



CERTIFICATE



R.D. AND S.H. NATIONAL COLLEGE AND S.W.A SCIENCE COLLEGE

BANDRA, MUMBAI- 400 050

Department of BSC-IT

This is to certify that Mr/Miss _____

Roll No./Seat No. _____ of _____ class has

Satisfactory completed _____ Practicals, in the subject of

_____ during the academic year 20 -20

Term	No. of Practical	Signature
Semester -		

Teacher Incharge

Incharge
Department of Bsc-IT

Signature of Examiner

INDEX

Sr.No.	NAME OF EXPERIMENT	Page No.	Date of Experiment	Signature
1.	Familiarizing Quantum GIS: Installation of QGIS, datasets for both vectors and raster data,Maps.			
2.	Creating and Managing Vector Data: Adding vector layers, setting properties, formatting, calculating line lengths and statistics.			
3.	Exploring and Managing Raster data: Adding raster layers, raster styling and analysis, raster mosaicking and clipping.			
4.	Making a Map, Working with Attributes, Importing Spreadsheets or CSV files Using Plugins, Searching and Downloading OpenStreetMap Data			
5.	Working with attributes, terrain Data			
6.	Working with Projections and WMS Data			
7.	Georeferencing Topo Sheets and Scanned Maps Georeferencing Aerial Imagery Digitizing Map Data			
8.	Managing Data Tables and Saptial data Sets: Table joins, spatial joins, points in polygon analysis, performing spatial queries			

9.	Advanced GIS Operations 1: Nearest Neighbor Analysis, Sampling Raster Data using Points or Polygons, Interpolating Point Data			
10.	Advanced GIS operations 2: Batch Processing using Processing Framework Automating Complex Workflows using processing Modeler Automating Map creation with print Composer Atlas Validating Map data			

Name: Swapnil Patil
Class: TYBSCIT

Subject: Fundamentals of GIS

Roll No: IT22087
Date of Performance :

Practical 1

Aim: Familiarizing Quantum GIS: Installation of QGIS, DataSets for both vector and raster data, maps.

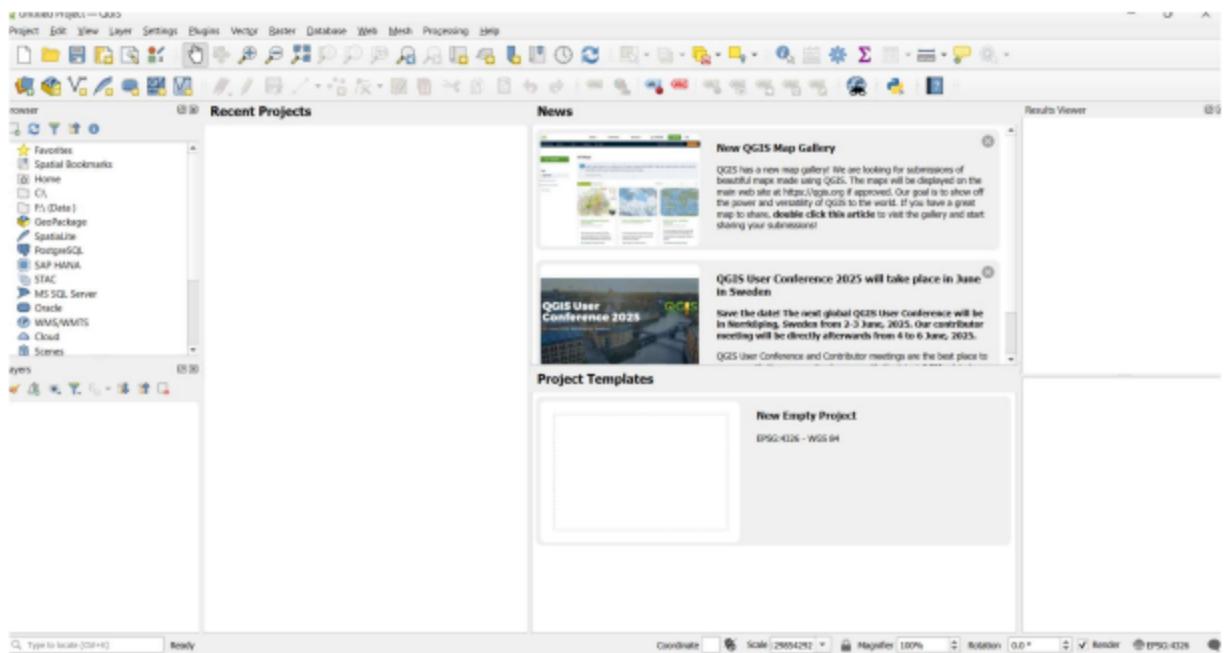
Output: Installation of QGIS

1. To download QGIS – search for QGIS.org and download – once downloaded set the application accordingly

Or Enter the following link : <https://qgis.org/download/>

2. Open the file explorer and run the setup file

3 – After the installation is complete. Open the start menu and type QGIS and then open QGIS Desktop 3.40.4.



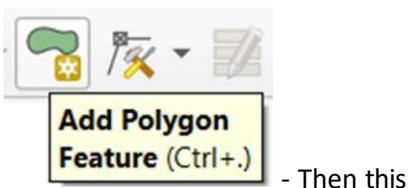
Practical 2

Step 1: Click on the 'Create Empty Project' shown at the startup of the application

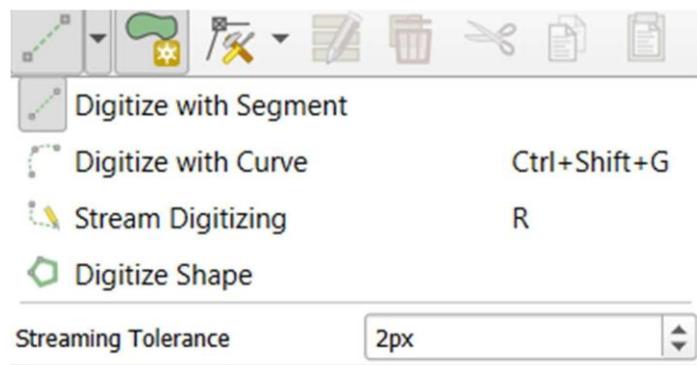
Now to Create a new Vector Layer

- Click on Layer
- Create new Vector layer – New Shapefile layer
- Give a file name with .shp extension
- Select Geometry type – Point/Multipoint/LineString/Polygon
- On the New Field section, give the same name without the extension and click on 'Add to Field's list ', Click on 'Close' .

3. If you have selected your Geometry type as polygon

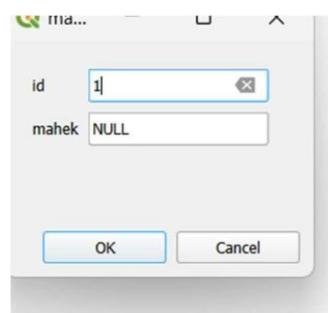


- Then this

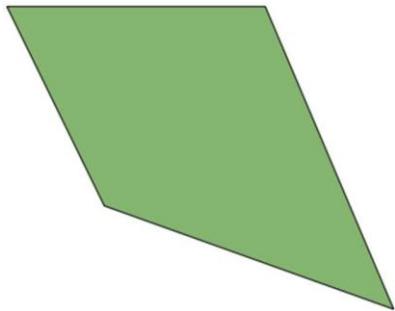


Choose which ever you wish to input in your maps .

Draw the Diagram according to the shape you want and save it using right click and giving It a ID



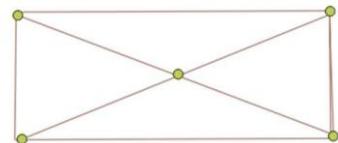
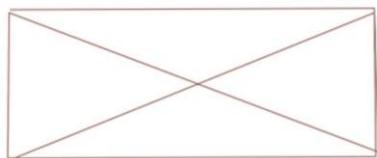
And style it – using different color & patterns



Same Steps can be followed for – Point/Multipoint/LineString



- LineString

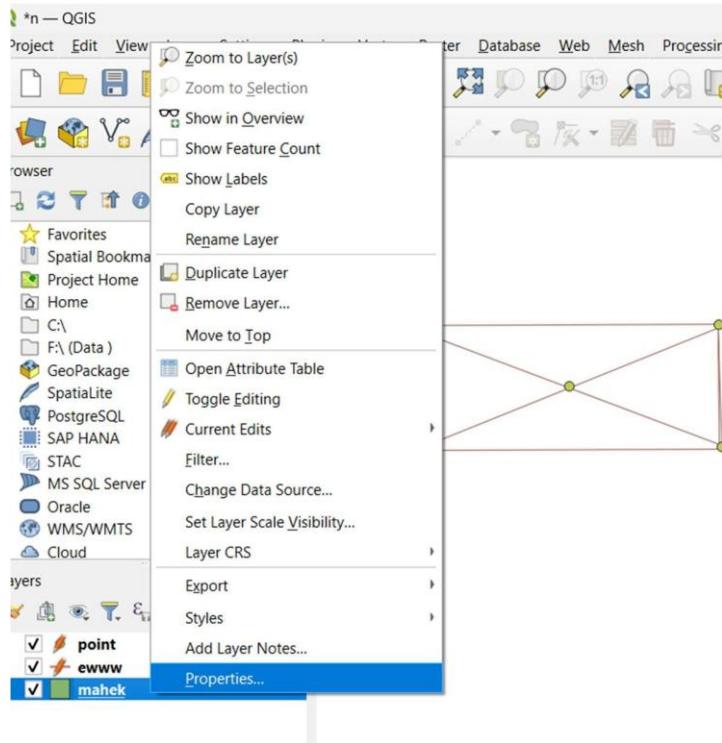


- point

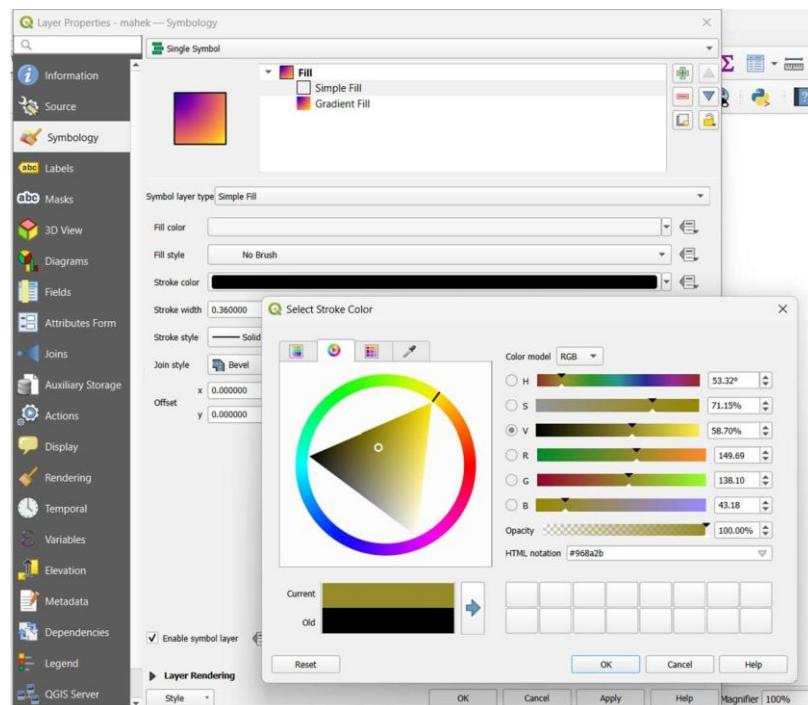
you can add as many points as you like.

Step 4:

You can change the properties of any of the layers by just right click on any of the layer and then clicking properties.



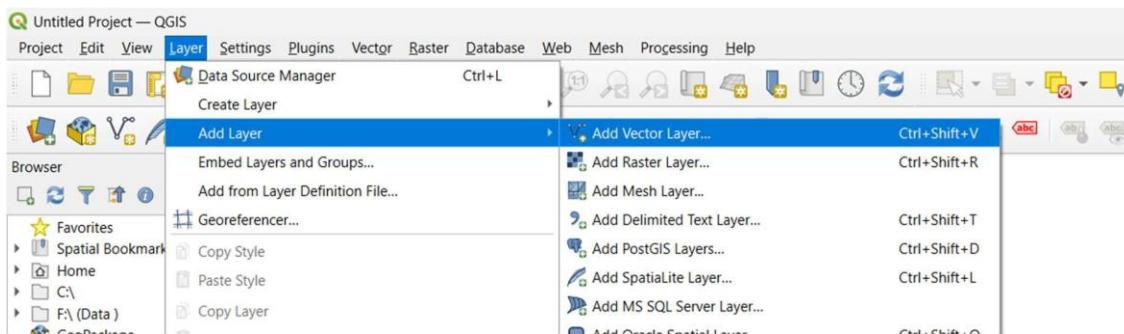
Step 5: You can change anything like its color, size, symbol, etc.



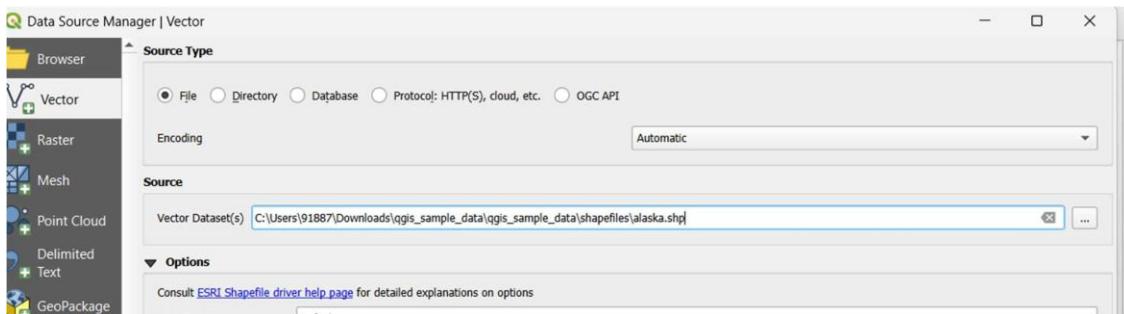
Step 6: The same can be done to other layers.

Step 7: Now to save the project click on Project > Save As enter file name and then click Save.

Step 8: Now to calculate line length and statistics create a new project. In the Layer Tab click on Add Layer and select Add Vector Layer.



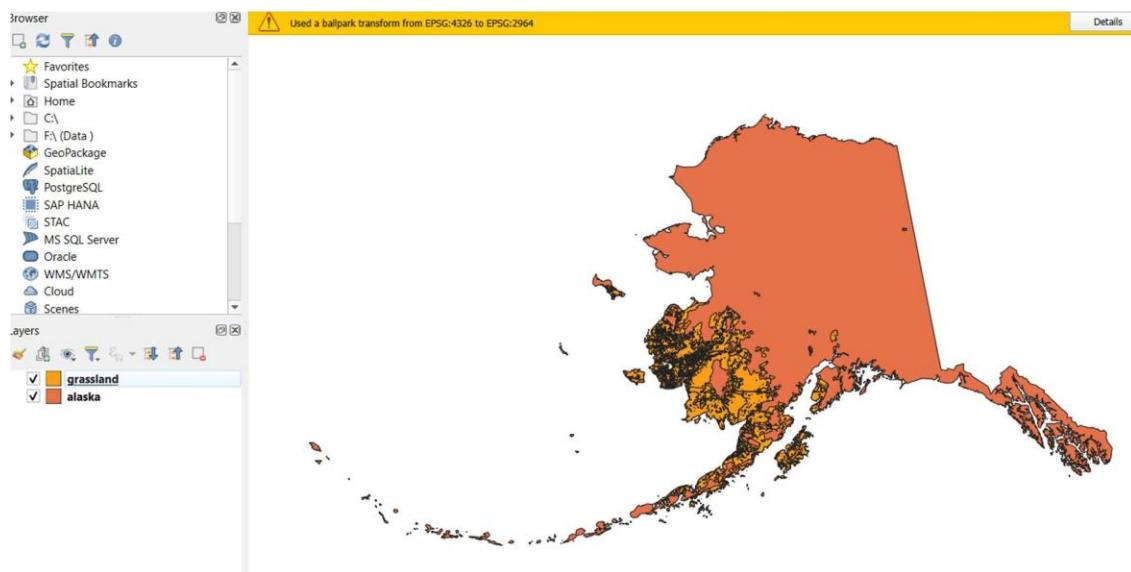
Step 9: – Select the option as shown below then choose the .shp file you want to add and then click Open.



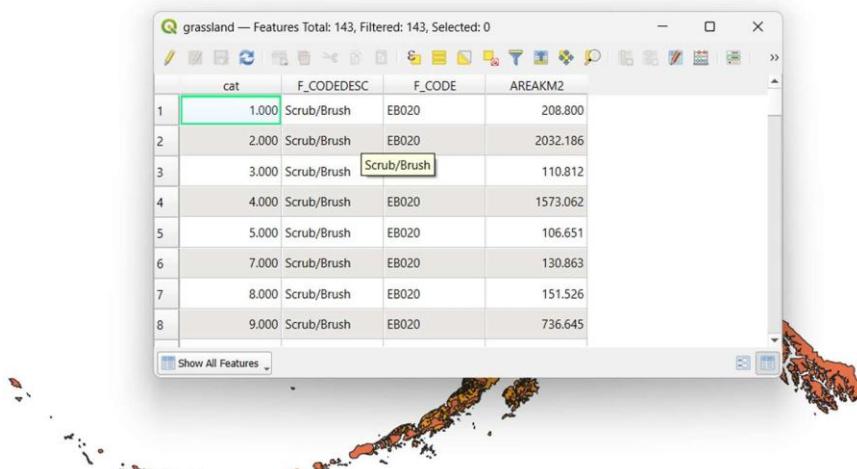
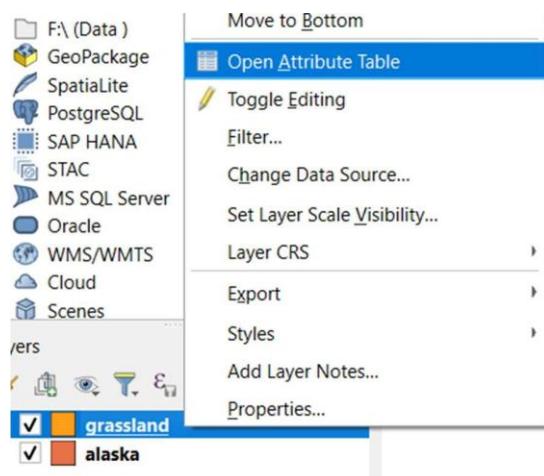
Once the file is loaded , you will see this



You can add as many layers you like using this method

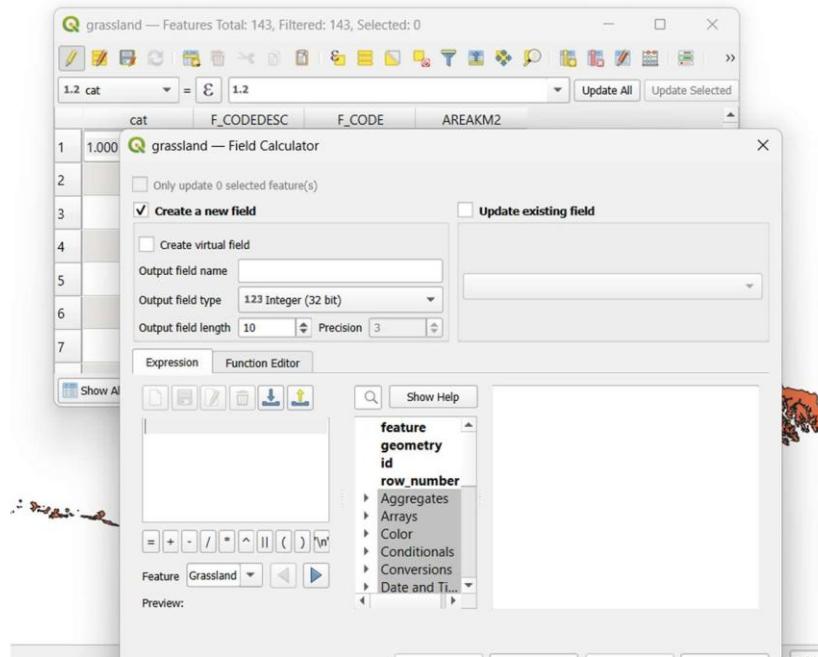


Step 10 : Now right click on a Layer and click Open Attribute Table.



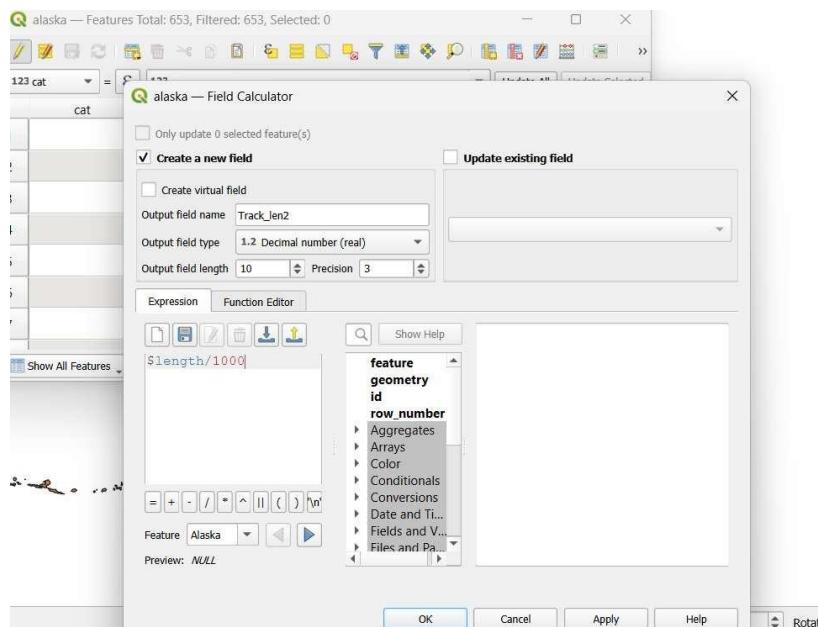
Step 11: – Now toggle editing and click on Open Field calculator

This symbol:



Step 12:

Click on open field calculator --- Give the output Field name as “Track_len2” and change output field type to Decimal number



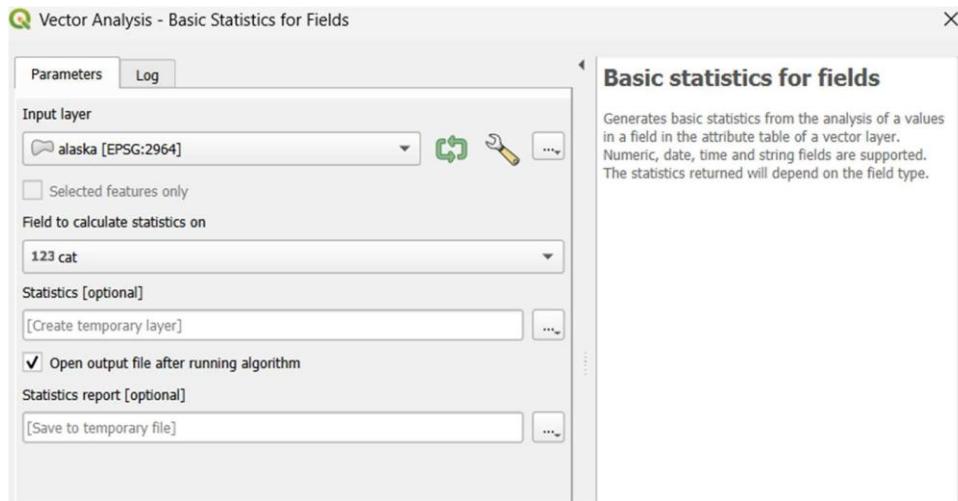
Then write the formula $\$length/1000$ Click on OK

Close all the tabs

Click on Vector ---- analysis tools ----- basic statistics

In the input vector layer ---- select “Alaska [EPSG:____]

In the Target Field ----select Track_len2 and run close and values will be seen



Final output shall look like this :

Analyzed field: cat

Count: 653

Unique values: 653

NULL (missing) values: 0

NOT NULL (filled) values: 653

Minimum value: 1

Maximum value: 665

Range: 664

Sum: 213749.000000

Mean value: 327.333844

Median value: 327.000000

Standard deviation: 189.042826451711

Coefficient of Variation: 0.577523

Minority (rarest occurring value): 1

Majority (most frequently occurring value): 1

First quartile: 164.000000

Third quartile: 490.000000

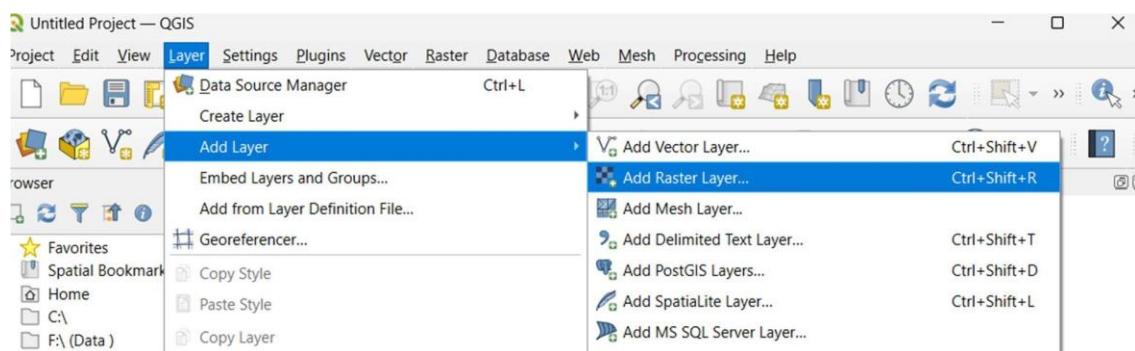
Interquartile Range (IQR): 326

Practical 3

Aim: Exploring and Managing Raster data: Adding raster layers, raster styling and analysis, raster mosaicking and clipping.

Steps:

Step 1 – Open QGIS 2.18 Desktop and Create a new project. In Layer tab click Add Layer and select Add Raster Layer.



Step 2: Select the file with “Tif” extension

landcover.img.aux	17-03-2025 17:51	Microsoft Edge HT...	2
SR_50M_alaska_nad	17-03-2025 17:51	TIF File	2,394
SR_50M_alaska_nad.tif.aux	17-03-2025 17:51	Microsoft Edge HT...	3

Click to add

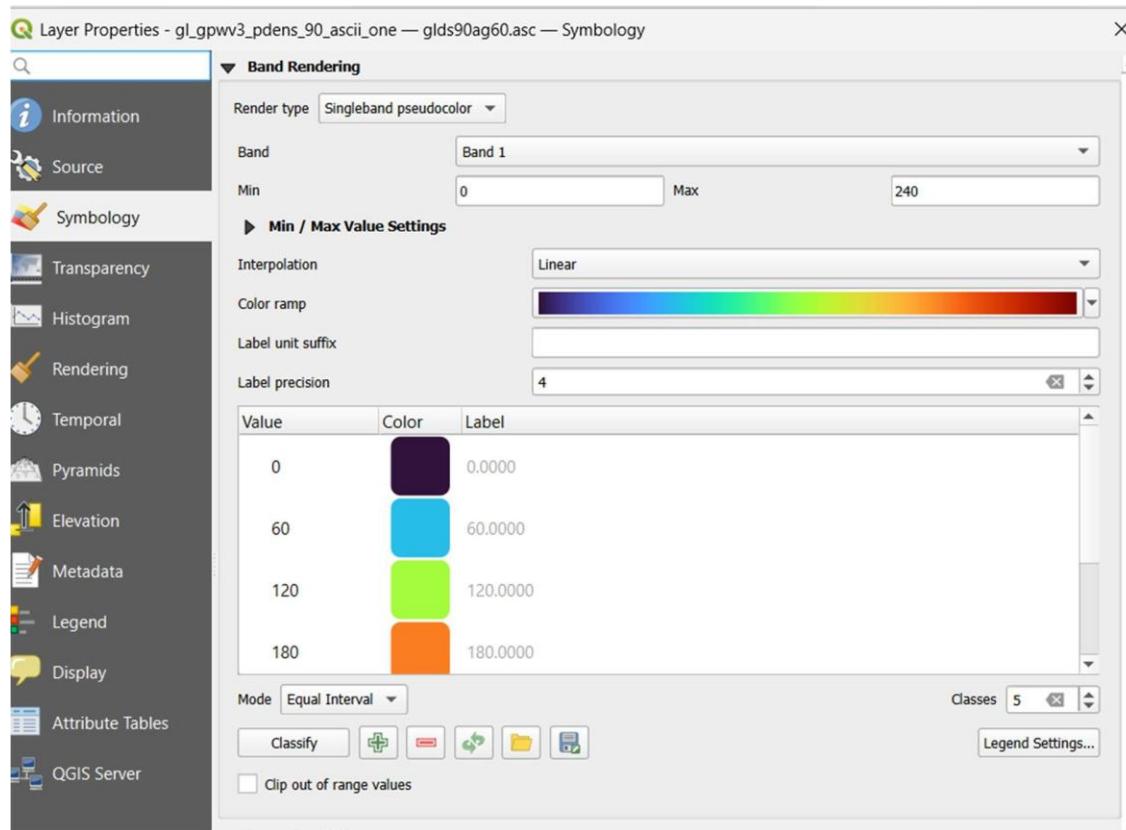
New layer is added

If you wish to download a different map you can download from

<https://drive.google.com/drive/folders/1f56YkcYYBGkQGQbcYTShc3ca5-lxg7WW> drive link

Here , you can open Practical 2 (A) folder ----click on “gl90g60.asc”

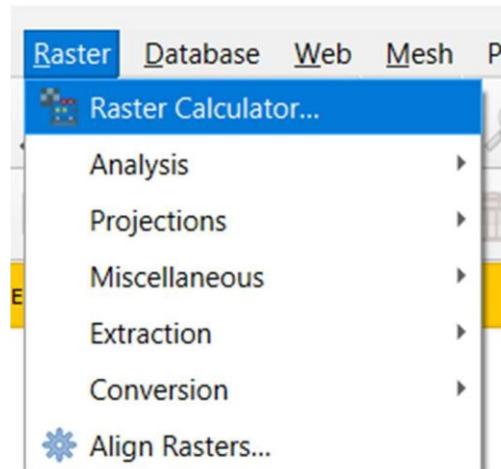
Step 3 : right click on layer or double click---- click on properties and then do these changes

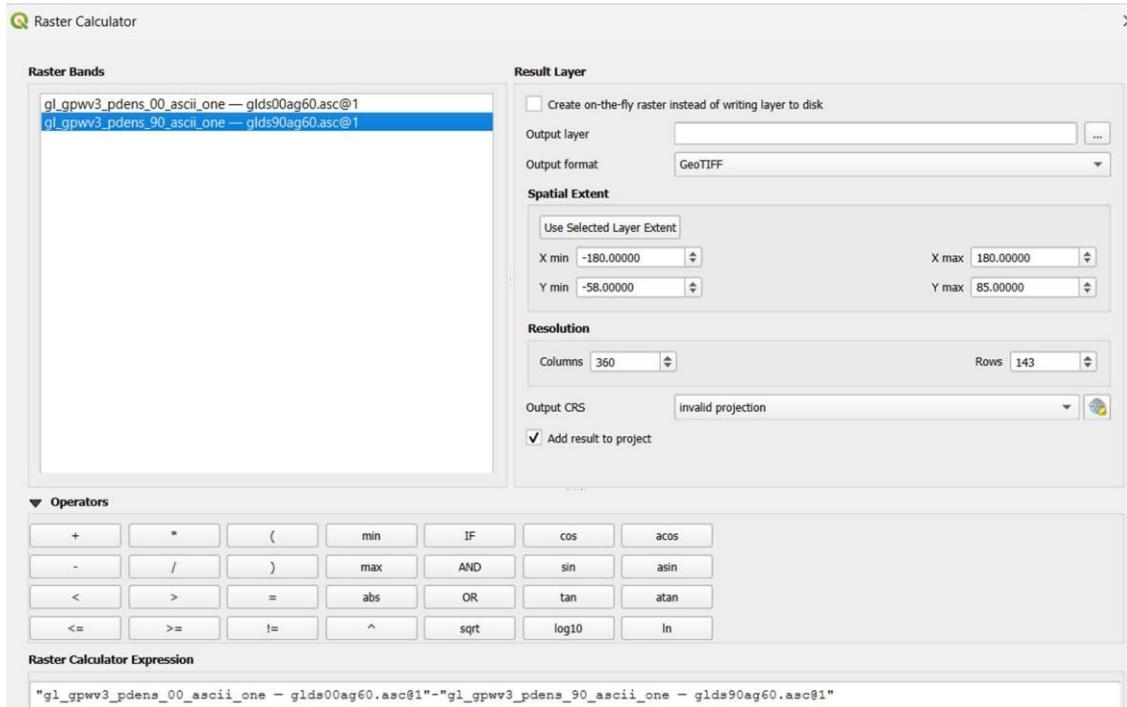


Here we will have two layers to calculate from : so from the same drive download another file: "glds00g60"

Apply same steps : make sure to have different color settings .

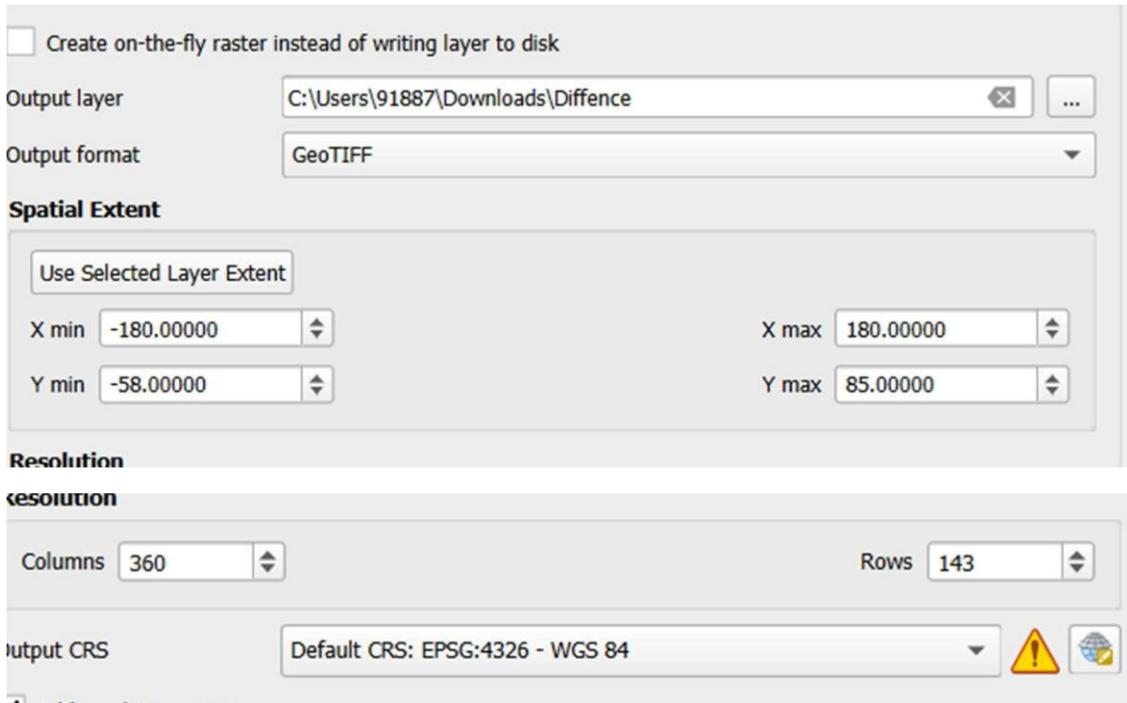
Step 4: click on raster as shown below





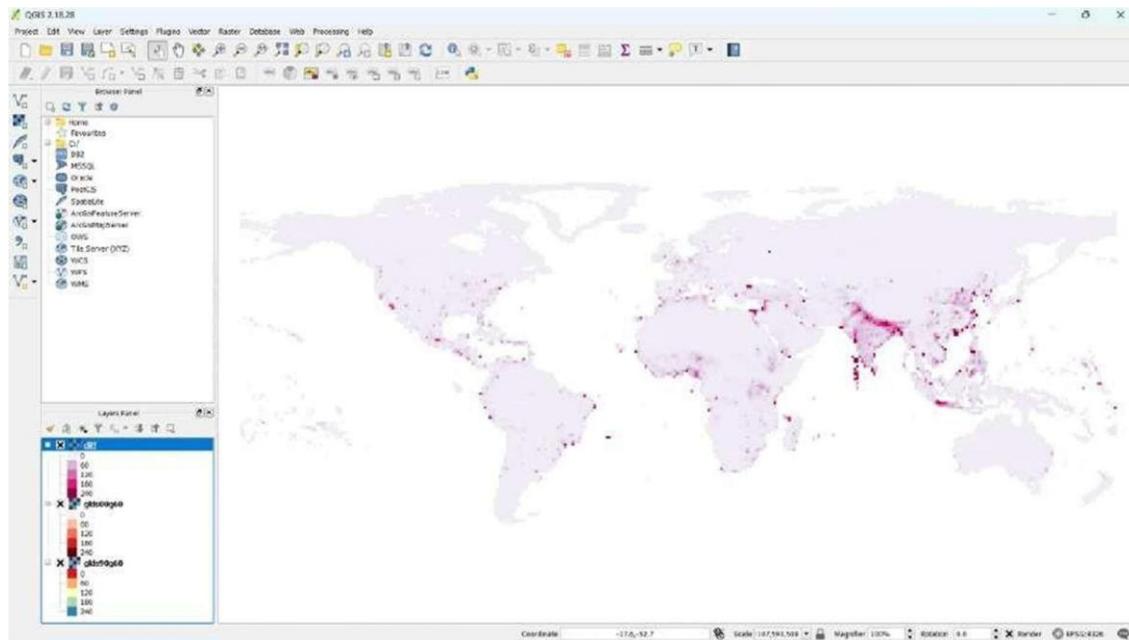
Double click on the first raster band and '-' operator and then click on the second raster band

Custom your file name



Set its properties like we did in the previous steps

Untick other layers and you will have the difference map/layer created which shows the difference between those two.

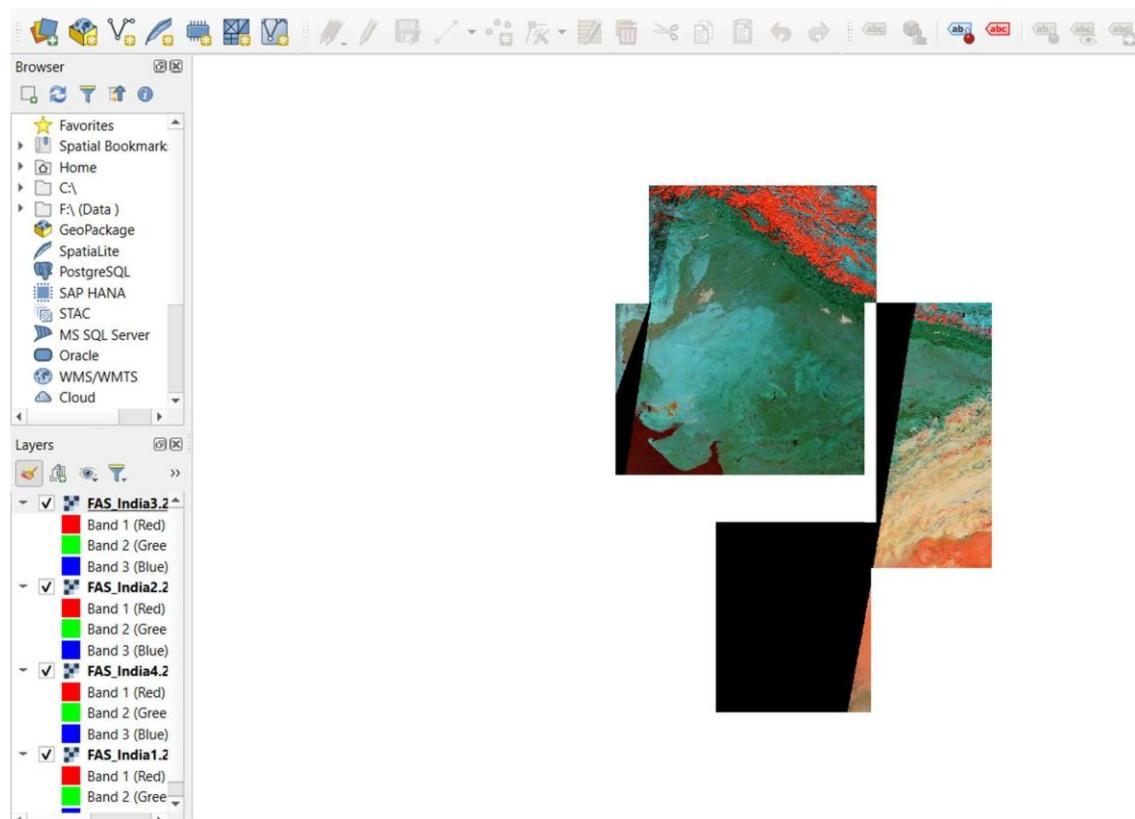
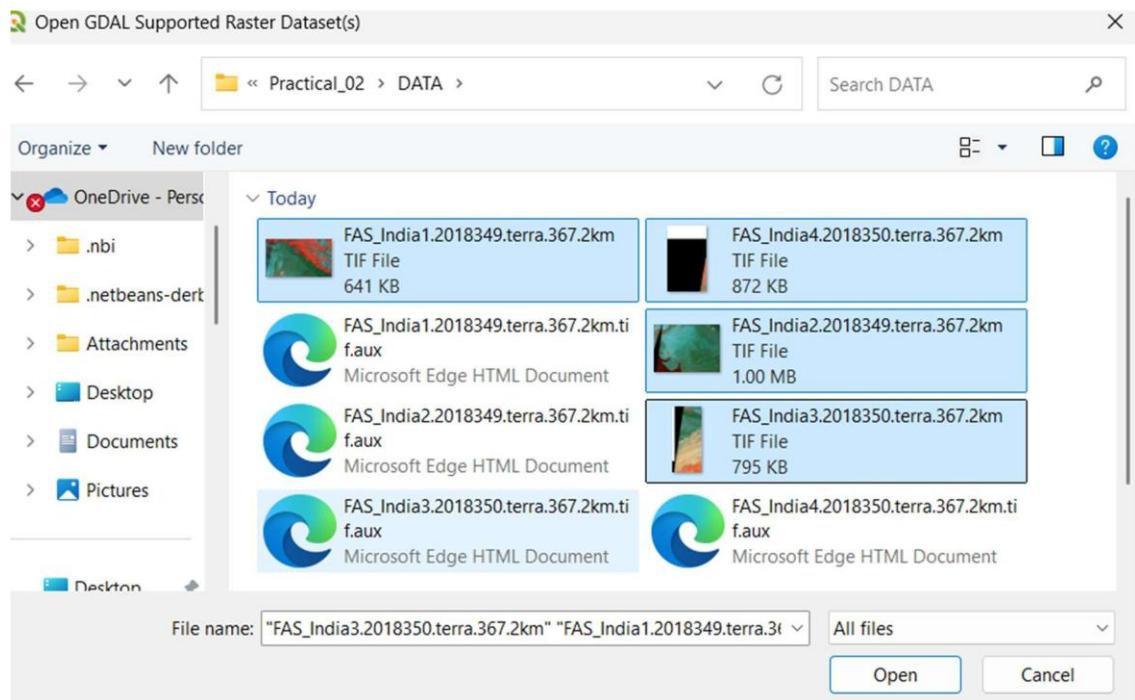


Step 5: For Raster clipping Create a new project

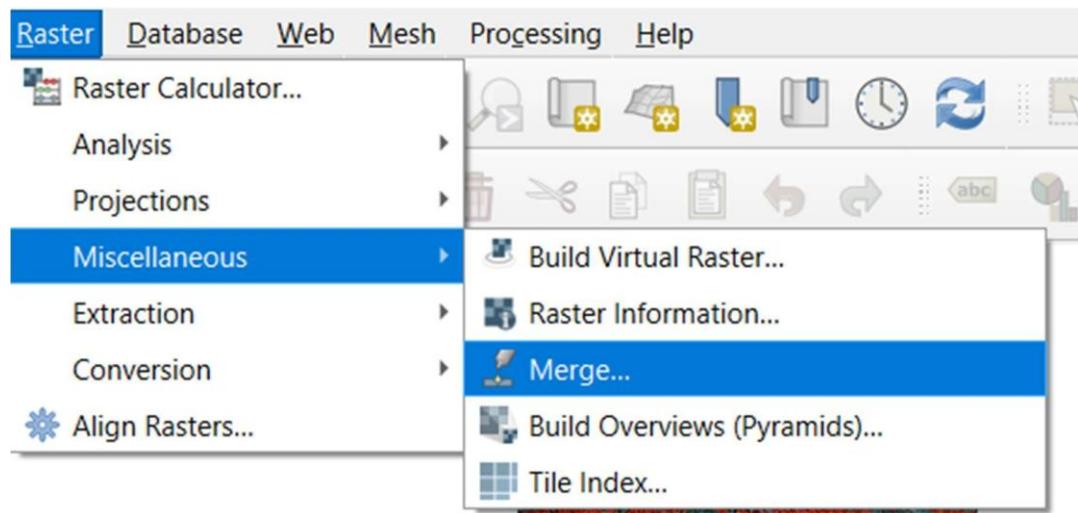
A Mosaic is a combination or merge of two or more images. In GIS, a single raster dataset can be created from multiple raster datasets by mosaicking them together.

Here , open a new project --- click on add layers—raster layer--- go to that downloaded drive file “practical 2”---

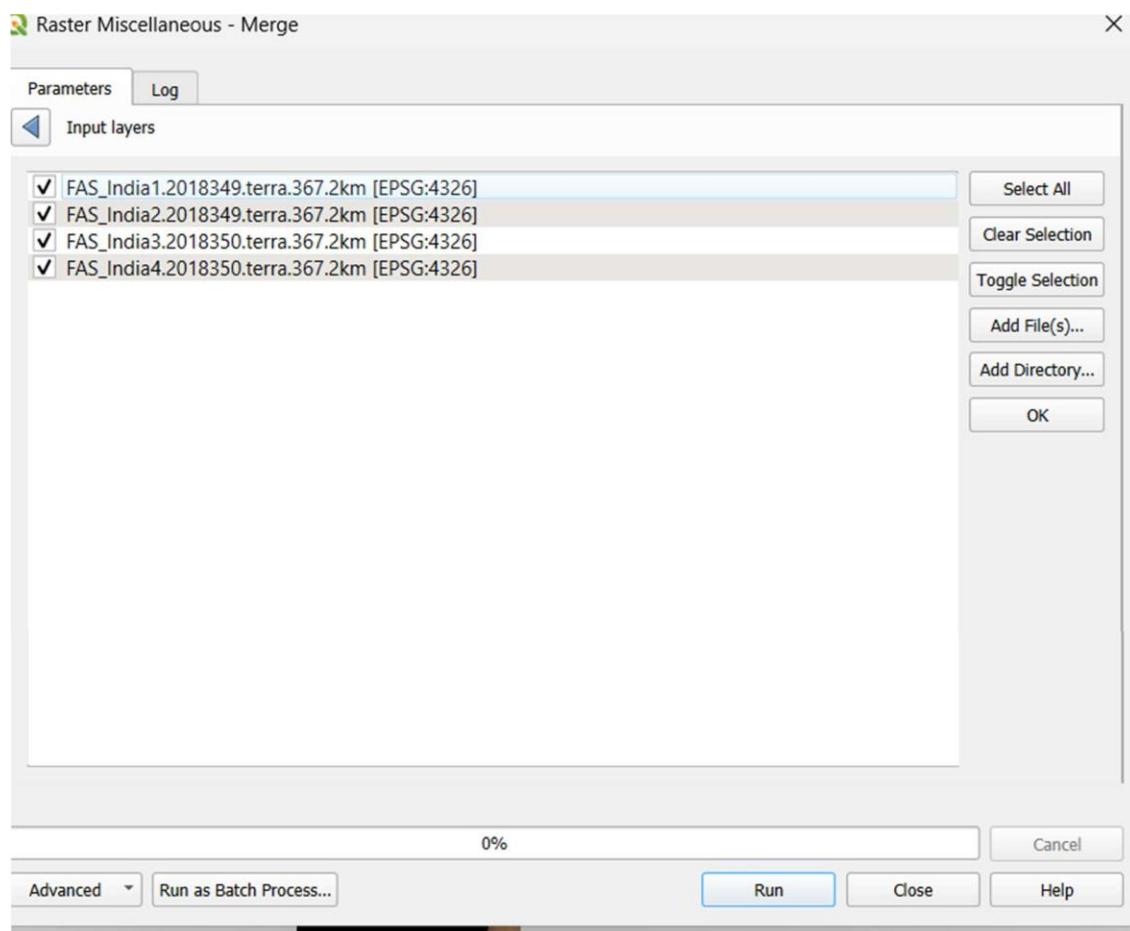
“Data” select these 4 images and click open



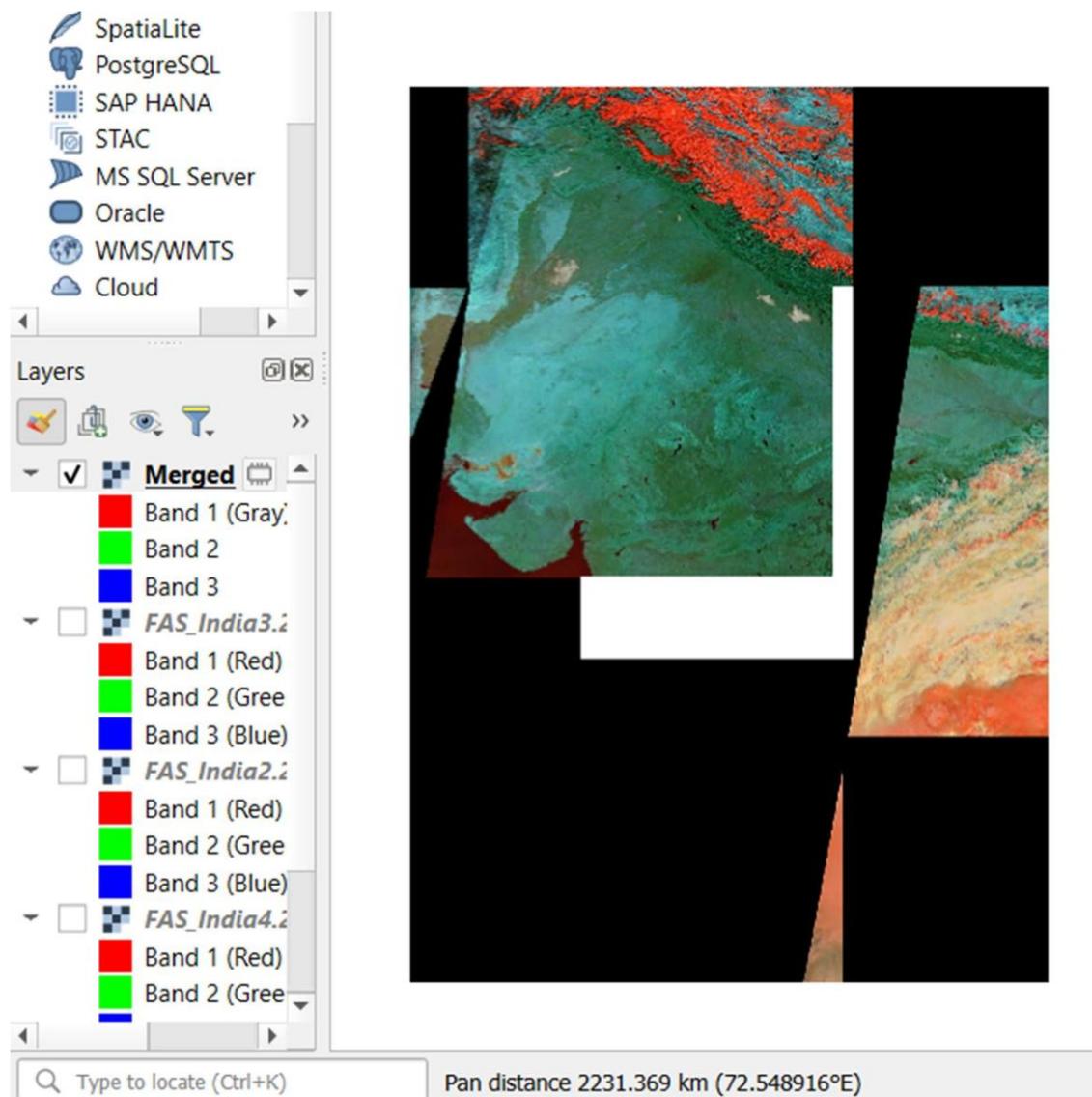
Step 6: Click on Miscellaneous --- merge



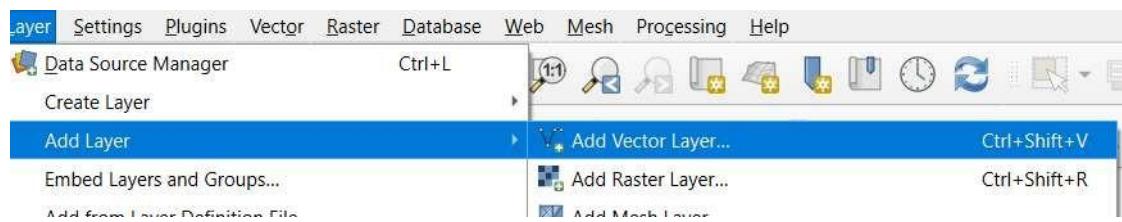
Step 7: Click on Select input layers and select all the layers --- click on run – your all layers will be merged .



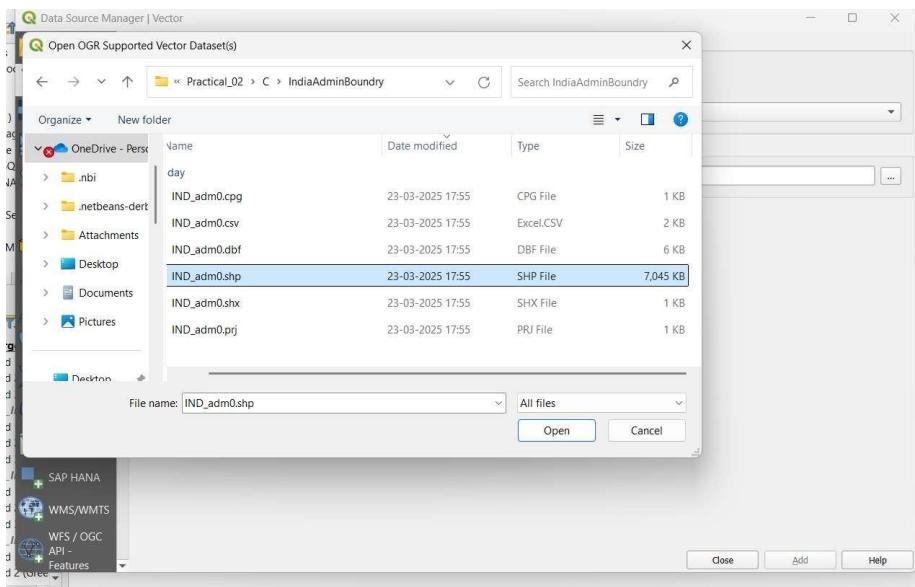
Step 8 : Deselect all other layers , only select the merged layer



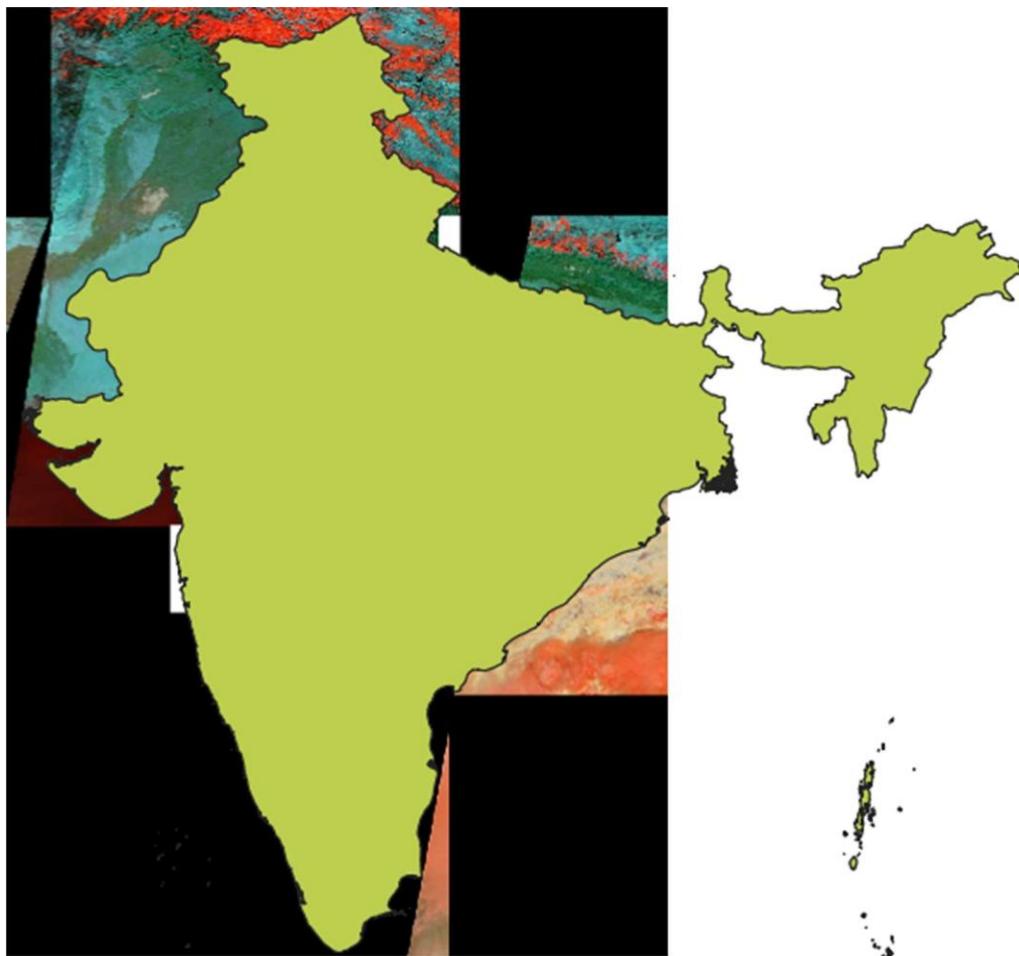
Step : 9 add a new layer – vector layer



Add this Indian boundary layer with extension SHP

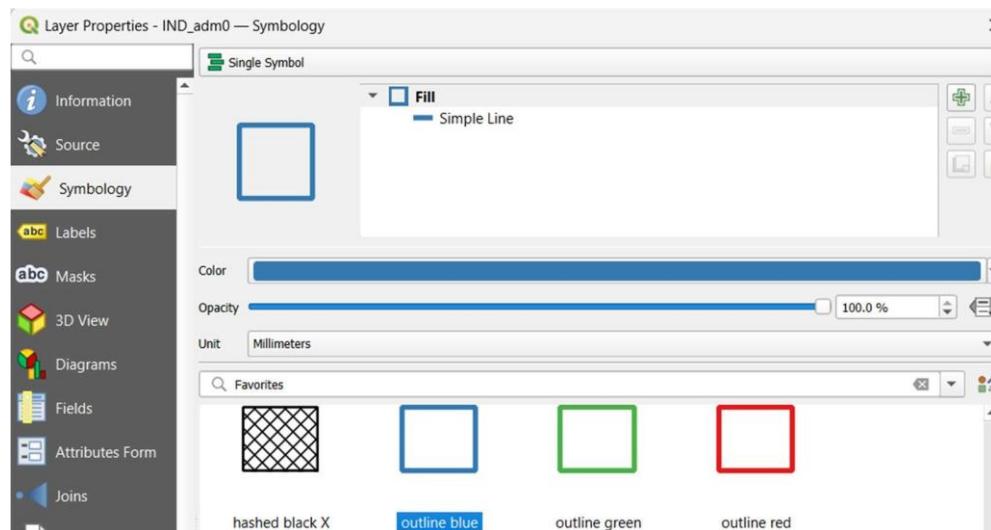


This will be shown when you add the layer



Step 10

On this IND_adm layer select this: outline



There will be an outline of the Indian map

Once done : step 11:

Raster Database Web Mesh Processing Help

Raster Calculator...

Analysis

Projections

Miscellaneous

Extraction

Conversion

Align Rasters...

Clip Raster by Extent...

Clip Raster by Mask Layer...

Contour...

Raster Extraction - Clip Raster by Mask Layer

Parameters Log

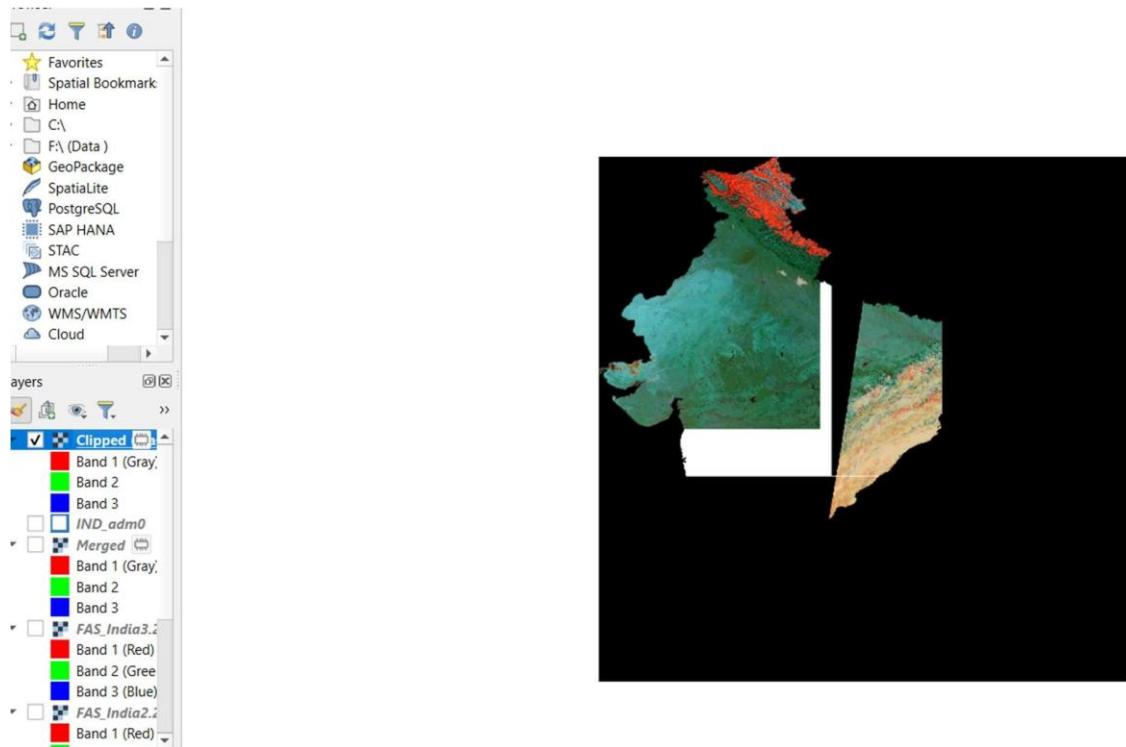
Input layer: Merged [EPSG:4326]

Mask layer: IND_adm0 [EPSG:4326]

Selected features only

Source CRS [optional]:

Your Final output will look something like this .



Name: Swapnil Patil

Roll No.: 22087

Class: TYBSc IT

Subject: Fundamentals of

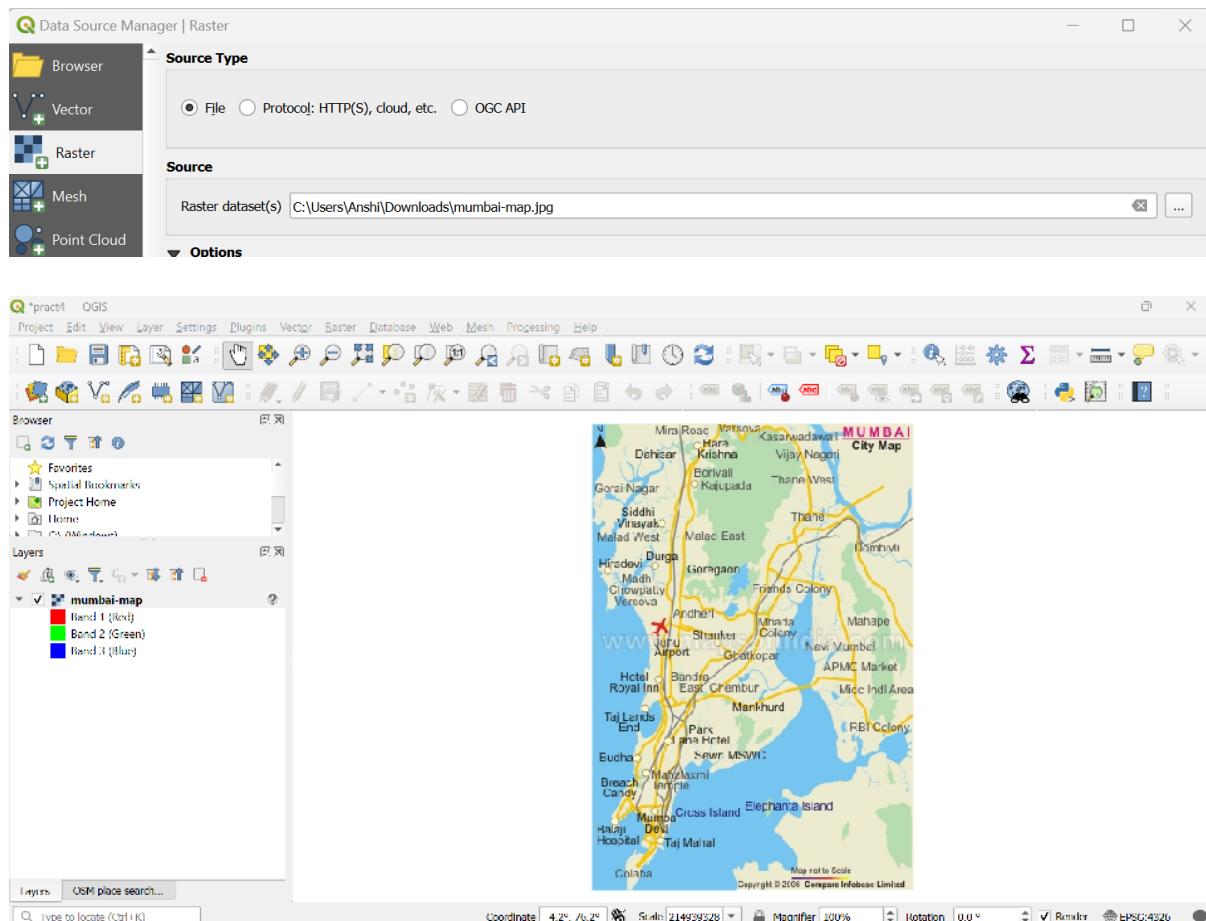
GIS

Sem: VI

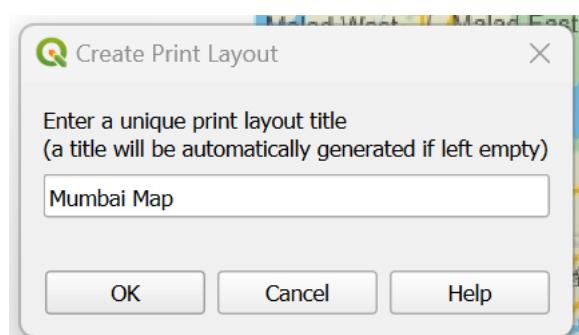
Practical 4

Aim: Making a map, Working with attributes, Importing Spreadsheets or CSV files using Plugins, Searching and Downloading OpenStreetMap data.

Step 1: To make a map with Raster Data – Open QGIS Desktop and open a new project. Add a Raster Layer with the image shown below.



Step 2: Click Ctrl + P



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Roll No.: 22087

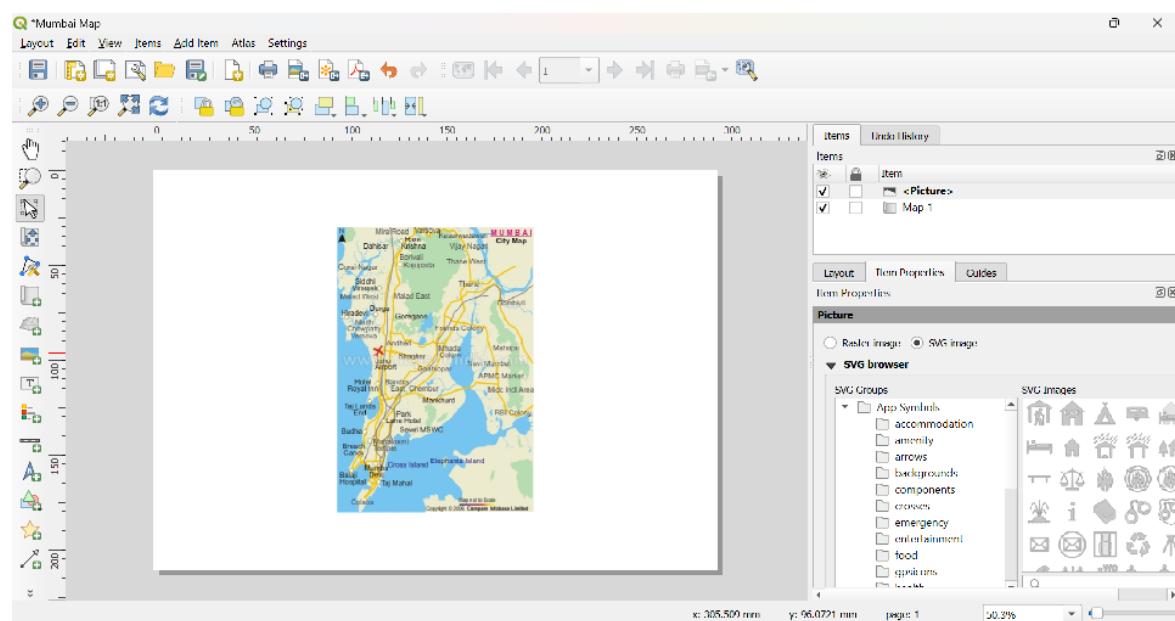
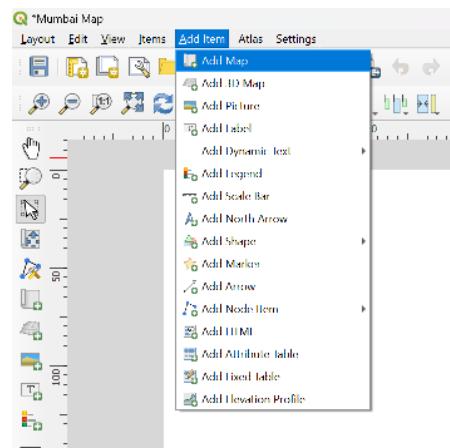
Class: TYBSc IT

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GIS

Sem: VI

Step 3: Add Item > Add Map. Select the entire canvas.



Step 4: To insert an image on the map select the add image tool and in the item properties tab select the icon you want to insert.

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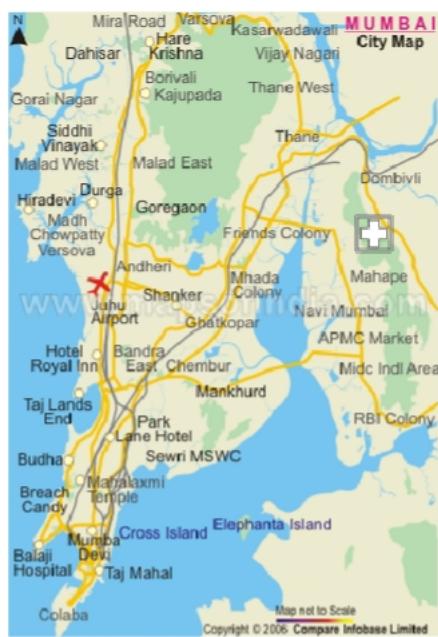
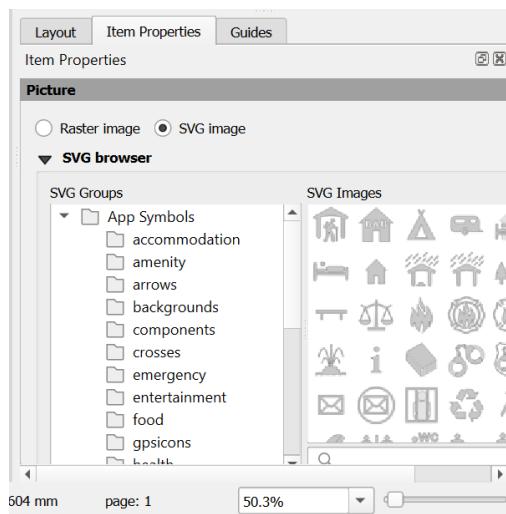
Subject: Fundamentals of

GIS

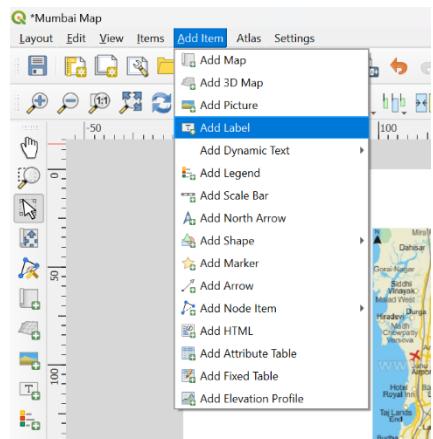
Sem: VI

Roll No.: 22087

Class: TYBSc IT



Step 5: To add a Label to the map select the Add Label tool and select the text field. You can also change the label properties as per your liking.



Name: Swapnil Patil

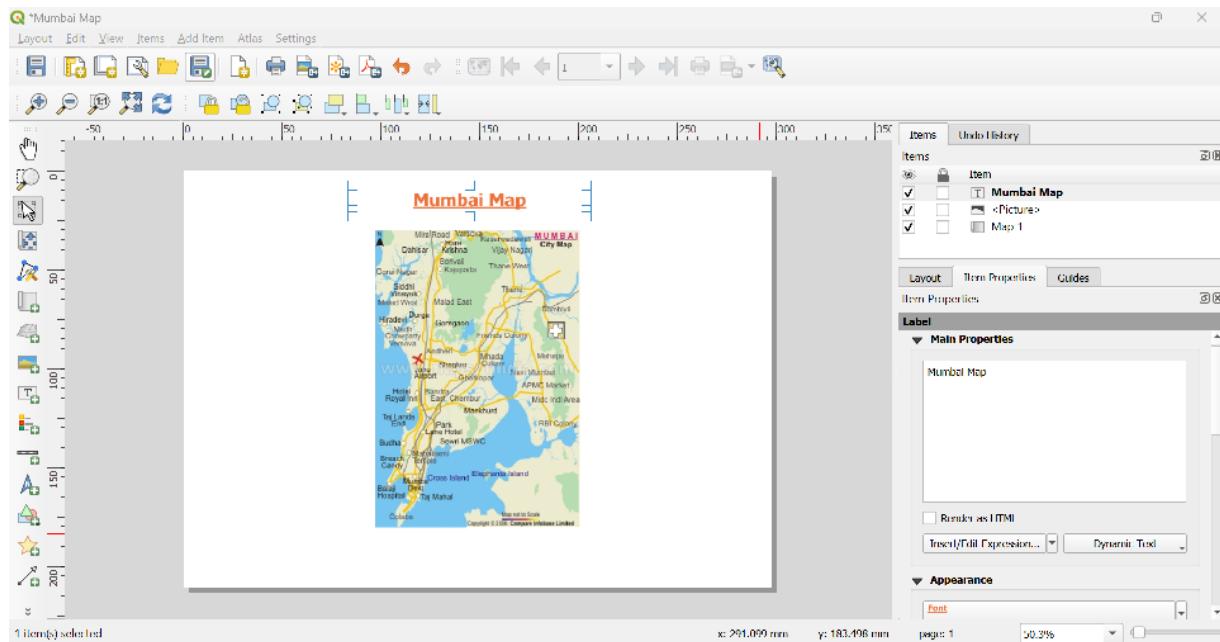
Subject: Fundamentals of

GIS

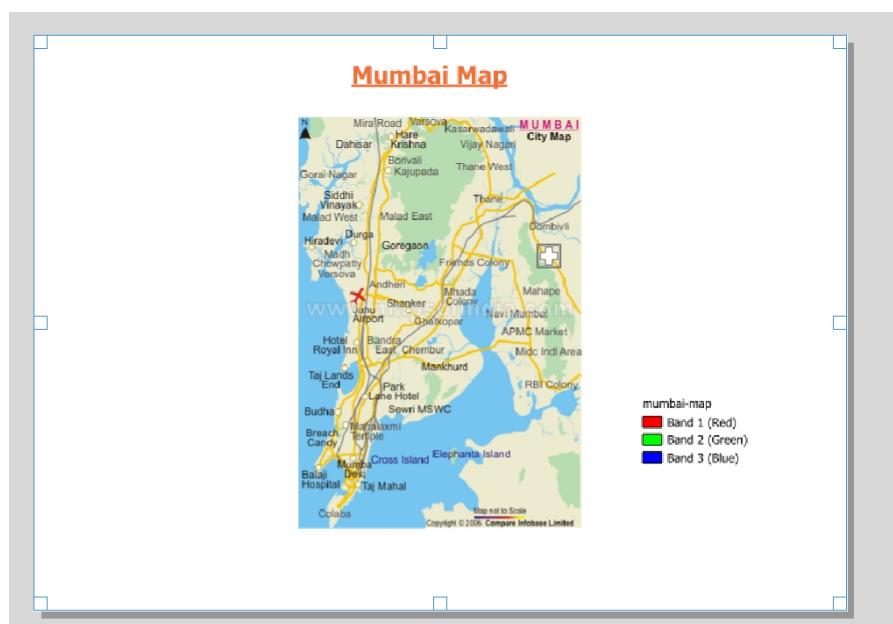
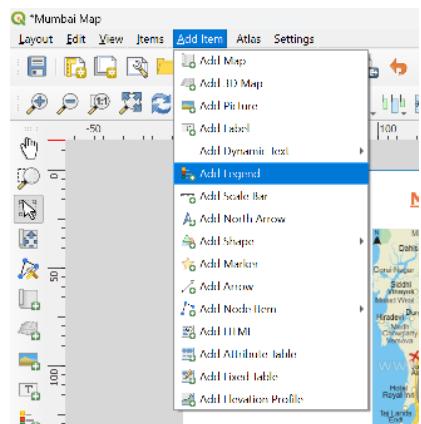
Sem: VI

Roll No.: 22087

Class: TYBSc IT



Step 6: To add a legend select the add legend tool and select the legend area.



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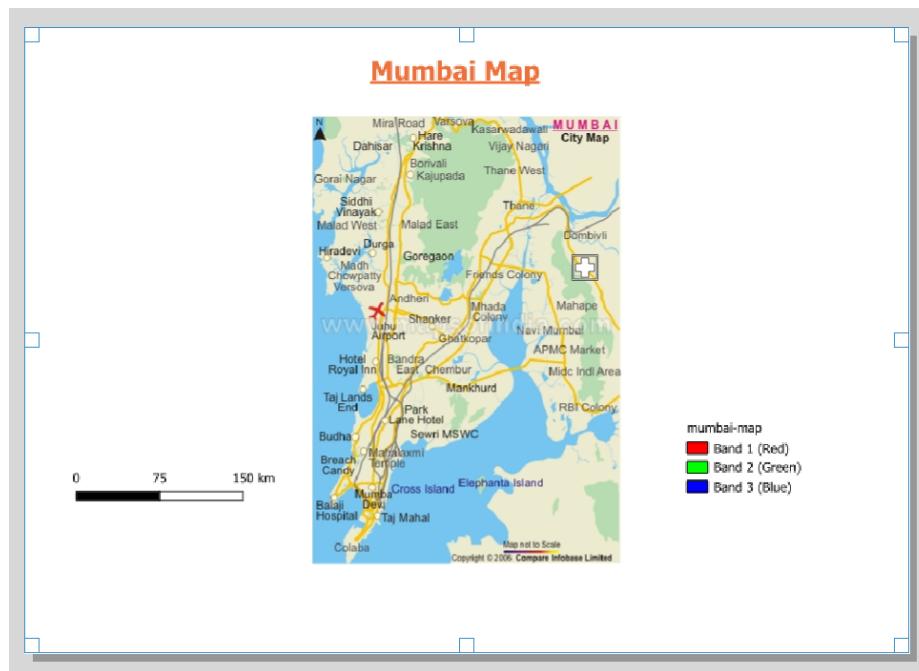
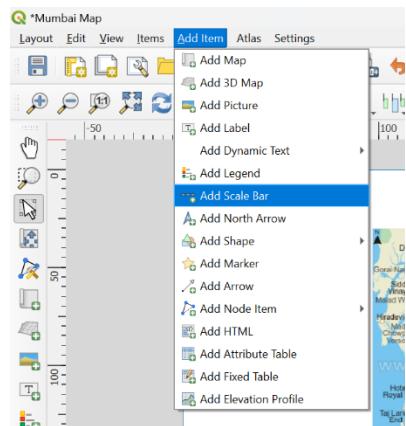
GIS

Sem: VI

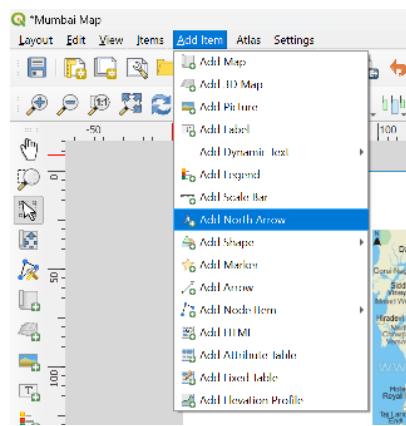
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Step 7: To add a Scalebar select the add a scalebar tool and select where you want the scalebar to be placed.



Step 8: Similarly you can add arrows, shapes, node items, etc.



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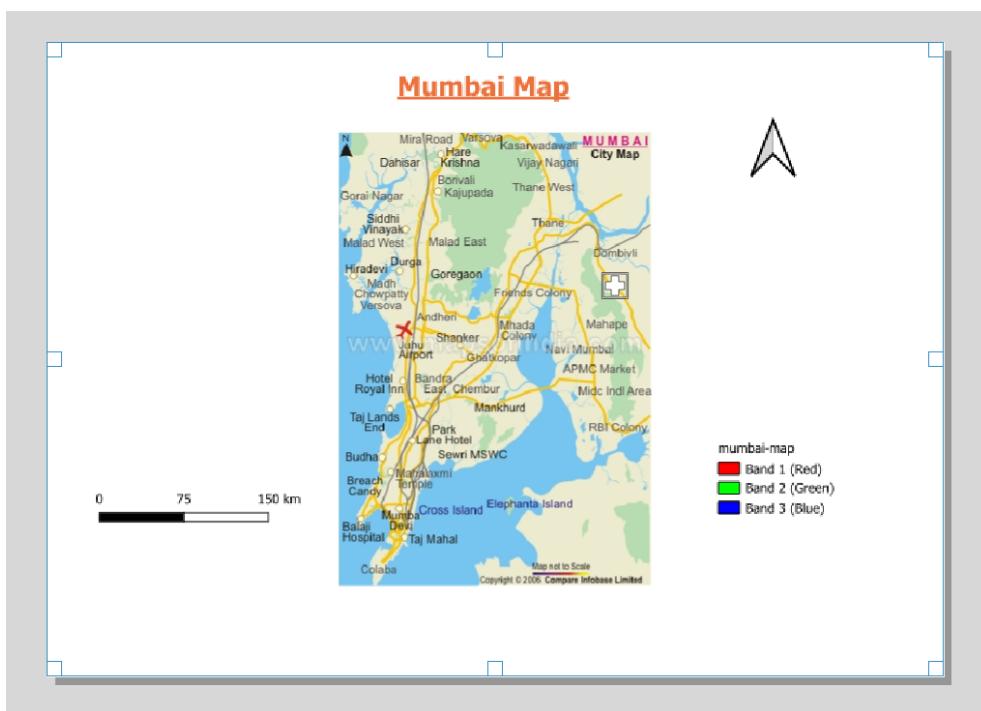
Subject: Fundamentals of

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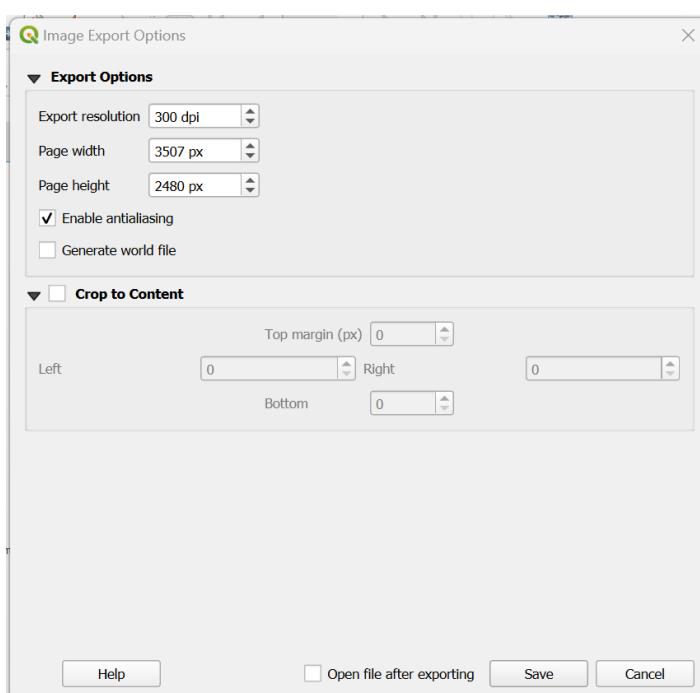
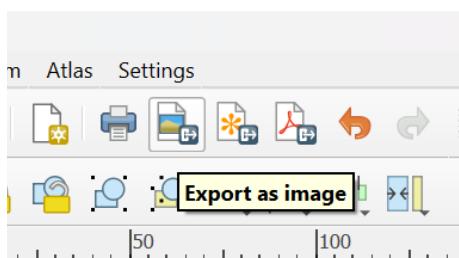
Sem: VI

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Step 9: Finally you click the save as image button then enter the name and then hit save.



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Roll No.: 22087

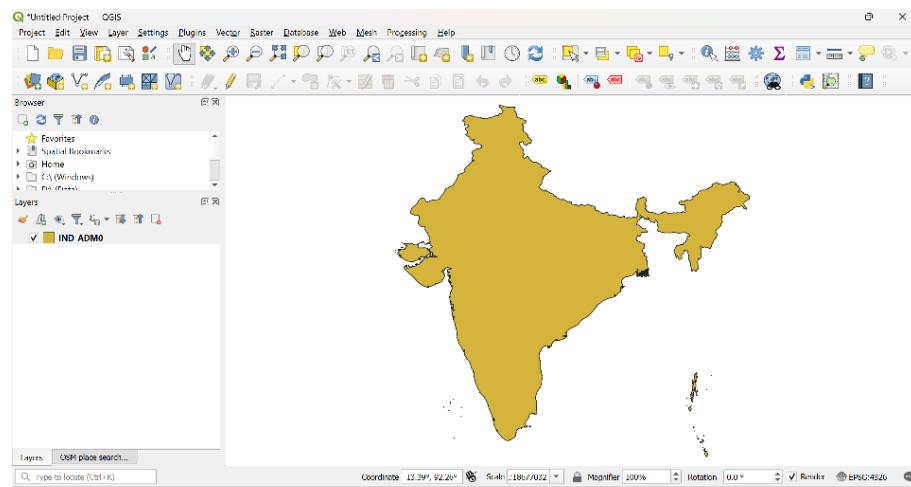
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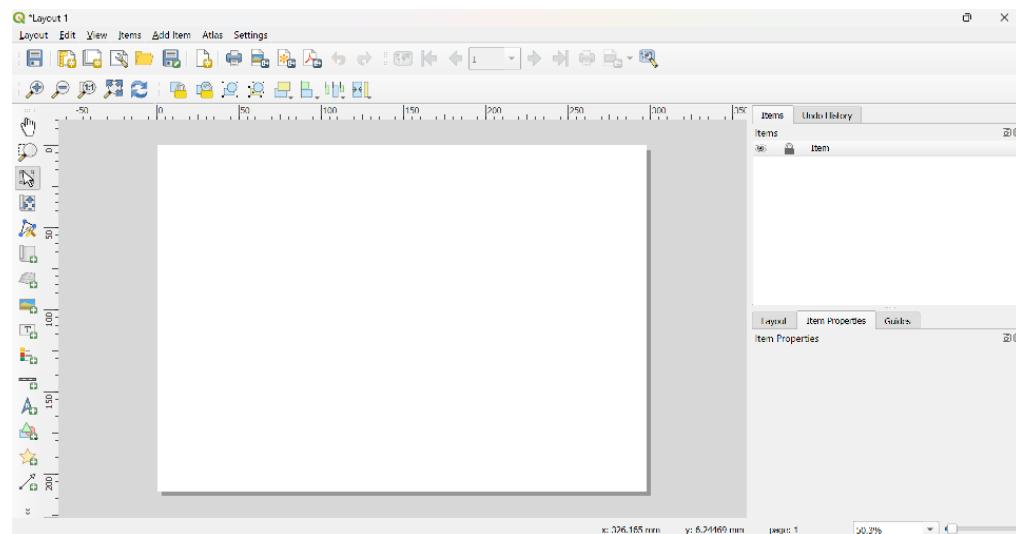
GIS

Sem: VI

Step 10: To create a map with Vector Data – Open QGIS Desktop. Layer > Add Layer > Add Vector Layer.



Step 11: Ctrl + P



Step 12: Select the add new map tool and select the entire canvas.



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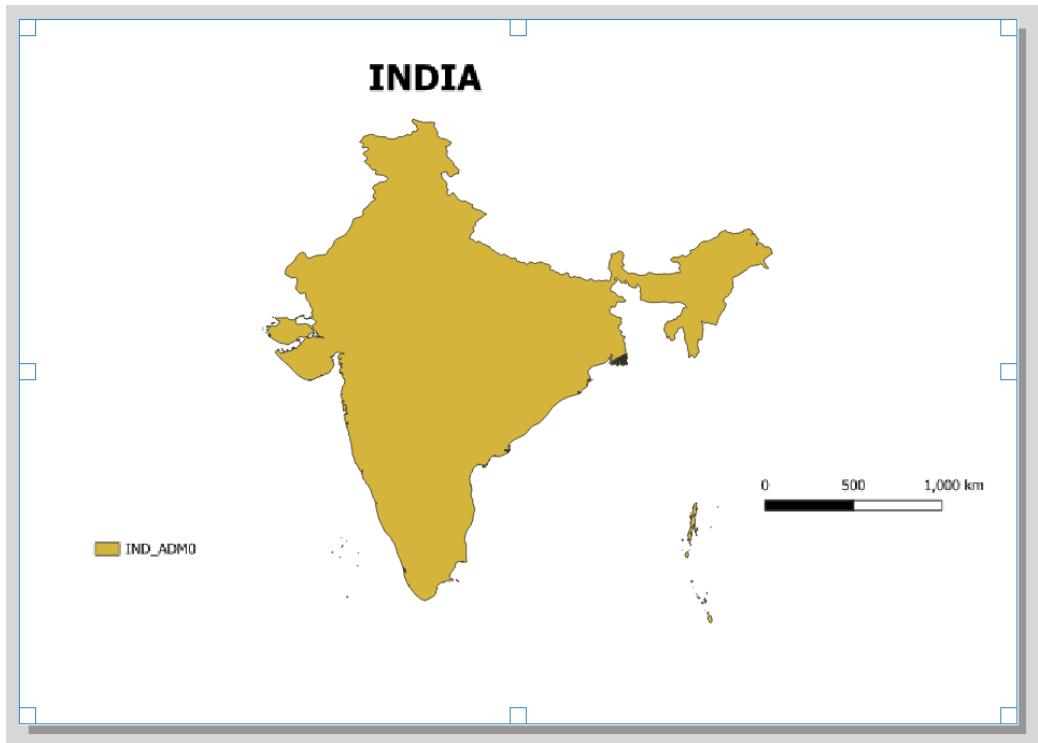
GIS

Sem: VI

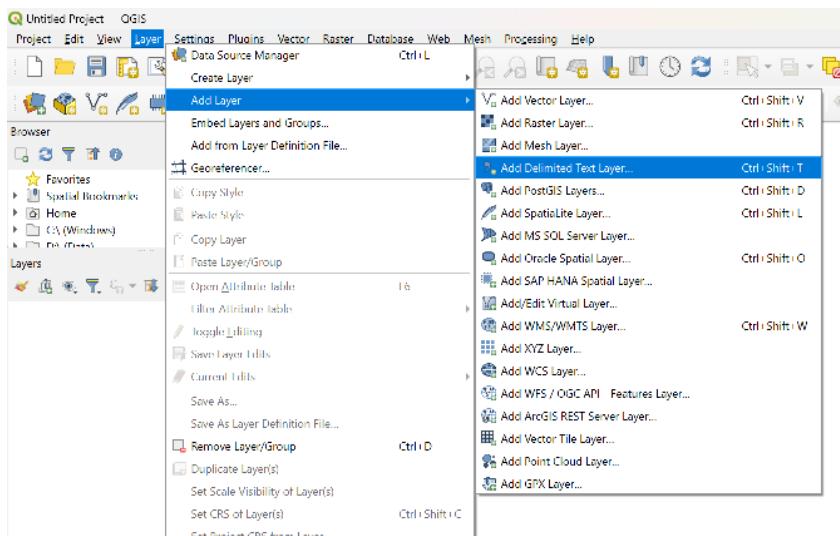
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Step 13: You can add the same things you could add to the map made with raster data. And then finally save as image.



Step 14: Now create a new project. Layer > Add Layer > Add Delimited Text Layer.



Step 15: Enter data as shown and then click OK.

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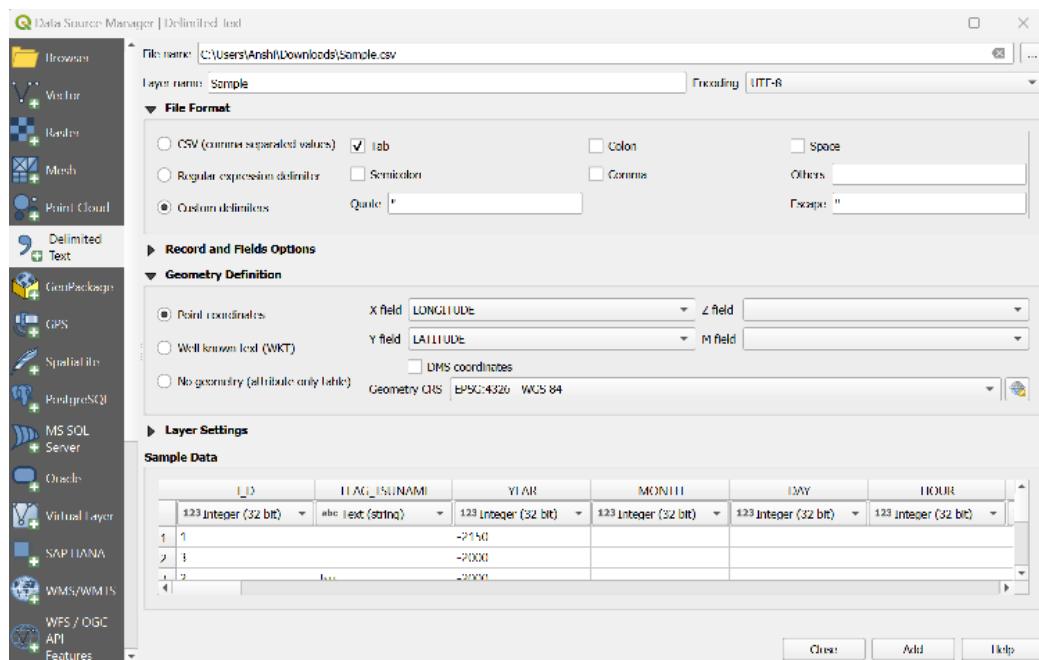
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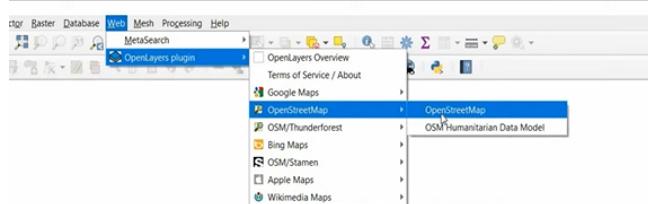
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Step 16: Install the OpenLayers and OSM place search plugin.

Go to Plugins > Manage & Install Plugins > Search and download “OSM place search” and “OpenLayers Plugin”

Step 17: Web > OpenLayers plugin > OpenStreetMap



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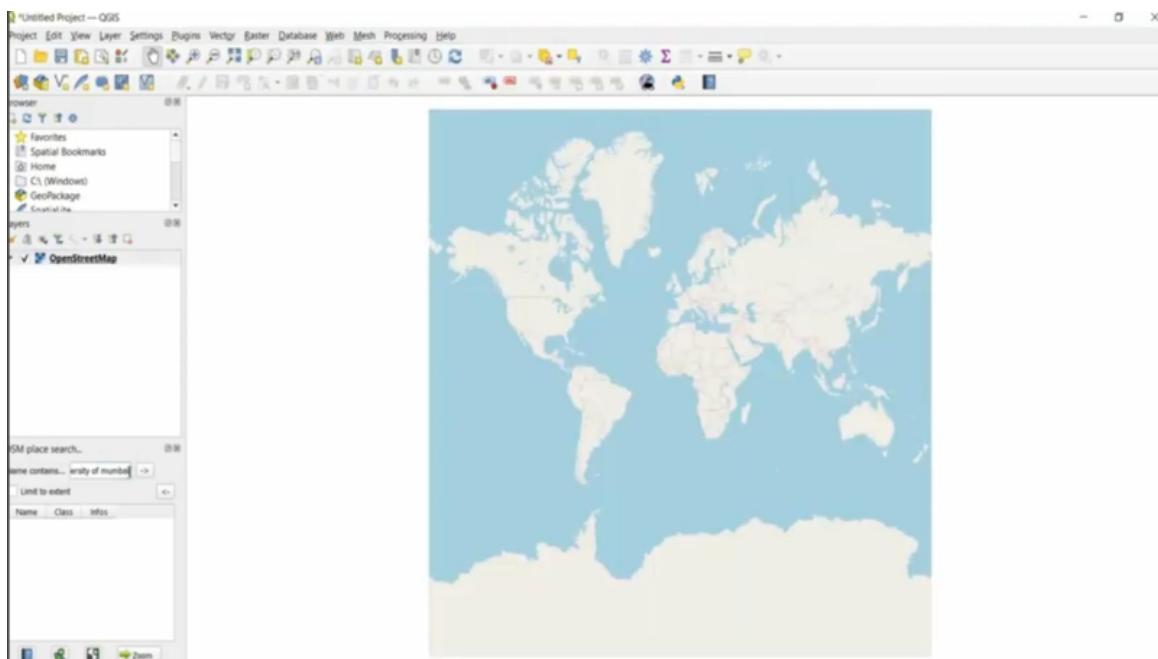
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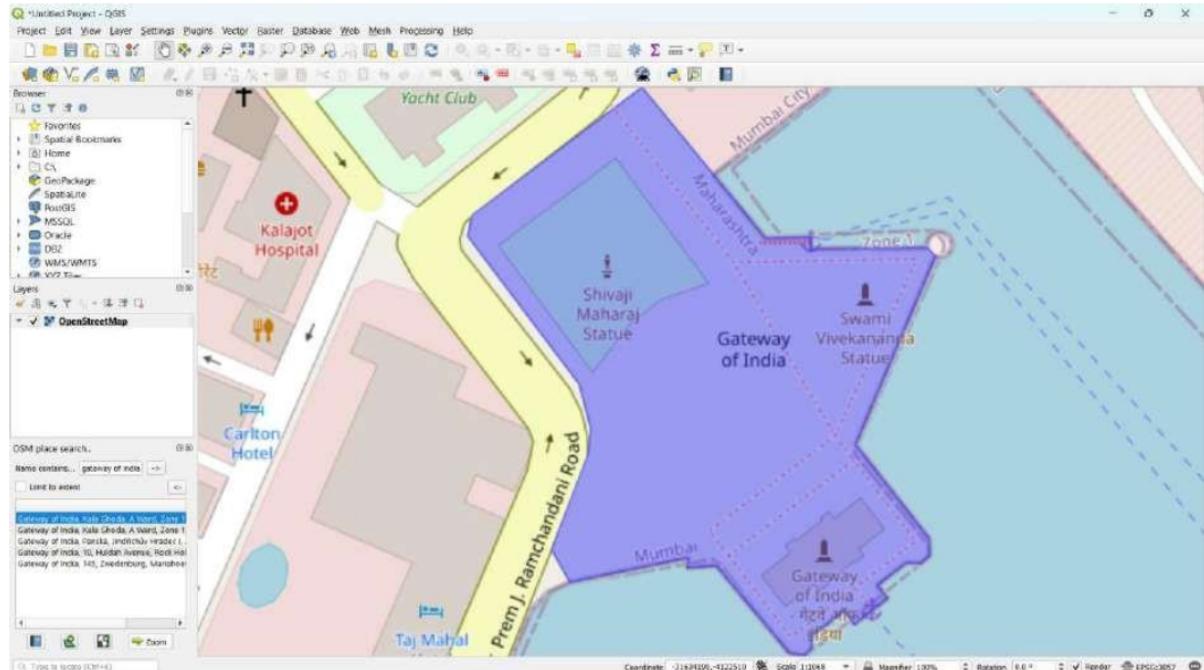
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Step 18: To search for a place type its name in the OSM place search.



Select the one you want to find and hit zoom.

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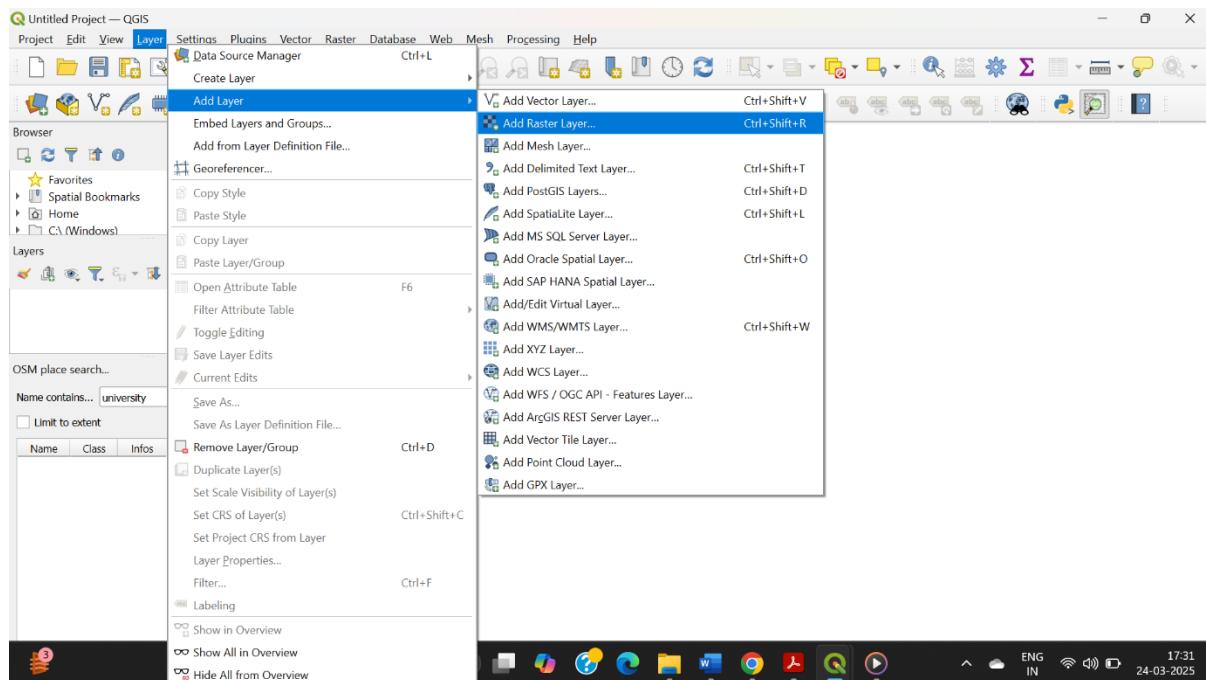
GIS

Sem: VI

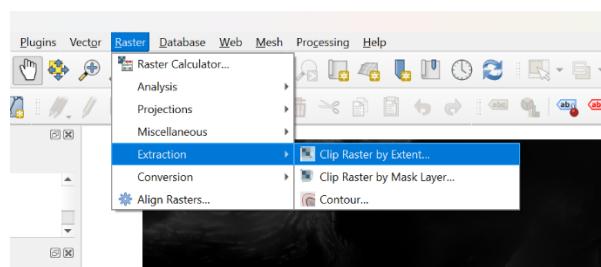
Practical 5

Aim: Working with attributes, terrain data.

Step 1: Open QGIS Desktop and create a new project. Layer > Add Layer > Add Raster Layer.



Step 2: Raster > Extraction > Clip Raster by Extent.



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Roll No.: 22087

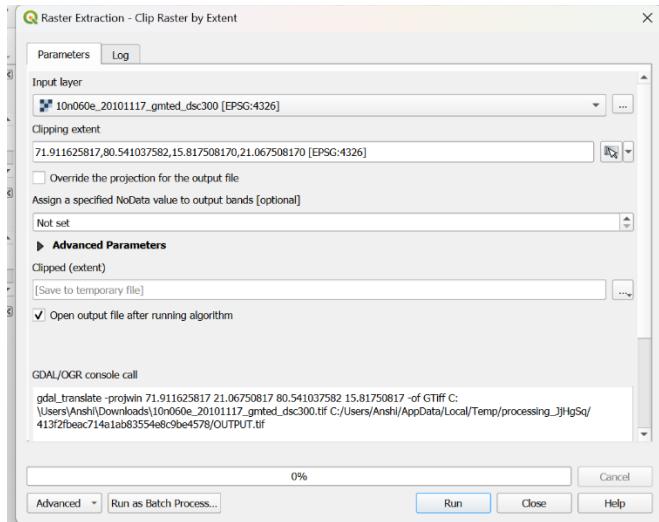
Class: TYBSc IT

Subject: Fundamentals of

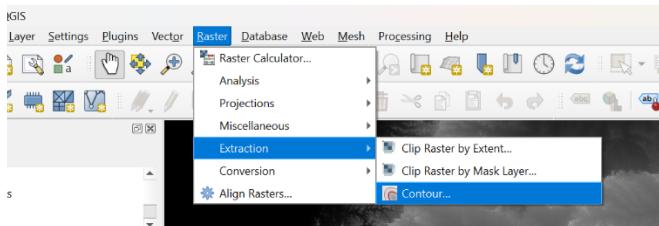
GIS

Sem: VI

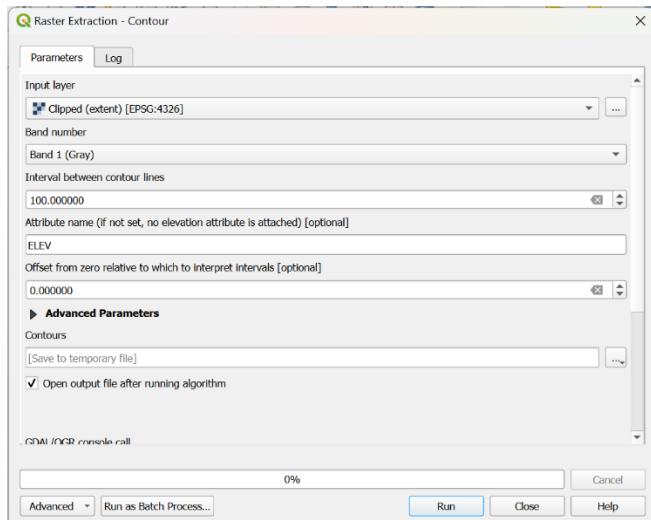
Step 3: Set the following parameters and hit run.



Step 4: Raster > Extraction > Contour.



Step 5: Set the following parameters and hit run.



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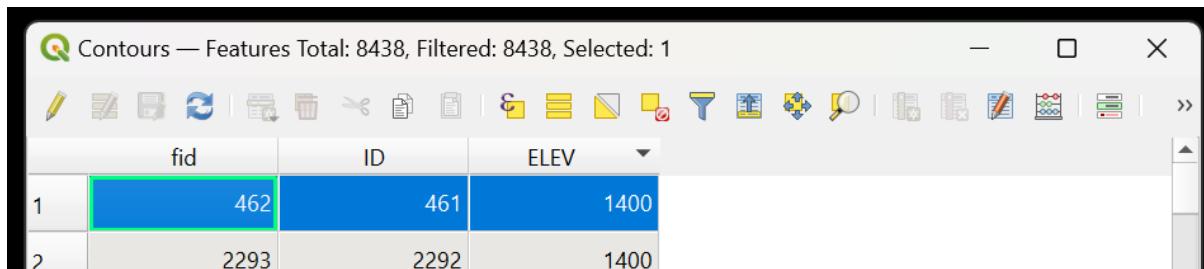
GIS

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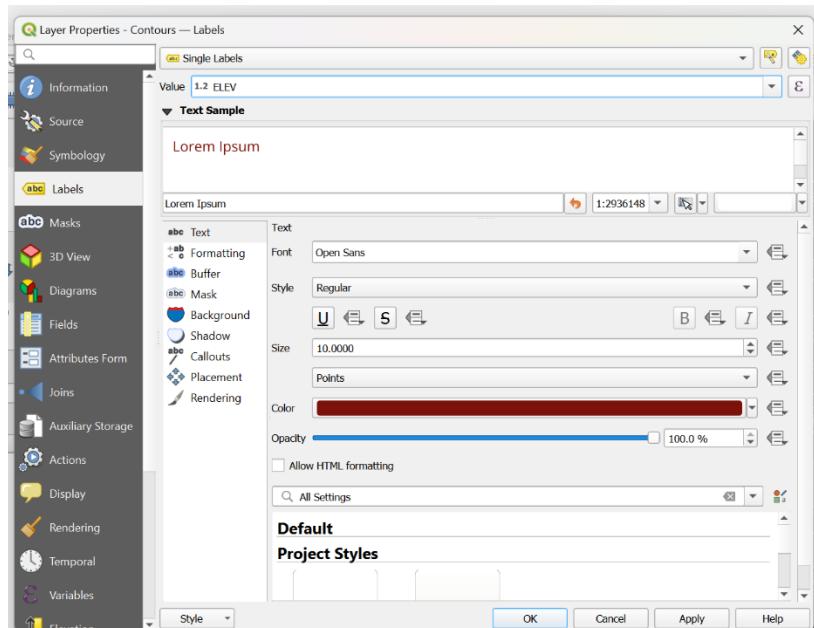
Step 6: Right click on the Contour file from the layers section on the left bottom side. To find the highest point open the attribute table. Sort the elev column in descending order, select the first row and click the zoom map to selected rows tool.



	fid	ID	ELEV
1	462	461	1400
2	2293	2292	1400

The point with highest elevation is highlighted.

Step 7: To get labels, double click on contour, in that open the label menu then select the following options and then hit apply.



Step 8: Raster > Analysis > Hill Shade.

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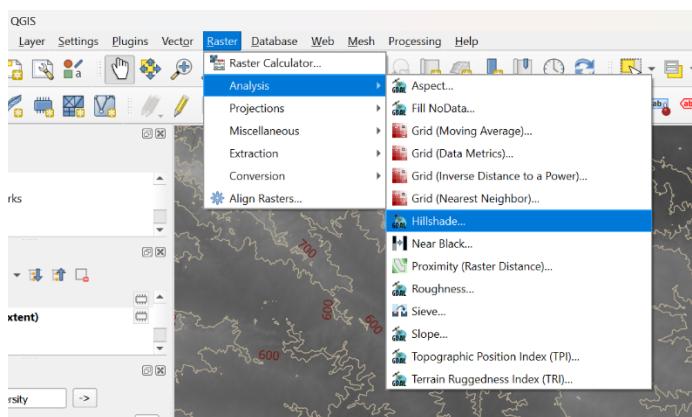
Roll No.: 22087

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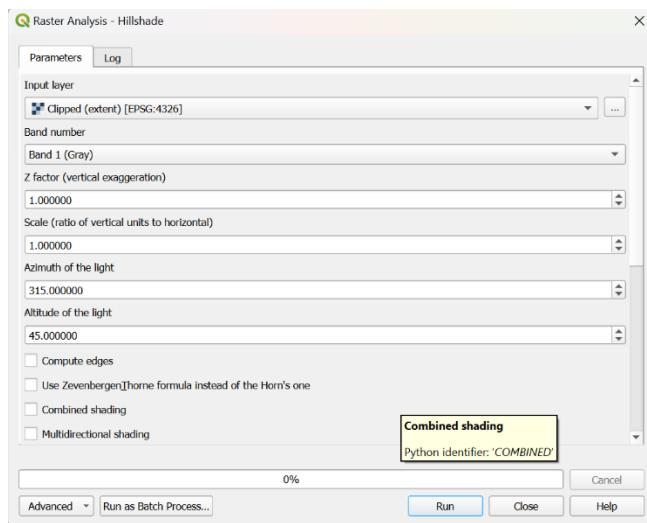
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Step 9: Set the following parameters and hit run.



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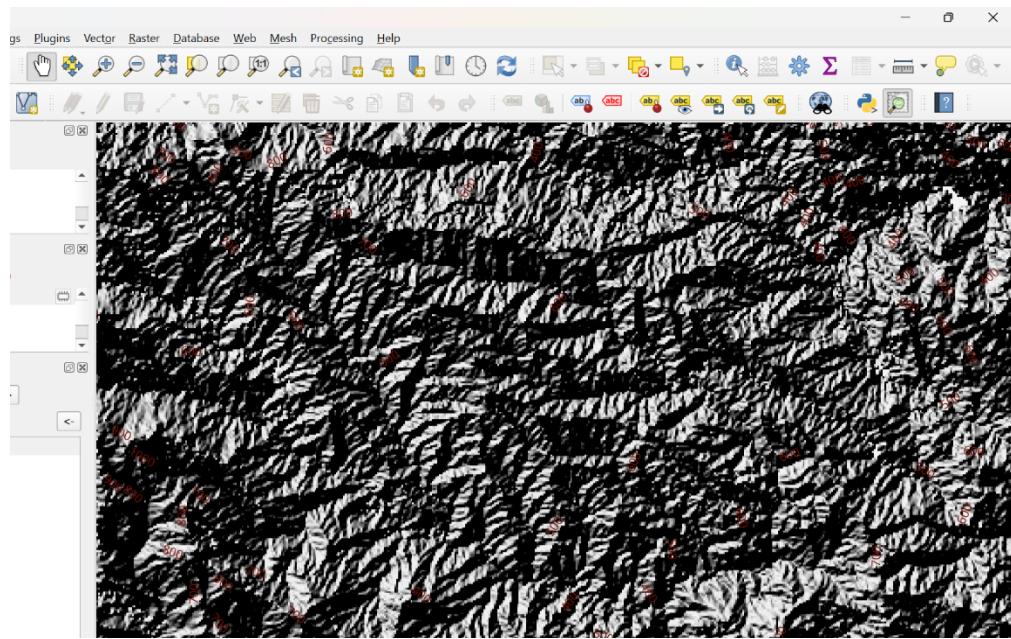
Subject: Fundamentals of

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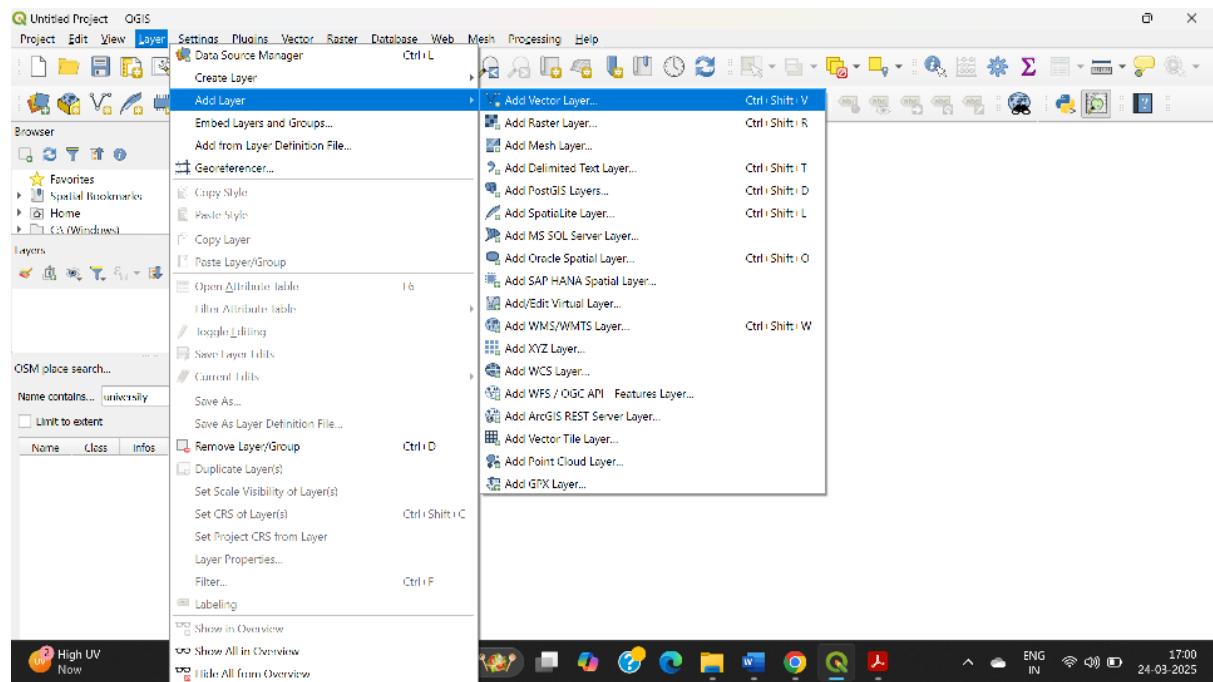
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Step 10: Layer > Add Layer > Add Vector Layer.



Name: Swapnil Patil

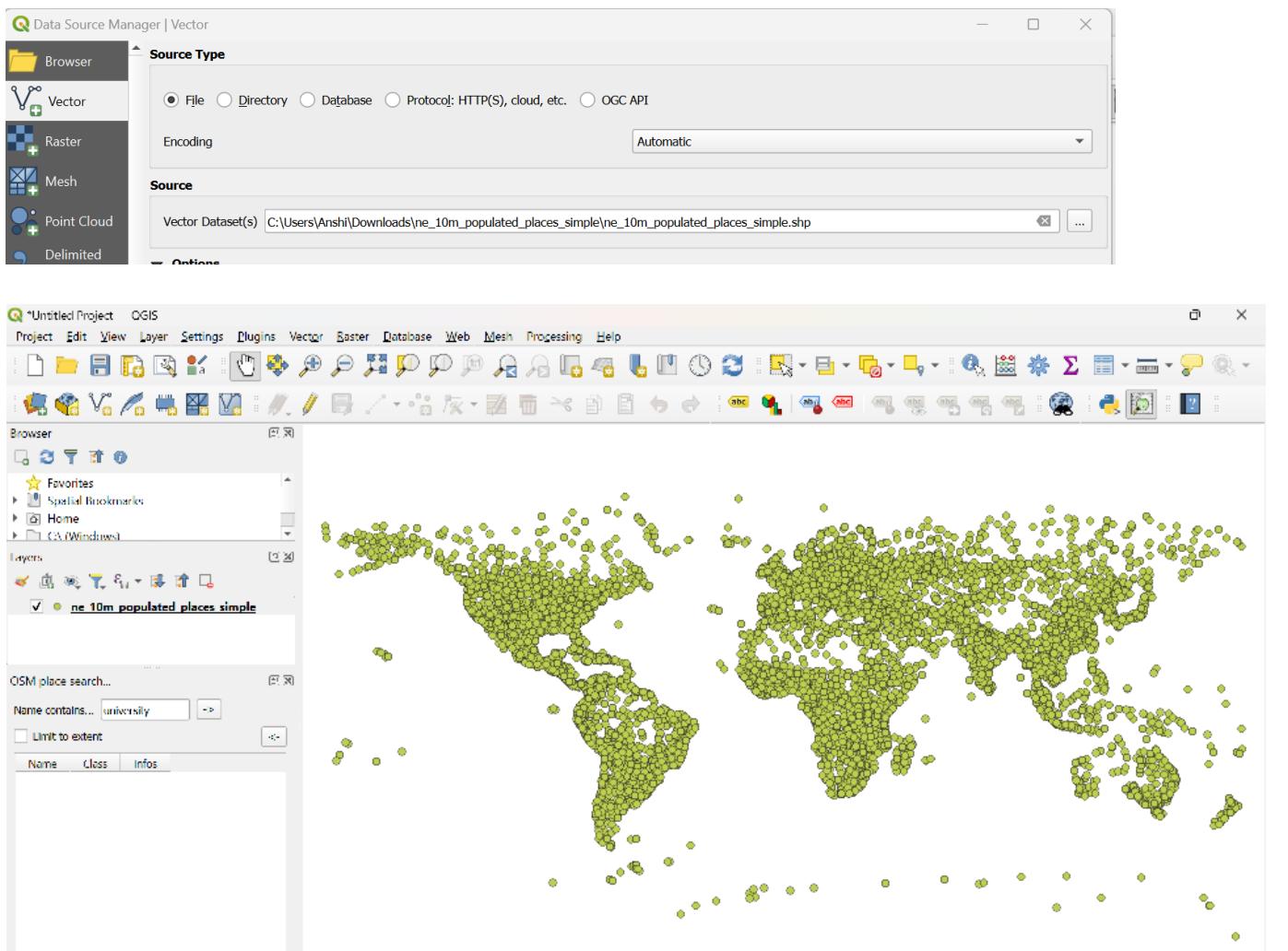
Subject: Fundamentals of

GIS

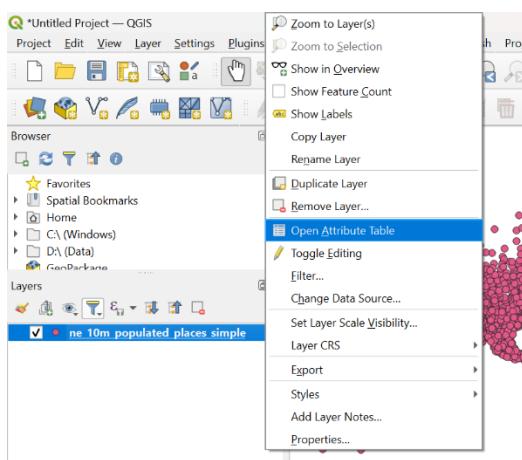
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Step 11: Right click on the layer and open Attribute Table.



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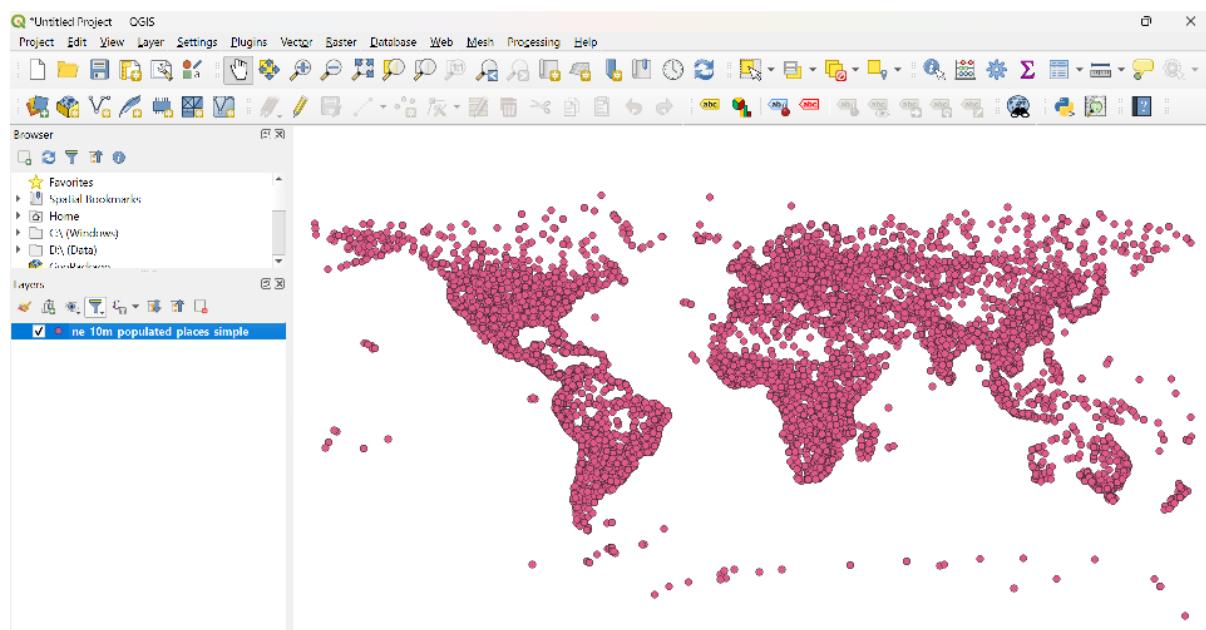
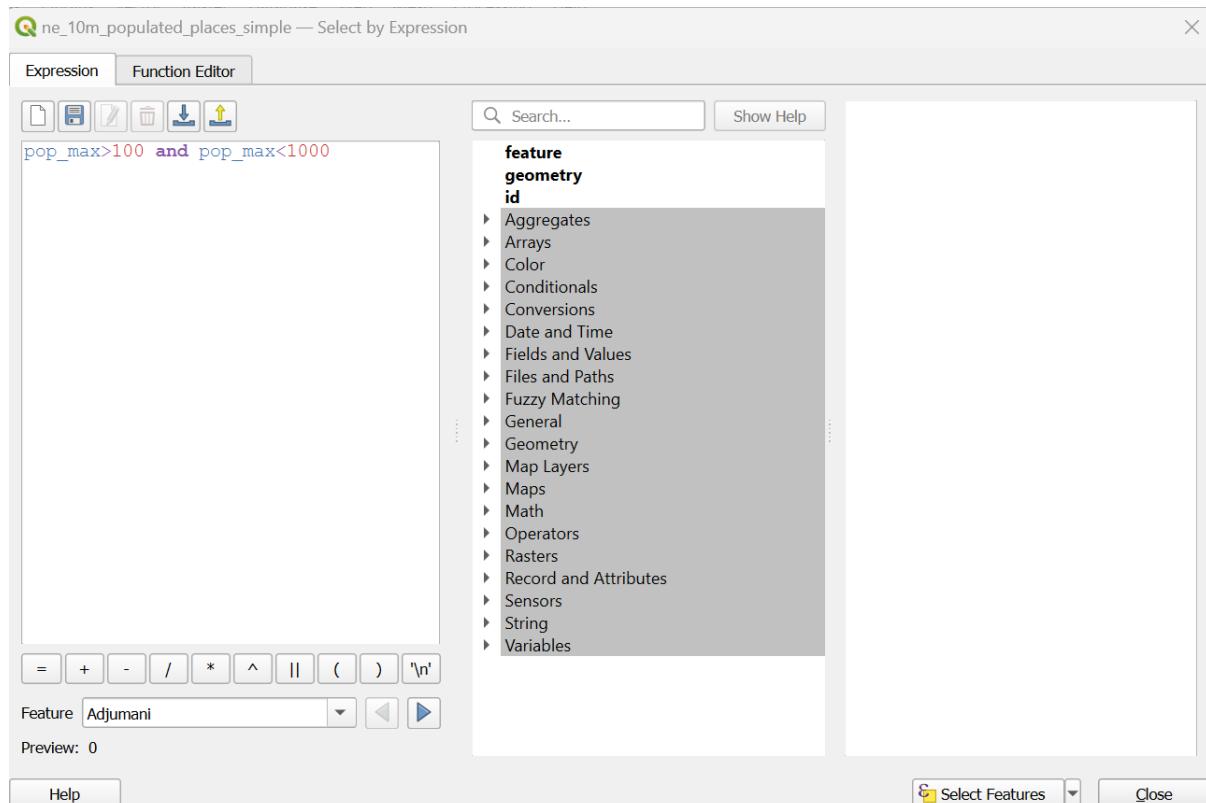
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Step 12: Click the select features using expression tool and enter the following expression then click select features.



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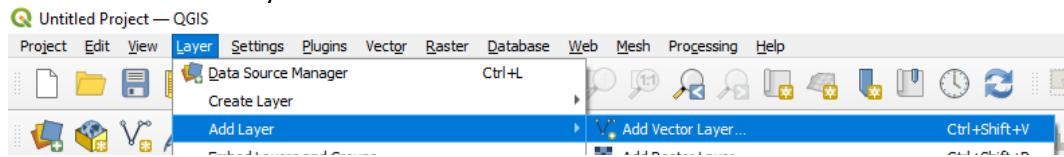
Subject: Fundamentals of GIS

Practical 6

Aim: Working with Projections and WMS Data.

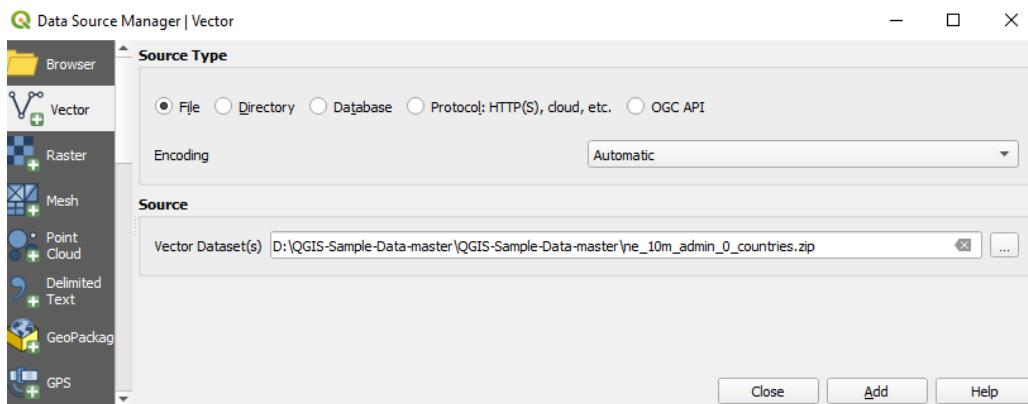
Step1: Go in Layers. Select Add Layer.

- Add Vector Layer.

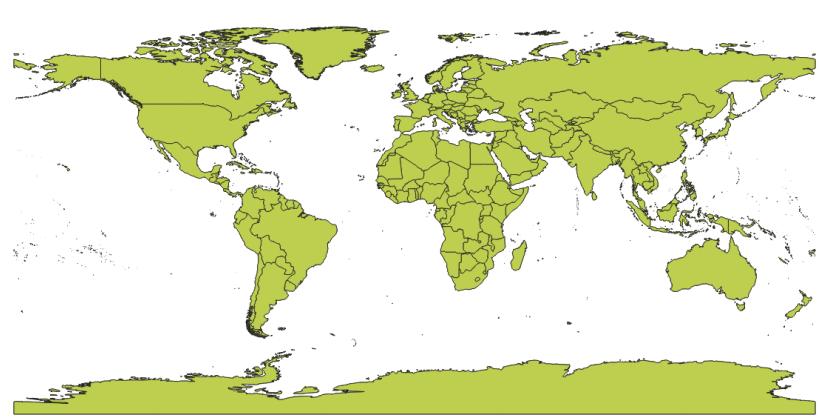


Step 2: In the Vector Layer add the ne_10m_admin_0_countries.zip file and click on Add.

- Then click on close.

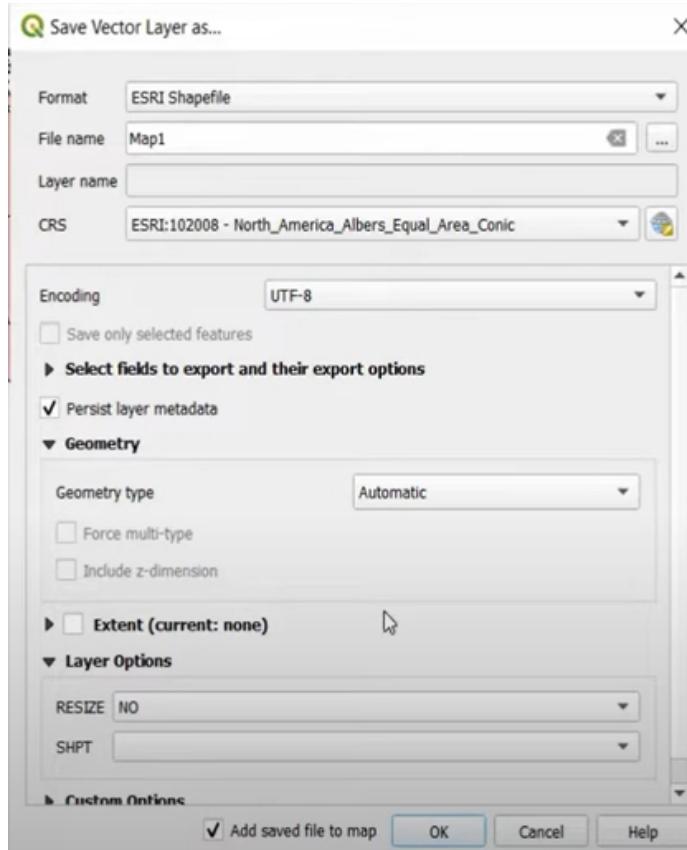


- We can see the following map open up.

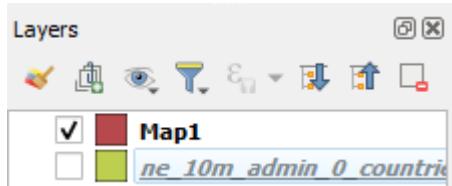


Step 3: Click on Layer and select the Save As option.

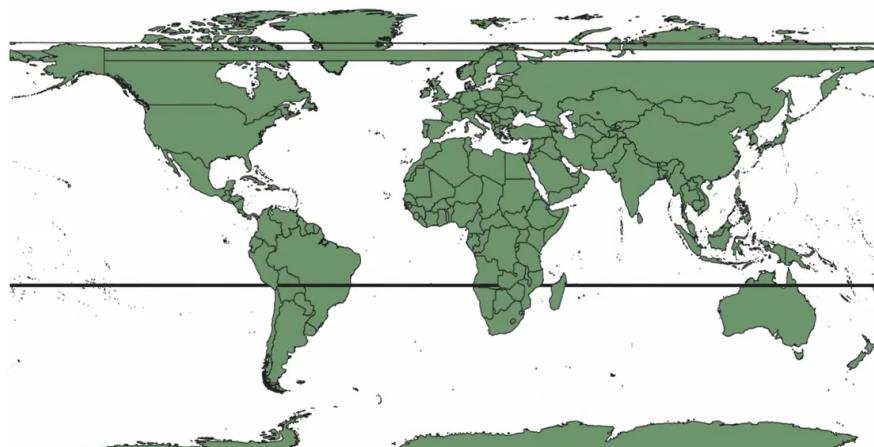
Step 4: We save the vector layer as follows by adding the following data:



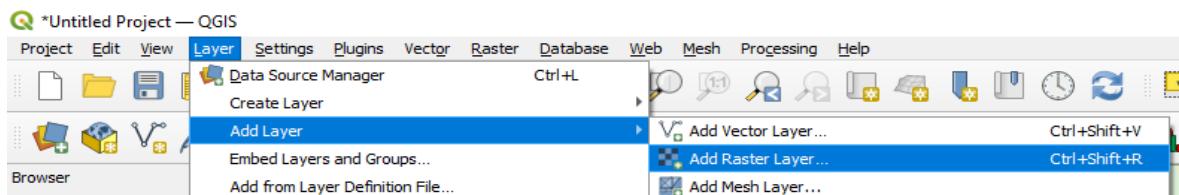
Step 5: Unselect the ne_10m_admin_0_countries.zip file from the Layers menu.



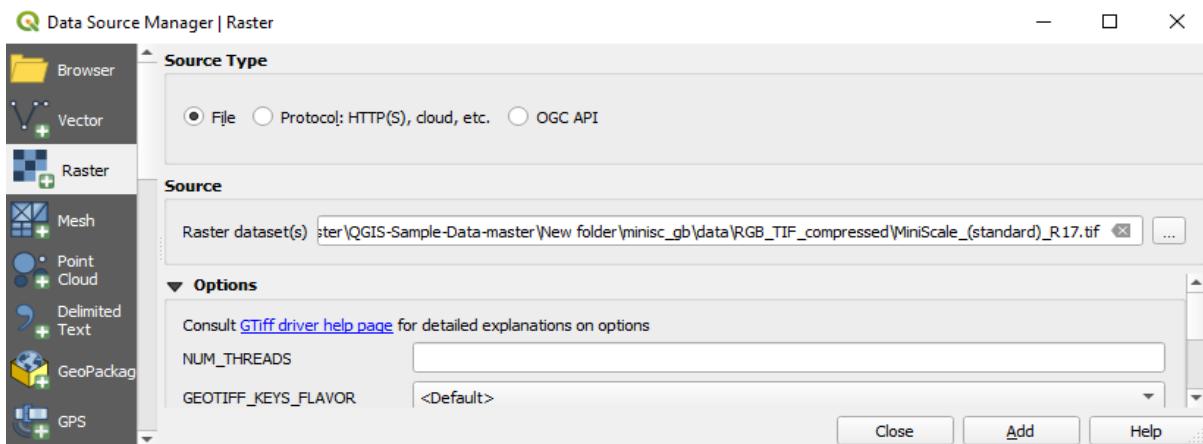
Step 6: We see the following map:



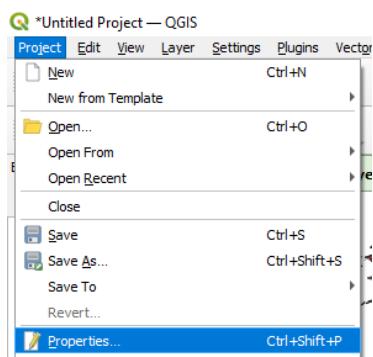
Step 7: Go in Layer and now add a Raster Layer.



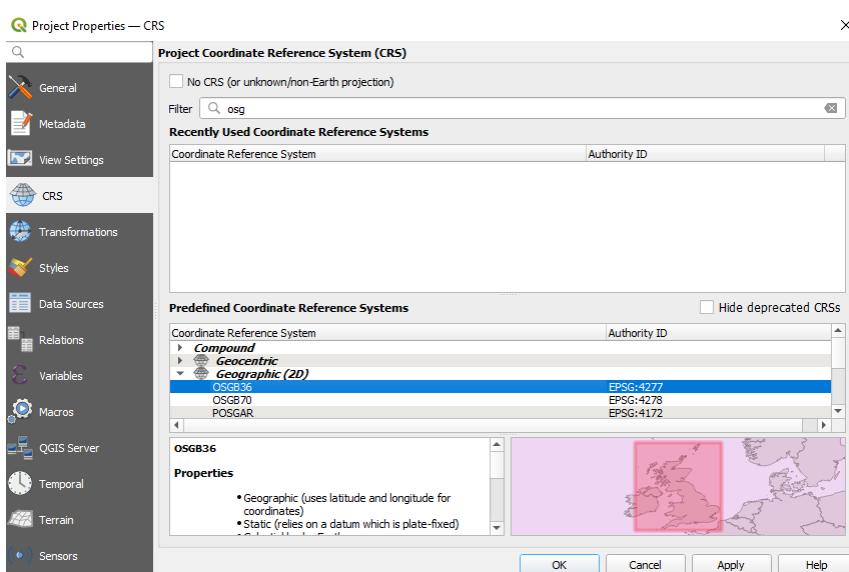
Step 8: Add the MinScale_(standard)_R17.tif and click on Add. Then click on Add and Close.



Step 9: Click on Project and select Properties.



Step 10: Add the EPSG:4277 Reference System and click on Apply.



- We can see the exact mapped area as follows:



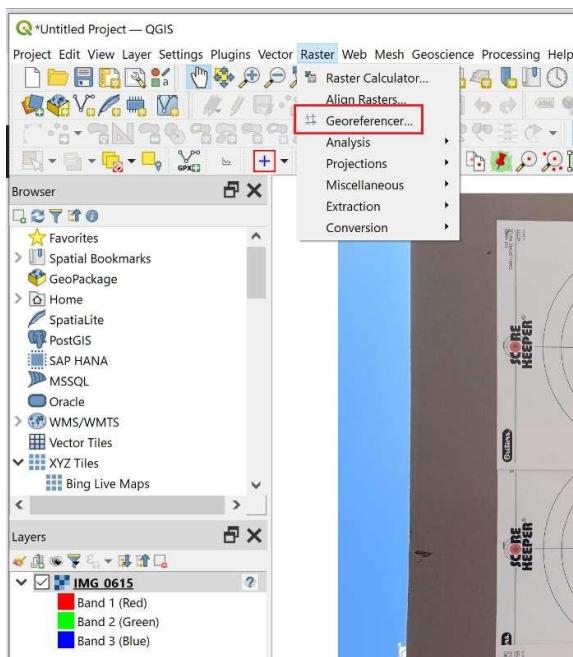
Practical 7

Aim: Georeferencing Topo Sheets and Scanned Maps, Georeferencing Aerial Imagery and Digitizing Map Data

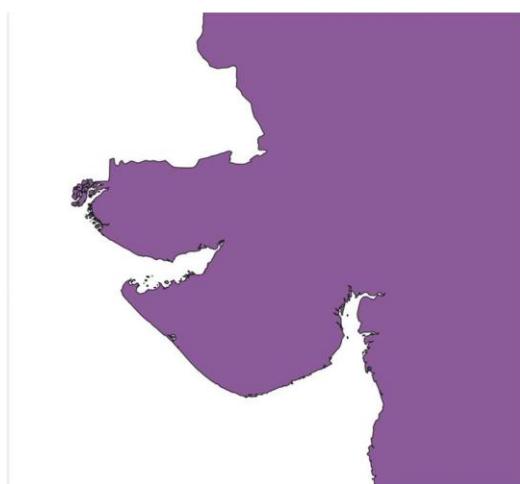
Steps:

Step 1: Layer > Add Layer > Add Vector Layer. Select the following .shp file and hit add.

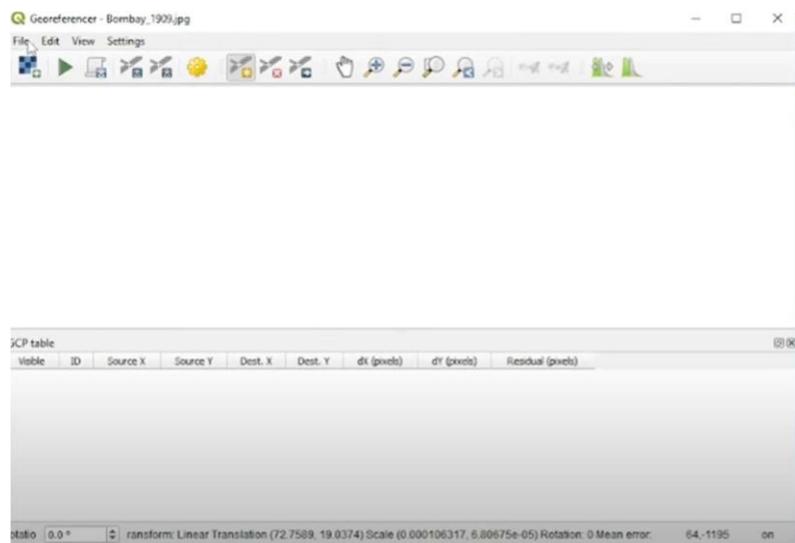
Step 2: Check for plugins > raster > Georeferencer



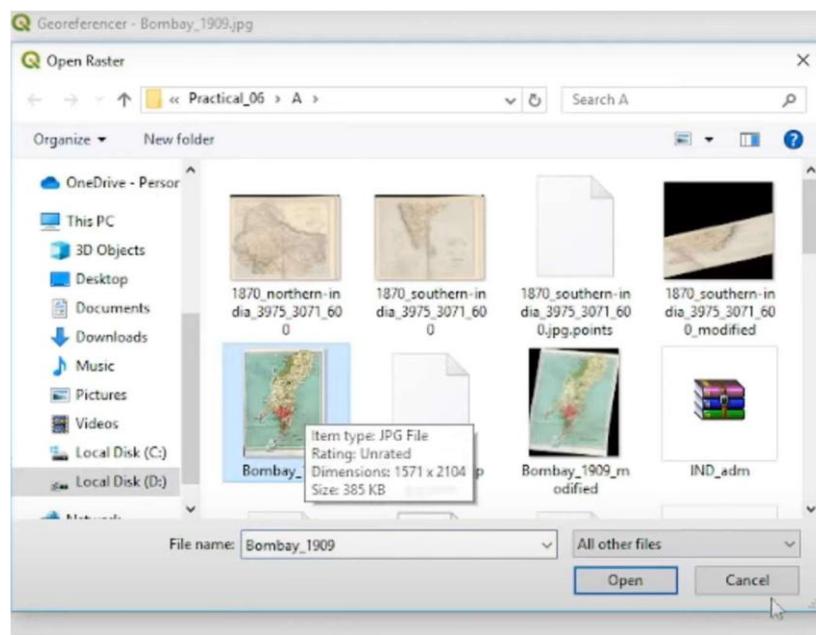
Step 3: Once Added Zoom in the Map to add a raster layer.



Step 4: Click on file > open Raster

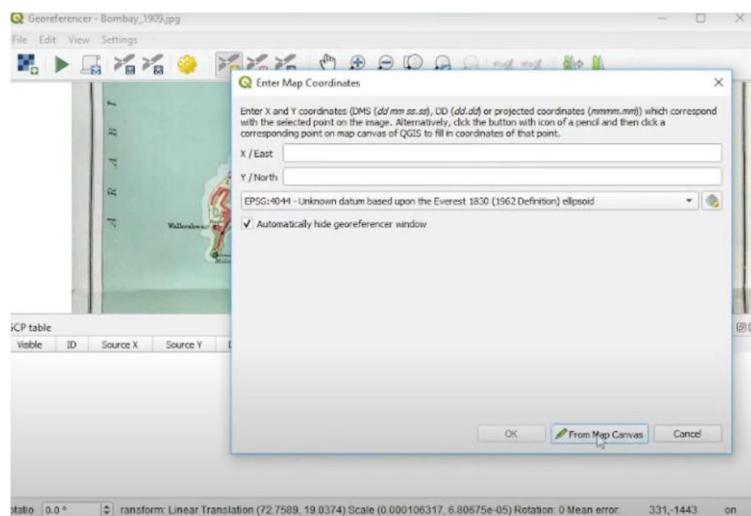


Take this file from the googl drive link itself and proceed as shown



Step 5: Location is somewhere near Bombay so add coordinates

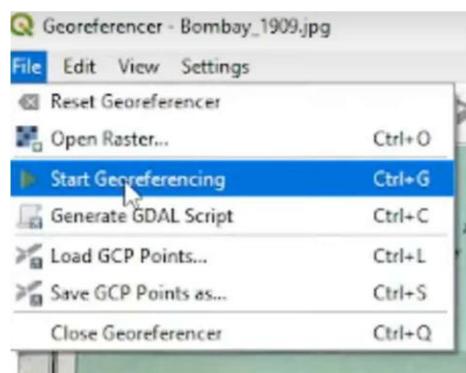
Click on the point you wish to add the coordinate



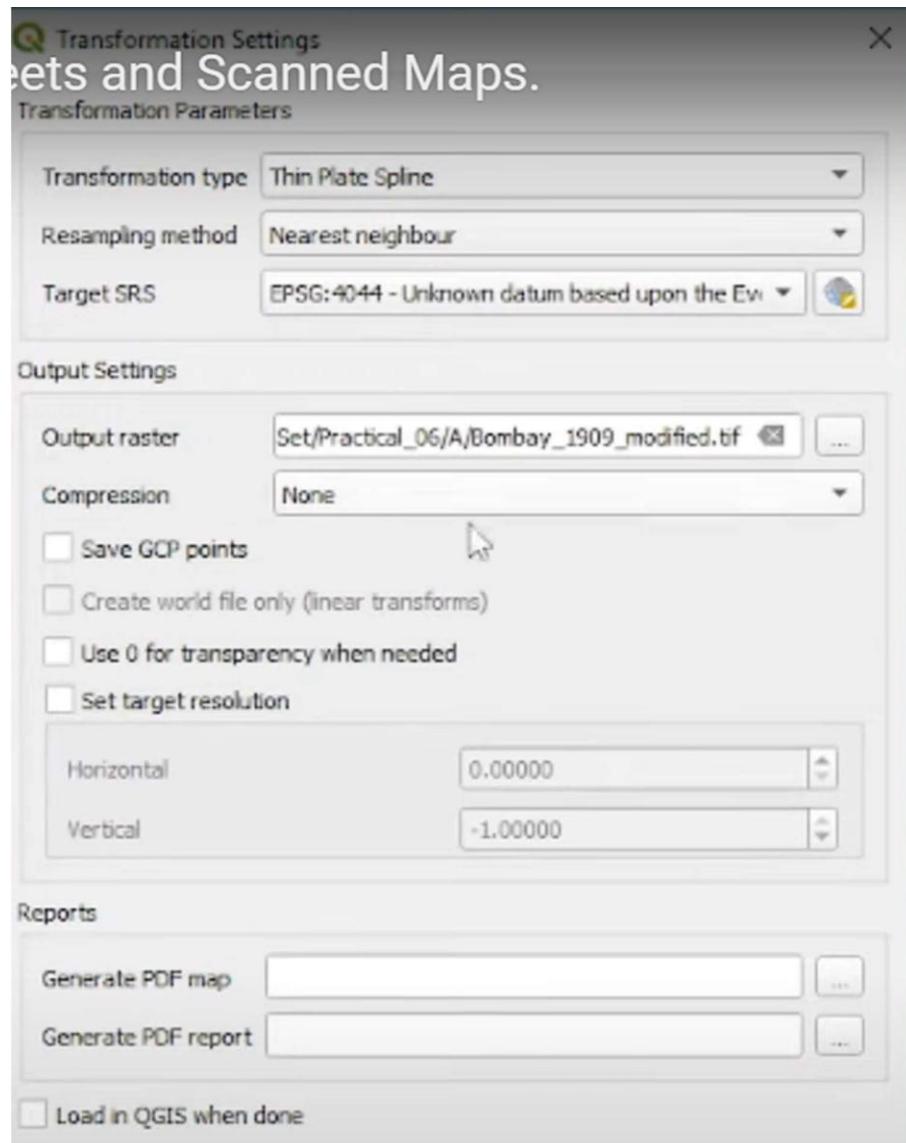
Add 3-4 points > by clicking on map canvas you will select and there will be a red point indicating the selected area.



Step 6 : once done click on file and start Georeferencing



Check for these settings:



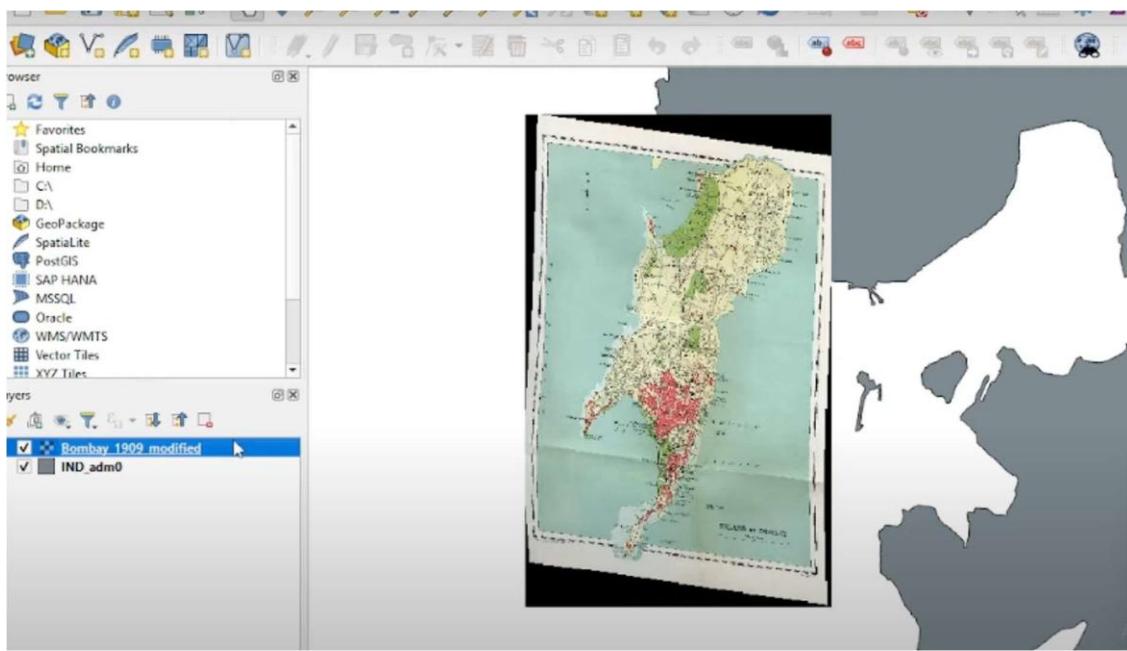
And click on load

Here you will see the map indicating points on the vector layer map

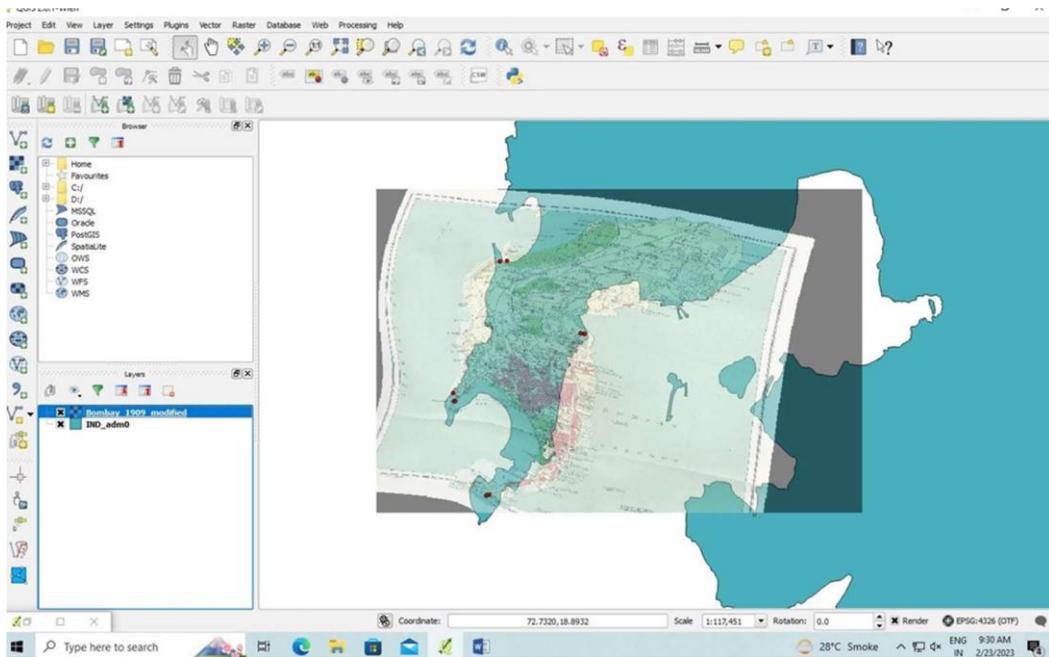
And further do settings like : properties > transparency > adjust Transparency to 50%

So that it exactly matches the vector layer part

Click Apply ok



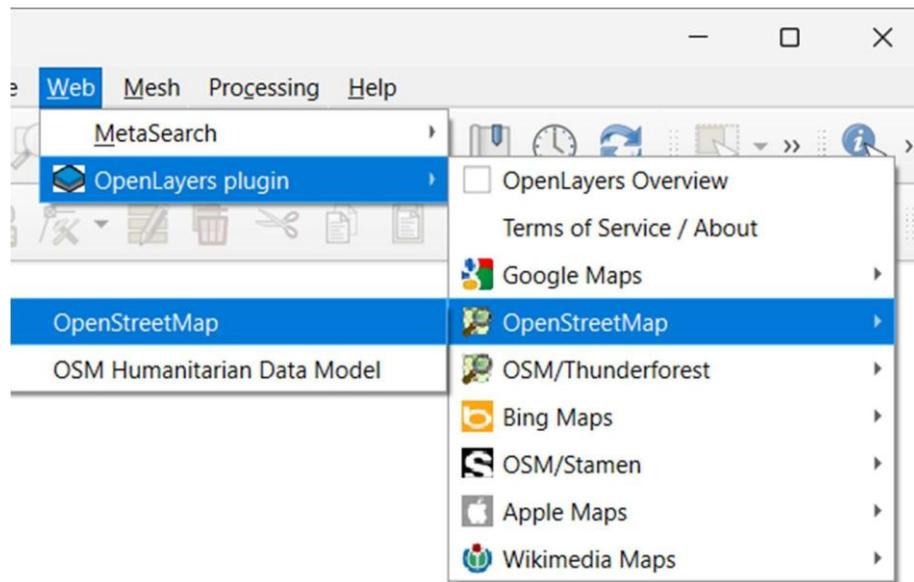
Final output:



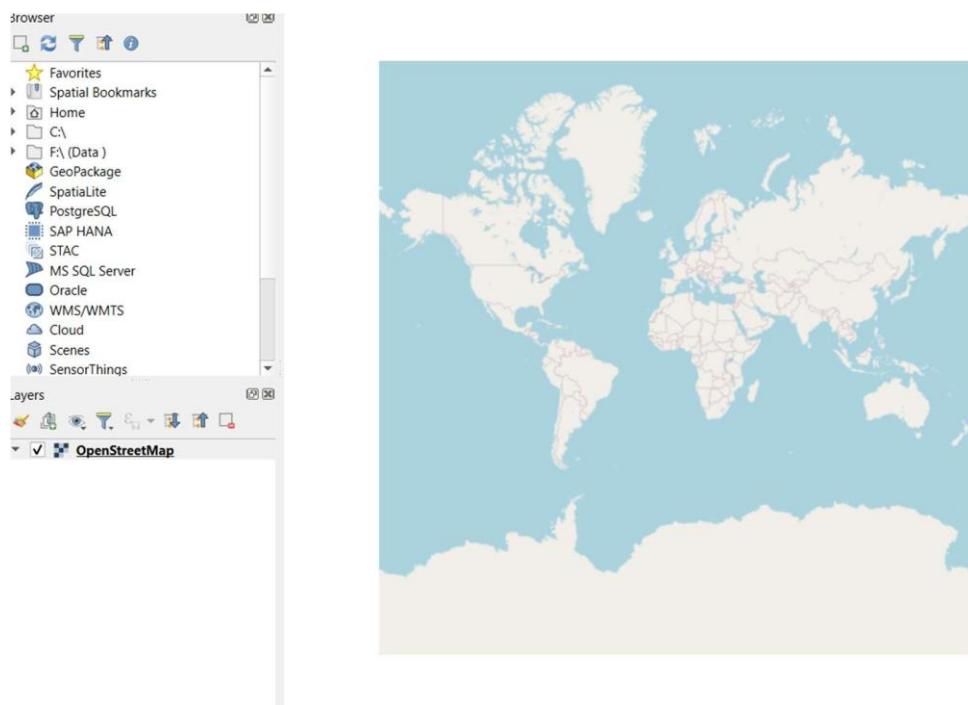
For Georeferencing Aerial Imagery and Digitizing Map Data

Follow these steps

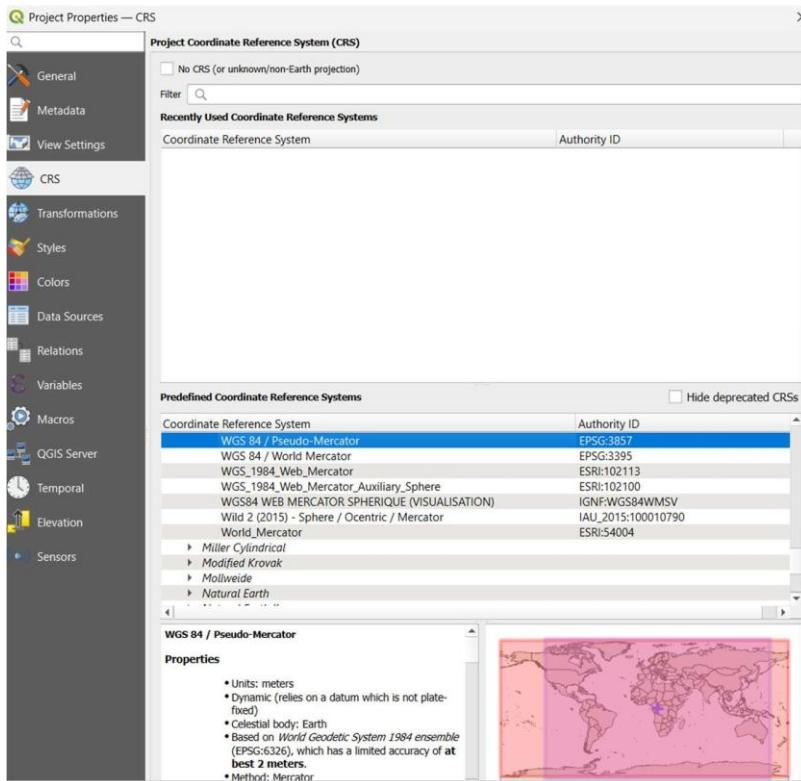
Step 1 : new project and select web and proceed



You will see this :

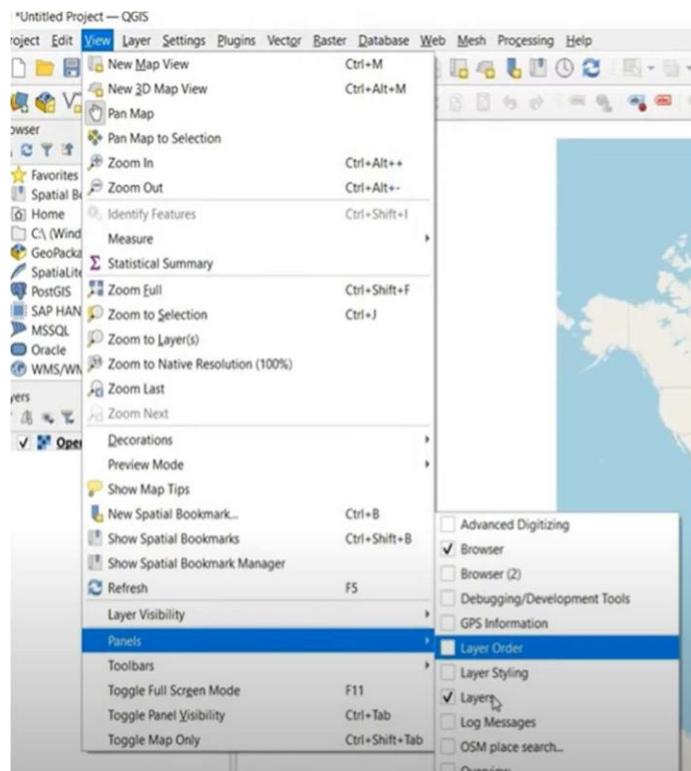


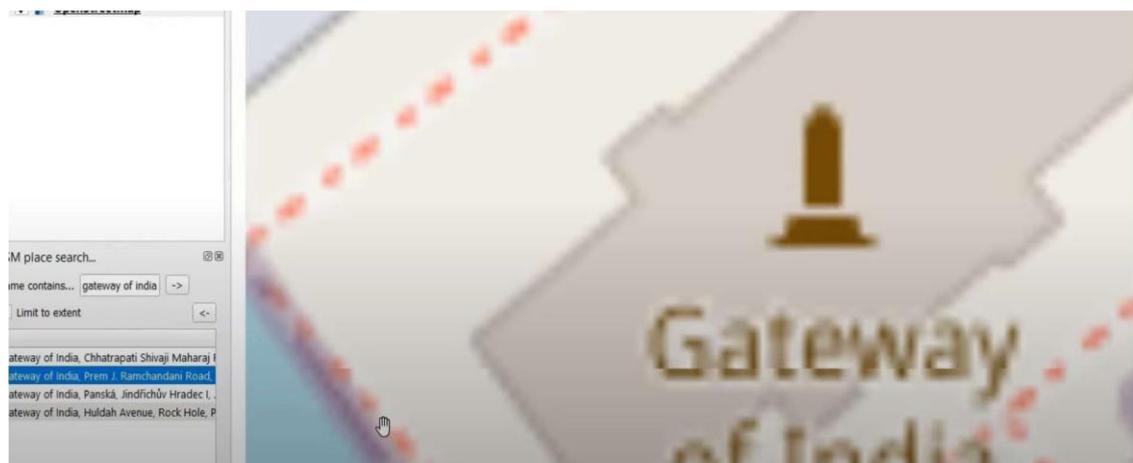
Further go to project > properties



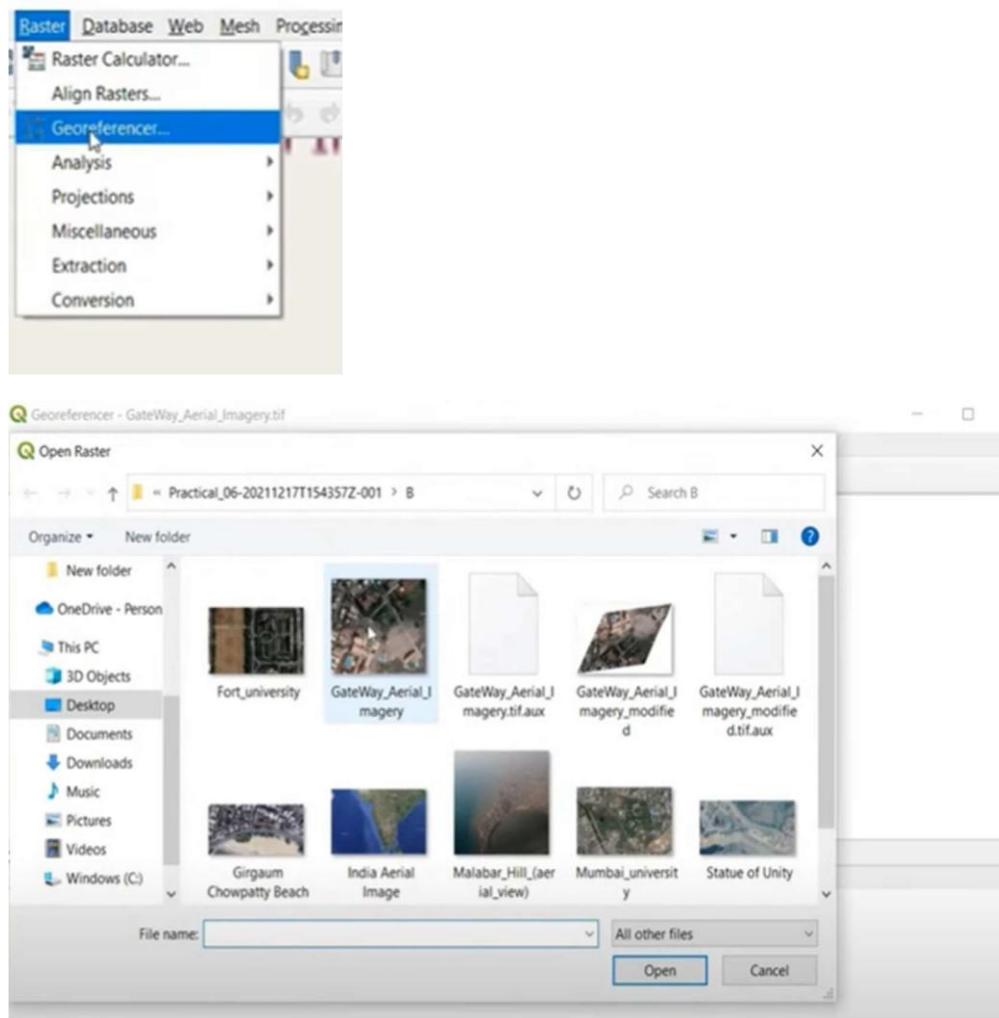
Apply & ok

Step 2: Click on view>panels>check for OSM place Search>tick the box

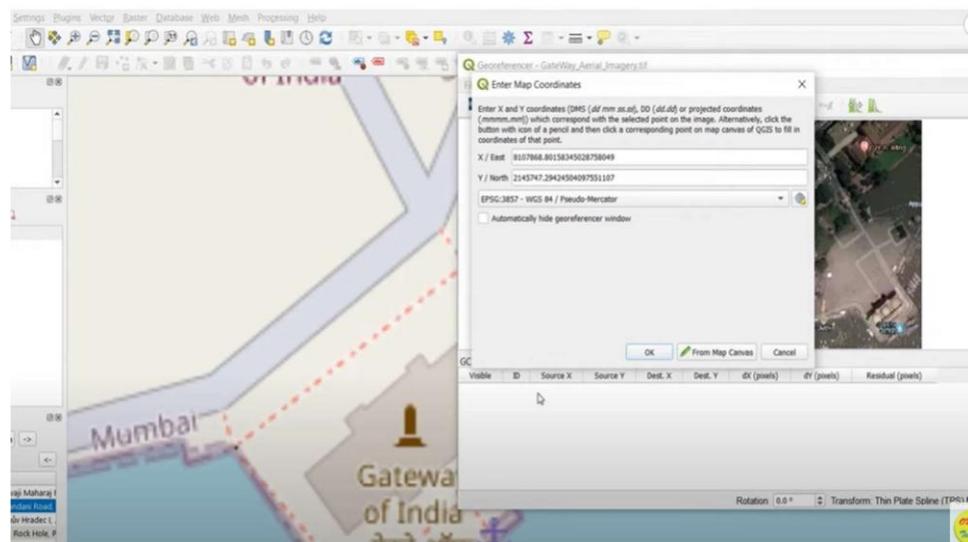




To make points on this Click on raster > Georefrencer

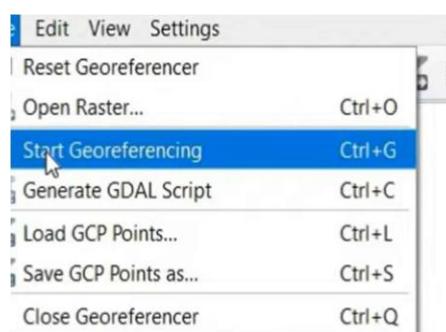
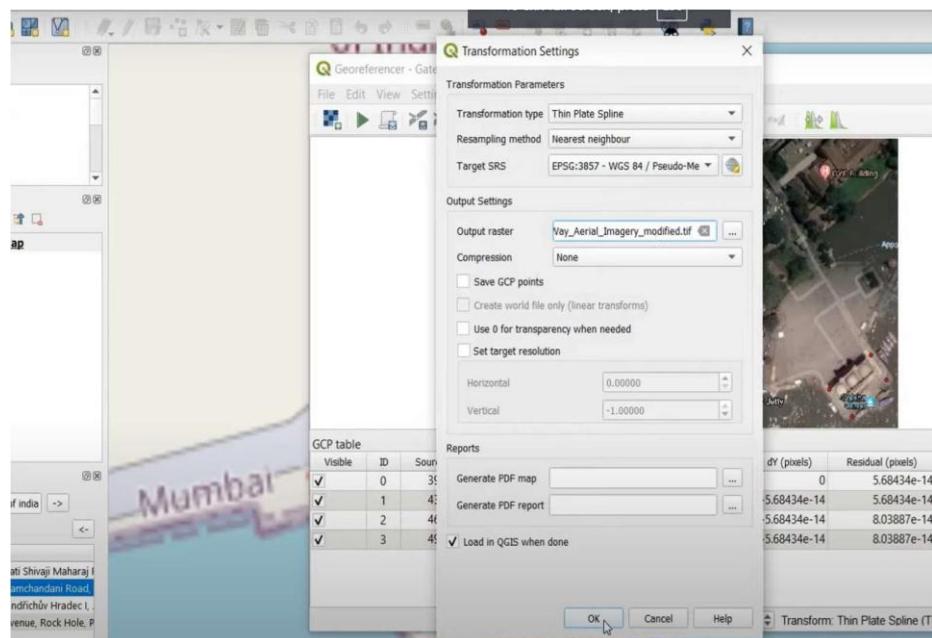


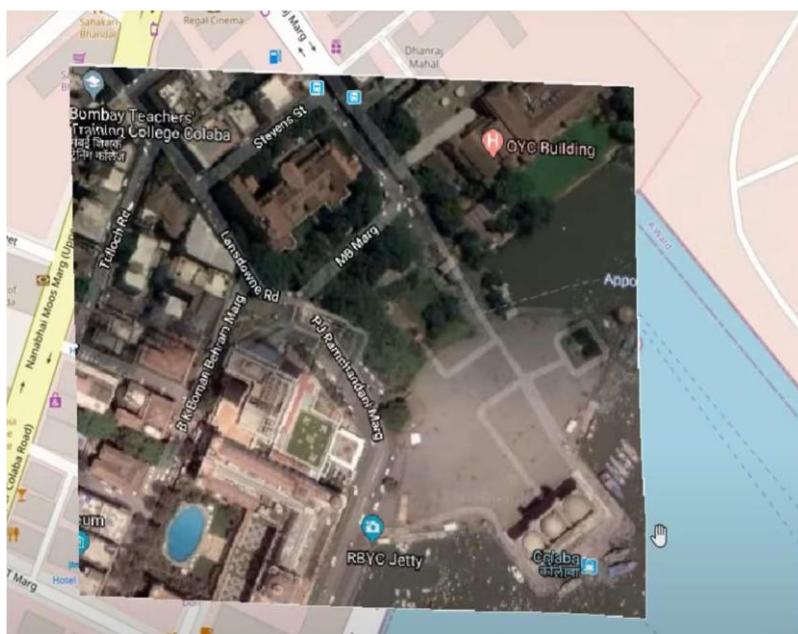
Once opened , to make points > add points , here add such points which could merge with your vector layer in the end



Add such 4 & 5 points

Make these transformation settings

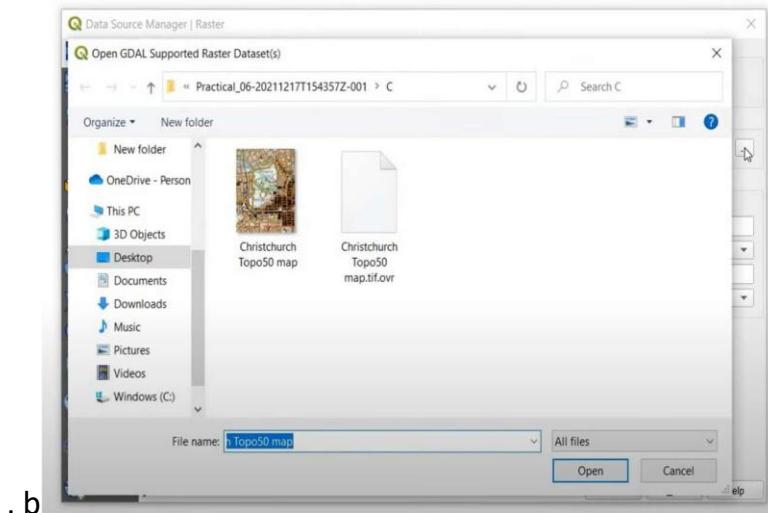




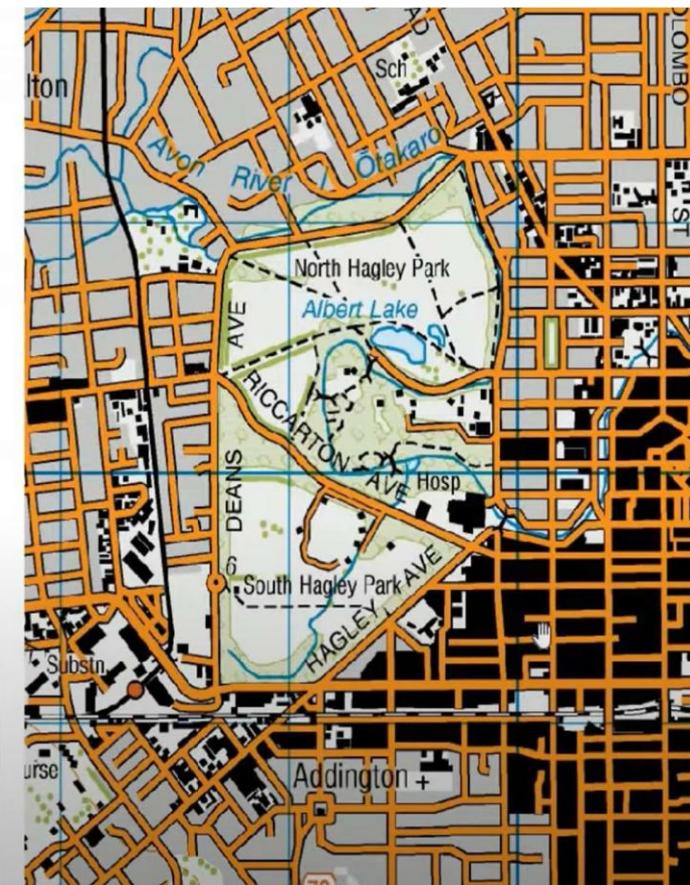
And we will finally have the Raster layer on the street map which we had chosen

(c) Digitizing the data –

Step 1: add the raster layer and add the image from the drive

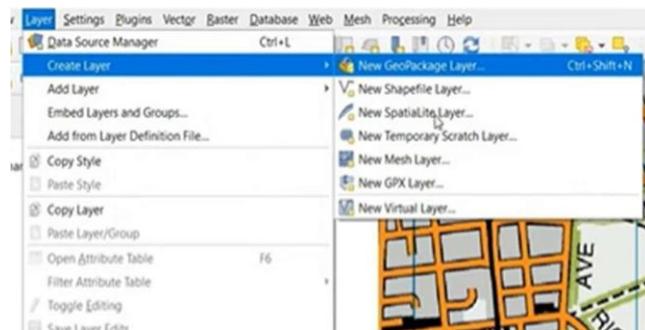


, b

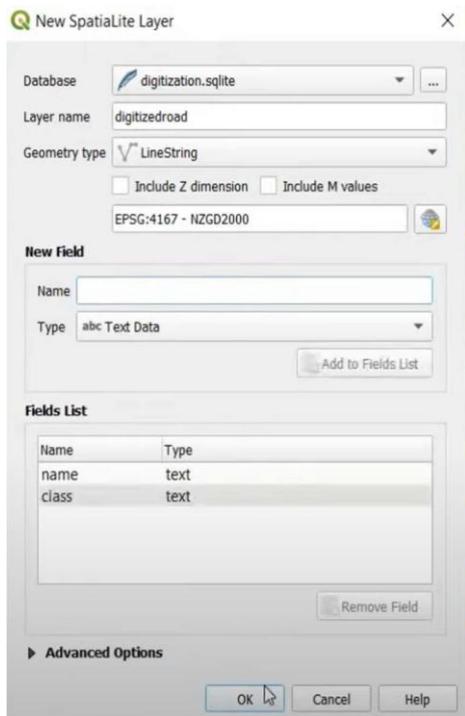


Click on settings>Digitizing>Deselect the “Enable snapping by default”

Step 2: Layer>Create new layer> New Spatialite layer

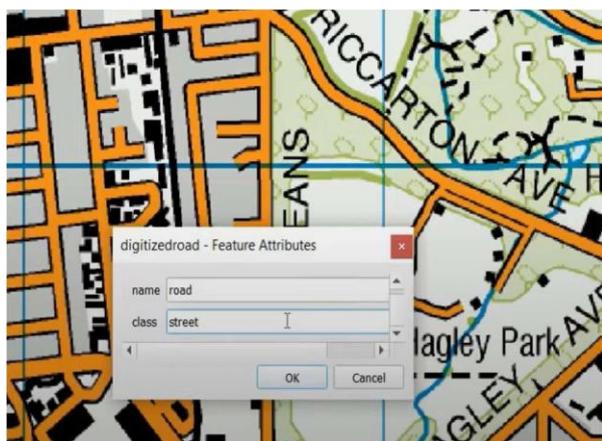


Once you click next , to add a database select any file and name it “digitization”



We will draw using the pencil icon as we are using linestring

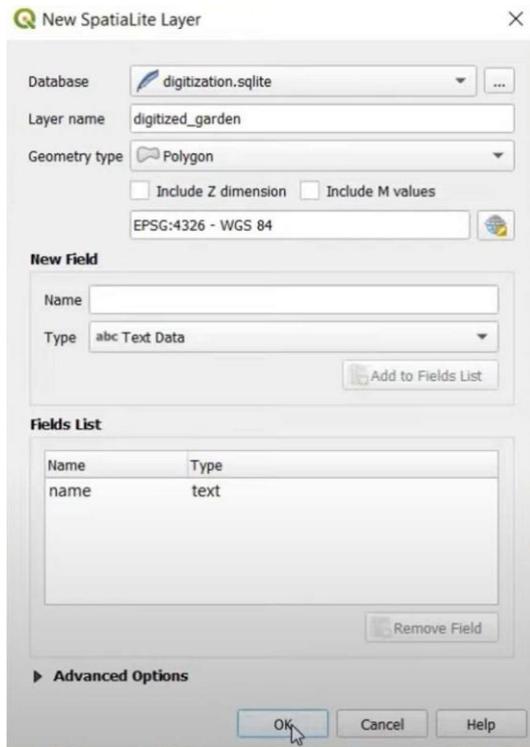
Draw the road , referring the map lines and draw as you want and name your roads and its class



Now to make the road visible change the settings from properties accordingly



As we have made the road, now using the same steps make Garden > Select database "digitization.spatial" > layer name: digitized_garden > Geometry type:polygon



Now make the garden using pencil and name it



To make visible change its properties (add as many as gardens you want)

And your final output will be :

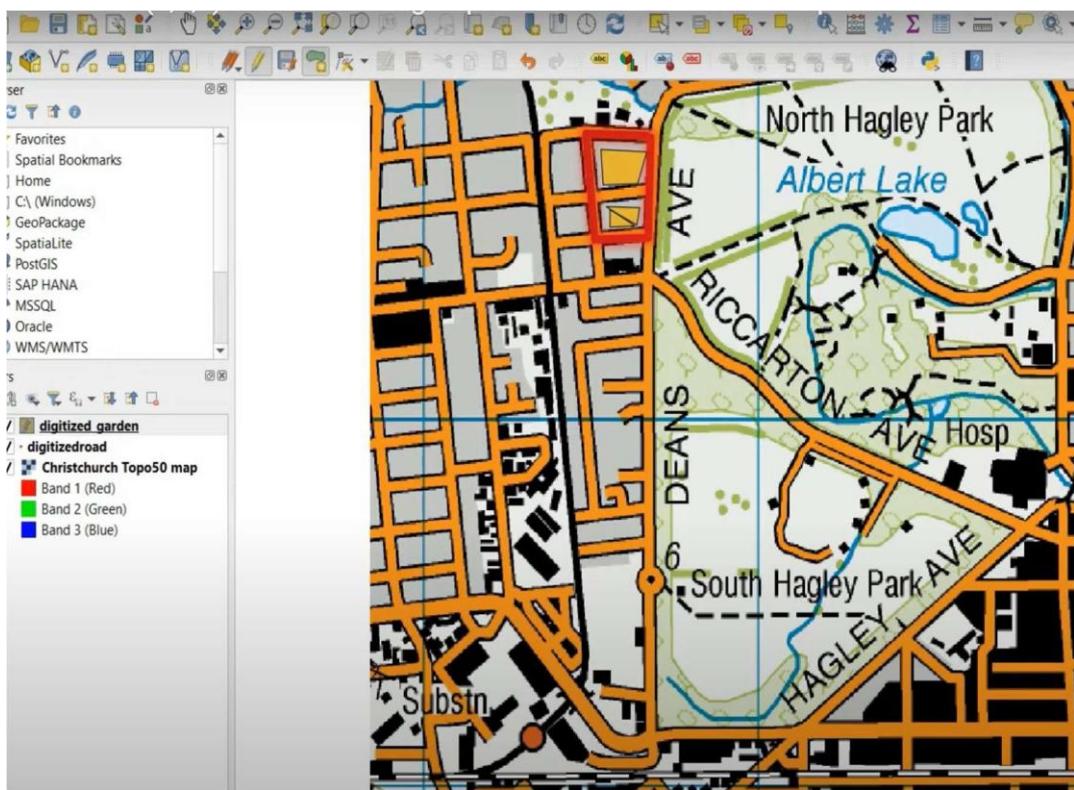
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Class: TYBSCIT

Subject: Fundamentals of GIS

Roll No: IT22087

Date of Performance :



Name: Swapnil Patil

Subject: Fundamentals of

GIS

Sem: VI

Roll No.: 22087

Class: TYBSc IT

Practical 8

Aim: Managing Data Tables and Saptial data Sets: Table joins, spatial joins, points in polygon analysis, performing spatial queries.

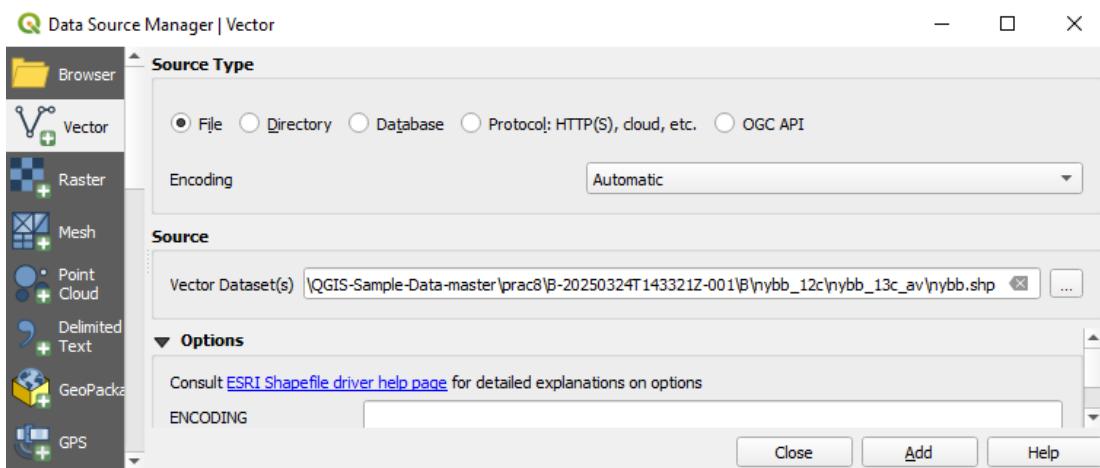
Steps:

a. Spatial Joins:

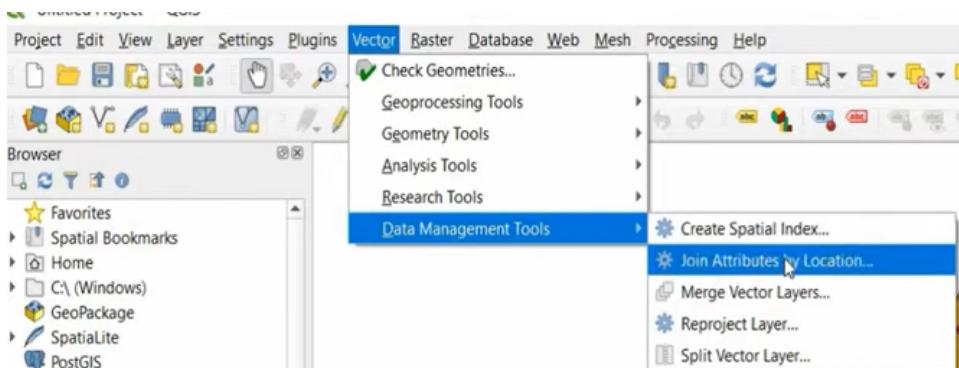
Step 1: Layer > Add Layer > Add Vector Layer. Select the following layer and hit add.



Step 2: Add the nybb.shp file. Click on close.



Step 3: Go to Vector -> Data Management Tools -> Join Attribute by Location.



Step 4: Add the data as given below and then click on Run.

Name: Swapnil Patil

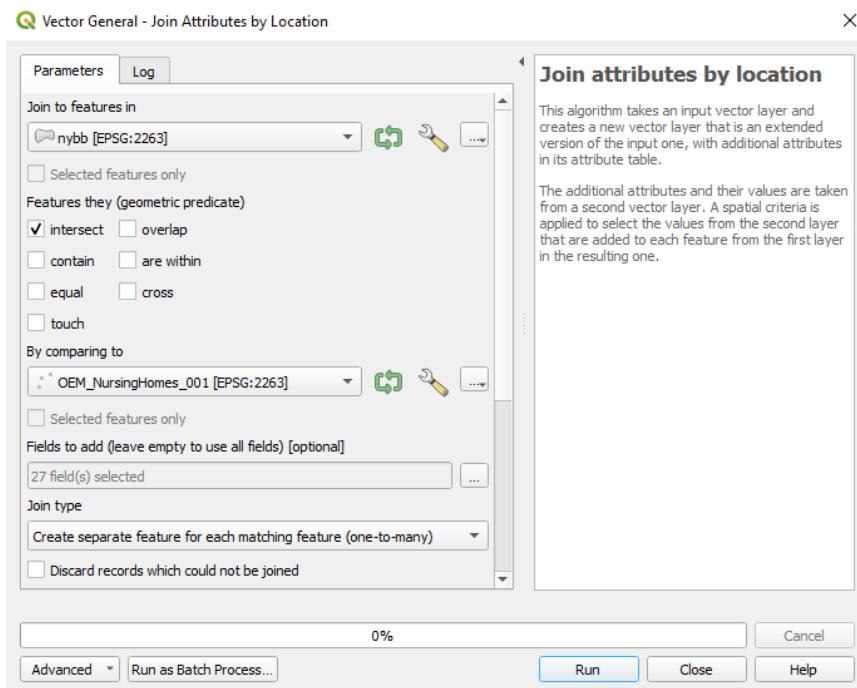
Roll No.: 22087

Class: TYBSc IT

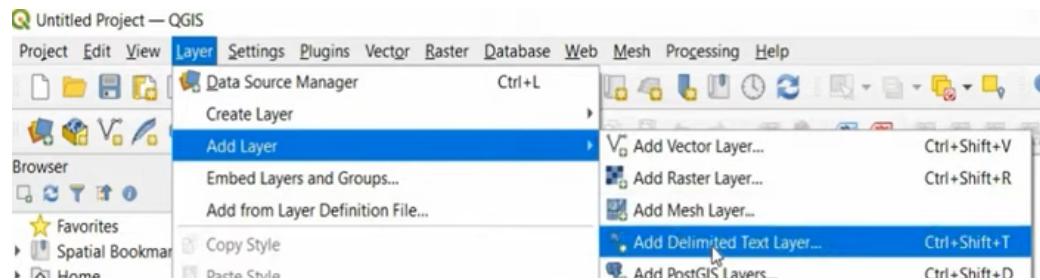
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Step 5: Now add another layer – Layer - > Add Layer - > Add Delimited Text Layer



Step 6: Make the changes as follows:

Name: Swapnil Patil

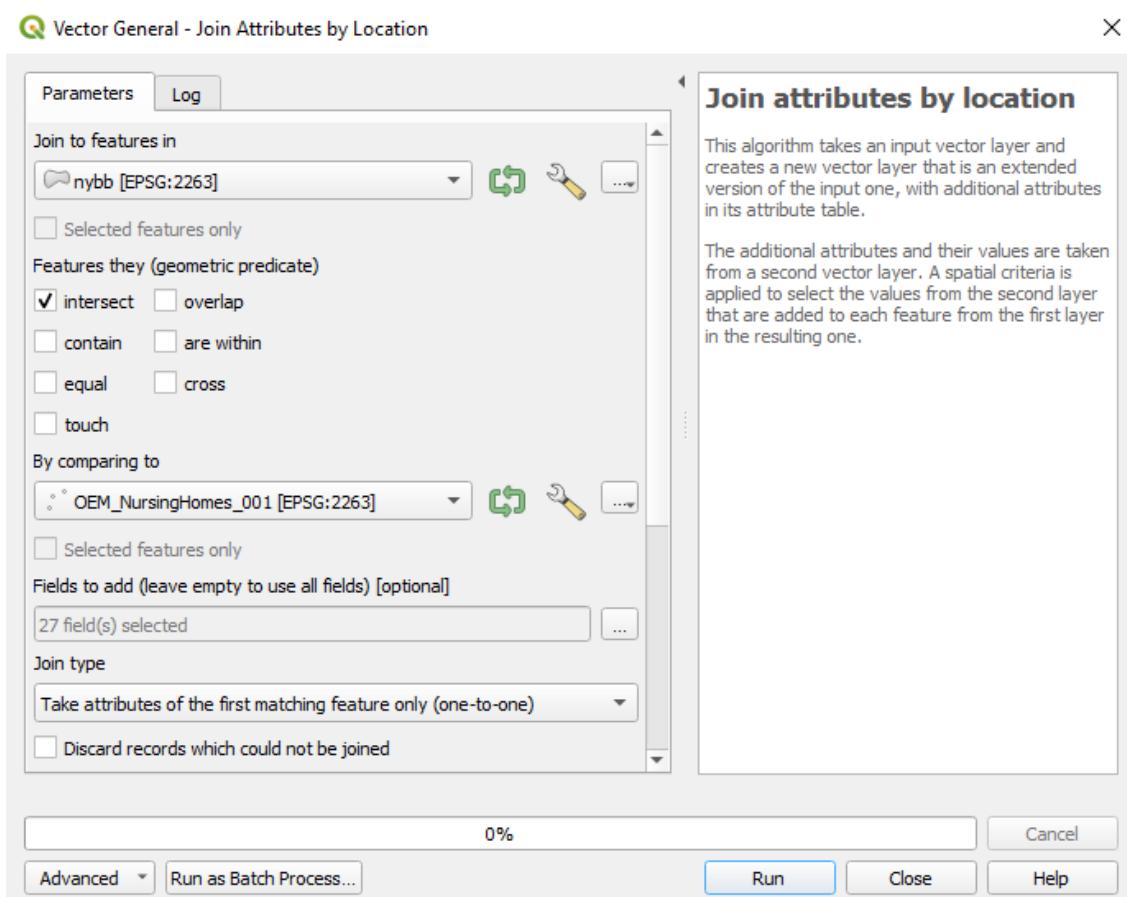
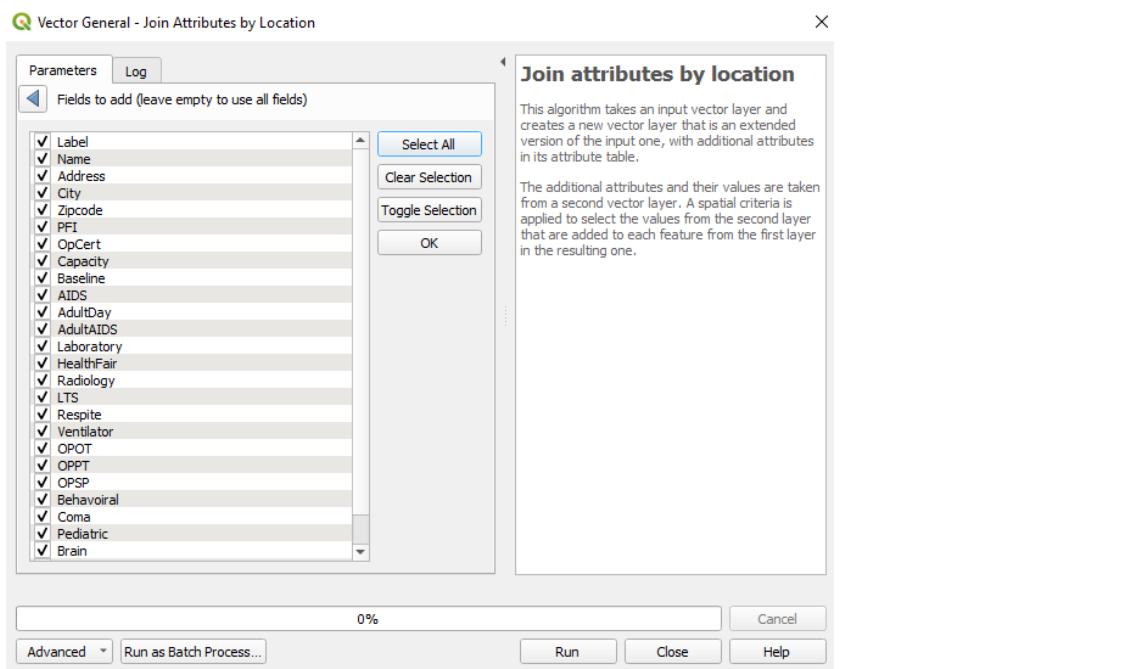
Subject: Fundamentals of

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Roll No.: 22087

Class: TYBSc IT



Name: Swapnil Patil

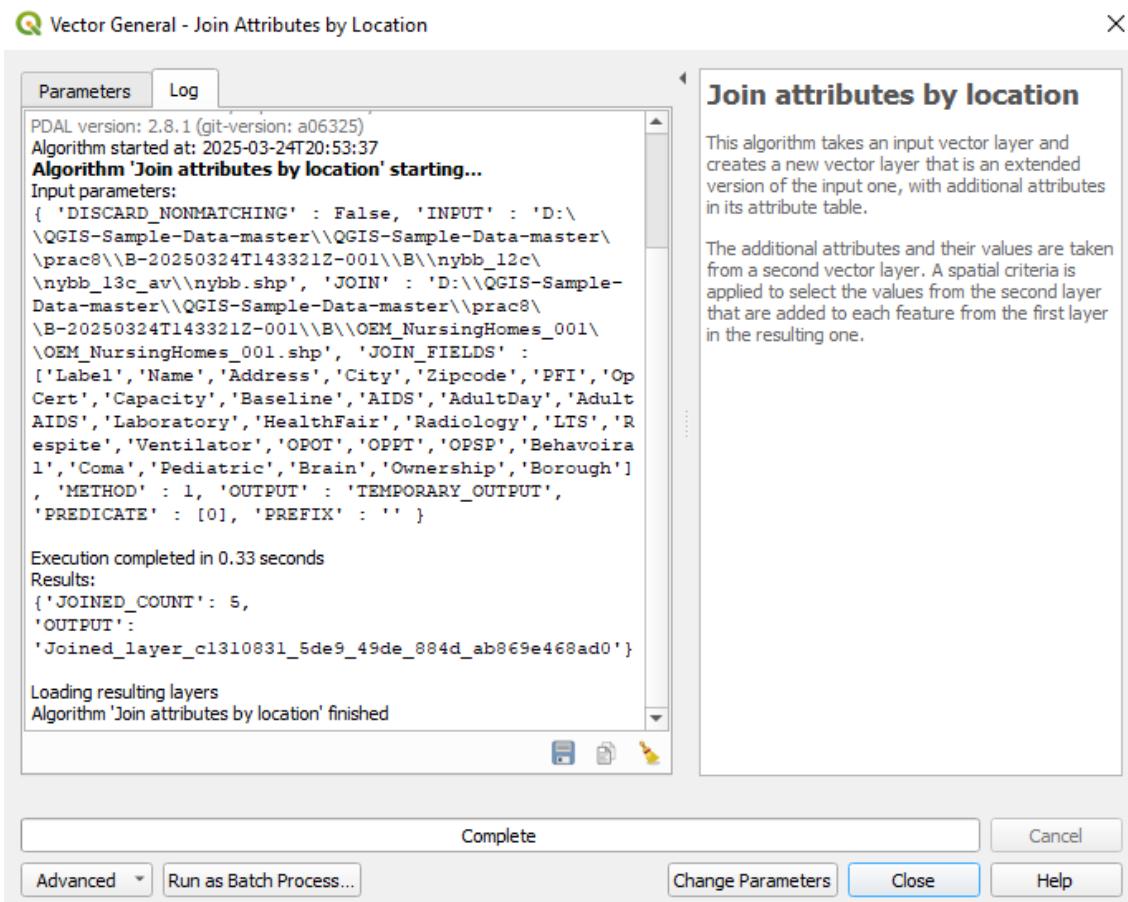
Roll No.: 22087

Class: TYBSc IT

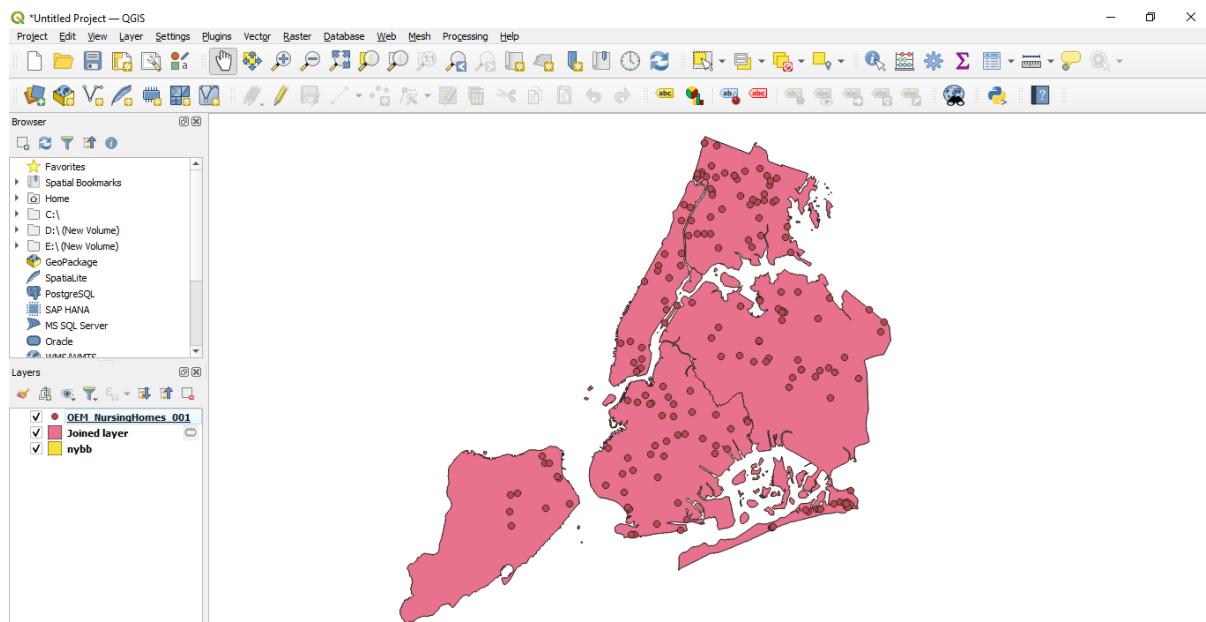
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- We can see the following view:



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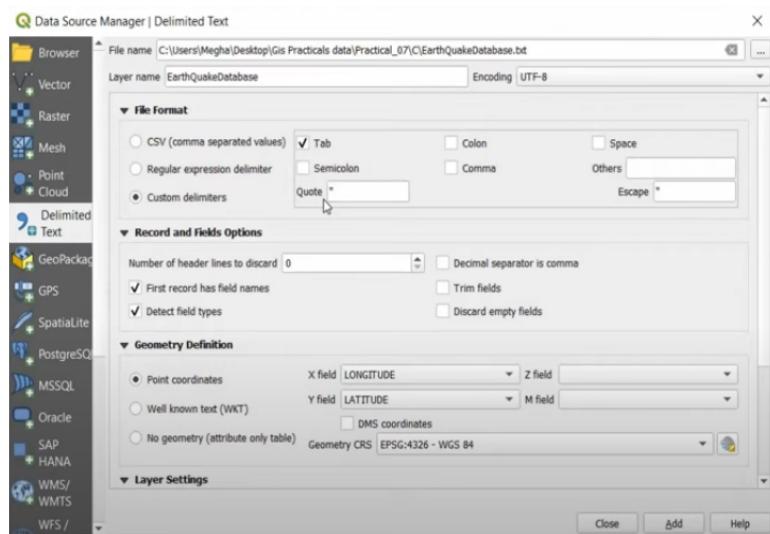
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b. Points in polygon analysis:

Step 1: Add another Delimited Text Layer:



Step 2: Add the Earthquake text file.



- We can see the following map:



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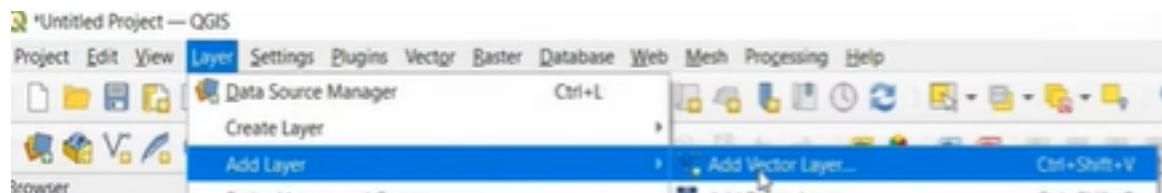
GIS

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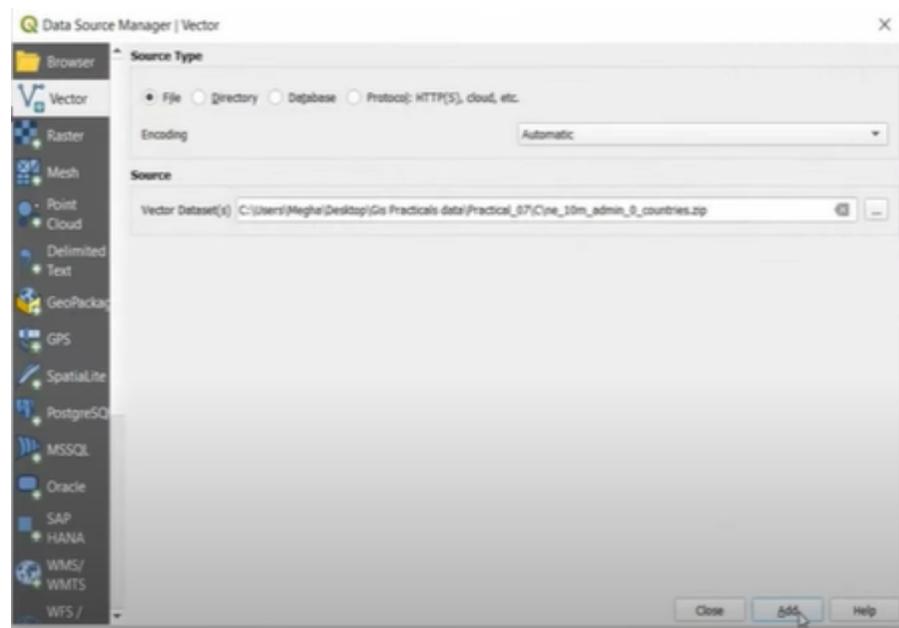
Roll No.: 22087

Class: TYBSc IT

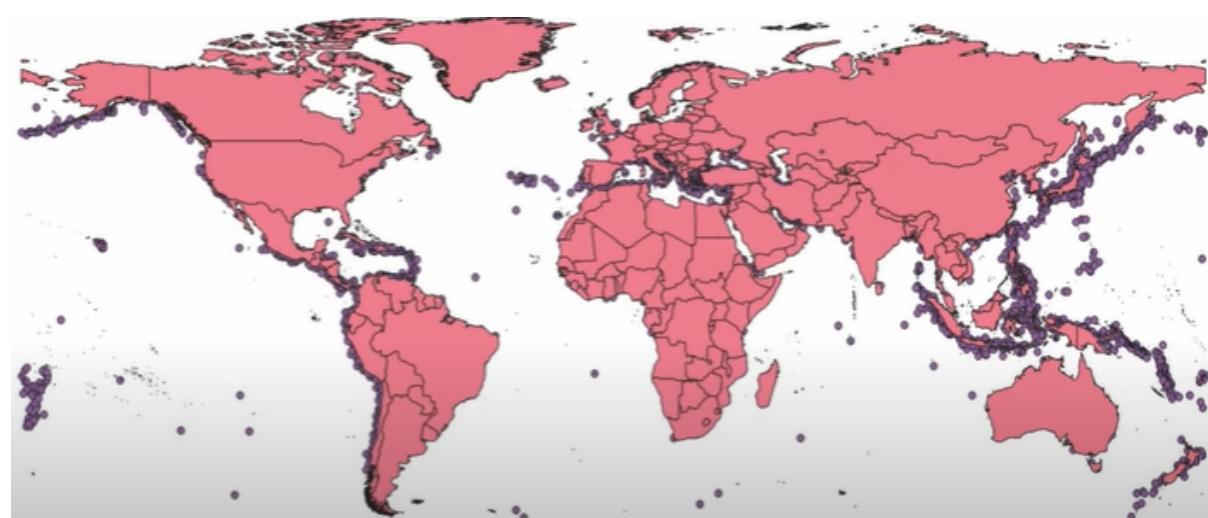
Step 3: Add another vector layer:



Step 4: Add the countries zip file.



- We see the following map:



Step 5: Go to Vector -> Analysis Tools -> Count Points in Polygon

Name: Swapnil Patil

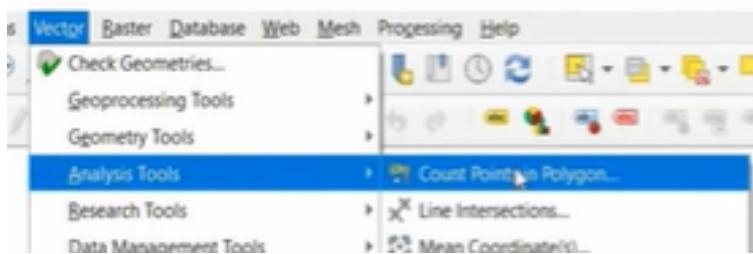
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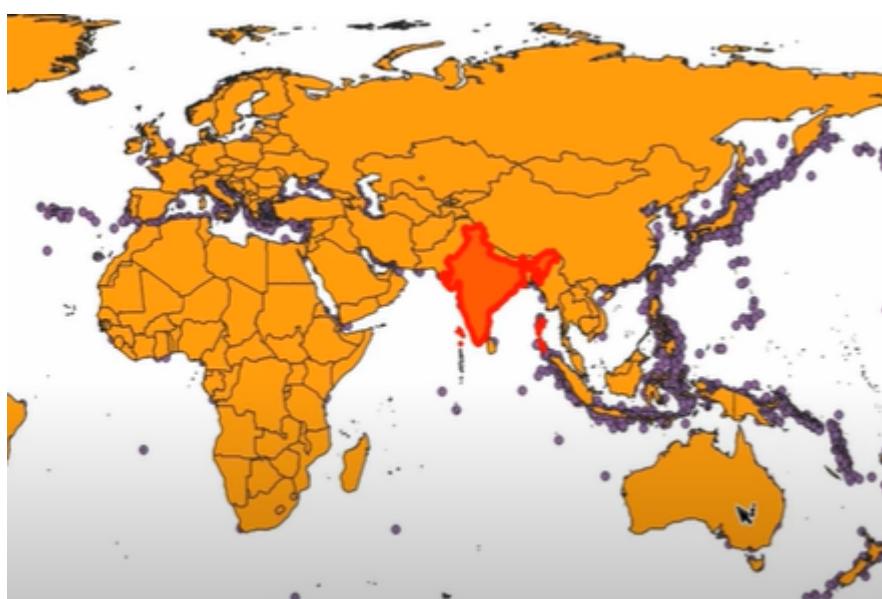
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- Add the following data and save the file



Name: Swapnil Patil

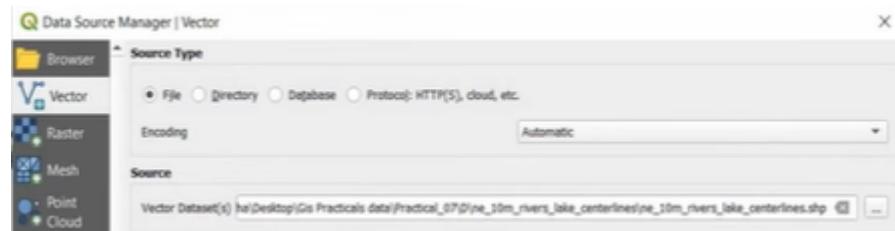
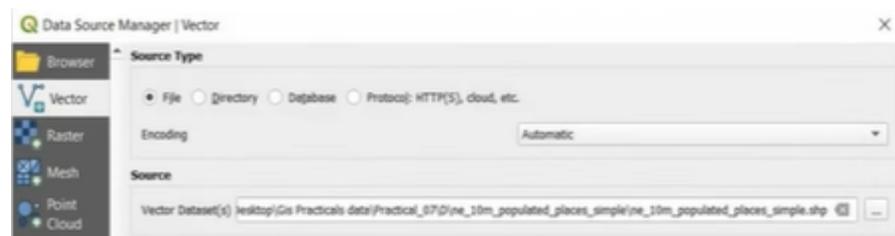
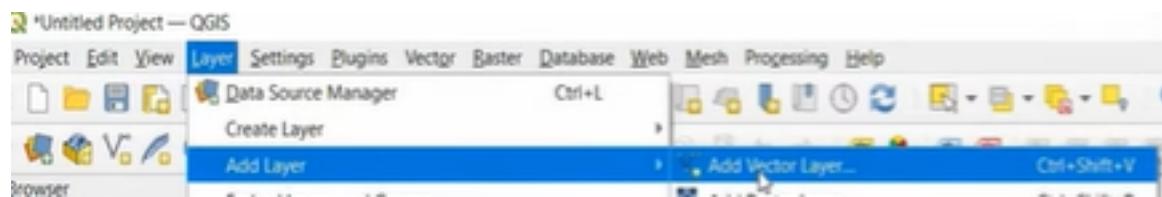
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Name: Swapnil Patil

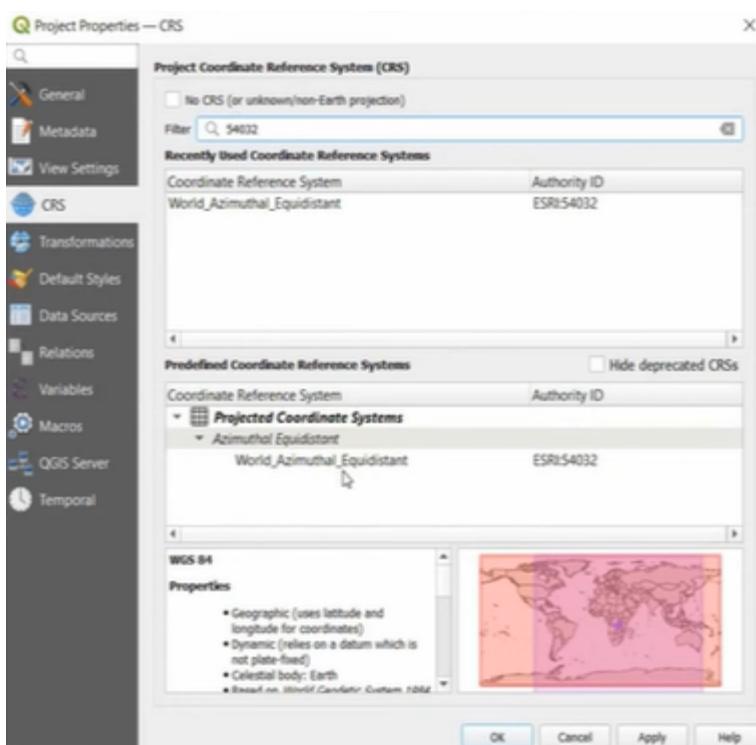
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Name: Swapnil Patil

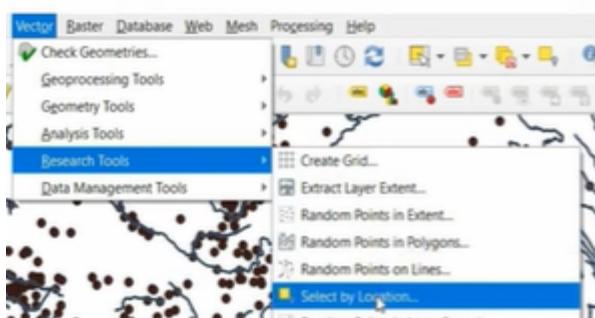
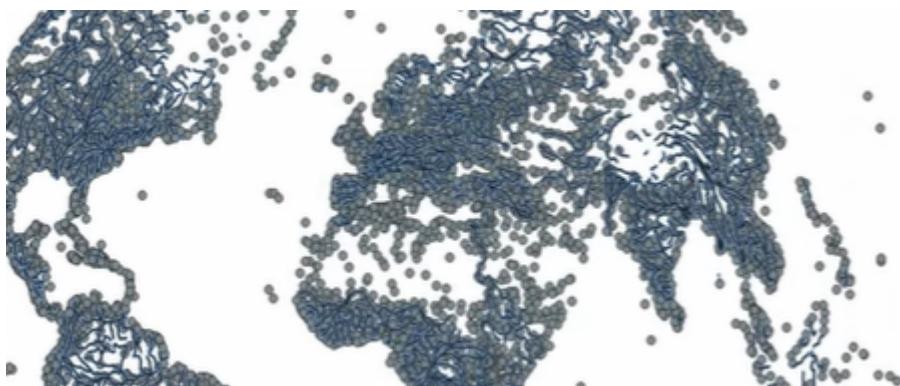
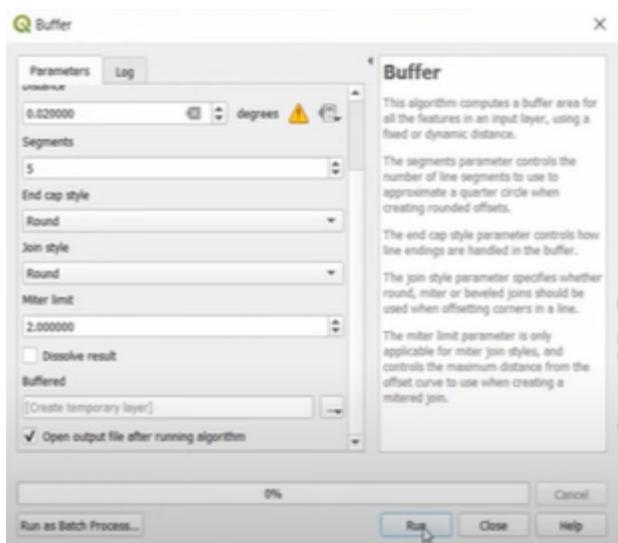
Roll No.: 22087

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Name: Swapnil Patil

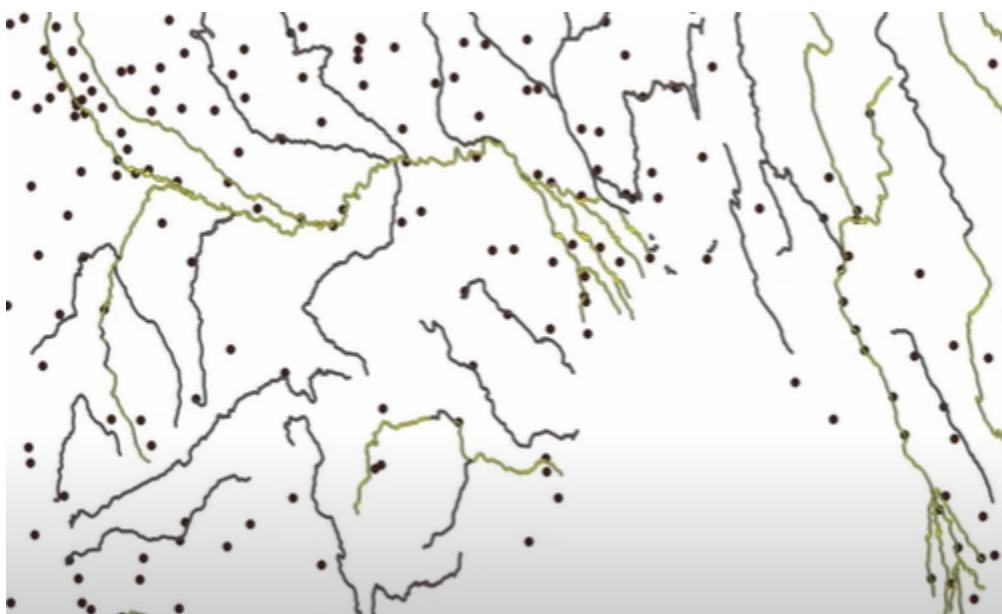
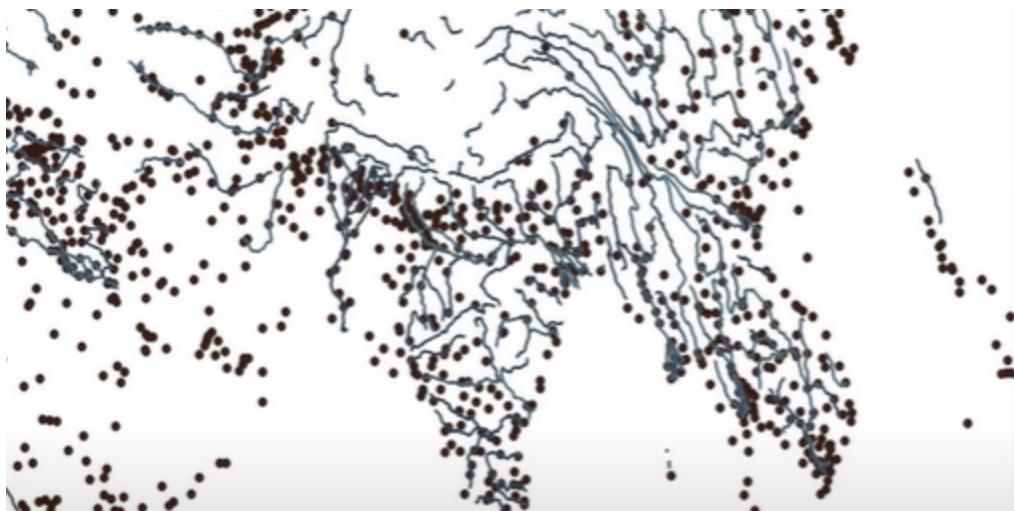
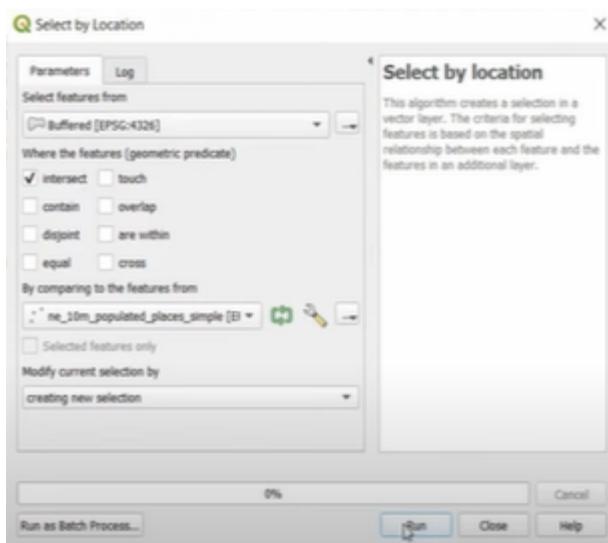
Roll No.: 22087

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GIS

Sem: VI



Name: Swapnil Patil

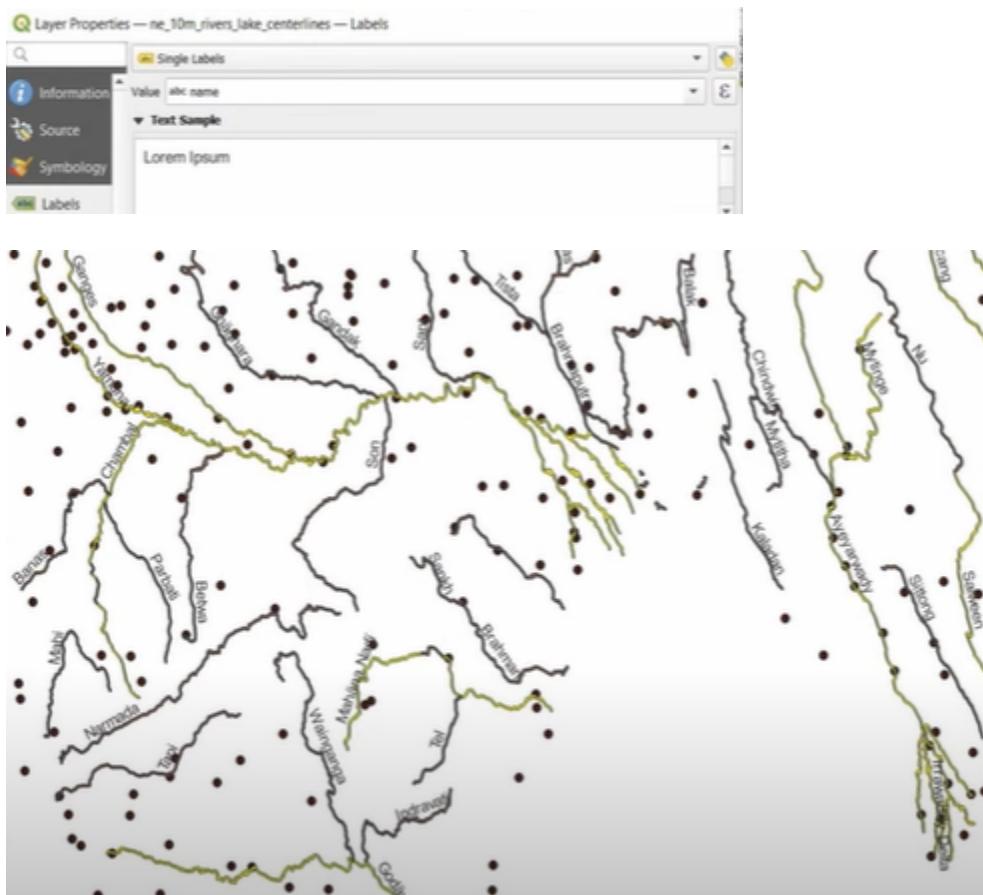
Roll No.: 22087

Class: TYBSc IT

Subject: Fundamentals of

GIS

Sem: VI



Practical 9

AIM: Advanced GIS Operations 1: Nearest Neighbor Analysis, Sampling Raster. Data using Points or Polygons, Interpolating Point Data.

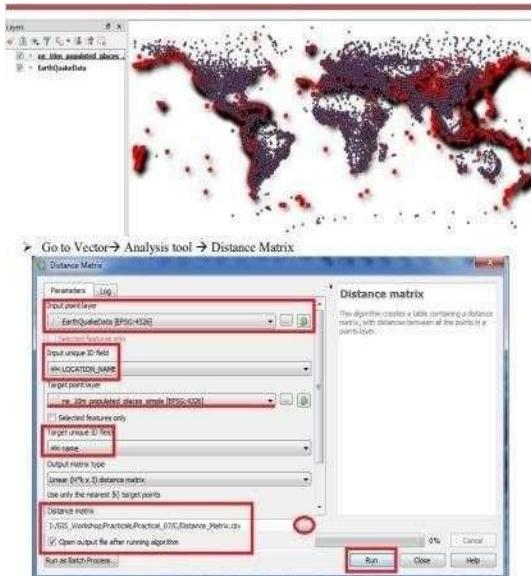
Advanced GIS Operations 1:

a)Nearest Neighbor Analysis

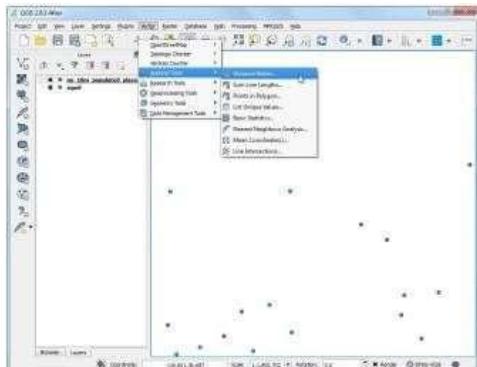
-> Go to Layer → add Layer → add Delimited Text Layer and load “signif.txt” from data file.



Go to Layer → Add Layer → Add vector Layer and from data folder “\GIS_Workshop\Practicals\Practical_08\A\DATA\ne_10m_populated_places_simple.zip” load the layer to the project and remove all rows from attribute table other than India.



→Calculate the Distance matrix and perform Nearest Neighbor Analysis .Now you will be able to see the content of our results. The InputID field contains the field name from the Earthquake layer. The TargetID field contains the name of the feature from the Populated Places layer that was the closest to the earthquake point. The Distance field is the distance between the 2 points

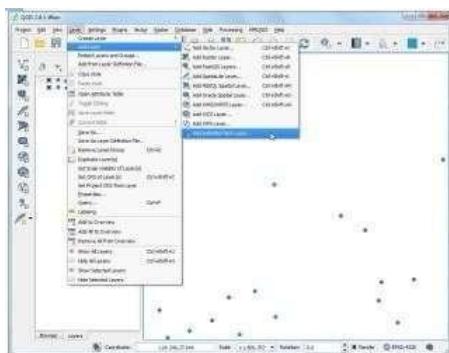


Here select the earthquake layer signif as the Input point layer and the populated places ne_10m_populated_places_simpleas the target layer. You also need to select a unique field from each of these layers which is how your results will be displayed. In this analysis, we are looking to get only 1 nearest point, so check the Use only the nearest(k) target points, and enter 1. Name your output file matrix.csv, and click OK. Once the processing finishes, click

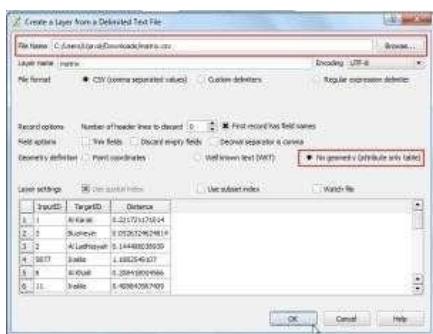
Close



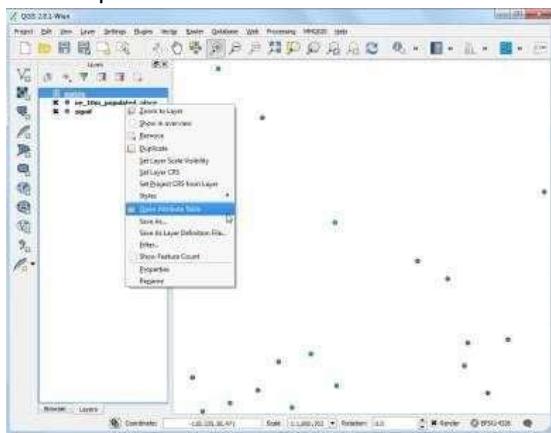
Once the processing finishes, click the Close button in the Distance Matrix dialog. You can now view the matrix.csv file in Notepad or any text editor. QGIS can import CSV files as well, so we will add it to QGIS and view it there. Go to Layer ▶ Add Layer ▶ Add Delimited Text Layer....



Browse to the newly created matrix.csv file. Since this file is just text columns, select No geometry (attribute only table) as theGeometry definition. Click OK.



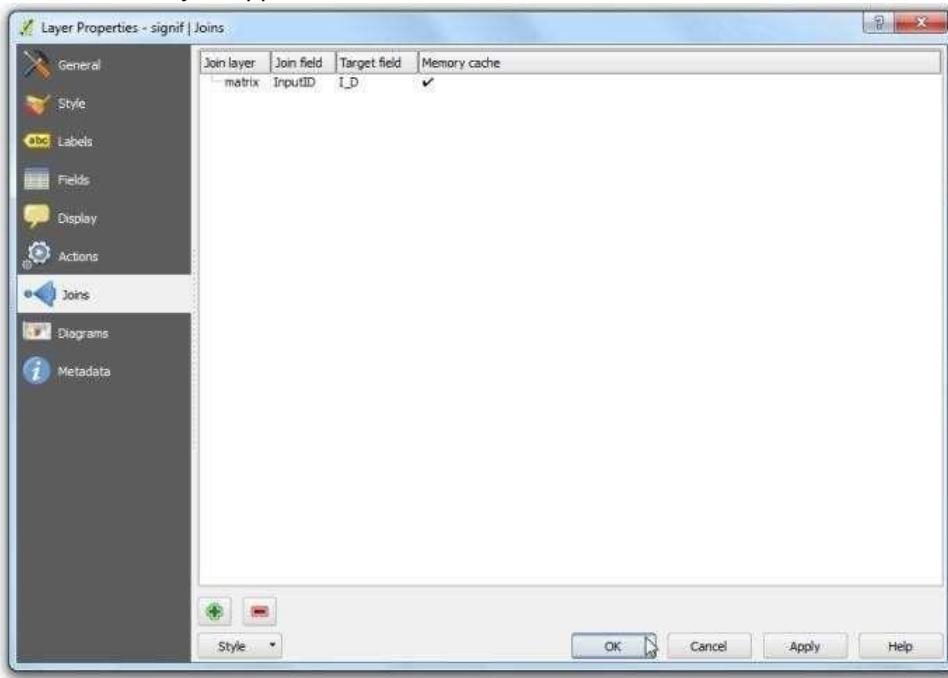
You will see the CSV file loaded as a table. Right-click on the table layer and select Open Attribute Table



Now you will be able to see the content of our results. The InputID field contains the field name from the Earthquake layer. The TargetID field contains the name of the feature from the Populated Places layer that was the closest to the earthquake point. The Distance field is the distance between the 2 points.

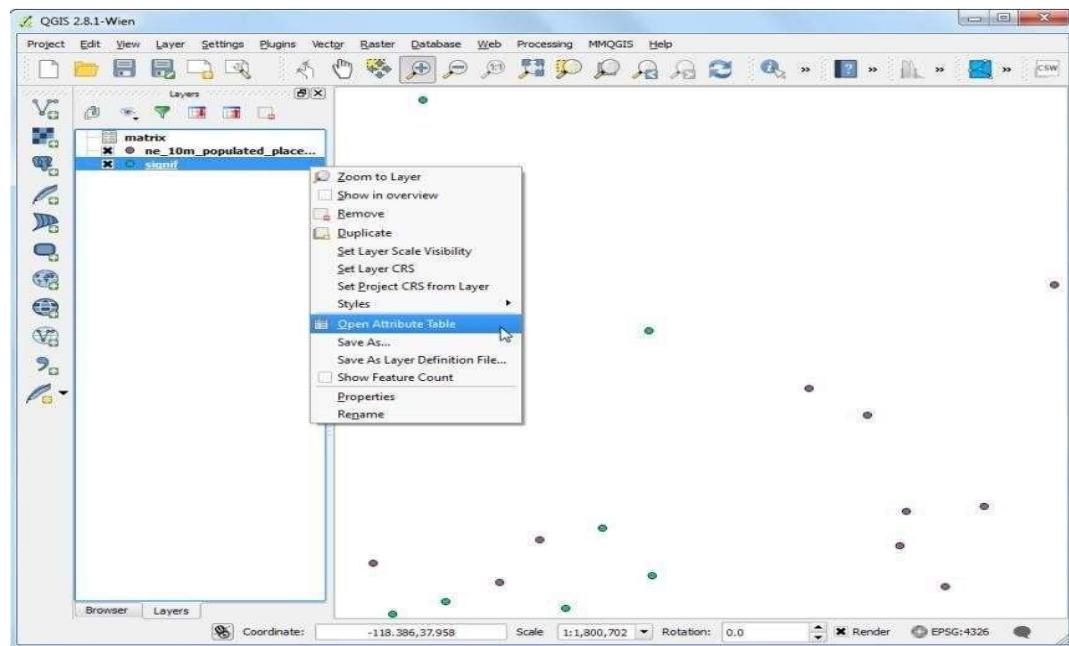
ID	SourceID	Destination
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8	8	8
9	9	9
10	10	10
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You will see the join appear in the Joins tab. Click OK.



Now open the attribute table of the signif layer by right-clicking and selecting Open Attribute Table.

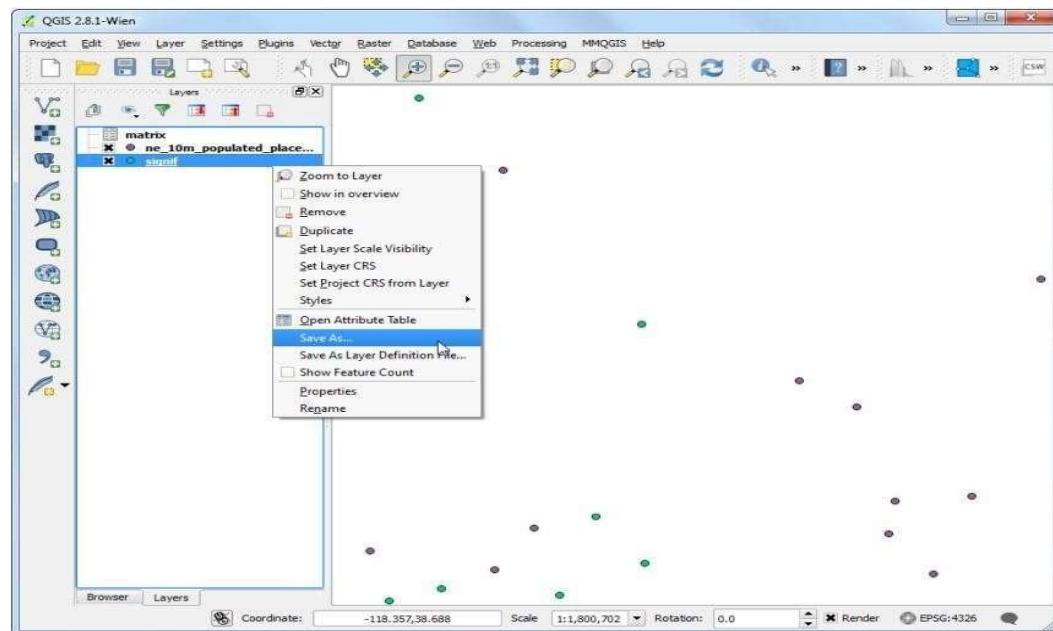
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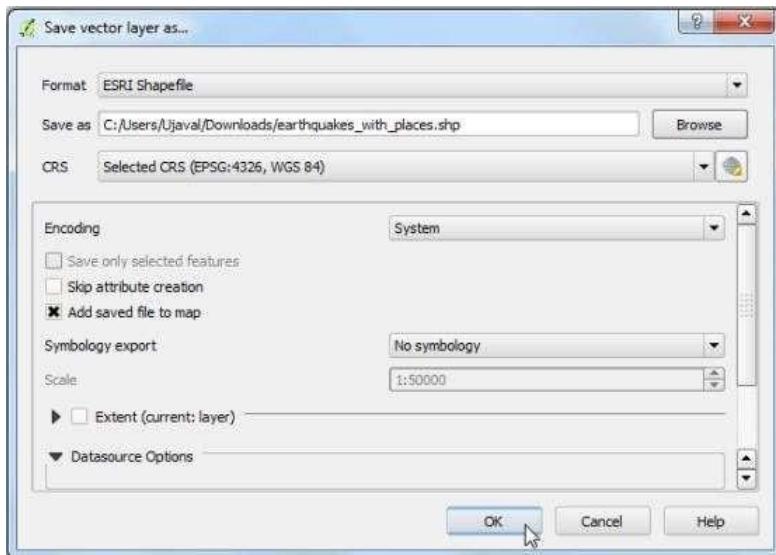
You will see that for every Earthquake feature, we now have an attribute which is the nearest neighbor (closest populated place) and the distance to the nearest neighbor

Attribute table - signif :: Features total: 5789, filtered: 5789, selected: 0						
	_HOUSES_DESTROYED	ES_DESTROYED_DIST	AL_HOUSES_DAMAGE	ES_DAMAGED_DIST	matrix_TargetID	matrix_Distance
5139	NULL	NULL	3100	4	Dulan	2.01739872078
3345	NULL	NULL	2800	4	Yogyakarta	1.76045290364
5721	600	3	55000	4	Lijiang	1.68697672541
5464	331	3	5613	4	Aksu	1.63416691989
3225	326	3	2200	4	Yogyakarta	1.62947269236
5668	NULL	NULL	30000	4	Shihezi	1.58756245594
3924	500	3	1951	4	Hios	1.5457604489
5590	127511	4	273796	4	Sendai	1.35225172867
4877	3600	4	18771	4	Shache	1.23735810418
3897	2000	4	5000	4	Jember	1.18334084967
4647	NULL	3	2000	4	Feyzabad	1.14744856695
4841	100	2	5000	4	Birjand	1.08829070683
5575	NULL	3	1800	4	Bam	1.07386335966
1798	20000	4	15000	4	Tokushima	1.06587936484
4919	NULL	NULL	2800	4	Serang	0.945435509316
5042	650	3	1350	4	Bandar-e Bushehr	0.929327026627
3369	29205	4	46950	4	Tsu	0.924368786383
5454	30	1	5400	4	Namtu	0.902227067915
5455	30	1	5400	4	Namtu	0.902227067915

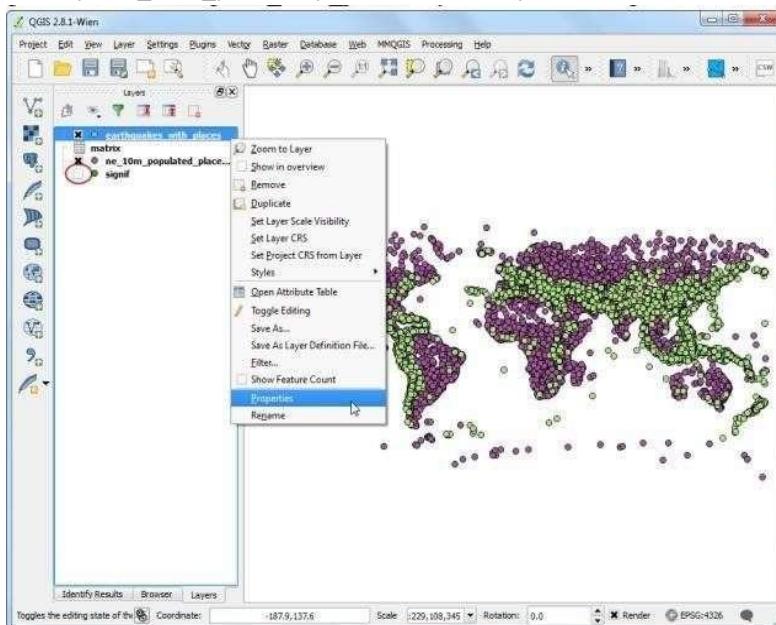
We will now explore a way to visualize these results. First, we need to make the table join permanent by saving it to a new layer. Right-click the signif layer and select Save As....



Click the Browse button next to Save as label and name the output layer as earthquake_with_places.shp. Make sure the Add saved file to map box is checked and click OK

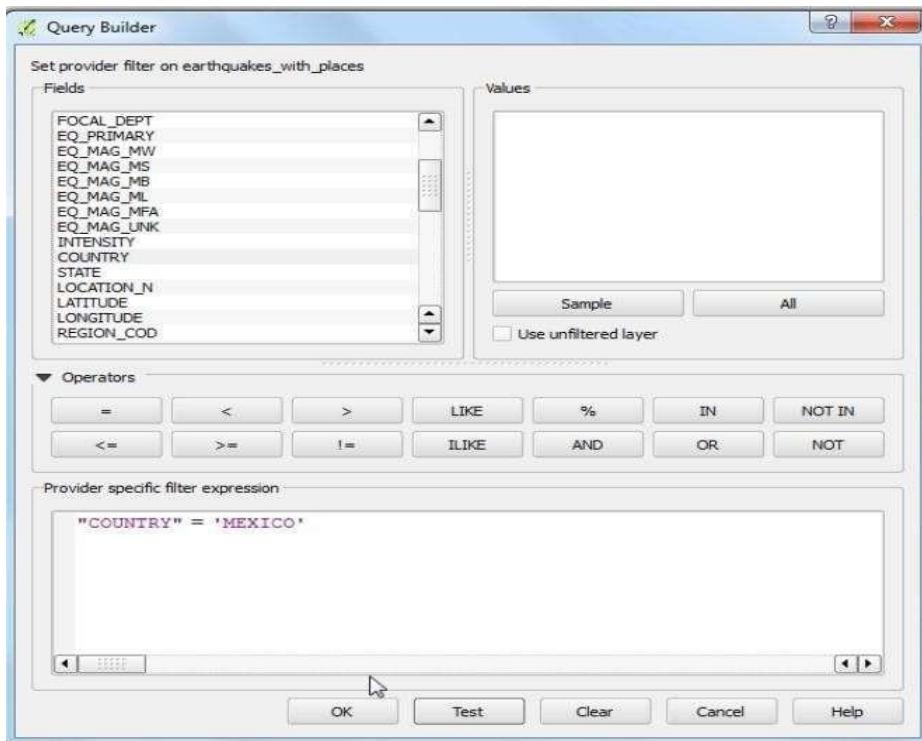


Once the new layer is loaded, you can turn off the visibility of the signif layer. As our dataset is quite large, we can run our visualization analysis on a subset of the data. QGIS has a neat feature where you can load a subset of features from a layer without having to export it to a new layer. Right-click the earthquake_with_places layer and select Properties.

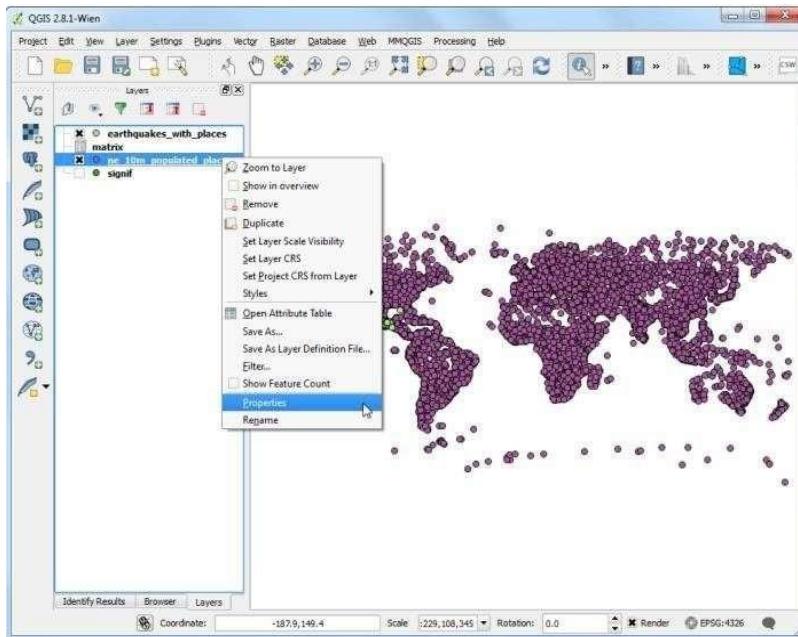


In the General tab, scroll down to the Feature subset section. Click Query Builder

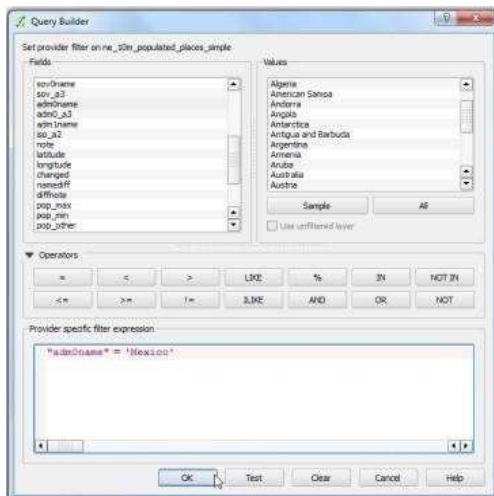
For this tutorial, we will visualize the earthquakes and their nearest populated places for Mexico. Enter the following expression in the Query Builder dialog.



You will see that only the points falling within Mexico will be visible in the canvas. Let's do the same for the populated places layer. Right-click on the ne_10m_populated_places_simple layer and select Properties.

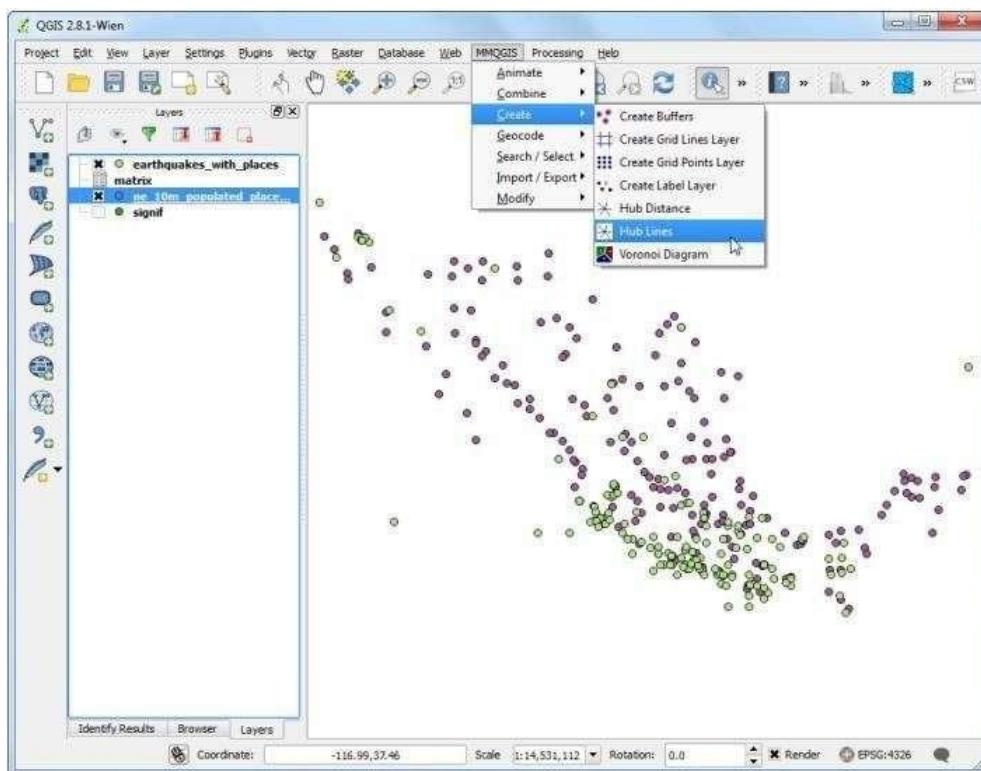


Open the Query Builder dialog from the General tab. Enter the following expression.

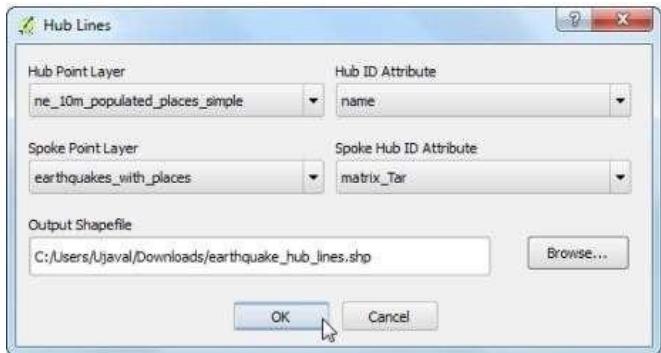


Now we are ready to create our visualization. We will use a plugin named MMQGIS. Find and install the plugin. See Using Plugins for more details on how to work with plugins. Once you have the plugin installed, go to MMQGIS

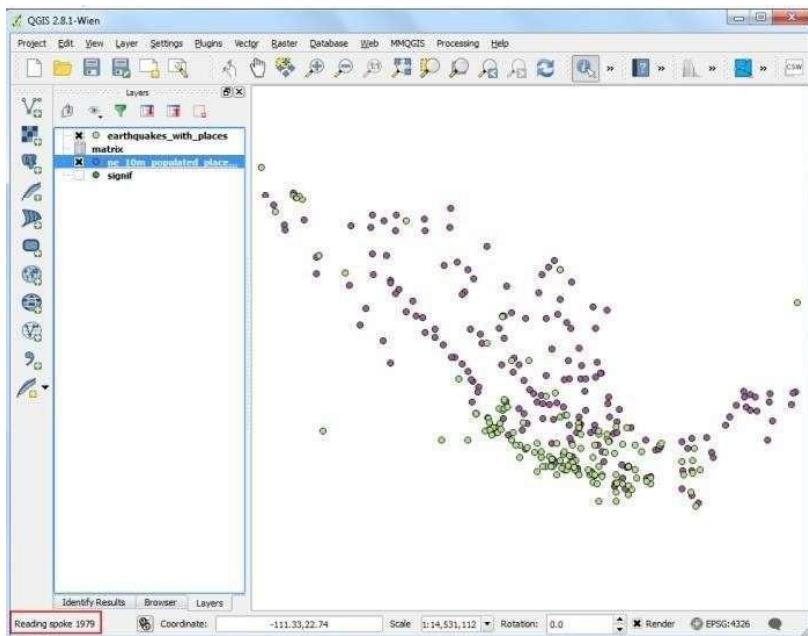
►Create ►Hub Lines.



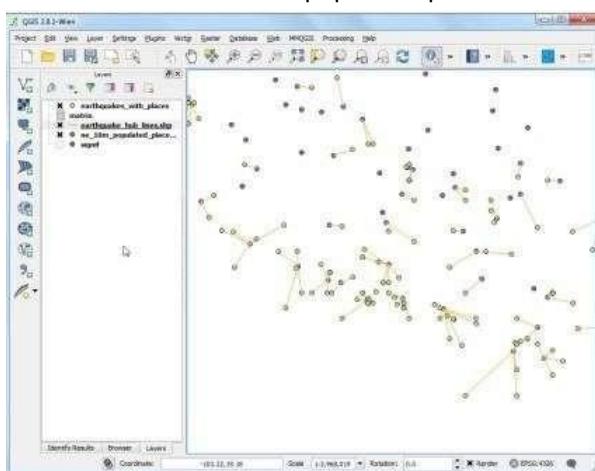
Select `ne_10m_populated_places_simple` as the Hub Point Layer and name as the Hub ID Attribute. Similarly, select `earthquake_with_places` as the Spoke Point Layer and `matrix_Tar` as the Spoke Hub ID Attribute.



The processing may take a few minutes. You can see the progress on the bottom-left corner of the QGIS window.



Once the processing is done, you will see the "earthquake_hub_lines" layer loaded in QGIS. You can see that each earthquake point now has a line that connects it to the nearest populated place.

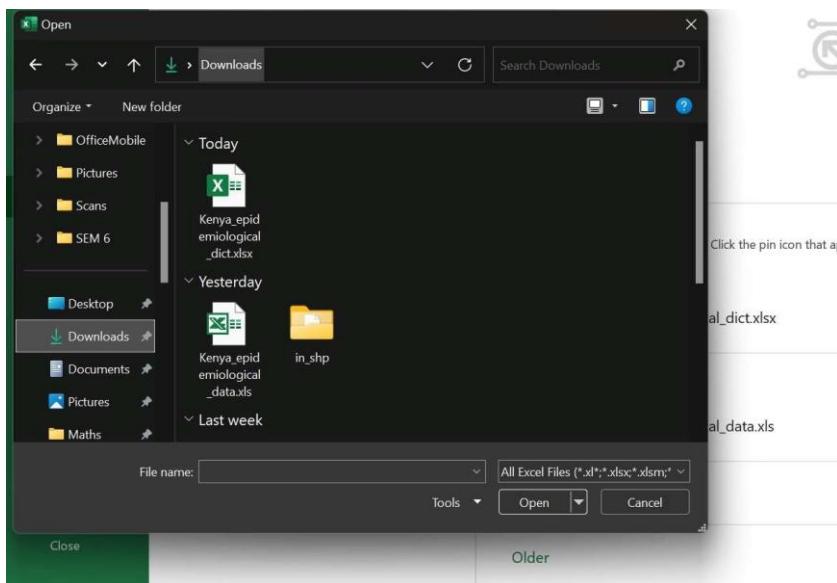


Practical 10

Aim: Validating Map data.

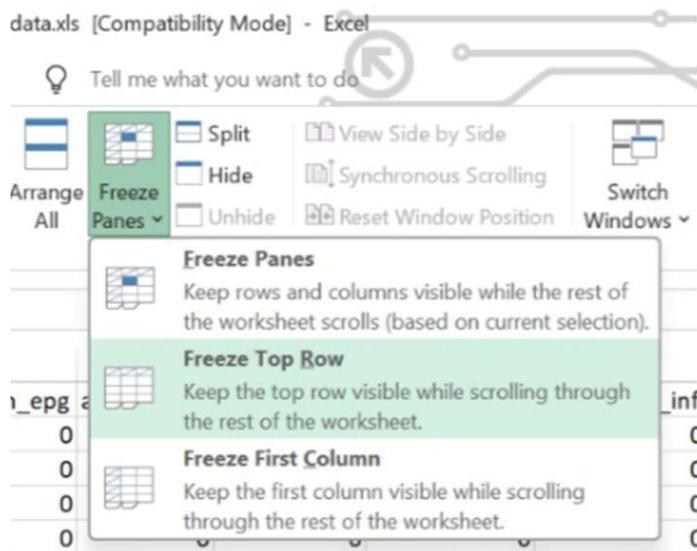
Steps:

Step1: Open MS Excel and open the following file



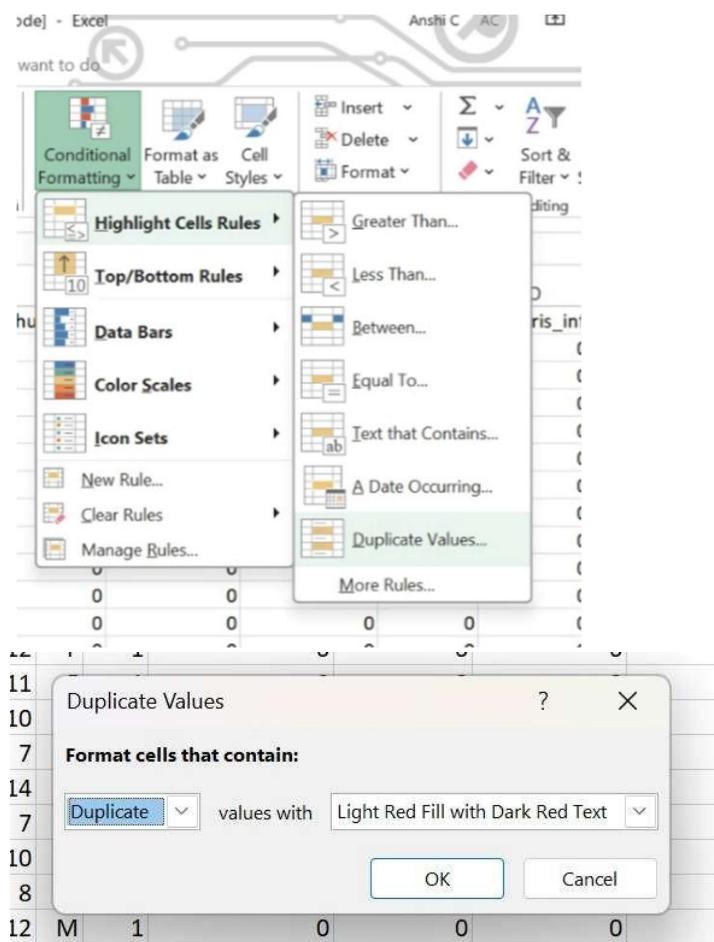
Open both the files – take that from the google drive link mentioned above

Step 2: View > Freeze Panes > Freeze Top Row

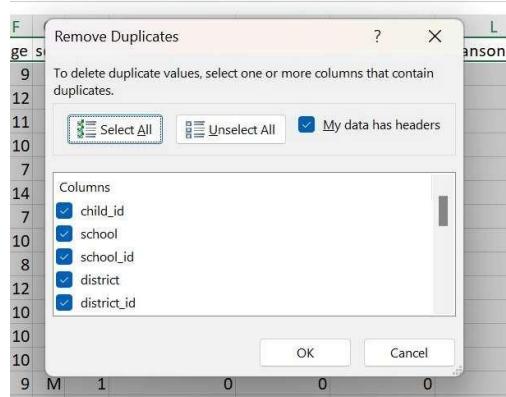


Step3: do as mentioned in the image.

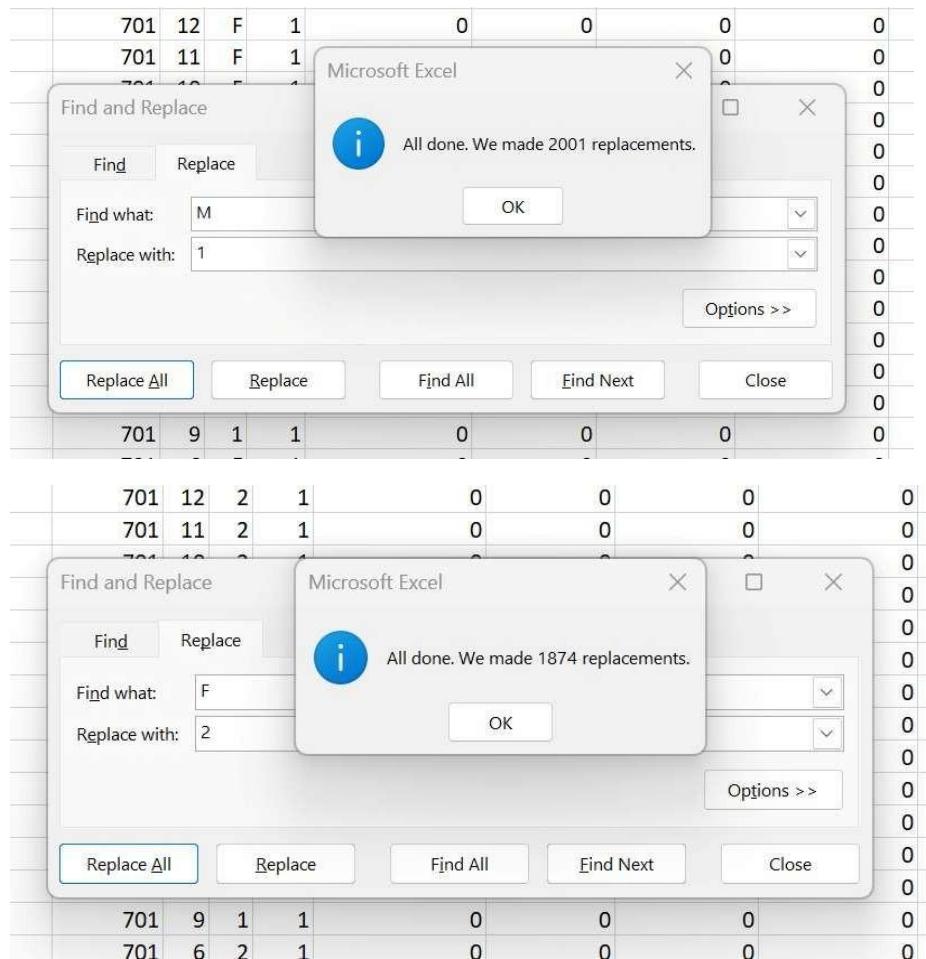
Step4:



Step 5: Select the entire data. Data > Remove Duplicates.

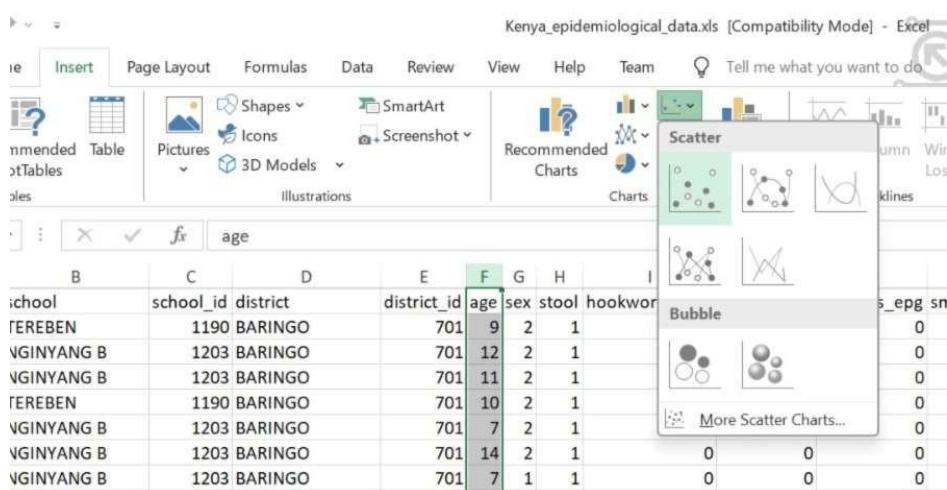


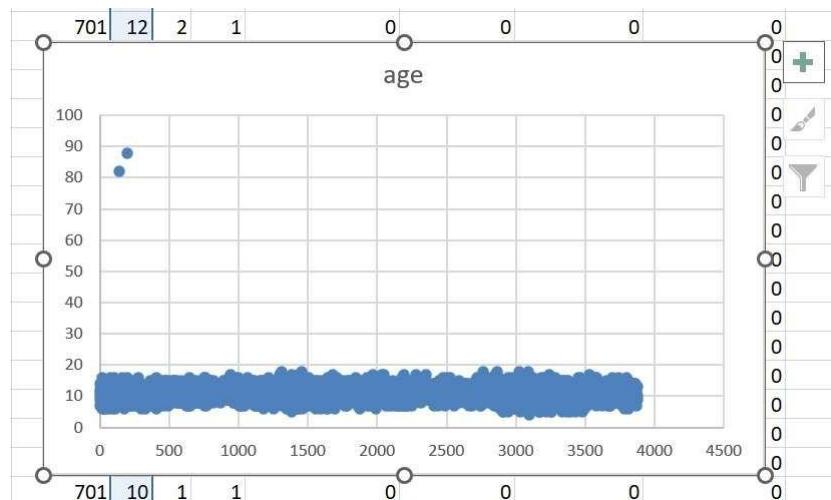
Step6: Select the G column and press ctrl + F.



701	12	F	1	0	0	0	0
701	11	F	1	0	0	0	0
701	10	F	1	0	0	0	0
701	9	1	1	0	0	0	0
701	12	2	1	0	0	0	0
701	11	2	1	0	0	0	0
701	10	2	1	0	0	0	0
701	9	1	1	0	0	0	0
701	6	2	1	0	0	0	0

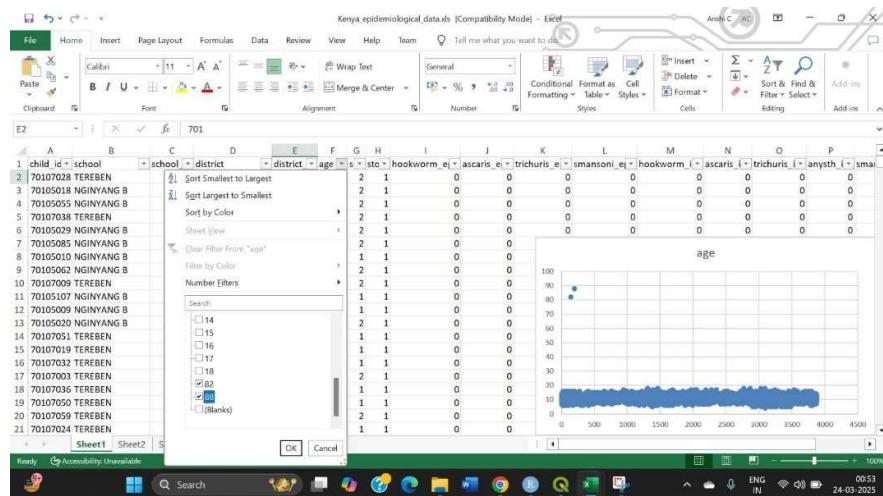
Step 7: Select the F column. Insert > Scatter.





Step 8: Select the first row. Home > Sort & Filter > Filter

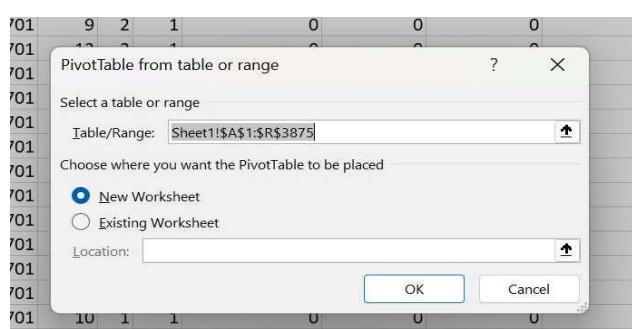
Step 9: Click the arrow beside age. Only select 82 and 88 and then click OK.

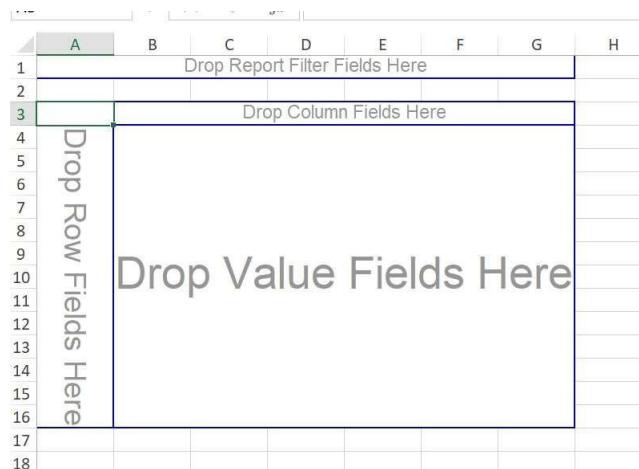


Step 10: Select both the rows and click delete.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	child_id	- school	- district	- district	- age	- s	- sta	- hookworm_e	- ascaris_e	- trichuris_e	- smanson_i	- hookworm_i	- ascaris_i	- trichuris_i	- anysth_i
2	70107038 TEREBEN				2	1	0	0	0	0	0	0	0	0	0
3	70105018 NGINYANG B				2	1	0	0	0	0	0	0	0	0	0
4	70105052 NGINYANG B				2	1	0	0	0	0	0	0	0	0	0
5	70107038 TEREBEN				2	1	0	0	0	0	0	0	0	0	0
6	70105029 NGINYANG B				2	1	0	0	0	0	0	0	0	0	0
7	70105085 NGINYANG B				2	1	0	0	0	0	0	0	0	0	0
8	70105010 NGINYANG B				2	1	0	0	0	0	0	0	0	0	0
9	70105062 NGINYANG B				2	1	0	0	0	0	0	0	0	0	0
10	70107009 TEREBEN				2	1	0	0	0	0	0	0	0	0	0
11	70105107 NGINYANG B				2	1	0	0	0	0	0	0	0	0	0
12	70105009 NGINYANG B				2	1	0	0	0	0	0	0	0	0	0
13	70105020 NGINYANG B				2	1	0	0	0	0	0	0	0	0	0
14	70107051 TEREBEN				2	1	0	0	0	0	0	0	0	0	0
15	70107019 TEREBEN				2	1	0	0	0	0	0	0	0	0	0
16	70107032 TEREBEN				2	1	0	0	0	0	0	0	0	0	0
17	70107003 TEREBEN				2	1	0	0	0	0	0	0	0	0	0
18	70107036 TEREBEN				2	1	0	0	0	0	0	0	0	0	0
19	70107050 TEREBEN				2	1	0	0	0	0	0	0	0	0	0
20	70107059 TEREBEN				2	1	0	0	0	0	0	0	0	0	0
21	70107024 TEREBEN				2	1	0	0	0	0	0	0	0	0	0

Step 11: Insert > Pivot Table. Set the following attributes and click OK.





Step12: Drag and Drop fields as shown below

A screenshot of Microsoft Excel showing a PivotTable setup. The PivotTable Fields pane on the right shows fields being mapped: 'child_id' is in the Rows area, 'district' is in the Values area, and 'age' is in the Columns area. The main table on the left shows data for child_ids 60904001 to 60904017 across age groups 4 to 18. The table has columns for child_id, age, and district.

Step 13: Select T2, type the following function and click enter

=IF(AND(H2=0,NOT(P2="")),1,0)

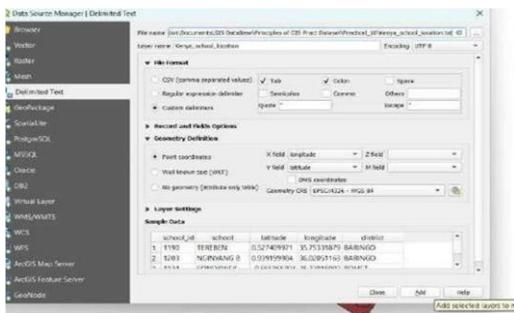
Step 14: Open a new project in QGIS Desktop. Add the following vector layer

Pick the file > see the map > click on panel>"OSM Place Search">Add the delimited layer

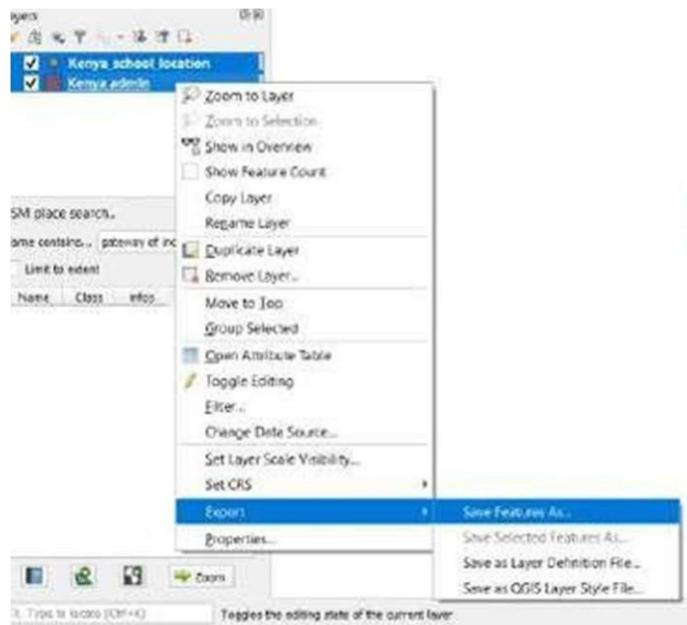
Name:Suraj Vishwakarma
Class:TYBSCIT

Subject: Fundamentals of GIS

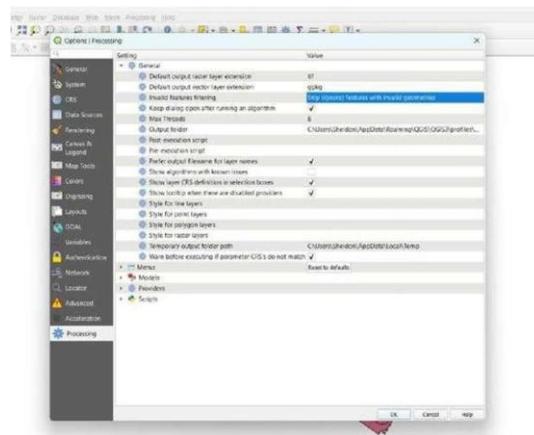
Roll No: IT22096
Date of Performance :



Select both the layers and right click. Export > save features as. Set the following parameters and click OK.



Settings > Option. Set the following parameters and then click OK.



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Date of Performance :

Vector > Data Management Tools > Join Attributes by Location. Set the following attributes and hit run.

And final output will look like this:

