

International Islamic University Chittagong (IIUC)

Department of Computer and Communication Engineering

Final Term Examination

Program: B.Sc. (Engg)

Course Code: CCE-3505

Time: 2 hour 30 minutes

Semester: Autumn 2021

Course Title: Database Management Systems

Full Marks: 50

[Group A]

[Answer any two sets of questions]

- [1] (a) Define SQL. 2 CLO1
(b) Explain the following SQL syntax with example 4 CLO1
- SELECT**
first_name
FROM
employees
WHERE
YEAR(hire_date) = 2000;
- (c) Distinguish between SQL TRUNCATE table and SQL DELETE table with relevant example. 4 CLO1
- [2] (a) "A deadlock is a condition where two or more transactions are waiting indefinitely for one another to give up locks." – Justify this statement with relevant example. 6 CLO1
(b) Write short notes on 4 CLO1
- Transaction failure
 - Disk failure
- [3] (a) Describe the state of the transaction with example. 3 CLO1
(b) Create a precedence graph for schedule S1. Also justify whether the schedule S1 is serializable or not. Provide your opinion by writing all the transaction for S1. 7 CLO1

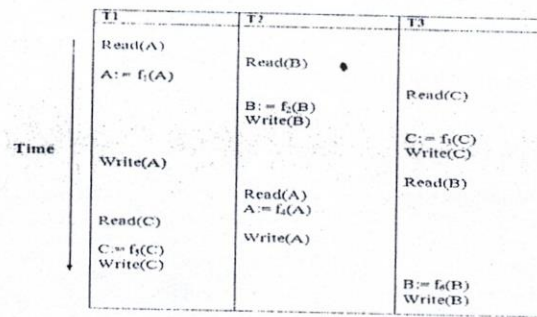


Figure 1: Schedule S1

[Group B]
[Answer any three sets of questions]

- [4] (a) Write short notes on following SQL Constraints: 10 CLO2
- Primary key
 - Foreign key
 - Unique
- Your answer should include but not limited to the following
- Definition of each constraint with example
 - How to create table using SQL with each constraint
- [5] (a) Explain Transaction Management in Database Management Systems. 4 CLO1
- (b) "ACID properties provide mechanism to ensure correctness and consistency of a Database." **Justify** this statement with example. 6 CLO1
- [6] (a) Describe the situation of Concurrent Execution in DBMS. 3 CLO1
- (b) Consider the below figure 2 where two transactions T_X and T_Y , are performed on the same account A where the balance of account A is BDT 50000. 7 CLO1

Time	T_X	T_Y
t_1	READ (A)	—
t_2	$A = A - 50$	—
t_3	—	READ (A)
t_4	—	$A = A + 100$
t_5	—	—
t_6	WRITE (A)	—
t_7	—	WRITE (A)

LOST UPDATE PROBLEM

Figure 2: Lost update problem of transactions T_X and T_Y

- Explain **lost update problem** in DBMS
 - Based on the figure 2, **justify** the closing balance (correct/incorrect)
- [7] (a) Create and modify a Database based on the information provided in figure 3. 10 CLO2
- You have to perform at least the following activities using SQL on the database.
- create a database
 - create tables for the database
 - insert data on the tables
 - update data of the tables
 - drop tables
 - delete the created database

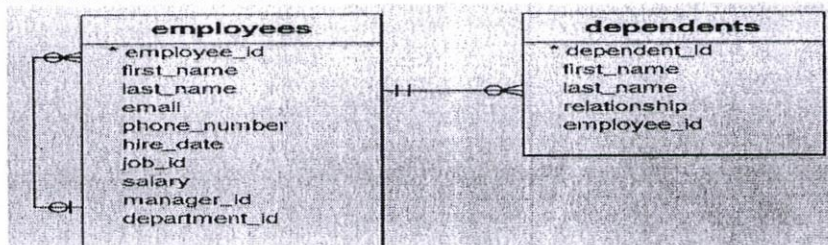


Figure 3: employees and dependents table