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SECTION :: B
SEMESTER :: 4th
PAPER :: DATABASE SYSTEM
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Q NO 1. Which attribute in the following table is a candidate key? Assume that no more data will ever be added to this table.

ANS:

ID	NAME	SEMESTER	DEPARTMENT	CELL
1	Sania	1	CS	03334324234
2	Romaisa	1	CS	03335399123
3	Alina	1	CS	03150034224
4	Ayeza	1	CS	03455559822

Candidate key:-

Candidate key we simply define a candidate key is a column, or set of columns, in a table that can uniquely identify any database record without referring to any other data. Each table may have one or more candidate keys, but one candidate key is unique, and it is called the primary key.

Examples:

1. Student ID
2. Student Cell

Because in a given table cell and the id of each student is unique we can say that a candidate key.

CANDIDATE KEY

ID	NAME	SEMESTER	DEPARTMENT	CELL
1	Sania	1	CS	03334324234
2	Romaisa	1	CS	03335399123
3	Alina	1	CS	03150034224
4	Ayeza	3	CS	03455559822

#BROWN COLOR COLUMNS ARE THE CANDIDATE KEY

Q NO 2. What is Data Redundancy and Data Integrity?

ANS:-

DATA REDUNDANCY:-

Data Redundancy means having more than one copy of your data. It can be either at table level or at the fields level.

In a simple terms, we can say that if we are maintaining our whole database copy in an another database at another location with 1 to 1 copy, we will have database

redundancy. We can always use another database when database we use go down or not available.

This type of arrangement of maintaining database at more than one place with the same data is called data redundancy and that's very beneficial when we are running a large application.

DATA INTEGRITY:-

Data integrity is the overall completeness, accuracy and consistency of data. This can be indicated by the absence of alternation between two instance or between two updates of a data record , meaning data is intact and unchanged. Data integrity is usually imposed during the database design phase through the use of standard procedure and rules. Data integrity can be maintained through the use of various error-checking methods and validation procedures

Q NO 3. How a multivalued composite attribute is represented in conceptual model ? show with examples?

ANS:-

MULTIVALUED ATTRIBUTE:-

A multivalued attribute of an entity is an attribute that can have more than one value associated with the key of the entity.

EXAMPLE:-

A large company could have many divisions, some of them possibly in different cities. In this case, division or division-name would be classified as a multivalued attribute of the Company entity (and its key, company-name). The headquarters-address attribute of the company, on the other hand, would normally be a single-valued attribute.

In this example, the multivalued attribute division-name should be reclassified as an entity Division with division-name as its identifier (key) and division-address as a descriptor attribute. If attributes are restricted to be single valued only, the later design and implementation decisions will be simplified.

Q NO 4. How is there “Reduced maintenance “ in database approach?

ANS:-

DATABASE APPROACH:-

It can cost more to maintain a mature software application in use than it did to develop it in the first place, and this is particularly the case when we are maintaining systems built on top of an RDBMS. To keep an application in use, both developers and DBAs may be forced to spend

considerable time on maintenance tasks such as

- Fixing bugs and deploying the fixes
- Changing the functionality because the requirements have changed
- Cleaning up the data
- Dealing with concurrency issues; troubleshooting deadlocks, for example
- Speeding up slow queries

Database applications in a busy corporate setting, yet take considerable time over meticulous database design, extensive constraints, automated tests, error logs, and defensive coding. Why? Because it cuts down on the subsequent need for maintenance.

Question# 5:

How are the following represented using ER Diagram: Mandatory one, Mandatory many, Optional one, Optional Many?

Answer:

Mandatory one:

relationship exists when zero or one instance of entity A can be associated with zero or one instance of entity B, and zero or one instance of entity B can be associated with zero or one instance of entity A

Example:



Mandatory many:

In relational database design, a one-to-many (1:N) relationship exists when, for one instance of entity A, there exists zero, one, or many instances of entity B; but for one instance of entity B, there exists zero or one instance of entity A.

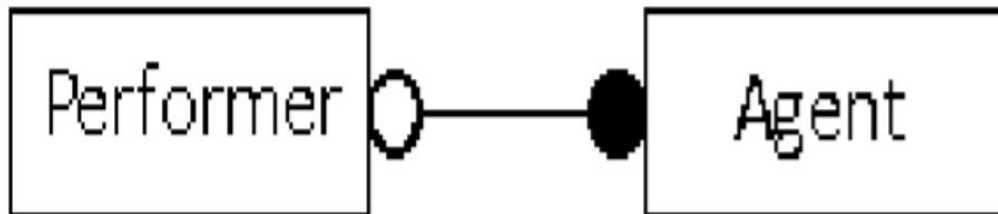
Example:



OPTIONAL ONE:

A member of staff does not have to be placed in a department, but all departments must have at least one member of staff. A member of staff does not have to be placed in a department, but all departments must have at least one member of staff.

Example:

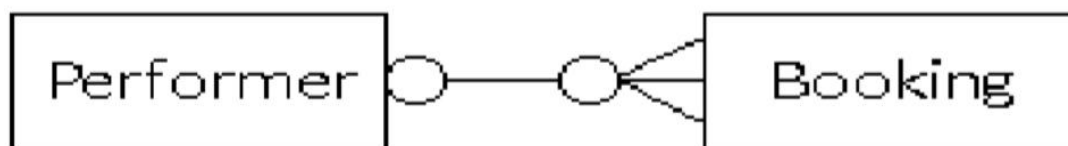


OPTIONAL MANY:

A performer might have one or more bookings; a booking might be associated with a performer.

In this case, a booking could be for an exhibition as it is optional for a booking to involve a performer, as indicated by the hollow circle. A performer might decline to accept any bookings;

this is acceptable, as it is optional for a performer to have a booking (shown by the hollow circle).



Question #6:

Why is there an explicit need of backup in database approach?

Answer:

Because the data stored in business databases is so important to daily functions, it's imperative that businesses have their databases backed up. Equipment failures, data corruption, user error, and other calamities can massively affect both internal users and customers. Database backup software helps ensure that companies always have more copies of their business data, just in case it's needed. These backups can be scheduled or manually run, and they can back up fully, differentially, incrementally, or any combination thereof.

Back up one or several database types to a chosen destination

Set up automated or manual backups at the needed extensiveness

Integration with other backup and IT infrastructure and management solutions

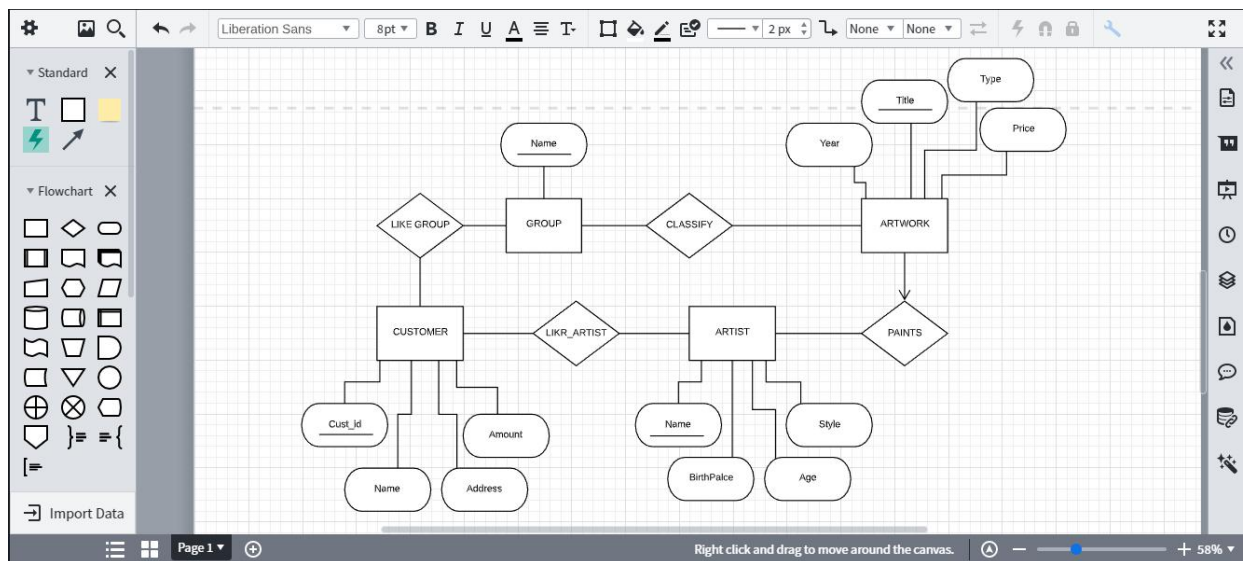
Responsibility over databases typically falls to a company's database administrator(s), or a database team if the company has those kinds of resources. so database backup solutions will likely be used most by those administrators or the database team. While databases themselves can be highly accessible for any member of a company, database backup software —as a part of the database maintenance ecosystem— should be handled by those explicitly focused on maintaining a company's database integrity.

Q 2: Draw an ERD from the following business rules: Use proper notations for the type of attributes.

A schema needs to capture all the information that An Art gallery need to maintain.

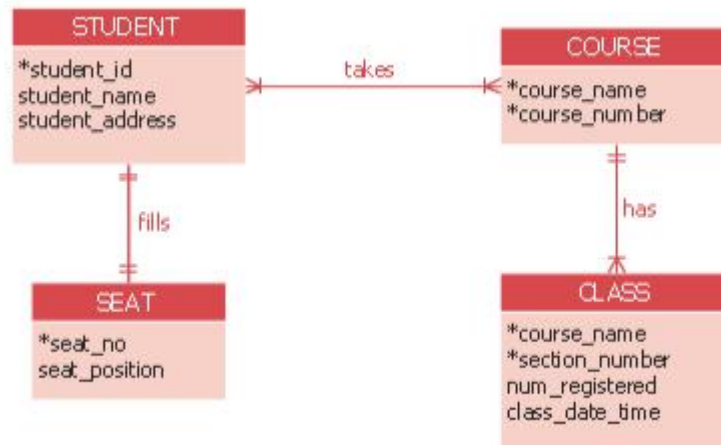
- The database shall keep information about Artists, their names (which are unique), birthplace, age, and style of art.
- For each piece of artwork, the artist, the year it was made, its unique title, its type of art (e.g. painting lithography, sculpture, photograph), and its price must be stored.
- Pieces of artwork are also classified into groups of various kinds for example, potraits, still lifes, works by Picasso, or works of the 19th century.
 - A given piece may belong to more than one group.
 - Each group identified by a name that describes the group.
- Finally galleries keep the Customer's unique name, address, total amount of dollars spent in the gallery and the artist and groups of the art that the customer tends to like

Answer:



Question #3:

Convert the following Conceptual Model to Relational Model.



Answer:

