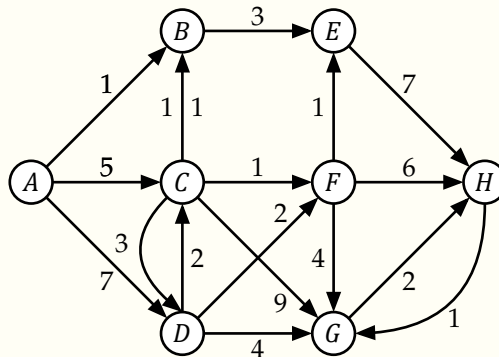


5. Tutorial exercises - Fourth Series - Shortest path problems

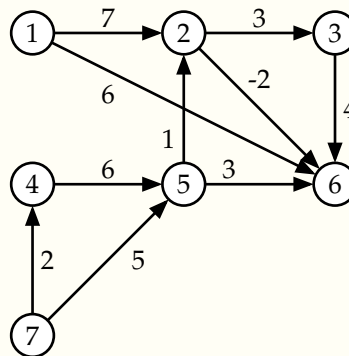
Exercise 1

By using Dijkstra's algorithm, determine the arborescence of the shortest paths in the following network, starting from vertex A.



Exercise 2

Use the Bellman-Ford algorithm to determine the arborescence of the shortest paths in the following network starting from vertex 1. Then, determine the arborescence of the shortest paths starting from vertex 7.



Exercise 3

An airline company serves five cities (A, B, C, D and E) according to the following table:

↷	A	B	C	D	E
A		1h15	1h45		2h
B	1h30				3h
C	2h			2h30	
D			3h10		1h10
E	2h15	3h15	1h30		

- What are the optimal paths between the cities?
- Actually, when a trip between two cities includes a stopover at an intermediate city, the trip's duration increases by 30 minutes (30 minutes for each stopover city). Recalculate the optimum routes between the locations.