

## LECTURE – 07

# BASE MAPS, GEOCODING AND REVERSE GEOCODING

Course Instructor:

*Engr. Hizb Ullah Sajid*

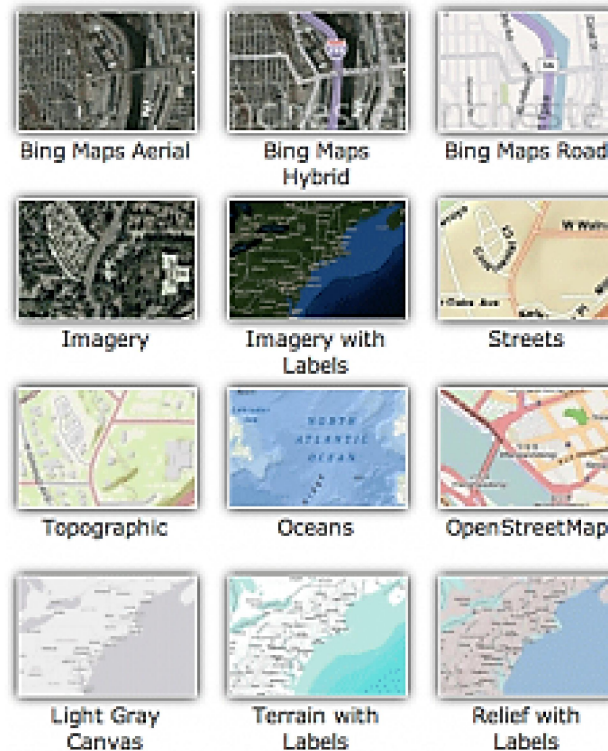
# Content

- Base Maps
- Geocoding
- Geocoding in QGIS
- Reverse Geocoding in QGIS
- Bulk Geocoding in QGIS

# Base Maps

## ■ What is Base Map?

- A map depicting background reference information such as landforms, roads, landmarks, and political boundaries, onto which other thematic information is placed.



# Base Maps

## ■ Plugins for Loading Base Maps

- OpenLayers
- QuickMapServices

- **Note:** Both of these plugins are web based, hence, these plugins will work only when connected to internet.

# Geocoding

## ■ what is Geocoding?

- A GIS operation for converting street addresses into spatial data that can be displayed as features on a map, usually by referencing address information from a street segment data layer.
- Two sets of data are needed for the geocoding process - the **address data** that you want to place on a map, e.g., a list of addresses, and the **GIS data layer** that you will use as the geographic reference layer, e.g., a city's street centerlines layer or a parcel address point layer.
- Input: “University of Peshawar, Pakistan”
- Output: “xxxxxx N, yyyyyy E”

# Geocoding in QGIS

## ■ Workflow:

- Add georeferenced raster data layer
- Install **Geocoding Plugin**
- **Plugins > GeoCode > Settings**
  - Set **GeoCoder** to **Google** (or **openstreetmap**)
  - Select appropriate scale (e.g. 1:200)
- **Plugins > GeoCode > GeoCode**
- Insert **Address** and select appropriate CRS.

# Reverse Geocoding in QGIS

- **what is Reverse Geocoding?**
  - A GIS operation for converting spatial data into Street addresses.
  - **Input:** “xxxxxx N, yyyyyy E”
  - **Output:** “University of Peshawar”

# Geocoding in QGIS

## ■ Workflow:

- Add georeferenced raster data layer
- Install **Geocoding Plugin**
- **Plugins > GeoCode > Settings**
  - Set **Geocoder** to **Google** (or **openstreetmap**)
  - Select appropriate scale (e.g. 1:200)
- **Plugins > GeoCode > Reverse GeoCode**
- Click on the map canvas (to specify spatial data) and select appropriate CRS.



## Bulk Geocoding in QGIS

- If you have a CSV formatted file containing addresses, you can take advantage of QGIS to map out those addresses.
- In order to geocode addresses from a CSV file, you will need to first install the plugin **MMQGIS**.
- For installing MMQGIS plugin:
  - Plugins > Manage and Install Plugin > mmqgis

# Bulk Geocoding in QGIS

## ■ **MMQGIS Workflow:**

- First convert data containing addresses to CSV format.
- MMQGIS > Geocode > Geocode CSV with Google / OpenStreetMap
- Specify input CSV file, fields, name and address for output Shapefiles and Ok

# Bulk Geocoding in QGIS

## ■ MMQGIS Workflow:

Web Service Geocode

Input CSV File (UTF-8)  
  
Browse...

Address Field

City Field

State Field

Country Field

Web Service  
Google Maps

Google API Key (optional)  
(none)

Output Shapefile  
C:\PROGRA~1\QGIS21~1.5\bin/temp.shp  
Browse...

Not Found Output List  
C:\PROGRA~1\QGIS21~1.5\bin/notfound.csv  
Browse...

OK Cancel

## References

- Hill, Linda L. (2006). Georeferencing. *The MIT Press*. ISBN 978-0262083546.
- ESRI Community
- Dempsey, C. (2015). How to Geocode Addresses using QGIS. *GIS Lounge*. ([www.gislounge.com](http://www.gislounge.com))
- QGIS User Manual