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Daffodil International University
Department of Software Engineering
Faculty of Science & Information Technology
Midterm Examination, Spring 2024
Course Code: SE 223; Course Title: Database systems
Sections & Teachers: All
Time:1:30-3:00PM Date: 20-03-2024
Marks: 25

Answer ALL Questions

1.		A Video Rental Company has several branches throughout Bangladesh. Each branch has the branch address made up of a branch number, street, city, state, and zip code, and the telephone number. Each branch is allocated staff or Manager. The Manager or staff is responsible for the day-to- day running of a given branch. Each staff member is given a staff number,name, position, and salary. Each branch has a stock of videos. The data held on a video is the catalog number, video number, title, category, daily rental, cost, status, and the names of the main actors, and the director. However, in most cases, there are several copies of each video at a branch, and the individual copies are identified using the video number. The status indicates whether a specific copy of a video is available for rent. Before hiring a video from the company, a customer must first register as a member of a local branch. The data held on a member is the member number, first and last name, address, and the date that the member registered at a branch. Once registered, a member is free to rent videos, up to a maximum of ten at any time. The data held on each video rented is the rental number, the full name and number of the member, the video number, title, and daily rental, and the dates the video is rented out and date returned. The rental number is unique throughout the company.		CLO-1, Level-2]
	a)	**Describe** relational database and tables for the above system	[Marks-2]	
	b)	**Explain** data abstraction for the above mentioned system	[Marks-3]	
	c)	**Distinguish** between schema & instance for the above management system.	[Marks- 3]	
	d)	**Clarify** at least four functions of database administrator.	[Marks- 2]	
2.	*a)*	Consider the question 1's scenario. **Generate** an ERD identifying their entity, attributes & relationship.	[Marks-4]	CLO-2 *Level-3*

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b) [Marks- 2]

Table: Customer

Customer_id	Customer_name	Address
101	Rumman	Savar
102	Anik	Dhanmondi
103	Polash	Tejgaon
104	Suha	Agargaon
105	Mikel	Dohar
106	Mika	Farmgate

Table: Order

Order_id	Order_date	amount	Customer_id
111	2002-02-22	2520 Tk	103
112	2019-02-09	13478 Tk	104
113	2022-12-06	521 Tk	102
114	2019-10-09	9200 Tk	411
115	2017-07-29	1440 Tk	600
116	2022-09-12	520 Tk	105

From this schema, **choose`** candidate key, primary key, alternate key, foreign key, and Composite key with explanation.

c) [Marks-4]

Consider the relation for **Question b. Solve** relational algebra for the following questions.

a. Find all customer name who yet not give any order,

b. Find the customer name who gives the order on 2017-07-29.

c. Find the customer information who lives in Savar.

d. Find all customer IDs who are ordered.

3. [CLO-3, Level-3]

Student

Student Name	Course Id	Title	Term
Shahin	121	Structured Programming	T1-L2
Rupa	122	Structured Programming Lab	T1-L2
Jui	311	Design pattern	T2-L3
Miraj	223	Database	T2-L2
Bina	333	Null	Null

Course

CourseId	Course Fee	Dept Name
121	10000	SWE
111	8000	CIS
311	12000	SWE
224	5000	SWE
124	4500	BBA

a) Show the results of inner join, full outer join for the table Student and Course [Marks- 2]

b) [Marks-3]

Solve SQL command to express each of the following queries:

I. Create those two tables using constraints

II. Insert data into those dates.

III. Add a new column credit in the course table using the alter command.