**🔗 1. JOINS**

**🔹 INNER JOIN: Show each customer's plan details**

SELECT c.name, c.contact, p.plan\_type, p.monthly\_fee

FROM customers c

JOIN plans p ON c.plan\_type = p.plan\_type;

**🔹 LEFT JOIN: Customers and their payments (if any)**

SELECT c.customer\_id, c.name, p.amount, p.payment\_date

FROM customers c

LEFT JOIN payments p ON c.customer\_id = p.customer\_id;

**✏️ 2. UPDATE**

**🔹 Increase call charges for long calls**

UPDATE calls

SET charge = charge + 10

WHERE duration > 300; -- more than 5 minutes

**🔹 Change a customer's plan**

UPDATE customers

SET plan\_type = 'Platinum'

WHERE customer\_id = 'C002';

**❌ 3. DELETE**

**🔹 Delete old call records**

DELETE FROM calls

WHERE call\_date < '2024-01-01';

**🔹 Remove a customer who closed the account**

DELETE FROM customers

WHERE customer\_id = 'C010';

**👁 4. VIEWS**

**🔹 View of total payments per customer**

CREATE VIEW customer\_payments AS

SELECT customer\_id, SUM(amount) AS total\_paid

FROM payments

GROUP BY customer\_id;

**🔹 View of customers with more than 10 calls**

CREATE VIEW frequent\_callers AS

SELECT customer\_id, COUNT(\*) AS call\_count

FROM calls

GROUP BY customer\_id

HAVING COUNT(\*) > 10;

**⚡ 5. INDEXES**

**🔹 Improve call lookup by customer**

CREATE INDEX idx\_calls\_customer ON calls(customer\_id);

**🔹 Speed up payments search by date**

CREATE INDEX idx\_payments\_date ON payments(payment\_date);

**📥 6. IMPORT / EXPORT**

**🔹 Import from CSV into customers**

LOAD DATA INFILE '/var/lib/mysql-files/customers.csv'

INTO TABLE customers

FIELDS TERMINATED BY ','

LINES TERMINATED BY '\n'

IGNORE 1 LINES;

**🔹 Export payments to CSV**

SELECT \* FROM payments

INTO OUTFILE '/var/lib/mysql-files/payments\_export.csv'

FIELDS TERMINATED BY ','

LINES TERMINATED BY '\n';

**🔁 7. TRANSACTIONS**

**🔹 Deduct call charge and record payment together**

START TRANSACTION;

UPDATE customers

SET plan\_type = 'Gold'

WHERE customer\_id = 'C003';

INSERT INTO payments (payment\_id, customer\_id, amount, payment\_date)

VALUES ('P999', 'C003', 300.00, CURDATE());

COMMIT;

In case of error:

ROLLBACK;

**🔐 8. CONSTRAINTS**

**🔹 NOT NULL & UNIQUE example (already in schema)**

ALTER TABLE customers

MODIFY contact VARCHAR(15) NOT NULL UNIQUE;

**🔹 CHECK constraint on calls.charge**

ALTER TABLE calls

ADD CONSTRAINT chk\_charge\_non\_negative CHECK (charge >= 0);

**🔹 FOREIGN KEY**

ALTER TABLE calls

ADD CONSTRAINT fk\_calls\_customer

FOREIGN KEY (customer\_id) REFERENCES customers(customer\_id);