SQL Basic Best Practices

1. Write Clean, Readable Queries

Use consistent indentation and formatting.
Capitalize SQL keywords: SELECT, FROM, WHERE, JOIN, etc.
Use meaningful aliases for tables and columns when appropriate.

2. Understand and Use Proper Joins

Know the difference between INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL OUTER JOIN.
Always use clear join conditions with ON to prevent incorrect results or Cartesian products.

3. Be Specific with Columns

Avoid using SELECT * as it may fetch unnecessary data and reduce performance.
Only select the columns you actually need.

4. Index Smartly

Apply indexes on columns frequently used in WHERE, JOIN, and ORDER BY clauses.
Be cautious not to overuse indexes, as they can slow down INSERT, UPDATE, and DELETE operations.

5. Filter Early and Precisely

Use WHERE clauses to limit the number of rows as early as possible.
Avoid functions on columns in WHERE clauses if possible to preserve index use.

6. Use Aggregates Wisely

Use aggregate functions (SUM, COUNT, AVG, etc.) correctly with GROUP BY.
Every non-aggregated column in a SELECT should also appear in the GROUP BY clause.

7. Protect Against SQL Injection

Never directly insert user input into SQL queries.
Use parameterized queries or prepared statements.

8. Comment Your Queries

Add comments to explain the logic, especially for complex queries.

9. Analyze Query Performance

Use EXPLAIN or EXPLAIN ANALYZE to understand how a query will be executed.
Identify bottlenecks and optimize slow queries.

10. Test and Validate

Test queries with sample data before running them on a production database.
Validate the output to ensure correctness, especially after schema changes.