

1 Ammissibilità del Flusso

$$T = \begin{pmatrix} 1 & 2 \\ 2 & 3 \\ 3 & 4 \\ 3 & 5 \\ 4 & 6 \end{pmatrix}$$

$$x_T = (0 \quad 3 \quad 10 \quad 4 \quad 6)$$

$$x = (0 \quad 5 \quad 3 \quad 0 \quad 0 \quad 10 \quad 4 \quad 0 \quad 6 \quad 0)$$

$$\pi_T = (0 \quad 8 \quad 12 \quad 20 \quad 21 \quad 24)$$

$$C_L^\pi = \begin{pmatrix} -9 \\ -12 \\ -5 \\ 5 \end{pmatrix}$$

$$C_U^\pi = -4$$

x_T ammissibile degenerare π_T NON ammissibile NON degenerare
FLUSSO NON OTTIMO

2 Primo passo del Simplexso

L'arco entrante per L vincente è $(p, q) = \begin{pmatrix} 2 \\ 4 \end{pmatrix}$

Verso ANTIORARIO ↺
 $C^+ = \begin{pmatrix} 2 \\ 4 \end{pmatrix} \quad C^- = \begin{pmatrix} 3 & 2 \\ 4 & 3 \end{pmatrix}$

$\theta^+ = 5 \quad \theta^- = 3 \quad \theta = 3$

L'arco uscente è $(r, s) = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$

La nuova tripartizione è: $T = \begin{pmatrix} 1 & 3 & 3 & 4 & 2 \\ 2 & 4 & 5 & 6 & 4 \end{pmatrix} \quad L = \begin{pmatrix} 2 & 3 & 5 & 2 \\ 6 & 6 & 6 & 3 \end{pmatrix} \quad U =$

$\begin{pmatrix} 1 \\ 3 \end{pmatrix}$

$$x_{\text{finale}} = (0 \quad 5 \quad 0 \quad 3 \quad 0 \quad 7 \quad 4 \quad 0 \quad 6 \quad 0)$$

3 Cammini minimi:

$$N = (1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6) \quad p = (0 \quad -1 \quad -1 \quad -1 \quad -1 \quad -1) \quad \pi = (0 \quad \infty \quad \infty \quad \infty \quad \infty \quad \infty)$$

$$N = (1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6) \quad p = (0 \quad 1 \quad 1 \quad -1 \quad -1 \quad -1) \quad \pi = (0 \quad 8 \quad 8 \quad \infty \quad \infty \quad \infty)$$

$$N = (2 \quad 3 \quad 4 \quad 5 \quad 6) \quad p = (0 \quad 1 \quad 1 \quad 2 \quad -1 \quad 2) \quad \pi = (0 \quad 8 \quad 8 \quad 11 \quad \infty \quad 12)$$

$$N = (3 \quad 4 \quad 5 \quad 6) \quad p = (0 \quad 1 \quad 1 \quad 2 \quad 3 \quad 2) \quad \pi = (0 \quad 8 \quad 8 \quad 11 \quad 17 \quad 12)$$

$$N = (4 \ 5 \ 6) \quad p = (0 \ 1 \ 1 \ 2 \ 3 \ 2) \quad \pi = (0 \ 8 \ 8 \ 11 \ 17 \ 12)$$

$$x = (3 \ 2 \ 0 \ 1 \ 1 \ 0 \ 1 \ 0 \ 0 \ 0)$$

4 Flusso Massimo con Ford-Falkerson

4.1

$$Q = 1 \quad p = (0 \ -1 \ -1 \ -1 \ -1 \ -1)$$

$$Q = (2 \ 3) \quad p = (0 \ 1 \ 1 \ -1 \ -1 \ -1)$$

$$\text{Cammino aumentante} = (1 \ 2 \ 6)$$

$$\text{A aumentanti} = \begin{pmatrix} 1 & 2 \\ 2 & 6 \end{pmatrix} \quad \text{Residui} = \begin{pmatrix} 12 \\ 11 \end{pmatrix} \quad \delta = 11 \quad v = 11$$

$$x = (11 \ 0 \ 0 \ 0 \ 11 \ 0 \ 0 \ 0 \ 0 \ 0)$$

4.2

$$Q = 1 \quad p = (0 \ -1 \ -1 \ -1 \ -1 \ -1)$$

$$Q = (2 \ 3) \quad p = (0 \ 1 \ 1 \ -1 \ -1 \ -1)$$

$$Q = (3 \ 4) \quad p = (0 \ 1 \ 1 \ 2 \ -1 \ -1)$$

$$\text{Cammino aumentante} = (1 \ 3 \ 6)$$

$$\text{A aumentanti} = \begin{pmatrix} 1 & 3 \\ 3 & 6 \end{pmatrix} \quad \text{Residui} = \begin{pmatrix} 5 \\ 8 \end{pmatrix} \quad \delta = 5 \quad v = 16$$

$$x = (11 \ 5 \ 0 \ 0 \ 11 \ 0 \ 0 \ 5 \ 0 \ 0)$$

4.3

$$Q = 1 \quad p = (0 \ -1 \ -1 \ -1 \ -1 \ -1)$$

$$Q = 2 \quad p = (0 \ 1 \ -1 \ -1 \ -1 \ -1)$$

$$Q = (3 \ 4) \quad p = (0 \ 1 \ 2 \ 2 \ -1 \ -1)$$

$$\text{Cammino aumentante} = (1 \ 2 \ 3 \ 6)$$

$$\text{A aumentanti} = \begin{pmatrix} 1 & 2 \\ 2 & 3 \\ 3 & 6 \end{pmatrix} \quad \text{Residui} = \begin{pmatrix} 1 \\ 11 \\ 3 \end{pmatrix} \quad \delta = 1 \quad v = 17$$

$$x = (12 \ 5 \ 1 \ 0 \ 11 \ 0 \ 0 \ 6 \ 0 \ 0)$$

4.4

$$Q = 1 \quad p = (0 \ -1 \ -1 \ -1 \ -1 \ -1)$$

$$Q = \emptyset \quad p = (0 \ -1 \ -1 \ -1 \ -1 \ -1)$$

$$N_s = 1 \quad N_t = (2 \ 3 \ 4 \ 5 \ 6)$$