

Lab exam and viva questions

1. Write SQL statements for the following queries in reference to relation Emp_time provided.

Eid#	Name	Start_time	End_time
E101	Magale	10:30	18:30
E102	Malati	8:30	14:30
E103	Fulmaya	9:00	17:00

- create the table Eid# as primary key and insert the values provided
- Select all employees and their total working hours
- Find the Employee information as per their least working hours.
- Select the employee name who works long hours among all the employees
- Display the name of the employee whose name start from letter 'M' and who work more than seven hours

2. Consider the following relational database

Employee(Empno,Name,Address,salary)

The primary key are underlined

Employee

<u>Empno</u>	<u>Name</u>	<u>Address</u>	<u>Salary</u>
1	Ram	Kathmandu	50000
2	Sita	Lalitpur	60000
3	Gopal	Pokhara	55000
4	Sunita	Kathmandu	52000
5	Hari	Lalitpur	48000

Now write SQL command for the following:

- Insert data as per given table
 - Modify the database so that Ram now lives in Pokhara
 - Find average salary of employee for each address
 - Find the information of employee whose salary is greater than average salary of all employees
 - Delete the information of employee whose name is Hari
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3. Consider the table tbl_emp as follow

EmpId*	EmpName	Salary(Nrs.)	Date_of_join	Phone	Department
E001	Ram	20000	2060-02-01	#1234	Packing
E002	Hari	18000	2065-04-01	#5647	Cleaning
E004	Sita	15000	2068-04-01	#2564	Polishing

Write the SQL statements for the following

- Insert a record as per given table
- Change the Department of Hari to marketing
- Increase the salary of all employee by 5000
- Select the row having salary greater than 16000
- Add a new column Address to the above table
- Delete the record of sita

4. Consider the relational schema:

Teacher (**TeacherID**,TeacherName,Office)

Write SQL statements for the following task:

- To create a table from a table and insert at least 5 records
- To eliminate duplicate rows
- To add new column 'Gender' in the table
- To sort data in a table
- To delete rows
- Count the number of rows based in office

5. Write the SQL statements for the following Queries by reference to Liquors_info relation:

Serial_No	Liquors	Start_year	Bottles	Ready_Year
1	Gorkha	1997	10	1998
2	Divine Wine	1998	5	2000
3	Old Durbar	1997	12	2001
4	Khukhuri Rum	1991	10	1992
5	Xing	1994	5	1995

- creates the Liquors_info relation and insert the above records
 - insert the records in Liquor_info as above
 - List all the records which were ready by 2000
 - Remove all records from database that required more than 2 years to get ready
 - Create any views for above relation
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6. Write SQL statements for the following:

create a table named Vehicle with veh_number as primary key and following attributes:

veh_brand,veh_year,veh_mileage,veh_price

- i. Enter a full detailed information of a vehicle (at least 5)
- ii. Increment a vehicle price by 10,000
- iii. Display the total price of all vehicles
- iv. create a view a from above table
- v. Display details of vehicles ordering on descending manner in brand and by mileage when brand matches
- vi. Remove all vehicle's records whose brand contains character 'o' second position
- vii. change data type of year to datetime.

7. Consider the following schemas

Doctor(Name,age,address)

Works(Name,Depart_no,salary)

Department(Depart_no,dept_name,floor,room)

Write down the SQL statement for the following

1. Create the table for above schemas in such a way that referential integrity constraints must maintained .(underline attributes represent primary key)
2. Insert at least 3 rows for each table
3. Draw schema diagram for above schemas

8. Write the SQL statements for the following queries by reference of Hotel_details relation.

Hotel_id	Hotel_name	Estb_year	Hotel_star	Hotel_worth
1	Hyatt	2047	Five	15M
2	Hotel ktm	2043	Three	5M
3	Fullbari	2058	Five	20M
4	Yak and Yeti	2052	Four	11M
5	Hotel chitwan	2055	Three	7M

- i) create a database named hotel and table relation
 - ii) Insert the above rows
 - iii) create a view named price which shows hotel name and its worth
 - iv) modify the data so that hotel chitwan is now four star level
 - v) delete the records of all hotels having worth more than 9M
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9. Write a SQL statements for the following
Create a table named Automotor with chasis_number as primary key and following attributes.

veh_brand,veh_name,veh_model,veh_year,veh_cost,veh_color,veh_weight

- i. Enter a full detailed information of automotor(at least 5 rows)
- ii. Change any Automotor's year to 2019
- iii. Remove all Automotor's records whose model contains 'i' in last position
- iv. Display the total cost of all vehicles of the table Automotor
- v. Create a view from above table having vehicle only red color
- vi. Display details of Automotor ordering on descending manner by brand name and ascending order on model when brand matches

10. Let us consider the following relation

Sailors (sid,sname,rating,age)

Boats(bid, bname,color)

Reserves(sid,bid,day)

Sailors

sid	sname	rating	age
1	John	8	25
2	Alice	7	28
3	Bob	6	22

Boats

bid	bname	color
101	Speedy	Red
102	Swift	yellow
103	Sailor	Blue

Reserves

sid	bid	day
1	101	5
2	102	6
3	103	4

Write a SQL statements for the following

- i) Insert the above records
 - ii) Find the records of sailors who have reserved boat number 103(bid=103)
 - iii) Update the color of the boat ,where bid is 102,into green
 - iv) find the name of sailors who have reserved a red or green boat
 - v) find the name of sailors who have reserved boat number 103 on day 4
 - vi) find the name of sailors whose name is not 'Bob'
 - vii) find the name of all boats
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11. Consider the relation Actress_Details and Write SQL statements for the following queries.

Players_id	Actress_name	Debut_year	Recent_release	Actress_fee
1	Renu	2010	Samay	400000
2	Sita	2022	Radha	300000
3	Geeta	2001	Mato	600000
4	Amita	1990	Man	700000
5	Karishma	1989	Prem	100000

- Create the table Actress_details relation and insert the above rows
- Delete the data of actress whose recent release is prem
- Modify the database so that Renu's new release is "Win the race" film
- Find the actress with the highest fee
- Find the name of actress whose name ends with a
- Create any views for above relation

12. Write SQL statements for the following queries using the given Employees relation

E_id	Fname	Lname	Department	Salary	Hire_Date
01	Ramu	Bashyal	Sales	20000	2023-08-08
02	Damu	Pandey	IT	50000	2022-01-01
03	Biru	B.k.	Sales	40000	2021-02-10
04	Hiru	Dhamala	HR	35000	2023-12-18
05	Biren	Khadka	IT	60000	2012-10-22

- Create a database named Company and Employees relation.
 - Insert the above rows
 - Create a view that shows the E_id, Department and Hire_Date of all employees
 - Modify the table such that the Department of Biren is HR now.
 - Delete the record of employees whose Lname is "Pandey"
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13. Consider the following table

order_id	product_name	price	quantity	order_date	delivery_date
1	T-shirt	25.99	2	2023-07-15	2023-07-25
2	Jeans	49.95	1	2023-07-17	2023-07-20
3	Shoes	69.50	1	2023-07-20	2023-07-30
4	Sunglasses	12.75	3	2023-07-22	2023-07-28
5	Backpack	34.99	2	2023-07-25	2023-07-29

- i. Create table orders by considering order_id as primary key insert the above records (Note that insert at least one records with today date)
- ii. Retrieve all orders placed on a 2023-07-15
- iii. Find the number of days that required to delivered shoes
- iv. Find all the orders that is received from '2023-07-17' to '2023-07-22'
- v. find all the orders that is received today
- vi. Calculate the average number of days it takes to deliver a orders
- vii. Find the product with highest quantity

14. Create relational database for the Department of computer Engineering (DOCE) of pokhara university. Your database should have at least three relations and referential integrity constraint must me maintained and draw schema diagram also.

15. Demonstrate the use of DDL statements.

16.Demonstrate the use of TCL statements

17. Create any two table and insert the rows and perform the following join

- Inner join
- Outer join
- Natural join
- Cross join

18. Demonstrate the use of stored procedures

- Without using parameters
 - With parameters
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19.Demonstrate the use of triggers in SQL.

20.Create the following table and insert the records below

Employee

emp_id	emp_name	Position	salary	dept_id
1	Anish	Manger	25000	1
2	Sita	Secretary	25000	2
3	Ronit	Analyst	40000	5
4	Riya	Manager	50000	3

Department

dept_id	dept_name	HOD
1	Sales	Janak
2	Marketing	Madhav
3	Finance	Sapana
4	Operations	Durga

Write SQL queries to

- i. Find emp_name,position,salary of employee who works in finance department
 - ii. Find name of employee who works in sales department
 - iii. Find the average salary of employee
 - iv. Find the employee with minimum salary
 - v. Delete information of employee whose salary is less than average salary
 - vi. Find the HOD of Riya
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21. Create two table named **emp_civildepartment** and **emp_computerdepartment** with following columns with appropriate data types and insert the following data in table

After insertion your table must look like as follows:

emp_civildepartment

emp_id	emp_name	address
1	Kapil	Chitwan
2	Ujwal	Dharan
3	Pradip	Palpa
4	Prakash	Kathmandu
5	Supriya	Mahendranagar

emp_computerdepartment

emp_id	emp_name	address
1	Mukunda	Surkhet
2	Santosh	Pokhara
3	Pradip	Palpa
4	Jasbin	Kathmandu
5	Supriya	Mahendranagar

perform the following set operations

- i. UNION
- ii. UNION ALL
- iii. INTERSET
- iv. EXCEPT

Write SQL queries for the following:

- i. Find the name of employee who works either civil or computer department
 - ii. Find the name of employee who works in both civil and computer department
 - iii. Find the name of employee who works in computer department but not in civil department
 - iv. Find the common address of where both computer and civil department employee lives in .
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Viva Questions

Viva questions will be related from following topics

- DDL, DML, DCL and TCL statements
 - Database application architecture
 - Data abstraction, physical and logical data independence
 - ER diagram (Entity (strong and weak entity)
)set, attributes, relationship, generalization, specialization, aggregations, types of keys, role in ER diagram, cardinality constraints)
 - Schemas and instances, Schema diagram
 - Relational model, Relational DBMS ,Advantages
 - SQL constraints(primary key, foreign key, default, check, unique, not null)
 - Operators in SQL, data types, specially focused on(LIKE, AS,BETWEEN,AND,OR, IN,NOT IN, wildcard characters, order by)
 - Join operations, set operations, subquery
 - stored procedure, views, role of views in security, authentication vs authorization, Triggers, Assertions
 - Group by and having clause, where clause, aggregate functions, Difference between having and where clause
 - Normalization, functional dependencies
 - Steps of query processing, query optimization, query cost estimation
 - Log and log records, deferred and immediate database modification
 - ACID properties of transaction, serial and non-serial schedule, serializability, conflict and view serializability, lock based protocols
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