# Regular Expressions in MySQL

MySQL supports regular expressions for pattern matching within strings using the REGEXP (or synonym RLIKE) operator. These expressions follow a specific syntax to define patterns for searching text data.

Key Components:

- Characters: Literal characters match themselves exactly (e.g., "a" matches the letter "a").
- Metacharacters: These have special meanings within the expression (e.g., ".", "^", "$").
- Quantifiers: Specify how many times a preceding element can be matched (e.g., "*", "+", "?").

Common Metacharacters:

. : Matches any single character.

^ : Matches the beginning of the string.

$ : Matches the end of the string.

[] : Character class, matches any character within the brackets (e.g., [aeiou] matches any vowel).

[^] : Negated character class, matches any character not within the brackets.

* : Matches the preceding element zero or more times.

+ : Matches the preceding element one or more times.

? : Matches the preceding element zero or one time.

| (OR): Matches either the pattern before or after the pipe.

Escaping Characters:

Since the backslash (\) is used for special characters within the expression, you need to escape it (write \\) to represent a literal backslash in your pattern.

Basic Structure:

```
SELECT column_name
FROM table_name
WHERE column_name REGEXP 'pattern';
```

Examples :

1. Find all users whose first name contains "le":

```
SELECT *
FROM users
WHERE first_name REGEXP  'le';
```

2. Find all users whose first name starts with "J":

```
SELECT *
FROM users
WHERE first_name REGEXP '^J';
```

3. Find all users whose last name ends with "son":

```
SELECT *
FROM users
WHERE last_name REGEXP 'son$';
```

4. Find all users whose phone number starts with "321" or "654":

```
SELECT *
FROM users
WHERE phone_number REGEXP '^(321|654)';
```

5. Find all users whose first name starts with "A" and last name ends with "ez":

```
SELECT *
FROM users
WHERE first_name REGEXP '^A' AND last_name REGEXP 'ez$';
```

6. Find all users whose email starts with "j" (case insensitive):

```
SELECT *
FROM users
WHERE email REGEXP '^[jJ]';
```

7. Find all users whose phone number contains "987" or "876" or "765":

```
SELECT *
FROM users
WHERE phone_number
REGEXP '987|876|765';
```

8. Find all users whose address starts with a digit:

```
SELECT *
FROM users
WHERE address REGEXP '^[0-9]';
```

9. Find all users whose last name starts with "M" or "P" and ends with "ez".

```
SELECT *
FROM users
WHERE last_name REGEXP '^(M|P).*ez$';
```

10. Find all users whose phone numbers have a valid format (XXX-XXX-XXXX):

```
SELECT *
FROM users
WHERE phone_number REGEXP '^[0-9]{3}-[0-9]{3}-[0-9]{4}$';
```

11. Find all users whose first names start and end with the same letter:

```
SELECT *
FROM users
WHERE first_name REGEXP '^(.).*\\1$';
```

12. Find all users whose email addresses have a number before the "@" symbol:

```
SELECT *
FROM users
WHERE email REGEXP '[0-9]@';
```

13. Find all users whose last names have at least 5 characters and end with "son" or "ez":

```
SELECT *
FROM users
WHERE last_name REGEXP '.{5,}(son|ez)$';
```

14. Find all users whose last names contain at least two consecutive vowels:

```
SELECT *
FROM users
WHERE last_name REGEXP '[aeiouAEIOU]{2}';
```