Chair of Distributed Information Systems
Dr. Wiem Fekih Hassen (Wiem.FekihHassen@uni-passau.de)
Dr. Armin Gerl (Armin.Gerl@uni-passau.de)
Felix Bölz (Felix.Boelz@uni-passau.de)

DiMIS
Distributed and Multimedia Information Systems

Online-Exercises Thu. 10:15 – 11:45 Zoom

Privacy-Preservation Technologies in Information Systems, WS 21/22

Exercise Sheet 07.

Subject: "Information Systems & Data Warehouses, Data Attributes & Types, Anonymization"

Task 1 - Information Systems & Data Warehouses

a) Which properties classify an Information System? Describe them.

b) Give the properties of a Data Warehouse.

c) Describe an example of a Data Warehouse, which fulfills all properties given in the previous sub-task.

d) What is an Hypercube? Explain the concept and draw one with $n = 4$.

e) Give examples for Data Models with the Hypercube dimensions $n = 1$, $n = 2, n = 3, n = 4$. (Also refer to slide 7-9 of Chapter 3 of the lecture.)

Task 2 - Data Attributes & Types

a) Give the four Attribute Classifications. Explain each in detail.

b) Explain the four Attribute Types.

c) What is the difference between Micro- and Macrodata? Explain!

d) Describe how Graph Data can be stored in a data base.

Task 3 - Anonymization

a) Which three underlying basic concepts are used for the most anonymization approaches? Explain and give examples for each concept.

b) Assume, there is a data set which combines number-plates of cars with the names of the owners (Refer to Table 1). Also, this data set includes the sum of the non-payed penalties for false parking. A german number-plate can be described by the following regular expression:

[A-ZÖÜÄ]{1,3} [A-ZÖÜÄ]{1,2} [1,9]{1}[0-9]{1,3}.

i Give the Attribute Classifications and Types.

ii Which anonymization concepts are feasible for each attribute? Explain!

iii Anonymize each row.

iv Explain whether it is useful to anonymize each row, or not.

Table. 1: Example of Data set

Name	**Number-Plate**	**Non-payed penalties**
Wiem	PA X 293	0 €
Armin	DEG L 32	100 €
Felix	M XX 002	50 €
Ashish	NU LL OOOO	9,90 €