Final Exam Workshop

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1. Note: control questions are only a sample (not actual questions). To study for final exams review all the slides and the book! Pay special attention to examples and make sure you understand them.

2. Material – **everything** after midterm (including Authorization).

3. BRING YOUR LAPTOP TO FINAL EXAM.

Functional Dependency

1. Inference Test. Construct inference test with two tuples (using 0 and ? symbols). Describe all the steps in your reasoning and which dependencies you used.

    A. Assume a set of FDs F = {ABC -> DEF, D -> G, D-> H, GH -> IJ}

    B. Is it true that ABC -> I?

    C. Is it true that DEF -> IJ?

    D. Is it true that AB -> H?

Closure Test

1.   Assume set of FDs F = {ABC -> DEF, D -> G, D-> H, GH -> IJ, C -> K}

2.   Compute closure of ABC, ABC+ and the closure of DEF, DEF+.

3.   Describe each of the steps in your computation (Basis and Induction).

4.   Based on the closure information:

   A.   Is it true that ABC -> GH?

   B.   Is it true that ABC -> K?

   C.   Is it true that DEF -> BC?

   D.   For each of the points provide justification.

Data integration

1. Provide an example of schema heterogenity.

2. Provide two different ways of *cleaning* wrt FDs and example to each of them. Provide an example of data repair which minimizes the number of changes (cardinality repair).

3. Draw a Star-Schema for Sales data wareshouse of car dealership (that consists of five tables). You can use Toad Data Modeler.

4. Provide description which tables are fact tables and dimension tables.

5. Which attributes are dimension attributes and dependent attributes (in fact tables)?

DTD and XML Document

1.   Provide DTD and XML Document for PART of your car dealership schema

2.   In your specificiation include multiplicty, IDs, IDREFs, requires and non-requires attributes etc.

Order Dependency

1. What is the advantage of mapping list-based order dependencies (ODs) to set-based ODs to discover ODs?

2. Map the list-based OD [AB] |-> [CDF] into equivalent set-based ODs.

Anomalies

1. Give an example of an update and delete anomalies (provide a table with sample data) over movie database.

Normalization

1.   Assume set of FDs F = {AB -> CH, AB -> IJ, DE -> FG} over relation R.

2.   What does it mean that relation is in BCNF? (definition)

3.   Is table R in BCNF? (Provide justification – prove it by closure test or inference test with symbols 0 and ?)

4.   If answer is NO decompose R.