📌 Deleting Data from a Table (SQL Notes)

1️⃣ Introduction

- Deleting data is a basic operation in a **Database Management System (DBMS)**.
- It removes one or more rows from a table.
- Used for:
    - Maintaining data integrity
    - Managing storage space
    - Ensuring compliance with rules and regulations

2️⃣ SQL DELETE Statement

🔹 Syntax:

```
DELETE FROM table_name
WHERE condition;
```

🔹 Explanation:

- DELETE FROM → Specifies the table name.
- WHERE → Defines which rows to delete.
- If **WHERE is omitted**, all rows in the table are deleted.

3️⃣ Examples

✅ Delete by ID

```
DELETE FROM People
WHERE person_id = 1;
```

- Deletes the row where person_id = 1.

✅ Delete Based on Age

```
DELETE FROM People
WHERE age < 30;
```

- Deletes all people whose age is less than 30.

✅ Delete Based on City

```
DELETE FROM People
WHERE city = 'Las Vegas';
```

- Deletes all people living in Las Vegas.

✅ Delete Using Pattern (LIKE Operator)

```
DELETE FROM People
WHERE last_name LIKE 'W%';
```

- Deletes people whose last name starts with **W**.
- % → Wildcard (matches any number of characters).

✅ Delete All Rows

```
DELETE FROM People;
```

- Deletes all rows from the table.
- Table structure remains.
- Table becomes empty.

4️⃣ Important Considerations

🔶 Transaction Management

- Use transactions to control deletions:

```
BEGIN TRANSACTION;
DELETE FROM table_name WHERE condition;
COMMIT;   -- Save changes
ROLLBACK; -- Undo changes
```

- Ensures data safety.

🔶 Performance

- Large deletions can slow down the database.
- Always test in a development environment first.

🔶 Data Integrity

- Be careful with:

    - Foreign key constraints
    - Cascading deletes
- Deleting one row may affect related tables.

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5 Key Points to Remember

✓ Always use WHERE to avoid deleting all records accidentally.
✓ Test queries before running in production.
✓ Use transactions for safety.
✓ Check relationships between tables.

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6 Conclusion

- The DELETE statement removes specific or all records from a table.
- It is powerful and must be used carefully.
- Proper understanding prevents accidental data loss.