Ch1

file_based sys: collection of data stored in an orderly manner in permnant file

file-based sys Disadvantges:- (and sentence on each one)

1- Data redundancy and inconsistency : various copies of the same data may no longer agree (inconsisten

2- Difficulty in accessing Data: need to write new program to carry out each new task.

3- Data isolation: writing new app programs to retrive the appropiate data is diffic

4- integrity problems: Hard to add new constraints or change existing ones

5- Atomicity of updates: failures may leave database in inconsistent state with partial updates carried out

6- concurrent access by multiple users : uncontrolled concurrent accesses can lead to inconsisten

7- security problems

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database approach: new approach in managing large amounts of orgnizational information and we use it to solve diffculties from using file-based system

2019 → Database: A collection of related data used to support the activites of a particular orgnization / can be viewed as a repository of data that is defined once and then accessed by various users

2019 → DBMS: A software system designed to manage a database
or A collection of programs that enable users to create and maintain a database and control all access to it.

primary goal of DBMS: provide environment that is both convenient and efficent for users to retrieve and store information

2019 → Database System: the DBMS software together with data itself, sometimes the applica are also included.

DBMS used in: (Banking - Airlines - Universities - Sales - Manufacturing - Human resources)

characterstics and benefits of Database ——→ 2019 : file-based ~~system~~

1- self-describing nature of a database system
2- insulation between program and data (data independence)
3- support for multiple views of data
4- sharing of data and multiuser system
5- control of data redundancy
6- Enforcement of integrity constraints
7- Restriction of unautherized access
8- Transaction processing
9- Backup and recovery facilites

2019 → Disadvantges of DBMS: 1- complexity 2- size
3- cost of DBMS 4- Additional Hardware cost

2021 — classification of DataBase system

2021 → classfication Based on User numbers

- Multiuser database system (It supports multiple users concurrently)
- single-user database system (It supports one user at a time)

2021 → Based on DataBase Distrbution

- centralized systems
  - DBMs and database stored at a single site that is used by several other systems.
- Distrbuted system
  - The actual database and DBMS are distrbuted from various sites that are co by a computer network

2017 → levels of Abstraction :- (one sentence ateach one)

1-physical level: the lowest level of abstraction describes how data actually store

2-logical level: The higher level of abstraction describes what data are stored in da and what relationships exist among those data.

3-view level: The highest level of abstraction describes only part of the entire databa

2017 ~~Database~~ schema: the overall design of the database

2017 ~~Database~~ Instance: the collection of information stored in the database at particular moment.

physical schema: describe the database design at physical level

logical schema: describe the database design at logical level

subschemas: describe different views of the database

components of DBMS: 1- the storage manager 2- the query processor 3- the transaction manager

2021 data model: is a collection of concepts for describing (data-data relationships
-data constraints).
Relational model of data is the most widely used model today

2018, 21 → Data Definition Language (DDL): is a computer language used to create and modify the structure of database objects in a database

2018, 2021 → Data Manuplation language (DML): language for accessing and manipulating the data organized by the appropriate data model.

~~2021~~ List ~~Data phase design phases~~ :- ~~1-The intial phase~~
~~2- conceptual design phase~~

~~3- logical design phase~~ ~~4- Physical design phase~~

2021 Metdata: information about the schema or structure of the data

data-definition language → specify the database schema
data-manipulation language → express database queries and up dates

2021. List Database design phase :- 1-intial phase: charactrize fully the data needs of th prospective database users

2- The conceptual-design phase: The process of moving from an abstract data model to the implementat of the database proceeds in two final design phases

- Logical-design phase: the designer maps the high-level conceptual scheme onto the implementation data model.

- Physical design Phase: Deciding on the physical layout of the database

2021, 2019, 2018, 17 → Explain distinctions among terms primary Key, canadite Key and super Key?

Super Key: set of one or more attributes that taken collectively allow us to identify uniquely a tuple in the relation

Canadite Key: is a simple (one attribute) or composite (more attributes) Key that is unique and minimal

* super Key is canadite Key if it's minimal
* one of the canadite Key is selected to be the primary Key

Primary Key: Is a canadite Key selected by the database designer to used as an identifying mechanism for the relation. it must uniquely identify tuples in a table and not null

Foreign Key: an attribute in table that references primary Key in another table and both of them must be the same data type

2019 → Database schema: the logical design of the database

2019 → Database Instance: A snapshot of the data in the database at a given instant time.

Relation schema: The logical design of the relation. the name of the relation and set of attributes for that relation.

2021, 18 → Define cardinality and list types of cardinality for binary relationship ?

Cardinality: expresses the maximum number of entites that can be associated with another entity via relationship.

types: 1- one to one 2- one to many
3- many to one 4- many to many

Participation: expresses the minimum number of entites that can be associated with another entity via relationship.

→ 2018 Total participation: every entity in the entity set participates in at least one relationship in the relationship set.

018 → Partial participation: some entites may not participate in any relationship in the relationship set.

2019 Explain difference between weak and strong entity?

	strong Entity	weak entity
Key	- always have primary key	- it uses a foreign key combined with its attributed to form the primary key
Dependency	doesn't depend on other entites	its existance depend on the existance of identifying entity set
Particpation	may or may not participate in entity relationships	always participates in entity relationships
Represented by	represented by single rectanagle	represented by double rectangle