# GIS 5572 Lab 1

**Due:** 2 weeks from the date of assignment

**Goals**

1. Practice decomposing interfaces for spatial web API's into informal conceptual models
2. Compare and contract different web API's using informal conceptual models and custom-built extract, transform, and load (ETL) routines
3. Build an ETL pipeline with Open Source Tools in Esri's Online and ArcPro Jupyter Notebook

**Deliverables**

Submit a lab report on Canvas as a PDF (see report form). Include all your code on Github.

**Specifics**

For this lab, write a lab report that does two things:

1. Compare and contrast the conceptual models for the following API's
    a. Minnesota Geospatial Commons
    b. Google Places
    c. NDAWN

2. Create Jupyter notebooks that can programmatically get data from each of these APIs. Make all of this code available on Github in your Lab 1 folder.

A few tips:

1. Before writing any code, start by using paper and pencil to unpack the dataset objects.
2. Look at other examples of how people designed ETL code.
    a. Towards Data Science article on ETL with CRON or Jupyter
        i. Google terms you don't understand (there are a lot of resources)