SRINIVAS UNIVERSITY

COLLEGE OF COMPUTER & INFORMATION SCIENCE

CITY CAMPUS, PANDESHWAR,

MANGALORE - 575 001

Question Bank Answers with Bloom's Model

Database Management Using MySQL

B.C.A - II SEMESTER

DATABASE MANAGEMENT USING MYSOL QUESTION BANK

Exam	II semester	Paper code	20BCASD22/ 20BCAAI22/ 20BCANT22
Subject	Database Management Using MySQL	Class	I BCA
Maximum marks	50	Time	2 Hours

Weightage Table

Sl. No	Objectives	Marks	Percentage marks
1.	Knowledge (Remembering)	05	10
2.	Understanding	20	40
3.	Application	15	30
4.	Skill	10	20
	Total	**50**	**100**

Blueprint with Unit wise Marks

Unit	Remembering			Understand			Application			Skill			Total
	OT	SA	Unit wise Marks	OT	SA	Unit wise Marks	OT	SA	Unit wise Marks	OT	SA	Unit wise Marks	
1	1(1)	1(4)	5	1(1)	1(4)	5	-	-	-	-	-	-	10
2	-	-	-	1(1)	1(4)	5	-	-	-	1(1)	1(4)	5	10
3	-	-	-	1(1)	1(4)	5	1(1)	1(4)	5	-	-	-	10
4	-	-	-	1(1)	1(4)	5	1(1)	1(4)	5	-	-	-	10
5	-	-	-	-	-	-	1(1)	1(4)	5	1(1)	1(4)	5	10
	05			20			15			10			50

Blueprint

Unit	Remembering		Understand		Application		Skill		Total
	OT	SA	OT	SA	OT	SA	OT	SA	
1	1(1)	1(4)	1(1)	1(4)	-	-	-	-	10
2	-	-	1(1)	1(4)	-	-	1(1)	1(4)	10
3	-	-	1(1)	1(4)	1(1)	1(4)	-	-	10
4	-	-	1(1)	1(4)	1(1)	1(4)	-	-	10
5	-	-	-	-	1(1)	1(4)	1(1)	1(4)	10
	05		20		15		10		50

1. What do you think when a same record or a file is to be used by multiple users simultaneously called?

   A. Data integrity
   B. Data isolation
   C. <u>Concurrent access</u>
   D. Isolated access

2. Can you clarify, what is it called if the data is duplicated in two files?

   A. <u>Data Redundancy</u>
   B. Data integrity
   C. Data concurrency
   D. Data isolation

3. Can you clarify the concept called when the related data is stored in a centralized storage?

   A. Data Integration
   B. <u>Data Sharing</u>
   C. Data independence
   D. Data isolation

4. Who do you think is like a super user of DBMS?

   A. End user
   B. Application programmer
   C. <u>DBA</u>
   D. Database user

5. Can you clarify, in which of the following models, the records are physically linked through linked lists?

   A. <u>Network model</u>
   B. Hierarchical model
   C. Relational model
   D. File structure model

6. Who do you think are the users of DBMS?

   A. End users
   B. Application programmer
   C. DBA
   D. <u>All the above</u>

7. What do you think is centralized DBMS?

   A. The data is stored in a single computer
   B. A centralized DBMS supports multiple users
   C. It supports only single user
   D. <u>Only A and B</u>

8. What do you think is a set of programs that help to use or modify a collection of related data called?

    A. File system
    B. Database Management system
    C. Online system
    D. Decision support system

9. Can you clarify,which level in the DBMS architecture comprises of all the DBMS functions?

    A. Conceptual level
    B. Physical level
    C. Internal level
    D. External level

10. What do you think the DBMS architecture can be viewed as?

    A. 2-tier system
    B. 7-tier system
    C. 3-tier system
    D. 4-tier system

11. Can you clarify. what is it called when isolating an upper level changes in the structure of a lower level is called

    A. Data isolation
    B. Data security
    C. Data Independence
    D. Data integration

12. What do you think is the description of the schema constructs and constraints called?

    A. Data mart
    B. Metadata
    C. Data schema
    D. Schema diagram

(Questions for Skills)

13. What is the collection of interrelated data called?

    A. File
    B. Database
    C. Record
    D. Attribute

14. Which of the level in the DBMS architecture, the data actually resides?

    A. Conceptual level
    B. External level
    C. Internal level
    D. Data level

15. Which of the level in the DBMS architecture, the application programs actually reside?

    A. Conceptual level
    B. Physical level
    C. Internal level
    D. External level

16. What do you think is the immunity of the applications to change the physical representation andaccess technique called?

   A. Data isolation
   B. <u>Data independence</u>
   C. Data integration
   D. Data inconsistency

17. Which of the following views a database as a set of pages?

   A. DBMS
   B. <u>File Manager</u>
   C. Disk Manager
   D. Data Manager

18. What do you think is the capacity to change the conceptual schema without having to change the external schemas called?

   A. Physical data independence
   B. <u>Logical data independence</u>
   C. Internal data independence
   D. External data independence

19. Which of the following is the acronym for SDL?

   A. schema definition language
   B. system definition language
   C. set definition language
   D. <u>storage definition language</u>

20. Which of the following is true about Hierarchical model?

   A. Records are inter-related through tree-like structure
   B. A parent record can have several children
   C. A child can have only one parent
   D. <u>All the above</u>

21. Which of the following is/are functions of DBMS?

   A. Data recover
   B. Data security
   C. Data Dictionary maintenance
   D. <u>All the above</u>

22. Which of the following statements are true?

   A. DBMS views the database as a collection of records
   B. File manager views the database as a set of pages
   C. Disk manager views the database as collection of physical locations on the disk
   D. <u>All the above</u>

23. Which of the following statements are true about DML?

   A. DML is data manipulation language
   B. The two types of DML are high-level DML and low-level DML
   C. High level DML is non-procedural and low-level DML is procedural

D. <u>All the above</u>

24. In which of the following models' records are inter-related through tree-like structures

    A. Network model
    B. <u>Hierarchical model</u>
    C. Relational model
    D. Data model

25. Which of the following is the acronym for DBA?

    A. <u>Database Administrator</u>
    B. Database Actor
    C. Database Application programmer
    D. Database Access

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Long Questions (4 Marks)

(Questions for Remembering)
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1. Find the definition of DBA and what is its role in a database environment?

DBA stands for Data Base Administrator. Database admin is responsible for managing the entire DBMS system. Administering these resources is the responsibility of the DBA. The DBA is responsible for authorizing access to the database, coordinating and monitoring its use and acquiring the software and hardware resources as needed. DBA is also accountable for system security.

2. Find the definition of categories of data models with examples.

1. High-Level or conceptual data models- provide concepts that are close to the way how many users perceive data

2. Low-Level or physical data models – provide concepts that describe details of how the data is stored in computers.

3. Can you name and explain various database users?

The various classes of database users are:-

- DBA
- DB Designers
- End Users
- Software engineers

DBA - Data Base Administrator: DBA stands for Data Base Administrator. Database admin is responsible for managing the entire DBMS system. Administering these resources is the responsibility of the DBA. The DBA is responsible for authorizing access to the database, coordinating and monitoring its use and acquiring the software and hardware resources as needed. DBA is also accountable for system security.

DB Designers: These are people who are responsible for identifying data to be stored in the database and for choosing appropriate structures to represent and store data .

End Users: The end users are the people who interact with the database management system. End users are people whose jobs require access to the database for querying, updating and generating reports. These people make use of the existing database.

Software Engineers: This class of users can be classified as follows

- System analyst: People who determine the requirements of the end users.
- Application programmers: These people implement the above specification as programs, then test and debug and maintain the software for which the database was designed.

4. How do you explain classification of DBMS?

There are several criteria on which DBMS can be classified. They are: -

1. Based on data models
2. Based on number of users
3. Based on number of sites
4. Based on types of applications

Data Models: Based on data models, DBMS can be classified as

    a. Relational Data Model- data is organized as tables
    b. Hierarchical Data model- data is stored and related through tree like structures.
    c. Network Data Model- data records have a 1:N relation between them
    d. Object – relational Data Model- data is treated as objects

Number of users: Depending on the number of users supported by the system, DBMS can be categorized into a. Single user systems- that support only one user at a time b. Multi-user system – that support multiple users concurrently

Number of sites: Based on the number of sites over which the database is distributed.

DBMS can be classified as:-

    a. Centralized DBMS- Here the data is stored at a single computer site. It supports multiple users but the DBMS and database reside at a single computer site.
    b. Distributed DBMS- The database and DBMS are distributed over many sites connected through network. This can again be divided as
      i. Homogeneous RDBMS: They use same DBMS software at multiple sites
      ii. Heterogeneous RDBMS: They use different DBMS software at different sites

Types of application: Based on the types of application DBMS can be classified as follows

    a. General Purpose DBMS: DBMS that can be used for all types of application
    b. Special Purpose DBMS: DBMS used for a specific application for which they are designed.

E.g. airline reservation – It cannot be used for other applications.

5. What are the characteristics of database approach?

In file processing, each user defines and implements the files needed for a specific softwareapplication as a part of programming the application.

E.g., Consider a student file.

A person trying to grade the students uses the student file and calculates grade. A clerk who wants toprint students' attendance will create another file with the same data.

Hence, when files are used there is redundancy in storing the same data and redundant effort to maintain the common data. In database approach, a single repository of data is maintained that is defined and then accessed by various users.

The characteristics of database approach vs. file processing are as follows

1. Self-describing nature of database system
2. Insulation between data and programs and data abstraction
3. Support of multiple views of data
4. Sharing of data and multi-user transaction processing

Self-describing nature of database system:
A fundamental characteristic of database approach is that the database system contains not only the database but also a complete definition or description of the database structure and constraints. The definition is stored in a DBMS catalog. The catalog contains information such as structure of each file, the type and storage format for each data item and various constraints on data. The information stored in the catalog is called the meta-data and it describes the structure of primary database. This is used only by the DBMS users and DBMS software who need information about the database structure.

Insulation between data and programs and data abstraction:
The structure of data files is stored in DBMS catalog separately from access programs . This property is called program-data independence. The structure of the data file can be modified to reflect any changes in the data description. Program-operation independence is a term where users define operations on data as a part of database operation. An operation is specified in 2 parts- the interface of an operation includes the name of the operation and data types of the parameters. The implementation of the operations is specified separately without affecting the interface. The characteristic that allows both program-data independence and program-operation independence is called data abstraction. DBMS provides user with conceptual representation of data that does not include how data is stored or how methods are implemented. In database approach, the detailed structure and organization of the file are stored in a catalog. Database users and applications only refer to the conceptual representation.

Support of multiple views of data:
A database typically has many users, each of whom may require a different view or perspective of the database. A view may be a subset of the database or may contain virtual data that is derived from database files. A multi-user DBMS whose users have a variety of distinct applications must provide facility for defining multiple views.

Sharing of data and multi-user transaction processing
A multi user DBMS must allow multiple users to access the database at the same time . DBMS must include concurrency control software to ensure that several users trying to update the same data in a controlled manner. DBMS must support multiple users to make concurrent transactions.

6. What are the various types of DBMS interfaces?

a. **Menu based interfaces for web clients or browsers:** These help the users with a list of options called menus that lead the user through formulation of requests. The user need not remember any command or syntax of the query language. The query is composed step by step by picking options from the menu.

b. **Form based Interfaces**: It displays a form to each user. Users can fill data in the form to insert new data. The user can also fill specific entries in which case the DBMS retrieves data from the database

c. **Graphical user interfaces**: A GUI displays a schema in a diagrammatic form to the user. The user specifies a query by manipulating the diagram. A pointing device such as mouse is used.

d. **Natural Language Interfaces**: These interfaces accept request written in English and attempts to understand them. It has its own schema and dictionary of important words. If the interpretation is successful, the interface generates a high-level query corresponding to the natural language request and submits it to the DBMS. Otherwise a dialog is started with the

user for clarification of request.

ℓ. **Interface for parametric users**: Parametric users such as bank tellers perform small set of operations on the database repeatedly. A small set of abbreviated commands are included to minimize the number of keystrokes for each request.

ʃ. **Interface for DBA**: Privileged commands can be used only by the DBA. These include commands for creating user accounts, granting account authorization and reorganizing storage structure of data.

(Questions for Understanding)

7. Can you explain any four advantages of database approach?

The advantages of DBMS approach are as follows

1. **Controlled Redundancy**:
   In traditional file processing each user group maintain their own files and handle data processing application. This leads to a stage where the same data is stored in multiple files. The redundancy of storing data in more than one file creates a lot of problems • Entering a new record should be done on multiple files leads to duplication of effort • Storage space is wasted since the same details appear in all the files • Data inconsistency- if a record is modified in one file this updation does not reflect in other files In order to overcome these limitations, the database approach integrates all the views of the different user group during database design. All the required details are stored in the database in one place. This ensures consistency and saves storage space. But, in practice, only some data items may repeat themselves at the required places. This phenomenon is called controlled redundancy.

2. **Restricting unauthorized access**:
   When multiple users share a large database, it is likely that all users will not want all the information in the database. Moreover, all the users will not be authorized to use all the data. Some users may be only allowed to retrieve while others may be allowed to retrieve a well as to update data. In order to provide authorization, users are given user names and passwords. A DBMS provides security and authorization subsystem, which the DBA uses to create accounts and passwords to different users.

3. **Providing Backup and recovery:**
   DBMS must provide facilities for recovering from hardware or software failures. The backup and recovery systems are responsible for recovery of data in such situations.

4. **Providing multiple user interfaces**:
   DBMS has a wide variety of users. Hence, it should provide multiple user interfaces for each class of user. For example: Query language for casual users, programming language interface for application programmers.

5. **Represent complex relationships among data:**
   A database may contain a variety of data that are interrelated. DBMS must provide a capability to represent complex relationship among data as well as o retrieve and update related data only.

8. Can you illustrate the functions of DBMS?

The functions performed by DBMS are as follows:

- Defining a database involves specifying the data types, structures and constraints for the data to be stored in the database
- Constructing the database is the process of storing the data itself on some storage medium that is controlled by the DBMS

- Manipulating the database includes functions like querying the database to retrieve specific data, updating the database so as to reflect changes and generating reports from the data
- Sharing the database allows multiple users and programs to access the database concurrently
- DBMS protects the database. Protection includes both system protection against hardware or software malfunction and security malfunction against unauthorized access
- A large database may have a life cycle for many years. Hence the DBMS must be able to maintain the database system by allowing the system to evolve as requirements change over time.

9. Can you explain the three-schema architecture with the help of a diagram?

The schemas are defined at the following three levels:

The internal level has an internal schema which describes the physical storage structure of the database. The internal schema uses physical data model and describes the complete details of data storage and access paths for the database.

The conceptual level has a **conceptual schema** which describes the structure of the whole database for a community of users. It hides details of physical storage and concentrates on describing entities, data types, relationships, operations and constraints. The representational model is used to describe the conceptual schema.

The external or view level includes a number of external schemas or user views. Each external schema describes a part of the database that a particular user group is interested and hides the rest of the database from that user group. The process of transforming requests and results between levels is called mappings.
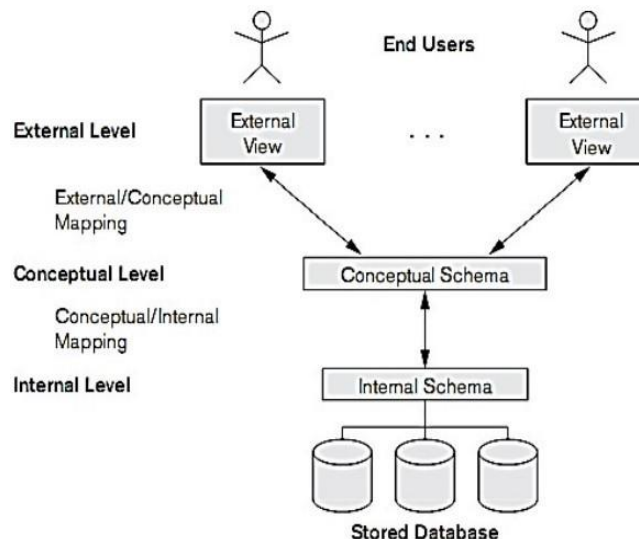
10. Can you write a brief outline on various DBMS languages?

DBMS Languages: Once the database design is over and DBMS is chosen to implement the database. The main task is to specify conceptual and internal schemas for the database and any mappings between the two. In most DBMS when no strict separation of levels is maintained, one language called the DDL (Data Definition Language) is used by the DBA

The DBMS will have a DDL compiler whose function is to process the DDL statements in order to identify the descriptions of the schema constructs and to store the schema description in the DBMS

catalog. the DDL is used to specify the conceptual schema only. Storage Definition Language is used to describe the internal schema.

Manipulations in the database include retrieval, insertion, deletions and modification on data. DBMS provides a language called DML (Data Manipulation Language) to perform manipulations on the data in the database. There are two main types of DML. They are:-

- High level or non-procedural DML: It can be used on its own to specify complex database operations in a concise manner. Many DBMSs allow high level DML statements to be entered interactively from a terminal. They specify only what to do rather than how to do i.e. the procedural details are not mentioned here.
  E.g., SQL. High level DML such as SQL can specify and retrieve many records in a single DML statement.
- Low level or procedural DML: They are embedded in a general-purpose programming language. This type of DML retrieves individual records or objects from the database and processes them separately. They are also called record-at-time DML.

11. Can you explain Database system environment with the help of a diagram?

DBMS Component Modules: The database and DBMS catalog is stored on disk. Access to disk is controlled primarily by the operating system which schedules disk I/O. The stored data manager module controls access to the DBMS information stored on the disk whether it is a part of catalog or database. Some DBMS use a buffer manager module that transfers the data from the disk to the main memory buffer so that it can be processed by other DBMS modules as well as application programs. The DDL compiler process the schema definition specified in DDL and stores the description of the schema in the catalog. The run-time database processor handles database access at run time. It receives retrieval and updates operation and carries them on the database. A query compiler handles high level queries that are entered interactively. The pre-compiler extracts the DML commands from an application program and sends these commands to DML compiler for compilation into object code. The DBMS runs on a computer which can be accessed by the end users. This is known as client program/ computer. The database resides on a computer called the database server.
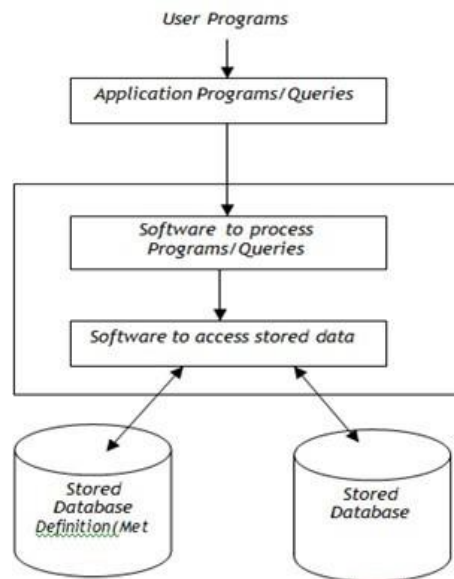
12. How would you explain the concept of data independence in DBMS?

Data Independence: Data independence can be defined as the capacity to change the schema at one level of the database system without having to change the schema at the next higher level. There are two types of data independence logical data independence and physical data independence.

Logical Data Independence: It is the capacity to change the conceptual schema without having to change external schemas or application programs. We may need to change the constraints or reduce the database. After the conceptual schema undergoes logical reorganization, application programs that reference the external schema constructs should work as before.

Physical Data Independence: It is the capacity to change the internal schema without having to change conceptual schemas. Changes to the internal schema may be needed because physical files had to be reorganized. The three-schema architecture makes it easier to achieve true data independence i.e. both physical and logical data independence.

13. Can you write a brief outline about the various models of DBMS with the aid of diagrams?

Data models can be categorized as
- a. Hierarchical model
- b. Network model
- c. Relational model

Hierarchical Data Model: Here different records are interrelated through a hierarchical or a tree-like structure. A parent record can have several children but a child can have only one parent. At the top of hierarchy there is only one entity which is called Root.

c. **Hierarchical Model**
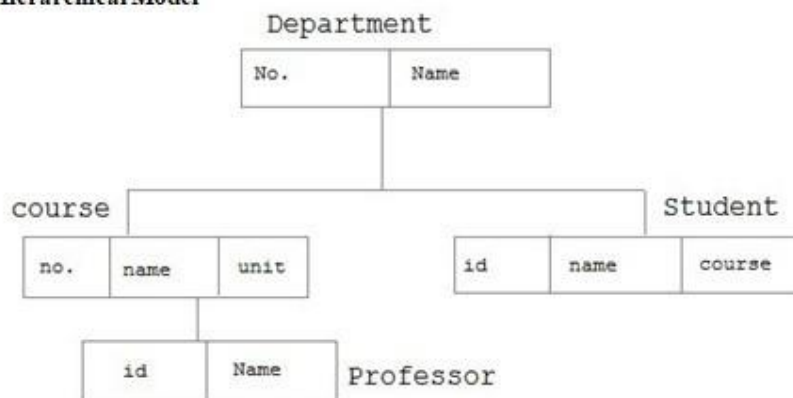
Network Data Model: Here, a parent record can have several children and a child record can also have many parent records.

Network Model
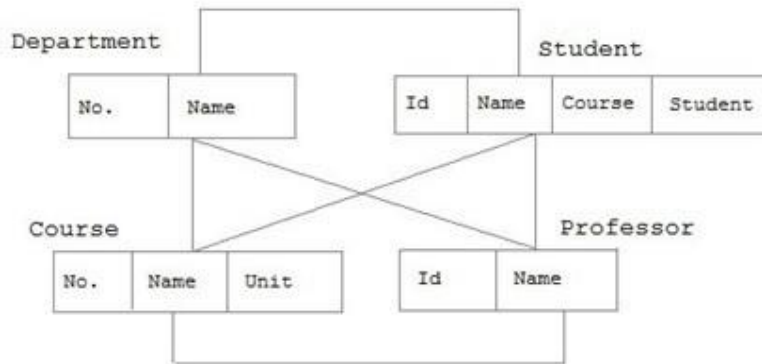
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