

Sub:	Database Management Systems				SubCode:	18CS53	Branch:	ISE
Date:	07/11/2022	Duration:	90 min's	MaxMarks:	50	Sem/Sec:	V A, B & C	OBE

Answer any FIVE FULL Questions

		MARKS	CO	RBT																												
1	<p>Discuss the main characteristics of the database approach and how it differs from traditional file systems.</p> <p>Characteristics of database approach are:-</p> <p>1) Self-describing nature of database system:- DB system has a catalog. A catalog describes the structure of the data base. The description of database structure helps database software to interact with different databases. Whereas, in traditional file systems it does not have a self-describing nature and the user has to find it out by himself the description of data.</p> <p>2) Isolation between program and data:- It is known as program-data independence. It allows changing of data storage structure and operations without changing the access of programs in DB.</p> <p>This feature is not provided in file systems which makes it less flexible and time consuming.</p> <p>3) Data abstraction:- It uses data model which hides the storage details of database and present the user with only the conceptual view of data.</p> <p>In file systems there is no data abstraction so the details of storage of data is open to users.</p> <p>Support multiple views of a data:- Each user is provided with a different view of the same database. The data is of the interest of user.</p> <p>Whereas in file system there data presented to each user is same for all of them, so multiple view of data is not possible in traditional file systems.</p> <p>4) Sharing data and multiuser transaction processing:- DBMS allows a set of concurrent users to retrieve and update the data base and concurrency control in DBMS guarantee's that all the transactions are either completed correctly or aborted completely.</p> <p>In file system if multiple users try to access and update data then it may cause confusion and error in database.</p>	10	CO1	L2																												
2a)	<p>What is database management system? Explain a database system environment with a block diagram.</p> <p>(a) Database management system is a collection of programs which allows users to create, store and manage database. It is a general purpose software system.</p> <p>In a university database system it will have entities as student, course, grade, professor</p> <table border="1" data-bbox="243 1785 673 1921"> <thead> <tr> <th>Name</th> <th>S-id</th> <th>Course</th> <th>Sem</th> </tr> </thead> <tbody> <tr> <td>Abhi</td> <td>1001</td> <td>CS</td> <td>5</td> </tr> <tr> <td>Ravi</td> <td>1002</td> <td>IS</td> <td>3</td> </tr> <tr> <td>Ninu</td> <td>1023</td> <td>IS</td> <td>5</td> </tr> </tbody> </table> <table border="1" data-bbox="803 1785 1112 1911"> <thead> <tr> <th>C-id</th> <th>C Name</th> <th>Duration</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CSE</td> <td>4</td> </tr> <tr> <td>2</td> <td>ESE</td> <td>4</td> </tr> <tr> <td>3</td> <td>B.com</td> <td>3</td> </tr> </tbody> </table> <p>Data manipulation, definition and description is given in this database system.</p>	Name	S-id	Course	Sem	Abhi	1001	CS	5	Ravi	1002	IS	3	Ninu	1023	IS	5	C-id	C Name	Duration	1	CSE	4	2	ESE	4	3	B.com	3	6	CO1	L2
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2b) What is a weak entity type? What is the role of partial key in the relationship? 4 CO1 L1

A weak entity type are those entity which do not have its own key attribute or primary key. A weak entity type ~~also mostly type~~ is described by combining with the attributes of other entity. The other entity is known as owner entity. Partial key is found in weak entity which is used to identify a weak entity and is made with attributes of owner entity.

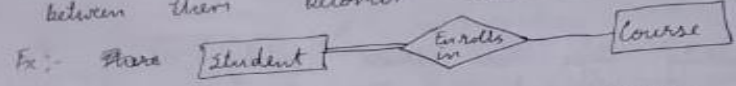
3 What is meant by Integrity constraint? Explain the importance of Referential integrity constraint. How is it implemented in SQL? 10 CO2 L2

Integrity constraint:- In most of data base applications it has semantics / to meaning to the value which is achieved by imposing certain restrictions on the attributes and on database in order to make the data sensible and meaningful.

Ex:- For an attribute Name integrity constraint will be that it must accept only string of characters or only characters as value in order to describe the person's Name. Data type is char.

Referential Integrity constraint:- In DBMS when one entity is in relationship with other entity through a common attribute in both of them, then the values of this

attribute should match in both the entities. If the attribute has a value in one entity which does not exist in other entity then the relationship defined between them becomes irrelevant.



Student

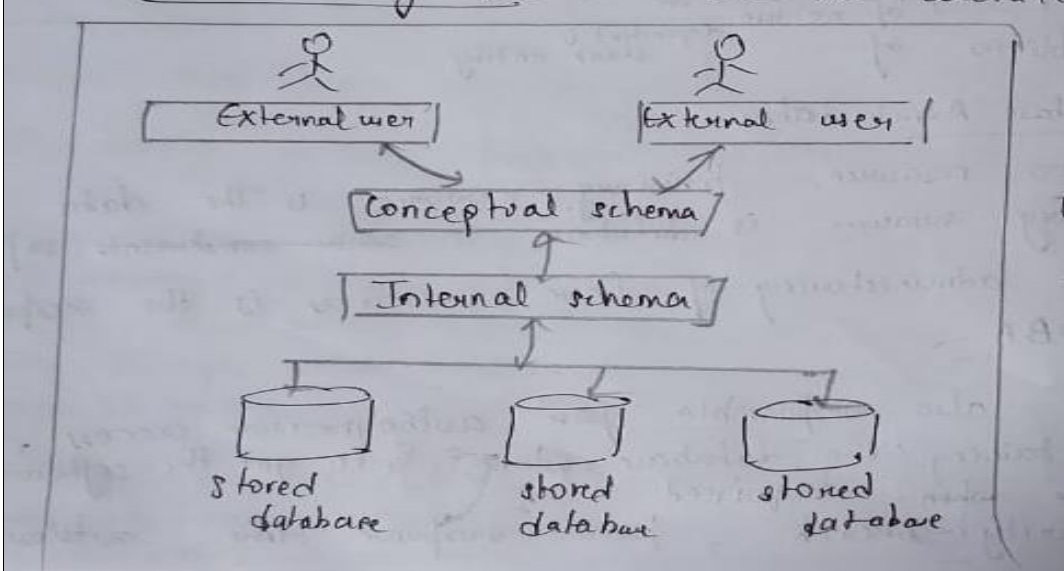
Sid	Sname	Sem	Age
1CR19	Ravi	5	21
1CR20	Nisha	3	20
1CR21	Praveen	1	19

Course

Sid	CName	Duration
1CR20	CSE	4
1CR21	ISE	4
1CR19	ISE	4
1CR18	ISE	4

Now, Here in Student and course entity are related with Sid as which says which course is student enrolled and relates with student entity. In course 1CR18 entry is made but there is no student of this Id in student entity. This is Referential integrity constraint that both values of attributes in both entity should match.

4a) With a neat block diagram, explain the architecture of DBMS 6 CO1 L2



4b) What are the responsibilities of DBA and the database designers?

DBA - Database Administrators -

DBMS has two resources, primary resource is the data & secondary resource is database & other constraints software

→ These resources administering of these resources is the responsibility of DBA.

→ DBA are also responsible for authorization access, coordinating & maintaining the database system. & to get the software & hardware resource when required

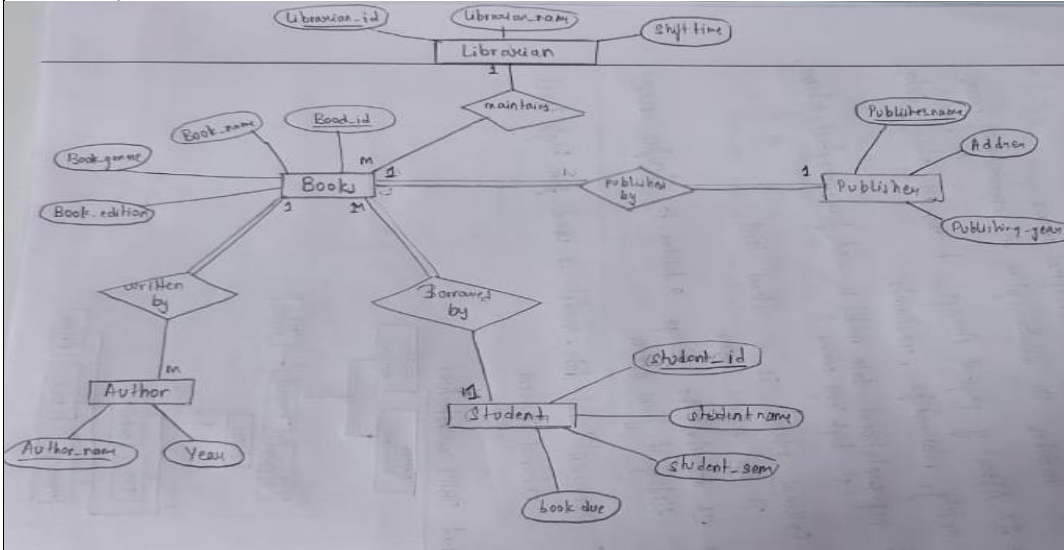
→ Any security breach, poor response time, unauthorized access

4

CO1

L1

5 Design an ER diagram for Library database considering atleast 4 entities and indicate cardinality ratio.



10

CO2

L3

6 Consider the following movie database:
 Movie(Title, Director, Myear, Rating) Acts(Aname, Title)
 Directors(Director, dage) Actors(Aname, Age)
 Write the following queries in relational algebra on the database given:
 i. Find movies made by Hanson in 2000
 ii. Find all actors and directors name

10

CO2

L3

iii. Find movies acted by Sean.

(i) $\Pi_{Title} (\sigma_{Director = 'Hanson' \text{ and } Year = '2000'} (Movie \bowtie Directors))$

(ii) $\Pi_{Title} \text{ and } \Pi_{Director} (Movie \bowtie Directors \bowtie Actors \bowtie Acts)$

(iii) $\Pi_{Title} (\sigma_{Name = 'Sean'} (Movie \bowtie Acts \bowtie Actors))$