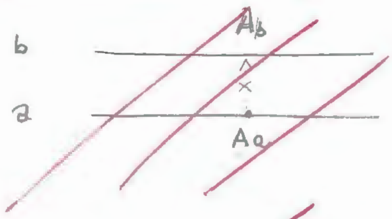
LAB-3 Network-Flow



$\sigma_d(n) = \{ \quad \} \cup \{a, A_a, \mid a \in ind(\varphi) \wedge d = a^F\} \cup \{\neg \exists R_\circ A_b \mid a, b \in ind(\varphi) \wedge d = a^F \ (a^F, b^F) \notin R^{F_n}\}$

(5)+(3) $V_3, V_4 \rightarrow V_5$

$V_1, V_2 \mid V_3, V_4, V_5$

$w_1 w_2 \quad W_3 \quad w_4$

$w_1 w_2 \quad w_3 \quad w_4$

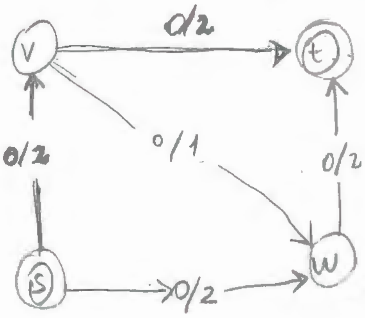
$w_1' w_2' \quad w_3 \quad w_4'$

$0 \quad 0' \quad 0''$

$0_1 \neq 0_2$

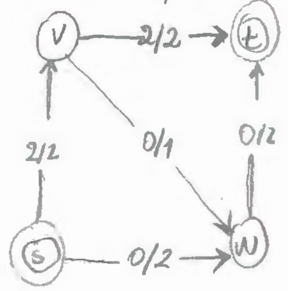
$0_1' \neq 0_1$

$G_0 = G$

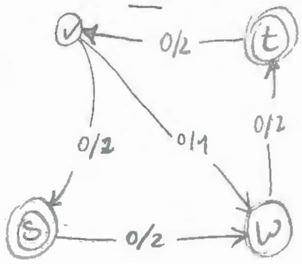


S→V→t
v(f) = 2
b = 2

G

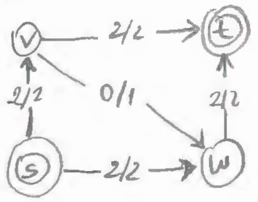


G_2



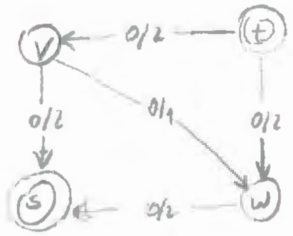
S→w→t
b = 2
V(f) = 2+2

Alternative



max-flow = 4

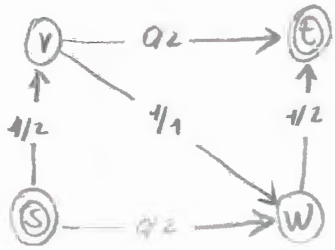
G_4



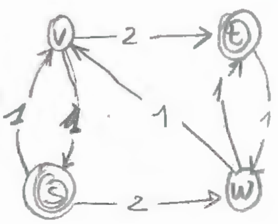
✓

Running Ford-Fulkerson

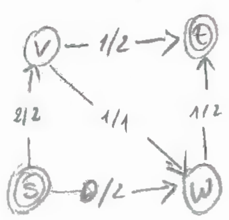
S→V→w→t
V(f) = 1



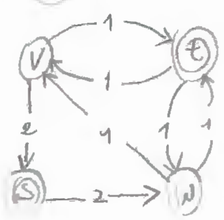
G_1



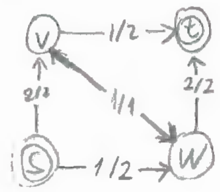
s→v→t
v(f) = 1+1 = 2
b = 1



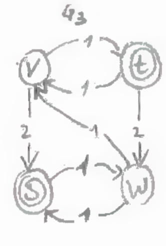
G_2



S→w→t
b = 1
V(f) = 2+1 = 3



G_3



s→w→v→t ⟹ b = 1 V(f) = 4 = Max-Flow !

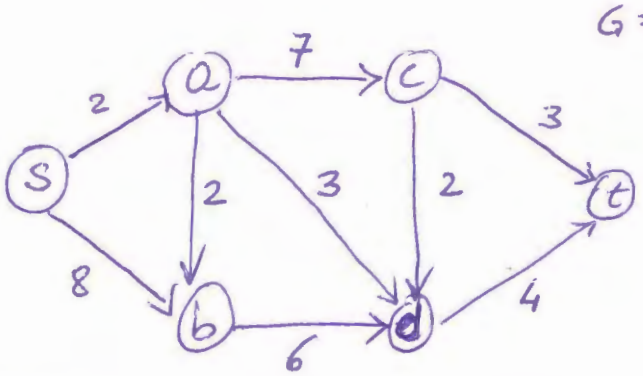
LAB-3 Net-Flow

Ex 1 Given the following Net-Flow, Run F-F Algorithm to find a max-Flow. At each iteration show:

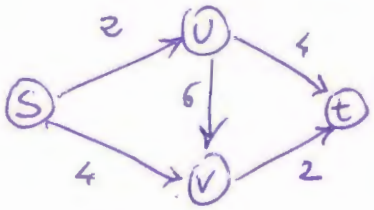
- the Augmenting Path
- the value of Bottleneck
- the residual graf

At end, show the Oripinal graph with the max-flow.

$G = G_0$



Ex 2



Find a cut with min capacity

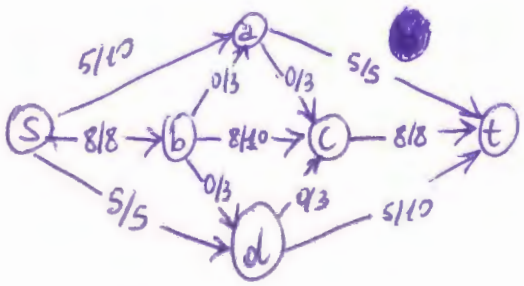
$S = \{s, a\} \rightarrow c(S,T) = 6$

$S = \{s, u\} \rightarrow c(S,T) = 14$

$* S = \{s, v\} \rightarrow c(S,T) = 4 *$

$S = \{s, u, v\} \rightarrow c(S,T) = 6$

Ex 3



Run F-F algorithm as in Ex. 1 and show the same steps. Furthermore:

- What's the value of the Flow $val(f) = ?$
- Find the max-flow and show it in the graph. what's $val(f_{max})$?
- Find a min-cut.