Problem 1. [20 points] Consider a strongly connected directed graph with indegree(v) = outdegree(v) for all $v \in V$. We will prove such a graph has a (directed) Eulerean tour, by considering its longest path.

[10 pts] Show the longest sequence of adjacent edges (walk or tour) where no edges are repeated is a tour.

[10 pts] Show no directed edge is left out of the longest possible walk or tour.