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**DBMS Lab**

**Assignment No. 3 (All types of Join, Sub-Query and View)**

Title: Design at least 10 SQL queries for suitable database application using SQL DML statements: all types of Join, Sub-Query and View

**Tables:**

Pack\_grades(grade\_id,grade\_name,min\_price,max\_price)

mysql> create table pack\_grades(grade\_id int not null primary key,grade\_name varchar(20),min\_price int,max\_price int);

Query OK, 0 rows affected (0.05 sec)

Packages(pack\_id,speed,strt\_date,monthly\_payment,sector\_id)

mysql> create table packages(pack\_id int primary key, speed int,strt\_date date,monthly\_payment int,sector\_id varchar(5));

Query OK, 0 rows affected (0.05 sec)

Customers(cust\_id,firstname,lastname,birthdate,joindate,city,state,street,main\_phone\_num,secondary\_phn\_no,fax,monthly\_discount,pack\_id)

mysql> create table customers(cust\_id int primary key, firstname varchar(20),lastname varchar(20),birthdate date,joindate date,city varchar(20),street varchar(20),main\_phone int(12),secondary\_phn int(12),fax varchar(20),monthly\_discount int,pack\_id int);

Query OK, 0 rows affected, 2 warnings (0.05 sec)

Sectors(sector\_id,sector\_name)

mysql> create table sectors(sector\_id varchar(5) primary key,sector\_name varchar(20));

Query OK, 0 rows affected (0.05 sec)

**Foreign Key Syntax:**

## CREATE TABLE TABLENAME (

COLUMN\_LIST, PRIMARY KEY (COL NAME),  
 FOREIGN KEY (COL NAME FROM SAME TABLE) REFERENCES REF\_TABLE NAME(COL NAME FROM REF\_TABLE));

**Inner JOIN**

1. Customers and internet packages (*Customers* & *Packages* tables) –
   1. Write a query to display first name, last name, package number and internet speed for all customers.

mysql> select customers.firstname,customers.lastname,packages.pack\_id,packages.speed from customers inner join packages on customers.pack\_id=packages.pack\_id;

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

| firstname | lastname | pack\_id | speed |

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

| Akhilesh | Rawat | 1 | 60 |

| Sheetal | Rawat | 2 | 50 |

| Tanishka | Goyal | 22 | 55 |

| Sanjeevani | Baluni | 27 | 45 |

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

4 rows in set (0.00 sec)

* 1. Write a query to display first name, last name, package number and internet speed for all customers whose package number equals 22 or 27. Order the query in ascending order by last name.

mysql> select customers.firstname,customers.lastname,packages.pack\_id,packages.speed from customers inner join packages on customers.pack\_id=packages.pack\_id && customers.pack\_id=1 or customers.pack\_id=2 order by lastname asc;

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

| firstname | lastname | pack\_id | speed |

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

| Sanjeevani | Baluni | 27 | 45 |

| Tanishka | Goyal | 22 | 55 |

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

5 rows in set, 1 warning (0.00 sec)

1. Internet packages and sectors –
   1. Display the package number, internet speed, monthly payment and sector name for all packages (*Packages* and *Sectors* tables).

mysql>select packages.pack\_id,packages.speed,packages.monthly\_payment,sectors.sector\_name from inner join sectors on packages.sector\_id=sectors.sector\_id);

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

| pack\_id | speed | monthly\_payment | sector\_name |

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

| 1 | 60 | 5000 | Rawat |

| 2 | 50 | 6000 | Rawat |

| 22 | 55 | 6500 | Goyal |

| 27 | 45 | 5500 | Baluni |

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

2 rows in set, 1 warning (0.00 sec)

* 1. Display the customer name, package number, internet speed, monthly payment and sector name for all customers (*Customers*, *Packages* and *Sectors* tables).

mysql>select customers.firstname,customers.lastname,packages.pack\_id,packages.speed,packages.monthly\_payment,sectors.sector\_name from ((packages inner join customers on customers.pack\_id=packages.pack\_id) inner join sectors on packages.sector\_id=sectors.sector\_id);

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

| firstname | lastname | pack\_id | speed | monthly\_payment | sector\_name |

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

| Akhilesh | Rawat | 1 | 60 | 5000 | Rawat |

| Sheetal | Rawat | 2 | 50 | 6000 | Rawat |

| Tanishka | Goyal | 22 | 55 | 6500 | Goyal |

| Sanjeevani | Baluni | 27 | 45 | 5500 | Baluni |

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

4 rows in set (0.00 sec)

* 1. Display the customer name, package number, internet speed, monthly payment and sector name for all customers in the business sector (*Customers*, *Packages* and *Sectors* tables).

mysql> select customers.firstname,customers.lastname,packages.pack\_id,packages.speed,packages.monthly\_payment,sectors.sector\_name from ((packages inner join customers on customers.pack\_id=packages.pack\_id) inner join sectors on packages.sector\_id=sectors.sector\_id) where sectors.sector\_name="Rawat";

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

| firstname | lastname | pack\_id | speed | monthly\_payment | sector\_name |

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

| Akhilesh | Rawat | 1 | 60 | 5000 | Rawat |

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

1 row in set (0.01 sec)

1. Display the last name, first name, join date, package number, internet speed and sector name for all customers in the private sector who joined the company in the year 2006.

mysql> select customers.firstname,customers.lastname,packages.pack\_id,packages.speed,packages.monthly\_payment,sectors.sector\_name from ((packages inner join customers on customers.pack\_id=packages.pack\_id) inner join sectors on packages.sector\_id=sectors.sector\_id) where sectors.sector\_name="Rawat" && year(customers.joindate)=2021;

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

| firstname | lastname | pack\_id | speed | monthly\_payment | sector\_name |

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

| Akhilesh | Rawat | 1 | 60 | 5000 | Rawat |

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

1 row in set, 1 warning (0.00 sec)

**Non Equi Join**

1. Display the package number, internet speed, monthly payment and package grade for all packages whose monthly payment is between min\_price and max\_price(*Packages* and *Pack\_Grades* tables).

mysql> select packages.pack\_id,packages.speed,packages.monthly\_payment,pack\_grades.grade\_name from packages inner join pack\_grades on packages.monthly\_payment between pack\_grades.min\_price and pack\_grades.max\_price;

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

| pack\_id | speed | monthly\_payment | grade\_name |

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

| 1 | 60 | 5000 | ccc |

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

1 row in set (0.00 sec)

**Outer Join**

* 1. Customers and internet packages (*Customers* and *Packages* tables)
     1. Display the first name, last name, internet speed and monthly payment for all customers. Use INNER JOIN to solve this exercise.

mysql> select customers.firstname,customers.lastname,packages.speed,packages.monthly\_payment from customers right outer join packages on customers.pack\_id=packages.pack\_id;

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

| firstname | lastname | speed | monthly\_payment |

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

| Akhilesh | Rawat | 60 | 5000 |

| Sheetal | Rawat | 50 | 6000 |

| Tanishka | Goyal | 55 | 6500 |

| Sanjeevani | Baluni | 45 | 5500 |

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

4 rows in set (0.00 sec)

* + 1. Modify last query to display all customers, including those without any internet package.

mysql> select customers.firstname,customers.lastname,packages.speed,packages.monthly\_payment from customers left outer join packages on customers.pack\_id=packages.pack\_id;

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

| firstname | lastname | speed | monthly\_payment |

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

| Akhilesh | Rawat | 60 | 5000 |

| Sheetal | Rawat | 50 | 6000 |

| Tanishka | Goyal | 55 | 6500 |

| Sanjeevani | Baluni | 45 | 5500 |

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

4 rows in set (0.00 sec)

* + 1. Modify last query to display all packages, including those without any customers.

mysql> select customers.firstname,customers.lastname,packages.speed,packages.monthly\_payment from customers left outer join packages on customers.pack\_id=packages.pack\_id;

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

| firstname | lastname | speed | monthly\_payment |

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

| Akhilesh | Rawat | 60 | 5000 |

| Sheetal | Rawat | 50 | 6000 |

| Tanishka | Goyal | 55 | 6500 |

| Sanjeevani | Baluni | 45 | 5500 |

| Saurabh | Joshi | NULL | NULL |

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

5 rows in set (0.00 sec)

* + 1. Modify last query to display all packages and all customers.

mysql> select customers.firstname,customers.lastname,packages.speed,packages.monthly\_payment from customers right outer join packages on customers.pack\_id=packages.pack\_id union select customers.firstname,customers.lastname,packages.speed,packages.monthly\_payment from customers left outer join packages on packages.pack\_id = customers.pack\_id;

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

| firstname | lastname | speed | monthly\_payment |

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

| Akhilesh | Rawat | 60 | 5000 |

| Sheetal | Rawat | 50 | 6000 |

| Tanishka | Goyal | 55 | 6500 |

| Sanjeevani | Baluni | 45 | 5500 |

| NULL | NULL | 34 | 3500 |

| NULL | NULL | NULL | NULL |

| Saurabh | Joshi | NULL | NULL |

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

7 rows in set (0.02 sec)

**Self Join**

* + 1. Display the last name, first name and package number for all customers who have the same package number as customer named ‘A Taylor’ (*Customers* table).

mysql> select A.firstname,A.lastname,A.pack\_id from customers A join customers B on A.pack\_id = B.pack\_id and B.lastname="Rawat";

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

| firstname | lastname | pack\_id |

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

| Akhilesh | Rawat | 1 |

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

* + 1. Display the last name, first name and monthly discount for all customers whose monthly discount is lower than the monthly discount of employee number 103 (*Customers* table).

mysql> select A.firstname,A.lastname,A.monthly\_discount from customers A join customers B on B.cust\_id=2 and A.monthly\_discount<B.monthly\_discount;

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

| firstname | lastname | monthly\_discount |

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

| Akhilesh | Rawat | 500 |

| Tanishka | Goyal | 550 |

| Sanjeevani | Baluni | 450 |

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

3 rows in set (0.01 sec)

* + 1. Display the package number and internet speed for all packages whose internet speed is equal to the internet speed of package number 10 (*Packages* table).

mysql> select A.pack\_id,A.speed from packages A join packages B on B.pack\_id=2 and A.speed<B.speed;

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

| pack\_id | speed |

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

| 4 | 45 |

| 5 | 34 |

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

2 rows in set (0.00 sec)