

BT-205 Basic Computer Engineering Unit-V Notes

UNIT-V TOPICS

- Database Management System (DBMS)
- File Oriented Approach and Database Approach
- Data Models
- Architecture of Database System
- Data Independence
- Data Dictionary
- Database Administrator (DBA)
- Primary Key
- Data Definition Language (DDL)
- Data Manipulation Language (DML)
- Cloud Computing
- Cloud Infrastructure
- IaaS, PaaS and SaaS
- Types of Cloud
- Advantages and Disadvantages of Cloud Computing

1. DATABASE MANAGEMENT SYSTEM (DBMS)

DBMS is software used to create, manage and control databases.

Functions of DBMS:

- Data storage
- Data retrieval
- Data security
- Data backup
- Data sharing

Advantages of DBMS:

- Reduces data redundancy
- Improves security
- Easy data management

Examples:

- MySQL
- Oracle
- SQL Server
- MongoDB

2. FILE ORIENTED APPROACH

In file oriented approach, data is stored in separate files.

Disadvantages:

- Data redundancy
- Data inconsistency
- Difficult data access
- Poor security

3. DATABASE APPROACH

Database approach stores data in centralized database.

Advantages:

- Better security
- Easy data sharing
- Reduced redundancy

4. DATA MODELS

Data model defines structure of database.

Types of Data Models:

(a) Hierarchical Model

Data organized in tree structure.

(b) Network Model

Data organized in graph structure.

(c) Relational Model

Data stored in tables.

(d) Object Oriented Model

Data represented as objects.

5. ARCHITECTURE OF DATABASE SYSTEM

DBMS architecture describes structure of database system.

Three Level Architecture:

- External Level
- Conceptual Level
- Internal Level

Advantages:

- Data abstraction
- Data independence

6. DATA INDEPENDENCE

Data independence means ability to modify database without affecting applications.

Types:

- Logical Data Independence
- Physical Data Independence

7. DATA DICTIONARY

Data dictionary stores information about database structure.

Contains:

- Table names
- Attributes
- Constraints

8. DATABASE ADMINISTRATOR (DBA)

DBA is person responsible for managing database.

Responsibilities:

- Database security
- Backup and recovery
- Performance monitoring

9. PRIMARY KEY

Primary key uniquely identifies each record in table.

Characteristics:

- Unique value
- Cannot be NULL

Example:

Roll Number in student table.

10. DATA DEFINITION LANGUAGE (DDL)

DDL defines structure of database.

Commands:

- CREATE
- ALTER
- DROP
- TRUNCATE

11. DATA MANIPULATION LANGUAGE (DML)

DML manipulates data in database.

Commands:

- INSERT
- UPDATE
- DELETE
- SELECT

12. CLOUD COMPUTING

Cloud computing means delivery of computing services over internet.

Services Include:

- Storage
- Servers
- Databases
- Networking
- Software

Advantages:

- Cost saving
- Scalability
- Easy access

13. CLOUD INFRASTRUCTURE

Cloud infrastructure consists of hardware and software components used for cloud services.

Components:

- Servers
- Storage systems
- Networking devices
- Virtualization software

14. CLOUD SERVICE DELIVERY MODELS**(a) IaaS (Infrastructure as a Service)**

Provides virtual hardware resources.

Examples:

- Amazon EC2
- Microsoft Azure

(b) PaaS (Platform as a Service)

Provides platform for application development.

Examples:

- Google App Engine
- Heroku

(c) SaaS (Software as a Service)

Provides software over internet.

Examples:

- Gmail
- Google Docs

15. TYPES OF CLOUDS

(a) Public Cloud

Cloud services available to public.

(b) Private Cloud

Cloud services used by single organization.

(c) Community Cloud

Shared by organizations with common goals.

(d) Hybrid Cloud

Combination of public and private cloud.

16. ADVANTAGES OF CLOUD COMPUTING

- Cost reduction
- High scalability
- Easy accessibility
- Automatic updates
- Backup and recovery

17. DISADVANTAGES OF CLOUD COMPUTING

- Security issues
- Internet dependency
- Limited control
- Downtime problems

MOST IMPORTANT 14 MARK QUESTIONS

1. Explain DBMS and advantages of DBMS.
2. Differentiate file oriented approach and database approach.
3. Explain different data models with examples.
4. Explain architecture of database system.
5. Explain data independence and its types.
6. Explain data dictionary and role of DBA.
7. Explain primary key with suitable examples.
8. Explain DDL and DML commands with examples.
9. Explain cloud computing and cloud infrastructure.

10. Explain IaaS, PaaS and SaaS with examples.
11. Explain different types of cloud computing models.
12. Explain advantages and disadvantages of cloud computing.

IMPORTANT 7 MARK QUESTIONS

1. Define DBMS.
2. Explain relational model.
3. Explain primary key.
4. Explain data dictionary.
5. Explain DBA.
6. Explain DDL commands.
7. Explain DML commands.
8. Explain cloud computing.
9. Explain SaaS.
10. Explain hybrid cloud.

EXAM TIPS

- Learn definitions carefully.
- Revise DBMS architecture regularly.
- Practice differences between cloud models.
- Learn DDL and DML commands properly.
- Focus on advantages and disadvantages of cloud computing.