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... needs to capture all the information  
... gallery need to maintain.

## Question # 1.

Which attribute in the following table is a candidate key? Assume that no more data will ever be added to this table.

ANSWER # 1.

NAME	Semester	Department	cell
Sania	1	CS	03334324234
Romaisa	1	CS	03335399123
Alina	1	CS	03150034224
Ayeza	3	CS	03455559822

## ⇒ CANDIDATE KEY:

- Candidate key is a set of attributes that uniquely identify tuples in a table.
- candidate key is a super key with no repeated attributes.
- The primary key should be selected from candidate keys. ~~every~~
- every table must have at least a single candidate key.

→ A table can have multiple candidate keys but only a single primary key.

⇒ Properties of candidate key:

- It must contain unique values.
- Candidate key may have multiple attributes.
- must not contain null values.
- It should contain minimum fields to ensure uniqueness.
- uniquely identify each record in a table

⇒ **EXAMPLE:** - In the given table Student ID, cell are candidate keys which helps us to uniquely identify the student record in the table.

CONDIDATE KEY:

Name	Semester	Department	Cell
Sania	1	CS	03334324234
Romana	1	CS	0335899128
Alina	1	CS	03150034224
Ayesa	3	CS	0345559822

// ————— // ————— //

2) :: What is data Redundancy and data integrity?

ANSWER 2 :-

Data Redundancy :-

→ Data Redundancy is a condition that can cause the same piece of data to be stored in multiple places of a database or a storage.

- Repetition or superfluity of data.
- Reduces data consistency.
- Negative Impact.

### Data Integrity: -

Data integrity is the process of ensuring that the data is accurate, unchange and consistent over its whole life cycle.

- Maintenance and assurance of the accuracy and consistency of data over the entire life cycle.
- Helps to improve data consistency.
- positive impact.

|| ————— || ————— || ————— ||

3) How a multivalued composite attribute is represented in conceptual model. Show with example.

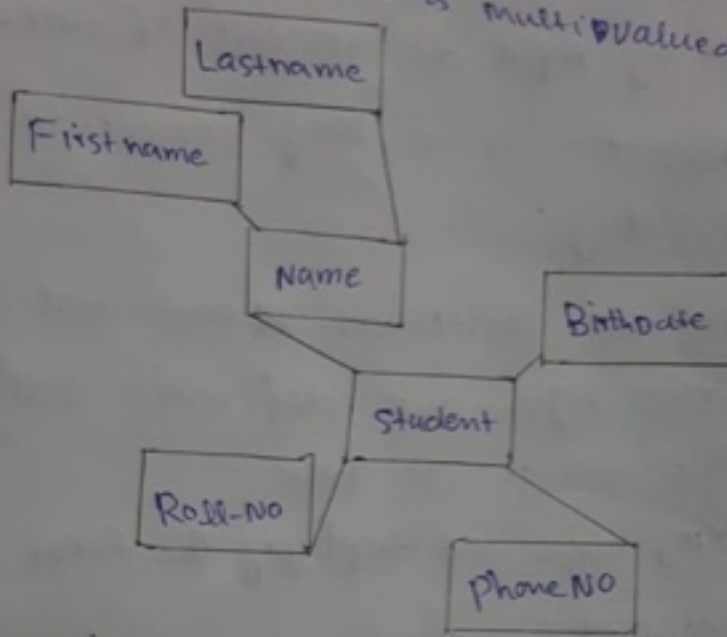
3) ANSWER:-

Multivalued attribute:

An attribute that can hold multiple values is known as multivalued attribute.

→ It is represented with double ovals in an ER-Diagram. e.g. A person can have more than one phone numbers so the phone number attribute is multi-valued.

Example:



→ composite attribute is represented in conceptual model:

### Conceptual Model



4) How is there, reduced maintenance in database approach?

ANSWER 4 :-

- Doing rapid development of database applications in a busy corporate setting
- Extensive constraints, ~~or~~ automated tests, error logs, and defensive coding
- The maintenance task.  
Fixing bugs and deploying the fixes
- cleaning up the data.
- Dealing with concurrency queries / issue.

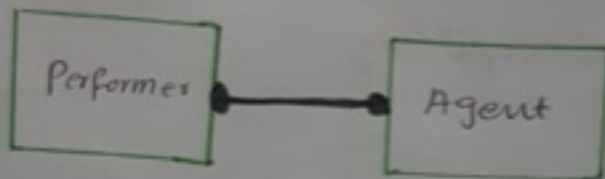


5) How are the following represented using ER-Diagram, Mandatory one, mandatory many, optional one, optional many?

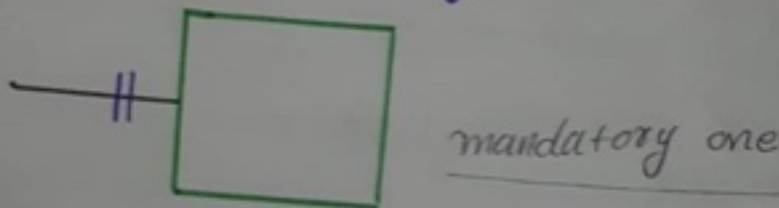
i) Mandatory one :-

In a mandatory relationship, every instance of one entity must participate in a relationship with another entity

e.g



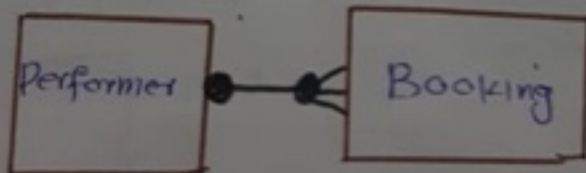
Relationship cardinality: (OR)



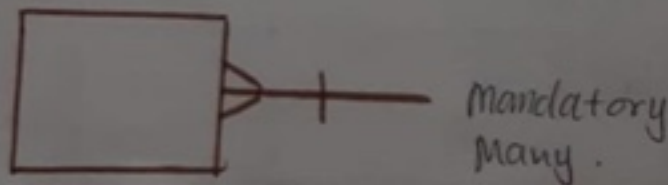
ii) Mandatory many :-

In a mandatory relationship, every instance of more than one entity must participate in relationship with another entity.

e.g



(OR)

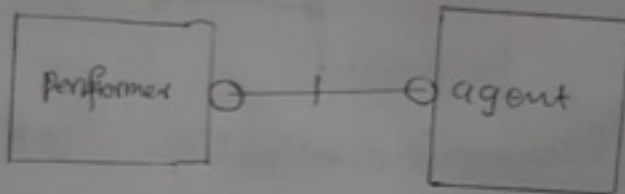




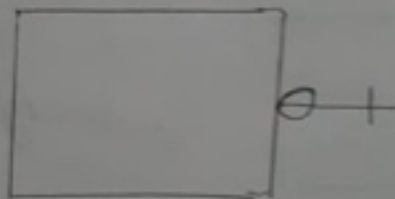
iii) optional one :-

In an optional relationship, any instance of one entity might participate in a relationship with another entity, but this is not compulsory

e.g

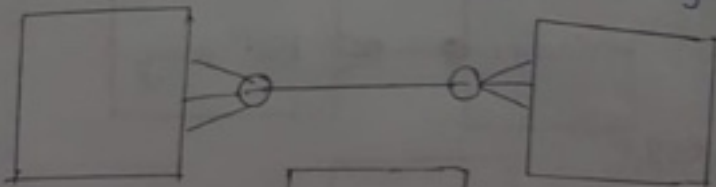


(OR)

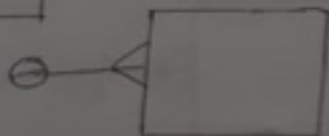


iv) optional many :- In an optional many relationship any instance of more than one entity might participate in a relationship with another entity.

e.g

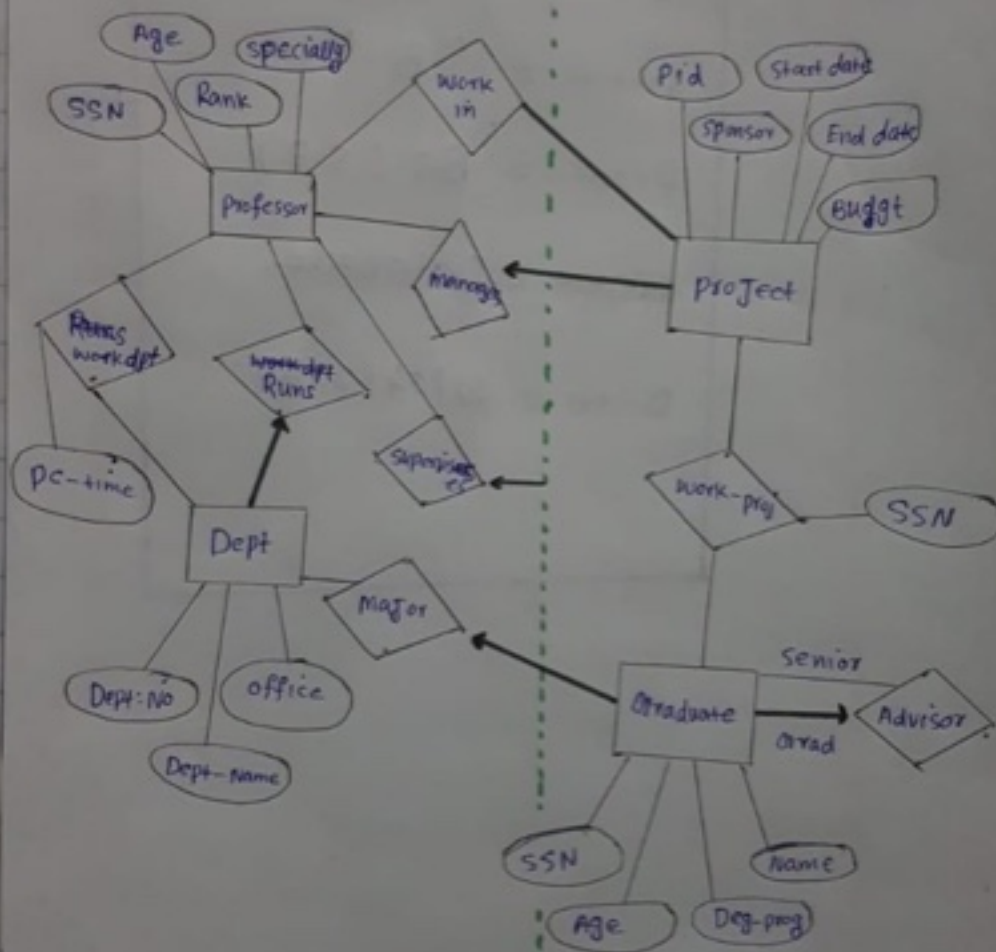


(OR)



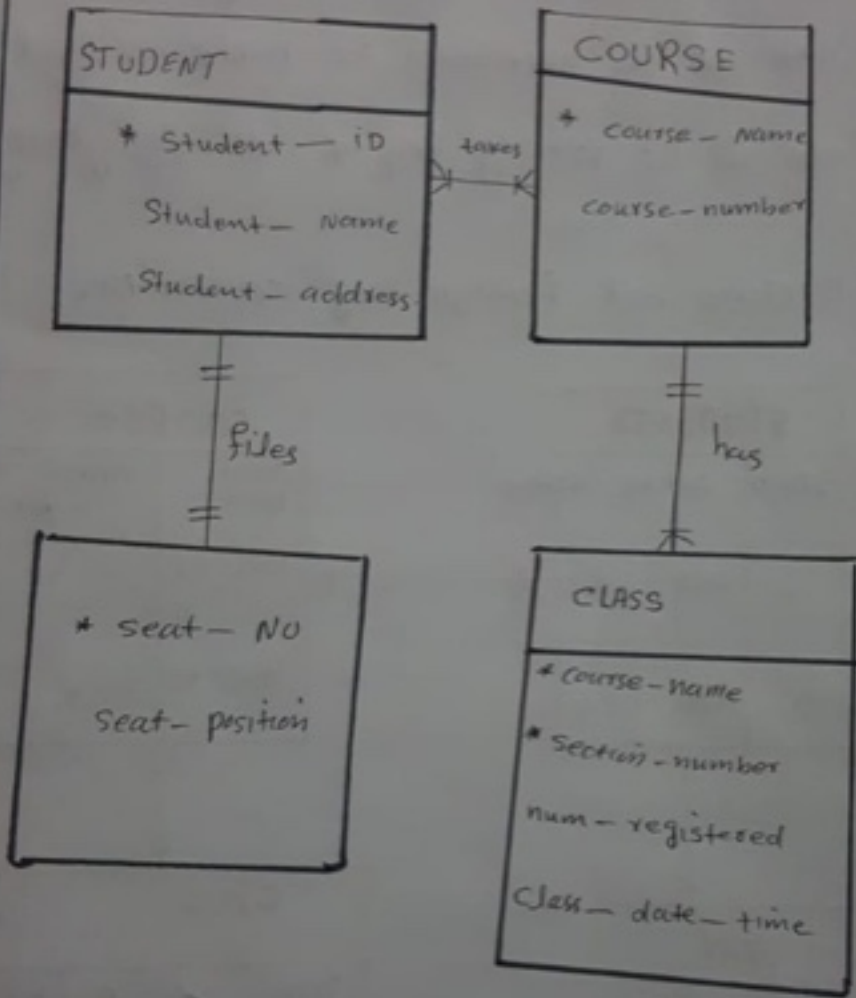
Question No 02 :- Draw an ERD from the following Business Rules: use proper notation for the type of attributes .....

ANSWER 02 :-



Question # 03 :-

Convert the following conceptual model to relational model?



ANSWER # 03 :-

⇒ mapping process: Relational Model:

- create table for weak entity set.
- Add all its attributes to table as field.
- Add all the primary key of identifying entity set.
- Declare all foreign key constraints.

