



Daffodil International University

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Final Assessment, spring 2021 @ DIU Blended Learning Center

Course Code: CSE311 (Day), Course Title: Database Management System

Level: 3 Term: 1 Section: I, J, Re-A

Instructor: Warda Ruheen Bristi Modality: Open Book Assessment

Date: Tuesday 20 April, 2021 Time: 10:00am-06:00pm

Eight hours (8:00) to support online open/case study based assessment Marks: 40.0

Analyze and answer specific sections based on your own thinking and work.
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Q1. Consider the following scenario, and draw an ER diagram for it. [8]

In a shop management system, a salesperson can be characterized by his ID, date of joining, contact number and NID. His name, DOB and address is assumed from NID. A salesperson may manage many other salespeople. A salesperson is managed by only one salespeople. A salesperson can help many customers to place order.

A customer is managed by one salespeople at a time. A customer can place many orders. Customer's records are saved in the system as name, ID, address. Orders are characterized as order_id, purchase amount, purchase date.

An order can be placed by one customer. An order contains many inventory items. An inventory item may be listed on many different orders.

An inventory item is assembled from many separated parts. A part may be assembled into many inventory items.

Many employees assemble an inventory item from many parts. Employee and salespersons both work in the shop. But employee's date of joining is also recorded.

A supplier supplies many parts. A part may be supplied by many suppliers. Suppliers are recorded by name, ID, Address, product_type.

Q2. Write the SQL and outputs of the following questions based on following schemas.
[5*1.5=7.5]

Table: Customer

customer_id	cust_name	city	grade	salesman_id
-----	-----	-----	-----	-----
3002	Nick Rimando	New York	100	5001
3007	Brad Davis	New York	200	5001
3005	Graham Zusi	California	200	5002
3008	Julian Green	London	300	5002
3004	Fabian Johnson	Paris	300	5006
3009	Geoff Cameron	Berlin	100	5003
3003	Jozy Altidor	Moscow	200	5007
3001	Brad Guzan	London	300	5005

Table: Order

ord_no	purch_amt	ord_date	customer_id	salesman_id
-----	-----	-----	-----	-----
70001	150.5	2012-10-05	3005	5002
70009	270.65	2012-09-10	3001	5005
70002	65.26	2012-10-05	3002	5001
70004	110.5	2012-08-17	3009	5003
70007	948.5	2012-09-10	3005	5002
70005	2400.6	2012-07-27	3007	5001
70008	5760	2012-09-10	3002	5001
70010	1983.43	2012-10-10	3004	5006
70003	2480.4	2012-10-10	3009	5003
70012	250.45	2012-06-27	3008	5002

70011	75.29	2012-08-17	3003	5007
70013	3045.6	2012-04-25	3002	5001

Table: Salesman

salesman_id	name	city	commission
-----	-----	-----	-----
5001	James Hoog	New York	0.15
5002	Nail Knite	Paris	0.13
5005	Pit Alex	London	0.11
5006	Mc Lyon	Paris	0.14
5007	Paul Adam	Rome	0.13
5003	Lauson Hen	San Jose	0.12

- A. Find out the names of the customers who placed orders by the salesman with the highest commission.
- B. Find out the name & city of the customer who has purchased with lowest amount on October 2021
- C. Find out the salesman name & customer name whose city is London or San jose.
- D. Find out the name of the salesman who handled the maximum number of customers in November 2021.
- E. Find out the average grade of the customers who ordered more than 750 amounts or purchased in September 2012.

Q3. Consider the following relational schema. Write Relational Algebra for the following questions. [5*1.5=7.5]

Employee (Fname, Mname, Lname, SSN, Bdate, Address, Sex, Salary, Super-SSN, Dno)

Department (Dname, Dnumber, Mgr-ssn, Mgr-start-date)

Project (Pname, Pnumber, Plocation, Dnum)

Works-on (Essn, Pno, Hours)

1. Retrieve the First name, middle name, last name and date of birth of all employees.
2. Retrieve the average salary of all male employees.
3. Retrieve the name, address and salary of all employees who works in “Research” department.
4. Retrieve the name of all employees who work more than 10 hours per week on project “Choloman”.
5. Retrieve the employees First name and last name who is directly supervised by “ Ahmed Khan”.

Q4. Normalize the following table up to Third Normal Form. Candidate key {Studio, Movies}

[8]

Studio	Director	Movies	Budget	StudioCity	CityTemp
Marvel	Jonathan Kolia Favreau	Iron men	14 Cr.	New York	15
Warner Bros	Chris Joseph Columbus	Harry Potter	120 Cr.	London	13
DCEU	Zack Snyder	Batman Vs superman	70 Cr	Gotham	20
		Suicide Quad	80 Cr.		

Marvel	Kevin Feige	The Avengers	100 Cr.	New York	15
		Captain America	150 Cr.		

Q5. (a) Suppose, you were withdrawing BDT 1500 Tk. from your account using an ATM booth. In the meantime, there happened a server problem or any kind of error but you have got a confirmation message that your account debited by 1500 Tk. though you didn't get any money from the ATM machine. And within a few seconds, you have got another message of money adjustment. Now describe this scenario with transaction states. [5]

(b) You have taken a loan from a bank named ABC bank. Every month tk 3000 is transferred from your ABC bank saving account to pay the loan. But in march 2021, tk 3000 is deducted from your savings account but not added to pay the loan. Which type of DBMS properties this transaction is missing here?[4]