

DIRECTED WORK 1 (FUNCTIONAL DEPENDENCIES)

EXERCISE 1

- 1- Extract all functional dependencies from the opposite relation (table).
- 2- Calculate the candidate key.
- 3- Normalize this relation.

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1	IS318	Adams	Database	A	Howser	60192
1	IS301	Adams	Program	B	Langley	45869
2	IS318	Jones	Database	A	Howser	60192
3	IS318	Adams	Database	B	Howser	60192
4	IS301	Baker	Program	A	Langley	45869
4	IS318	Baker	Database	B	Howser	60192

EXERCISE 2

Given the set of functional dependencies F on the relation R(ABCDEI) as follows

$$\text{Let } F = \{A \rightarrow D, AB \rightarrow E, BI \rightarrow E, CD \rightarrow I, E \rightarrow C\}$$

- 1- Calculate the closure $\{A, E\}^+$ on R.

EXERCISE 3

Consider the following relation R(ABCDEF) and F the set of functional dependencies

$$S = \{A \rightarrow BCE, B \rightarrow E, CD \rightarrow EF, A \rightarrow C, AD \rightarrow E\}$$

- 1- Prove that $AD \rightarrow F \in S^+$
- 2- Calculate the closure $\{A, B\}^+$
- 3- Calculate the minimal cover of the set S
- 4- Find a candidate key for R

EXERCISE 4

F et G are two set of FDs

$$F = \{A \rightarrow BC, A \rightarrow D, CD \rightarrow E\}, \text{ and}$$

$$G = \{A \rightarrow BCE, A \rightarrow ABD, CD \rightarrow E\}$$

- Are F and G equivalent?