Task-1.1 Date:- 28/7/25

1) Data:-

* It is a collection of facts and figures.
* It is a collection of raw entrity.

2. Database:-

* Collections of data which is related by some aspects.

3. DBMS.

It is a software that allows user to define create, manipulate & manage database.

4. Drawback of file processing system.

1) Difficulties in accessing & managing data.
2) Data written in C.
3) Security problem.
4) Data isolation.
5) Concurrent access by multiple users.

5) Characteries of DBMS:-

1) Data security.
2) Data independence.
3) Data integrity.
4) Ability to handle concurrent access by multiple users

6) Application of DBMS.

1) Health cares.
2) Education.
3) It provides improved data analysis.

4) Enhanced decision making.

5) Banking.

7) Schema:-

* It refers to the over logical & physical design of database.

* It acts as a blue print (or) structural description that define how data is organised & stored in the database.

8) Types of Schema:

1) Physical schema.

It describes the pysical storage structure of data base.

2) Logical schema:

It provides high-level, global view of the entire database.

3) View schema:

It define the user's view of data base.

9) Instance:

It refers to the collection of all the data and information stored in the database at a specific point in time.

10) Type of database model.

1) Relational Model.

2) Hierachical Model

3) Network Model.

4) Object - Oriental Model
5) Enity - relational Model
6) NOSQL - Model.

11) Database Languages :-
1) Data definition languages.
2) Data control languages.
3) Transation control languages.
4) Structural querry languages.
5) Data manipulation languages.

12) Views of Data base :-
A view is like a virtual table in a data bases. It doesn't store the data itself but shows data that is placed from one (or) more real table.

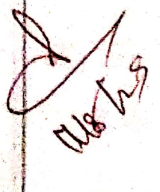
13) E-R Model :-
It is a high-level conceptual data model that represent the structure of a database using diagrams called "Entity-Relation ship".

14) Hierachical Model.
It represent data in a tree like stature with top down, parent-child relationship

15) Network Model.
It is a Model that extends the hierachical model by allowing nodes to have multiple parents for creating more flexible graph.

16) Relational Model.

This model organises the data into tables with rows & columns.



Task- 1.2 28/7/25

STUDY OF ER-MODEL

ER Model (Entity Relationship model)

This ER Model is high level conceptual data model used to difine data element & their relationship in a system.

It help in designing the data base structure before implementation.

* The model was proposed by Peterchen in 1976.

Purpose of the ER Model.

* To visually represent data and its relationships.
* To bridge the gap between real world seenarios & database design.
* Used in the initial stages of database design to understand and organized data clearly.

Components of ER-Model.

a) Enitity:-

* An object or thing in the real world that can be distinity identified.
* Represented by rectangles in ER diagrams.

Examples:- Student, courses, Employee.

Types:-

1) Strong Entity:- Has a primarykey
   Ex:- Student.
2) Weak entity:- Depends on another entity. Has no key attributes on its own
   Ex:- Dependent.

b) Attributes :-

* Property or characteristic of an entity
* Represented by ellipses (ovals).

Types :-

i) Simple / Atomic :- It cannot be divided
(eg: Name, Age)

ii) Composite :- Can be divided into sub-parts
(eg : Full Name → First Name, Last Name)

iii) Derived :- Derived from other attributes.
(eg: Age from DOB)

iv) Multivalued :- Can have multiple values.
(eg : phone number).

c) Enitity set :-

* A collection of ~~simple~~ similar entities
* Example : All students in a college from a student entity set.

d) Relationship :-

* Associate among two or more entities
* Represented by diamonds.

Types :-

i) One-to-one (1:1) :- A person has one passport.

ii) one-to-many (1:N) :- One department has many employes.

iii) Many-to-many (M:N) :- Students can enroll in many courses & a course can have many students.

e) Relationship set

* A collection of similar relationship.

Example :- All enrolled relationship b/w student and course.

f) Keys.

i) Primary key :- Uniquely identifies an entity (eg :- Roll No)

* Helps in maintaining unqueue and data integrity.

g) Participation :-

* Total participation :- Every must participate in a relationship. (shown by double lives).

* Partial participation :- Some entities may not participate (single line).

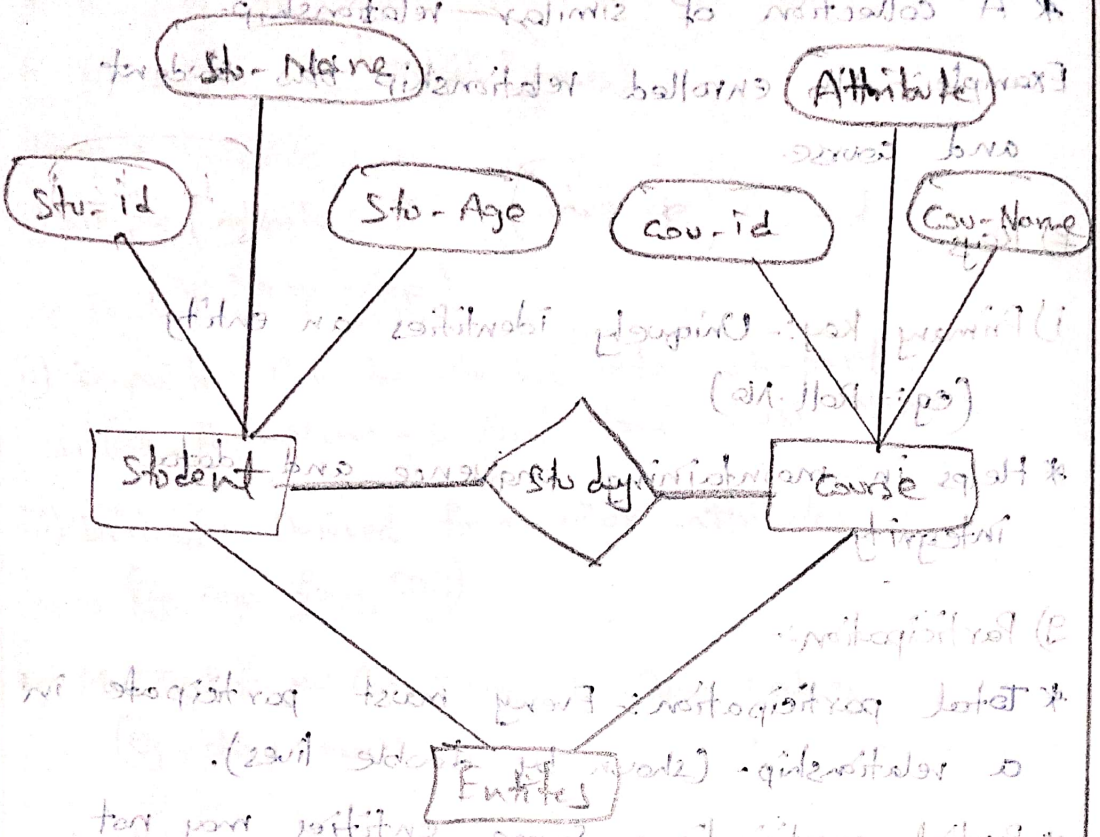
h) Cardinality constraints.

* Specifies the no. of entity instances that can be associated with another entites.

Types :-

* One - to - One (1:1)
* One - to - May (1:N)
* May - to - One (N:1)
* May - to - May (N:N)

Diagram (Ex: Student course database):-



Average of ER Model:-

* Easy to understand.
* Helps in designing a clear database structure.
* Acts as a blueprint for relation models.
* Reduces redundancy & condition.

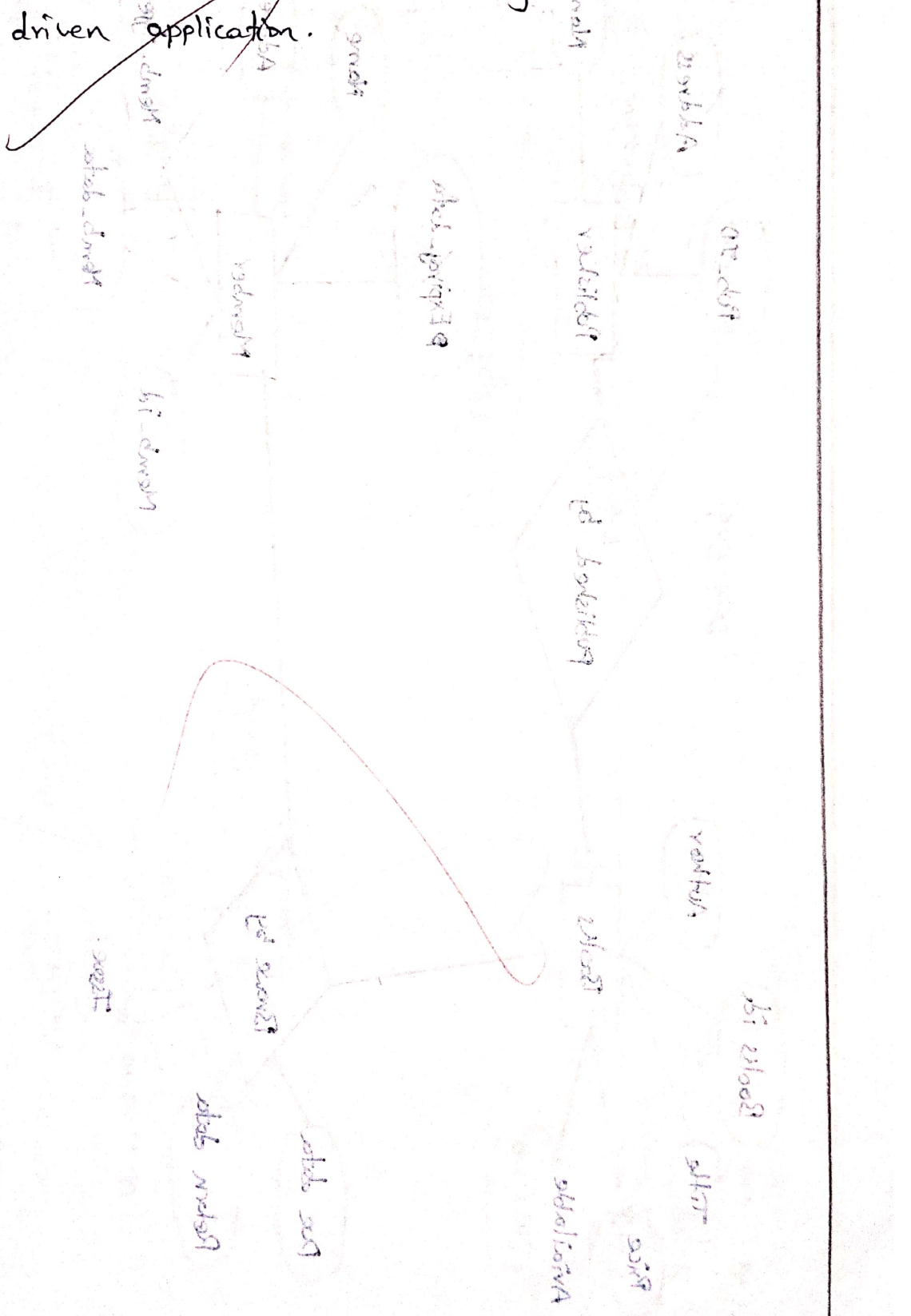
Converting ER Model to Relational Model.

After designing the ER Diagram, it is converted into a Relational schema by:

* Converting entites into tables.
* Converting relationship using foreign keys.
* Handling multivalued and composited attributes properly.

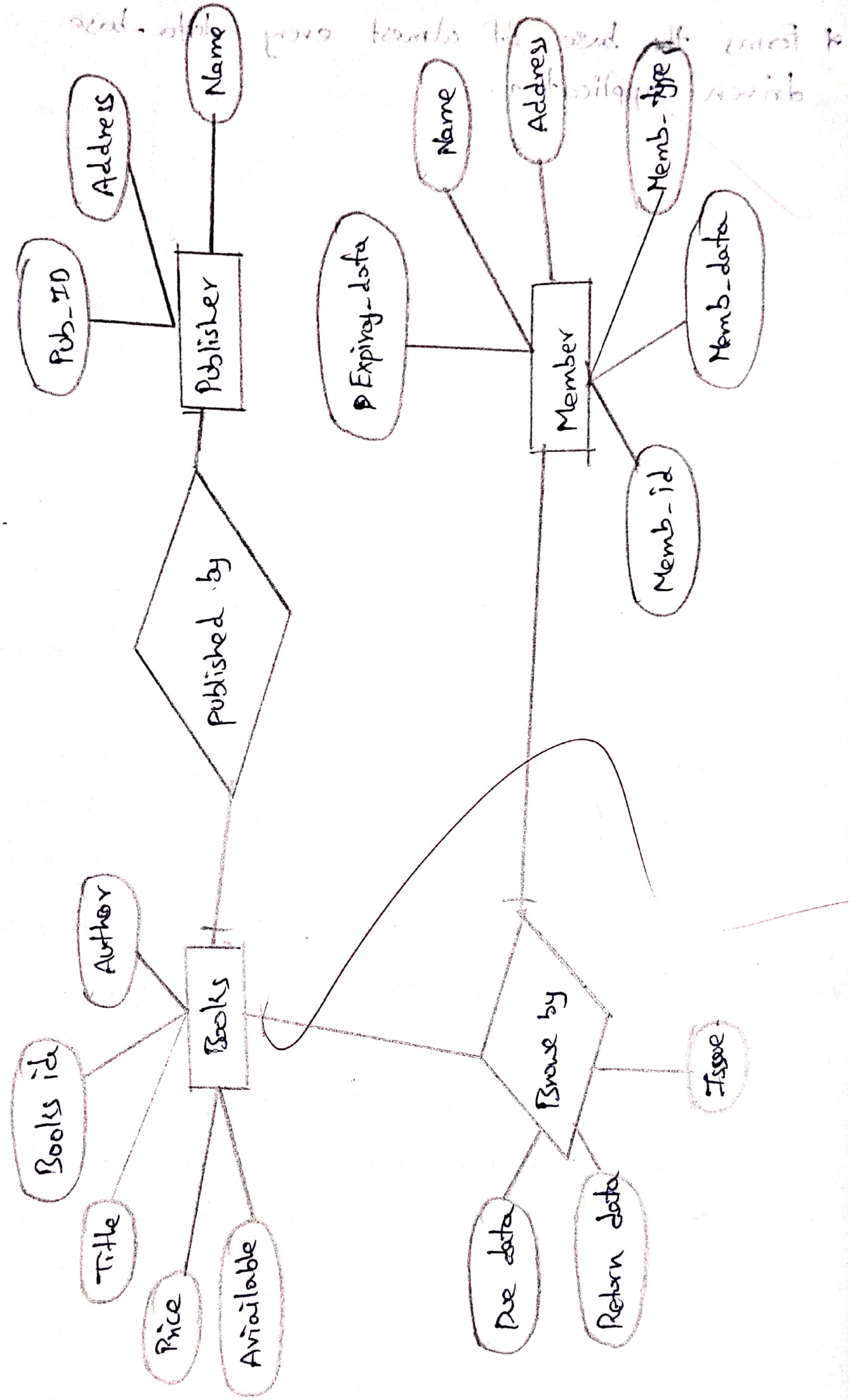
Real-world application:-

* Used in designing banking system, college, database driven application.
* Forms the base of almost every data-base driven application.

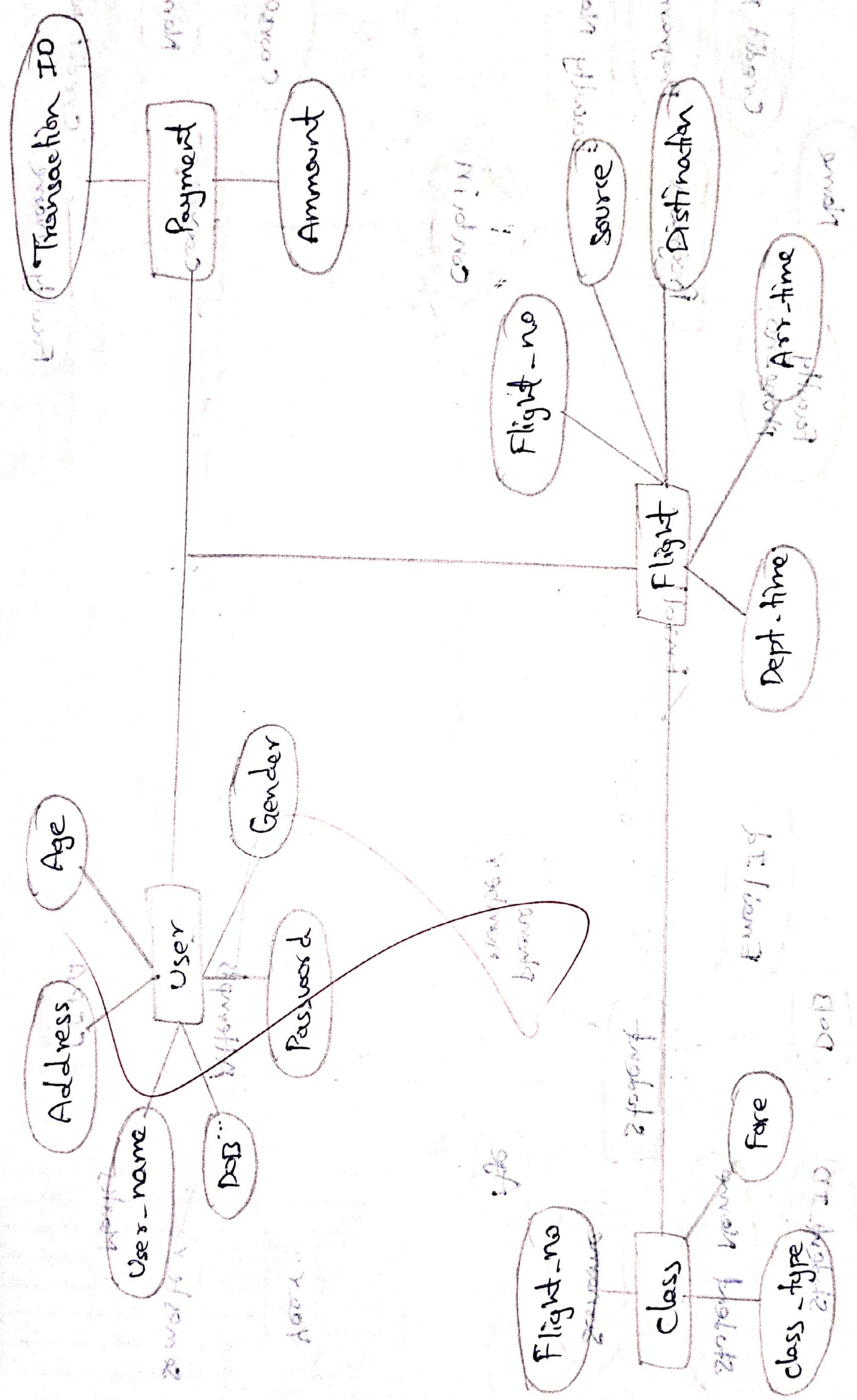


Entity Relationship Model (ER)

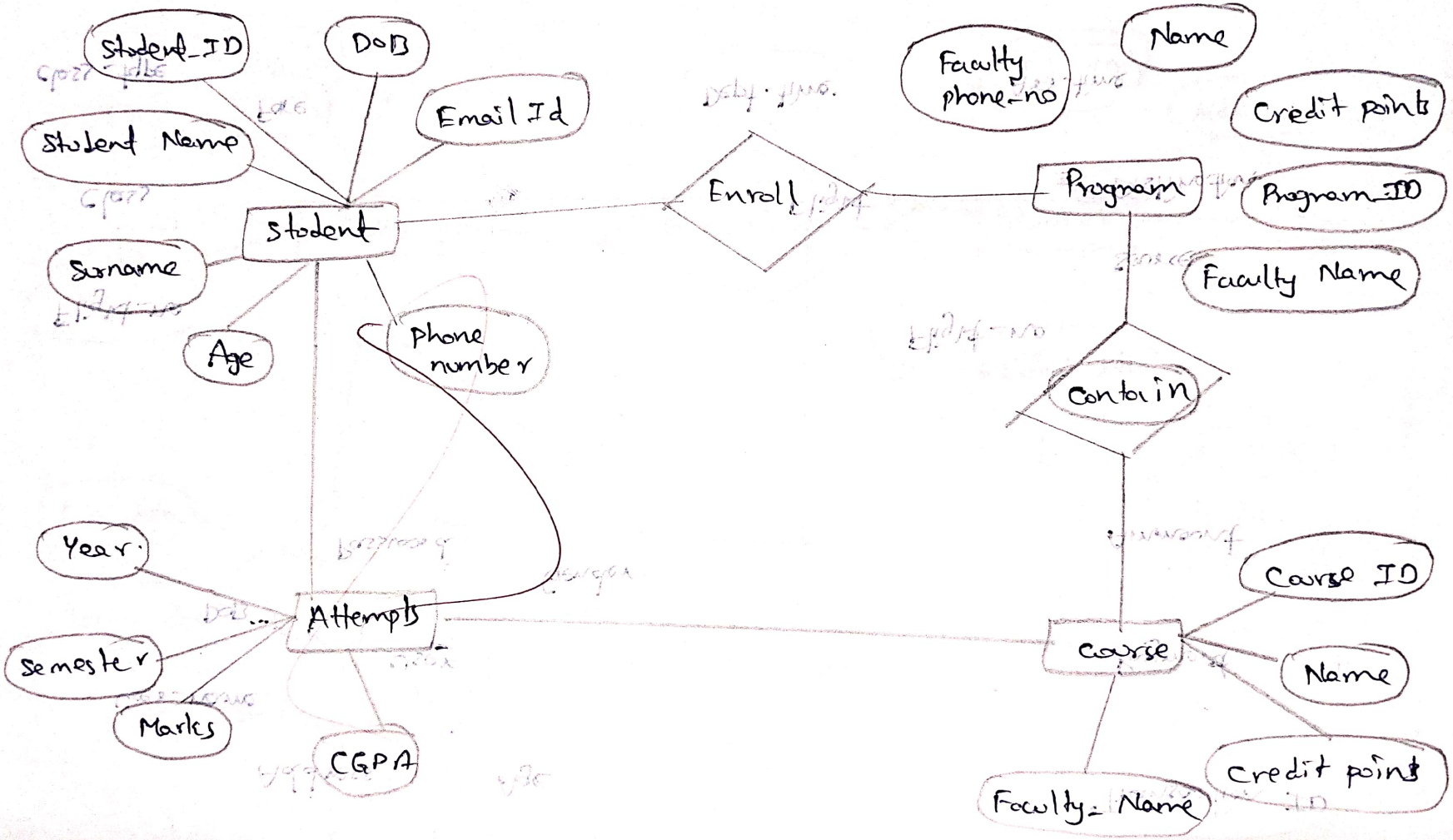
1) ER diagram from library Management system.



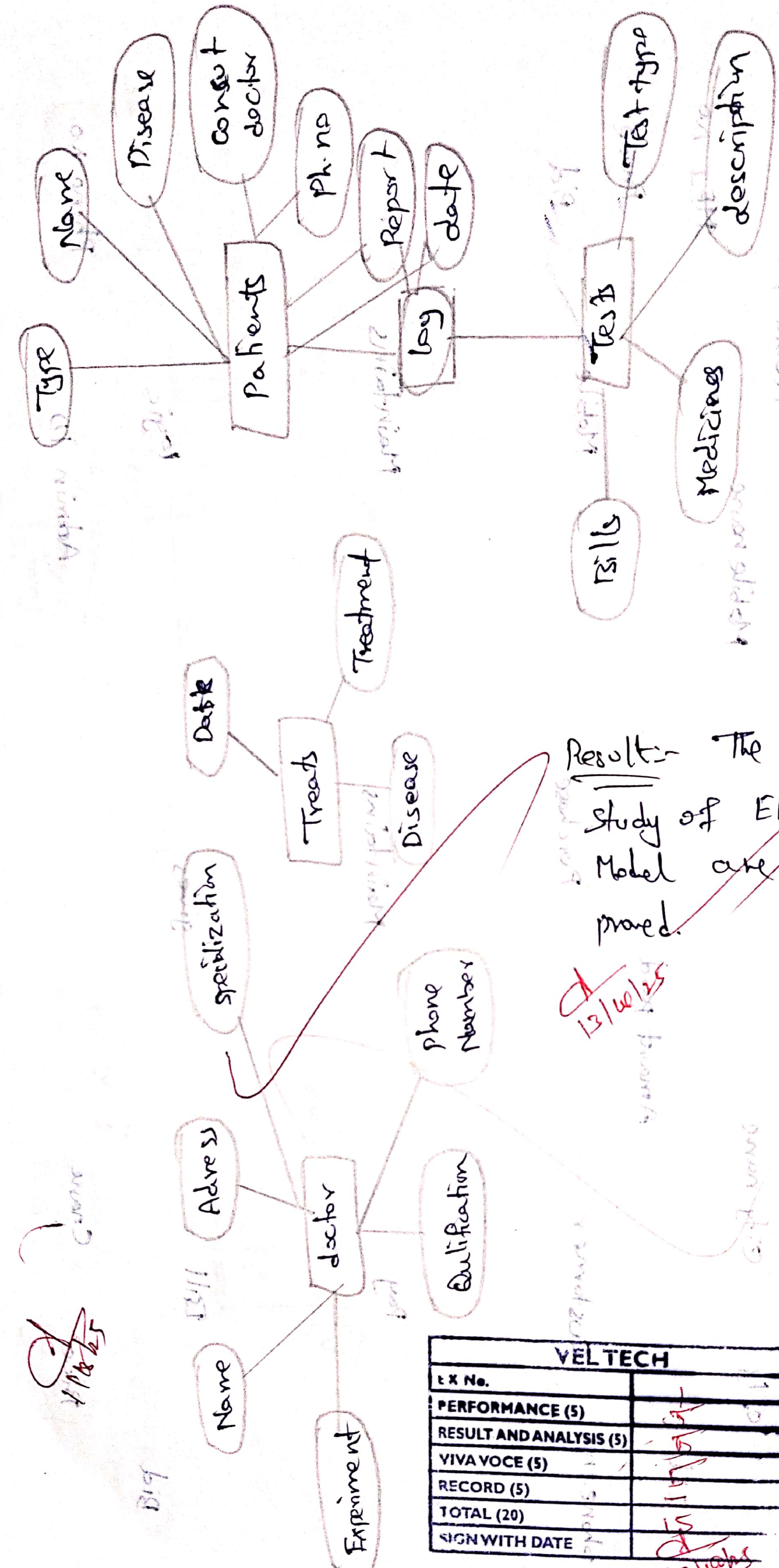
Air line ticket reservation system.



University Management System.



Health care system.



Result:- The Study of ER-Model are proved.

13/10/25

VELTECH	
EX No.	
PERFORMANCE (5)	
RESULT AND ANALYSIS (5)	5
VIVA VOCE (5)	5
RECORD (5)	5
TOTAL (20)	15
SIGN WITH DATE	13/10/25