

National University of Computer and Emerging Sciences, Lahore Campus



Course:	Database Systems (Lab)	Course Code:	CL203
Program:	BS (Computer Science)	Semester:	Fall 2018
Duration:	2 Hours	Total Marks:	50
Paper Date:	19-10-2018	Weight	25%
Section:	All	Page(s):	3
Exam:	Lab Midterm Exam	Reg. No	

EXAM_NO_1

Important Instructions (Please read them before attempting the exam):

- Submit **ONLY .sql File** in this format (All parts of a question in one SQL File **named** with your **Roll Number** e.g., L13-4152). Do not zip your file.
- Write question 1's solution in one file and questions 2's solution in another file.
- Copy the schema for question 2 from the following path \\sandata\xeon\Ishaq\Database Systems-Fall 2018\Lab\mid_schema.sql . Put the sql file in your D drive, and then **unplug the ethernet cable**.
- **Plagiarism** will result in **F grade** in lab.
- No cell phones are allowed. Sharing of **USBs** or any other items is **not allowed**.
- Submission path will be announced soon.
- **Write your roll number on this paper, and submit this paper to invigilator before leaving the lab.**

SQL Server Login Details:

- Server: localhost or SQLEXPRESS
- username: sa
- password: fstky2e4mdt

Question#1

- a. Write DDL script to create all the required tables. Also add primary keys in tables. (Do not create foreign key constraints inside Create Table statements) (10 marks)

Students (studentId, name, departmentId, batch)

Department (departmentId, name)

Courses (courseId, name, creditHrs)

StudentCourse (courseId, StudentId)

- b. Create foreign constraints using alter table statement. Also consider the following constraints for foreign key: (4 marks)

1. If there is any student in a department, then that department cannot be deleted.
2. If a department's id is updated, then it is updated for student as well.
3. If a course is deleted, then the Student's information from Student Course table is also deleted.
4. If a course id is updated, then it is updated for student as well.

- c. Alter the tables so that the following requirements are fulfilled: (5 marks)

1. A new column "dateOfBirth" having datatype date for student table is required.

2. Name of each department needs to be unique.
3. The batch of a student cannot be greater than the current year.
4. The creditHrs of a course can be only be 3 or 4.
5. Department name cannot be null.

Question#2 Write the SQL solution of the following questions. Clearly mention the part number above each SQL solution in comments.

- a. List the employee name and salary of those employees who are not working on any project. (4 marks)
- b. List the employees who were hired in the same year as their manager. **Required fields to display** are employee number and name, Manager Number and name. (7 marks)
- c. Count the **avg salary of employees** against each **grade**. Do not take average of min and max fields in the salary table. Use employees' actual salaries to calculate the average. (5 marks)
- d. List the **employee names, number, annual salary, project_ID, Project_Name** and their respective **grades** who are working on only one project. (10 marks)
- e. List the employee Name and dept Name who is most recently hired in **each** Department. (**Use only Sub Query**) (5 marks)

	grade	MinSalary	MaxSalary	Salary_Grade
1	1	200	700	
2	2	701	1500	
3	3	1501	2000	
4	4	2001	3500	

	pro_id	pro_Name	details	Projects
1	1	Smart Recognition	Find the bones length and detect the person	
2	2	Super CPU	Find the ways to utilize the CPU 99%	
3	3	3D Printing	Print small the in 3D	
4	4	Information Retrieval	Find the ways to retrieve data using optimal searc...	
5	5	Data Mining	Generate new information from raw data	
6	6	Robo Servent	A robot can help people in daily tasks	
7	7	Mobo Mechanics	Tell the problems and solutions in the car	

	Emp_No	Pro_id
1	1	2
2	1	3
3	1	4
4	1	7
5	3	4
6	4	1
7	5	2
8	6	6
9	7	2
10	9	3
11	12	2

Employee_Project

	Dept_No	Dept_Name	Location	Department
1	1	CS	East	
2	2	Electrical Eng	West	
3	3	Civil	East/west	
4	4	Urdu	Mid East	
5	5	Mechanical Engr	South	

	Emp_No	Emp_Name	Salary(monthly)	Hire_Date	Dept_No	Manager	Employee
1	1	Ahmad	500	1990-05-01	2	2	
2	2	Ali	1570	1999-07-05	1	5	
3	3	Furqan	600	2001-01-09	5	2	
4	4	Nargas	2250	1995-05-01	4	3	
5	5	Alisha	700	2002-05-07	2	2	
6	6	Sana	1700	1994-01-06	1	5	
7	7	Akbar	975	2005-05-01	3	1	
8	8	Imran	3050	1981-05-01	4	2	
9	9	Faisal	500	2011-07-09	2	2	
10	10	Zain	2100	2003-01-05	4	7	
11	11	Gul Khan	3500	1991-06-02	1	9	
12	12	kamran	1450	2009-05-01	2	11	