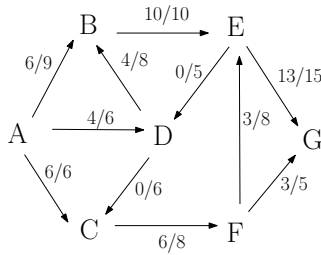


COMP 3711H – Fall 2016
Tutorial 10

1. Consider the given graph with flow values f and capacities c (f/c) as shown. $s = A$ and $t = G$.



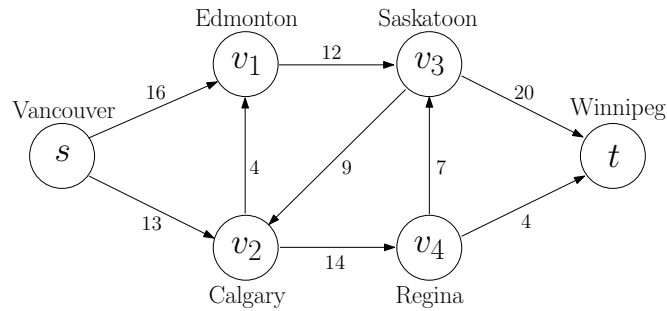
Draw the residual graph.

Find an augmenting path.

Show the new flow created by adding the augmenting path flow. Is your new flow optimal?

Prove or disprove.

- 2 Show the execution of the Edmonds-Karp algorithm on the following flow network.



3. Consider a taxi company that has received many reservations. A reservation specifies when and where a taxi needs to be to pick up a passenger and when and where the taxi will drop the passenger off.

The company wants to calculate the minimum number of taxis it will need to service all of those requests. How can it do this?

More specifically, you are given n taxi reservations r_1, r_2, \dots, r_n . For every pair of reservations r_i, r_j you are told if the same taxi can first satisfy reservation r_i and then go on to satisfy reservation r_j . Find the minimum number of taxis needed to satisfy all of the reservations.