
This Lab is based on Query Processing.

- Submit your *own work* on time. No credit will be given if the lab is submitted after the due date.
 - Note that the completed lab should be submitted in .doc, .docx, .rtf, .pdf or .zip format only.
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Solve the following Exercises from the course text book.

1. 23.17/21.17 (5th/4th edition)

Using the Hotel schema given at the start of the Exercises at the end of Chapter 3, determine whether the following queries are semantically correct

**(a) SELECT r.type, r.price
FROM Room r, Hotel h
WHERE r.hotel_number = h.hotel_number AND h.hotel_name = 'Grosvenor Hotel' AND r.type > 100;**

Not semantically correct: hotel_number and hotel_name are not the names of attributes in the schema; type is character string and so cannot be compared with an integer value (100).

**(b) SELECT g.guestNo,g.name
FROM Hotel h, Booking b, Guest g
WHERE h.hotelNo = b.hotelNo AND h.hName = 'Grosvenor Hotel';**

Not semantically correct: g.name and h.hName not in schema; Guest table not connected to remainder of query.

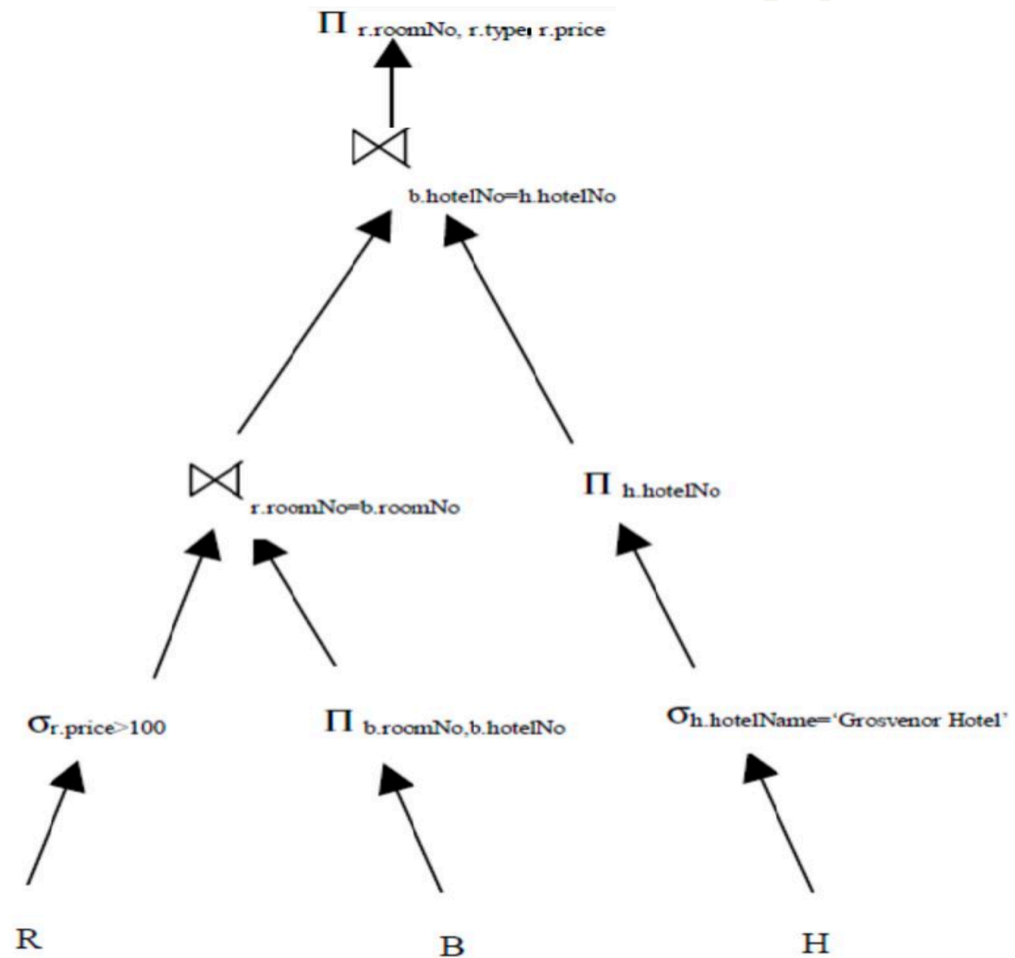
**(c) SELECT r.roomNo, h.hotelNo
FROM Hotel h, Booking b,Room r
WHERE h.hotelNo = b.hotelNo AND h.hotelNo = 'H21' AND b.roomNo = r.roomNo AND type = 's' AND b.hotelNo = 'H22';**

Not semantically correct: hotelNo cannot be both H@! and H22 in Booking.

2. 23.18/21.18 (5th/4th edition)

- Again using the Hotel schema, draw a relational algebra tree for each of the following queries and use the heuristic rules given in Section 21.3.2 to transform the queries into a more efficient form. Discuss each step and state any transformation rules used in the process.

- (a) **SELECT** r.roomNo, r.type, r.price
FROM Room r, Booking b, Hotel h
WHERE r.roomNo = b.roomNo **AND** b.hotelNo = h.hotelNo **AND**
h.hotelName = 'Grosvenor Hotel' **AND** r.price > 100;



- (b) SELECT g.guestNo, g.guestName**
FROM Room r, Hotel h, Booking b, Guest g
WHERE h.hotelNo = b.hotelNo AND g.guestNo = b.guestNo AND h.hotelNo =
r.hotelNo AND
h.hotelName = 'Grosvenor Hotel' AND dateFrom >= '1-Jan-04' AND dateTo <= '31-
Dec-04';

