ADBMS
Assignment - 1

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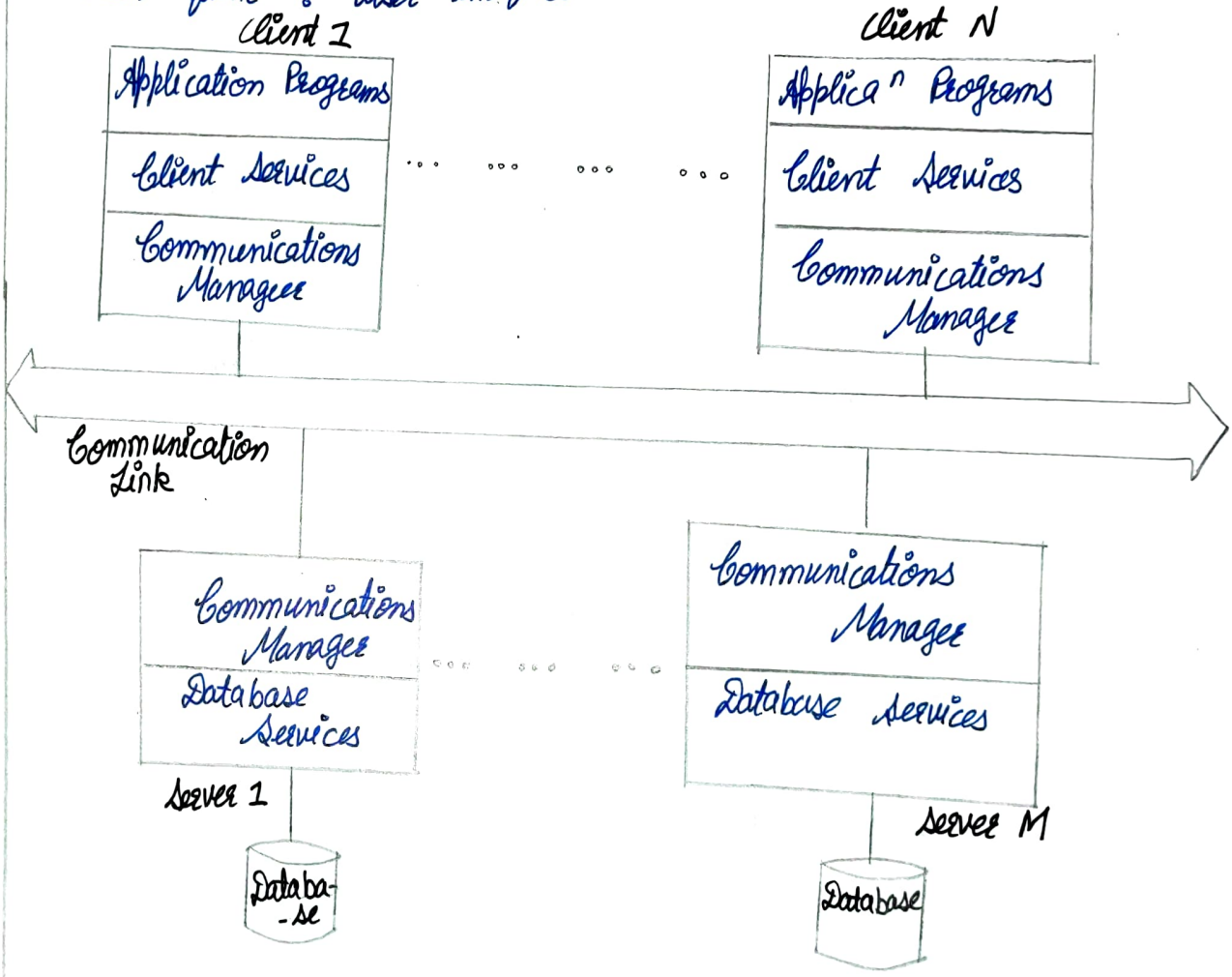
Q1 Architecture of DDBMS.

A distributed database is a collection of multiple interconnected databases, which are spread physically across various locations that communicate via a computer network.

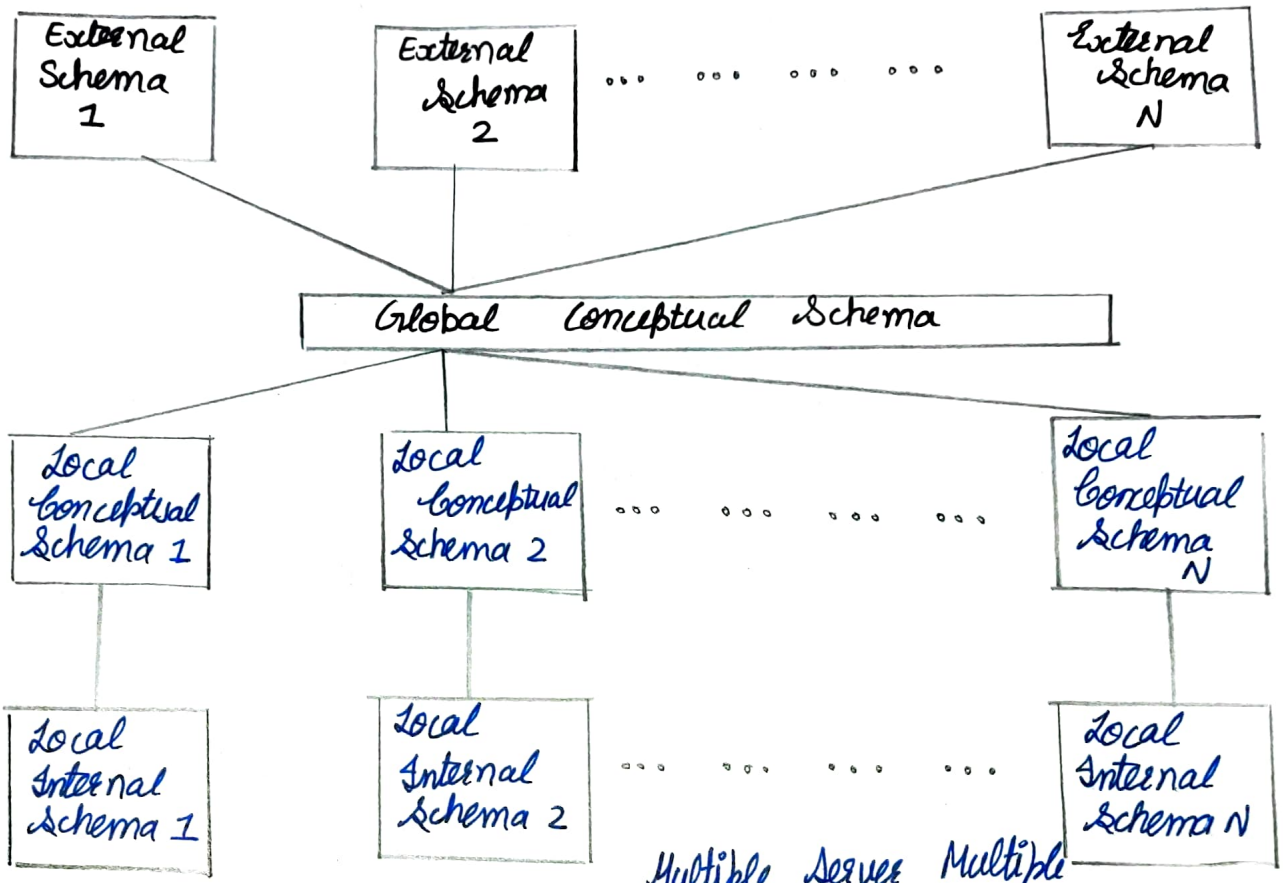
1. Client - server architecture for DDBMS
   - → Functionality divided into servers and clients.
   - → Server func^n : encompass data management, query processing, optimization and transaction management.

   Client func^n : User interface



2. Peer - to - Peer Architecture for DDBMS

→ Each peer acts both as client & server for imparting database services
→ Peers share their resource with other peers and co-ordinate their activities.



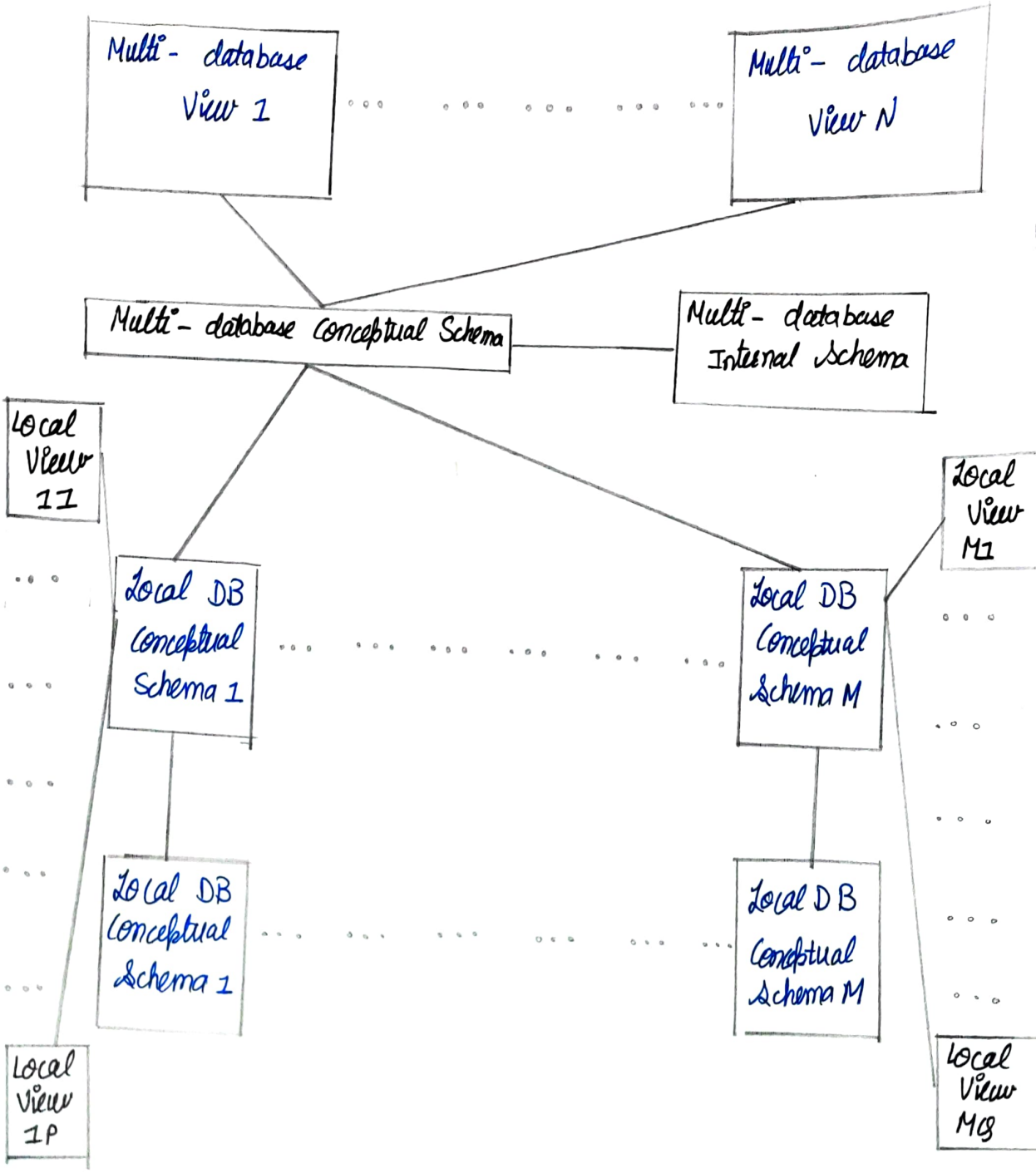
Multiple Server Multiple Client

3. Multi° - DBMS Architecture

→ Integrated database system formed by a collec^n of 2 or more autonomous database systems.

→ Can be expressed ~~theory~~ through six levels of schemas:

1. Multi° - database View level
2. Multi - database Conceptual level
3. Multi° - database Internal level
4. ~~Multi°~~ Local database View level
5. Local database Conceptual level
6. Local database Internal level



Model with multibase Conceptual level

Q2 Difference b/w PL/SQL and SQL.

SQL	PL/SQL
1. It is a database structured Query Language.	1. It is a database programming language using SQL.
2. No supported control structures like for loop, if.	2. Control structures are available like for loop, while loop, if.
3. Data-oriented language.	3. Application oriented language.
4. Interacts directly with database server.	4. Does not interact directly with database server.
5. Does not provide error and exception handling.	5. Provides error and exception handling.

Q3 What are triggers and cursors?

A trigger is a set of statements that are executed as a side effect of a modification to the database to ensure data integrity.

Schema: EMP(E#, E_NAME, SALARY, D#)
DEPT(D_NUMB, D_NAME, TOTAL_SAL)

Create a trigger do automatically ~~to~~ update TOTAL_SAL when an employee is transferred from one department to another one.

```
CREATE OR REPLACE TRIGGER adj_sal AFTER UPDATE OF D# OIN EMP FOR
  EACH ROW
BEGIN
      IF :OLD.D# IS NOT NULL
      THEN
         BEGIN
            UPDATE DEPT
            SET TOTAL_SAL = TOTAL_SAL - :OLD.SALARY
         WHERE DEPT.D_NUMB = :OLD.D#;
         END
      END IF;
      IF : NEW.D# ISNOT NULL
      THEN
         BEGIN
             UPDATE DEPT
            SET TOTAL_SAL = TOTAL_SAL + :  NEW.SALARY
         WHERE DEPT.D_NUMB = :NEW.D#;
         END
      END IF;
END;
```

A cursor is a pointer associated with a work area in a PL/SQL program. It has 4 phases:

1. Declaration of a cursor
2. Opening of a cursor
3. Fetching data from a cursor
4. Closing a cursor

Schema : EMP (E#, E_NAME, SALARY, D#)

DEPT (D#, D_NAME, TOTAL_SAL, MGR#)

Write a cursor to increase salary by 40%.

```
DECLARE
    CURSOR C1 IS SELECT E#, SALARY FROM EMP WHERE SALARY>40000;
    ENO EMP.E# TYPE;
    SAL EMP.SALARY%TYPE;
BEGIN
    OPEN C1;
    IF C1%ISOPEN THEN
    LOOP
        FETCH C1 into ENO, SAL;
        EXIT WHEN C1%NOTFOUND;
        UPDATE EMP SET SALARY = SALARY * 5.0 WHERE E# = ENO;
    END LOOP;
  CLOSE C1:
  END IF:
  Ext
  EXCEPTION
  WHEN INVALID_CURSOR THEN
   DBMS_OUTPUT.PUT_LINE ('Invalid Cursor');
END;
```

Q4 **Functions of Query Processor and Storage Manager.**

The query processor handles user queries, parsing, optimization and executing them to retrieve or ~~mai~~ manipulate data from the database. It interprets high-level SQL statements into efficient low-level operations.

Storage manager is responsible for managing data storage, ensuring data integrity and providing efficient access to stored info. It manages data files, storage allocation, I/O operations.