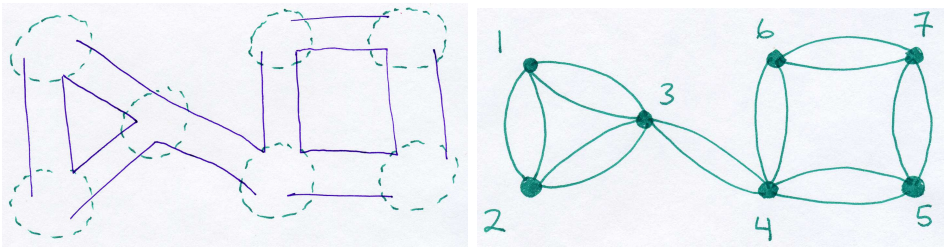
Chapter 1: Urban Services Handout

Euler Circuits

Consider the following streetplan, where mail is to be delivered on both sides of the street.



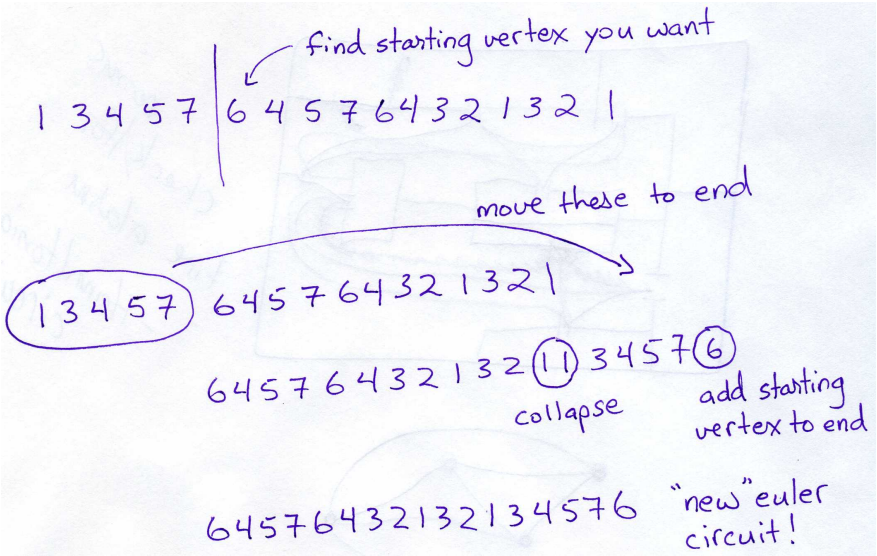
Where the streets intersect, we identify vertices, and the sidewalks themselves become the edges on the graph. This leads to a graph on the left.

Euler circuit (listing vertices in order visited): 1,3,4,5,7,6,4,5,7,6,4,3,2,1,3,2,1 covers each edge only once.

Is their an Euler circuit starting from vertex 6?

The answer is yes–if there is an Euler circuit on the graph, then there will be one beginning at each vertex. Since the Euler circuit covers all the edges, we can start anywhere we want! And we don't have to search for a new Euler circuit for each vertex, we can just modify the one we already have.

Start with the Euler circuit we already have: 1 3 4 5 7 6 4 5 7 6 4 3 2 1 3 2 1



You can also label Euler circuits by labeling the edges in the order they are traveled, which is typically how we will do it.