Database Management Systems [CSE2007 - 140]

Marks: 50   **Duration: 90 mins.**

Section A

Answer all the questions.

1) 1. From the given relation schema write the appropriate SQL Queries for the below questions (10)

customers
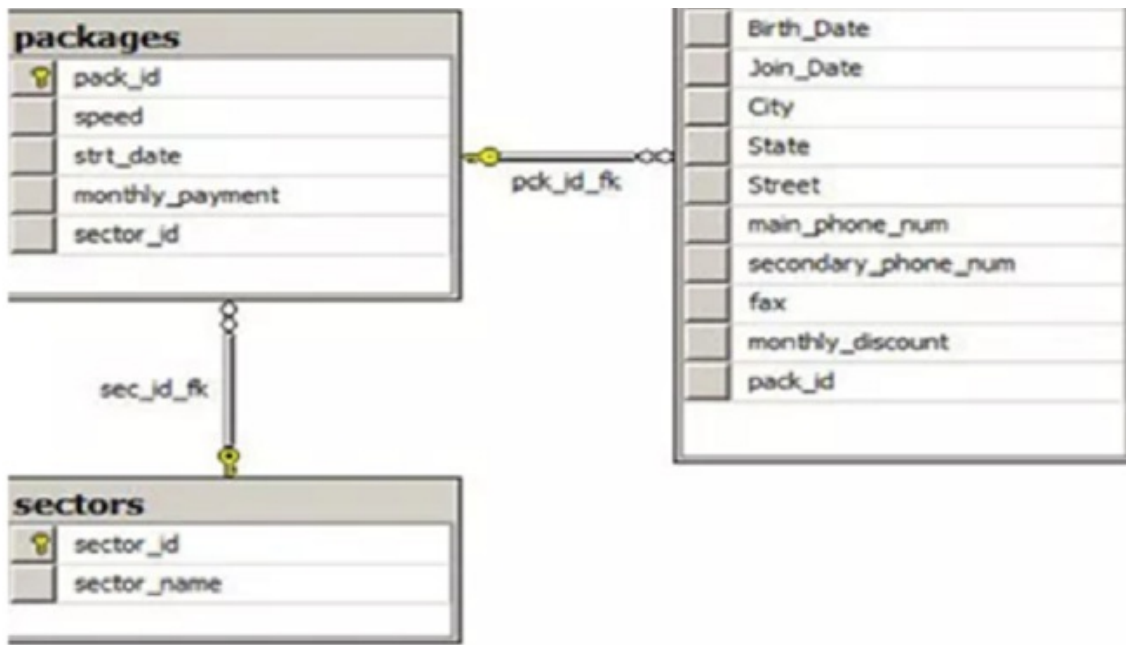- Customer_Id
- First_Name
- Last_Name
- Birth_Date
- Join_Date
- City
- State
- Street
- main_phone_num
- secondary_phone_num
- fax
- monthly_discount
- pack_id

   a. Display the customer number, first name, state, city and package number for all customers whose package id equals 21, 28, or 14
   b. Display all the data for all customers who have the letters: *l, j* or *h* in their last name. Order the query in descending order by monthly discount.
   c. Display the first name, monthly discount and package id for all customers without any monthly discount
   d. Display all data from *Customers* table for:
      i. All customers who live in state New York **and** whose monthly discount is in the range between 30 and 40 **or**
      ii. All customers whose package id is not 8,19, or 30 **and** whose join date is before January 1st, 2007

2) Write SQL queries based on the relational database schema provided below.   (10)

pack_grades
- grade_id
- grade_name
- min_price
- max_price

customers
- Customer_Id
- First_Name
- Last_Name

packages
- pack_id
- speed
- strt_date
- monthly_payment
- sector_id

pck_id_fk

- Birth_Date
- Join_Date
- City
- State
- Street
- main_phone_num
- secondary_phone_num
- fax
- monthly_discount
- pack_id

sec_id_fk

sectors
- sector_id
- sector_name

a. Write a query to display first name, last name, package id and internet speed for all customers whose package number equals 22 or 27. Order the query in ascending order by last name.

b. Display the last name, first name and package id for all customers who have the same package id as customer named 'Amado Taylor' (Customers table).

c. Display the package id, internet speed and sector id for all packages whose sector id equals to the sector number of package id 10

d. Display the first name, last name, city, state and package id for all customers whose internet speed is "5Mbps"

3)   Consider the following sets of functional dependencies over a relation R(A,B,C).   (5)

a)   Â F1 = {A â†' B, B â†' C}
     Â F2 = {A â†' B, A â†' C}
     Â F3 = {A â†' B, AB â†' C}

     Which of these sets are equivalent?

b)   Find the minimal cover of the set of functional dependencies given; {A â†' C, AB â†' C, C â†' DI, CD   (5)
     â†' I}

4)   Consider the relation below with dependencies. For this relation determine the candidate keys, and if a (5)
     relation is not in BCNF then decompose it into a collection of BCNF relations.Â

a)   Â
     Â R1(A,B,C,D,E) with functional
     dependencies D â†' B, CE â†' A.

b)   Let R = ABCDE, R1 = AD, R2 = AB, R3 = BE, R4 = CDE, and R5 = AE. Â Â Â Â Â Â Â Â Â Â   (5)
     Â
     Let the functional dependencies be: A -> C, B -> C, C -> D, DE -> C, CE -> A.
     Find whether it is a lossless or lossy decomposition.

5)   From the given relational schema write appropriate query and draw the optimized query tree for the   (10)
     query.Â
     Â Professor(ID, name,deptId,email)
     Â Teaching (ProfId, Course, sememster)
     Â
     Â
     Find the name of the professor who belongs to CS department and teaching in W2019 semester

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