

CS 6301 Implementation of data structures and algorithms
Long Project 5: Flow and Postman Tour

Ver 1.0: Initial description (April 18th).

Due: 11:59 PM, Thu, May 11th for part a, and Sat, May 13th for parts b and c.

Max excellence credits: 1.0.

Submission procedure is the same as that of prior projects.

This project has three parts. Part c is optional. Successful implementation of part c can earn you 1 excellence credit. Starter code, driver code for each part and test cases are provided.

- a. Implement preflow-push algorithm discussed in the class.
- b. Implement cost scaling min cost flow algorithm discussed in the class.
- c. Implement the algorithm discussed in the class for finding an optimal Postman tour in a directed graph. (EC: 1)

As discussed in the class it is not efficient to construct the residual graph and update it after each push. Instead, calculate residual capacity of an edge on the fly. Also, note that the test cases may contain both edges (i, j) and (j, i) for some i, j . So, do not assume that if (i, j) is in E , then (j, i) will not be in E . Residual capacity of edge $(u, v) = c(u, v) - f(u, v) + f(v, u)$.