

MATH 634, Spring 2014
 HOMEWORK 15
 due 5:00PM on Monday, May 5.

15D*. Work to understand the following definitions.
 It is not required to turn in written descriptions.

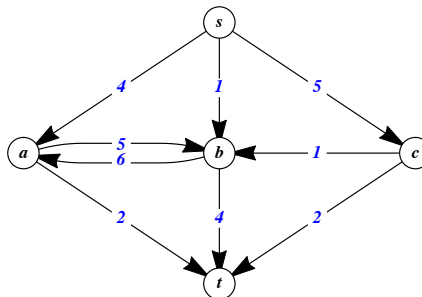
- MIN CUT (aka minimum st -cut)
- flow companion graph
- flow augmenting path

15GS. Run the Gale-Shapley algorithm twice on the following sets of preferences, once with the people proposing, and once with the pets proposing. Discuss how your results are related to the theorems on optimality and pessimality.

Pets' Preferences					
	Art	Bettie	Casper	Delphi	Ernie
1st Choice	F	F	G	G	H
2nd Choice	G	H	I	H	F
3rd Choice	I	I	F	J	I
4th Choice	J	G	H	I	G
5th Choice	H	J	J	F	J

People's Preferences					
	Fei	Georg	Helen	Ivan	Jin
1st Choice	C	E	A	E	B
2nd Choice	B	B	D	C	D
3rd Choice	E	C	B	A	A
4th Choice	A	A	E	B	C
5th Choice	D	D	C	D	E

- 15ST.** (a) List all st -cuts in the network pictured below (there are eight). Find the capacity of each st -cut and determine the min cut from this information.
 (b) Find a maximum flow for the network (and verify that it is a max flow). Then verify that the max flow / min cut theorem holds.
 [**Important:** Do NOT use the Ford-Fulkerson algorithm in this problem.]



15FF. Use the Ford-Fulkerson algorithm to find the max flow and min cut on the attached network. You must prove that your flow is a max flow and your st -cut is a min cut.

