

# Practical Assinment:2

**Aim:** To creat a map of your surrounding area using Raster layer (DIVA-GIS  
Administrative areas (boundaries))

- Add data (labels) on map in qgis
- Creat a raster layers.
- Add data using text annotation functionality
- Export the image with map and data

## Theory:

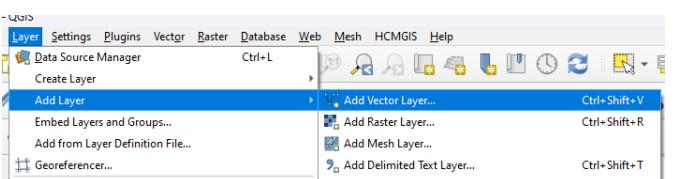
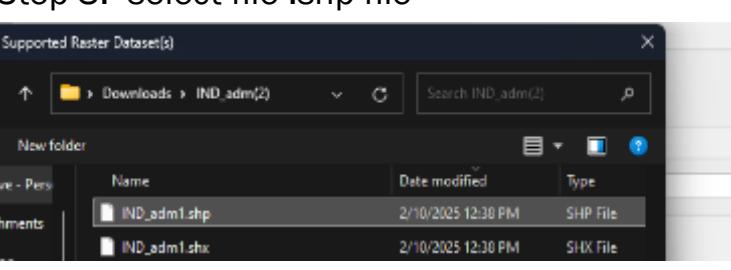
### Introduction to study area mapping:

A study area map is a visual representation of a geographic region or area that is under investigation. It shows the boundaries, key features, and relevant data associated with the area of interest. These maps allow researchers, planners, and decision-makers to better understand the spatial characteristics of the area and can clearly and concisely present stakeholders with the findings.

### DIVA-GIS :-

DIVA-GIS is a free Geographical information system software program used for the analysis of geographic data, especially species occurrence data. The software was first designed for application to the study of the distribution of plants, especially crop wild relatives such as wild potatoes.

## Result

<p><b>Step 1:- Open qgis</b></p> 	<p><b>Step 2:- Add vector layer</b></p> 
<p><b>Step 3:- select file .shp file</b></p> 	<p><b>Step 4:- Add the shp file</b></p> 

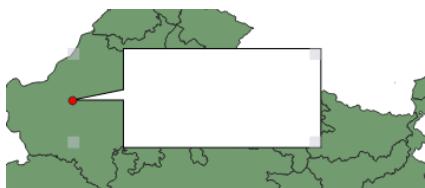
Step 5:- open the map in QGIS



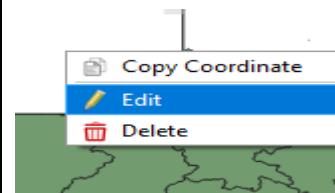
Step 6:- click on text icon to add the text



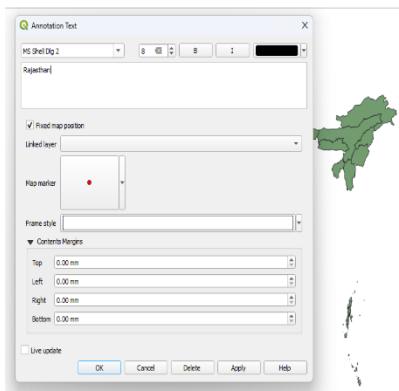
Step 7:- select the state to add name of state



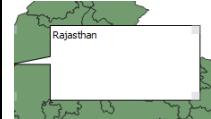
Step 8:- click the write an select the edit option



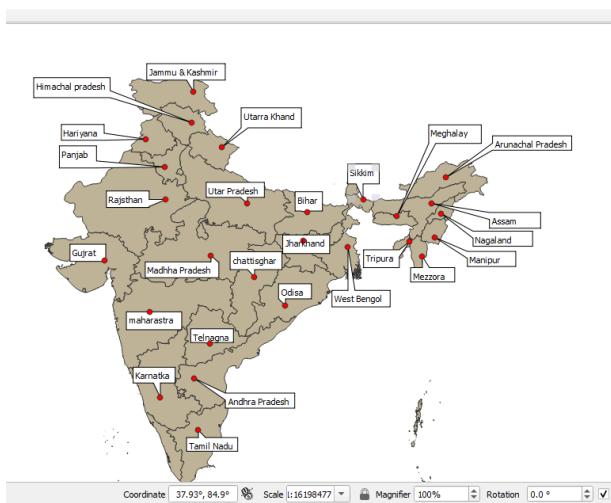
Step 9:- give name to the state



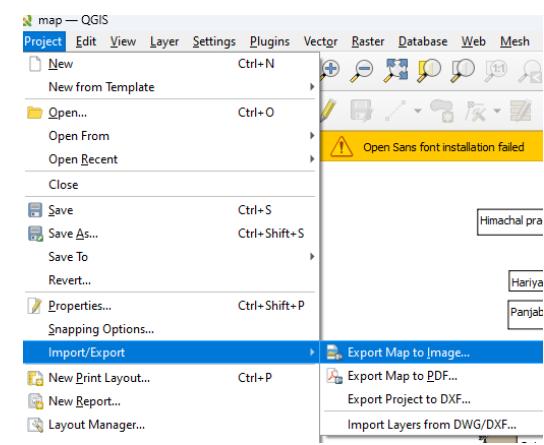
Step 10:- give the name



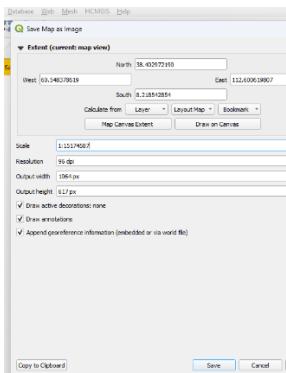
Step 11:- after give name to all states



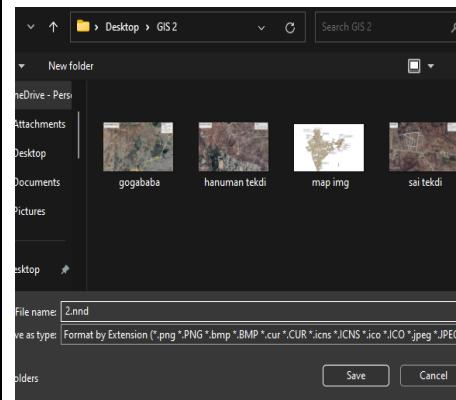
Step 12:- select projection map and select export image



**Step 13:- export map to image and save it**



**Step 14:- save it**



**Step 15:- finally export map to the image**



## Assignment 3

**Aim:** To Create a study area map layout using DIVA-GIS Administrative area (boundaries)

- Import and display administrative boundaries (shapefile) in DIVA-GIS.
- Add a north arrow to the map layout.
- Add legend in the map layout.

### Theory:

DIVA-GIS is a free geographic information system (GIS) software that allows users to visualize and analyze spatial data. It is particularly useful for ecological and environmental studies, as well as for mapping administrative boundaries.

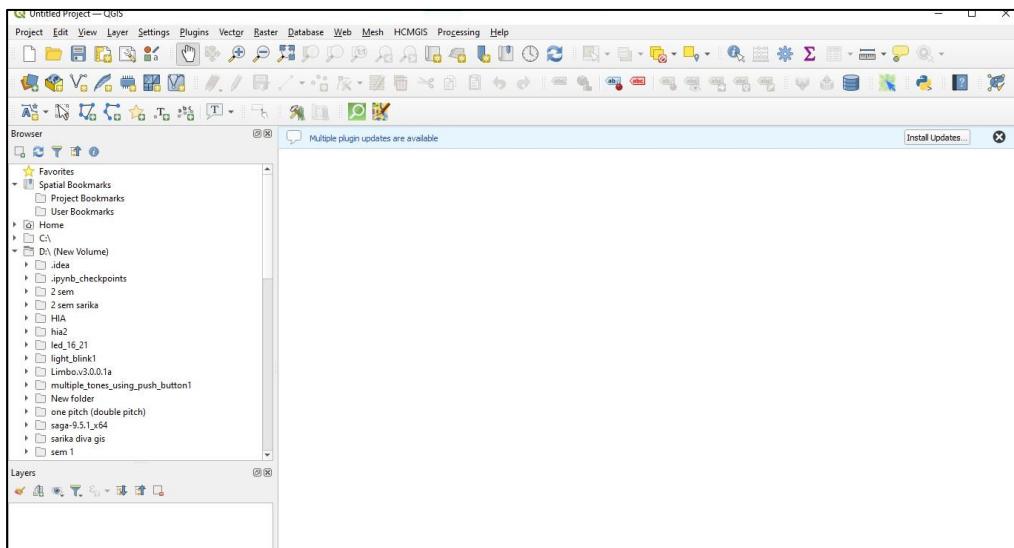
### Map layout component:

1. **Administrative Boundaries:** These are the lines that define the limits of different administrative regions (e.g., countries, states, municipalities). They are typically represented as shape files (.shp) in GIS.
2. **North arrow:** A north arrow is a graphical element that indicates the orientation of the map. It helps the viewer understand the direction of north relative to the map.
3. **Legend:** A legend explains the symbols and colors used on the map. It is essential for interpreting the map correctly, especially when multiple features or categories are represented.

**Step 1:** Open QGIS application.



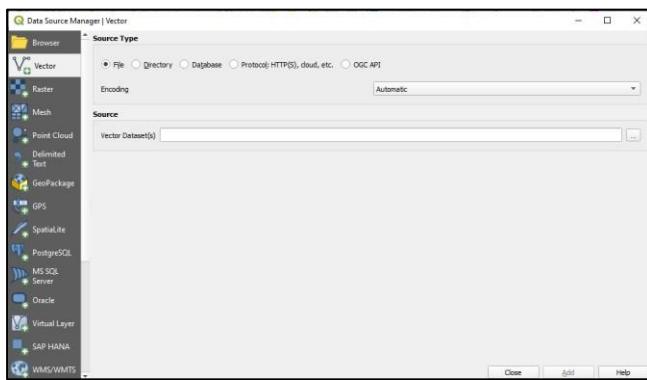
**Step 2:** Click on New Empty Project



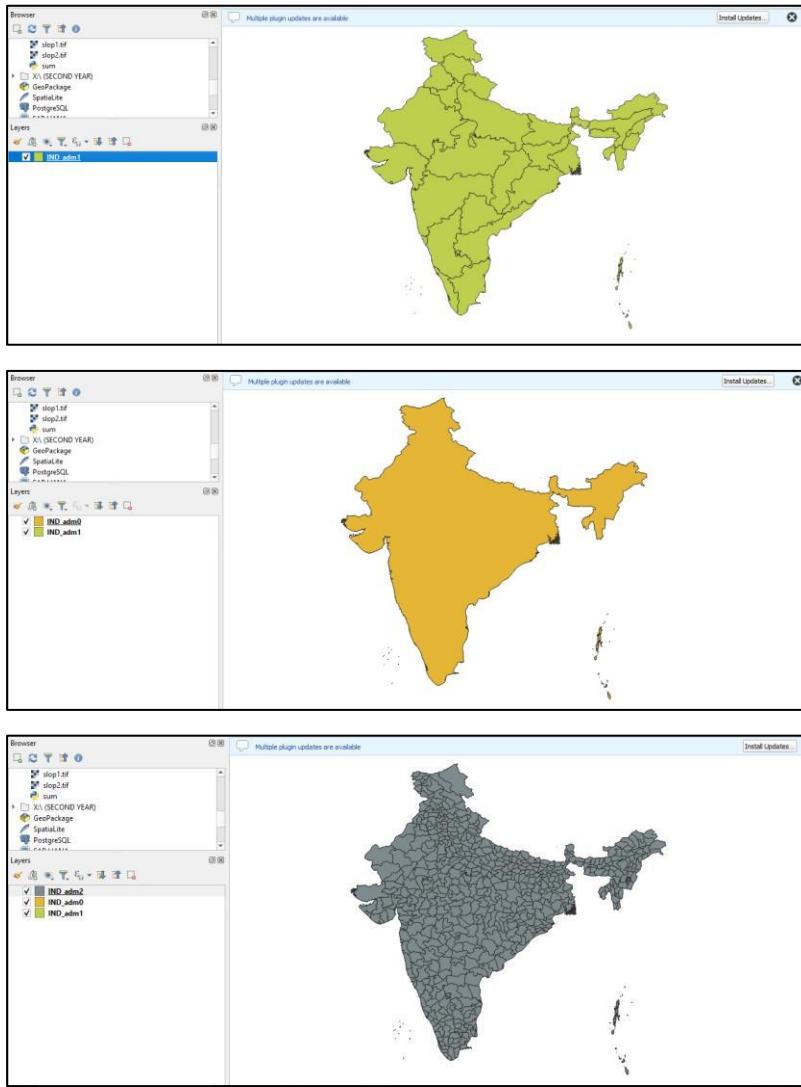
**Step 3:** Then click on Layers then Add Layers and Add Vector Layer.



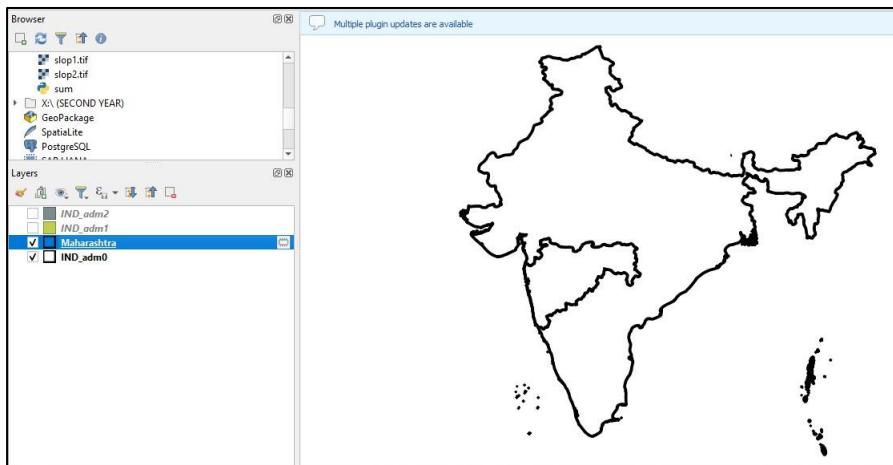
**Step:4** Click on Browse and select required file which is Shapefiles and click on Ok and Add.



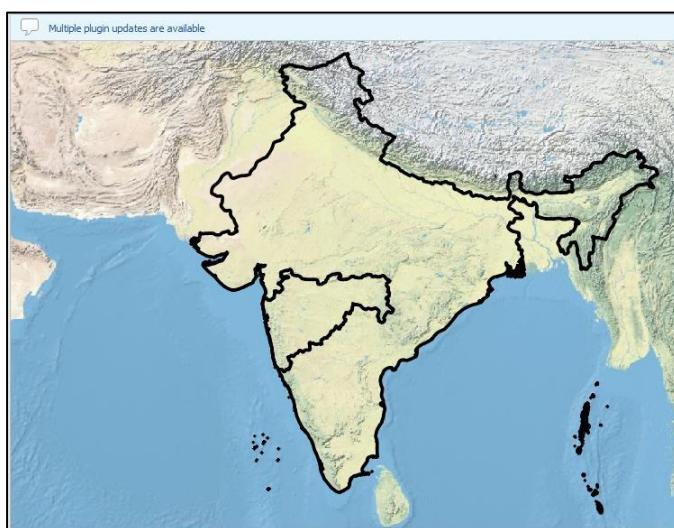
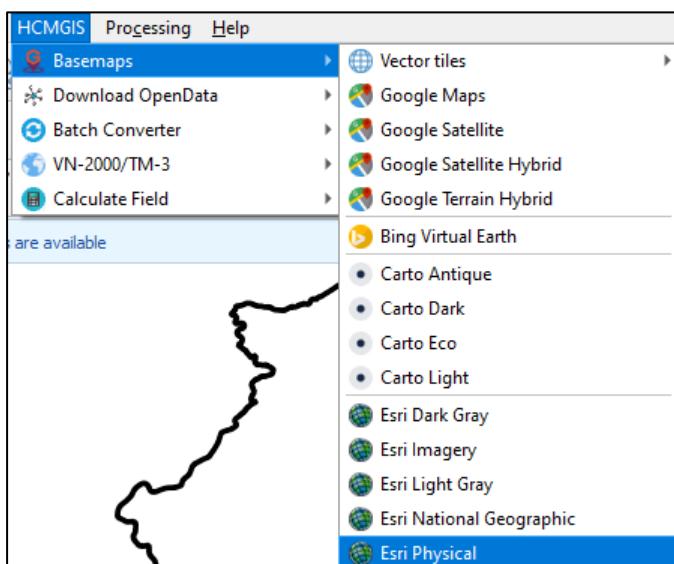
**Step:5** Three layer is added on Layers panel.



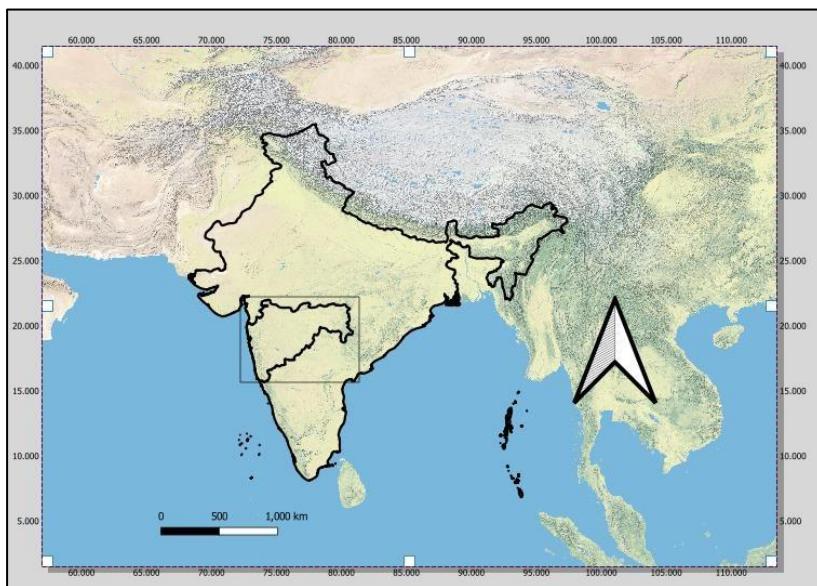
**Step:6** In the layer which contains state borders, use [OSMInfo](#) plugin to separate out Maharashtra and apply symbology.



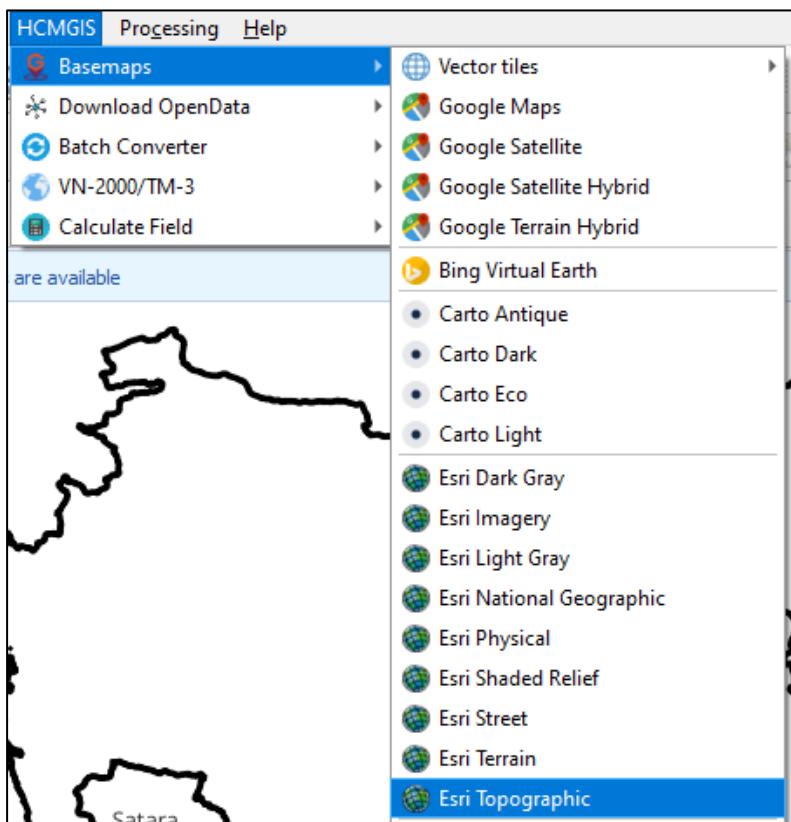
**Step:7** Then Click on [HCMGIS](#) then [Basemaps](#) then [Esri Physical](#).

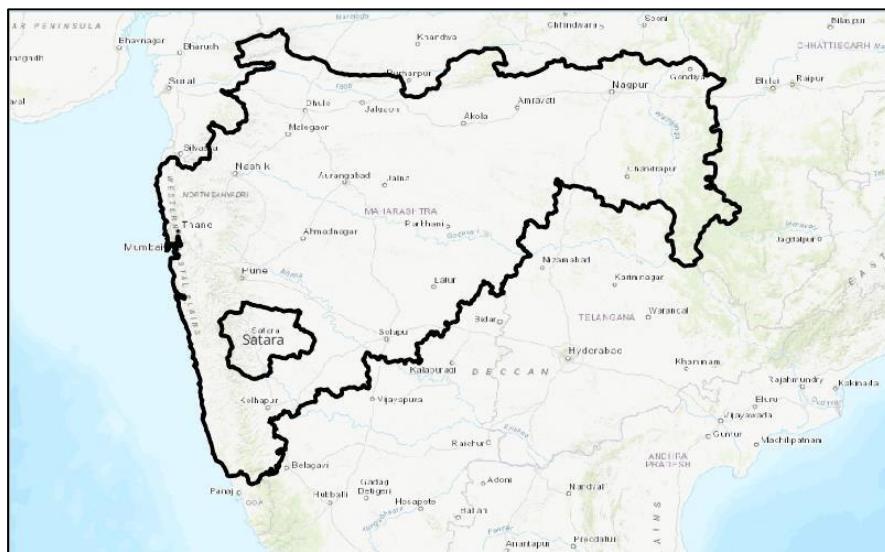


**Step:8** Add the map and Go to Item properties then go to Grid and Check the Draw Coordinates option and Scale Bar and North Arrow.

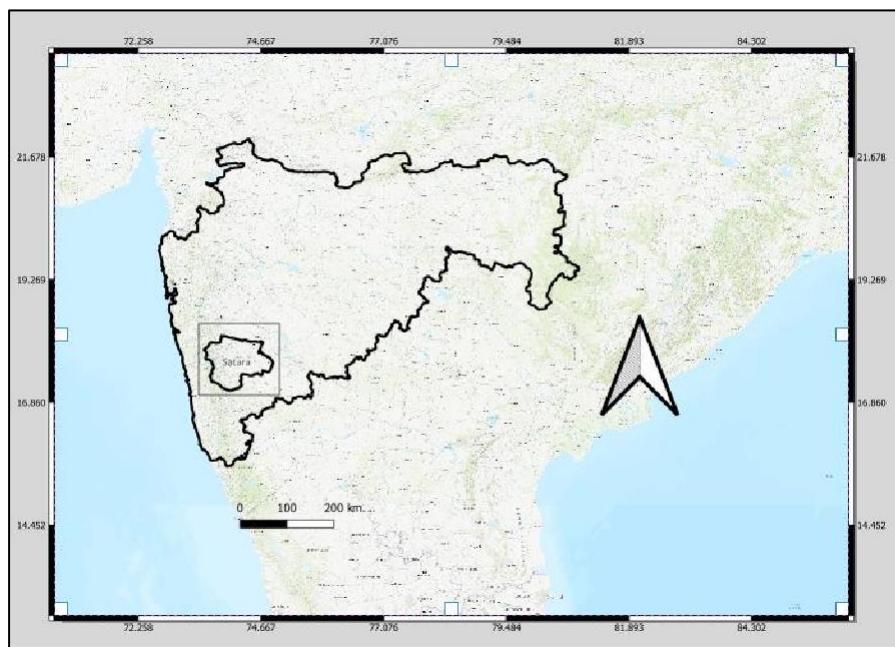


Step:9 Then Click on HCMGIS then Basemaps then Esri Topographic

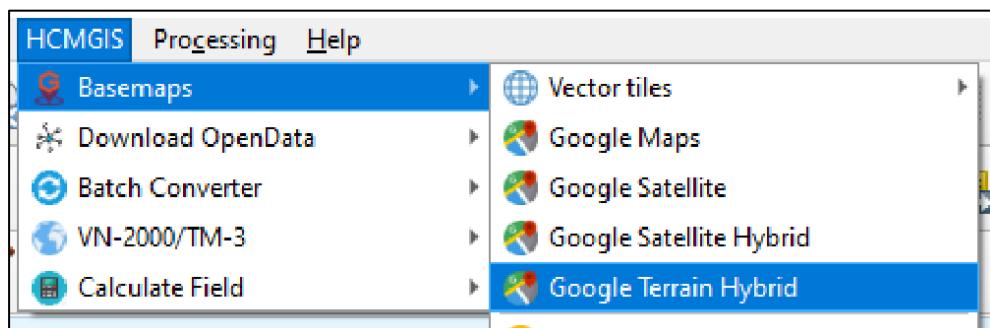


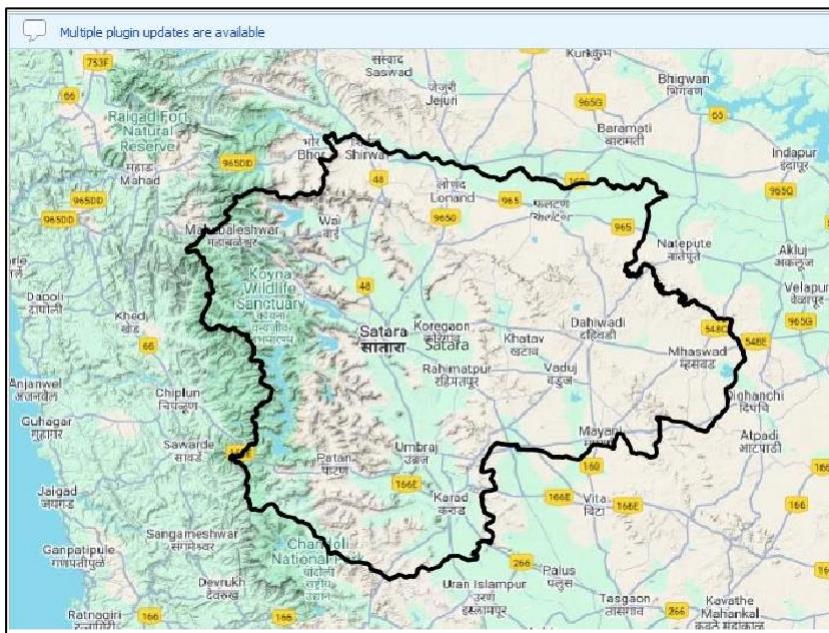


**Step:10** : Add the map and Go to Item properties then go to Grid and Check the Draw Coordinates option and Scale Bar and North Arrow

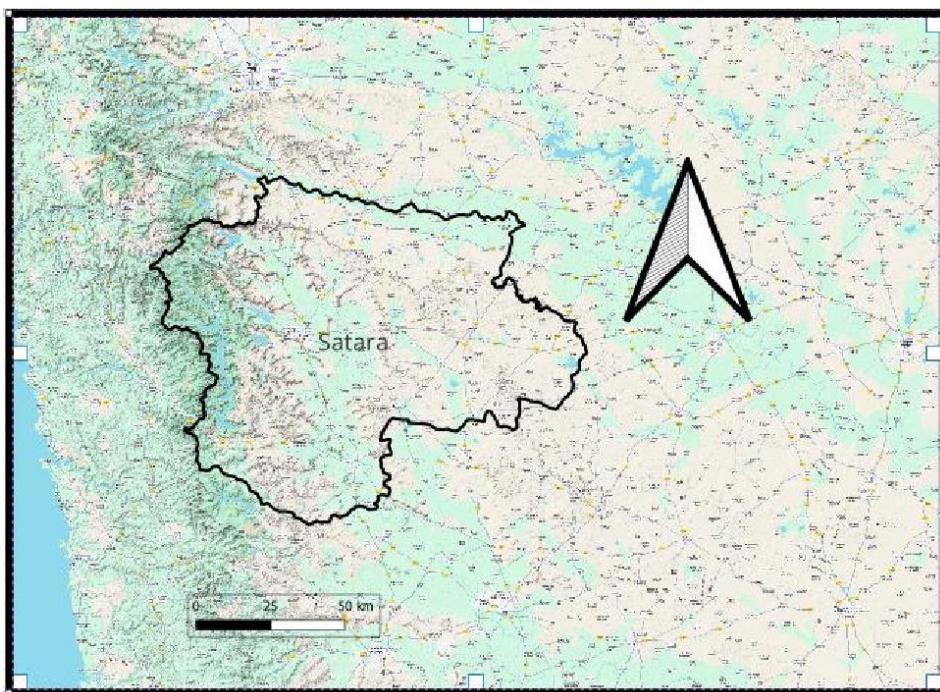


**Step:11** Then Click on HCMGIS then Basemaps then Google Terrain Hybrid.

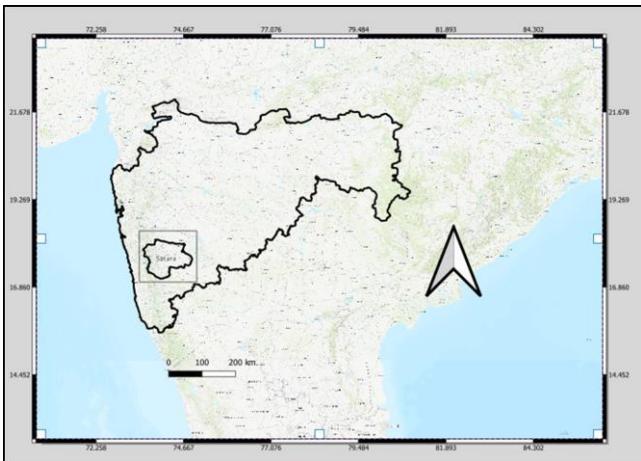
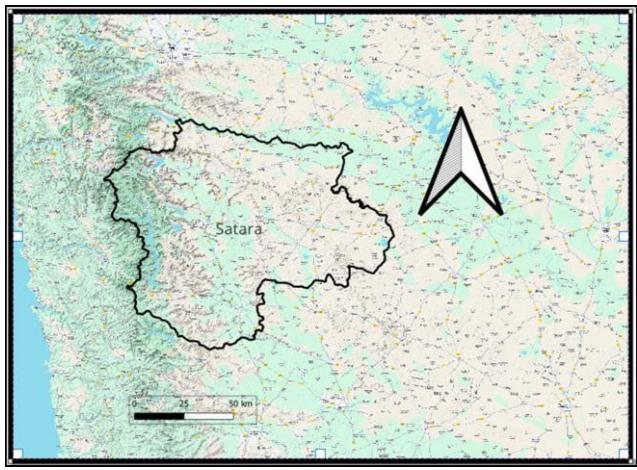
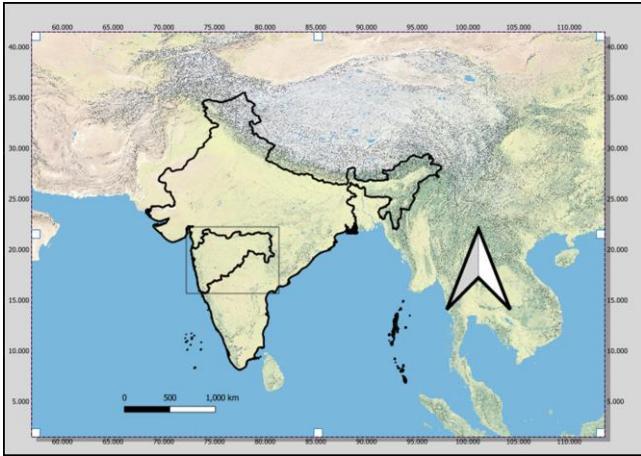




**Step:12** Add the map and Go to Item properties then go to Grid and Check the Draw Coordinates



option and Scale Bar and North Arrow.



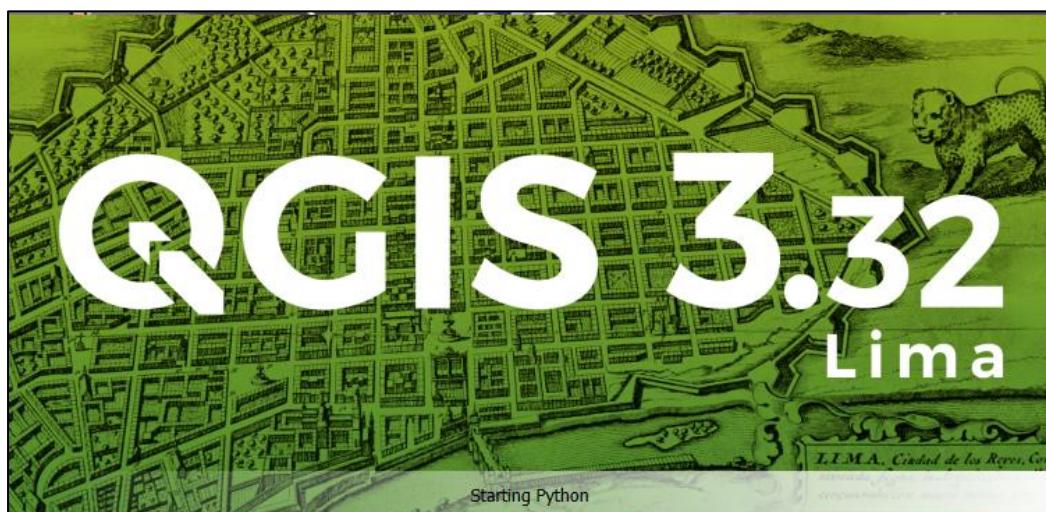
## Assignment 8

Aim : To digitize ( Vectorization ) a Map / Toposheet using.

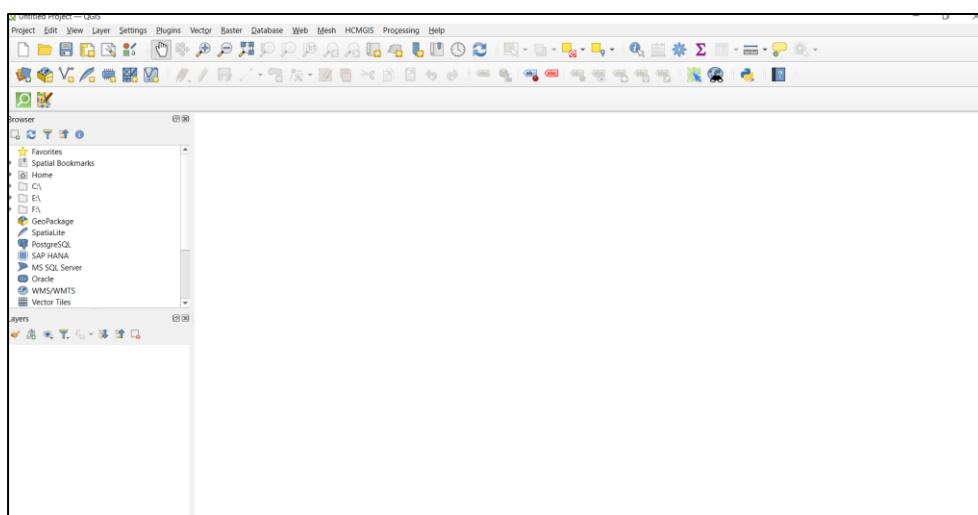
### Theory :

Digitize a map or toposheet involves converting a physical or scanned map into a digital vector format using GIS software. The process includes tracing feature (like roads, rivers and Boundaries ) from the map as points, lines, and polygon . After importing the raster image of the map into the software, you create a new vector layer and manually trace over the feature to generate digital data. This data can then be analyzed , edited and integrated with other spatial information. The result is a digital version of the map that can be easily used for future analysis and mapping .

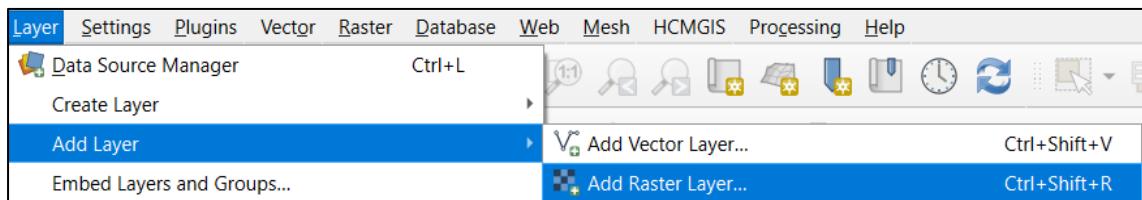
Step 1: Open QGIS.



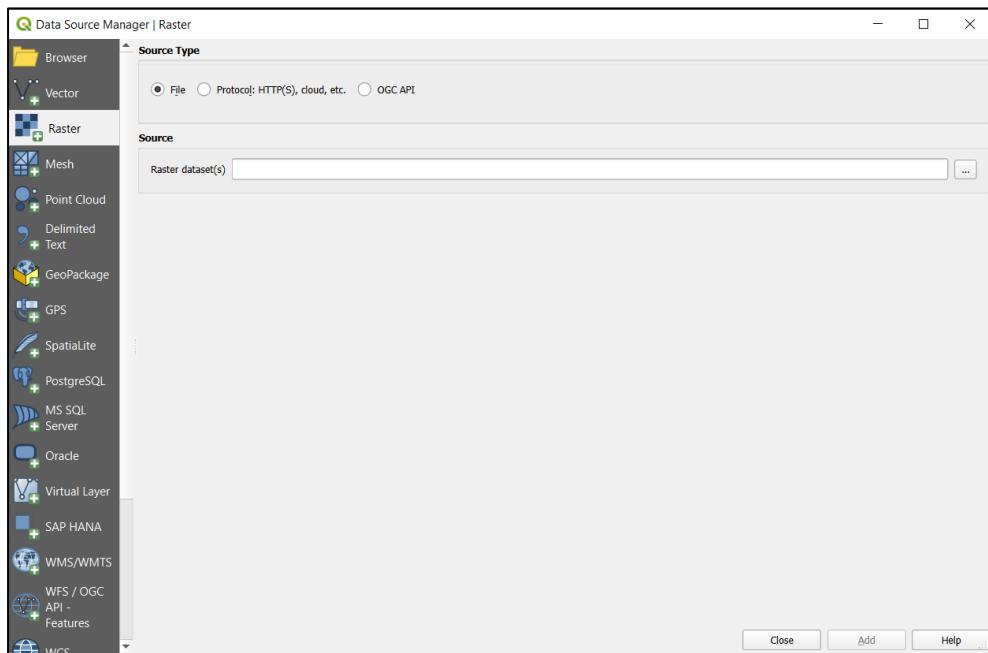
Step 2: Click on new Empty project.



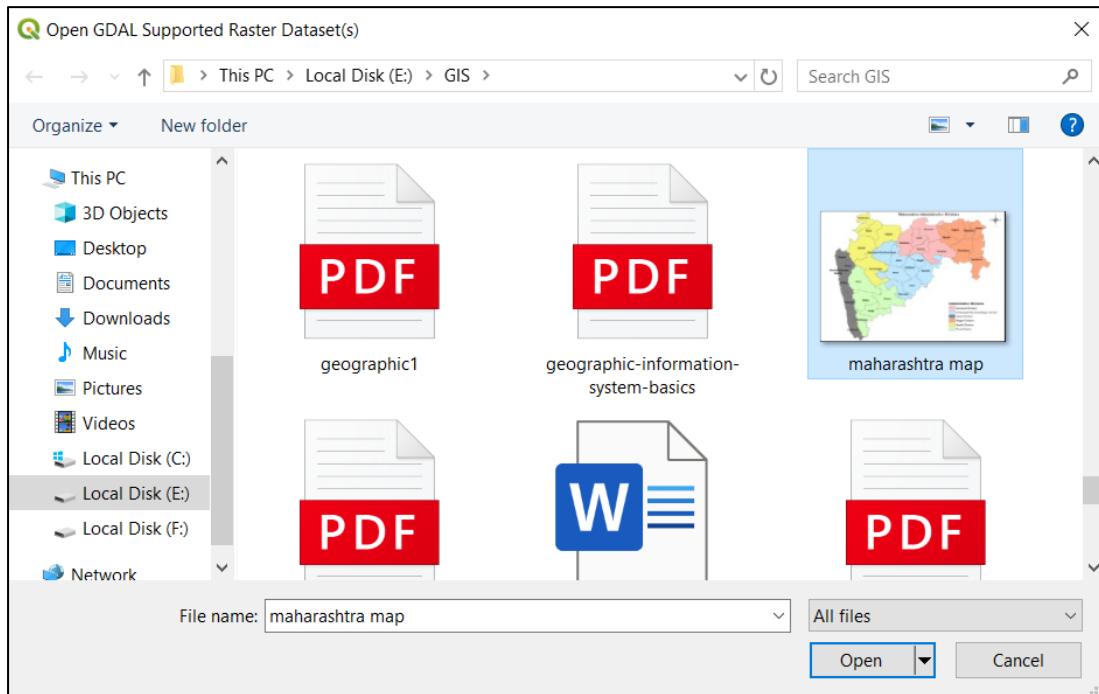
Step 3: Go to layers the Add Layer then Add Raster layer.



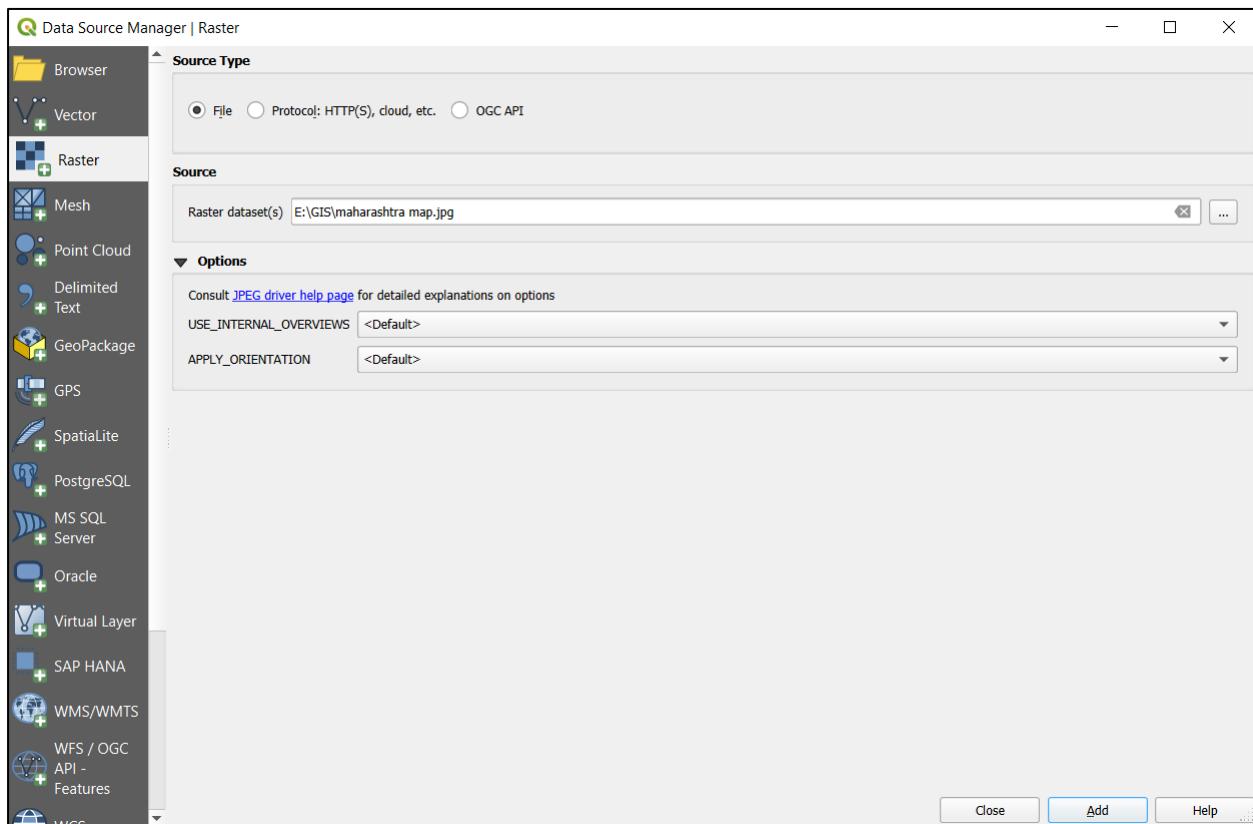
Step 4: This window will appear click on Browser option.



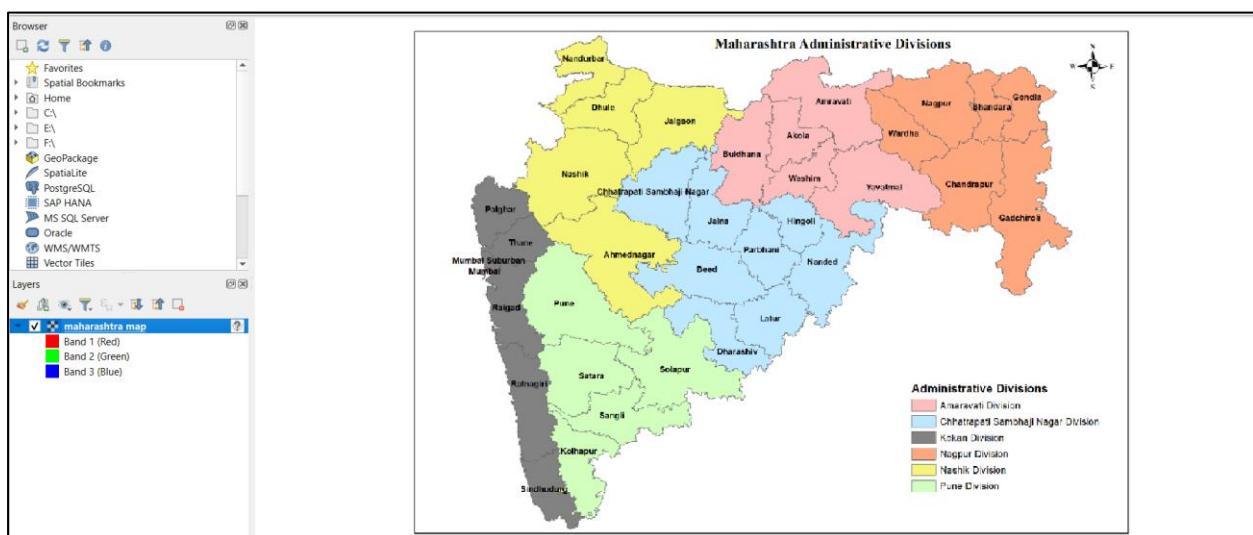
Step 5: select the require file then click on OK button.



Step 6: Then click on Add button.



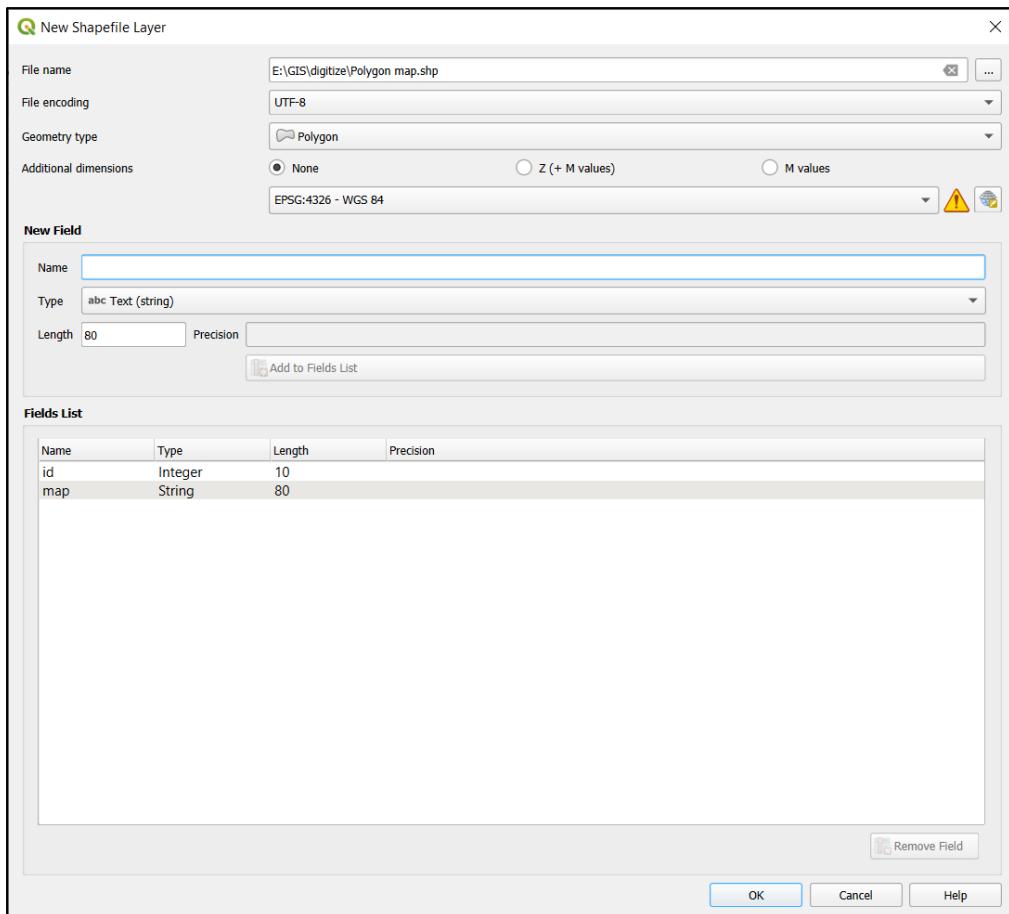
Step 7: Layer is added.



Step 8: Go to Layer then Create Layer then New Shapefile Layer



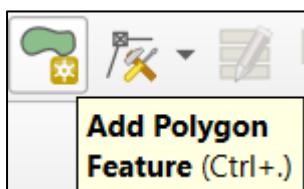
Step 9 : This window will appear then give file name , Geometry type then click on ok button.



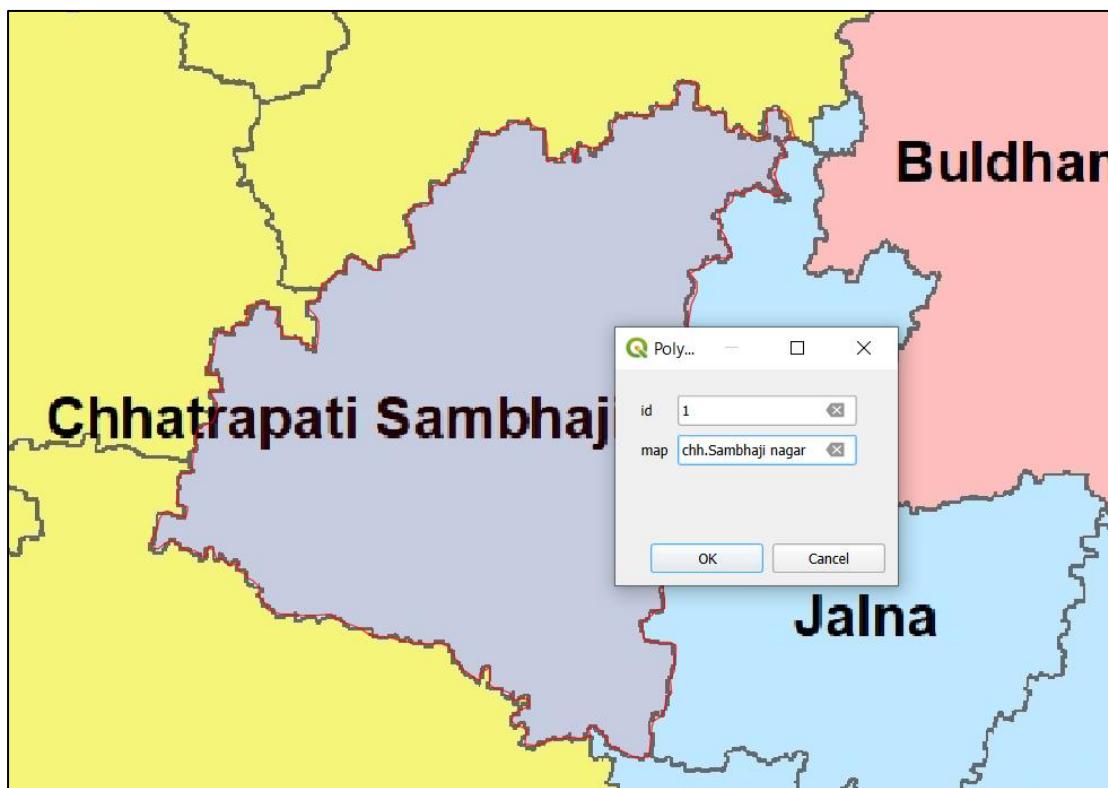
Step 10: Click on Toggle Editing .



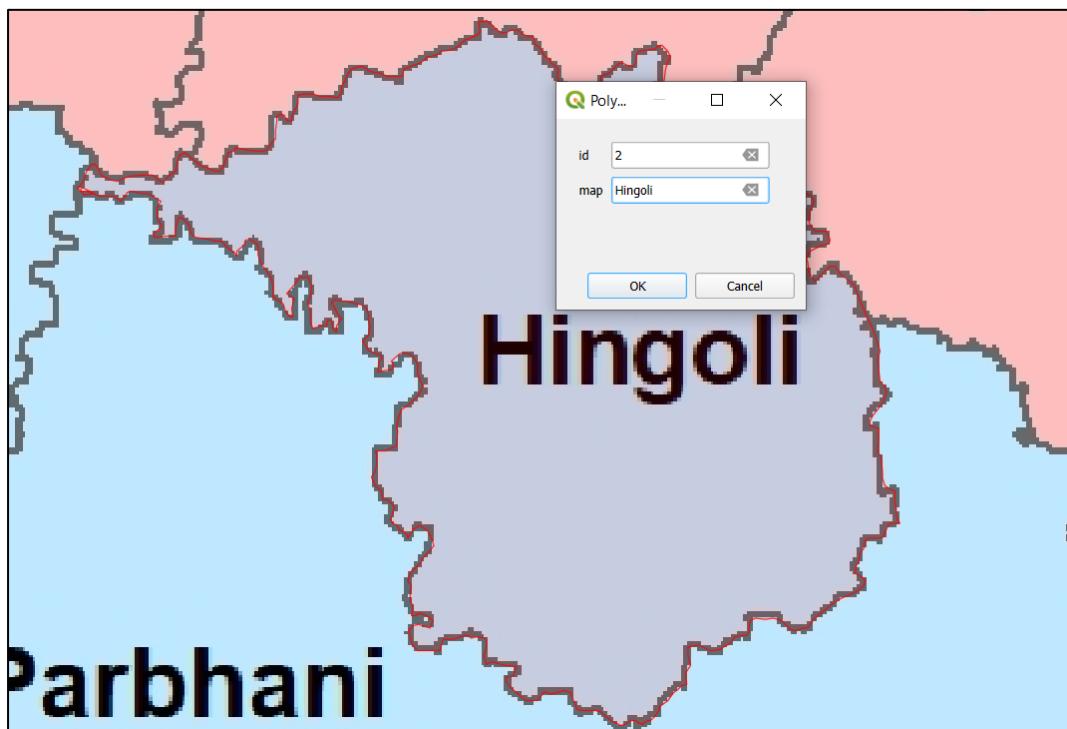
Step 11: Click on Add Polygon Feature .



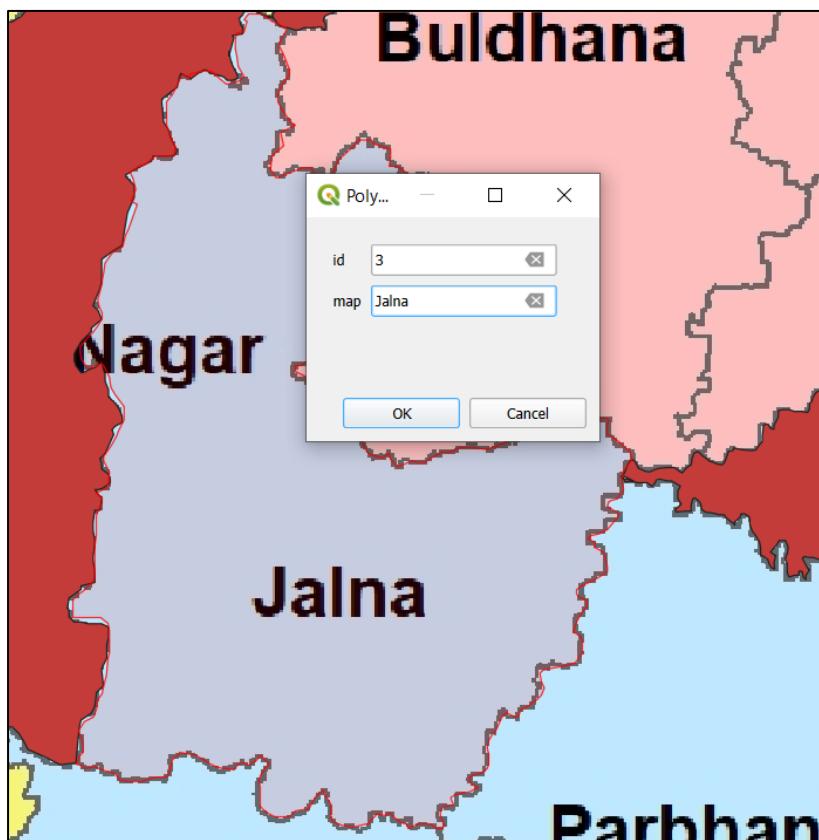
Step 12: Create chh.sambhaji nagar Polygon then right click give id and map then click on ok button.



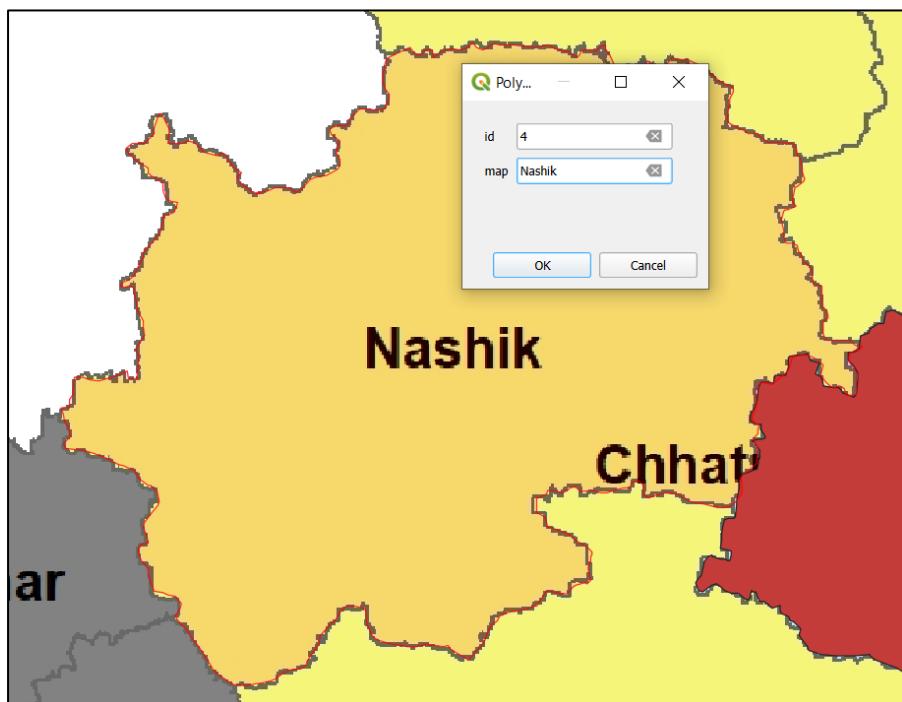
Step 9 : Create Hingoli Polygon then right click give id and map then click on ok button.



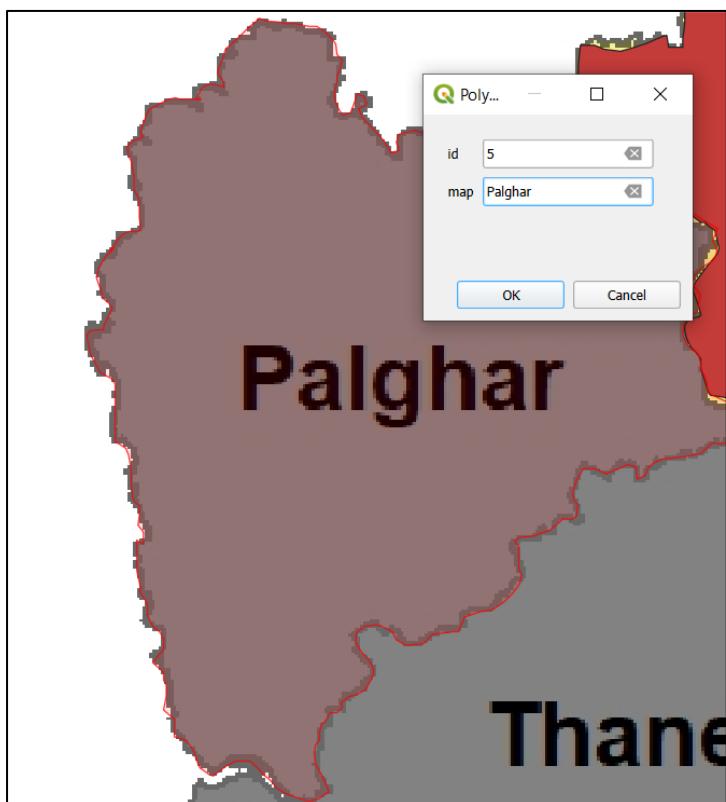
Step 10: Create Jalna Polygon then right click give id and map then click on ok button.



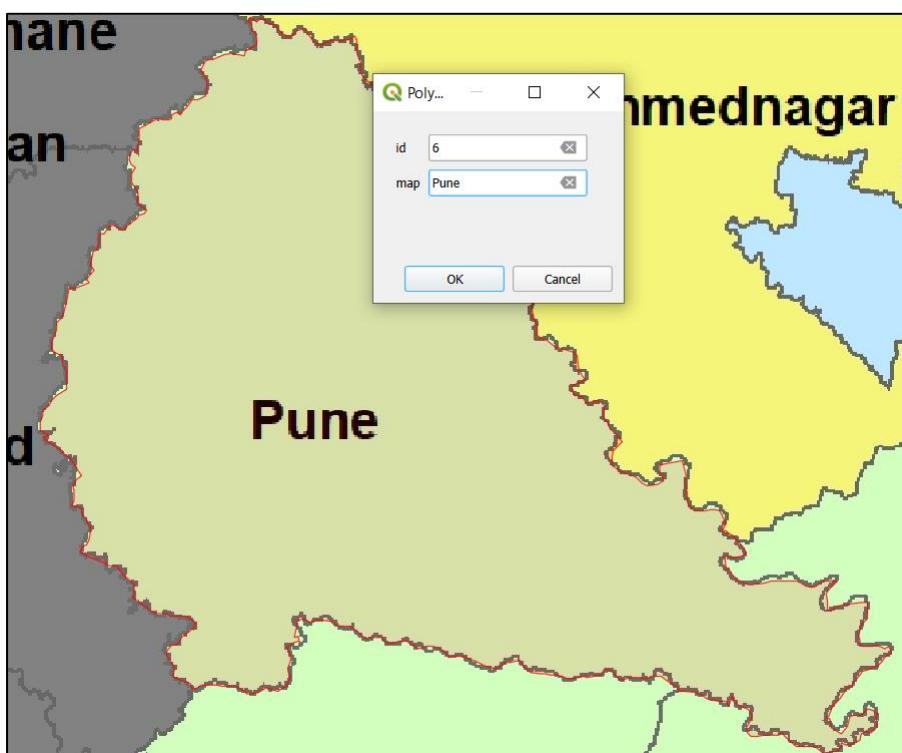
Step 11: Create Nashik Polygon then right click give id and map then click on ok button.



Step 12: Create Palghar Polygon then right click give id and map then click on ok button.



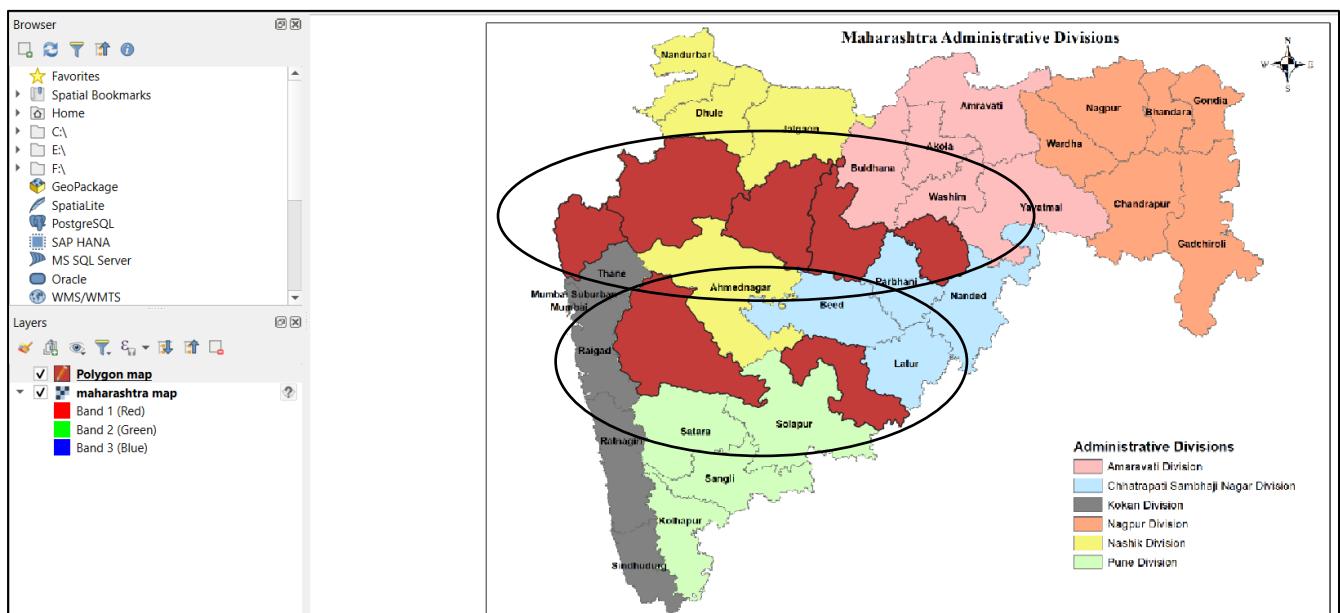
Step 13: Create Pune Polygon then right click give id and map then click on ok button.



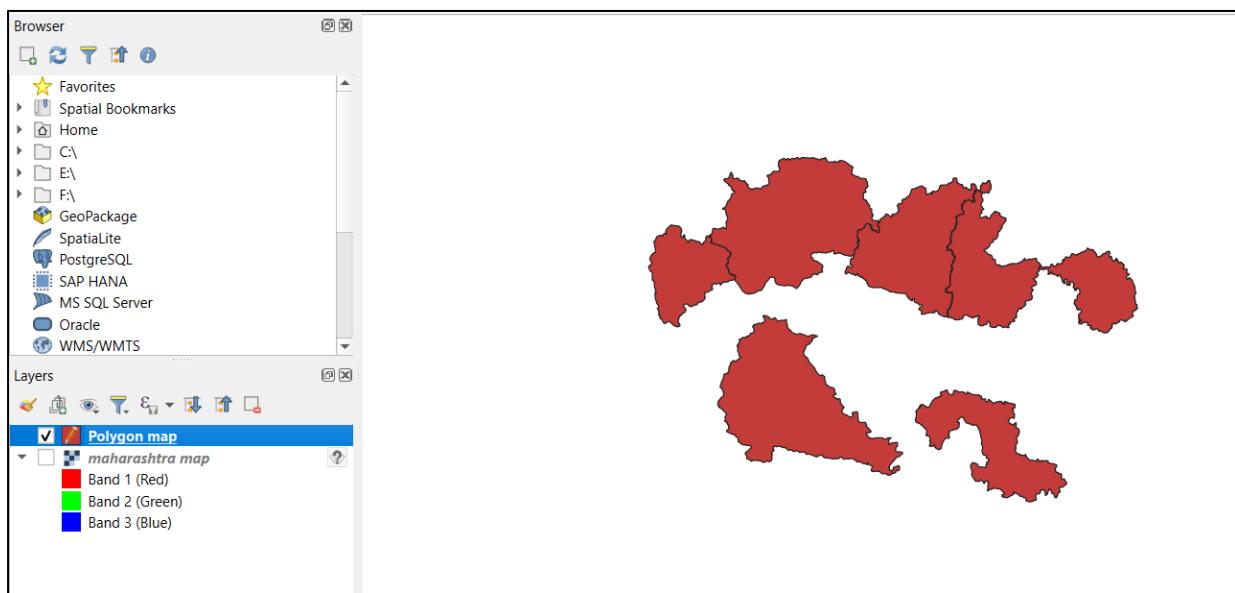
Step 14: Create Dharashiv Polygon then right click give id and map then click on ok button.



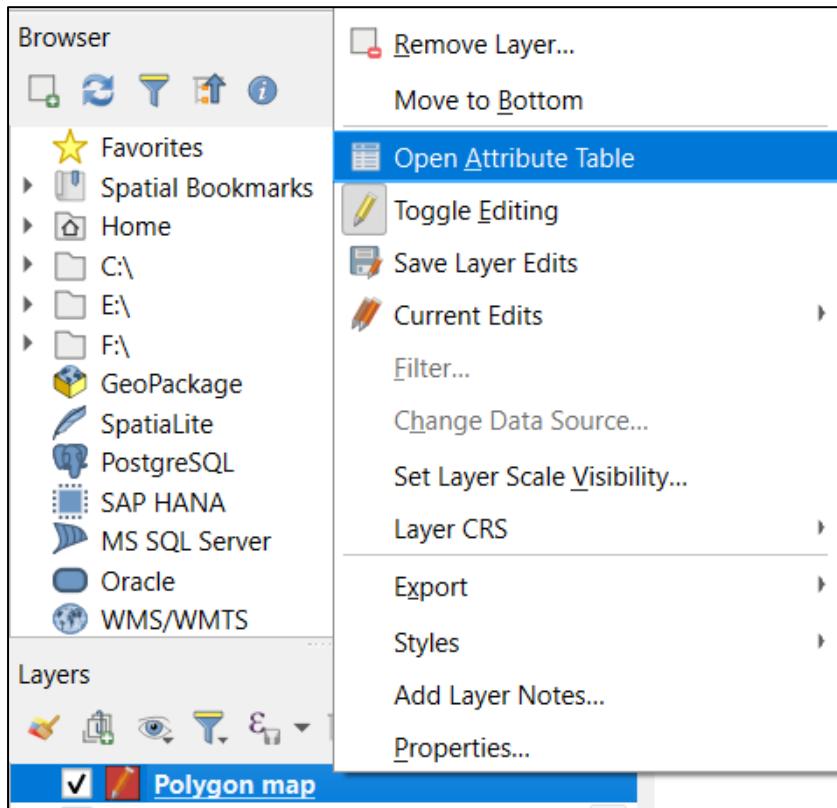
Step 15: Polygon is created .



Step 16 : Map Polygon.



Step 17: Right click on Polygon map then click on open Attribute table.



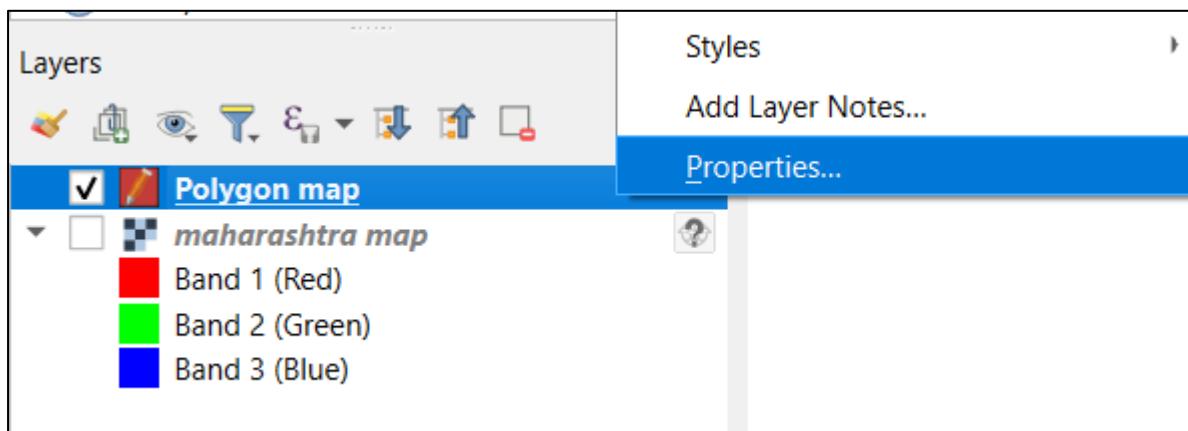
Step 18: This is map Attribute table .

Polygon map — Features Total: 7, Filtered: 7, Selected: 0

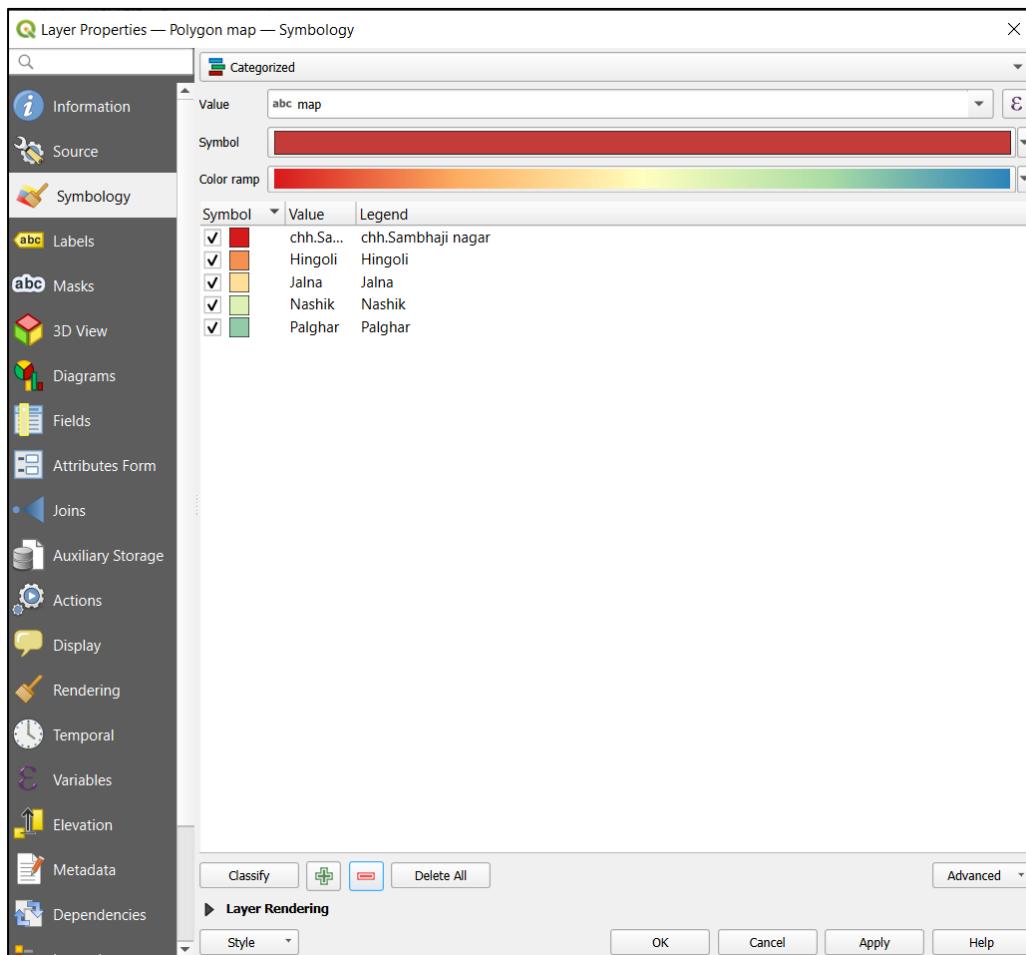
	id	map
1	1	chh.Sambhaji n...
2	2	Hingoli
3	3	Jalna
4	4	Nashik
5	5	Palghar
6	6	Pune
7	7	Dharashiv

Show All Features

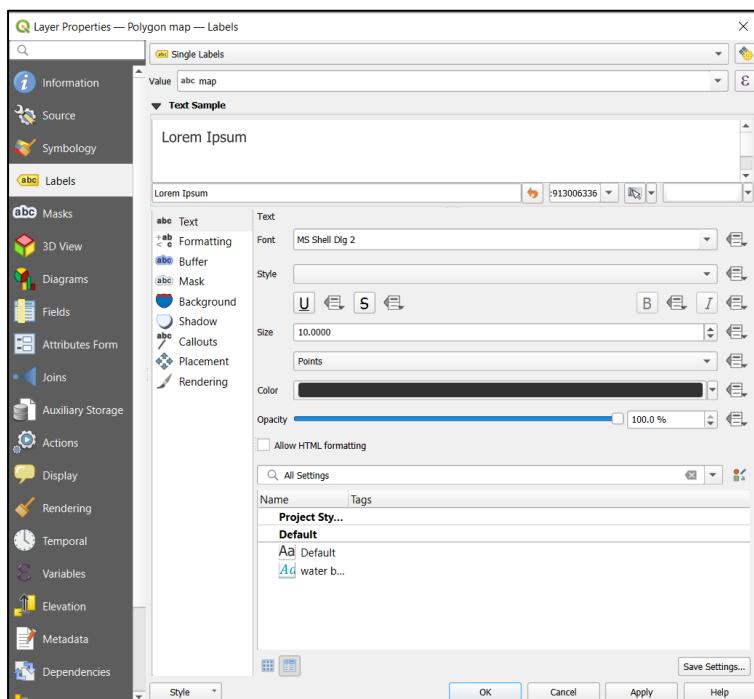
Step 19: Right click on Polygon map then go to Properties .



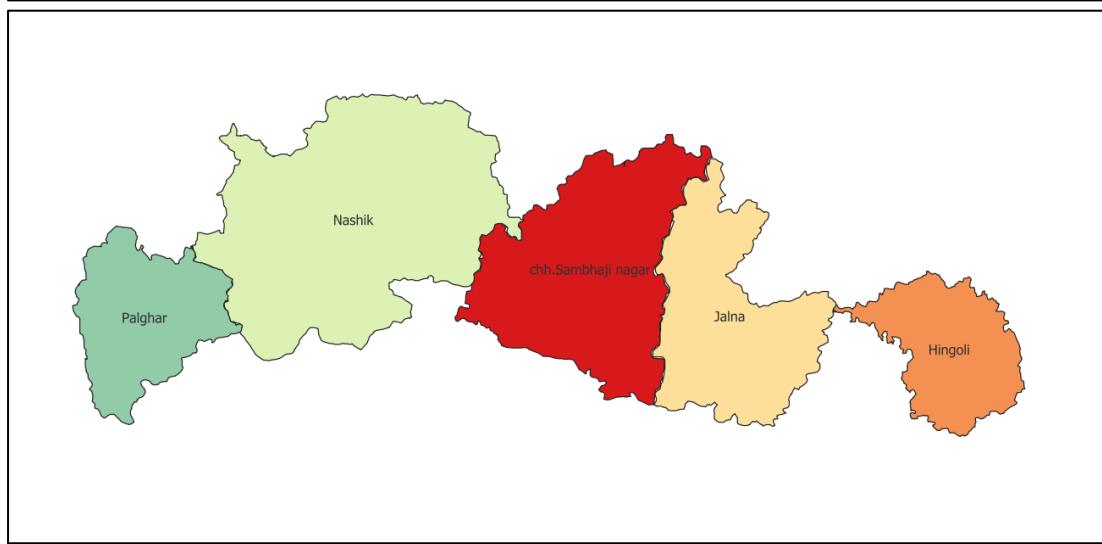
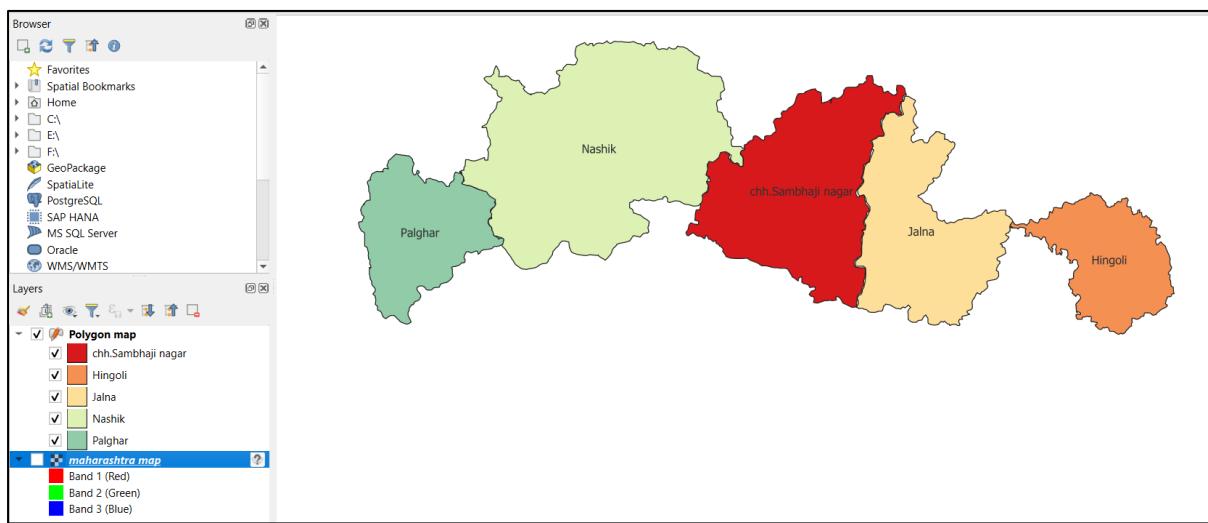
Step 20 : Go to Symbology then select categorized the give value then give different color for all map then click on Classify then click on Apply button.



## Step 21: Give labels .



## Step 22 : Digitize map .



## Assignment 10

Aim : To perform Vector Analysis using QGIS.

Types of Raster Analysis:

- Buffer
- Clip
- Intersect
- Union
- Merge
- Dissolve

Theory :

### 1. Buffer in Vector and Raster Analysis

- **Vector Analysis:**
  - Buffer creates a zone around a vector feature (point, line, or polygon) at a specified distance. This tool is typically used for proximity analysis.
  - Example: If you want to create a buffer zone around roads to determine areas within a certain distance from roads, you can use the **Buffer** tool in vector analysis.

### 2. Clip in Vector and Raster Analysis

- **Vector Analysis:**
  - Clip extracts portions of one vector layer based on the boundaries of another layer. It helps extract specific features of interest.
  - Example: Clip a **roads layer** to the area defined by a **city boundary** to extract only roads inside that city.

### 3. Intersect in Vector and Raster Analysis

- **Vector Analysis:**
  - Intersect returns the overlapping area between two vector layers. The output layer contains only the features where both layers overlap.
  - Example: Find areas of intersection between **land use zones** and **protected areas**.
  -

### 4. Union in Vector and Raster Analysis

- **Vector Analysis:**

- **Union** combines two layers and keeps all features from both layers. Overlapping areas are merged and preserved.
- Example: Combine different administrative boundaries (e.g., district and city boundaries) to analyze how they intersect or overlap.

## 5. Merge in Vector Vector Analysis:

- **Merge** combines multiple vector layers (with the same geometry type) into a single layer.
- Example: If you have multiple shapefiles for different regions (like different counties), you can merge them into one.
- **How to use:**
  - Go to **Vector > Data Management Tools > Merge Vector Layers.**
  - Select all the layers you want to merge.

## 6. Dissolve in Vector and Raster Analysis

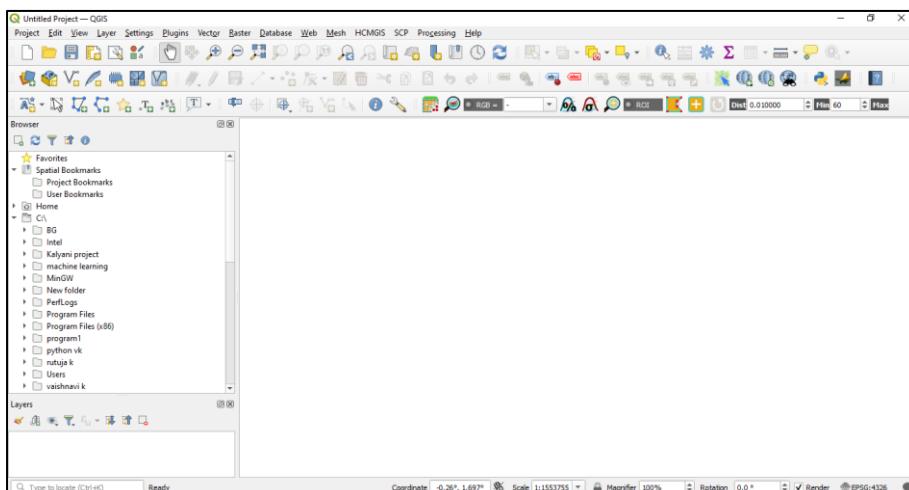
- **Vector Analysis:**
  - **Dissolve** combines adjacent polygons with the same attribute value into a single feature. It simplifies the dataset by removing boundaries between features with identical values.
  - Example: Dissolve the **municipal boundaries** based on **land use** to create a new layer of generalized land use areas.

**Result :**

**Step 1:** Open QGIS.



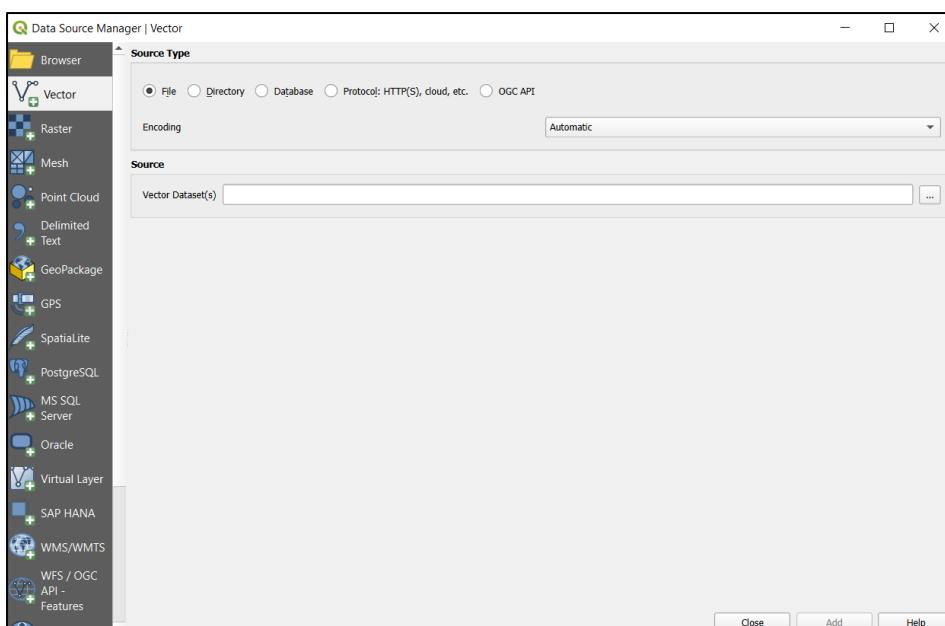
**Step 2:** Open New File



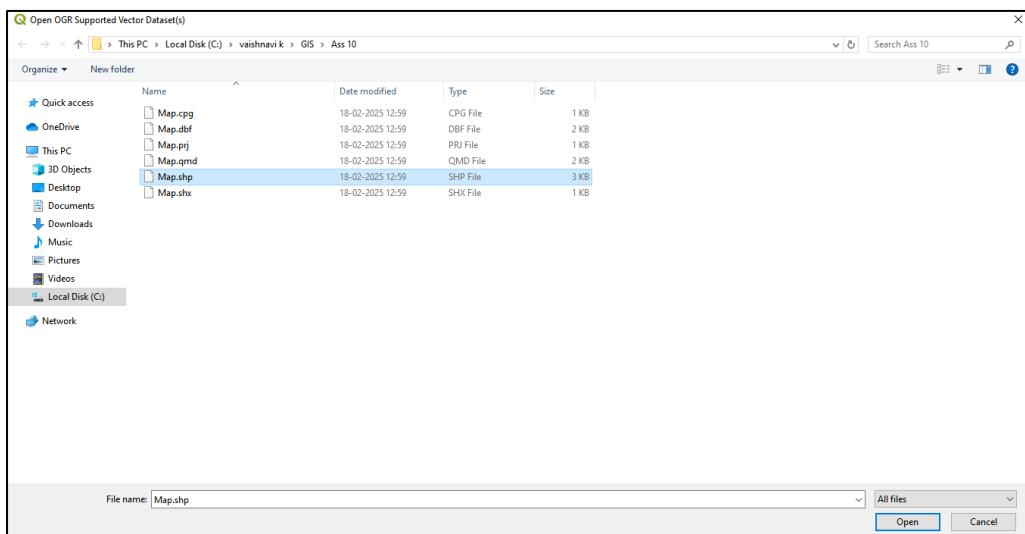
**Step 3:** Click on Layer then Add Layer and Add vector layer.



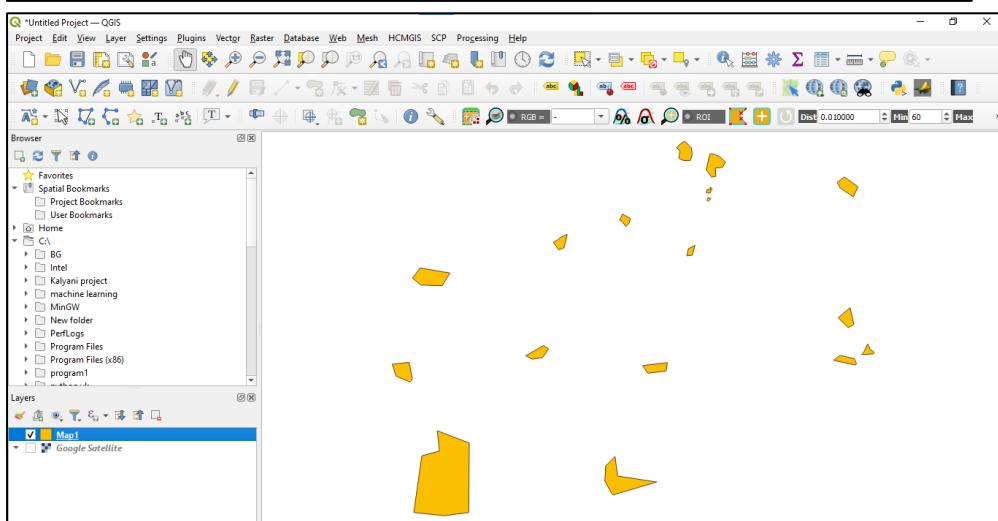
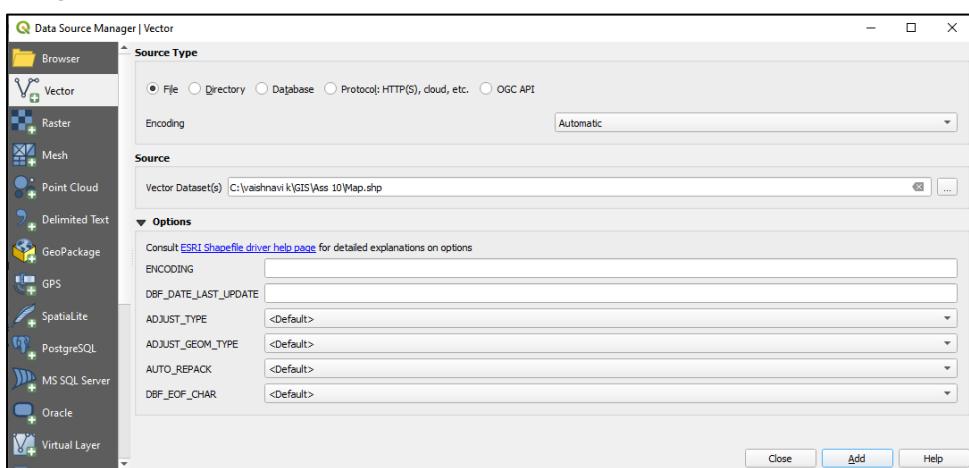
**Step 4:** Open this Data Source Manager vector and add vector dataset.



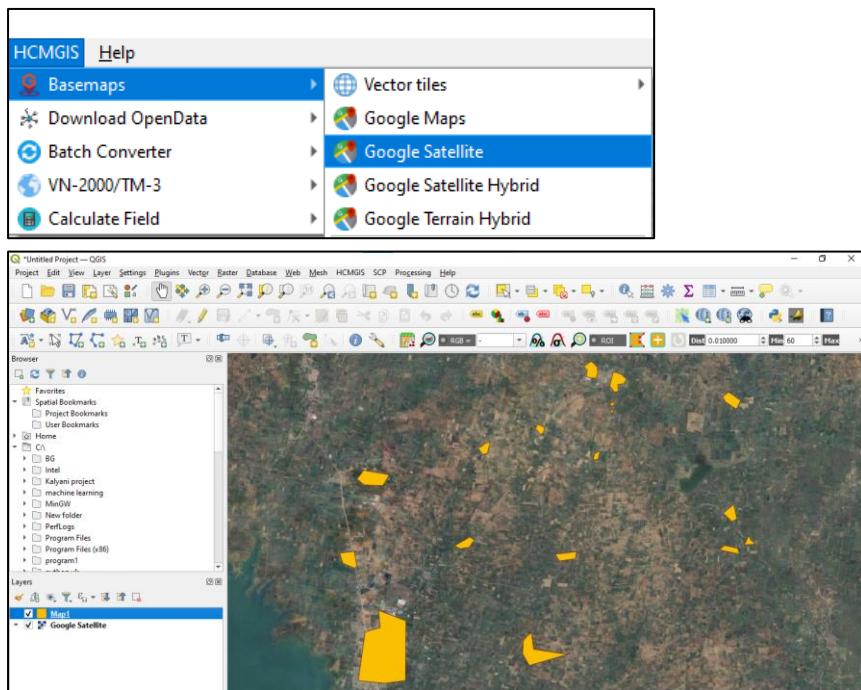
**Step 5 :** click on Map.shp and click on open .



## Step 6: Click on Add button.

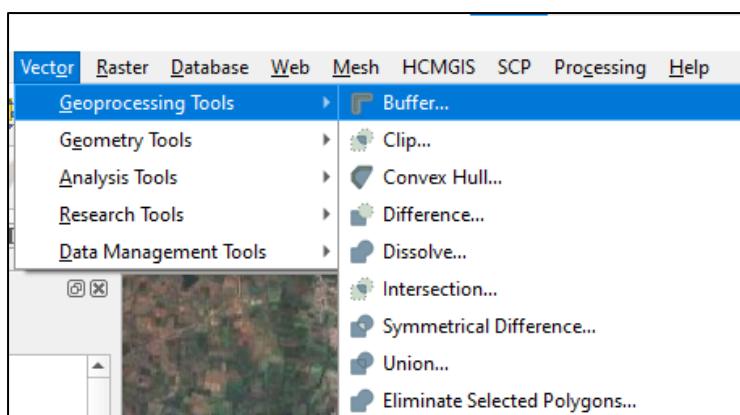


## Step 7: Click on HCMGIS then click on BaaseMaps the Add google satellite.

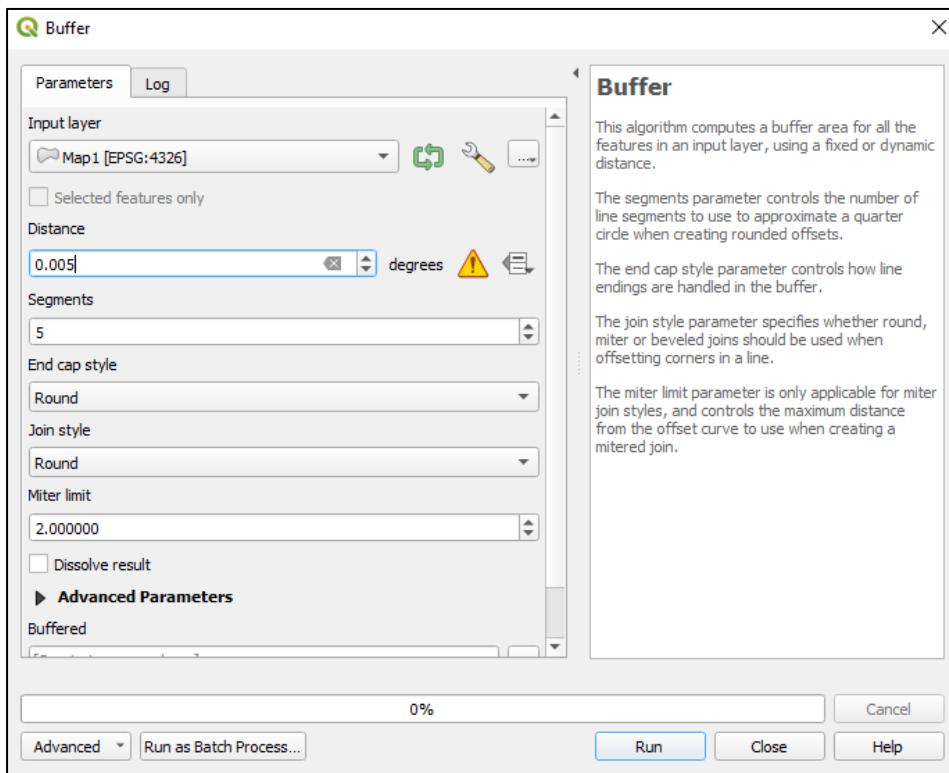


## Step 8: FOR BUFFER.

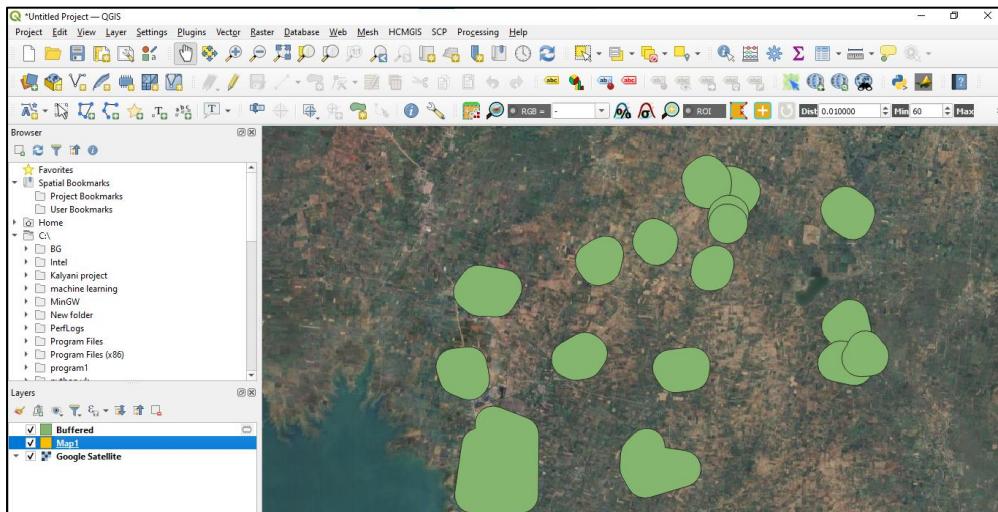
Click on vector layer then Geoprocessing Tools then click Buffer



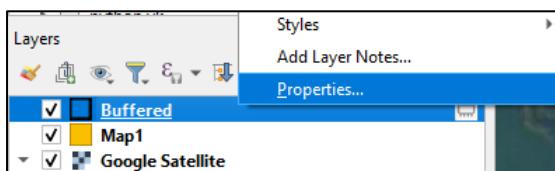
Step 9: give Input layer and distance then click on Run button.



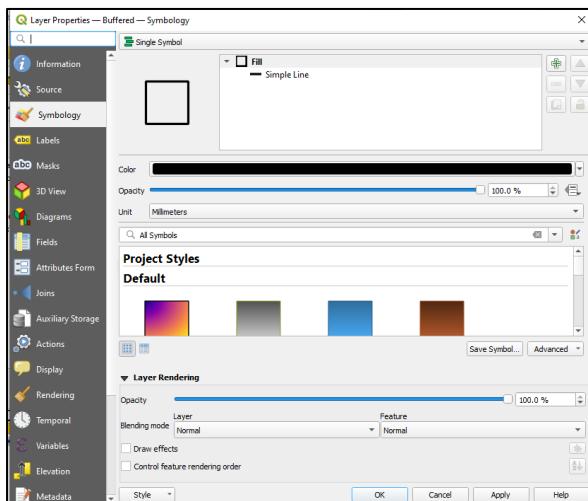
**Step 10 :** After buffer process map look like this.



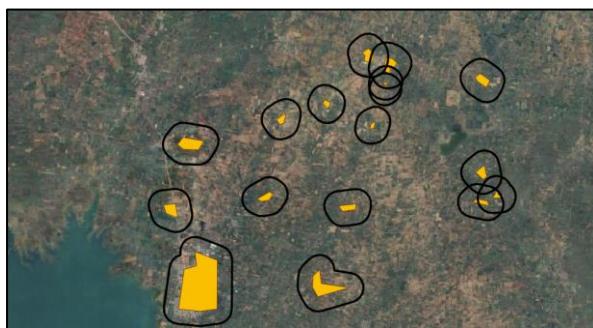
**Step 11:** Right click on Buffered then click on Properties.



**Step 12:** Give symbology.



### Step 13: Buffer map

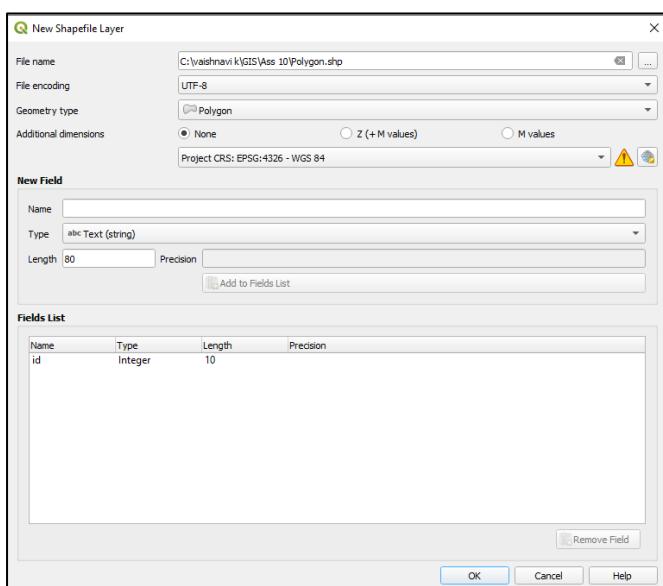


### Step 14 : FOR CLIPPING

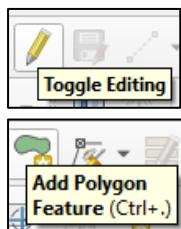
Click on Layer the click on Create Layer then Add New Shapefile layer



### Step 15: Give file name and Geometry type then click on OK button.



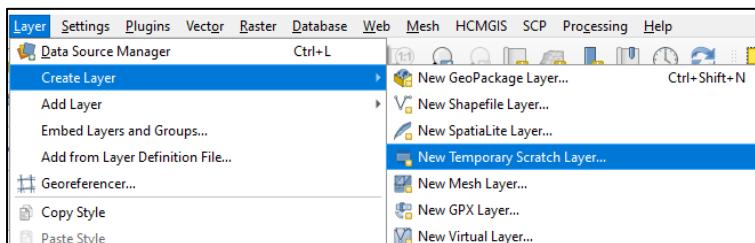
### Step 16: Click on Toggle Editing and click on Add Polygon Feature.



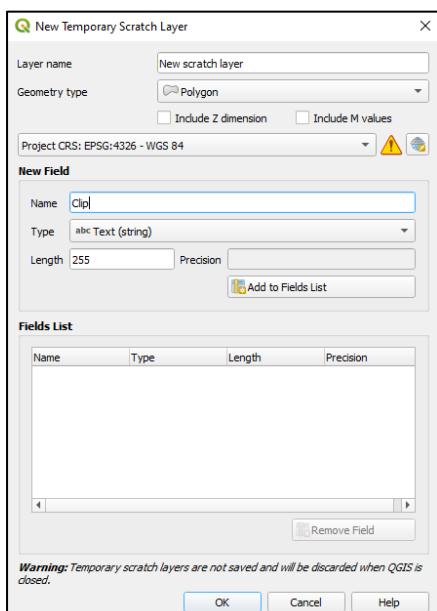
**Step 17:** Create new Polygon.



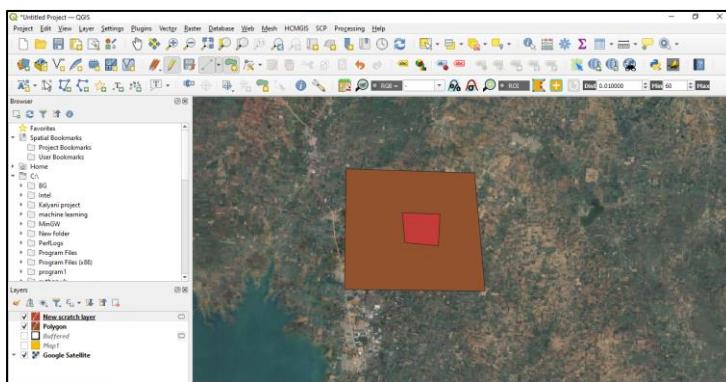
**Step 18:** Click on Layer the Create Layer and add New Temporary Scratch Layer for Polygon.



**Step 19:** Give layer name , Geometry type and New Field Name then click on OK button.



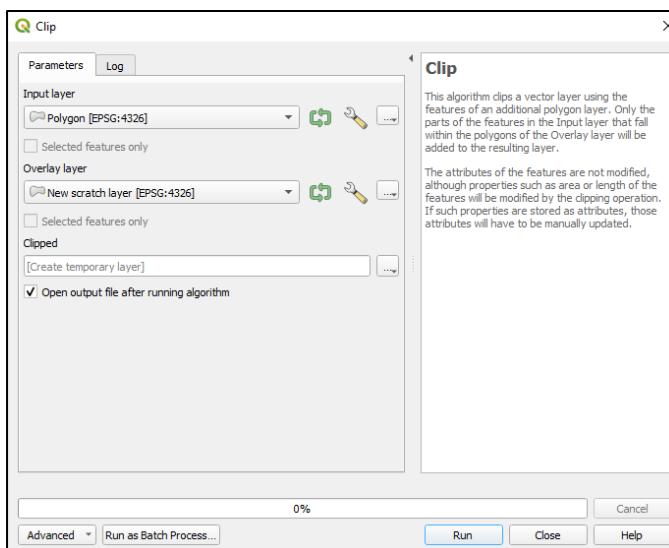
**Step 20 :** Create new Polygon



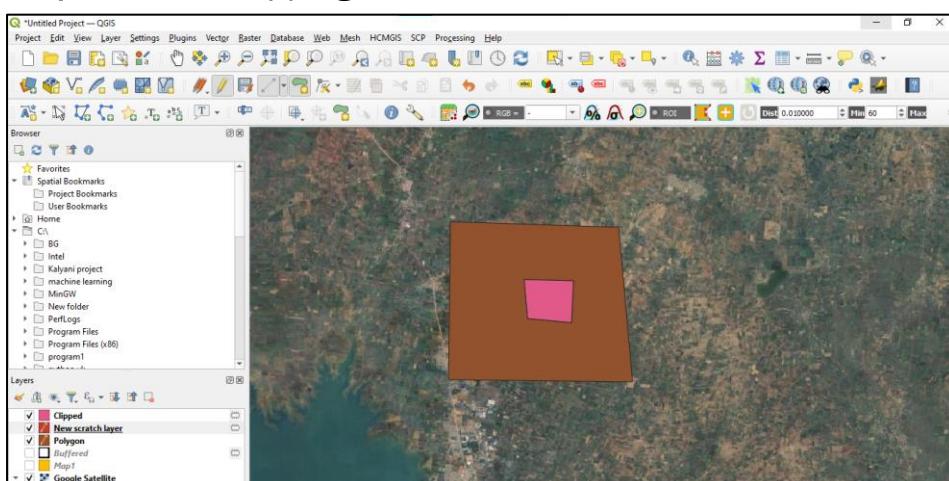
**Step 21:** Click on vector then Geoprocessing then click on Clip.



**Step 22:** Give Input layer , Overlay layer and then click on Run button.



**Step 23:** After clipping look like this.

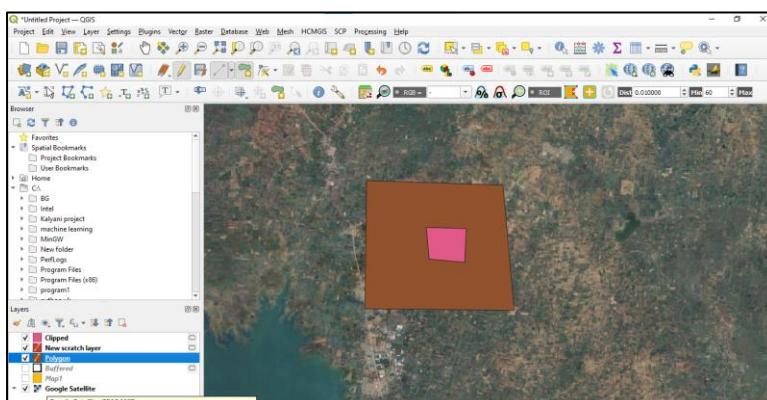


**Step 24:** Clip map.

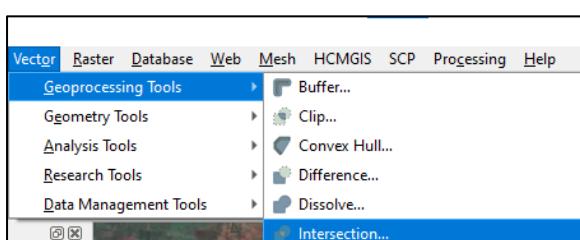


### Step 25: FOR INTERSECTION

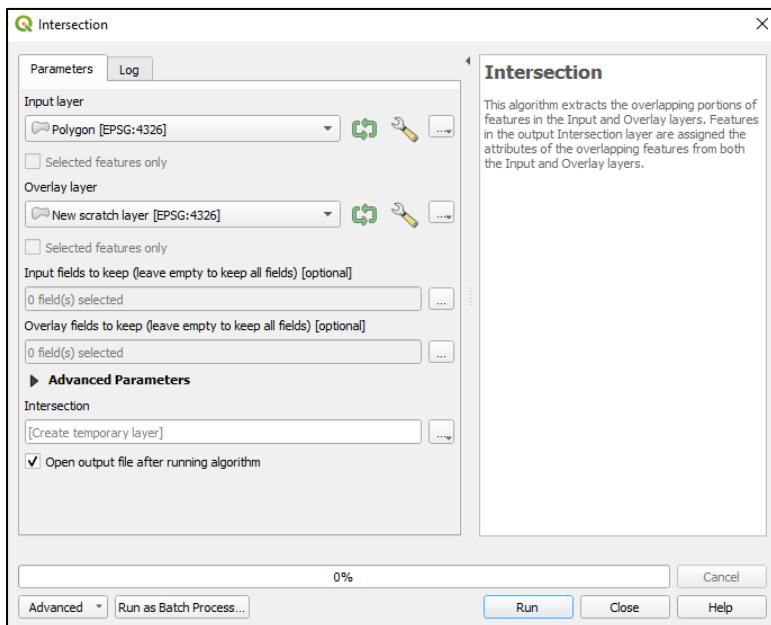
Open Polygon layer and new scratch layer



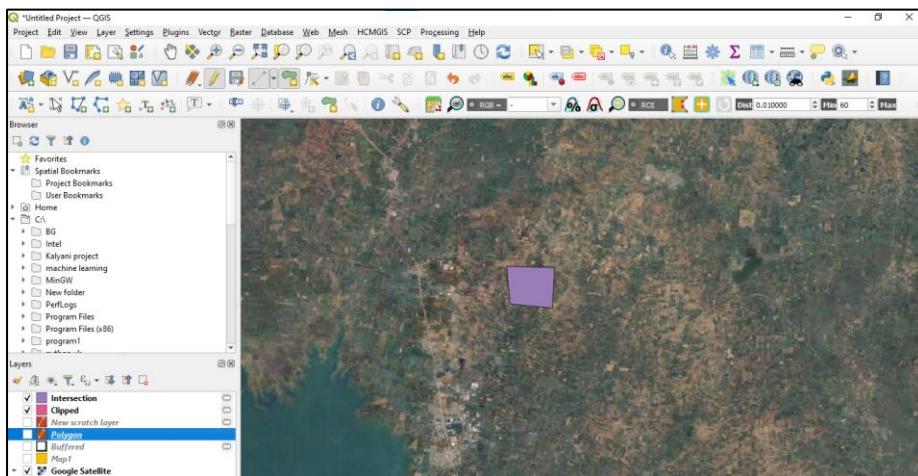
Step 26: Click on vector then click on Geoprocessing Tools, and click on Intersection.



Step 27 : Give Input layer , Overlay layer and click on Run button.



**Step 28:** After Intersection Process look like this.

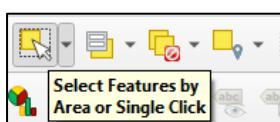


**Step 29: FOR UNION**

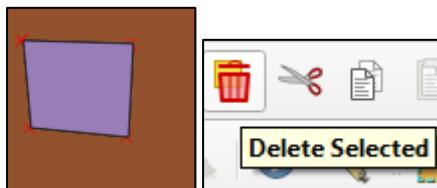
Open Polygon layer.



**Step 30:** Click select features by area or single click for delete Polygon.



**Step 31:** Delete this Polygon.



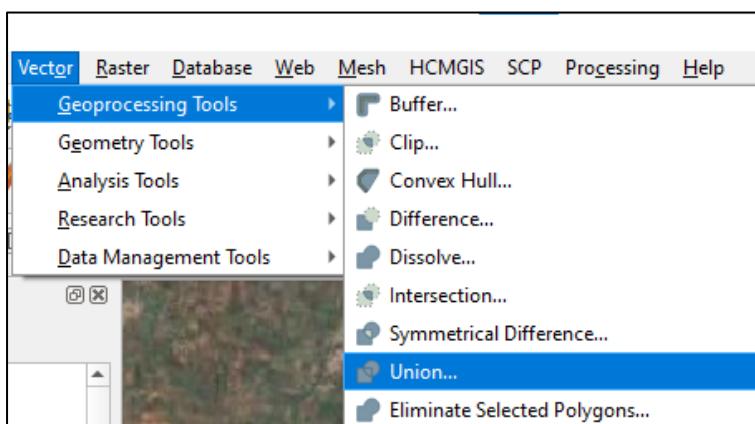
**Step 32:** After delete.



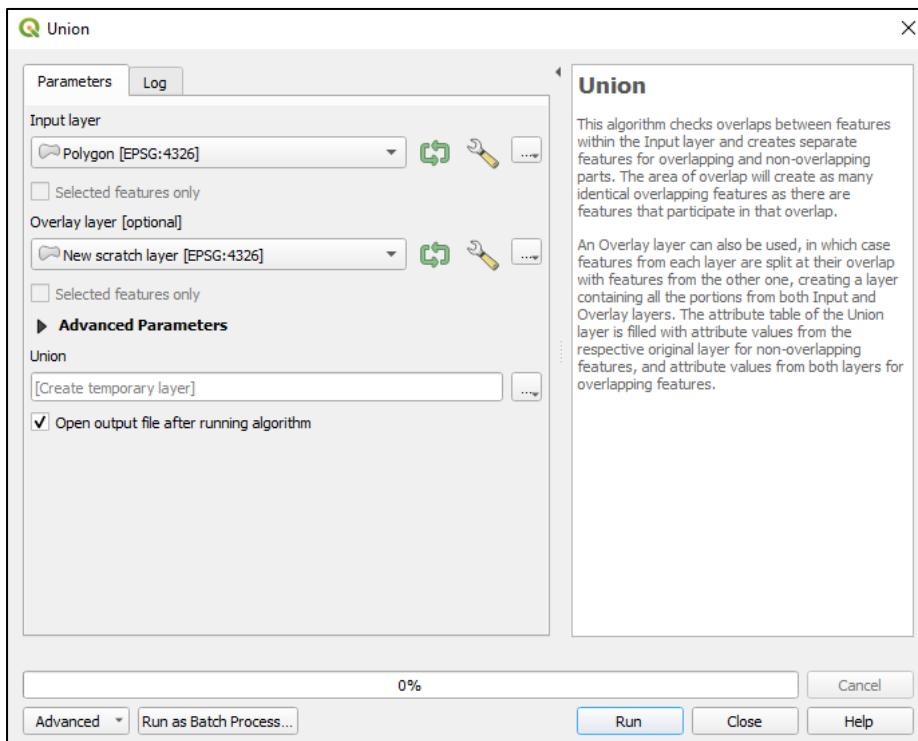
**Step 33 :** Then Add new Polygon.



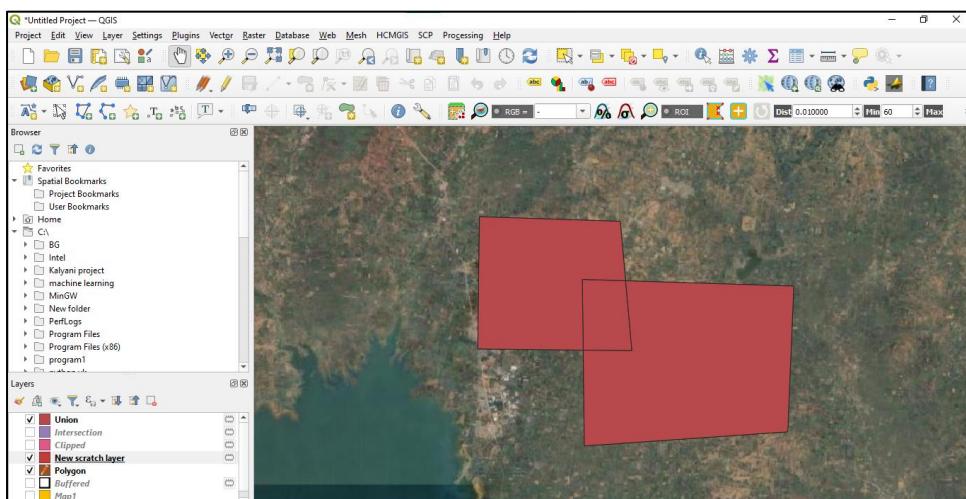
**Step 34:** Click vector then click Geoprocessing Tools then click Union.



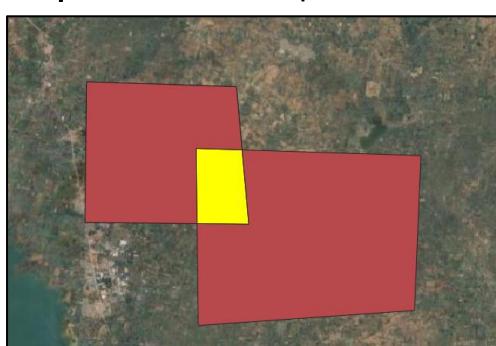
**Step 35 :** Give Input Layer , Overlay layer then click on Run button.



**Step 36:** After Union process map look like this.

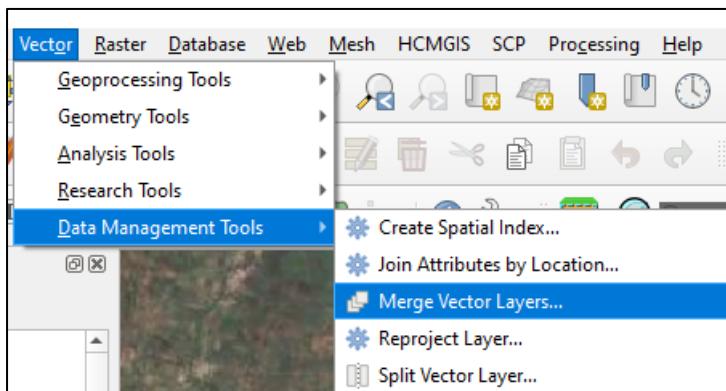


**Step 37:** Union Map.

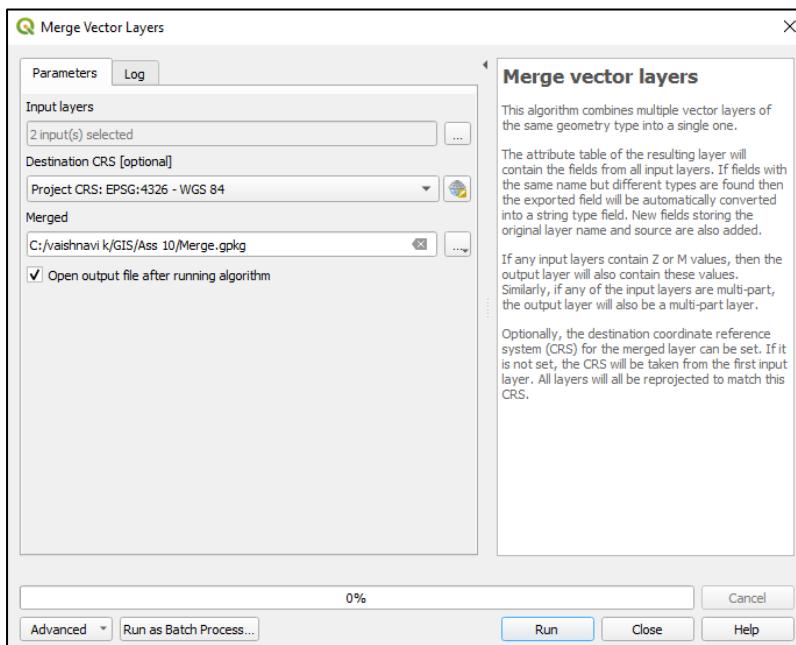


**Step 38: FOR MERGE .**

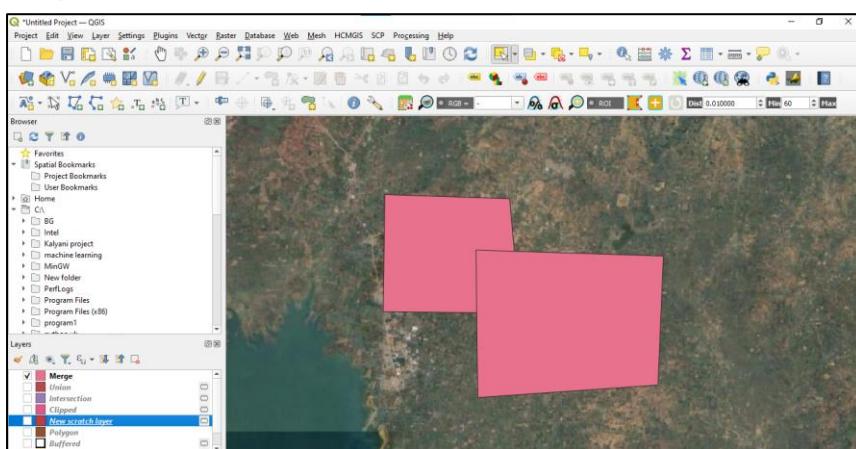
Click vector then click Data Management Tools then click on Merge vector Layers.



**Step 39 : give Input layer , destination CRS, Merged.**

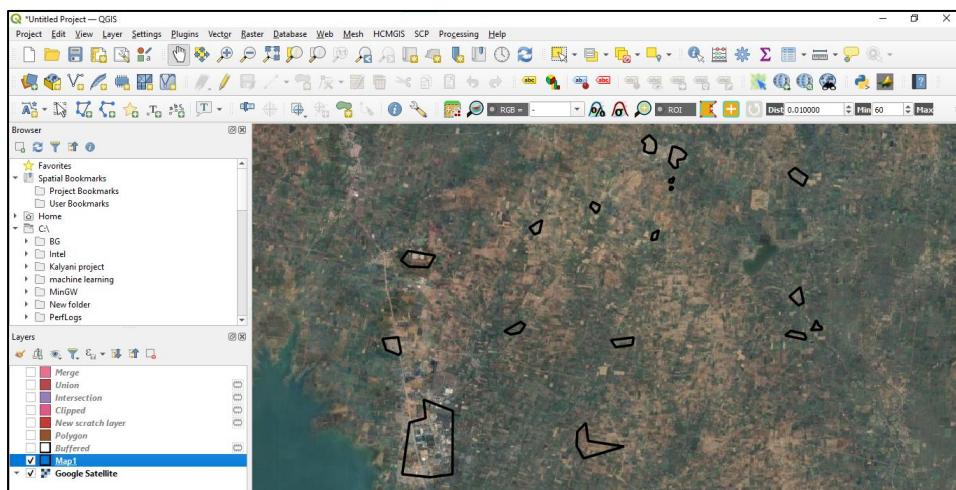


**Step 40 : After Merge process look like this.**

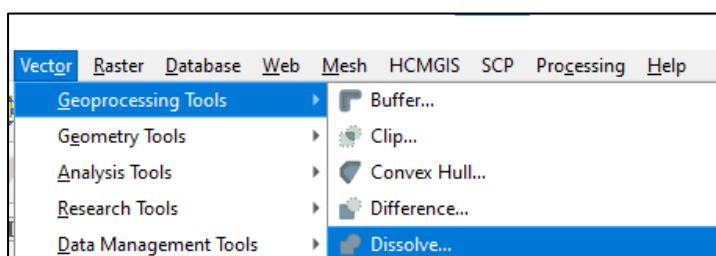


**Step 41: FOR DISOLVE**

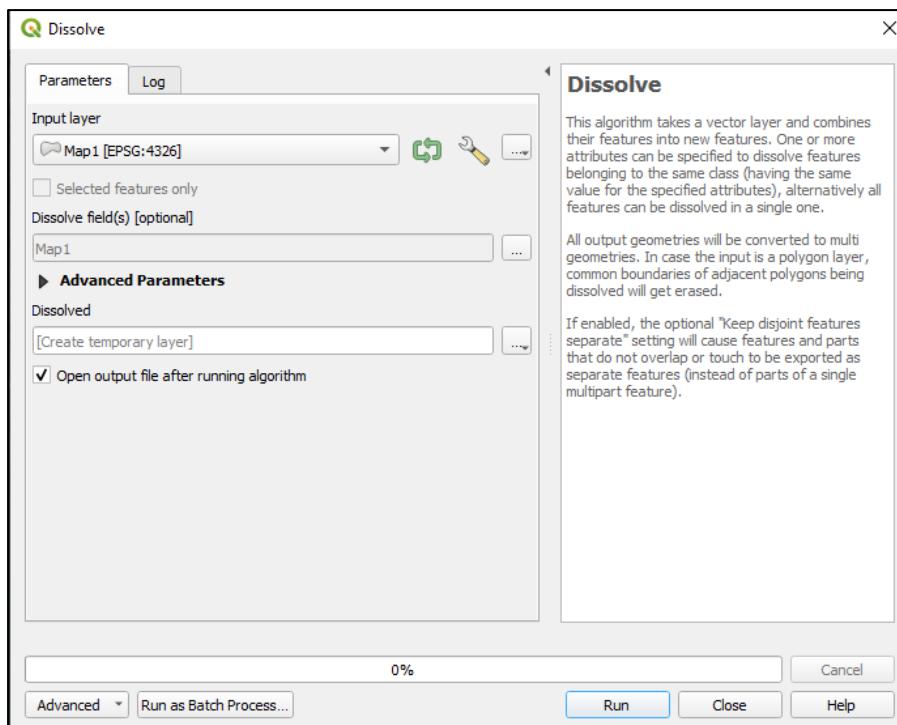
Open Map1 layer, Google Satellite.



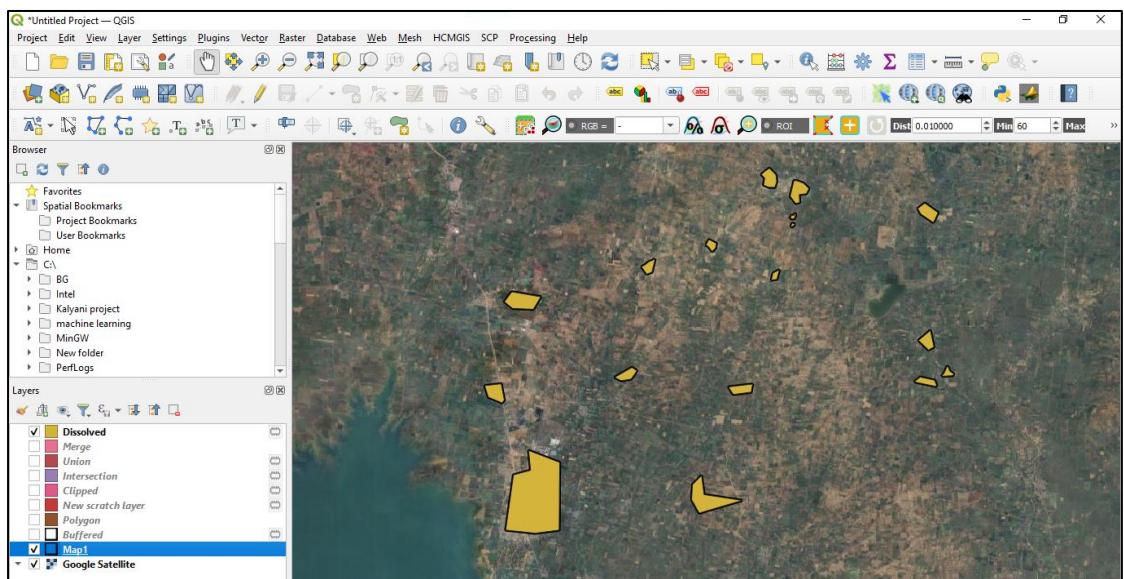
**Step 42:** click vector then click Geoprocessing Tool then click on Dissolve.



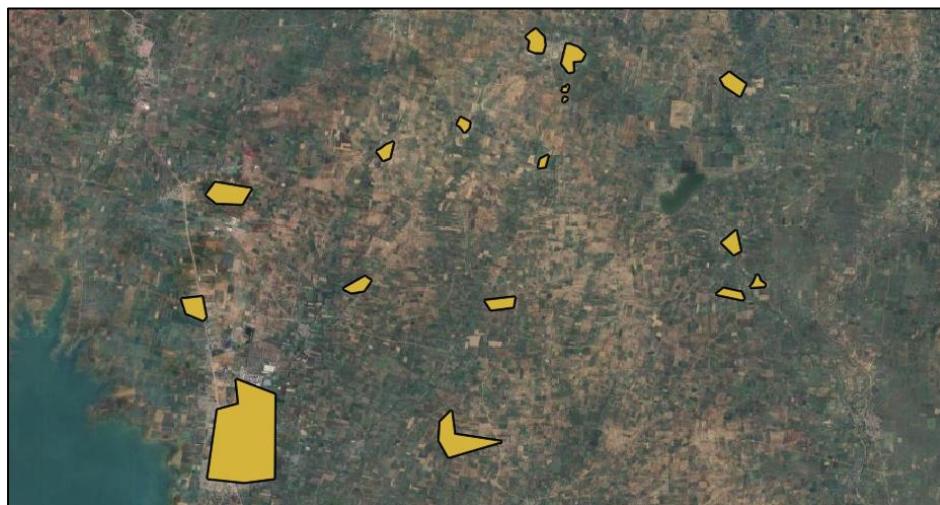
**Step 43:** Give Input layer .



**Step 44 :** After Dissolve process map look like this.



### Step 45 : Dissolve Map .



## Practical assignment 11

**AIM:** To perform Raster Analysis using QGIS

### Theory:

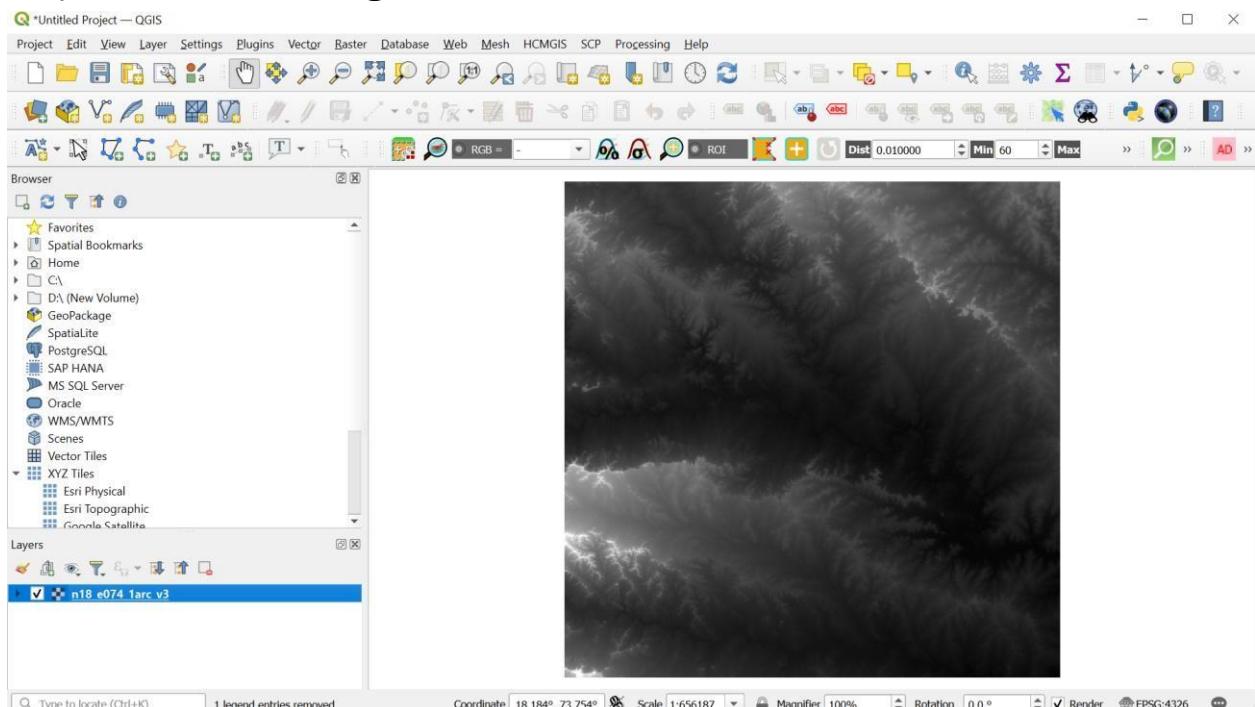
Raster Analysis in QGIS involves performing spatial operations on raster data to extract meaningful insights. QGIS provides various tools under the **Raster** menu and **Processing Toolbox** for raster-based analysis. These tools are essential for applications like environmental modeling, terrain analysis, land cover classification, and hydrological studies.

Raster data represents spatial information in a grid format, where each cell contains a value representing information such as elevation, temperature, or land cover. Common raster analysis techniques include mathematical operations, distance calculations, surface modeling, statistical analysis, and raster classification. These techniques help in understanding and manipulating spatial data to derive important geographic and environmental information.

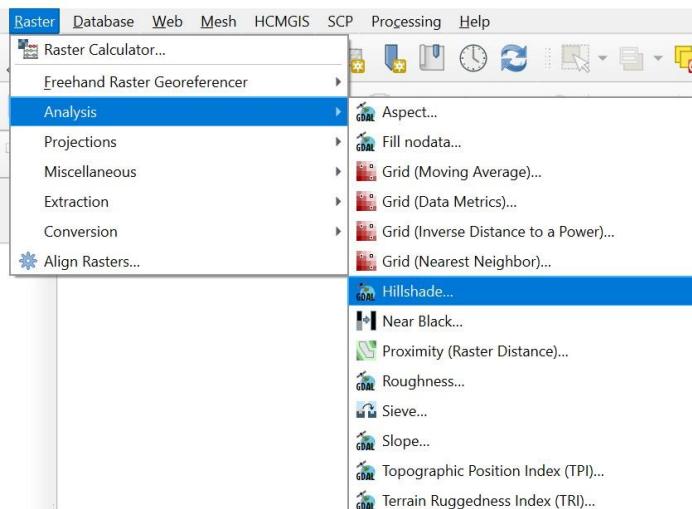
### Steps:

Step 1: Open QGIS.

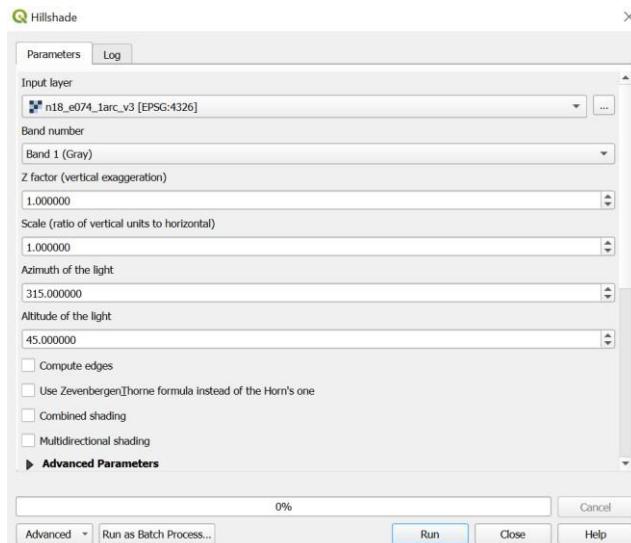
Step 2: load raster image.



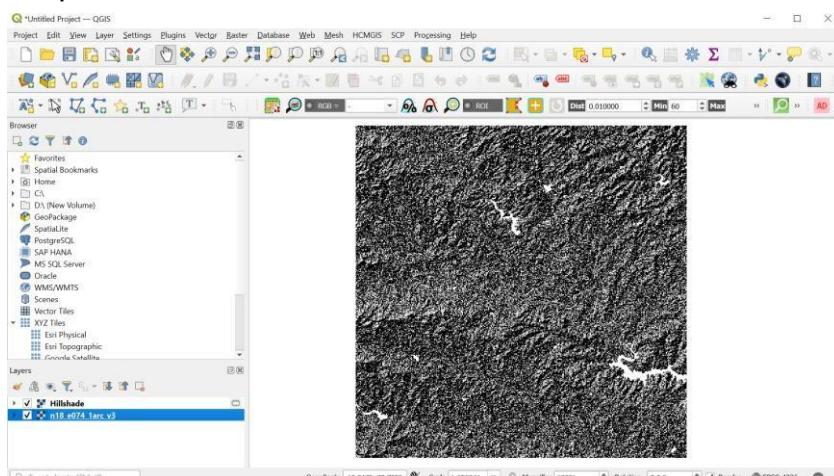
Step 3: Go to Raster analysis and Hillshade



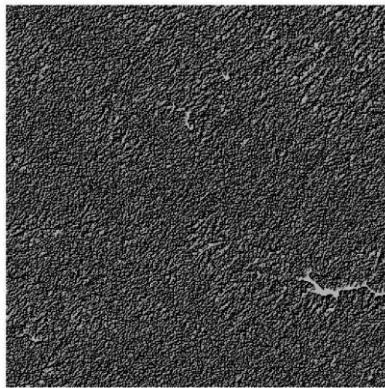
## Step 4:



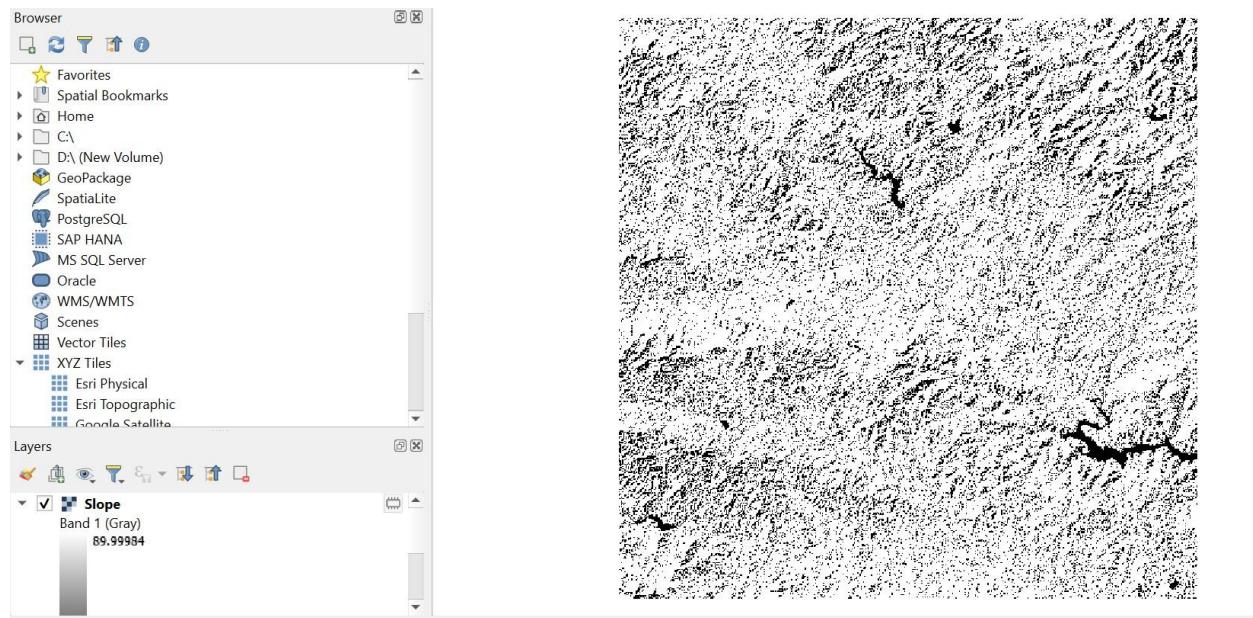
## Step 5:



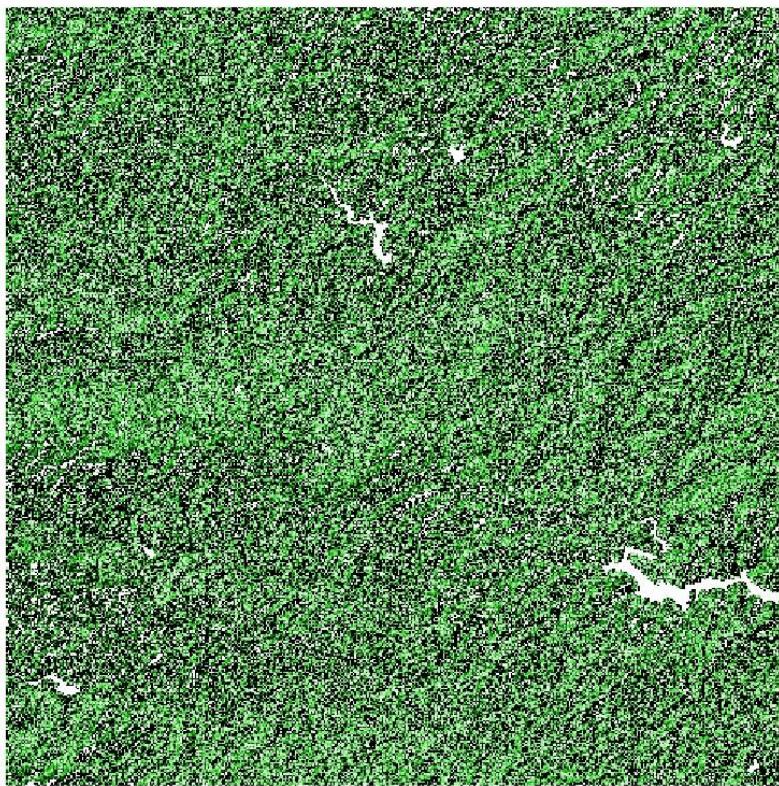
## Step 6: Apply some symbology



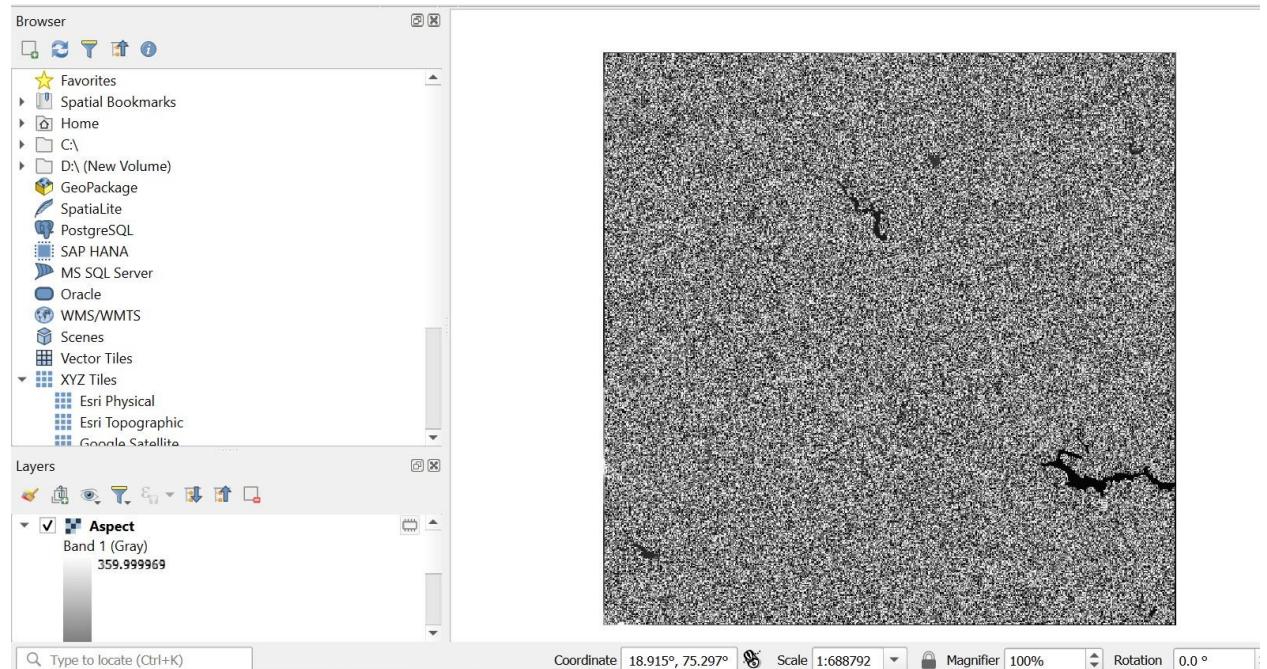
Step 7: Similarly do slop mapping



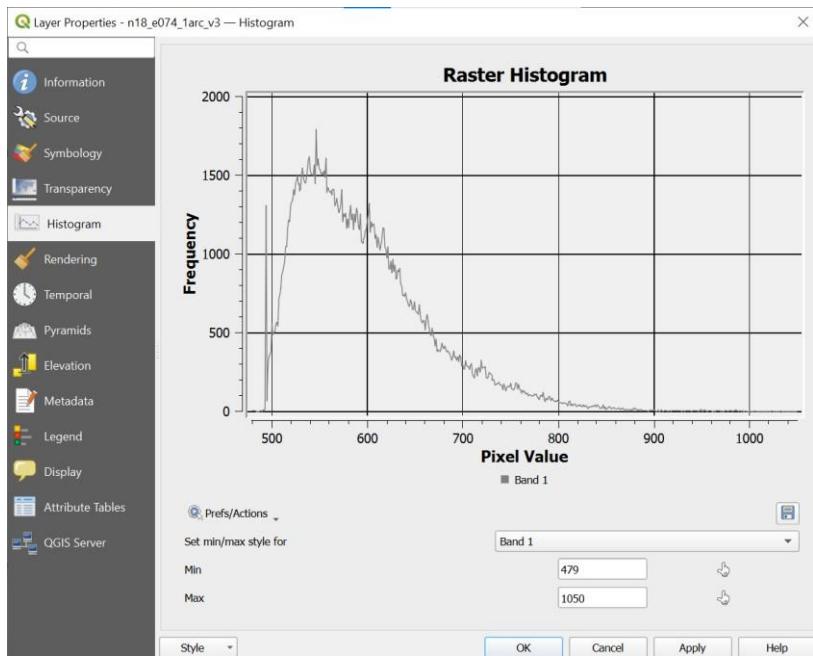
Step 8: Apply some symbology.



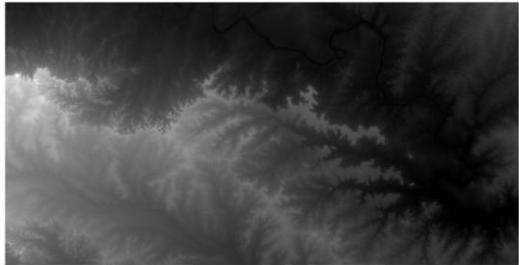
### Step 9: Similarly do Aspect.



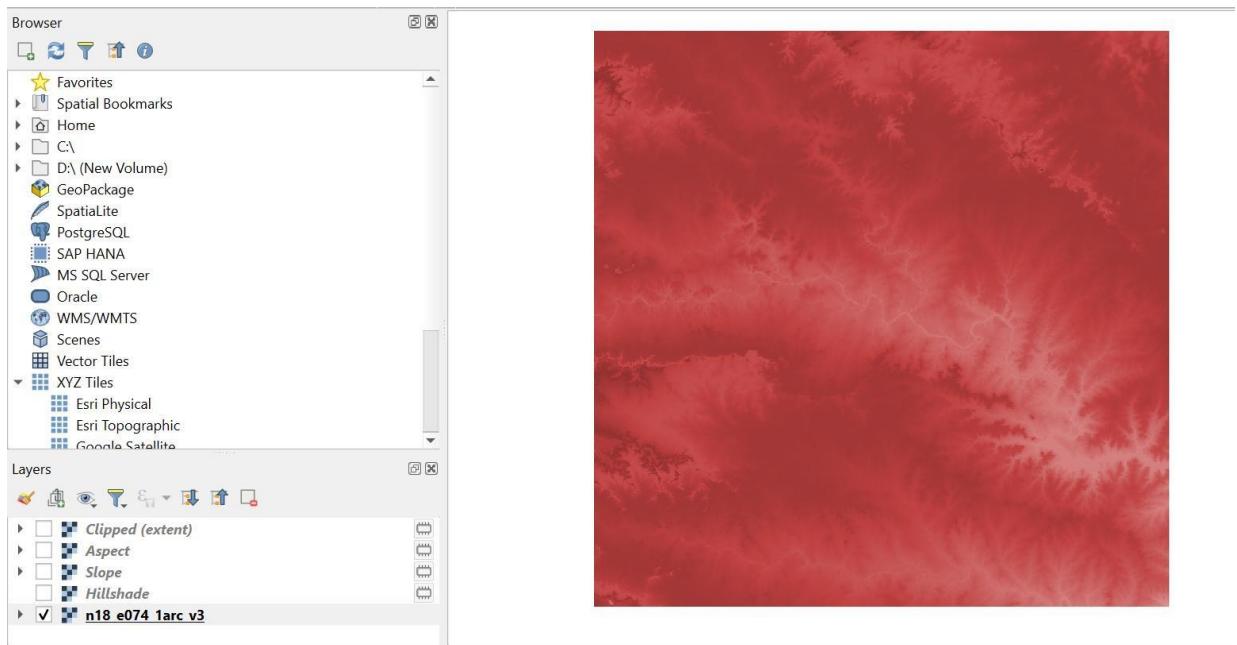
### Step 10: Show the histogram



## Step 11: Clipping raster



## Step 12: Raster styling



## Assignment number 12

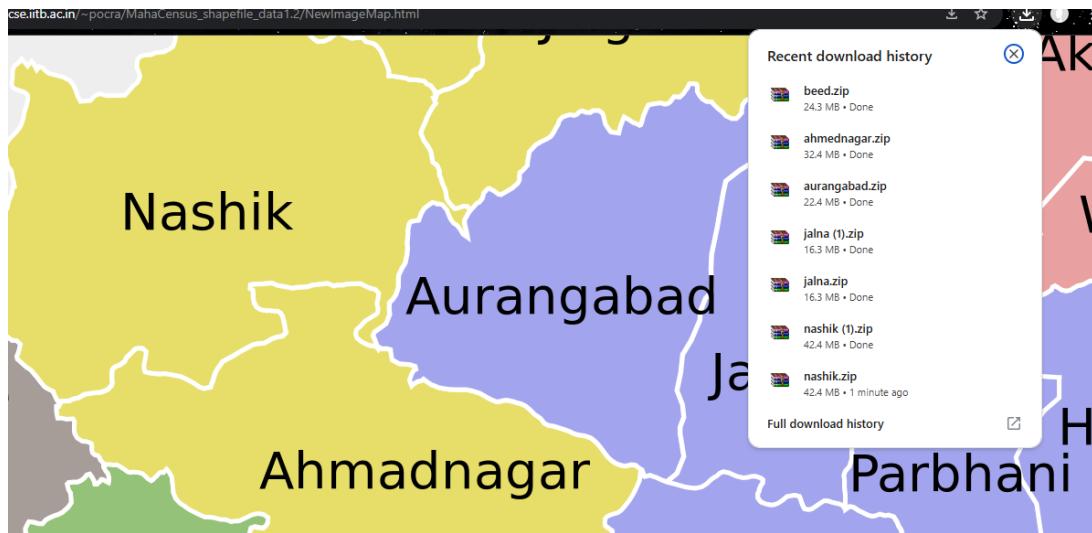
### 1) Download District Maps

- Visit [IIT Bombay GIS website](#).

The screenshot shows a search results page for 'iitb.ac.in'. The top navigation bar includes 'All', 'Images', 'Maps', 'News', 'Videos', 'Shopping', 'Web', and 'More'. Below the search bar, it says 'iitb.ac.in https://www.iitb.ac.in › iit-bombay-fossee-gis-activities-c...'. The main content area displays two links:

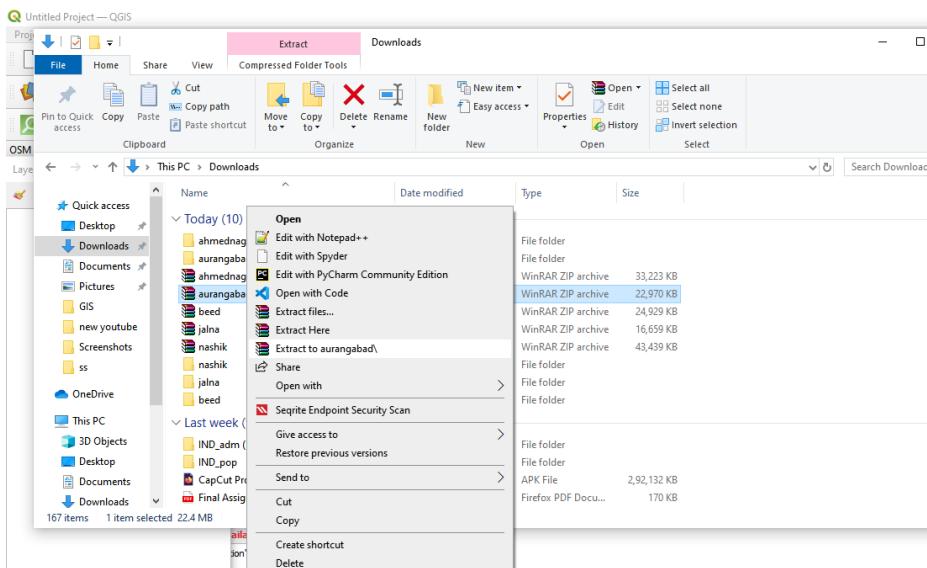
- Maharashtra Census Map - CSE IITB**  
Download the districtwise shapefiles by clicking on the map above or on the district name below .C can open the downloaded shapefiles with the help of any GIS ...
- IIT Bombay FOSSEE Geospatial Mapathon 2024**  
https://iitm-mapathon-2024.fossee.in › results  
Results of IIT Bombay FOSSEE Geospatial Mapathon 2024 ...  
Results of IIT Bombay FOSSEE Geospatial Mapathon 2024 Edition IV. All the teams mentioned below are champions, there is no particular order to be followed.

- Download maps for five districts (Ahmednagar, Aurangabad, Beed, Pune, Nashik).

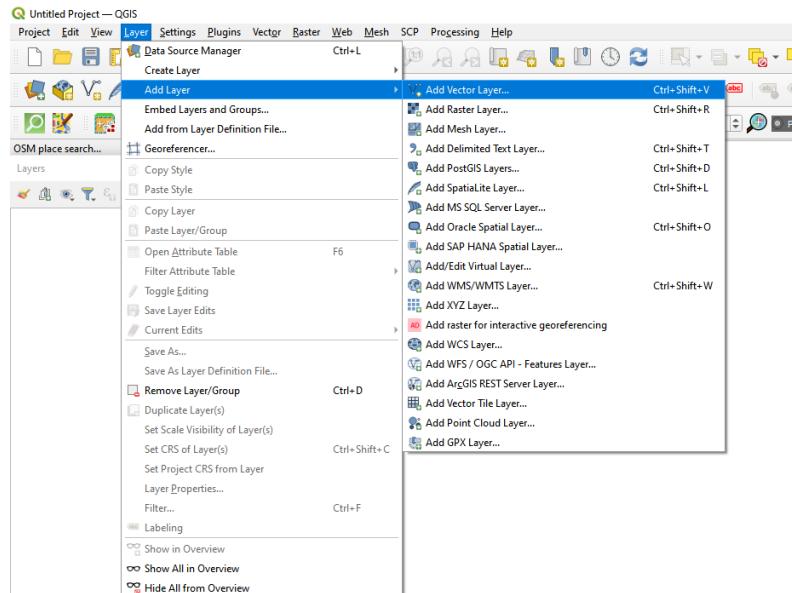


### 2) Extract the Downloaded Maps

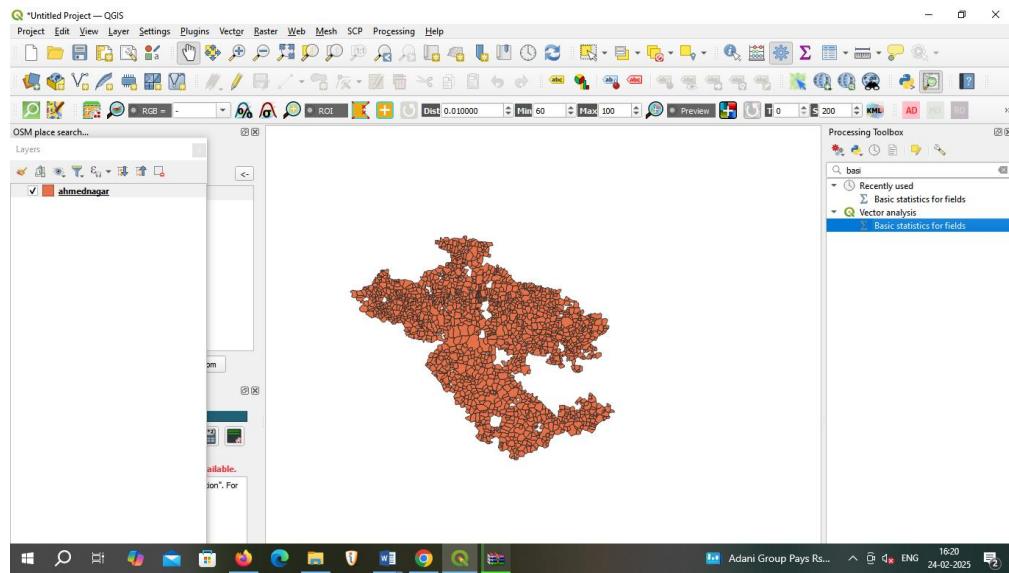
- Unzip or extract the files if they are in a compressed format (e.g., .zip).
- Ensure that all maps are accessible in a folder.



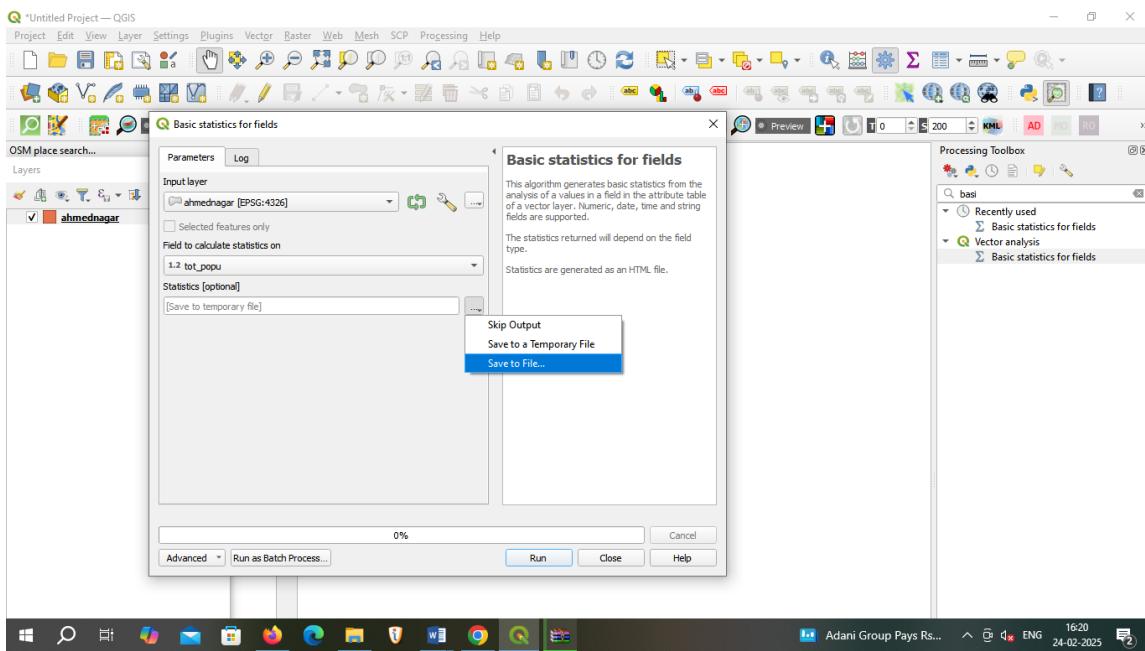
### 3) Add Vector Layers



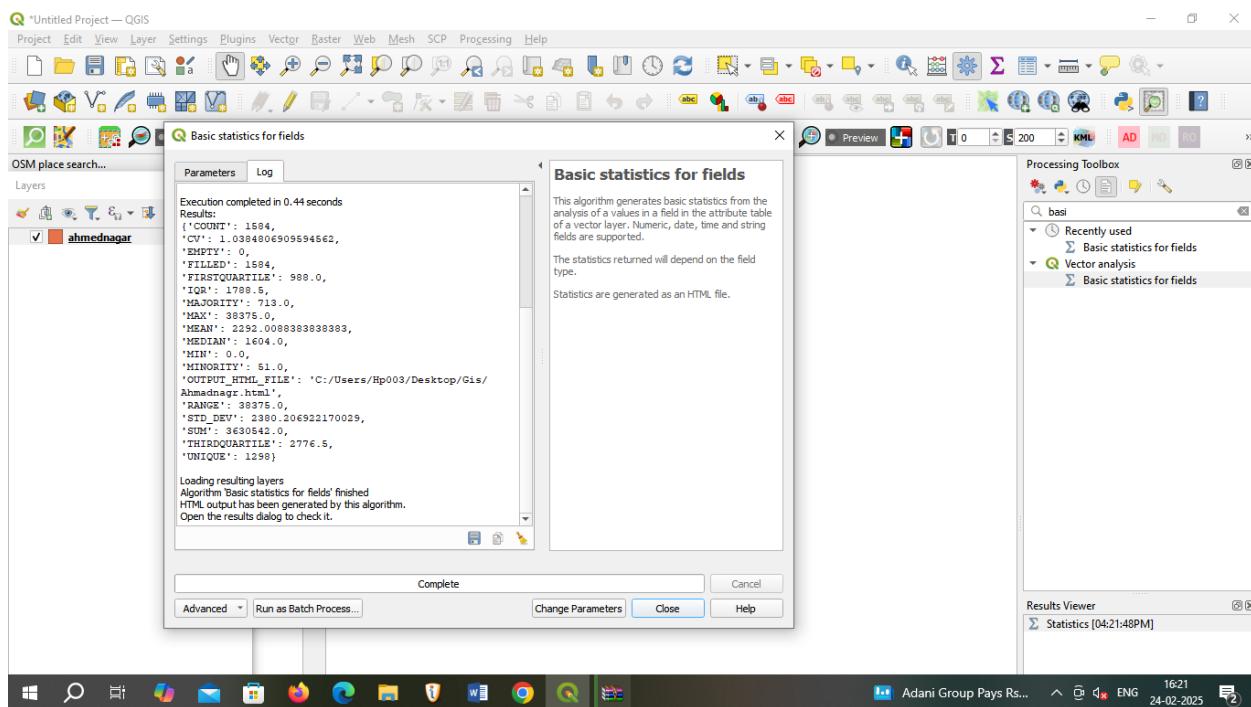
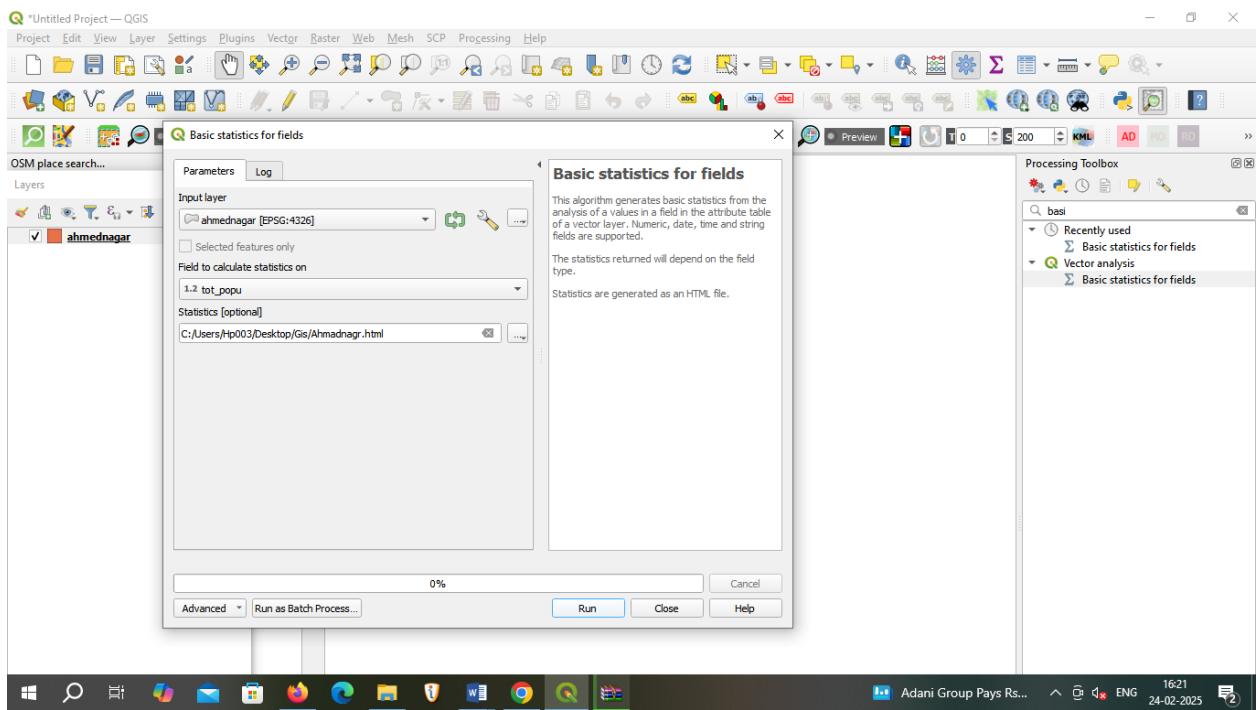
### 4) Browser open extract file



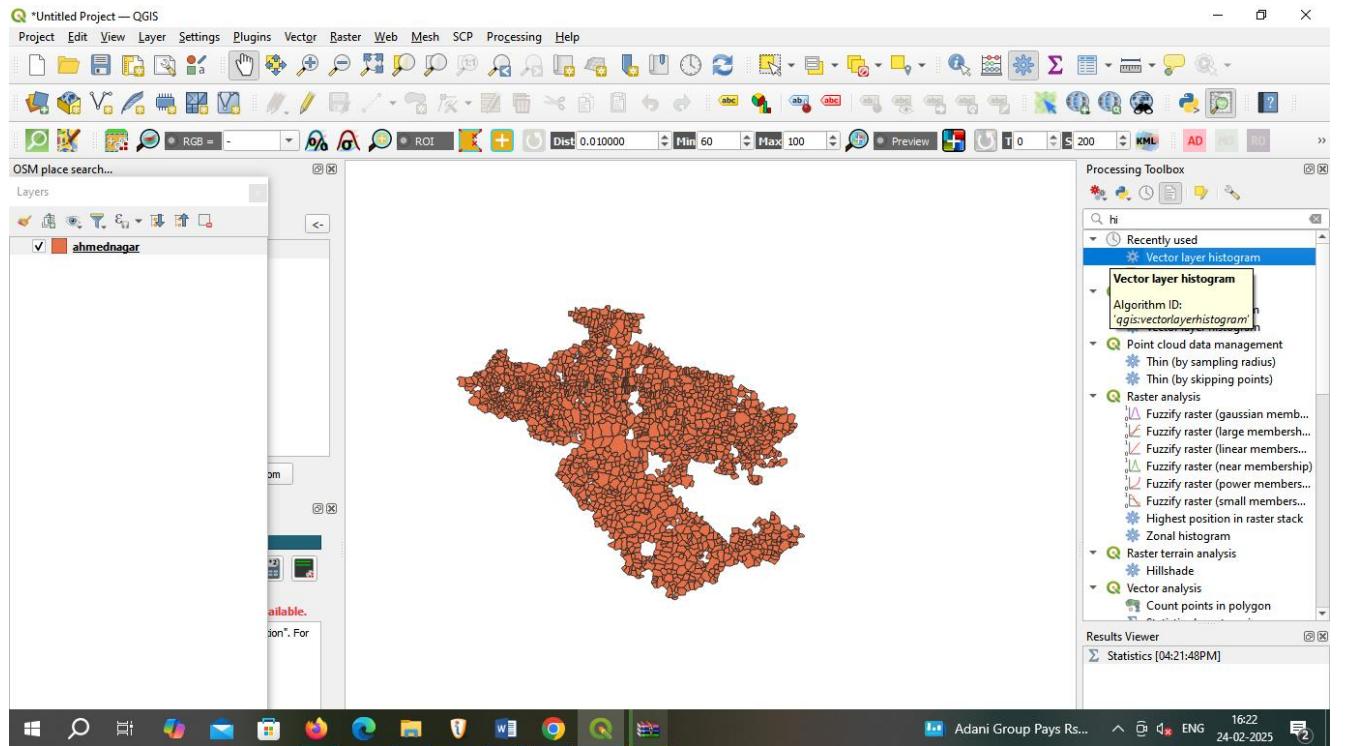
## 5) Search Basic statistics for fields input layer field and save file :



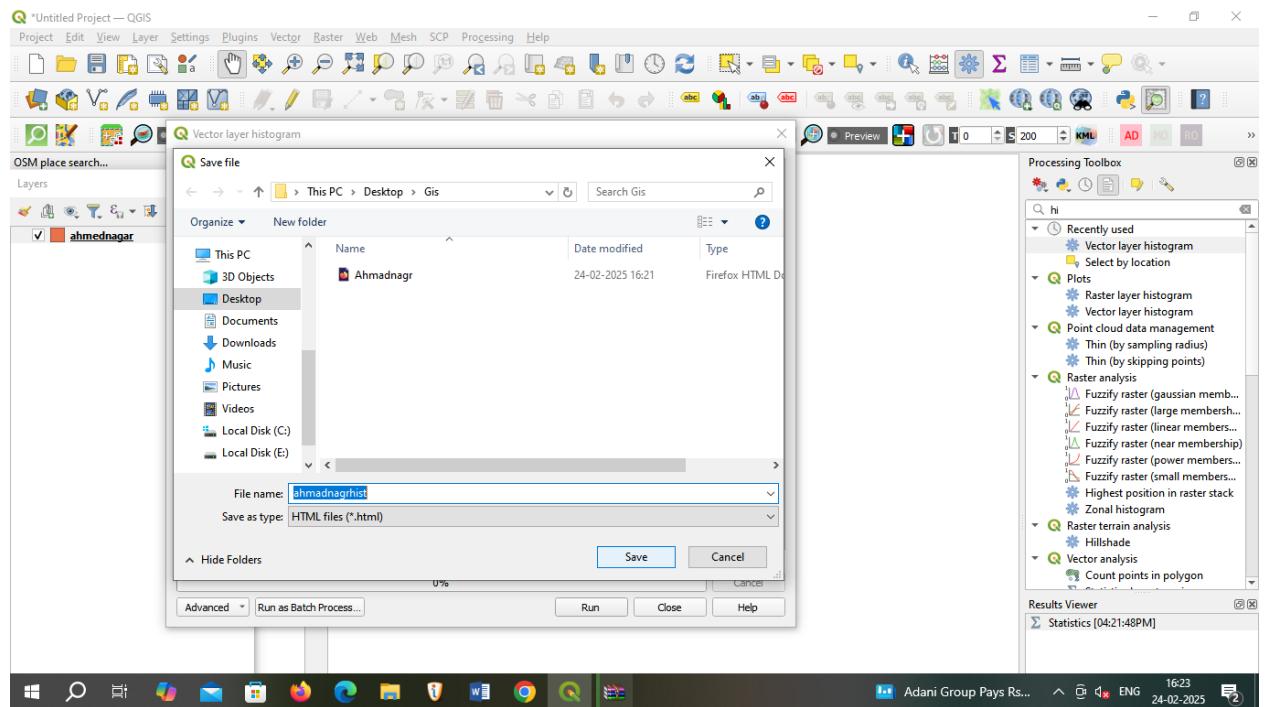
## 6) Run



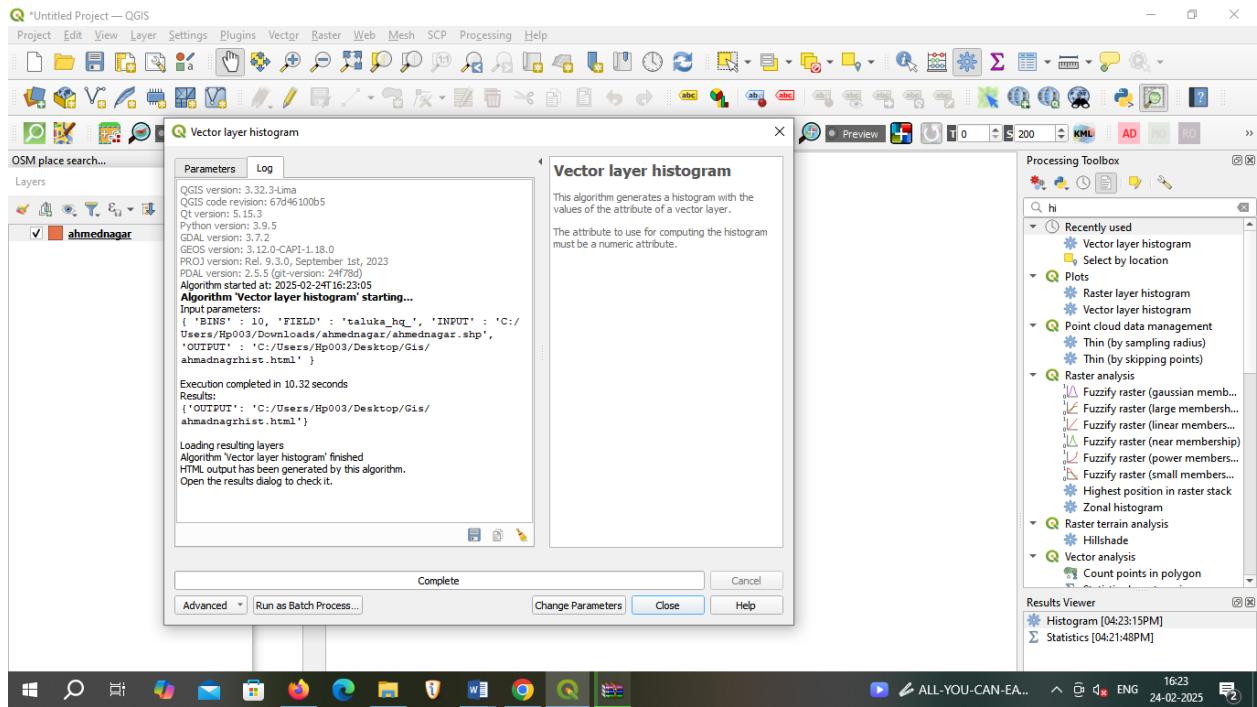
## 7) Open toolbox Search vector layer histogram open this :



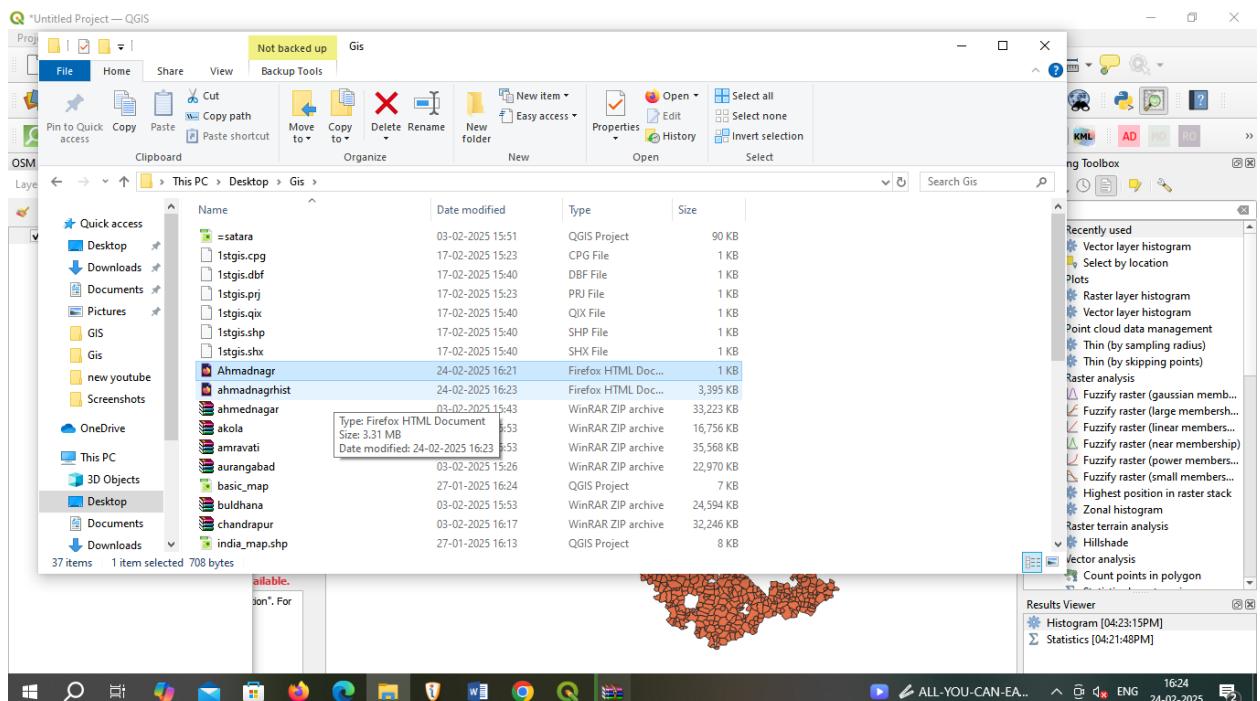
## 8) Save this file



## 9) Output overview

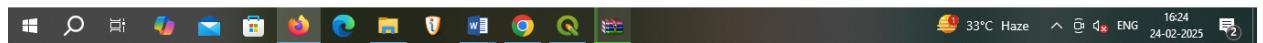


## 10) Open this save file

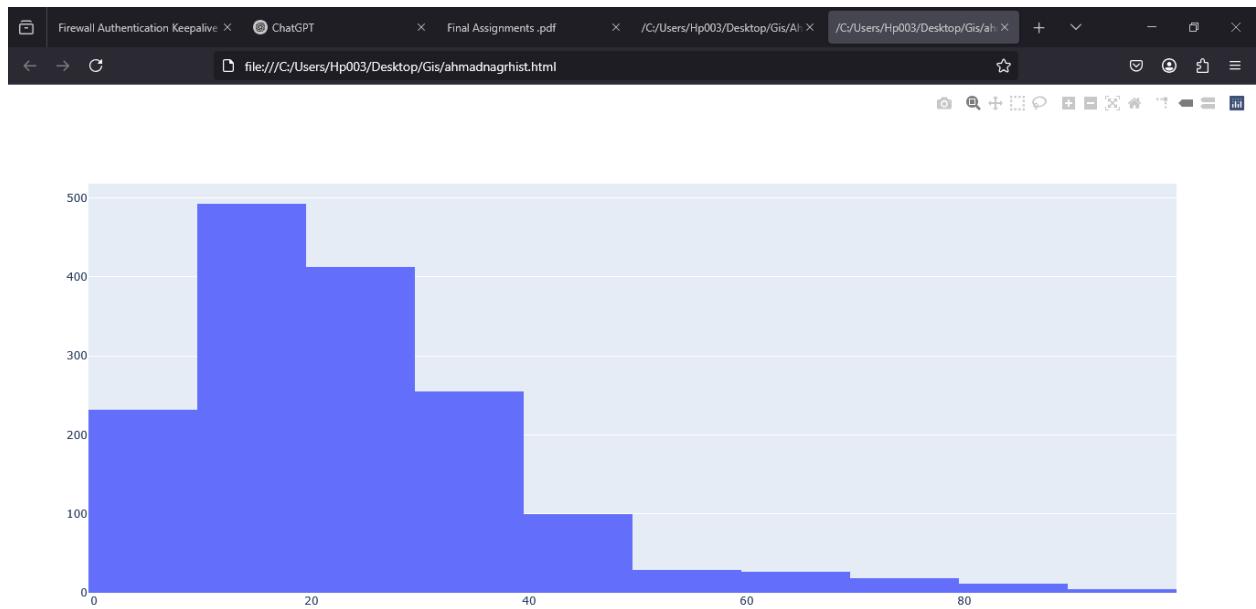


## Ahmednagar Basic statistics for fields output :

Analyzed field: tot\_popu  
Count: 1584  
Unique values: 1298  
NULL (missing) values: 0  
Minimum value: 0.0  
Maximum value: 38375.0  
Range: 38375.0  
Sum: 3630542.0  
Mean value: 2292.008838383838  
Median value: 1604.0  
Standard deviation: 2380.206922170029  
Coefficient of Variation: 1.0384806909594562  
Minority (rarest occurring value): 51.0  
Majority (most frequently occurring value): 713.0  
First quartile: 988.0  
Third quartile: 2776.5  
Interquartile Range (IQR): 1788.5

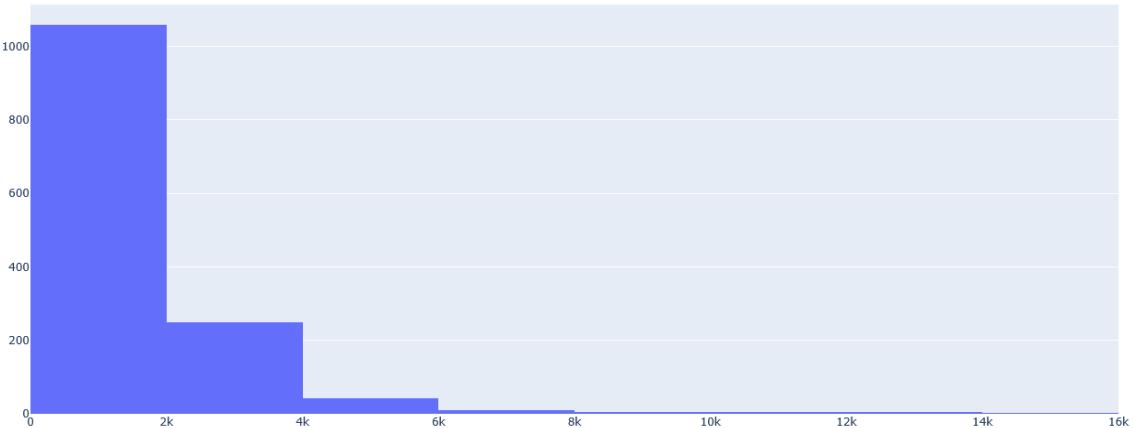
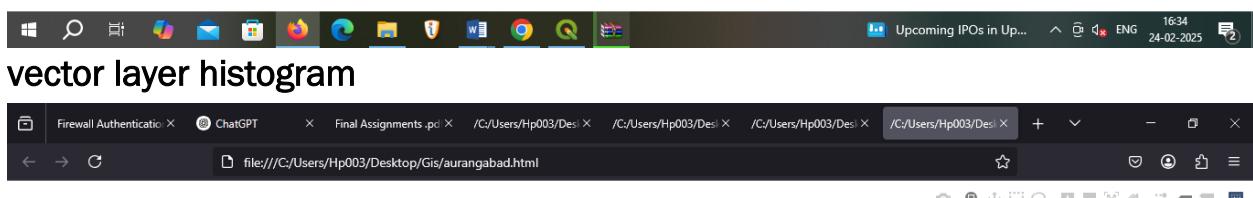


## Ahmednagar vector layer histogram



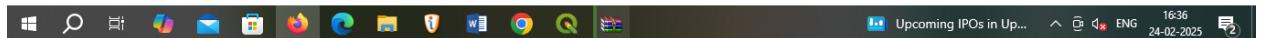
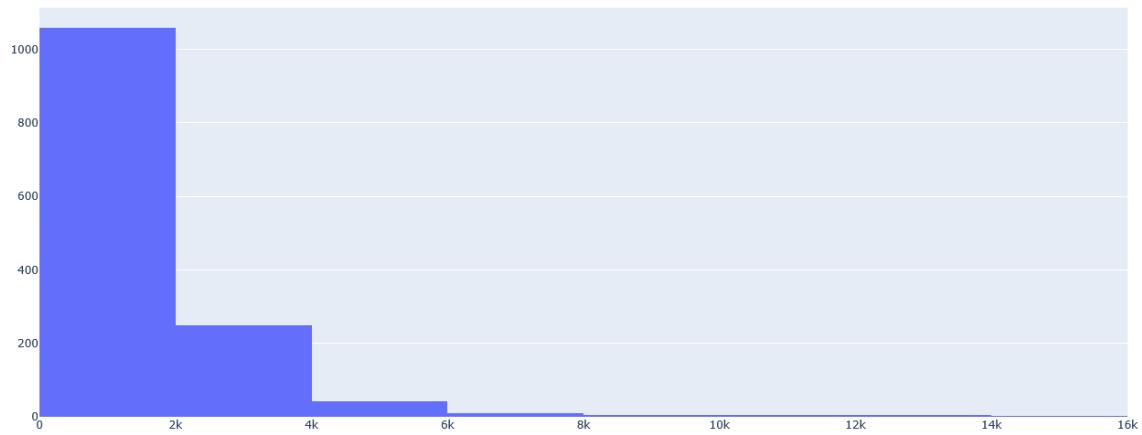
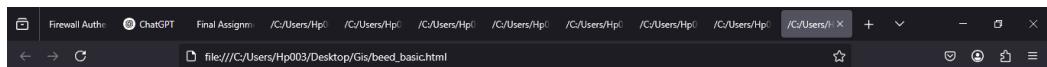
2) Aurangabad  
Basic statistics for fields output :

Analyzed field: tot\_popu  
Count: 1368  
Unique values: 1079  
NULL (missing) values: 0  
Minimum value: 0.0  
Maximum value: 14476.0  
Range: 14476.0  
Sum: 2070751.0  
Mean value: 1513.7068713450292  
Median value: 1130.5  
Standard deviation: 1398.822829933594  
Coefficient of Variation: 0.9241041686562782  
Minority (rarest occurring value): 7.0  
Majority (most frequently occurring value): 0.0  
First quartile: 693.0  
Third quartile: 1888.0  
Interquartile Range (IQR): 1195.0



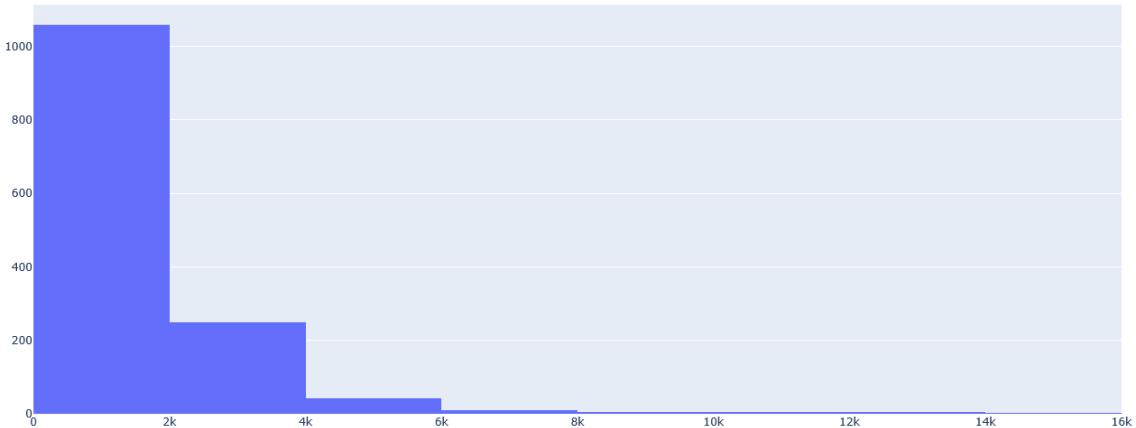
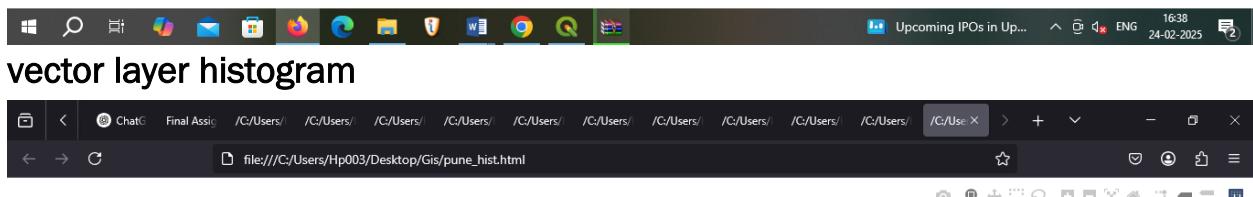
### 3) Beed

#### Basic statistics for fields output :



**4) pune**  
**Basic statistics for fields output :**

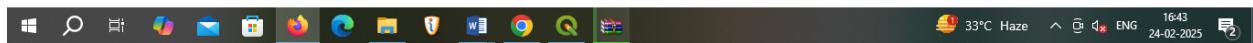
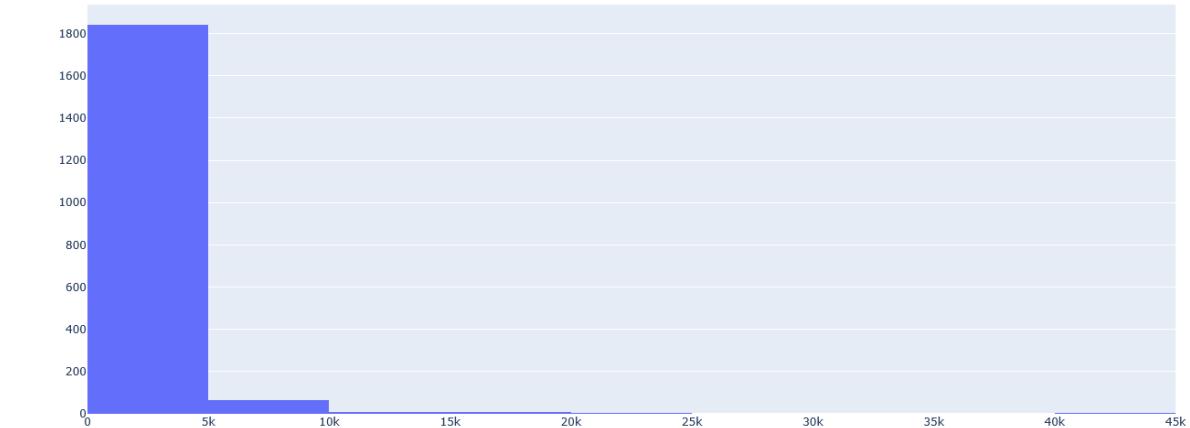
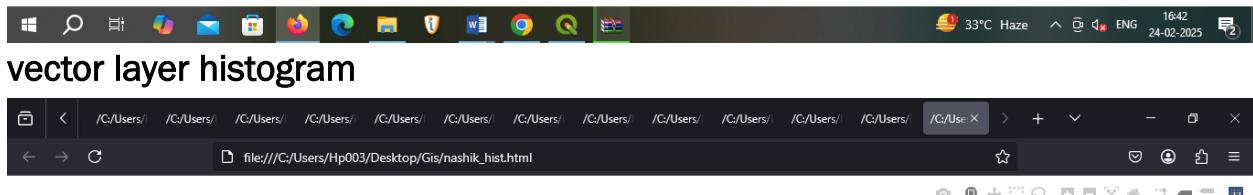
Analyzed field: tot\_popu  
Count: 1368  
Unique values: 1079  
NULL (missing) values: 0  
Minimum value: 0.0  
Maximum value: 14476.0  
Range: 14476.0  
Sum: 2070751.0  
Mean value: 1513.7068713450292  
Median value: 1130.5  
Standard deviation: 1398.822829933594  
Coefficient of Variation: 0.9241041686562782  
Minority (rarest occurring value): 7.0  
Majority (most frequently occurring value): 0.0  
First quartile: 693.0  
Third quartile: 1888.0  
Interquartile Range (IQR): 1195.0

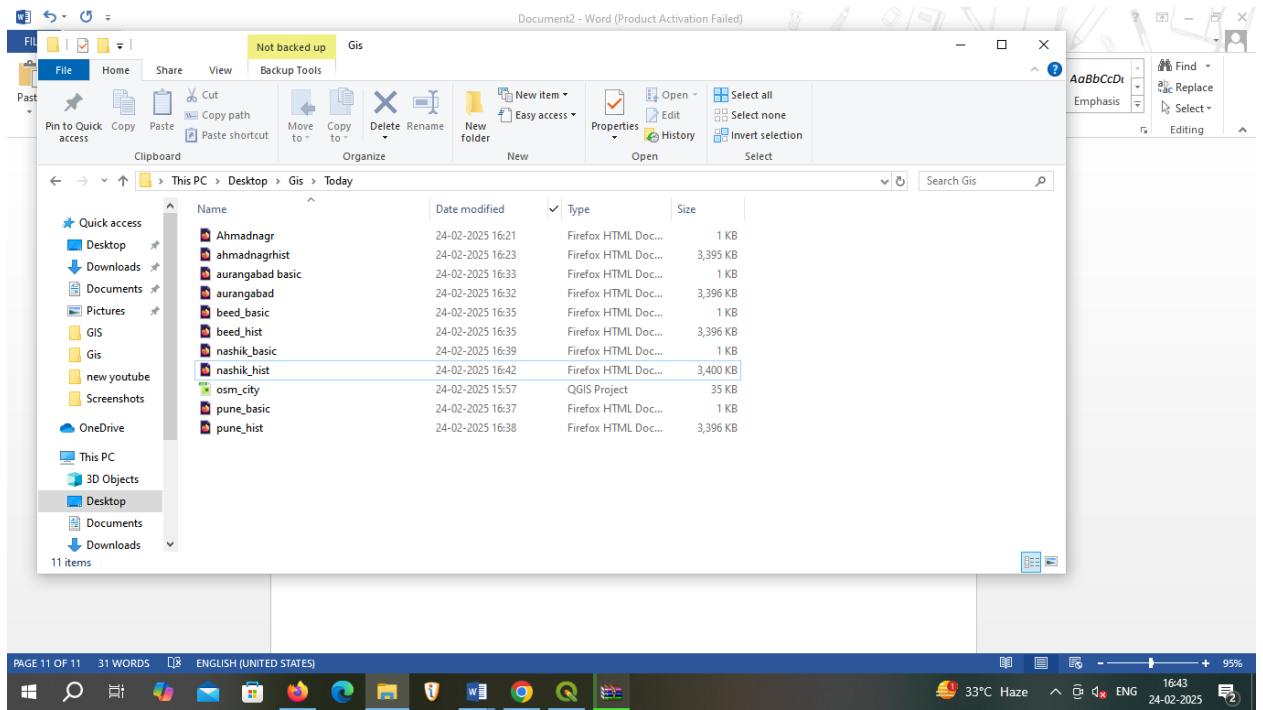


## 5) Nashik

Basic statistics for fields output :

Analyzed field: tot\_popu  
Count: 1922  
Unique values: 1449  
NULL (missing) values: 0  
Minimum value: 0.0  
Maximum value: 41559.0  
Range: 41559.0  
Sum: 3509814.0  
Mean value: 1826.1259105098854  
Median value: 1343.0  
Standard deviation: 2010.862501195621  
Coefficient of Variation: 1.1011631178455563  
Minority (rarest occurring value): 11.0  
Majority (most frequently occurring value): 615.0  
First quartile: 828.0  
Third quartile: 2204.0  
Interquartile Range (IQR): 1376.0



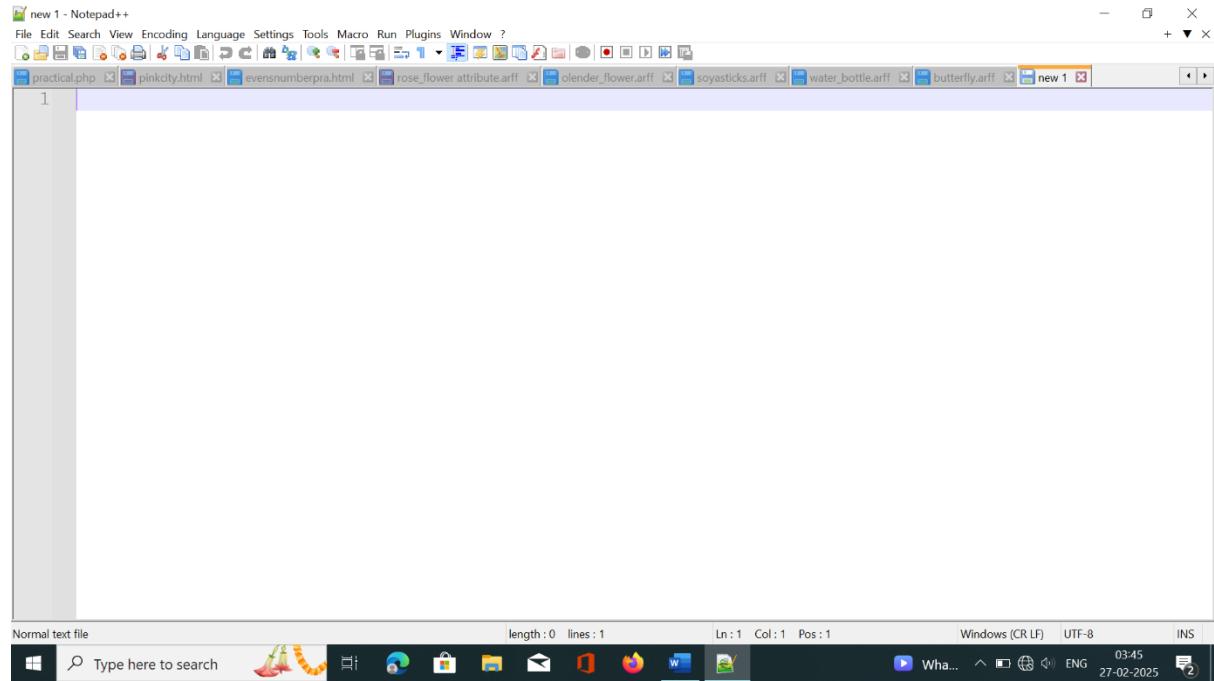


## Practical Assignment : 13

Aim: Create ARFF file of given elements .

1.First elements is rose flower.

Step 1. Open notepad++

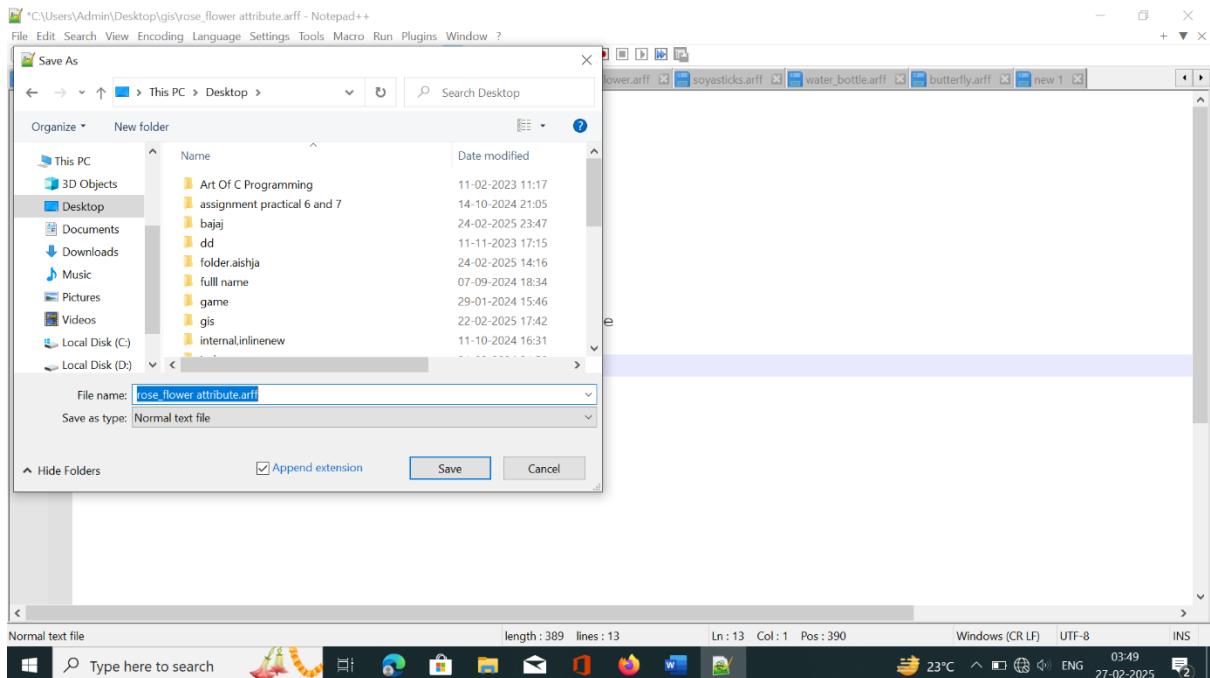


Step 2. Add a ARFF code of rose flower.

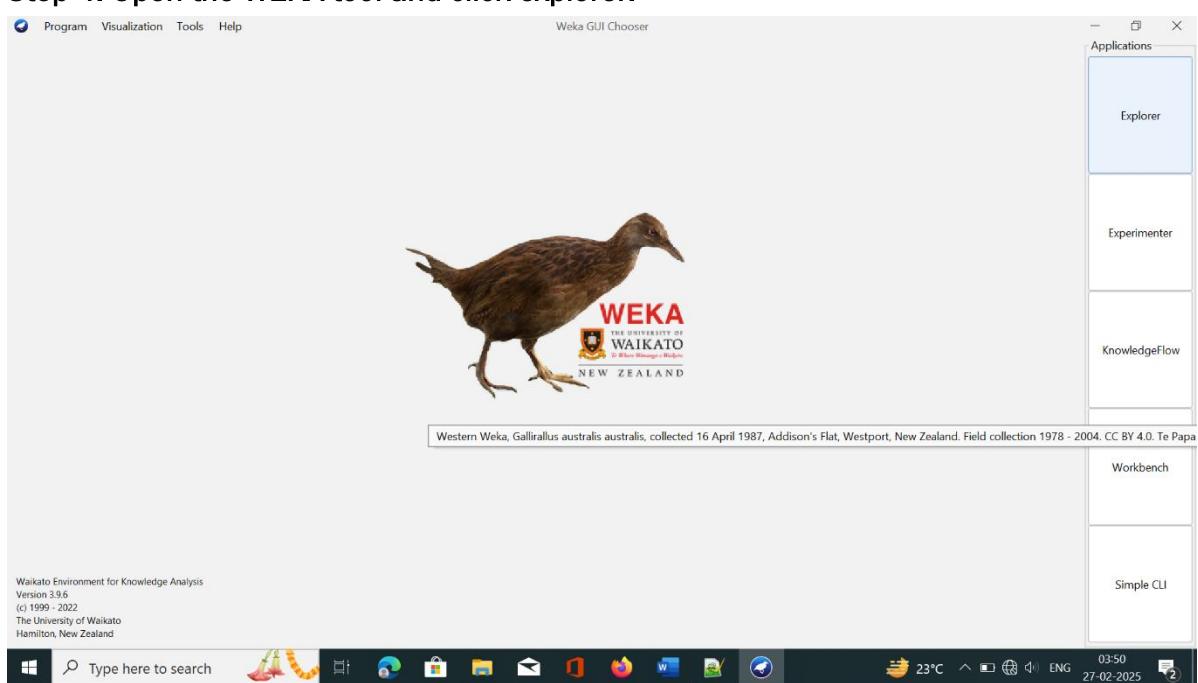
```
*C:\Users\Admin\Desktop\gis\rose_flower attribute.arff - Notepad++  
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?  
 praktical.php pinkcity.html evennumberpra.html rose_flower attribute.arff olander_flower.arff soyasticks.arff water_bottle.arff butterfly.arff new 1  
1 @relation rose_flower  
2 @attribute petal_length numeric  
3 @attribute petal_width numeric  
4 @attribute color {red,white,pink,yellow}  
5 @attribute fragrance {strong,moderate}  
6 @attribute thorn_presence {yes,no}  
7 @attribute leaf_shape {serrated,smooth}  
8 @attribute bloom_size {small,medium,large}  
9 @attribute symbolic_meaning {love,purity}  
10 @data 5.1,2.3,red,strong,yes,serrated,large,love  
11  
12  
13
```

The screenshot shows the Notepad++ interface with the ARFF code for a rose flower relation. The code defines attributes for petal length, width, color, fragrance, thorn presence, leaf shape, bloom size, and symbolic meaning, along with a single data instance. The status bar at the bottom indicates the file is a 'Normal text file' with 389 lines and a file path of 'C:\Users\Admin\Desktop\gis\rose\_flower attribute.arff'. The taskbar at the bottom includes icons for File Explorer, Task View, Edge, Google Chrome, Mail, Microsoft Office, and File Explorer again.

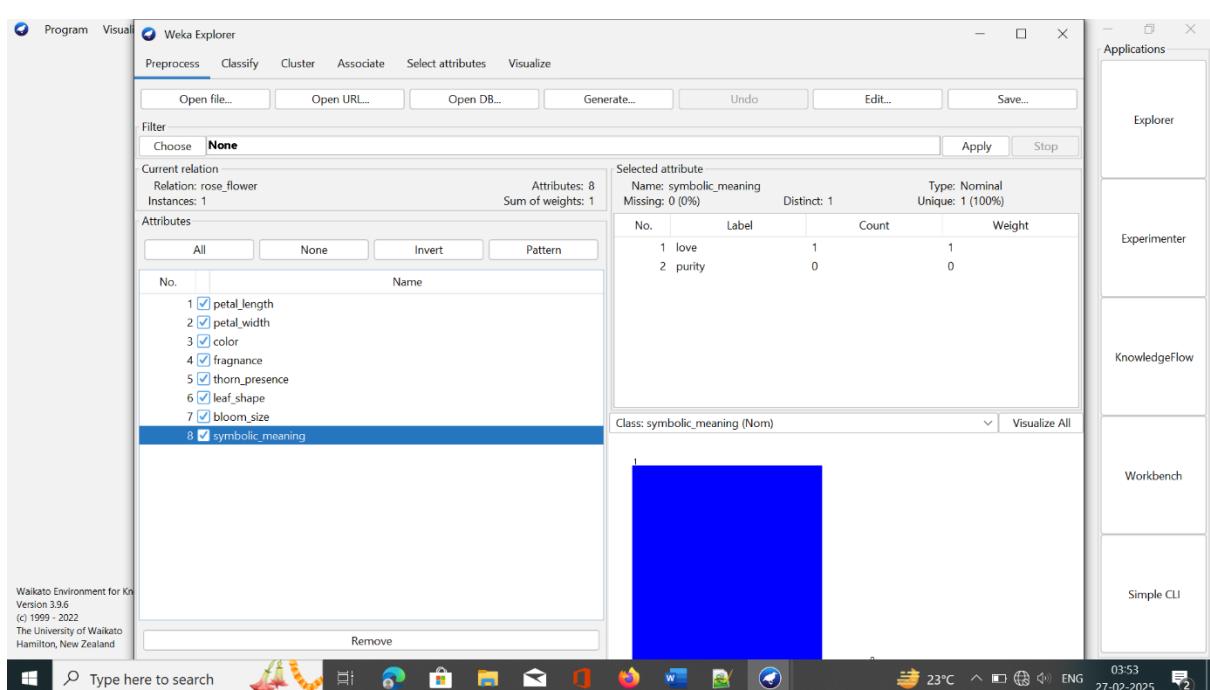
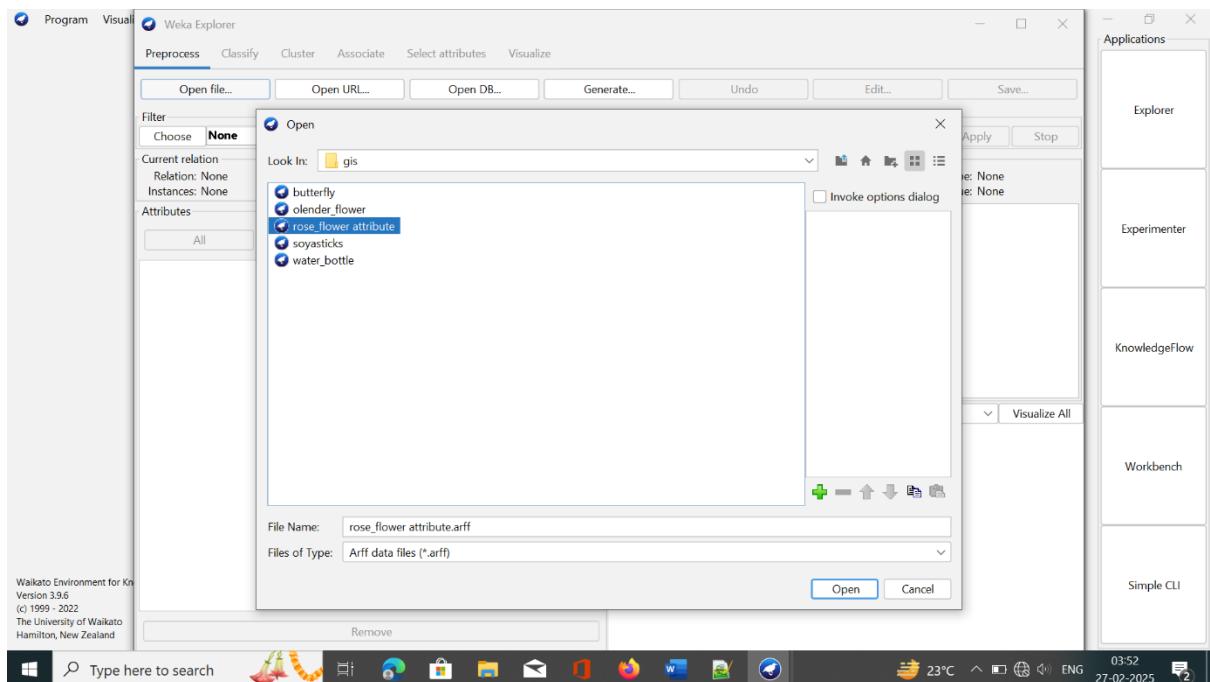
Step 3. Save code in desktop with extension .arff

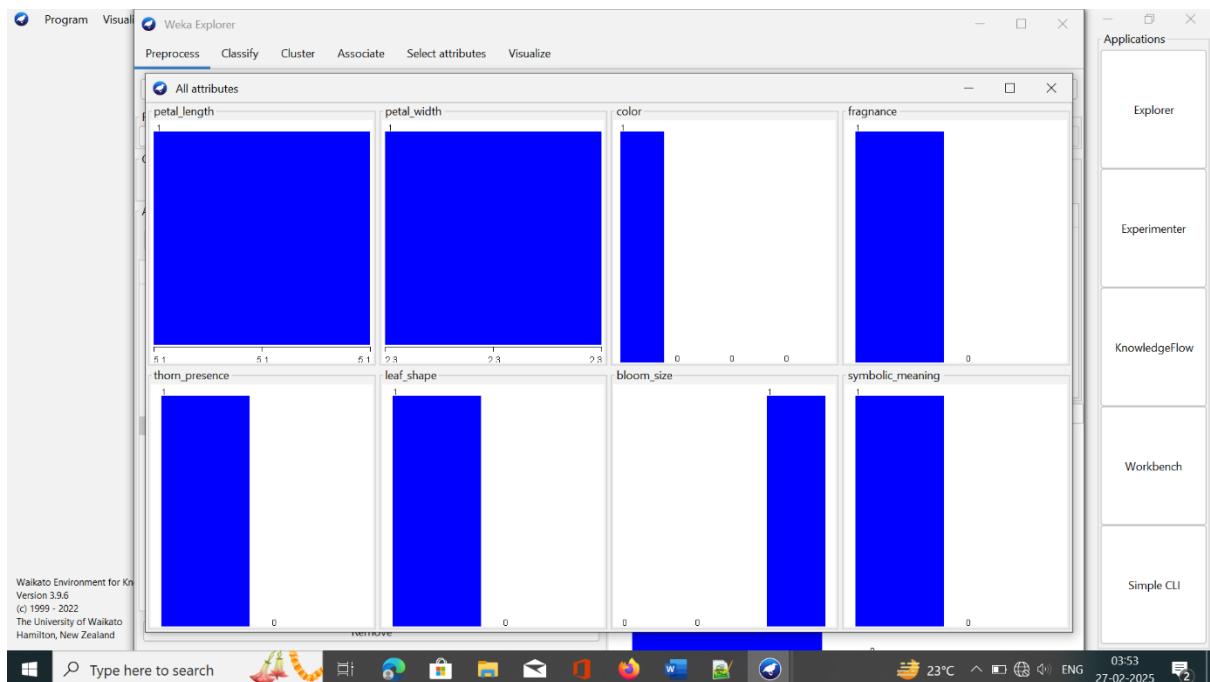


#### Step 4. Open the WEKA tool and click explorer.



#### Step 5. Click open file.





**Viewer**

Relation: rose\_flower

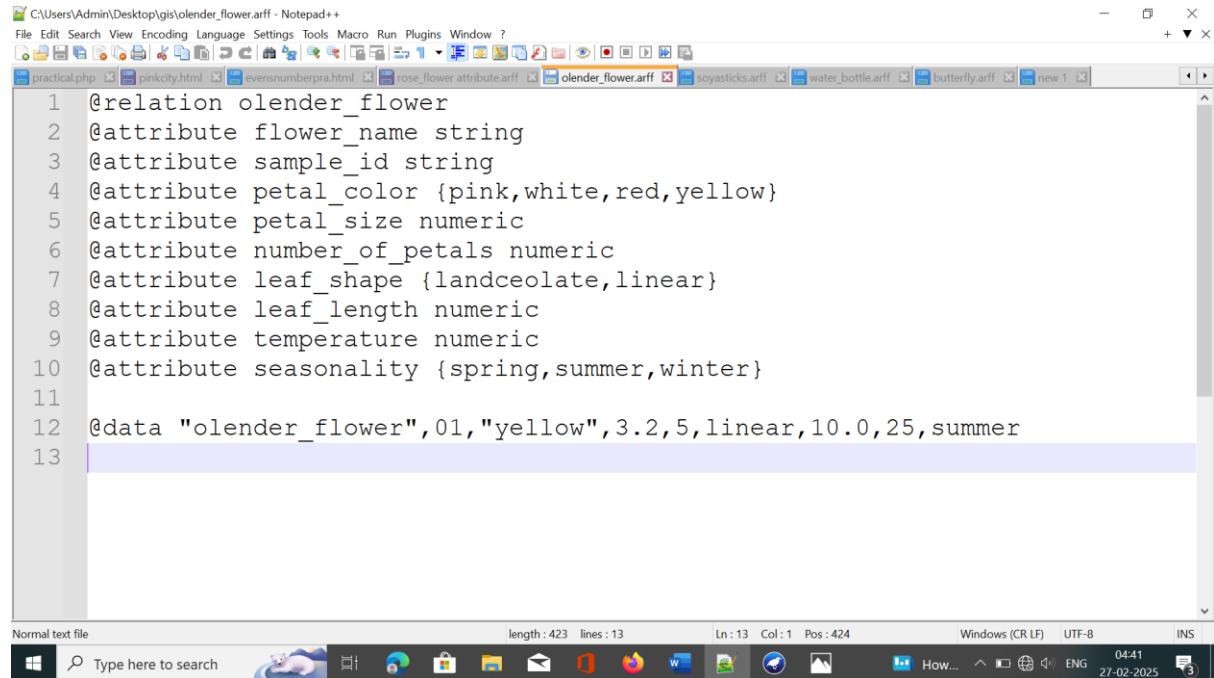
No.	1: petal_length	2: petal_width	3: color	4: fragrance	5: thorn_presence	6: leaf_shape	7: bloom_size	8: symbolic_meaning
1	Numeric 5.1	Numeric 2.3	Nominal red	Nominal strong	Nominal yes	Nominal serrated	Nominal large	Nominal love

Add instance Undo OK Cancel

# PRACTICAL ASSIGNMENT: 13

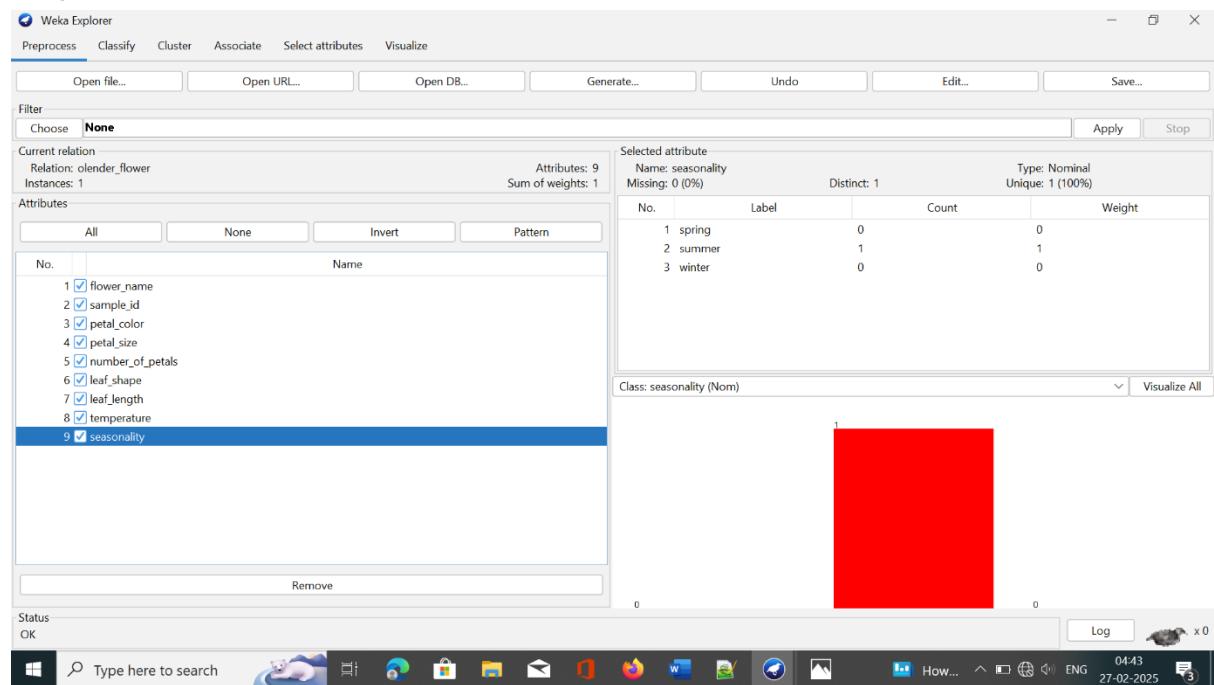
## 2. Second element is Olander Flower.

### Attribute ARFF code:



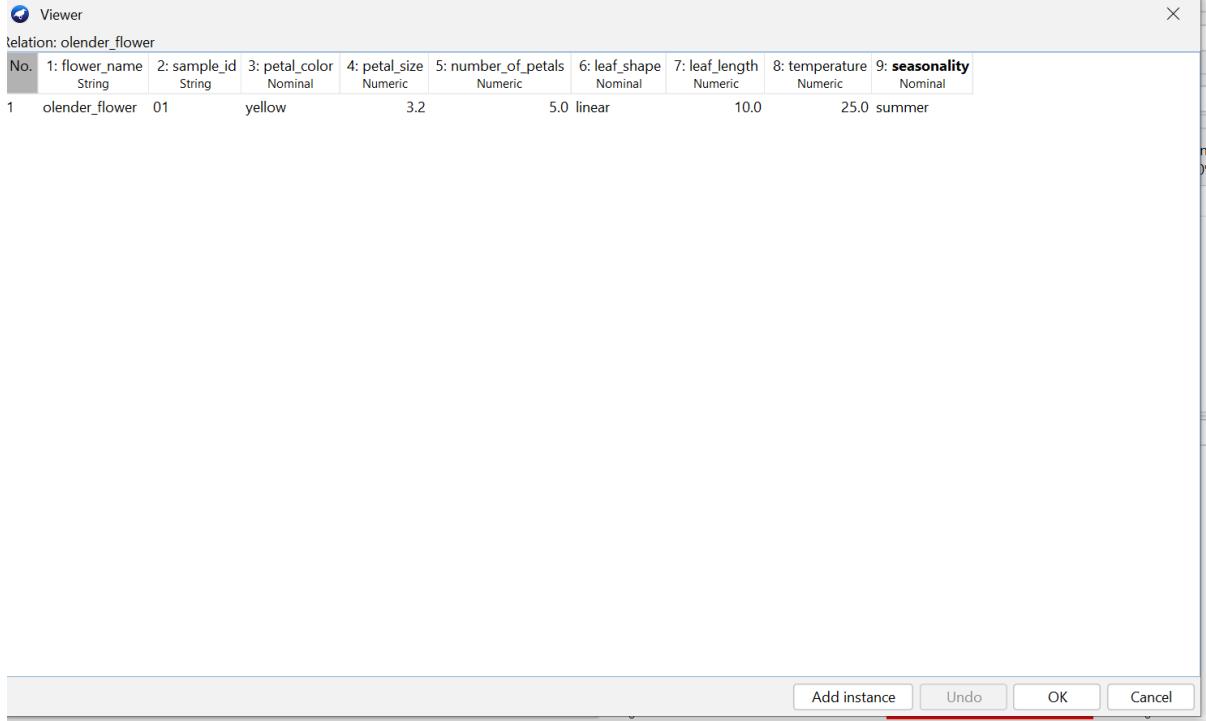
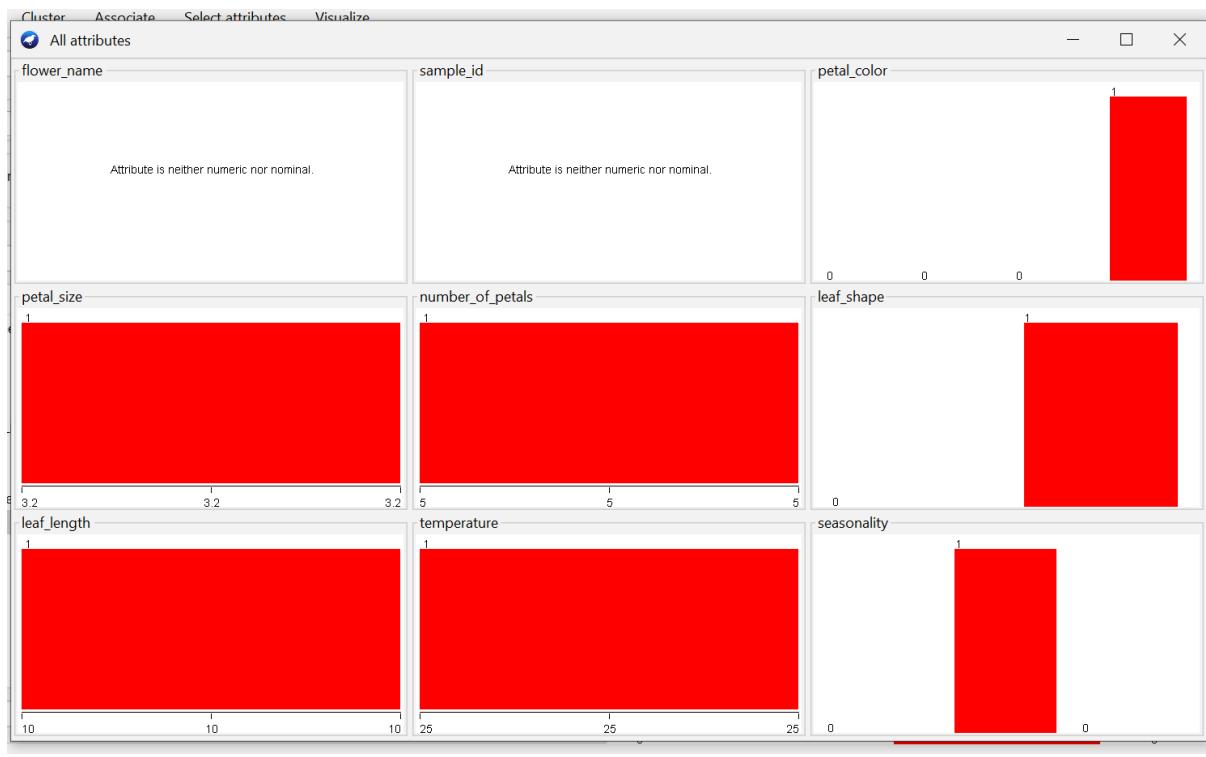
```
1 @relation olander_flower
2 @attribute flower_name string
3 @attribute sample_id string
4 @attribute petal_color {pink,white,red,yellow}
5 @attribute petal_size numeric
6 @attribute number_of_petals numeric
7 @attribute leaf_shape {landceolate,linear}
8 @attribute leaf_length numeric
9 @attribute temperature numeric
10 @attribute seasonality {spring,summer,winter}
11
12 @data "olender_flower",01,"yellow",3.2,5,linear,10.0,25,summer
13
```

### Output:



The Weka Explorer interface shows the following configuration for the "olender\_flower" relation:

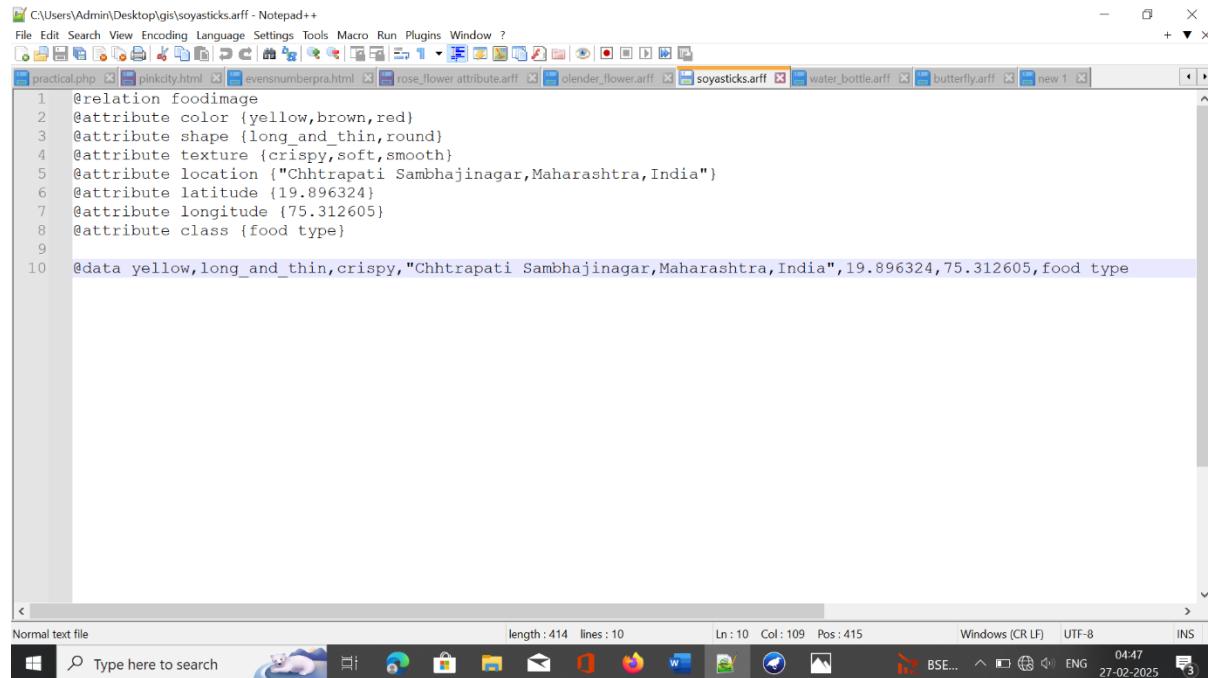
- Preprocess** tab is selected.
- Attributes** section:
  - Current relation: olander\_flower
  - Instances: 1
  - Attributes: 9
  - Sum of weights: 1
- Selected attribute**: seasonality (Nominal, Unique: 1 (100%))
- Attributes list**: flower\_name, sample\_id, petal\_color, petal\_size, number\_of\_petals, leaf\_shape, leaf\_length, temperature, seasonality (selected)
- Visualize** button is visible.



## PRACTICAL ASSIGNMENT : 14

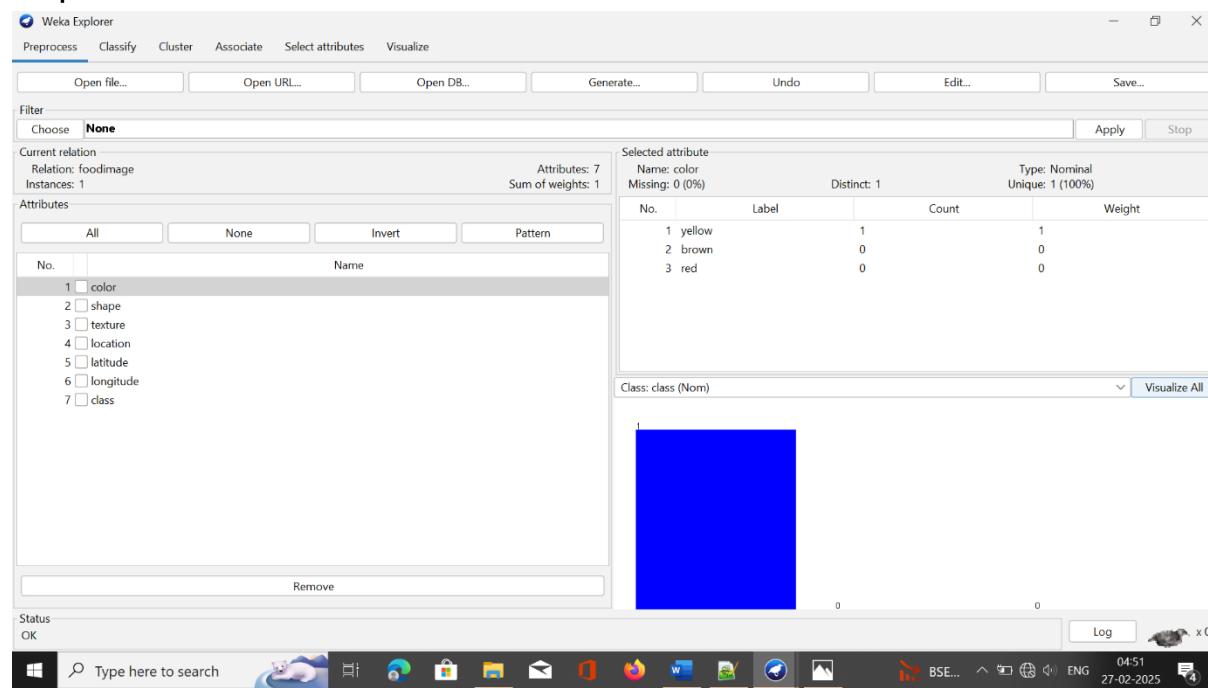
### 3.Third element is soya sticks.

#### Attributes ARFF code:



```
1 @relation foodimage
2 @attribute color {yellow,brown,red}
3 @attribute shape {long_and_thin,round}
4 @attribute texture {crispy,soft,smooth}
5 @attribute location {"Chhtrapati Sambhajinagar,Maharashtra,India"}
6 @attribute latitude {19.896324}
7 @attribute longitude {75.312605}
8 @attribute class {food type}
9
10 @data yellow,long_and_thin,crispy,"Chhtrapati Sambhajinagar,Maharashtra,India",19.896324,75.312605,food type
```

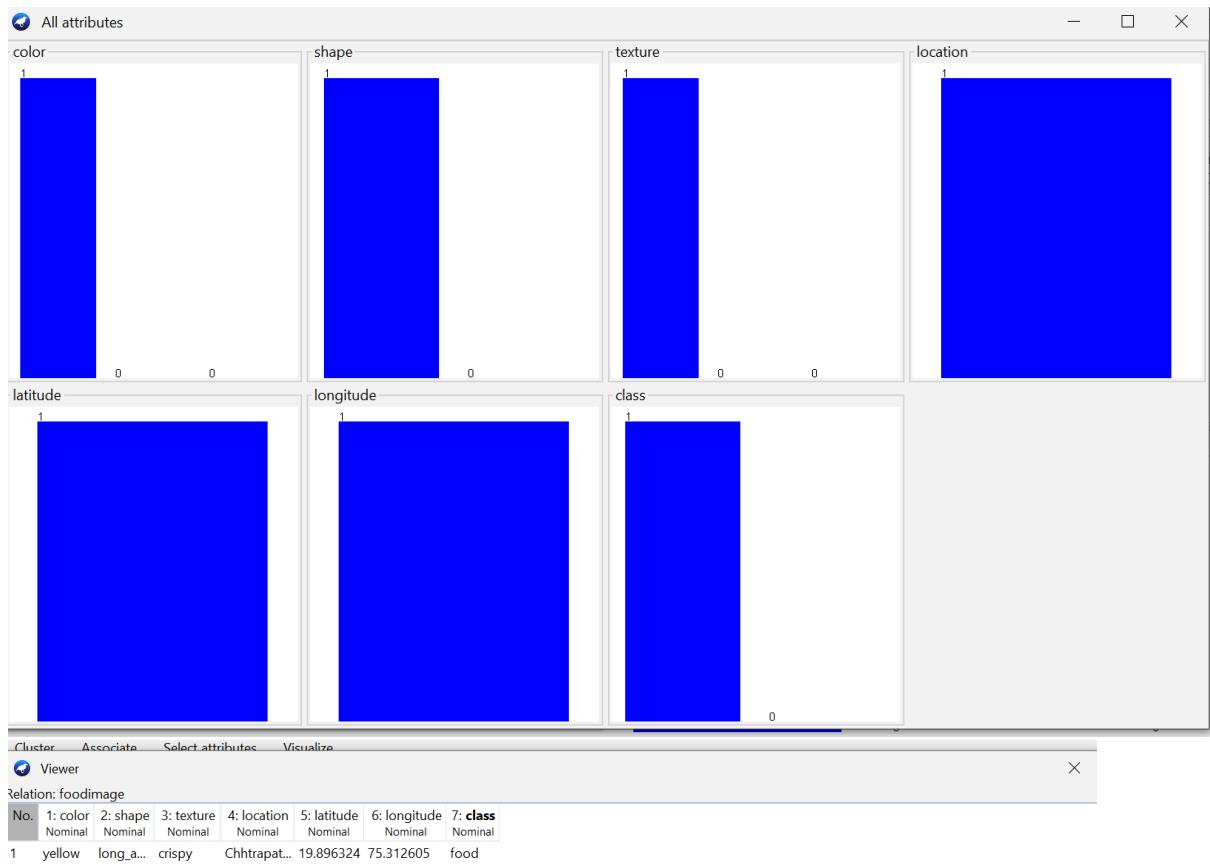
#### Output:



The Weka Explorer interface shows the following details for the "color" attribute:

No.	Label	Count	Weight
1	yellow	1	1
2	brown	0	0
3	red	0	0

The visualization pane shows a single blue square representing the data distribution for the "color" attribute.

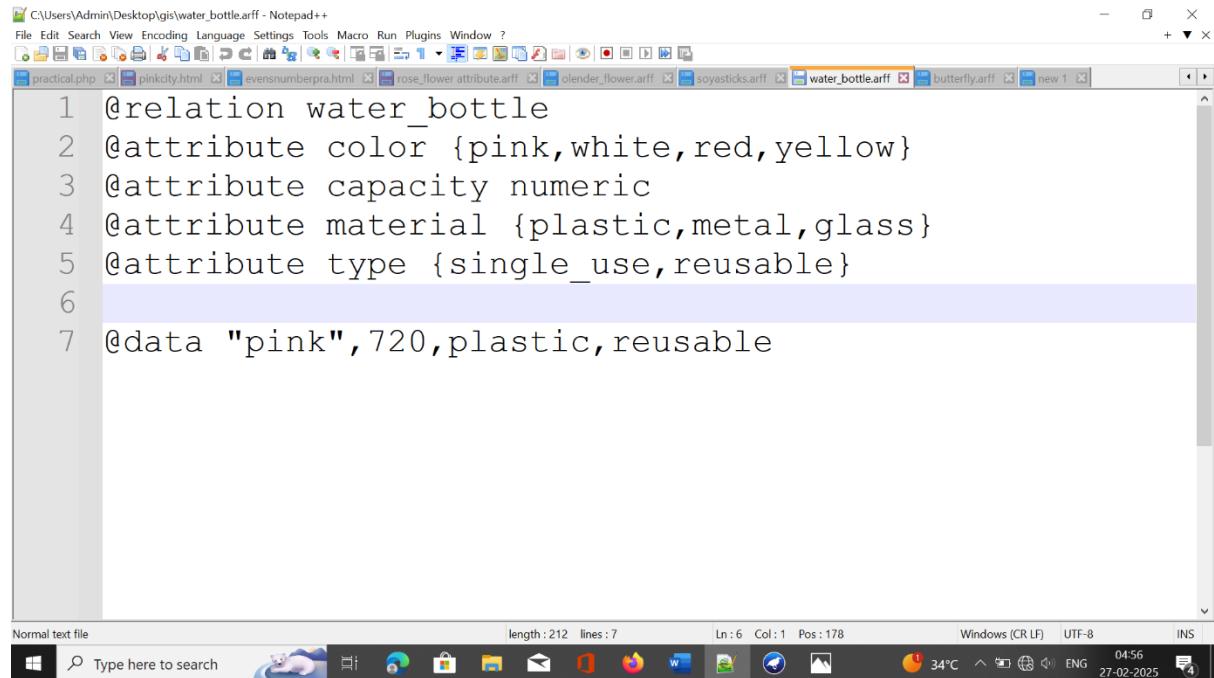


Add instance Undo OK Cancel

## PRACTICAL ASSIGNMENT : 15

### 4. Fourth element is water bottle.

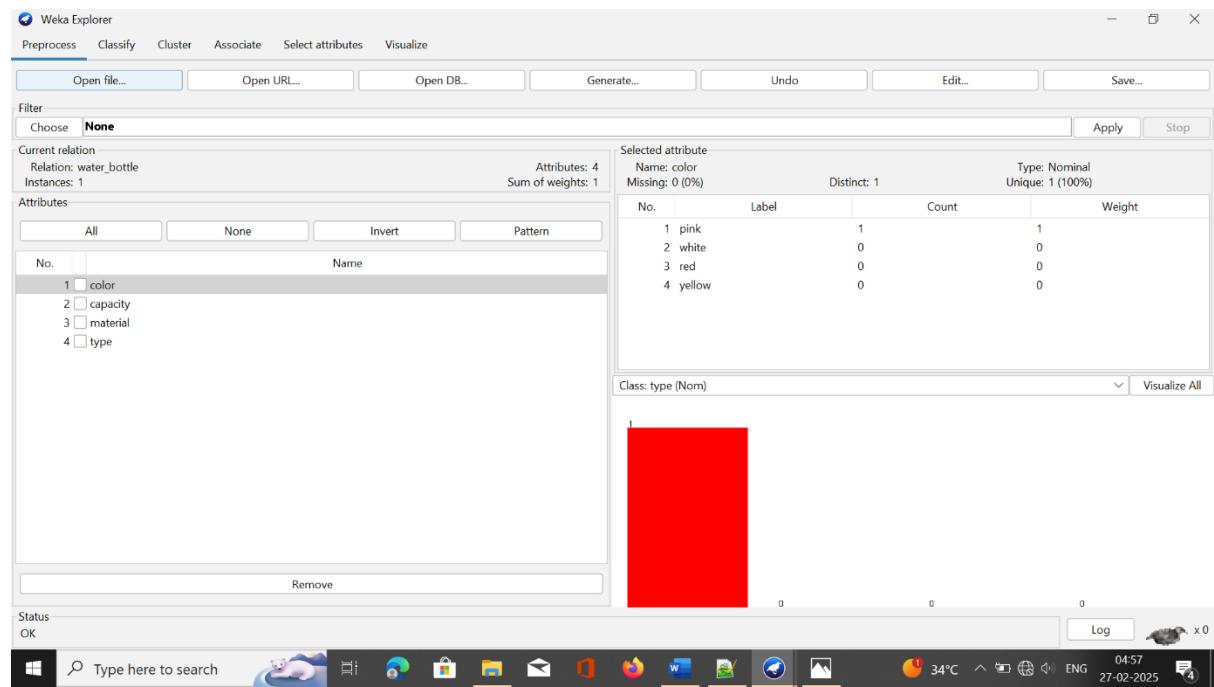
#### Attribute ARFF code.

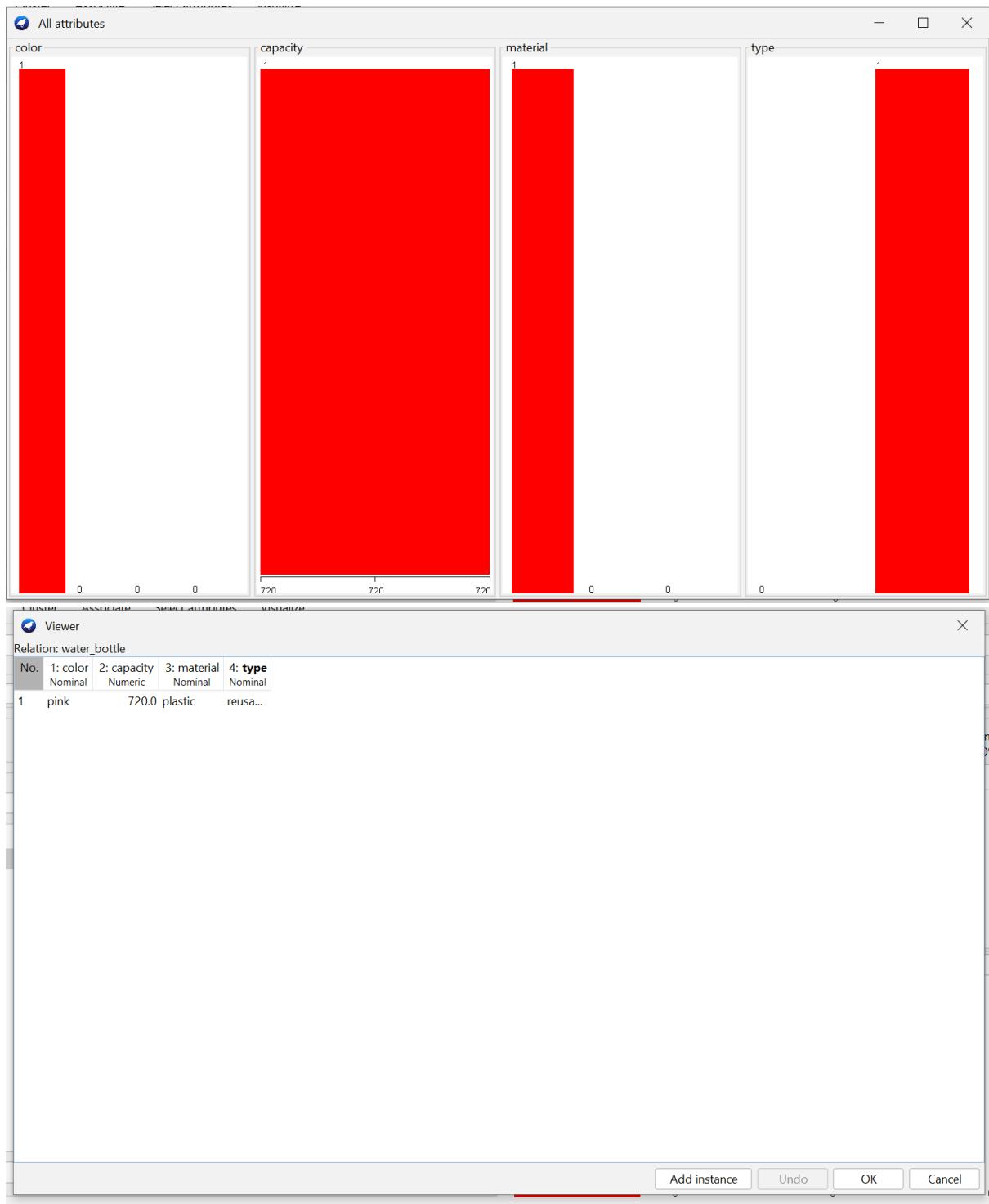


```
1 @relation water_bottle
2 @attribute color {pink,white,red,yellow}
3 @attribute capacity numeric
4 @attribute material {plastic,metal,glass}
5 @attribute type {single_use,reusable}
6
7 @data "pink",720,plastic,reusable
```

The screenshot shows a Notepad+ window with the ARFF code for a 'water\_bottle' relation. The code defines four attributes: color (nominal, values pink, white, red, yellow), capacity (numeric), material (nominal, values plastic, metal, glass), and type (nominal, values single\_use, reusable). A single data instance is provided: a pink, 720-unit capacity, plastic water bottle that is reusable.

#### Output:

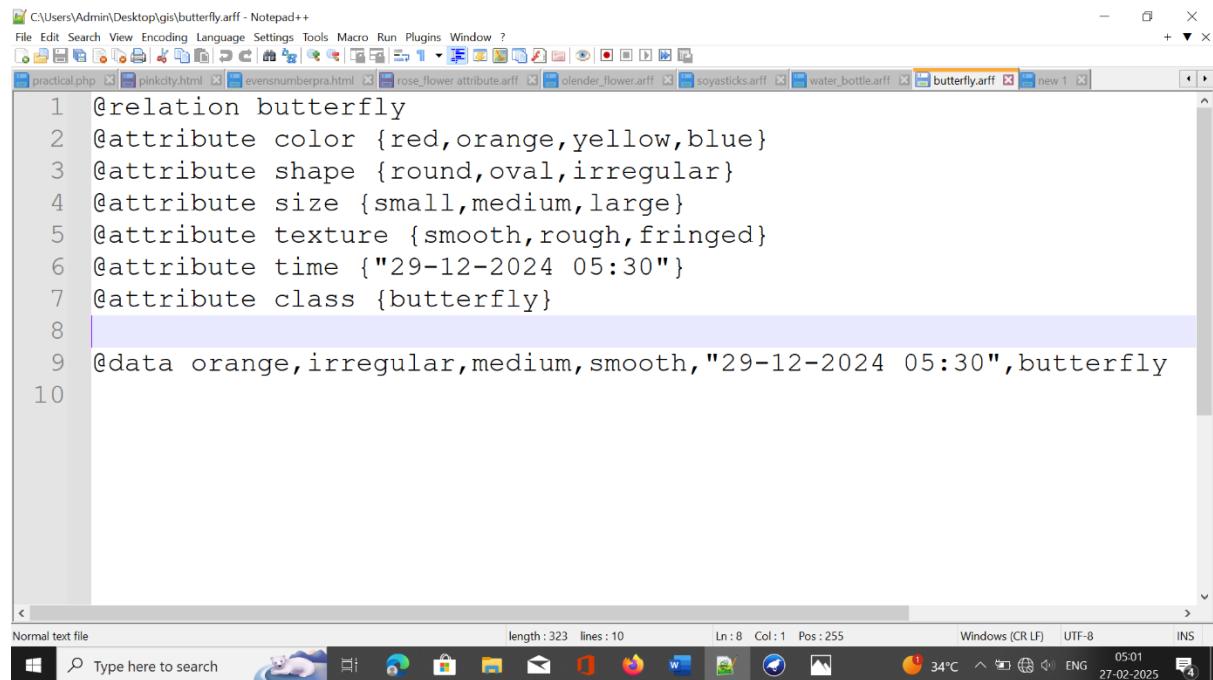




## PRACTICAL ASSIGNMENT : 16

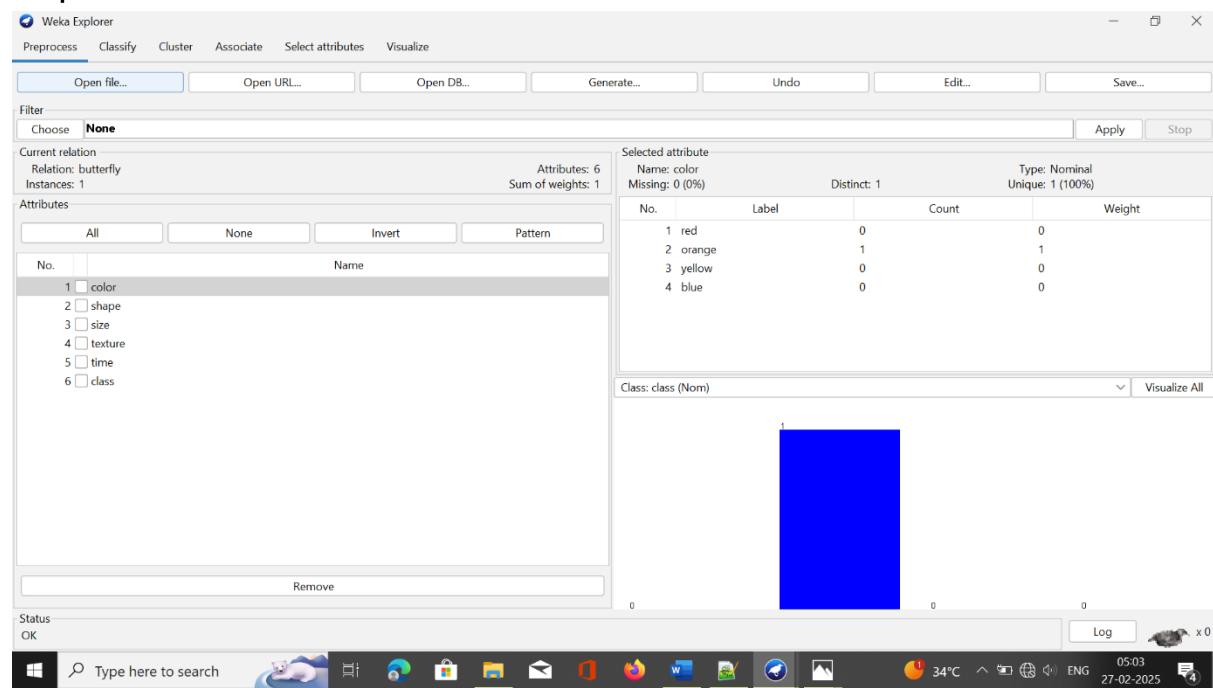
### 5.Fifth element is butterfly.

#### Attribute ARFF code.



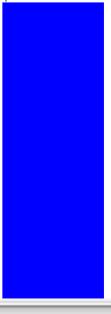
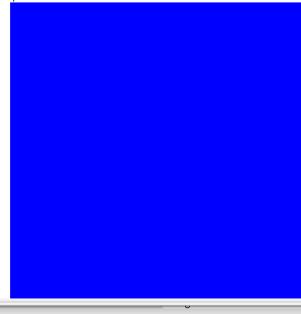
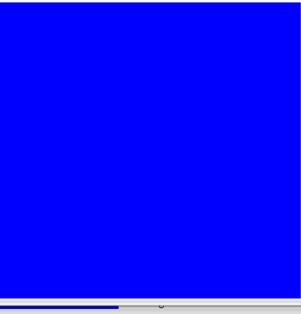
```
1 @relation butterfly
2 @attribute color {red,orange,yellow,blue}
3 @attribute shape {round,oval,irregular}
4 @attribute size {small,medium,large}
5 @attribute texture {smooth,rough,fringed}
6 @attribute time {"29-12-2024 05:30"}
7 @attribute class {butterfly}
8
9 @data orange,irregular,medium,smooth,"29-12-2024 05:30",butterfly
10
```

#### Output:



All attributes

	color	shape	size
1			
0	0	0	0

	texture	time	class
1			
0	0	0	0

Viewer

Relation: butterfly

No.	1: color	2: shape	3: size	4: texture	5: time	6: class
1	Nominal	Nominal	Nominal	Nominal	Nominal	Nominal

1 orange irregular medium smooth 29-12... butterfly

Add instance Undo OK Cancel