Geographical Information Systems (GIS)

Section 8

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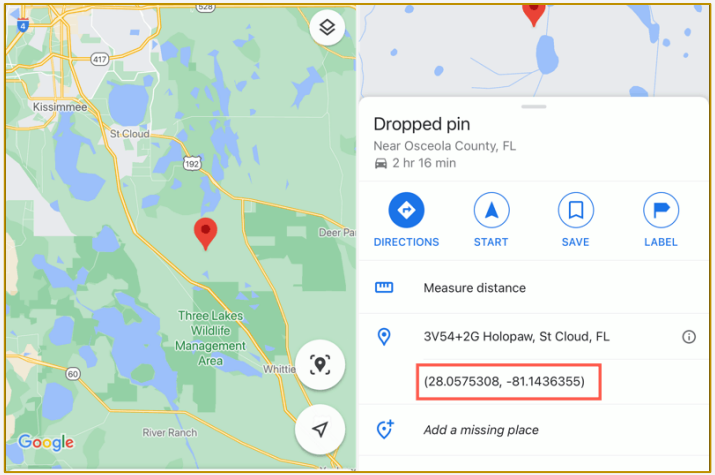
1. Understanding Latitude and Longitude

- Geographic coordinates are a way to describe a specific location on Earth using numbers.
- This system uses two values:
  - Latitude (Y-axis):
    - Measures how far north or south a point is from the Equator.
    - Ranges from -90° to +90° 0° is the Equator Positive values are north, negative values are south
  - Longitude (X-axis):
    - Measures how far east or west a point is from the Prime Meridian (which runs through Greenwich, UK).
    - Ranges from -180° to +180° 0° is the Prime Meridian Positive values are east, negative values are west

2. Getting Coordinates from Google Maps (Mobile)

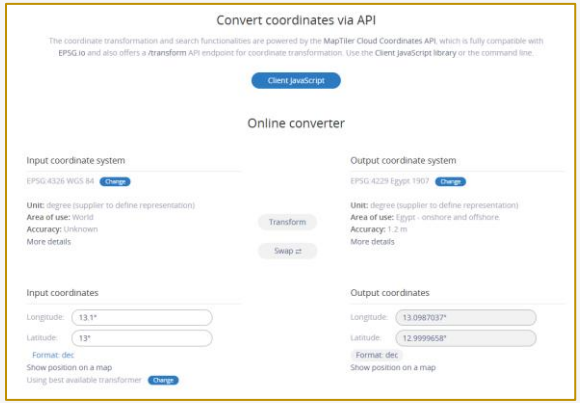
1. Launch the Google Maps app on your smartphone.
2. Tap and hold on a specific point on the map where you want to get the coordinates.
3. Swipe up on the location card (or tap it) to expand it.
4. You'll see the latitude and longitude displayed under the address or name



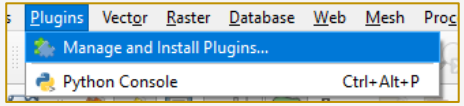
2. Getting Coordinates from Google Maps (Mobile)

Google Maps uses (EPSG:4326 WGS 84) as CRS.

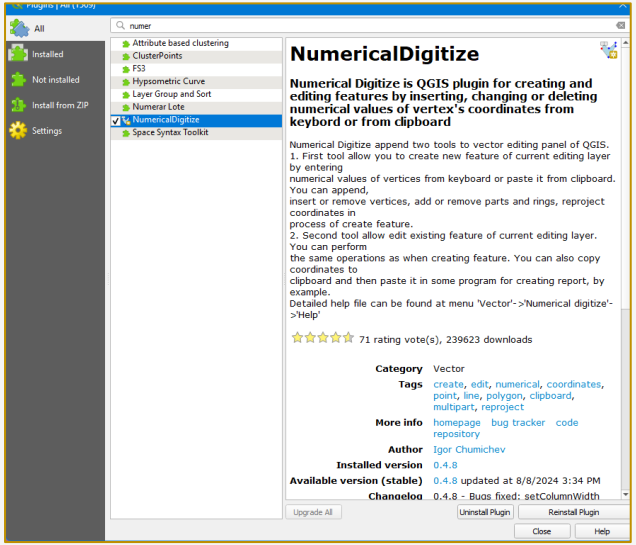
- If your project different from this CRS, then you need to convert what you got from Google Maps to suitable values for your CRS (for example: Egypt uses EPSG:4229)
- To convert from one CRS to other, you can use [epsg.io.](epsg.io)
    - Make sure you get values in dec format



3. Install NumericalDigitze Plugin

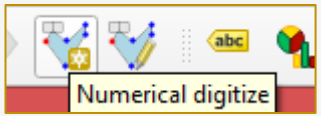


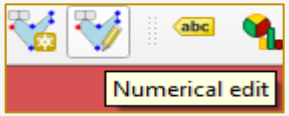
Usage: allows users to enter precise coordinates or distances and angles when digitizing points, lines, or polygons, enabling accurate and controlled feature creation



How to Install Plugin:

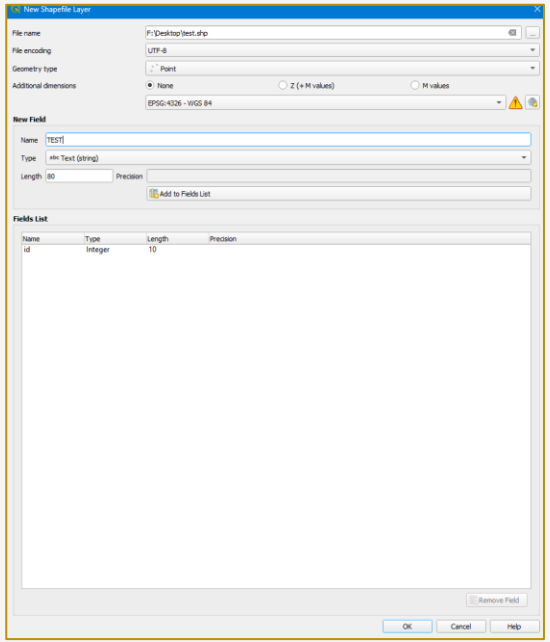
1. First, go to plugins -> Manage and Install Plugins.
2. Search for NumericalDigitze and install it.
3. After installing it, you'll notice that toolbar has 2 new options:





4. Adding point feature from coordinates

1. You'll have to create a new shapefile point layer with a name field as well.
2. Go to Layer > Create Layer > New Shapefile Layer.
3. Select "Point" as shape type.
4. Add a name field and change the directory using … on the right.
5. Select an appropriate data type.
6. Change length value when needed.
7. On "add fields list", add attributes that you prefer in each point.



Note: Make sure you change the saving directory before pressing "Ok".

Note: Choose a CRS that is compatible with the project's CRS

4. Adding point feature from coordinates

1. Now, right click on the layer and click on “Toggle Editing”.
2. Selecting Toggle Editing produces a pencil icon to the right of the “Layers Panel”.
3. Make sure your new layer is still highlighted, and in the toggle editing mode.
4. Click on the “Numerical Digitze” points layer on the menu above the layers panel.
5. Now enter the values (must be in dec format) of:
    1. Longitude (X)
    2. Latitude (Y)