**SEHEJ BAKSHI DBMS Lab 31/07 – 07/08**

**Assignment No. 4 (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) not null,  
-> min\_price int,  
-> max\_price int not null  
-> );  
Query OK, 0 rows affected (2.39 sec)

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

mysql> create table packages(  
-> pack\_id int not null primary key,  
 -> speed int,  
 -> start\_date date not null,  
 -> monthly\_payment int not null,  
 -> sector\_id int  
-> );  
Query OK, 0 rows affected (0.63 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 not null primary key,  
 -> fname char(20) not null,  
 -> lname char(20) not null,  
 -> birthdate date,  
 -> joindate date not null,  
 -> city char(20),  
 -> state char(20),  
 -> street varchar(30),  
 -> main\_phone\_num int(10) not null,  
 -> monthly\_discount int,  
 -> pack\_id int  
-> );  
Query OK, 0 rows affected, 1 warning (0.83 sec)

Sectors(sector\_id,sector\_name)

mysql> create table sectors(  
-> sector\_id int not null primary key,  
 -> sector\_name varchar(30)  
 -> );  
Query OK, 0 rows affected (0.52 sec)

**Foreign Key:**

mysql> alter table packages add foreign key(sector\_id) references sectors(sector\_id);  
Query OK, 0 rows affected (2.94 sec)  
Records: 0 Duplicates: 0 Warnings: 0

mysql> alter table customers add foreign key(pack\_id) references packages(pack\_id);  
Query OK, 0 rows affected (2.06 sec)  
Records: 0 Duplicates: 0 Warnings: 0

**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.fname, customers.lname,  
customers.pack\_id, packages.speed  
-> from customers  
-> inner join packages  
-> on customers.pack\_id = packages.pack\_id;

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

| fname | lname | pack\_id | speed |

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

| sehej | bakshi | 1 | 300 |

| yashvardhan | negi | 3 | 900 |

| akshay | rawat | 2 | 100 |

+---------------+--------+---------+-------+  
3 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.fname, customers.lname, customers.pack\_id, packages.speed  
-> from customers  
-> inner join packages  
-> on customers.pack\_id = packages.pack\_id  
-> where customers.pack\_id in (1, 3)  
-> order by customers.lname asc;

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

| fname | lname | pack\_id | speed |

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

| sehej | bakshi | 1 | 300 |

| yashvardhan | negi | 3 | 900 |

+-------------+--------+---------+-------+  
2 rows in set (0.06 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 packages  
-> inner join sectors  
-> on packages.sector\_id = sectors.sector\_id;

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

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

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

| 1 | 300 | 550 | Sector 28 |

| 2 | 100 | 230 | Sector 29 |

| 3 | 900 | 1100 | Sector 15 |

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

3 rows in set (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.fname, customers.lname, customers.pack\_id, packages.speed, packages.monthly\_payment, sectors.sector\_name  
-> from customers  
-> inner join packages  
-> on customers.pack\_id = packages.pack\_id  
-> inner join sectors  
-> on packages.sector\_id = sectors.sector\_id;

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

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

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

| sehej | bakshi | 1 | 300 | 550 | Sector 28 |

| yashvardhan | negi | 3 | 900 | 1100 | Sector 15 |

| akshay | rawat | 2 | 100 | 230 | Sector 29 |

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

3 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.fname, customers.lname, customers.pack\_id, packages.speed, packages.monthly\_payment, sectors.sector\_name  
-> from customers  
-> inner join packages  
-> on customers.pack\_id = packages.pack\_id  
-> inner join sectors  
-> on packages.sector\_id = sectors.sector\_id  
-> where sectors.sector\_name = 'Sector 15';

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

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

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

| yashvardhan | negi | 3 | 900 | 1100 | Sector 15 |

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

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.fname, customers.lname, customers.joindate, customers.pack\_id, packages.speed, sectors.sector\_name  
-> from customers  
-> inner join packages  
-> on customers.pack\_id = packages.pack\_id  
-> inner join sectors  
-> on packages.sector\_id = sectors.sector\_id  
-> where customers.joindate like '2006%';

Empty set (0.00 sec)

mysql> select customers.fname, customers.lname, customers.joindate, customers.pack\_id, packages.speed, sectors.sector\_name  
-> from customers  
-> inner join packages  
-> on customers.pack\_id = packages.pack\_id  
-> inner join sectors  
-> on packages.sector\_id = sectors.sector\_id  
-> where customers.joindate like '2012%';

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

| fname | lname | joindate | pack\_id | speed | sector\_name |

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

| sehej | bakshi | 2012-08-11 | 1 | 300 | Sector 28 |

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

1 row in set (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\_id, pack\_grades.grade\_name  
-> from packages  
-> join pack\_grades  
-> on packages.monthly\_payment  
-> between pack\_grades.min\_price and pack\_grades.max\_price;

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

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

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

| 1 | 300 | 550 | 1 | Entertainment |

| 2 | 100 | 230 | 1 | Entertainment |

| 3 | 900 | 1100 | 1 | Entertainment |

| 3 | 900 | 1100 | 2 | Health |

| 1 | 300 | 550 | 4 | Daily Use |

| 2 | 100 | 230 | 4 | Daily Use |

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

6 rows 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.fname, customers.lname, packages.speed, packages.monthly\_payment  
-> from customers  
-> inner join packages  
-> on customers.pack\_id = packages.pack\_id;

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

| fname | lname | speed | monthly\_payment |

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

| sehej | bakshi | 300 | 550 |

| yashvardhan | negi | 900 | 1100 |

| akshay | rawat | 100 | 230 |

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

3 rows in set (0.00 sec)

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

mysql> insert into customers values  
-> (4, 'akhil', 'nair', '2000-12-25', '1998-02-19', 'bangalore', 'karnataka', 'tyuvsj', 456789987, 220, NULL);

Query OK, 1 row affected (0.24 sec)

mysql> select \* from customers;

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

| cust\_id | fname | lname | birthdate | joindate | city | state | street | main\_phone\_num | monthly\_discount | pack\_id |

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

| 1 | sehej | bakshi | 2000-11-03 | 2012-08-11 | noida | up | abcdefg123 | 1234567890 | 210 | 1 |

| 2 | yashvardhan | negi | 2000-04-22 | 2020-08-03 | dehradun | uk | efghijk123 | 987654321 | 123 | 3 |

| 3 | akshay | rawat | 2000-07-10 | 2019-11-13 | panchkula | harayana | qwerty134 | 456789123 | 20 | 2 |

| 4 | akhil | nair | 2000-12-25 | 1998-02-19 | bangalore | karnataka | tyuvsj | 456789987 | 220 | NULL |

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

4 rows in set (0.00 sec)

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

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

| fname | lname | speed | monthly\_payment |

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

| sehej | bakshi | 300 | 550 |

| yashvardhan | negi | 900 | 1100 |

| akshay | rawat | 100 | 230 |

| akhil | nair | NULL | NULL |

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

4 rows in set (0.00 sec)

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

mysql> alter table packages modify column start\_date date null;

Query OK, 0 rows affected (3.45 sec)

Records: 0 Duplicates: 0 Warnings: 0

mysql> alter table packages modify column monthly\_payment int null;

Query OK, 0 rows affected (1.69 sec)

Records: 0 Duplicates: 0 Warnings: 0

mysql> insert into packages values(5, NULL, NULL, NULL, NULL);

Query OK, 1 row affected (0.17 sec)

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

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

| fname | lname | speed | monthly\_payment |

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

| sehej | bakshi | 300 | 550 |

| akshay | rawat | 100 | 230 |

| yashvardhan | negi | 900 | 1100 |

| NULL | NULL | NULL | NULL |

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

4 rows in set (0.00 sec)

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

mysql> select customers.fname, customers.lname, packages.speed, packages.monthly\_payment  
-> from customers  
-> left join packages  
-> on customers.pack\_id = packages.pack\_id  
-> union  
-> select customers.fname, customers.lname, packages.speed, packages.monthly\_payment  
-> from customers  
-> right join packages  
-> on customers.pack\_id = packages.pack\_id;

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

| fname | lname | speed | monthly\_payment |

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

| sehej | bakshi | 300 | 550 |

| yashvardhan | negi | 900 | 1100 |

| akshay | rawat | 100 | 230 |

| akhil | nair | NULL | NULL |

| NULL | NULL | NULL | NULL |

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

5 rows in set (0.95 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> insert into customers(cust\_id, fname, lname, birthdate, joindate, city, state, street, main\_phone\_num, monthly\_discount, pack\_id) values

-> (5, 'swapnil', 'pandey', '2000-02-17', '2010-06-20', 'bangalore', 'karnataka', 'xegjvxh65', 951486123, 460, 1);

Query OK, 1 row affected (0.95 sec)

mysql> select c1.fname, c1.lname, c1.pack\_id  
-> from customers c1  
-> join customers c2  
-> on c1.pack\_id = c2.pack\_id  
-> and c2.lname = 'bakshi';

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

| fname | lname | pack\_id |

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

| sehej | bakshi | 1 |

| swapnil | pandey | 1 |

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

2 rows in set (0.00 sec)

* + 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 c1.fname, c1.lname, c1.monthly\_discount  
-> from customers c1  
-> join customers c2  
-> on c1.pack\_id = c2.pack\_id  
-> and c2.monthly\_discount < (select c1.monthly\_discount from customers c1 where c1.cust\_id = 1);

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

| fname | lname | monthly\_discount |

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

| yashvardhan | negi | 123 |

| akshay | rawat | 20 |

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

2 rows in set (0.15 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> insert into packages values(6, 300, '2010-06-05', 550, 1);

Query OK, 1 row affected (0.45 sec)

mysql> select \* from packages;

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

| pack\_id | speed | start\_date | monthly\_payment | sector\_id |

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

| 1 | 300 | 2020-08-03 | 550 | 2 |

| 2 | 100 | 2012-08-11 | 230 | 1 |

| 3 | 900 | 2019-11-13 | 1100 | 3 |

| 5 | NULL | NULL | NULL | NULL |

| 6 | 300 | 2010-06-05 | 550 | 1 |

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

5 rows in set (0.01 sec)

mysql> select p1.pack\_id, p1.speed  
-> from packages p1  
-> join packages p2  
-> on p1.pack\_id = p2.pack\_id  
-> and p2.speed = (select p1.speed from packages p1 where p1.pack\_id = 1);

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

| pack\_id | speed |

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

| 1 | 300 |

| 6 | 300 |

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

2 rows in set (0.08 sec)