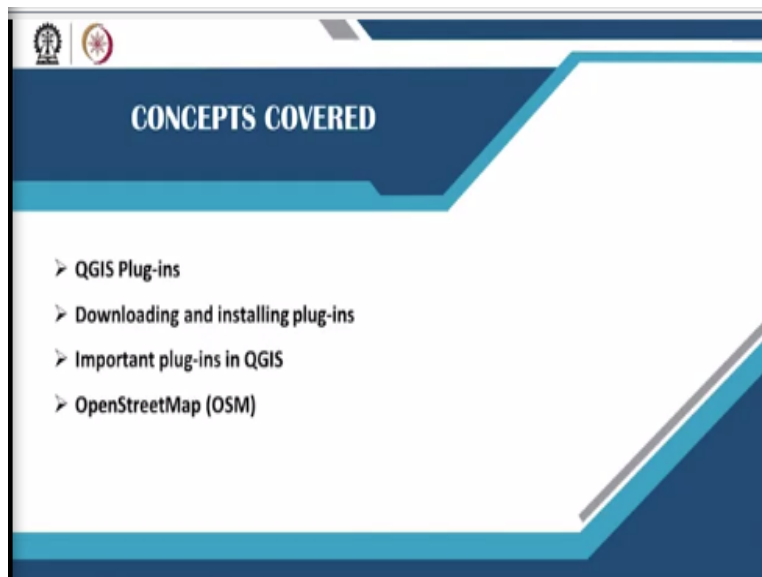


Geographic Information Systems
Prof. Prakash PS
Teaching Assistant
Ranbir and Chitra Gupta School of Infrastructure Design and Management
Indian Institute of Technology-Kharagpur

Module-10
Lecture-47
QGIS Plugins

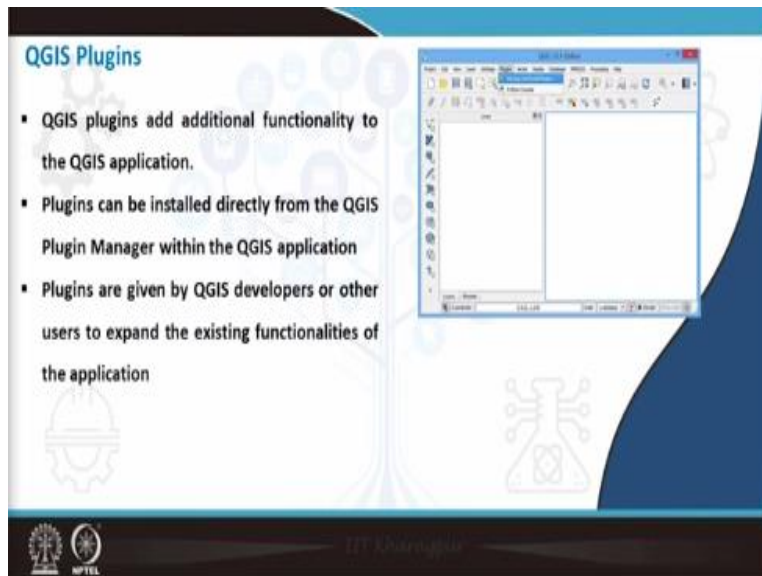
Welcome to the course on geographic information system, this is module 10, GIS as a software and this particular session we are going to look at QGIS plugins.

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Basically In this session we are going to see different plugins in QGIS, downloading and installing plugins in QGIS. And important plugins which are existing in QGIS and OpenStreetMap plugin which is the important plugin. So that can be use to download the data and to bring OpenStreetMap as a base layer.

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So QGIS plugin can be downloaded from the plugin repository using plugins menu QGIS. So there are different kind of plugins are available. One is core plugins, external plugins and experimental plugins, core plugins are part of QGIS applications. So that just request enabling in the QGIS software and external plugins are the plugins which can be found in the internet that can be downloaded through plug in repository.

We will see how to download this plugin repository in QGIS software practically and experimental plugins are developed under experimental stage. And those plugins are marked as experimental plugins under QGIS manager. So these plugins can be used for additional functionalities but they are not stable plugins, bugs maybe existing in the plugin. So that can be reported back to the QGIS developers, so that they can rectify in the next version and give it back **(Video Starts: 01:56)**.

So right now we will directly jump to the QGIS software, so this is the interface of QGIS software all of you know. So we will go to plugins to install the plugins, before installing the plugins we need to make sure that internet is connected to the laptop or the systems which you are using. And if there is a proxy or a proxy server if you are using in your institute or other place which are using the internet, you need to go to settings and go to options and change the proxy web access.

So here if you are using the proxy you need to click on this and change the hostname and the port and press ok, so if you are not using you do not have to do any settings. So make sure that if you are connected to the internet before installing the plugins, now go to plugins and click on manage and install plugins. So if you click this, the window plugins window will get open, so there are 4 options available one is all, install, not install and settings.

So if you click all, all plugins available in the plugin repository will appear for you. So all the plugins I can scroll it down and see one by one. So if you click on each plugin, so the description about the plugins and it is reviews. And more information about the plugins who is developed it and available for what kind of version these informations are available in the right side of the plugin manager.

So if you click on install plugins all plugins which are installing the software or core plugins, those plugins are visible here. For example, there is a plugin called georeferencer which we are going to use in the next session upcoming session to georeferencer a raster map. So this plugin is a internal plugin or a core plugin, so this is already installed in the system we just have to enable it by clicking here.

So next is not installed plugin, these are the plugins which are available but not installed in your QGIS version in the laptop. Here you can go to search button and install any plugins which you want. And next button is settings, here if you click on check for updates on startup. So any plugins updates or QGIS version update it will show in the while starting up the QGIS session.

And you can also mark show also experimental plugins that means you have some experimental plugins are there those will be showed under all. And there are deprecated plugins that means those plugins which are all not in use or older version of the plugins can be seen under deprecated plugins. So currently what we will see we are going to look at some important plugins in QGIS that can be useful in our upcoming sessions and in normal use for your projects.

So first we are going to see a plugin called georeferencer this plugin is currently installed in as a core plugin. So you do not need to install this plugin, so where do you find this particular plugin.

If you close the plugin manager, this plugin can be found under raster because it is a raster functionality. So if you go to raster and georeferencer plugin can be seen if you click on georeferencer the georeferencer window with this one will get open.

So how to geo-reference in the raster map and how to bring into a particular lat long or UTM coordinate system that is explained by Chandan in the upcoming session. So next we are going to see one more plugin called open layer plugins, what exactly open layer plugins are do. So if you click on open layer plugin, so it shows Google maps, Bing maps, OpenStreetMap layers and more.

So basically, this brings all these base map as a layer in QGIS, so currently in my system this plugin is installed, that is why the option is coming as reinstall plugin. So if this plugin is not installed in your system it will come as a install plugin just need to click on install plugin to install this particular plugin, so I will close the window now. So where this particular plugin will appear, this will appear under web because it is a web plugin.

So where internet is used to bring the base map from the servers, so now I will go to open layers plug in OpenStreetMap and click on OpenStreetMap. The OpenStreetMap will get loaded to the window. This may take some time because of the internet connection speed or the connectivity issues. So currently the OpenStreetMap is opened in my system, so how to zoom to a particular place, I can directly zoom to a particular place.

So where my project is or I can open a sharefile by going to layer add layer or add vector layer and then browse. So here I have kept all files in desktop I go to NPTEL, so datasets. So here we kept all raster and vector datasets of related to our sessions. So if you go to vector, so there is option for viewing the sharefiles. So the sharefile for Kolkata city WGS 84 can be seen here, so if you click on this particular sharefile you need to click on shp.

And press open and then press open again the Kolkata sharefile which is named as Kolkata city WGS 84 is opened in the layer panel left side, right click on that and zoom to layer. So what this particular feature will do, it will zoom to the extent of the Kolkata city sharefile and then map

will get loaded. Now the OpenStreetMap is loaded to the background in the map layer. So, here to improve the visibility behind Kolkata city, what you can do you can go to right click on the layer, go to properties.

The properties window will appear in styles if you go to simple fill and make it as outline simple line under a simple layer type. So, the only outline of the shapefile will get shown then press apply and ok. So now within Kolkata city boundary, so all the features appearing in the OpenStreetMap can be seen. So this is how we can bring in OpenStreetMap as a base layer to the QGIS similarly, we can bring in Google satellite imagery also.

So like we do it in Google earth famously called Google earth, so Google earth imagery also can be brought to QGIS. For example, if you go to plugins, manage and install plugin, so there is a plugin called quick map service. So, currently in my system, this particular plugin is installed if you install quick map service it has a collection of base maps that can be worked with QGIS.

So I will just close this, if you go to web quick map service, so it has multiple options. For example, you can go to search QMS layer, so here it gives the option Google satellite. If this particular option is not there, you can go to search and search for Google satellite. Here I can press add, so once I add this particular Google satellite image, this will come as a base layer here in layers panel.

So if I switch off OpenStreetMap, Google map will appear. So this is how we can bring in OpenStreetMap or Google maps as a base layer in QGIS. Also, you can bring in Google street map also by just typing Google here. So if you change the options if you go here and change the option, if you type Google. So whatever the different base maps are available by the Google are seen here for example Google maps are here.

If you just pull this window, Google maps can be seen or Google normal, so I will add this. Now this particular map window is open, if you switch off Google satellite imagery, Google maps can be seen as the base layer. So this one we famously use it in our Google maps app in the mobile or

for navigation purpose, or you can see any points any number of points roads. So if you zoom to any place those roads will get highlighted.

So if you are doing any projects related to the your study area and if you have the study area map, if you want to zoom to particular place and see verify the places using Google earth QGIS, this can be done very easily using these plugins. So next we are going to look at how to download this OpenStreetMap data to QGIS. So the OpenStreetMap which you are seeing on the screen, so it is just a raster base map is coming from the internet.

So suppose if you want to import this OpenStreetMap data to your system and start analyzing the dataset or use this particular maps for any kind of analysis. So this can be done using the software itself, so it has option to download OpenStreetMap data to your system and start working on it. So OpenStreetMap gives GIS layers as point lines and polygons as a downloadable option, so this is created by open community across the world.

So for many cities, for many even rural areas, this maps, roads, buildings, land use maps, point features, these things are available on the internet. So there are 2 options to download OpenStreetMap data. One is if you can directly go to OpenStreetMap website and mention the boundaries and download it as dot osm file or in QGIS you can do. So right now we will see how it can be done in the QGIS platform.

So we will again jump to the QGIS software and do it, so I will open a new software and discard the older projects. And then I will open go to layers add layer, add vector layer, and browse, I will open again Kolkata city sharefile. To this Kolkata city we will download OpenStreetMap data now. I will make again transparent go to properties, styles, simple fill, here change a simple line and apply, now we have boundary of the study area.

Now this OpenStreetMap downloadable data which appears under vector option if you go to vector, OpenStreetMap, download data. So, it use 3 options one is from map canvas that means, download OpenStreetMap data to the map canvas which is seeing in the map window or from

layer. So to the layer which we open for example, Kolkata city layer which we open to that extent map will get downloaded or third is manual.

Or here we can manually mention the extent of the latitude or longitude. And finally we need to mention the output file name where you want to download. So I will download it to NPTEL folder. So, here I will mention Kolkata data I will give name as Kolkata data it will be in dot osm XML format. So, from layer I do, to the Kolkata city extent the data will get downloaded, so once you press ok.

So now the downloading started, so 30, 40 MB of data is downloaded, so this will go on until the entire dataset is downloaded to your system. So once the data is downloaded you need to convert that data into dot spatial light file. So we are going to see how to do that in very short time. So once it get downloaded, now you can see the downloaded has been successful.

So if you press ok and here close the window again go to vectors OpenStreetMap, import topology from XML browse to the file which you downloaded Kolkata data dot osm and convert that into a spatial light database file then press ok. So it will get converted into a database file. So from that database we can import either point line or polygons to QGIS window.

And then we can convert it into a shapefile or any other format which we want for further processing. So now this conversion is happening, so once the conversion is complete you just close the window and then go to vector again. Then press on OpenStreetMap export topology to spatial light. So then browse to the spatial light database that is Kolkata data dot osm and then here you can mention points, poly lines or polygons.

Currently we will try to extract road features which is to the extent with which we have mentioned and we need to load exported tax. So once we load the tags all the tax will appear in the window, so here it has features for bound buildings, highways, names, land use etc. So, here I will try to download highways, if you click on highway and you here you can see there are 24036 features.

That means there are 24,000 line features that are created by public that is available for download for this particular extent. So if you select highway and click ok, the data will get loaded to the window. So, here you can see a layer has been added saying that Kolkata data poly lines. So it will automatically name as Kolkata data poly lines and it will get downloaded to the window, so something like this.

Here if you want to highlight the boundary right click and go to properties and in a simple line you can change the color for better viewing and improve the width also I will employ it to 0.5 and apply. Here you can see for our boundary extents that our data get downloaded. So if you want to highway features only to the within the boundary, you can go to clip option and operation and do it.

So this one is covered in the next upcoming session, right now we will try to see what are the different attributes this particular data has. So if you go to Kolkata data and right click go to open attribute table, so it has the attribute, it has the IDs and highway. So inside highway you can see there are different kinds of roads are available, still you can zoom it and see there are tertiary roads, secondary roads and residential roads.

And there are multiple other types of roads are available in the OpenStreetMap data repository. You can close this and see particular road what is it is type, so if you click So, this is a tertiary road, if you click this particular road, this is some other road, for example if you click this is a service road. So this is how you can inspect the data from the OpenStreetMap which is downloaded to your system.

So also what you can, so this is in spatial light format now, this one you need to convert it into a shapefile before using it efficiently in your system. So how to convert this particular data into a shapefile, so you just have to save it in shapefile format, you just go to the layer in the layer window, right click, save as. So currently the format is showing you shapefile, if you want to change it to any other format you can do, you can do it GeoJSON, you can do it KML or any other format.

Currently, we will do a standard format called ESRI shapefile and you need to mention the coordinate reference system by going to the button called select CRS. Here currently we are using WGS 84 itself that is the standard reference system used by OpenStreetMap, that is chosen. So then give the file name just browse to the folder, so here I will choose as output, I will create a folder called output.

Here, I will save as a name Kolkata roads then press ok and then press ok. So, now the data is converted into a Kolkata roads file which is in shapefile formats. We can go to the directory and see in output folder there is a shapefile having different files is being created. So with space occupying 3 almost 3 MB 3.82 MB specifically, so what it actually means the entire dataset for the Kolkata city is of 3 MB file for highway formats.

And one more important plugins is useful in QGIS is the terrain analysis, we will see how to install that plugin. So if you go to plugin manage and install plugin, so there is a plugin called terrain analysis, raster terrain analysis plugin. So this plugin is used to perform raster analysis basically elevation based analysis in QGIS. So if you click this and the press on install plugins, this plugin will get installed and that will appear under raster.

If you go to raster this terrain analysis plugin will appear. So it can perform the operation such as slope analysis, aspect analysis, hillshade analysis relief analysis, ruggedness index from digital elevation models. So in upcoming session we are going to see in detail how to perform this terrain analysis using digital elevation models. This is being this will be taught by Chandan in upcoming session (**Video Ends: 21:44**).

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So, again coming back to the summary, we have seen QGIS plugins downloading and installing plugins. So what are the different plugins we have seen georeferencer plugins, we have seen OpenStreetMap, quick map service, how to bring in Google map and how to download OpenStreetMap data repository to the QGIS platform using QGIS plugin. And OpenStreetMap base layers or to the QGIS platform. So till now we have seen these aspects of the plugin in this particular session, thank you very much.