

CS 331-H01: DATA MANAGEMENT SYSTEMS DESIGN – ASSIGNMENT 5

Due date: See the Assignment page on Canvas

Do answer all items below and **submit** a word/pdf file via Canvas. If you have a question, email me or ask during class hours.

1- Discuss insertion, deletion, and modification anomalies.

What update anomalies occur in the following relation BOOK_PUBLISHER?

BOOK_PUBLISHER

Book_id	Title	Publisher_Name	P_Address	P_Phone
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2- What is a functional dependency? What are the possible sources of information that define the functional dependencies that hold among the attributes of a relation schema?

3- Consider the following relation:

R (Doctor#, Patient#, Date, Diagnosis, Treat_code, Charge)

In the above relation, a tuple describes a visit of a patient to a doctor along with a treatment code and daily charge. Assume that diagnosis is determined (uniquely) for each patient by a doctor. Assume that each treatment code has a fixed charge (regardless of the patient).

Is this relation in 2NF? Justify your answer and decompose it if necessary.

Then argue whether further normalization to 3NF is necessary and if so, perform it.

4- Consider a relation R(ABCDEFGHIJ) with the following set of functional dependencies

F = { $F \rightarrow AB$, $CD \rightarrow E$, $C \rightarrow FG$, $H \rightarrow IJ$, $D \rightarrow H$ }

- Is CDE a superkey of R (w.r.t. **F**)?
- Is CDE a key of R (w.r.t. **F**)?
- Determine the prime and non-prime attributes of R.