georeferences have already been established.

Satellite based positioning

Satellite based positioning is basically a navigation system using satellite. A satellite navigation or satnav system is a system that uses satellites to provide autonomous geo-spatial positioning. It allows small electronic receivers to determine their location (longitude, latitude, and altitude/elevation) to high precision (within a few centimeters to metres) using time signals transmitted along a line of sight by radio from satellites.When satellite positioning is mentioned the assumption is that reference is being made to the American Navigation System with Timing and Ranging, Global Positioning System (NAVSTAR GPS). In fact, there are other similar satellite positioning systems that are under development, for example, the Russian Global Navigation Satellite System (GLONASS). The GLONASS satellites, however, are already available for positioning during the development process. The operation of these satellite positioning systems is very similar, therefore, knowing the concept of one system would lead to an understanding of the others.

In our project the Geo-referencing is done by referring to a OpenStreetMap which is provided by QGIS and we refer the geographical values which is Latitude and Longitude to plot location on the Map.

Base Map

The term basemap is see often in GIS and refers to a collection of GIS data and/or orthorectified imagery that form the background setting for a map. The function of the basemap is to provide background detail necessary to orient the location of the map. Basemaps also add to the aesthetic appeal of a map.

Typical GIS data and imagery that make up the layers for a basemap: streets, parcels, boundaries (country, county, city boundaries), shaded relief of a digital elevation model, waterways, and aerial or satellite imagery. Depending on the type of map, any combination of those layers can be used. For example, for a map showing foreclosed properties, the basemap would consist of GIS data such as streets (with labels) and parcel lines. A map showing hiking trails would benefit from a basemap containing a digital elevation model or topo lines that shows elevation, thus allow viewers to understand the rise and fall of a trail's path.

Basemaps are also pre-authored datasets that can be pulled from online sources. Esri's ArcGIS online offers a selection of predefined basemaps that can be used for creating online maps or that can be pulled into ArcGIS for use as a basemap when using the desktop mapping software.

SELECT OF BASEMAPS FROM ESRI'S ARCGIS ONLINE.

Experiment No. 6

Aim: **There are data capture methods & technologies available to capture data from remote distances, we call it as Remote sensing data acquisition technologies, like Arial Images, Satellite Images, LiDAR etc. Explore the technologies. Have you used in your project any of the data captured by remote sensing technologies? Give two examples of applications where these data are used**

Aerial images are excellent examples of textured regions where different areas such as water, sand, vegetation, and so forth have distinct texture signatures, hence we can easy depict information on these. We have used aerial image view of India. It basically replicated India's actual boundaries. It represents satellite view of India. The map can zoom in and out of a location.

Application:

- Providing a base map for graphical reference and assisting planners and engineers
- Aerial images has many applications in fields like urban planning, real-estate management, and disaster relief.
- Google maps uses aerial view when we have to look for direction

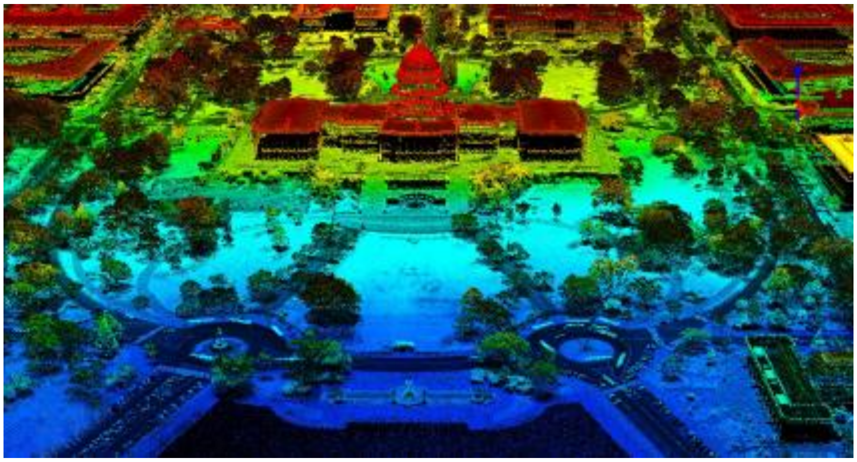
What is Remote Sensing?

Remote sensing is the science of obtaining the physical properties of an area without being there. It measures emitted and reflected radiation captured typically from sensors on airplanes, satellites and drones. Active and passive are the two types of remote sensing.

So how is **remote sensing** solving some of our most challenging problems on Earth? And how does remote sensing go above and beyond human vision to capture Earth's features?

From weather forecasting to military intelligence, this is just the tip of the iceberg.

Let's take a look at remote sensing and the surprising influences it has on our every day lives.

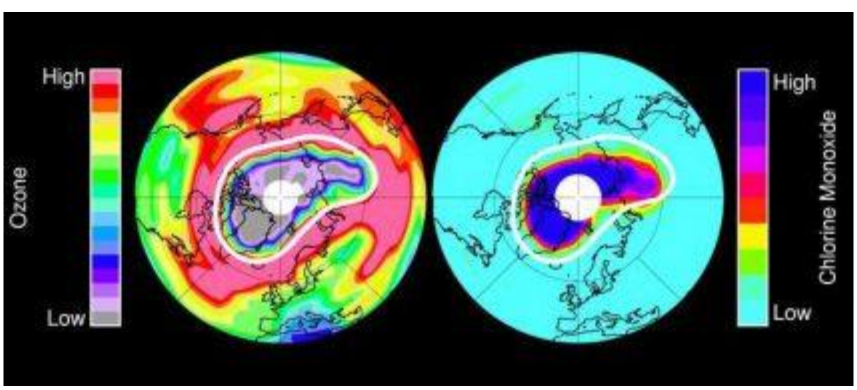


3D Lidar Point Cloud of the US Capitol Building in Washington, DC

What are remote sensing applications and uses?

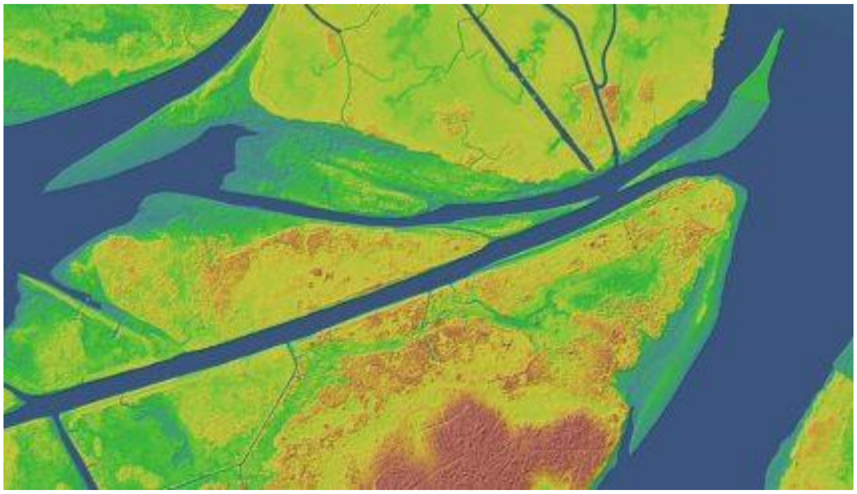
First, if we are going to solve some of the major challenges of our time, remote sensing data is *fundamentally important* to monitor the Earth as an entire system. Literally, there are thousands of uses for remote sensing, but here are just **100 of remote sensing applications**.

For example, the Arctic is an unforgiving destination to travel to. Because of the obvious safety risks of field activity, scientists leverage remote sensing for **sea ice monitoring**, ship tracking and even national defense.



NASA's Aura spacecraft monitors ozone in Earth's stratosphere. While purple delineates low ozone amounts, grey colors display large amounts of chlorine. And dark blue colors describe monoxide

Already, we see growth in the usage of **Light Detection and Ranging (LiDAR)** which is simply just a way to accurately measure *how far* things are. Often, airplanes and drones capture LiDAR depending on the size and area of land. Using **digital elevation models** from LiDAR, we can better predict risk of flooding, archaeological sites and even autonomous vehicles.



LiDAR stands for Light Detection and Ranging. It uses lasers to measure distance. This is useful for measuring heights on the bare ground and its features.

Because remote sensing covers so much ground, it puts a wealth of information into the hands of decision-makers.

We didn't use any such **Remote sensing data acquisition technology in our project.**

Experiment No. 7

Aim: **There are data capture methods & technologies available to capture data from ground survey, we call it as Fields Survey data acquisition technologies, like GPS, GPRS, Contour capture using digital devices, Google Traces etc. Explore these technologies. Have you used in your project any of the data captured by ground survey technologies? Give two examples of applications where these data are used.**

GPS:

The NAVSTAR Global Positioning System (GPS) was declared operational in 1994, providing Precise Positioning Services (PPS) to US and allied military forces as well as US government agencies, and Standard Positioning Service (SPS) to civilians throughout the world. Its space segment nominally consists of 24 satel lites, each of which orbit our planet in 11h58m at an altitude of 20,200 km. There can be any number of satellites active, typically between 21 and 27. The satel lites are organized in six orbital planes, somewhat irregularly spaced, with an angle of inclination of 55-63° with the equatorial plane, nominally having four satellites each (see Figure 4.28). This means that a receiver on Earth will have between five and eight (sometimes up to twelve) satellites in view at any point in time. Software packages exist to help in planning GPS surveys, identifying expected satellite set-up for any location and time. GPS's control segment has its master control in Colorado, USA, and monitor sta tions in a belt around the equator, namely in Hawaii, Kwajalein Atoll in the Marshall Islands, Diego Garcia (British Indian Ocean Territory) and Ascension Island (UK, southern Atlantic Ocean). The NAVSTAR satellites transmit two radio signals, namely the Li frequency at 1575.42 MHz and the L2 frequency at 1227.60 MHz. There are also a third and fourth signal, but they are not important for our discussion here.
GPS systems are extremely versatile and can be found in almost any industry sector. They can be used to map forests, help farmers harvest their fields, and navigate airplanes on the ground or in the air. GPS systems are used in military applications and by emergency crews to locate people in need of assistance.

GPRS:

It is a mobile telephony service that helps mobile phone users to connect to the Internet using their phones, It is a non-voice service which offers wireless packet data access within GSM networks (Global System for Mobile communication) .

Google traces:

Cloud Trace is a distributed tracing system that collects latency data from your applications and displays it in the Google Cloud Console. You can track how requests propagate through your application and receive detailed near real-time performance insights.

Contour capture:

Designed with the needs of GIS professionals in mind, contour delivers bright, consistent, stereoscopic, HD images in an easy to use comfortable system. We have not used any of this in our system.

Simple QGis architecture is used to obtain location of user and using it in all the maps

We didn’t use any such technology in our project.

Expirement No. 8

AIM: I know Map Visualization must be core portion of your project. Explore the following before you explain Map visualization u did in your project work. What is the Map? What are the Map Types? What is map boundaries? What is Cartography? What are the elements of Maps (legend, scale, etc)? What is Map scales & why u need Map scaling ? How you map the maps in your project work ? qualitative mapping ?, Quantitative Mapping ? Terrain Elevation mapping ? Time series mapping? What are the GIS/Map File formats

Map:

A **map** is almost universally a two-dimensional representation of a piece of three-dimensional space. Only with the advent of modern computer graphics were three-dimensional maps made possible. Maps serve two map functions; they are a spatial database and a communication device. The science of making maps is called cartography.

Basic map characteristics tell the reader where an object is (location) and what the object is (its attributes). Maps are also simplified reductions and abstracions of selected real world areas that have attributes of scale, resolution, and are defined onto a projection that distorts the curved surface of the earth onto a flat surface. Different objects represented on the map are classifed and symbolized so that the map user can easily use the map as a database of geographic information.

Map Types

There are five different types of maps: General Reference, Topographical, Thematic, Navigation Charts and Cadastral Maps and Plans.

General Reference

Think of a regular map, where cities and towns are named, major transport routes are included along with natural features like lakes and rivers, and you will be thinking of a general reference map. These are the maps that are ideal for helping you to get to your destination – they tend to be easy to read and include street and tourist maps.

Topographical

Topographical maps stand out from the other offerings by showing detailed elevation, with contour lines helping to map the landscape. Ordinance Survey maps are arguably the best-known type of topographical maps, but thousands of other mapmakers have created detailed alternatives, and even if you can't see specific landmarks – lakes or roads, for example – it's still possible to work out your exact location by following the contours and checking out the landscape around you.

Thematic

Rather than attempting to map the landscape or help to show you where to go, thematic maps are designed instead to highlight information on specific topics. It could be anything from geology to population density or weather, and we have even seen thematic maps used to track the locations of whales. Companies like Esri use thematic maps to make a massive difference to businesses, governments and other organisations around the world, combining geography with information like our smart traffic services to allow more efficient decisions to be made. Unlike general reference maps, which can typically be read and understood by pretty much anybody, thematic maps may also require specific knowledge to understand.

Navigational Charts

Along with general reference and topographical maps, navigational charts are another invaluable tool when it comes to getting around, whether you're at sea or in the air. Maps for the ocean are typically referred to as charts, and the same applies to air navigation mapping. The charts tend to include information that is important to avoiding accidents – such as features in and around the water, like submerged rocks – along with any specific navigational aids.

Cadastral Maps and Plans

Cadastral maps are a lot more specific, and although they are widely used, there is a good chance you will not see one every day. The plans map out individual properties, offering details like boundary information when houses or land are surveyed, and can be joined to create much larger cadastral maps. You are likely to see a cadastral map when you get a house surveyed, and town planners will also deal with them a lot.

For our project, we have used General Reference map as a base to locate all the districts, we then converted this map to a Thematic Map which contains all the data about the district.

Elements of a Map

Data Frame

The data frame is the portion of the map that displays the data layers. This section is the most important and central focus of the map document.

Legend

The legend serves as the decoder for the symbology in the data frame. Therefore, it is also commonly known as the key. Descriptions detailing any colour schemata, symbology or categorization is explained here.

Title

The title is important because it instantly gives the viewer a succinct description of the subject matter of the map.

North Arrow

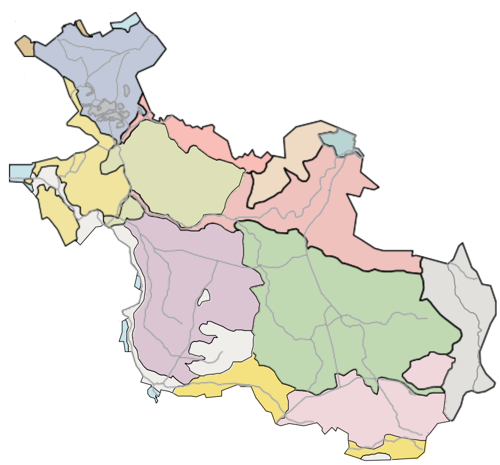
The purpose of the north arrow is for orientation. This allows the viewer to determine the direction of the map as it relates to due north. Most maps tend to be oriented so that due north faces the top of the page. There are exceptions to this and having the north arrow allows the viewer to know which direction the data is oriented.

Scale

The scale explains the relationship of the data frame extent to the real world. The description is a ratio. This can be shown either as a unit to unit or as one measurement to another measurement. Therefore, a scale showing a 1:10,000 scale means that paper map unit represents 10,000 real world units. For example, 1:10,000 in inches means that a measurement of one inch on the map equals 10,000 inches in real life. The second method of depicting scale is a comparison with different unit types. For example, 1”:100’ means that every inch measure on the paper map represents 100 feet in the real world. This ratio is the same as 1:1200 (1 foot = 12 inches).

Qualitative Mapping:

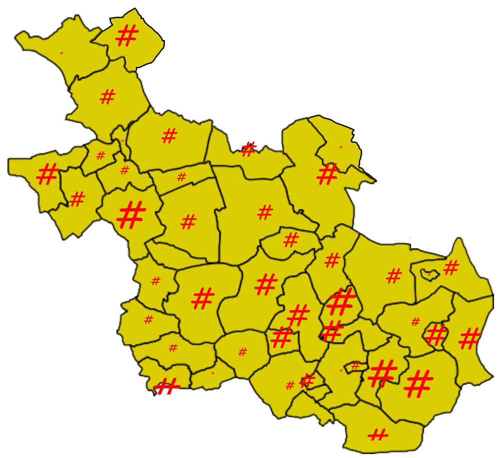
If, after a long fieldwork period, one has finally delineated the boundaries of a province's watersheds, one likely is interested in a map showing these areas. The geographic units in the map will have to represent the individual watersheds. In such a map, each of the watersheds should get equal attention, and none should stand out above the others.



The application of colour would be the best solution since is has characteristics that allow one to quickly differentiate between different geographic units. However, since none of the watersheds is more important than the others, the colours used have to be of equal visual weight or brightness. Figure 7.12 gives an example of a correct map.   The readability is influenced by the number of display geographic units. In this example, there are about 15. When this number is much higher, the map, at the scale displayed here, will become too cluttered.

Mapping quantitative data :

When, after executing a census, one would for instance like to create a map with the number of people living in each municipality, one deals with absolute quantitative data. The geographic units will logically be the municipalities. The final map should allow the user to determine the amount per municipality and also offer an overview of the geographic distribution of the phenomenon. To reach this objective, the symbols used should have quantitative perception properties. Symbols varying in size fulfil this demand. Figure 7.14 shows the final map for the province of Overijssel.

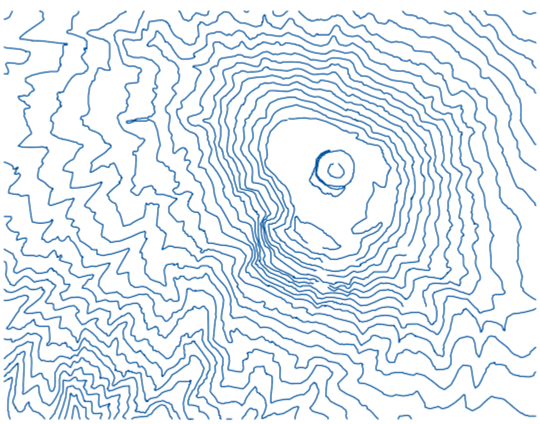


Mapping the terrain elevation

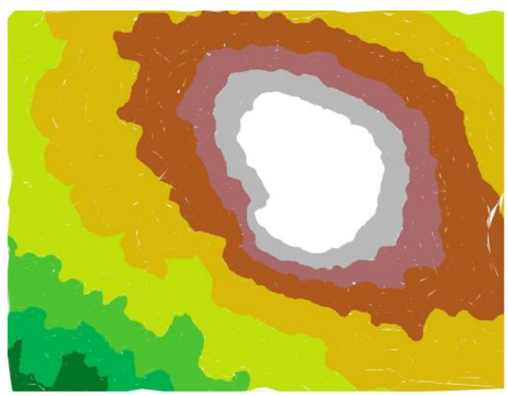
Terrain elevation can be mapped using different methods. Often, one will have collected an elevation data set for individual points like peaks, or other characteristic points in the terrain. Obviously, one can map the individual points and add the height information as text. However, a contour map, in which the lines connect points of equal elevation, is generally used. To visually improve the information content of such a map the space between the contour lines can be filled with colour and value information following a convention, e.g. green for low elevation and brown for high elevation areas. This technique is known as hypsometric or layer tinting. Even more advanced is the addition of shaded relief. This will improve the impression of the three-dimensional relief (see Fig- ure 7.18).The shaded relief map uses the full three-dimensional information to create shading effects. This map, represented on a two-dimensional surface, can also be floated in three-dimensional space to give it a real three-dimensional appearance of a ‘virtual world’, as shown in Figure 7.18(d). Looking at such a representation one can immediately imagine that it will not always be effective. Certain (low) objects in the map will easily disappear behind other (higher) objects.

Interactive functions are required to manipulate the map in three-dimensional space in order to look behind some objects. These manipulations include panning, zooming, rotating and scaling. Scaling is needed, particularly along the z-axis, since some maps require small-scale elevation resolution, while others require large-scale resolution, i.e. vertical exaggeration. One can even imagine that other geographic, three-dimensional objects (for instance, the built-up area of a city and individual houses) have been placed on top of the terrain model,like it is done in Google Earth. Of course, one can also visualize objects below the surface in a similar way, but this is more difficult because the data to describe underground objects are sparsely available.

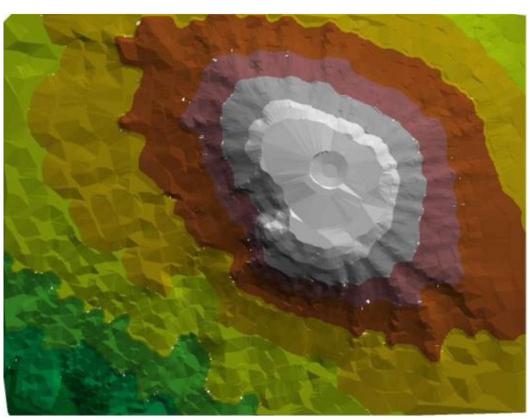
A



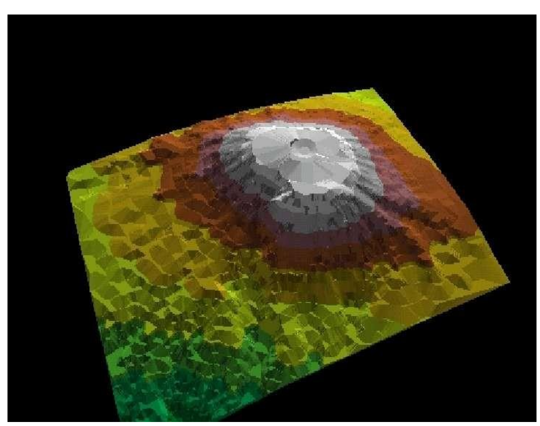
B



C



D



visualization of terrain elevation:

(a) contour map; (b) map with layer tints; (c) shaded relief map; (d) 3D view of the terrain

Mapping time series

Advances in spatial data handling have not only made the third dimension part of GIS routines. Nowadays, the handling of time-dependent data is also part of these routines. This has been caused by the increasing availability of data captured at different periods in time. Next to this data abundance, the GIS com- munity wants to analyse changes caused by real world processes. To that end, single time slice data are no longer sufficient, and the visualization of these pro- cesses cannot be supported with only static paper maps.

Mapping time means mapping change. This may be change in a feature's geom- etry, in its attributes or both. Examples of changing geometry are the evolving

coastline of the Netherlands (as displayed in Figure 7.3), the location of Europe's

Mapping changing

national boundaries, or the position of weather fronts. The changes of a land par- cel's owner, landuse, or changes in road traffic intensity are examples of chang- ing attributes. Urban growth is a combination of both. The urban boundaries expand and simultaneously the land use shifts from rural to urban. If maps are to represent events like these, they should be suggestive of such change.

In our project we use the OpenStreetMap and then with the help of longitude and latitude value in the database we map that location on Map.The openstreeetmap is provided by Qgis2Web plugin in QGIS software.

Vector GIS File Format

Extension	File Type	Description
Esri Shapefile	.SHP, .DBF, .SHX	The shapefile is the most common geospatial file type you will encounter. You will need a complete set of three files that are mandatory to make up a shapefile. The three required files are: ▪ SHP is the feature geometry. ▪ SHX is the shape index position. ▪ DBF is the attribute data. You can optionally include these files but are not completely necessary. ▪ PRJ is the projection system metadata. ▪ XML is the associated metadata. ▪ SBN is the spatial index for optimizing queries. ▪ SBX optimizes loading times.
Geographic JavaScript Object Notation (GeoJSON)	.GEOJSON .JSON	The GeoJSON format is mostly for web-based mapping. GeoJSON stores coordinates as text in JavaScript Object Notation (JSON) form. This includes vector points, lines and polygons as well as tabular information. Web maps browsers understand JavaScript so by default GeoJSON is a common web format.
Geography mark-up	.GML	GML allows for the use of geographic coordinates extension of XML. And

Language (GML)		eXtensible mark-up Language (XML) is both human-readable and machine-readable. GML stores geographic entities (features) in the form of text. Like GeoJSON, GML can be updated in any text editor. Each feature has a list of properties, geometry (points, lines, curves, surfaces and polygons) and spatial reference system. There is generally more overhead when compare GML with GeoJSON. This is because GML results in more data for the same amount of information.
Google Keyhole mark-up Language (KML/KMZ)	.KML .KMZ	KML stands for Keyhole mark-up Language. This GIS format is XML-based and is primarily used for Google Earth. KML was developed by Keyhole Inc which was later acquired by Google. KMZ (KML-Zipped) replaced KML as being the default Google Earth geospatial format because it is a compressed version of the file. KML/KMZ became an international standard of the Open Geospatial Consortium in 2008.
GPS eXchange Format (GPX)	.GPX	GPS Exchange format is an XML schema that describes waypoints, tracks and routes captured from a GPS receiver. Because GPX is an exchange format, you can openly transfer GPS data from one program to another based on its description properties. The minimum requirement for GPX are latitude and longitude coordinates. In

		addition, GPX files optionally stores location properties including time, elevation and geoid height as tags.
IDRISI Vector	.VCT .VDC	IDRISI vector data files have a VCT extension along with an associated vector documentation file with a VDC extension. VCT format are limited to points, lines, polygons, text and photos. Upon the creation of an IDRISI vector file, it automatically creates a documentation file for building metadata. Attributes are stored directly in the vector files. But you can optionally use independent data tables and value files.
MapInfo TAB	.TAB .DAT .ID .MAP .IND	MapInfo TAB files are a proprietary format for Pitney Bowes MapInfo software. Similar to shapefiles, they require a set of files to represent geographic information and attributes. ▪ TAB files are ASCII format that link the associated ID, DAT, MAP and IND files. ▪ DAT files contain the tabular data associated as a dBase DBF file. ▪ ID files are index files that link graphical objects to database information. ▪ MAP files are the map objects that store geographic information. ▪ IND files are index files for the tabular data.
OpenStreetMap OSM XML	.OSM	OSM files are the native file for OpenStreetMap which had become the largest crowdsourcing GIS data project in the world. These files are a collection of

		vector features from crowd-sourced contributions from the open community. The GIS format OSM is OpenStreetMap's XML-based file format. The more efficient, smaller PBF Format ("Protocol buffer Binary Format") is an alternative to the XML-based format. The data interoperability in QGIS can load native OSM files. The OpenStreetMap plugin can convert PBF to OSM, which then can be used in QGIS.
Digital Line Graph (DLG)	.DLG	Digital Line Graph (DLG) files are vector in nature that were generated on traditional paper topographic maps. For example, this includes township & ranges, contour lines, rivers, lakes, roads, railroads and towns.

Raster GIS File Format

Extension	File Type	Description
ERDAS Imagine (IMG)	.IMG	ERDAS Imagine IMG files is a proprietary file format developed by Hexagon Geospatial. IMG files are commonly used for raster data to store single and multiple bands of satellite data. IMG files use a hierarchical format (HFA) that are optional to store basic information about the file. For example, this can include file information, ground control points and sensor type. Each raster layer as part of an IMG file contains information about its data values.

American Standard Code for Information Interchange ASCII Grid	.ASC	ASCII uses a set of numbers (including floats) between 0 and 255 for information storage and processing. They also contain header information with a set of keywords. In their native form, ASCII text files store GIS data in a delimited format. This could be comma, space or tab-delimited format. Going from non-spatial to spatial data, you can run a conversion process tool like ASCII to raster.
GeoTIFF	.TIF .TIFF .OVR	The GeoTIFF has become an industry image standard file for GIS and satellite remote sensing applications. GeoTIFFs may be accompanied by other files: ▪ TFW is the world file that is required to give your raster geolocation. ▪ XML optionally accompany GeoTIFFs and are your metadata. ▪ AUX auxiliary files store projections and other information. ▪ OVR pyramid files improves performance for raster display.
IDRISI Raster	.RST .RDC	IDRISI assigns RST extensions to all raster layers. They consist of numeric grid cell values as integers, real numbers, bytes and RGB24. The raster documentation file (RDC) is a companion text file for RST files. They assign the number of columns and rows to RST files. Further to this, they record the file type, coordinate system, reference units and positional error.

Envi RAW Raster	.BIL .BIP .BSQ	Band Interleaved files are a raster storage extension for single/multi-band aerial and satellite imagery. ▪ Band Interleaved for Line (BIL) stores pixel information based on rows for all bands in an image. ▪ Whereas Band interleaved by pixel (BIP) assigns pixel values for each band by rows. ▪ Finally, Band sequential format (BSQ) stores separate bands by rows.
PCI Geomatics Database File (PCIDSK)	.PIX	PIX files are raster storage layers developed by PCI Geomatics. It's a flexible file type that stores all image and auxiliary data called "segments" in a self-contained file. For example, segments can include image channels, training site and histogram information. As a database file, PIX files can hold raster channels with varying bit depths. They can also store projections, attribute information, metadata and imagery/vectors.

LiDAR File Formats

Extension	File Type	Description
ASPRS LiDAR Data Exchange Format	.LAS, .LASD, .LAZ	The LAS file format is a binary file format specifically for the interchange between vendors and customers. Overall, LAS files maintain information specific to LIDAR without the loss of information. LAS files are available for public use, unlike ASCII and other proprietary file formats. The dense networks of coordinate point measurements are so large sometimes that

		they often need to be split to prevent the file size becoming too large. When you compress a LAS file, the file format specifically for this is LAZ. You can save significant storage space using the LAZ file format. Like most file compression, LAZ has no information loss. Lastly, LAS Datasets (LASD) reference a set of LAS files. The purpose of LASD is to be able to examine 3D point cloud properties from the referenced LAS files. .
Point Cloud XYZ	.XYZ	XYZ files do not have specifications for storing point cloud data. The first 3 columns generally represent X, Y and Z coordinates. But there is no standard specification so it may include RGB, intensity values and other LiDAR values. They are in the ASCII point cloud group of file formats which includes TXT, ASC and PTS. Non-binary files like XYZ are advantageous because they can be opened and edited in a text editor.

.

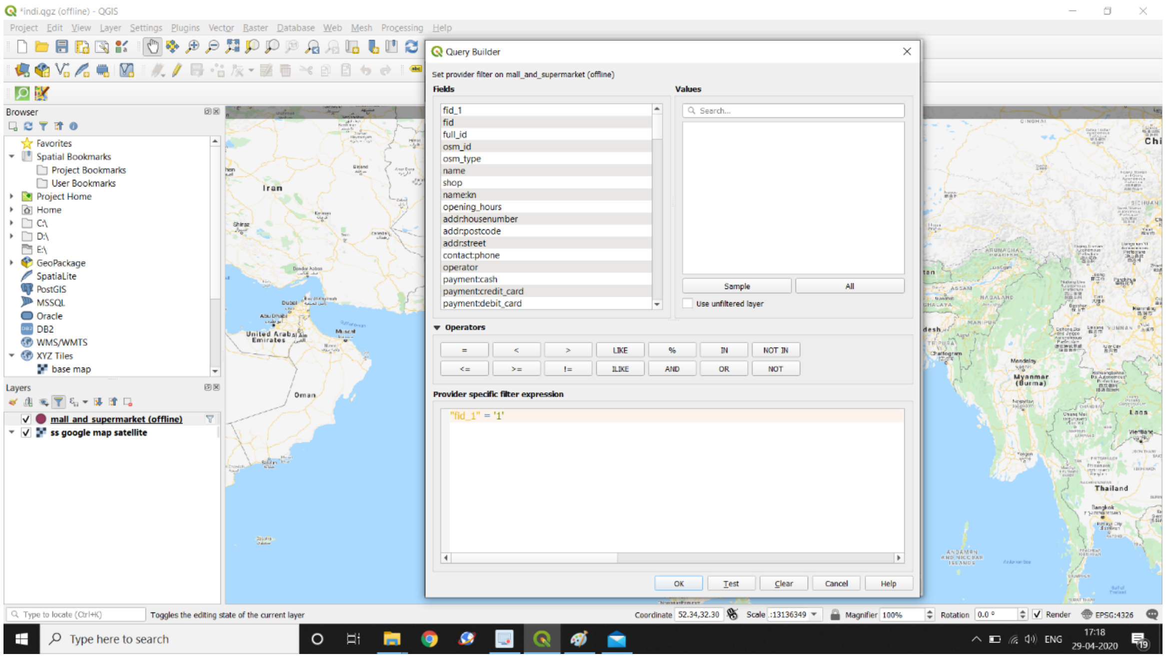
Experiment No 9

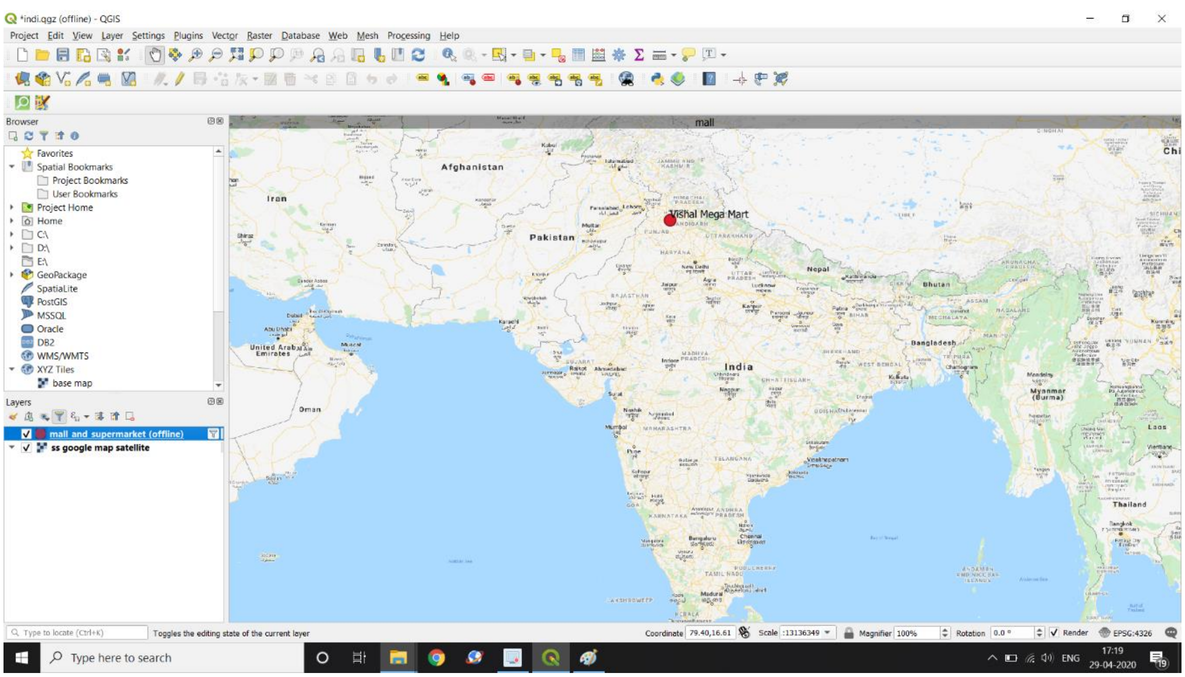
Aim: All the above Geospatial Technologies are basically used to make geo visualization of the data in order to summarize the analysis, called as Spatial Analysis. The spatial Analysis like selection for pointing, classification of one from other, proximity finding using proximity functions, Buffer region marking, i.e. buffering, Overlay (combining the characteristics datasets) Analysis, Extraction
(removing the characteristic datasets for projecting subset characteristics), Interpolation (finding/guessing/predicting in between features & values)

You are required to ask at least 50 questions to the system, whose answers to be given on map & visualization, which can be further referred as Spatial Analysis.

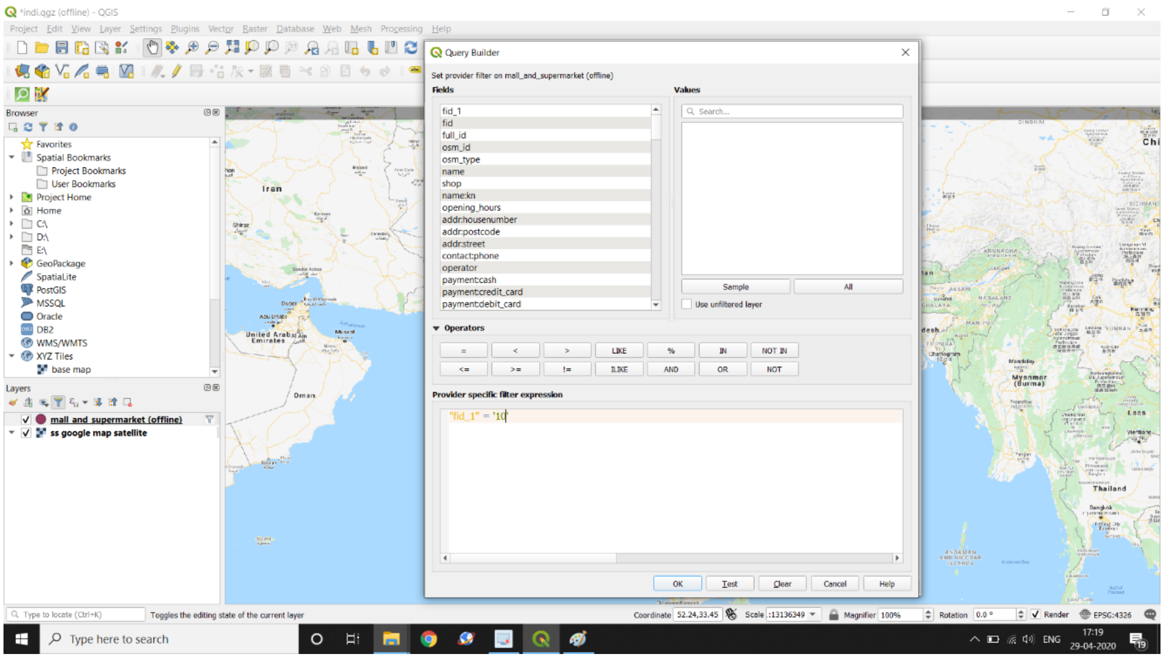
Queries:

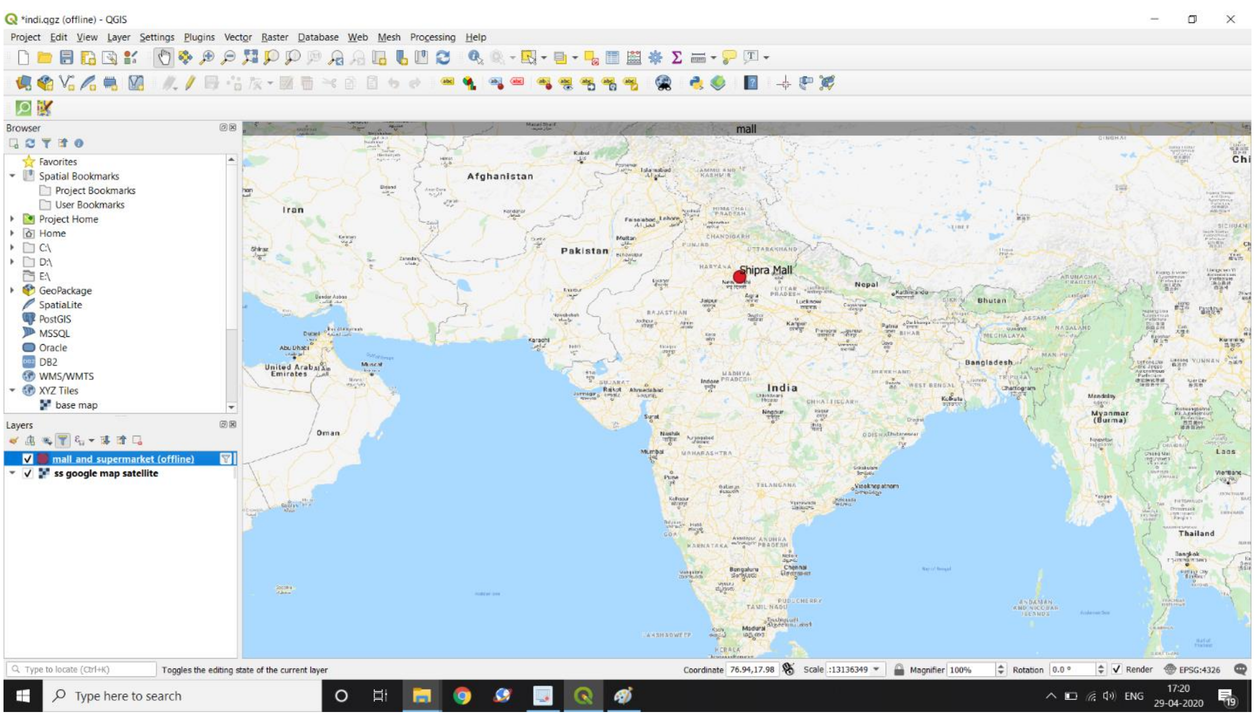
1.


*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"fid_1" = '1'
OK
Test
Clear
Cancel
Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall and supermarket (offline)
ss google map satellite
Toggles the editing state of the current layer
Type here to search
17:18
29-04-2020

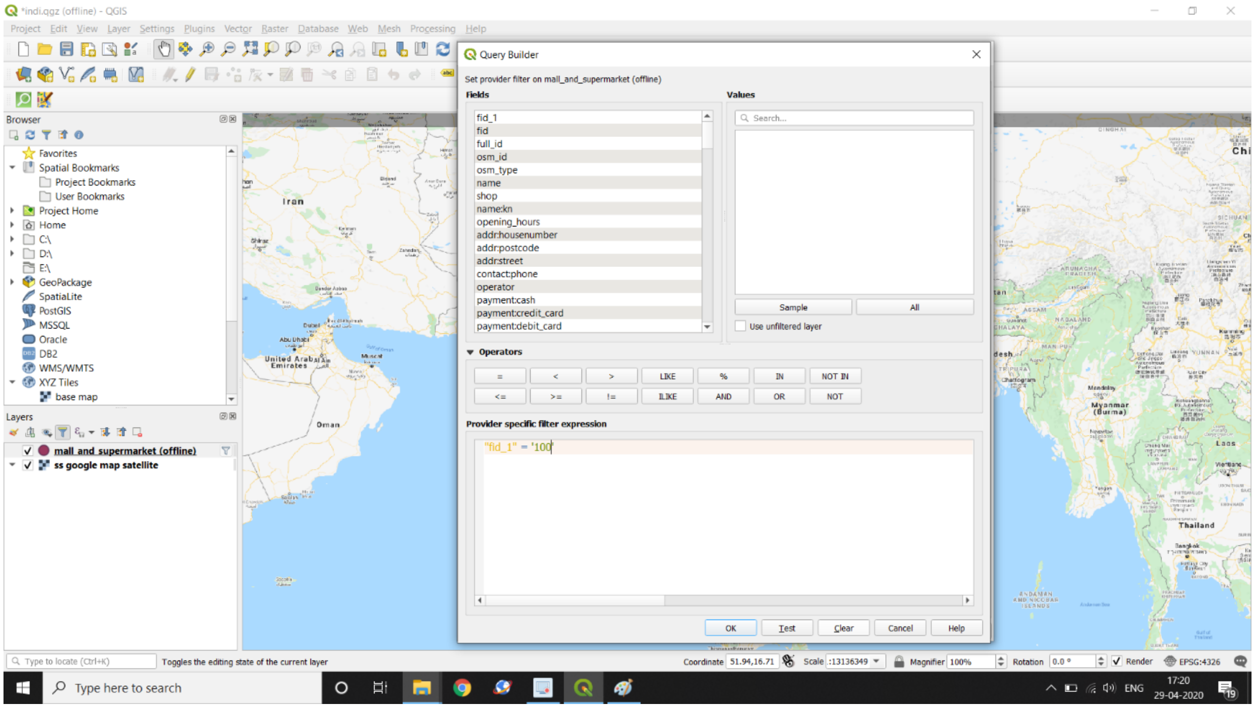

*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall and supermarket (offline)
ss google map satellite
mall
Vishal Mega Mart
Afghanistan
Iran
Pakistan
Nepal
Bhutan
Bangladesh
India
Oman
Thailand
Toggles the editing state of the current layer
Type here to search
17:19
29-04-2020

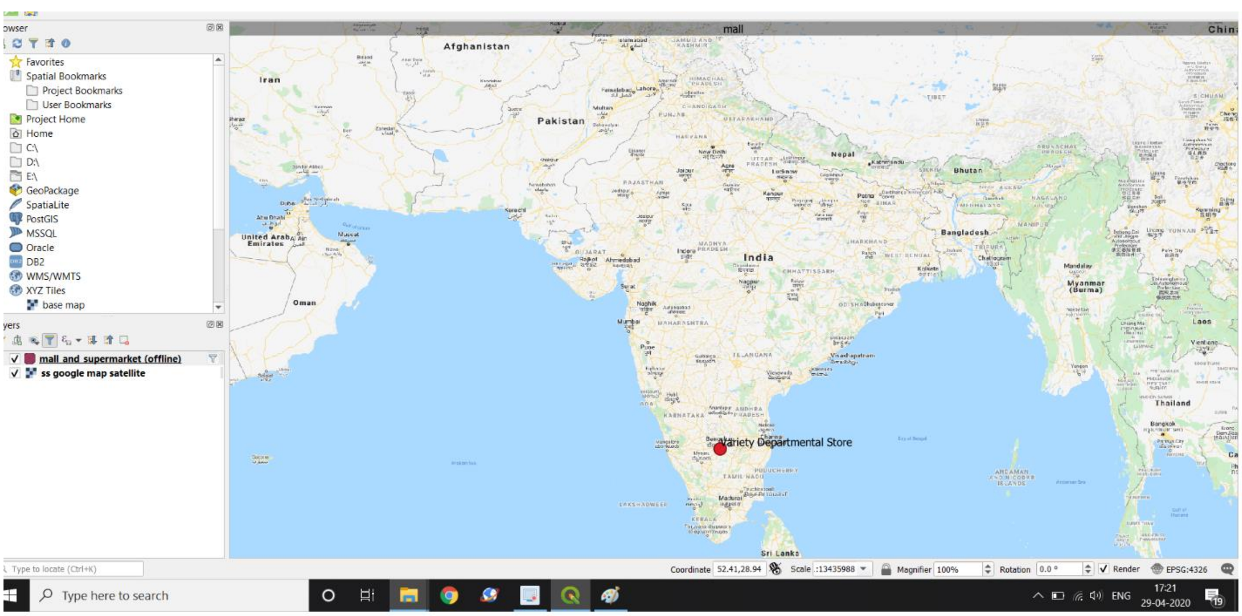
2.


*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
Operators
Provider specific filter expression
"fid_1" = '10'
OK
Test
Clear
Cancel
Help

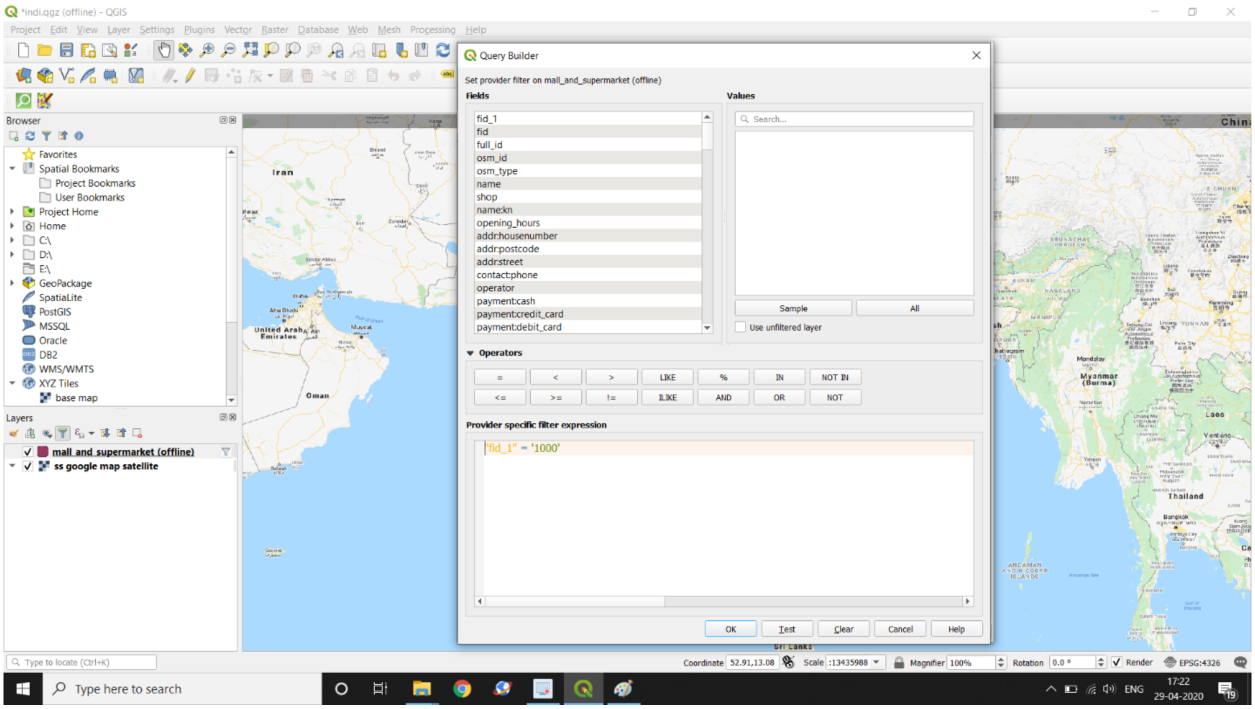

*indi.qgz (offline) - QGIS
mall
Shipra Mall
mall_and_supermarket (offline)
ss google map satellite

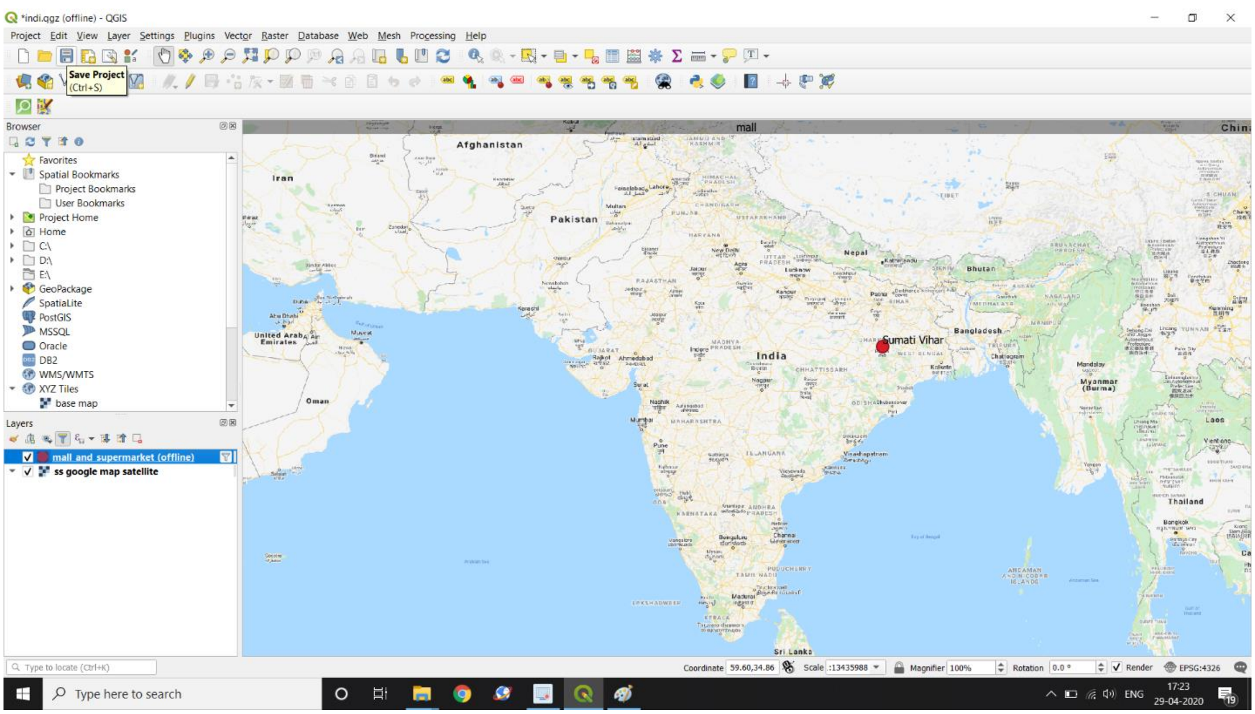
3.


*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"fid_1" = '100'
OK
Test
Clear
Cancel
Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Toggles the editing state of the current layer
Type here to search

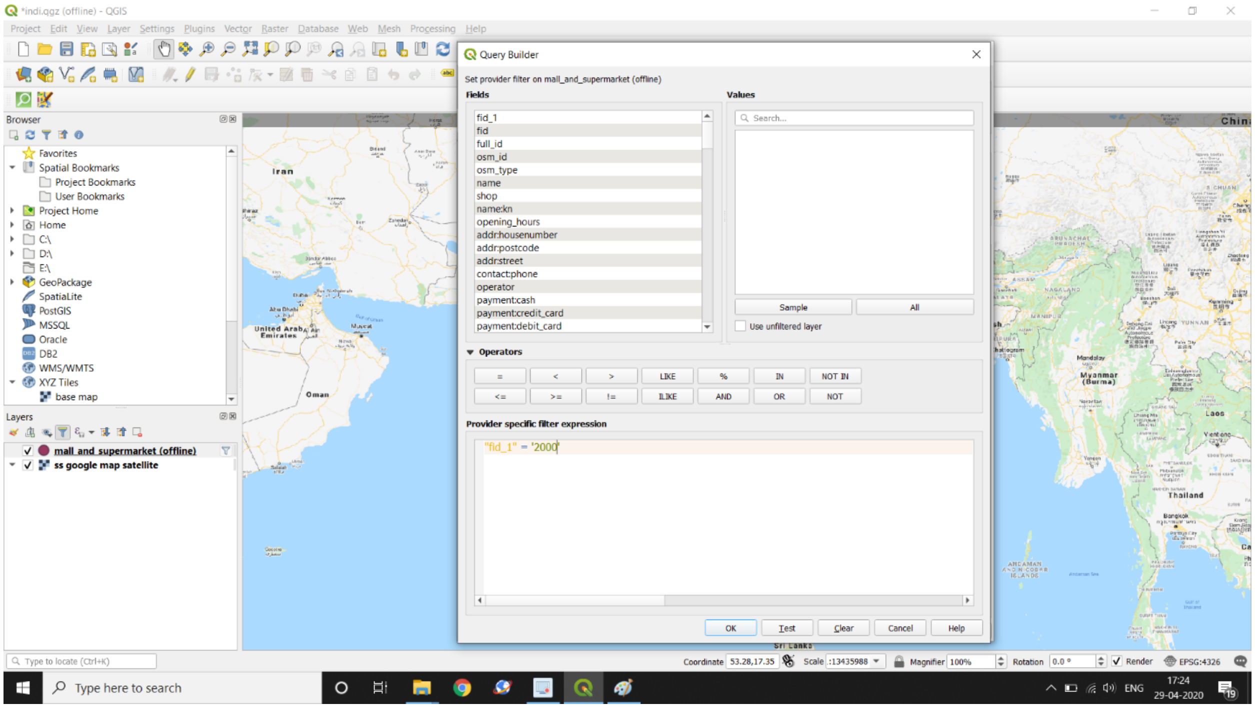

mall
Afghanistan
Iran
Pakistan
Nepal
Bhutan
Bangladesh
India
Oman
Thailand
Sri Lanka
Variety Departmental Store
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
mall_and_supermarket (offline)
ss google map satellite
Type here to search

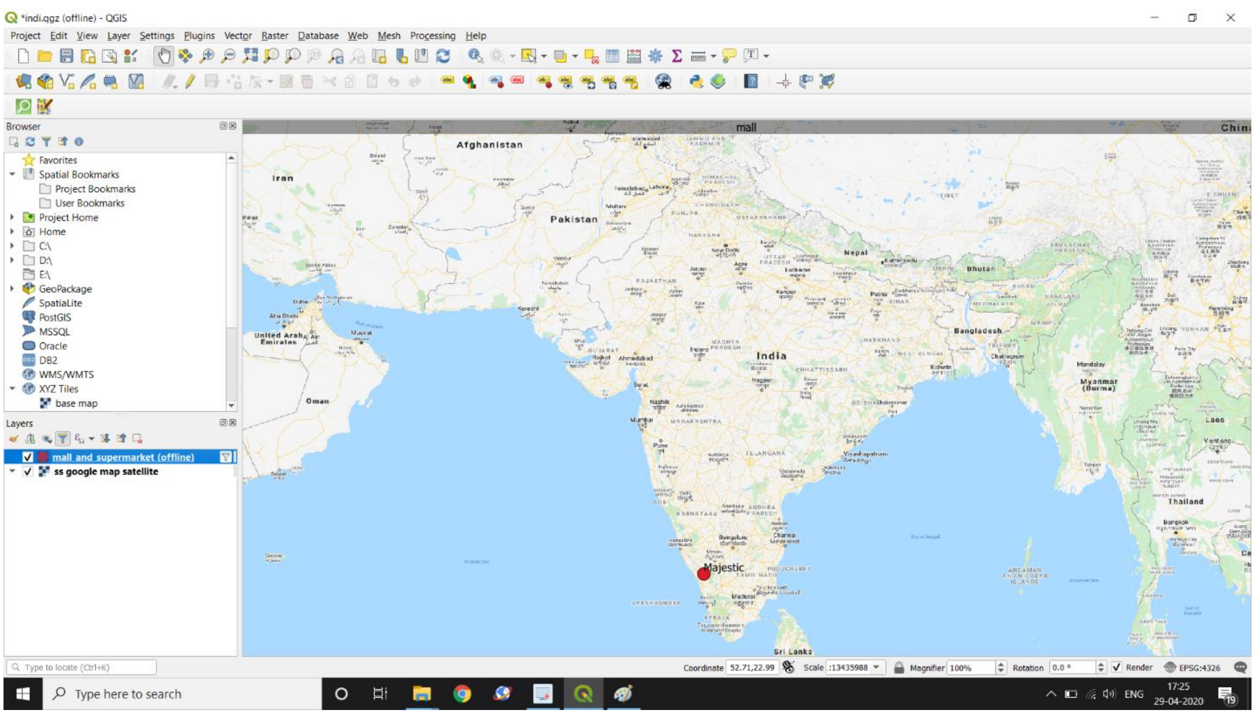
4.



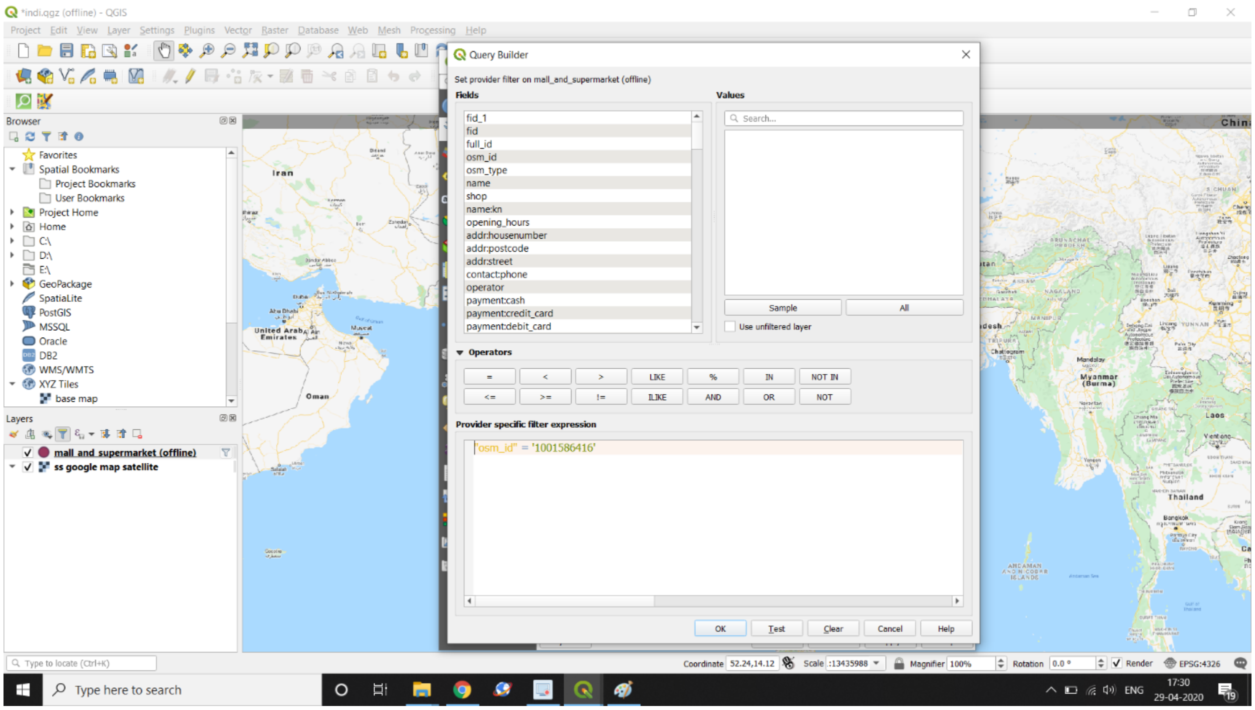


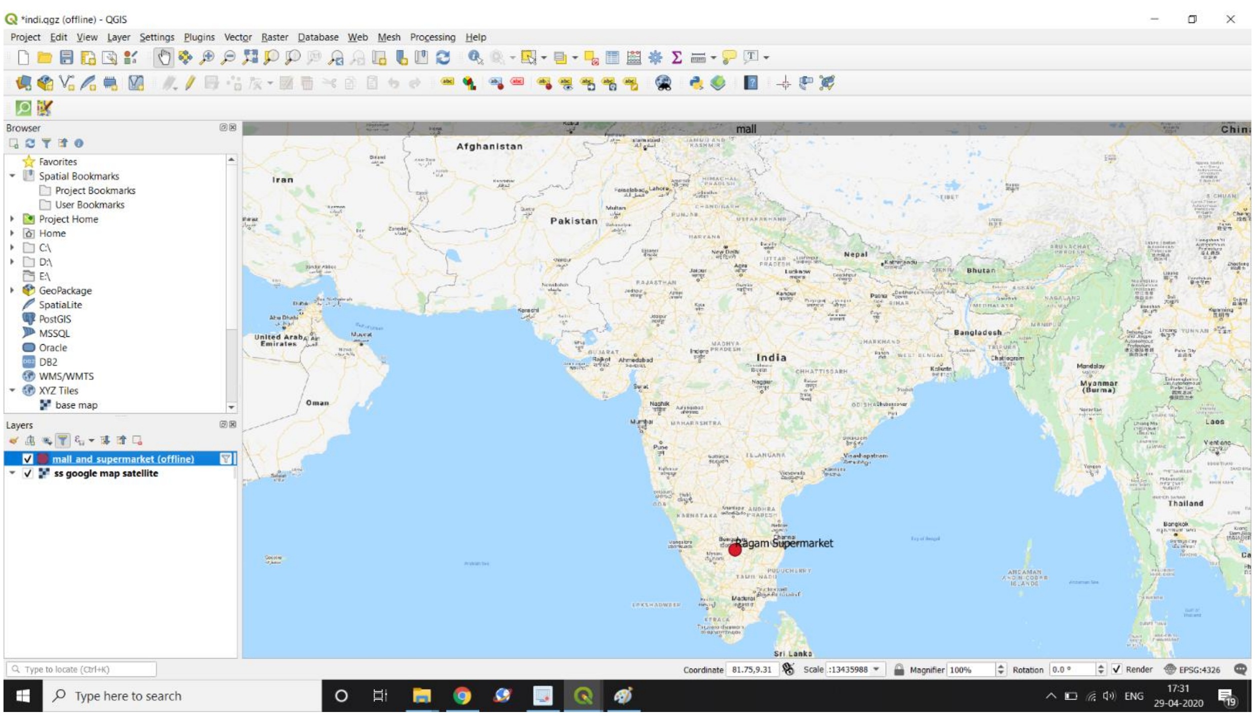
5.


*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"fid_1" = '2000'
OK
Test
Clear
Cancel
Help
Layers
mall_and_supermarket (offline)
ss google map satellite
Type here to search

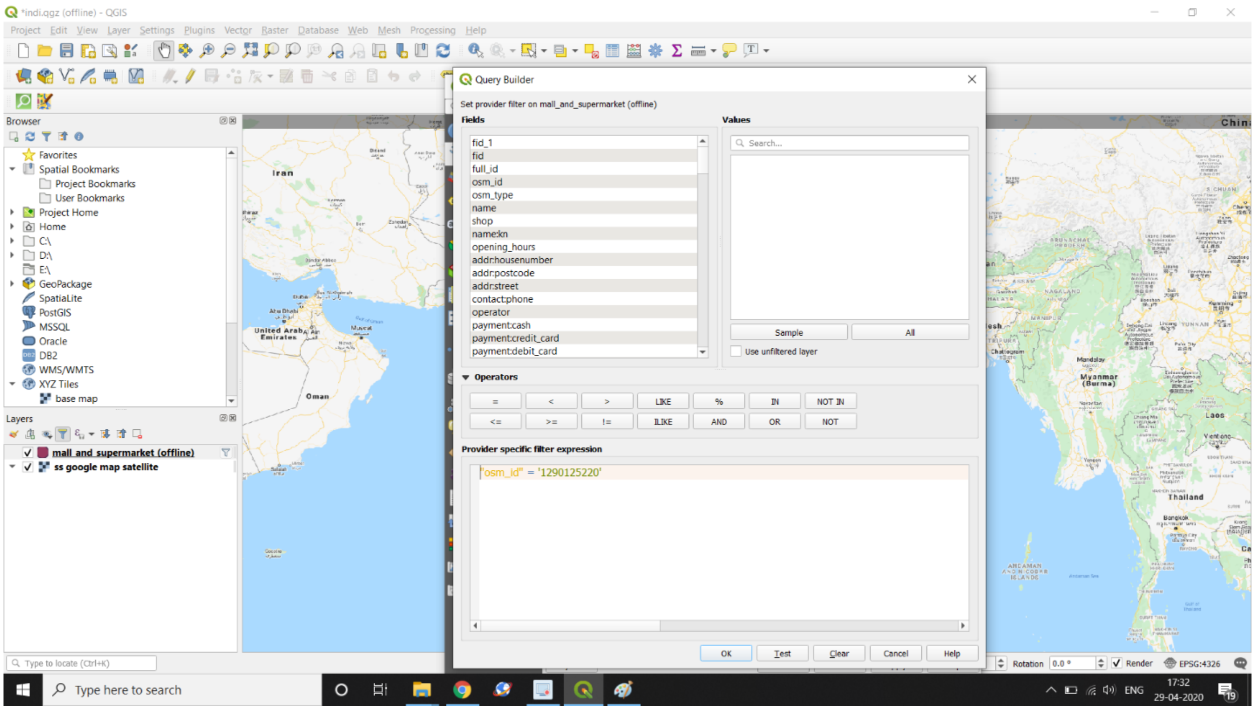

*indi.qgz (offline) - QGIS
Layers
mall_and_supermarket (offline)
ss google map satellite
Afghanistan
Pakistan
India
Majestic
Type here to search

6.

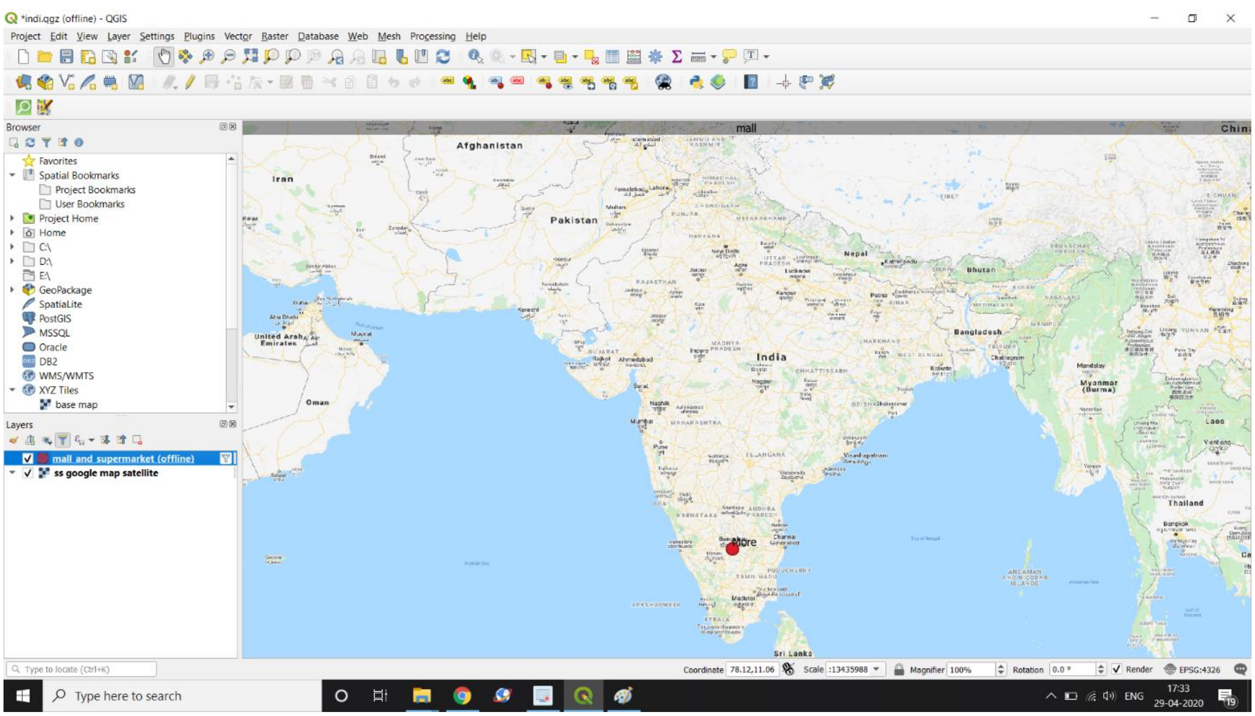

Query Builder
Set provider filter on mall_and_supermarket (offline)
"osm_id" = '1001586416'


Ragam Supermarket

7.

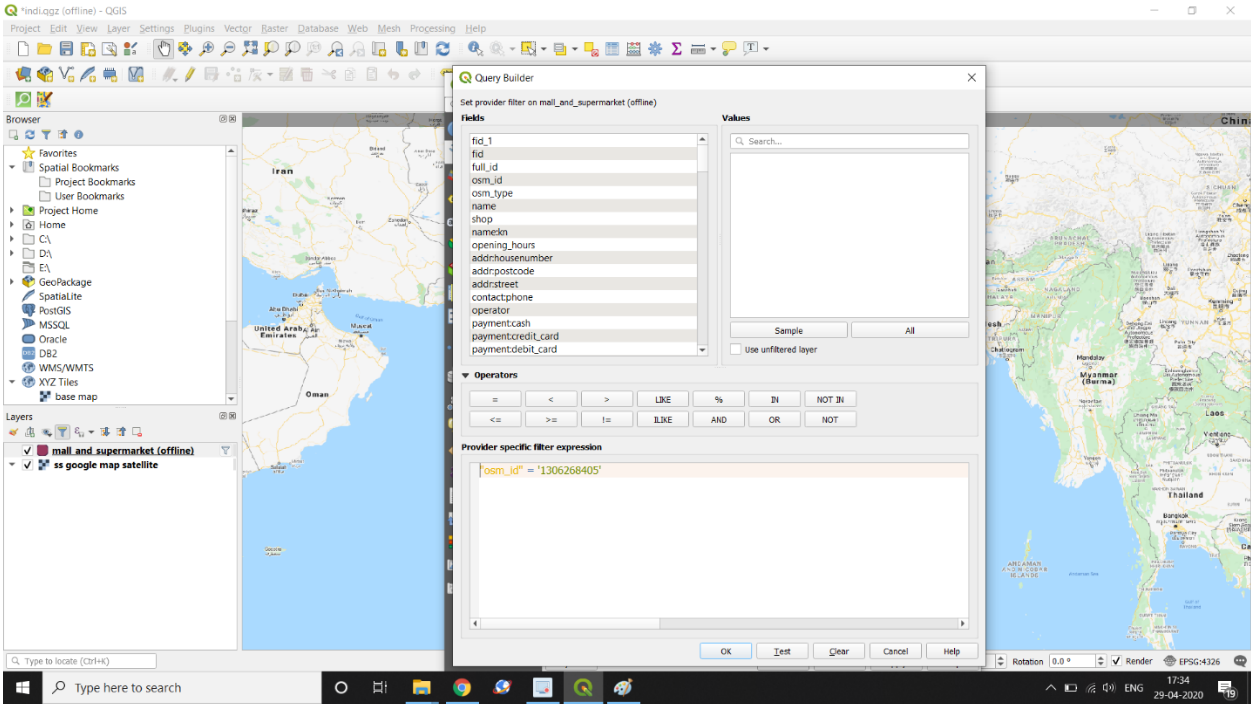


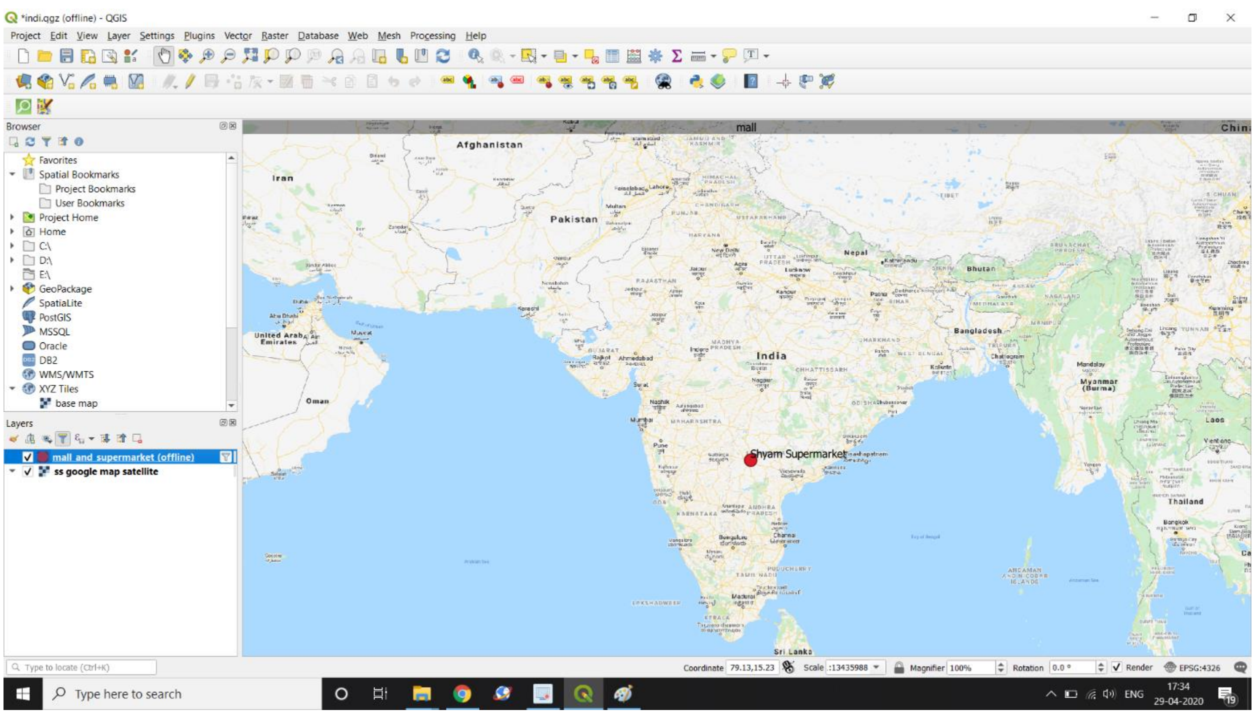
*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
C:\
D:\
E:\
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
Search...
Sample
All
Use unfiltered layer
Operators
= < > LIKE % IN NOT IN
<= >= != ILIKE AND OR NOT
Provider specific filter expression
"osm_id" = '1290125220'
OK Test Clear Cancel Help
Type to locate (Ctrl+K)
Rotation 0.0 ° Render EPSG:4326
Type here to search
ENG 17:32 29-04-2020



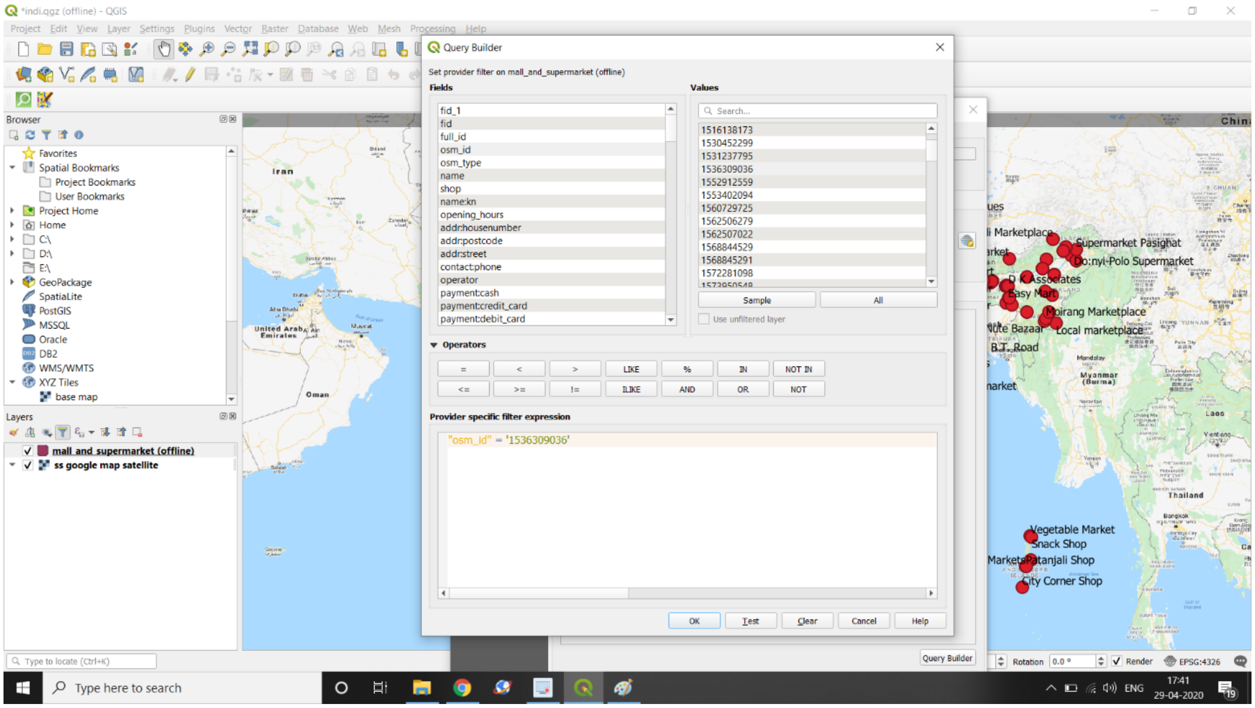
*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
C:\
D:\
E:\
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
mall
Afghanistan
Iran
Pakistan
Nepal
Bhutan
Bangladesh
India
Myanmar (Burma)
Thailand
Laos
Oman
United Arab Emirates
Sri Lanka
Type to locate (Ctrl+K)
Coordinate 78.12,11.06 Scale 1:13435988 Magnifier 100% Rotation 0.0 ° Render EPSG:4326
Type here to search
ENG 17:33 29-04-2020

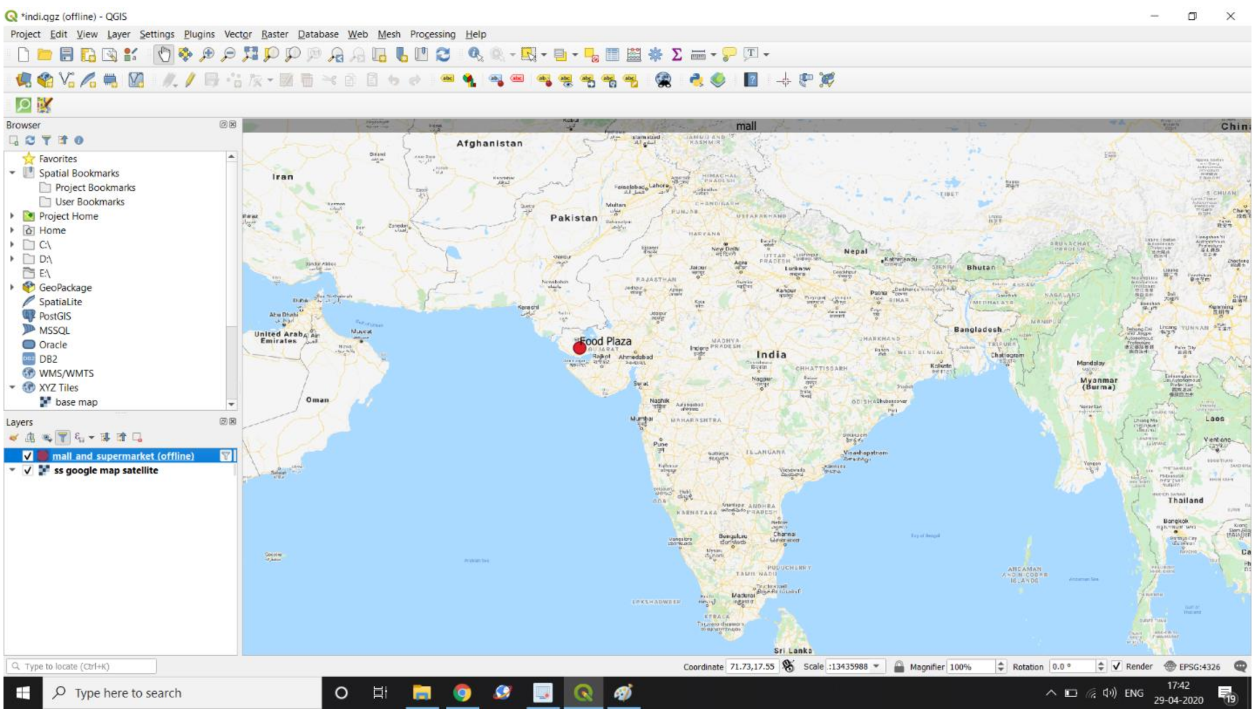
8.


*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
Search...
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"osm_id" = '1306268405'
OK
Test
Clear
Cancel
Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Type to locate (Ctrl+K)
Type here to search
17:34
29-04-2020

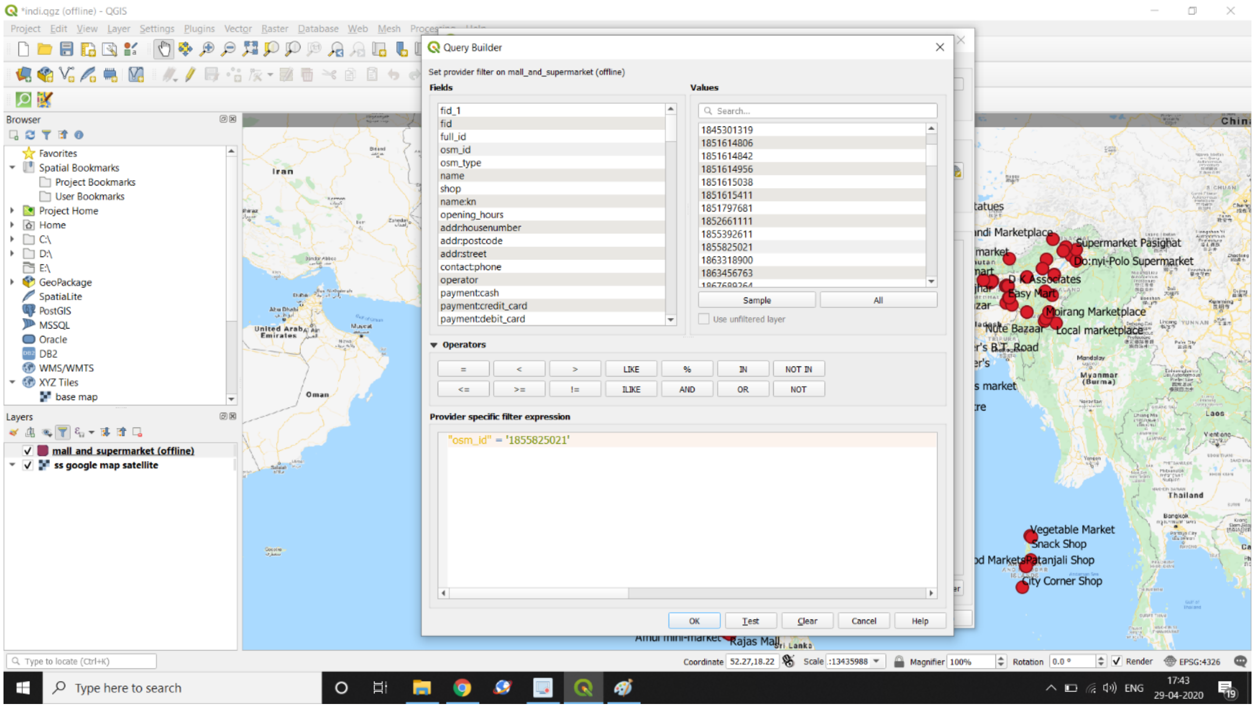

*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
mall
Afghanistan
Iran
Pakistan
Nepal
Bhutan
Bangladesh
India
Myanmar (Burma)
Thailand
Oman
United Arab Emirates
Sri Lanka
Shyam Supermarket
Coordinate 79.13,15.23
Scale 1:13435988
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type to locate (Ctrl+K)
Type here to search
17:34
29-04-2020

9.

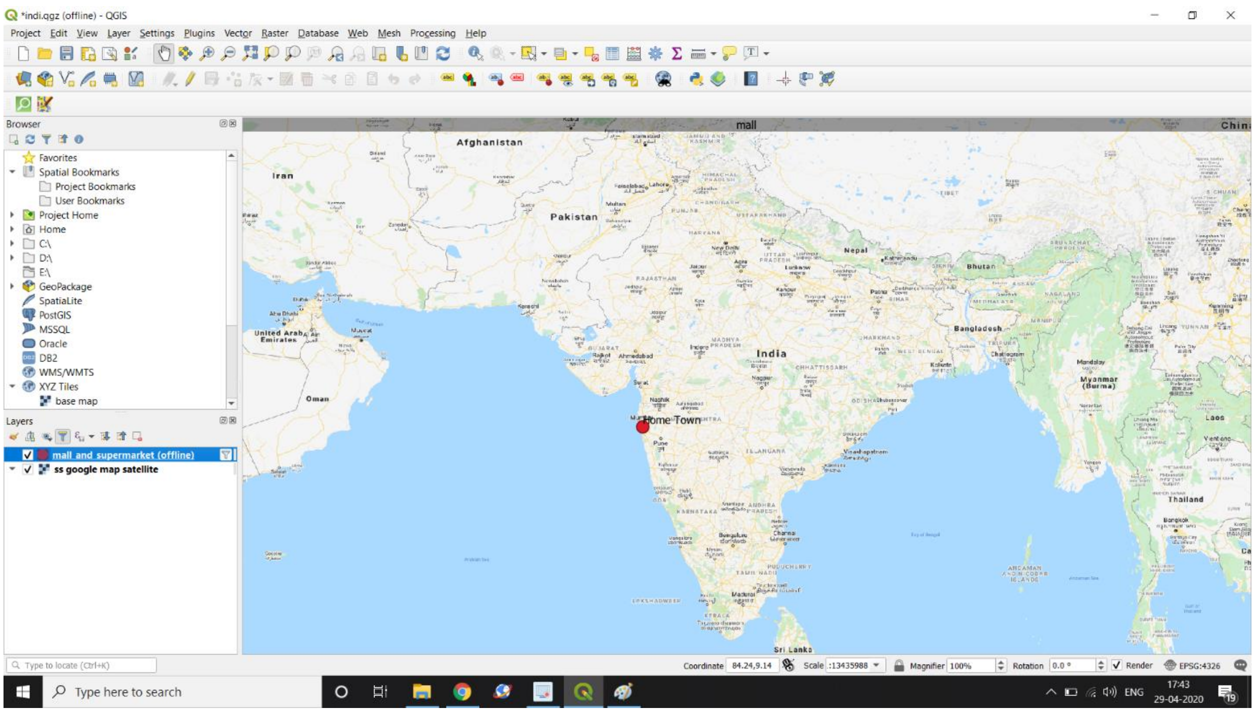

*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
Operators
Provider specific filter expression
"osm_id" = '1536309036'
Sample
All
Use unfiltered layer
OK
Test
Clear
Cancel
Help
mall and supermarket (offline)
ss google map satellite


*indi.qgz (offline) - QGIS
Food Plaza
mall and supermarket (offline)
ss google map satellite

10.

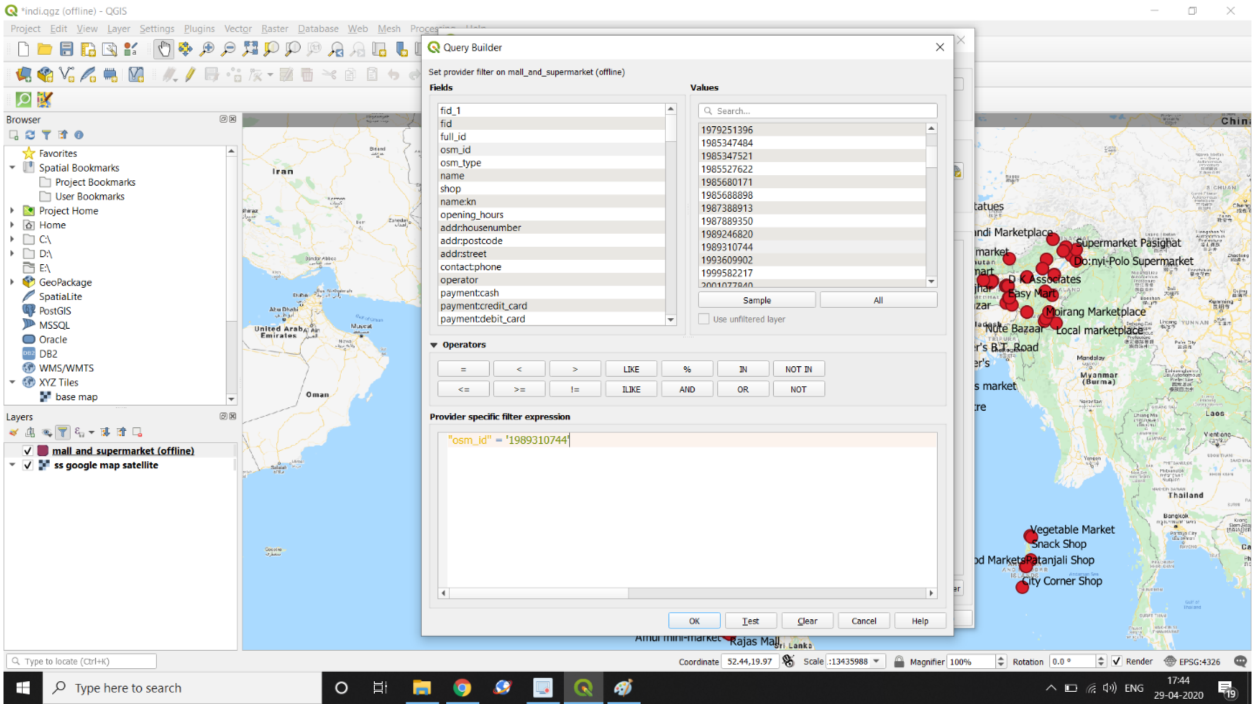


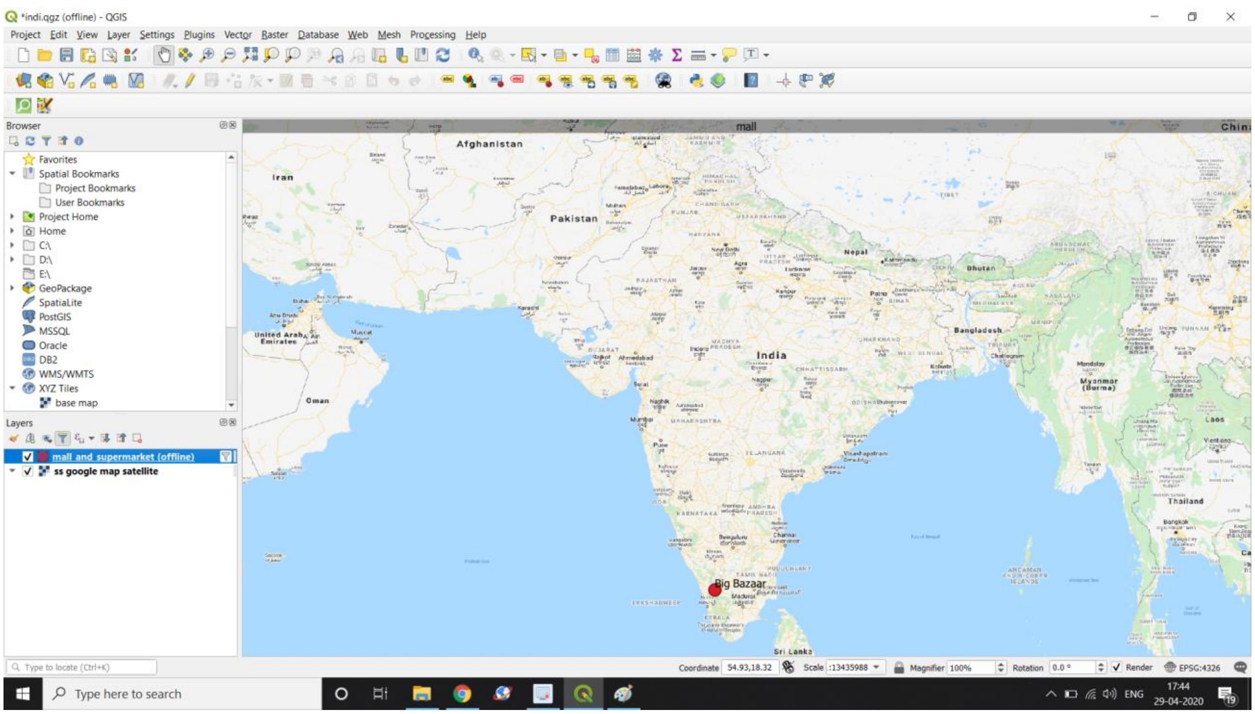
*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
1845301319
1851614806
1851614842
1851614956
1851615038
1851615411
1851797681
1852661111
1855392611
1855825021
1863318900
1863456763
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"osm_id" = '1855825021'
OK
Test
Clear
Cancel
Help
mall and supermarket (offline)
ss google map satellite
Type here to search



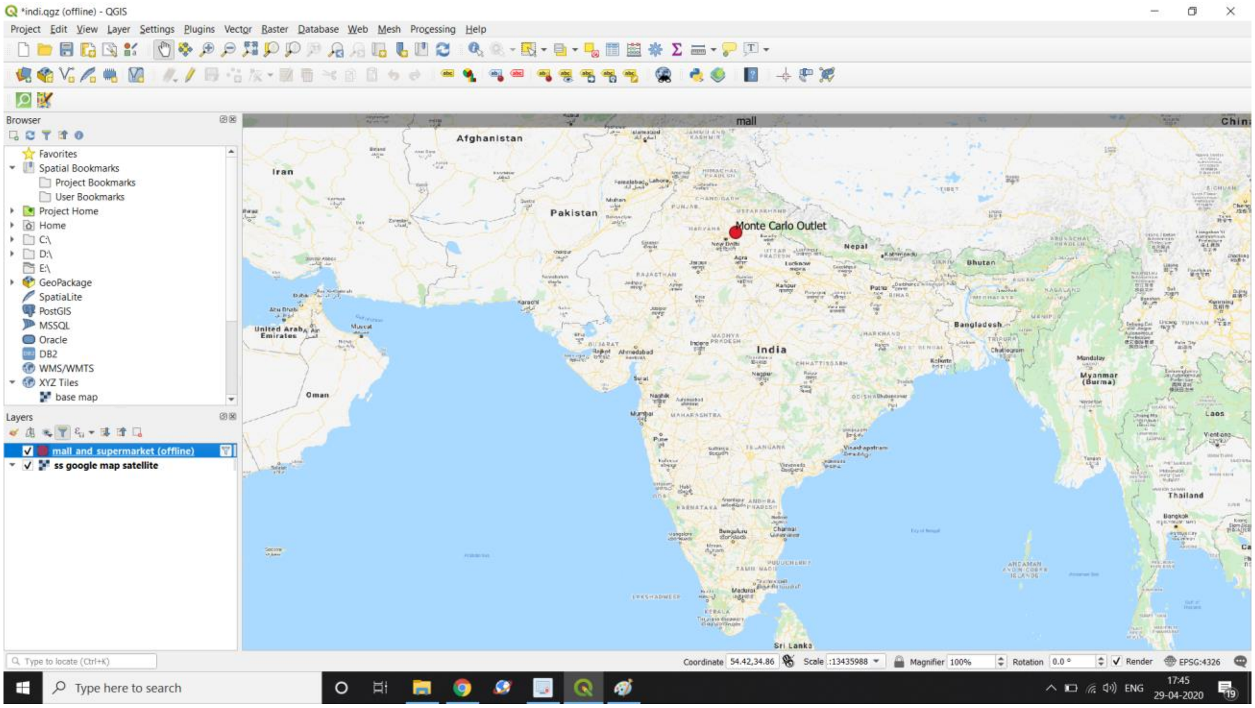
*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Layers
mall and supermarket (offline)
ss google map satellite
Home Town
Type here to search

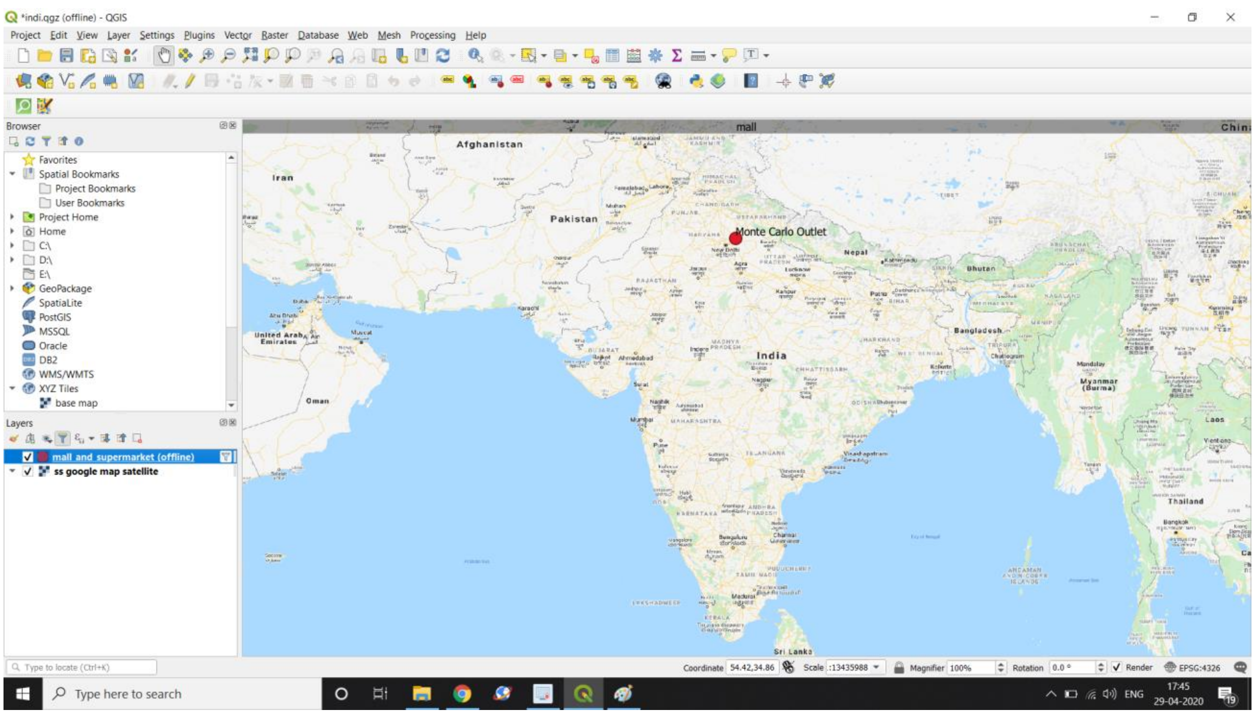
11


*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
Sample
All
Use unfiltered layer
Operators
Provider specific filter expression
"osm_id" = '1989310744'
OK
Test
Clear
Cancel
Help
mall_and_supermarket (offline)
ss google map satellite
Type here to search

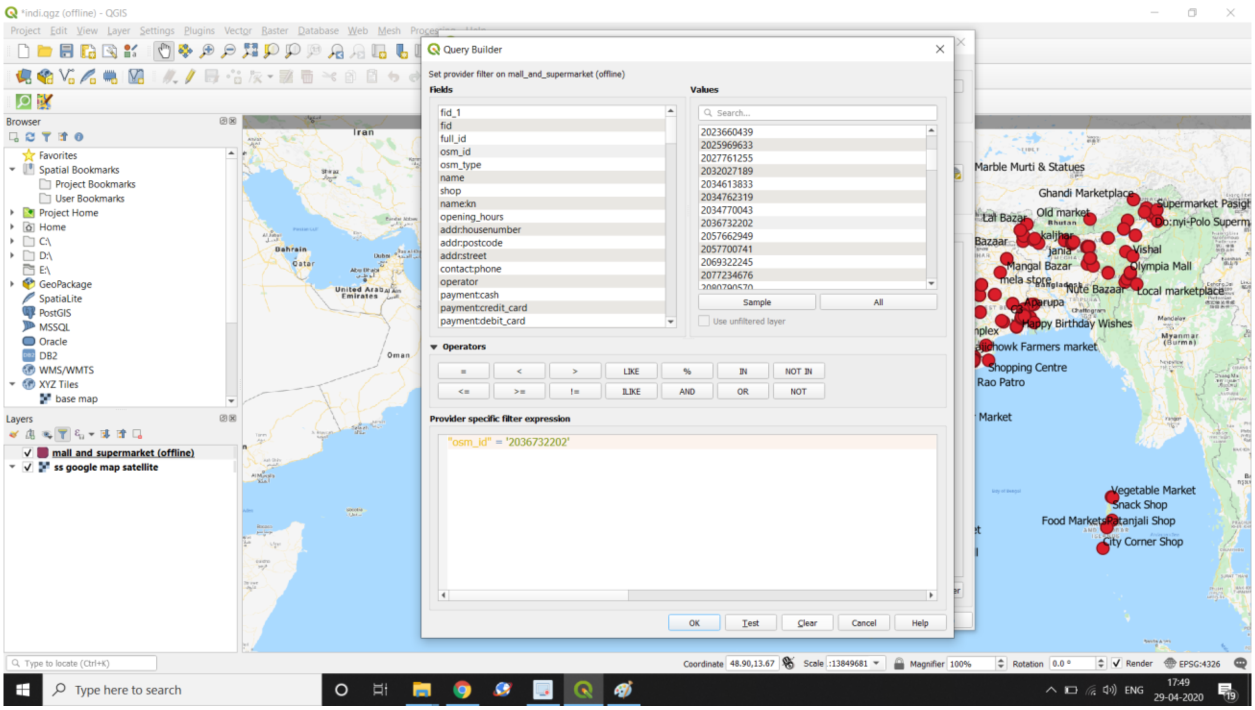

*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Layers
mall_and_supermarket (offline)
ss google map satellite
Afghanistan
Pakistan
India
Big Bazaar
Type here to search

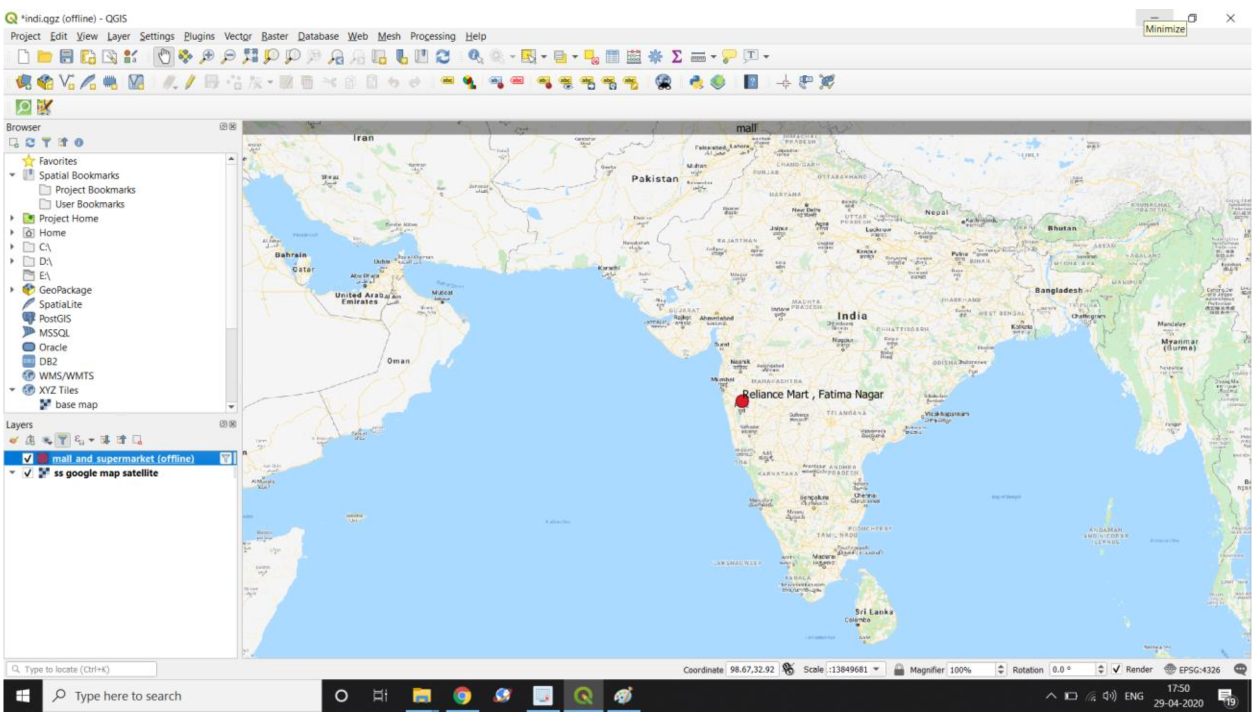
12


*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
C:\
D:\
E:\
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall and supermarket (offline)
ss google map satellite
mall
Afghanistan
Iran
Pakistan
Monte Carlo Outlet
Nepal
Bhutan
Bangladesh
India
Oman
United Arab Emirates
Myanmar (Burma)
Thailand
Laos
Sri Lanka
Type to locate (Ctrl+K)
Coordinate 54.42,34.86
Scale 1:13435988
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search
ENG
17:45
29-04-2020

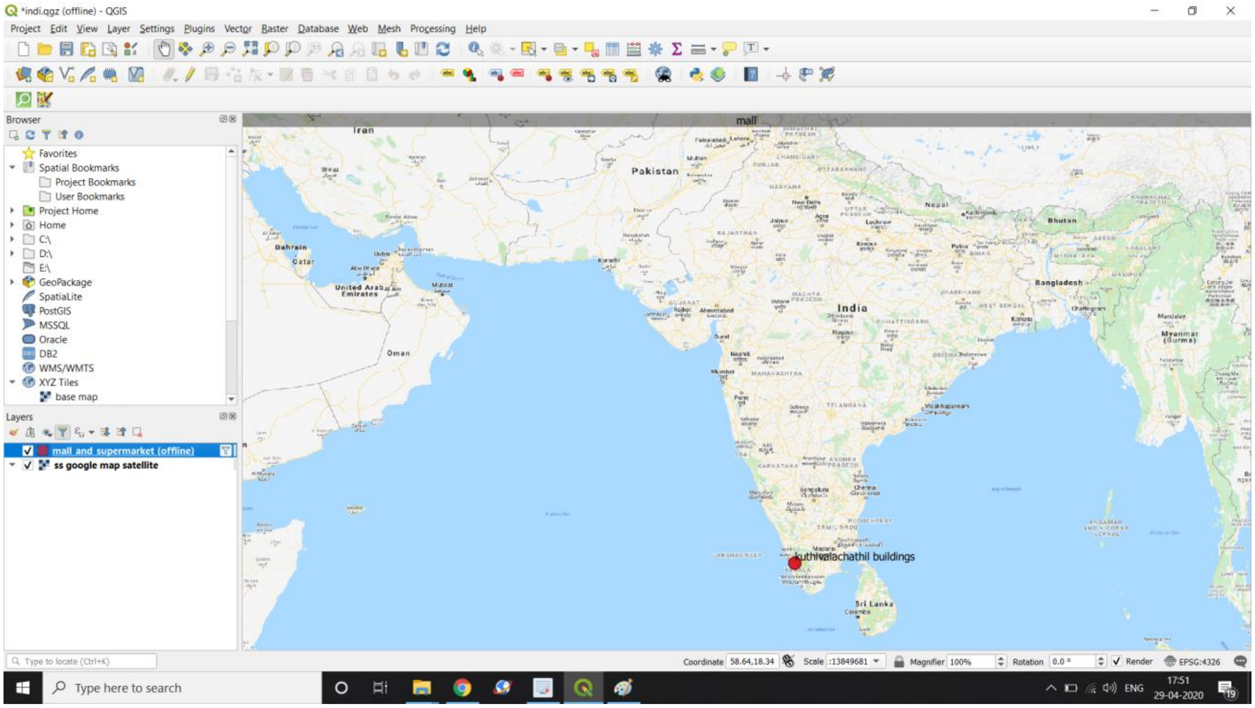

*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
C:\
D:\
E:\
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall and supermarket (offline)
ss google map satellite
mall
Afghanistan
Iran
Pakistan
Monte Carlo Outlet
Nepal
Bhutan
Bangladesh
India
Oman
United Arab Emirates
Myanmar (Burma)
Thailand
Laos
Sri Lanka
Type to locate (Ctrl+K)
Coordinate 54.42,34.86
Scale 1:13435988
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search
ENG
17:45
29-04-2020

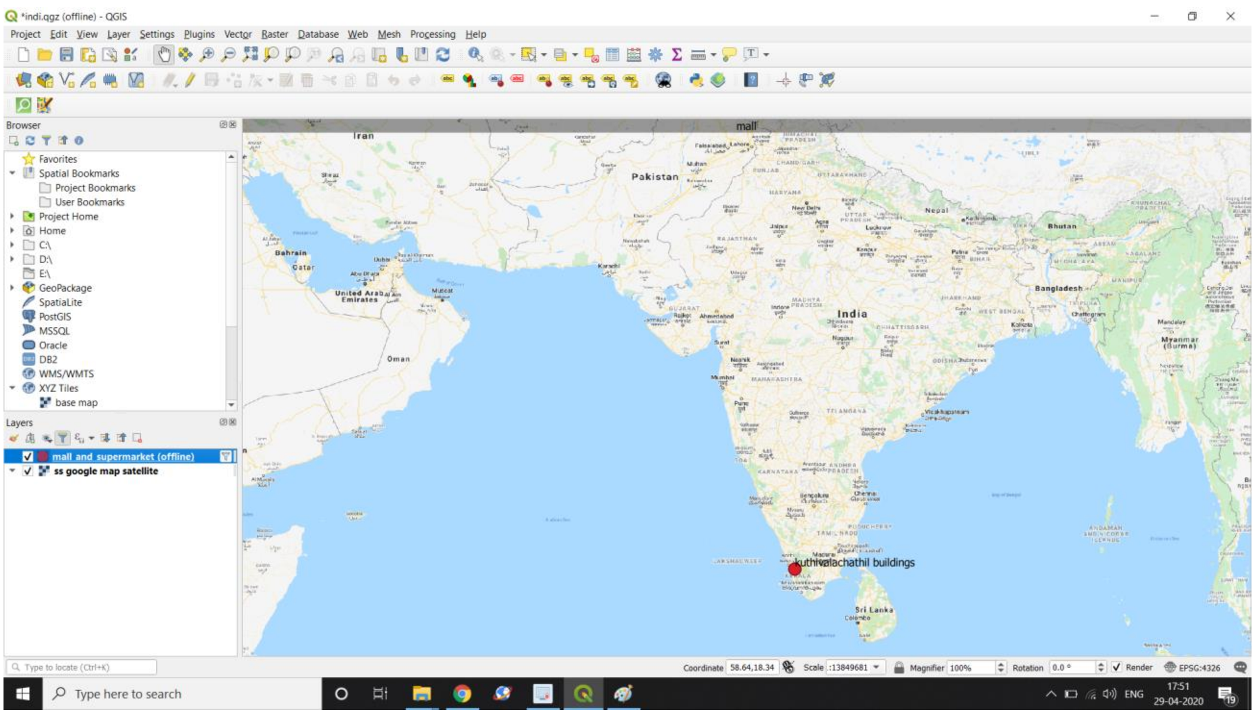
13


*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
2023660439
2025969633
2027761255
2032027189
2034613833
2034762319
2034770043
2036732202
2057662949
2057700741
2069322245
2077234676
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"osm_id" = '2036732202'
OK
Test
Clear
Cancel
Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall and supermarket (offline)
ss google map satellite
Marble Murti & Statues
Ghandi Marketplace
Supermarket Pasigh
Old market
Vishal
Olympia Mall
Local marketplace
Shopping Centre
Rao Patro
Market
Vegetable Market
Snack Shop
Food Market
Patanjali Shop
City Corner Shop
Type here to search
17:49
29-04-2020

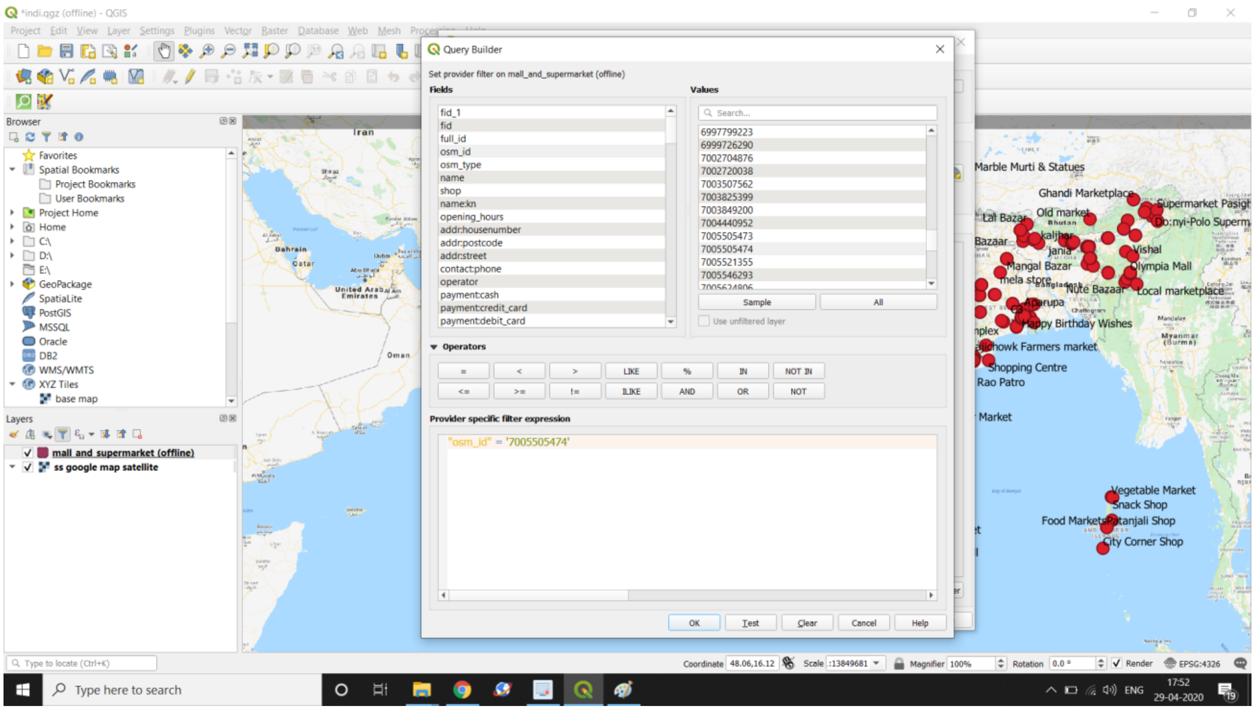

*indi.qgz (offline) - QGIS
Project
Edit
View
Layer
Settings
Plugins
Vector
Raster
Database
Web
Mesh
Processing
Help
Minimize
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall and supermarket (offline)
ss google map satellite
Pakistan
India
Nepal
Bhutan
Bangladesh
Sri Lanka
Oman
Reliance Mart , Fatima Nagar
Type here to search
17:50
29-04-2020

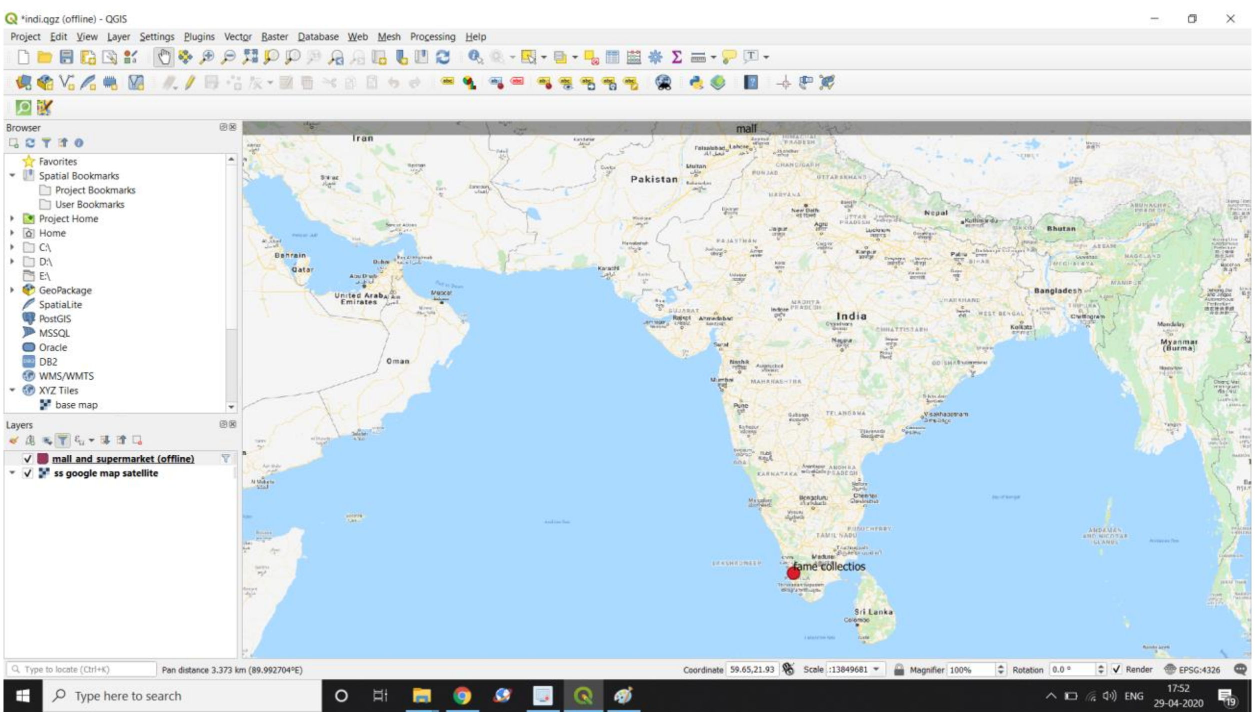
14


*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
C:\
D:\
E:\
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall and supermarket (offline)
ss google map satellite
mall
kuthiravalachathil buildings
Coordinate 58.64,18.34
Scale 1:13849681
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search
ENG
17:51
29-04-2020

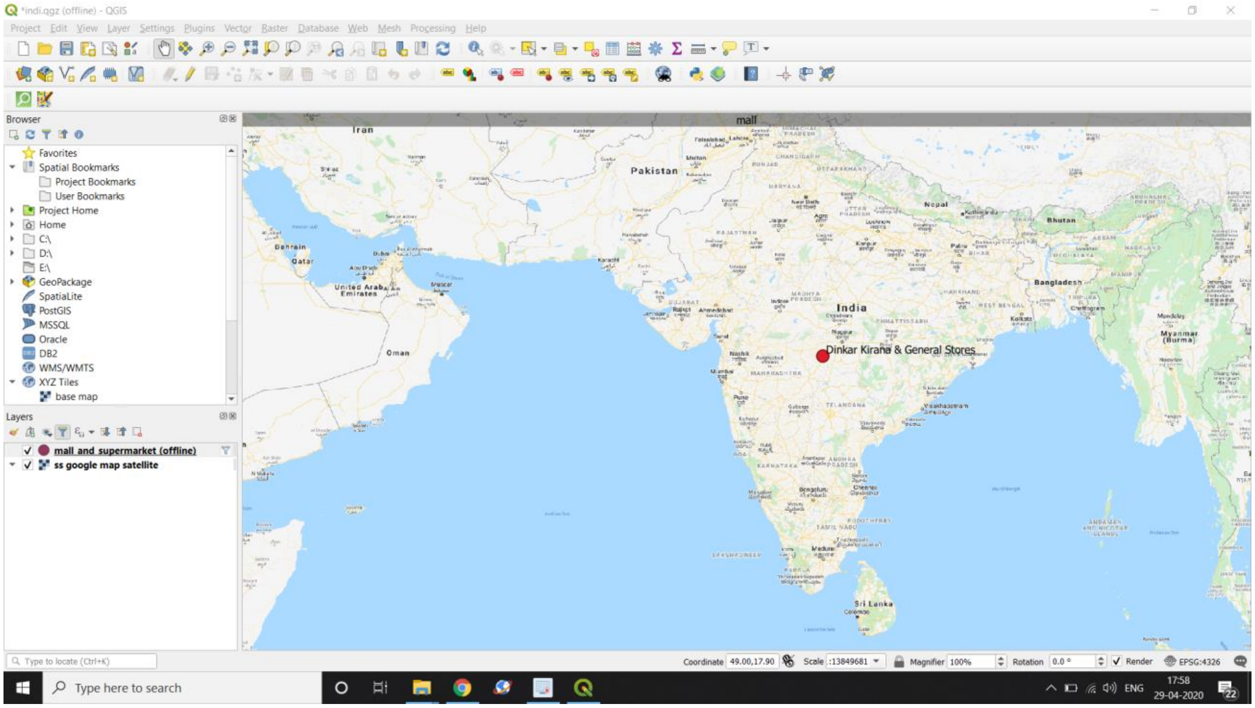

*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
C:\
D:\
E:\
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall and supermarket (offline)
ss google map satellite
mall
kuthiravalachathil buildings
Coordinate 58.64,18.34
Scale 1:13849681
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search
ENG
17:51
29-04-2020

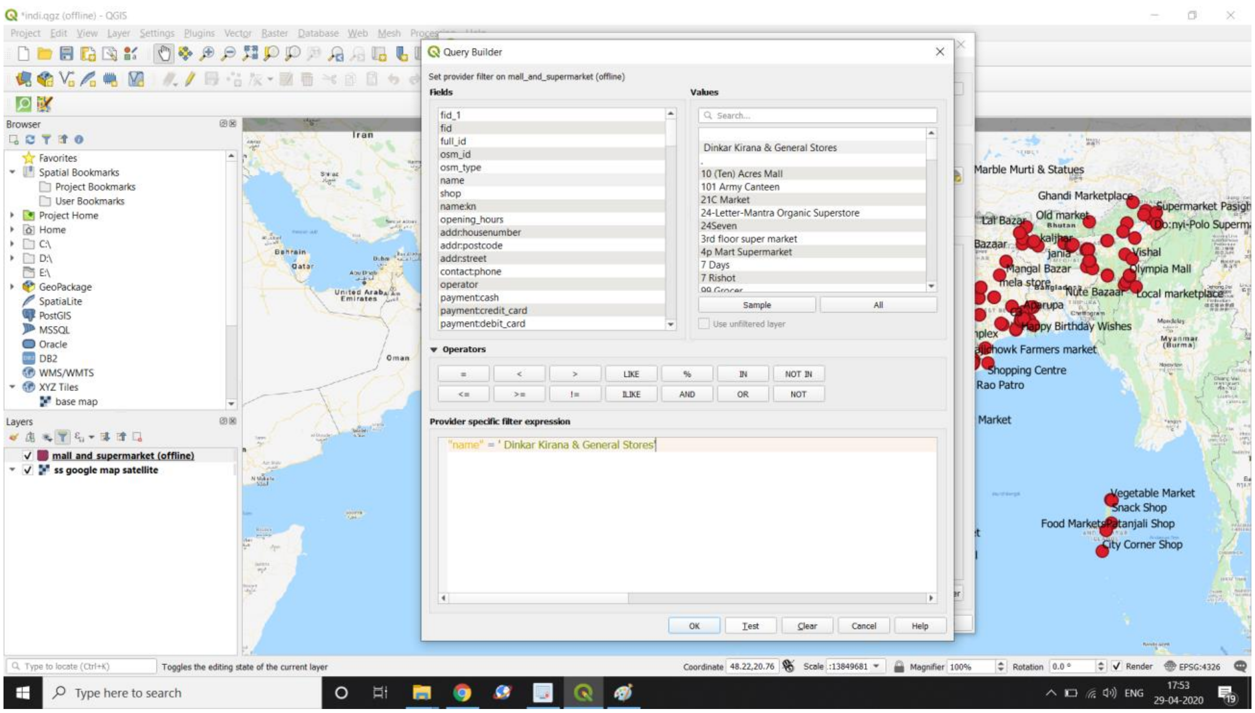
16


*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
6997799223
6999726290
7002704876
7002720038
7003507562
7003825399
7003849200
7004440952
7005505473
7005505474
7005521355
7005546293
Sample
All
Use unfiltered layer
Operators
Provider specific filter expression
"osm_id" = '7005505474'
OK
Test
Clear
Cancel
Help
Layers
mall and supermarket (offline)
ss google map satellite

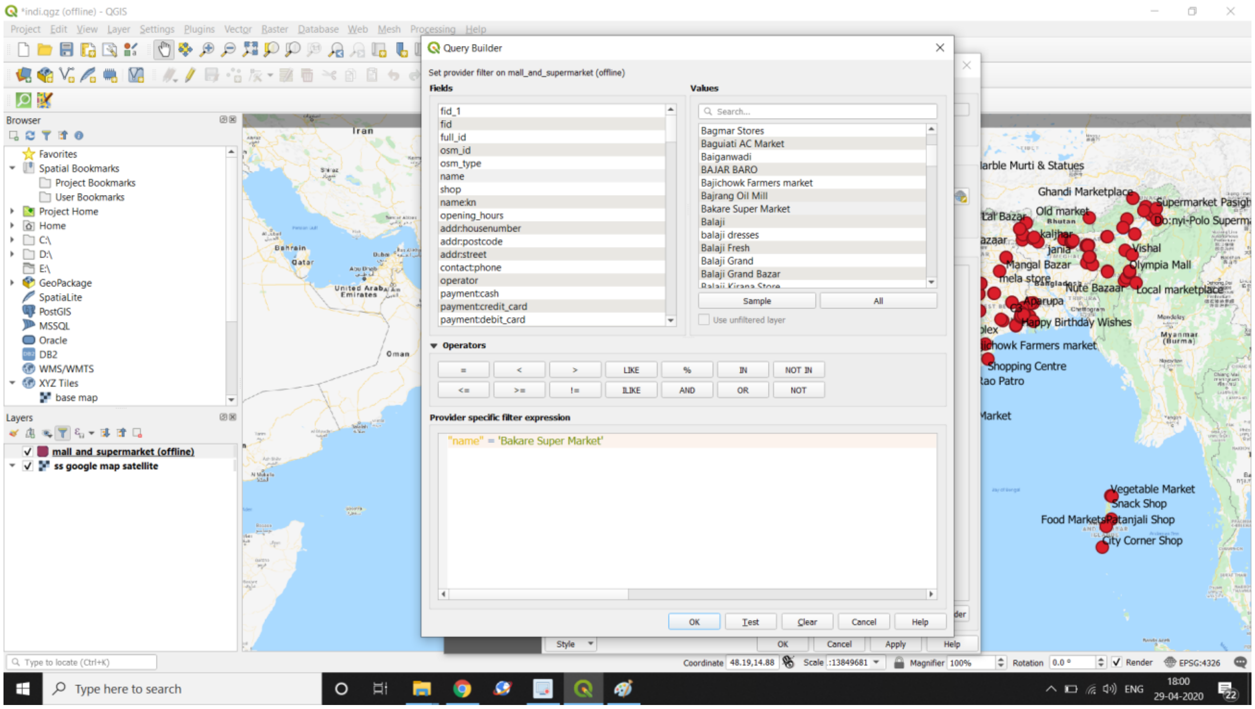

*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall and supermarket (offline)
ss google map satellite
Pakistan
India
Sri Lanka
fame collectios
Pan distance 3.373 km (89.992704°E)
Coordinate 59.65,21.93
Scale 1:13849681
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search
17:52
29-04-2020

17

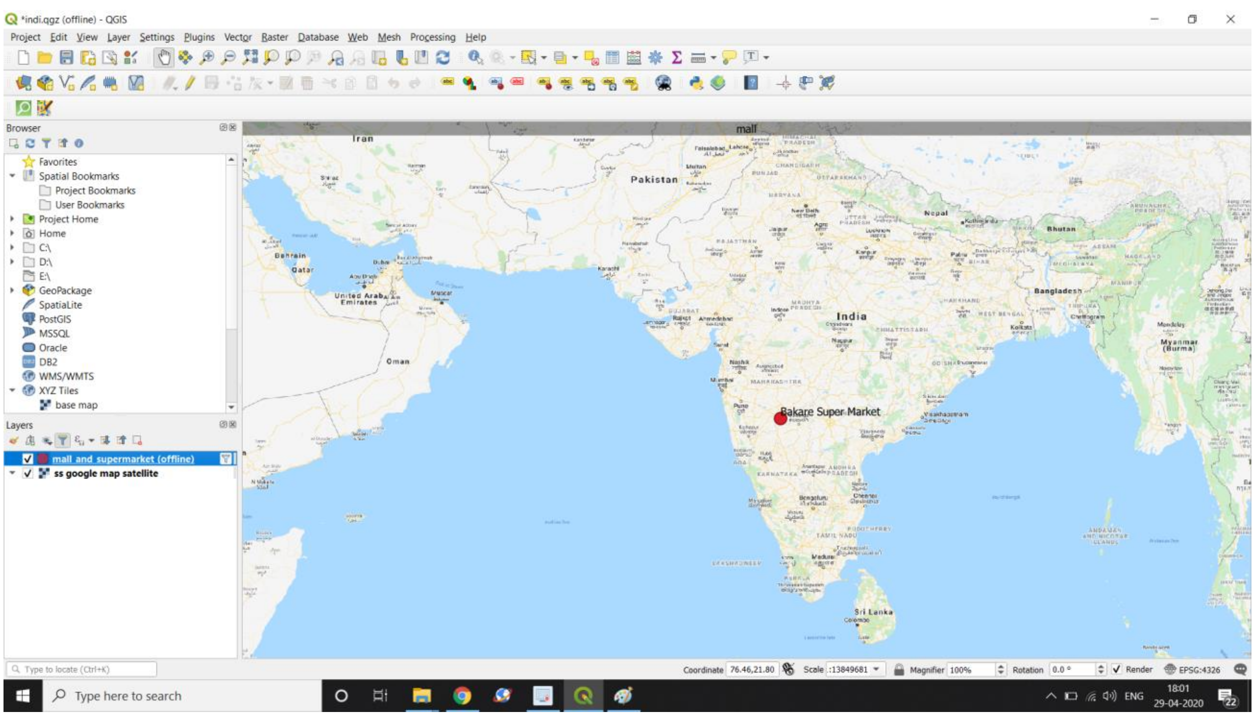

*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
C:\
D:\
E:\
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall and supermarket (offline)
ss google map satellite
Pakistan
India
Dinkar Kirana & General Stores
Sri Lanka
Oman
Coordinate 49.00,17.90
Scale 1:13849681
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search
17:58
29-04-2020


*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
Search...
Dinkar Kirana & General Stores
10 (Ten) Acres Mall
101 Army Canteen
21C Market
24-Letter-Mantra Organic Superstore
24Seven
3rd floor super market
4p Mart Supermarket
7 Days
7 Rishot
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"name" = ' Dinkar Kirana & General Stores'
OK
Test
Clear
Cancel
Help
Marble Murti & Statues
Ghandi Marketplace
Supermarket Pasig
Old market
Vishal
Olympia Mall
Mangal Bazar
Local marketplace
Happy Birthday Wishes
Shopping Centre
Rao Patro
Market
Vegetable Market
Snack Shop
Food Markets
Patanjali Shop
City Corner Shop
Toggles the editing state of the current layer
Coordinate 48.22,20.76
Scale 1:13849681
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search
17:53
29-04-2020

18

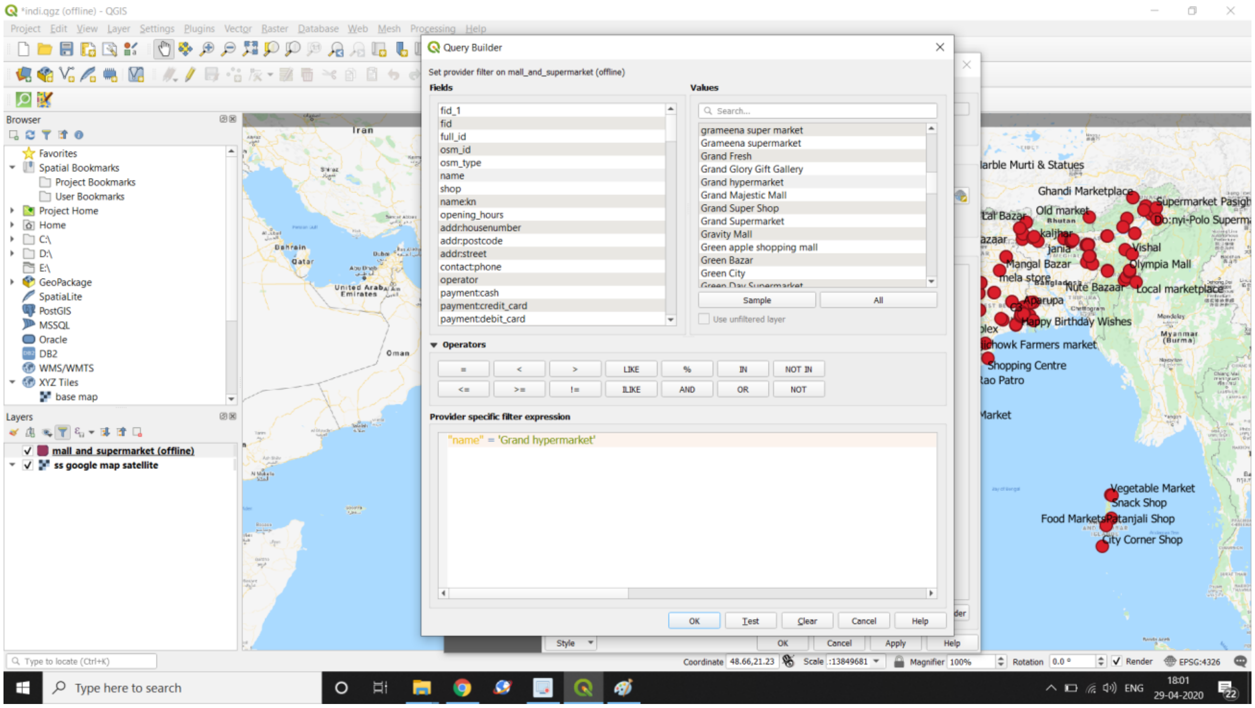


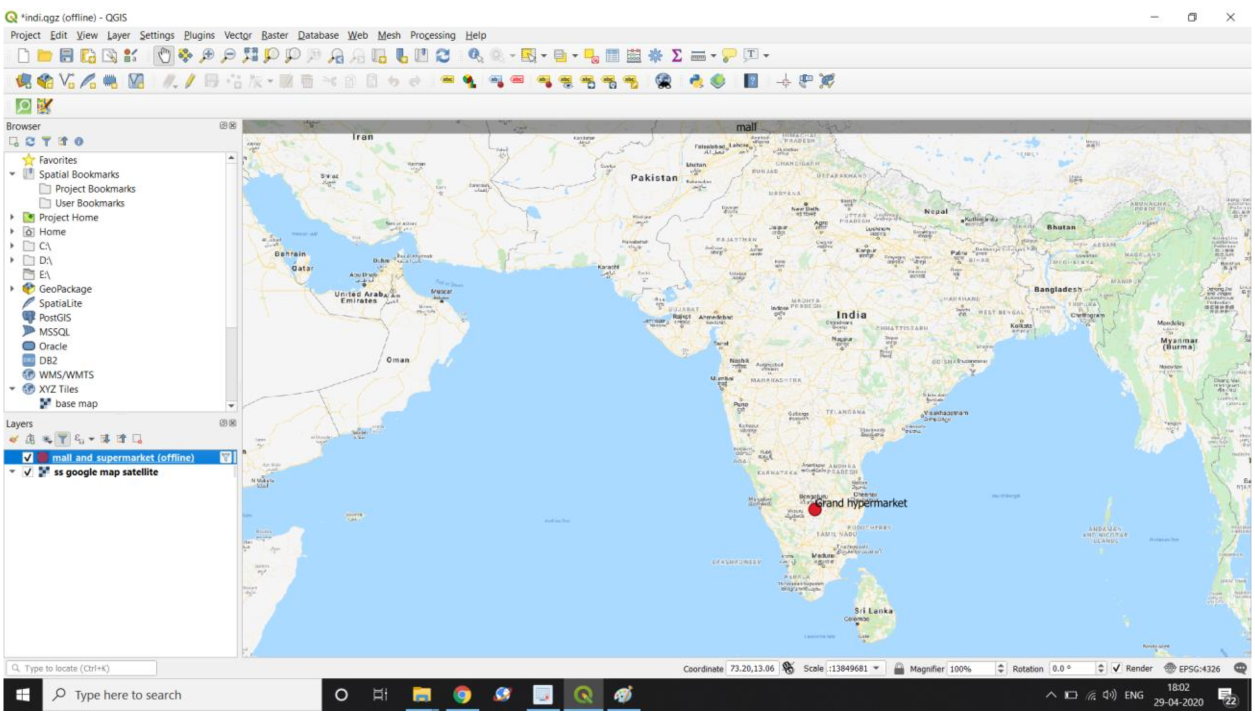
*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
Bagmar Stores
Baguiati AC Market
Baiganwadi
BAJAR BARO
Bajichowk Farmers market
Bajrang Oil Mill
Bakare Super Market
Balaji
balaji dresses
Balaji Fresh
Balaji Grand
Balaji Grand Bazar
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"name" = 'Bakare Super Market'
OK
Test
Clear
Cancel
Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Type here to search



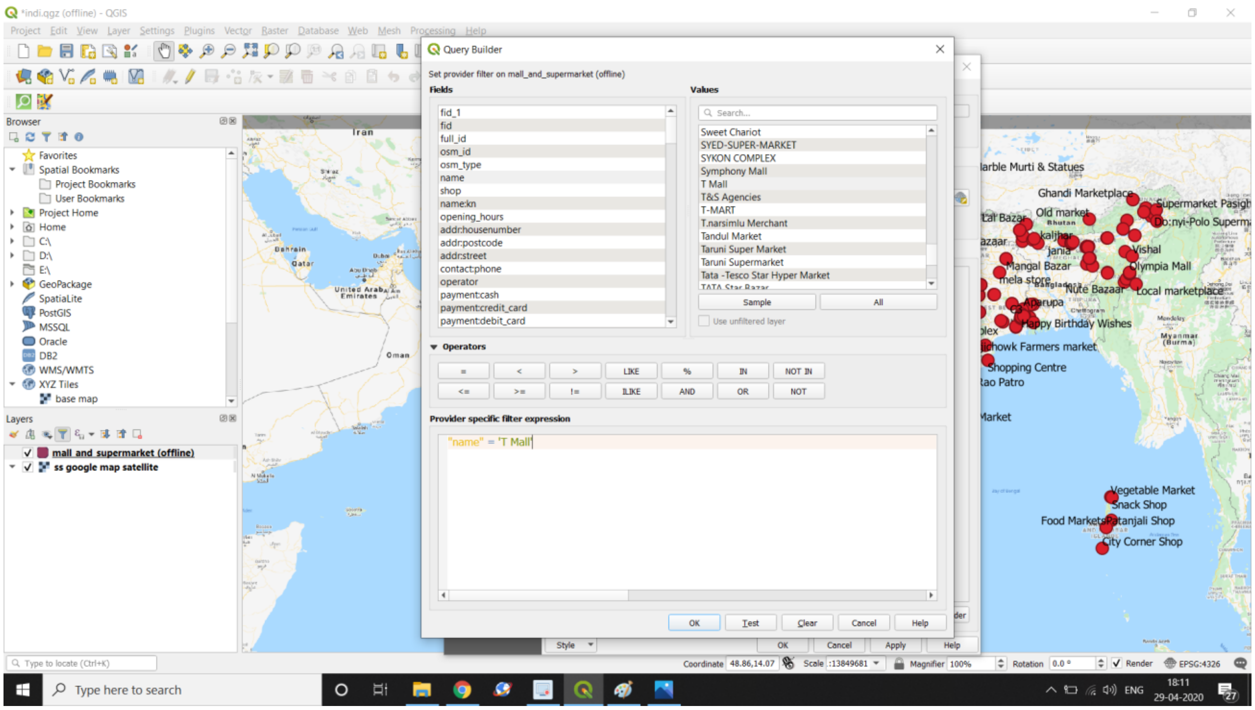
*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Layers
mall_and_supermarket (offline)
ss google map satellite
Bakare Super Market
Type here to search

19

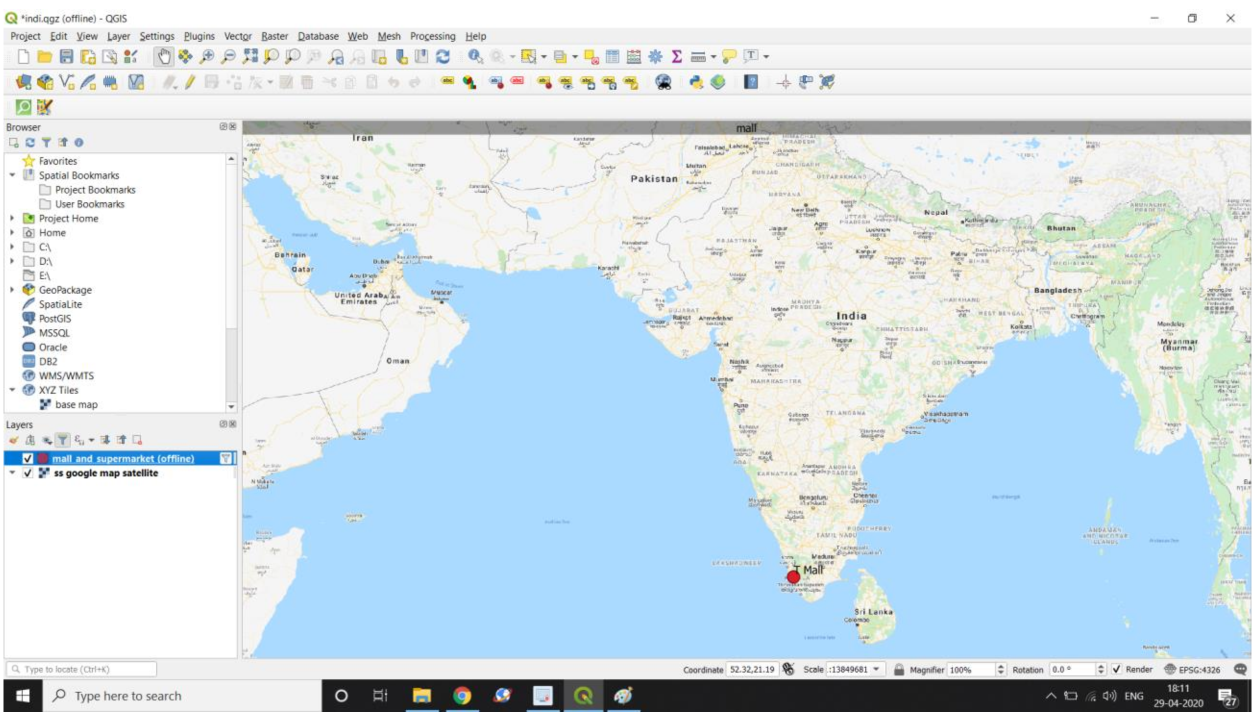

*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
Operators
Provider specific filter expression
"name" = 'Grand hypermarket'
OK
Test
Clear
Cancel
Help
Browser
Layers
mall_and_supermarket (offline)
ss google map satellite
Type here to search


*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Layers
mall_and_supermarket (offline)
ss google map satellite
Grand hypermarket
India
Type here to search

20

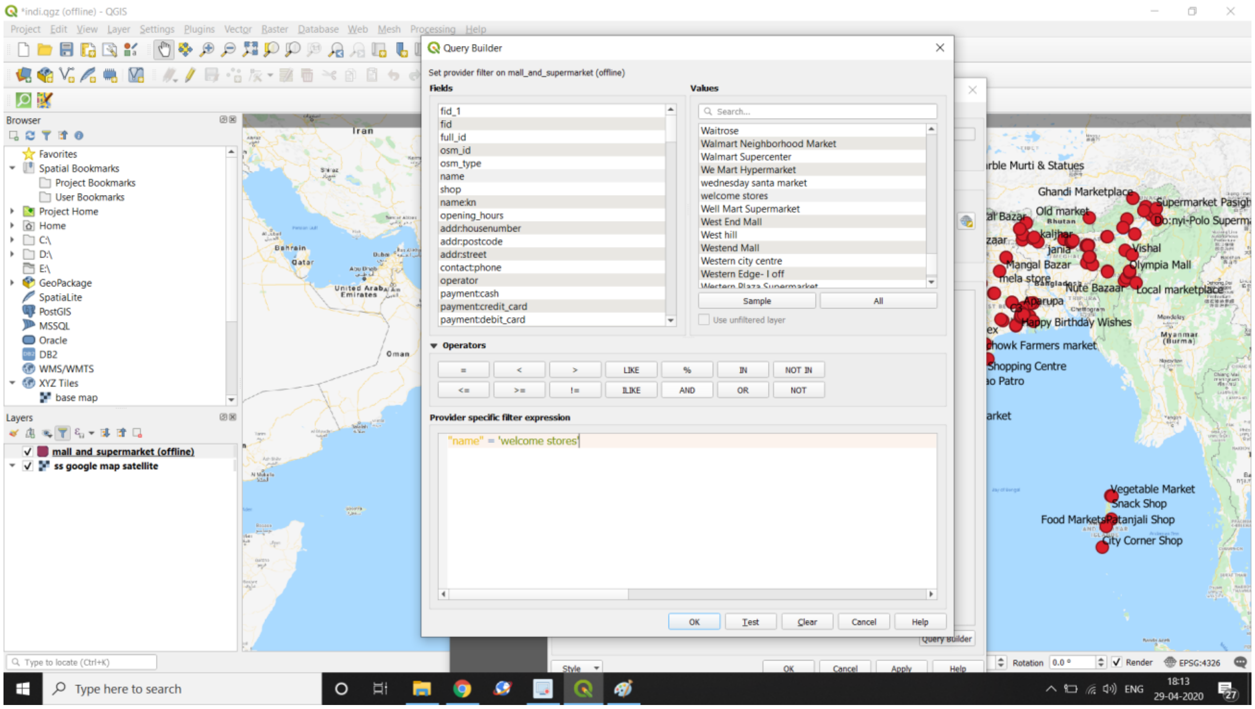


Query Builder
Set provider filter on mall_and_supermarket (offline)
"name" = 'T Mall'

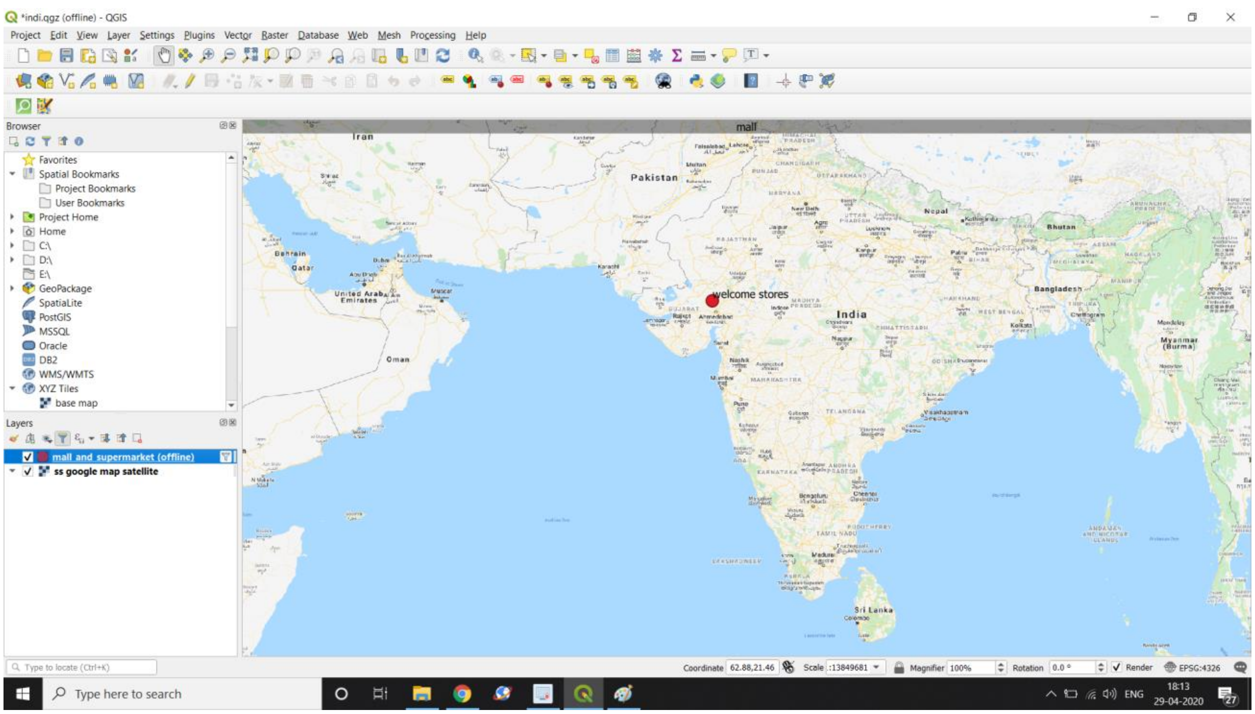


*indi.qgz (offline) - QGIS
India
T Mall
Sri Lanka

21

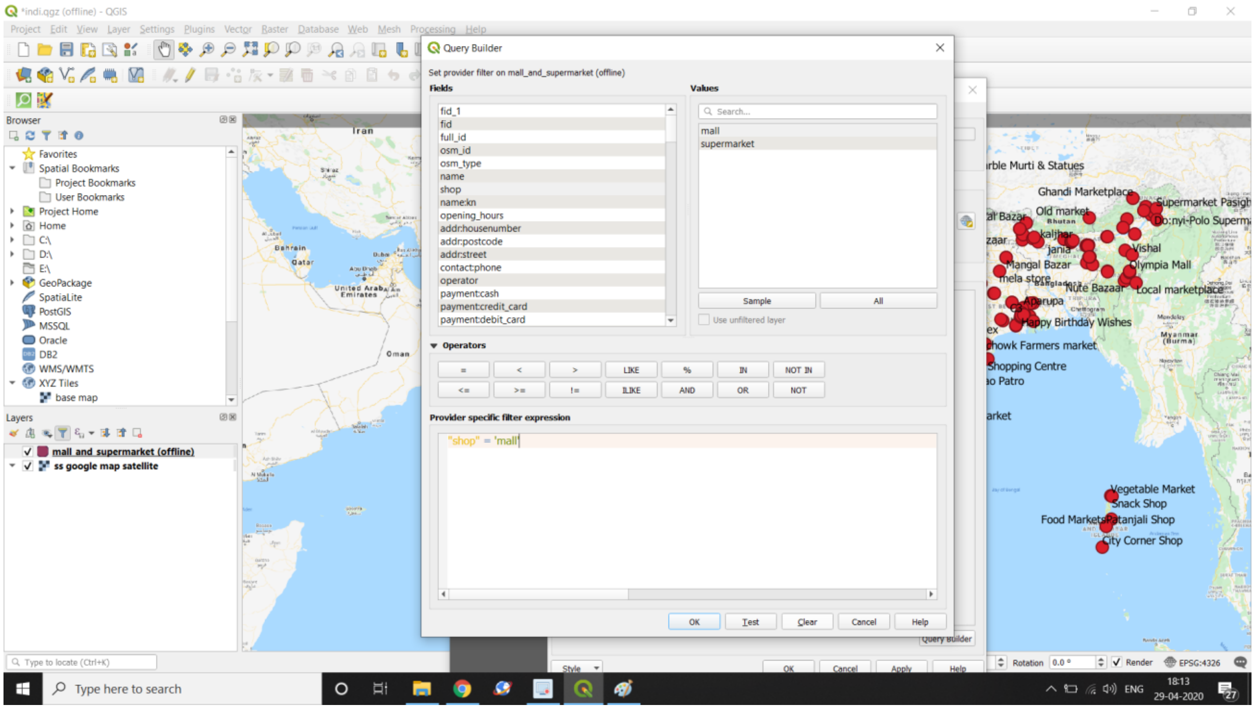


*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
Operators
Provider specific filter expression
"name" = 'welcome stores'
OK
Test
Clear
Cancel
Help

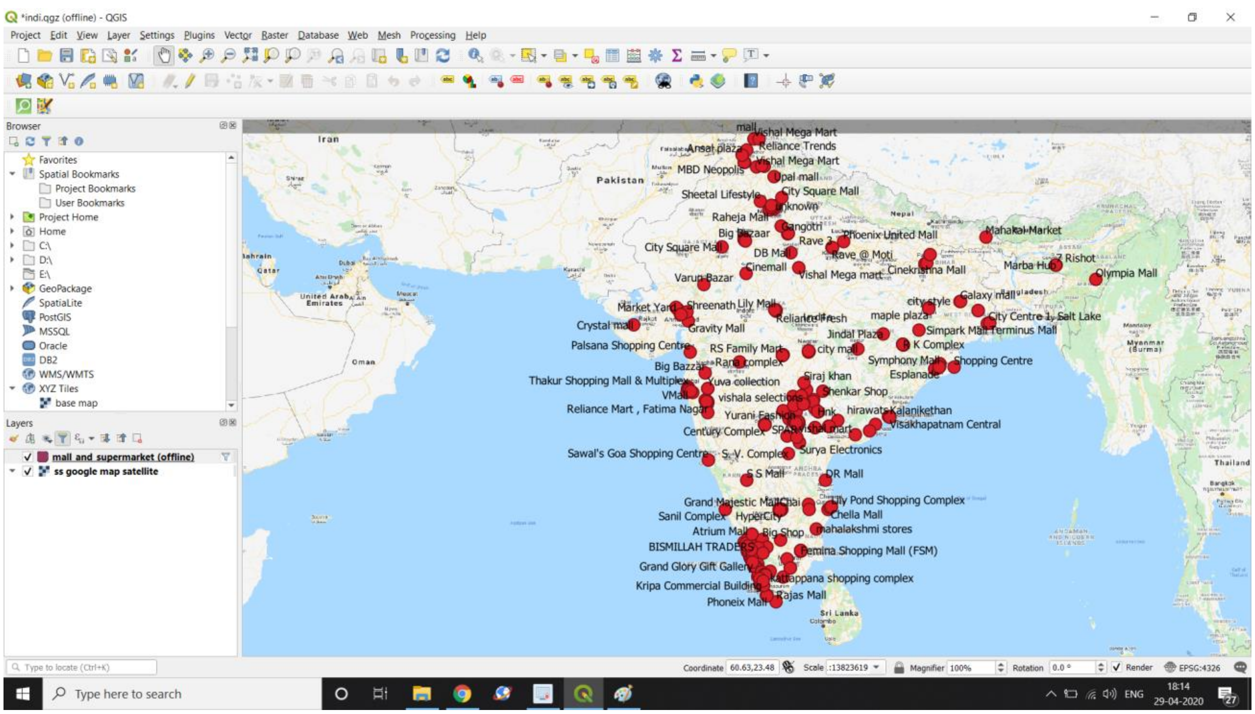


*indi.qgz (offline) - QGIS
mall and supermarket (offline)
ss google map satellite
welcome stores

22

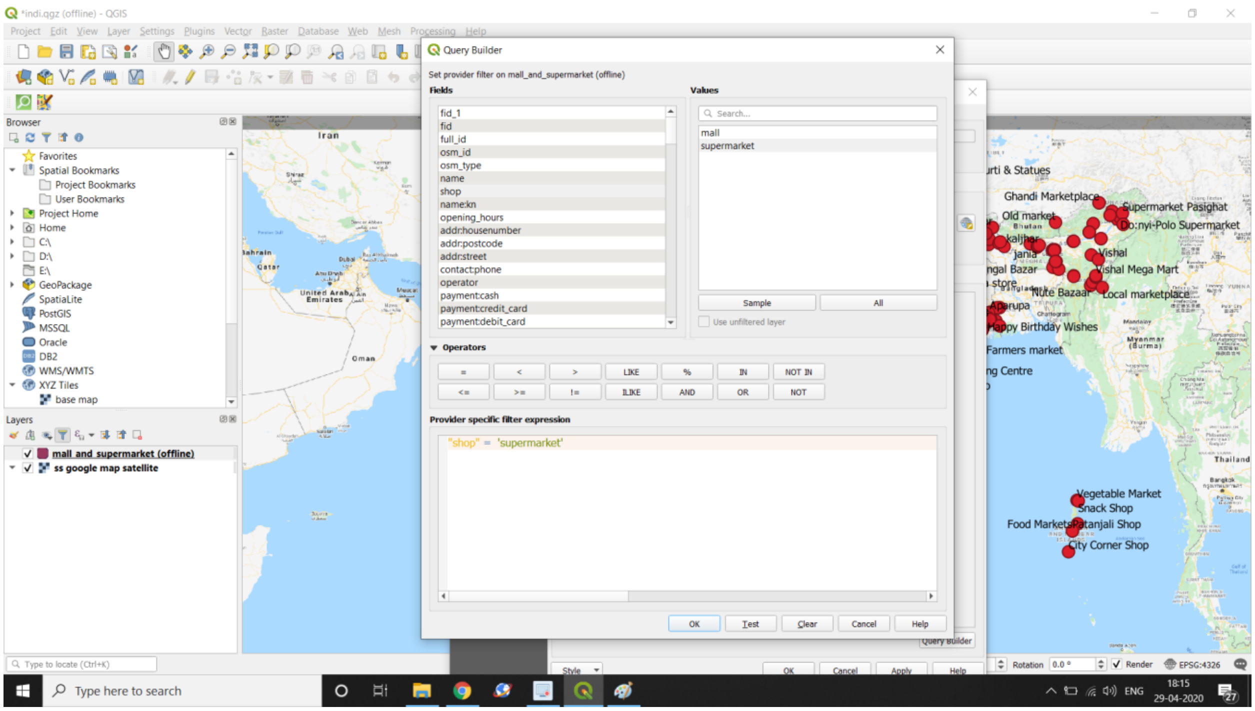


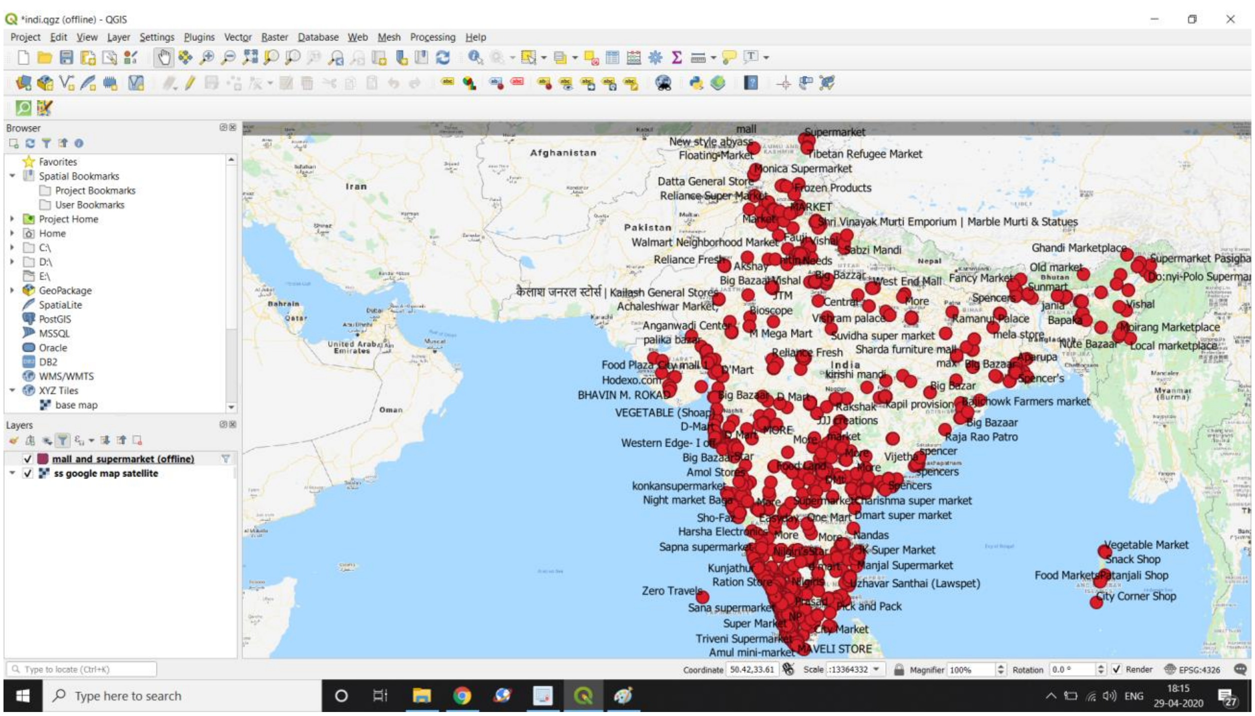
*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
mall
supermarket
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"shop" = 'mall'
OK
Test
Clear
Cancel
Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
C:\
D:\
E:\
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Type here to search

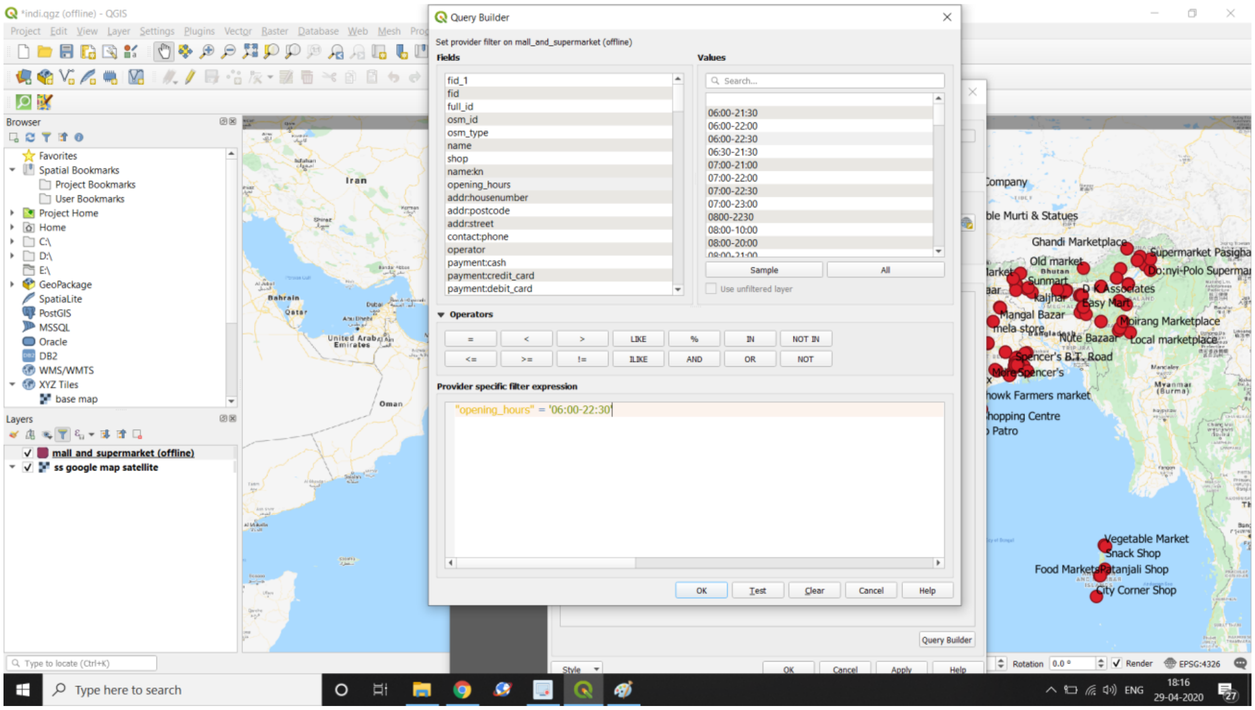


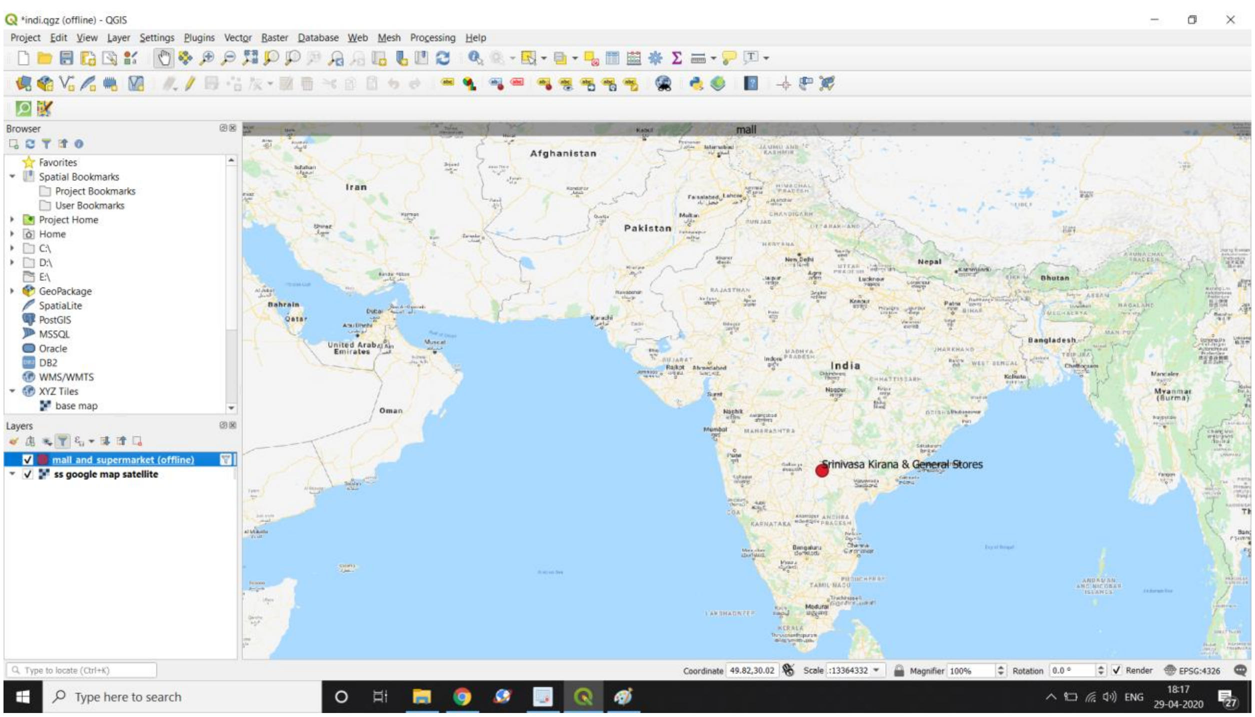
*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
C:\
D:\
E:\
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Coordinate 60.63,23.48
Scale 1:13823619
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search

23

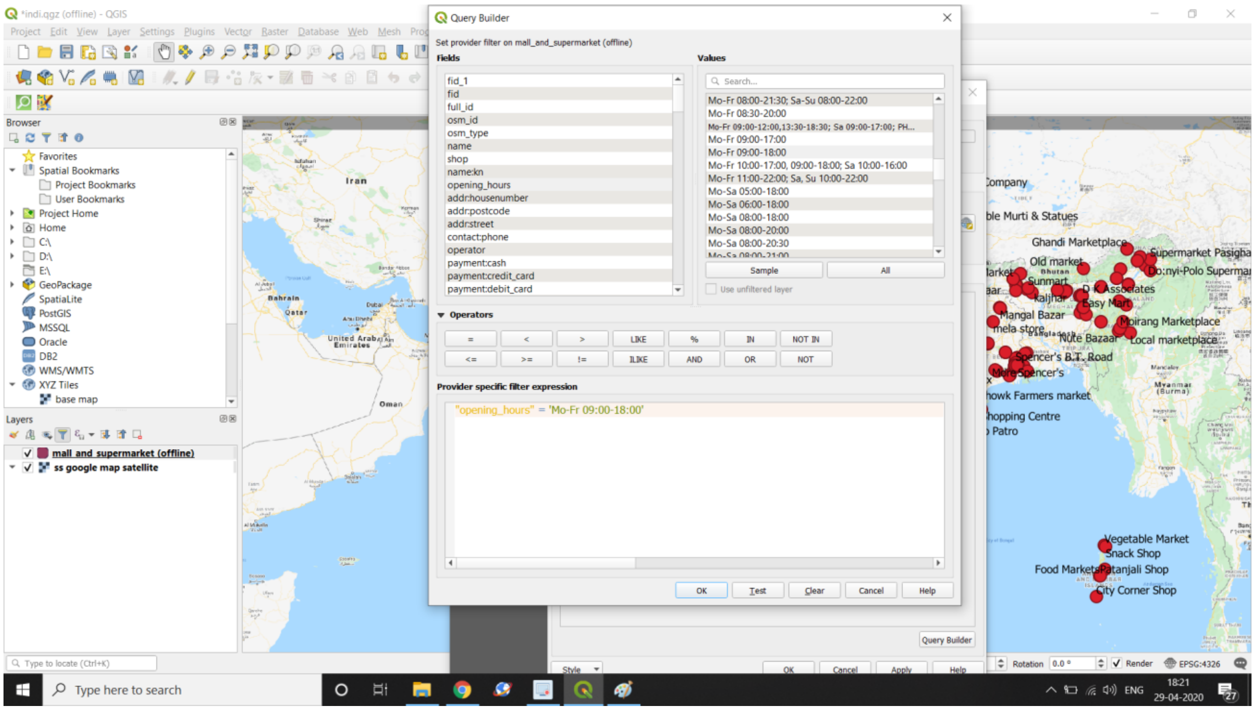

Query Builder
Set provider filter on mall_and_supermarket (offline)
"shop" = 'supermarket'

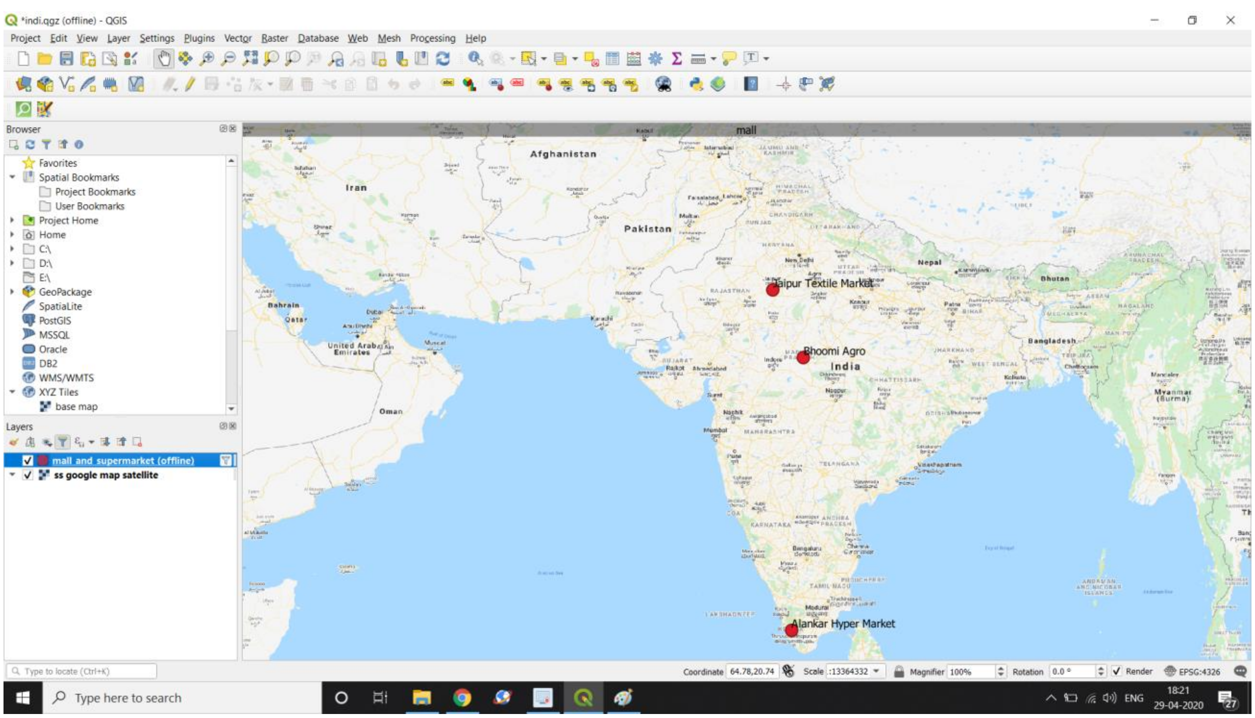


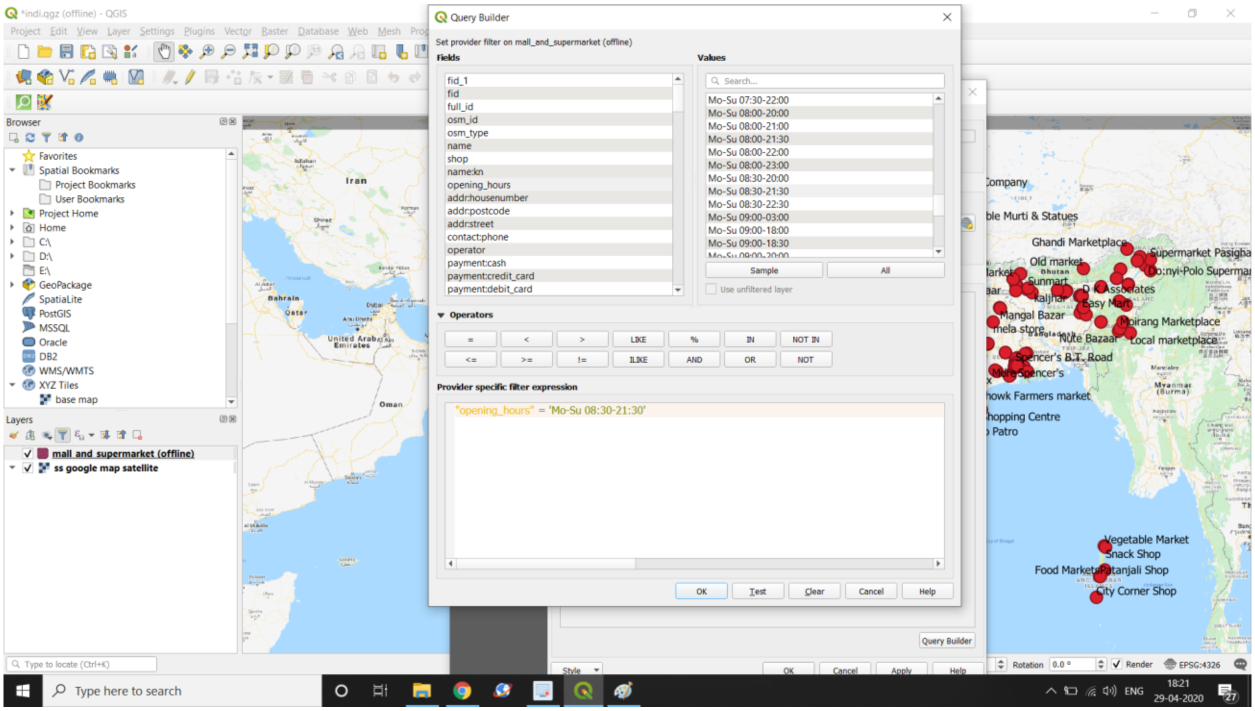

Query Builder
Set provider filter on mall_and_supermarket (offline)
"opening_hours" = '06:00-22:30'

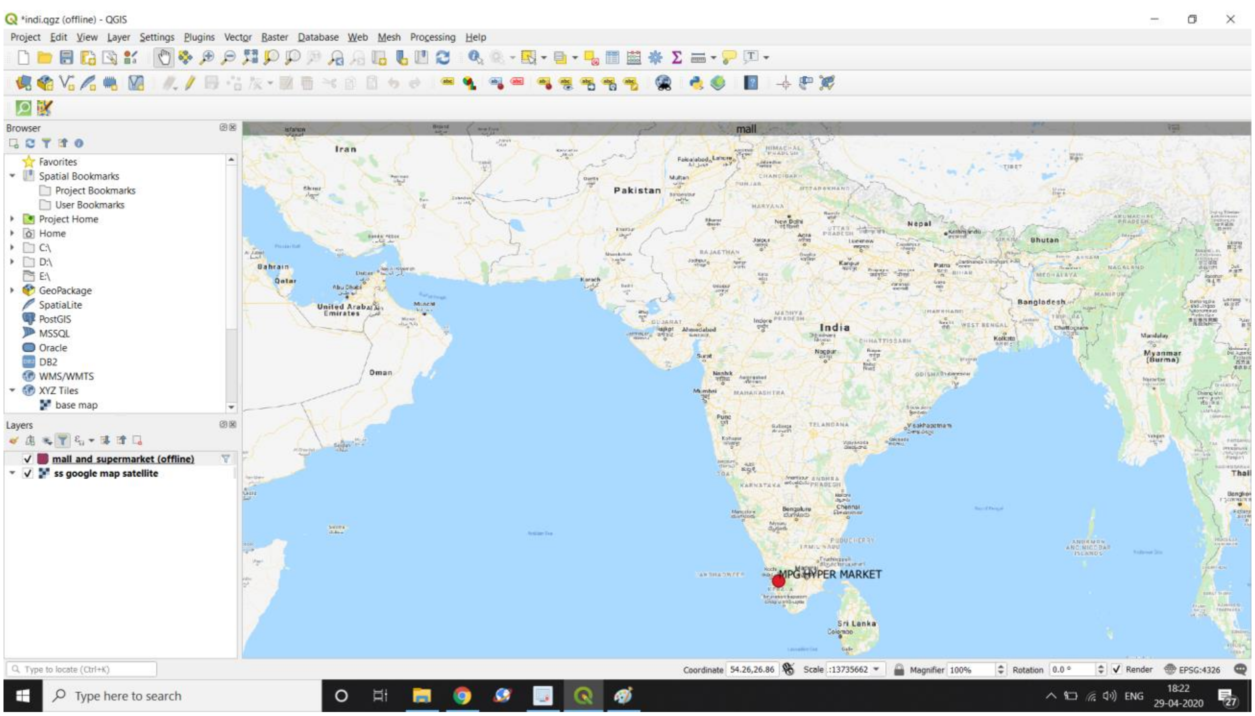

Srinivasa Kirana & General Stores

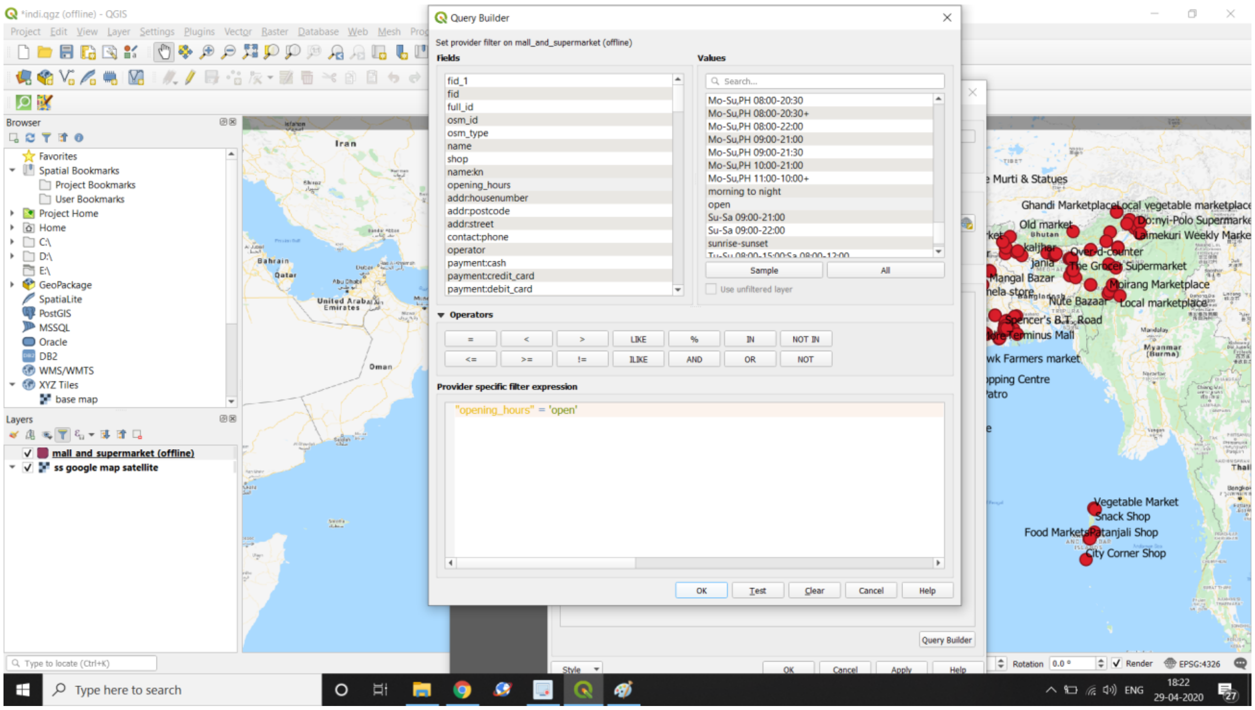
25

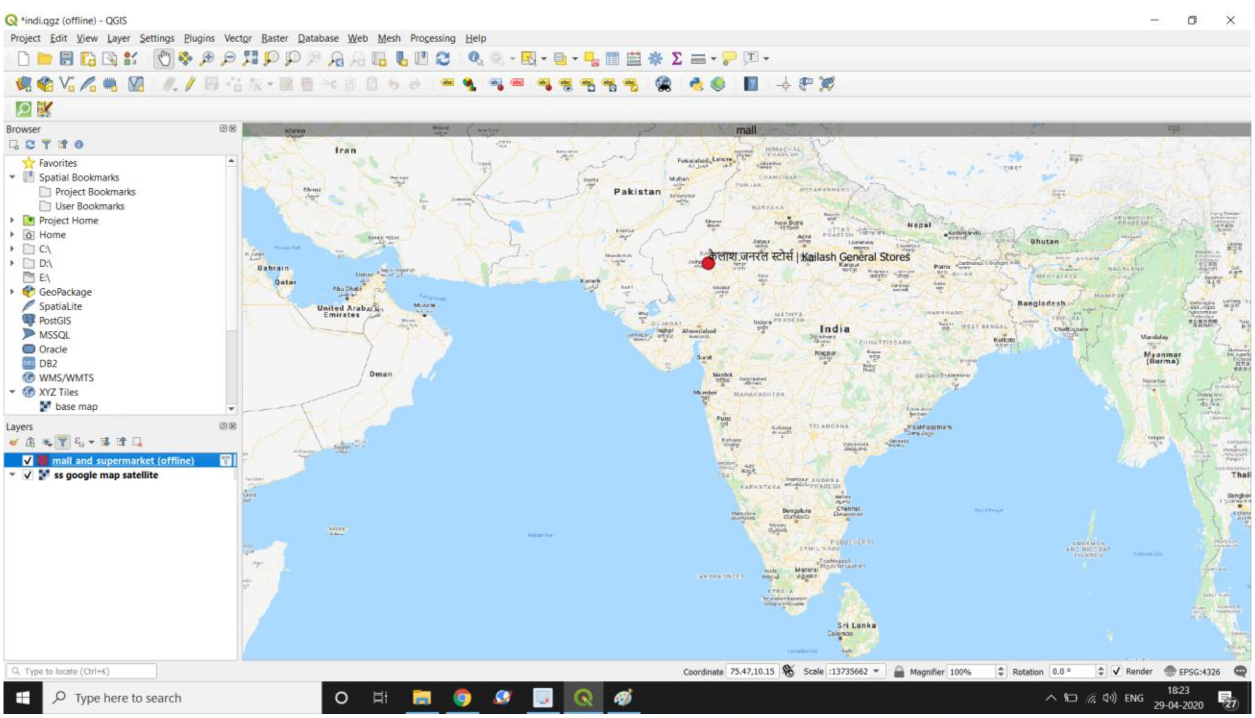




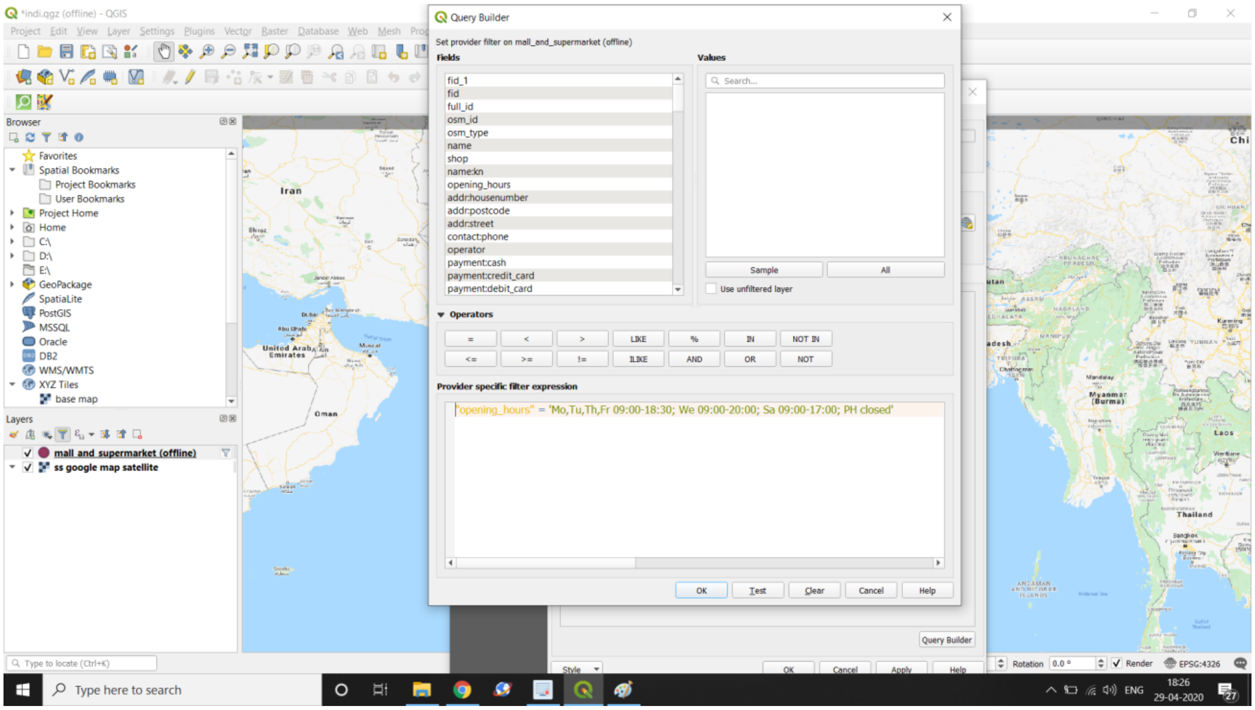

*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Mo-Su 07:30-22:00
Mo-Su 08:00-20:00
Mo-Su 08:00-21:00
Mo-Su 08:00-21:30
Mo-Su 08:00-22:00
Mo-Su 08:00-23:00
Mo-Su 08:30-20:00
Mo-Su 08:30-21:30
Mo-Su 08:30-22:30
Mo-Su 09:00-03:00
Mo-Su 09:00-18:00
Mo-Su 09:00-18:30
Sample
All
Use unfiltered layer
Operators
Provider specific filter expression
"opening_hours" = 'Mo-Su 08:30-21:30'
OK
Test
Clear
Cancel
Help
mall_and_supermarket (offline)
ss google map satellite
Type here to search


*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Layers
mall_and_supermarket (offline)
ss google map satellite
Iran
Pakistan
India
MPG HYPER MARKET
Sri Lanka
Type here to search

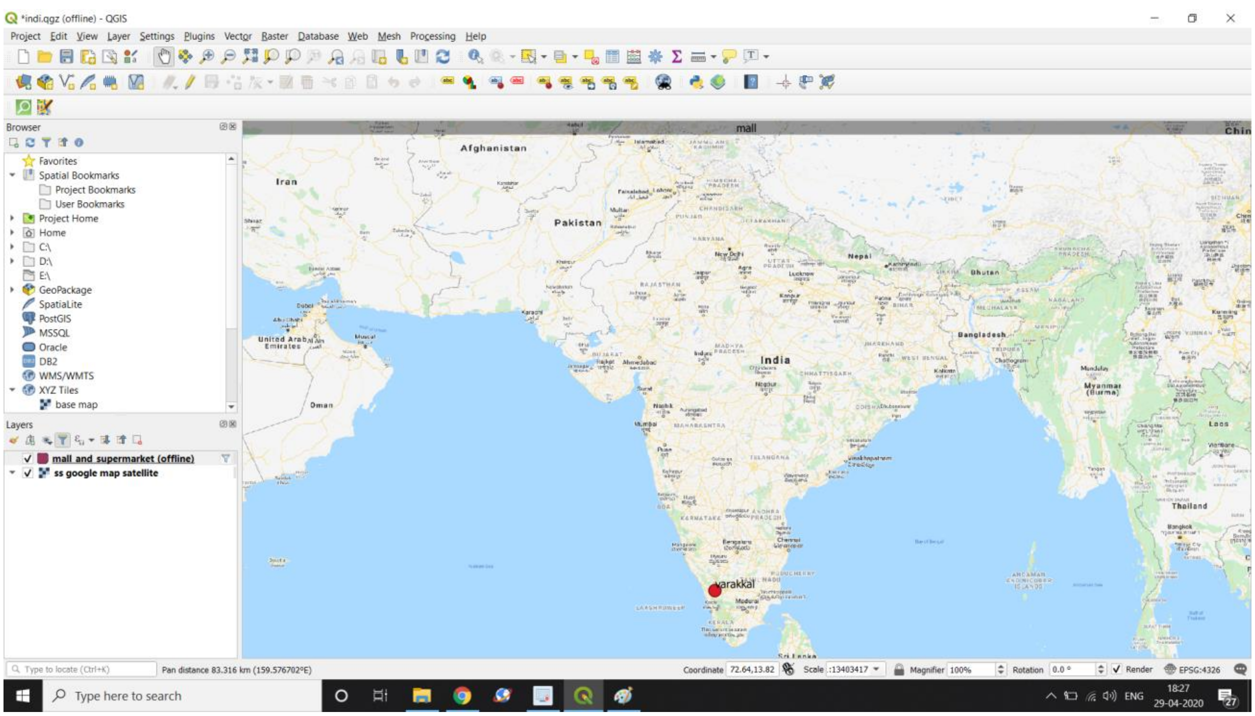

Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Mo-Su,PH 08:00-20:30
Mo-Su,PH 08:00-20:30+
Mo-Su,PH 08:00-22:00
Mo-Su,PH 09:00-21:00
Mo-Su,PH 09:00-21:30
Mo-Su,PH 10:00-21:00
Mo-Su,PH 11:00-10:00+
morning to night
open
Su-Sa 09:00-21:00
Su-Sa 09:00-22:00
sunrise-sunset
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"opening_hours" = 'open'
OK
Test
Clear
Cancel
Help
Query Builder
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Type here to search
18:22
29-04-2020


*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
mall
कैलाश जनरल स्टोर्स | Kailash General Stores
Pakistan
India
Sri Lanka
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Coordinate 75.47,10.15
Scale 1:13735662
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search
18:23
29-04-2020

28

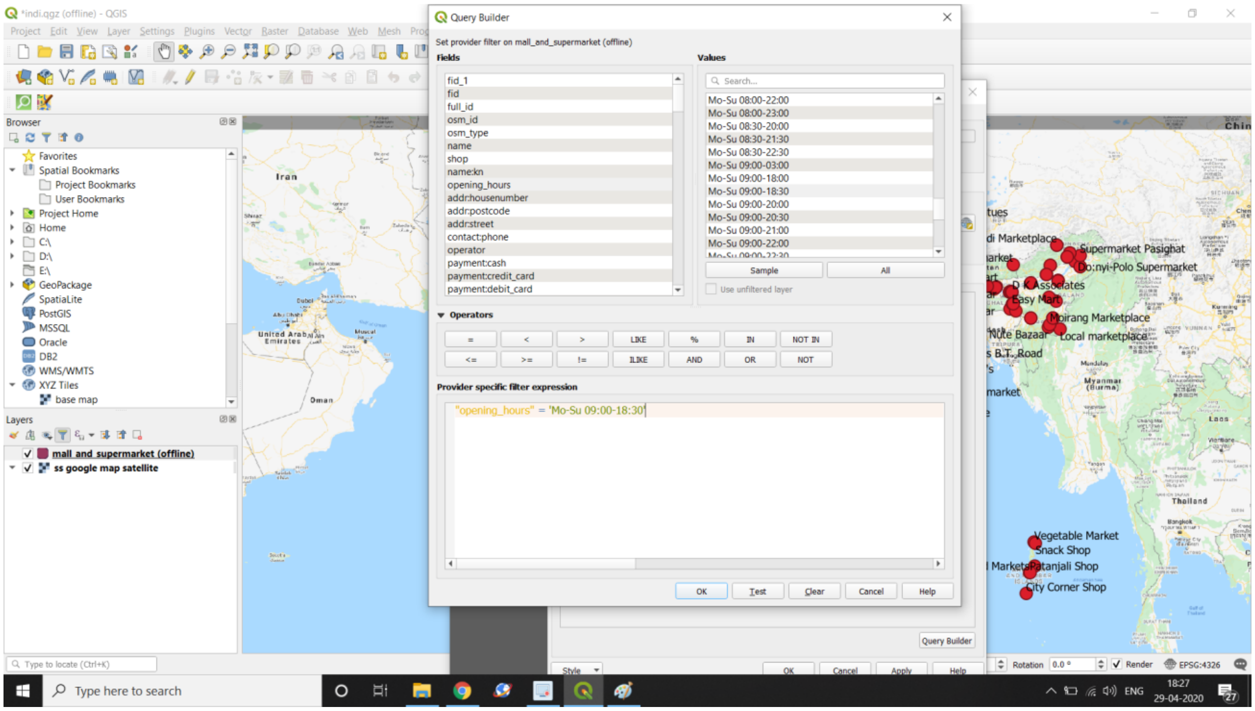


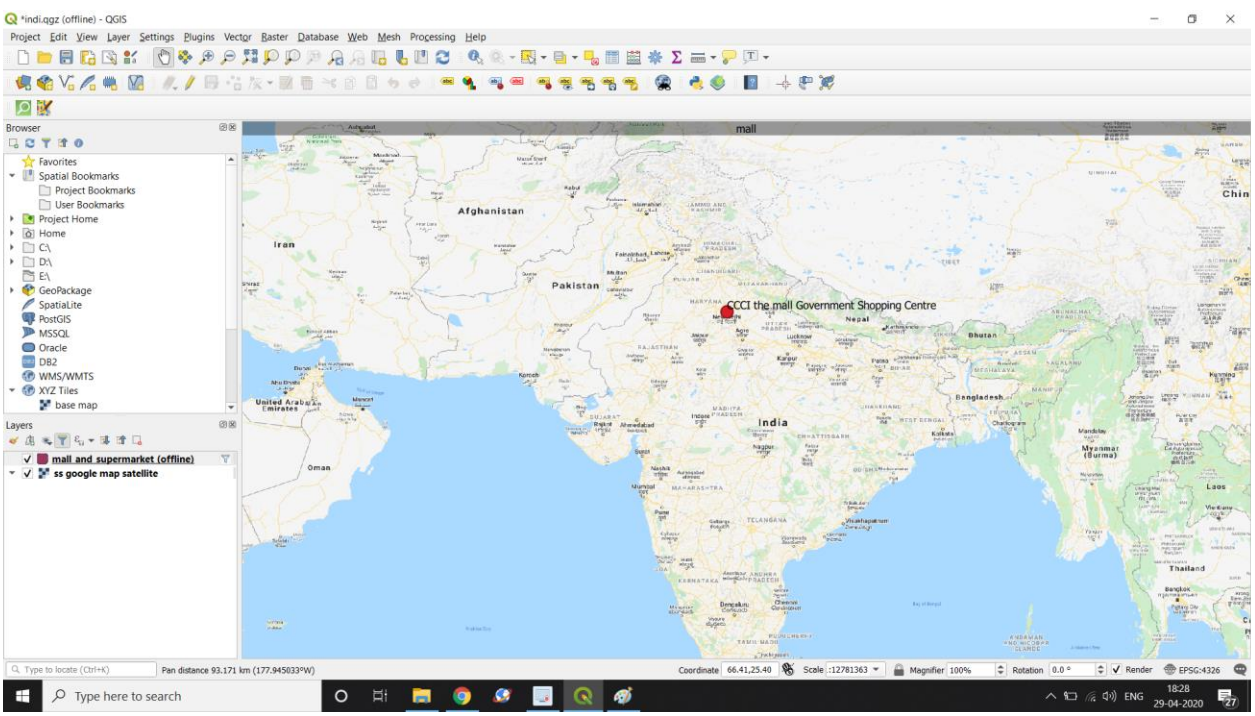
*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"opening_hours" = 'Mo,Tu,Th,Fr 09:00-18:30; We 09:00-20:00; Sa 09:00-17:00; PH closed'
OK
Test
Clear
Cancel
Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall and supermarket (offline)
ss google map satellite
Iran
Oman
Type here to search
18:26
29-04-2020



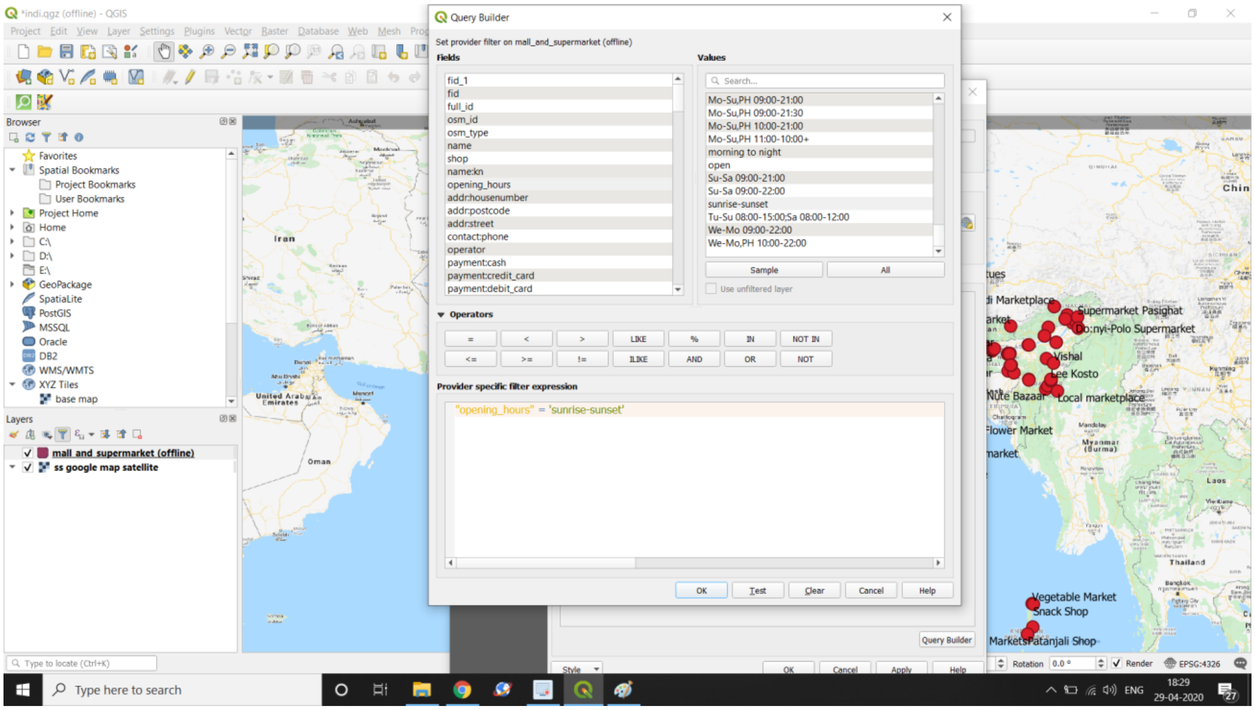
*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Layers
mall and supermarket (offline)
ss google map satellite
mall
Afghanistan
Iran
Pakistan
Nepal
Bhutan
India
Bangladesh
Oman
Thailand
Sri Lanka
Pan distance 83.316 km (159.576702°E)
Coordinate 72.64,13.82
Scale 1:13403417
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search
18:27
29-04-2020

29

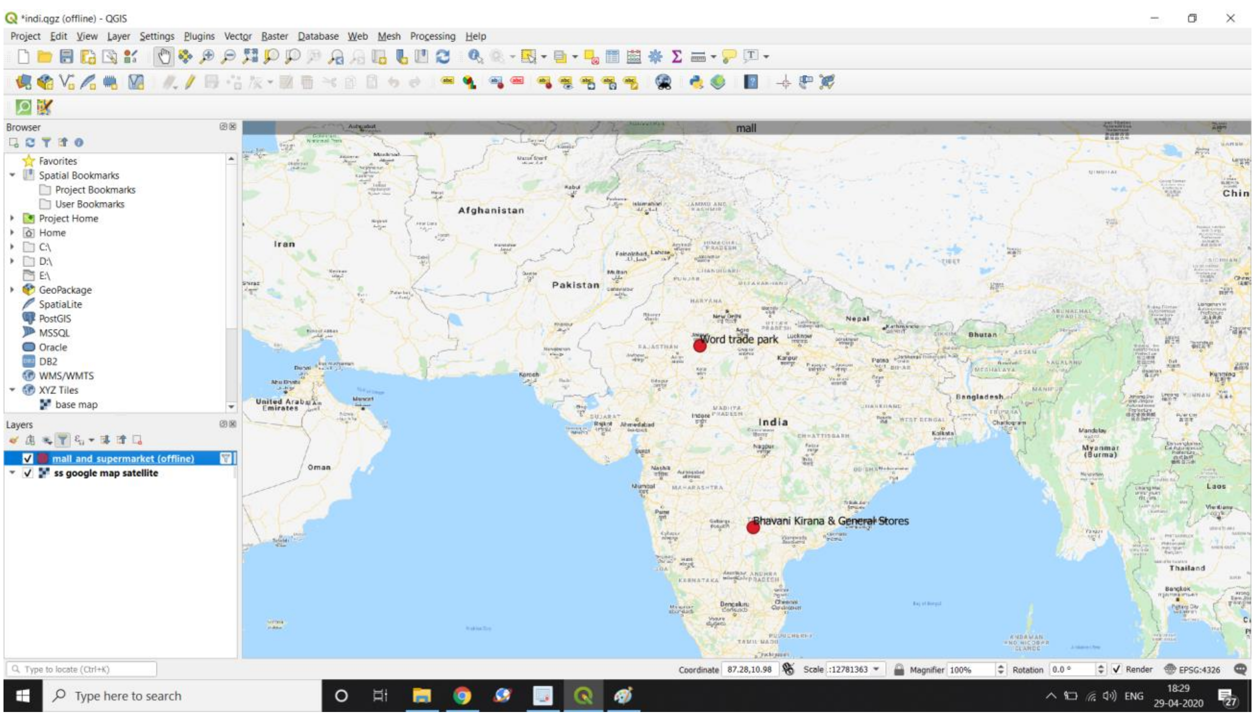

*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
Operators
Provider specific filter expression
"opening_hours" = 'Mo-Su 09:00-18:30'
OK
Test
Clear
Cancel
Help
mall_and_supermarket (offline)
ss google map satellite


*indi.qgz (offline) - QGIS
mall_and_supermarket (offline)
ss google map satellite
CCCI the mall Government Shopping Centre
Afghanistan
Pakistan
India
Iran
Oman

30

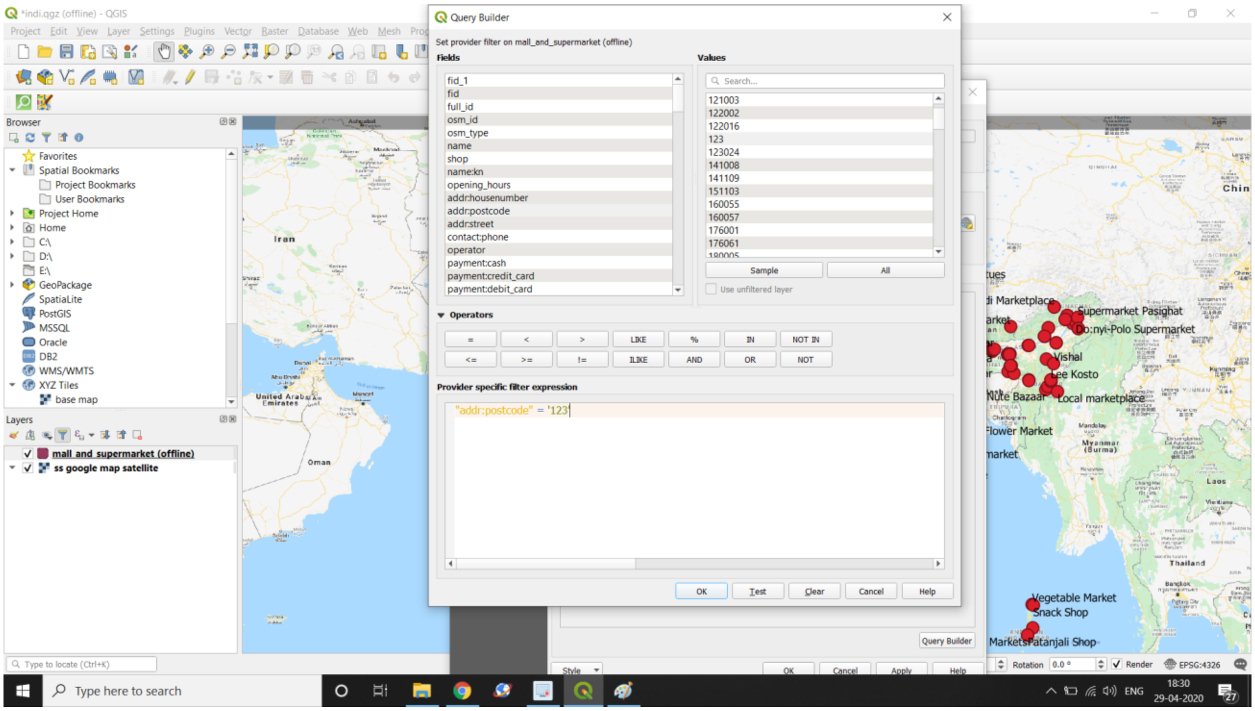


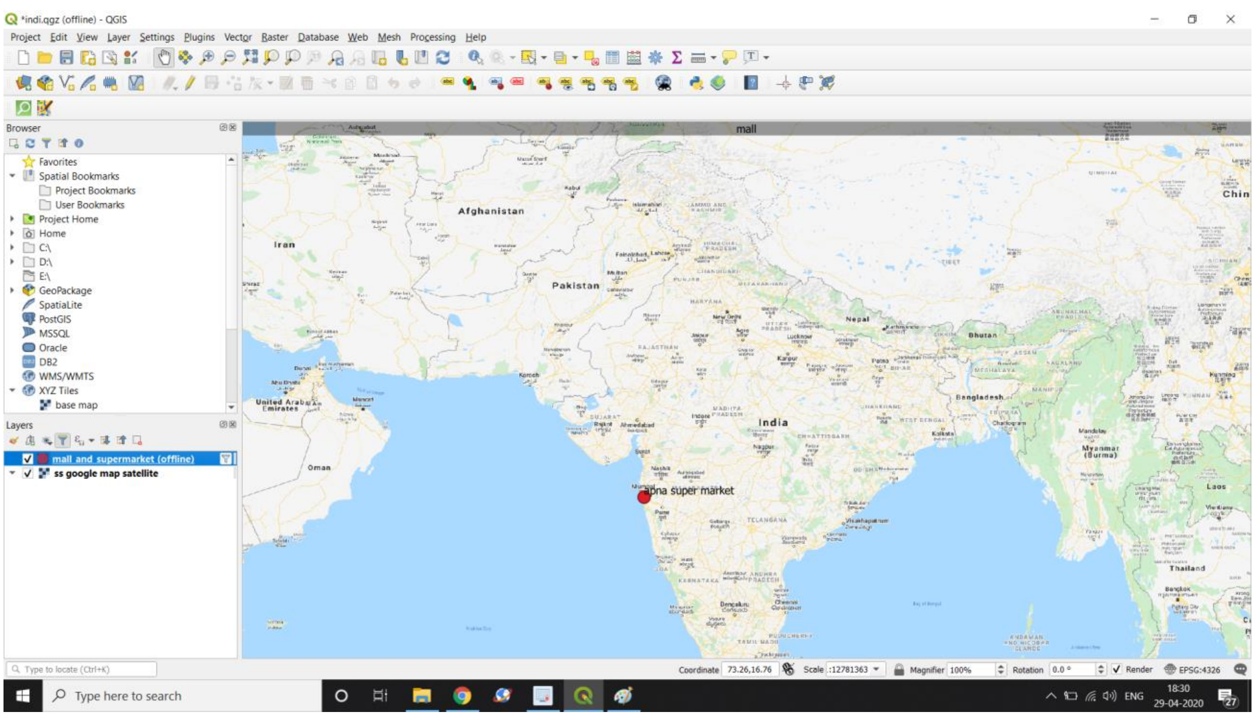
Query Builder
Set provider filter on mall_and_supermarket (offline)
"opening_hours" = 'sunrise-sunset'



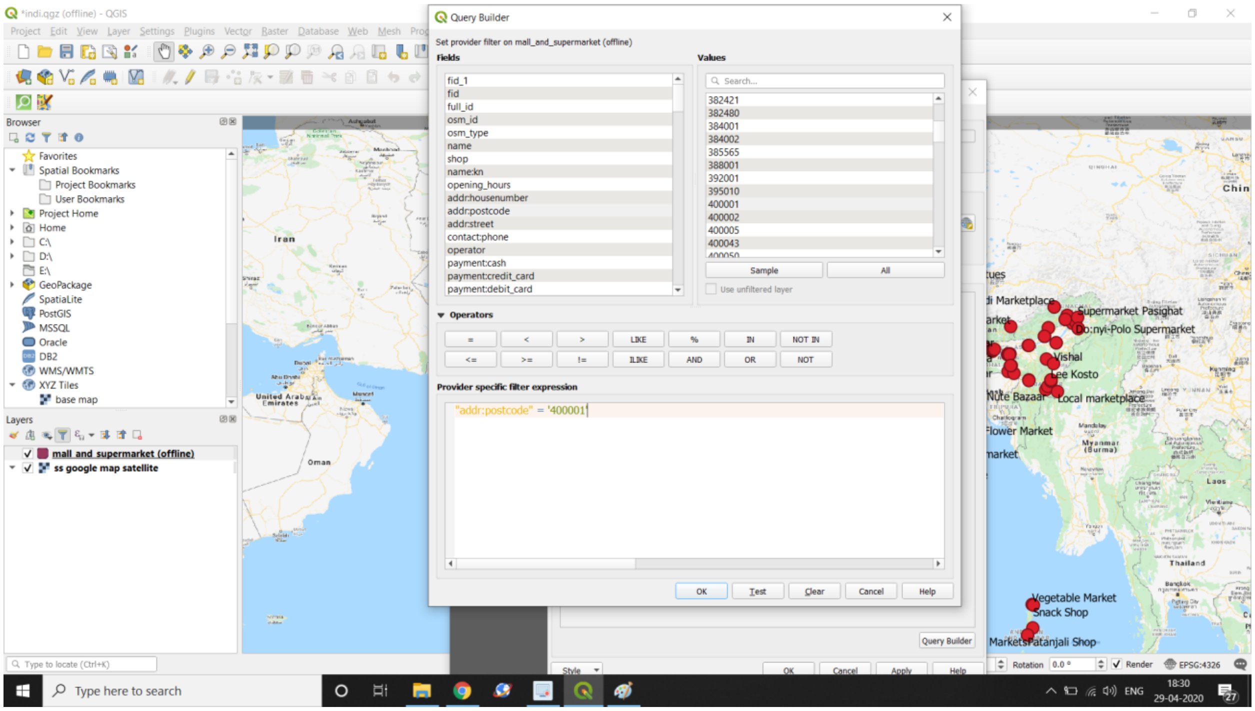
*indi.qgz (offline) - QGIS
mall_and_supermarket (offline)
ss google map satellite
Word trade park
Bhavani Kirana & General Stores

31

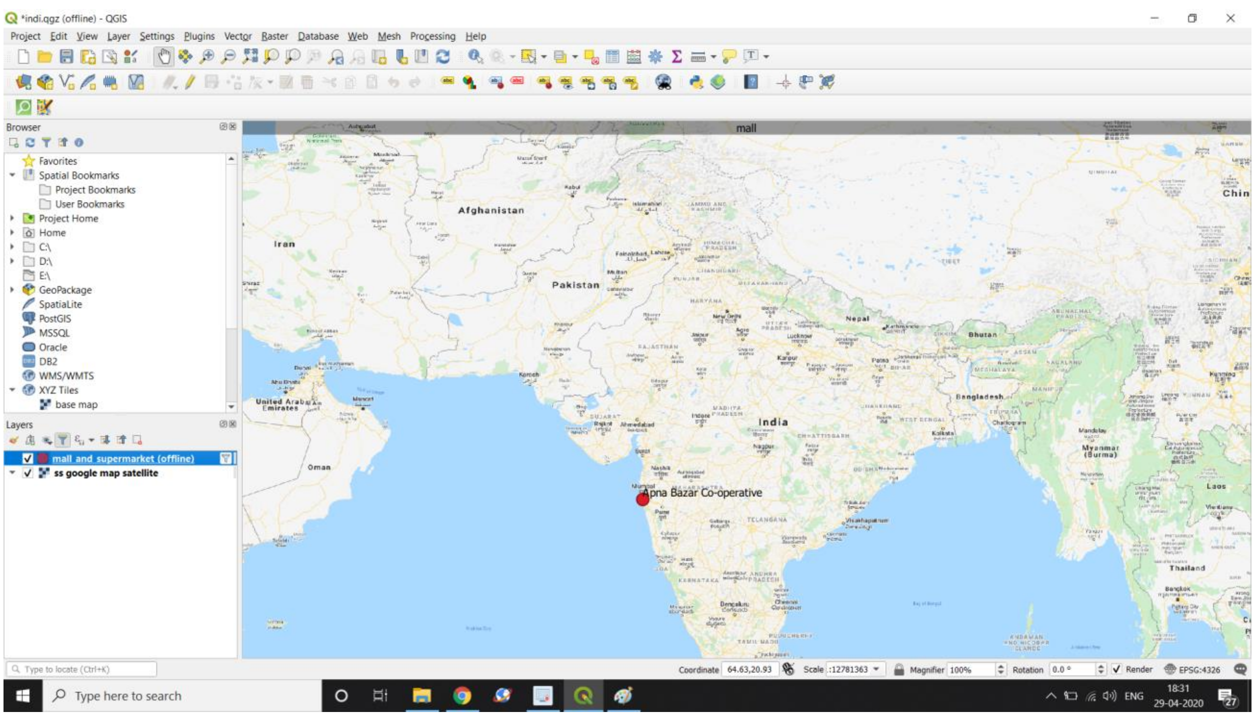

*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
121003
122002
122016
123
123024
141008
141109
151103
160055
160057
176001
176061
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"addr:postcode" = '123'
OK
Test
Clear
Cancel
Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Supermarket Pasighat
Vishal
Local marketplace
Flower Market
Vegetable Market
Snack Shop
Patanjali Shop
Query Builder
Type here to search
ENG
18:30
29-04-2020


*indi.qgz (offline) - QGIS
Project
Edit
View
Layer
Settings
Plugins
Vector
Raster
Database
Web
Mesh
Processing
Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
mall
Afghanistan
Pakistan
India
Iran
Oman
apna super market
Coordinate
73.26,16.76
Scale
1:12781363
Magnifier
100%
Rotation
0.0 °
Render
EPSG:4326
Type here to search
ENG
18:30
29-04-2020

32

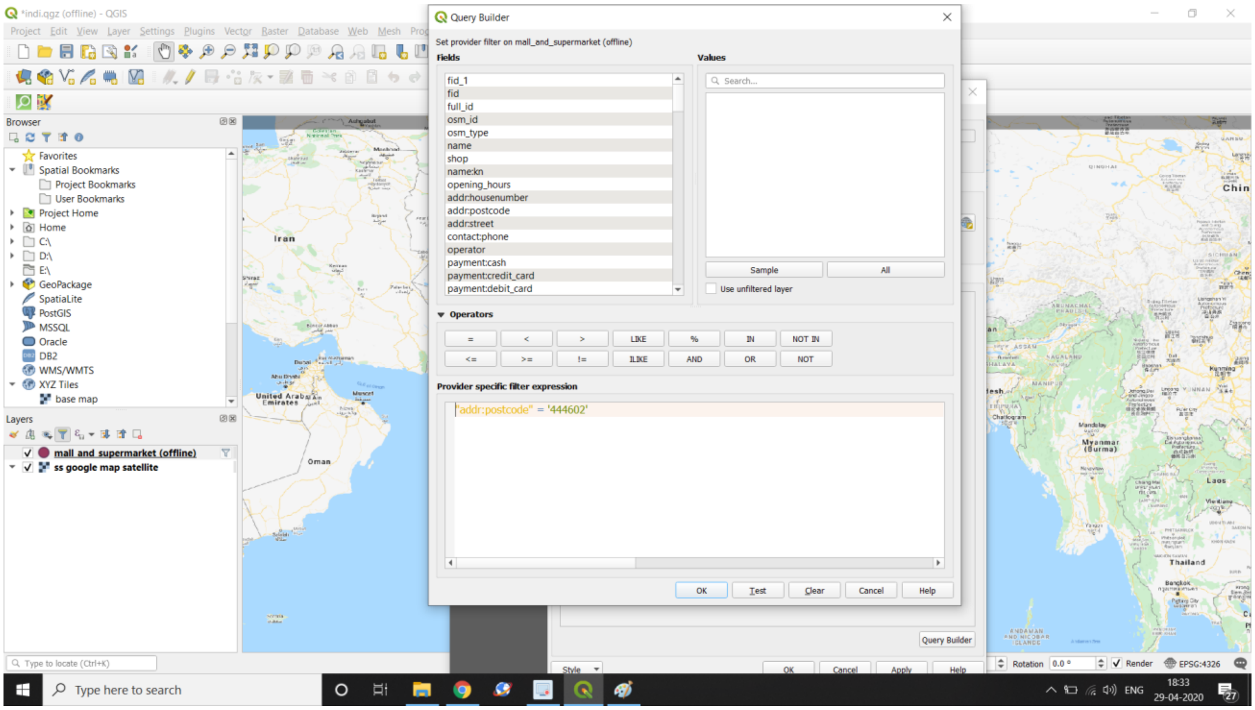


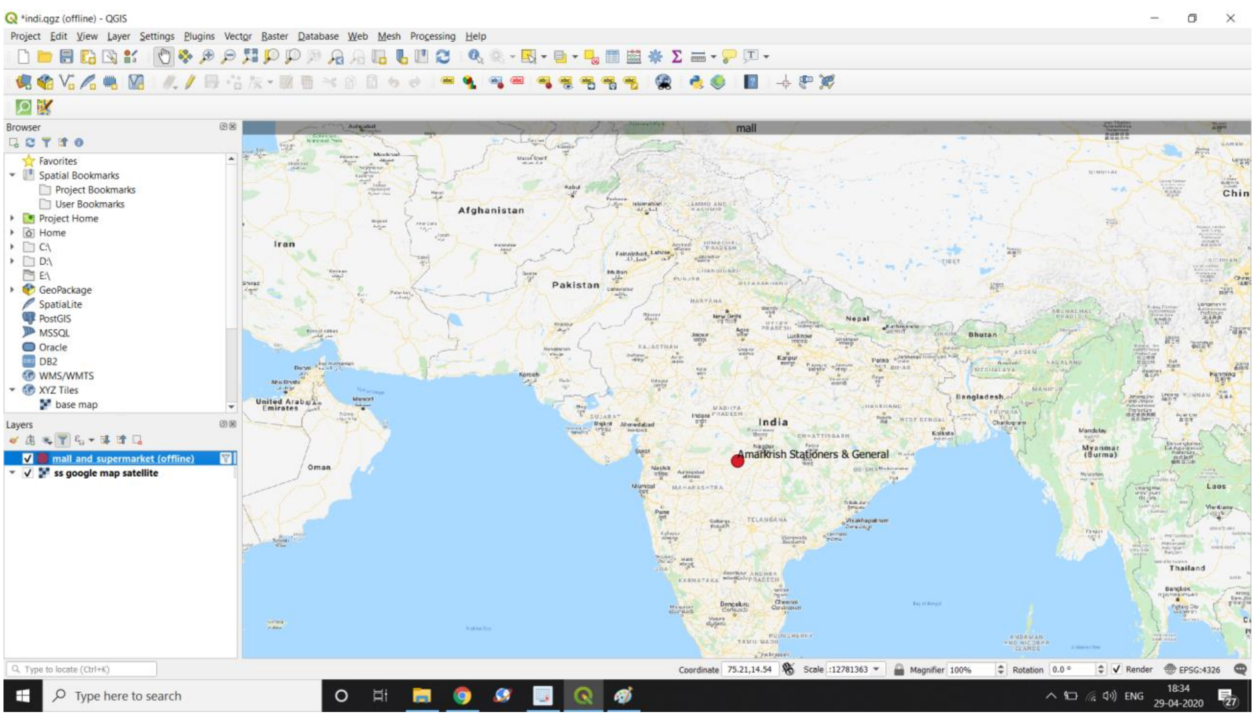
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
Operators
Provider specific filter expression
"addr:postcode" = '400001'



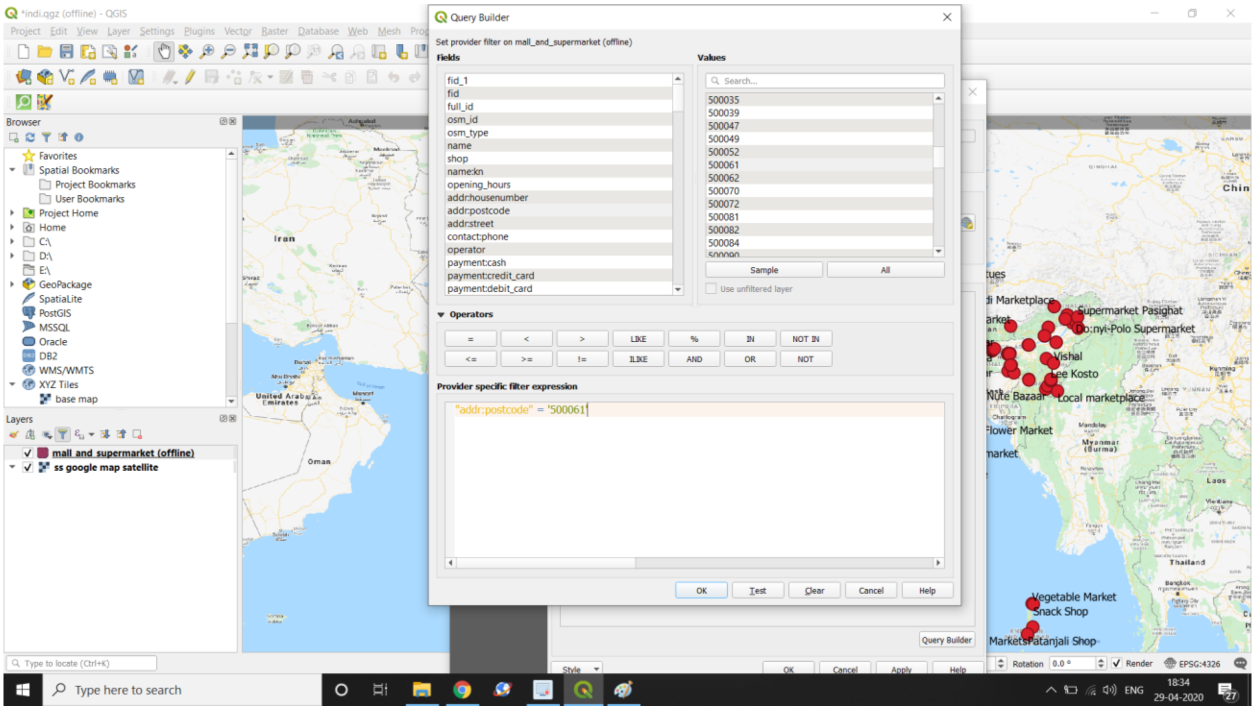
*indi.qgz (offline) - QGIS
mall and supermarket (offline)
ss google map satellite
Apna Bazar Co-operative

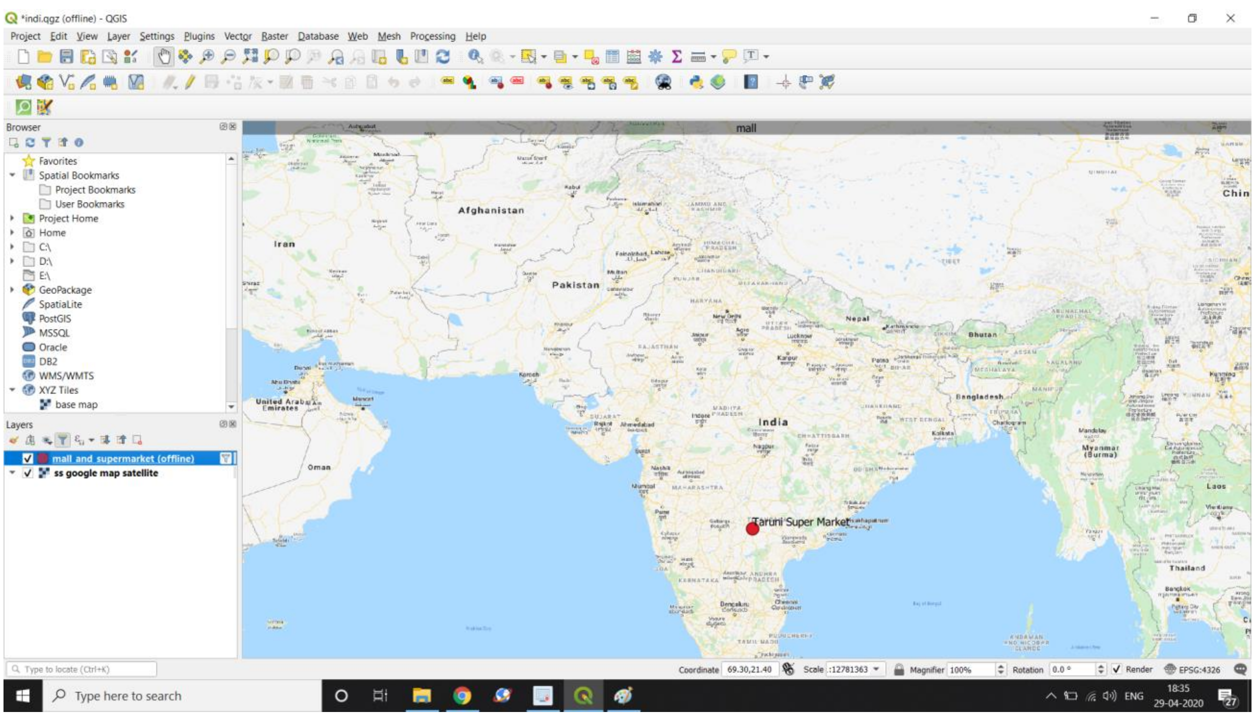
33


Query Builder
Set provider filter on mall_and_supermarket (offline)
"addr:postcode" = '444602'

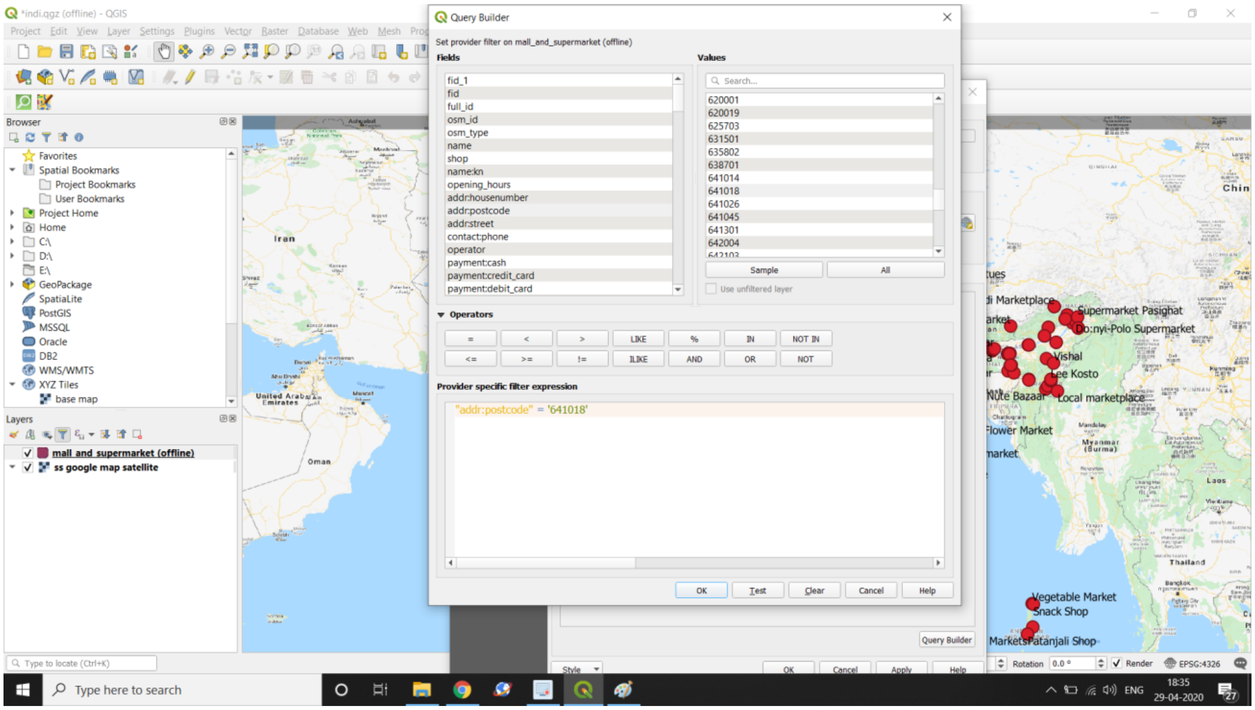

*indi.qgz (offline) - QGIS
mall
Amarkrish Stationers & General

34

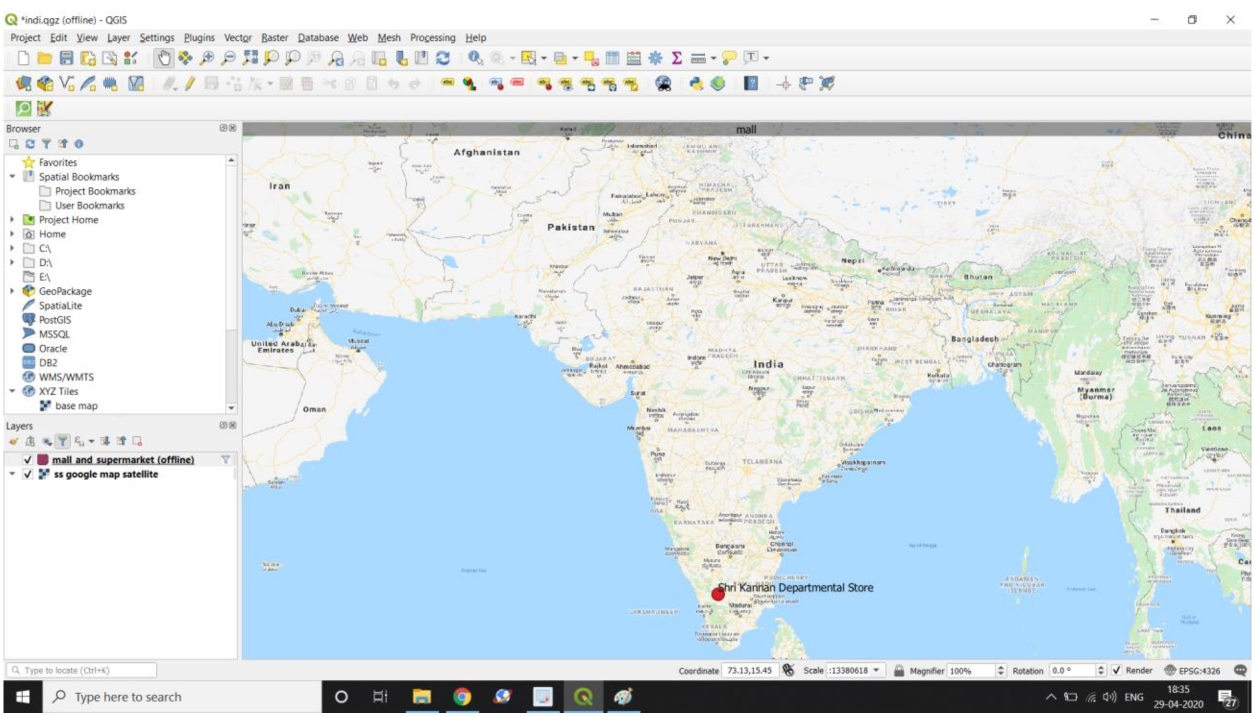

*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
500035
500039
500047
500049
500052
500061
500062
500070
500072
500081
500082
500084
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"addr:postcode" = '500061'
OK
Test
Clear
Cancel
Help
Browser
Layers
mall and supermarket (offline)
ss google map satellite
Type here to search


*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Layers
mall and supermarket (offline)
ss google map satellite
mall
Tarun Super Market
Coordinate 69.30,21.40
Scale 1:12781363
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search
18:35
29-04-2020

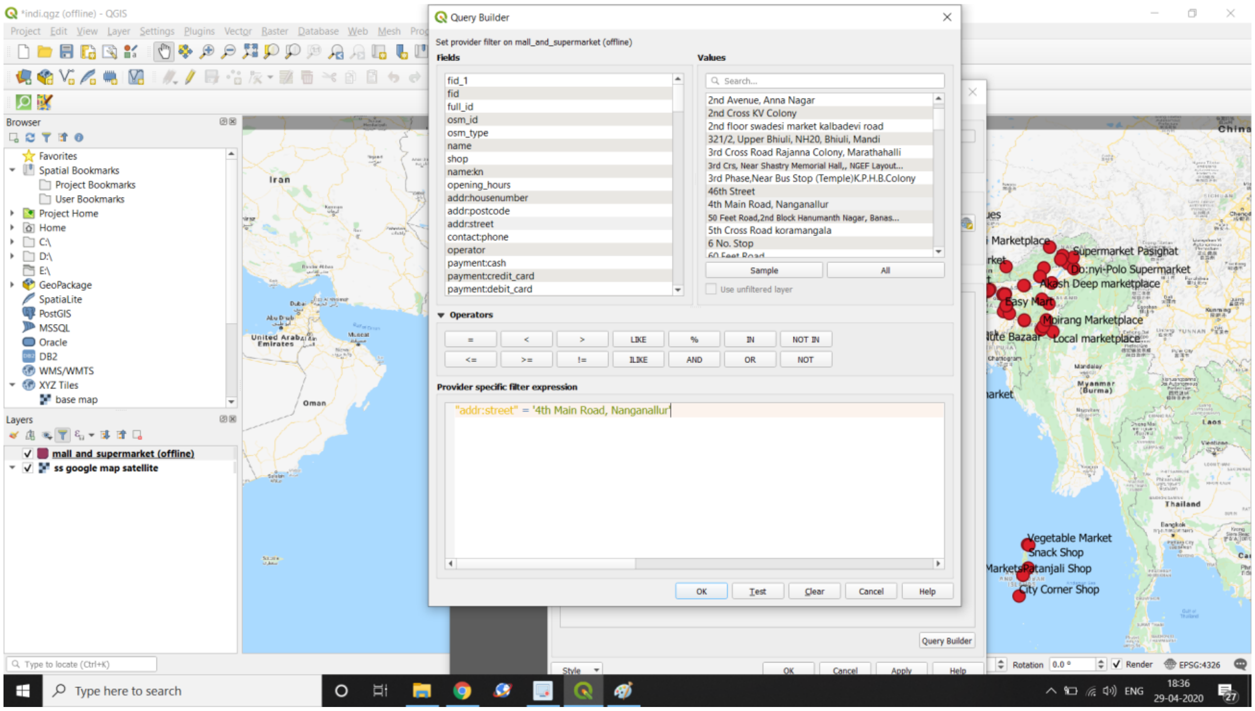
35

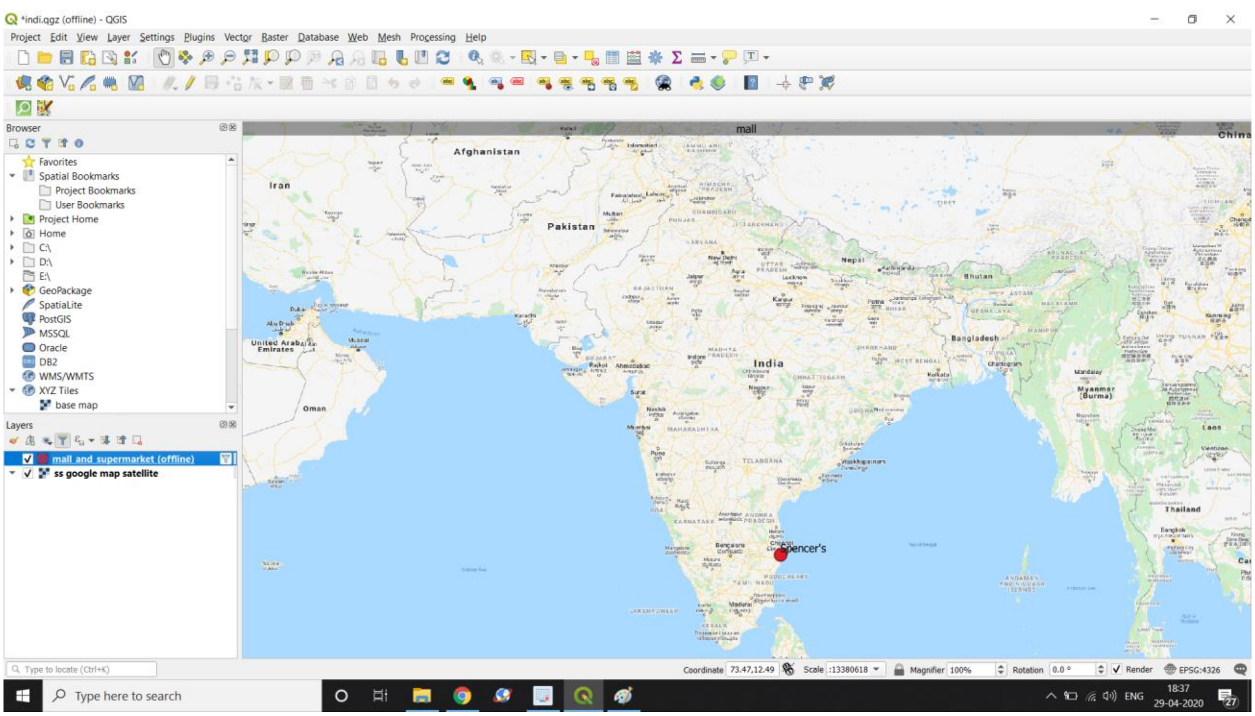


*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
620001
620019
625703
631501
635802
638701
641014
641018
641026
641045
641301
642004
Sample
All
Use unfiltered layer
Operators
Provider specific filter expression
"addr:postcode" = '641018'
OK
Test
Clear
Cancel
Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Type here to search

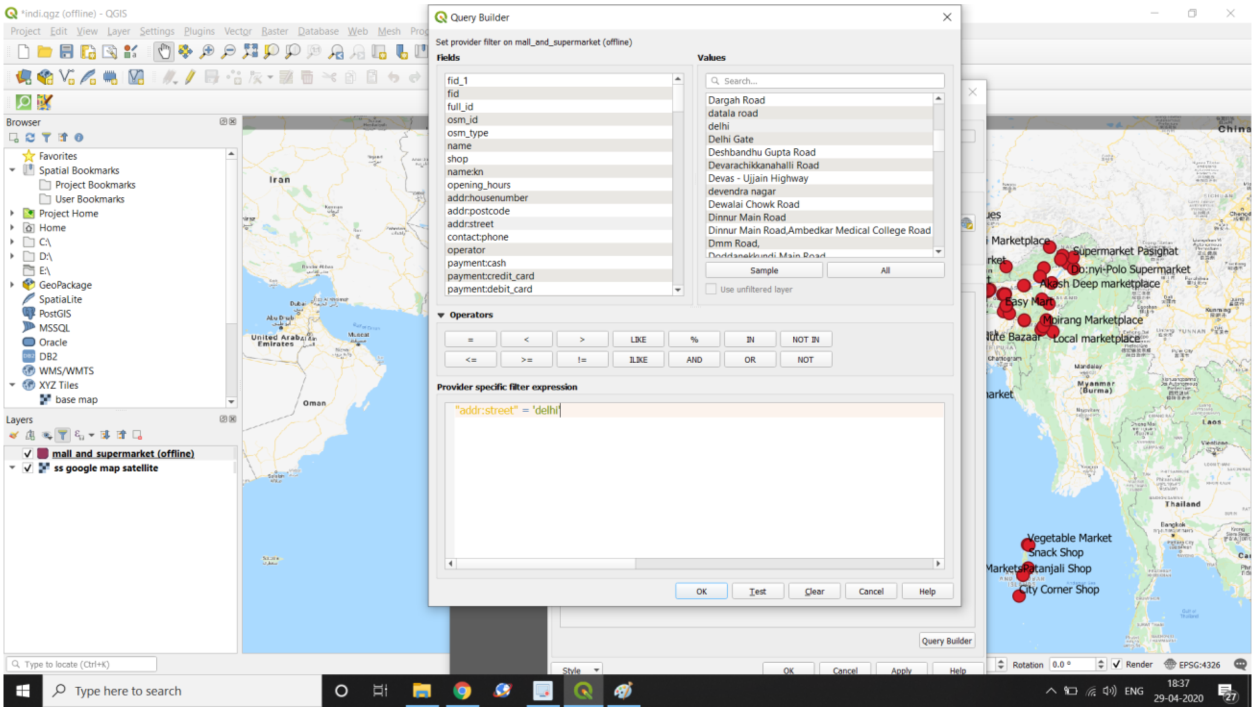


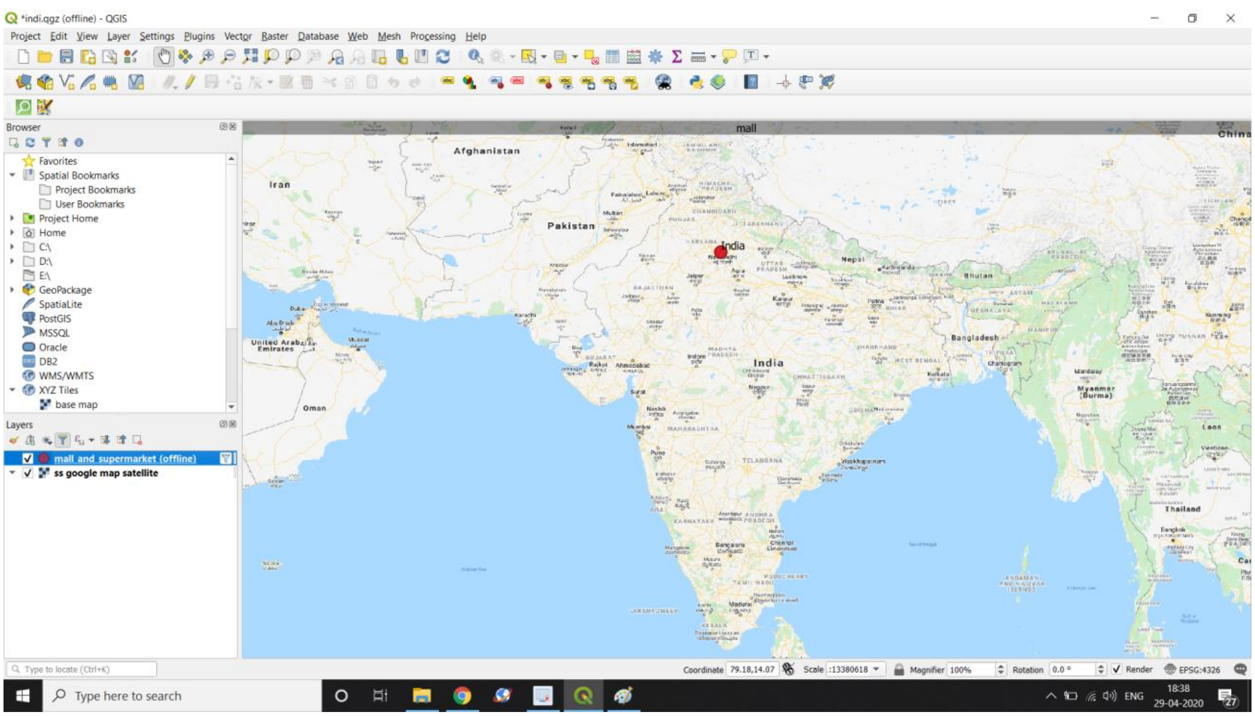
*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Afghanistan
Iran
Pakistan
India
Shri Kannan Departmental Store
Type here to search


*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
2nd Avenue, Anna Nagar
2nd Cross KV Colony
2nd floor swadesi market kalbadevi road
321/2, Upper Bhiuli, NH20, Bhiuli, Mandi
3rd Cross Road Rajanna Colony, Marathahalli
46th Street
4th Main Road, Nanganallur
5th Cross Road koramangala
6 No. Stop
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"addr:street" = '4th Main Road, Nanganallur'
OK
Test
Clear
Cancel
Help
Query Builder
Type here to search
18:36
29-04-2020

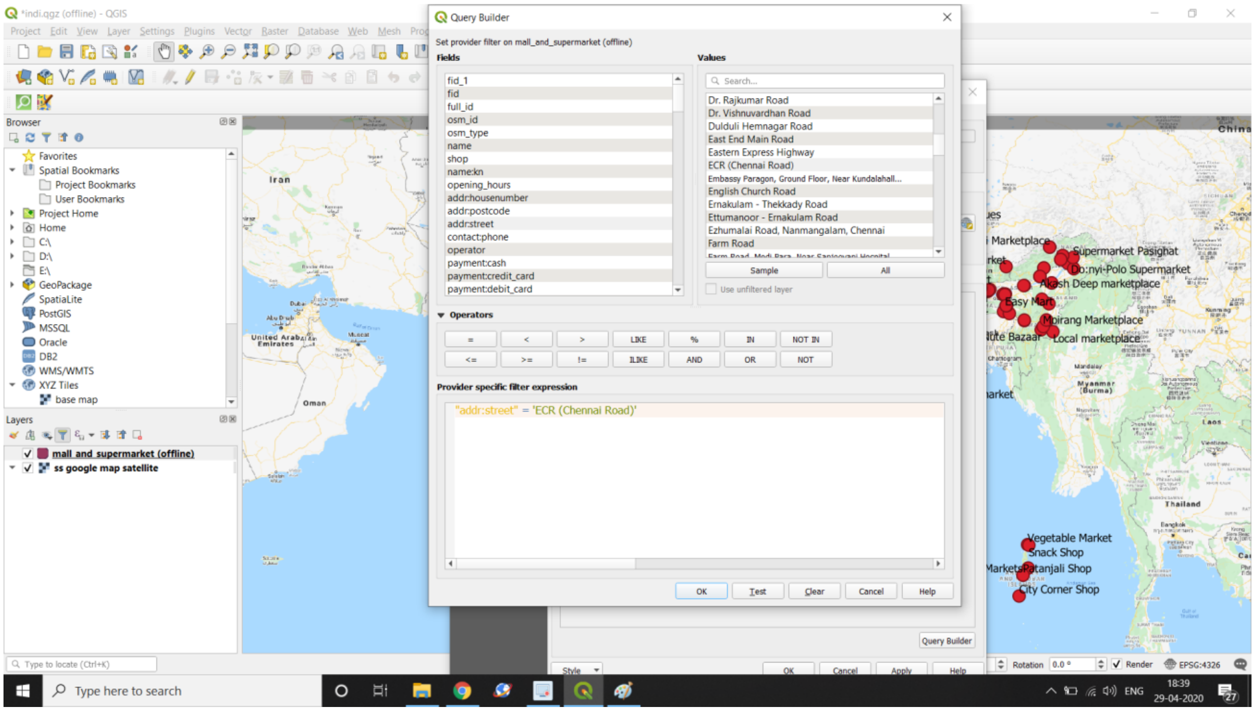

*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Afghanistan
Pakistan
India
Spencer's
Coordinate 73.47,12.49
Scale 1:13380618
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search
18:37
29-04-2020

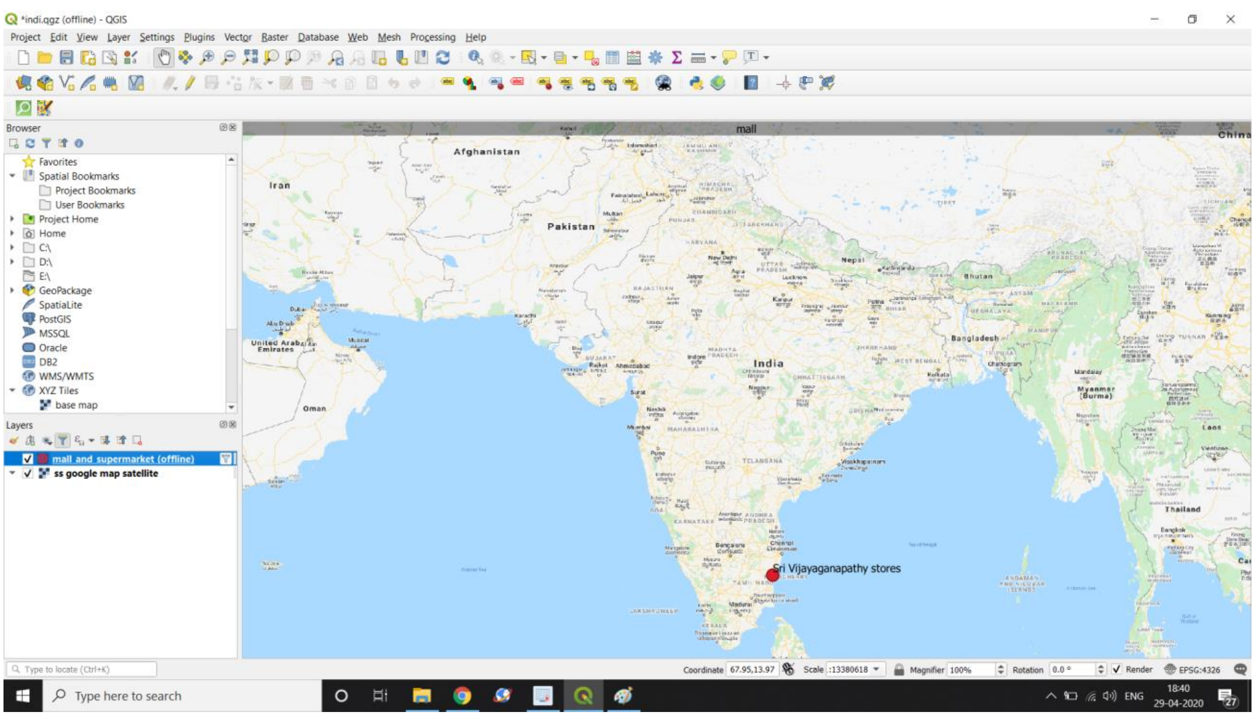
37


*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
Dargah Road
datala road
delhi
Delhi Gate
Deshbandhu Gupta Road
Devarachikkanahalli Road
Devas - Ujjain Highway
devendra nagar
Dewalai Chowk Road
Dinnur Main Road
Dinnur Main Road,Ambedkar Medical College Road
Dmm Road,
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"addr:street" = 'delhi'
OK
Test
Clear
Cancel
Help
Browser
Layers
mall_and_supermarket (offline)
ss google map satellite

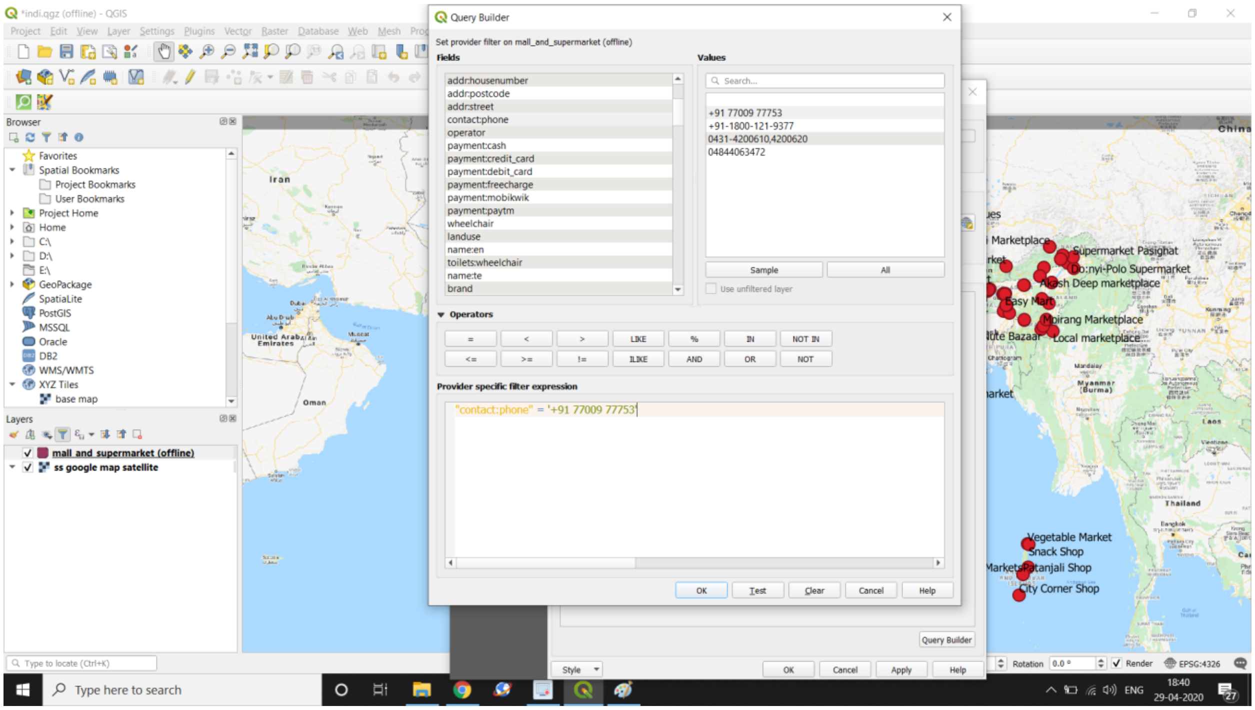

*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
India
Pakistan
Afghanistan
Iran
Nepal
Bhutan
Bangladesh
Coordinate 79.18,14.07
Scale 1:13380618
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326

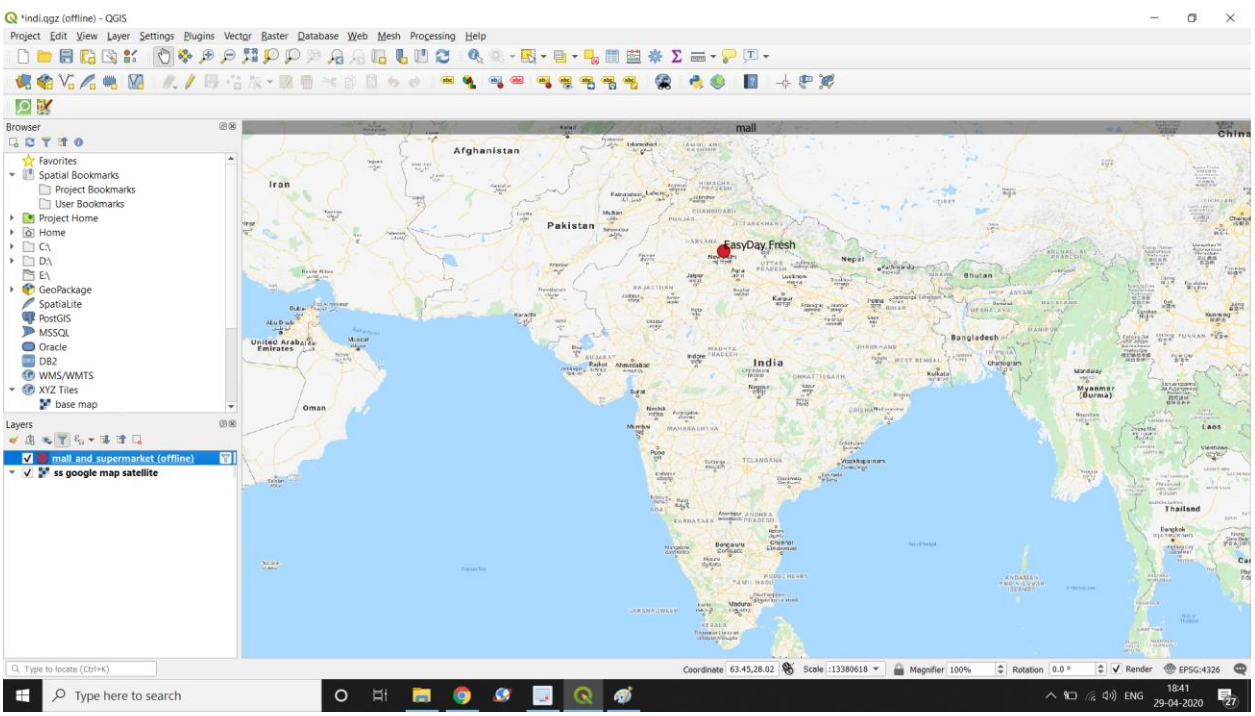
38

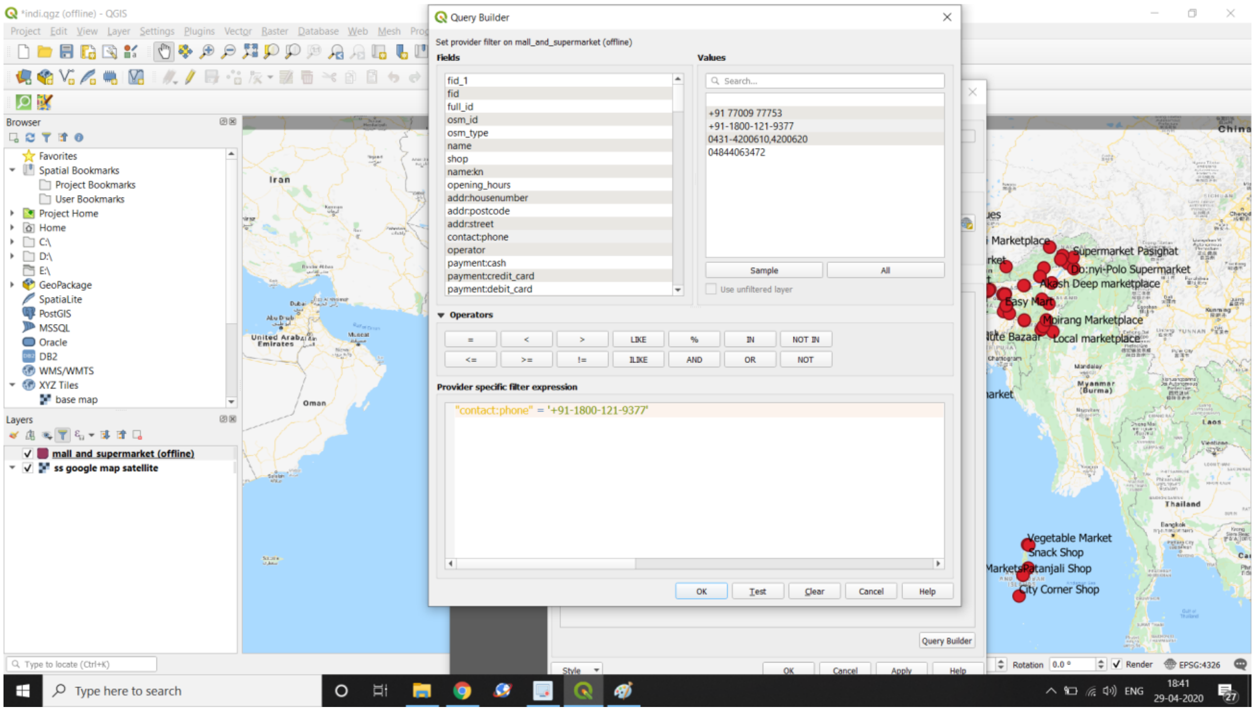

Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Dr. Rajkumar Road
Dr. Vishnuvardhan Road
Dulduli Hemnagar Road
East End Main Road
Eastern Express Highway
ECR (Chennai Road)
English Church Road
Ernakulam - Thekkady Road
Ettumanoor - Ernakulam Road
Ezhumalai Road, Nanmangalam, Chennai
Farm Road
Sample
All
Use unfiltered layer
Operators
Provider specific filter expression
"addr:street" = 'ECR (Chennai Road)'
OK
Test
Clear
Cancel
Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Supermarket Pasighat
Akash Deep marketplace
Moirang Marketplace
Local marketplace
Vegetable Market
Snack Shop
Patanjali Shop
City Corner Shop
Type here to search
18:39
29-04-2020

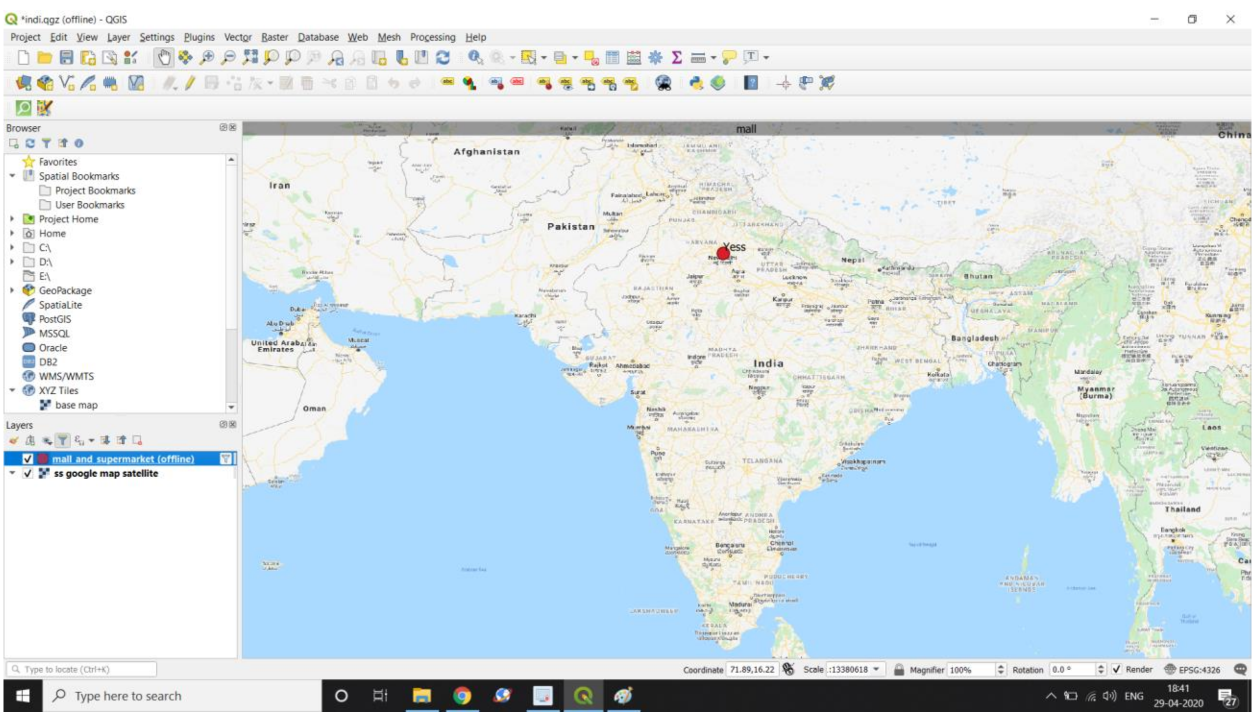

*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Afghanistan
Pakistan
Iran
India
Nepal
Bhutan
Bangladesh
Oman
Sri Vijayaganapathy stores
Coordinate 67.95,13.97
Scale 1:13380618
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search
18:40
29-04-2020

39

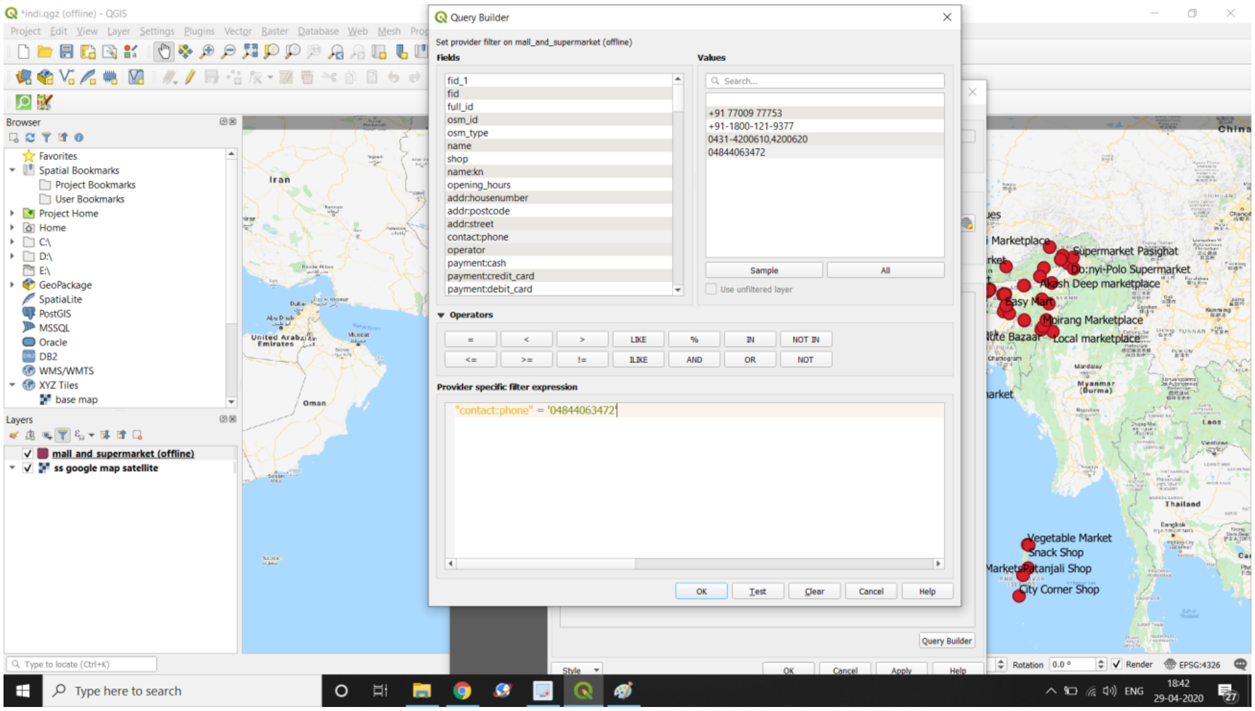

Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
Operators
Provider specific filter expression
"contact:phone" = '+91 77009 77753'
OK
Test
Clear
Cancel
Help

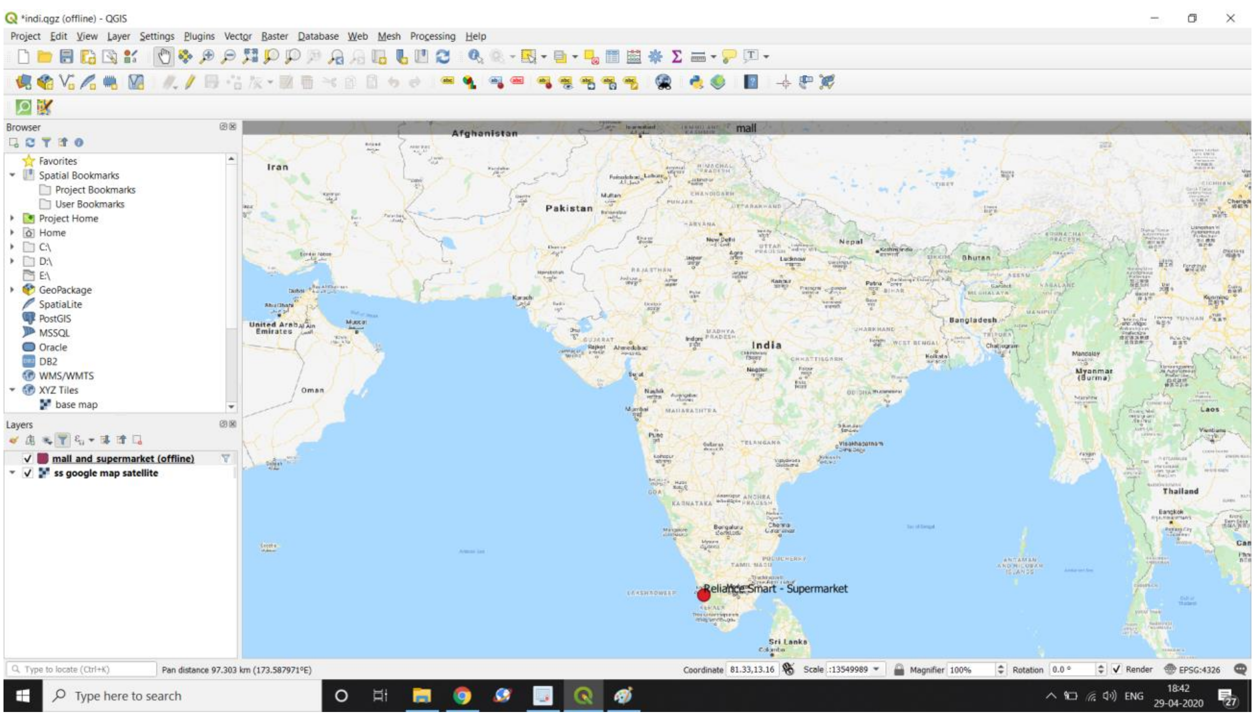

*indi.qgz (offline) - QGIS
mall and supermarket (offline)
ss google map satellite
EasyDay Fresh


Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
Operators
Provider specific filter expression
"contact:phone" = '+91-1800-121-9377'

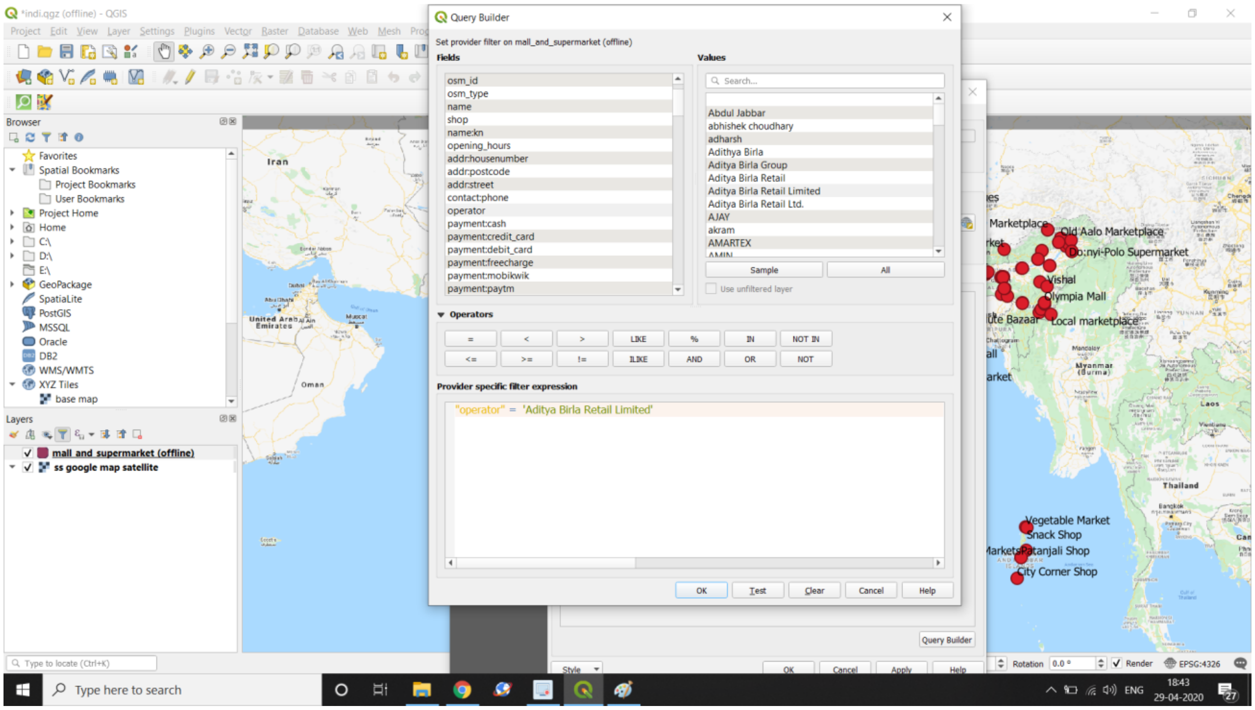

*indi.qgz (offline) - QGIS
mall and supermarket (offline)
ss google map satellite

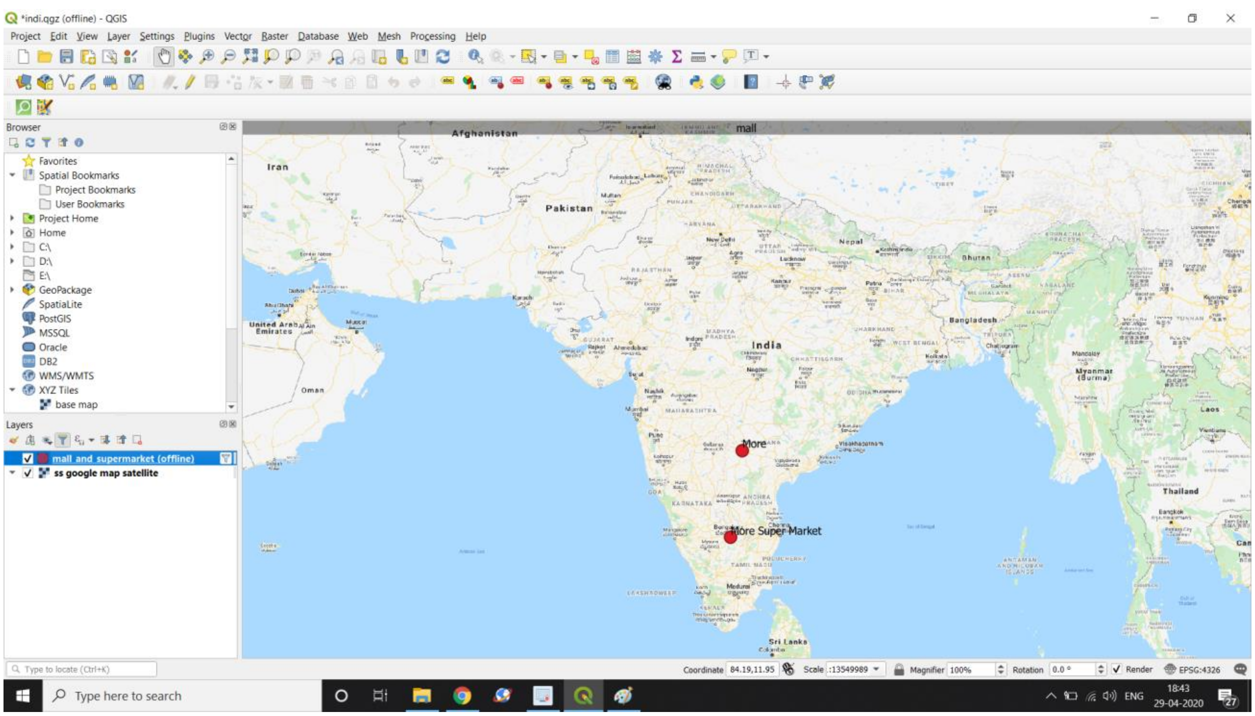
41


*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
+91 77009 77753
+91-1800-121-9377
0431-4200610,4200620
04844063472
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"contact:phone" = '04844063472'
OK
Test
Clear
Cancel
Help
Query Builder
Layers
mall and supermarket (offline)
ss google map satellite
Supermarket Pasighat
Do:nyi-Polo Supermarket
Akash Deep marketplace
Moirang Marketplace
Local marketplace
Vegetable Market
Snack Shop
Patanjali Shop
City Corner Shop
Type here to search
18:42
29-04-2020

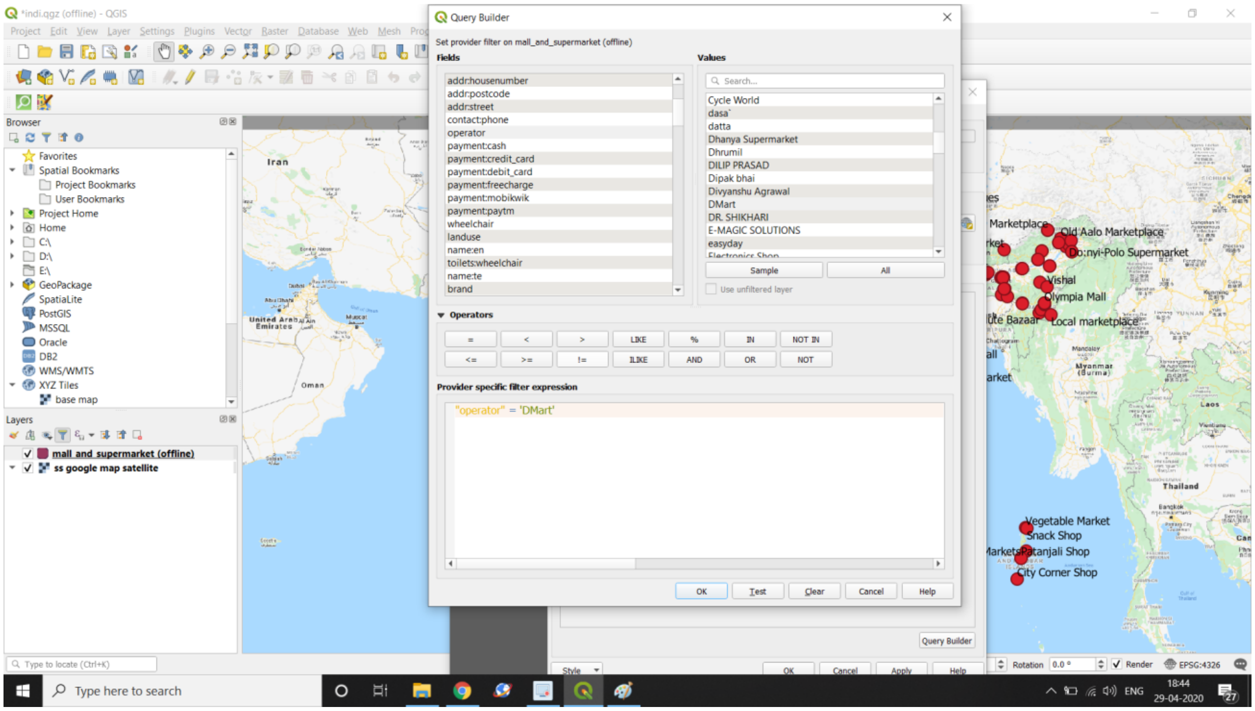

*indi.qgz (offline) - QGIS
Project
Edit
View
Layer
Settings
Plugins
Vector
Raster
Database
Web
Mesh
Processing
Help
Browser
Layers
mall and supermarket (offline)
ss google map satellite
Afghanistan
Pakistan
India
Iran
Oman
Sri Lanka
Reliance Smart - Supermarket
Coordinate 81.33,13.16
Scale 1:13549989
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search
18:42
29-04-2020

42

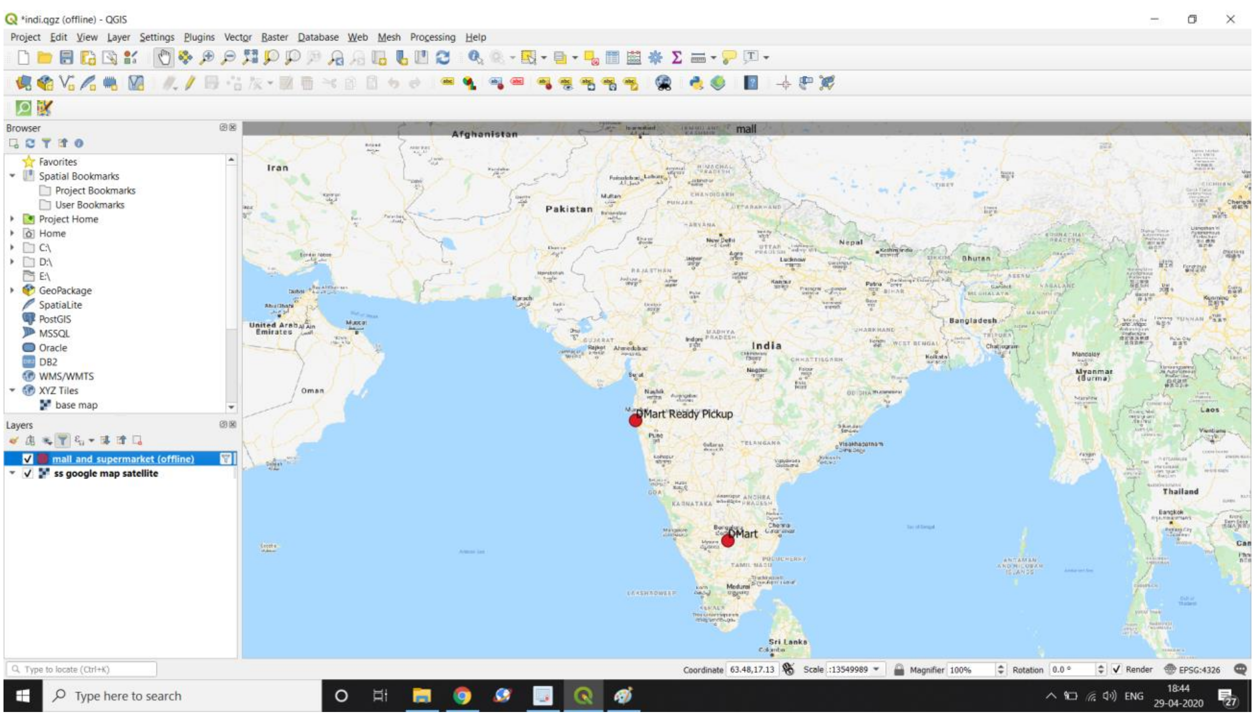




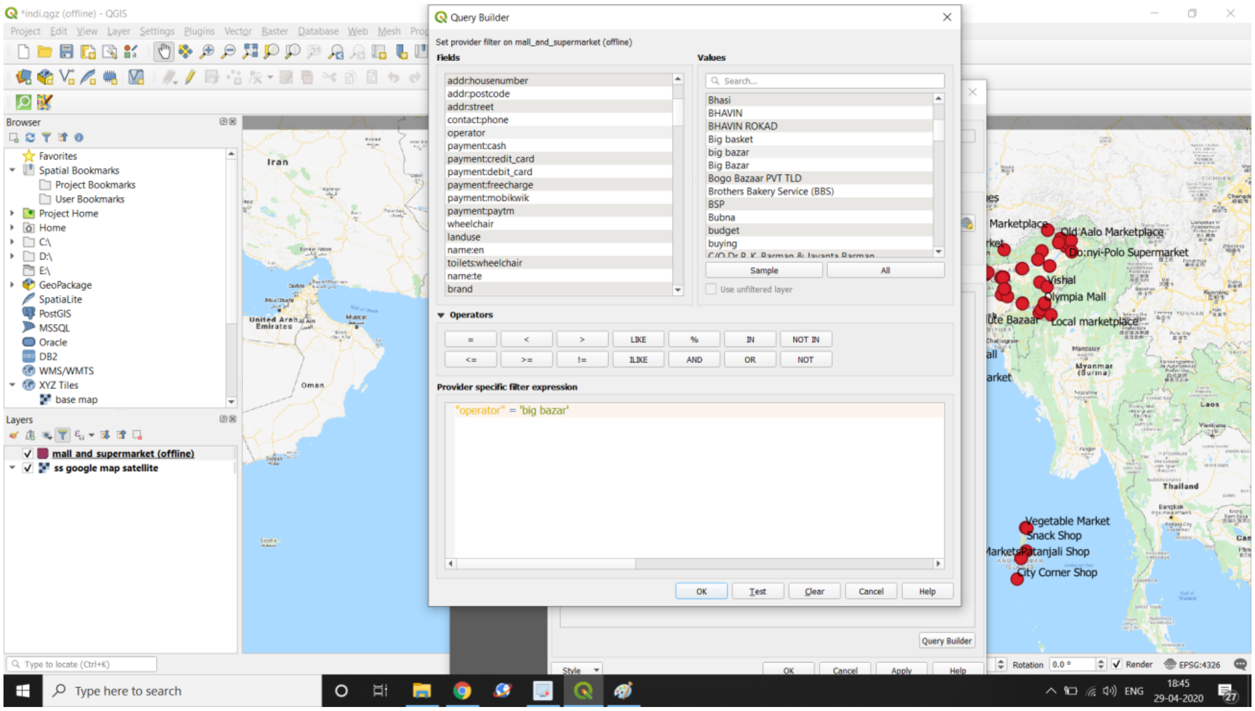
43

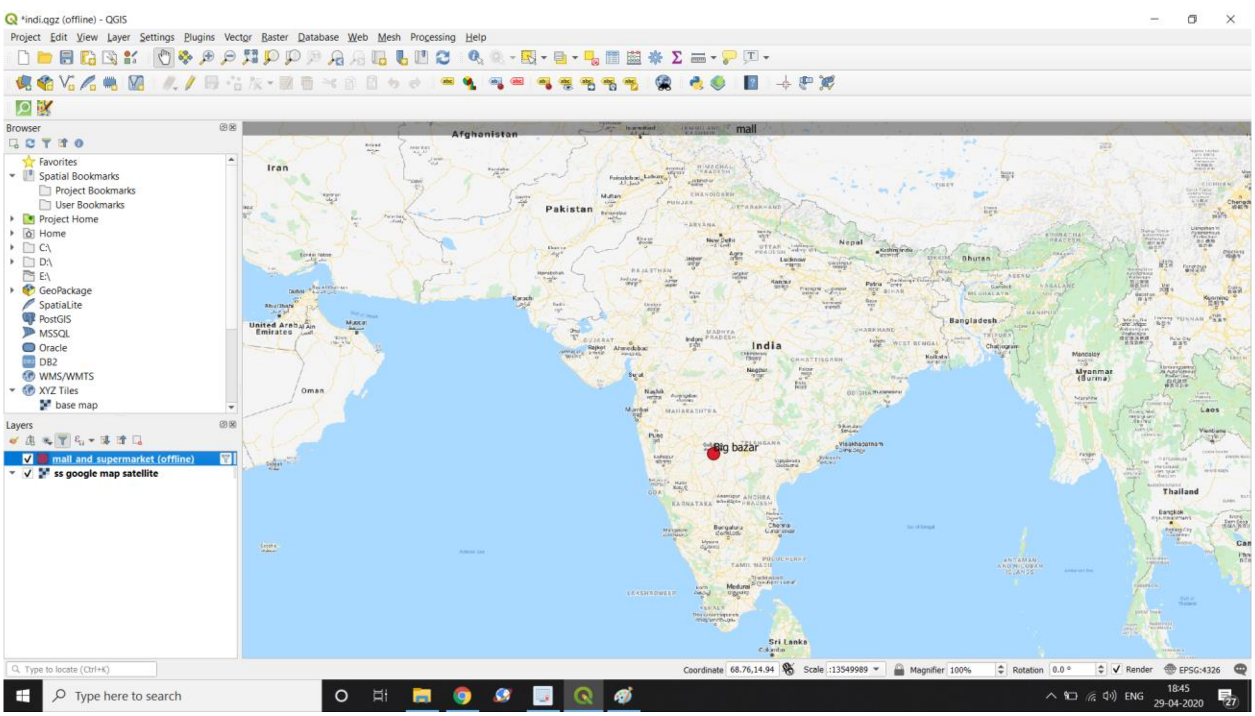


*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
payment:freechange
payment:mobikwik
payment:paytm
wheelchair
landuse
name:en
toilets:wheelchair
name:te
brand
Cycle World
dasa
datta
Dhanya Supermarket
Dhrumil
DILIP PRASAD
Dipak bhai
Divyanshu Agrawal
DMart
DR. SHIKHARI
E-MAGIC SOLUTIONS
easyday
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"operator" = 'DMart'
OK
Test
Clear
Cancel
Help
Query Builder
Browser
Layers
mall and supermarket (offline)
ss google map satellite
Type here to search

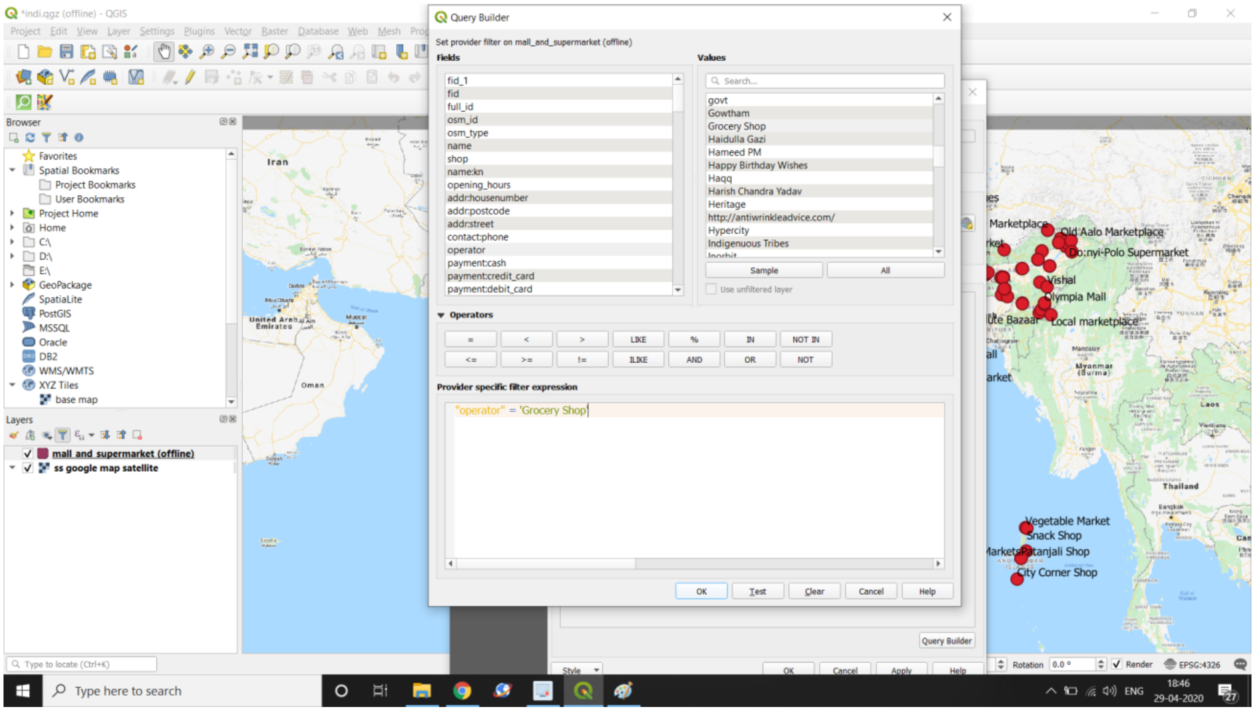


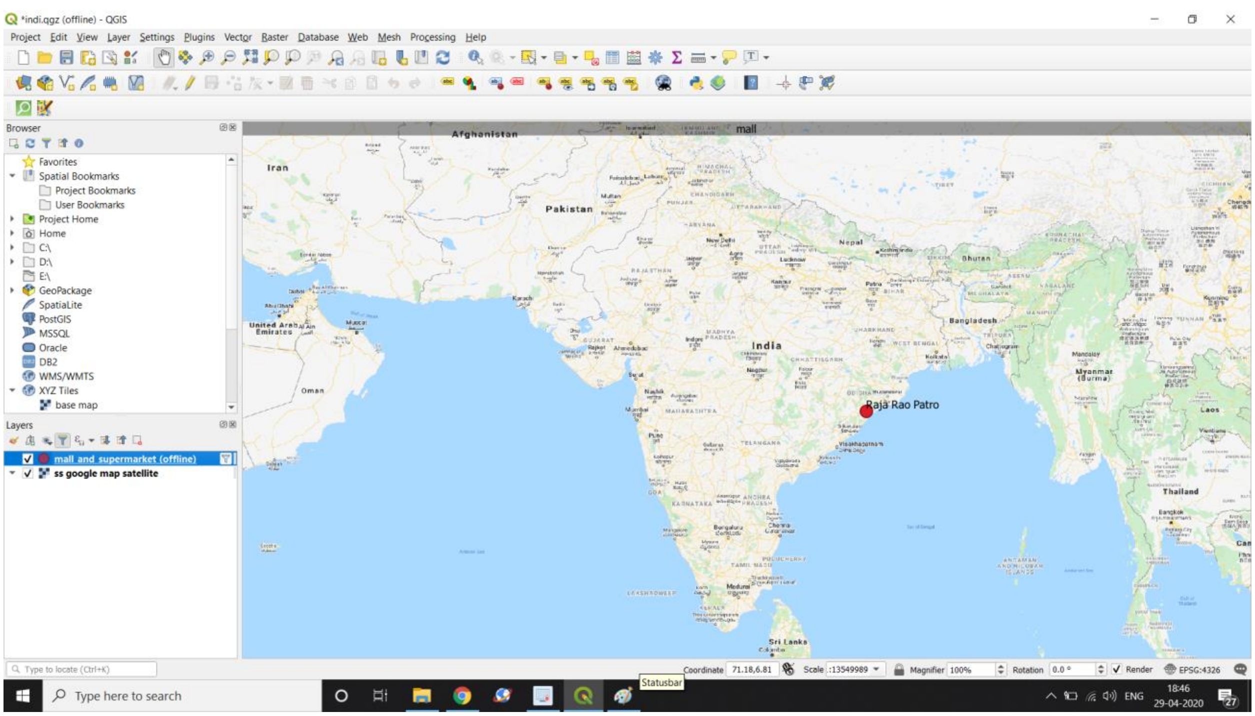
*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall and supermarket (offline)
ss google map satellite
DMart Ready Pickup
DMart
India
Pakistan
Iran
Afghanistan
Oman
Nepal
Bangladesh
Sri Lanka
Thailand
Coordinate 63.48,17.13
Scale 1:13549989
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326
Type here to search
18:44
29-04-2020

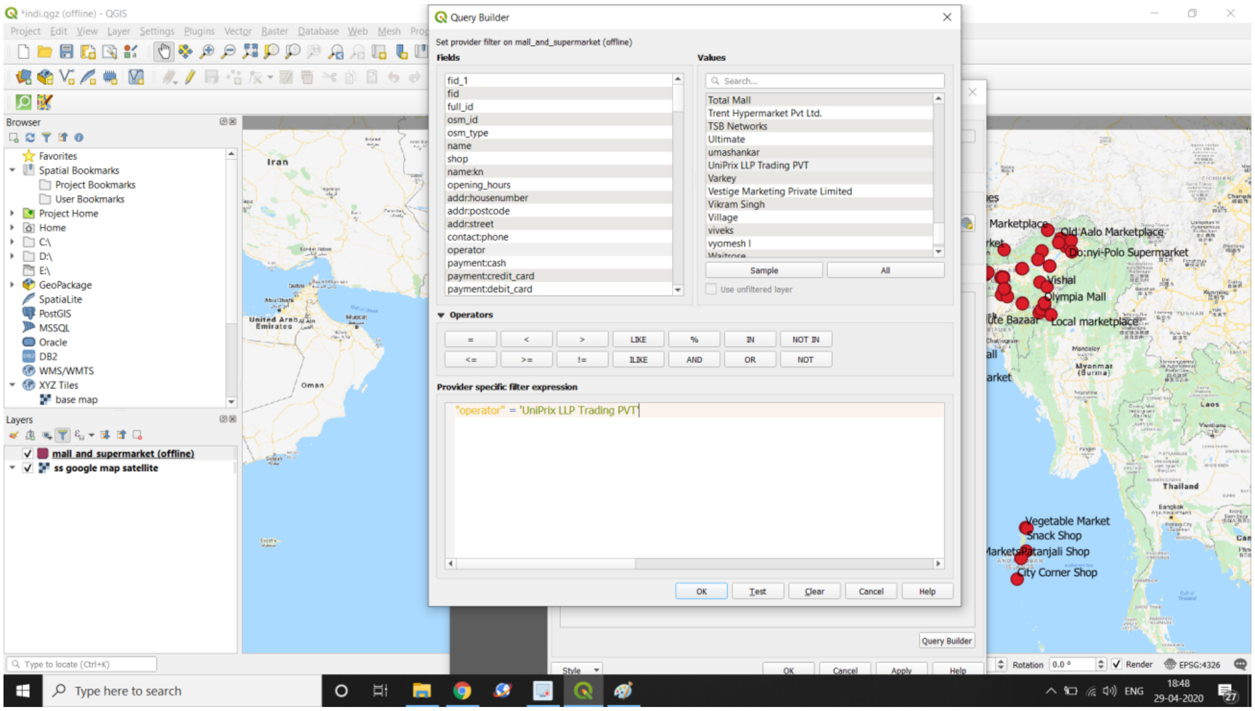

*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
Values
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
payment:freecharge
payment:mobikwik
payment:paytm
wheelchair
landuse
name:en
toilets:wheelchair
name:te
brand
Bhasi
BHAVIN
BHAVIN ROKAD
Big basket
big bazar
Big Bazar
Bogo Bazaar PVT TLD
Brothers Bakery Service (BBS)
BSP
Bubna
budget
buying
Sample
All
Use unfiltered layer
Operators
Provider specific filter expression
"operator" = 'big bazar'
OK
Test
Clear
Cancel
Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Type here to search

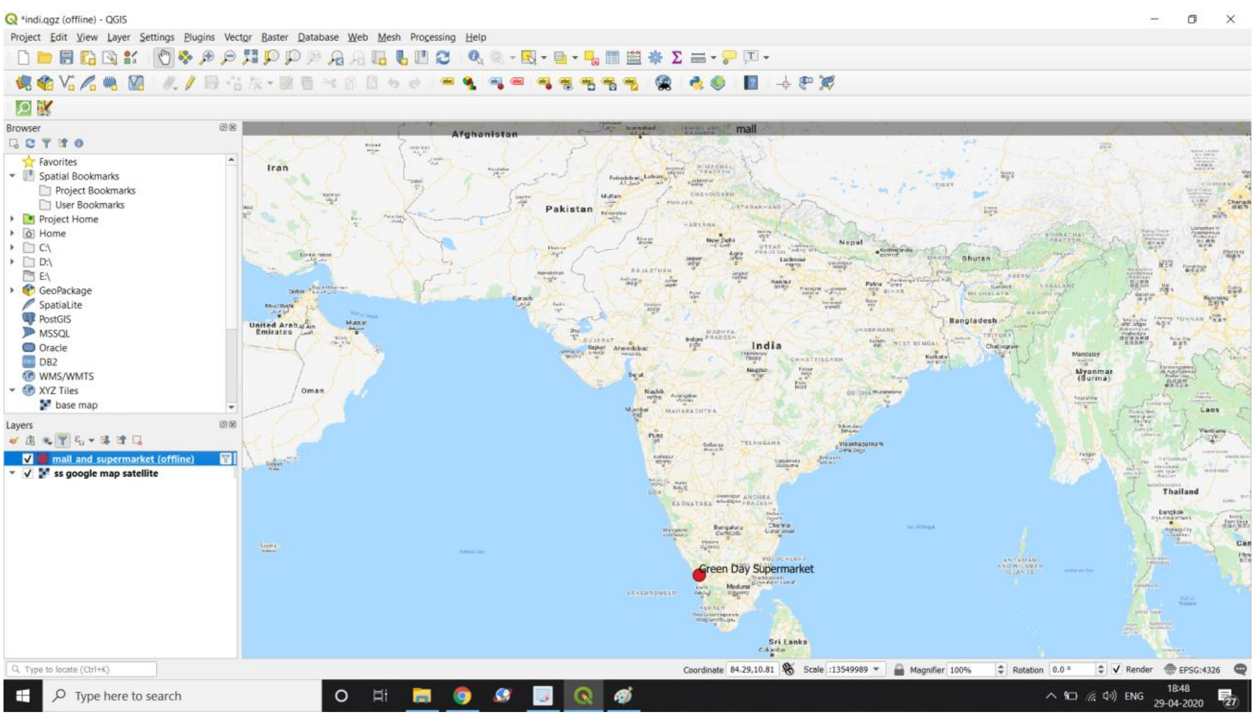

*indi.qgz (offline) - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Layers
mall_and_supermarket (offline)
ss google map satellite
Big bazar
Afghanistan
Pakistan
India
Nepal
Bhutan
Bangladesh
Sri Lanka
Thailand
Type here to search

45


*indi.qgz (offline) - QGIS
Query Builder
Set provider filter on mall_and_supermarket (offline)
Fields
fid_1
fid
full_id
osm_id
osm_type
name
shop
name:kn
opening_hours
addr:housenumber
addr:postcode
addr:street
contact:phone
operator
payment:cash
payment:credit_card
payment:debit_card
Values
govt
Gowtham
Grocery Shop
Haidulla Gazi
Hameed PM
Happy Birthday Wishes
Haqq
Harish Chandra Yadav
Heritage
http://antiwrinkleadvice.com/
Hypercity
Indigenuous Tribes
Sample
All
Use unfiltered layer
Operators
=
<
>
LIKE
%
IN
NOT IN
<=
>=
!=
ILIKE
AND
OR
NOT
Provider specific filter expression
"operator" = 'Grocery Shop'
OK
Test
Clear
Cancel
Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Type here to search
18:46
29-04-2020

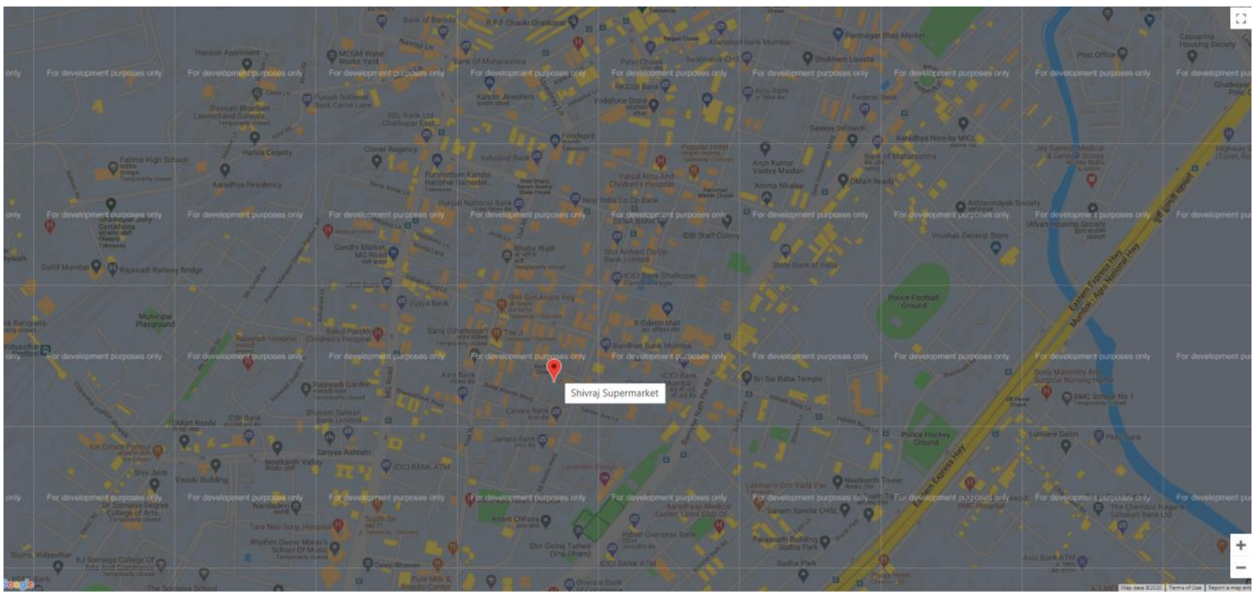

*indi.qgz (offline) - QGIS
Project
Edit
View
Layer
Settings
Plugins
Vector
Raster
Database
Web
Mesh
Processing
Help
Browser
Favorites
Spatial Bookmarks
Project Bookmarks
User Bookmarks
Project Home
Home
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
base map
Layers
mall_and_supermarket (offline)
ss google map satellite
Afghanistan
Iran
Pakistan
Nepal
India
Bangladesh
Raja Rao Patro
Thailand
Sri Lanka
Coordinate
71.18,6.81
Scale
1:13549989
Magnifier
100%
Rotation
0.0 °
Render
EPSG:4326
Statusbar
Type here to search
18:46
29-04-2020


Query Builder
Set provider filter on mall_and_supermarket (offline)
Provider specific filter expression
"operator" = 'UniPrix LLP Trading PVT'


Green Day Supermarket

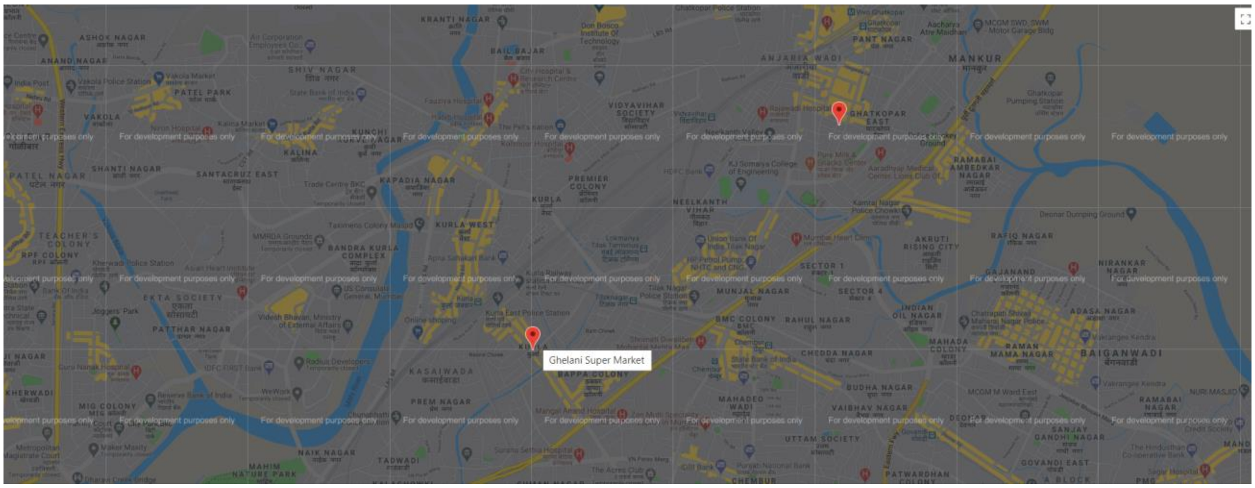
47

```
{
    "title": 'Shivraj Supermarket',
    "lat": '19.078505',
    "lng": '72.907166',
    "description": 'Shivraj Supermarket',
    "Url": 'http://groceryfinder.cf/shop/'
},
```



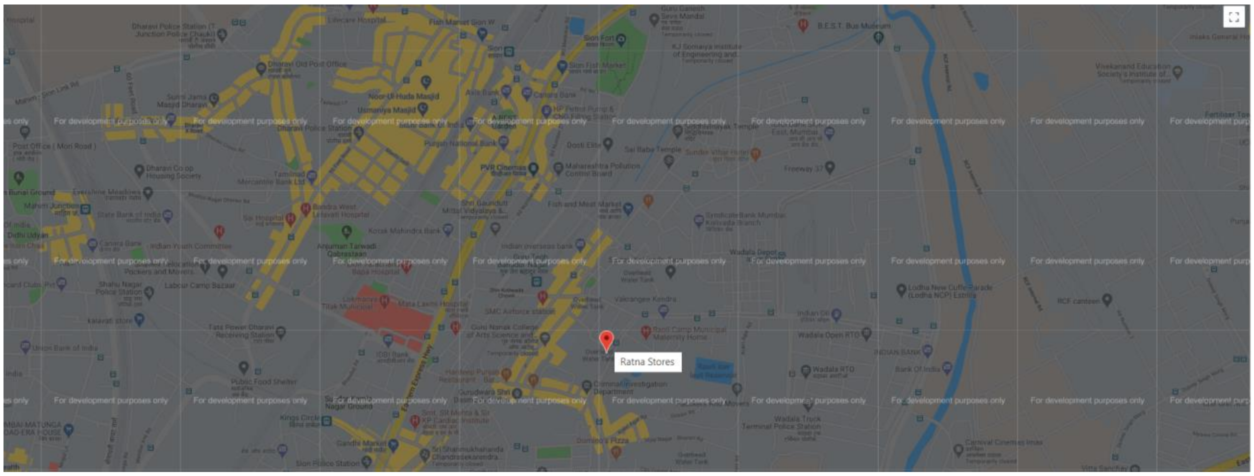
48


```
{
    "title": 'Ghelani Super Market',
    "lat": '19.062054',
    "lng": '72.883438',
    "description": 'Ghelani Super Market',
    "url": 'http://groceryfinder.cf/shop/'
},
```

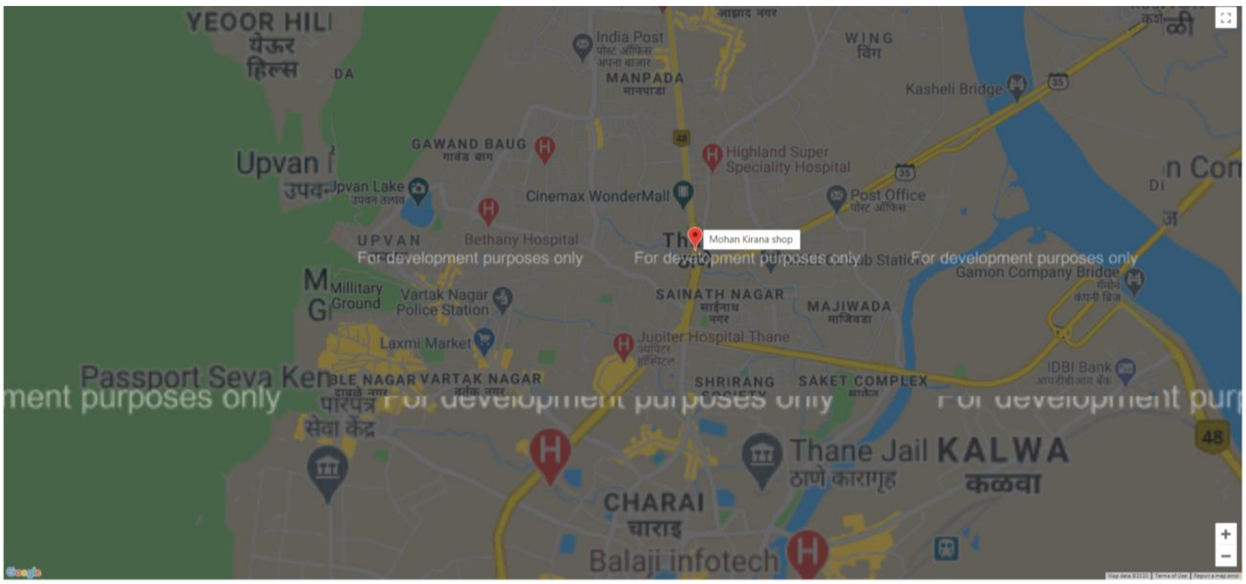
49


```
{
    "title": 'Ratna Stores',
    "lat":'19.035288',
    "lng": '72.867119',
    "description": 'Ratna Stores',
    "url": 'http://groceryfinder.cf/shop/'
},
```

50

```
{
    "title": 'Mohan Kirana shop',
    "lat": '19.218330',
    "lng": '72.978088',
    "description": 'Infinity Mall',
    "url": 'http://groceryfinder.cf/product-category/mohan-grocery-shop/'
},
```



Experiment No.10

Aim: **Hosting Architecture For Public Access. WebGIS, MobileGIS, are the technologies to help you develop the applications to be accessible at end user. You use, server/client scripting languages, Frameworks, webGIS frameworks, Spatial Databases, etc. Final you delivered our Project, that is webGIS and MobileGIS.**

Explain the webGIS & mobile GIS, server/client scripting languages, databases, spatial datatypes used to represent your data, scripting languages to code your algorithms, etc. Explain webGIS/MobileGIS components and Architecture of your project in details. What are the knowledge forums, Research Groups, Consortiums, Standard's Organizations, open source platforms, etc. working in GIS, Spatial Analysis, and related studies.

Web GIS

The web application provides the software interface to the client, and its corresponding tools are used to visualize, interact with, and work with geographic information. It may be an application that runs in a web browser, or it could be a mobile application that works on a GPSenabled field device or a smartphone.

In web GIS applications, the basemap provides the geographic context for each application. The type of application (for example, hydrology, parcels, electrical utilities, and conservation) often defines the type of basemap that you'll need to use. For example, in a web GIS application aimed at waterfowl conservation, high-resolution orthoimagery would be an appropriate basemap for digitizing wetlands

Observations or sensor feeds: This can be any information that reflects status or situational awareness, for example, crime locations, traffic sensor feeds, real-time weather, readings from meters (such as stream gauges), observations from equipment or made by workers in the field, inspection results, addresses of customers, disease locations, air quality and pollution monitors, and so on. These information sources are often displayed as status information in web GIS maps. Also, they are frequently used as inputs into analytic operations that are computed on the server.

- Editing and data access layers: These are the map layers that your users work with, for example, to edit features, perform queries, and select features for input to analysis.
- Query results: In many cases, applications will make a query request to the server and return a set of records as results. These can include a set of individual features or attribute records. Users often display and work with these results as map graphics in their web GIS applications.
- Result layers that are derived from analytic models: GIS analysis can be performed to derive new information that can be added as new map layers and explored, visualized, interpreted, and compared by end users

Mobile GIS Mobile Geographical Information System

Mobile GIS is the expansion of GIS technology from the office into the field. A mobile GIS Enables field-based personnel to capture, store, update, manipulate, analyze, and display geographic information. Mobile GIS integrates the following technologies

- Mobile Devices
- Global Positioning System (GPS)
- Wireless Communications for Internet GIS access 3

Mobile GIS Architecture is client side components are the mobile client (laptop computer, PDA or mobile phone), a mobile GIS Software and Global Position System (GPS) attached to the mobile client, while server side components are generally made up of one or more different database. A wireless communication network ensures communication between the client and the server for data uploads and downloads, or information request and response

Core technologies that make mobile GIS possible for organizations include:• Global Positioning System (GPS) technology

- Mobile OS and device platforms such as smart phones, Pocket PCs, PDAs (Personal Digital Assistant), Laptops and Tablet PCs
- GIS and navigation software for mobile platforms
- Wireless Communications including Internet GIS access, Wi-Fi, broadband and Bluetooth capabilities 4

Benefits of Mobile GIS

- Improves efficiency and accuracy of field operations
- Improves completeness and accuracy of GIS data
- Improves quality of geographic analysis and decisions
- Easy access of GIS Data• Replace paper-based workflows 10

ESRI Mobile GIS Apps1. Arc Pad: Arc Pad is mobile field mapping and data collection software designed for GIS professionals. It includes advanced GIS and GPS capabilities for capturing, editing and displaying geographic information quickly and efficiently. Critical data can be checked in and out of a multiuser or personal geo-database and shared throughout your organization

ESRI Mobile GIS Apps2. Arc GIS for Windows Mobile and Tablets: Arc GIS for Windows Mobile helps organizations deliver GIS capabilities and data to range of mobile devices. Arc GIS for Windows Mobile comes with configurable Software Development Kit (SDK) to create stand-alone mobile applications, embed GIS functionality into existing applications and build custom tasks and extensions

Server side scripting

A server is a computer system that serves as a central repository of data and programs and is shared by clients.

The server-side environment that runs a scripting language is a web server. A user's request is fulfilled by running a script directly on the web server to generate dynamic HTML pages. This HTML is then sent to the client browser. It is usually used to provide interactive web sites that interface to databases or other data stores on the server.

Server-side scripting is a technique used in web development which involves employing scripts on a web server which produce a response customized for each user's (client's) request to the website. The alternative is for the web server itself to deliver a static web page. Scripts can be written in any of a number of server-side scripting languages that are available (see below). Server-side scripting is distinguished from client-side scripting where embedded scripts, such as JavaScript, are run client-side in a web browser, but both techniques are often used together.

Server-side scripting is often used to provide a customized interface for the user. These scripts may assemble client characteristics for use in customizing the response based on those characteristics, the user's requirements, access rights, etc. Server-side scripting also enables the website owner to hide the source code that generates the interface, whereas with client-side scripting, the user has access to all the code received by the client. A down-side to the use of server-side scripting is that the client needs to make further requests over the network to the server in order to show new information to the user via the web browser. These requests can slow down the experience for the user, place more load on the server, and prevent use of the application when the user is disconnected from the server.

When the server serves data in a commonly used manner, for example according to the HTTP or FTP protocols, users may have their choice of a number of client programs (most modern web browsers can request and receive data using both of those protocols). In the case of more specialized applications, programmers may write their own server, client, and communications protocol, that can only be used with one another.

Programs that run on a user's local computer without ever sending or receiving data over a network are not considered clients, and so the operations of such programs would not be considered client-side operations.

It is the program that runs on server dealing with the generation of content of web page.

- Querying the database
- Operations over databases
- Access/Write a file on server.
- Interact with other servers.
- Structure web applications.

- Process user input. For example if user input is a text in search box, run a search algorithm on data stored on server and send the results.

Examples :

The Programming languages for server-side programming are :

PHP

- C++
- Java and JSP
- Python
- Ruby on Rails

Client side
The client-side environment used to run scripts is usually a browser. The processing takes place on the end users computer. The source code is transferred from the web server to the users computer over the internet and run directly in the browser.[2]

The scripting language needs to be enabled on the client computer. Sometimes if a user is conscious of security risks they may switch the scripting facility off. When this is the case a message usually pops up to alert the user when script is attempting to run.

A client is a computer application, such as a web browser, that runs on a user's local computer, smartphone, or other device, and connects to a server as necessary. Operations may be performed client-side because they require access to information or functionality that is available on the client but not on the server, because the user needs to observe the operations or provide input, or because the server lacks the processing power to perform the operations in a timely manner for all of the clients it serves. Additionally, if operations can be performed by the client, without sending data over the network, they may take less time, use less bandwidth, and incur a lesser security risk.

When the server serves data in a commonly used manner, for example according to standard protocols such as HTTP or FTP, users may have their choice of a number of client programs (e.g. most modern web browsers can request and receive data using both HTTP and FTP). In the case of more specialized applications, programmers may write their own server, client, and communications protocol which can only be used with one another.

It is the program that runs on the client machine (browser) and deals with the user interface/display and any other processing that can happen on client machine like reading/writing cookies.

- Interact with temporary storage
- Make interactive web pages
- Interact with local storage
- Sending request for data to server
- Send request to server
- work as an interface between server and user

The Programming languages for client-side programming are :

- Javascript
- VBScript
- HTML
- CSS
- AJAX

Database

A database is a collection of information that is organized so that it can be easily accessed, managed and updated. Computer databases typically contain aggregations of data records or files, containing information about sales transactions or interactions with specific customers. Spatial databases provide a strong foundation to accessing, storing and managing your spatial data empire.

A database is a collection of related information that permits the entry, storage, input, output and organization of data. A database management system (DBMS) serves as an interface between users and their database.

A spatial database includes location. It has geometry as points, lines and polygons.

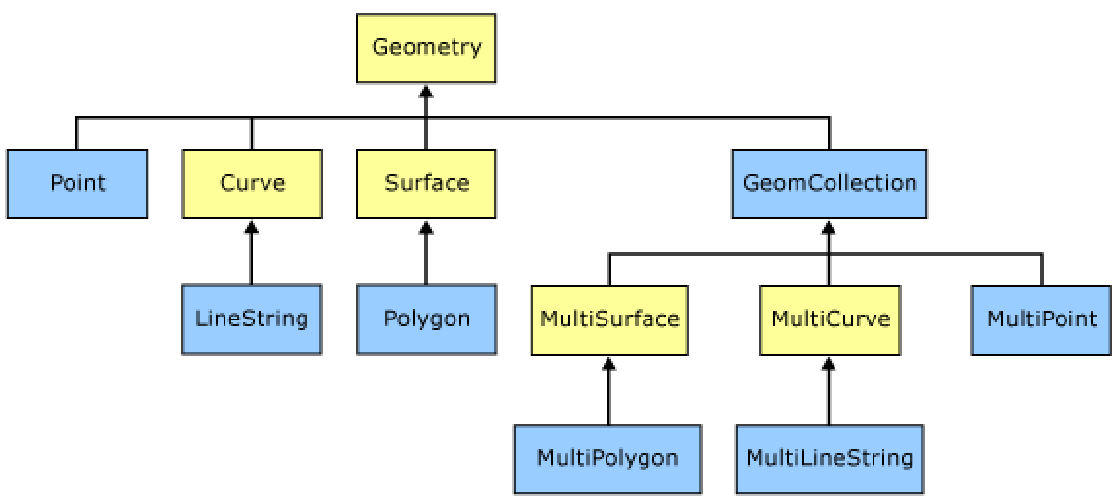
GIS combines spatial data from many sources with many different people. Databases connect users to the GIS database.

For example, a city might have the waste water division, land records, transportation and fire departments connected and using datasets from common spatial databases.

Spatial datatypes

- Geometry spatial data type
- Geography spatial data types

The geometry and geography data types support sixteen spatial data objects, or instance types. However, only eleven of these instance types are instantiable; you can create and work with these instances (or instantiate them) in a database. These instances derive certain properties from their parent data types that distinguish them as Points, LineStrings, CircularStrings, CompoundCurves, Polygons, CurvePolygons or as multiple geometry or geography instances in a GeometryCollection. Geography type has an additional instance type, FullGlobe.



As the figure indicates, the ten instantiable types of the geometry and geography data types are Point, MultiPoint, LineString, CircularString, MultiLineString, CompoundCurve, Polygon, CurvePolygon, MultiPolygon, and GeometryCollection. There is one additional instantiable type for the geography data type: FullGlobe. The geometry and geography types can recognize a specific instance as long as it is a well-formed instance, even if the instance is not defined explicitly. For example, if you define a Point instance explicitly using the STPointFromText() method, geometry and geography recognize the instance as a Point, as long as the method input is well-formed. If you define the same instance using the STGeomFromText() method, both the geometry and geography data types recognize the instance as a Point.

Geometry spatial data type

The geometry data type supports planar, or Euclidean (flat-earth), data. The geometry data type both conforms to the Open Geospatial Consortium (OGC) Simple Features for SQL Specification version 1.1.0 and is compliant with SQL MM (ISO standard). The defining data for LineString and Polygon types are vertices only. The connecting edge between two vertices in a geometry type is a straight line.Circular arc segments for geometry types are defined on the XY Cartesian coordinate plane (Z values are ignored).In the planar, or flat-earth, system, measurements of distances and areas are given in the same unit of measurement as coordinates. Using the geometry data type, the distance between (2, 2) and (5, 6) is 5 units, regardless of the units used.In the planar system, the ring orientation of a polygon is not an important factor. For example, a polygon described by ((0, 0), (10, 0), (0, 20), (0, 0)) is the same as a polygon described by ((0, 0), (0, 20), (10, 0), (0, 0)). The OGC Simple Features for SQL Specification does not dictate a ring ordering, and SQL Server does not enforce ring ordering.

Geography spatial data types

In Our project , the geographic data types are used. SQL Server supports the geography data type, which stores ellipsoidal (roundearth) data, such as GPS latitude and longitude coordinates. The connecting edge between two vertices in a geography type is a short great elliptic arc between the two vertices. A great ellipse is the intersection of the ellipsoid with a plane through its center and a great elliptic arc is an arc segment on the great ellipse. Circular arc segments for geography types are defined by curve segments on a reference sphere. Any parallel on the reference sphere can be defined by two complementary circular arcs where the points for both arcs have a constant latitude angle.In the ellipsoidal, or round-earth system, coordinates are given in degrees of latitude and longitude. However, lengths and areas are usually measured in meters and square meters, though the measurement may depend on the spatial reference identifier (SRID) of the geography instance. The most common unit of measurement for the geography data type is meters. If we use the geography data type to store the spatial instance, we must specify the orientation of the ring and accurately describe the location of the instance. The interior of the polygon in an ellipsoidal system is defined by the left-hand rule.

Scripting Languages:

A scripting language is a programming language designed for integrating and communicating with other programming languages. Since a scripting language is normally used in conjunction with another programming language, they are often found alongside HTML, Java or C++.One common distinction between a scripting language and a language used for writing entire applications is that, while a programming language is typically compiled first before being allowed to run, scripting languages are interpreted from source code or bytecode one command at a time.

Although scripts are widely employed in the programming world, they have recently become more associated with the World Wide Web, where they have been used extensively to create dynamic Web pages. While technically there are many client-side scripting languages that can be used on the Web, in practice it means using JavaScript.

There are many scripting languages some of them are discussed below:

bash: It is a scripting language to work in the Linux interface. It is a lot easier to use bash to create scripts than other programming languages. It describes the tools to use and code in the command line and create useful reusable scripts and conserve documentation for other people to work with.

Node js: It is a framework to write network applications using JavaScript. Corporate users of Node.js include IBM, LinkedIn, Microsoft, Netflix, PayPal, Yahoo for real-time web applications.

Ruby: There are a lot of reasons to learn Ruby programming language. Ruby's flexibility has allowed developers to create innovative software. It is a scripting language which is great for web development.

Python: It is easy, free and open source. It supports procedureoriented programming and object-oriented programming. Python is an interpreted language with dynamic semantics and huge lines of code are scripted and is currently the most hyped language among developers.

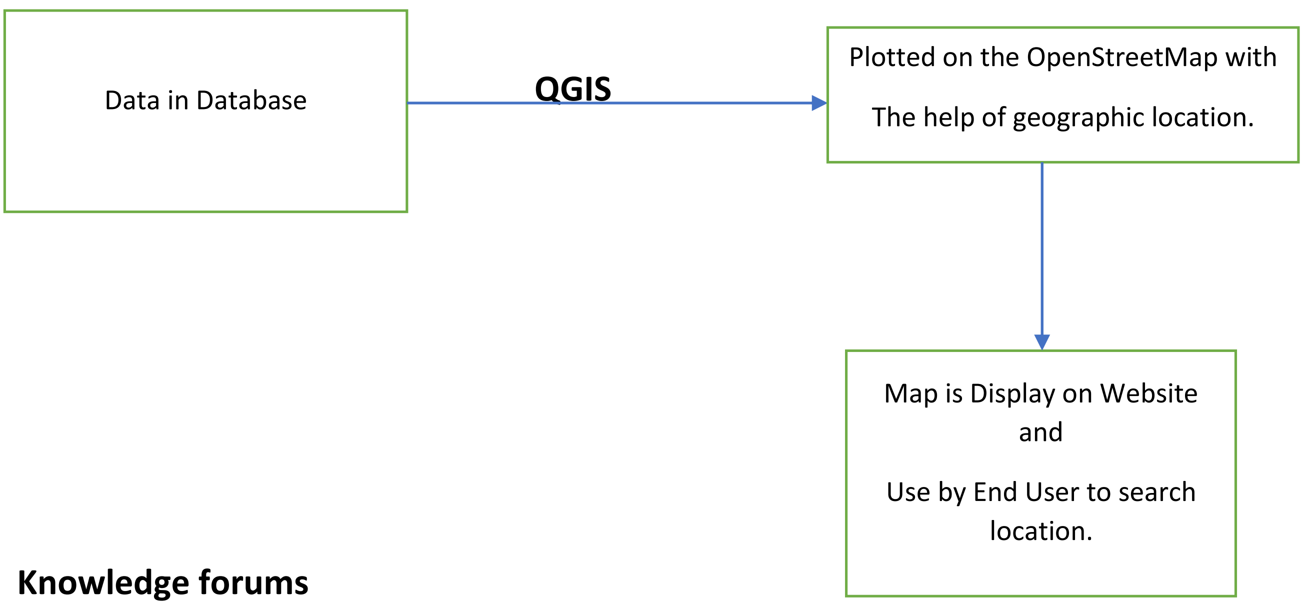
Perl: A scripting language with innovative features to make it different and popular. Found on all windows and Linux servers. It helps in text manipulation tasks. High traffic websites that use Perl extensively include priceline.com, IMDB.

Advantages of scripting languages:

- Easy learning: The user can learn to code in scripting languages quickly, not much knowledge of web technology is required.

- Fast editing: It is highly efficient with the limited number of data structures and variables to use.
- Interactivity: It helps in adding visualization interfaces and combinations in web pages. Modern web pages demand the use of scripting languages. To create enhanced web pages, fascinated visual description which includes background and foreground colors and so on.
- Functionality: There are different libraries which are part of different scripting languages. They help in creating new applications in web browsers and are different from normal programming languages

Project Component:



Knowledge forums

Knowledge Forum is an electronic group workspace designed to support the process of knowledge building. With Knowledge Forum, any number of individuals and groups can share information, launch collaborative investigations, and build networks of new ideas together.

geospatialOnline is a relatively new forum focused on knowledge sharing within the GIS industry. The forum also features sections where users can post event and job information.

1. GIS Forum. geospatialOnline is a relatively new forum focused on knowledge sharing within the GIS industry.
2. General Cartography and Mapping Help.
3. Esri Technical Help for ArcGIS.
4. Help for Open Source GIS Questions.
5. Other GIS Forums.
6. Using Social Media to Answer GIS Questions.
7. GIS Mailing Lists.

Research Group

A research group (also sometimes called a research centre) is a group of researchers from the same faculty working together on a particular issue or topic. Research groups may be composed of researchers all from the same school/subject or from different subjects within a faculty.

The success of research group depends on several factors like, clear goals, research emphasis, group climate, participative governance, decentralized organization, communication, resources, recruitment, selection, and leadership.

Consortium

GIS Consortium India Pvt Ltd. is a technology driven GIS services provider. With our experienced technical staff, we aim at providing high quality and innovative GIS based solutions. We specialize in designing, developing, and deploying GIS solutions for our various clients that maximize information resources across the organization.

As a GIS company India, we strive to provide all-inclusive geographical information which act as a great source of information and empower areas like Data Conversion, Land Information Systems, Natural Resources Management, Urban Planning & Geographical Information Systems Applications. Our cutting edge technology and exceptional GIS solutions enables us to give a technological push to various development projects.

The GIS Consortium is an organization of Chicago-area communities unified by a common goal: to share resources, information, staffing, and technology so that municipalities can optimize the value of geographic information systems (GIS).

Standard Organizations

GIS standards are recommended practices to facilitate developing, sharing and using GIS data, GIS software and GIS services. When you look for GIS standards, you actually mean geospatial standards, where GIS is a part of. Geospatial standards concern the use of any geographic information.

Normally any standard is a technical document intended for use as a rule, guideline or definition for common and repeated use. They might include requirements and recommendations for products, systems, processes or services. They possibly describe measurements, test methods or establish common terminologies. A GIS standard is a technical document designed to use for operating with geospatial data.

Esri has supported standards both on the organizational level and in the way it has designed its products. On the organizational level, Esri has participated in international and regional standards organizations as well as information community standards such as those of the North American Treaty Organization (NATO) and the United States government and its military.

Esri has a long history of participation in a variety of organizations that promote standards and interoperability. Organizations that enable interoperability can be grouped into two categories. International organizations, such as ISO and GSDI, promote interoperability across communities rather than a particular discipline. Other organizations deal with standards and interoperability for specific technologies or industries, such as defense or navigation. Esri supports both types of organizations through direct participation on boards of directors and chairing committees and by providing input for developing standards. The accompanying chart lists standards and interoperability organizations with which Esri works.

Acronym	Organization	URL Type
ANSI	American Standards Institute	National Standards
CEN	European Committee for Standardization	Standards
DGIWG	Digital Geographic Information Working Group	Standards
FGDC	Federal Geographic Data Committee	Standards
GSDI	Global Spatial Data Infrastructure	Interoperability

IHO	International Hydrographic Organization	Standards
ISO	International Organization for Standardization	Standards
OASIS	Organization for the Advancement of Structured Information Standards	Standards
OGC	Open Geospatial Consortium	Specifications
OMA	Open Mobile Alliance	Specifications
W3C	World Wide Web Consortium	Standards
WS-I	Web Services Interoperability Organization	Interoperability

Open Source Platforms:

1. QGIS

When it comes to automating map production, processing geospatial data, and generating cartographic figures, QGIS is the best GIS software to have. Besides composing and exporting graphical maps, it enables you to view, edit, and analyze geospatial data carefully. QGIS supports both raster and vector layers.

QGIS integrates with other open-source geographic information systems and extends its capabilities. It is mostly used for terrain analysis, disaster risk reduction, and environmental resource mapping.

Features

- Data capturing
- Overlaying
- Spatial analysis
- Create, edit, manage, and export data

Pros

- Multiple plugins and tools that can be customized
- User-friendly interface

Cons

- It can be made more image analysis friendly

2. GRASS GIS

GRASS refers to Geographic Resources Analysis Support System and is a tool for land management and environmental planning. It is an opensource GIS software that offers tools and programs for several tasks. This includes image processing, data management, spatial modeling, graphic production, and data visualization.

Companies looking for a GIS package that can help in terrain manipulation must consider GRASS as the top option.

Features

- Image processing
- Raster analysis
- Vector analysis
- Geocoding

Pros

- 350 robust vector and raster manipulation tools
- Intuitive GUI and reliability

Cons

- Not useful in cartographic design
- Data management is complicated

3. Open Jump

This free GIS software, written in JAVA, is capable of handling large sets of data. It boasts functionalities that enable users to read and write shapefiles, read different spatial databases, and interpret various vector formats. One more striking feature it offers is the ability to edit geometry. OpenJump allows users to analyze buffers, overlays, and vector data.

It is proficient at letting you create pie charts, plotting, and choropleth maps. Moreover, OpenJump GIS plugins add to its capabilities. Whether you need a plugin for raster, editing, printing, web processing, spatial analysis, or databases, it provides them all.

Features

- Chart data
- Layer editing
- Geometry data

Pros

- Editing geometry and attribute data
- Customize the appearance of your information

Cons

- Changes you make are often lost; thus, you need keeping backups

4. uDig

uDig is a free GIS software that encapsulates its functionalities in its name. Well, let's comprehend it!

u – user-friendly interface

D – Desktop; you can run uDig on Windows, Mac, and Linux i – internet-oriented consuming standard; this includes WMS, WFS, or WPS

g – GIS-ready for complex analytical capabilities

uDig is most suitable for basic mapping. With its Mapnik, you can import base maps with the same tune as ArcGIS offers. Built with Eclipse Rich Client (RCP) technology, it aims to provide a user-friendly framework to build complex analytic data.

Features

- Drag and drop interface
- Editing tools

- Vector operations
- Import base maps

Pros

- It can work as an independent application or an extension with RCP plugins
  - It's catalog, symbology, and Mac OS functionality makes it robust and powerful

Cons

  - Limited tools to personalize the data
  - Processing speed is quite slow

Spatial Analysis:

Spatial analysis allows you to solve complex location-oriented problems and better understand where and what is occurring in your world. It goes beyond mere mapping to let you study the characteristics of places and the relationships between them. Spatial analysis lends new perspectives to your decision making.

With spatial analysis, you can do the following:

- Determine relationships
- Understand and describe locations and events
- Detect and quantify patterns

- Make predictions
- Find best locations and paths

Experiment No.11

Aim: What are other 3 GIS Applications you visualize which are in line with your Project. Explore one case study in detail explaining the impacting uses of GIS systems/GIS Applications/Spatial Analysis/Data Acquisition Systems/Remote Sensing/or any relevant technology& Application areas mentioned above.

1.A GIS Application for Location Selection and Customers' Preferences for Shopping Malls

Geographical Information Systems (GIS) are used today at several planning applications including land use planning, health care planning, and transportation planning. Site selection is an issue for many different kinds of businesses. Retailers, banks, savings and loans, and health care and service providers of all types face the common issue of placing sites in close proximity to their customers and prospects (GIS for Retail Business, 2013). Geographical Information Systems (GIS) used today to provide advanced analysis tools and complete data packages for analysing retail and demographic information.

Public Participation in decision-making processes works not only to identify areas of common values or variability, but also as an illustrative and instructional too (Higgsn et, al 2008). It is necessary to find and evaluate any problems, which may affect the structure; the builder needs to determine a suitable location for the mall to ensure a strong customer base for the retailers. It is observed that urban projects evolve according to their location and huge amount of long term investments. This makes some locations the favourites of capital owners because of their location properties such as a central position in the city or ease of transport with automobile (Yırtıcı, 2005; Ozaydin & Ozgur, 2009; Terzi, et, al.).

The Geographic information System (GIS) is a technological method of organizing and arranging the site location of the mall. GIS provides the framework in which all these techniques can be utilized by first looking at what factors contribute to successful site location. Spatial analysis is one of the most important applications of GIS. It is possible to integrate different analyses via, for example, ArcGIS Model Builder tool that allows the combination of data inputs; interactive and dynamic spatial analysis; and resulting outputs (Onden & Tuzla, 2012; Mishra, 2009).

Therefore, this study was designed to examine the potential of suitable location as well as to study customers' preferences for shopping malls in the area and to identify new sites for shopping malls.

• The study hypothesized that the Al Bateen and Zakhir districts will be ideal locations for new malls based on population density and non-availability of malls in these districts.
• It was hypothesized that the Bawadi Mall attracts more customers based on diversity of its stores and entertainments.

2.A GIS-based methodology for safe site selection of a building in a hilly region

Worker safety during construction is widely accepted, but the selection of safe sites for a building is generally not considered. Safe site selection (SSS) largely depends upon compiling, analyzing, and refining the information of an area where a building is likely to be located. The locational and topographical aspects of an area located in hilly regions play a major role in SSS, but are generally neglected in traditional and CAD-based systems used for site selection. Architects and engineers select a site based on their judgment, knowledge, and experience, but issues related to site safety are generally ignored. This study reviewed the existing literature on site selection techniques, building codes, and approaches of existing standards to identify various aspects crucial for SSS in hilly regions. A questionnaire survey was conducted to identify various aspects that construction professionals consider critical for SSS. This study explored the application of geographic information systems (GIS) in modeling the locational and topographical aspects to identify areas of suitability. A GIS-based methodology for locating a safe site that satisfies various spatial safety aspects was developed.

3.A GIS-based method for the selection of the location of residence

Homebuyers are usually interested in both the accessibility of services and the quality of the local environment, and real estate agents frequently offer some web-based systems for home searches. There is however hardly any information about the quality of local living environment in those web-based systems. The purpose of this study was to develop a method for homebuyers, adaptable to the environmental variables of interest to homebuyers when selecting a home location. In this paper, a multicriteria spatial analysis method is proposed and demonstrated for the homebuyers' selection process, using data from the City of Kuopio, Finland. Several spatial variables are applied, including environmental and service factors in the home searching process. A geographical information system (GIS) is used for creating maps for decision variables and mapping suitable areas. The method for ranking alternative dwellings is based on the difference between levels of the decision variables for each dwelling and the target levels given by the user. The method presented in this paper is adaptable to other geographical and social contexts. This decision analysis tool will be useful for both customers and real estate agents, and can also be used for city planning as a participatory-GIS (P-GIS) tool. It introduces new possibilities in the home selection process. The availability of spatial data on the living environment in the web-based services for homebuyers is likely to have effects on customers' requirements and house markets, and also promote better spatial city organization in the long run.

Case Study:

Using GIS in water management system: case study of Bangalore Water Supply and Sewerage Board

Bangalore Water Supply and Sewerage Board (BWSSB) moved forward on developing a GIS in 1998-99 and along with other civic bodies of Bangalore (BDA , BMP, BESCOM and others) pooled resources for obtaining aerial photography and photogrammetrically compiled base map covering an area of 290 Sq Kms of Bangalore from the National Remote Sensing Agency (NRSA).

BWSSB under the Indo-French protocol in 1999 assigned the work of developing a GIS System to M/s SCE France. This led to the development of BISON (Bangalore Information System on Networks) applications for the operational activities of BWSSB. The GIS development was completed in the year 2002. Genesys

International Corporation Ltd, an internationally known, ISO 9001-2000, GIS and mapping company, had taken charge of implementation and maintenance of GIS at BWSSB from Nov 2003 onwards.

The GIS hardware/software setup at BWSSB is described in the presentation. The presentation provides details of the applications of BISON such as water supply maintenance, asset management, consumers management, billing system, employee management, sewage maintenance etc. The data available in geo-database at BWSSB includes the following -

- Spatial data
  - Road network & road names
  - Base map of buildings, green area & landmarks
  - Consumers
  - Location of service station
  - Details of water supply network
  - Details of sewer network
  - Location of BWSSB offices
- Non-spatial data
  - Attributes of water network
  - Attributes of sewer network

The GIS data available with BWSSB is being used in planning pipe line layout for new wards and CMC areas. Planning is carried out by identifying the main feeder line or nearby reservoir or nearby main sewer line to lay a new pipeline network for the new layout.

The presentation makes the following recommendations for enhancement of GIS –

- Web hosting of GIS on intranet/internet.
- Online registration of consumer complaints and linking with GIS through Internet.
- Providing ortho-imagery (from satellite/aerial) as background.
- Draped DEM attached to maps, providing a better perception of ground for engineering planning (new connections, network planning, replacements/repairs).
- Contour map generation from DEM to assist in sewage route planning / laying of storm water drains, network planning etc.,

- Connectivity with other civic bodies to share related information
- GIS on a handheld device