

Communications Network Design

Class Exercise 2: due before lecture, Wednesday May 6th, 2009.

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1. Apply Minoux's greedy algorithm to the network shown in Figure 1 costs, and traffic as shown in the figure. Show all working!

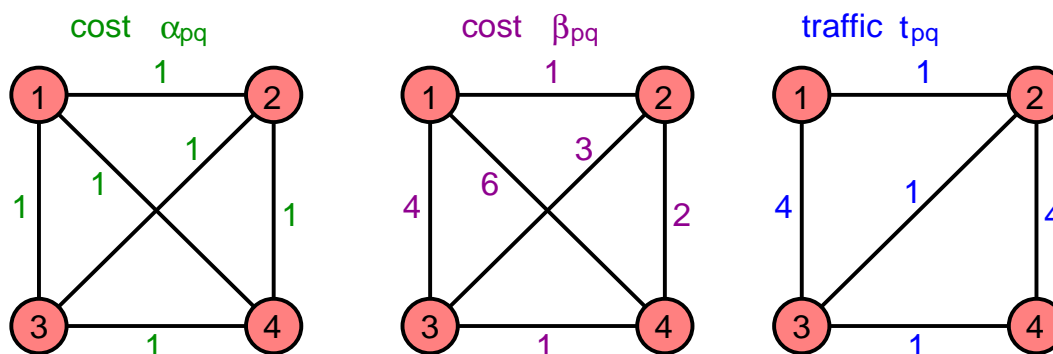


Figure 1: A network and associated costs and traffic.

2. Apply Minoux's greedy algorithm to the network shown in Figure 2 costs, and traffic as shown in the figure. Show all working! Note that for your convenience the costs and traffic are also defined in the matrices below.

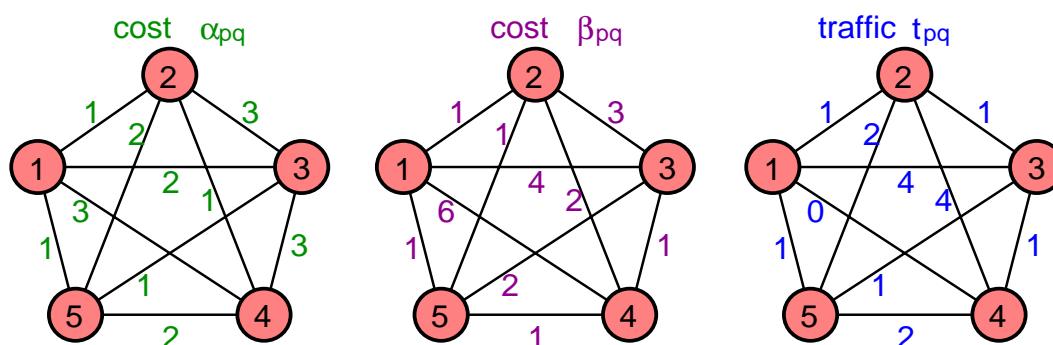


Figure 2: A network and associated costs and traffic.

$$\alpha = \begin{pmatrix} 0 & 1 & 2 & 3 & 1 \\ 1 & 0 & 3 & 1 & 2 \\ 2 & 3 & 0 & 3 & 1 \\ 3 & 1 & 3 & 0 & 2 \\ 1 & 2 & 1 & 2 & 0 \end{pmatrix}, \quad \beta = \begin{pmatrix} 0 & 1 & 4 & 6 & 1 \\ 1 & 0 & 3 & 2 & 1 \\ 4 & 3 & 0 & 1 & 2 \\ 6 & 2 & 1 & 0 & 1 \\ 1 & 1 & 2 & 1 & 0 \end{pmatrix}, \quad T = \begin{pmatrix} 0 & 1 & 4 & 0 & 1 \\ 1 & 0 & 1 & 4 & 2 \\ 4 & 1 & 0 & 1 & 1 \\ 0 & 4 & 1 & 0 & 2 \\ 1 & 2 & 1 & 2 & 0 \end{pmatrix}.$$