CS-203 Database System

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Course Instructor

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_____	All Sections
Roll No	Section

Guidelines for Submission:

1. You should submit only one PDF document and **all text should be typed**. Equations, figures can be taken as pictures (all figures/equations can be pasted as images inside that document).
2. You must submit your solution before due time via **Slate/Google Classroom**. Submissions submitted after the due time shall not be considered.
3. If you don't finish every part of a question, don't worry! You can still submit what you've done to get marks based on your efforts.
4. In case of copied or plagiarized solutions in exam Or If a student provided help to another student during exam both will be awarded "F" grade and it will affect the student CGPA.
5. Viva of any student can be conducted by the instructor after conducting an online exam in case of any doubt.
6. This document should be submitted through LMS (**Slate/Google Classroom**). But in worst case, you can email it within the deadline.
7.

Guidelines for Attempting Paper

1. You have to solve this Exam on A4 papers.
2. Each question is to be solved on separate papers by clearly mentioning question number and Roll No at the top of the page.
3. After completing a hand written exam, you have to take clear images of your papers and paste them in order in a single WORD document.
4. Save the word document in PDF format.
5. You should submit only one PDF document named 'RollNo_Name'.
6. You must submit your solution before due time via Slate.
7. Submissions submitted after the due time shall not be considered.
8. You have **3 hours** to submit the Exam
   a. 2.5 hours --- working time
   b. 0.5 hour --- for preparing and submitting the document on Slate.
9. If you don't finish every part of a question, don't worry! You can still submit what you've done to get marks based on your efforts.
10. In case of copied or plagiarized solutions in exam Or If you provide help to another student during exam both will be awarded "F" grade and it will affect your CGPA.
11. Viva of this exam will be conducted in a day or two.
12. This document should be submitted through LMS (Slate). But in the worst case, you can email it within the deadline.

National University of Computer and Emerging Sciences

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Note: All Questions carry equal Marks. Submission required on time.

Question#01 (10 Marks)

Consider the following view defined on the Movie schema:

Create View Movie_Count (Movie_id, MovieCount)
As Select m.Movie_id, COUNT(*)
From Actor a, Movie_Cast mc, Movie m
Where m.Movie_id = mc.Movie_id and a.Actor_id = mc.Actor_id
Group by m.Movie_id

For each of the following given queries, state whether the query is valid or invalid and for the valid ones show how each of the queries would be mapped on to a query on the underlying base tables.

1. Select Movie_id
From Movie_Count
Where Movie_id = '908';

2. Select Movie_id
From Movie_Count
Order by MovieCount;

3. Select MIN (MovieCount)
From Movie_Count;

4. Select COUNT(*)
From Movie_Count;

5. Select Movie_id
From Movie_Count
Where MovieCount = 100;

6. Select *
From Movie_Count;

Question # 02 (10 Marks)

Note: Please check that you are Login through nu account in your browser for accessing the case study.

Select a case study from the examples placed on [Google Drive](#). You have to choose the Case Study Number using the following formula.   **[10 Marks]**

Case Study Selection Formula: Take last four digits of your Roll No and divide it by 7 and obtained the remainder. You have to answer the following questions based on Case Study as per your reminder. For example, if your Roll No. is 18F-1234 then last four digits are 1234 and it will be dividend while divisor will be 7. In this way you will get 2 as reminder. So your Case Study will be Case-Study-No-0002, in case you get reminder as 4 then you will answer using Case-Study-No-0004. You can also calculate remainder using [online tool](#) (put last four digits as dividend and divisor as 7).

   i.   Write SQL statement(s) which creates any two tables based on the relations given in the case study. All attributes must be same as given in the case study. Create Primary and Foreign Key relationship during table creation. You must have to select tables those have primary and foreign key relationship. In case you failed to find any primary and foreign key between relations then assume attribute by yourself and clearly mentioned the name of attribute before writing the query.   (3)

ii.   Write a query to display the structure of your created table.   (1)
iii. Write a query which applies Check and Unique constraints on any two attributes. (1)
iv.   Write a query to add another new field in the relation. The name of the attribute should be of type Date using "DOB_Roll_No" naming conventions e.g. If your Roll No. is 18F-1234 the field name will be DOB_1234.(1)
v.   Write a query which set the default value of DOB_Roll_No as '10-FEB-1999'. (1)
vi.   Write a query to rename the name of DOB_Roll_No to "DOB".(1)
vii. Write a query to drop the column DOB from the given relation. (1)
viii. Write the difference between Drop and Truncate Table commands. (1)

Question # 03 (10 marks)

Part.1 (5 Marks)
Consider the following relational schema that manages by the ZONG Company for mobile calls bill.

CUSTOMER (<u>SSN</u>, Name, Surname, PhoneNum, Plan)
PRICING (<u>Code,</u> ConnectionFee, PricePerSecond)
PHONECALL (<u>SSN</u>, <u>Date</u>, <u>Time</u>, CalledNum, Seconds)
BILL (<u>SSN, Month, Year</u>, amount)

Trigger. We make the assumption that the bills to be updated are always present in the database. In order to do this, Create a trigger that creates a bill with an amount of 0 for each registered customer at the beginning of each month (suppose we have the event END_MONTH).

Part.2 (5 Marks)
Write another SQL Server trigger TRG_EMP_HISTORY that keep track of data rows when changes are made by the DELETE operation on EMPLOYEE table. Trigger must record the deleted rows along with the timestamp in the separate EMPLOYEE_RECORD table.

EMPLOYEE TABLE

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7566	JONES	MANAGER	7839	1981-04-02	2975	NULL	20
7654	MARTIN	SALESMAN	7698	1981-09-28	1250	1400	30
7698	BLAKE	MANAGER	7839	1981-05-01	2850	NULL	30
7782	CLARK	MANAGER	7839	1981-06-09	2450	NULL	10
7839	KING	PRESIDENT	NULL	1981-11-17	5000	NULL	10

For example, after deleting employee number 7654 from the EMPLOYEE table, trigger must record the deleted row automatically in the EMPLOYEE RECORD table. Note: Deleted rows will be arbitrary rows.

EMPLOYEE_RECORD TABLE

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	TIMESTAMP
7654	MARTIN	SALESMAN	7698	1981-09-28	1250	1400	30	2020-05-30 14:11:55.533

You are only required to create a trigger to meet the mentioned requirements and write a query to fire that trigger as well.

Question # 4.
Use the following tables for solving this question.

Table 1(Pictures)

Picture_id	Name	Movie Maker(Dircetor)	Year	Duration(Min)
1	Toy Story	John Lasseter	1995	81
2	A Bug's Life	John Lasseter	1998	95
3	Toy Story 2	John Lasseter	1999	93
4	Monsters, Inc.	Pete Docter	2001	92
5	Finding Nemo	Andrew Stanton	2003	107
6	The Incredibles	Brad Bird	2004	116
7	Cars	John Lasseter	2006	117

Table 2 (Boxoffice)

Picture_id	Score/Rating	Sales_of_Domestics	Sales_of_International
5	8.2	380843261	555900000
14	7.4	268492764	475066843
8	8	206445654	417277164
12	6.4	191452396	368400000
3	7.9	245852179	239163000
6	8	261441092	370001000
9	8.5	223808164	297503696
11	8.4	415004880	648167031
1	8.3	191796233	170162503
7	7.2	244082982	217900167
10	8.3	293004164	438338580
4	8.1	289916256	272900000

2	7.2	162798565	200600000
13	7.2	237283207	301700000

Write an SQL query for the following. (4+3+3 Marks)

1. Find the domestic and international sales for each movie.

2. Show the sales numbers for each movie that did better internationally rather than domestically.

3. List all the movies by their ratings in descending order.

Question # 5 (10 Marks)

Consider you are working as database administrator in an organization. Write down the queries to *(1) create a user* and make him *(2) able to log in* by *(3) establishing a connection*. Also *(4) allow* the user with **SELECT on EMPLOYEE** table and make him able to assign this *(5) privilege* to other users as well. Also, write down the queries to assign some *(6)* privileges to the user by creating a **ROLE** that contain the privileges *(7) (INSERT, UPDATE and DELETE)*.