

**TWO MARKS**

**UNIT I**

**1. What is data base management system?**

- Database management system (DBMS) is a collection of interrelated data and a set of programs to access those data.
- A database management system (DBMS) is a software package with computer programs that control the creation, maintenance, and the use of a database.
- DBMSs may use a variety of database models, such as the relational model or object model, to conveniently describe and support applications.

**2. List any eight applications of DBMS.**

- a) Banking
- b) Airlines
- c) Universities
- d) Credit card transactions
- e) Tele communication
- f) Finance
- g) Sales
- h) Manufacturing
- i) Human resources

**3. What are the disadvantages of file processing system?**

The disadvantages of file processing systems are

- a) Data redundancy and inconsistency
- b) Difficulty in accessing data
- c) Data isolation
- d) Integrity problems
- e) Atomicity problems
- f) Concurrent access anomalies

**4. What are the advantages of using a DBMS?**

The advantages of using a DBMS are

- Controlling redundancy
- Restricting unauthorized access
- Providing multiple user interfaces
- Enforcing integrity constraints.
- Providing backup and recovery

### 5. Difference between Delete and Truncate

S.no	Delete	Truncate
1.	DELETE is a DML Command.	TRUNCATE is a DDL
2.	specify filters in where clause	Cannot use Where Co
3.	deletes specified data if where condition exists	Removes all the data
4.	Rollback is possible	Rollback is not possib

### 6. Write short notes on relational model

The relational model uses a collection of tables to represent both data and the relationships among those data. The relational model is an example of a record based model.

### 7. What is a primary key?

A *primary key* is an attribute that allows us to identify uniquely an entity in the entity set.

### 8. What is a super key?

A *super key* is a set of one or more attributes that collectively allows us to identify uniquely an entity in the entity set.

### 9. What is foreign key?

A key in which primary key attribute of one table and same attribute be used in another table, then that key is known as foreign key.

### 10. What are referential integrity constraints?

A value that appears in one relation for a given set of attributes also appears for a certain set of attributes in another relation.

### 11. What is the use of integrity constraints?

Integrity constraints ensure that changes made to the database by authorized users do not result in a loss of data consistency. Thus integrity constraints guard against accidental damage to the database.

## TWO MARKS

### UNIT II

**1. What is an entity relationship model?**

The entity relationship model is a collection of basic objects called entities and relationship among those objects. An entity is a thing or object in the real world that is distinguishable from other objects.

**2. What are attributes? Give examples.**

An entity is represented by a set of attributes. Attributes are descriptive properties possessed by each member of an entity set.

**Example:** possible attributes of customer entity are customer name, customer id, Customer Street, customer city.

**3. What is an entity?**

An entity is an object that exists and is distinguishable from other objects.

Example: specific person, company, event, plant

**4. Define the terms: i) Entity set ii) Relationship set**

**Entity set:** The set of all entities of the same type is termed as an entity set.

**Relationship set :** The set of all relationships of the same type is termed as a relationship set.

**5. What are stored and derived attributes?**

**Stored attributes:** The attributes stored in a data base are called stored attributes.

**Derived attributes:** The attributes that are derived from the stored attributes are called derived attributes.

**6. Define null values.**

In some cases a particular entity may not have an applicable value for an attribute or if we do not know the value of an attribute for a particular entity. In these cases null value is used.

**7. What does the cardinality ratio specify?**

Mapping cardinalities or cardinality ratios express the number of entities to which another entity can be associated. Mapping cardinalities must be one of the following:

- One to one
- One to many
- Many to one
- Many to many

**8. Define weak and strong entity sets?**

**Weak entity set:** entity set that do not have key attribute of their own are called weak entity sets.

**Strong entity set:** Entity set that has a primary key is termed a strong entity set.

**9. Explain the two types of participation constraint.**

**Total:** The participation of an entity set E in a relationship set R is said to be **total** if every entity in E participates in at least one relationship in R.

**Partial:** if only some entities in E participate in relationships in R, the participation of entity set E in relationship R is said to be **partial**.

## 10. Define the terms Generalization and Aggregation?

Generalization is a containment relationship that exists between a high-level Entity set and one or more low-level entity set.

Aggregation is an abstraction through which relationships are treated as higher-level entities.

## 11. What is ER diagram?

An entity-relationship diagram is a data modeling technique that creates a graphical representation of the entities, and the relationships between entities, within an information system.

## 12. What are the steps involved in creating in ERD?

- a) Identify the entities.
- b) Find the relationships
- c) Identify key attributes for every entity
- d) Draw the ERD.

## 13. What is normalization?

Database normalization is the process of organizing the fields and tables of a relational database to minimize redundancy and eliminate dependency. Normalization usually involves dividing large tables into smaller (and less redundant) tables and defining relationships between them.

## 14. What are the needs of normalization?

- To reduce redundancy
- To eliminate dependency
- To solve insert, delete, update anomalies.
- 

## 15. Define 1NF

A relation said to be first normal form if and if only all attributes are atomic in nature.

## 16. Define 2NF

A relation said to be second normal form if and if only relation should be in first normal form and to eliminate partial dependency.

## 17. Define 3NF

A relation said to be third normal form if and if only relation should be in second normal form and to eliminate transitive dependency.

## 18. Define BCNF

A relational schema R is in Boyce–Codd normal form if and only if for every one of its dependencies  $X \rightarrow Y$ , at least one of the following conditions hold

- $X \rightarrow Y$  is a trivial functional dependency ( $Y \subseteq X$ )
- X is a superkey for schema R

## 19. Define 4NF

A Table is in 4NF if and only if, for every one of its non-trivial multivalued dependencies  $X \twoheadrightarrow Y$ , X is a superkey that is, X is either a candidate key or a superset

## 20. Define 5NF

A table is said to be in the 5NF if and only if every non-trivial join dependency in it is implied by the candidate keys.

## TWO MARKS

### UNIT III

**1. What are the ACID properties?**

(*Atomicity, Consistency, Isolation, Durability*) is a set of properties that guarantee database transactions are processed reliably. In the context of databases, a single logical operation on the data is called a transaction. For example, a transfer of funds from one bank account to another, even though that might involve multiple changes (such as debiting one account and crediting another), is a single transaction.

**2. What is transaction?**

Collections of operations that form a single logical unit of work are called transactions.

**3. What is recovery management component?**

Ensuring durability is the responsibility of a software component of the base system called the recovery management component.

**4. When is a transaction rolled back?**

Any changes that the aborted transaction made to the database must be undone. Once the changes caused by an aborted transaction have been undone, then the transaction has been rolled back.

**5. What are the two types of serializability?**

A (possibly concurrent) schedule is serializable if it is equivalent to a serial schedule. Different forms of schedule equivalence gives rise to the notions of :

1. conflict serializability
2. view serializability

**6. List the SQL statements used for transaction control.**

- ❖ **Commit:** Saves all transactions
- ❖ **Rollback:** Used to undo transactions
- ❖ **Savepoint:** Establishes a point back to which you may roll
- ❖ **Set Transaction:** Establishes properties for current transaction.

**7. What are the three types of intent Lock?**

- ❖ Intent Shared(IS)
- ❖ Intent Exclusive (IX)
- ❖ Shared Intent Exclusive(SIX)

**8. What is Conflict-Serializability?**

**Conflict-Serializability** is defined by equivalence to a serial schedule (no overlapping transactions) with the same transactions, such that both schedules have the same sets of respective chronologically ordered pairs of conflicting operations (same precedence relations of respective conflicting operations).

**9. What are two pitfalls (problem) of lock-based protocols?**

**Shared Lock:** If a Transaction  $T_i$  has obtained a shared mode lock on data item  $Q$ , then  $T_i$  can read, but cannot write  $Q$ .

**Exclusive Lock:** If the transaction  $T_i$  has obtained a shared mode Lock on item  $Q$ , then  $T_i$  can read and also write  $Q$ .

**10. Define lock?**

Lock is the most common used to implement the requirement is to allow a transaction to access a data item only if it is currently holding a lock on that item.

**11. What are the different modes of lock?**

The modes of lock are:

- ❖ Shared Lock
- ❖ Exclusive Lock

**12. Define deadlock?**

Deadlock which defined as Neither of the transaction can ever proceed with its normal execution.

**13. Define the phases of two phase locking protocol**

Growing phase: a transaction may obtain locks but not release any lock.

Shrinking phase: a transaction may release locks but may not obtain any new locks.

**14. What are the time stamps associated with each data item?**

- ❖ W-timestamp (Q) denotes the largest time stamp if any transaction that executed WRITE (Q) successfully.
- ❖ R-timestamp (Q) denotes the largest time stamp if any transaction that executed READ (Q) successfully.

**15. What are the three types of intent Lock?**

- ❖ Intent Shared(IS)
- ❖ Intent Exclusive (IX)
- ❖ Shared Intent Exclusive(SIX)

**16. Write about Time-stamp based protocol.**

- ❖ Timestamp based protocol ensures Serializability. It selects an ordering among transactions in advance using time stamps.
- ❖ With each Transaction in the system, a unique fixed timestamp is associated. It is denoted by  $TS(T_i)$ . This timestamp is assigned by the database system before the transaction  $T_i$  status execution. If a transaction  $T_i$  has been assigned timestamp  $TS(T_i)$  and new transaction  $T_j$  enters the system, then  $TS(T_i) < TS(T_j)$ .

**17. Write short note on Two phase commit protocol.**

The commit process proceeds as follows:

**Phase 1**

Each participating resource manager coordinates local operations and forces all log records out:

- (i) If successful, respond "OK"
- (ii) If unsuccessful, either allow a time-out or respond "OOPS"

**Phase 2**

If all participants respond "OK":

- (i) Coordinator instructs participating resource managers to "COMMIT"

(ii) Participants complete operation writing the log record for the commit

Otherwise:

(i) Coordinator instructs participating resource managers to "ROLLBACK"

(ii) Participants complete their respective local undos

## **18. Difference between Deadlock Prevention and Deadlock Avoidance**

### **Deadlock Prevention:**

❖ Preventing deadlocks by constraining how requests for resources can be made in the system and how they are handled (system design).

❖ The goal is to ensure that at least one of the necessary conditions for deadlock can never hold.

### **Deadlock Avoidance:**

❖ The system dynamically considers every request and decides whether it is safe to grant it at this point,

❖ The system requires additional a priori information regarding the overall potential use of each resource for each process.

❖ Allows more concurrency.

## **19. What is Concurrency Control?**

Process of managing simultaneous execution of transactions in a shared database, to ensure the Serializability of transactions, is known as concurrency control.

## **20. What is meant by deadlock?**

A system is in a deadlock state if there exists a set of transaction such that every transaction in the set is waiting for another transaction in the set.

**TWO MARKS**

**UNIT IV**

1. **What are the merits & demerits of B+ tree index structure?**

**Merits:**

- ❖ Insertion in B+ tree is easy.
- ❖ Deletion in B+ tree is simple than B tree.

**Demerits:**

- ❖ Requires redundant storage for search-key values every search key appears in some leaf node. Several are repeated in non-leaf node.
- ❖ Lookup on B+-tree requires traversal of a path from root of tree to some leaf node.

2. **Difference between Static hashing and Dynamic hashing.**

S.No	Static hashing	Dynamic hashing
1.	Numbers of buckets are fixed	Numbers of buckets are not fixed
2.	As the file grows, performance decreases.	As the file grows, performances do not degrade.
3.	Space overhead is more	Space overhead is less
4.	Do not use bucket address table	Bucket address table is used
5.	Open hashing and closed hashing are forms of it.	Extendable hashing and linear hashing are forms of it.
6.	Implementation is simple	Implementation is complex
7.	It is less attractive techniques	It is more attractive techniques
8.	Overflow chaining is used	Overflow chaining is not used

3. **What are the two types of ordered indices?**

- ❖ Primary index
- ❖ Secondary index

4. **What are different types of file organization?**

- ❖ Sequential file organization
- ❖ Heap file organization
- ❖ Hashing file organization

5. **Difference between Dense index and parse index**

S. No	Dense index	Parse index
-------	-------------	-------------



1.	Index entry for every search key value (and hence every record) in the data file.	Index entries for only some of the search values.
2.	Dense indices are faster than sparse	Sparse indices are slower than dense
3.	Require more space and impose more maintenance for insertion and deletion	Require less space and impose less maintenance for insertion and deletion

**6. Difference between Primary index and Secondary index.**

S.No	Primary index	Secondary index
1.	An index on a set of fields that includes the unique primary key for the field	An index that is not a primary key
2.	Guaranteed not to contain duplicates	May have duplicates
3.	Also Called a <b>Clustered index</b> .	Also Called a <b>Non-Clustered index</b> .
4.	Eg: Employee ID	Eg: Employee name

**7. What are the factors to evaluate the indexing technique?**

- ❖ Access types
- ❖ Access time
- ❖ Insertion time
- ❖ Deletion time
- ❖ Space overhead

**8. What are the two main goals of parallelism?**

- ❖ Load –balance multiple small accesses, so that the throughput of such accesses increases.
- ❖ Parallelize large accesses so that the response time of large accesses is reduced

**9. What are the two types of blocks in the fixed –length representation?**

- ❖ **Anchor block:** Contains the first record of a chain.
- ❖ **Overflow block:** Contains the records other than those that are the first record of a chain.

**10. What is B+ tree?**

A **B+ tree** is an n-ary tree with a variable but often large number of children per node. The root may be either a leaf or a node with two or more children. A B+ tree can be viewed as a B-tree in which each node contains only keys (not key-value pairs), and to which an additional level is added at the bottom with linked leaves.

**11. List out the levels of RAID**

- ❖ RAID level 0 –Block striping non-redundant
- ❖ RAID level 1 –Mirroring
- ❖ RAID level 2 –Memory style Error correcting code
- ❖ RAID level 3 –Bit interleaved parity

- ❖ RAID level 4 –Block interleaved parity
- ❖ RAID level 5 – Block interleaved distributed parity
- ❖ RAID level 6 – P+Q redundancy disk

**12. Define query optimization**

A query typically has many possible execution strategies, and the process of choosing a suitable one for processing a query is known as query optimization.

**13. Define query processing**

Query processing means a range of activities involved in extraction data from a database. It is a procedure of selecting the strategy to be used in responding to a database request. This component of DBMS is called as a query process.

**14. List out the various steps involved in query processing.**

The basic steps involved in query processing namely

- ❖ Parsing and Translation
- ❖ Optimization
- ❖ Evaluation

**15. List out the factors that contribute to query time cost.**

Many factors contribute to time cost,

- ✓ Disk accesses.
- ✓ CPU time.
- ✓ Network communication.
- ✓ Distributed or parallel processor.

**TWO MARKS**  
**UNIT V**

**1. What are the two approaches to store a relation in the distributed database?**

**Replication:** System maintains several identical replicas (copies) of the relation and stores each replica at a different site.

**Fragmentation:** System Partitions the relation into several fragments and stores each fragment at a different site.

**2. Define Distribute Database.**

The computers in a distributed system communicate with one another through various communication media, such as high-speed networks or telephone lines. They do not share main memory or disk. The computers in distributed system are referred by names such as sites or nodes.

**3. What are the types of Transactions?**

Distributed database system supports two types of transactions.

❖ **Local transaction:** It is one that accesses data only from site where that transaction was initiated.

❖ **Global transaction:** It is one that either accesses data from a site other than the site where that transaction was initiated or accesses data from several different sites.

**4. 5. What are the advantages & disadvantages of distributed databases?**

**Advantages:**

- ❖ Sharing data
- ❖ Autonomy
- ❖ Availability
- ❖ Disadvantages:
- ❖ Software development cost
- ❖ Greater potential for bugs
- ❖ Increased processing overhead

**6. List out the reasons for the development of distributed database.**

- ❖ In Centralized system data is stored on a single computer. If that computer fails, complete system fails.
- ❖ In client server system also the data is stored on server. If server fails, complete system fails.

**7. What is Object Oriented Database?**

An object-oriented database is a database that subscribes to a model with information represented by objects. Object-oriented databases are a niche offering in the relational database management system (RDBMS) field and are not as successful or well-known as mainstream database engines.

**8. List out the features of OODB.**

- ❖ Complexity
- ❖ Inheritance
- ❖ Encapsulation
- ❖ Persistency

9. **What is Object?**  
 Object consists of entity and attributes which can describe the state of real world object and action associated with that object.

10. **List out the Characteristics of Object**  
 Some important characteristics of an object are:

- ❖ Object name.
- ❖ Object identifier
- ❖ Structure of object
- ❖ Transient object
- ❖ Persistent objects

11. **What are the three types of attributes in OODB?**

- ❖ Simple Attributes
- ❖ Complex Attributes
- ❖ Reference Attribute

12. **Define Simple attributes**

Attributes can be of primitive data type such as, integer, string, real etc. which can take literal value.

**Example:** 'ID' is simple attribute and value is 07.

13. **Define Complex attributes**

Attributes which consist of collections or reference of other multiple objects are called as complex attributes.

**Example:** Collection of Employees consists of many employee names.

14. **Define Reference attributes**

Attributes that represent a relationship between objects and consist of value or collection of values are called as reference attributes.

**Example:** Manager is reference of staff object

15. **What is ODMG?**

The Object Database Management Group (ODMG) is made up of the leading Object Database vendors plus a large number of companies that are interested in an ODBMS standard. The ODMG has produced a standard for object databases. The ODMG Standard is an interoperability standard which allows applications written to the standard to run on any compliant system .

16. **What is XML Database?**

XML Database is used to store huge amount of information in the XML format. As the use of XML is increasing in every field, it is required to have a secured place to store the XML documents. The data stored in the database can be queried using **XQuery**, serialized, and exported into a desired format.

17. **What are the attributes of XML?**

- ❖ XML elements can have attributes. By the use of attributes, we can add the information about the element.
- ❖ XML attributes enhance the properties of the elements.

18. **Difference between HTML and XML**

No.	HTML	XML
1)	HTML is used to display data and	XML is a software and hardware

	focuses on how data looks.	independent tool used to transport and store data. It focuses on what data is.
2)	HTML is a markup language itself.	XML provides a framework to define markup languages.
3)	HTML is not case sensitive.	XML is case sensitive.
4)	HTML is a presentation language.	XML is neither a presentation language nor a programming language.
5)	HTML has its own predefined tags.	You can define tags according to your need.
6)	In HTML, it is not necessary to use a closing tag.	XML makes it mandatory to use a closing tag.
7)	HTML is static because it is used to display data.	XML is dynamic because it is used to transport data.
8)	HTML does not preserve whitespaces.	XML preserve whitespaces.

**19. What is XML schema?**

- ❖ XML schema is a language which is used for expressing constraint about XML documents. There are so many schema languages which are used now a days for example Relax- NG and XSD (XML schema definition).
- ❖ An XML schema is used to define the structure of an XML document. It is like DTD but provides more control on XML structure.

**20. Difference between DTD and XSD**

No.	DTD	XSD
1)	DTD stands for <b>Document Type Definition</b> .	XSD stands for XML Schema Definition.
2)	DTDs are derived from <b>SGML</b> syntax.	XSDs are written in XML.
3)	DTD <b>doesn't support datatypes</b> .	XSD <b>supports datatypes</b> for elements and attributes.
4)	DTD <b>doesn't support namespace</b> .	XSD <b>supports namespace</b> .
5)	DTD <b>doesn't define order</b> for child elements.	XSD <b>defines order</b> for child elements.
6)	DTD is <b>not extensible</b> .	XSD is <b>extensible</b> .
7)	DTD is <b>not simple to learn</b> .	XSD is <b>simple to learn</b> because you don't need to learn new language.
8)	DTD provides <b>less control</b> on XML structure.	XSD provides <b>more control</b> on XML structure.

**21. What is XQuery?**

XQuery is a standardized language for combining documents, databases, Web pages and almost anything else. It is very widely implemented. It is powerful and easy to learn. XQuery is replacing proprietary middleware languages and Web Application development languages. XQuery is replacing complex Java or C++ programs with a few lines of code. XQuery is simpler to work with and easier to maintain than many other alternatives.

**22. Difference between XQuery and XPath**

Index	XQuery	XPath
-------	--------	-------

1)	XQuery is a functional programming and query language that is used to query a group of XML data.	XPath is a xml path language that is used to select nodes from an xml document using queries.
2)	XQuery is used to extract and manipulate data from either xml documents or relational databases and ms office documents that support an xml data source.	XPath is used to compute values like strings, numbers and boolean types from another xml documents.
3)	xquery is represented in the form of a tree model with seven nodes, namely processing instructions, elements, document nodes, attributes, namespaces, text nodes, and comments.	xpath is represented as tree structure, navigate it by selecting different nodes.
4)	xquery supports xpath and extended relational models.	xpath is still a component of query language.
5)	xquery language helps to create syntax for new xml documents.	xpath was created to define a common syntax and behavior model for xpointer and xslt.

**23. What is XQuery FLWOR?**

FLWOR is an acronym which stands for "For, Let, Where, Order by, Return".

1. **For** - It is used to select a sequence of nodes.
2. **Let** - It is used to bind a sequence to a variable.
3. **Where** - It is used to filter the nodes.
4. **Order by** - It is used to sort the nodes.
5. **Return** - It is used to specify what to return (gets evaluated once for every node).

**24. What is Information Retrieval (IR)?**

- ❖ Information retrieval (IR) systems use a simpler data model than database systems
  - ✓ Information organized as a collection of documents
  - ✓ Documents are unstructured, no schema
- ❖ Information retrieval locates relevant documents, on the basis of user input such as keywords or example documents

**25. What is Web Crawling?**

- ❖ Crawling is done by multiple processes on multiple machines, running in parallel
  - ✓ Set of links to be crawled stored in a database
  - ✓ New links found in crawled pages added to this set, to be crawled later
- ❖ Indexing process also runs on multiple machines
  - ✓ Creates a new copy of index instead of modifying old index
  - ✓ Old index is used to answer queries
  - ✓ After a crawl is "completed" new index becomes "old" index



## TWO MARKS

1. State the levels of abstraction in DBMS. **Nov/Dec 2017**

- a) Physical Level b) Logical Level c) View Level

**Physical schema:** It describes the database design at the physical level, which is the lowest level of abstraction describing how the data are actually stored.

**Logical schema:** It describes the database design at the logical level, which describes what data are stored in the database and what relationships exist among data.

2. What are the problems caused by redundancy? **Nov/Dec 2017**

- Insertion anomaly
- Deletion anomaly
- Update anomaly

3. What is static SQL and how is it different from dynamic SQL? **Nov/Dec 2017, Nov/Dec 2016, Nov/Dec 2015**

S.No.	Static (embedded) SQL	Dynamic (interactive) SQL
1.	In static SQL how database will be accessed is predetermined in the embedded SQL statement.	In dynamic SQL, how database will be accessed is determined at run time.
2.	It is more swift and efficient.	It is less swift and efficient.
3.	SQL statements are compiled at compile time.	SQL statements are compiled at run time.
4.	Parsing, validation, optimization, and generation of application plan are done at compile time.	Parsing, validation, optimization, and generation of application plan are done at run time.
5.	It is generally used for situations where data is distributed uniformly.	It is generally used for situations where data is distributed non-uniformly.
6.	EXECUTE IMMEDIATE, EXECUTE and PREPARE statements are not used.	EXECUTE IMMEDIATE, EXECUTE and PREPARE statements are used.
7.	It is less flexible.	It is more flexible.

4. State the steps in query processing. **Nov/Dec 2017**

The basic steps involved in query processing namely

- Parsing and Translation
- Optimization
- Evaluation



5. State need for concurrency. **Nov/Dec 2017**

- Lost update problem
- Uncommitted dependency (or dirty read/temporary update)
- Inconsistent analysis

6. Define ACID properties. (or) What are the properties of transaction. **Nov/Dec 2017, APR/MAY 2016, APR/MAY 2015**

• **Atomicity:** Either all operations of the transaction are reflected properly in the database, or none are.

• **Consistency:** With no other transaction executing concurrently preserves the consistency of the database.

• **Isolation:** Each transaction is unaware of other transactions executing concurrently in the system.

• **Durability:** After a transaction completes successfully, the changes it has made to the database persist, even if there are system failures.

These properties are often called the **ACID properties**.

7. What are data fragmentations? State the various fragmentations with example. **Nov/Dec 2017**

Dividing the whole table data into smaller chunks and storing them in different DBs in the DDBMS is called data fragmentation.

Types: Horizontal Data Fragmentation, Vertical Data Fragmentation.

8. Define ordered indices with example. **Nov/Dec 2017**

An ordered index stores the values of the search keys in sorted order and associates with each search key the records that contain it.

9. State the function of XML schema. **Nov/Dec 2017**

- XML Schema is integrated with namespaces.
- XML Schema is itself specified in XML syntax, unlike DTDs.

10. What are the desirable properties of decomposition? **APR/MAY 2017**

- Lossless Decomposition
- Dependency Preservation
- Lack of Data Redundancy

11. Distinguish between key and super key. **APR/MAY 2017**

A super key is a set of attributes that uniquely identifies the tuples of a relation. It satisfies the uniqueness constraint.

A key is an attribute or set of attributes that uniquely identifies the tuples of a relation. It is a minimal super key.

12. What is query execution plan? **APR/MAY 2017**

A **query plan** (or **query execution plan**) is an ordered set of steps used to [data](#) in a [SQL relational database management system](#). This is a specific case of the [relational model](#) concept of access plans.

13. Which cost component are used most often as the basis for cost function? **APR/MAY 2017**

Many factors contribute to time cost,

- Disk accesses.
- CPU time.
- Network communication.
- Distributed or parallel processor.

14. What is serializable schedule? **APR/MAY 2017**

A schedule is serializable if it is equivalent to a serial schedule.

A schedule where the operations of each transaction are executed consecutively without any interference from other transactions is called serial schedule.

15. What type of locking needed for insert and delete operations? **APR/MAY 2017**

- Two-Phase Locking
- Index Locking

16. Define replication transparency. **APR/MAY 2017**

The users view each data object as logically unique.

17. What are the disadvantages of file processing system? **APR/MAY 2016**

The disadvantages of file processing systems are

- Data redundancy and inconsistency
- Difficulty in accessing data
- Data isolation
- Integrity problems
- Atomicity problem
- Concurrent access anomalies

18. Explain Entity relationship model. **APR/MAY 2016**

The entity relationship model is a collection of basic objects called entities and relationship among those objects. An entity is a thing or object in the real world that is distinguishable from other objects.

19. Name the categories of SQL commands. **APR/MAY 2016, APR/MAY 2015**

- Data Definition Language (DDL)
- Data Manipulation Language (DML)
- Data Control Language (DCL)
- Transaction Control Language (TCL)

20. Explain “Query Optimization”. **APR/MAY 2016, APR/MAY 2015**

A query typically has many possible execution strategies, and the process of choosing a suitable one for processing a query is known as query optimization.

21. Differentiate strict two phase locking protocol and rigorous two phase locking protocol. **APR/MAY 2016**

In strict two phase locking protocol all exclusive mode locks taken by a transaction is held until that transaction commits. Rigorous two phase locking protocol requires that all locks be held until the transaction commits.

22. Define software and hardware RAID systems. **APR/MAY 2016**

**Software RAID :** RAID implementations done entirely in software, with no special hardware support.

**Hardware RAID :** RAID implementations with special hardware

- Use non- volatile RAM to record writes that are being executed.
- In case of power failure, when the system comes back up, it retrieves information about only incomplete write from non- volatile RAM and then completes the writes.

23. Differentiate file processing system with Database Management System. **Nov/Dec 2016, APR/MAY 2015**

<b>File based system</b>	<b>Database system</b>
<b>1.</b> The data and program are inter- dependent.	<b>1.</b> The data and program are independent of each other.
<b>2.</b> File-based system caused data redundancy.	<b>2.</b> Database system control data redundancy.
<b>3.</b> File –based system caused data inconsistency.	<b>3.</b> In database system data always consistent
<b>4.</b> File based system is less complex system.	<b>4.</b> Database system is very complex system.
<b>5.</b> File based system does not provide concurrency facility.	<b>5.</b> Database system provides concurrency facility.
<b>6.</b> The cost of file processing system is less than database system.	<b>6.</b> The cost of database system is more than file processing system.
<b>7.</b> If one application fail it does not affects other files in system.	<b>7.</b> If database fail it affects all application that dependent on database
<b>8.</b> Hardware cost is less than database system	<b>8.</b> Hardware cost is high in database than file system.

24. What is a weak entity? Give example. **Nov/Dec 2016**

- The entity set which does not have sufficient attributes to form a primary key is called as Weak entity.
- It is represented by double rectangles.

Eg:

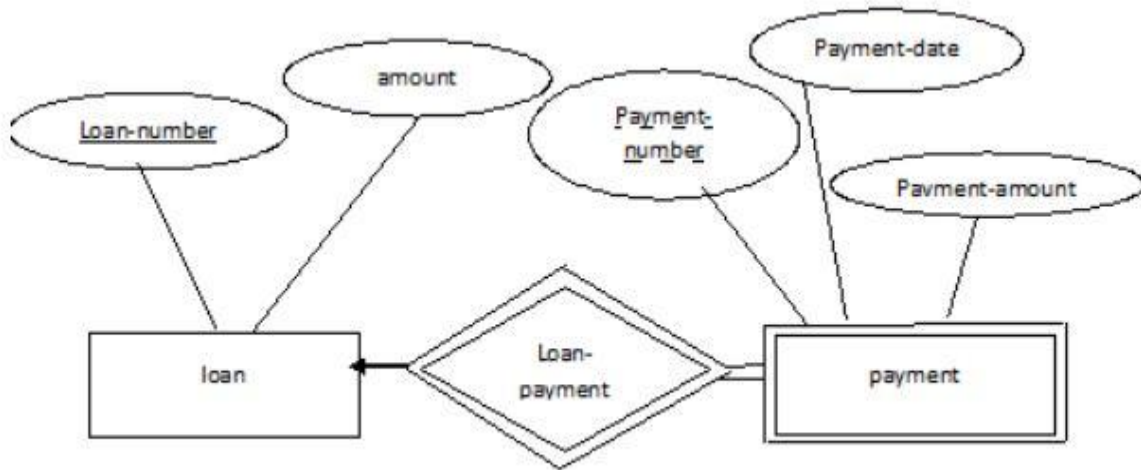


Fig1: Example of weak entity set.

25. What is data definition language? Give example. **Nov/Dec 2016**

Data Definition Language (DDL) provides commands for defining relation schemas, deleting relations, and modifying relation schemas.

Eg: create table employee ( empno number(2), ename varchar(23), salary number(5));

26. List the four conditions for deadlock. **Nov/Dec 2016**

- Mutual Exclusion
- Hold and Wait
- No preemptive
- Circular Wait

27. List out the mechanisms to avoid collision during hashing. **Nov/Dec 2016**

- Separate Chaining
- Open Addressing

28. What are the disadvantages of B tree over B+ tree. **Nov/Dec 2016**

- Only small fraction of all search-key values are found early.
- Non-leaf nodes are larger, so fan-out is reduced. Thus B trees typically have greater depth than corresponding B+ tree.
- Insertion and Deletion more complicated than B+ tree.
- Implementation is harder than B+ tree.

29. Define distributed database management system. **Nov/Dec 2016**

The computers in a distributed system communicate with one another through various communication media, such as high-speed networks or telephone lines. They do not share main memory or disk. The computers in distributed system are referred by names such as sites or nodes.

30. How does the concept of an object in the object -oriented model differ from the concept of an entity in the entity relationship model? **Nov/Dec 2016**

<b>Object Oriented Model</b>	<b>ER Model</b>
In the object oriented data model (OODM), both data and their relationships are contained in a single structure known as an object.	But, ER model is a collection of basic objects called entities and relationships among those objects
An object is an abstraction of a real-world entity.	An entity is a thing or object in the real world that is distinguishable from other objects.

31. State the anomalies of 1NF. **Nov/Dec 2015**

- Update Anomalies
- Insertion Anomalies
- Deletion Anomalies

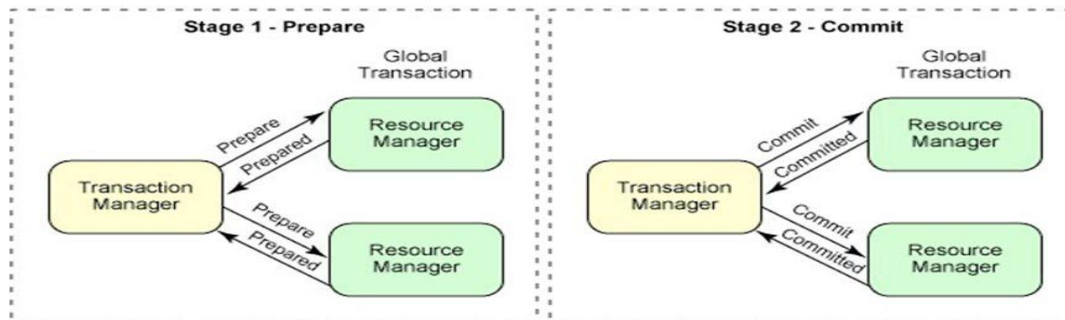
32. What is meant by concurrency control? **Nov/Dec 2015**

The system must control the interaction among the concurrent transactions. This control is achieved through one of concurrency control schemes. The concurrency control schemes are based on the serializability property.

33. Give an example of two phase commit protocol. **Nov/Dec 2015**

## Transaction Communication

### □ Two Phase Commit Protocol



34. Differentiate between dynamic hashing and static hashing. **Nov/Dec 2015, APR/MAY 2015**

<b>Static Hashing</b>	<b>Dynamic Hashing</b>
<ul style="list-style-type: none"> <li>• Number of buckets are fixed</li> </ul>	<ul style="list-style-type: none"> <li>• Number of buckets are not fixed</li> </ul>
<ul style="list-style-type: none"> <li>• As the file grows, performance decreases</li> </ul>	<ul style="list-style-type: none"> <li>• As the file grows, performances do not degrade</li> </ul>
<ul style="list-style-type: none"> <li>• Space overhead is more</li> </ul>	<ul style="list-style-type: none"> <li>• Space overhead is less</li> </ul>
<ul style="list-style-type: none"> <li>• Do not use bucket address table</li> </ul>	<ul style="list-style-type: none"> <li>• Bucket address table is used</li> </ul>
<ul style="list-style-type: none"> <li>• Open hashing and closed hashing are forms of it</li> </ul>	<ul style="list-style-type: none"> <li>• Extendable hashing and linear hashing are forms of it</li> </ul>
<ul style="list-style-type: none"> <li>• Implementation is simple</li> </ul>	<ul style="list-style-type: none"> <li>• Implementation is complex</li> </ul>
<ul style="list-style-type: none"> <li>• It is less attractive technique</li> </ul>	<ul style="list-style-type: none"> <li>• It is more attractive technique</li> </ul>
<ul style="list-style-type: none"> <li>• Overflow chaining is used</li> </ul>	<ul style="list-style-type: none"> <li>• Overflow chaining is not used</li> </ul>

35. Define: functional dependency. **APR/MAY 2015**

Consider a relation schema R and a C R and  $\beta$  C R. The functional dependency  $\alpha \rightarrow \beta$  holds on relational schema R if in any legal relation r(R), for all pairs of tuples t1 and t2 in r such that t1 [α] = t2 [α], and also t1 [β] = t2 [β].