FACULTY OF COMPUTING
UTM Johor Bahru

Semester I 2024/2025

Subject	:	**SECD2523 Database**
Task	:	**Assignment 2**
Title	:	**Topic 3 – Relational Algebra – Assignment 2**
Due	:	4/11/2024
Submission	:	Submit softcopy (in .pdf format) via e-learning

Note: All answers should be printed on and uploaded via link specified in e-learning.

Question 1: Describe the result of the relational algebra expression based on the following schema:

The following tables form part of a database held in a relational DBMS:

> Hotel (<u>hotelNo</u>, hotelName, city)
> Room (<u>roomNo</u>, <u>hotelNo</u>, type, price)
> Booking (<u>hotelNo</u>, <u>guestNo</u>, <u>dateFrom</u>, dateTo, roomNo)
> Guest (<u>guestNo</u>, guestName, guestAddress)

where Hotel *contains hotel details and* hotelNo *is the primary key;*
> Room contains room details for each hotel and (roomNo, hotelNo) forms the primary key;
> Booking contains details of bookings and (hotelNo, guestNo, dateFrom) forms the primary key;
> Guest contains guest details and guestNo is the primary key.

1. ΠhotelName (Hotel $\bowtie$ Hotel.hotelNo = Room.hotelNo (σ price > 50 (Room)))

2. Guest $\bowtie$ (σdateTo ≥ '1-Jan-2002' (Booking))

3. Hotel $\triangleright$ Hotel.hotelNo = Room.hotelNo (σ price > 50 (Room)))

4. ΠguestName, hotelNo (Booking $\bowtie$ Booking.guestNo = Guest.guestNo Guest) ÷ ΠhotelNo (σ city = 'London'(Hotel))

Question 2: Write the relational algebra expression for the following statements (refer to the Hotel schema in previous question):

1. List the price and type of all rooms at the Grosvenor Hotel.

2. List all guests currently staying at the Grosvenor Hotel.

3. List the details of all rooms at the Grosvenor Hotel, including the name of the guest staying in the room, if the room is occupied.

4. List the guest details (guestNo, guestName, and guestAddress) of all guests staying at the Grosvenor Hotel.

Question 3: Describe the result of the relational algebra expression:

1. ΠguestName, hotelNo (Booking $\bowtie$ Booking.guestNo = Guest.guestNo Guest) ÷ ΠhotelNo (σ city = 'London'(Hotel))