Final Exam Workshop

Final Exam

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 (from SQL Libraries).
3. BRING YOUR LAPTOP TO FINAL EXAM.

Functional Dependency

1. Inference Test. Construct inference test with two tuples (using 0, ? and 1 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 = {D -> G, ABC -> DEF, D-> H, GH -> IJ, C -> K}
2. Compute closure of D+ and the closure of ABC+.
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 D -> BC?
   D. For each of the points provide justification.

Data integration

1. Provide an example of schema heterogenity.
2. Assume following table with FD: Postal_Code -> City. Propose an algorithm to clean the data. Provide justification of your desicions. Is there any alternative way to clean the data?

Postal_Code	City
M4Y2W4	TO
M4Y2W4	TO
M4Y2W4	TO
M4Y2W4	MIA

1. Draw a Star-Schema for Sales data wareshouse of car dealership (that consists of five tables). You can use Toad Data Modeler.
2. Provide description which tables are fact tables and dimension tables.
3. 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 (covering 2, 3 tables)
2. In your specificiation include multiplicty, IDs, IDREFs, required and non-required attributes etc.

Anomalies

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

Normalization

1. Assume set of FDs F = {AB -> CD, AB -> E, F -> G} over relation R.
2. What does it mean that relation is in BCNF? (provide 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.