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Daffodil International University

Faculty of Science & Information Technology

Department of Computer Science & Engineering

Midterm Examination, Fall 2024

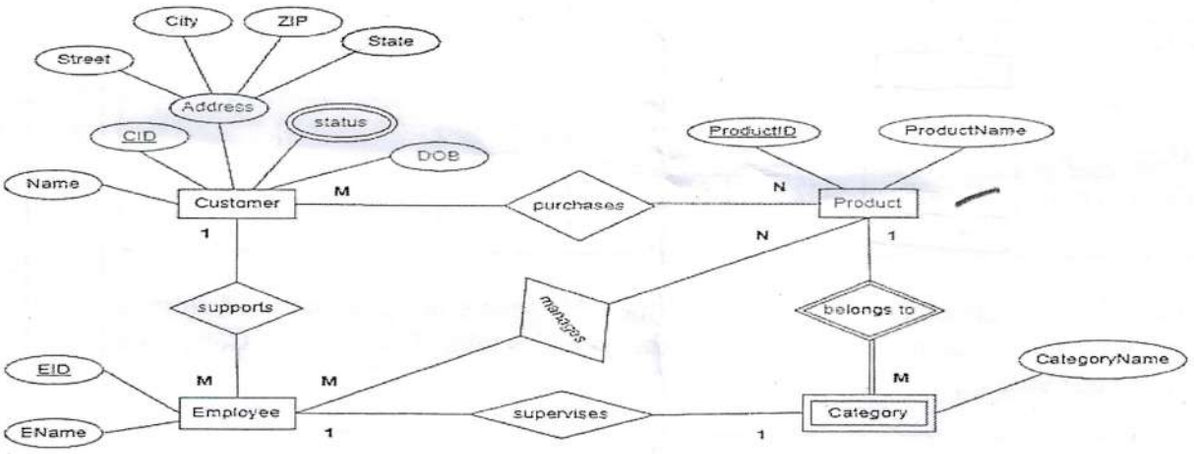
Course Code: CSE311, Course Title: Database Management System

Level: 3, Term: 1, Batch: 62 & 63

Time: 01:30 Hrs **Marks: 25**

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	Suppose you want to design a software system to manage Gym Membership of DIU. You tried to talk with the gym supervisor to find out the detailed information about gym management. The requirements are given below, The gym has a registration process for the students, faculties and staff of DIU. Users should be able to register for an account with their personal information, including name, ID, contact information, and a unique username and password. Registered users should be able to log in securely with their credentials. Gym trainers and administrators, should have additional privileges and access rights. The system should provide information about different membership plans, including their features, pricing, and duration (e.g., monthly, annual). No membership plan with the same type (regular or economic), price and duration are allowed to be set. However the same plan may have multiple working features in it. Prospective members should be able to view and compare the available plans before making a decision. Prospective gym members should be able to enroll in a specific membership plan. The system should handle the payment process for membership fees, with options for payment methods (e.g., credit card, cash). Members should be able to schedule fitness training sessions, one-on-one consultations with trainers. Staff members should be able to manage and confirm these appointments. The system should track member attendance, allowing staff to record check-ins and check-outs. The check in day and time should be unique for a specific member as no member is allowed to enter twice in the same day. Attendance records can help in assessing member engagement and plan utilization Now **Design** an ER diagram based on the given scenario. Be certain to indicate necessary constraints.	[7]	CO1
2.	 **Explain** How above ER diagram can be converted into a relational schema.	[4]	CO1

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3. **Perform** the necessary SQL queries or sub queries to answer the following queries based on the two tables:

Table 1

Employee ID	Name	Department	Gender	Salary
510046	Rahab	IT	M	30000
510047	Iqram	Finance	M	56000
510048	Susmi	HR	F	63000
510049	Baker	HR	M	25000
510050	Alif	IT	M	37000
510050	Alam	IT	F	32000

Table 2

Project ID	Project Name	Supervisor Name
115	Cloud Migration	Dr. Esrat
116	Data Analytics	Mr. Abu Sufian
117	Green Computing	Dr. Shaha
118	Database	Mr. Andrew

[8] CO2

a) Add a column Age to **Table 1** with an integer data type.
b) Retrieve the Employee ID and name of employees whose salary is greater than 50,000 or whose second last character in their name is 'a' in **Table 1.**
c) Display the highest salary of female employees in the HR department in **Table 1.**
d) Modify the data type of the Project ID column to VARCHAR(20) and insert a new record with values ('119', 'Mobile App Launch', 'Ms. Emma') in **Table 2.**
e) Update the record with Supervisor Name from 'Mr. Andrew' to 'Mr. Akash' where the Project ID is 118 in **Table 2.**
f) Retrieve the names of employees who work in the same department as 'Rahab'
g) Find the name of the employee who has the lowest salary in the 'HR' department.

4.

Customer ID	Customer Name	Phone	ZIP Code	City	Order ID	Delivery Person	Order Status
1055	Hasibul Islam	+8511111	1002	Dhaka	101	Arif	Delivered
1056	Rashid Mia	+6127777	1345	Chittagong	167	Rahad	Processing
1057	Labiba Islam	+3888888	4833	Khulna	205	Farhan	Cancelled
1058	Jamal Uddin	+333333, +2555555	8765	Bogura	209	Muzahid	Delivered
1059	Mahbubul Alam	+1122222	3465	Rajshahi	214	Rafi	Delivered
1060	Tasfia Ahmed	+125678, +7890123	5432	Sylhet	314	Nayan	Processing

[6] CO1

Simplify and **break down** the process of normalizing the table shown in figure up to 3rd Normal Form. State any assumptions you make about the data shown in this table. Consider that Composite key is(Customer id ad Order Id)

Note: All corresponding COs for each question are listed in the rightmost cell of each row.