SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE NAME : 19CS402 - DATABASE MANAGEMENT SYSTEMS

II YEAR / IV SEMESTER

Unit 1- Introduction to Data Base

Topic 4 : View of Data & Data Models

VIEWS OF DATA

- It refers that how database is actually stored in database, what data and structure of data used by database for data. So describe all this database provides user with views and these are

  ➢ **Data abstraction**
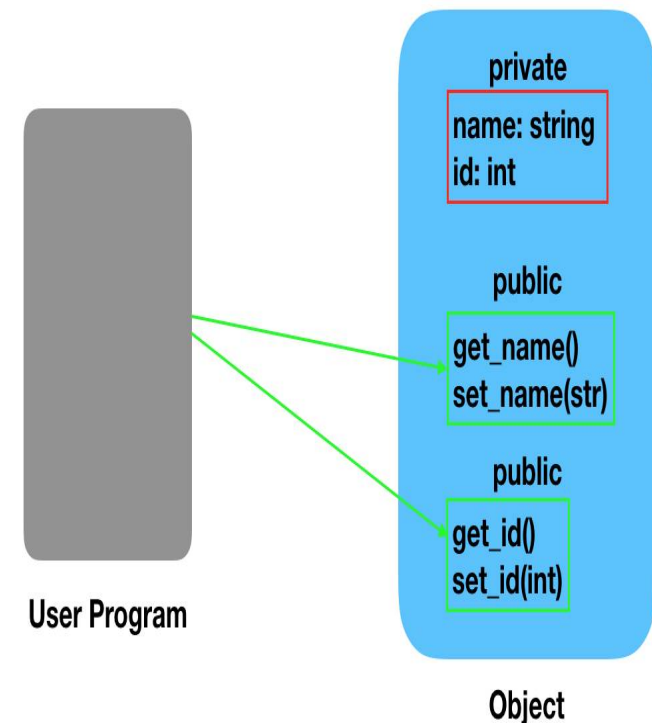
  ➢ **Instances and schemas**
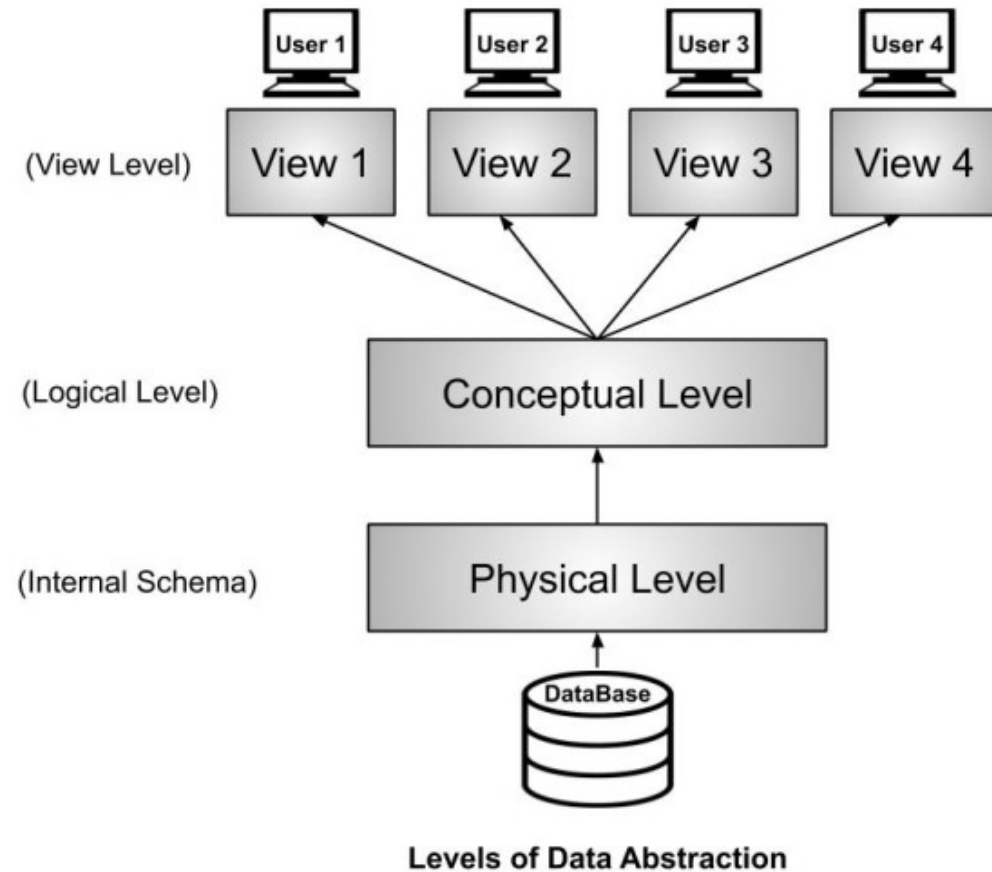
- **Data abstraction**

- As a data in database are stored with very complex data structure so when user come and want to access any data, he will not be able to access data if he has go through this data structure.

- So to simplify the interaction of user and database, DBMS hides some information which is not of user interest, a this is called data abstraction:- **So developer hides complexity from user and store abstract view of data.**

Data Abstraction

User Program

private
name: string
id: int

public
get_name()
set_name(str)

public
get_id()
set_id(int)

Object

Data abstraction has three level of abstractions

- level / internal level
- Logical level / conceptual level
- view level / external level

Levels of Data Abstraction

Data abstraction –Cont..

- **Physical level:-** this is the lowest level of data abstraction which describe How data is actual stored in database.

  This level basically describe the data structure and access path /indexing use for accessing file.

- **Logical level:-** The next level of abstraction describe what data are stored in the database and what are the relationship existed among those of data.

- **View level:-** In this level user only interact with database and the complexity remain unview . user see data and there may be many views of one data like chart and graph

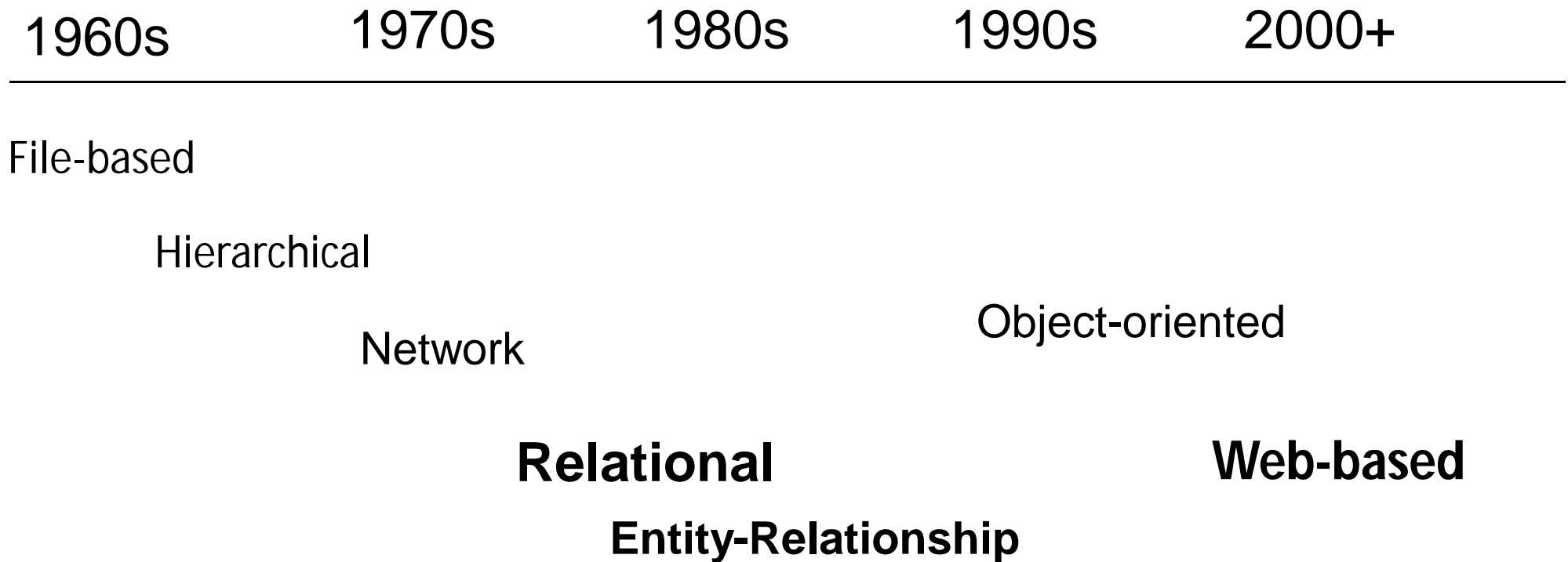# Break

Different types of data model

➤ Entity – Relationship (E-R) Model.

➤ Relational Model

➤ Object –Based Data Model

➤ Semi structured Data Model

➤ Network Model

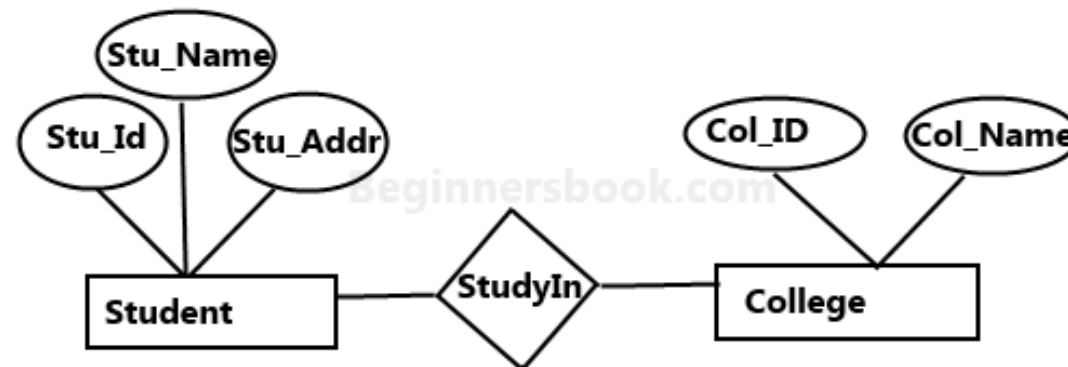➤ Hierarchical data model

Evolution of Data Models

- Timeline

1960s	1970s	1980s	1990s	2000+

File-based

Hierarchical

Object-oriented

Network

Relational

Web-based

Entity-Relationship

Entity Relationship Model

➢ER Model consists of a collection of basic objects called entities
➢Relationships among these objects.
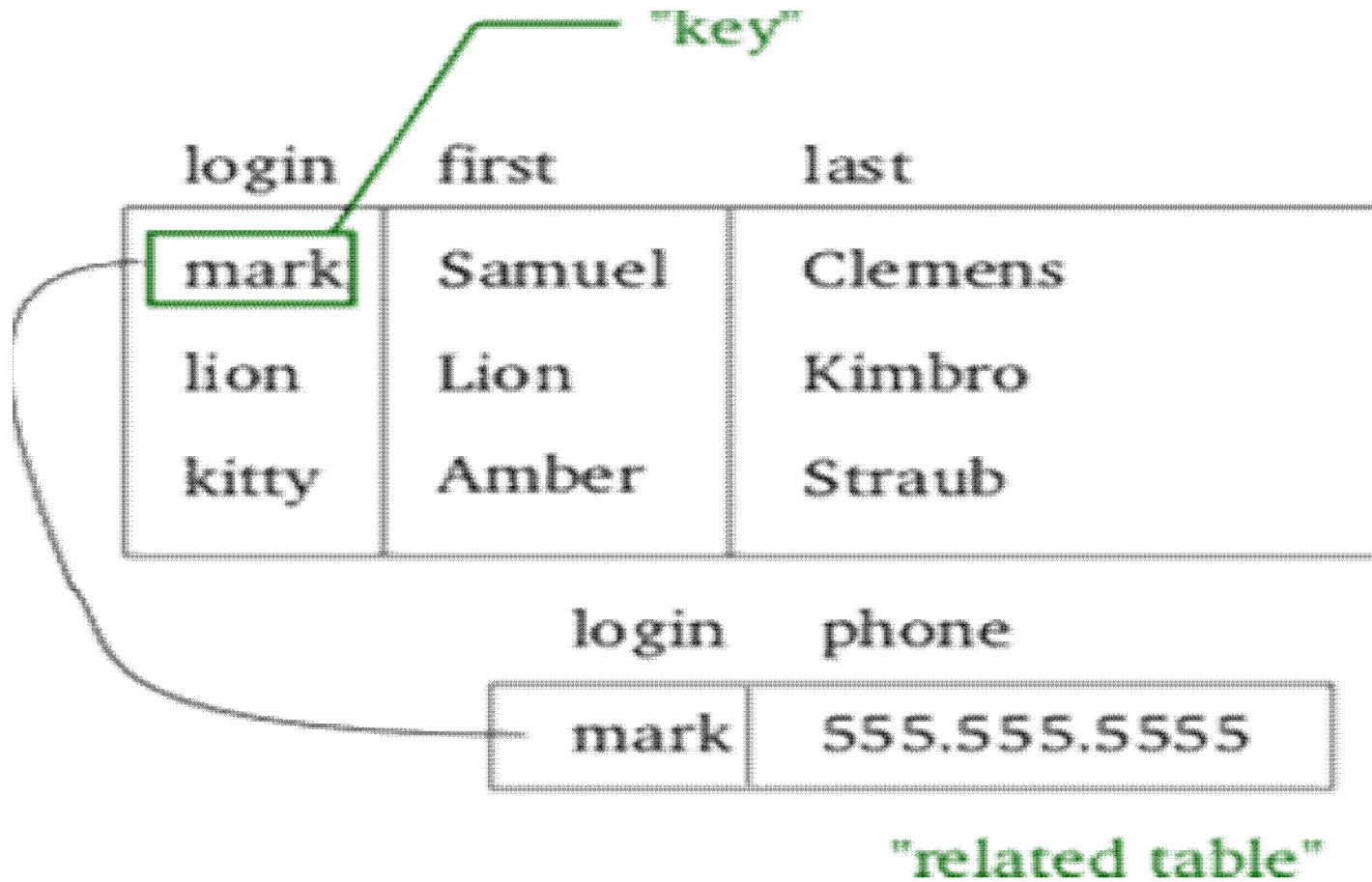

Sample E-R Diagram

Relational Model

➤ The relational model uses a collection of tables to represent both data and the relationships among those data.

➤ It is record based model

➤ Each table contains records (fields or attributes)

"key"

login	first	last
mark	Samuel	Clemens
lion	Lion	Kimbro
kitty	Amber	Straub

login	phone
mark	555.555.5555

"related table"

Object –Based Data Model

➢The object oriented model can be seen as extending the E-R model with notions of encapsulation methods (functions) and object identity.
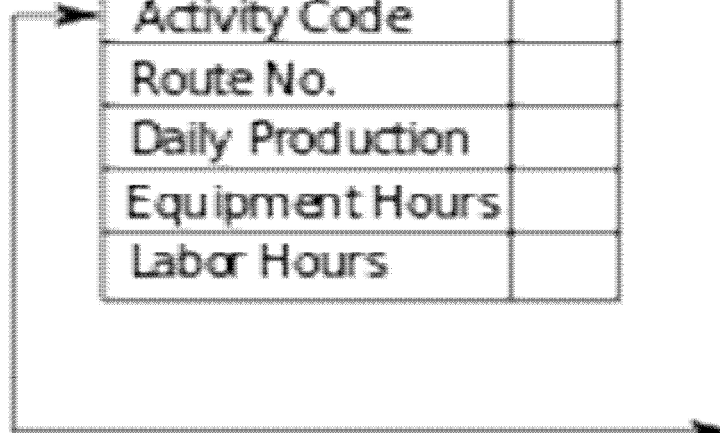
Object-Oriented Model

Object 1: Maintenance Report   Object 1 Instance

Date	
Activity Code	
Route No.	
Daily Production	
Equipment Hours	
Labor Hours	

01-12-01
24
I-95
2.5
6.0
6.0

Object 2: Maintenance Activity
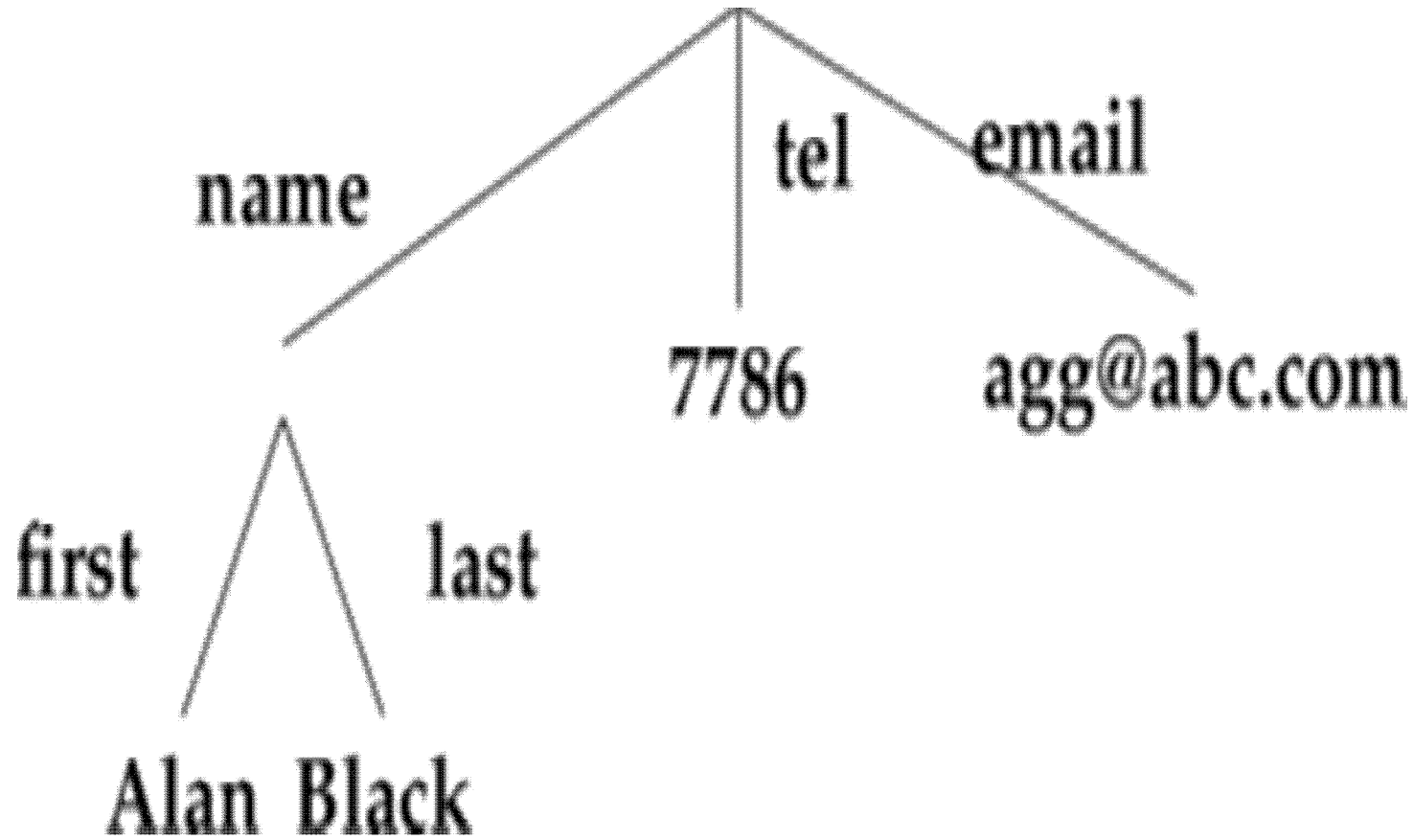
Activity Code	
Activity Name	
Production Unit	
Average Daily Production Rate	

Semi structured data model

- The semi structure data model permits the specification of data where individual data items of the same type have different set of attributes.

- Example

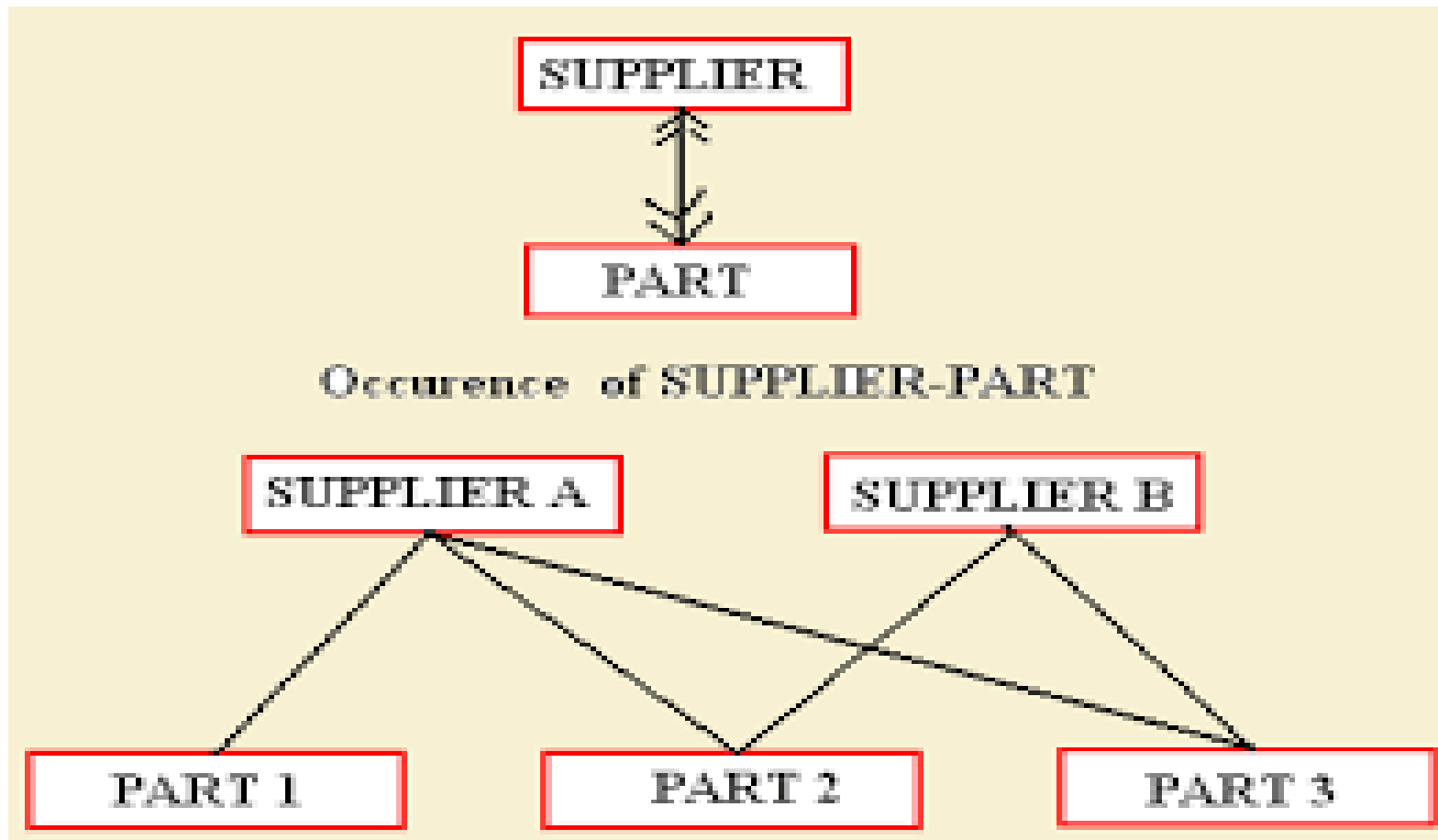   – XML (Extensible Markup Language)

Network Model

- It is data structure diagram
- Advantage
  - Data independence
  - Conceptual simplicity
  - Easy to design
- Disadvantage
  - Lack of structure independence

Hierarchical Model

It uses tree structure diagram
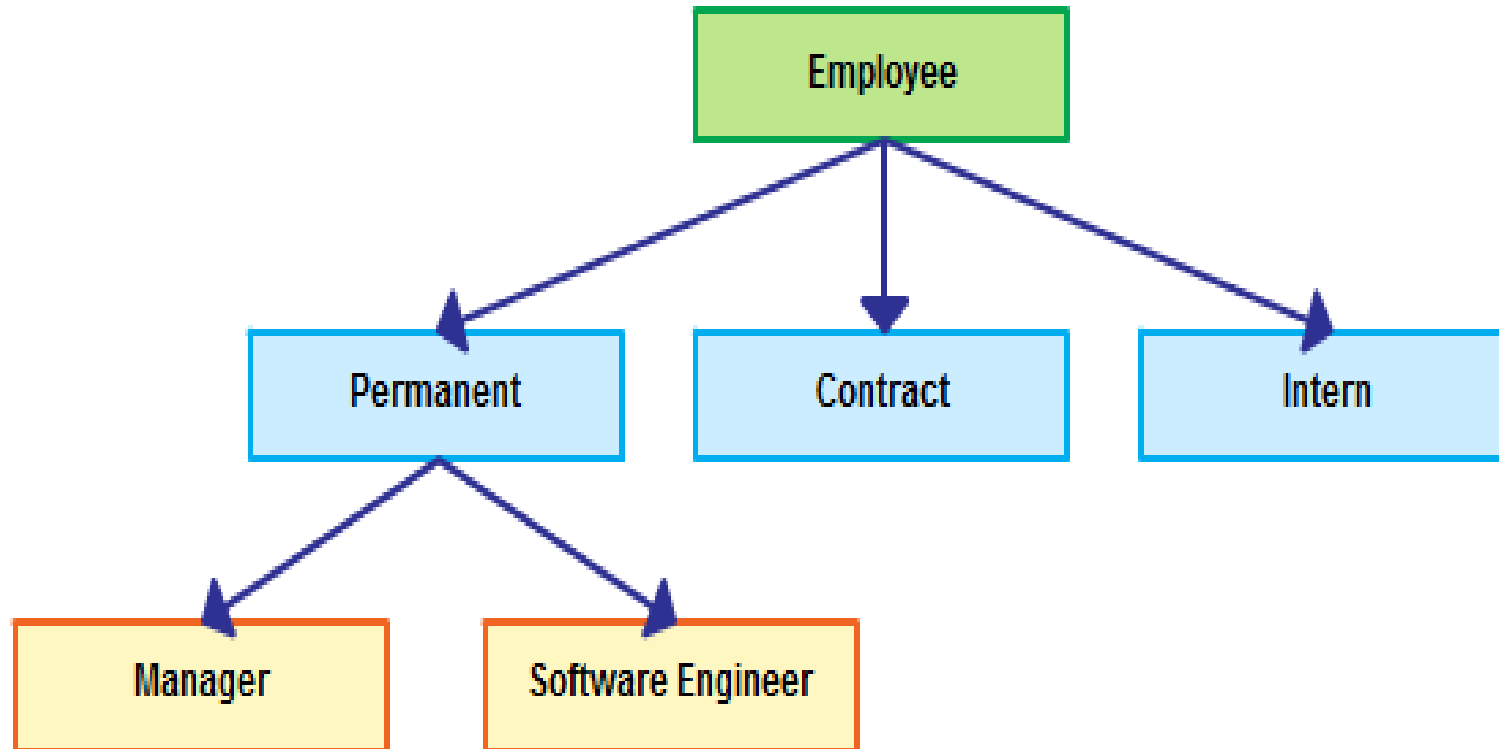
Advantage

Simple

Easy to update

Design is simple

Database security

Efficiency

Disadvantage

Implementation complexity

Difficult to manage

Advantages

Conceptual simplicity

groups of data could be related to each other

related data could be viewed together

Centralization of data

reduced redundancy and promoted consistency

Disadvantages

Limited representation of data relationships

did not allow Many-to-Many (M:N) relations

Complex implementation

required in-depth knowledge of physical data storage

Structural Dependence

data access requires physical storage path

Lack of Standards

limited portability

EVALUATION

1.Advantage of data models

a)_____

b)_____

c)_____

2.Disadvantages of data models

a)_____

b)_____

c)_____

REFERENCES

1. 1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, - Database System Concepts‖, Sixth Edition, Tata McGraw Hill, 2011.

2. Ramez Elmasri, Shamkant B. Navathe, ―Fundamentals of Database Systems, Sixth Edition, Pearson Education, 2011.

3. C.J.Date, A.Kannan, S.Swamynathan, ―An Introduction to Database Systems, Eighth Edition, Pearson Education, 2006.

4. Raghu Ramakrishnan, ―Database Management Systems‖, Fourth Edition, McGraw-Hill College Publications, 2015.

THANK YOU