Practical activity #4

Chapter 2

Student EQF level: 4, 5

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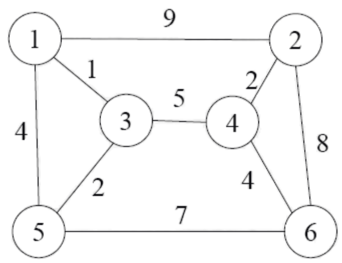
Objective:

This activity simply simulates methods that are used to determine the most effective route when delivering goods and choose the most convenient location of distribution centres which are involved in the supplying.

Instructions:

There are locations in the transport network where service centres-distribution centres and serviced shops and stores can be located. Below you can see a scheme of such a network. The diagram represents 6 locations/distribution numbers (circles with numbers 1-6) and the lines represent distances between them. There the numbers represent distances in kilometres (see also the table). This data is input information for all EQF 4 exercises.



Input distance values from individual locations:

	1	**2**	**3**	**4**	**5**	**6**
1	0	8	1	6	3	10
2	8	0	7	2	9	6
3	1	7	0	5	2	9
4	6	2	5	0	7	4
5	3	9	2	7	0	7
6	10	6	9	4	7	0

EQF 4

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Exercise 1:

Determine the maximum distances from each site to other sites:

Example:

Distances between locations in the transportation network (d_{11}= distance from location 1 to location 1):

From site 1: max (d11, d12, d13, d14, d15, d16) = max (0, 8, 1, 6, 3, **10**) = 10 km

From site 2: max (d21, d22, d23, d24, d25, d26) = max (8, 0, 7, 2, **9**, 6) = 9 km

Etc…

Exercise 2:

Determine the shortest maximum distance to the other locations and which is the location of the distribution centre

Exercise 3:

Determine the distribution center from which the sum of the distances to the stores will be minimum.

EQF 5

There are locations in the transport network where distribution centres and serviced shops and stores can be located. In the following table there are input data for distances between 5 potential distribution centres (sites) and 8 companies.

	1	2	3	4	5	6	7	8
DC1	5	41	50	26	38	60	44	159
DC2	49	182	13	67	68	20	32	41
DC3	45	17	61	45	67	48	53	27
DC4	37	25	195	32	77	88	90	30
DC5	58	42	25	101	133	32	21	78

Exercise 1:

On the basis of the table above, what information can it present and can it help you when planning using a DC? Next, think about types of transport and means of transport that could be or should be not performed from different points in the transport network regarding the distances between them.

Exercise 2:

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Determine the accessibility of individual companies from each potential DC with the maximum distance of 40 km. Use the value 1 for accessibility and value 0 for inaccessibility within 40 km). Then decide, which sites (potential DCs) should be used to cover all companies within the given distance.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
DC1								
DC2								
DC3								
DC4								
DC5								

A table for new variables:

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
DC1								
DC2								
DC3								
DC4								
DC5								

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