HONR 39900 – Homework 9

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Homework Instructions

To receive credit for the assignment, do the following:

1. Create an `.ipynb` file, and name it: `purduealias_honr39900_homework_number.ipynb` (e.g., `gould29_honr39900_homework_1.ipynb`)

2. Show all your work and follow the instructions below very carefully.

3. Submit a printout (e.g., as PDF) of your `.ipynb` file–and the file itself–to Brightspace by the due date.

4. You must show **all** your work and provide comments in your code explaining what you are doing.

   For grading this assignment, I will not leverage unit tests. I will look at the printout of your `.ipynb` file. When in doubt, please show and comment all your work.

Problem 1

Route Optimization with OSMnx – 50 points
In the homework directory, you will find a map of the greater Ann Arbor, MI region, `ann_arbor.xml`, which is in `data.zip`. This was generated via the Overpass API. Please follow the procedures below to gain full credit. You will be asked to find the shortest path for the provided network, for given inputs. To receive full credit, you must graph the route on an overlay of OSM via `folium`. You will lose 50% of possible points per missing graph (i.e., if the request is worth 10 points and you do not supply a graph, you will receive a maximum of 5 points.).

TIP: Please see the OSMnx documentation to see how to use this package. You can find example usage here. If you run into any environment issues, contact me ASAP.

Please route the following, using `ann_arbor.xml` as the graph:

1. (6 points) GPS Points: `origin = (42.279828,-83.7402104)` and `destination = (42.2682423,-83.7395408)`

2. (6 points) GPS Points: `origin = (42.2651712,-83.749409)` and `destination = (42.3032951,-83.695224)`

3. (18 points) Addresses: `origin = "1600 Huron Pkwy, Ann Arbor, MI 48105"` and `destination = "395 Briarwood Cir, Ann Arbor, MI 48108"`

4. (20 points) POI: `origin = "Ann Arbor, MI CVS Pharmacy"` and `destination = "Briarwood Mall, Ann Arbor, MI"`