



SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

AN AUTONOMOUS INSTITUTION



Accredited by NAAC–UGC with 'A' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

23ITB204 – Modern Database

Management Systems

Unit IV – 16 Marks

1. Discuss the different RAID levels (0, 1, 5, 10) in detail. Explain how each level enhances performance and data redundancy, and provide use cases for each.
2. Compare and contrast different file organization methods (e.g., sequential, heap, indexed). Discuss their advantages and disadvantages, and provide examples of scenarios where each method would be optimal.
3. Explain the organization of records in files and its impact on database performance. Discuss various methods for organizing records and how these choices affect retrieval times and storage efficiency.
4. Define a data dictionary and explain its role in database management systems. Discuss its components, how it supports data integrity, and its importance in query processing and database administration.
5. Evaluate the benefits and drawbacks of column-oriented storage versus traditional row-oriented storage. Provide examples of scenarios where column-oriented storage is particularly advantageous, such as in data warehousing.
6. Discuss the concepts of indexing and hashing in databases. Compare their use cases, performance implications, and how they can affect query execution times.
7. Explain the structure and advantages of ordered indices in databases. Discuss how they improve search operations and the trade-offs involved in maintaining such indices.
8. Discuss the B+ tree index structure in detail. Explain its properties, how it handles insertions and deletions, and its advantages over other indexing methods, particularly in terms of disk I/O.
9. Describe the B tree indexing structure, its properties, and how it differs from B+ trees. Discuss its advantages and disadvantages and provide examples of when to use a B tree index.
10. Explain the concept of static hashing and its implementation. Discuss its limitations, including issues related to overflow and resizing, and provide examples of scenarios where static hashing might be used.

11. Discuss dynamic hashing and how it overcomes the limitations of static hashing. Explain the concepts of hash buckets and the process of splitting and merging buckets during insertions and deletions.

12. Outline the major steps involved in query processing in a database management system. Discuss the role of parsing, optimization, and execution, and how each step contributes to efficient query execution.

13. Evaluate different algorithms used for selection, sorting, and join operations in databases. Discuss their time complexities, advantages, and scenarios where each algorithm is most effective.

14. Discuss the importance of query optimization in database systems. Explain various heuristic techniques used for query optimization and how they improve the performance of query execution.

15. Explain the role of cost estimation in query optimization. Discuss methods for estimating the cost of operations and the factors that affect these estimations, including I/O costs, CPU time, and memory usage.