

Homework Assignments

Methods and Techniques of Decision Support 2021

Homework 1

	Amsterdam	Dunaj	London	Moskva	Pariz	Praga	Rim	Stockholm
A Amsterdam								
D Dunaj								
L London								
M Moskva								
P Pariz								
G Praga								
R Rim								
S Stockholm								

1. Provide your own preferences for visiting these cities.
2. Rank the cities according to your preferences.

Please see slides 5-7 in *MSPO_2_OsnovneMetode*.

Try to keep and check the consistency of your answers.

You can propose your own cities. At least 7 cities are required.

Homework 2

		<i>vrsta koruze</i>	
<i>vreme</i>	<i>verjetnosti</i>	K_1	K_2
<i>povprečno</i>	0,55	10	7
<i>suho</i>	0,15	5	8
<i>deževno</i>	0,30	12	13

- vreme: weather
- verjetnosti: probabilities
- vrsta koruze: corn (maize) type
- povprečno: average
- suho: dry
- deževno: rainy

- Evaluate alternatives K_1 in K_2 according to criteria:
 - Dominant Alternative, Pessimistic, Optimistic, Hurwicz (with $h = 0,7$), Laplace and Savage
 - Most probable outcome and Expected Value
- Draw evaluation chart for $h = 0, \dots, 1$
- Assess the sensitivity of decision
- Suggest the best alternative

Homework 3

		<i>vrsta koruze</i>	
<i>vreme</i>	<i>verjetnosti</i>	K_1	K_2
<i>povprečno</i>	0,55	10	7
<i>suho</i>	0,15	5	8
<i>deževno</i>	0,30	12	13

- vreme: weather
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- Represent this decision table by an equivalent decision tree
- Suggest the best corn type given this data
- Draw the risk profile
- Analyse possible effects of weather changes (i.e. water shortage) to the choice of corn type
- Calculate the value of perfect information

Homework 4

Where would you like to work (or what to do) after the studies?

- a. Define 5 to 8 criteria according to your own goals and expectations, and rank them by importance to you
- b. Formulate 2 to 5 alternatives (organisations or jobs)
- c. Make an ABACON diagram and draw profiles of alternatives
- d. Evaluate your alternatives using the Kepner-Tregoe method

Homework 5

Develop a hierarchy of criteria for buying a family car.

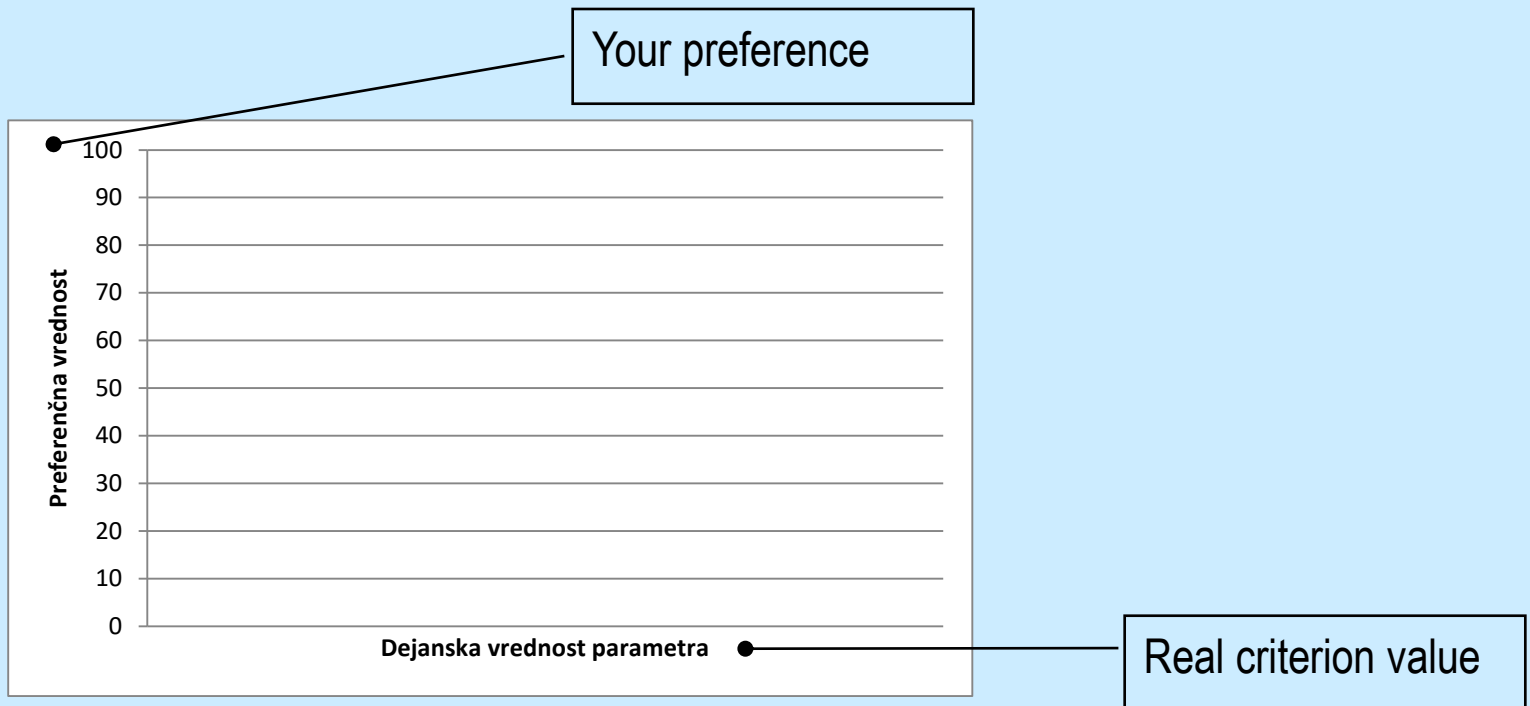
Instructions:

- Define criteria according to your own goals and preferences
- First make an unordered list of criteria, then gradually connect them into a tree or hierarchy
- Try to make a multi-level structure that reflects the dependence and inter-relations of criteria
- Use about 10-15 criteria structured in 3-5 levels
- Label (or use different symbols) for input and output criteria

Homework 6

Draw marginal utility functions for criteria:

- car age [years]
- car price [€]
- fuel consumption [l/100km]
- age of a shop assistant [years]
- age of a USA president [years]



Homework 7

Fill in the comparison matrix and calculate the criteria weights

apartment	<i>rent</i>	<i>location</i>	<i>quality</i>
<i>rent</i>			
<i>location</i>			
<i>quality</i>			

Fill in the comparison matrix and calculate marginal values of alternatives considering the distance of the apartment to nearby shops

shops	<i>studio apartment</i>	<i>extension</i>	<i>farm</i>	<i>in a block of flats</i>
<i>studio apartment</i>				
<i>extension</i>				
<i>farm</i>				
<i>in a block of flats</i>				