

Question Bank - Module 1

1. What are the types of a Database System ?.

2. Define DBMS and explain its 4 operations.

Explain with suitable diagrams

3. Differentiate Catalog and Metadata

4. Explain Database System Environment with suitable diagram.

5. What are Characteristics of the Database Approach ?.

Explain each one with suitable example ?

6. what are the advantages and disadvantages of dbms ?

7. What are the roles and responsibility of DBA ?

7. What are the roles and responsibility of Database Designer ?

8. Explain Data models ?

9. Illustrate with an example, the difference between the conceptual data models and the physical data models

10. With neat diagram explain the 3 schema architecture

11. What are different types of DBMS architecture

Explain each one with neat diagrams.

Answer Hint:

- Centralized DBMSs Architecture
- Basic Client/Server Architectures
- Two-Tier Client/Server Architectures
- Three-Tier and n-Tier Architectures

12. What are different classification of DBMS. Explain each with suitable examples.

13. What are different classes of DBMS Language, Explain each with suitable examples

14. Explain and differentiate types of attributes with the help of neat diagrams

Answer Hint:

1. Simple/Composite
2. Single/Multivalued
3. Stored/Derived
4. NULL Valued

15. What is domain (value set) of an attribute ?

Why it is used for.

16. Define Degree of relationship. Explain with suitable diagrams.

17. Define Cardinality Ratio, What are the possible cardinality ratios for a binary relationship.

18. Define Participation constraint. Explain with neat diagrams

Answer Hint:

- Partial participation
- Total participation

19. Construct an E-R diagram for a car-insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents.\

20. Construct an E-R diagram : The company database keeps track of company's employee, department and projects. We store Employee's name,ssn,address,salary, gender,date of birth, age. An employee is assigned to one department, but may work on several projects which are not necessarily controlled by the same department. A particular employee manages the department. Each department has a unique name,unique number and several locations. The department controls number of projects each of which has a unique name, unique number and a single location. We want to keep track of the dependents of each employee for insurance purpose. We keep each dependent's first name, sex,birth date and relationship to employee

21. Draw the Entity- Relationship Diagram (ERD) for the following scenario: A salesperson may manage many other salespeople. A salesperson is managed by only one salespeople. A salesperson can be an agent for many customers. A customer is managed by one salespeople. A customer can place many orders. An order can be placed by one customer. An order lists many inventory items. An inventory item may be listed on many orders. An inventory item is assembled from many parts. A part may be assembled into many inventory items. Many

employees assemble an inventory item from many parts. A supplier supplies many parts. A part may be supplied by different supplier.

22. Design an ER diagram for the following scenario:

There is a set of teams, each team has an ID (unique identifier), name, main stadium, and to which city this team belongs. Each team has many players, and each player belongs to one team. Each player has a number (unique identifier), name, DoB, start year, and shirt number that he uses. Teams play matches, in each match, there is a host team and a guest team. The match takes place in the stadium of the host team. For each match, we need to keep track of the following: The date on which the game is played The final result of the match. The players participated in the match. For each player, how many goals he scored, whether or not he took the yellow card, and whether or not he took the red card. During the match, one player may substitute another player. We want to capture this substitution and the time at which it took place. Each match has exactly three referees. For each referee, we have an ID (unique identifier), name, DoB, years of experience. One referees the main referee and the other two are assistant referees

23. Design an ER diagram for the following scenario: UPS prides itself on having update information on processing and current location of each shipped item. To do this, UPS relies on a company wide information system. Shipped items can be characterized by item number(unique),weight,dimensions,insuranceamount,destination and final delivery date. Shipped items are received into ups system at a single retail center. Retail Centers are characterized by their type, unique ID and address. Shipped items make their way to the destination via one or more standard UPS transportation events. These transportation events are characterized by unique schedule Number, type and delivery route. Model this scenario by identifying Entities, Attributes ,Primary Keys, Relationship and Cardinality

24. Design an E-R diagram for keeping track of the exploits of your favourite sports team. You should store the matches played, the scores in each match, the players in each match and individual player statistics for each match. Summary statistics should be modeled as derived attributes.

25. Draw ER Diagrams based on Manufactureres have a name which is unique, an address and phone number. Products have model number and type. Each product is made by one manufacturor, and different manufacturers have different product with same model number. You may assume that, no manufacturer wold have two products with same model number. Customers are identified with unique ssn. Thye have e-mail and physical address. Several

customers may live at same physical address, but we assume no two customers have same mai-id. An order has unique order number and a date. An order is placed by one customer, for each order, there are one or more products ordered and there is a quantity for each product on the order.

26. A university registrar's office maintains data about the following entities: (a) courses, including number, title, credits, syllabus, and prerequisites; (b) course offerings, including course number, year, semester, section number, instructor(s), timings, and classroom; (c) students, including student-id, name, and program; and (d) instructors, including identification number, name, department, and title. Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled. Construct an E-R diagram for the registrar's office. Document all assumptions that you make about the mapping constraints.

27. List out any three salient features of a database system.

28. When is a multi-valued composite attribute used in ER modelling?

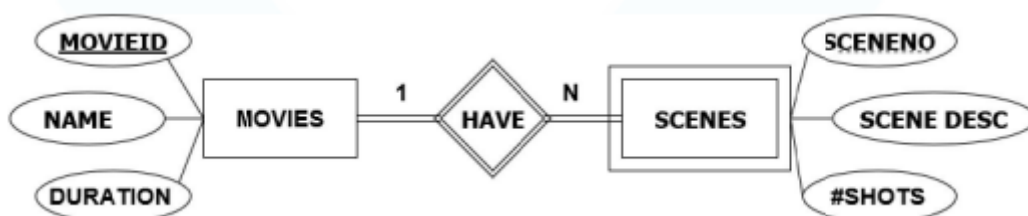
29. Distinguish between physical data independence and logical data independence with suitable examples.

30. With a help of an example, elaborate weak entity set and strong entity set.

31. List out any three responsibilities of database administrators.

32. Give good examples (using ER notation) for unary brief explanation.

33. In the following ER diagram, how can we replace the entity set SCENE with an attribute of the entity set MOVIE? Draw the new ER diagram.



34. Define the following terms:

i) Data model ii) Database schema iii) Meta-data

35. What are the different ways of classifying a DBMS?

36. Explain the following terms briefly: -

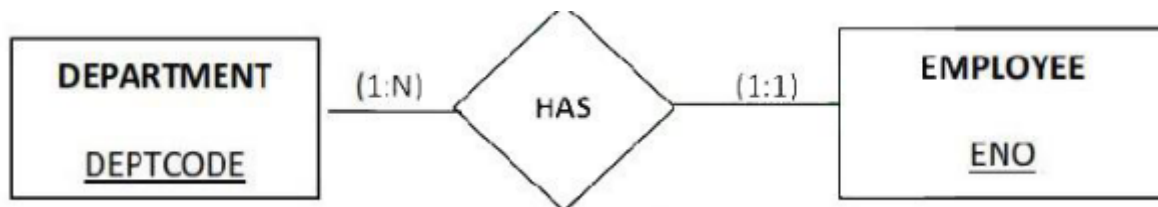
i) Participation constraint

ii) Cardinality Ratio

37. List out 3 salient features of DBMS

38. How DML is different from DDL, Write a sample statement in DML and DDL.

39. Can we represent the situation modelled by following ER diagram without the relationship HAS ?. If so write the new diagram , If No, give reasons.



40. Construct an ER Diagram for Company having following details:

- Company organized into DEPARTMENT. Each department has unique name and a particular employee who manages the department. Start date for the manager is recorded. Department may have several locations.
- A department controls a number of PROJECT. Projects have a unique name, number and a single location.
- Company's EMPLOYEE name, ssno, address, salary, sex and birth date are recorded. An employee is assigned to one department, but may work for several projects (not necessarily controlled by her dept). Number of hours/week an employee works on each project is recorded; The immediate supervisor for the employee.
- Employee's DEPENDENT are tracked for health insurance purposes (dependent name, birthdate, relationship to employee).

Express in MIN-MAX notation