LearnOSM

OSM Data Overview

How OSM Works

Let's consider how OpenStreetMap works. Thousands of users around the world continually add to and edit the map, but what goes on behind the scenes?

When you or any other user makes changes using editing software such as JOSM or iD, the software communicates with a central OpenStreetMap server and notifies it of your changes. On that server is a massive database, which contains all the location information and attributes about every single geographic feature in all of OpenStreetMap.

Because OSM is free and open, it is possible for anybody to download all the data in this database. However, because it is so massive (*the data is more than 30 GB even when it's compressed*) , it's nearly impossible to work with all the data at once.

Because of this limitation, there are various methods of **exporting** and **extracting** data which are covered in this section. Exporting means to convert OpenStreetMap data from its native format into a format that is convenient for you. This is slightly different from **extracting** data, which means to cut the data from the area of your choosing. It may also mean to pull out the specific features that you want from an area. These terms are often used interchangeably. We'll learn more about this throughout the OSM Data section.

Using Geodata

If you are not an experienced GIS user, it's important to understand the difference between OSM editing software like JOSM and GIS software such as Quantum GIS and ArcGIS.

Editors such as iD or JOSM have one core function that they are very good at - making it easy for users to edit OpenStreetMap. But they are not software meant for analyzing or querying data - this function is best left to other applications. GIS software, such as the free and open source [Quantum GIS (QGIS)](), allows users to design good-looking maps, to query and analyze data, and much more. GIS software can also be used for editing geodata, but it is much easier to edit OpenStreetMap with the dedicated OSM editors.

In the next chapter we will take a closer look at file formats which are associated with OpenStreetMap and geographic data in general. Then we'll look at various ways to access and manipulate OSM data and convert it between different file types.

Getting the Data

That's great, but how do you get out the data that you want?

In this chapter we'll go over the various ways of exporting OSM data. We'll stick to the basics, but keep in mind that in order to use the data effectively, you'll probably need GIS software, such as the free Quantum GIS application.

Before we begin, let's go over some terminology. First, **exporting** means to convert OpenStreetMap data from its native XML format into a format that is convenient for you. This is slightly different from **extracting** data, which means to cut the data from the area of your choosing. It may also mean to pull out the specific features that you want from an area. We'll use these terms frequently in this chapter, so it's important to understand the difference.

The OSM API

The OSM editing process functions because of what is known as an API, which allows editing software to communicate with the central server. For example, when you are using JOSM and you select the area you want to map, an API call is sent to the server, requesting all of the data that exists within the area that you have selected.

In fact, when you download data in JOSM, you are **extracting** the data from a specific area of the world. The data is then sent to you in **.osm** format, which you can then edit in JOSM. If you download data in JOSM and then save it, you will see that the file type is **.osm**. We'll talk more about this in the next chapter.

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