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Registration No# 16549

Semester: 6th

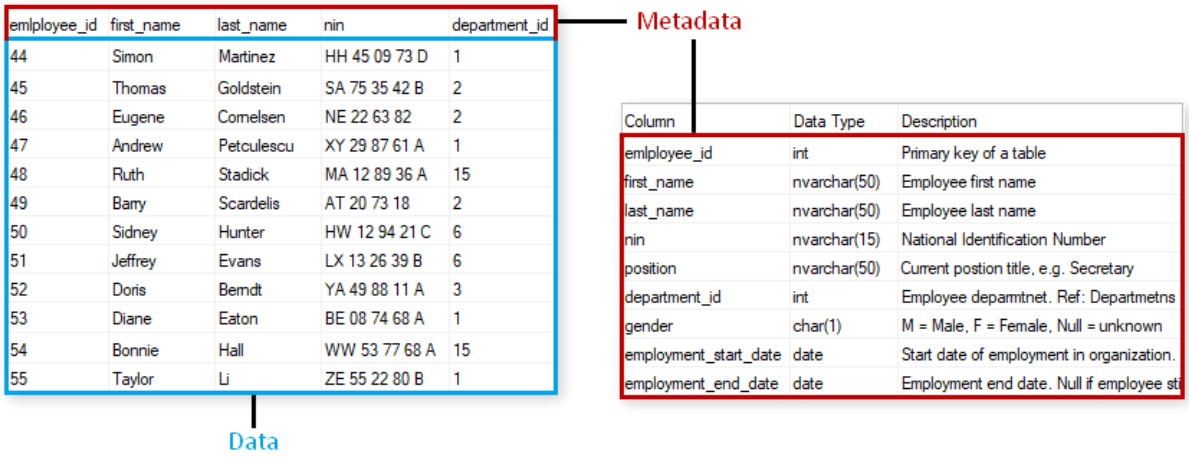
RE-Mid Assignment Data Base Theory

Submitted to: Madam Rimsha Khan

Q: Answer the following Short Question in maximum 2 to 3 lines. (12 Marks):

1. **What is metadata in Database? Give 1 example**

Answer: Metadata is data that describes other data. For example, author, date created, date modified and file size are examples of very basic document metadata. Having the ability to filter through that metadata makes it much easier for someone to locate a specific document.



emlployee_id	first_name	last_name	nin	department_id
44	Simon	Martinez	HH 45 09 73 D	1
45	Thomas	Goldstein	SA 75 35 42 B	2
46	Eugene	Cornelsen	NE 22 63 82	2
47	Andrew	Petculescu	XY 29 87 61 A	1
48	Ruth	Stadick	MA 12 89 36 A	15
49	Barry	Scardelis	AT 20 73 18	2
50	Sidney	Hunter	HW 12 94 21 C	6
51	Jeffrey	Evans	LX 13 26 39 B	6
52	Doris	Berndt	YA 49 88 11 A	3
53	Diane	Eaton	BE 08 74 68 A	1
54	Bonnie	Hall	WW 53 77 68 A	15
55	Taylor	Li	ZE 55 22 80 B	1

Column	Data Type	Description
emlployee_id	int	Primary key of a table
first_name	nvarchar(50)	Employee first name
last_name	nvarchar(50)	Employee last name
nin	nvarchar(15)	National Identification Number
position	nvarchar(50)	Current postion title, e.g. Secretary
department_id	int	Employee deparmtnet. Ref: Departmetns
gender	char(1)	M = Male, F = Female, Null = unknown
employment_start_date	date	Start date of employment in organization.
employment_end_date	date	Employment end date. Null if employee sti

2. **List down the components of database environment:**

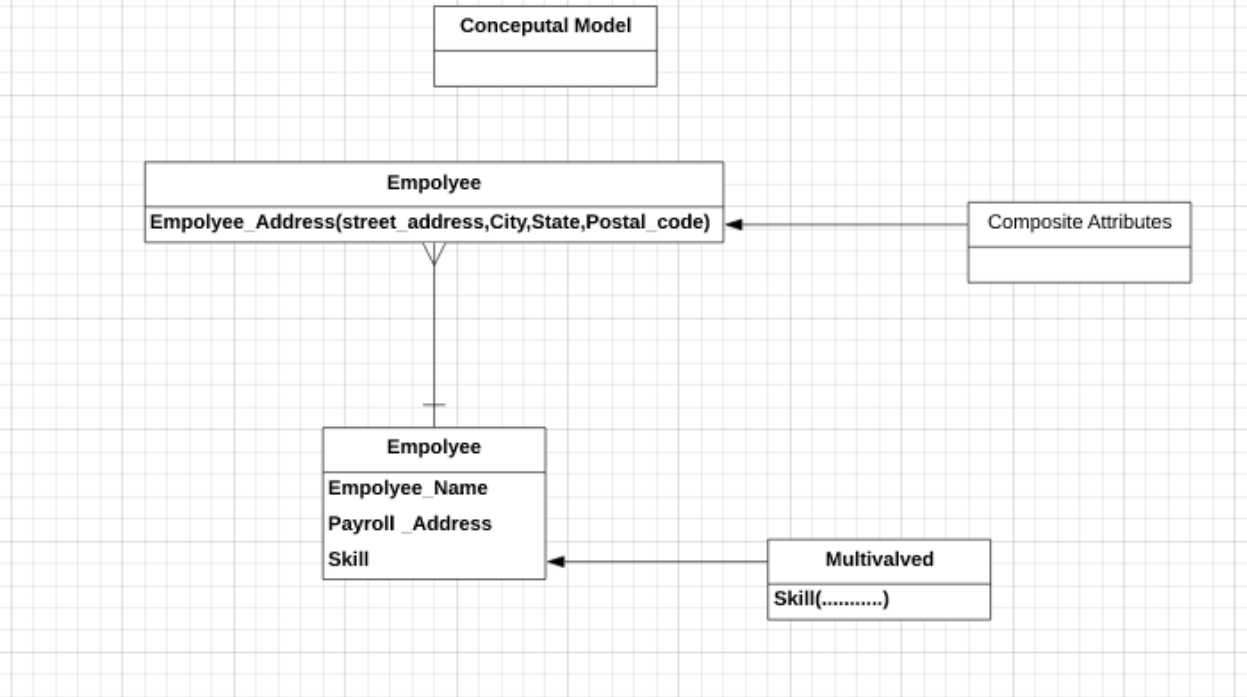
Answer:

- **Software**
- **Hardware**
- **Data**
- **Procedures**
- **Database Access Language**
- **Query Processor**
- **Run Time Database Manager**
- **Data Manager**
- **Database Engine**
- **Data Dictionary**
- **Report Writer**

3 How a multivalued composite attribute is represented in Conceptual Model. Show with example:

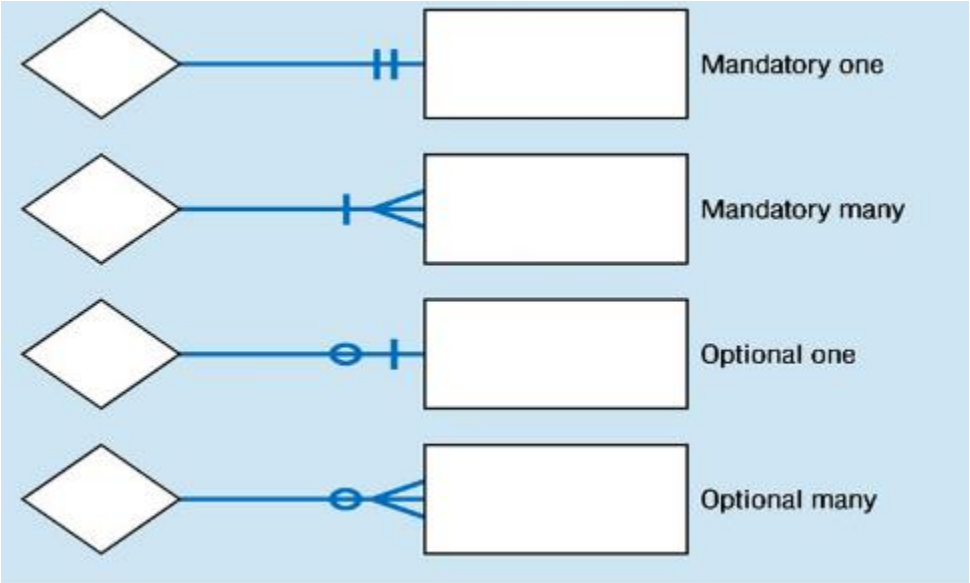
Answer: Composite attribute − Composite attributes are made of more than one simple attribute. For example, a student's complete name may have first_name and last_name
OR
An Attribute broken into components parts.

The following is the conceptual Model for Multivalued Composite Attributes.



4. Data warehouse is an operational database or non-operational database?
Answer: Data warehouse is a non-operational database due to: Operational databases support concurrent processing of multiple transactions. ... An operational database query allows to read and modify operations, while an OLAP query needs only read only access of stored data. An operational database maintains current data. On the other hand, a data warehouse maintains historical data.

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



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

Answer: Need for Explicit Backup and Recovery:

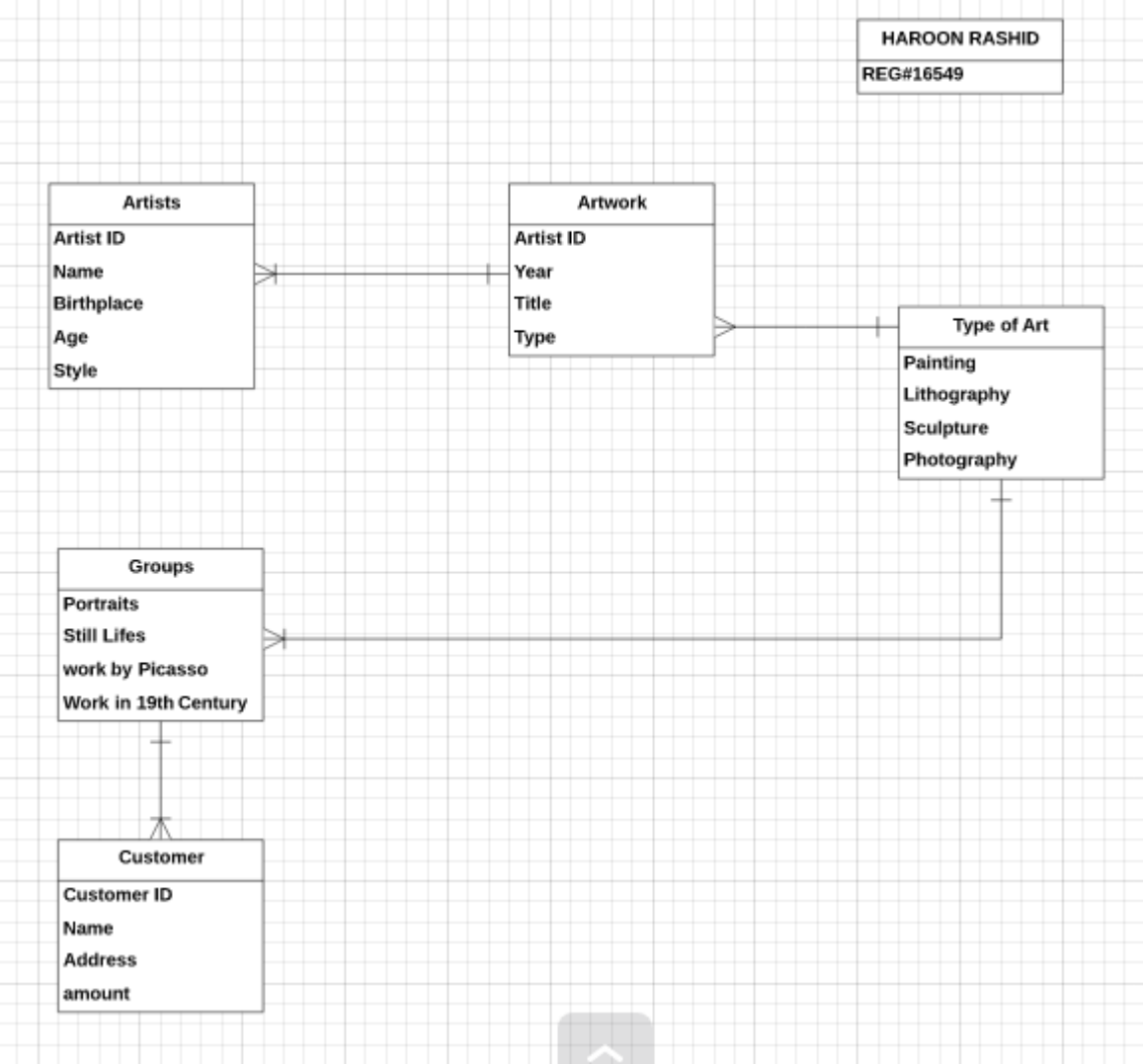
A shared corporate database must be accurate and available at all times. This requires that comprehensive procedures be developed and used for providing backup copies of data and for restoring a database when damage occurs. These considerations have acquired increased urgency in today's Security-conscious environment. A modern database management system normally automates many more of the backup and recovery tasked than a file system.

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, 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.
- Final 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

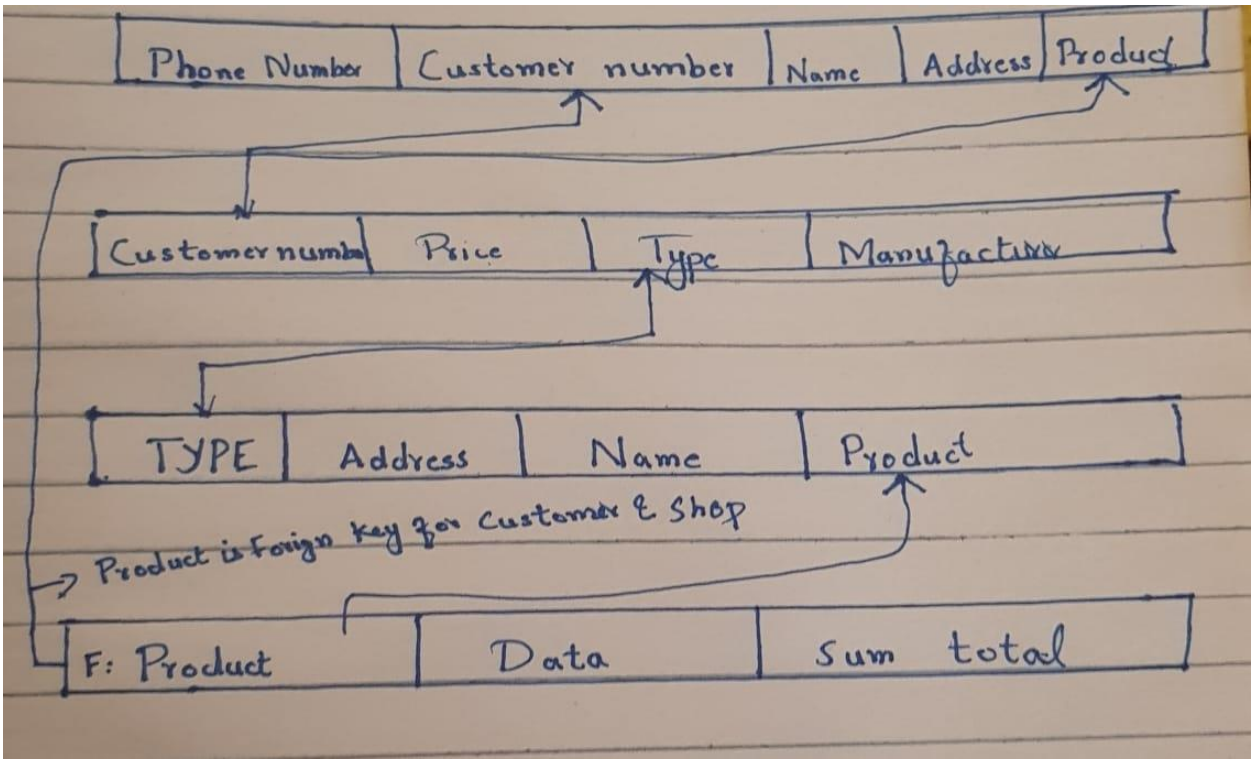
Answer: ER DIAGRAM IS THE FOLLOWING



artist(a name:string, birthplace:string, age:int, style:string) artwork(title:string, year:int, type:string, price:real, a name:string) customer(cust id:string, c name:string, address:string, amount:real)

Q 3: Convert the following Conceptual Model to Relational Model:

Answer:



The relation of Customer and product are one to many (1:M) because there must be a primary key.
And the primary key is the Customer Number

(b) The relation between Product and shop is many to many (M:M) no null value in foreign key this because of the mandatory minimum cardinality (so we add foreign key is Type in Sales

(c)The relation between Shop and Sales is one to many (1:M) and the Foreign key is already given (Product) so first we put the foreign key Shop.

c)The relation between Customer and Sales is one to many (1:M) and the Foreign key is already given (Product) so first we put the foreign key customer