Oral Questions and Answers (DBMS LAB)

Questions & Answers- DBMS

1) Define Database.
A prearranged collection of figures known as data is called database.

2) What is DBMS?

Database Management Systems (DBMS) are applications designed especially which enable user interaction with other applications.

3) What are the various kinds of interactions catered by DBMS?

The various kind of interactions catered by DBMS are:

- Data definition
- Update
- Retrieval
- Administration

4) Segregate database technology's development.

The development of database technology is divided into:

- Structure or data model
- Navigational model
- SQL/ relational model

5) Who proposed the relational model?

Edgar F. Codd proposed the relational model in 1970.

6) What are the features of Database language?

A database language may also incorporate features like:
DBMS-specific Configuration and management of storage engine
Computations to modification of query results by computations, like summing, counting, averaging, grouping, sorting and cross-referencing Constraint enforcement Application Programming Interface

7) What do database languages do?

As special-purpose languages, they have:

- Data definition language
- Data manipulation language
- Query language

8) Define database model.

A data model determining fundamentally how data can be stored, manipulated and organised andthe structure of the database logically is called database model.

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9) What is SQL?

Structured Query Language (SQL) being ANSI standard language updates database and commandsfor accessing.

10) Enlist the various relationships of database.

The various relationships of database are:

- One-to-one: Single table having drawn relationship with another table having similar kindof columns.
- One-to-many: Two tables having primary and foreign key relation.
- Many-to-many: Junction table having many tables related to many tables.

11) Define Normalization.

Organized data void of inconsistent dependency and redundancy within a database is callednormalization.

12) Enlist the advantages of normalizing database.

Advantages of normalizing database are:

- No duplicate entries
- Saves storage space
- Boasts the query performances.

13) Define Denormalization.

Boosting up database performance, adding of redundant data which in turn helps rid of complex data is called denormalization.

14) Define DDL and DML.

Managing properties and attributes of database is called Data Definition Language(DDL).

Manipulating data in a database such as inserting, updating, deleting is defined as Data Manipulation Language. (DML)

15) Enlist some commands of DDL.

They are:

CREATE:

Create is used in the CREATE TABLE statement. Syntax is:

CREATE TABLE [column name] ([column definitions]) [table parameters]

ALTER:

It helps in modification of an existing object of database. Its syntax is:

ALTER objecttype objectname parameters.

DROP:

It destroys an existing database, index, table or view. Its syntax is:

DROP objecttype objectname.

16) Define Union All operator and Union.

Full recordings of two tables is Union All operator.
A distinct recording of two tables is Union.

17) Define cursor.

A database object which helps in manipulating data row by row representing a result set is called cursor.

18) Enlist the cursor types.

They are:

- Dynamic: it reflects changes while scrolling.
- Static: doesn't reflect changes while scrolling and works on recording of snapshot.
- Keyset: data modification without reflection of new data is seen.

19) Enlist the types of cursor.

They types of cursor are:

- Implicit cursor: Declared automatically as soon as the execution of SQL takes place without the awareness of the user.
- Explicit cursor: Defined by PL/ SQL which handles query in more than one row.

20) Define sub-query.

A query contained by a query is called Sub-query.

21) Why is group-clause used?

Group-clause uses aggregate values to be derived by collecting similar data.

22) Compare Non-clustered and clustered index

Both having B-tree structure, non-clustered index has data pointers enabling one table many non-clustered indexes while clustered index is distinct for every table.

23) Define Aggregate functions.

Functions which operate against a collection of values and returning single value is called aggregate functions

24) Define Scalar functions.

Scalar function is depended on the argument given and returns sole value.

25) What restrictions can you apply when you are creating views?

Restrictions that are applied are:

- Only the current database can have views.
- You are not liable to change any computed value in any particular view.
- Integrity constants decide the functionality of INSERT and DELETE.
- Full-text index definitions cannot be applied.
- Temporary views cannot be created.
- Temporary tables cannot contain views.
- No association with DEFAULT definitions.
- Triggers such as INSTEAD OF is associated with views.

26) Define "correlated subqueries".

A 'correlated subquery' is a sort of sub query but correlated subquery is reliant on another queryfor a value that is returned. In case of execution, the sub query is executed first and then the correlated query.

27) Define Data Warehousing.

Storage and access of data from the central location in order to take some strategic decision is called Data Warehousing. Enterprise management is used for managing the information whose framework is known as Data Warehousing.

28) Define Join and enlist its types.

Joins help in explaining the relation between different tables. They also enable you to select data with relation to data in another table.

The various types are:

- INNER JOINs: Blank rows are left in the middle while more than equal to two tables arejoined.
- OUTER JOINs: Divided into Left Outer Join and Right Outer Join. Blank rows are left at the specified side by joining tables in other side.

Other joins are CROSS JOINs, NATURAL JOINs, EQUI JOIN and NON-EQUI JOIN.

29) What do you mean by Index hunting?

Indexes help in improving the speed as well as the query performance of database. The procedureof boosting the collection of indexes is named as Index hunting.

Oral Questions and Answers (DBMS LAB)

Questions & Answers- MySQL

1. What is MySQL?

MySQL is an open source DBMS which is built, supported and distributed by MySQL AB (nowacquired by Oracle)

2. What are the technical features of MySQL?

MySQL database software is a client or server system which includes

- Multithreaded SQL server supporting various client programs and libraries
- Different backend
- Wide range of application programming interfaces and
- Administrative tools.

3. Why MySQL is used?

MySQL database server is reliable, fast and very easy to use. This software can be downloaded as freeware and can be downloaded from the internet.

4. What are Heap tables?

HEAP tables are present in memory and they are used for high speed storage on temporary

basis.

• BLOB or TEXT fields are not allowed

• Only comparison operators can be used =, <,>, = >,=<

• AUTO_INCREMENT is not supported by HEAP tables

• Indexes should be NOT NULL

5. What is the default port for MySQL Server?

The default port for MySQL server is 3306.

6. What are the advantages of MySQL when compared with Oracle?

- MySQL is open source software which is available at any time and has no cost involved.
- MySQL is portable
- GUI with command prompt.
- Administration is supported using MySQL Query Browser

Oral Questions and Answers (DBMS LAB)

7. Difference between CHAR and VARCHAR?

Following are the differences between CHAR and VARCHAR:

- CHAR and VARCHAR types differ in storage and retrieval
- CHAR column length is fixed to the length that is declared while creating table. The lengthvalue ranges from 1 and 255
- When CHAR values are stored then they are right padded using spaces to specific length. Trailing spaces are removed when CHAR values are retrieved.

8. Give string types available for column?

The string types are:

- SET
- BLOB
- ENUM
- CHAR
- TEXT
- VARCHAR

9. How to get current MySQL version

SELECT VERSION ();

10. What are the drivers in MySQL?

- PHP Driver
- JDBC Driver
- ODBC Driver
- C WRAPPER
- PYTHON Driver
- PERL Driver
- RUBY Driver
- CAP11PHP Driver
- Ado.net5.mxj

11. What does a TIMESTAMP do on UPDATE CURRENT_TIMESTAMP data type?

TIMESTAMP column is updated with Zero when the table is created. UPDATE CURRENT_TIMESTAMP modifier updates the timestamp field to current time whenever there is a change in other fields of the table.

12. What is the difference between primary key and candidate key?

Every row of a table is identified uniquely by primary key. There is only one primary key for a table.

Primary Key is also a candidate key. By common convention, candidate key can be designated as primary and which can be used for any foreign key references.

13. What, if a table has one column defined as TIMESTAMP?

Timestamp field gets the current timestamp whenever the row gets altered.

14. What happens when the column is set to AUTO INCREMENT and if you reach maximum value in the table?

It stops incrementing. Any further inserts are going to produce an error, since the key has been used already.

15. How can we find out which auto increment was assigned on Last insert?

LAST_INSERT_ID will return the last value assigned by Auto_increment and it is not required to specify the table name.

16. How can you see all indexes defined for a table?

Indexes are defined for the table by:

SHOW INDEX FROM <tablename>;

17. What do you mean by % and _ in the LIKE statement?

% corresponds to 0 or more characters, _ is exactly one character in the LIKE statement.

18. What is the difference between NOW() and CURRENT_DATE()?

NOW() command is used to show current year, month, date with hours, minutes and seconds while CURRENT_DATE() shows the current year with month and date only.

19. What is a trigger in MySQL?

A trigger is a set of codes that executes in response to some events.

20. How many Triggers are possible in MySQL?

There are six Triggers allowed to use in MySQL database.

1. Before Insert
2. After Insert
3. Before Update
4. After Update
5. Before Delete
6. After Delete

21. What is the difference between TRUNCATE and DELETE in MySQL?

The DELETE command is used to delete data from a table. It only deletes the rows of data fromthe table while, truncate is very dangerous command and should be used carefully because it deletes every row permanently from a table.

Oral Questions and Answers (DBMS LAB)

Questions & Answers- NoSQL

1. Compare NoSQL & RDBMS

Criteria	NoSQL	RDBMS
Data format	Does not follow any order	Organized and structured
Scalability	Very Good	Average
Querying	Limited as no Join Clause	Using SQL
Storage mechanism	Key-Value Pair, document, columnstorage, etc.	Data & relationship stored indifferent tables

2. What is NoSQL?

NoSQL encompasses a wide variety of different database technologies that were developed in response to a rise in the volume of data stored about users, objects and products. The frequency inwhich this data is accessed, and performance and processing needs. Relational databases, on the other hand, were not designed to cope with the scale and agility challenges that face modern applications, nor were they built to take advantage of the cheap storage and processing power available today.

3. What are the features of NoSQL?

When compared to relational databases, NoSQL databases are more scalable and provide superior performance, and their data model addresses several issues that the relational model is not designed to address:

- Large volumes of structured, semi-structured, and unstructured data
- Agile sprints, quick iteration, and frequent code pushes
- Object-oriented programming that is easy to use and flexible
- Efficient, scale-out architecture instead of expensive, monolithic architecture

Oral Questions and Answers (DBMS LAB)

Questions & Answers- MongoDB

1) Explain what is MongoDB?

Mongo-DB is a document database which provides high performance, high availability and easyscalability.

2) What is "Namespace" in MongoDB?

MongoDB stores BSON (Binary Interchange and Structure Object Notation) objects in the collection. The concatenation of the collection name and database name is called a namespace.

3) What is sharding in MongoDB?

The procedure of storing data records across multiple machines is referred as Sharding. It is a MongoDB approach to meet the demands of data growth. It is the horizontal partition of data in adatabase or search engine. Each partition is referred as shard or database shard.

4) How can you see the connection used by Mongos?

To see the connection used by Mongos use db_adminCommand ("connPoolStats");

5) Explain what is a replica set?

A replica set is a group of mongo instances that host the same data set. In replica set, one node isprimary, and another is secondary. From primary to the secondary node all data replicates.

6) How replication works in MongoDB?

Across multiple servers, the process of synchronizing data is known as replication. It provides redundancy and increase data availability with multiple copies of data on different database server. Replication helps in protecting the database from the loss of a single server.

7) While creating Schema in MongoDB what are the points need to be taken in consideration?

Points need to be taken in consideration are

- Design your schema according to user requirements
- Combine objects into one document if you use them together. Otherwise, separate them
- Do joins while write, and not when it is on read
- For most frequent use cases optimize your schema
- Do complex aggregation in the schema

8) What is the syntax to create a collection and to drop a collection in MongoDB?

- Syntax to create collection in MongoDB is db.createCollection(name,options)
- Syntax to drop collection in MongoDB is db.collection.drop()

9) Explain what is the role of profiler in MongoDB?

MongoDB database profiler shows performance characteristics of each operation against

thedatabase. You can find queries using the profiler that are slower than they should be.

10) Explain can you move old files in the moveChunk directory?

Yes, it is possible to move old files in the moveChunk directory, during normal shard balancing operations these files are made as backups and can be deleted once the operations are done.

11) To do safe backups what is the feature in MongoDB that you can use?

Journaling is the feature in MongoDB that you can use to do safe backups.

12) Mention what is Objecld composed of?

Objectld is composed of

- Timestamp
- Client machine ID
- Client process ID
- 3 byte incremented counter

13) Mention what is the command syntax for inserting a document?

For inserting a document command syntax is database.collection.insert (document).

14) Mention how you can inspect the source code of a function?

To inspect a source code of a function, without any parentheses, the function must be invoked.

15) What is the command syntax that tells you whether you are on the master server or not? And how many master does MongoDB allow?

Command syntax Db.isMaster() will tell you whether you are on the master server or not.MongoDB allows only one master server, while couchDB allows multiple masters.

16) Mention the command syntax that is used to view Mongo is using the link?

The command syntax that is used to view mongo is using the link isdb._adminCommand("connPoolStats.")

17) Explain what are indexes in MongoDB?

Indexes are special structures in MongoDB, which stores a small portion of the data set in an easy to traverse form. Ordered by the value of the field specified in the index, the index stores the value of a specific field or set of fields.

18) Mention what is the basic syntax to use index in MongoDB?

The basic syntax to use in MongoDB is >db.COLLECTION_NAME.ensureIndex ({KEY:1}). In here the key is the the name of the COLUMN (or KEY:VALUE pair) which is present in the documents.

19) Explain what is GridFS in MongoDB?

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For storing and retrieving large files such as images, video files and audio files GridFS is used. By default, it uses two files fs.files and fs.chunks to store the file's metadata and the chunks.

20) What are alternatives to MongoDB?

Cassandra, CouchDB, Redis, Riak, Hbase are a few good alternatives.

DBMS Oral Questions:

1. What is MySQL?

Why MySQL is used? MySQL database server is reliable, fast and very easy to use. This softwarecan be downloaded as freeware and can be downloaded from the internet.

2.What is the default port for MySQL Server?
The default port for MySQL server is 3306.

3. What are the advantages of MySQL when compared with Oracle?

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Every row of a table is identified uniquely by primary key. There is only one primary key for atable. Primary Key is also a candidate key. By common convention, candidate key can be designated as primary and which can be used for any foreign key references.

6What is a foreign key?

A foreign key is one table which can be related to the primary key of another table. Relationship needs to be created between two tables by referencing foreign key with the primary key of anothertable.

7. What is a View?
A view is a virtual table which consists of a subset of data contained in a table. Views are notvirtually present, and it takes less space to store. View can have data of one or more tables combined, and it is depending on the relationship.

8. What is an Index?

An index is performance tuning method of allowing faster retrieval of records from the table. Anindex creates an entry for each value and it will be faster to retrieve data.

9. What are all the different types of indexes?

There are three types of indexes -.

- **Unique Index.**

This indexing does not allow the field to have duplicate values if the column is unique indexed.Unique index can be applied automatically when primary key is defined.

- **Clustered Index.**

This type of index reorders the physical order of the table and search based on the key values. Each table can have only one clustered index.

- **NonClustered Index.**

NonClustered Index does not alter the physical order of the table and maintains logical order of data. Each table can have 999 nonclustered indexes.

10. What is a Cursor?

A database Cursor is a control which enables traversal over the rows or records in the table. This can be viewed as a pointer to one row in a set of rows. Cursor is very much useful for traversing such as retrieval, addition and removal of database records.

11. **What happens when the column is set to AUTO INCREMENT and if you reach maximum value** in the table? It stops incrementing. Any further inserts are going to produce an error, since thekey has been used already

12. How can you see all indexes defined for a table? Indexes are defined for the table by:
SHOW INDEX FROM tablename

13. What do you mean by % and _ in the LIKE statement? % corresponds to 0 or more characters, _ is exactly one character in the LIKE statement

14. What is the difference between NOW() and CURRENT_DATE()?
NOW() command is used to show current year, month, date with hours, minutes and seconds while CURRENT_DATE() shows the current year with month and date only.

15. What is a JOIN?
It is a Keyword, used to query data from multiple tables based on relationship between the fields ofthe tables. Keys plays major role in JOINs.

16. Differebt types of joins?

17.What is subquery?

A subquery is a query within another query. The outer query is called as main query, and inner query

is called subquery. SubQuery is always executed first, and the result of subquery is passed onto the main query.

18. What is a trigger in MySQL?
A trigger is a set of codes that executes in response to some events.

19. How many Triggers are possible in MySQL?
There are six Triggers allowed to use in MySQL database. 1. Before Insert 2. After Insert 3. Before Update 4. After Update 5. Before Delete 6. After Delete

20. What is PL/SQL?
PL/SQL (Procedural Language/SQL) is basically a procedural extension of Oracle – SQL. PL/SQL helps the user to develop complex database applications using control structures, procedures, function,modules, etc.

21. Explain the purpose of %TYPE and %ROWTYPE data types with the example?

Answer: PL/SQL uses %TYPE declaration attribute for anchoring. This attribute provides the datatype of a variable, constant or column. %TYPE attribute is useful while declaring a variable that has the same datatype as a table column.
For example, the variable m_empno has the same data type and size as the column *empno* in table emp.
m_empno emp.empno%TYPE;
%ROWTYPE attribute is used to declare a variable to be a record having the same structure as a row ina table. The row is defined as a record and its fields have the same names and data types as the columnsin the table or view.
For example: dept_rec dept%ROWTYPE;
This declares a record that can store an entire row for DEPT table.

22. What do you understand by PL/SQL cursors?
Answer: PL/SQL requires a special capability to retrieve and process more than one row and that resource is known as Cursors. A cursor is a pointer to the context area, which is an area of memory containing SQL statements and information for processing the statements.
PL/SQL Cursor is basically a mechanism under which multiple rows of the data from the database are selected and then each row is individually processed inside a PL/SQL program.
Question #7) Explain cursor types?
Answer: There are two types of cursors. They are explained as follows
1) Explicit Cursors: For queries that return more than one row, an explicit cursor is declared and named by a programmer. In order to use explicit cursor in PL/SQL, 4 steps are followed
Declare the cursor
Syntax: CURSOR <cursor_name> is
SELECT statement;
Where <cursor_name> is the name assigned to the cursor and SELECT statement is the query that returns rows to the cursor active set.
Open the cursor
Syntax: OPEN <cursor_nam>;
Where, <cursor_name> is the name of the previously defined cursor.
Fetch rows from the cursor
Syntax: FETCH <cursor_name> INTO <record_list>;
Where <cursor_name> refers to the name of the previously defined cursor from which rows are being fetched.

<record_list> represents the list of variables that will receive the data being fetched.

Closing the cursor

Syntax: CLOSE <cursor_name>;

Where <cursor_name> is the name of the cursor being closed.

2) Implicit cursors: When any SQL statement is executed, PL/SQL automatically creates a cursor without defining such cursors are known as implicit cursors.

For following statements, PL/SQL employs implicit cursors

- INSERT
- UPDATE
- DELETE
- SELECT (queries that return exactly one row)

23. Explain the difference in execution of triggers and stored procedures?

Answer: A stored procedure is executed explicitly by issuing procedure call statement from anotherblock via a procedure call with arguments.
The trigger is executed implicitly whenever any triggering event like the occurrence of DML statements happens.

24. Compare NoSQL & RDBMS

25. What is NoSQL?
NoSQL encompasses a wide variety of different database technologies that were developed in response to a rise in the volume of data stored about users, objects and products. The frequency in which this data is accessed, and performance and processing needs. Relational databases, on the other hand, were not designed to cope with the scale and agility challenges that face modern applications, nor were they built to take advantage of the cheap storage and processing power available today

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Group-clause uses aggregate values to be derived by collecting similar data.

38. Define Aggregate functions.

Functions which operate against a collection of values and returning single value is called aggregate functions.

39. What is JSON? Explain?

Ans: JSON is the abbreviation of JavaScript Object Notation. It is one of the simplest data interchange format. It is also independent of programming language and platform. Its lightweight text-based structure makes it easily readable by a human. It is derived from JavaScript for presenting simple data inthe form of key-value pairs.
It is often used for serialization and transmission of data between the network connections. It is mostlyused for data transmission between a web application and the server thereby making it a popular alternative to the XML format.

40. What is meant by JSON objects?

Ans: An object is defined as a set of key-value pair. A JSON starts with a left brace "{" and ends with another right brace "}". Every key is followed by a colon ":" and the key-value pairs are separated from each other by using a comma ",". So, basically, JSON object is a collection of keys along with their values arranged in a pre-specified JSON format.

41. Explain JSON syntax rules?

Ans: There are several rules that describe the structure of the JSON. They are:

- Data inside a JSON is arranged in Key value pair. The left side represents the key and the data at theright side represents value. Both key and value are separated by a colon ":".
- Each set of key-value pair is separated from the other pair by using a comma ",".
- Curly braces define the JSON objects. Left curly brace "{" represents the start of the object and rightcurly brace "}" represents the end of an object.
- Arrays are defined inside a JSON object by using square brackets "[ ]".

42. What are the advantages of JSON over XML?

Ans: JSON has emerged as one of the most popular data interchange methods. It has several advantagesover the XML that has to help it to replace XML as a most popular data transfer format.

- JSON is lighter and faster than the XML.
- JSON has object types but XML doesn't define objects as types. JSON have different object type for adifferent set of data such as string, integer, Boolean, array etc. All XML objects are categorized as just one data type, i.e. string.
- JSON data can be easily accessed as a JSON object using JavaScript. On the other hand, the XML dataneed to be parsed and allocated to the variables using APIs. Getting a value out of a JSON is as easy as reading an object from your JavaScript programming.