

1. What do you mean DBMS ? List significant difference bet'n a file processing & and a DBMS system.

- DBMS is a collection of interrelated data and a set of program to access those data.
- purpose : provide a way to store & retrieve database information that is both convenient & efficient.
- Involves both defining structures for storage of inform & providing mechanism for manipulation of information.

SN File System

DBMS

- | | | |
|---|--|--|
| 1 | Used to manage and organise the file stored in the hard drive of the computer. | A software to store and retrieve data of the user's. |
| 2 | Redundant data is present. | No presence of redundant data. |
| 3 | Query processing isn't so efficient. | Query processing is efficient. |
| 4 | Data consistency is low. | Due to the process of normalization, the data consistency is high. |
| 5 | Less security | Supports more security mechanisms. |
| 6 | less expensive ^{comparison} DA to DBMS | Higher cost than fs. |
| 7 | Doesn't support crash recovery | Crash recovery mechanism is highly supported. |

2, list 5 responsibilities of a database management system - For each responsibility, explain the problems that would arise if ~~they~~ weren't discharged.

→ Responsibilities are:-

- a) interaction with the file manager,
- b) integrity enforcement
- c) security "
- d) backup and recovery
- e) concurrency control

- a) No DBM can do without this, if there is no file manager interaction then nothing stored in the files can be retrieved.
- b) Consistency constraints mayn't be satisfied, account balances could go below the minimum allowed, employees could earn too much overtime (eg. hours > 80) or, airplane pilots may fly more hours than allowed by law.
- c) Unauthorized users may access the database, or users authorised to access part of the db may be able to access parts of db for which they lack authority. for eg, high school std could get access to national defense secret codes, or employes- could find out what their supervisor earn.
- d) Data could be lost permanently, rather than at least being available in a consistent state → the existed prior to failure
- e) consistency constraints may be violated despite proper integrity

enforcement in each transaction. For eg ; incorrect bank balance might be reflected due to simultaneous withdrawals and deposits , and so on .

3, What are main function of a database administrator (DBA) ?
list six major steps that you would take in setting up a db for a particular enterprise .

- DB Administrator is person having central control over data and programs accessing that data . The db administrator is a manager whose responsibilities are focused on management of technical aspects of db system . The func' of the db administrator are summarized as follows :
- Authorizing access to db .
 - Coordinating & monitoring its use .
 - Acquiring hardware and soft resources as needed .
 - Backup & recovery .

The steps are

- 1, first find out the requirements of the user.
 - ↳ Identify & gather the specific needs & exception expectation of user or stakeholders.
- 2, Design a view for each imp. appln :
 - ↳ Analyze the requirement gathered & identify by application that rely on db .

3) Integrate the views giving the conceptual schema, which is the union of all views :

→ combine & integrate the individual views design for each app into a unified conceptual schema.

4) Map to the data model provided by the DBMS (usually relational).

→ choose a suitable data model provided by the selected db management system (usually relational).

5) Design external views

→ Design Determine additional external views or interfaces reqd for users or appⁿ that need customized or filtered access to the data.

6) Choose physical structures (indexes, etc)

→ Determine physical structures reqd for efficient data storage & retrieval, such as indexes, partitions, or clustering.

7) Explain the distinctions among the terms primary key, candidate key and superkey.

→ keys are attribute or group of attributes which are used for uniquely identifying a row in relation.

Key's are ?

7) Super key :

→ " " are mainly constraints on relation. It doesn't allow two entities to have same values for that particular subset

of attributes.

ii) Candidate key

→ " " is minimal key-super key. In a relational schema candidate key is that minimal set of attributes which uniquely identify tuple of agreeing relation.

iii) Primary key

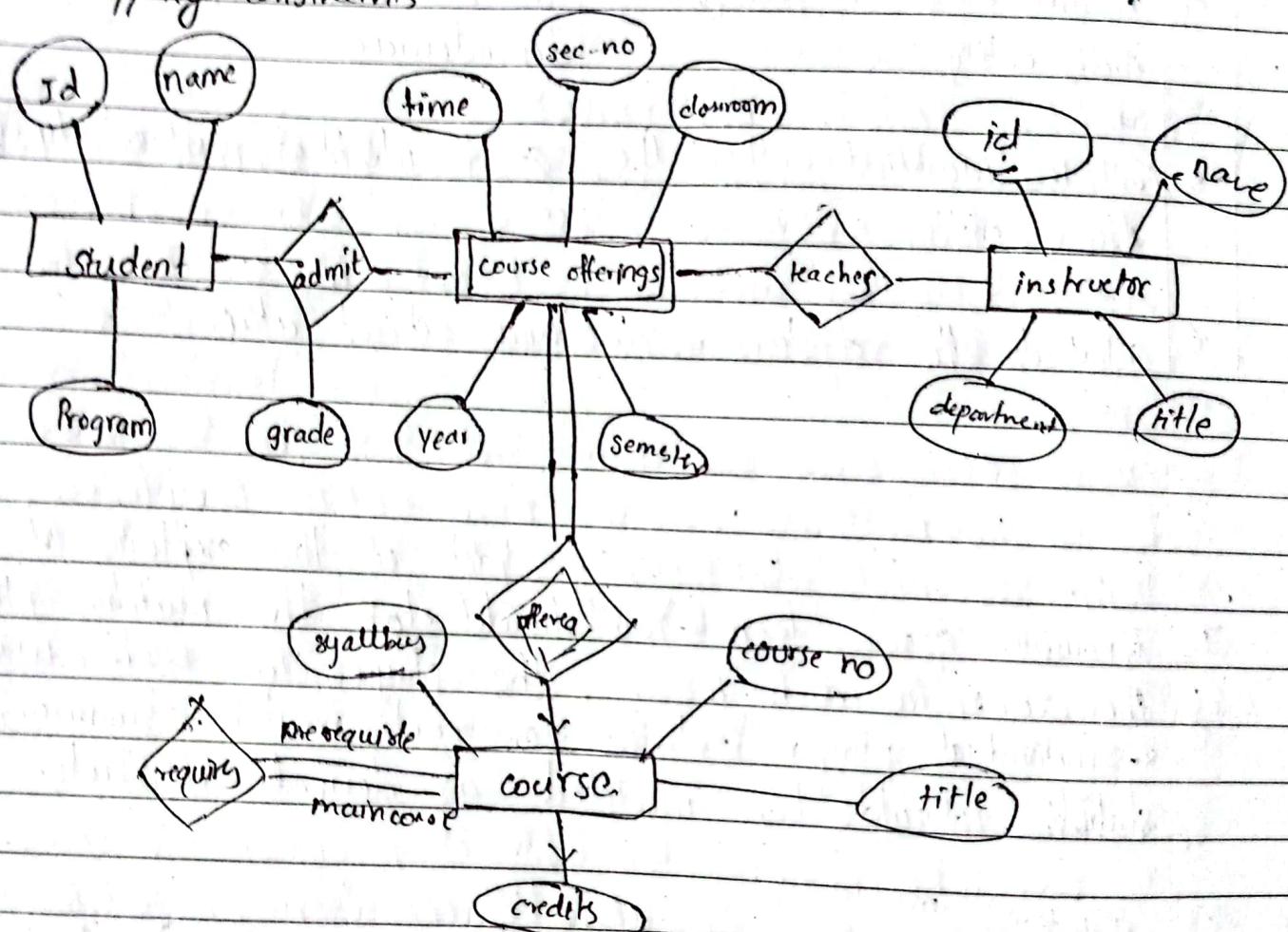
→ " " is a column or a set of columns in a table that uniquely identifies each record (row) in the table. It serves as a uniquely identifies & provides a way to distinguish one record from another.

5-A) A university registrar's office maintains data about the following entities.

- courses , including number, title , credit , syllabus & prerequisites ;
- course offerings , including course number, year, semester , section number , instructor (s) , timings , & classroom ;
- students , including student-id , name & program ; &
- instructors , including identification number , name , department & title .

further , the enrollment of stds in courses & grades

awarded to stds in each courses they're enrolled for must be approx modeled. Construct an E-R diagram for the registrar's office. Document all assumption that you make about the mapping constraints.



6) Explain the difference betⁿ a weak & a strong entity set.

SN Weak

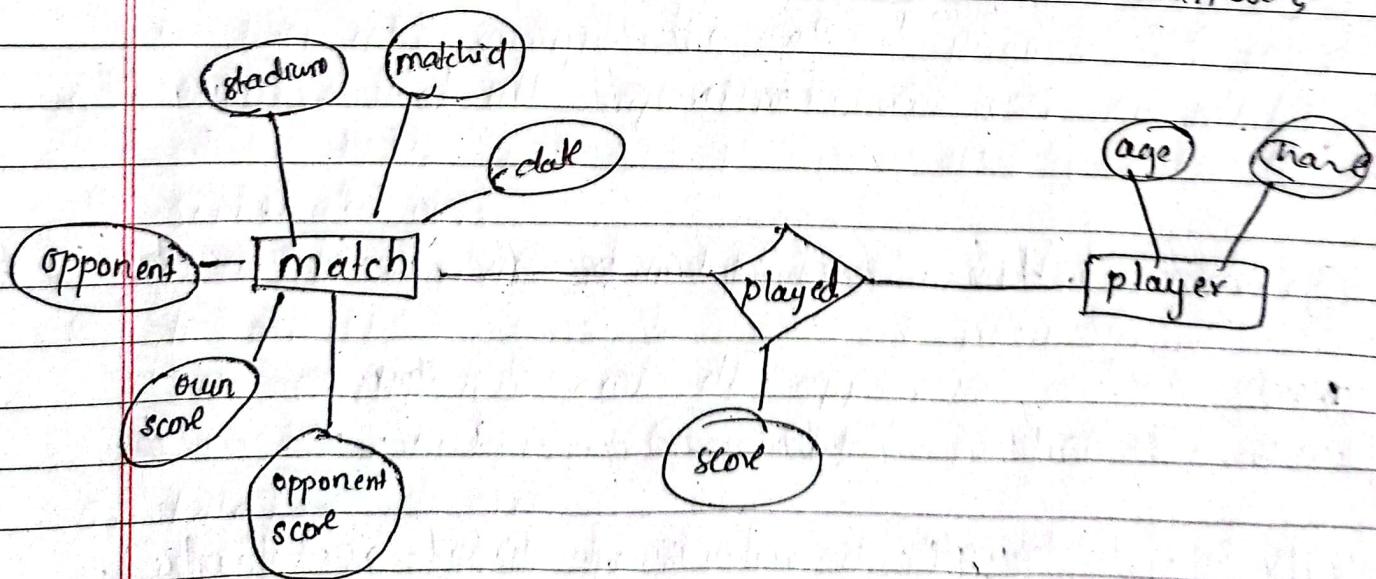
Strong

1 Existence & identifier dependent Independent of other entities

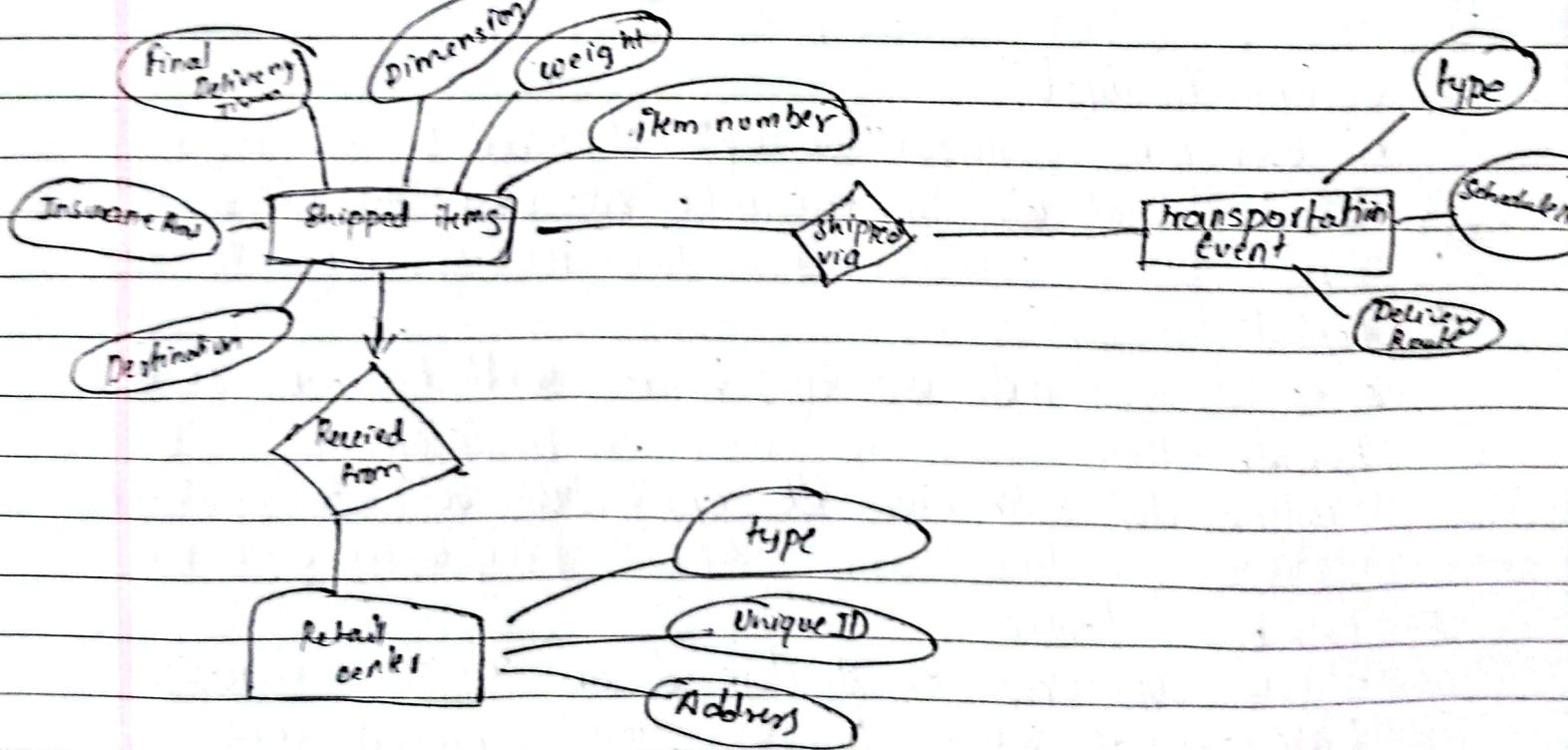
2 Double-lined rectangle.

Single-lined rectangle.

3. Identifier includes relationship to Has its own unique identifier, strong entity.
- Requires existence of corresponding Can exist independently without strong entity.
 - Can't be identified without the Can be identified. without dependencies strong entity.
 - Subset of attr. of strong entity Own set of attrs
- 7) Design an E-R For keeping track of the exploits of your favourite sports team. You should store the matches played, the scores in each match, the players in each match & individual player statistics for each match.. summary statistics should be modeled as derived attributes.



8. UPS prides itself on having up-to-date info^m on the processing & current location of each shipped item. To do this, UPS relies on a company-wide info^m system. Shipped items are the heart of the UPS product tracking info^m system. Shipped items can be characterized by item number (unique), dimensions, insurance amt, destination, & final delivery dest. Shipped items are received into the OPS system at a single retail center. Retail centers are characterized by their type, unique ID & address. Shipped items make their way to their destination via one or more standard OPS transportation events (i.e., flights, truck deliveries). These transportation events are characterized by a unique schedule number, a type (e.g. flight, truck) & a delivery route. Please create an Entity Relationship diagram that captures this info^m about the UPS system. Be certain to indicate identifiers & cardinality constraints.



What are diffn types of db users? Explain

DB users are categorized based on their interaction with the db.

Types of db are :-

Database Administrator (DBA) :

- ↳ DBA is a person who defines the schema & control the 3 levels of db.
- ↳ Responsible for problems such as security breaches & poor system response time.

Naïve / Parametric End Users :

- ↳ Are unsophisticate, doesn't have DBMS knowledge but they frequently use the db appln in their daily life to get the desired result.
- ↳ clerks in bank

System Analyst

- ↳ User who analyzes the reqⁿ of parametric & user.
- ↳ checks that all requirement of end user are satisfied.

Sophisticated users :

- ↳ Can be engineers, scientist, business analyst, who're familiar to db.
- ↳ can develop their own db application accⁿ to requirements

Data base Designers

- ↳ User who design the structure of db which includes tables, indexes views, triggers, stored procedures &

constraints.

- ↳ controls what data must be stored & how data items to be related

6, Application Programmers :

- ↳ software engineers who are back-end programmers who write code for appn programs
- ↳ computer professionals

7, Casual Users

8, Specialized users

4, what is DBA ? what are roles & responsibility of DBA.

- ↳ DBA manages & control 3 levels of db internal level, conceptual level, & external level of db management systems architec. & in discussion with comprehensive user community.

DBA ensures held responsible to maintain integrity & security of db restricting from unauthorized users. It grants permission to user of db & contains a profile of each & every user in db.

Roles & duties of DBA

- 1, Decides hardware
- 2, Manages data integrity & security
- 3, Db accessibility

- 4) Db design
- 5) Db implementation
- 6) Query processing performance
- 7) Tuning db performance

Various responsibilities of db administrator (DBA)

- 1) Responsible for designing overall db schema (tables & field)
- 2) Select & install db software & hardware
- 3) Responsible for deciding on access method & data storage.
- 4) DBA select appropriate DBMS soft. like oracle, SQL server or MySQL.
- 5) Used in designing recovery procedure.

18) Discuss about evolution of DBMS

→ The db evolution happened in five "waves": The first wave db's consist of network, hierarchical, inverted list, & object-oriented DBMS ; it took place from roughly 1960 to 1999.

{ DBMS is structured system of collection of programs
dbms } that enable users to create & maintain a db & interfaces with the various users as database administrator, online users, appl'n programmers & users.

structured approach :-

