Database Management System – cs422 DE

Lab 6 – Week 13

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.

Solve the following Exercises from the course text book.

1. 23.17/21.17 (5^{th}/4^{th} edition)

   Using the Hotel schema given at the start of the Exercise 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';

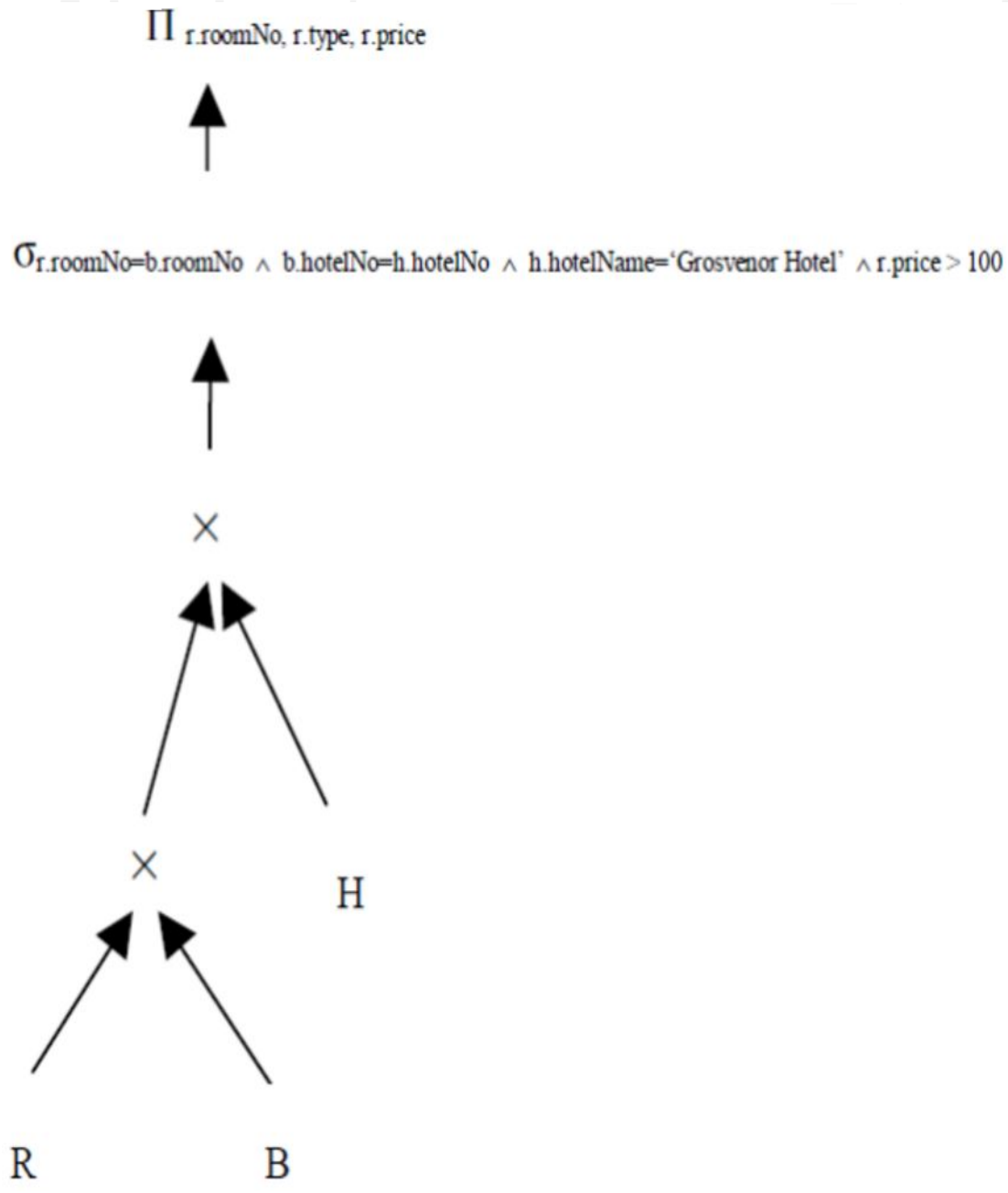
   Not semantically correct: g.name and h.hName not in schema; Guest table not connected to remainder of query.

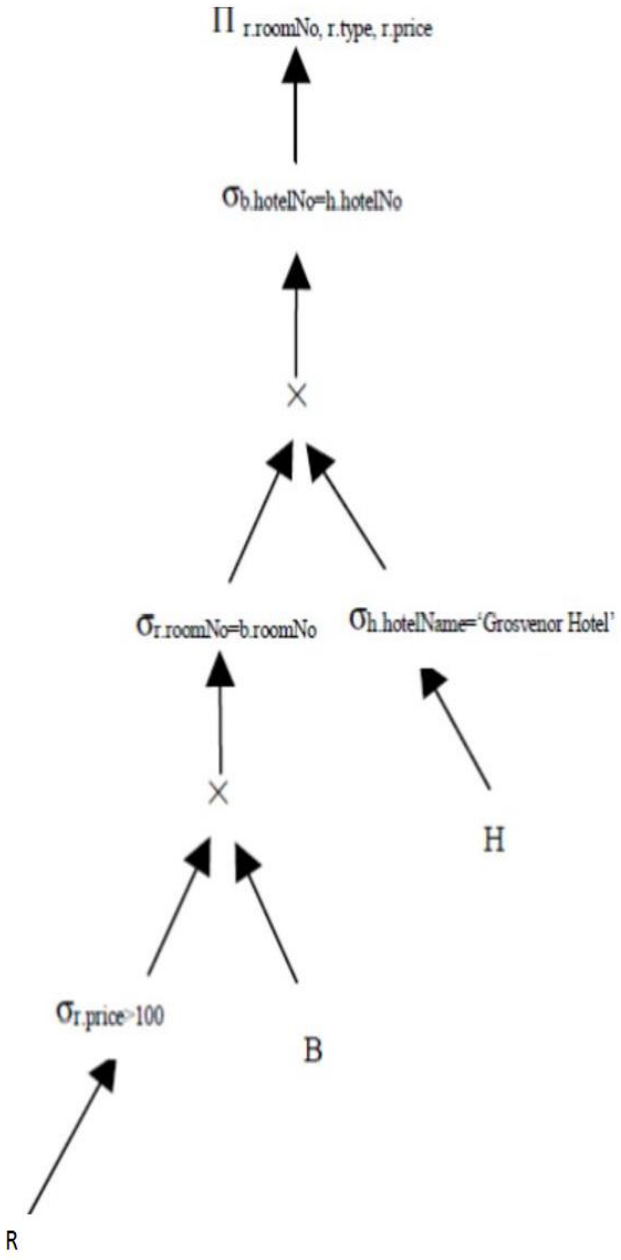
   c) SELECT r.roomNo, h.hotelNo
   FROM Hotel h, Booking b, Room r
   WHERE h.hotelNo=b.hotelNo AND h.hotelNo='H21' AND
   b.roomNo=r.roomNo AND type='s' AND b.hotelNo='H22';

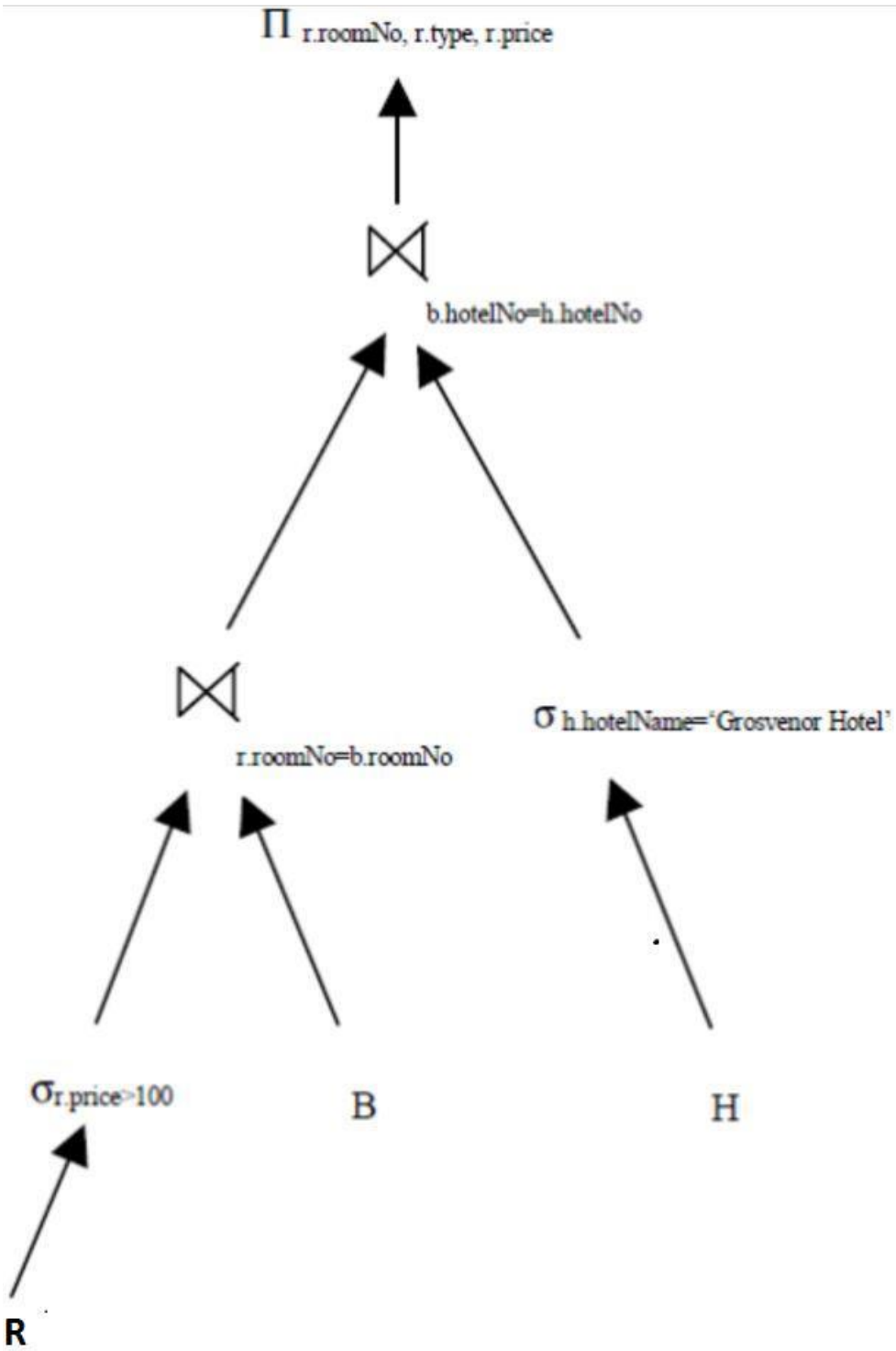
   Not semantically correct: hotelNo cannot be both H@! and H22 in Booking.

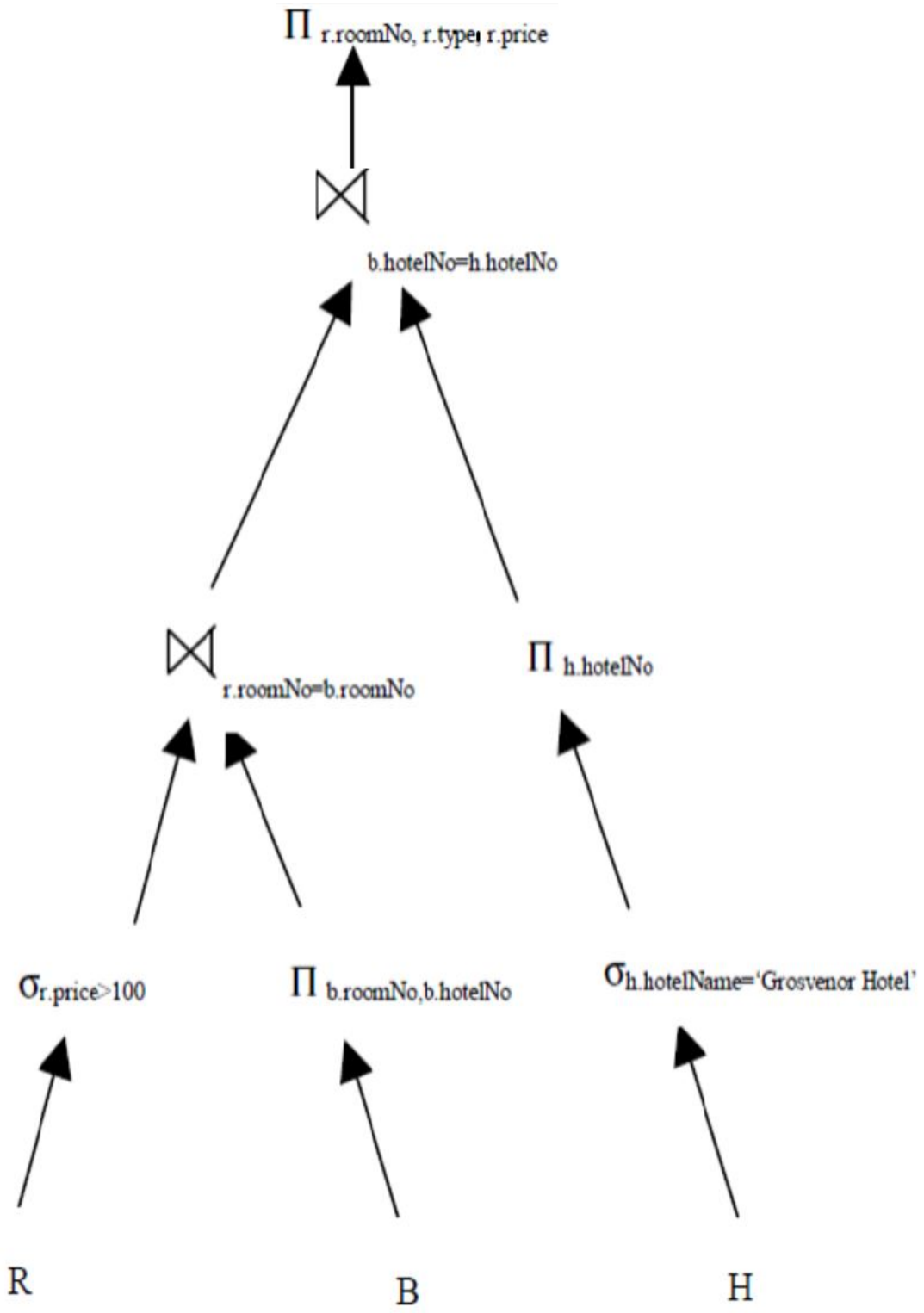
2. 23.18/21.18 (5^{th}/4^{th} edition)

   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;


Π r.roomNo, r.type, r.price
σr.roomNo=b.roomNo ∧ b.hotelNo=h.hotelNo ∧ h.hotelName='Grosvenor Hotel' ∧ r.price > 100
×
×
H
R
B


Π r.roomNo, r.type, r.price
σb.hotelNo=h.hotelNo
×
σr.roomNo=b.roomNo
σh.hotelName='Grosvenor Hotel'
×
H
σr.price>100
B
R


Π r.roomNo, r.type, r.price
b.hotelNo=h.hotelNo
σ h.hotelName='Grosvenor Hotel'
r.roomNo=b.roomNo
σr.price>100
B
H
R

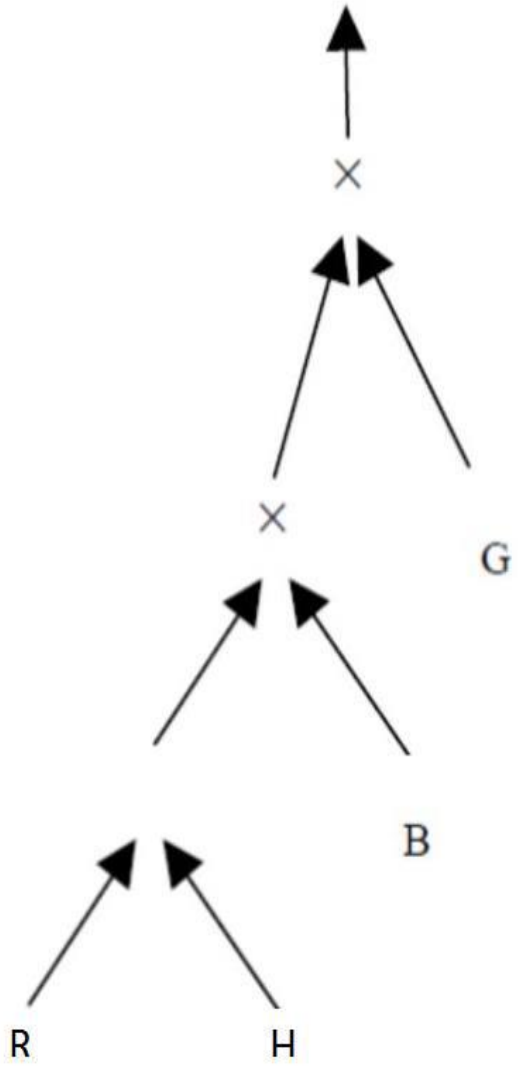


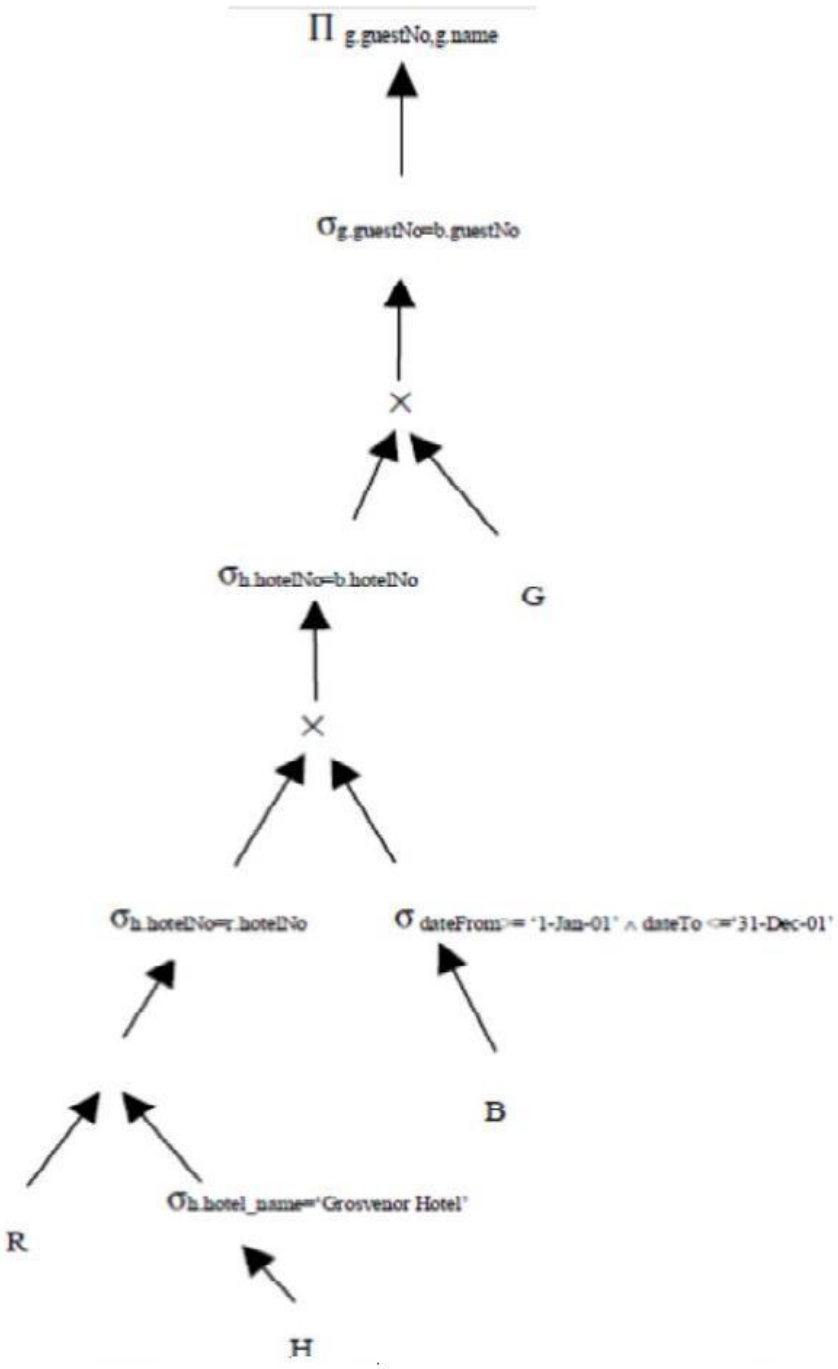
(b)SELECT g.guestNo, g.guestName
FROM Room r, Hotel h, Booking b, Guest g
WHERE h.hotelNo = b.hotelNo AND g.guestNo = b.guestNo AND
h.hotelNo = r.hotelNo AND h.hotelName = 'Grosvenor Hotel' AND
dateFrom >= '1-Jan-o4' AND dateTo <= '31-Dec-04';

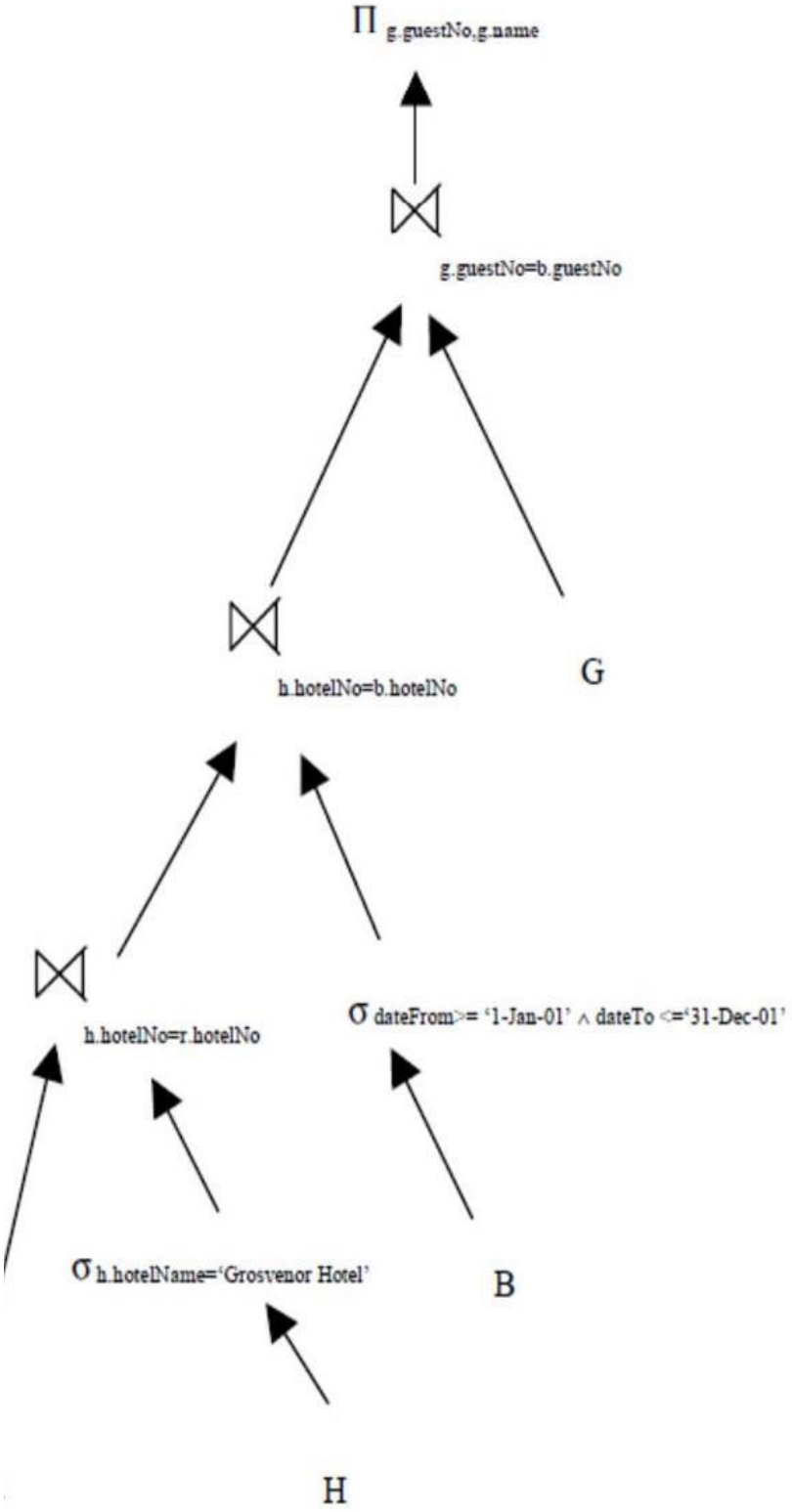
$\Pi_{g.guestNo,g.guestName}$

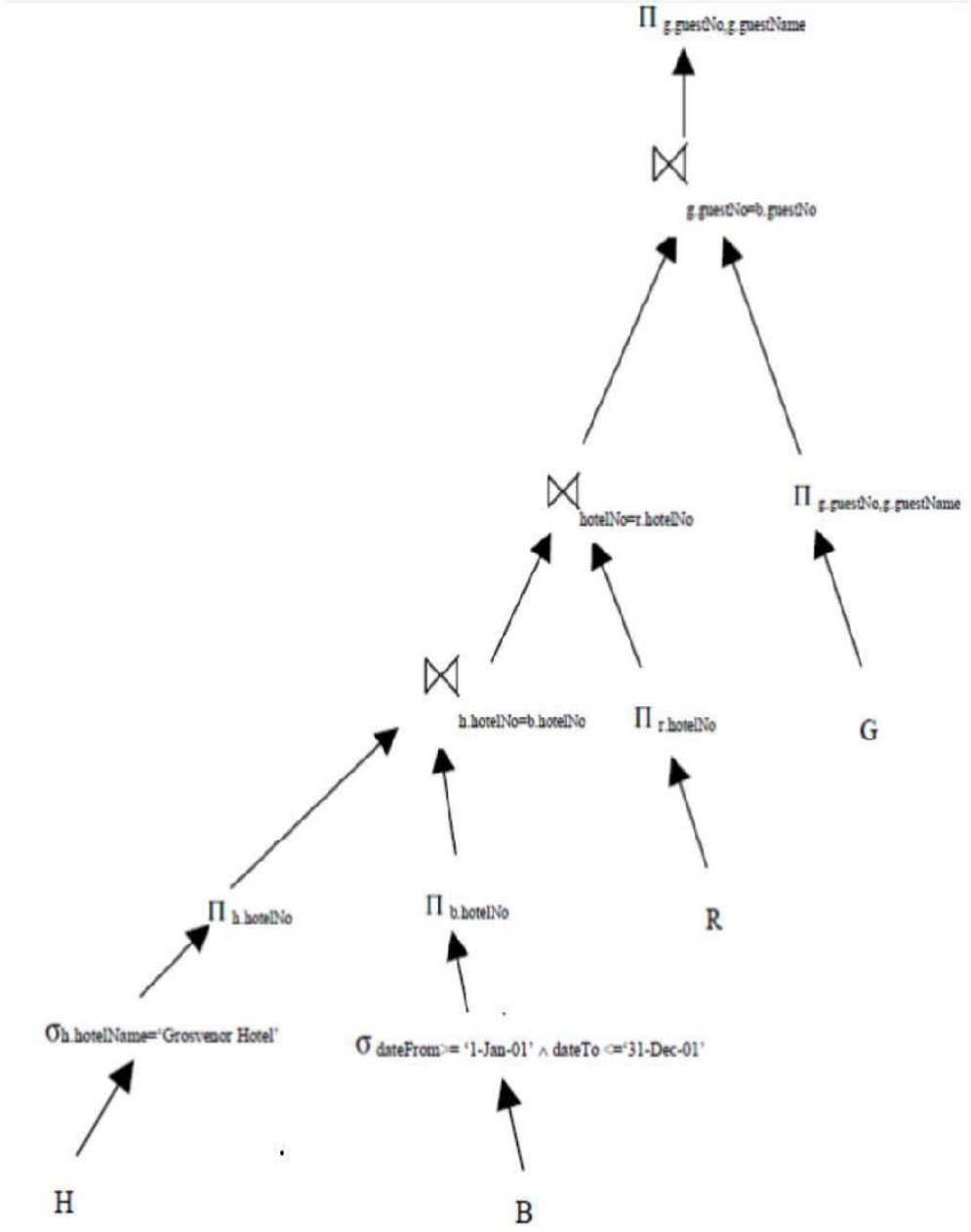
$\sigma_{h.hotelNo=b.hotelNo \wedge g.guestNo=b.guestNo \wedge h.hotelNo=r.hotelNo \wedge}$

$h.hotelName='Grosvenor\ Hotel' \wedge dateFrom >= '1\text{-}Jan\text{-}01' \wedge dateTo <= '31\text{-}Dec\text{-}01'$




Π g.guestNo,g.name
σg.guestNo=b.guestNo
×
σh.hotelNo=b.hotelNo
G
×
σh.hotelNo=r.hotelNo
σ dateFrom >= '1-Jan-01' ∧ dateTo <='31-Dec-01'
B
σh.hotel_name='Grosvenor Hotel'
R
H


Π g.guestNo,g.name
g.guestNo=b.guestNo
h.hotelNo=b.hotelNo
G
h.hotelNo=r.hotelNo
σ dateFrom>= '1-Jan-01' ∧ dateTo <='31-Dec-01'
σ h.hotelName='Grosvenor Hotel'
B
H


Π g.guestNo,g.guestName
g.guestNo=b.guestNo
hotelNo=r.hotelNo
Π g.guestNo,g.guestName
h.hotelNo=b.hotelNo
Π r.hotelNo
G
Π h.hotelNo
Π b.hotelNo
R
σh.hotelName='Grosvenor Hotel'
σ dateFrom>= '1-Jan-01' ∧ dateTo <='31-Dec-01'
H
B