

## Database Management System – cs422 DE

### Lab 6 – Week 13

---

1. 23.17/21.17 (5<sup>th</sup>/4<sup>th</sup> edition)

(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;
```

This is not semantically correct because

- there is no hotel\_number named attribute in Room and Hotel relations
- type attribute or Room relation is assumed as character (e.g., S) so it cannot be filtered as greater than integer 100

(b)

```
SELECT g .guestNo, g .name  
FROM Hotel h, Booking b, Guest g  
WHERE h.hotelNo = b.hotelNo AND h.hotelName = 'Grosvenor Hotel';
```

This is not semantically correct because

- there is no name named attribute in Guest relation

(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';
```

This is not semantically correct because

- hotelNo is checking if it is H21 and H22 at the same time.

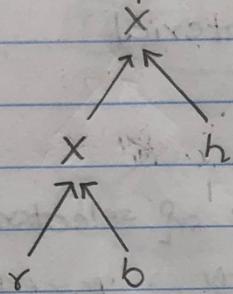
2. 23.18/21.18 (5<sup>th</sup>/4<sup>th</sup> edition)

(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;
```

$\Pi_{r.roomNo, r.type, r.price}$  $\Pi_{r.roomNo, r.type, r.price}$ 

$b$   
 $6. r.roomNo = b.roomNo \wedge$   
 $b.hotelNo = h.hotelNo \wedge$   
 $h.hotelName = 'Grosvenor Hotel' \wedge$   
 $r.price > 100$



(a)

 $6. r.roomNo = b.roomNo$ 

$6. h.hotelName =$   
 $'Grosvenor'$   
 $h$   
 $'Hotel'$

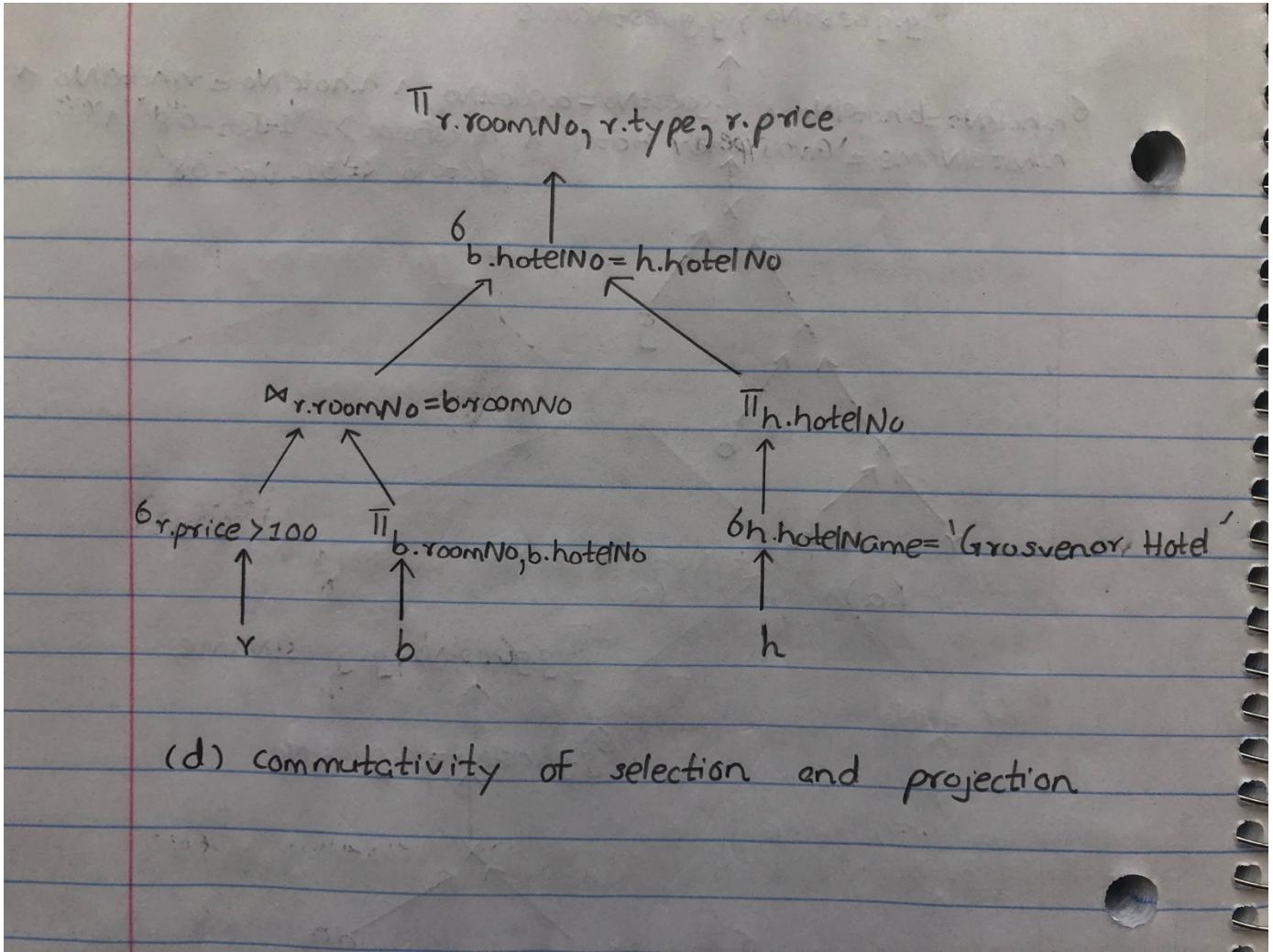
 $6. r.price > 100$ 

(b) Conjunctive selection operations  
 can cascade into individual  
 selection operations (and  
 vice versa)

 $\Pi_{r.roomNo, r.type, r.price}$ 

$\bowtie b.hotelNo = h.hotelNo$   
 $\bowtie r.roomNo = b.roomNo \quad 6. h.hotelName = 'Grosvenor Hotel'$   
 $6. r.price > 100 \quad b \quad h$

(c) commutativity of selection and theta join (or cartesian product)



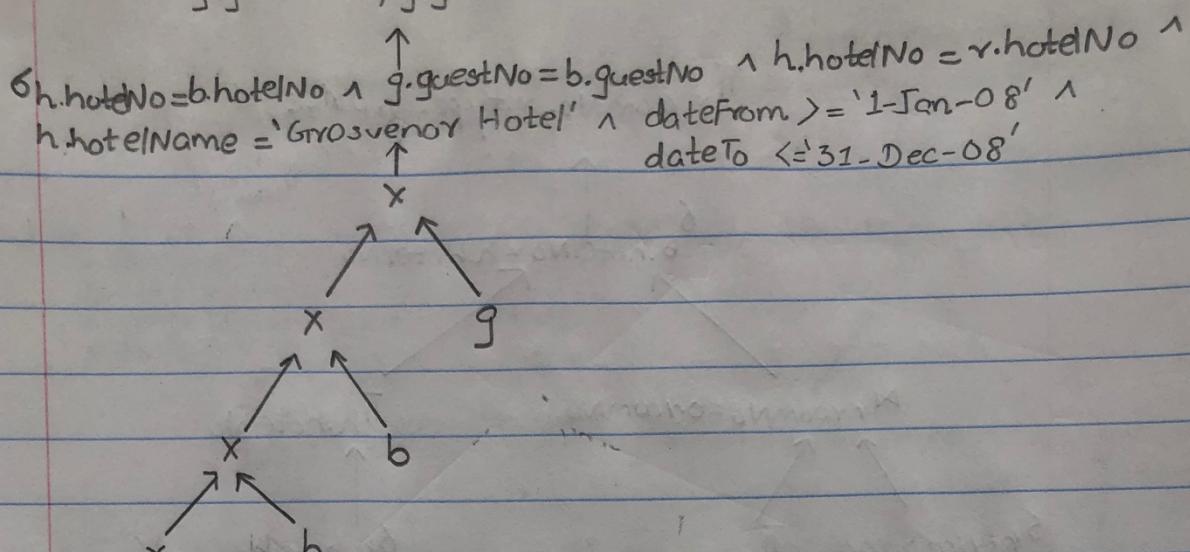
(d) commutativity of selection and projection

(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-08' AND dateTo <= '31-Dec-08';
    
```

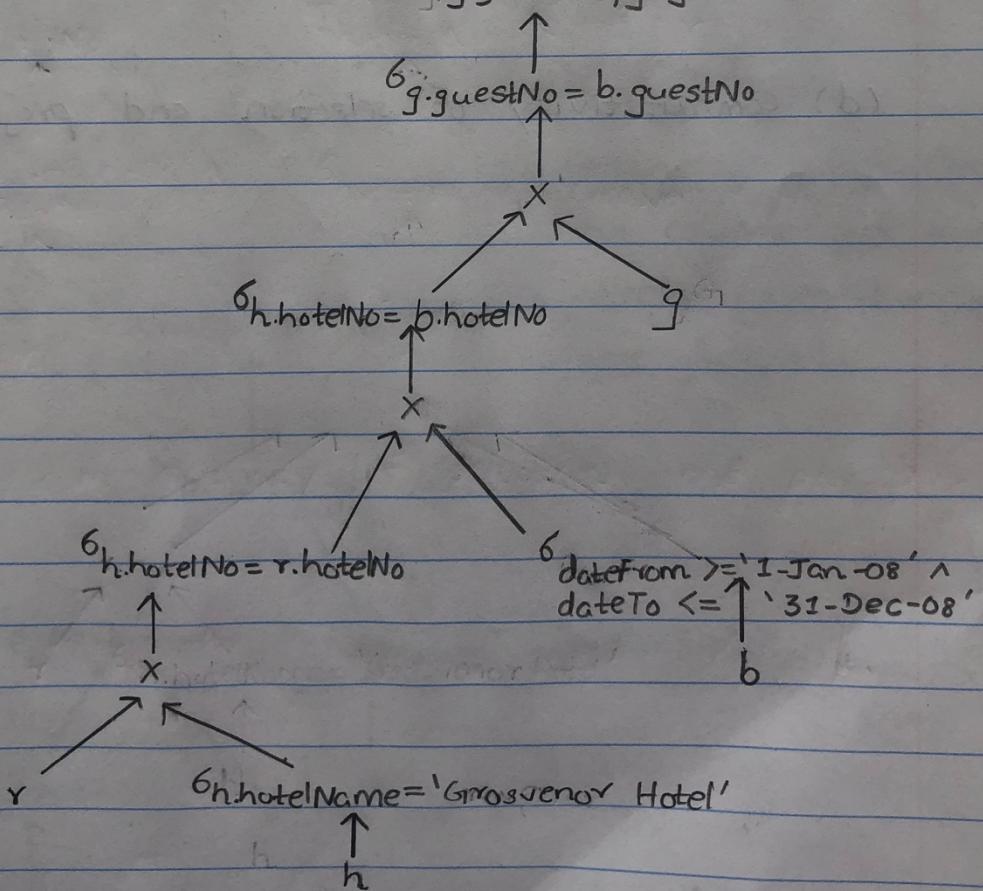
II g.guestNo, g.guestName



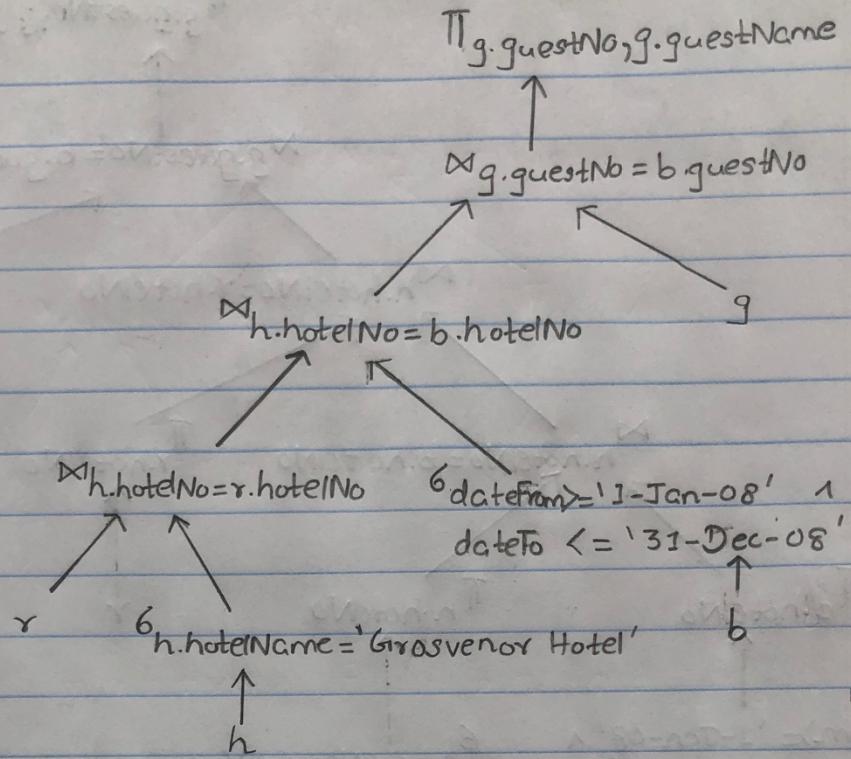
(a)

(a)

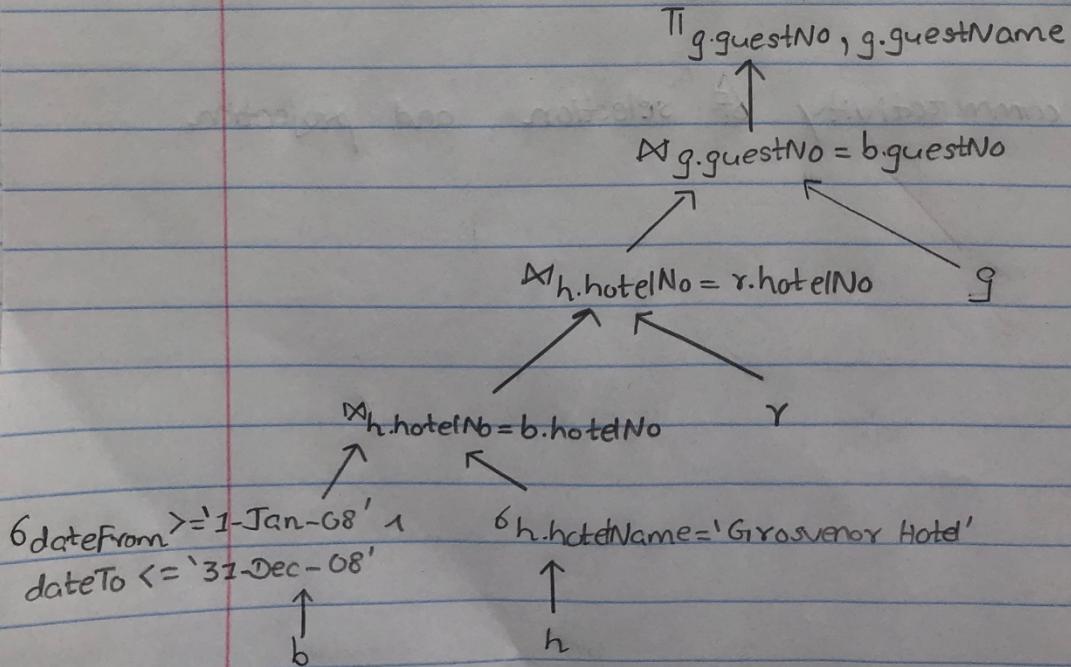
II g.guestNo, g.guestName



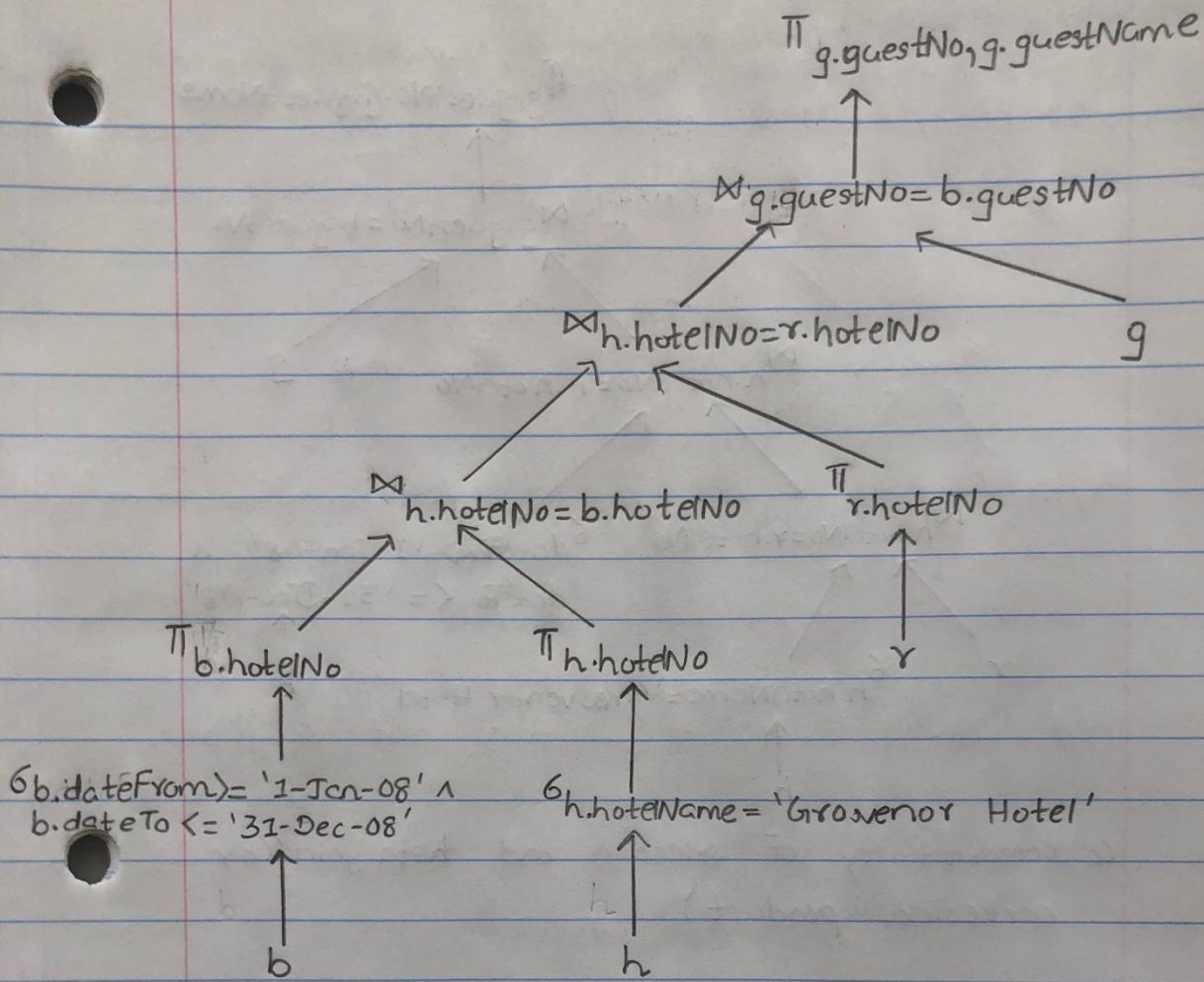
(b) conjunctive selection operations can cascade into individual selection operations (and vice versa).



(c) commutativity of selection and theta join (or cartesian product)



(d) commutativity of selection



(e) commutativity of selection and projection