**Assignment No 3 :Implementation of SQL- DML**

**Joins,Subqueries, Views and Index**

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**DIVISION - C**

**1. Display the employee name along with his department name .**

mysql> select ename,dname

-> from employee,department

-> where employee.did = department.did;

+--------+----------------------+

| ename | dname |

+--------+----------------------+

| Vedika | Finance |

| John | Software Development |

| Rajas | Treasury |

| Ritika | Finance |

| Neha | Marketing |

| Sam | Finance |

| Anne | Back office |

| Anita | Machine Learning |

| Asmita | Back office |

| Manish | Front office |

| Rohit | Machine Learning |

| Ritesh | manufacturing |

| Soha | Production Support |

| Saniya | Legal |

| anisha | Web Development |

| Girija | Management |

+--------+----------------------+

16 rows in set (0.00 sec)

**2. Write a query to count the number of employees working in the Research department.**

mysql> select \* from department

-> ;

+-----+----------------------+

| Did | Dname |

+-----+----------------------+

| 1 | Finance |

| 2 | Production Support |

| 3 | Treasury |

| 4 | Software Development |

| 5 | Software Testing |

| 6 | Management |

| 7 | Legal |

| 8 | Back office |

| 9 | Front office |

| 10 | Machine Learning |

| 11 | Web Development |

| 12 | Customer Relations |

| 13 | Marketing |

| 14 | Advertising |

| 15 | manufacturing |

| 16 | Foreign exchange |

+-----+----------------------+

16 rows in set (0.01 sec)

mysql> update department

-> set dname="Research"

-> where did=15;

Query OK, 1 row affected (0.10 sec)

Rows matched: 1 Changed: 1 Warnings: 0

mysql> select count(\*)

-> from employee,department

-> where employee.did =department.did and dname="Research";

+----------+

| count(\*) |

+----------+

| 1 |

+----------+

1 row in set (0.11 sec)

**3. Retrieve the names of all employees who work in the department that has the employee with the highest income among all employees**

mysql> select ename from employee

-> where did =

-> (select did from employee where annual\_income =

-> (select MAX(annual\_income) from employee));

+--------+

| ename |

+--------+

| Girija |

+--------+

1 row in set (0.19 sec)

**4. Display name of all Managers and hours they worked for the client ”XYZ”.**

mysql> select ename

from employee,project

where employee.e\_id=project.eid and employee.post="manager" and project.client\_name="XYZ";

+--------+

| ename |

+--------+

| Ritesh |

| Soha |

+--------+

2 rows in set (0.10 sec)

**5. Display all employees having annual incomes higher than the amount of average of annual income. (subquery)**

mysql> SELECT \* FROM employee

-> where annual\_income >

-> ( select avg(annual\_income) from employee);

+------+--------+--------------+-----------+------------+-----------------+---------------+--------+------+

| E\_id | Ename | Post | Address | Phno | Date\_of\_Joining | Annual\_income | Gender | Did |

+------+--------+--------------+-----------+------------+-----------------+---------------+--------+------+

| 3 | Rajas | Manager | Mumbai | 8009781256 | 2005-02-12 | 90000 | M | 3 |

| 4 | Ritika | Finance head | Mumbai | 7559081256 | 2020-02-12 | 100000 | F | 1 |

| 8 | Anita | engineer | Hyderabad | 9990012300 | 2007-01-12 | 90000 | F | 10 |

| 11 | Rohit | Tech Lead | Pune | 9983976670 | 2019-08-19 | 90000 | M | 10 |

| 12 | Ritesh | Manager | Pune | 9983112270 | 2005-07-11 | 90000 | M | 15 |

| 13 | Soha | Manager | Nashik | 7783112270 | 2003-07-11 | 100000 | F | 2 |

| 14 | Saniya | Manager | Nashik | 7783118760 | 2003-07-11 | 90000 | F | 7 |

| 15 | anisha | Manager | Nashik | 9879875656 | 2008-07-12 | 90000 | F | 11 |

| 18 | Girija | Manager | Mumbai | 8239780056 | 2000-02-12 | 200000 | F | 6 |

+------+--------+--------------+-----------+------------+-----------------+---------------+--------+------+

9 rows in set (0.00 sec)

**6. Display list of all employees who live in the same city as “John”. (subquery)**

mysql> SELECT \* FROM employee

-> where address =

-> ( select address from employee where ename="John");

+------+--------+---------+---------+------------+-----------------+---------------+--------+------+

| E\_id | Ename | Post | Address | Phno | Date\_of\_Joining | Annual\_income | Gender | Did |

+------+--------+---------+---------+------------+-----------------+---------------+--------+------+

| 1 | Vedika | analyst | Delhi | 8756998756 | 2010-07-09 | 50000 | F | 1 |

| 2 | John | analyst | Delhi | 8234997656 | 2000-09-01 | 50000 | M | 4 |

+------+--------+---------+---------+------------+-----------------+---------------+--------+------+

2 rows in set (0.16 sec)

**7. Demonstrate the use of Left outer join.**

mysql> SELECT t1.e\_id, t1.ename, t2.dname FROM employee AS t1 LEFT JOIN department AS t2 ON t1.did = t2.did;

+------+--------+----------------------+

| e\_id | ename | dname |

+------+--------+----------------------+

| 1 | Vedika | Finance |

| 2 | John | Software Development |

| 3 | Rajas | Treasury |

| 4 | Ritika | Finance |

| 5 | Neha | Marketing |

| 6 | Sam | Finance |

| 7 | Anne | Back office |

| 8 | Anita | Machine Learning |

| 9 | Asmita | Back office |

| 10 | Manish | Front office |

| 11 | Rohit | Machine Learning |

| 12 | Ritesh | Research |

| 13 | Soha | Production Support |

| 14 | Saniya | Legal |

| 15 | anisha | Web Development |

| 18 | Girija | Management |

+------+--------+----------------------+

16 rows in set (1.55 sec)

mysql> SELECT t1.e\_id, t1.ename, t2.client\_name FROM employee AS t1 LEFT JOIN project AS t2 ON t1.e\_id = t2.eid;

+------+--------+-------------+

| e\_id | ename | client\_name |

+------+--------+-------------+

| 1 | Vedika | Nakul |

| 2 | John | Riya |

| 2 | John | Riya |

| 3 | Rajas | NULL |

| 4 | Ritika | NULL |

| 5 | Neha | XYZ |

| 5 | Neha | XYZ |

| 5 | Neha | XYZ |

| 6 | Sam | Manasi |

| 7 | Anne | Mona |

| 8 | Anita | Rishabh |

| 9 | Asmita | Pooja |

| 10 | Manish | Anuja |

| 11 | Rohit | Shreya |

| 12 | Ritesh | XYZ |

| 13 | Soha | XYZ |

| 14 | Saniya | NULL |

| 15 | anisha | Devika |

| 18 | Girija | NULL |

+------+--------+-------------+

19 rows in set (0.10 sec)

**8. Demonstrate the use of Right outer join.**

mysql> SELECT t1.e\_id, t1.ename, t2.client\_name FROM employee AS t1 RIGHT JOIN project AS t2 ON t1.e\_id = t2.eid;

+------+--------+-------------+

| e\_id | ename | client\_name |

+------+--------+-------------+

| 11 | Rohit | Shreya |

| 1 | Vedika | Nakul |

| 2 | John | Riya |

| 2 | John | Riya |

| 5 | Neha | XYZ |

| 12 | Ritesh | XYZ |

| 8 | Anita | Rishabh |

| 10 | Manish | Anuja |

| 7 | Anne | Mona |

| 15 | anisha | Devika |

| 5 | Neha | XYZ |

| 6 | Sam | Manasi |

| 13 | Soha | XYZ |

| 5 | Neha | XYZ |

| 9 | Asmita | Pooja |

+------+--------+-------------+

15 rows in set (0.03 sec)

**9. Create a view to access emp\_id,emp\_name,post and income and check if it is updatable.**

mysql> CREATE VIEW emp\_dept\_view AS

SELECT e\_id, ename,post, annual\_income

FROM employee;

Query OK, 0 rows affected (3.85 sec)

mysql> select \* from emp\_dept\_view;

+------+--------+--------------+---------------+

| e\_id | ename | post | annual\_income |

+------+--------+--------------+---------------+

| 1 | Vedika | analyst | 50000 |

| 2 | John | analyst | 50000 |

| 3 | Rajas | Manager | 90000 |

| 4 | Ritika | Finance head | 100000 |

| 5 | Neha | clerk | 20000 |

| 6 | Sam | clerk | 20000 |

| 7 | Anne | clerk | 60000 |

| 8 | Anita | engineer | 90000 |

| 9 | Asmita | clerk | 60000 |

| 10 | Manish | Cashier | 60000 |

| 11 | Rohit | Tech Lead | 90000 |

| 12 | Ritesh | Manager | 90000 |

| 13 | Soha | Manager | 100000 |

| 14 | Saniya | Manager | 90000 |

| 15 | anisha | Manager | 90000 |

| 18 | Girija | Manager | 200000 |

+------+--------+--------------+---------------+

16 rows in set (0.32 sec)

mysql> update emp\_dept\_view

-> set annual\_income =70000

-> where e\_id=2;

Query OK, 1 row affected (0.29 sec)

Rows matched: 1 Changed: 1 Warnings: 0

**//UPDATABLE**

mysql> select \* from emp\_dept\_view;

+------+--------+--------------+---------------+

| e\_id | ename | post | annual\_income |

+------+--------+--------------+---------------+

| 1 | Vedika | analyst | 50000 |

| 2 | John | analyst | 70000 |

| 3 | Rajas | Manager | 90000 |

| 4 | Ritika | Finance head | 100000 |

| 5 | Neha | clerk | 20000 |

| 6 | Sam | clerk | 20000 |

| 7 | Anne | clerk | 60000 |

| 8 | Anita | engineer | 90000 |

| 9 | Asmita | clerk | 60000 |

| 10 | Manish | Cashier | 60000 |

| 11 | Rohit | Tech Lead | 90000 |

| 12 | Ritesh | Manager | 90000 |

| 13 | Soha | Manager | 100000 |

| 14 | Saniya | Manager | 90000 |

| 15 | anisha | Manager | 90000 |

| 18 | Girija | Manager | 200000 |

+------+--------+--------------+---------------+

16 rows in set (0.00 sec)

**10.Create a view to access emp\_name, job\_name,emp\_salary, dept\_name,dept\_loc and check if it is updatable.**

mysql> CREATE VIEW emp\_dept\_view2 AS

-> SELECT e\_id, ename,post, annual\_income,dname, address

-> from employee, department

-> where employee.did=department.did;

Query OK, 0 rows affected (1.90 sec)

mysql> select \* from emp\_dept\_view2;

+------+--------+--------------+---------------+----------------------+-----------+

| e\_id | ename | post | annual\_income | dname | address |

+------+--------+--------------+---------------+----------------------+-----------+

| 1 | Vedika | analyst | 50000 | Finance | Delhi |

| 2 | John | analyst | 70000 | Software Development | Delhi |

| 3 | Rajas | Manager | 90000 | Treasury | Mumbai |

| 4 | Ritika | Finance head | 100000 | Finance | Mumbai |

| 5 | Neha | clerk | 20000 | Marketing | banglore |

| 6 | Sam | clerk | 20000 | Finance | banglore |

| 7 | Anne | clerk | 60000 | Back office | Hyderabad |

| 8 | Anita | engineer | 90000 | Machine Learning | Hyderabad |

| 9 | Asmita | clerk | 60000 | Back office | Pune |

| 10 | Manish | Cashier | 60000 | Front office | Pune |

| 11 | Rohit | Tech Lead | 90000 | Machine Learning | Pune |

| 12 | Ritesh | Manager | 90000 | Research | Pune |

| 13 | Soha | Manager | 100000 | Production Support | Nashik |

| 14 | Saniya | Manager | 90000 | Legal | Nashik |

| 15 | anisha | Manager | 90000 | Web Development | Nashik |

| 18 | Girija | Manager | 200000 | Management | Mumbai |

+------+--------+--------------+---------------+----------------------+-----------+

16 rows in set (0.38 sec)

mysql> update emp\_dept\_view2

-> set annual\_income =70000

-> where e\_id=10;

Query OK, 1 row affected (0.28 sec)

Rows matched: 1 Changed: 1 Warnings: 0

**//UPDATABLE**

mysql> select \* from emp\_dept\_view2;

+------+--------+--------------+---------------+----------------------+-----------+

| e\_id | ename | post | annual\_income | dname | address |

+------+--------+--------------+---------------+----------------------+-----------+

| 1 | Vedika | analyst | 50000 | Finance | Delhi |

| 2 | John | analyst | 70000 | Software Development | Delhi |

| 3 | Rajas | Manager | 90000 | Treasury | Mumbai |

| 4 | Ritika | Finance head | 100000 | Finance | Mumbai |

| 5 | Neha | clerk | 20000 | Marketing | banglore |

| 6 | Sam | clerk | 20000 | Finance | banglore |

| 7 | Anne | clerk | 60000 | Back office | Hyderabad |

| 8 | Anita | engineer | 90000 | Machine Learning | Hyderabad |

| 9 | Asmita | clerk | 60000 | Back office | Pune |

| 10 | Manish | Cashier | 70000 | Front office | Pune |

| 11 | Rohit | Tech Lead | 90000 | Machine Learning | Pune |

| 12 | Ritesh | Manager | 90000 | Research | Pune |

| 13 | Soha | Manager | 100000 | Production Support | Nashik |

| 14 | Saniya | Manager | 90000 | Legal | Nashik |

| 15 | anisha | Manager | 90000 | Web Development | Nashik |

| 18 | Girija | Manager | 200000 | Management | Mumbai |

+------+--------+--------------+---------------+----------------------+-----------+

16 rows in set (0.00 sec)

**11.Create an index on the emp\_name field and see the improvement in the performance using profiling.**

mysql> SELECT @@profiling;

+-------------+

| @@profiling |

+-------------+

| 0 |

+-------------+

1 row in set, 1 warning (0.05 sec)

mysql> SET profiling = 1;

Query OK, 0 rows affected, 1 warning (0.00 sec)

mysql> SHOW PROFILES;

Empty set, 1 warning (0.00 sec)

mysql> SHOW PROFILE;

Empty set, 1 warning (0.08 sec)

mysql> SET profiling = 1;

Query OK, 0 rows affected, 1 warning (0.00 sec)

mysql> CREATE INDEX emp\_index ON employee(Ename);

Query OK, 0 rows affected, 1 warning (0.74 sec)

Records: 0 Duplicates: 0 Warnings: 1

mysql> SHOW PROFILES;

+----------+------------+-------------------------------------------+

| Query\_ID | Duration | Query |

+----------+------------+-------------------------------------------+

| 1 | 0.00031800 | SET profiling = 1 |

| 2 | 0.74530475 | CREATE INDEX emp\_index ON employee(Ename) |

+----------+------------+-------------------------------------------+

3 rows in set, 1 warning (0.00 sec)

mysql> SHOW PROFILE;

+--------------------------------+----------+

| Status | Duration |

+--------------------------------+----------+

| starting | 0.000071 |

| Executing hook on transaction | 0.000004 |

| starting | 0.000029 |

| checking permissions | 0.000006 |

| init | 0.000012 |

| Opening tables | 0.000590 |

| setup | 0.021492 |

| creating table | 0.000290 |

| After create | 0.011608 |

| System lock | 0.000016 |

| preparing for alter table | 0.088609 |

| altering table | 0.202688 |

| committing alter table to stor | 0.315969 |

| end | 0.000028 |

| waiting for handler commit | 0.000006 |

| waiting for handler commit | 0.103702 |

| query end | 0.000014 |

| closing tables | 0.000004 |

| waiting for handler commit | 0.000019 |

| freeing items | 0.000125 |

| cleaning up | 0.000025 |

+--------------------------------+----------+

21 rows in set, 1 warning (0.00 sec)

mysql> show profile for query 1;

+--------------------------------+----------+

| Status | Duration |

+--------------------------------+----------+

| starting | 0.000118 |

| Executing hook on transaction | 0.000009 |

| starting | 0.000015 |

| checking permissions | 0.000012 |

| Opening tables | 0.100164 |

| end | 0.000016 |

| query end | 0.000010 |

| closing tables | 0.000006 |

| freeing items | 0.000131 |

| cleaning up | 0.000035 |

+--------------------------------+----------+

10 rows in set, 1 warning (0.01 sec)

mysql> show profile for query 2;

+--------------------------------+----------+

| Status | Duration |

+--------------------------------+----------+

| starting | 0.000087 |

| Executing hook on transaction | 0.000009 |

| starting | 0.000011 |

| checking permissions | 0.000010 |

| Opening tables | 0.000604 |

| end | 0.000009 |

| query end | 0.000006 |

| closing tables | 0.000004 |

| freeing items | 0.000099 |

| cleaning up | 0.000059 |

+--------------------------------+----------+

10 rows in set, 1 warning (0.00 sec)