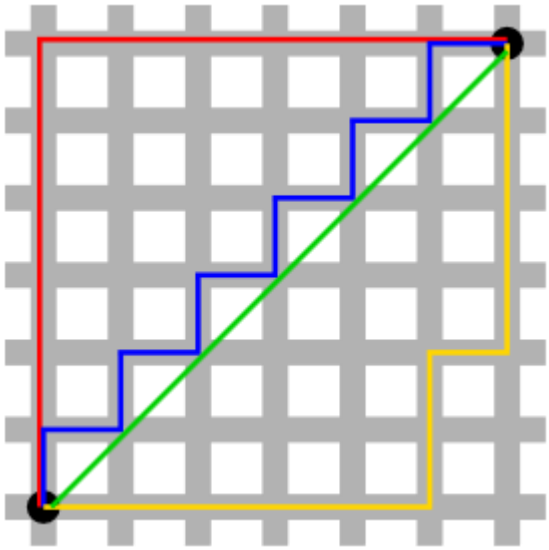
GEOG 1180 Introduction to Geo-Programming

Assignment 1 Calculate Manhattan Distance



Manhattan distance is the distance between two points measured along axes at right angles. The Manhattan distance is the simple sum of the horizontal and vertical components, and is based on the well-known grid like street geography of the New York borough of Manhattan. As is shown in the above figure, the red line is the Manhattan distance, the green line is the Euclidean distance, and the yellow and blue lines are equivalent Manhattan distances between the two points. The Manhattan distance between $p_1(x_1,y_1)$ and p_2 (x_2,y_2) is defined as:

$$distance(p_1, p_2) = |x_1 - x_2| + |y_1 - y_2|$$

Now we know the coordinates of the centroid of Salt Lake County (x=422504.192, y=4498778.552) and Beaver County (x=271162.223, y=4252186.393) in Utah. Please calculate the Manhattan distance between the two points.

Here are the requirements for the Python script you need to submit online in Canvas:

1) Please write a script to calculate the Manhattan distance between Salt Lake County and Beaver County and print the distance.
2) Please write a scrip to calculate the Euclidean distance between Salt Lake County and Beaver County and print the distance.
3) Please write a script to compare the Manhattan distance to the Euclidean distance. Print the comparison result.
4) Please name the script file as “Assignment1.py”
5) Add relevant comments where necessary