

Subject: Data Base Management System

Frequently Asked Questions

- Q1. Explain DBMS. List and explain advantages of DBMS over file processing system.
- Q2. Explain the client-server architecture of DBMS.
- Q3. Explain all the notations used to represent an E-R diagram.
- Q4. Differentiate between Hierarchical and Network data model.
- Q5. Differentiate between procedural and non-procedural languages.
- Q6. Explain DML and DDL
- Q7. What are the responsibilities of Database Administrator (DBA)?
- Q8. What are attributes? Explain the difference Simple and Composite Attribute.
- Q9. Define:
- (a) Tuple Calculus
 - (b) Direct files
- Q10. Explain the mapping constraints in DBMS.
- Q11. Explain 3-tier architecture of DBMS.
- Q12. What are the different types of database users? Explain all with their responsibilities.
- Q13. Explain structure query language with example.
- Q14. What is the concept of a weak entity set used in data modeling? Define the terms owner entity type, weak entity type, identifying relationship type and partial key.
- Q15. Differentiate between logical data independence and physical data independence.
- Q16. 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.

Q17. Consider the relation schemas as follows.

Works (person name, company name, salary);

Lives (person name, street, city);

Located in (company name, city);

Managers (person name, manager name);

Where manager name refers to person name

Give an expression in relational algebra and SQL to express each of the following queries.

- i. Find the names of the persons who work for company 'FBC' (company name='FBC'). (FBC=First Bank Corporation)
- ii. List the names of the persons who work for company 'FBC' along with the cities they live in.
- iii. Find the persons who work for company 'FBC' with a salary of more than 10000. List the names of these persons along with the streets and cities where they live.
- iv. Find the names of the persons who live in the same city and on the same street as their managers.
- v. Find the names of the persons who do not work for company 'FBC'.
- vi. Find the persons whose salaries are more than the salary of everybody who work for company 'SBC'. (SBC= Small Bank Corporation).

Q18. Explain Sequential file and Indexed file.

Q19. Differentiate between spars and dense index.

Q20. Explain how to reduce ER diagram into tables.

Q21. What is indexing? Explains B- indexing.

Q22. Compare between indexed file and sequence file?

Q23. Draw ER Diagram of library system and explain Strong entity set, Weak entity Set, and Multi value Attributes?

Q24. Explain various operations of tuple calculus.

Q25. Differentiate between Cartesian product and natural join operations with example.

Q26. Describe briefly the following:

- (a) Concurrency Control
- (b) Hashing
- (c) Data Mining and data Warehousing

Q27. Explain Boyce-Codd Normal form by giving examples.

Q28. Consider the relation schema as follows.

student (rollNo, name, degree, year, sex, deptNo, advisor)

department (deptId, name, hod, phone)

professor (empId, name, sex, startYear, deptNo, phone)

course (courseId, cname, credits, deptNo)

enrollment (rollNo, courseId, sem, year, grade)

teaching (empId, courseId, sem, year, classRoom)

preRequisite(preReqCourse, courseID)

Give an expression in tuple relational calculus to express each of the following queries.

- i. Determine the departments that do not have any girl students.
- ii. Obtain the names of courses enrolled by student named Mahesh.
- iii. Get the names of students who have scored 'S' in all subjects they have enrolled. Assume that every student is enrolled in at least one course.
- iv. Get the names of students who have taken at least one course taught by their advisor.
- v. Display the departments whose HODs are teaching at least one course in the current semester.
- vi. Determine the students who are enrolled for *every* course taught by Prof Ramanujam. Assume that Prof Ramanujam teaches at least one course.

Q29. Explain the concept of Normalization and Functional Dependency.

Q30. Given a relation R {A B C D E F} and a set of FD's on R given by
F= {A B C->DE, AB-> D, DE-> ABCF, E->C}

In what normal form is R? If it is not 3rd normal form, decompose R and find a set of 3NF projections of R. Is this set lossless and dependency preserving.