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Question Ans 1

Pair 1:

I have 2 tables, T1, and T2 and I want to get all the customerName whose postal_code >= 75400

```
mysql> select * from T1
    -> ;
+---------------------+-------------+
| customerName        | postal_code |
+---------------------+-------------+
| Cardinal            |        4006 |
| Alfreds Futterkistel |       12209 |
| Around the Horn     |       68306 |
| John Doe            |       75306 |
| Johny Depp          |       80010 |
+---------------------+-------------+
```

```
mysql> select * from T2;
+--------------------+-------------+
| customerName       | postal_code |
+--------------------+-------------+
| Augustus Haynes    |       40010 |
| Abigail Taylor     |       13008 |
| Abraham Beltran    |       33008 |
| Eastern Connection |       31008 |
| Ernst Handel       |       80100 |
| Ernst Rakuten      |       90100 |
+--------------------+-------------+
```

Integrating the table T1, T2 gives the following result which is better than the result I get from the individual table. The result of the integration is given below.

```
mysql> SELECT * from T1 where postal_code >= 75400
    -> UNION ALL (SELECT * from T2 where postal_code >= 75400)
    -> ;
+---------------+-------------+
| customerName  | postal_code |
+---------------+-------------+
| Johny Depp    |       80010 |
| Ernst Handel  |       80100 |
| Ernst Rakuten |       90100 |
+---------------+-------------+
3 rows in set (0.00 sec)
```

Pair 2:

Now Assuming I have other two tables T3, and T4 as following-

```
mysql> select * from T3;
+------------+---------------------+-----------+-------------+
| customerID | customerName        | city      | postal_code |
+------------+---------------------+-----------+-------------+
|          1 | Cardinal            | Stavanger |        4006 |
|          2 | Alfreds Futterkistel | Berlin    |       12209 |
|          3 | Around the Horn     | London    |       68306 |
|          4 | John Doe            | Darlington |       75306 |
|          5 | Johny Depp          | Mannheim  |       80010 |
+------------+---------------------+-----------+-------------+
```

```
mysql> select * from T4;
+------------+-------------------+----------------+-------------+
| customerID | customerName      | city           | postal_code |
+------------+-------------------+----------------+-------------+
|          6 | Augustus Haynes   | Berguvsvägen 8 |       40010 |
|          7 | Abigail Taylor    | Tsawassen      |       13008 |
|          8 | Abraham Beltran   | London         |       33008 |
|          9 | Eastern Connection | Aachen         |       31008 |
|         10 | Ernst Handel      | Graz           |       80100 |
|         11 | Ernst Rakuten     | Berlin         |       90100 |
|         12 | Marley Rakuten    | London         |       10000 |
+------------+-------------------+----------------+-------------+
```

Now I want to find out all the customers whose city is Berlin or London and whose postal code is greater than 10000.

```
mysql> SELECT customerID, customerName, postal_code FROM T3
    ->  WHERE (city LIKE 'Berlin' OR city LIKE 'LONDON') AND
    ->  postal_code > 10000
    -> UNION ALL
    -> SELECT customerID, customerName, postal_code FROM T4
    ->  WHERE (city LIKE 'Berlin' OR city LIKE 'LONDON') AND
    ->  postal_code > 10000;
+------------+---------------------+-------------+
| customerID | customerName        | postal_code |
+------------+---------------------+-------------+
|          2 | Alfreds Futterkistel |       12209 |
|          3 | Around the Horn      |       68306 |
|          8 | Abraham Beltran      |       33008 |
|         11 | Ernst Rakuten        |       90100 |
+------------+---------------------+-------------+
```

Combining these two tables (T3, T4) gets me more rows and better results.

Pair 3:

Now, I want find out all the customers whose countries are either Germany or UK from the following two tables (T5, T6)

```
mysql> select * from T5;
+------------+---------+
| customerID | country |
+------------+---------+
|          1 | Norway  |
|          2 | Germany |
|          3 | UK      |
|          4 | UK      |
|          5 | Germany |
+------------+---------+
```

```
mysql> select * from T6
    -> ;
+------------+---------+
| customerID | country |
+------------+---------+
|          6 | Sweden  |
|          7 | Canada  |
|          8 | France  |
|          9 | Germany |
|         10 | Austria |
|         11 | Germany |
|         12 | London  |
+------------+---------+
7 rows in set (0.00 sec)
```

Combining these two tables (T5, T6) we get,

```
mysql> SELECT * FROM T5
    -> WHERE (country LIKE 'Germany' OR country LIKE 'UK')
    -> UNION ALL
    -> SELECT * FROM T6
    -> WHERE (country LIKE 'Germany' OR country LIKE 'UK');
+------------+---------+
| customerID | country |
+------------+---------+
|          2 | Germany |
|          3 | UK      |
|          4 | UK      |
|          5 | Germany |
|          9 | Germany |
|         11 | Germany |
+------------+---------+
```

So, we can see integrating I get more rows and more data.

Pair 4:

```
mysql> select * from T7;
+------------+----------------------+---------+
| customerID | customerName         | country |
+------------+----------------------+---------+
|          1 | Cardinal             | Norway  |
|          2 | Alfreds Futterkistel | Germany |
|          3 | Around the Horn      | UK      |
|          4 | John Doe             | UK      |
|         10 | Ernst Handel         | Austria |
+------------+----------------------+---------+
```

```
mysql> select * from T8;
+------------+--------------------+---------+
| customerID | customerName       | country |
+------------+--------------------+---------+
|          5 | Johny Depp         | Germany |
|          6 | Augustus Haynes    | Sweden  |
|          7 | Abigail Taylor     | Canada  |
|          8 | Abraham Beltran    | France  |
|          9 | Eastern Connection | Germany |
|         11 | Ernst Rakuten      | Germany |
|         12 | Marley Rakuten     | London  |
|         13 | Marley Ernst       | UK      |
+------------+--------------------+---------+
```

From the above two tables T7 and T8, I want to find out all customers whose name contain ‘Ernst’

```
mysql> SELECT * FROM T7
    -> WHERE (customerName LIKE '%Ernst%')
    -> UNION ALL
    -> SELECT * FROM T8
    -> WHERE (customerName LIKE '%Ernst%');
+------------+---------------+---------+
| customerID | customerName  | country |
+------------+---------------+---------+
|         10 | Ernst Handel  | Austria |
|         11 | Ernst Rakuten | Germany |
|         13 | Marley Ernst  | UK      |
+------------+---------------+---------+
```

Pair 5:

Now, My new tables are T9, T10 as following

```
mysql> select * from T9;
+--------------------+----------------+-------------+
| customerName       | contactName    | postal_code |
+--------------------+----------------+-------------+
| Augustus Haynes    | Abr Bel        |       40010 |
| Abigail Taylor     | Abrigail Bel   |       13008 |
| Abraham Beltran    | Beltran Hayes  |       33008 |
| Eastern Connection | Ann Devon      |       31008 |
| Ernst Handel       | Roland Mendel  |       80100 |
| Ernst Rakuten      | Britney Mendell|       90100 |
| Marley Rakuten     | Jamie Lynn     |       10000 |
| Marley Ernst       | James Smith    |       10320 |
| Bob Ernst          | Philip Smith   |       10320 |
+--------------------+----------------+-------------+
9 rows in set (0.00 sec)

mysql> select * from T10;
+---------------------+----------------+-------------+
| customerName        | contactName    | postal_code |
+---------------------+----------------+-------------+
| Cardinal            | Tom B. Erichsen|        4006 |
| Alfreds Futterkistel| Maria Anders   |       12209 |
| Around the Horn     | Thomas Hardy   |       68306 |
| John Doe            | Philip Hay     |       75306 |
| Johny Depp          | Philip Hardy   |       80010 |
+---------------------+----------------+-------------+
5 rows in set (0.00 sec)
```

Now, I want to find out the contactNames that contain ‘Philip’ and where the postal_code is greater than 1000.

```
mysql> SELECT contactName, postal_code FROM T9
    -> WHERE (contactName LIKE '%Philip%' AND postal_code > 1000)
    -> UNION ALL
    -> SELECT contactName, postal_code FROM T10
    -> WHERE (contactName LIKE '%Philip%' AND postal_code > 1000);
+--------------+-------------+
| contactName  | postal_code |
+--------------+-------------+
| Philip Smith |       10320 |
| Philip Hay   |       75306 |
| Philip Hardy |       80010 |
+--------------+-------------+
3 rows in set (0.00 sec)
```

Question Ans 2

Pair 1:

Assuming I have 2 tables T11, T12 as following -

```
mysql> select * from T11;
+----------+----------+--------+
| county   | state    | deaths |
+----------+----------+--------+
| Autauga  | Alabama  |    146 |
| Baldwin  | Georgia  |     46 |
| Barbour  | Alabama  |    167 |
| Cherokee | Georgia  |    173 |
| Clarke   | Lousiana |    267 |
| Clay     | Georgia  |    139 |
| Dallas   | Alabama  |    110 |
| Leon     | Florida  |    200 |
+----------+----------+--------+
8 rows in set (0.01 sec)

mysql> select * from T12;
+----------+----------+-------+
| county   | state    | cases |
+----------+----------+-------+
| Autauga  | Alabama  |  9910 |
| Baldwin  | Georgia  |  8010 |
| Barbour  | Alabama  |  8676 |
| Cherokee | Georgia  |  6936 |
| Clarke   | Lousiana |  7776 |
| Clay     | Georgia  |  9776 |
| Dallas   | Alabama  |  4902 |
| Leon     | Florida  |  8336 |
+----------+----------+-------+
8 rows in set (0.00 sec)
```

Now, I want to find out all the counties along with states where deaths is greater than 100 and cases is greater than 8000;

```
mysql>
mysql> SELECT T11.county, T11.state, deaths, cases
    -> FROM T11, T12
    -> WHERE (T11.county = T12.county
    -> AND deaths > 100
    -> AND cases > 8000);
+---------+---------+--------+-------+
| county  | state   | deaths | cases |
+---------+---------+--------+-------+
| Autauga | Alabama |    146 |  9910 |
| Barbour | Alabama |    167 |  8676 |
| Clay    | Georgia |    139 |  9776 |
| Leon    | Florida |    200 |  8336 |
+---------+---------+--------+-------+
4 rows in set (0.00 sec)
```

So we can see that we have acquired more precise results with multiple attributes from different tables.

Pair 2:

Assuming I have 2 tables T13, T14 as below-

```
mysql> select * from T13;
+----------+-------+
| county   | flips |
+----------+-------+
| Autauga  |  1001 |
| Baldwin  |  2001 |
| Barbour  |  1111 |
| Cherokee |  2591 |
| Clarke   |  1231 |
| Clay     |  3231 |
| Dallas   |  1047 |
| Leon     |  4591 |
+----------+-------+
8 rows in set (0.00 sec)

mysql> select *from T14;
+----------+----------+-------+
| county   | state    | cases |
+----------+----------+-------+
| Autauga  | Alabama  |  9910 |
| Baldwin  | Georgia  |  8010 |
| Barbour  | Alabama  |  8676 |
| Cherokee | Georgia  |  6936 |
| Clarke   | Lousiana |  7776 |
| Clay     | Georgia  |  9776 |
| Dallas   | Alabama  |  4902 |
| Leon     | Florida  |  8336 |
+----------+----------+-------+
8 rows in set (0.00 sec)
```

Now, I want to find out all the counties along with states where flips is less than 1200 and cases is greater than 8100;

```
mysql> SELECT T13.county, T14.state, flips, cases
    -> FROM T13, T14
    -> WHERE (T13.county = T14.county
    -> AND flips < 1200
    -> AND cases > 8100);
+---------+---------+-------+-------+
| county  | state   | flips | cases |
+---------+---------+-------+-------+
| Autauga | Alabama |  1001 |  9910 |
| Barbour | Alabama |  1111 |  8676 |
+---------+---------+-------+-------+
2 rows in set (0.00 sec)
```

So we can see that we have acquired more precise results with multiple attributes from different tables.

Pair 3:

Assuming I have two tables T16 and T16 as below-

```
mysql> select * from T15;
+----------+-------+
| state    | cases |
+----------+-------+
| Alabama  |  9910 |
| Georgia  |  8010 |
| Alabama  |  8676 |
| Georgia  |  6936 |
| Lousiana |  7776 |
| Georgia  |  9776 |
| Alabama  |  4902 |
| Florida  |  8336 |
+----------+-------+
8 rows in set (0.00 sec)

mysql> select * from T16;
+----------+-----------------+
| state    | confirmed_cases |
+----------+-----------------+
| Alabama  |            8287 |
| Georgia  |            5287 |
| Alabama  |            7001 |
| Georgia  |            6000 |
| Lousiana |            4501 |
| Georgia  |            5201 |
| Alabama  |            3597 |
| Florida  |            8100 |
+----------+-----------------+
8 rows in set (0.00 sec)
```

Now, we want to find out the total number of covid cases for each state and also the total number of confirmed cases among all of these cases.

```
mysql> SELECT T15.state, sum(cases), sum(confirmed_cases)
    -> FROM T15, T16
    -> WHERE (T15.state = T16.state) group by T15.state;
+----------+------------+----------------------+
| state    | sum(cases) | sum(confirmed_cases) |
+----------+------------+----------------------+
| Alabama  |      70464 |                56655 |
| Florida  |       8336 |                 8100 |
| Georgia  |      74166 |                49464 |
| Lousiana |       7776 |                 4501 |
+----------+------------+----------------------+
4 rows in set (0.00 sec)
```

So, here we get a holistic confirmed case along with the cases from 2 different tables by attribute filtering.

Pair 4:

Assuming I have 2 tables (T17, T18) as below -

```
mysql> select * from T17;
+----------+----------+-----------------+
| county   | state    | confirmed_cases |
+----------+----------+-----------------+
| Autauga  | Alabama  |            8287 |
| Baldwin  | Georgia  |            5287 |
| Barbour  | Alabama  |            7001 |
| Cherokee | Georgia  |            6000 |
| Clarke   | Lousiana |            4501 |
| Clay     | Georgia  |            5201 |
| Dallas   | Alabama  |            3597 |
| Leon     | Florida  |            8100 |
+----------+----------+-----------------+
8 rows in set (0.00 sec)

mysql> select * from T18;
+----------+----------+-----------------+
| county   | state    | confirmed_deaths |
+----------+----------+-----------------+
| Autauga  | Alabama  |              130 |
| Baldwin  | Georgia  |              230 |
| Barbour  | Alabama  |              140 |
| Cherokee | Georgia  |              504 |
| Clarke   | Lousiana |              121 |
| Clay     | Georgia  |              321 |
| Dallas   | Alabama  |              147 |
| Leon     | Florida  |              648 |
+----------+----------+-----------------+
8 rows in set (0.00 sec)
```

Now I want to find out all the counties where confirmed cases are greater than 7000 and confirmed deaths are greater than 100.

```
mysql> SELECT  *
    -> FROM T17, T18
    -> WHERE T17.county = T18.county
    -> AND confirmed_cases > 7000
    -> AND confirmed_deaths > 100;
+---------+---------+-----------------+---------+---------+------------------+
| county  | state   | confirmed_cases | county  | state   | confirmed_deaths |
+---------+---------+-----------------+---------+---------+------------------+
| Autauga | Alabama |            8287 | Autauga | Alabama |              130 |
| Barbour | Alabama |            7001 | Barbour | Alabama |              140 |
| Leon    | Florida |            8100 | Leon    | Florida |              648 |
+---------+---------+-----------------+---------+---------+------------------+
3 rows in set (0.00 sec)
```

Pair 5:

Assuming I have 2 tables (T19, T20) as below -

```
mysql> select * from T19;
+----------+----------+----------------+
| county   | state    | probable_cases |
+----------+----------+----------------+
| Autauga  | Alabama  |           1623 |
| Baldwin  | Georgia  |           1300 |
| Barbour  | Alabama  |           1200 |
| Cherokee | Georgia  |           8110 |
| Clarke   | Lousiana |           1410 |
| Clay     | Georgia  |           2110 |
| Dallas   | Alabama  |           4162 |
| Leon     | Florida  |           7810 |
+----------+----------+----------------+
8 rows in set (0.00 sec)

mysql> select * from T20;
+----------+----------+-----------------+
| county   | state    | probable_deaths |
+----------+----------+-----------------+
| Autauga  | Alabama  |              16 |
| Baldwin  | Georgia  |              10 |
| Barbour  | Alabama  |              17 |
| Cherokee | Georgia  |              19 |
| Clarke   | Lousiana |              14 |
| Clay     | Georgia  |              24 |
| Dallas   | Alabama  |              54 |
| Leon     | Florida  |              20 |
+----------+----------+-----------------+
8 rows in set (0.00 sec)
```

Now, I want to find probable deaths which are greater than 16 along with probable cases which are greater than 1300 for each of the counties and states.

```
mysql> SELECT  T19.county, T19.state, T20.probable_deaths,
    -> T19.probable_cases
    -> FROM T19 JOIN T20 ON (T19.county = T20.county )
    -> WHERE probable_deaths > 16
    -> AND probable_cases > 1300;
+----------+---------+-----------------+----------------+
| county   | state   | probable_deaths | probable_cases |
+----------+---------+-----------------+----------------+
| Cherokee | Georgia |              19 |           8110 |
| Clay     | Georgia |              24 |           2110 |
| Dallas   | Alabama |              54 |           4162 |
| Leon     | Florida |              20 |           7810 |
+----------+---------+-----------------+----------------+
4 rows in set (0.00 sec)
```