Networks and Complexity

Solution 2-3

This is an example solution from the forthcoming book Networks and Complexity.
Find more exercises at https://github.com/NC-Book/NCB

Ex 2.3: An abstract example [2]

Find the route from the first to the fifth node in a network described by the distance matrix

$$\mathbf{D} = \begin{pmatrix} 0 & 3 & 6 & 8 & 9 \\ 3 & 0 & 1 & 6 & 7 \\ 6 & 1 & 0 & 3 & 1 \\ 8 & 6 & 3 & 0 & 1 \\ 9 & 7 & 1 & 1 & 0 \end{pmatrix}. \tag{1}$$

(use Dijkstra, do not draw a map)

Solution

Using Dijkstra's algorithm we find

1	2	3	4	5
0	∞	∞	∞	∞
	3	6	8	9
		4	8	9
			7	5

Hence, the shortest route is 1,2,3,5.