# Basic Database Operations-II

🔢 Recognize common SQL data types

🔍 Use WHERE clause for filtering data

✅ Use logical & comparison operators in the WHERE clause

🎏 Work with wildcards for pattern matching

📋 Remove duplicates with DISTINCT

🔢 Sort data using ORDER BY

🎯 Limit results using LIMIT & OFFSET

📝 Add comments for better documentation

🏷️ Use column aliases for readability

```
-- Comment                          "Ctrl + /"
> /*
     Multiple Comments
     with multi line

     |
*/
```

## WHERE

```
mysql> SELECT
    ->   FirstName,
    ->     LastName,
    ->     Gender
    -> FROM Customers
    -> WHERE Gender = 'F'
    -> LIMIT 10;
+-----------+-----------+--------+
| FirstName | LastName  | Gender |
+-----------+-----------+--------+
| CHRISTY   | ZHU       | F      |
| ELIZABETH | JOHNSON   | F      |
| ROBIN     | VERHOFF   | F      |
| JACQUELYN | SUAREZ    | F      |
| LAUREN    | WALKER    | F      |
| SYDNEY    | BENNETT   | F      |
| CHLOE     | YOUNG     | F      |
| SHANNON   | WANG      | F      |
| DESTINY   | WILSON    | F      |
| JILL      | JIMENEZ   | F      |
+-----------+-----------+--------+
10 rows in set (0.00 sec)
```

```
mysql> SELECT DISTINCT Prefix FROM Customers;
+--------+
| Prefix |
+--------+
| MR.    |
| MS.    |
| MRS.   |
|        |
+--------+
4 rows in set (0.01 sec)
```

It shows all the distinct value in prefix Columns

-- Find the Married Female without using AND Logic.

```
mysql> SELECT
    -> Prefix,
    -> FirstName,
    ->     LastName,
    ->     Gender,
    ->     MaritalStatus
    -> FROM Customers
    -> WHERE Prefix = "Mrs."
    -> LIMIT 10;
+--------+-----------+----------+--------+---------------+
| Prefix | FirstName | LastName | Gender | MaritalStatus |
+--------+-----------+----------+--------+---------------+
| MRS.   | ELIZABETH | JOHNSON  | F      | S             |
| MRS.   | ROBIN     | VERHOFF  | F      | S             |
| MRS.   | LAUREN    | WALKER   | F      | M             |
| MRS.   | SYDNEY    | BENNETT  | F      | S             |
| MRS.   | SHANNON   | WANG     | F      | S             |
| MRS.   | JILL      | JIMENEZ  | F      | M             |
| MRS.   | BETHANY   | YUAN     | F      | M             |
| MRS.   | THERESA   | RAMOS    | F      | M             |
| MRS.   | DENISE    | STONE    | F      | M             |
| MRS.   | EBONY     | GONZALEZ | F      | M             |
+--------+-----------+----------+--------+---------------+
10 rows in set (0.02 sec)
```

```
mysql> SELECT Distinct MaritalStatus FROM Customers;
+---------------+
| MaritalStatus |
+---------------+
| M             |
| S             |
+---------------+
2 rows in set (0.01 sec)
```

```
mysql> SELECT
    -> FirstName,
    ->     LastName,
    ->     Gender,
    ->     MaritalStatus
    -> FROM Customers
    -> WHERE Gender = 'F' AND MaritalStatus = 'M'
    -> LIMIT 10;
+-----------+-----------+--------+---------------+
| FirstName | LastName  | Gender | MaritalStatus |
+-----------+-----------+--------+---------------+
| LAUREN    | WALKER    | F      | M             |
| JILL      | JIMENEZ   | F      | M             |
| BETHANY   | YUAN      | F      | M             |
| THERESA   | RAMOS     | F      | M             |
| DENISE    | STONE     | F      | M             |
| EBONY     | GONZALEZ  | F      | M             |
| JENNIFER  | RUSSELL   | F      | M             |
| DIANA     | HERNANDEZ | F      | M             |
| AMANDA    | CARTER    | F      | M             |
| MEGAN     | SANCHEZ   | F      | M             |
+-----------+-----------+--------+---------------+
10 rows in set (0.00 sec)
```

## Comparison Operator

= [Equal To]
> [Greater Than]
>= [Greater Than or Equal to]
< [Less Than]
<= [Less Than or Equal To]
!= Not Equal
<> Not Equal

## Logical Operator

AND

OR

NOT

| cond1 | cond2 | Result |
|-------|-------|--------|
| T | T | T |
| T | F | F |
| F | T | F |
| F | F | F |

**AND LOGIC**

If Both the statement are True Then Result is TRUE Else False.

| cond1 | cond2 | Result |
|-------|-------|--------|
| T | T | T |
| T | F | T |
| F | T | T |
| F | F | F |

**OR LOGIC**

If Both the statement are False Then Result is FALSE Else TRUE.

| T | F |
|---|---|
| F | T |

**NOT LOGIC**

### Short Circuit/ Short Switching

F && [T && T && F && T && F && T && F]  ---→ False

F && (T || T || F || T || F && T && F)  ---→ False

T || (F && T || F || T && F || T || T || F && T)  ---→ TRUE

## Challenge 1

## Find the customer having 2 or More Children.

```
mysql> SELECT
    -> FirstName,
    ->    LastName,
    ->    Gender,
    ->    MaritalStatus,
    ->    TotalChildren
    -> FROM Customers
    -> WHERE TotalChildren >=2
    -> LIMIT 10;
+-----------+----------+--------+---------------+---------------+
| FirstName | LastName | Gender | MaritalStatus | TotalChildren |
+-----------+----------+--------+---------------+---------------+
| JON       | YANG     | M      | M             |             2 |
| EUGENE    | HUANG    | M      | S             |             3 |
| RUBEN     | TORRES   | M      | M             |             3 |
| ELIZABETH | JOHNSON  | F      | S             |             5 |
| MARCO     | MEHTA    | M      | M             |             3 |
| ROBIN     | VERHOFF  | F      | S             |             4 |
| CURTIS    | LU       | M      | M             |             4 |
| LAUREN    | WALKER   | F      | M             |             2 |
| IAN       | JENKINS  | M      | M             |             2 |
| SYDNEY    | BENNETT  | F      | S             |             3 |
+-----------+----------+--------+---------------+---------------+
10 rows in set (0.03 sec)
```

## Challenge 2

## Find Customers who have exactly 3 children.

```
mysql> SELECT
    -> FirstName,
    ->    LastName,
    ->    Gender,
    ->    MaritalStatus,
    ->    TotalChildren
    -> FROM Customers
    -> WHERE TotalChildren = 3
    -> LIMIT 10;
+-----------+----------+--------+---------------+---------------+
| FirstName | LastName | Gender | MaritalStatus | TotalChildren |
+-----------+----------+--------+---------------+---------------+
| EUGENE    | HUANG    | M      | S             |             3 |
| RUBEN     | TORRES   | M      | M             |             3 |
| MARCO     | MEHTA    | M      | M             |             3 |
| SYDNEY    | BENNETT  | F      | S             |             3 |
| MARC      | MARTIN   | M      | M             |             3 |
| LEONARD   | NARA     | M      | S             |             3 |
| CHRISTINE | YUAN     | F      | M             |             3 |
| JACLYN    | LU       | F      | M             |             3 |
| JEREMY    | POWELL   | M      | M             |             3 |
| ALAN      | ZHENG    | M      | M             |             3 |
+-----------+----------+--------+---------------+---------------+
10 rows in set (0.01 sec)
```

## Challenge 3

**Find Customers whose Total Children != 4 .**

```
mysql> SELECT
    ->    FirstName,
    ->       LastName,
    ->       Gender,
    ->       MaritalStatus,
    ->       TotalChildren
    -> FROM Customers
    -> WHERE TotalChildren != 4
    -> LIMIT 10;
+-----------+-----------+--------+---------------+---------------+
| FirstName | LastName  | Gender | MaritalStatus | TotalChildren |
+-----------+-----------+--------+---------------+---------------+
| JON       | YANG      | M      | M             |             2 |
| EUGENE    | HUANG     | M      | S             |             3 |
| RUBEN     | TORRES    | M      | M             |             3 |
| CHRISTY   | ZHU       | F      | S             |             0 |
| ELIZABETH | JOHNSON   | F      | S             |             5 |
| JULIO     | RUIZ      | M      | S             |             0 |
| MARCO     | MEHTA     | M      | M             |             3 |
| SHANNON   | CARLSON   | M      | S             |             0 |
| JACQUELYN | SUAREZ    | F      | S             |             0 |
| LAUREN    | WALKER    | F      | M             |             2 |
+-----------+-----------+--------+---------------+---------------+
10 rows in set (0.00 sec)
```

```
mysql> SELECT
    ->    FirstName,
    ->       LastName,
    ->       Gender,
    ->       MaritalStatus,
    ->       TotalChildren
    -> FROM Customers
    -> WHERE TotalChildren <> 4
    -> LIMIT 10;
+-----------+-----------+--------+---------------+---------------+
| FirstName | LastName  | Gender | MaritalStatus | TotalChildren |
+-----------+-----------+--------+---------------+---------------+
| JON       | YANG      | M      | M             |             2 |
| EUGENE    | HUANG     | M      | S             |             3 |
| RUBEN     | TORRES    | M      | M             |             3 |
| CHRISTY   | ZHU       | F      | S             |             0 |
| ELIZABETH | JOHNSON   | F      | S             |             5 |
| JULIO     | RUIZ      | M      | S             |             0 |
| MARCO     | MEHTA     | M      | M             |             3 |
| SHANNON   | CARLSON   | M      | S             |             0 |
| JACQUELYN | SUAREZ    | F      | S             |             0 |
| LAUREN    | WALKER    | F      | M             |             2 |
+-----------+-----------+--------+---------------+---------------+
10 rows in set (0.00 sec)
```

```
mysql> SELECT
    ->    FirstName,
    ->       LastName,
    ->       Gender,
    ->       MaritalStatus,
    ->       TotalChildren
    -> FROM Customers
    -> WHERE NOT TotalChildren = 4
    -> LIMIT 10;
+-----------+-----------+--------+---------------+---------------+
| FirstName | LastName  | Gender | MaritalStatus | TotalChildren |
+-----------+-----------+--------+---------------+---------------+
| JON       | YANG      | M      | M             |             2 |
| EUGENE    | HUANG     | M      | S             |             3 |
| RUBEN     | TORRES    | M      | M             |             3 |
| CHRISTY   | ZHU       | F      | S             |             0 |
| ELIZABETH | JOHNSON   | F      | S             |             5 |
| JULIO     | RUIZ      | M      | S             |             0 |
| MARCO     | MEHTA     | M      | M             |             3 |
| SHANNON   | CARLSON   | M      | S             |             0 |
| JACQUELYN | SUAREZ    | F      | S             |             0 |
| LAUREN    | WALKER    | F      | M             |             2 |
+-----------+-----------+--------+---------------+---------------+
10 rows in set (0.00 sec)
```

## Challenge 4

**Provide the Annual Income of a Customers having
Education Level = "Bachelors"
AND Occupation = "Professional"**

```
mysql> SELECT DISTINCT EducationLevel FROM Customers;
+---------------------+
| EducationLevel      |
+---------------------+
| Bachelors           |
| Partial College     |
| High School         |
| Partial High School |
| Graduate Degree     |
+---------------------+
5 rows in set (0.02 sec)
```

AND

```
mysql> SELECT DISTINCT Occupation FROM Customers;
+---------------+
| Occupation    |
+---------------+
| Professional  |
| Management    |
| Skilled Manual|
| Clerical      |
| Manual        |
+---------------+
```

```
mysql> SELECT
    -> FirstName,
    ->     LastName,
    ->     AnnualIncome,
    ->     EducationLevel,
    ->     Occupation
    -> FROM Customers
    -> WHERE EducationLevel = "Bachelors" AND Occupation = "Professional"
    -> LIMIT 10;
+------------+----------+--------------+----------------+--------------+
| FirstName  | LastName | AnnualIncome | EducationLevel | Occupation   |
+------------+----------+--------------+----------------+--------------+
| JON        | YANG     | $90,000      | Bachelors      | Professional |
| EUGENE     | HUANG    | $60,000      | Bachelors      | Professional |
| RUBEN      | TORRES   | $60,000      | Bachelors      | Professional |
| CHRISTY    | ZHU      |              | Bachelors      | Professional |
| ELIZABETH  | JOHNSON  | $80,000      | Bachelors      | Professional |
| JULIO      | RUIZ     | $70,000      | Bachelors      | Professional |
| MARCO      | MEHTA    | $60,000      | Bachelors      | Professional |
| ROBIN      | VERHOFF  | $60,000      | Bachelors      | Professional |
| SHANNON    | CARLSON  | $70,000      | Bachelors      | Professional |
| JACQUELYN  | SUAREZ   | $70,000      | Bachelors      | Professional |
+------------+----------+--------------+----------------+--------------+
10 rows in set (0.01 sec)
```

STRING Patterns   WildCard Characters. [LIKE / NOT LIKE]

```
mysql> SELECT
    -> FirstName,
    ->     LastName,
    ->     AnnualIncome,
    ->     EducationLevel,
    ->     Occupation
    -> FROM Customers
    -> WHERE EducationLevel LIKE "Bachelors" AND Occupation LIKE "Professional"
    -> LIMIT 10;
+------------+----------+--------------+----------------+--------------+
| FirstName  | LastName | AnnualIncome | EducationLevel | Occupation   |
+------------+----------+--------------+----------------+--------------+
| JON        | YANG     | $90,000      | Bachelors      | Professional |
| EUGENE     | HUANG    | $60,000      | Bachelors      | Professional |
| RUBEN      | TORRES   | $60,000      | Bachelors      | Professional |
| CHRISTY    | ZHU      |              | Bachelors      | Professional |
| ELIZABETH  | JOHNSON  | $80,000      | Bachelors      | Professional |
| JULIO      | RUIZ     | $70,000      | Bachelors      | Professional |
| MARCO      | MEHTA    | $60,000      | Bachelors      | Professional |
| ROBIN      | VERHOFF  | $60,000      | Bachelors      | Professional |
| SHANNON    | CARLSON  | $70,000      | Bachelors      | Professional |
| JACQUELYN  | SUAREZ   | $70,000      | Bachelors      | Professional |
+------------+----------+--------------+----------------+--------------+
10 rows in set (0.00 sec)
```

## Challenge 5

Find Customer who are married but don't have any children yet.

```
mysql> SELECT
    ->  FirstName,
    ->     LastName,
    ->     MaritalStatus,
    ->     TotalChildren
    -> FROM Customers
    -> WHERE MaritalStatus LIKE "M" AND TotalChildren = 0
    -> LIMIT 10;
+-----------+-----------+---------------+---------------+
| FirstName | LastName  | MaritalStatus | TotalChildren |
+-----------+-----------+---------------+---------------+
| WYATT     | HILL      | M             |             0 |
| ETHAN     | ZHANG     | M             |             0 |
| SETH      | EDWARDS   | M             |             0 |
| RUSSELL   | XIE       | M             |             0 |
| JENNIFER  | RUSSELL   | M             |             0 |
| JESSE     | MURPHY    | M             |             0 |
| AMANDA    | CARTER    | M             |             0 |
| MEGAN     | SANCHEZ   | M             |             0 |
| NATHAN    | SIMMONS   | M             |             0 |
| ANA       | PRICE     | M             |             0 |
+-----------+-----------+---------------+---------------+
10 rows in set (0.00 sec)
```

```
mysql> SELECT DISTINCT MaritalStatus FROM Customers;
+---------------+
| MaritalStatus |
+---------------+
| M             |
| S             |
+---------------+
2 rows in set (0.02 sec)
```

## Challenge 6

Find the customer who are not a HomeOwner.

```
mysql> SELECT
    ->  FirstName,
    ->     LastName,
    ->     HomeOwner
    -> FROM Customers
    -> WHERE HomeOwner LIKE 'N'
    -> LIMIT 10;
+-----------+-----------+-----------+
| FirstName | LastName  | HomeOwner |
+-----------+-----------+-----------+
| EUGENE    | HUANG     | N         |
| CHRISTY   | ZHU       | N         |
| SHANNON   | CARLSON   | N         |
| JACQUELYN | SUAREZ    | N         |
| SYDNEY    | BENNETT   | N         |
| CHLOE     | YOUNG     | N         |
| LUKE      | LAL       | N         |
| JORDAN    | KING      | N         |
| DESTINY   | WILSON    | N         |
| HAROLD    | SAI       | N         |
+-----------+-----------+-----------+
10 rows in set (0.00 sec)
```

```
mysql> SELECT
    ->  FirstName,
    ->     LastName,
    ->     HomeOwner
    -> FROM Customers
    -> WHERE HomeOwner NOT LIKE 'Y'
    -> LIMIT 10;
+-----------+-----------+-----------+
| FirstName | LastName  | HomeOwner |
+-----------+-----------+-----------+
| EUGENE    | HUANG     | N         |
| CHRISTY   | ZHU       | N         |
| SHANNON   | CARLSON   | N         |
| JACQUELYN | SUAREZ    | N         |
| SYDNEY    | BENNETT   | N         |
| CHLOE     | YOUNG     | N         |
| LUKE      | LAL       | N         |
| JORDAN    | KING      | N         |
| DESTINY   | WILSON    | N         |
| HAROLD    | SAI       | N         |
+-----------+-----------+-----------+
10 rows in set (0.00 sec)
```

```
mysql> SELECT
    ->  FirstName,
    ->      LastName,
    ->      HomeOwner
    -> FROM Customers
    -> WHERE HomeOwner <> 'Y'
    -> LIMIT 10;
+-----------+-----------+-----------+
| FirstName | LastName  | HomeOwner |
+-----------+-----------+-----------+
| EUGENE    | HUANG     | N         |
| CHRISTY   | ZHU       | N         |
| SHANNON   | CARLSON   | N         |
| JACQUELYN | SUAREZ    | N         |
| SYDNEY    | BENNETT   | N         |
| CHLOE     | YOUNG     | N         |
| LUKE      | LAL       | N         |
| JORDAN    | KING      | N         |
| DESTINY   | WILSON    | N         |
| HAROLD    | SAI       | N         |
+-----------+-----------+-----------+
10 rows in set (0.00 sec)
```

```
mysql> SELECT
    ->  FirstName,
    ->      LastName,
    ->      HomeOwner
    -> FROM Customers
    -> WHERE HomeOwner = 'N'
    -> LIMIT 10;
+-----------+-----------+-----------+
| FirstName | LastName  | HomeOwner |
+-----------+-----------+-----------+
| EUGENE    | HUANG     | N         |
| CHRISTY   | ZHU       | N         |
| SHANNON   | CARLSON   | N         |
| JACQUELYN | SUAREZ    | N         |
| SYDNEY    | BENNETT   | N         |
| CHLOE     | YOUNG     | N         |
| LUKE      | LAL       | N         |
| JORDAN    | KING      | N         |
| DESTINY   | WILSON    | N         |
| HAROLD    | SAI       | N         |
+-----------+-----------+-----------+
10 rows in set (0.00 sec)
```

String Patterns — Allow me to search for a string that I partially remember.

LIKE "%Stone%"

LIKE "% Achchha chalta hoon, duaon mein yaad rakhna %"

WILD CARD

% [Replace me with 0 or more character]
_ [Replace me with exactly one character]

% Wildcard [0 or more char]

%ing - Painting, Coding, String,
        Watching, Cooking, Learning.

Pa% - Pan, Parrot, Party, Papa,
       papaya, passing, pain, pasta.

%an% - Banana, Anand, Oranges,
        Band, Fans, Range, France,
        Pan, And, Loan , an
"I want an IceCream"

_ Underscore [Fixed missing Value]

C_T - CAT, CUT, CET, etc

(+91) - _____2561

ZIP Code - 1100__

ZIP CODE  - 1210__

## Challenge 7

Find the customers who have first Name starts with 'H'

```
mysql> SELECT
    ->  FirstName,
    ->      LastName
    -> FROM Customers
    -> WHERE FirstName LIKE 'H%'
    -> LIMIT 10;
+-----------+------------+
| FirstName | LastName   |
+-----------+------------+
| HAROLD    | SAI        |
| HEIDI     | LOPEZ      |
| HUNTER    | ROBINSON   |
| HANNAH    | LONG       |
| HAILEY    | PATTERSON  |
| HAILEY    | BRYANT     |
| HUNTER    | GRIFFIN    |
| HENRY     | GARCIA     |
| HALEY     | RICHARDSON |
| HUNTER    | RODRIGUEZ  |
+-----------+------------+
10 rows in set (0.01 sec)
```

## Challenge 8

Find the customers who have Last Name ends with 'S'

```
mysql> SELECT
    ->  FirstName,
    ->      LastName
    -> FROM Customers
    -> WHERE LastName LIKE '%S'
    -> LIMIT 10;
+-----------+----------+
| FirstName | LastName |
+-----------+----------+
| RUBEN     | TORRES   |
| IAN       | JENKINS  |
| SETH      | EDWARDS  |
| THERESA   | RAMOS    |
| NATHAN    | SIMMONS  |
| ADAM      | FLORES   |
| LUCAS     | PHILLIPS |
| ADAM      | ROSS     |
| EVAN      | JAMES    |
| JAN       | EDWARDS  |
+-----------+----------+
10 rows in set (0.00 sec)
```

## Challenge 9

Find the customers who have 'an' in between of the First Name

```
mysql> SELECT
    ->  FirstName,
    ->     LastName
    -> FROM Customers
    -> WHERE FirstName LIKE '%AN%'
    -> LIMIT 10;
+-----------+-----------+
| FirstName | LastName  |
+-----------+-----------+
| SHANNON   | CARLSON   |
| IAN       | JENKINS   |
| SHANNON   | WANG      |
| JORDAN    | KING      |
| ETHAN     | ZHANG     |
| ALEJANDRO | BECK      |
| BETHANY   | YUAN      |
| DIANA     | HERNANDEZ |
| AMANDA    | CARTER    |
| MEGAN     | SANCHEZ   |
+-----------+-----------+
10 rows in set (0.00 sec)
```

Note:

`product-subcategories` -> This is where the backticks use

## Challenge 10

Last name with 'A' in middle, then one character, ends with 'G'

%A_G

```
mysql> SELECT
    ->  FirstName,
    ->     LastName
    -> FROM Customers
    -> WHERE LastName LIKE '%A_G'
    -> LIMIT 10;
+-----------+-----------+
| FirstName | LastName  |
+-----------+-----------+
| JON       | YANG      |
| EUGENE    | HUANG     |
| SHANNON   | WANG      |
| ETHAN     | ZHANG     |
| TIFFANY   | LIANG     |
| TAMARA    | LIANG     |
| CURTIS    | YANG      |
| CRYSTAL   | WANG      |
| MAURICE   | TANG      |
| GABRIEL   | WANG      |
+-----------+-----------+
10 rows in set (0.00 sec)
```

## Challenge 11

First name pattern: any letter, then 'a', then any two letters, ends in 'e'

FirstName LIKE '_ a _ _ e'

FirstName LIKE '%a _ _ e'

```
mysql> SELECT
    ->  FirstName,
    ->      LastName
    -> FROM Customers
    -> WHERE FirstName LIKE '%A__E'
    -> LIMIT 10;
+-----------+-----------+
| FirstName | LastName  |
+-----------+-----------+
| JAIME     | NATH      |
| STEPHANIE | TORRES    |
| STEPHANIE | MURPHY    |
| NATALIE   | ADAMS     |
| ANNE      | HERNANDEZ |
| STEPHANIE | COLLINS   |
| TERRANCE  | RAMAN     |
| JAIME     | MORENO    |
| ANNE      | RAMOS     |
| LANCE     | VAZQUEZ   |
+-----------+-----------+
10 rows in set (0.01 sec)
```

```
mysql> SELECT
    ->  FirstName,
    ->      LastName
    -> FROM Customers
    -> WHERE FirstName LIKE '_A__E'
    -> LIMIT 10;
+-----------+-----------+
| FirstName | LastName  |
+-----------+-----------+
| JAIME     | NATH      |
| JAIME     | MORENO    |
| LANCE     | VAZQUEZ   |
| JAIME     | GUTIERREZ |
| JAMIE     | LIANG     |
| KATIE     | SHE       |
| JAMIE     | LI        |
| JAIME     | CHANDE    |
| KATIE     | KUMAR     |
| LANCE     | ORTEGA    |
+-----------+-----------+
10 rows in set (0.01 sec)
```