Mid Term Assignment Spring 2020

Course Title: Database Systems **ID:13002**
Instructor: Rimsha Khan **Name: Nusratullah**
Total Marks: 30

NOTE: Understanding the paper is part of solving the paper so no questions will be entertained.

INSTUCTIONS:

1. **Write your names and IDS at top of each paper.**
2. **Scan / Take clear photo of each paper and save it with a number. E.g. photo of paper 1 of answer sheet be saved with name 1.jpg, then 2.jpg and so on.**
3. **Put answer photos/pdf in a folder, name the folder with subject, ID and student name**
4. **Zip the folder and upload it.**

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1. **Which attribute in the following table is a candidate key? Assume that no more data will ever be added to this table. (2 Marks)**

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

Ans: ID, Name, Cell are candidate key because the individual columns in a table that qualifies for uniqueness of each row is called candidate key

2. **What is Data Redundancy and Data Integrity? (2 Marks)**

Ans: Data Redundancy**:** In the database where we are having same piece of data in more than one place is called data redundancy, like having the 2 employee records with same id

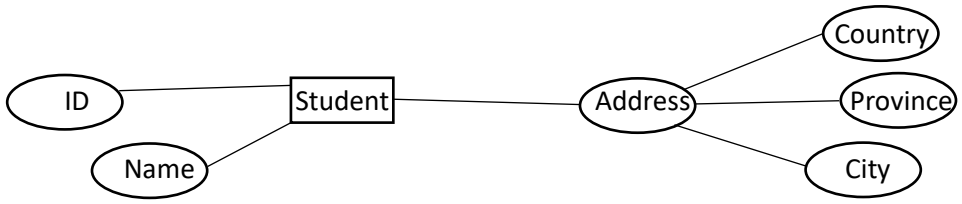
This leads modification anomalies whenever we are trying to update salary for emp than it will updates the 2 records because we have 2 records which same data.

Data Integrity: Data integrity is the overall completeness, accuracy and consistency of data. This can be indicated by the absence of alteration between two instances or between two updates of a data record, meaning data is intact and unchanged.

In its broadest use, “data integrity” refers to the accuracy and consistency of data stored in a database, data warehouse, data mart or other construct. The term – Data Integrity - can be used to describe a state, a process or a function – and is often used as a proxy for “data quality”.

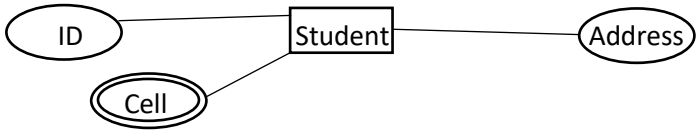
3 How a multivalued, composite attribute is represented in Conceptual Model. Show with example. (2 Marks)

Ans:



Composite attribute: Student is a entity type and have attributes of address, ID, Name, so address is composite attribute which includes country, province, city. Relational model

Student (ID, Name, Country, province, city)



Multivalued Attribute: As student is entity type and the multivalued will be cell as a student have many cell numbers. Relational model

St_cell (St_ID, cell)

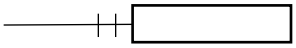
Relational schema for student equivalent regional table is:

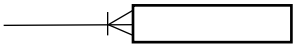
St_ ID	cell
001	03479093431
002	03479093432

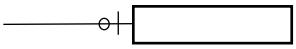
4. **How is there ‘reduced maintenance’ in database approach? (2 Marks)**

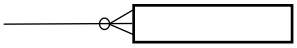
Ans: Maintenance in Database have little or no effect on the Database Application thus reducing the maintenance costs. stored data can be changed frequently for variety of reasons, the system will provide modification to a data file without modifying the program and it also provides us way to reduce the maintenance of the program.

5. How are the following represented using ER Diagram: Mandatory one, Mandatory many, Optional one, Optional Many? (2 Marks)

Ans: Mandatory one: 

Mandatory many: 

Optional one: 

Optional Many: 

6. Why is there an explicit need of backup in database approach? (2 Marks)

Ans: Five reasons that you need backup in database:

I. Unlimited Access to Data

Remote database backup is essential to your organization especially if your company needs access from remote areas or from branches where you have no IT personnel deployed. How cost effective could that be? Also, it will save you the hassle of having to buy drives to store data to travel with. Data which is not confined to one location gives a guarantee on its safety if a tragedy is to occur at one site.

II. Prompt Data Restoration

What happens when you are half-way through completing that trial balance you have been working on for weeks, then a power surge occurs? There are chances that you might completely lose the data. A power surge is not the only catastrophe that might hit you. Virus attacks and malfunctions are also notorious for tampering with your data.

When such events occur, it does not mean that your work has to stop. Backing up your database will give you a second chance in the event of a tragedy. With a sound system, you will be able to retrieve data quickly and go on with your business.

III. Security of Your Business

Losing data that is detrimental could make your business to also crumble to the ground. The whole idea of a database backup is to provide an assurance that should any risk take place; business operations will not be interfered with.

Remember that the growth and sustainability of your venture largely depend on the data of your day to day activities. The only way to keep your business protected is ensuring that your data and projects are safe

IV. Credibility and accountability

As earlier mentioned, losing your customer's data could make your company look bad. Database backup safeguards your business reputation by fostering your responsibility.

No customer wants to work with an organization that keeps losing data and cannot come up with a way of mitigating such a situation. It breaks the trust.

With database backup, the customer will not even know whether or not any tragedy struck the business because it will be business as usual: No disruptions resulting from a hardware malfunction. Being able to recover data after a crisis tells a lot about your reliability.

V. Peace of mind

How do you feel when you go to work, and you are not sure whether you have locked the house? Very uncomfortable with the worry of the possibility of an invasion. Same goes for data backup.

By having your data backed up safely, you will have peace of mind regardless of where you are. There is no better feeling than knowing that you are not vulnerable to any form of loss.

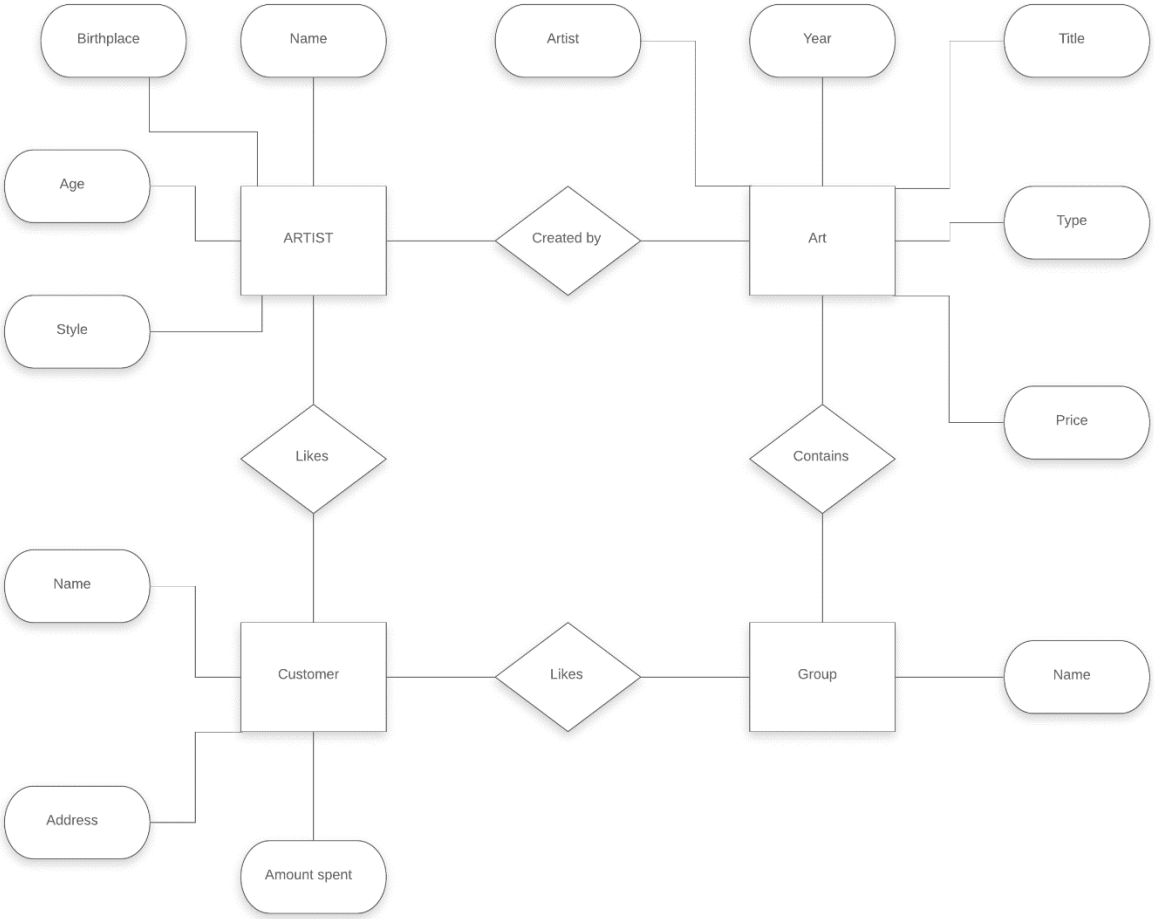
Also, being able to have a plan in place if any misadventure takes place keeps you free of worry.

The mentioned are just a few of the reasons as to why you need a database back up. Also, remember that you should be picky when getting to choose data backup software. There is so much that you can assess, starting from the scalability of the software, durability and the cost of running the particular software.

Q 2: Draw an ERD from the following business rules: Use proper notations for the type of attributes (Marks 10)

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, portraits, still life's, 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


Birthplace
Name
Artist
Year
Title
Age
ARTIST
Created by
Art
Type
Style
Price
Likes
Contains
Name
Customer
Likes
Group
Name
Address
Amount spent