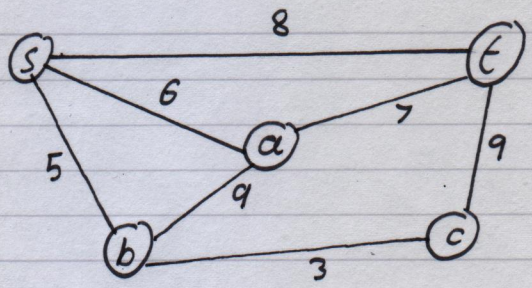
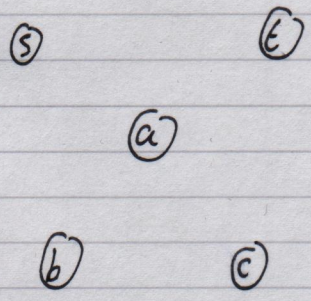
Tutorial 5

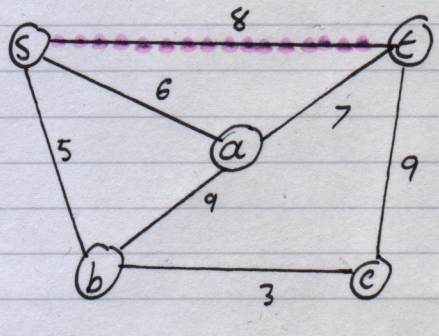
1. Original graph:



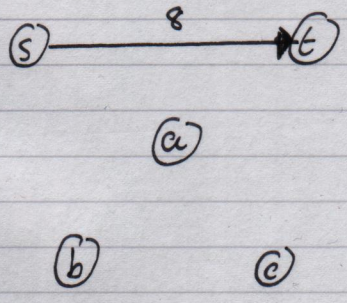
- Start state: (Zero flow)



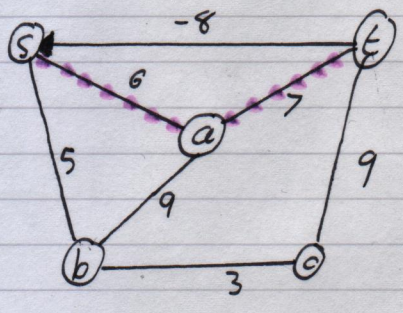
Residual network + flow:



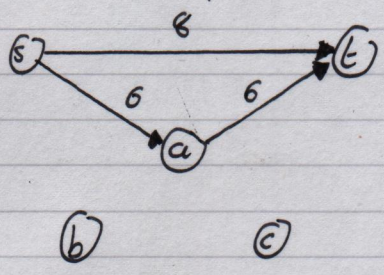
- With new flow:



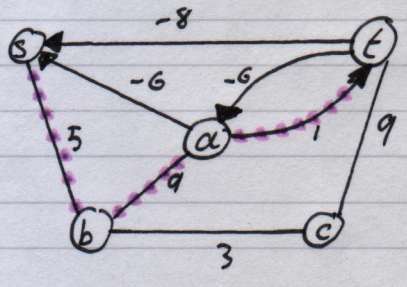
Residual network + flow:



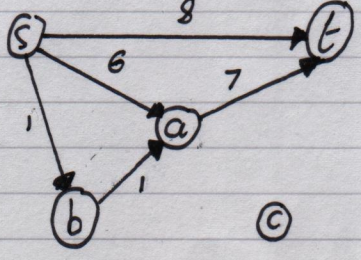
- With new flow:



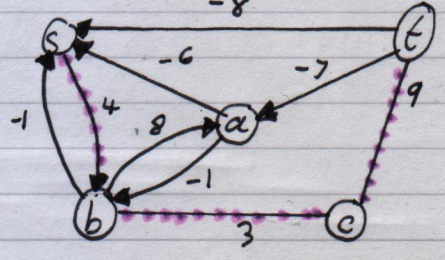
Residual network + flow:



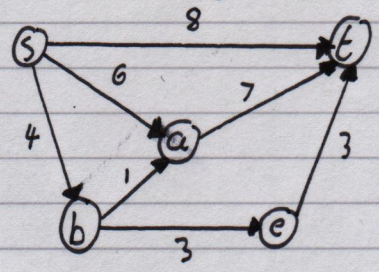
- With new flow:



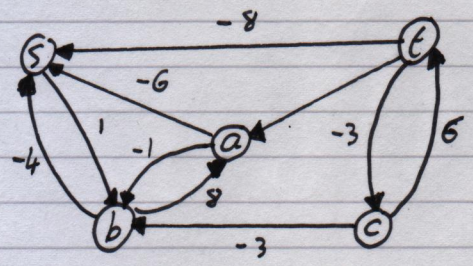
Residual Network + flow:



• With new flow:



Residual network:



The algorithm has finished, because no path from s to t exists in the residual network.

The Edmonds-karp algorithm uses a breadth first search from s. This search reaches only a and b, and therefore the minimum cut is defined as:

$S = \{ s, a, b \}$

$T = \{ t, c \}$

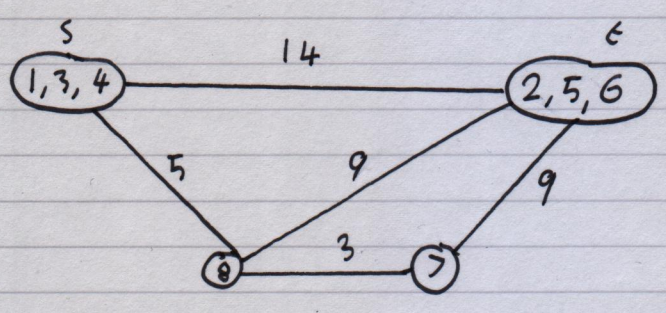
The value of this cut, and the maximum flow, is 18.

2. Parent: {1}, {2}

No collapsing is necessary. The max flow from s to t is 18.

Child: {1,3,4}, {2,5,6}

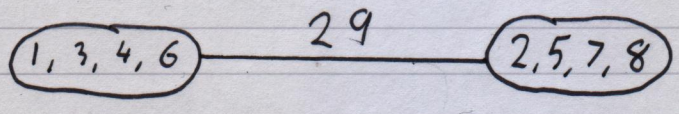
G':



The max flow/bound is 19.

Child: {1,3,4,6}, {2,5,7,8}

G':



The max flow/bound is 29.