CSCI 332 Database Concepts
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Assignment 3 - Tuple Calculus -Due September 22, 2020

Complete the following exercises from Chapter 5 of your textbook, page 140.

1. Exercise 5.12 parts (b), (c), (e) and (g). This problem uses the Hotel database, which has the structure given on page 118 of the textbook and is the same one you used in Assignment 1. We reproduce the schema here:

   ```
   Hotel(hotelNo,hotelName,city)
   Room(roomNo,hotelNo,type,price)
   Booking(hotelNo,guestNo,dateFrom,dateTo,roomNo)
   Guest(guestNo,guestName,guestAddress)
   ```

   Notes:
   - You just have to give tuple calculus expressions.
   - In problem (c), by "city" we shall mean city where a guest is staying, rather than the city the guest is from since we have no way to extract just the city subtext from the address attribute of Guest.
   - In problem (e), for the purposes of deciding "currently staying" you will need a date for reference as a "current date." You can use a date of your choosing, but represent it in the form DD-MMM-YYYY. For example September 15, 2020 would be represented as 15-SEP-2020.
   - In problem (g) instead of "staying" use "who have ever stayed at" and also include the dates they stayed there.

2. Still using the Hotel database from problem 1, express the following queries in tuple calculus:
   a. Get a listing of the names of hotels that have a hotel in Cambridge.
   b. Get a listing of the names of hotels that do not have a hotel in Cambridge.
   c. Get a listing of the guest numbers of guests who have had a booking with every hotel in Stratford.

3. Exercise 5.10 parts (a), (b) and (c). Use the Hotel database as described on page 118. Again, this is the same one you used in Assignments 1 and 2. Here by "describe the relation" you are to describe he query using language like that in problems 1. and 2.above. Terms like "projection," "selection," "join," etc. may not appear in your answer.

4. Problem 5.9 on page 140, but only give the tuple calculus equivalent of the relational algebra expressions in parts (a),(b),(c) and (f) from Problem 5.8.