Computer Network

```
        ↓                    ↓                    ↓
      LAN                  MAN                  WAN

- area coverage least    - Metropolitan
- max^m speed of data      Area N/W
  transfer               - Distributed Queue Dual Bus
- error rate → min^m        (DQDB)
```

Computer Network   (on the basis of accessibility)

```
     ↓              ↓                    →
  Internet       Intranet            Extranet
```

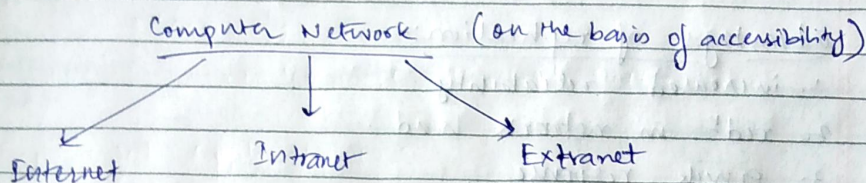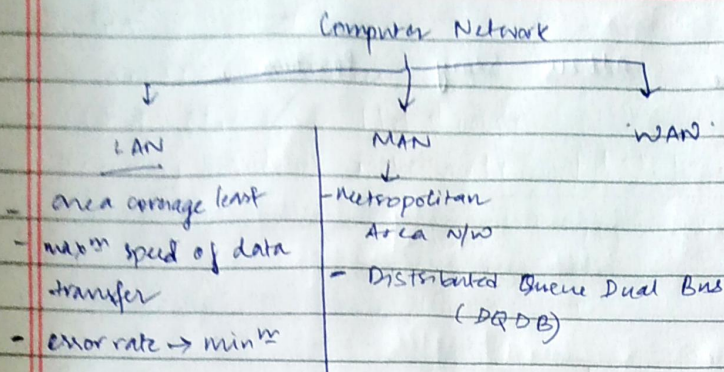
Distributed DBMS

1) Data Communication & Networking — B.A. Foronzan
2) Comp. Network — A.S. Tannenbaum

Distributed Design Issues.

① Fragmentation:
② Distribution

Design alternatives

① Non replicated and non-fragmentation — each site has diff database

② fully replicated → each site has full replica of overall database

③ partially replicated - replica present in one or two sites.

④ fragmented - vertical, horizontal, hybrid.

⑤ mixed - combination of fragmentation and partial replication. At first tables are fragmented then partially replicated.

E.No.	F.name	Address	Salary	Position	
1					
2					
3					
4					
5					
6					

advantages of replication:-

1. increased reliability
2. red^n in network load.
3. quick response
4. simple transactions reqd for accessing the data.

disadvantage of replication :-

Rules of fragmentation

① completeness
② lossless decomposition property is to be maintained.
③ reconstructibility of the rel^n from fragments is to be maintained
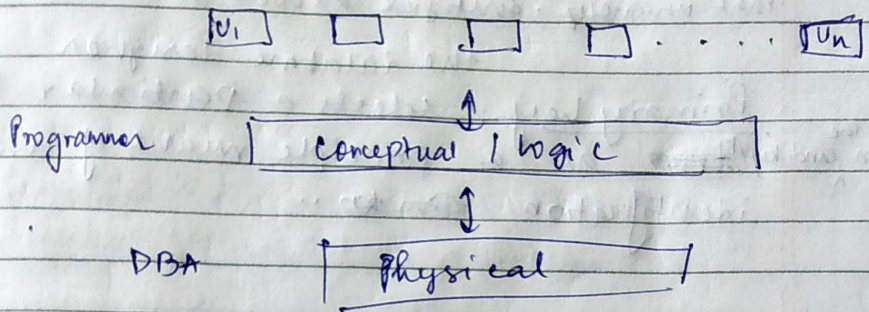④ each fragment will have disjoint data points.

Semantic data control

Security control

9/1/23

User
software
Data
hardware.

3 tier architecture.
end user level / View level

$\boxed{U_1}$ $\boxed{}$ $\boxed{}$ $\boxed{}$ . . . . $\boxed{U_n}$

Programmer   [Conceptual / logic   ]

DBA   [Physical   ]

SQL defined for all packages

→ data abstraction
↓ leads to
independence
(→ physical ~~lead~~ indep ..
(→ logical independence

relational / tabular.

dif b/w DBMS & RDBMS
↳ has to follow Codd's 12 Rules.

1. Info Rule
2. Guaranteed Access Rule
3. Systematic Treatment of NULL values
4. Active Online Catalog
5. Comprehensive Data Sublang Rule
6. View updating Rule
7. High Level Insert, Update &
   Delete Rule
8. Physical Data Independence
9. Logical   "   "
10. Integrity Independence.
11. Distribution   "
12 No Subvation Rule

Generally 1 database

SQL

A set of keys that uniquely identifies a
record in a table is superkeys

row of table → record/tuple

Generally preferabble to enhance superkey set.

Candidate key - minimal set of keys from superkey
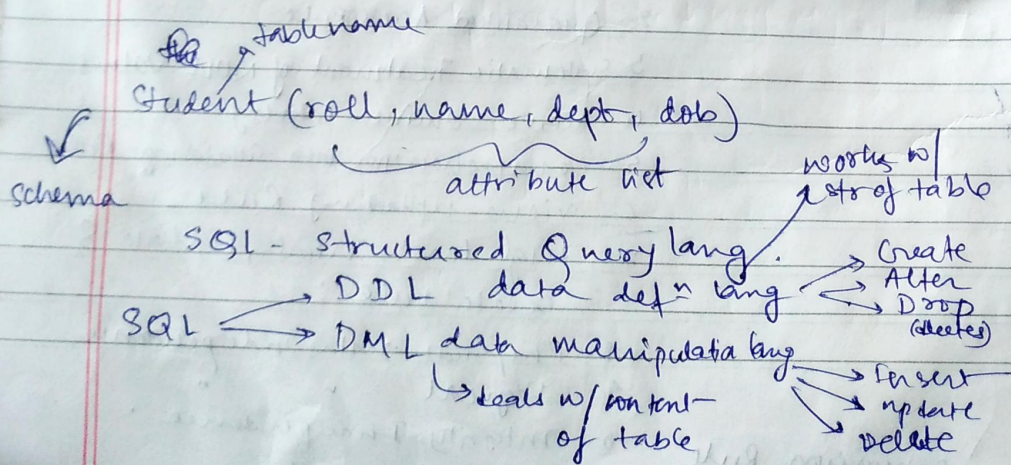that uniquely identifies record from a table

                    the database designer
Primary key - selects a particular key
from cand keyset ~~team~~ as a principle means of unique
identification ~~from keys~~..

2 mandatory characters.
   - has to be unique
   - cannot be null

2 derivable characters
   should not change over a period of time
   mix of alphanumeric characters.

        table name
Student (roll, name, dept, dob)
                attribute list   works to
                                        str of table
✓
schema

SQL - Structured Query lang.   → Create
         → DDL data def^n lang   → Alter
SQL ⟨   → Drop
         → DML data manipulation lang   (deletes)
            ↳ deals w/ content -   → Insert
              of table   → update
                                        → Delete

DDL s are stored in data dictionary

③ DCL - Data Control lang | Transaction Control lang
   ↳ granting authorisation to user under a DBA
   ↳ revoke
   ↳ commit (to save data permanently)
                          in server

④ DQL - Data Query lang
   ↳ select (initially was part of DML)

create table student (
   roll number (3),
   name varchar2 (30),   number (5, 2)
   dept varchar (15),   ↓   ↳ 2place
   dob date);   250 character   5 digits after
                                      memory   decimal
Enter → Table created   space wasted   string:-
                                             ↱ char (10)
* avoid date datatype as it   varchar (10)
may lead to mismatch in   ↱ varchar2 (10)
format   - variable length thus
                                   memory is not wasted
   showed tables   - 512 character
       in database   ↳ 1024 characters.
   ↳ select * from tab;
   dese Student;   mon
                                  date ⇒ dd - man - yy

insert
_____   *datavalues
        insert into student values (are case
           8, 'Advita', 'CSE', '09-Sep-01') sensitive

        commit;
[one row inserted]