

Homework 5

Due: Wednesday, September 28 at 11:59pm

For questions 1-4, please prepare your answers in a word processor. For questions 5-7, it would be preferable if you could use a word processor with an equation editor, but if that is too difficult, you may hand write your answers and scan them in. However, you must write **neatly** or you may receive a 0 if the TA cannot read your handwriting. Please submit your answers as a single file. You should insert scanned pages into your word processing document.

1. Define the following four terms (a one sentence description of each will suffice):
 - a. Super Key
 - b. Candidate Key
 - c. Primary Key
 - d. Foreign Key
2. Identify the foreign keys in the Hotel schema given in the exercises at the end of Chapter 4 and indicate which relation they reference.
3. Based on your answer to question 2, create the Booking table from the Hotel schema using mysql and declare the primary and foreign keys. None of the five fields should be able to contain null values, and any update or deletion of a parent key should be cascaded to the foreign key. Use the following information for the columns:
 - a. hotelNo: integer, 4 digits
 - b. guestNo: integer, 7 digits
 - c. dateFrom: date type
 - d. dateTo: date type
 - e. roomNo: integer, 3 digits

You should not include any constraints, other than the ones listed in this problem.

Hint: The primary key consists of three columns.

4. 5.8 parts a, c, and f. As an illustration of the type of answer I want, here is an example answer for 5.8d:

This will produce a (left outer) join of Guest and those tuples of Booking with an end date (dateTo) greater than or equal to 1-Jan-2002. All guests who don't have a booking with such a date will still be included in the join. Essentially this will produce a relation containing all guests and show the details of any bookings they have beyond 1-Jan-2002.
5. Provide the equivalent tuple relational calculus expressions for parts a, c, and f from exercise 5.8
6. 5.10
7. Provide the equivalent relational algebra expressions for each of the tuple relational calculus expressions given in exercise 5.10a and 5.10c