

Assuignment#1

CPCS-530 Advanced Data Base Systems

Student ID:
Student Name:

Exercise 2.1

The semantic links between the data (attributes) of an information system are written as functional dependencies (fds). The dfs describe properties that are necessarily invariant over time. Explain why they should be invariant.

Exercise 2.2

Given the ORDER relation:

ORDER_Id	Product_Id	Order_Qty	Client_Id	Vendor_Id

- 1) Fill in the table with tuples satisfying the functional dependencies below:

ORDER_Id, Product_Id \rightarrow Order_Qty

ORDER_Id \rightarrow Client_Id, Vendor_Id

Client_Id \rightarrow Vendor_Id

- 2) Among the following tuples, four tuples do not respect the above functional dependencies expressed on the ORDER relation. Circle the values in these four lines.

ORDER_Id	Product_Id	Order_Qty	Client_Id	Vendor_Id
100	P1	5	Cl1	V1
100	P2	10	Cl3	V1
100	P3	7	Cl1	V3
110	P1	8	Cl2	V3
110	P1	4	Cl2	V3
100	P5	20	Cl2	V3

Exercise 2.3

The application of the properties of functional dependencies (transitivity, pseudo-transitivity, etc.) on a set F of functional dependencies aims to: (Answer with True or False)

<input type="checkbox"/>	Remove redundant functional dependencies from F
<input type="checkbox"/>	Obtain new functional dependencies that will be added to F
<input type="checkbox"/>	Simplify the left parts of the F dfs

Exercise 2.4

Answer with True or False

<input type="checkbox"/>	The functional dependence $A, B \rightarrow C$ decomposes into $A \rightarrow C$ and $B \rightarrow C$.
<input type="checkbox"/>	The augmentation property consists of enriching the left part of a fd with any attribute and preserves its elementary character.
<input type="checkbox"/>	In the relational model, the concept of relation is the only way to model both the real world entities and relationships.
<input type="checkbox"/>	Any relation must have at least one candidate key.