Cs 403 midterm solved current paper fall 2021

1) Difference between Primary key and alternative key and secondary key 2 points?

A candidate key chosen by the database designer to act as key is the primary key.

Candidate keys which are not chosen as the primary key are known as alternate keys.

Many times we need to access certain instances of an entity type using the value(s) of one or more attributes other than the PK.

2) Standardization ka benifit btana tha future m apny point of view sy

Database Architecture: Standardization of database systems is a very beneficent in terms of future growth, because once a system is defined to follow a specific standard, or is built on a specific standard, it provides us the ease of use in a number of aspects.

3) Cartesian product ka long tha ek

The Cartesian product needs not to be union compatible. It means they can be of different degree. It is denoted by X. suppose there is a relation R with attributes (A1, A2,...An) and S with attributes (B1, B2……Bn). The Cartesian product will be: R X S

4) How data sharing is done in database.Explain.Also give solid example.

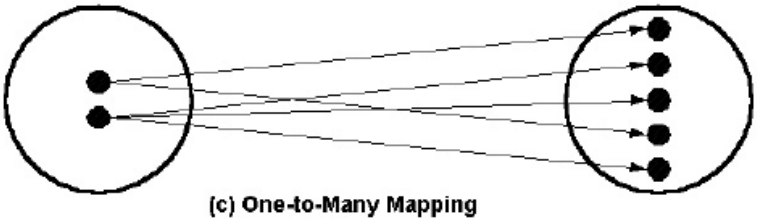
The data for different applications or subsystems is placed at the same place. This introduces the major benefit of data sharing. That is, data that is common among different applications need not to be stored repeatedly, as was the case in the file processing environment. For example,systems of an educational institution.

5) Student and Course k attributes given thy mapping krni the Many to Many

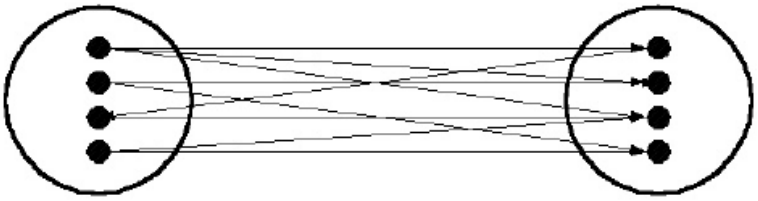
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- **Many-to-Many mapping:**

  A mapping R from X to Y is many-to-many if each entity from X is associated with many entities in Y and one entity in Y is associated with many entities in X.



(c) One-to-Many Mapping



(d) Many-to-Many Mapping

6) Two columns thy us mai sy Entity type,Entity instance and Entity set ko separate krna tha

Entity Type

The entity type can be defined as a name/label assigned to items/objects that exist in an environment and that have similar properties. It could be person, place, event or even concept, that is, an entity type can be defined for physical as well as not-physical things.

Entity Instance

A particular object belonging to a particular entity type and how does an item becomes an instance of or belongs to an entity type? By possessing the defining properties associated with an entity type. For example, EMPLOYEE, FURNITURE, ELECTRIC APPLIANCES, OFFICE EQUIPMENT

Entity Set

A group of entity instances of a particular entity type is called an entity set. For example, all employees of an organization form an entity set. Like all students, all courses, all of them form entity set of different entity types

7) Steps of data base

o Database Design o Application Programs o Implementation

8) Is it necessary to normalize relation... Explain

Normalization is a step by step process to make DB design more efficient and accurate. A normalized database helps the DBA to maintain the consistency of the database. However, the

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normalization process is not a must, rather it is a strongly recommended activity performed after the logical DB design phase

9) 1NF ko 2NF m convert krna th

The process for transforming a 1NF table to 2NF is:

• Identify any determinants other than the composite key, and the columns they determine.

• Create and name a new table for each determinant and the unique columns it determines.

• Move the determined columns from the original table to the new table. The determinate becomes the primary key of the new table.

• Delete the columns you just moved from the original table except for the determinant which will serve as a foreign key.

• The original table may be renamed to maintain semantic meaning.

Now to remove all these anomalies from the table we will have to decompose this table, into different tables as under:

CLASS (crId, stId, stName, fId, room, grade)

crId, stId ⟶ stName, fId, room, grade

stId ⟶ stName crId ⟶ fId, room

Now this table has been decomposed into three tables as under:-

STD (stId, stName)

COURSE (crId, fId, room)

CLASS (crId, stId, grade)

So now these three tables are in second normal form. There are no anomalies available now in this form and we say this as 2NF.

10) Weak entity explained

In a relational database, a weak entity is **an entity that cannot be uniquely identified by its attributes alone**; therefore, it must use a foreign key in conjunction with its attributes to create a primary key

11) Three operation of DBMS

In a relational database, three operations are used to develop sets of data: **Select: Creates a subset of data of records that meet** stated criteria. Join: Combines relational data from different tables. Project: Creates a subset of a table using only specified columns.

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12) Type of relationship

One-to-one, One-to-many, Many-to-many

13) conceptual or logic level

when we see in the logical view of the data we can see that the data stored in the database is stored only once and two users get different data from the same copy of data at the underlying conceptual level.

14) using cartisian product and theta join show out put

Answer on page # 158

15) how data is store in os physical level(something like that)

Physical Database Design:

The Logical design created using a specific data model and created after the analysis of the organization, it needs to be implemented in a physical DBMS software so the Physical database design is performed and the design created so far in the logical form are implemented on that very DBMS

16) difference between database system and traditional files processing

DBMS is data sharable but, the traditional file system is **isolated data sharable**. DBMS is flexible but, the traditional file system has a lack of flexibility and has many limitations. DBMS has no integrity but, the traditional file system has an integrity problem

17) difference between DBMS and database

A collection of related pieces of data, whose purpose is to solve the data management needs of an institution is called a Database. Database Management Systems (DBMS), on the other hand, are **very complex software which save the data on the secondary storage devices** and which are used to manipulate databases.

18) role of dba in dbms

A Database Administrator (DBA) is **individual or person responsible for controlling, maintenance, coordinating, and operation of database management system**. ... Their role also varies from configuration, database design, migration, security, troubleshooting, backup, and data recovery.

19) why we use sql

Structured query language (SQL) is the most widely language used for manipulation of data. But we will first study Relational Algebra and Relational Calculus, which are procedural and non – procedural respectively

20) What is difference between intension and extension?

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intension and extension, in logic, correlative words that indicate the reference of a term or concept: “intension” indicates the internal content of a term or concept that constitutes its formal definition; and “extension” **indicates its range of applicability by naming the particular objects that it denotes**

21) Consequences of database

Depending on the type of data involved, the consequences can include **destruction or corruption of databases**, the leaking of confidential information, the theft of intellectual property and regulatory requirements to notify and possibly compensate those affected.

22) define separator and ring sum Operator

Separator: The dataflow symbol which is used for separating data from a single source to multiple sinks is known as a separator.

Ring Sum Operator: This operator is used when data from a source process can flow to one of the mentioned sinks.

23) use code and compression technique and make the table again

STID	***STNAME***	***HOBBY***
S1020	Sohail Dar	Reading
S1038	Shoaib Ali	Gardening
S1015	Tahira Ejaz	Reading
S1015	Tahira Ejaz	Movie
S1018	Arif Zia	Reading

Solution:

STID	***STNAME***	***HOBBY***
S1020	Sohail Dar	R
S1038	Shoaib Ali	G
S1015	Tahira Ejaz	R
S1015	Tahira Ejaz	M
S1018	Arif Zia	R

24) write at least 5 duties of DBA

The Key Responsibilities of a Database Administrator

- Software installation and Maintenance.
- Data Extraction, Transformation, and Loading.

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- Specialised Data Handling.
- Database Backup and Recovery.
- Security.
- Authentication.
- Capacity Planning.
- Performance Monitoring.

Practical Questions:

1) Which tool can be use after analyzing a problem to develop a diagram?

2) If organization is using file server how you can agree a higher management to use a DBMS brief with 5 points.

3) ERD diagram bni ghi usy normalize krna tha

4) Scenario diya tha student ka. Student id name date of birth address age, In ki ERD Diagram bn ani thi Student id name ko composite, Hobby ko multivalued m Or Date of birth ko derived m ahow krna tha

5) ek question tha jis m customer or product ki detail di thi tables m un ki output nikalni thi Cartesian product sy

6) Cartesian product find krna th

7) do statements Di v then un m sy foreign key r home key dhoundh k lekhni thi 5 marks

8) ik ki mapping krni thi 3 marks

9) Map karna tha: Real world data, Metadata, Data occurences

10) Statement given thi normalization batani thi or agar 2nd form hai tou 3rd ma karna tha

11) Statement given thi multivalued attributes dhoond ka likhna tha.

12) convert the table into 2nd normal form

13)

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